



**Walt Disney Parks and Resorts US, Inc.**

**RadioNode**

**FCC 15.247:2021**

**DTS**

**Report: SYNA0309.1, Issue Date: April 6, 2021**



NVLAP LAB CODE: 200629-0  
NVLAP LAB CODE: 200676-0



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# CERTIFICATE OF TEST

**Last Date of Test: January 5, 2021**  
**Walt Disney Parks and Resorts US, Inc.**  
**EUT: RadioNode**

## Radio Equipment Testing

### Standards

| Specification   | Method                       |
|-----------------|------------------------------|
| FCC 15.247:2020 | ANSI C63.10:2013, KDB 558074 |

### Results

| Method Clause              | Test Description                    | Applied | Results | Comments      |
|----------------------------|-------------------------------------|---------|---------|---------------|
| 6.2                        | Powerline Conducted Emissions       | No      | N/A     | Not required. |
| 11.6                       | Duty Cycle                          | No      | N/A     | Not required. |
| 11.8.2                     | Occupied Bandwidth                  | No      | N/A     | Not required. |
| 11.9.1.1                   | Output Power                        | Yes     | Pass    |               |
| 11.9.1.1                   | Equivalent Isotropic Radiated Power | No      | N/A     | Not required. |
| 11.10.2                    | Power Spectral Density              | No      | N/A     | Not required. |
| 11.11                      | Band Edge Compliance                | No      | N/A     | Not required. |
| 11.11                      | Spurious Conducted Emissions        | No      | N/A     | Not required. |
| 11.12.1, 11.13.2, 6.5, 6.6 | Spurious Radiated Emissions         | Yes     | Pass    |               |

### Deviations From Test Standards

None

### Approved By:



Kyle Holgate, Operations Manager

*Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.*

# REVISION HISTORY



| Revision Number | Description | Date<br>(yyyy-mm-dd) | Page Number |
|-----------------|-------------|----------------------|-------------|
| 00              | None        |                      |             |

# ACCREDITATIONS AND AUTHORIZATIONS



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## United States

**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

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## Canada

**ISED** - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

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## European Union

**European Commission** – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

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## Australia/New Zealand

**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

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## Korea

**MSIT / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

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## Japan

**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

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## Taiwan

**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

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## Singapore

**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

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## Israel

**MOC** – Recognized by MOC as a CAB for the acceptance of test data.

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## Hong Kong

**OFCA** – Recognized by OFCA as a CAB for the acceptance of test data.

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## Vietnam

**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

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## SCOPE

For details on the Scopes of our Accreditations, please visit:

<https://www.nwemc.com/emc-testing-accreditations>

# FACILITIES



|                                                                                       |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>California</b><br>Labs OC01-17<br>41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918   | <b>Minnesota</b><br>Labs MN01-10<br>9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(612)-638-5136 | <b>Oregon</b><br>Labs EV01-12<br>6775 NE Evergreen Pkwy #400<br>Hillsboro, OR 97124<br>(503) 844-4066 | <b>Texas</b><br>Labs TX01-09<br>3801 E Plano Pkwy<br>Plano, TX 75074<br>(469) 304-5255 | <b>Washington</b><br>Labs NC01-05<br>19201 120 <sup>th</sup> Ave NE<br>Bothell, WA 98011<br>(425)984-6600 |
| <b>NVLAP</b>                                                                          |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
| NVLAP Lab Code: 200676-0                                                              | NVLAP Lab Code: 200881-0                                                                              | NVLAP Lab Code: 200630-0                                                                              | NVLAP Lab Code:201049-0                                                                | NVLAP Lab Code: 200629-0                                                                                  |
| <b>Innovation, Science and Economic Development Canada</b>                            |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
| 2834B-1, 2834B-3                                                                      | 2834E-1, 2834E-3                                                                                      | 2834D-1                                                                                               | 2834G-1                                                                                | 2834F-1                                                                                                   |
| <b>BSMI</b>                                                                           |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
| SL2-IN-E-1154R                                                                        | SL2-IN-E-1152R                                                                                        | SL2-IN-E-1017                                                                                         | SL2-IN-E-1158R                                                                         | SL2-IN-E-1153R                                                                                            |
| <b>VCCI</b>                                                                           |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
| A-0029                                                                                | A-0109                                                                                                | A-0108                                                                                                | A-0201                                                                                 | A-0110                                                                                                    |
| <b>Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA</b> |                                                                                                       |                                                                                                       |                                                                                        |                                                                                                           |
| US0158                                                                                | US0175                                                                                                | US0017                                                                                                | US0191                                                                                 | US0157                                                                                                    |



# MEASUREMENT UNCERTAINTY

## Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

| Test                                  | + MU    | - MU     |
|---------------------------------------|---------|----------|
| Frequency Accuracy                    | 0.0007% | -0.0007% |
| Amplitude Accuracy (dB)               | 1.2 dB  | -1.2 dB  |
| Conducted Power (dB)                  | 1.2 dB  | -1.2 dB  |
| Radiated Power via Substitution (dB)  | 0.7 dB  | -0.7 dB  |
| Temperature (degrees C)               | 0.7°C   | -0.7°C   |
| Humidity (% RH)                       | 2.5% RH | -2.5% RH |
| Voltage (AC)                          | 1.0%    | -1.0%    |
| Voltage (DC)                          | 0.7%    | -0.7%    |
| Field Strength (dB)                   | 5.2 dB  | -5.2 dB  |
| AC Powerline Conducted Emissions (dB) | 2.6 dB  | -2.6 dB  |

# Test Setup Block Diagrams

## Antenna Port Conducted Measurements



## Near Field Test Fixture Measurements



## Spurious Radiated Emissions



# PRODUCT DESCRIPTION



## Client and Equipment Under Test (EUT) Information

|                          |                                        |
|--------------------------|----------------------------------------|
| Company Name:            | Walt Disney Parks and Resorts US, Inc. |
| Address:                 | PO Box 10000                           |
| City, State, Zip:        | Lake Buena Vista, FL 32830             |
| Test Requested By:       | Hattie Spetla                          |
| EUT:                     | RadioNode                              |
| First Date of Test:      | August 25, 2020                        |
| Last Date of Test:       | January 5, 2021                        |
| Receipt Date of Samples: | August 25, 2020                        |
| Equipment Design Stage:  | Production                             |
| Equipment Condition:     | No Damage                              |
| Purchase Authorization:  | Verified                               |

## Information Provided by the Party Requesting the Test

### Functional Description of the EUT:

Device is a multi port BLE and a proprietary single channel radio operating at 2.482 GHz radio. It provides two transmitters and multiple receivers to collect data. This data can be then sent over a wired Ethernet connection to server side systems to act on the collected data. Additional external interface include POE, DMX, RS-232, RS-485, audio output, USB2.0 (2), Relays (2) and Opto-isolated Inputs(2) for general purpose peripheral control. The device is powered either by Power over Ethernet Plus, following the IEEE 802.3at standard, or a 24VDC supply.

### Testing Objective:

To demonstrate compliance of the 2.4 GHz DTS radio to FCC 15.247 requirements.

# CONFIGURATIONS



## Configuration SYNA0306- 4

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT         |                                        |                   |               |
|-------------|----------------------------------------|-------------------|---------------|
| Description | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode   | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |

| Peripherals in test setup boundary |              |                   |               |
|------------------------------------|--------------|-------------------|---------------|
| Description                        | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Switch       | Netgear      | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear      | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |

# CONFIGURATIONS



## Configuration SYNA0309- 1

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                    |               |
|----------------|----------------------------------------|--------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number  | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195         | Rev. 10 - 002 |
| Dipole Antenna | Linx                                   | ANT-2.4-CW-HWR-SMA | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| AC/DC Power Adapter - Switch       | Netgear                           | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear                           | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |

# CONFIGURATIONS



## Configuration SYNA0309- 2

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                    |               |
|----------------|----------------------------------------|--------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number  | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195         | Rev. 10 - 002 |
| Dipole Antenna | Linx                                   | ANT-2.4-CW-HWR-SMA | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |

# CONFIGURATIONS



## Configuration SYNA0309- 3

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                   |               |
|----------------|----------------------------------------|-------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Dipole Antenna | Taoglas                                | GW.26.0111        | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| AC/DC Power Adapter - Switch       | Netgear                           | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear                           | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |

# CONFIGURATIONS



## Configuration SYNA0309- 4

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                   |               |
|----------------|----------------------------------------|-------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Dipole Antenna | Taoglas                                | GW.26.0111        | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |

# CONFIGURATIONS



## Configuration SYNA0309- 5

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                          |                                        |                   |               |
|------------------------------|----------------------------------------|-------------------|---------------|
| Description                  | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                    | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Single Element Patch Antenna | L-com                                  | RE09P-NM          | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| AC/DC Power Adapter - Switch       | Netgear                           | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear                           | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                    | Single Element Patch Antenna |

# CONFIGURATIONS



## Configuration SYNA0309- 6

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                          |                                        |                   |               |
|------------------------------|----------------------------------------|-------------------|---------------|
| Description                  | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                    | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Single Element Patch Antenna | L-com                                  | RE09P-NM          | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                    | Single Element Patch Antenna |

# CONFIGURATIONS



## Configuration SYNA0309- 7

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT          |                                        |                   |               |
|--------------|----------------------------------------|-------------------|---------------|
| Description  | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode    | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Yagi Antenna | Disney                                 | C3EY              | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| AC/DC Power Adapter - Switch       | Netgear                           | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear                           | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| Coaxial Cable           | Yes    | 0.9m       | No      | RadioNode                    | Yagi Antenna                 |

# CONFIGURATIONS



## Configuration SYNA0309- 8

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT          |                                        |                   |               |
|--------------|----------------------------------------|-------------------|---------------|
| Description  | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode    | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Yagi Antenna | Disney                                 | C3EY              | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |
| Coaxial Cable           | Yes    | 0.9m       | No      | RadioNode                    | Yagi Antenna                 |

# CONFIGURATIONS



## Configuration SYNA0309- 9

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                   |               |
|----------------|----------------------------------------|-------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Dipole Antenna | Taoglas                                | WSA.2400.A.101151 | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| AC/DC Power Adapter - Switch       | Netgear                           | NUA3-6540240-11   | N/A           |
| Switch                             | Netgear                           | GS108pp           | 58617ADUA11A9 |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |

# CONFIGURATIONS



## Configuration SYNA0309- 10

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT            |                                        |                   |               |
|----------------|----------------------------------------|-------------------|---------------|
| Description    | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode      | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 002 |
| Dipole Antenna | Taoglas                                | WSA.2400.A.101151 | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |

# CONFIGURATIONS



## Configuration SYNA0309- 11

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT         |                                        |                   |               |
|-------------|----------------------------------------|-------------------|---------------|
| Description | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode   | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Laptop                       |

# CONFIGURATIONS



## Configuration SYNA0309- 12

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                           |                                        |                   |               |
|-------------------------------|----------------------------------------|-------------------|---------------|
| Description                   | Manufacturer                           | Model/Part Number | Serial Number |
| 4-Element Patch Array Antenna | Ventev                                 | T24130P10006GT    | N/A           |
| RadioNode                     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 004 |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| AC/DC Power Adapter - Switch           | Netgear                           | NUA3-6540240-11   | N/A             |
| Switch                                 | Netgear                           | GS108pp           | 58617ADUA11A9   |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| DC Power Cable - Switch        | No     | 1.5m       | No      | Switch                                 | AC/DC Power Adapter - Switch           |
| AC Power Cable - Switch        | No     | 2m         | No      | AC/DC Power Adapter - Switch           | AC Mains                               |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Audio DMX Cable                | No     | 3m         | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Switch                                 |
| Ethernet Cable                 | No     | 1m         | No      | Switch                                 | Laptop                                 |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |

# CONFIGURATIONS

## Configuration SYNA0309- 14

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                                    |                                        |                   |               |
|----------------------------------------|----------------------------------------|-------------------|---------------|
| Description                            | Manufacturer                           | Model/Part Number | Serial Number |
| Patch Array - 3x3 (9 elements) Antenna | Disney                                 | 3x3               | N/A           |
| RadioNode                              | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 004 |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| AC/DC Power Adapter - Switch           | Netgear                           | NUA3-6540240-11   | N/A             |
| Switch                                 | Netgear                           | GS108pp           | 58617ADUA11A9   |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| DC Power Cable - Switch        | No     | 1.5m       | No      | Switch                                 | AC/DC Power Adapter - Switch           |
| AC Power Cable - Switch        | No     | 2m         | No      | AC/DC Power Adapter - Switch           | AC Mains                               |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Switch                                 |
| Ethernet Cable                 | No     | 1m         | No      | Switch                                 | Laptop                                 |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |

# CONFIGURATIONS



## Configuration SYNA0309- 16

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                           |                                        |                   |               |
|-------------------------------|----------------------------------------|-------------------|---------------|
| Description                   | Manufacturer                           | Model/Part Number | Serial Number |
| 4-Element Patch Array Antenna | Ventev                                 | T24130P10006GT    | N/A           |
| RadioNode                     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 004 |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Audio DMX Cable                | No     | 3m         | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Laptop                                 |

# CONFIGURATIONS



## Configuration SYNA0309- 17

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                                    |                                        |                   |               |
|----------------------------------------|----------------------------------------|-------------------|---------------|
| Description                            | Manufacturer                           | Model/Part Number | Serial Number |
| Patch Array - 3x3 (9 elements) Antenna | Disney                                 | 3x3               | N/A           |
| RadioNode                              | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 012 |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Audio DMX Cable                | No     | 3m         | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Laptop                                 |

# CONFIGURATIONS



## Configuration SYNA0309- 18

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT           |                                        |                   |               |
|---------------|----------------------------------------|-------------------|---------------|
| Description   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 012 |
| Panel Antenna | Ventev                                 | T24190P10006GT    | N/A           |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Audio DMX Cable                | No     | 3m         | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| Antenna Patch Cable            | Yes    | 1.25m      | No      | RadioNode                              | Panel Antenna                          |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Laptop                                 |

# CONFIGURATIONS



## Configuration SYNA0309- 19

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT           |                                        |                   |               |
|---------------|----------------------------------------|-------------------|---------------|
| Description   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 012 |
| Panel Antenna | Ventev                                 | T24190P10006GT    | N/A           |

| Peripherals in test setup boundary     |                                   |                   |                 |
|----------------------------------------|-----------------------------------|-------------------|-----------------|
| Description                            | Manufacturer                      | Model/Part Number | Serial Number   |
| Audio Peripheral                       | Synapse Product Development, Inc. | Two               | N/A             |
| AC/DC Power Adapter - Switch           | Netgear                           | NUA3-6540240-11   | N/A             |
| Switch                                 | Netgear                           | GS108pp           | 58617ADUA11A9   |
| Laptop PC (ASUS)                       | ASUS                              | UL20FT            | A8N0AS133997328 |
| AC/DC Power Adapter - Laptop PC (ASUS) | ASUS                              | ADP-65JH          | 660W0BB0J5T     |

| Cables                         |        |            |         |                                        |                                        |
|--------------------------------|--------|------------|---------|----------------------------------------|----------------------------------------|
| Cable Type                     | Shield | Length (m) | Ferrite | Connection 1                           | Connection 2                           |
| DC Power Cable - Switch        | No     | 1.5m       | No      | Switch                                 | AC/DC Power Adapter - Switch           |
| AC Power Cable - Switch        | No     | 2m         | No      | AC/DC Power Adapter - Switch           | AC Mains                               |
| Relay & DC Out Cable           | No     | 1.5m       | No      | Audio Peripheral                       | RadioNode                              |
| Audio DMX Cable                | No     | 3m         | No      | Audio Peripheral                       | RadioNode                              |
| Ethernet Cable                 | No     | 7.5m       | No      | RadioNode                              | Switch                                 |
| Ethernet Cable                 | No     | 1m         | No      | Switch                                 | Laptop                                 |
| Ethernet Cable                 | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1.6m       | No      | RadioNode                              | Unterminated                           |
| USB Cable                      | No     | 1m         | No      | RadioNode                              | Unterminated                           |
| Antenna Patch Cable            | Yes    | 1.25m      | No      | RadioNode                              | Panel Antenna                          |
| DC Power Cable - Laptop (ASUS) | No     | 1.8m       | Yes     | Laptop PC (ASUS)                       | AC/DC Power Adapter - Laptop PC (ASUS) |
| AC Power Cable - Laptop (ASUS) | No     | 1.5m       | No      | AC/DC Power Adapter - Laptop PC (ASUS) | AC Mains                               |

# CONFIGURATIONS



## Configuration SYNA0313- 1

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                        |                                        |                   |               |
|----------------------------|----------------------------------------|-------------------|---------------|
| Description                | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                  | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| Dual Port Monopole Antenna | Taoglas                                | MA510.C.CG.005    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |
| AC/DC Power Adapter - Switch                    | Netgear      | NUA3-6540240-11   | N/A           |
| Switch                                          | Netgear      | GS108pp           | 58617ADUA11A9 |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                       | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                       | Laptop                       |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| Coaxial Cable x2        | Yes    | 0.8m       | No      | RadioNode                    | MA510.C.CG.005 Antenna       |

# CONFIGURATIONS



## Configuration SYNA0313- 2

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                        |                                        |                   |               |
|----------------------------|----------------------------------------|-------------------|---------------|
| Description                | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                  | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| Dual Port Monopole Antenna | Taoglas                                | MA510.C.CG.005    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral             | RadioNode                    |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                    | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                    | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                    | Laptop                       |
| Coaxial Cable x2        | Yes    | 0.8m       | No      | RadioNode                    | MA510.C.CG.005 Antenna       |

# CONFIGURATIONS



## Configuration SYNA0313- 5

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT         |                                        |                   |               |
|-------------|----------------------------------------|-------------------|---------------|
| Description | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode   | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |

| Peripherals in test setup boundary |              |                   |               |
|------------------------------------|--------------|-------------------|---------------|
| Description                        | Manufacturer | Model/Part Number | Serial Number |
| DC Power Supply                    | Tektronix    | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                              |                              |
|-------------------------|--------|------------|---------|------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                 | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                       | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral             | RadioNode                    |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply              | AC Mains                     |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                    | Laptop                       |

# CONFIGURATIONS



## Configuration SYNA0317- 1

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                           |                                        |                   |               |
|-------------------------------|----------------------------------------|-------------------|---------------|
| Description                   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| 4-Element Patch Array Antenna | Ventev                                 | T24130P10006GT    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |
| AC/DC Power Adapter - Switch                    | Netgear      | NUA3-6540240-11   | N/A           |
| Switch                                          | Netgear      | GS108pp           | 58617ADUA11A9 |

| Cables                  |        |            |         |                                  |                              |
|-------------------------|--------|------------|---------|----------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                     | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                           | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop     | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                           | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch     | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral/DC Power Supply | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral                 | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                        | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                           | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                        | Panel Antenna                |

# CONFIGURATIONS



## Configuration SYNA0317- 2

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT                           |                                        |                   |               |
|-------------------------------|----------------------------------------|-------------------|---------------|
| Description                   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode                     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| 4-Element Patch Array Antenna | Ventev                                 | T24130P10006GT    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                                  |                              |
|-------------------------|--------|------------|---------|----------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                     | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                           | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop     | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral/DC Power Supply | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral                 | RadioNode                    |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply                  | AC Mains                     |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Laptop                       |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                        | Panel Antenna                |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                        | Laptop                       |

# CONFIGURATIONS



## Configuration SYNA0317- 3

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT           |                                        |                   |               |
|---------------|----------------------------------------|-------------------|---------------|
| Description   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| Panel Antenna | Ventev                                 | T24190P10006GT    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |
| AC/DC Power Adapter - Switch                    | Netgear      | NUA3-6540240-11   | N/A           |
| Switch                                          | Netgear      | GS108pp           | 58617ADUA11A9 |

| Cables                  |        |            |         |                                  |                              |
|-------------------------|--------|------------|---------|----------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                     | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                           | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop     | AC Mains                     |
| DC Power Cable - Switch | No     | 1.5m       | No      | Switch                           | AC/DC Power Adapter - Switch |
| AC Power Cable - Switch | No     | 2m         | No      | AC/DC Power Adapter - Switch     | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral/DC Power Supply | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral                 | RadioNode                    |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                        | Switch                       |
| Ethernet Cable          | No     | 1m         | No      | Switch                           | Laptop                       |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                        | Panel Antenna                |

# CONFIGURATIONS



## Configuration SYNA0317- 4

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT           |                                        |                   |               |
|---------------|----------------------------------------|-------------------|---------------|
| Description   | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode     | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |
| Panel Antenna | Ventev                                 | T24190P10006GT    | N/A           |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                                  |                              |
|-------------------------|--------|------------|---------|----------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                     | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                           | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop     | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral/DC Power Supply | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral                 | RadioNode                    |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1.6m       | No      | RadioNode                        | Unterminated                 |
| USB Cable               | No     | 1m         | No      | RadioNode                        | Unterminated                 |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply                  | AC Mains                     |
| Ethernet Cable          | No     | 1m         | No      | RadioNode                        | Laptop                       |
| Antenna Patch Cable     | Yes    | 1.25m      | No      | RadioNode                        | Panel Antenna                |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                        | Laptop                       |

# CONFIGURATIONS



## Configuration SYNA0317- 5

| Software/Firmware Running during test |            |
|---------------------------------------|------------|
| Description                           | Version    |
| Radio Tool                            | 08/02/2018 |

| EUT         |                                        |                   |               |
|-------------|----------------------------------------|-------------------|---------------|
| Description | Manufacturer                           | Model/Part Number | Serial Number |
| RadioNode   | Walt Disney Parks and Resorts US, Inc. | 300-004195        | Rev. 10 - 007 |

| Peripherals in test setup boundary |                                   |                   |               |
|------------------------------------|-----------------------------------|-------------------|---------------|
| Description                        | Manufacturer                      | Model/Part Number | Serial Number |
| Audio Peripheral                   | Synapse Product Development, Inc. | Two               | N/A           |
| DC Power Supply                    | Tektronix                         | PS280             | TW55636       |

| Remote Equipment Outside of Test Setup Boundary |              |                   |               |
|-------------------------------------------------|--------------|-------------------|---------------|
| Description                                     | Manufacturer | Model/Part Number | Serial Number |
| AC/DC Power Adapter - Laptop                    | HP           | 608428-001        | 2306691807    |
| Laptop                                          | HP           | ProBook 4540s     | 2CE3201RB4    |

| Cables                  |        |            |         |                                  |                              |
|-------------------------|--------|------------|---------|----------------------------------|------------------------------|
| Cable Type              | Shield | Length (m) | Ferrite | Connection 1                     | Connection 2                 |
| DC Power Cable - Laptop | No     | 2m         | Yes     | Laptop                           | AC/DC Power Adapter - Laptop |
| AC Power Cable - Laptop | No     | 2m         | No      | AC/DC Power Adapter - Laptop     | AC Mains                     |
| Relay & DC Out Cable    | No     | 1.5m       | No      | Audio Peripheral/DC Power Supply | RadioNode                    |
| Audio DMX Cable         | No     | 3m         | No      | Audio Peripheral                 | RadioNode                    |
| DC Power Supply Cable   | No     | 1.6m       | No      | DC Power Supply                  | AC Mains                     |
| Ethernet Cable          | No     | 7.5m       | No      | RadioNode                        | Laptop                       |

# MODIFICATIONS

## Equipment Modifications

| Item | Date       | Test                                            | Modification                         | Note                                                                | Disposition of EUT                          |
|------|------------|-------------------------------------------------|--------------------------------------|---------------------------------------------------------------------|---------------------------------------------|
| 1    | 2020-08-25 | Output Power, 0dBm                              | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 2    | 2020-09-28 | Spurious Radiated Emissions, RE09P-NM           | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 3    | 2020-09-29 | Spurious Radiated Emissions, ANT-2.4-CW-HWR-SMA | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 4    | 2020-09-29 | Spurious Radiated Emissions, GW.26.0111         | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 5    | 2020-09-30 | Spurious Radiated Emissions, C3EY               | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 6    | 2020-10-05 | Spurious Radiated Emissions, WSA.2400.A.101151  | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 7    | 2020-10-14 | Output Power, -4dBm                             | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 8    | 2020-10-27 | Spurious Radiated Emissions, 3x3                | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 9    | 2020-11-20 | Spurious Radiated Emissions, T24130P10006GT     | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 10   | 2020-11-23 | Spurious Radiated Emissions, T24190P10006GT     | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 11   | 2020-11-24 | Output Power, -8dBm                             | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 12   | 2020-12-16 | Spurious Radiated Emissions, MA510.C.CG.005     | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |

# MODIFICATIONS

|    |            |                             |                                      |                                                                     |                                             |
|----|------------|-----------------------------|--------------------------------------|---------------------------------------------------------------------|---------------------------------------------|
| 13 | 2020-12-21 | Output Power, -4dBm         | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 14 | 2021-01-04 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Element following the test. |
| 15 | 2021-01-05 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed.            |

# POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information.

## ANTENNA GAIN (dBi)

| Type                           | Provided by:                   | Frequency Range (MHz) | Gain (dBi) |
|--------------------------------|--------------------------------|-----------------------|------------|
| Dipole                         | Linx, PN: ANT-2.4-CW-HWR-SMA   | 2300-2600             | 3.2        |
| Patch Array – 3x3 (9 elements) | Disney, PN: 3x3                | 2400-2500             | 12         |
| Yagi                           | Disney, PN: C3EY               | 2400-2500             | 6.3        |
| Dipole                         | Taoglas, PN: GW.26.011         | 2400-2500             | 1.2        |
| Dipole                         | Taoglas, PN: WSA.2400.A.101151 | 2400-2500             | 3.2        |
| Patch Array (4 elements)       | Ventev, PN: T24130P10006GT     | 2400-2500             | 13         |
| Patch Array (16 elements)      | Ventev, PN: T24190P10006GT     | 2400-2500             | 19         |
| Patch (single element)         | L-com, PN: RE09P-NM            | 2400-2500             | 8          |
| Dipole                         | Taoglas, PN: MA510.C.CG.005    | 2400-2500             | 3.9        |

The EUT was tested using the power settings provided by the manufacturer:

## SETTINGS FOR ALL TESTS IN THIS REPORT

### ANT-2.4-CW-HWR-SMA, C3EY, GW.26.011, WSA.2400.A.101151, RE09P-NM, MA510.C.CG.005

| Modulation Types / Data Rates | Type | Channel | Frequency (MHz) | Power Setting |
|-------------------------------|------|---------|-----------------|---------------|
| GFSK/1 Mbps                   | DTS  | 40      | 2482            | 0 dBm         |

### 3x3 & T24190P10006GT

| Modulation Types / Data Rates | Type | Channel | Frequency (MHz) | Power Setting |
|-------------------------------|------|---------|-----------------|---------------|
| GFSK /1 Mbps                  | DTS  | 40      | 2482            | -4 dBm        |

### T24130P10006GT

| Modulation Types / Data Rates | Type | Channel | Frequency (MHz) | Power Setting |
|-------------------------------|------|---------|-----------------|---------------|
| GFSK /1 Mbps                  | DTS  | 40      | 2482            | -8 dBm        |

# OUTPUT POWER



XMH 2020.12.30.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

## TEST EQUIPMENT

| Description                  | Manufacturer    | Model            | ID  | Last Cal.  | Cal. Due   |
|------------------------------|-----------------|------------------|-----|------------|------------|
| Attenuator                   | Weinschel       | 54A-20           | TYR | 2021-01-21 | 2022-01-21 |
| Block - DC                   | Weinschel Corp. | 7006             | AMS | 2021-01-21 | 2022-01-21 |
| Cable                        | Micro-Coax      | D150A-1-0720-200 | NCS | 2021-01-21 | 2022-01-21 |
| Analyzer - Spectrum Analyzer | Agilent         | N9010A           | AFI | 2020-12-08 | 2021-12-08 |
| Generator - Signal           | Agilent         | E4422B           | TGR | 2020-08-11 | 2021-08-11 |

## TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

# OUTPUT POWER



TSTx 2019.08.30.0 XMR 2020.12.30.0

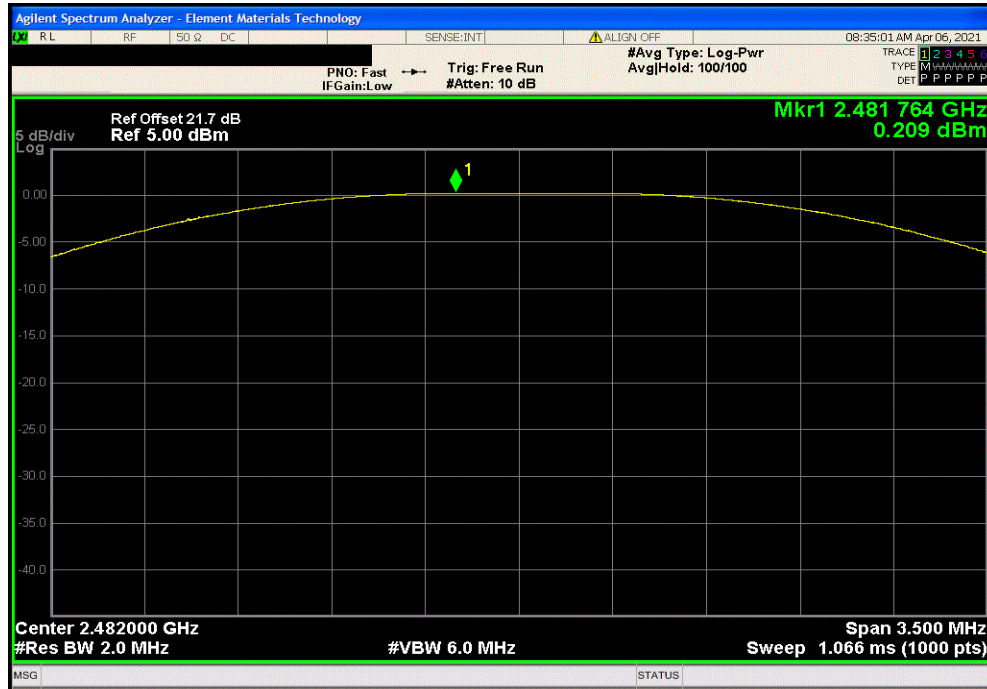
|                                                                                                              |    |                                                                                             |             |
|--------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------|-------------|
| EUT: Radio Node                                                                                              |    | Work Order: SYNA0309                                                                        |             |
| Serial Number: Rev. 10 - 007                                                                                 |    | Date: 6-Apr-21                                                                              |             |
| Customer: Synapse Product Development, Inc.                                                                  |    | Temperature: 22.6 °C                                                                        |             |
| Attendees: None                                                                                              |    | Humidity: 25.5% RH                                                                          |             |
| Project: None                                                                                                |    | Barometric Pres.: 1024 mbar                                                                 |             |
| Tested by: Brian Fahey                                                                                       |    | Power: 24VDC via 120VAC/60Hz                                                                |             |
|                                                                                                              |    | Job Site: NC0A                                                                              |             |
| TEST SPECIFICATIONS                                                                                          |    |                                                                                             |             |
| FCC 15.247:2021                                                                                              |    | Test Method                                                                                 |             |
|                                                                                                              |    | ANSI C63.10:2013                                                                            |             |
| COMMENTS                                                                                                     |    |                                                                                             |             |
| Reference level offset includes RF measurement cable, DC block, and 20 dB attenuator. Power setting = 0 dBm. |    |                                                                                             |             |
| DEVIATIONS FROM TEST STANDARD                                                                                |    |                                                                                             |             |
| None                                                                                                         |    |                                                                                             |             |
| Configuration #                                                                                              | 11 | Signature  |             |
|                                                                                                              |    | Out Pwr (dBm)                                                                               | Limit (dBm) |
| Port 7, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                               |    | 0.209                                                                                       | 30          |
| Port 8, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                               |    | -0.402                                                                                      | 30          |
|                                                                                                              |    |                                                                                             | Result      |
|                                                                                                              |    |                                                                                             | Pass        |
|                                                                                                              |    |                                                                                             | Pass        |

# OUTPUT POWER

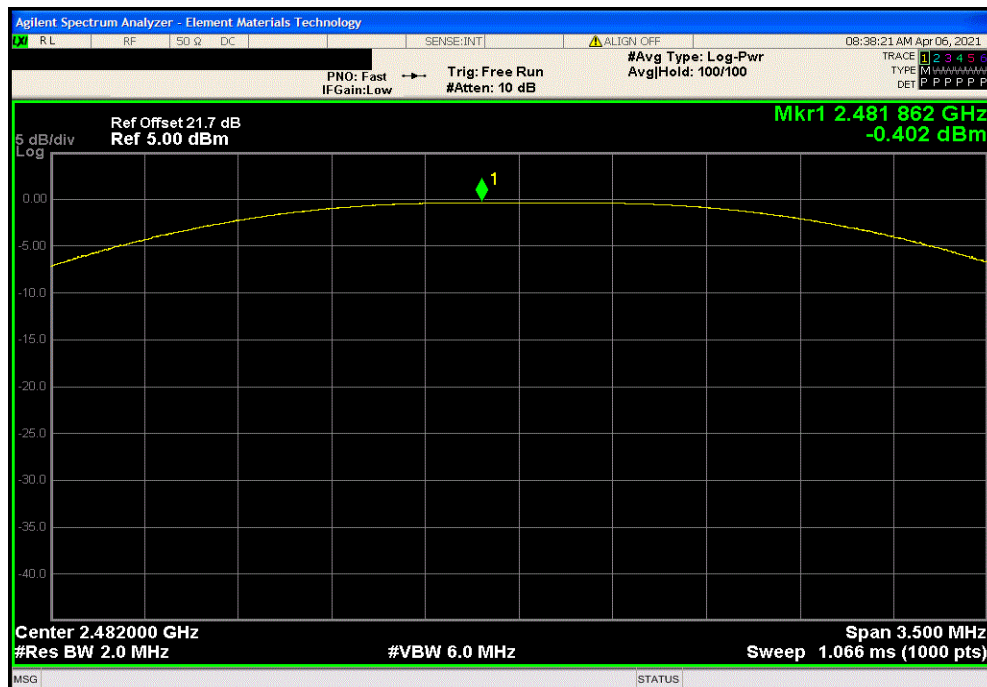


TbTx 2019.08.30.0 XMR 2020.12.30.0

| Port 7, DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|------------------------------------------------|--|--|--|------------------|----------------|--------|
|                                                |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                                |  |  |  | 0.209            | 30             | Pass   |



| Port 8, DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|------------------------------------------------|--|--|--|------------------|----------------|--------|
|                                                |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                                |  |  |  | -0.402           | 30             | Pass   |



# OUTPUT POWER



XMIT 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

## TEST EQUIPMENT

| Description                  | Manufacturer    | Model                 | ID  | Last Cal. | Cal. Due  |
|------------------------------|-----------------|-----------------------|-----|-----------|-----------|
| Block - DC                   | Weinschel Corp. | 7006                  | AMS | 17-Jan-20 | 17-Jan-21 |
| Attenuator                   | Weinschel       | 54A-20                | TYR | 17-Jan-20 | 17-Jan-21 |
| Cable                        | Micro-Coax      | UFD150A-1-0720-200200 | NCS | 17-Jan-20 | 17-Jan-21 |
| Generator - Signal           | Agilent         | E4422B                | TGR | 11-Aug-20 | 11-Aug-23 |
| Analyzer - Spectrum Analyzer | Keysight        | N9010A                | AFO | 25-Jun-20 | 25-Jun-21 |

## TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

# OUTPUT POWER



TSTx 2019.08.30.0 XMR 2020.03.25.0

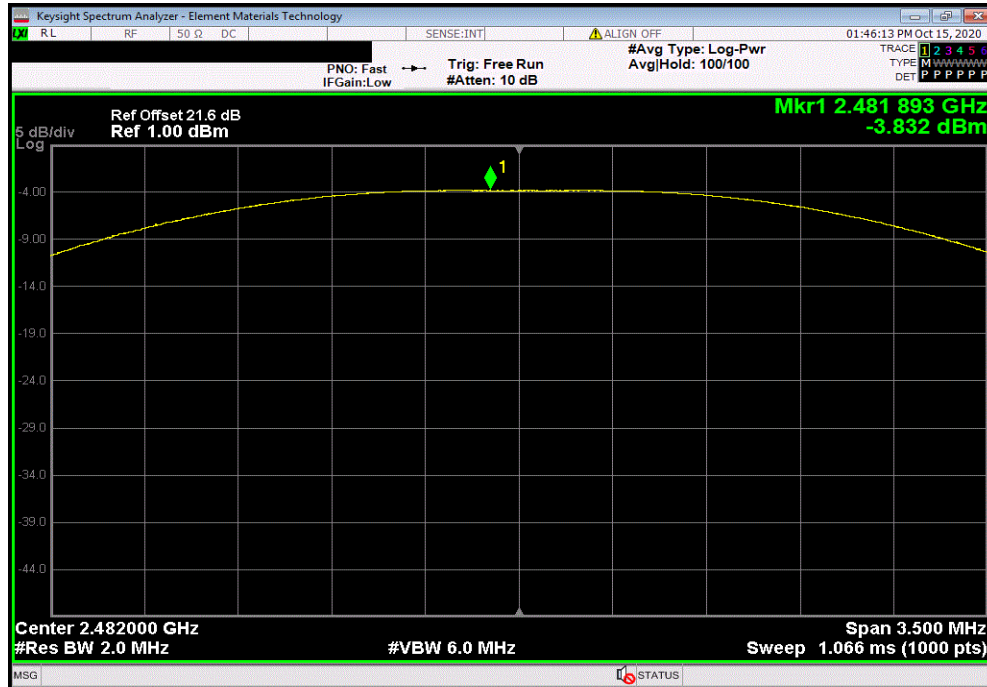
|                                                                                                               |    |                                                                                             |             |
|---------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------------|-------------|
| EUT: RadioNode                                                                                                |    | Work Order: SYNA0309                                                                        |             |
| Serial Number: Rev. 10 - 007                                                                                  |    | Date: 14-Oct-20                                                                             |             |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                              |    | Temperature: 23.1 °C                                                                        |             |
| Attendees: None                                                                                               |    | Humidity: 42.8% RH                                                                          |             |
| Project: None                                                                                                 |    | Barometric Pres.: 1031 mbar                                                                 |             |
| Tested by: Brian Fahey                                                                                        |    | Power: 24VDC via 120VAC/60Hz                                                                |             |
|                                                                                                               |    | Job Site: NC0A                                                                              |             |
| TEST SPECIFICATIONS                                                                                           |    |                                                                                             |             |
| FCC 15.247:2020                                                                                               |    | Test Method                                                                                 |             |
|                                                                                                               |    | ANSI C63.10:2013                                                                            |             |
| COMMENTS                                                                                                      |    |                                                                                             |             |
| Reference level offset includes RF measurement cable, DC block, and 20 dB attenuator. Power setting = -4 dBm. |    |                                                                                             |             |
| DEVIATIONS FROM TEST STANDARD                                                                                 |    |                                                                                             |             |
| None                                                                                                          |    |                                                                                             |             |
| Configuration #                                                                                               | 11 | Signature  |             |
|                                                                                                               |    | Out Pwr (dBm)                                                                               | Limit (dBm) |
| Port 7, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                                |    | -3.832                                                                                      | 30          |
| Port 8, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                                |    | -4.34                                                                                       | 30          |
|                                                                                                               |    |                                                                                             | Result      |
|                                                                                                               |    |                                                                                             | Pass        |
|                                                                                                               |    |                                                                                             | Pass        |

# OUTPUT POWER

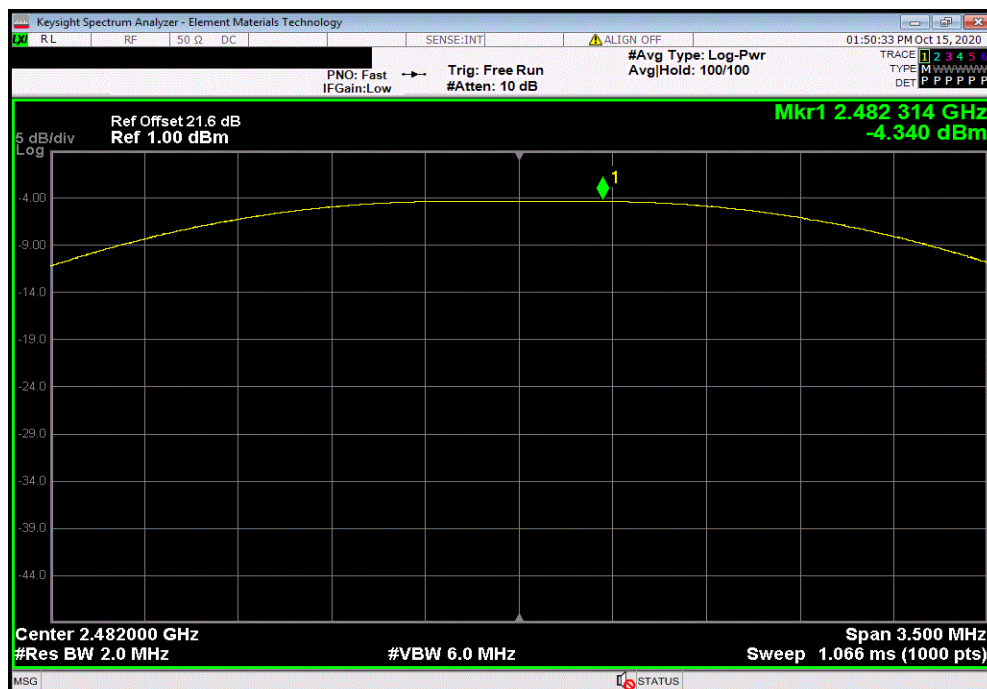


TbTtX 2019.08.30.0 XMt 2020.03.25.0

| DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|----------------------------------------|--|--|--|------------------|----------------|--------|
|                                        |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                        |  |  |  | -3.832           | 30             | Pass   |



| DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|----------------------------------------|--|--|--|------------------|----------------|--------|
|                                        |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                        |  |  |  | -4.34            | 30             | Pass   |



# OUTPUT POWER



XMit 2020.03.25.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

## TEST EQUIPMENT

| Description                  | Manufacturer    | Model                 | ID  | Last Cal. | Cal. Due  |
|------------------------------|-----------------|-----------------------|-----|-----------|-----------|
| Block - DC                   | Weinschel Corp. | 7006                  | AMS | 17-Jan-20 | 17-Jan-21 |
| Attenuator                   | Weinschel       | 54A-20                | TYR | 17-Jan-20 | 17-Jan-21 |
| Cable                        | Micro-Coax      | UFD150A-1-0720-200200 | NCS | 17-Jan-20 | 17-Jan-21 |
| Generator - Signal           | Agilent         | E4422B                | TGR | 11-Aug-20 | 11-Aug-23 |
| Analyzer - Spectrum Analyzer | Keysight        | N9010A                | AFO | 25-Jun-20 | 25-Jun-21 |

## TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

# OUTPUT POWER



TSTx 2019.08.30.0 XMR 2020.03.25.0

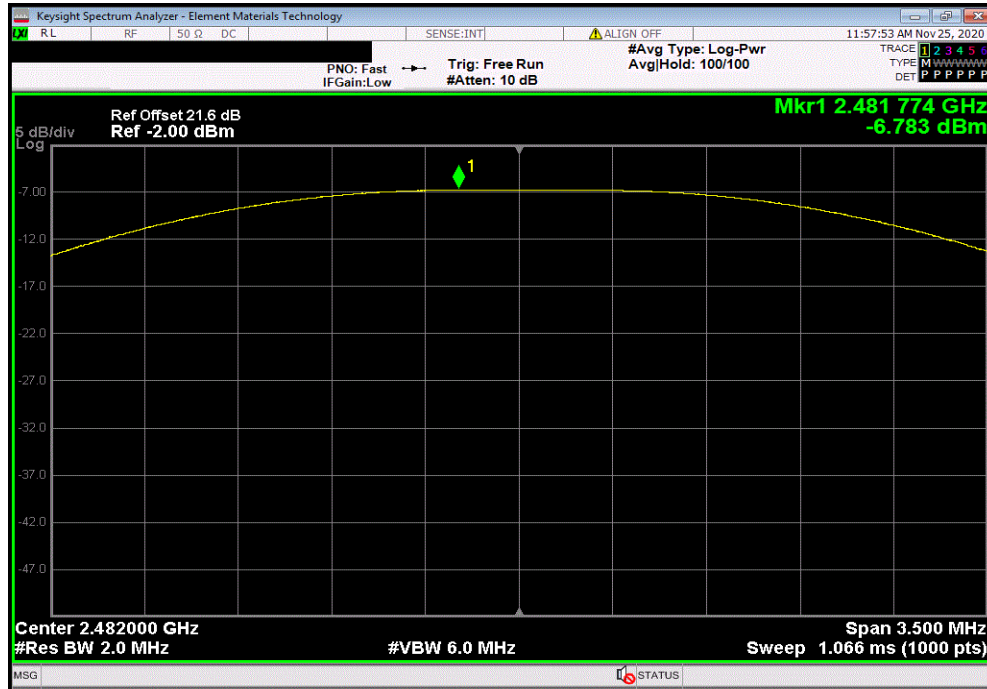
|                                                                                                               |   |                              |             |
|---------------------------------------------------------------------------------------------------------------|---|------------------------------|-------------|
| EUT: RadioNode                                                                                                |   | Work Order: SYNA0317         |             |
| Serial Number: Rev. 10 - 007                                                                                  |   | Date: 24-Nov-20              |             |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                              |   | Temperature: 22.8 °C         |             |
| Attendees: None                                                                                               |   | Humidity: 37.7% RH           |             |
| Project: None                                                                                                 |   | Barometric Pres.: 1015 mbar  |             |
| Tested by: Brian Fahey                                                                                        |   | Power: 24VDC via 120VAC/60Hz |             |
|                                                                                                               |   | Job Site: NC0A               |             |
| TEST SPECIFICATIONS                                                                                           |   |                              |             |
| FCC 15.247:2020                                                                                               |   | ANSI C63.10:2013             |             |
| TEST Method                                                                                                   |   |                              |             |
| COMMENTS                                                                                                      |   |                              |             |
| Reference level offset includes DC block, 20 dB attenuator, and RF measurement cable. Power setting = -8 dBm. |   |                              |             |
| DEVIATIONS FROM TEST STANDARD                                                                                 |   |                              |             |
| None                                                                                                          |   |                              |             |
| Configuration #                                                                                               | 5 | Signature                    |             |
|                                                                                                               |   | Out Pwr (dBm)                | Limit (dBm) |
| Port 7, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                                |   | -6.783                       | 30          |
| Port 8, DTS/GFSK 1 Mbps High Channel, 2482 MHz                                                                |   | -7.196                       | 30          |
|                                                                                                               |   |                              | Result      |
|                                                                                                               |   |                              | Pass        |
|                                                                                                               |   |                              | Pass        |

# OUTPUT POWER

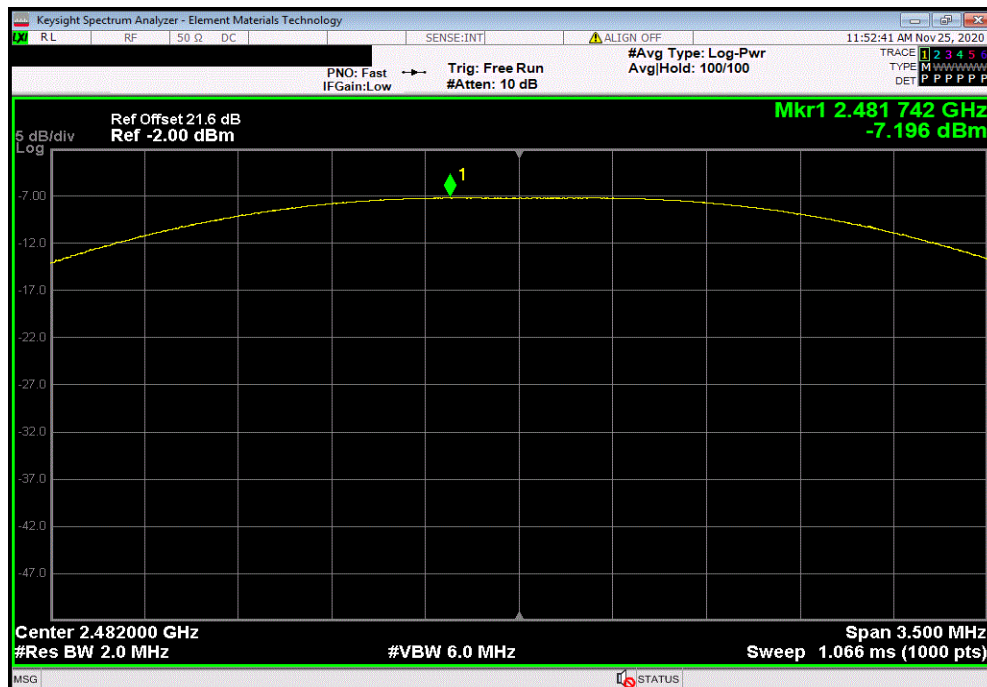


TbTtx 2019.08.30.0 XMt 2020.03.25.0

| Port 7, DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|------------------------------------------------|--|--|--|------------------|----------------|--------|
|                                                |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                                |  |  |  | -6.783           | 30             | Pass   |



| Port 8, DTS/GFSK 1 Mbps High Channel, 2482 MHz |  |  |  |                  |                |        |
|------------------------------------------------|--|--|--|------------------|----------------|--------|
|                                                |  |  |  | Out Pwr<br>(dBm) | Limit<br>(dBm) | Result |
|                                                |  |  |  | -7.196           | 30             | Pass   |



# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: 3x3, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

POE via 120VAC/60Hz

24VDC

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 14

SYNA0309 - 17

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |           |
|-----------------|--------|----------------|-----------|
| Start Frequency | 30 MHz | Stop Frequency | 26000 MHz |
|-----------------|--------|----------------|-----------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description               | Manufacturer       | Model                  | ID  | Last Cal.  | Interval |
|---------------------------|--------------------|------------------------|-----|------------|----------|
| Antenna - Standard Gain   | EMCO               | 3160-08                | AHK | NCR        | 0 mo     |
| Spectrum Analyzer         | Agilent            | N9010A                 | AFJ | 2020-01-06 | 12 mo    |
| Antenna - Standard Gain   | ETS Lindgren       | 3160-07                | AHX | NCR        | 0 mo     |
| Antenna - Double Ridge    | ETS Lindgren       | 3115                   | AIR | 2020-07-07 | 24 mo    |
| Antenna - Double Ridge    | A.H. Systems, Inc. | SAS-574                | AXV | 2020-06-03 | 24 mo    |
| Amplifier - Pre-Amplifier | Miteq              | AMF-3D-00100800-32-13P | AVJ | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier | Miteq              | AMF-6F-08001200-30-10P | AVL | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier | Miteq              | AMF-6F-12001800-30-10P | AVP | 2020-03-02 | 12 mo    |
| Antenna - Biconilog       | EMCO               | 3142                   | AXB | 2020-04-15 | 24 mo    |
| Cable                     | D-Coax             | None                   | OC4 | 2019-12-16 | 12 mo    |
| Cable                     | ESM Cable Corp.    | 30-1GHz cables         | OCW | 2020-05-01 | 12 mo    |
| Cable                     | ESM Cable Corp.    | 1-8GHz cables          | OCX | 2020-03-02 | 12 mo    |
| Cable                     | ESM Cable Corp.    | 8-18GHz cables         | OCY | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier | Miteq              | AM-1616-1000           | PAD | 2020-07-01 | 12 mo    |
| Amplifier - Pre-Amplifier | Miteq              | JSDWK42-18004000-60-5P | PAN | 2019-12-16 | 12 mo    |
| Filter - High Pass        | Micro-Tronics      | HPM50111               | HGC | 2020-03-11 | 12 mo    |
| Filter - Low Pass         | Micro-Tronics      | LPM50004               | HGK | 2020-01-20 | 12 mo    |
| Attenuator                | S.M. Electronics   | SA6-20                 | REO | 2020-01-21 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

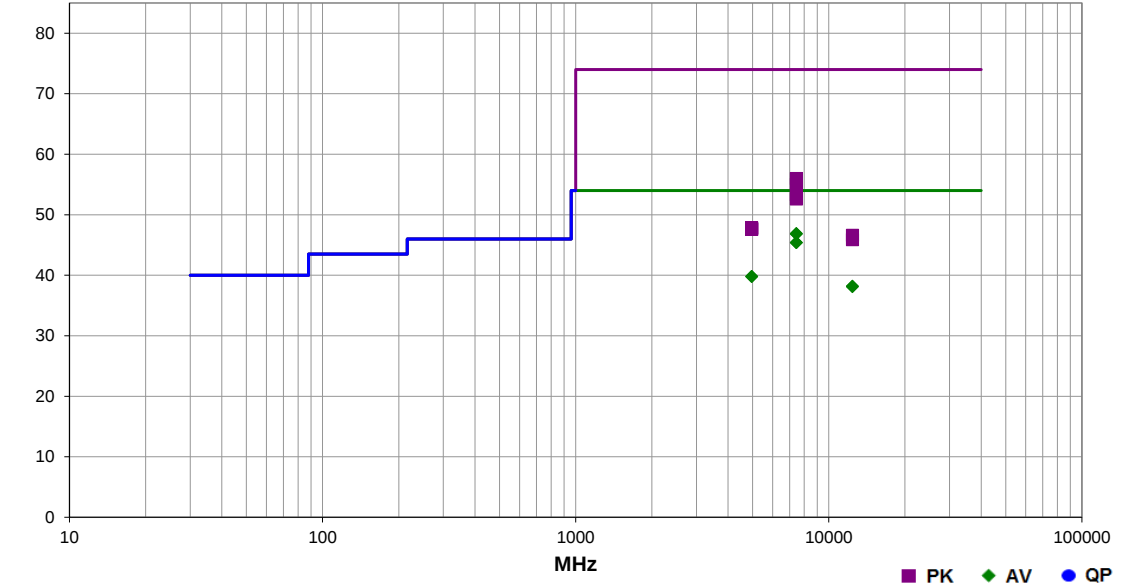
Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .



# SPURIOUS RADIATED EMISSIONS

|                                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:                                                                                                                                                                                                                                                                                                                                                           | SYNA0309      | Date:             | 2020-10-22 |  |
| Project:                                                                                                                                                                                                                                                                                                                                                              | None          | Temperature:      | 22.7 °C    |                                                                                    |
| Job Site:                                                                                                                                                                                                                                                                                                                                                             | OC07          | Humidity:         | 47.9% RH   |                                                                                    |
| Serial Number:                                                                                                                                                                                                                                                                                                                                                        | Rev. 10 - 004 | Barometric Pres.: | 1014 mbar  |                                                                                    |
| EUT: RadioNode                                                                                                                                                                                                                                                                                                                                                        |               |                   |            | Tested by: Nolan De Ramos                                                          |
| Configuration: 14                                                                                                                                                                                                                                                                                                                                                     |               |                   |            |                                                                                    |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                      |               |                   |            |                                                                                    |
| Attendees: None                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                                                                                    |
| EUT Power: POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                        |               |                   |            |                                                                                    |
| Operating Mode: DTS Tx, Antenna PN: 3x3, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                    |               |                   |            |                                                                                    |
| Deviations: None                                                                                                                                                                                                                                                                                                                                                      |               |                   |            |                                                                                    |
| Comments: See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |               |                   |            |                                                                                    |
| Test Specifications                                                                                                                                                                                                                                                                                                                                                   |               |                   |            | Test Method                                                                        |
| FCC 15.247:2020                                                                                                                                                                                                                                                                                                                                                       |               |                   |            | ANSI C63.10:2013                                                                   |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 51 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                             |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------|
| 7443.808   | 31.4             | 12.3        | 1.5                     | 340.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | High Ch, Port 8, EUT Horz, Ant Horz  |
| 7444.458   | 31.3             | 12.3        | 3.4                     | 242.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | High Ch, Port 8, EUT Vert, Ant Vert  |
| 7445.887   | 27.2             | 15.0        | 1.5                     | 285.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Vert, Ant Vert |
| 7445.127   | 27.2             | 15.0        | 1.2                     | 248.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Horz, Ant Horz |
| 4961.592   | 32.2             | 4.4         | 1.0                     | 105.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.8              | 54.0                 | -14.2                  | High Ch, Port 8, EUT Vert, Ant Vert  |
| 4962.275   | 32.2             | 4.4         | 1.5                     | 197.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.8              | 54.0                 | -14.2                  | High Ch, Port 8, EUT Horz, Ant Horz  |
| 12407.930  | 29.1             | 5.9         | 3.1                     | 313.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 38.2              | 54.0                 | -15.8                  | High Ch, Port 8, EUT Vert, Ant Vert  |
| 12407.780  | 29.0             | 5.9         | 2.2                     | 358.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.1              | 54.0                 | -15.9                  | High Ch, Port 8, EUT Horz, Ant Horz  |
| 7445.458   | 43.7             | 12.3        | 1.5                     | 340.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 56.0              | 74.0                 | -18.0                  | High Ch, Port 8, EUT Horz, Ant Horz  |
| 7446.383   | 42.7             | 12.3        | 3.4                     | 242.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.0              | 74.0                 | -19.0                  | High Ch, Port 8, EUT Vert, Ant Vert  |
| 7446.117   | 38.3             | 15.0        | 1.5                     | 285.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.3              | 74.0                 | -20.7                  | High Ch., Port 7, EUT Vert, Ant Vert |
| 7446.627   | 37.6             | 15.0        | 1.2                     | 248.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., Port 7, EUT Horz, Ant Horz |
| 4963.983   | 43.3             | 4.5         | 1.0                     | 105.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.8              | 74.0                 | -26.2                  | High Ch, Port 8, EUT Vert, Ant Vert  |
| 4961.692   | 43.2             | 4.4         | 1.5                     | 197.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.6              | 74.0                 | -26.4                  | High Ch, Port 8, EUT Horz, Ant Horz  |
| 12410.670  | 40.7             | 5.9         | 2.2                     | 358.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.6              | 74.0                 | -27.4                  | High Ch, Port 8, EUT Horz, Ant Horz  |
| 12409.920  | 40.0             | 5.9         | 3.1                     | 313.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 45.9              | 74.0                 | -28.1                  | High Ch, Port 8, EUT Vert, Ant Vert  |

# SPURIOUS RADIATED EMISSIONS

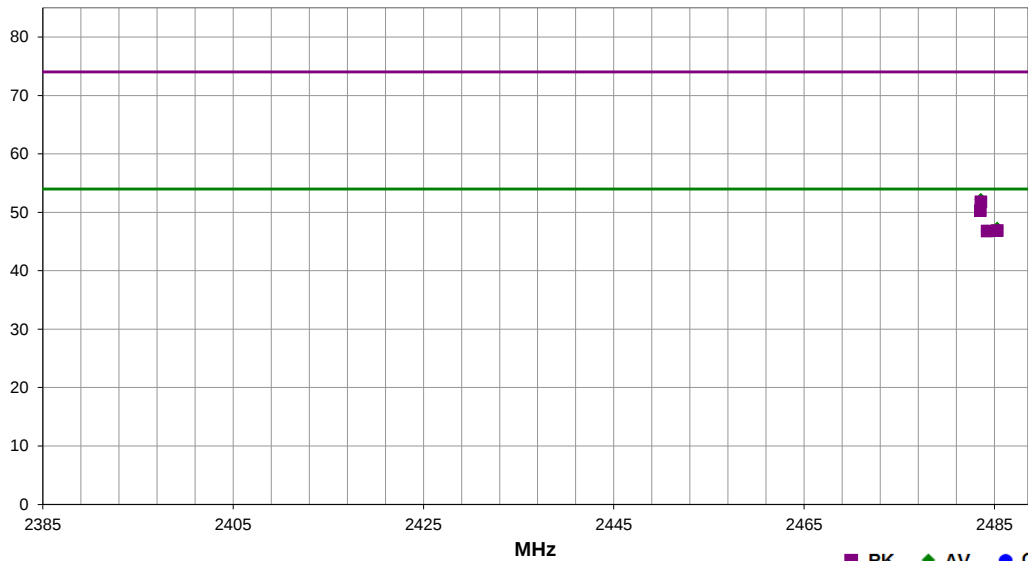


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|------------|---------------------------|
| Work Order:                                                                                                                                                                                                                                                                                                                                                           | SYNA0309      | Date:             | 2020-10-22 |                           |
| Project:                                                                                                                                                                                                                                                                                                                                                              | None          | Temperature:      | 22.7 °C    |                           |
| Job Site:                                                                                                                                                                                                                                                                                                                                                             | OC07          | Humidity:         | 47.9% RH   |                           |
| Serial Number:                                                                                                                                                                                                                                                                                                                                                        | Rev. 10 - 004 | Barometric Pres.: | 1014 mbar  |                           |
| EUT: RadioNode                                                                                                                                                                                                                                                                                                                                                        |               |                   |            | Tested by: Nolan De Ramos |
| Configuration: 14                                                                                                                                                                                                                                                                                                                                                     |               |                   |            |                           |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                      |               |                   |            |                           |
| Attendees: None                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                           |
| EUT Power: POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                        |               |                   |            |                           |
| Operating Mode: DTS Tx, Antenna PN: 3x3, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                    |               |                   |            |                           |
| Deviations: None                                                                                                                                                                                                                                                                                                                                                      |               |                   |            |                           |
| Comments: See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |               |                   |            |                           |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 53 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



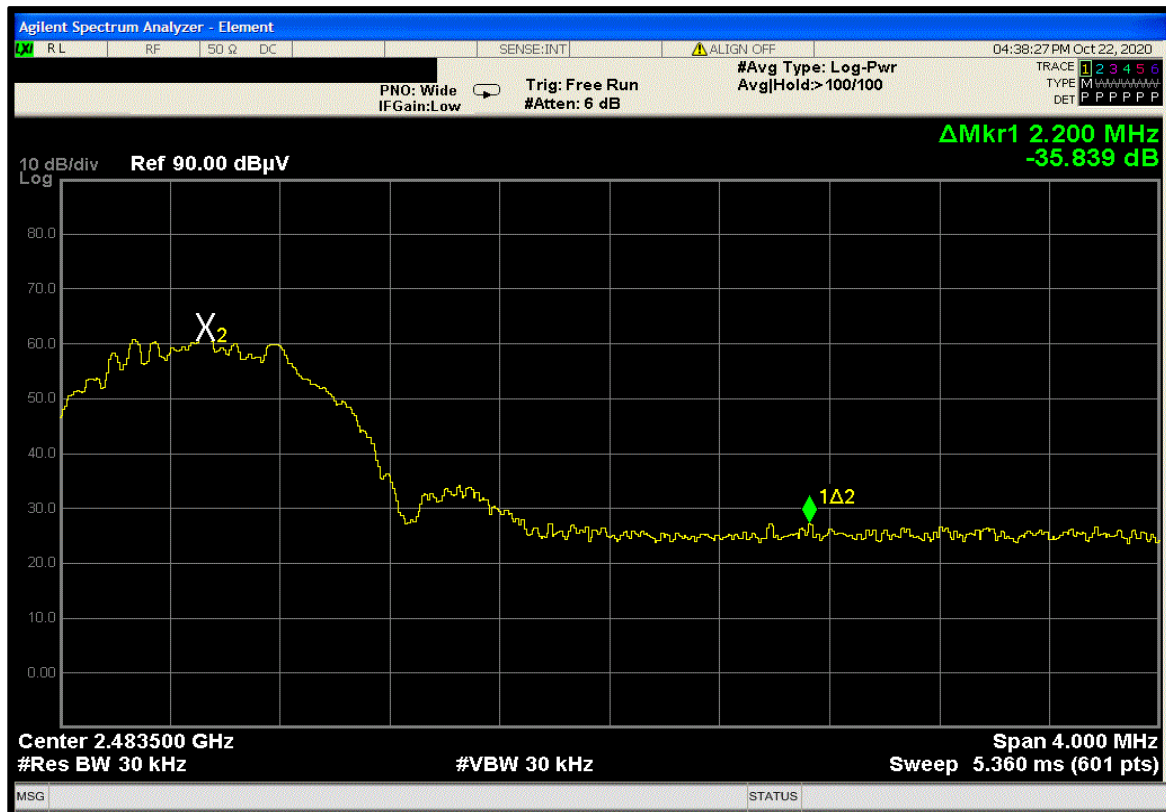
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta | Comments                                                                                  |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------|-------------------------------------------------------------------------------------------|
| 2483.580   | 33.2                        | -4.2        | 1.4                     | 191.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 52.2              | 54.0                 | -1.8                   |              | High Ch, Port 8, EUT Vert, Antenna Vert: Fund 81.4dBuV + -48.2dBc = 33.2dBuV (calc. amp.) |
| 2483.520   | 28.3                        | -0.8        | 1.5                     | 167.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.7              | 54.0                 | -3.3                   |              | High Ch., Port 7, EUT Vert, Ant Vert: Fund 75.6dBuV + -47.3dBc = 28.3dBuV (calc. amp.)    |
| 2485.293   | 24.9                        | -0.8        | 1.0                     | 166.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.3              | 54.0                 | -6.7                   |              | High Ch., Port 7, EUT Horz, Ant Horz: Fund 70.6dBuV + -45.7dBc = 24.9dBuV (calc. amp.)    |
| 2484.227   | 27.8                        | -4.2        | 1.5                     | 291.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   |              | High Ch, Port 8, EUT Horz, Antenna Horz: Fund 63.6dBuV + -35.8dBc = 27.8dBuV (calc. amp.) |
| 2483.580   | 36.0                        | -4.2        | 1.4                     | 191.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 51.8              | 74.0                 | -22.2                  |              | High Ch, Port 8, EUT Vert, Antenna Vert: Fund 84.2dBuV + -48.2dBc = 36.0dBuV (calc. amp.) |
| 2483.520   | 31.1                        | -0.8        | 1.5                     | 167.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 50.3              | 74.0                 | -23.7                  |              | High Ch., Port 7, EUT Vert, Ant Vert: Fund 78.4dBuV + -47.3dBc = 31.1dBuV (calc. amp.)    |
| 2485.293   | 27.7                        | -0.8        | 1.0                     | 166.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  |              | High Ch., Port 7, EUT Horz, Ant Horz: Fund 73.4dBuV + -45.7dBc = 27.7dBuV (calc. amp.)    |
| 2484.227   | 31.0                        | -4.2        | 1.5                     | 291.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  |              | High Ch, Port 8, EUT Horz, Antenna Horz: Fund 66.8dBuV + -35.8dBc = 31.0dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch, Port 8, EUT Horz, Antenna Horz

PSA-ESCI 2020.06.24.2



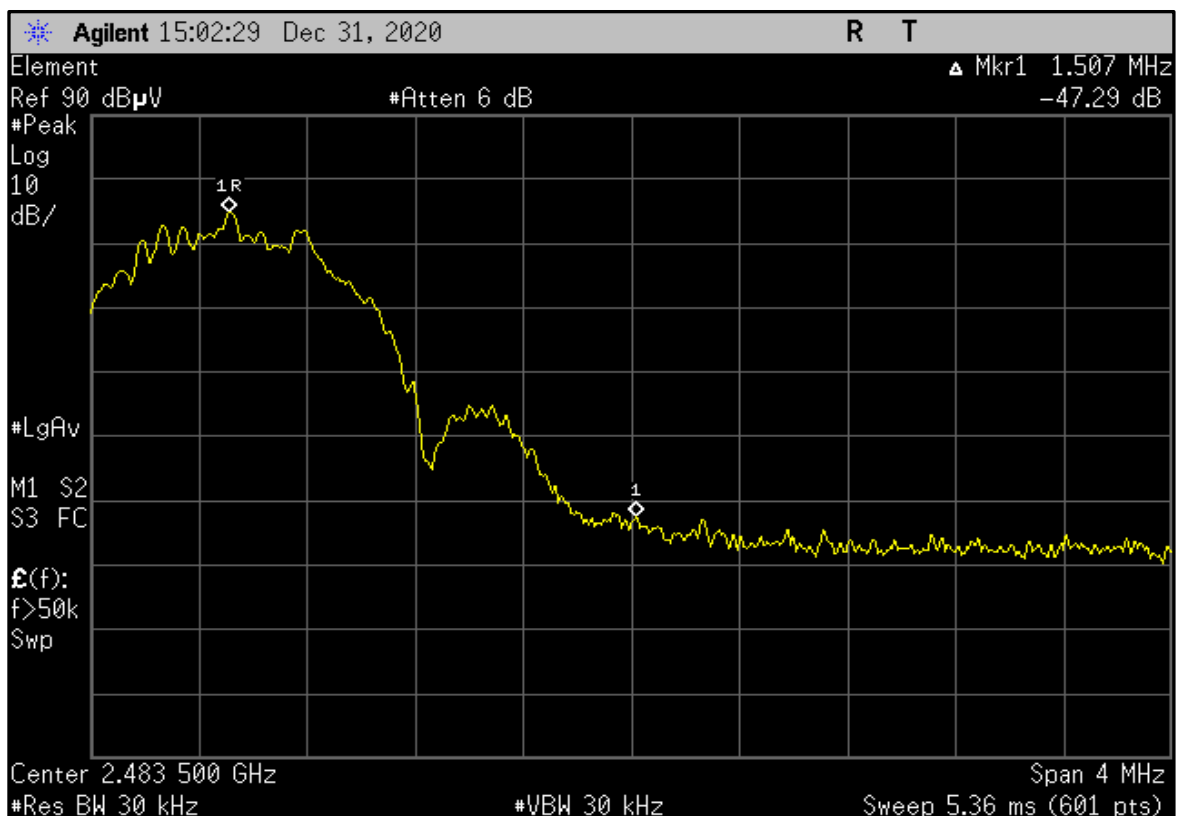
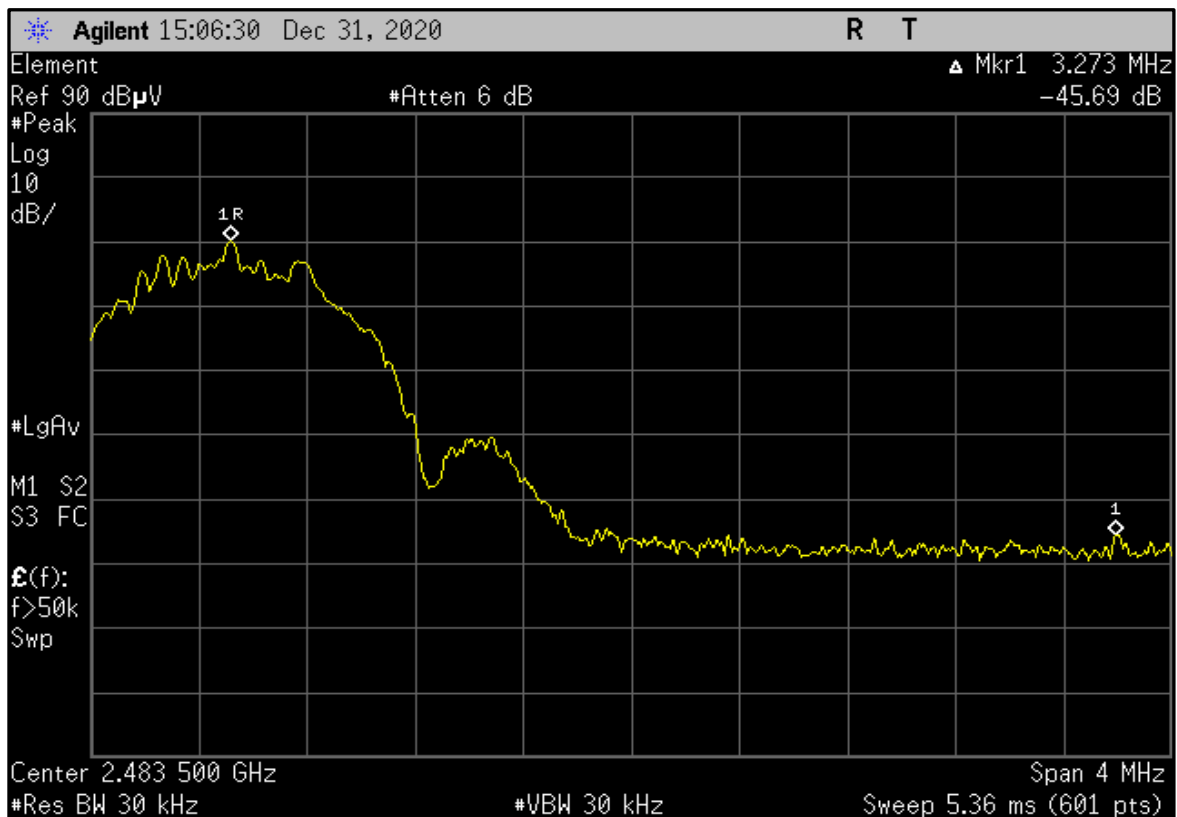
High Ch, Port 8, EUT Vert, Antenna Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



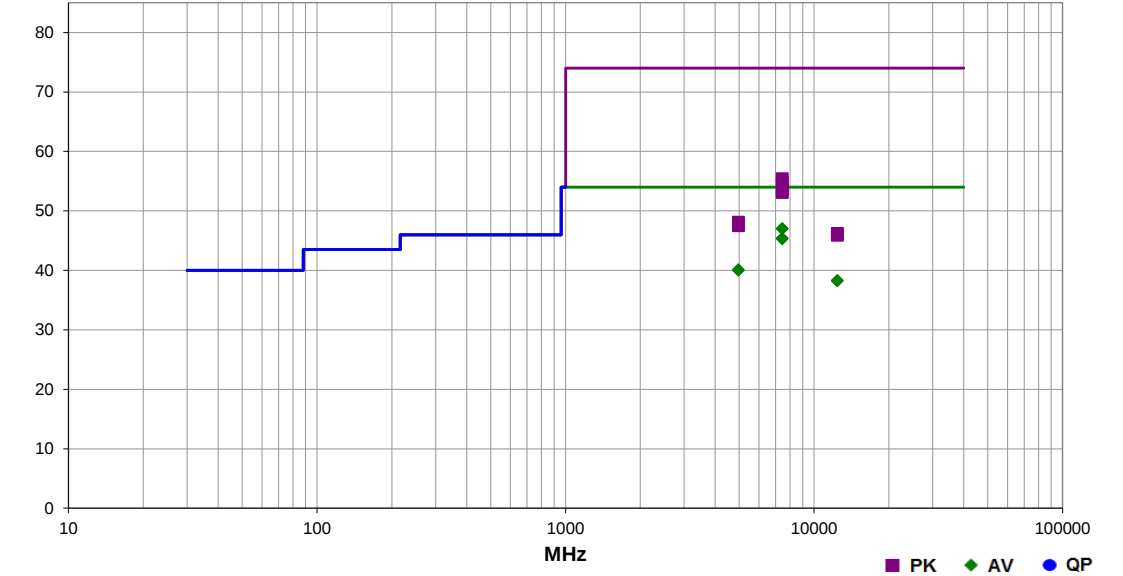
High Ch., Port 7, EUT Vert, Ant Vert



# SPURIOUS RADIATED EMISSIONS

|                     |                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-----------------------|
|                     |                                                                                                                                                                                                                                                                                                                                                             |                   |            | EmRS 2020.06.24.4                                                                  | PSA-ESCI 2020.06.24.2 |
| Work Order:         | SYNA0309                                                                                                                                                                                                                                                                                                                                                    | Date:             | 2020-10-27 |  |                       |
| Project:            | None                                                                                                                                                                                                                                                                                                                                                        | Temperature:      | 20.6 °C    |                                                                                    |                       |
| Job Site:           | OC07                                                                                                                                                                                                                                                                                                                                                        | Humidity:         | 23.4% RH   |                                                                                    |                       |
| Serial Number:      | Rev. 10 - 012                                                                                                                                                                                                                                                                                                                                               | Barometric Pres.: | 1020 mbar  | Tested by:                                                                         | Nolan De Ramos        |
| EUT:                | RadioNode                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |                       |
| Configuration:      | 17                                                                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |                       |
| Customer:           | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                      |                   |            |                                                                                    |                       |
| Attendees:          | None                                                                                                                                                                                                                                                                                                                                                        |                   |            |                                                                                    |                       |
| EUT Power:          | 24VDC                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |                       |
| Operating Mode:     | DTS Tx, Antenna PN: 3x3, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                          |                   |            |                                                                                    |                       |
| Deviations:         | None                                                                                                                                                                                                                                                                                                                                                        |                   |            |                                                                                    |                       |
| Comments:           | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |                   |            |                                                                                    |                       |
| Test Specifications |                                                                                                                                                                                                                                                                                                                                                             |                   |            | Test Method                                                                        |                       |
| FCC 15.247:2020     |                                                                                                                                                                                                                                                                                                                                                             |                   |            | ANSI C63.10:2013                                                                   |                       |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 105 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------------------|
| 7444.187   | 31.5             | 12.3        | 2.0                     | 140.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch, Port 8, EUT Vert, Antenna Vert |
| 7444.240   | 31.5             | 12.3        | 2.2                     | 141.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch, Port 8, EUT Horz, Antenna Horz |
| 7446.247   | 27.2             | 15.0        | 3.9                     | 237.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Horz, Ant Horz    |
| 7445.050   | 27.1             | 15.0        | 1.5                     | 88.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT Vert Ant Vert     |
| 4962.827   | 32.4             | 4.5         | 1.5                     | 289.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 40.1              | 54.0                 | -13.9                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 4962.820   | 32.3             | 4.5         | 1.7                     | 186.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.0              | 54.0                 | -14.0                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 12408.370  | 29.2             | 5.9         | 1.2                     | 50.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.3              | 54.0                 | -15.7                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 12410.150  | 29.1             | 5.9         | 3.8                     | 232.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 38.2              | 54.0                 | -15.8                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 7444.947   | 43.1             | 12.3        | 2.0                     | 140.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.4              | 74.0                 | -18.6                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 7445.073   | 42.5             | 12.3        | 2.2                     | 141.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.8              | 74.0                 | -19.2                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 7445.657   | 38.5             | 15.0        | 3.9                     | 237.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 53.5              | 74.0                 | -20.5                  | High Ch., Port 7, EUT Horz, Ant Horz    |
| 7445.437   | 38.1             | 15.0        | 1.5                     | 88.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.1              | 74.0                 | -20.9                  | High Ch., Port 7, EUT Vert Ant Vert     |
| 4965.133   | 43.6             | 4.5         | 1.5                     | 289.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 4962.447   | 43.1             | 4.4         | 1.7                     | 186.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 12408.180  | 40.3             | 5.9         | 3.8                     | 232.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.2              | 74.0                 | -27.8                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 12410.390  | 40.0             | 5.9         | 1.2                     | 50.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 45.9              | 74.0                 | -28.1                  | High Ch, Port 8, EUT Horz, Antenna Horz |

# SPURIOUS RADIATED EMISSIONS



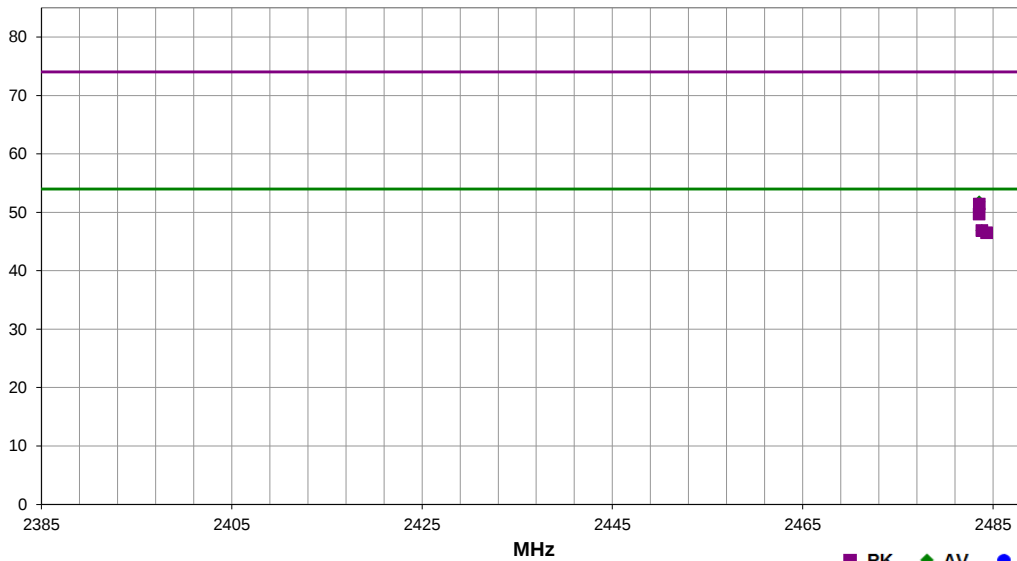
EnvRS 2020.06.24.4

PSA-ESCI 2020.06.24.2

|                                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|------------|---------------------------|
| Work Order:                                                                                                                                                                                                                                                                                                                                                           | SYNA0309      | Date:             | 2020-10-27 |                           |
| Project:                                                                                                                                                                                                                                                                                                                                                              | None          | Temperature:      | 20.6 °C    |                           |
| Job Site:                                                                                                                                                                                                                                                                                                                                                             | OC07          | Humidity:         | 23.4% RH   |                           |
| Serial Number:                                                                                                                                                                                                                                                                                                                                                        | Rev. 10 - 012 | Barometric Pres.: | 1020 mbar  |                           |
| EUT: RadioNode                                                                                                                                                                                                                                                                                                                                                        |               |                   |            | Tested by: Nolan De Ramos |
| Configuration: 17                                                                                                                                                                                                                                                                                                                                                     |               |                   |            |                           |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                      |               |                   |            |                           |
| Attendees: None                                                                                                                                                                                                                                                                                                                                                       |               |                   |            |                           |
| EUT Power: 24VDC                                                                                                                                                                                                                                                                                                                                                      |               |                   |            |                           |
| Operating Mode: DTS Tx, Antenna PN: 3x3, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                    |               |                   |            |                           |
| Deviations: None                                                                                                                                                                                                                                                                                                                                                      |               |                   |            |                           |
| Comments: See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |               |                   |            |                           |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 104 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



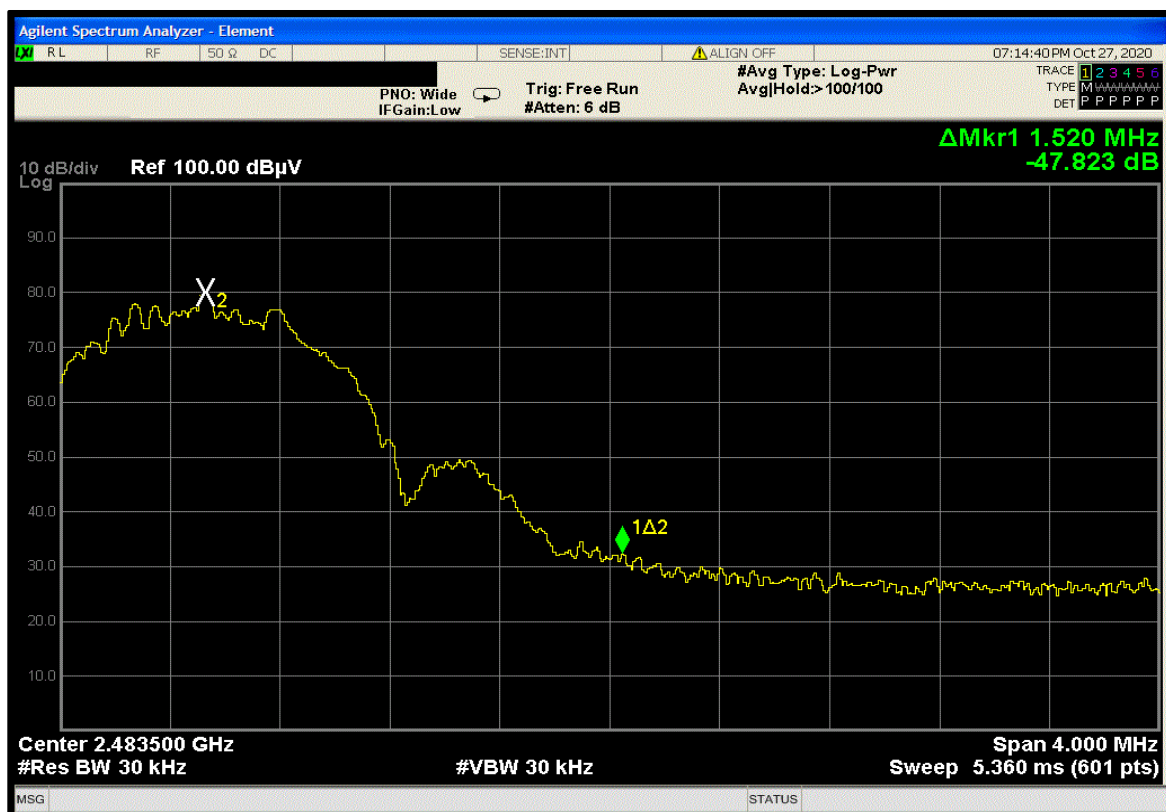
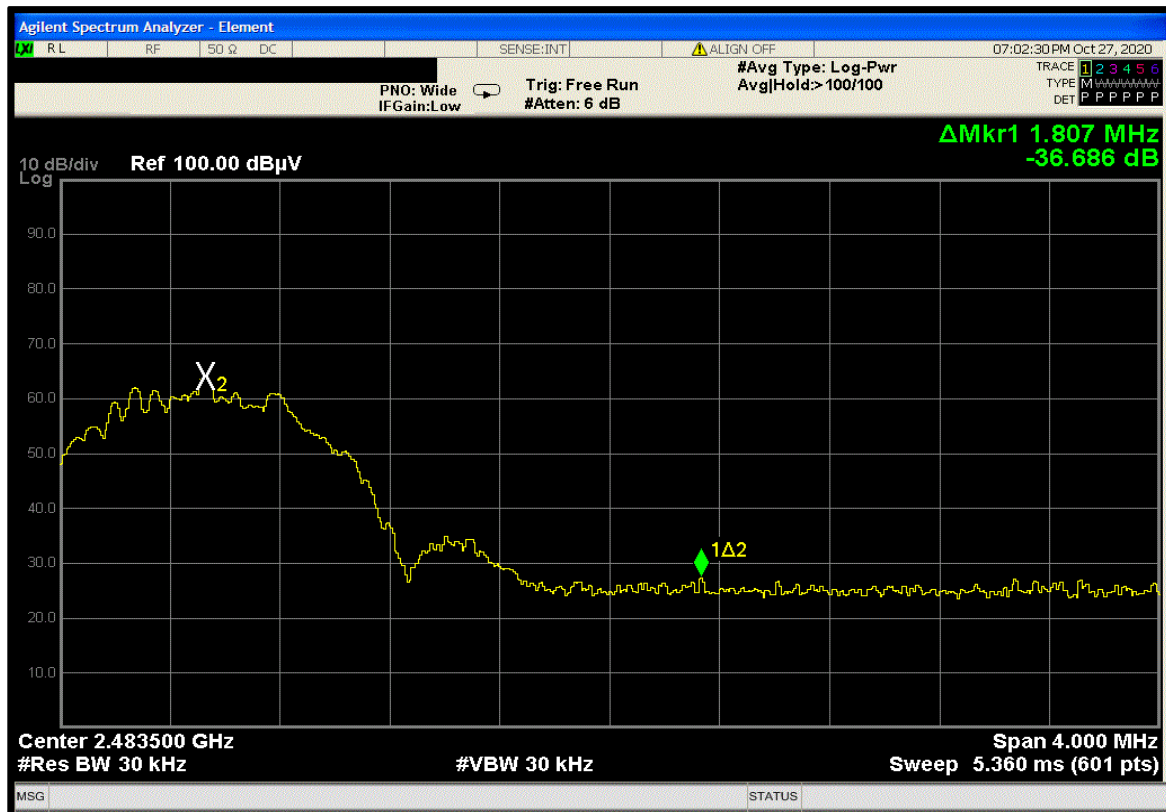
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta | Comments                                                                                  |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------|-------------------------------------------------------------------------------------------|
| 2483.547   | 32.8                        | -4.2        | 2.0                     | 187.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 51.8              | 54.0                 | -2.2                   |              | High Ch, Port 8, EUT Vert, Antenna Vert: Fund 80.6dBuV + -47.8dBc = 32.8dBuV (calc. amp.) |
| 2483.540   | 27.7                        | -0.8        | 1.9                     | 160.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.1              | 54.0                 | -3.9                   |              | High Ch., Port 7, EUT Vert, Ant Vert: Fund 76.7dBuV + -49.0dBc = 27.7dBuV (calc. amp.)    |
| 2483.833   | 27.9                        | -4.2        | 1.1                     | 293.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   |              | High Ch, Port 8, EUT Horz, Antenna Vert: Fund 64.6dBuV + -36.7dBc = 27.9dBuV (calc. amp.) |
| 2484.313   | 24.1                        | -0.8        | 1.2                     | 86.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.5              | 54.0                 | -7.5                   |              | High Ch., Port 7, EUT Horz, Ant Horz: Fund 60.2dBuV + -36.1dBc = 24.1dBuV (calc. amp.)    |
| 2483.547   | 35.6                        | -4.2        | 2.0                     | 187.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 51.4              | 74.0                 | -22.6                  |              | High Ch, Port 8, EUT Vert, Antenna Vert: Fund 83.4dBuV + -47.8dBc = 35.6dBuV (calc. amp.) |
| 2483.540   | 30.5                        | -0.8        | 1.9                     | 160.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 49.7              | 74.0                 | -24.3                  |              | High Ch., Port 7, EUT Vert, Ant Vert: Fund 79.5dBuV + -49.0dBc = 30.5dBuV (calc. amp.)    |
| 2483.833   | 31.1                        | -4.2        | 1.1                     | 293.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  |              | High Ch, Port 8, EUT Horz, Antenna Vert: Fund 67.8dBuV + -36.7dBc = 31.1dBuV (calc. amp.) |
| 2484.313   | 27.3                        | -0.8        | 1.2                     | 86.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.5              | 74.0                 | -27.5                  |              | High Ch., Port 7, EUT Horz, Ant Horz: Fund 63.4dBuV + -36.1dBc = 27.3dBuV (calc. amp.)    |

# SPURIOUS RADIATED EMISSIONS



High Ch, Port 8, EUT Horz, Antenna Horz

PSA-ESCI 2020.06.24.2

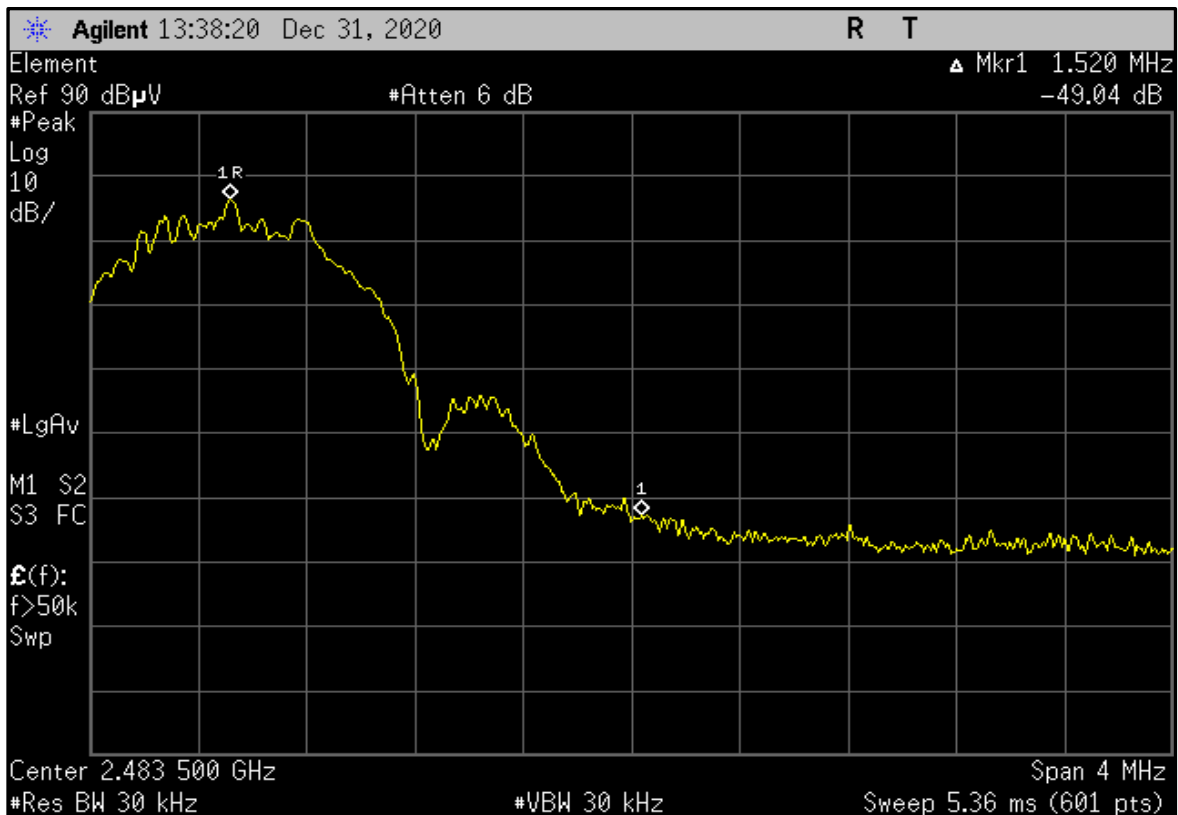
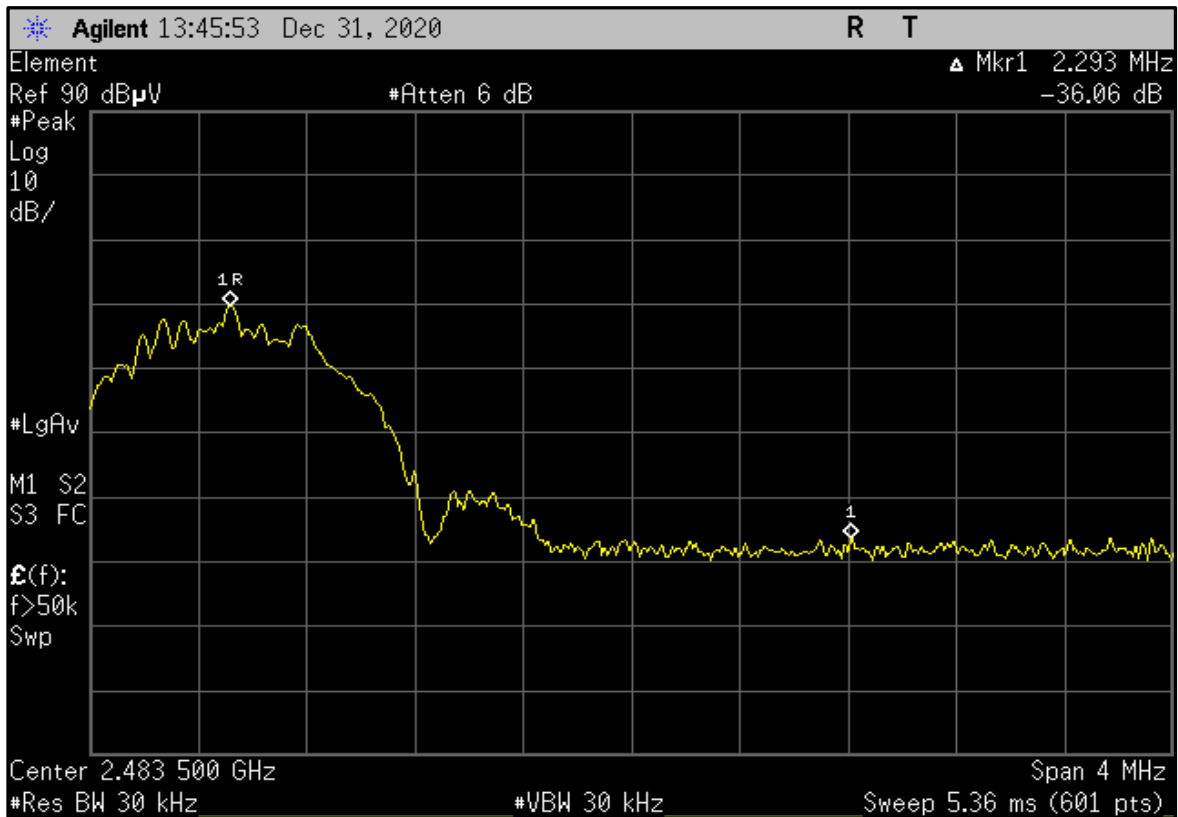


High Ch, Port 8, EUT Vert, Antenna Vert

# SPURIOUS RADIATED EMISSIONS

High Ch., Port 7, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



High Ch., Port 7, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: ANT-2.4-CW-HWR-SMA, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

24VDC via 120VAC/60Hz

POE via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 2

SYNA0309 - 1

## FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 26 GHz

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2019-11-08 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \log(1/dc)$ .

# SPURIOUS RADIATED EMISSIONS

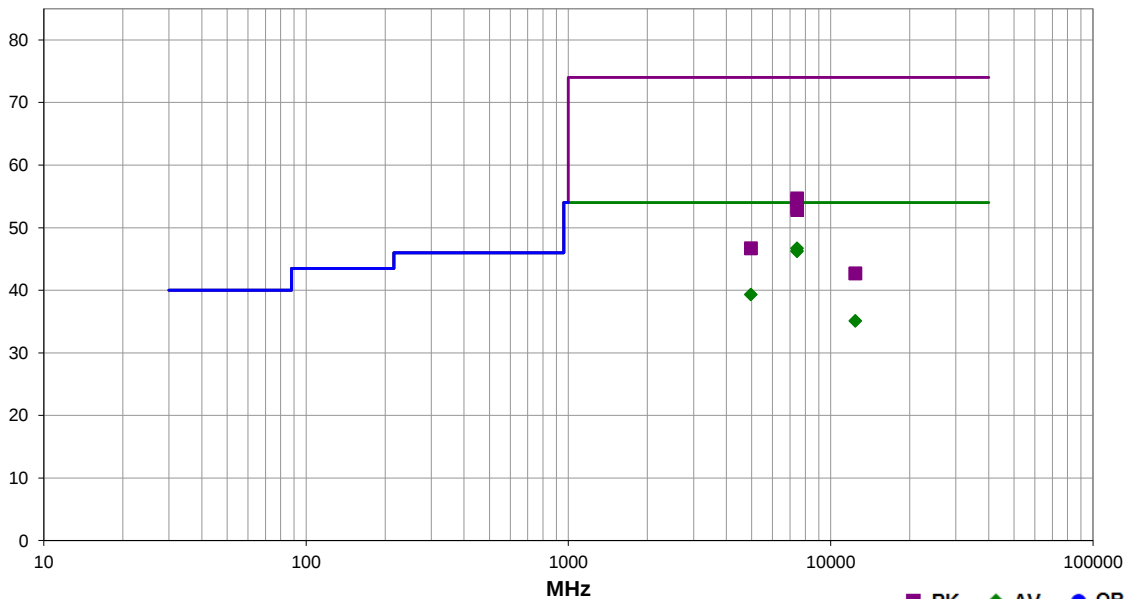


EmiRS 2020.04.20.0 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                                                               | Date:             | 2020-09-25 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                   | Temperature:      | 22.4 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                   | Humidity:         | 56% RH     |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                                                                          | Barometric Pres.: | 1028 mbar  | Tested by: Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: ANT-2.4-CW-HWR-SMA, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz. Power setting = 0 dBm.                                                                                                                                                                                                                                                                       |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/5/21. |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2021     | ANSI C63.10:2013 |

| Run # | 23 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.570   | 28.5             | 15.0        | 2.4                     | 249.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch., Port 8, EUT Vert    |
| 7446.708   | 28.5             | 15.0        | 4.0                     | 243.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch., Port 7, EUT on Side |
| 7446.658   | 28.1             | 15.0        | 4.0                     | 168.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.3              | 54.0                 | -7.7                   | High Ch., Port 7, EUT Vert    |
| 7445.627   | 28.0             | 15.0        | 1.5                     | 130.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.2              | 54.0                 | -7.8                   | High Ch., Port 8, EUT on Side |
| 4964.710   | 26.6             | 9.5         | 1.5                     | 150.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT Vert    |
| 4963.493   | 26.6             | 9.5         | 1.5                     | 112.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT on Side |
| 12409.720  | 26.9             | 5.0         | 1.5                     | 23.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.1              | 54.0                 | -18.9                  | High Ch., Port 8, EUT on Side |
| 12409.230  | 26.9             | 5.0         | 1.5                     | 80.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.1              | 54.0                 | -18.9                  | High Ch., Port 8, EUT Vert    |
| 7445.370   | 39.7             | 15.0        | 1.5                     | 130.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 54.7              | 74.0                 | -19.3                  | High Ch., Port 8, EUT on Side |
| 7446.977   | 39.4             | 15.0        | 2.4                     | 249.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | High Ch., Port 8, EUT Vert    |
| 7445.967   | 38.2             | 15.0        | 4.0                     | 243.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.2              | 74.0                 | -20.8                  | High Ch., Port 7, EUT on Side |
| 7446.008   | 37.8             | 15.0        | 4.0                     | 168.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.8              | 74.0                 | -21.2                  | High Ch., Port 7, EUT Vert    |
| 4963.597   | 37.2             | 9.5         | 1.5                     | 150.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.7              | 74.0                 | -27.3                  | High Ch., Port 8, EUT Vert    |
| 4964.993   | 37.2             | 9.5         | 1.5                     | 112.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.7              | 74.0                 | -27.3                  | High Ch., Port 8, EUT on Side |
| 12410.550  | 37.7             | 5.0         | 1.5                     | 23.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 42.7              | 74.0                 | -31.3                  | High Ch., Port 8, EUT on Side |
| 12410.480  | 37.7             | 5.0         | 1.5                     | 80.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.7              | 74.0                 | -31.3                  | High Ch., Port 8, EUT Vert    |

# SPURIOUS RADIATED EMISSIONS

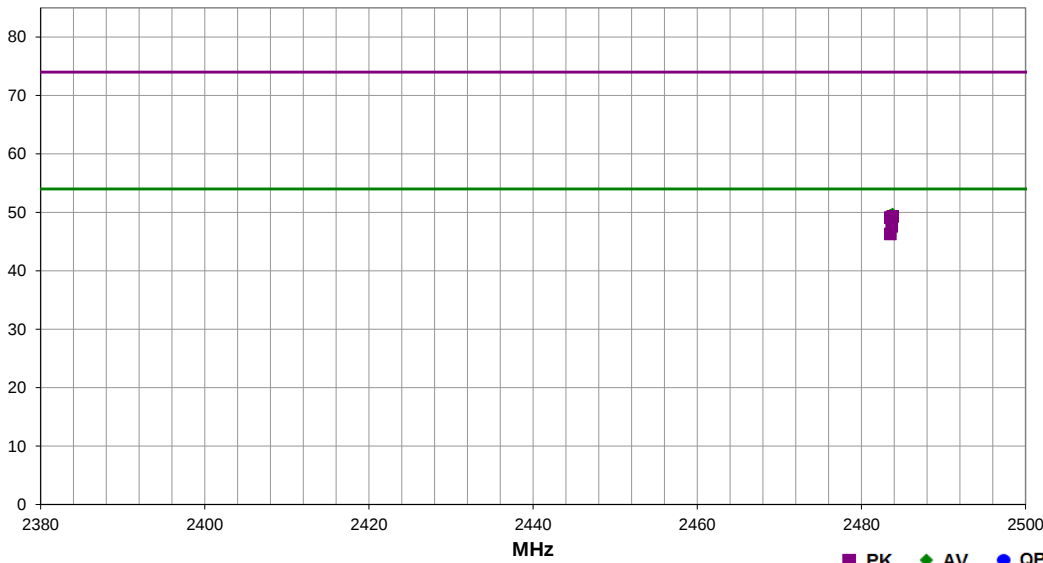


EmiRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-09-29 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 23.5 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 48.4% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: ANT-2.4-CW-HWR-SMA, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz<br>Power setting = 0 dBm.                                                                                                                                                                                                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/5/21. |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2021 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 119 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



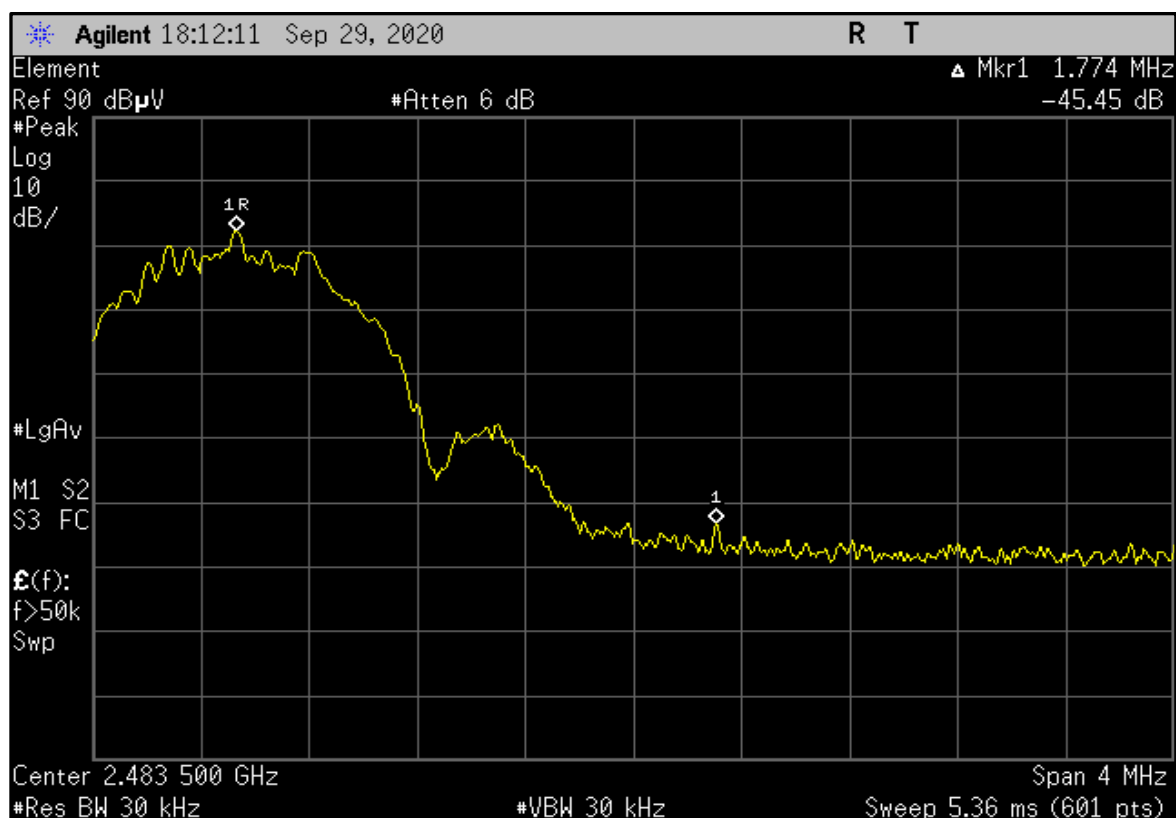
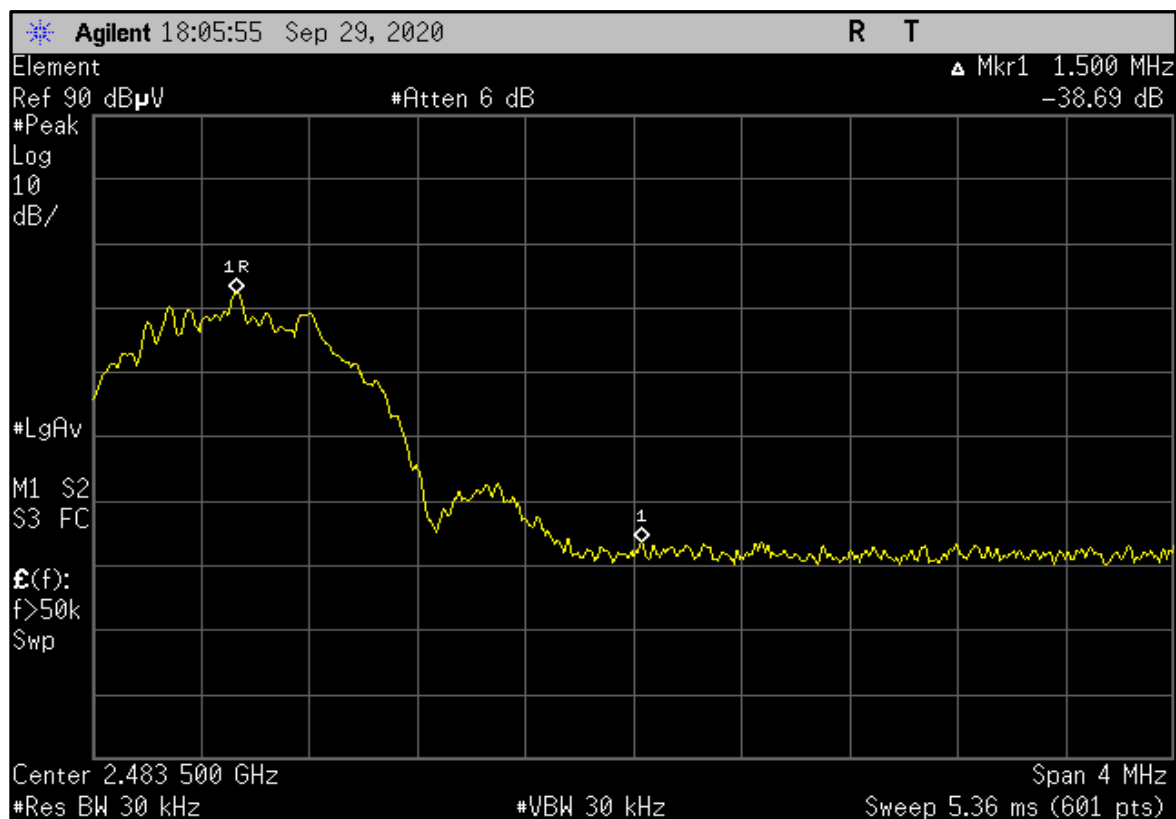
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                         |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------------------------------------------------------|
| 2483.807   | 27.3                        | -0.8        | 1.6                     | 337.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.7              | 54.0                 | -4.3                   | High Ch., Port 8, EUT Vert: Fund 72.8dBuV + - 45.5dBc = 27.3dBuV (calc. amp.) |
| 2483.533   | 27.1                        | -0.8        | 1.9                     | 263.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 49.5              | 54.0                 | -4.5                   | High Ch., Port 7, EUT Vert: Fund 74.5dBuV + - 47.4dBc = 27.1dBuV (calc. amp.) |
| 2483.693   | 25.6                        | -0.8        | 3.4                     | 163.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 48.0              | 54.0                 | -6.0                   | High Ch., Port 7, EUT Vert: Fund 70.9dBuV + - 45.3dBc = 25.6dBuV (calc. amp.) |
| 2483.533   | 24.0                        | -0.8        | 1.5                     | 187.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., Port 8, EUT Vert: Fund 62.7dBuV + - 38.7dBc = 24.0dBuV (calc. amp.) |
| 2483.807   | 30.1                        | -0.8        | 1.6                     | 337.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.3              | 74.0                 | -24.7                  | High Ch., Port 8, EUT Vert: Fund 75.6dBuV + - 45.5dBc = 30.1dBuV (calc. amp.) |
| 2483.533   | 29.9                        | -0.8        | 1.9                     | 263.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | High Ch., Port 7, EUT Vert: Fund 77.3dBuV + - 47.4dBc = 29.9dBuV (calc. amp.) |
| 2483.693   | 28.4                        | -0.8        | 3.4                     | 163.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.6              | 74.0                 | -26.4                  | High Ch., Port 7, EUT Vert: Fund 73.7dBuV + - 45.3dBc = 28.4dBuV (calc. amp.) |
| 2483.533   | 27.1                        | -0.8        | 1.5                     | 187.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.3              | 74.0                 | -27.7                  | High Ch., Port 8, EUT Vert: Fund 65.8dBuV + - 38.7dBc = 27.1dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Vert

PSA-ESCI 2020.04.03.0



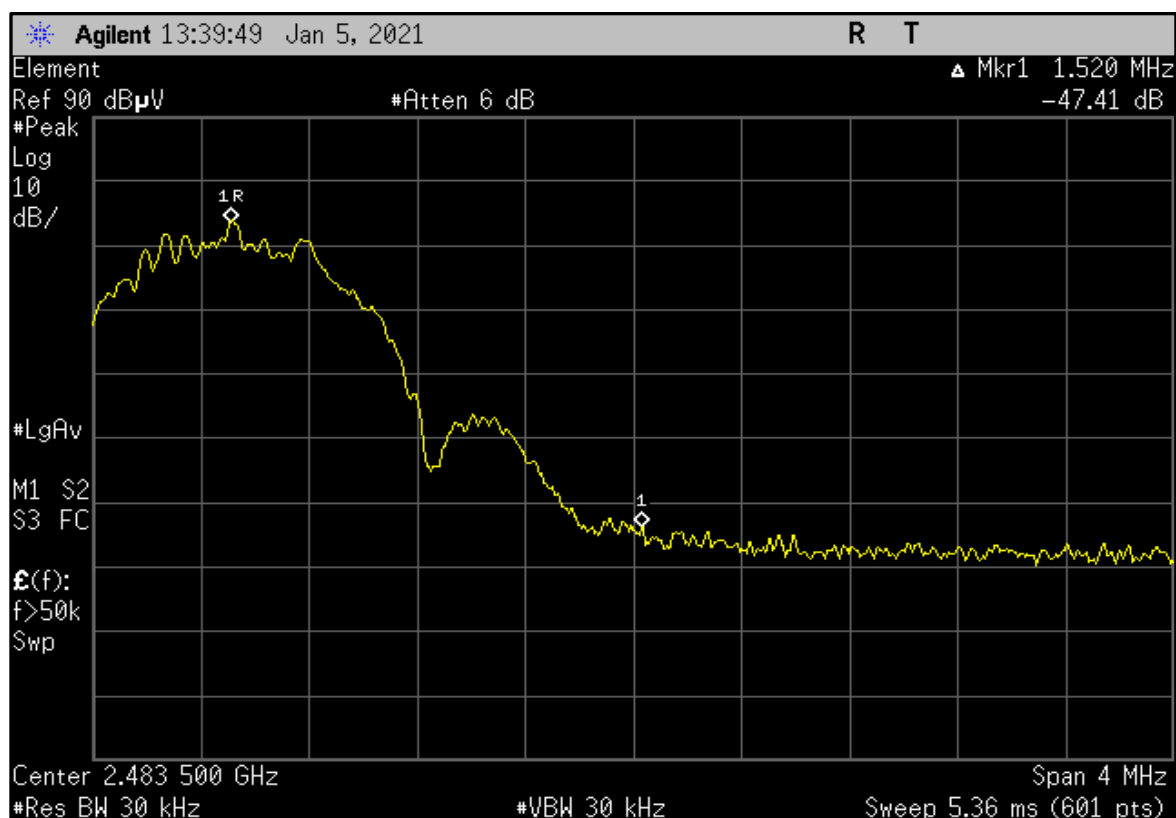
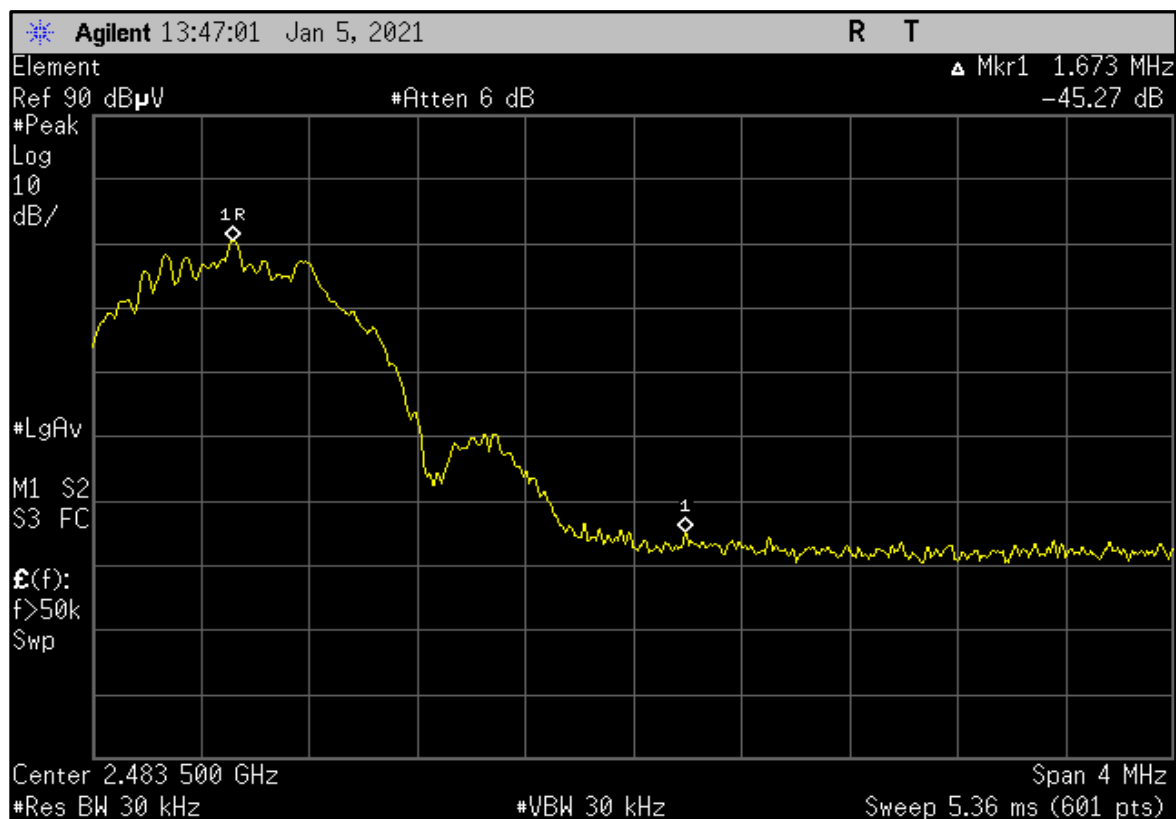
High Ch., EUT Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Vert

PSA-ESCI 2020.04.03.0



High Ch., Port 7, EUT Vert

# SPURIOUS RADIATED EMISSIONS



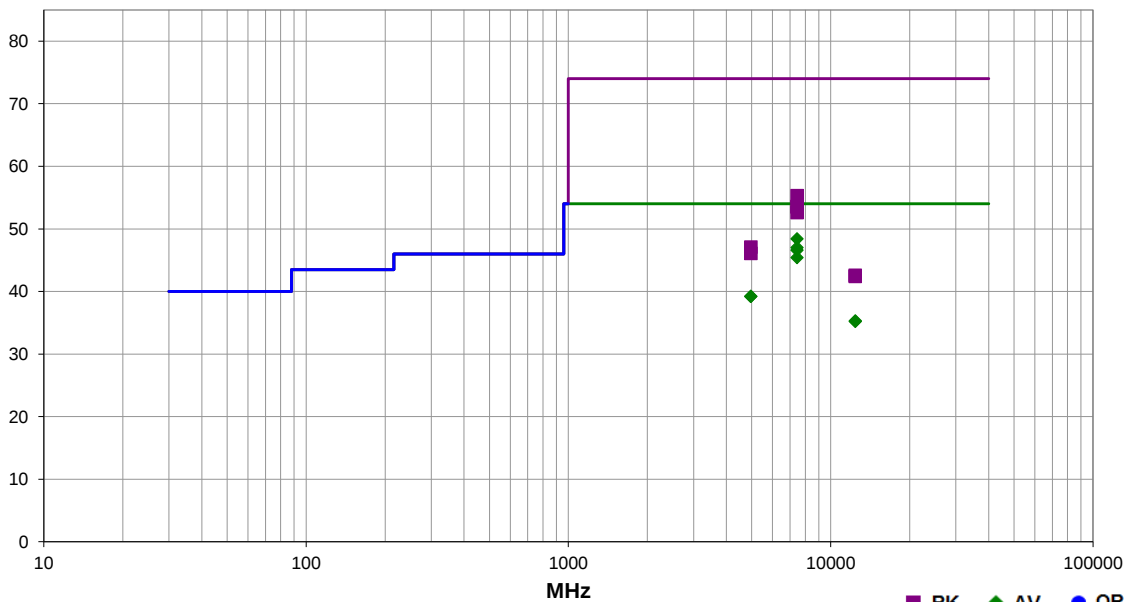
EmiRS 2020.04.20.0

PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                                                              | Date:             | 2020-09-25 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                  | Temperature:      | 22.4 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                  | Humidity:         | 56% RH     |                                                                                    |             |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                                                                         | Barometric Pres.: | 1028 mbar  | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |             |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |             |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Antenna PN: ANT-2.4-CW-HWR-SMA, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz. Power setting = 0 dBm.                                                                                                                                                                                                                                                                      |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8%. Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/5/21. |                   |            |                                                                                    |             |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2021     | ANSI C63.10:2013 |

| Run # | 18 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.600   | 30.2             | 15.0        | 2.8                     | 204.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 48.4              | 54.0                 | -5.6                   | High Ch., Port 8, EUT on Side |
| 7446.575   | 28.8             | 15.0        | 1.0                     | 246.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., Port 7, EUT on Side |
| 7445.625   | 28.4             | 15.0        | 1.8                     | 299.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | High Ch., Port 8, EUT Vert    |
| 7446.350   | 27.2             | 15.0        | 1.5                     | 166.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Vert    |
| 4962.800   | 26.5             | 9.5         | 3.5                     | 302.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.2              | 54.0                 | -14.8                  | High Ch., Port 8, EUT Vert    |
| 4962.000   | 26.5             | 9.5         | 1.5                     | 333.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.2              | 54.0                 | -14.8                  | High Ch., Port 8, EUT on Side |
| 12411.470  | 27.1             | 5.0         | 1.2                     | 303.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.3              | 54.0                 | -18.7                  | High Ch., Port 8, EUT on Side |
| 7446.708   | 40.3             | 15.0        | 2.8                     | 204.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.3              | 74.0                 | -18.7                  | High Ch., Port 8, EUT on Side |
| 12412.160  | 27.0             | 5.0         | 1.5                     | 151.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., Port 8, EUT Vert    |
| 7446.842   | 38.6             | 15.0        | 1.0                     | 246.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.6              | 74.0                 | -20.4                  | High Ch., Port 7, EUT on Side |
| 7446.508   | 38.5             | 15.0        | 1.8                     | 299.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 53.5              | 74.0                 | -20.5                  | High Ch., Port 8, EUT Vert    |
| 7447.517   | 37.6             | 15.0        | 1.5                     | 166.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., Port 7, EUT Vert    |
| 4964.958   | 37.6             | 9.5         | 3.5                     | 302.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.1              | 74.0                 | -26.9                  | High Ch., Port 8, EUT Vert    |
| 4964.933   | 36.6             | 9.5         | 1.5                     | 333.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.1              | 74.0                 | -27.9                  | High Ch., Port 8, EUT on Side |
| 12407.530  | 37.6             | 5.0         | 1.5                     | 151.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.6              | 74.0                 | -31.4                  | High Ch., Port 8, EUT Vert    |
| 12408.380  | 37.4             | 5.0         | 1.2                     | 303.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 42.4              | 74.0                 | -31.6                  | High Ch., Port 8, EUT on Side |

# SPURIOUS RADIATED EMISSIONS

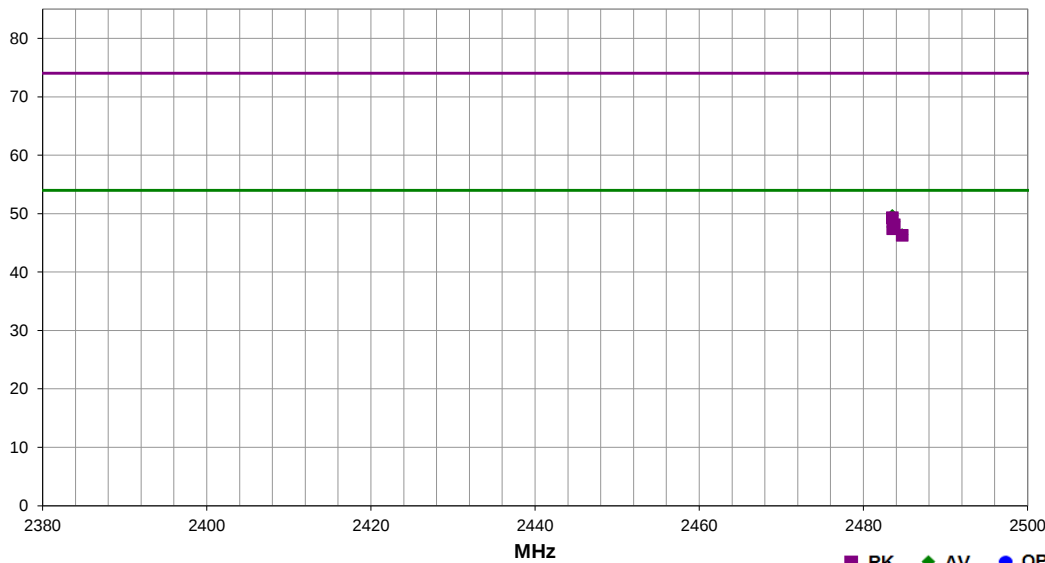


EmiRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-09-29 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 23.5 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 48.4% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: ANT-2.4-CW-HWR-SMA, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz<br>Power setting = 0 dBm.                                                                                                                                                                                                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/5/21. |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2021 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 120 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



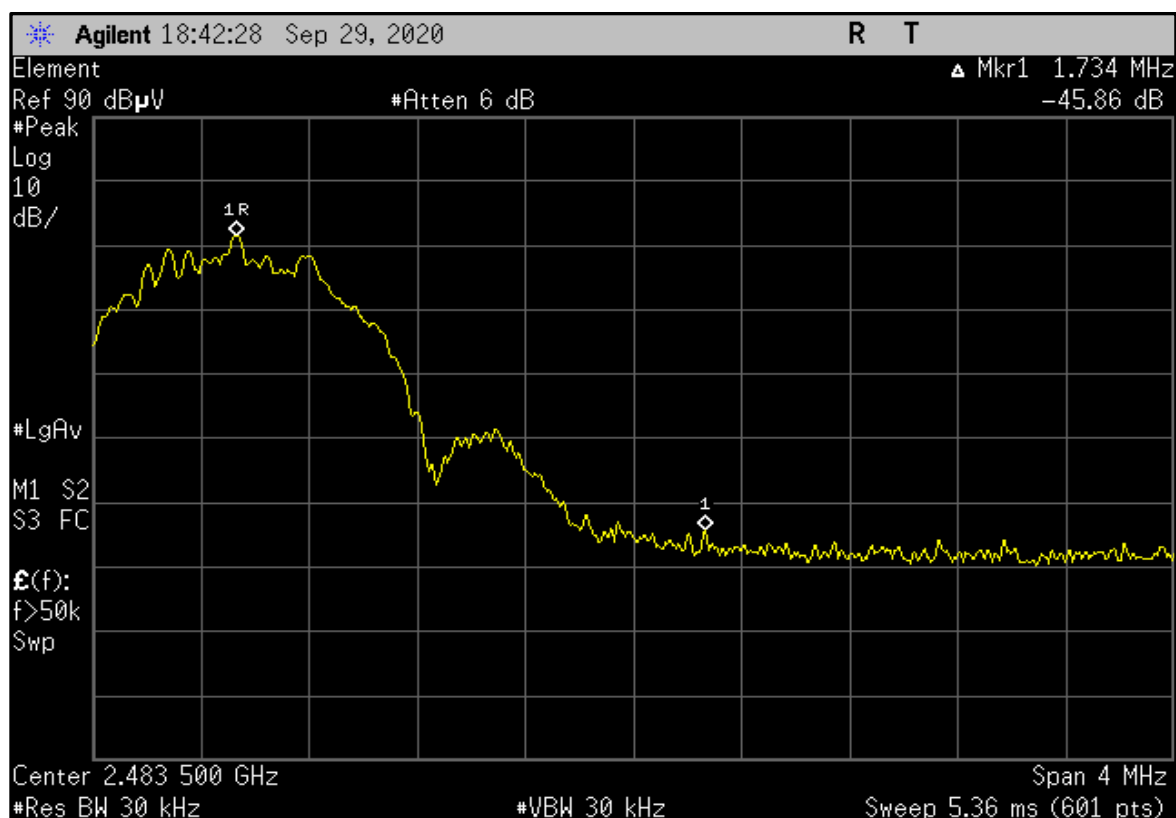
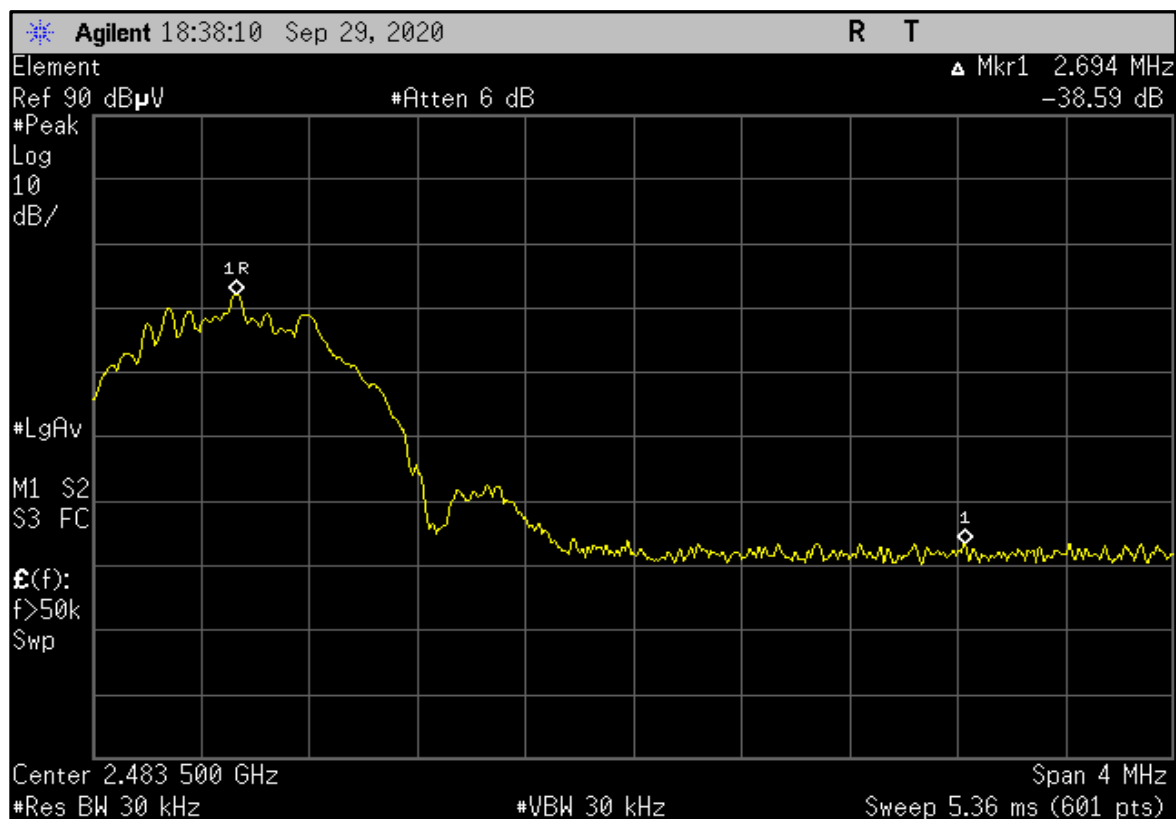
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|------------------------------------------------------------------------------|
| 2483.533   | 27.3                        | -0.8        | 1.9                     | 264.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 49.7              | 54.0                 | -4.3                   | High Ch., Port 7, EUT Vert: Fund 74.2dBuV + -46.9dBc = 27.3dBuV (calc. amp.) |
| 2483.767   | 26.2                        | -0.8        | 1.6                     | 338.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 48.6              | 54.0                 | -5.4                   | High Ch., Port 8, EUT Vert: Fund 72.1dBuV + -45.9dBc = 26.2dBuV (calc. amp.) |
| 2483.580   | 25.3                        | -0.8        | 3.3                     | 163.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.7              | 54.0                 | -6.3                   | High Ch., Port 7, EUT Vert: Fund 71.1dBuV + -45.8dBc = 25.3dBuV (calc. amp.) |
| 2484.727   | 24.0                        | -0.8        | 1.5                     | 187.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., Port 8, EUT Vert: Fund 62.6dBuV + -38.6dBc = 24.0dBuV (calc. amp.) |
| 2483.533   | 30.1                        | -0.8        | 1.9                     | 264.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 49.3              | 74.0                 | -24.7                  | High Ch., Port 7, EUT Vert: Fund 77.0dBuV + -46.9dBc = 30.1dBuV (calc. amp.) |
| 2483.767   | 28.9                        | -0.8        | 1.6                     | 338.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch., Port 8, EUT Vert: Fund 74.8dBuV + -45.9dBc = 28.9dBuV (calc. amp.) |
| 2483.580   | 28.2                        | -0.8        | 3.3                     | 163.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | High Ch., Port 7, EUT Vert: Fund 74.0dBuV + -45.8dBc = 28.2dBuV (calc. amp.) |
| 2484.727   | 27.1                        | -0.8        | 1.5                     | 187.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.3              | 74.0                 | -27.7                  | High Ch., Port 8, EUT Vert: Fund 65.7dBuV + -38.6dBc = 27.1dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Vert

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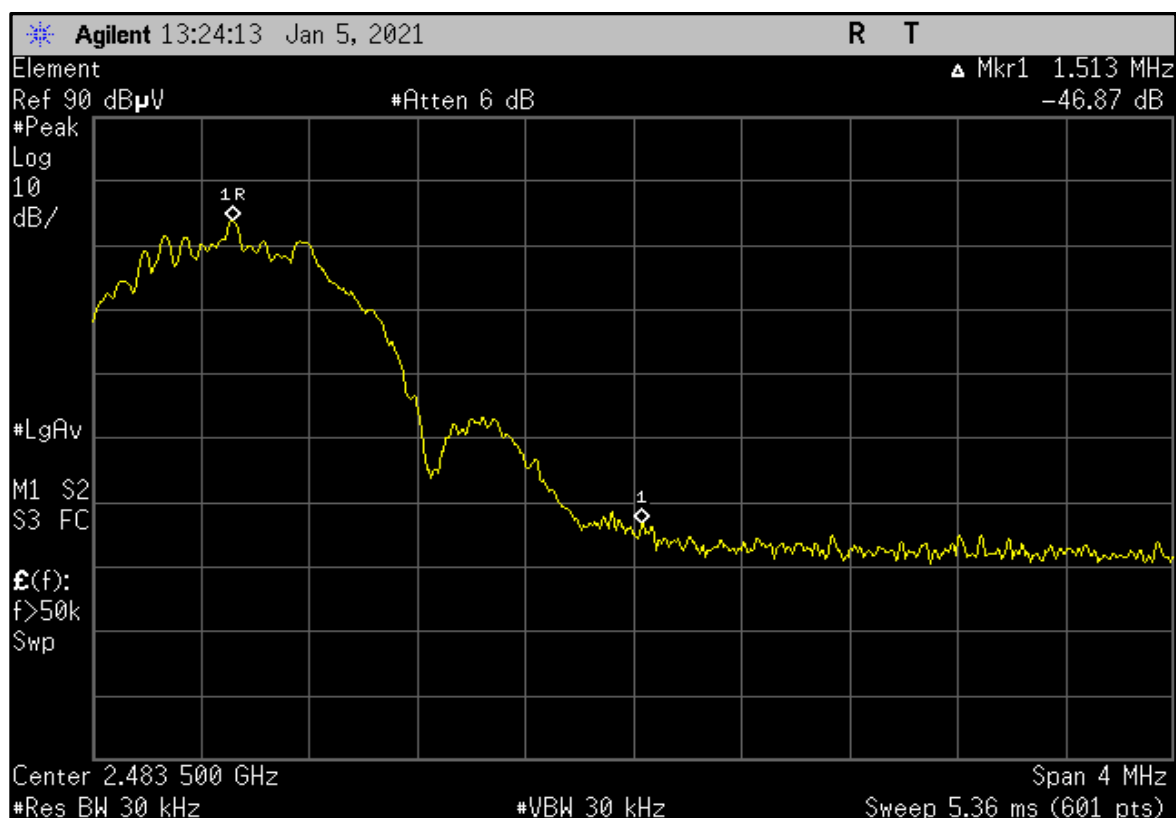
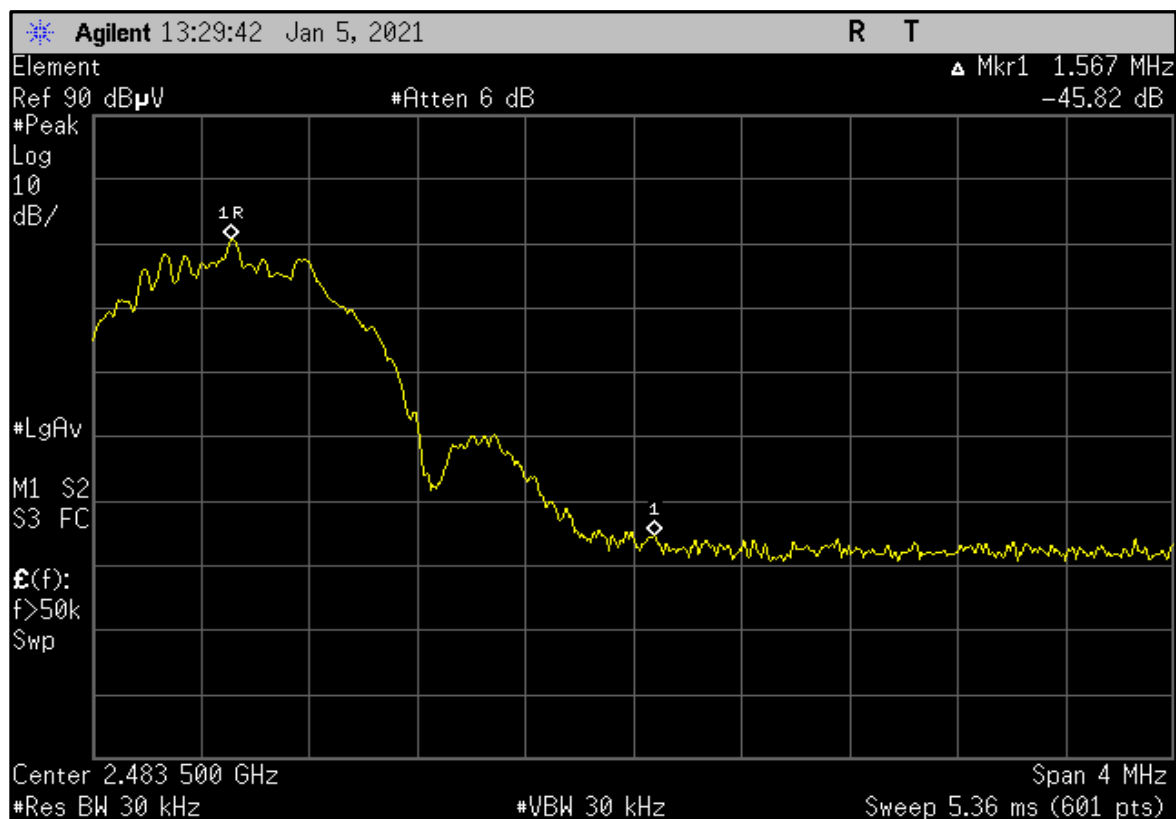
High Ch., EUT Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Vert

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High Ch., Port 7, EUT Vert

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: C3EY, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

24VDC via 120VAC/60Hz

POE via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 8

SYNA0309 - 7

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |        |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 26 GHz |
|-----------------|--------|----------------|--------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2019-11-08 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

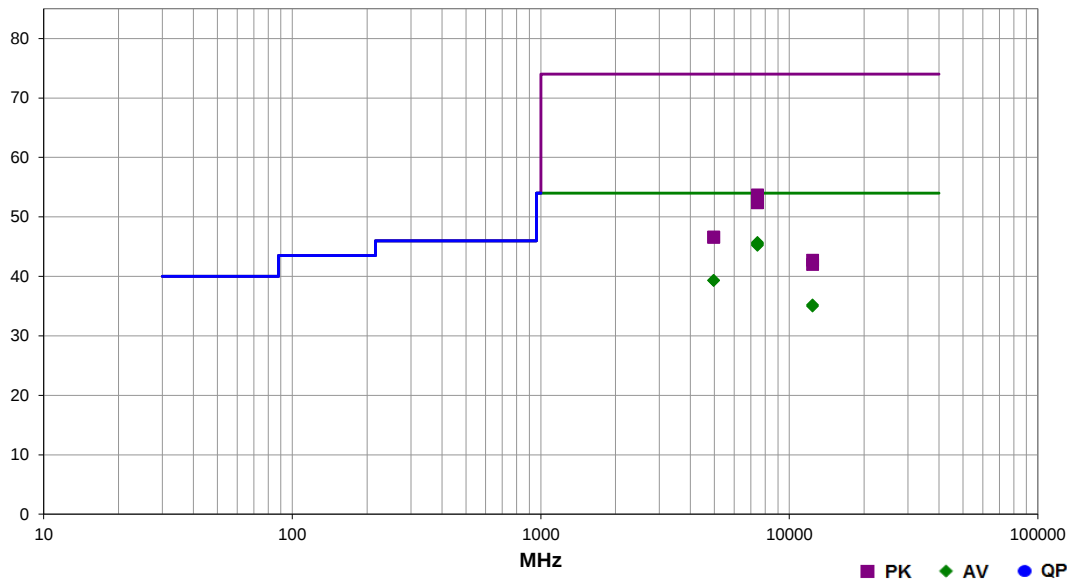


EmiRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-30 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.3 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 54.3% RH   |                                                                                    |             |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1024 mbar  | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |             |
| Configuration:  | 7                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Antenna PN: C3EY, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                             |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                                                                                    |             |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 138 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7445.417   | 27.5             | 15.0        | 4.0                     | 305.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.7              | 54.0                 | -8.3                   | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7445.483   | 27.3             | 15.0        | 1.5                     | 139.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.5              | 54.0                 | -8.5                   | High Ch., Port 7, EUT on Side, ANT on Side |
| 7445.400   | 27.2             | 15.0        | 1.5                     | 244.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7446.583   | 27.0             | 15.0        | 3.0                     | 338.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 7, EUT Vert, ANT Vert       |
| 4963.792   | 26.6             | 9.5         | 1.5                     | 220.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 4963.075   | 26.6             | 9.5         | 1.5                     | 335.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12408.410  | 27.0             | 5.0         | 1.5                     | 302.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 12412.380  | 26.8             | 5.0         | 1.5                     | 0.0               | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 35.0              | 54.0                 | -19.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7448.425   | 38.7             | 15.0        | 3.0                     | 338.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 53.7              | 74.0                 | -20.3                  | High Ch., Port 7, EUT Vert, ANT Vert       |
| 7445.233   | 38.0             | 15.0        | 1.5                     | 139.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 53.0              | 74.0                 | -21.0                  | High Ch., Port 7, EUT on Side, ANT on Side |
| 7447.550   | 37.4             | 15.0        | 4.0                     | 305.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.4              | 74.0                 | -21.6                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7446.950   | 37.4             | 15.0        | 1.5                     | 244.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.4              | 74.0                 | -21.6                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4962.442   | 37.1             | 9.5         | 1.5                     | 220.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 46.6              | 74.0                 | -27.4                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 4964.283   | 37.1             | 9.5         | 1.5                     | 335.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 46.6              | 74.0                 | -27.4                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12409.430  | 37.7             | 5.0         | 1.5                     | 302.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 42.7              | 74.0                 | -31.3                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 12408.090  | 37.0             | 5.0         | 1.5                     | 0.0               | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 42.0              | 74.0                 | -32.0                  | High Ch., Port 8, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

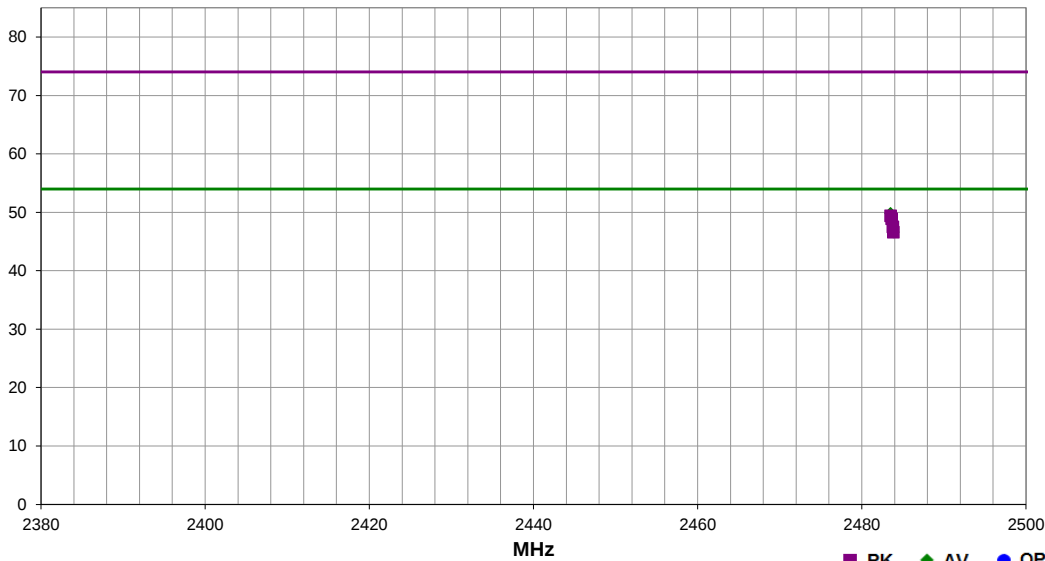


EmiRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-30 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.3 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 54.3% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1024 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 7                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: C3EY, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                             |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 140 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



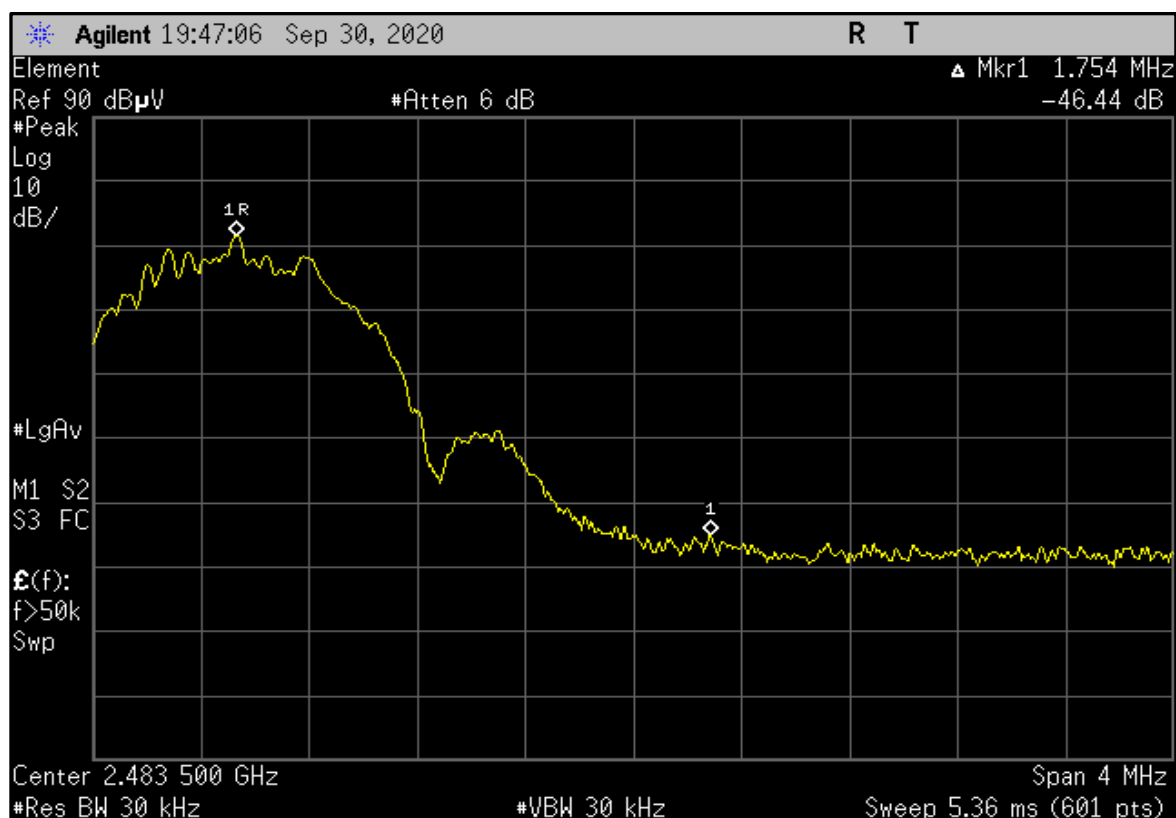
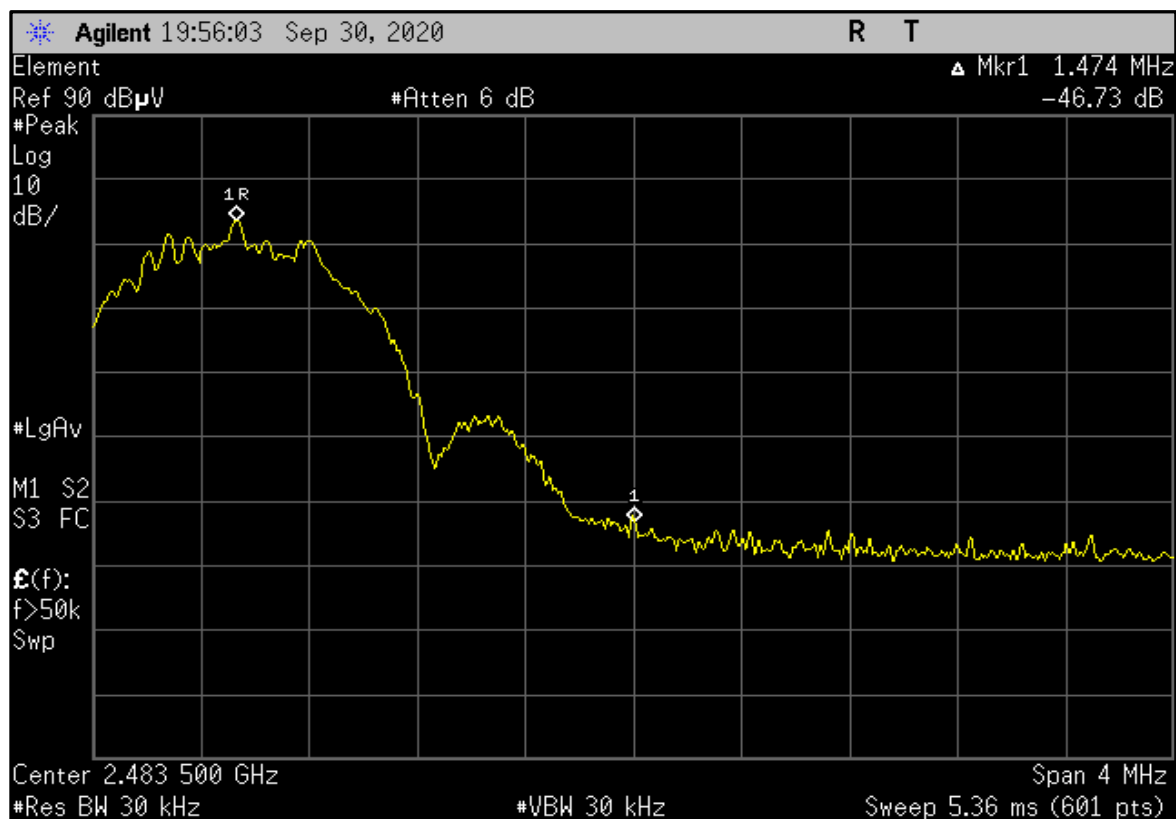
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2483.507   | 27.4                        | -0.8        | 1.5                     | 257.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.8              | 54.0                 | -4.2                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 74.1dBuV + -46.7dBc = 27.4dBuV (calc. amp.) |
| 2483.633   | 26.9                        | -0.8        | 1.5                     | 89.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | High Ch., Port 7, EUT on Side, ANT on Side: Fund 75.0dBuV + -48.1dBc = 26.9dBuV (calc. amp.) |
| 2483.787   | 25.5                        | -0.8        | 2.1                     | 104.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.9              | 54.0                 | -6.1                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 71.9dBuV + -46.4dBc = 25.5dBuV (calc. amp.)       |
| 2483.853   | 24.2                        | -0.8        | 1.5                     | 25.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | High Ch., Port 7, EUT Vert, ANT Vert: Fund 60.6dBuV + -36.4dBc = 24.2dBuV (calc. amp.)       |
| 2483.507   | 30.2                        | -0.8        | 1.5                     | 257.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.4              | 74.0                 | -24.6                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 76.9dBuV + -46.7dBc = 30.2dBuV (calc. amp.) |
| 2483.633   | 29.7                        | -0.8        | 1.5                     | 89.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | High Ch., Port 7, EUT on Side, ANT on Side: Fund 77.8dBuV + -48.1dBc = 29.7dBuV (calc. amp.) |
| 2483.787   | 28.3                        | -0.8        | 2.1                     | 104.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 74.7dBuV + -46.4dBc = 28.3dBuV (calc. amp.)       |
| 2483.853   | 27.4                        | -0.8        | 1.5                     | 25.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.6              | 74.0                 | -27.4                  | High Ch., Port 7, EUT Vert, ANT Vert: Fund 63.8dBuV + -36.4dBc = 27.4dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.04.03.0



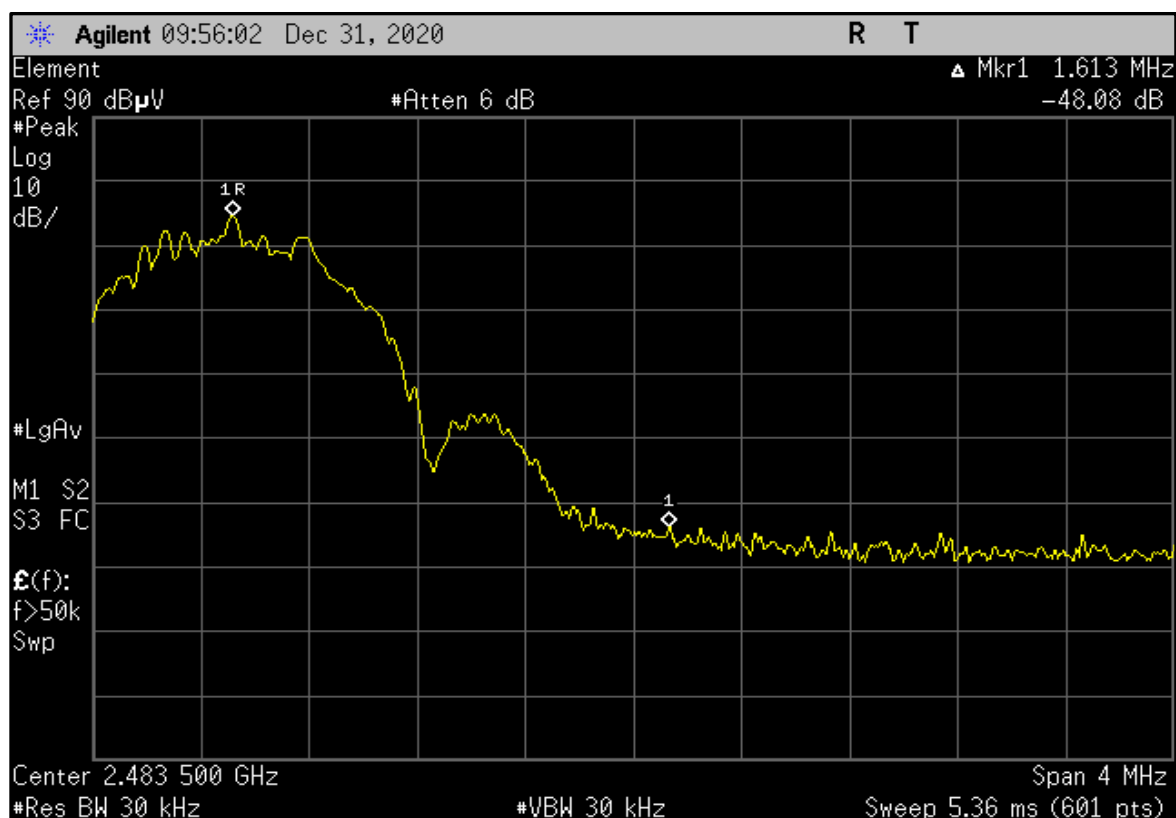
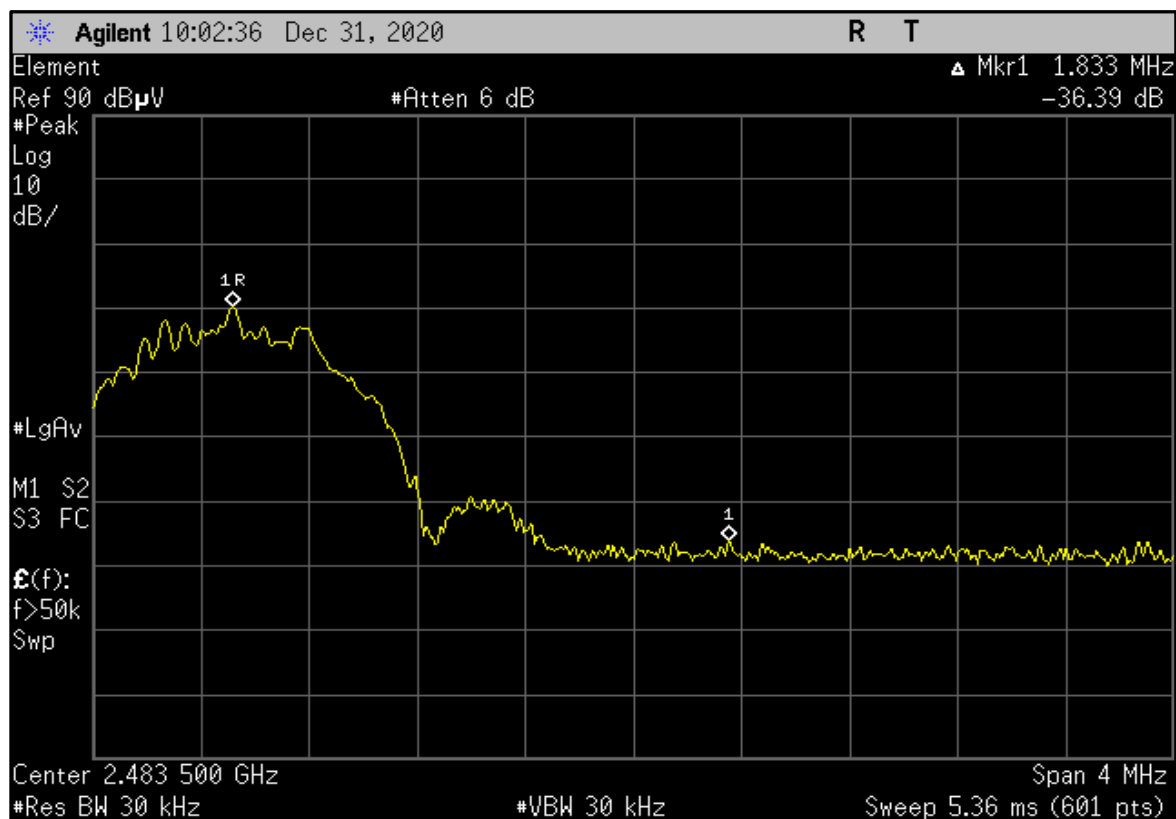
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Vert, ANT Vert

PSA-ESCI 2020.04.03.0



High Ch., Port 7, EUT on Side, ANT on Side

# SPURIOUS RADIATED EMISSIONS

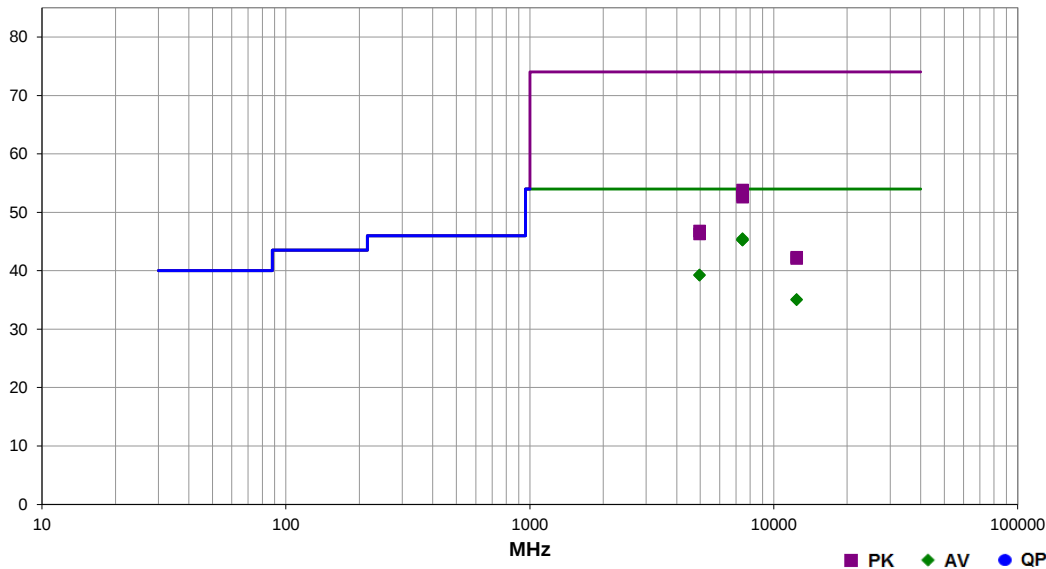


EmiRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-30 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.6 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 56% RH     |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1022 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Configuration:  | 8                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: C3EY, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                                                                                    |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 158 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7446.567   | 27.3             | 15.0        | 3.3                     | 11.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.5              | 54.0                 | -8.5                   | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7444.050   | 27.1             | 15.0        | 1.5                     | 3.0               | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7446.475   | 27.1             | 15.0        | 1.5                     | 315.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT on Side, ANT on Side |
| 7447.050   | 27.0             | 15.0        | 2.3                     | 56.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 7, EUT Vert, ANT Vert       |
| 4963.858   | 26.6             | 9.5         | 3.2                     | 168.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 4961.725   | 26.5             | 9.5         | 1.0                     | 228.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 39.2              | 54.0                 | -14.8                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12412.300  | 26.9             | 5.0         | 1.5                     | 255.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 35.1              | 54.0                 | -18.9                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 12412.490  | 26.8             | 5.0         | 1.5                     | 222.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 35.0              | 54.0                 | -19.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7448.092   | 38.8             | 15.0        | 1.5                     | 3.0               | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 53.8              | 74.0                 | -20.2                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7444.717   | 38.3             | 15.0        | 1.5                     | 315.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 53.3              | 74.0                 | -20.7                  | High Ch., Port 7, EUT on Side, ANT on Side |
| 7445.833   | 37.9             | 15.0        | 3.3                     | 11.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.9              | 74.0                 | -21.1                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7446.417   | 37.6             | 15.0        | 2.3                     | 56.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., Port 7, EUT Vert, ANT Vert       |
| 4965.542   | 37.3             | 9.5         | 3.2                     | 168.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 4964.867   | 36.8             | 9.5         | 1.0                     | 228.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 46.3              | 74.0                 | -27.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12412.270  | 37.3             | 5.0         | 1.5                     | 255.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 42.3              | 74.0                 | -31.7                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 12407.840  | 37.1             | 5.0         | 1.5                     | 222.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 42.1              | 74.0                 | -31.9                  | High Ch., Port 8, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

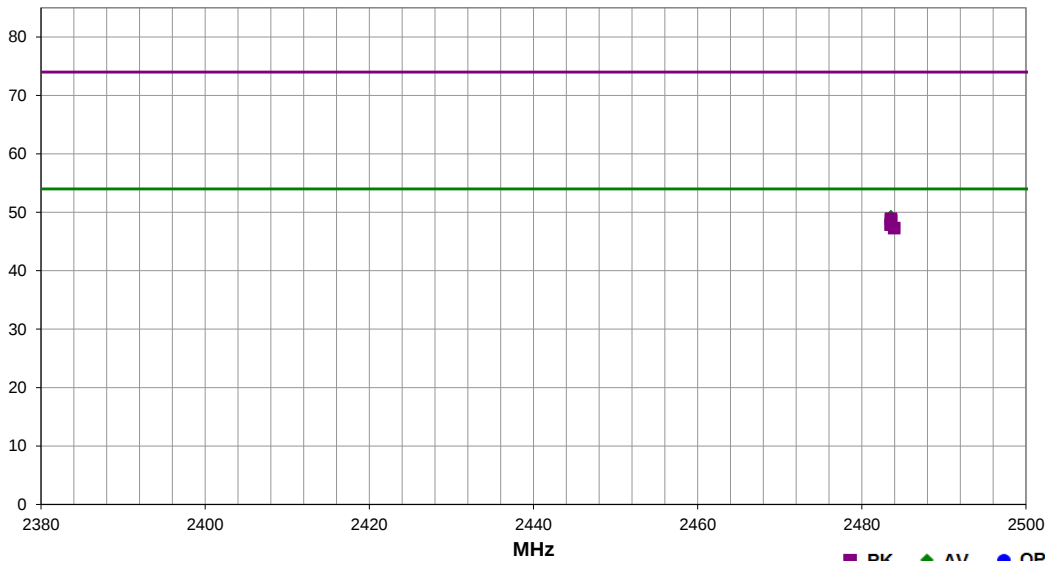


EmiRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-30 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 56% RH     |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1022 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 8                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: C3EY, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                             |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 160 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



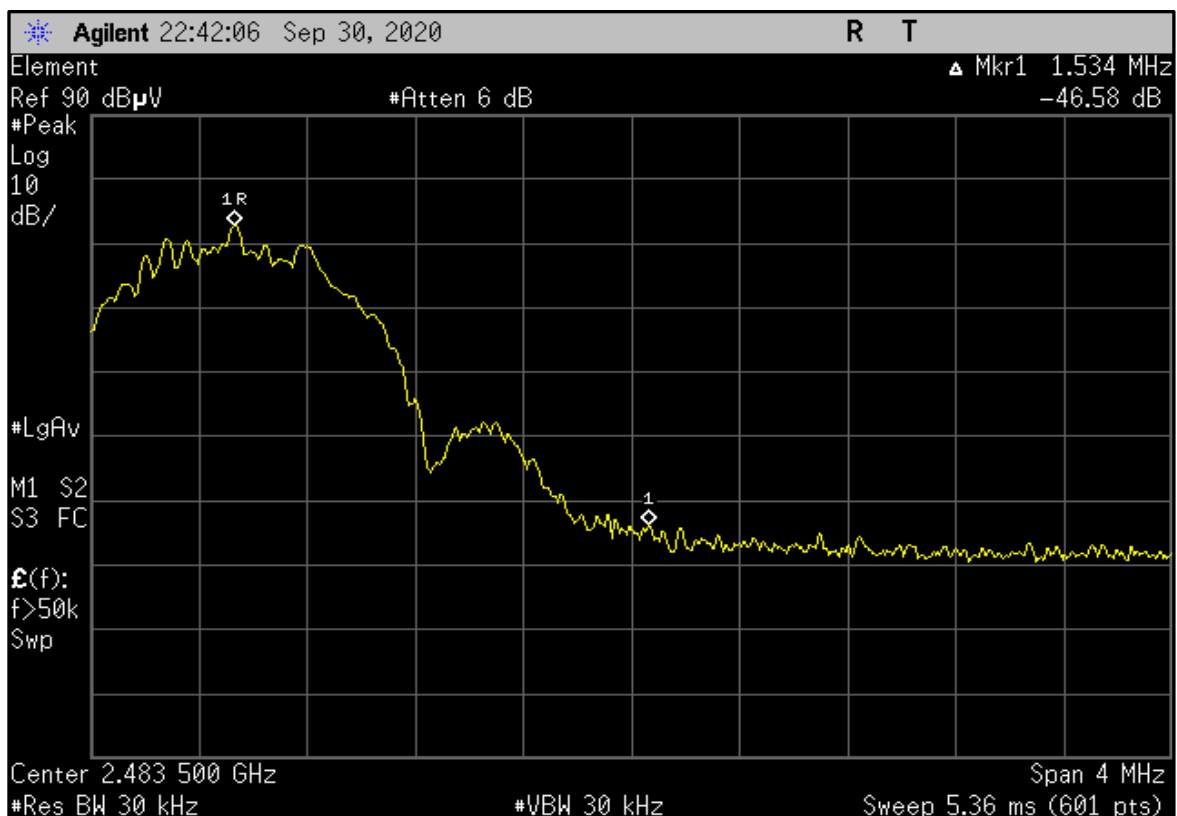
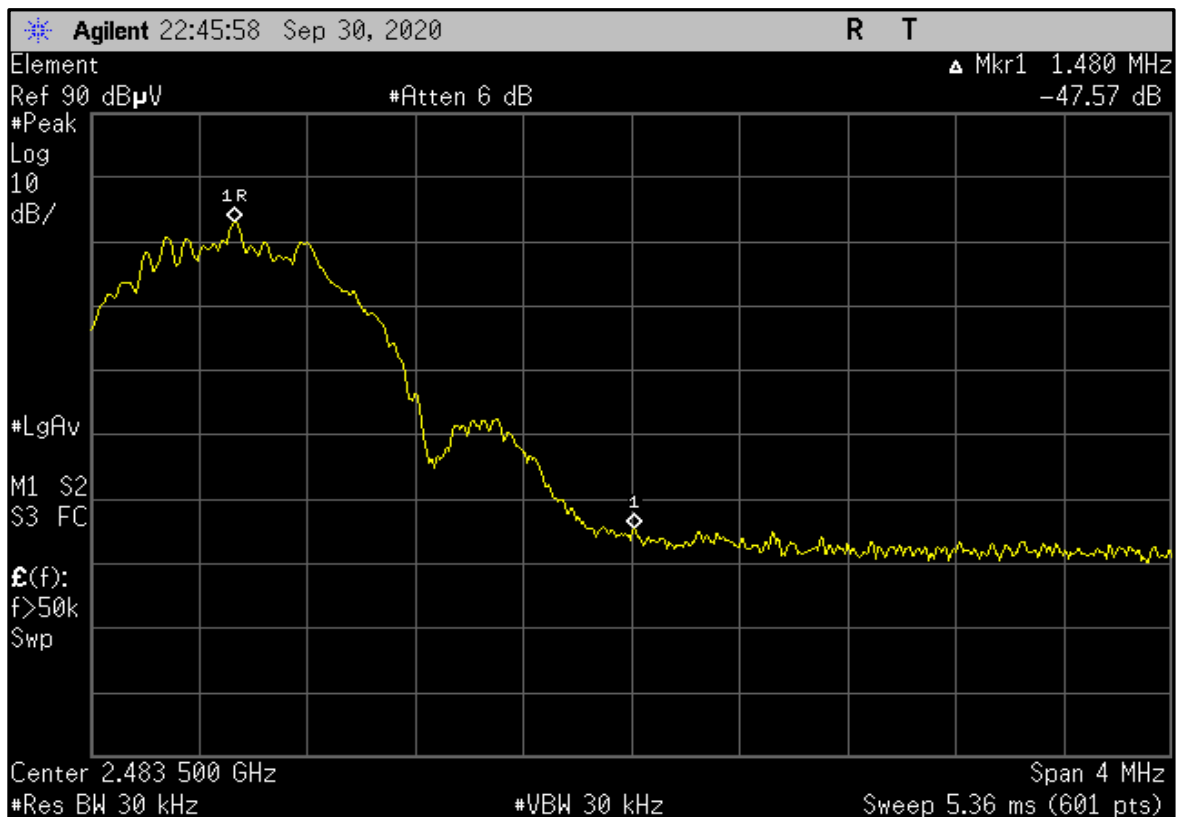
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2483.540   | 26.9                        | -0.8        | 1.5                     | 88.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | High Ch., Port 7, EUT on Side, Ant on Side: Fund 75.7dBuV + -48.8dBc = 26.9dBuV (calc. amp.) |
| 2483.567   | 26.7                        | -0.8        | 2.0                     | 103.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 49.1              | 54.0                 | -4.9                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 73.3dBuV + -46.6dBc = 26.7dBuV (calc. amp.)       |
| 2483.513   | 26.0                        | -0.8        | 1.5                     | 304.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 48.4              | 54.0                 | -5.6                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 73.6dBuV + -47.6dBc = 26.0dBuV (calc. amp.) |
| 2483.940   | 25.3                        | -0.8        | 3.2                     | 96.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.7              | 54.0                 | -6.3                   | High Ch., Port 7, EUT Vert, Ant Vert: Fund 72.8dBuV + -47.5dBc = 25.3dBuV (calc. amp.)       |
| 2483.540   | 29.7                        | -0.8        | 1.5                     | 88.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | High Ch., Port 7, EUT on Side, Ant on Side: Fund 78.5dBuV + -48.8dBc = 29.7dBuV (calc. amp.) |
| 2483.567   | 29.4                        | -0.8        | 2.0                     | 103.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.6              | 74.0                 | -25.4                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 76.0dBuV + -46.6dBc = 29.4dBuV (calc. amp.)       |
| 2483.513   | 28.7                        | -0.8        | 1.5                     | 304.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 76.3dBuV + -47.6dBc = 28.7dBuV (calc. amp.) |
| 2483.940   | 28.1                        | -0.8        | 3.2                     | 96.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.3              | 74.0                 | -26.7                  | High Ch., Port 7, EUT Vert, Ant Vert: Fund 75.6dBuV + -47.5dBc = 28.1dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.04.03.0



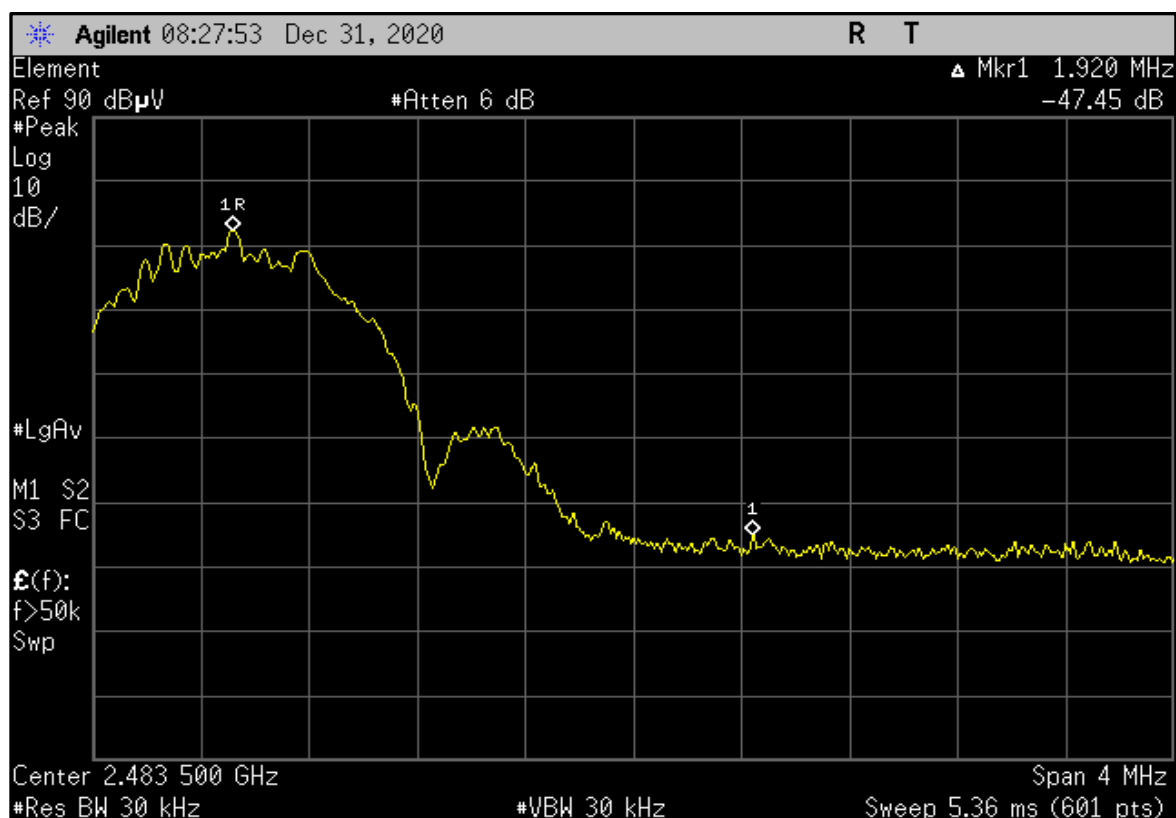
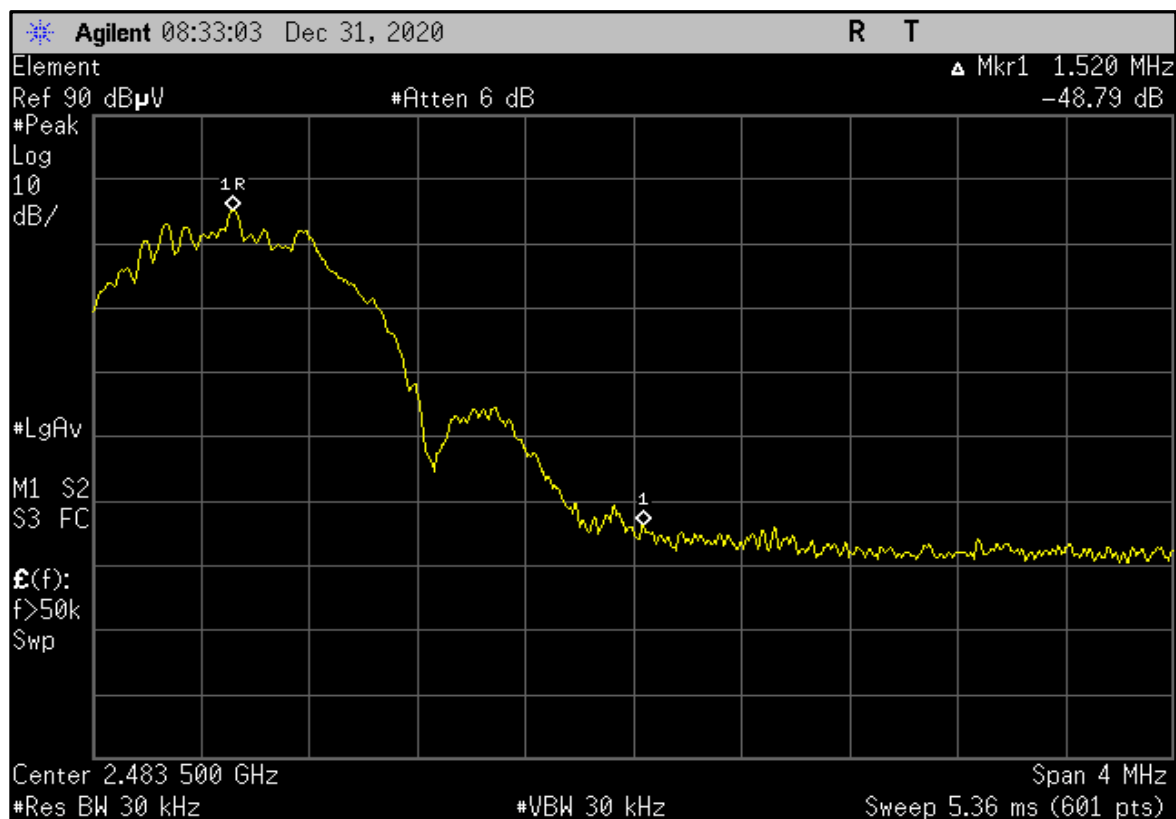
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT on Side, Ant on Side

PSA-ESCI 2020.04.03.0



High Ch., Port 7, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Port 8, Antenna PN: GW.26.0111, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

POE via 120VAC/60Hz

24VDC via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 3

SYNA0309 - 4

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |        |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 26 GHz |
|-----------------|--------|----------------|--------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2019-11-08 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

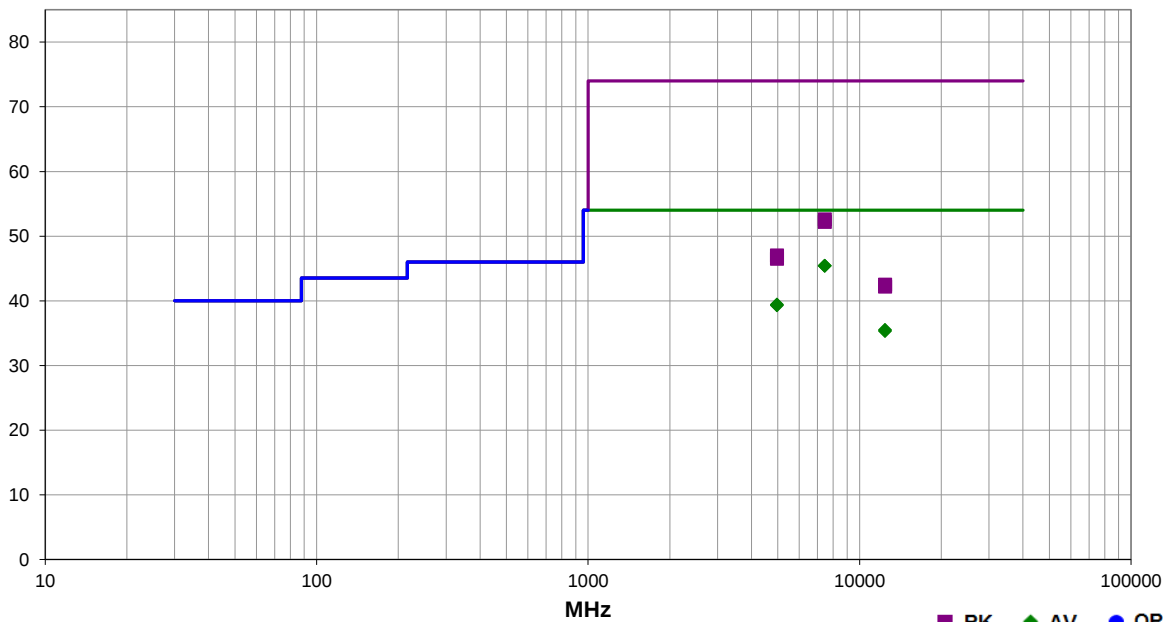


EmiR5 2020.04.20.0 PSA-ESCI 2020.04.03.0

|                        |                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-26 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 22.3 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 53.9% RH   |  |
| Serial Number:         | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1028 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |  |
| Configuration:         | 4                                                                                                                                                                                                                                                                                                                                                       |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |  |
| EUT Power:             | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| Operating Mode:        | DTS Tx, Port 8, Antenna PN: GW.26.0111, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                               |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |  |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 56 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments              |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------|
| 7446.383   | 27.2             | 15.0        | 1.5                     | 15.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., EUT Horz    |
| 7448.400   | 27.2             | 15.0        | 2.2                     | 191.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., EUT on Side |
| 4964.267   | 26.7             | 9.5         | 1.5                     | 124.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.4              | 54.0                 | -14.6                  | High Ch., EUT Horz    |
| 4961.983   | 26.6             | 9.5         | 1.5                     | 55.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT on Side |
| 12412.200  | 27.3             | 5.0         | 1.3                     | 183.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.5              | 54.0                 | -18.5                  | High Ch., EUT on Side |
| 12411.780  | 27.1             | 5.0         | 1.5                     | 360.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.3              | 54.0                 | -18.7                  | High Ch., EUT Horz    |
| 7446.450   | 37.6             | 15.0        | 2.2                     | 191.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., EUT on Side |
| 7446.142   | 37.2             | 15.0        | 1.5                     | 15.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.2              | 74.0                 | -21.8                  | High Ch., EUT Horz    |
| 4965.325   | 37.5             | 9.5         | 1.5                     | 55.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., EUT on Side |
| 4962.383   | 37.0             | 9.5         | 1.5                     | 124.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.5              | 74.0                 | -27.5                  | High Ch., EUT Horz    |
| 12411.990  | 37.5             | 5.0         | 1.3                     | 183.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.5              | 74.0                 | -31.5                  | High Ch., EUT on Side |
| 12407.880  | 37.2             | 5.0         | 1.5                     | 360.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 42.2              | 74.0                 | -31.8                  | High Ch., EUT Horz    |

# SPURIOUS RADIATED EMISSIONS

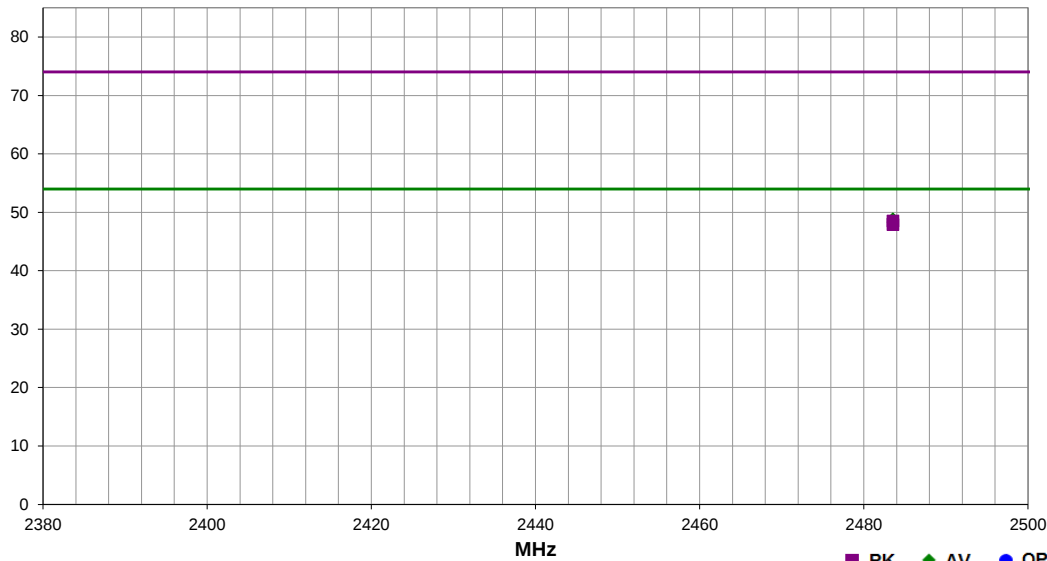


EmIRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-29 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.7 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.2% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1019 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 4                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: GW.26.0111, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                               |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 118 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



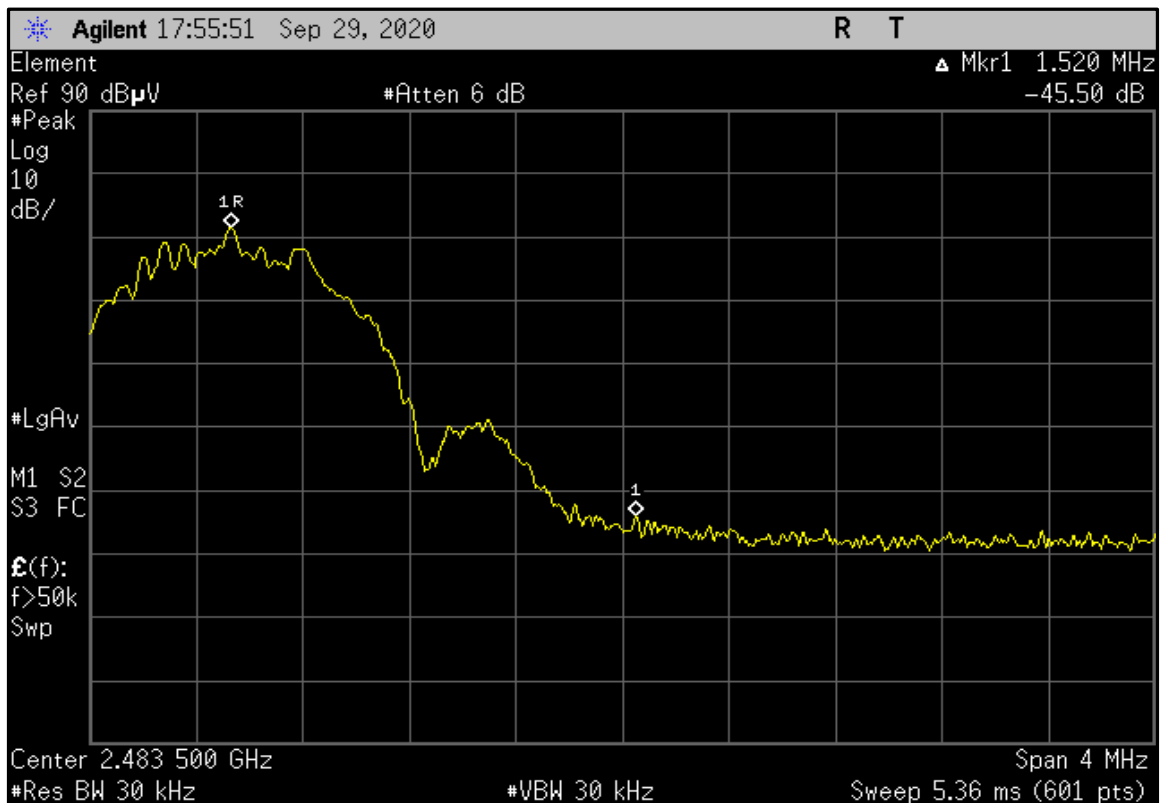
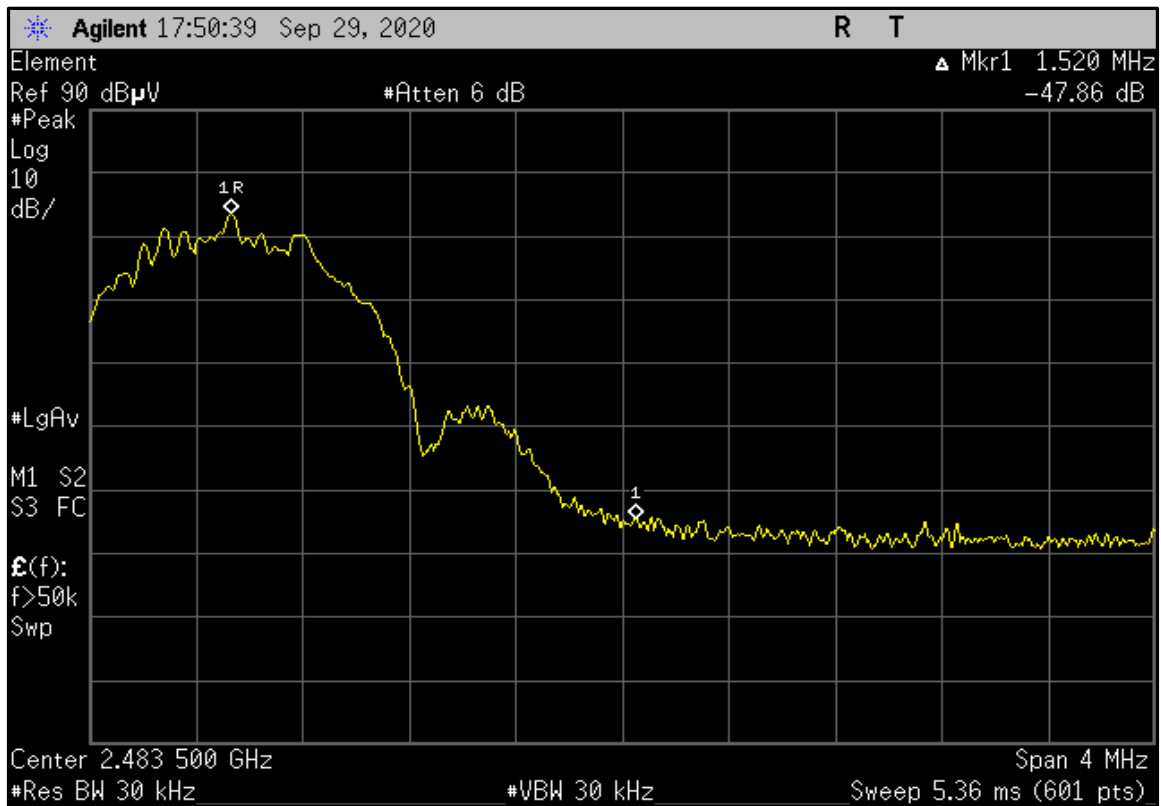
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------|
| 2483.553   | 26.5                        | -0.8        | 1.6                     | 152.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 48.9              | 54.0                 | -5.1                   | High Ch., EUT Vert: Fund 72.0dBuV + -45.5dBc = 26.5dBuV (calc. amp.) |
| 2483.553   | 25.9                        | -0.8        | 4.0                     | 136.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 48.3              | 54.0                 | -5.7                   | High Ch., EUT Horz: Fund 73.8dBuV + -47.9dBc = 25.9dBuV (calc. amp.) |
| 2483.553   | 29.3                        | -0.8        | 1.6                     | 152.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.5              | 74.0                 | -25.5                  | High Ch., EUT Vert: Fund 74.8dBuV + -45.5dBc = 29.3dBuV (calc. amp.) |
| 2483.553   | 28.7                        | -0.8        | 4.0                     | 136.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch., EUT Horz: Fund 76.6dBuV + -47.9dBc = 28.7dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Horz

PSA-ESCI 2020.04.03.0



High Ch., EUT Vert

# SPURIOUS RADIATED EMISSIONS

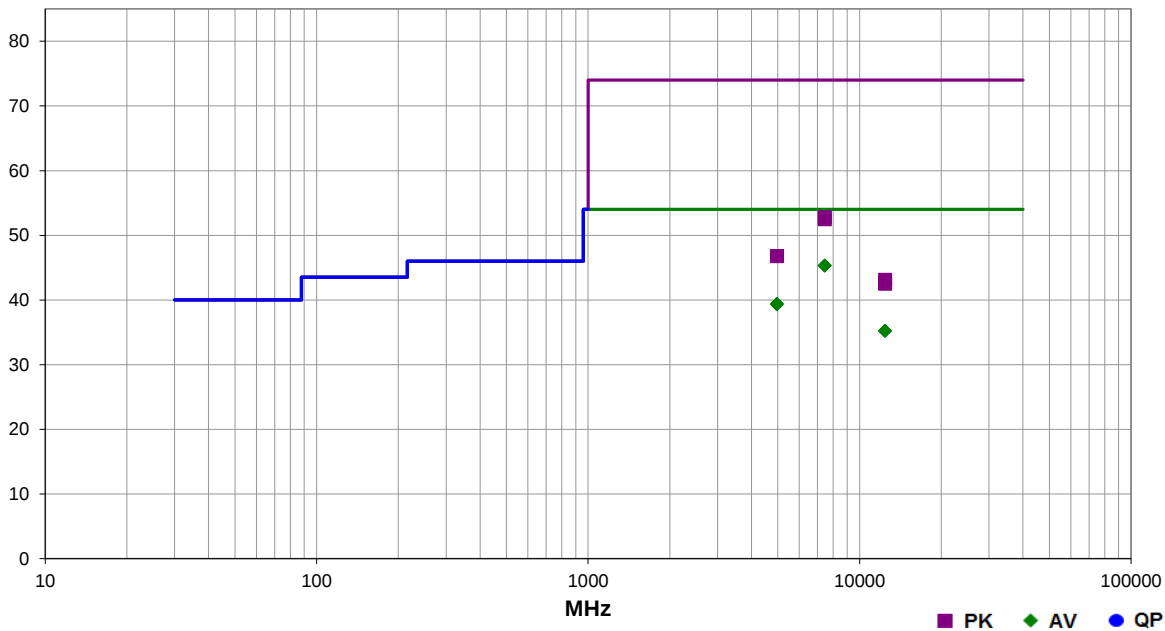


EmiR5 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-29 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.7 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.2% RH   |                                                                                    |             |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1019 mbar  |                                                                                    |             |
|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |             |
| Configuration:  | 3                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: GW.26.0111, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                               |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                                                                                    |             |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 115 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments              |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------|
| 7444.592   | 27.1             | 15.0        | 2.0                     | 303.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., EUT on Side |
| 7446.358   | 27.1             | 15.0        | 1.0                     | 310.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., EUT Horz    |
| 4961.633   | 26.7             | 9.5         | 1.5                     | 314.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.4              | 54.0                 | -14.6                  | High Ch., EUT on Side |
| 4961.600   | 26.6             | 9.5         | 3.9                     | 7.0               | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Horz    |
| 12409.620  | 27.0             | 5.0         | 1.5                     | 59.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., EUT Horz    |
| 12412.450  | 27.0             | 5.0         | 1.5                     | 276.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., EUT on Side |
| 7448.250   | 37.8             | 15.0        | 1.0                     | 310.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.8              | 74.0                 | -21.2                  | High Ch., EUT Horz    |
| 7443.642   | 37.5             | 15.0        | 2.0                     | 303.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.5              | 74.0                 | -21.5                  | High Ch., EUT on Side |
| 4963.767   | 37.3             | 9.5         | 1.5                     | 314.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch., EUT on Side |
| 4963.717   | 37.3             | 9.5         | 3.9                     | 7.0               | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch., EUT Horz    |
| 12410.550  | 38.1             | 5.0         | 1.5                     | 59.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 43.1              | 74.0                 | -30.9                  | High Ch., EUT Horz    |
| 12409.070  | 37.5             | 5.0         | 1.5                     | 276.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.5              | 74.0                 | -31.5                  | High Ch., EUT on Side |

# SPURIOUS RADIATED EMISSIONS

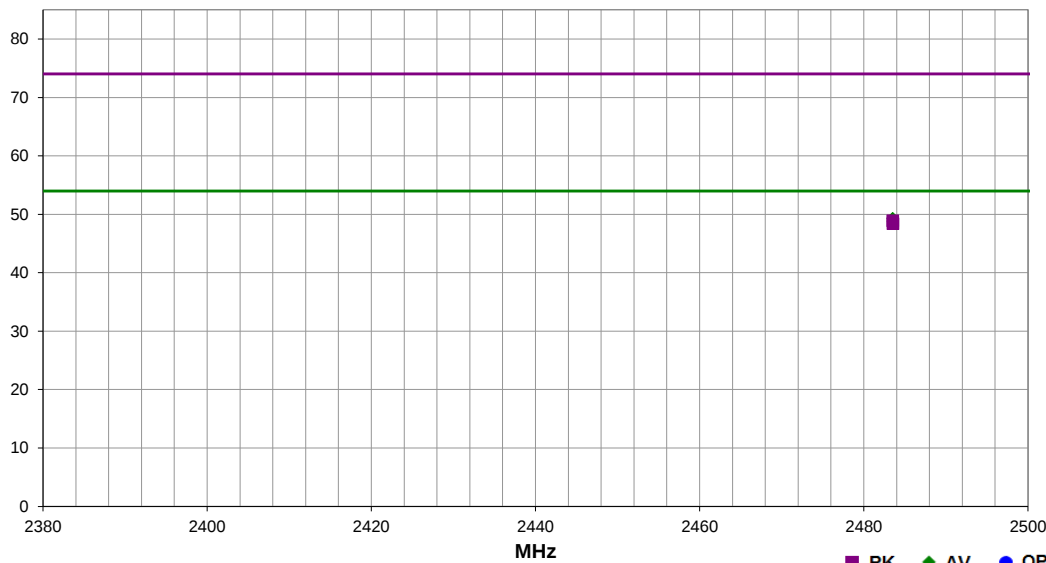


EMIRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                        |                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-29 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.7 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.2% RH   |  |
| Serial Number:         | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1019 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |  |
| Configuration:         | 3                                                                                                                                                                                                                                                                                                                                                       |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |  |
| EUT Power:             | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |  |
| Operating Mode:        | DTS Tx, Port 8, Antenna PN: GW.26.0111, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                               |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |  |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 117 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



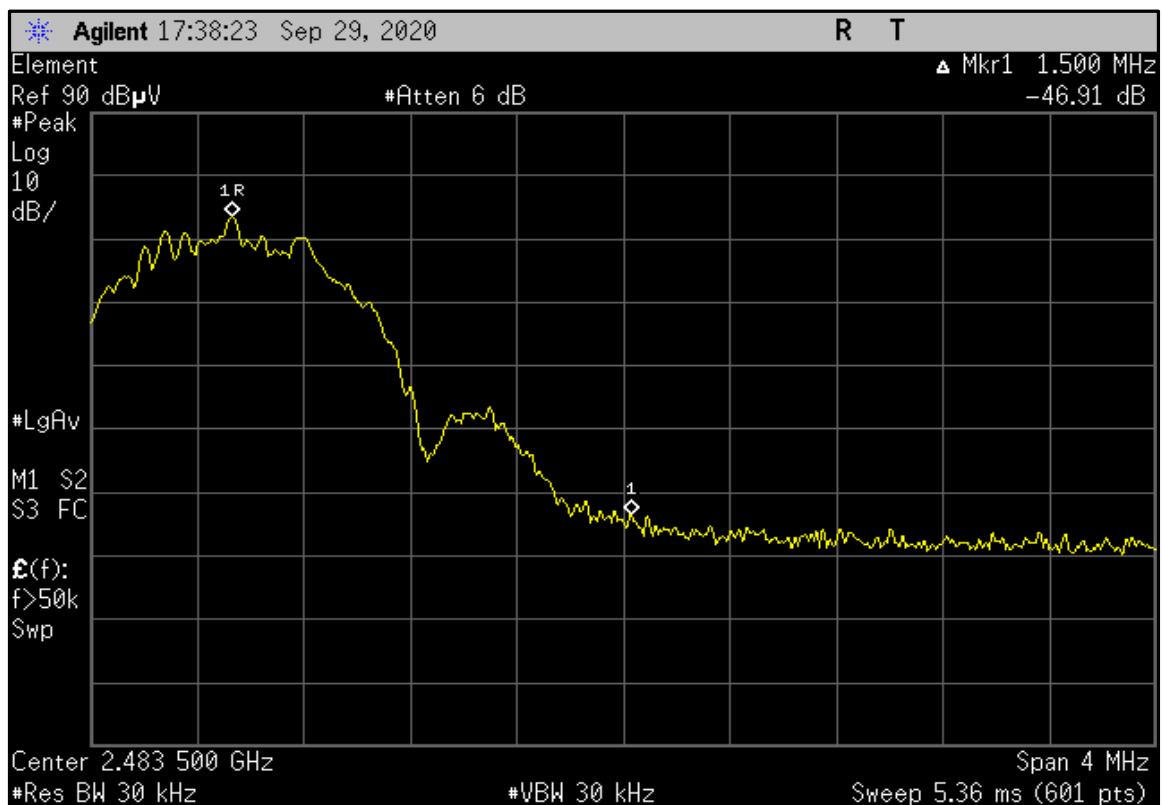
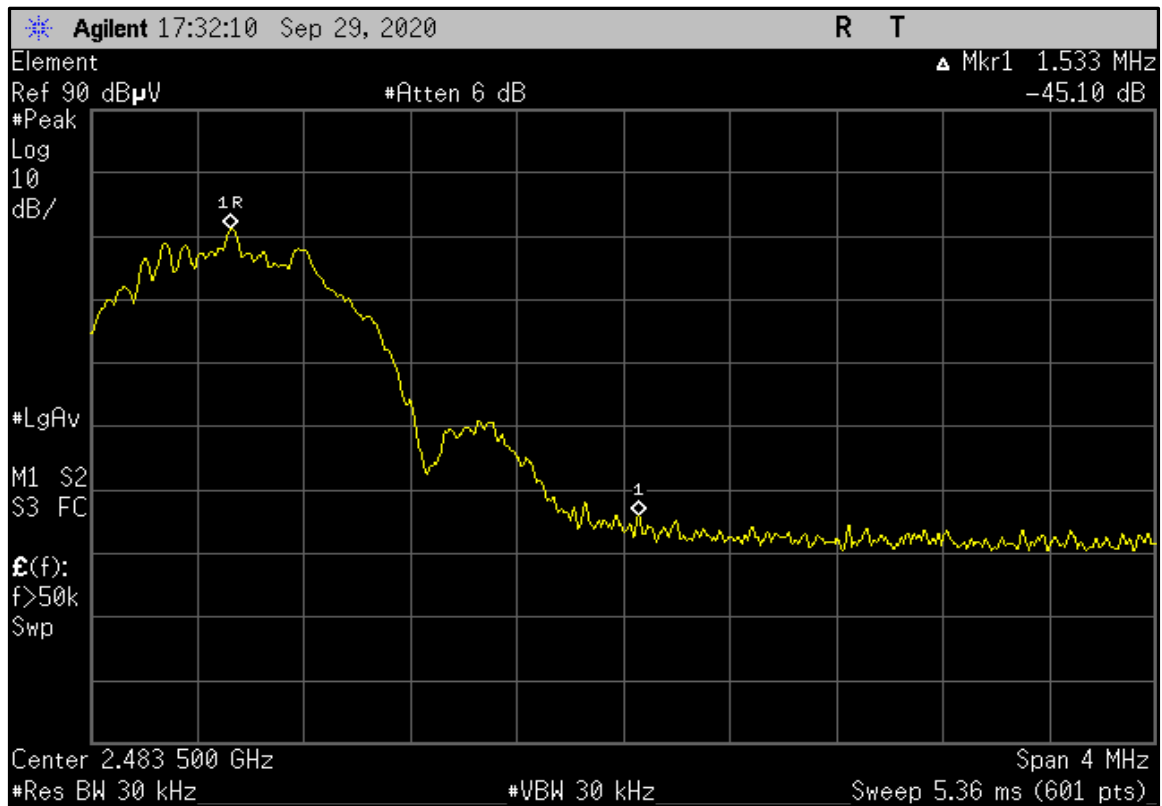
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------|
| 2483.533   | 26.9                        | -0.8        | 4.0                     | 137.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.3              | 54.0                 | -4.7                   | High Ch., EUT Horz: Fund 73.8dBuV + -46.9dBc = 26.9dBuV (calc. amp.) |
| 2483.560   | 26.4                        | -0.8        | 1.5                     | 150.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 48.8              | 54.0                 | -5.2                   | High Ch., EUT Vert: Fund 71.5dBuV + -45.1dBc = 26.4dBuV (calc. amp.) |
| 2483.533   | 29.7                        | -0.8        | 4.0                     | 137.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | High Ch., EUT Horz: Fund 76.6dBuV + -46.9dBc = 29.7dBuV (calc. amp.) |
| 2483.560   | 29.2                        | -0.8        | 1.5                     | 150.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | High Ch., EUT Vert: Fund 74.3dBuV + -45.1dBc = 29.2dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Vert

PSA-ESCI 2020.04.03.0



High Ch., EUT Horz

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: RE09P-NM, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

24VDC via 120VAC/60Hz

POE via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 6

SYNA0309 - 5

## FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 26 GHz

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2019-11-08 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

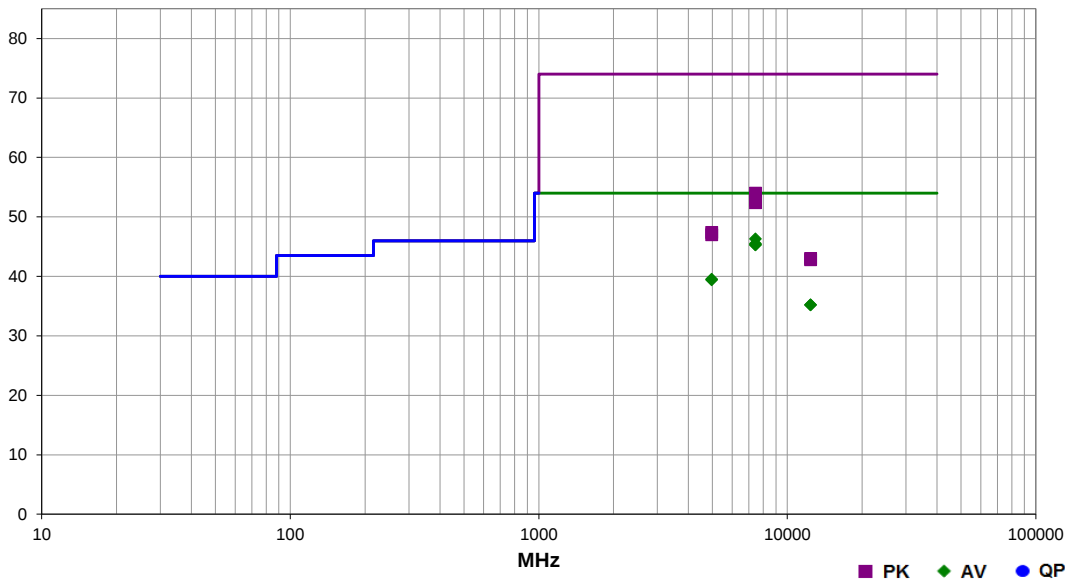


EmiRS 2020.04.20.0 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-28 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.1 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.5% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1028 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Configuration:  | 5                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: RE09P-NM, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 89 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7445.463   | 28.1             | 15.0        | 1.5                     | 41.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 46.3              | 54.0                 | -7.7                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.973   | 27.3             | 15.0        | 1.5                     | 41.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.5              | 54.0                 | -8.5                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7446.433   | 27.1             | 15.0        | 1.0                     | 298.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7444.792   | 27.1             | 15.0        | 1.5                     | 10.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 4963.383   | 26.8             | 9.5         | 1.5                     | 296.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 39.5              | 54.0                 | -14.5                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4963.653   | 26.7             | 9.5         | 1.5                     | 6.0               | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 39.4              | 54.0                 | -14.6                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12409.200  | 27.0             | 5.0         | 1.5                     | 28.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12409.270  | 27.0             | 5.0         | 1.5                     | 13.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.897   | 39.0             | 15.0        | 1.5                     | 41.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 54.0              | 74.0                 | -20.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.603   | 38.3             | 15.0        | 1.5                     | 41.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 53.3              | 74.0                 | -20.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.150   | 37.8             | 15.0        | 1.0                     | 298.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.8              | 74.0                 | -21.2                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7444.967   | 37.4             | 15.0        | 1.5                     | 10.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.4              | 74.0                 | -21.6                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 4963.630   | 37.9             | 9.5         | 1.5                     | 6.0               | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4963.337   | 37.5             | 9.5         | 1.5                     | 296.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12409.440  | 38.0             | 5.0         | 1.5                     | 28.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 43.0              | 74.0                 | -31.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12410.270  | 37.8             | 5.0         | 1.5                     | 13.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 42.8              | 74.0                 | -31.2                  | High Ch., Port 8, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

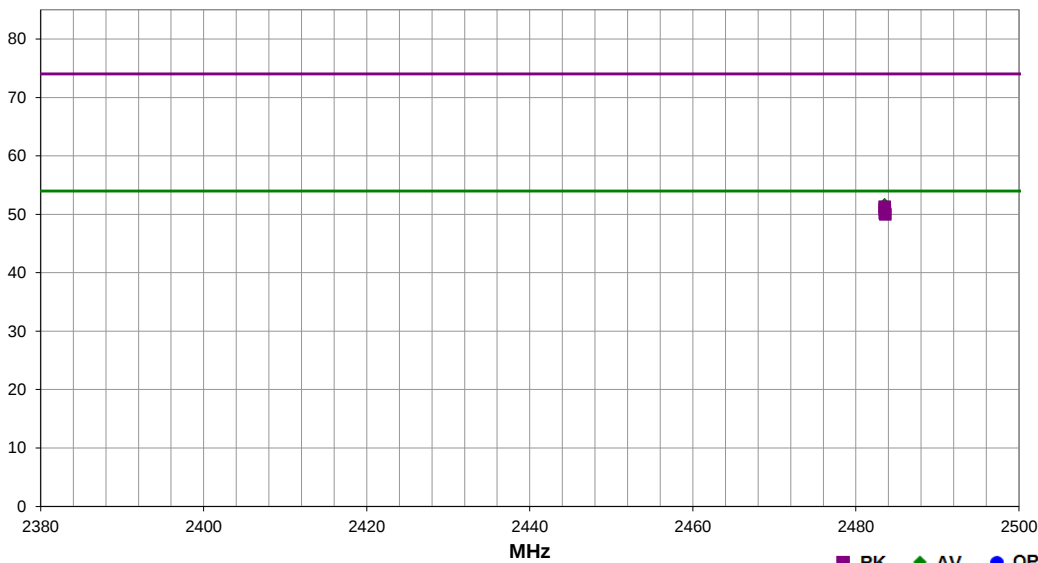


EmiRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-28 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.3 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.5% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1021 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 5                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: RE09P-NM, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                         |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 111 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



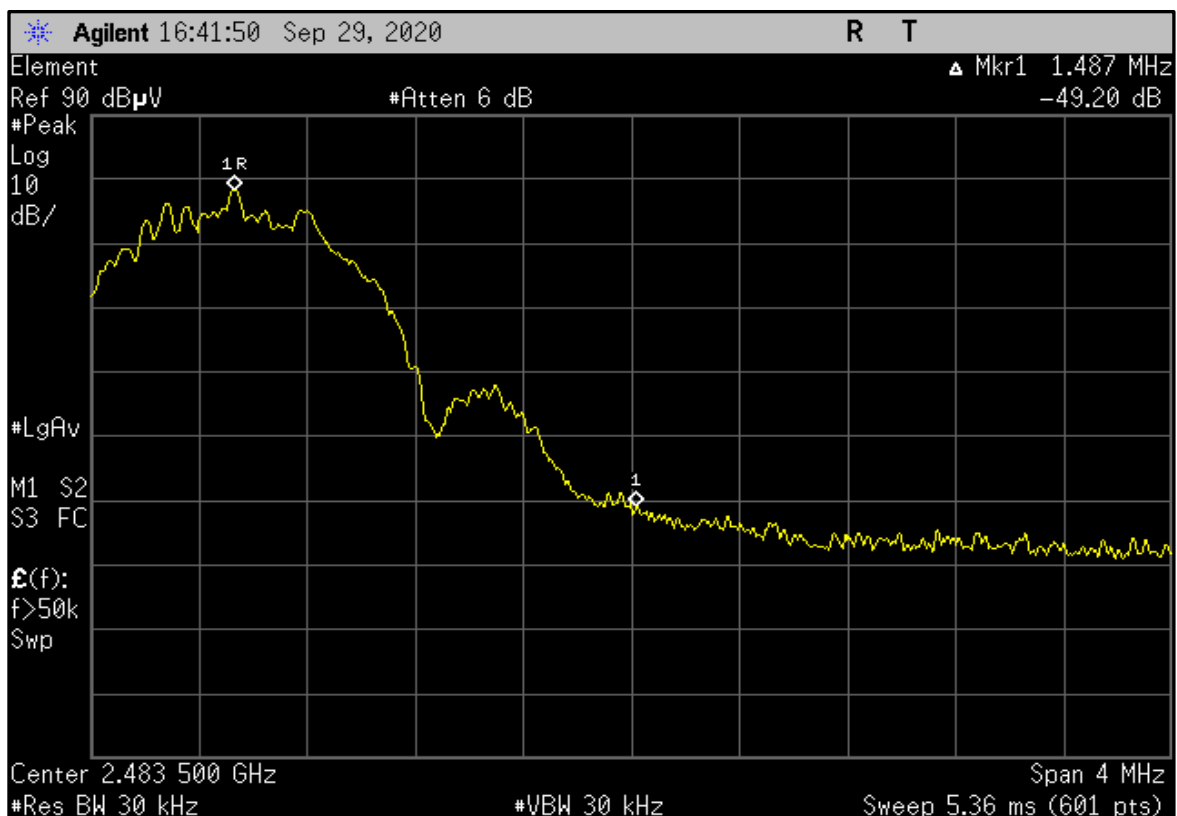
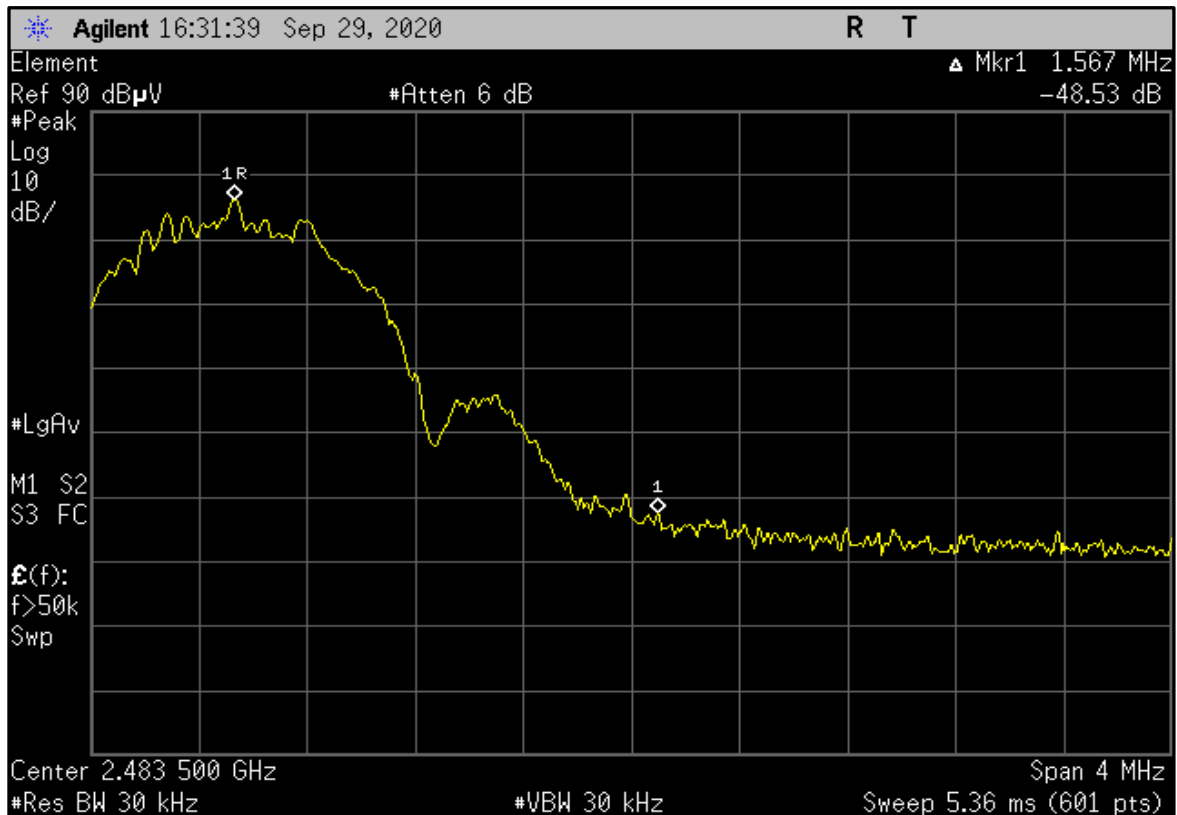
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2483.520   | 29.3                        | -0.8        | 3.9                     | 355.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 51.7              | 54.0                 | -2.3                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 78.7dBuV + -49.4dBc = 29.3dBuV (calc. amp.) |
| 2483.547   | 28.8                        | -0.8        | 1.0                     | 159.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 51.2              | 54.0                 | -2.8                   | High Ch., Port 7, EUT Vert, Ant Vert: Fund 76.7dBuV + -47.9dBc = 28.8dBuV (calc. amp.)       |
| 2483.540   | 28.3                        | -0.8        | 1.7                     | 159.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.7              | 54.0                 | -3.3                   | High Ch., Port 7, EUT on Side, Ant on Side: Fund 77.1dBuV + -48.8dBc = 28.3dBuV (calc. amp.) |
| 2483.600   | 28.1                        | -0.8        | 3.4                     | 346.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 50.5              | 54.0                 | -3.5                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 76.6dBuV + -48.5dBc = 28.1dBuV (calc. amp.)       |
| 2483.520   | 32.1                        | -0.8        | 3.9                     | 355.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 51.3              | 74.0                 | -22.7                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 81.5dBuV + -49.4dBc = 32.1dBuV (calc. amp.) |
| 2483.547   | 31.6                        | -0.8        | 1.0                     | 159.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 50.8              | 74.0                 | -23.2                  | High Ch., Port 7, EUT Vert, Ant Vert: Fund 79.5dBuV + -47.9dBc = 31.6dBuV (calc. amp.)       |
| 2483.540   | 31.0                        | -0.8        | 1.7                     | 159.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 50.2              | 74.0                 | -23.8                  | High Ch., Port 7, EUT on Side, Ant on Side: Fund 79.8dBuV + -48.8dBc = 31.0dBuV (calc. amp.) |
| 2483.600   | 30.8                        | -0.8        | 3.4                     | 346.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 50.0              | 74.0                 | -24.0                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 79.3dBuV + -48.5dBc = 30.8dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Vert, Ant Vert

PSA-ESCI 2020.04.03.0



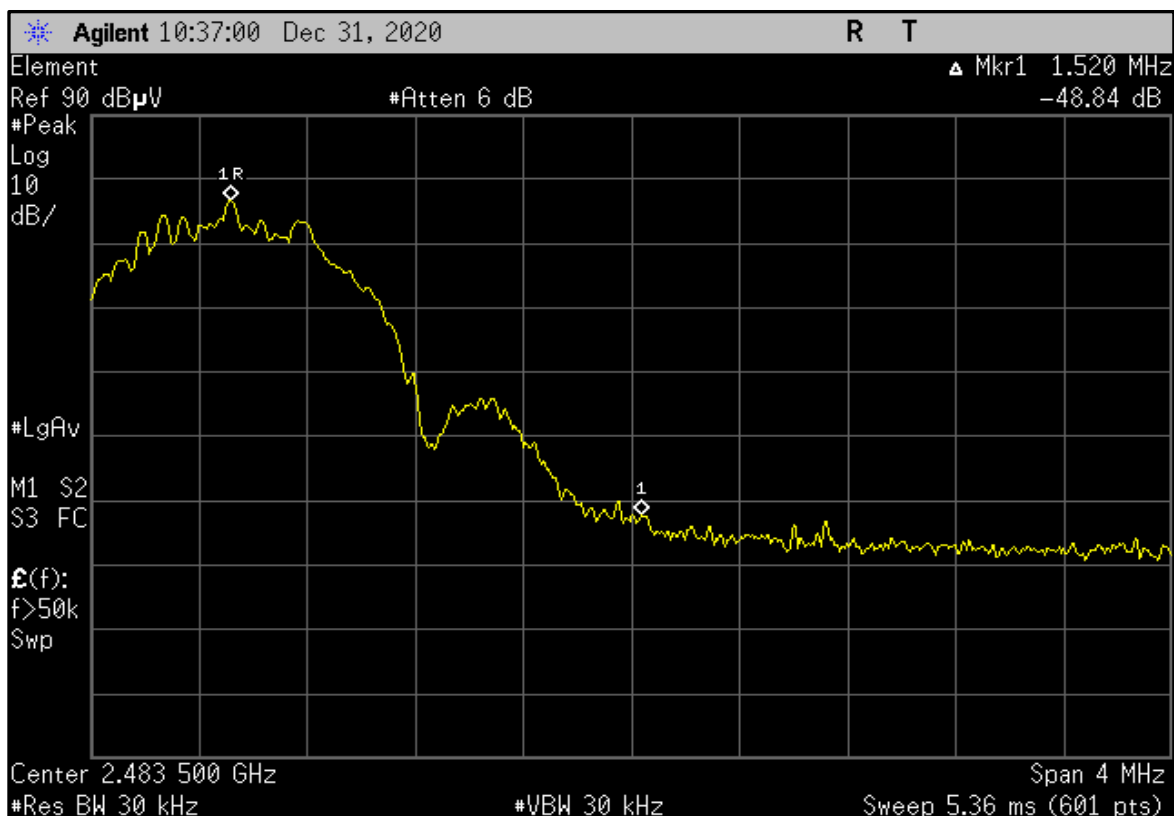
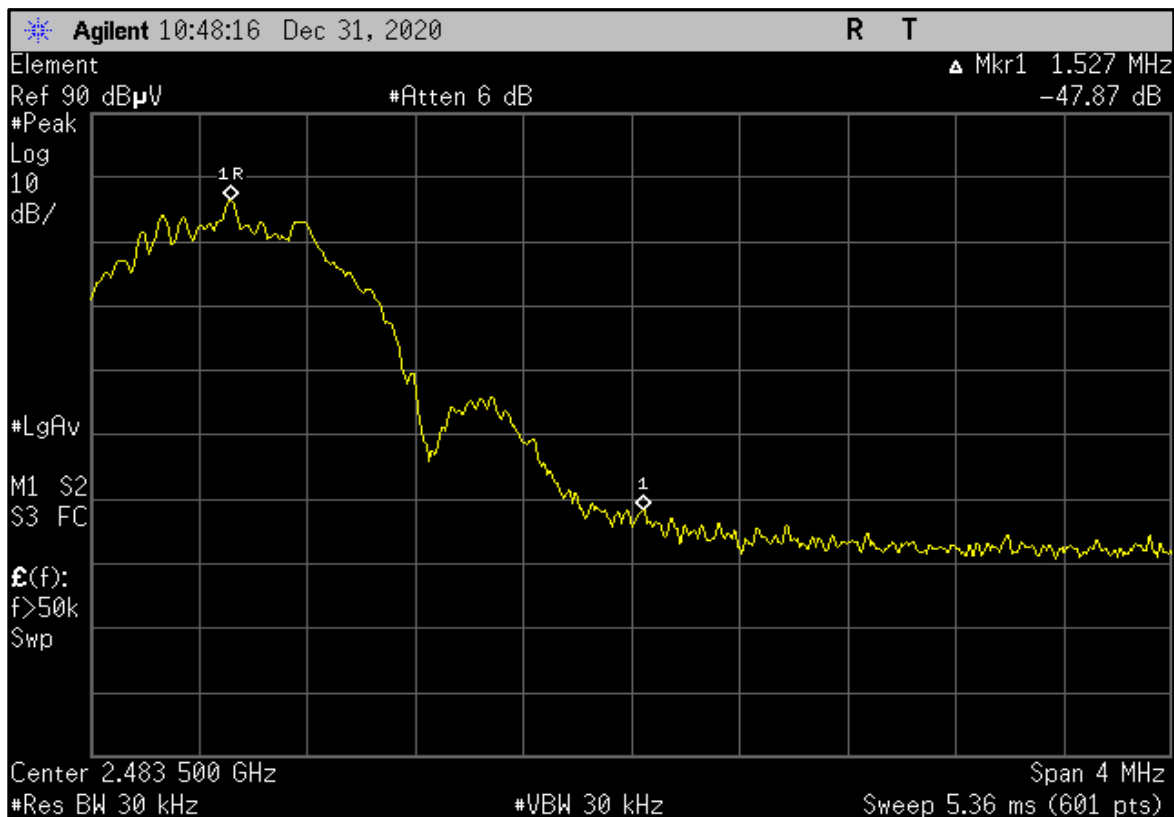
High Ch., Port 8, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Vert, Ant Vert

PSA-ESCI 2020.04.03.0



High Ch., Port 7, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS

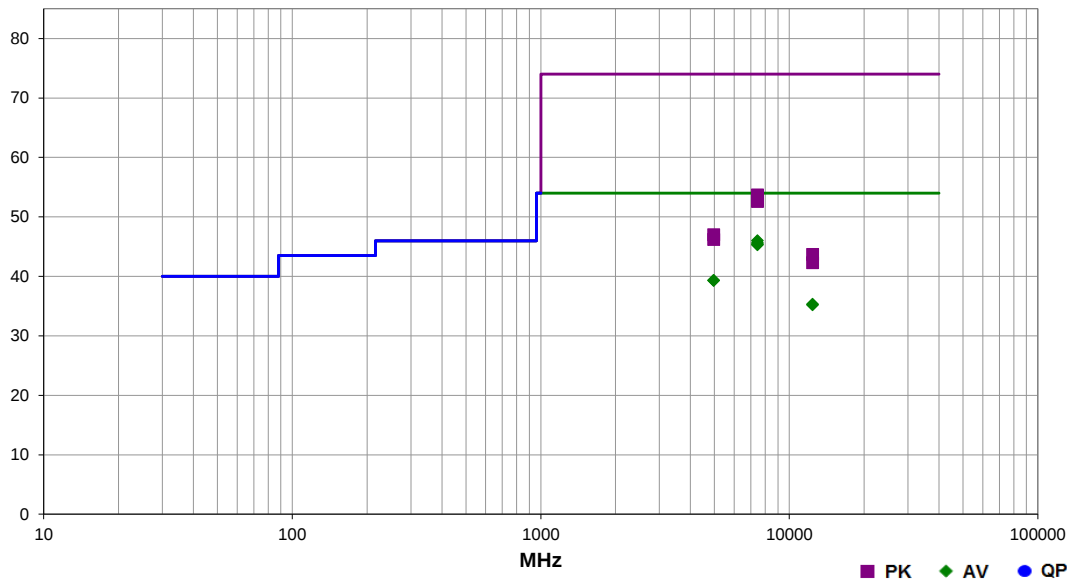


EmiRS 2020.04.20.0 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-28 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.1 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.5% RH   |                                                                                    |             |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1028 mbar  | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |             |
| Configuration:  | 6                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Antenna PN: RE09P-NM, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                         |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                                                                                    |             |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 94 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7445.517   | 27.8             | 15.0        | 1.5                     | 40.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.0              | 54.0                 | -8.0                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.470   | 27.4             | 15.0        | 1.5                     | 128.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.6              | 54.0                 | -8.4                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7445.508   | 27.2             | 15.0        | 2.6                     | 191.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.030   | 27.1             | 15.0        | 2.6                     | 83.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 4962.383   | 26.6             | 9.5         | 1.5                     | 182.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4962.050   | 26.6             | 9.5         | 1.5                     | 46.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12411.600  | 27.1             | 5.0         | 1.5                     | 255.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.3              | 54.0                 | -18.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12411.530  | 27.0             | 5.0         | 1.5                     | 277.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.2              | 54.0                 | -18.8                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7444.867   | 38.7             | 15.0        | 1.5                     | 40.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.7              | 74.0                 | -20.3                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.643   | 38.2             | 15.0        | 1.5                     | 128.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.2              | 74.0                 | -20.8                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7445.967   | 37.7             | 15.0        | 2.6                     | 83.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.7              | 74.0                 | -21.3                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7443.633   | 37.6             | 15.0        | 2.6                     | 191.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4964.425   | 37.5             | 9.5         | 1.5                     | 182.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 4962.833   | 36.7             | 9.5         | 1.5                     | 46.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.2              | 74.0                 | -27.8                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12407.760  | 38.7             | 5.0         | 1.5                     | 277.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 43.7              | 74.0                 | -30.3                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 12411.230  | 37.3             | 5.0         | 1.5                     | 255.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.3              | 74.0                 | -31.7                  | High Ch., Port 8, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

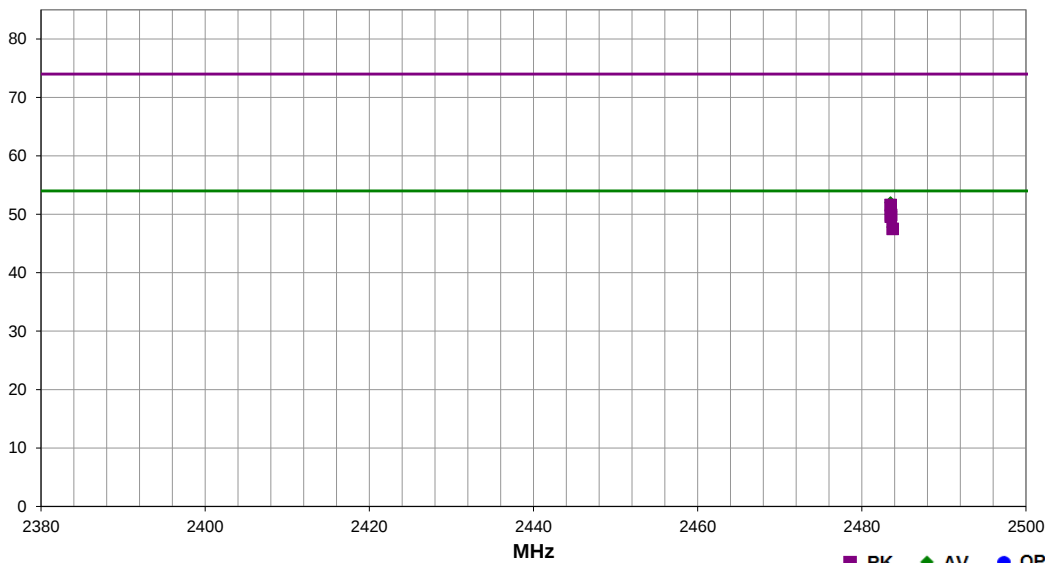


EmiRS 2020.06.24.3 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-09-28 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 23.3 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 49.5% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1021 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 6                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: RE09P-NM, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                                         |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 96 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



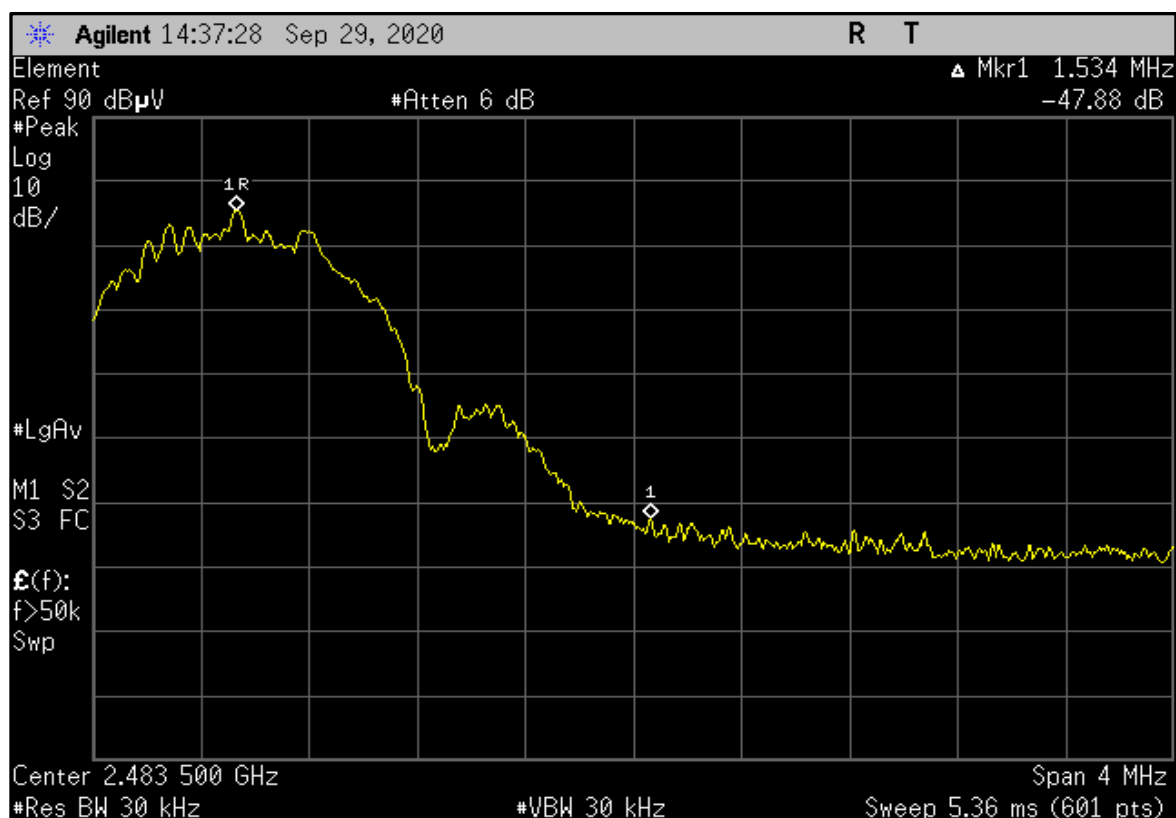
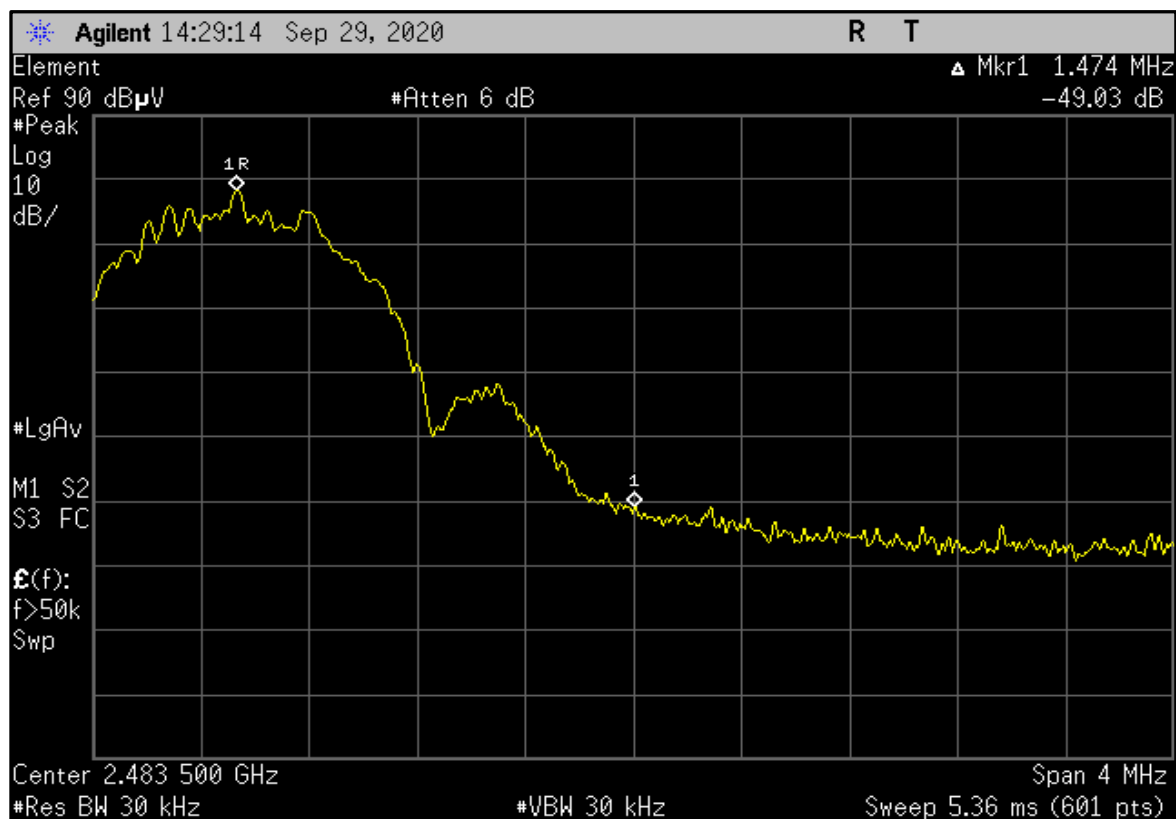
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2483.507   | 29.6                        | -0.8        | 3.3                     | 2.0               | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 52.0              | 54.0                 | -2.0                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 78.6dBuV + -49.0dBc = 29.6dBuV (calc. amp.) |
| 2483.567   | 28.0                        | -0.8        | 1.5                     | 360.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 50.4              | 54.0                 | -3.6                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 75.9dBuV + -47.9dBc = 28.0dBuV (calc. amp.)       |
| 2483.533   | 27.6                        | -0.8        | 1.6                     | 146.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.0              | 54.0                 | -4.0                   | High Ch., Port 7, EUT on Side, Ant on Side: Fund 76.7dBuV + -49.1dBc = 27.6dBuV (calc. amp.) |
| 2483.767   | 25.4                        | -0.8        | 4.0                     | 124.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.8              | 54.0                 | -6.2                   | High Ch., Port 7, EUT Vert, Ant Vert: Fund 69.8dBuV + -44.4dBc = 25.4dBuV (calc. amp.)       |
| 2483.507   | 32.4                        | -0.8        | 3.3                     | 2.0               | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 51.6              | 74.0                 | -22.4                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 81.4dBuV + -49.0dBc = 32.4dBuV (calc. amp.) |
| 2483.567   | 30.7                        | -0.8        | 1.5                     | 360.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.9              | 74.0                 | -24.1                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 78.6dBuV + -47.9dBc = 30.7dBuV (calc. amp.)       |
| 2483.533   | 30.4                        | -0.8        | 1.6                     | 146.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 49.6              | 74.0                 | -24.4                  | High Ch., Port 7, EUT on Side, Ant on Side: Fund 79.5dBuV + -49.1dBc = 30.4dBuV (calc. amp.) |
| 2483.767   | 28.3                        | -0.8        | 4.0                     | 124.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch., Port 7, EUT Vert, Ant Vert: Fund 72.7dBuV + -44.4dBc = 28.3dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.04.03.0



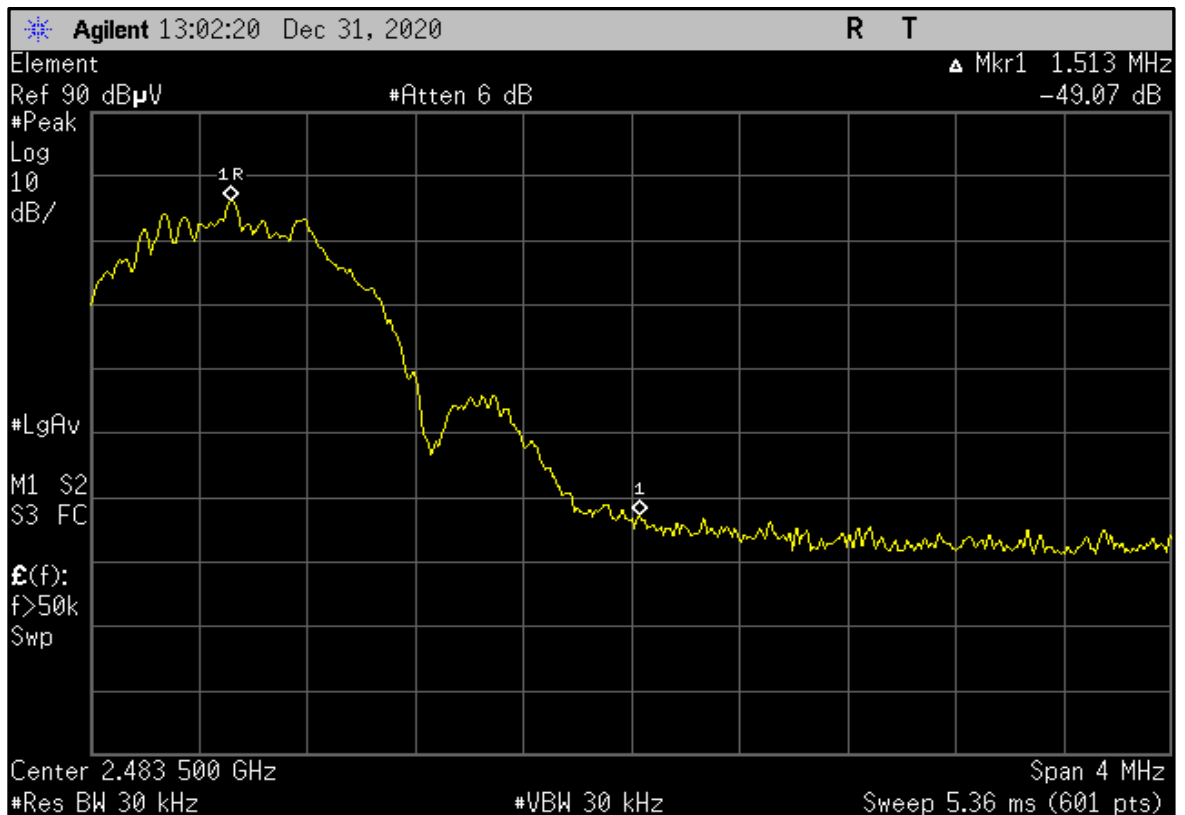
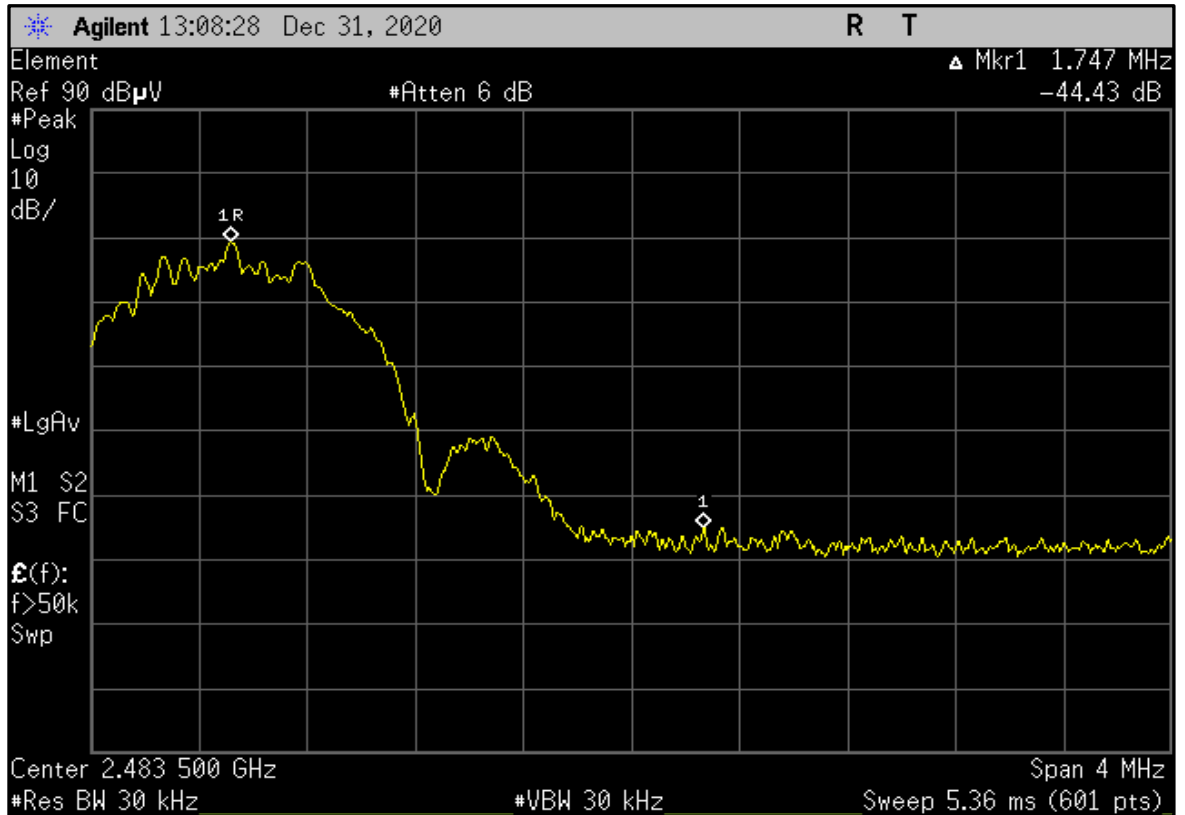
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Vert, Ant Vert

PSA-ESCI 2020.04.03.0



High Ch., Port 7, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.

DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -8 dBm, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

24VDC

POE via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 16

SYNA0309 - 12

SYNA0317 - 1

SYNA0317 - 2

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |           |
|-----------------|--------|----------------|-----------|
| Start Frequency | 30 MHz | Stop Frequency | 26000 MHz |
|-----------------|--------|----------------|-----------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Attenuator                   | S.M. Electronics         | SA6-20                 | REO | 2020-01-21 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | HGK | 2020-01-20 | 12 mo    |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HGC | 2020-03-11 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | JSDWK42-18004000-60-5P | PAN | 2019-12-16 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAD | 2020-07-01 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 8-18GHz cables         | OCY | 2020-03-02 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 1-8GHz cables          | OCX | 2020-03-02 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 30-1GHz cables         | OCW | 2020-05-01 | 12 mo    |
| Cable                        | D-Coax                   | None                   | OC4 | 2019-12-16 | 12 mo    |
| Antenna - Biconilog          | EMCO                     | 3142                   | AXB | 2020-04-15 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AVP | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AVL | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVJ | 2020-03-02 | 12 mo    |
| Antenna - Double Ridge       | ETS Lindgren             | 3115                   | AIR | 2020-07-07 | 24 mo    |
| Antenna - Double Ridge       | A.H. Systems, Inc.       | SAS-574                | AXV | 2020-06-03 | 24 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-07                | AHX | NCR        | 0 mo     |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHK | NCR        | 0 mo     |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

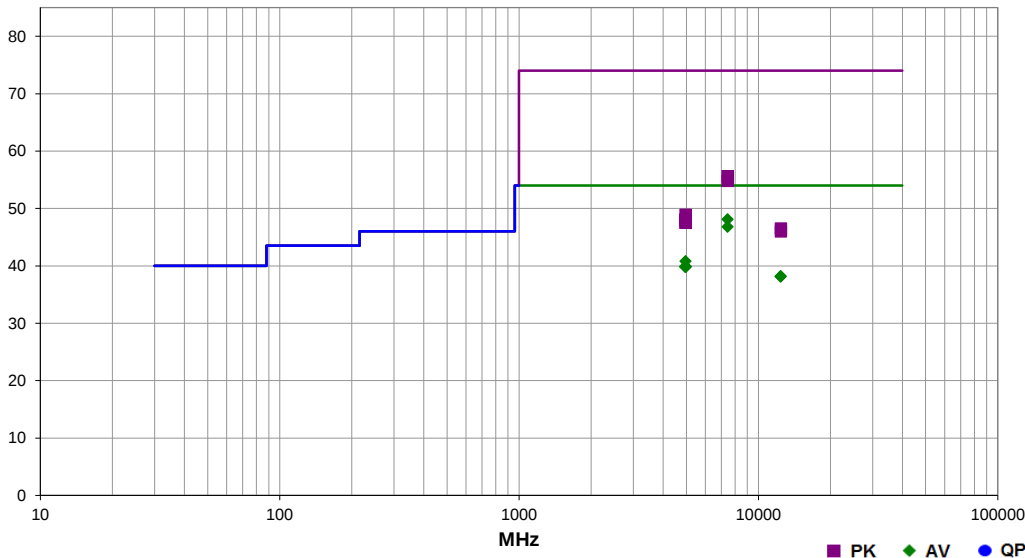


EmRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                          | Date:             | 2020-10-20 |  |
| Project:        | None                                                                                                                                                                                                                                                                              | Temperature:      | 24.8 °C    |                                                                                    |
| Job Site:       | OC07                                                                                                                                                                                                                                                                              | Humidity:         | 49% RH     |                                                                                    |
| Serial Number:  | Rev. 10 - 004                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1012 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 12                                                                                                                                                                                                                                                                                |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode: | DTS LE Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.                                                                                                                                                   |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |                   |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 29 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------------------------|
| 7445.383   | 32.6             | 12.3        | 1.5                     | 212.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.1              | 54.0                 | -5.9                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7445.108   | 31.3             | 12.3        | 1.5                     | 87.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4964.050   | 33.1             | 4.5         | 1.6                     | 238.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.8              | 54.0                 | -13.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4961.533   | 32.3             | 4.4         | 2.3                     | 0.0               | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.9              | 54.0                 | -14.1                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4961.525   | 32.3             | 4.4         | 1.5                     | 349.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.9              | 54.0                 | -14.1                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4961.675   | 32.3             | 4.4         | 1.5                     | 216.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.9              | 54.0                 | -14.1                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 4961.542   | 32.2             | 4.4         | 1.5                     | 295.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.8              | 54.0                 | -14.2                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4961.725   | 32.2             | 4.4         | 3.8                     | 74.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.8              | 54.0                 | -14.2                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 12407.780  | 29.1             | 5.9         | 1.5                     | 62.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.2              | 54.0                 | -15.8                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12407.600  | 29.0             | 5.9         | 3.8                     | 185.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 38.1              | 54.0                 | -15.9                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7446.825   | 43.3             | 12.3        | 1.5                     | 212.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 55.6              | 74.0                 | -18.4                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7445.575   | 42.5             | 12.3        | 1.5                     | 87.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 54.8              | 74.0                 | -19.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4964.725   | 44.4             | 4.5         | 1.6                     | 238.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.9              | 74.0                 | -25.1                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4966.200   | 43.5             | 4.6         | 1.5                     | 295.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4964.142   | 43.5             | 4.5         | 2.3                     | 0.0               | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4962.067   | 43.5             | 4.4         | 1.5                     | 349.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4962.492   | 43.1             | 4.4         | 1.5                     | 216.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 4962.000   | 43.1             | 4.4         | 3.8                     | 74.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 12411.950  | 40.6             | 5.9         | 1.5                     | 62.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.5              | 74.0                 | -27.5                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12411.170  | 40.1             | 5.9         | 3.8                     | 185.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.0              | 74.0                 | -28.0                  | High Ch, Port 8, EUT Vert, Antenna Vert       |

# SPURIOUS RADIATED EMISSIONS

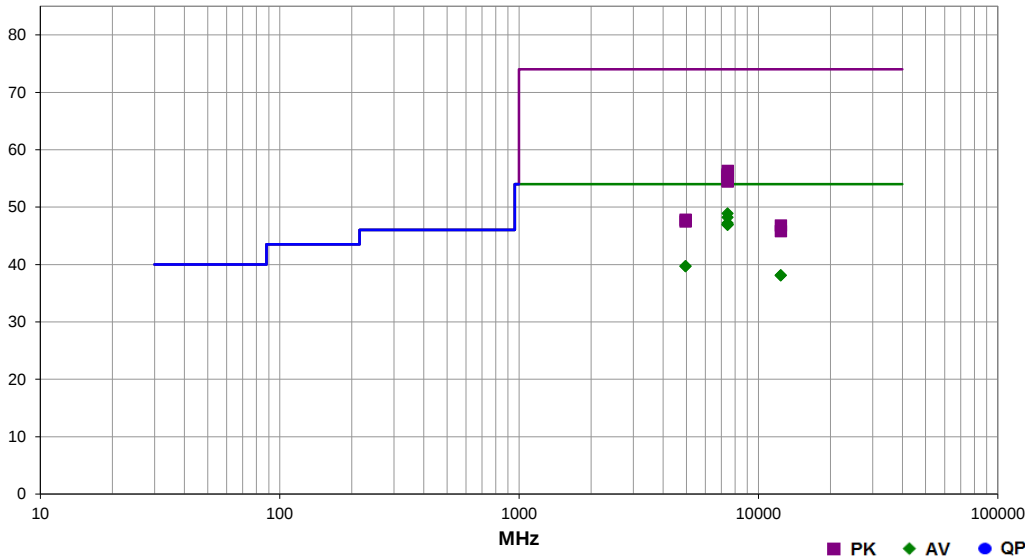


EmRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                          | Date:             | 2020-10-26 |  |
| Project:        | None                                                                                                                                                                                                                                                                              | Temperature:      | 20 °C      |                                                                                    |
| Job Site:       | OC07                                                                                                                                                                                                                                                                              | Humidity:         | 31.3% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 004                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1020 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 16                                                                                                                                                                                                                                                                                |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | 24VDC                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Operating Mode: | DTS LE Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.                                                                                                                                                   |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 83 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------------------------|
| 7445.442   | 33.4             | 12.3        | 1.5                     | 188.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 48.9              | 54.0                 | -5.1                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7446.533   | 32.7             | 12.3        | 3.2                     | 236.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 48.2              | 54.0                 | -5.8                   | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7445.308   | 31.7             | 12.3        | 3.9                     | 137.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7446.325   | 31.5             | 12.3        | 1.5                     | 185.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 7445.467   | 31.4             | 12.3        | 3.4                     | 234.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.058   | 31.4             | 12.3        | 1.5                     | 20.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 4963.200   | 32.0             | 4.5         | 1.5                     | 348.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 39.7              | 54.0                 | -14.3                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4961.500   | 32.1             | 4.4         | 1.5                     | 286.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 39.7              | 54.0                 | -14.3                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12410.080  | 29.0             | 5.9         | 1.6                     | 37.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 38.1              | 54.0                 | -15.9                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12408.980  | 29.0             | 5.9         | 3.2                     | 185.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 38.1              | 54.0                 | -15.9                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7446.958   | 44.0             | 12.3        | 1.5                     | 188.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 56.3              | 74.0                 | -17.7                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7445.392   | 43.4             | 12.3        | 3.2                     | 236.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 55.7              | 74.0                 | -18.3                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.783   | 43.2             | 12.3        | 1.5                     | 185.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 55.5              | 74.0                 | -18.5                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 7445.158   | 43.0             | 12.3        | 3.9                     | 137.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 55.3              | 74.0                 | -18.7                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7444.883   | 42.2             | 12.3        | 3.4                     | 234.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 54.5              | 74.0                 | -19.5                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.692   | 42.2             | 12.3        | 1.5                     | 20.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 54.5              | 74.0                 | -19.5                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 4964.058   | 43.3             | 4.5         | 1.5                     | 348.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 47.8              | 74.0                 | -26.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 4961.775   | 43.1             | 4.4         | 1.5                     | 286.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12410.200  | 40.9             | 5.9         | 3.2                     | 185.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 12412.000  | 39.9             | 5.9         | 1.6                     | 37.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 45.8              | 74.0                 | -28.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |

# SPURIOUS RADIATED EMISSIONS

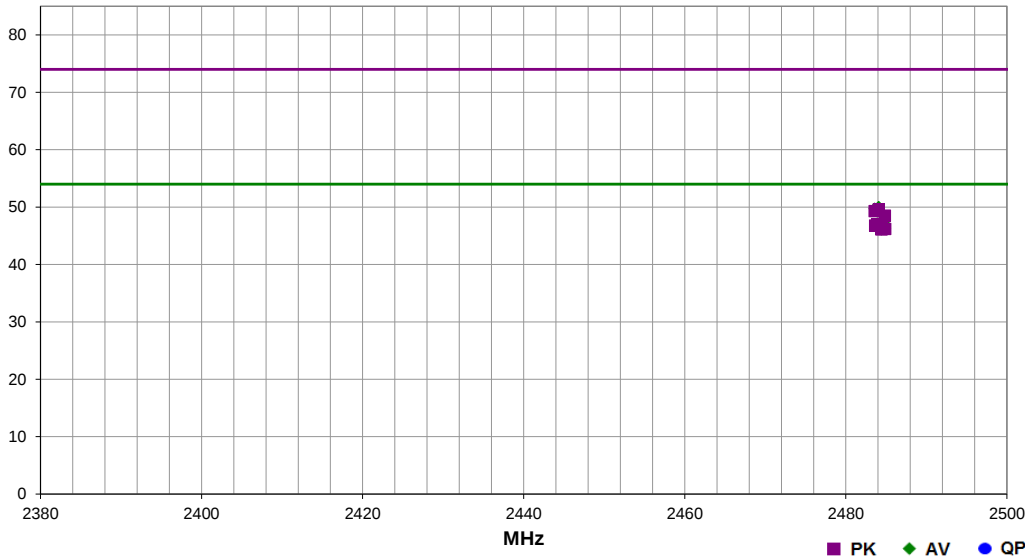


EnrRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                                                                                     | Date:             | 2020-11-20 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                         | Temperature:      | 23.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                         | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                | Barometric Pres.: | 1033 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -8 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/4/21. |                   |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2021     | ANSI C63.10:2013 |

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 5 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2484.080   | 27.6                        | -0.8        | 1.9                     | 160.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.0              | 54.0                 | -4.0                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 76.6dBuV + -49.0dBc = 27.6dBuV (calc. amp.) |
| 2483.573   | 27.3                        | -0.8        | 1.0                     | 169.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 49.7              | 54.0                 | -4.3                   | High Ch., Port7, EUT on Side, Ant on Side: Fund 75.3dBuV + -48.0dBc = 27.3dBuV (calc. amp.)  |
| 2484.853   | 25.2                        | -0.8        | 1.5                     | 226.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.6              | 54.0                 | -6.4                   | High Ch., Port7, EUT on Side, Ant on Side: Fund 49.9dBuV + -24.7dBc = 25.2dBuV (calc. amp.)  |
| 2483.887   | 24.7                        | -0.8        | 4.0                     | 175.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 60.1dBuV + -35.4dBc = 24.7dBuV (calc. amp.) |
| 2484.507   | 24.6                        | -0.8        | 3.2                     | 83.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., Port 8, EUT Horz, Ant Horz: Fund 64.2dBuV + -39.6dBc = 24.6dBuV (calc. amp.)       |
| 2483.653   | 24.3                        | -0.8        | 1.2                     | 197.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 58.1dBuV + -33.8dBc = 24.3dBuV (calc. amp.)       |
| 2484.893   | 23.9                        | -0.8        | 4.0                     | 164.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.3              | 54.0                 | -7.7                   | High Ch., Port 8, EUT Horz, Ant Horz: Fund 62.0dBuV + -38.1dBc = 23.9dBuV (calc. amp.)       |
| 2484.427   | 23.7                        | -0.8        | 1.6                     | 120.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.1              | 54.0                 | -7.9                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 59.7dBuV + -36.0dBc = 23.7dBuV (calc. amp.)       |
| 2484.080   | 30.4                        | -0.8        | 1.9                     | 160.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 49.6              | 74.0                 | -24.4                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 79.4dBuV + -49.0dBc = 30.4dBuV (calc. amp.) |
| 2483.573   | 30.1                        | -0.8        | 1.0                     | 169.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.3              | 74.0                 | -24.7                  | High Ch., Port7, EUT on Side, Ant on Side: Fund 78.1dBuV + -48.0dBc = 30.1dBuV (calc. amp.)  |
| 2484.853   | 29.3                        | -0.8        | 1.5                     | 226.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.5              | 74.0                 | -25.5                  | High Ch., Port7, EUT on Side, Ant on Side: Fund 54.0dBuV + -24.7dBc = 29.3dBuV (calc. amp.)  |
| 2483.887   | 27.8                        | -0.8        | 4.0                     | 175.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 79.4dBuV + -49.0dBc = 30.4dBuV (calc. amp.) |
| 2483.653   | 27.6                        | -0.8        | 1.2                     | 197.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 61.4dBuV + -33.8dBc = 27.6dBuV (calc. amp.)       |
| 2484.507   | 27.6                        | -0.8        | 3.2                     | 83.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | High Ch., Port 8, EUT Horz, Ant Horz: Fund 67.2dBuV + -39.6dBc = 27.6dBuV (calc. amp.)       |
| 2484.893   | 27.0                        | -0.8        | 4.0                     | 164.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.2              | 74.0                 | -27.8                  | High Ch., Port 8, EUT Horz, Ant Horz: Fund 65.1dBuV + -38.1dBc = 27.0dBuV (calc. amp.)       |

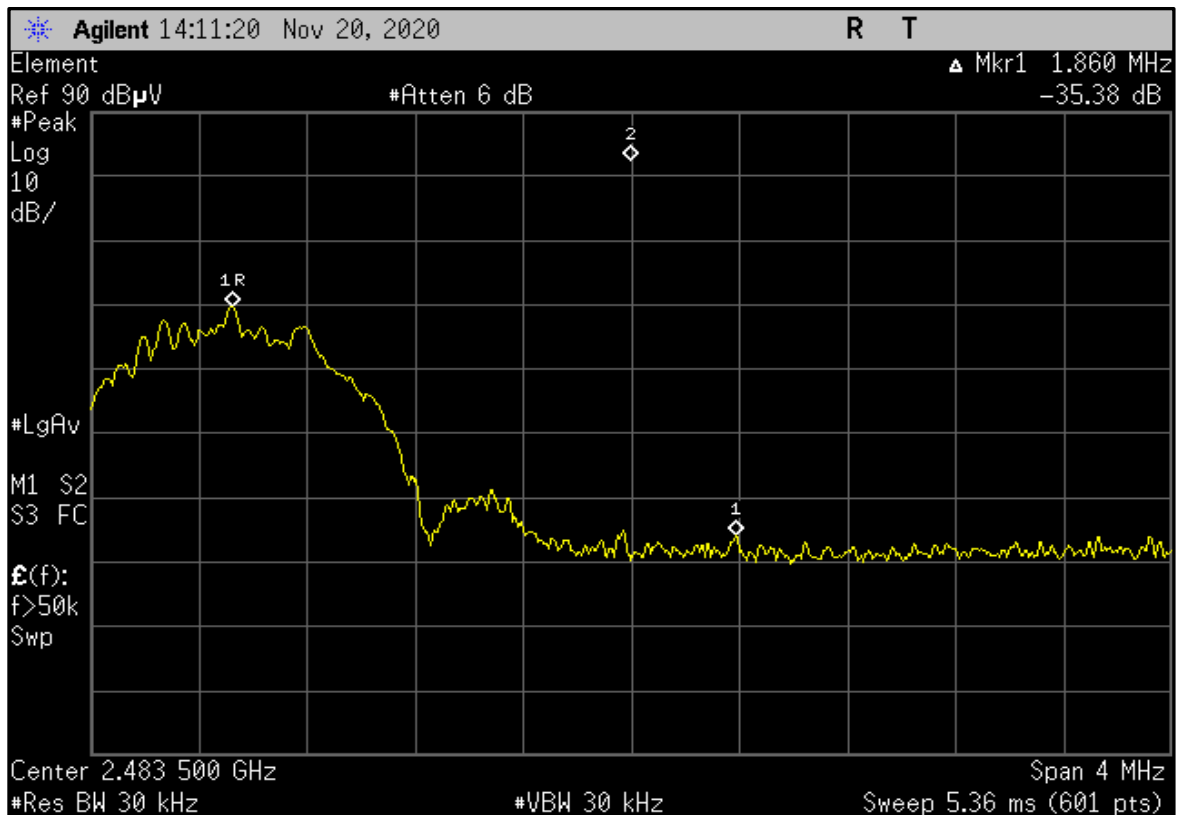
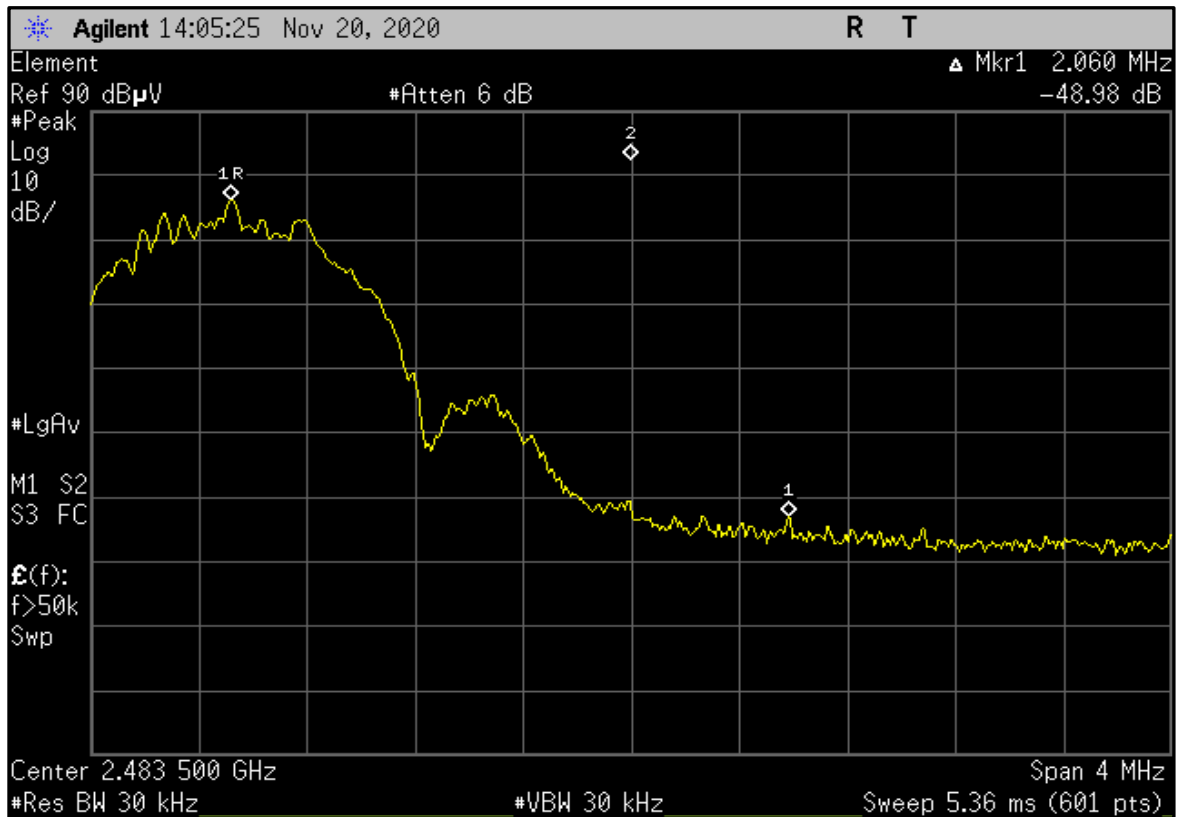
| Freq<br>(MHz) | Calculated<br>Amplitude<br>(dBuV) | Factor<br>(dB) | Antenna Height<br>(meters) | Azimuth<br>(degrees) | Duty Cycle<br>Correction<br>Factor<br>(dB) | External<br>Attenuation<br>(dB) | Polarity/<br>Transducer<br>Type | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>(dBuV/m) | Spec. Limit<br>(dBuV/m) | Compared to<br>Spec.<br>(dB) | Marker Delta Comments                                                                     |
|---------------|-----------------------------------|----------------|----------------------------|----------------------|--------------------------------------------|---------------------------------|---------------------------------|----------|--------------------------------|----------------------|-------------------------|------------------------------|-------------------------------------------------------------------------------------------|
| 2484.427      | 26.9                              | -0.8           | 1.6                        | 120.0                | 0.0                                        | 20.0                            | Vert                            | PK       | 0.0                            | 46.1                 | 74.0                    | -27.9                        | High Ch., Port 8, EUT Vert, Ant Vert: Fund 62.9dBuV<br>+ -36.0dBc = 26.9dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



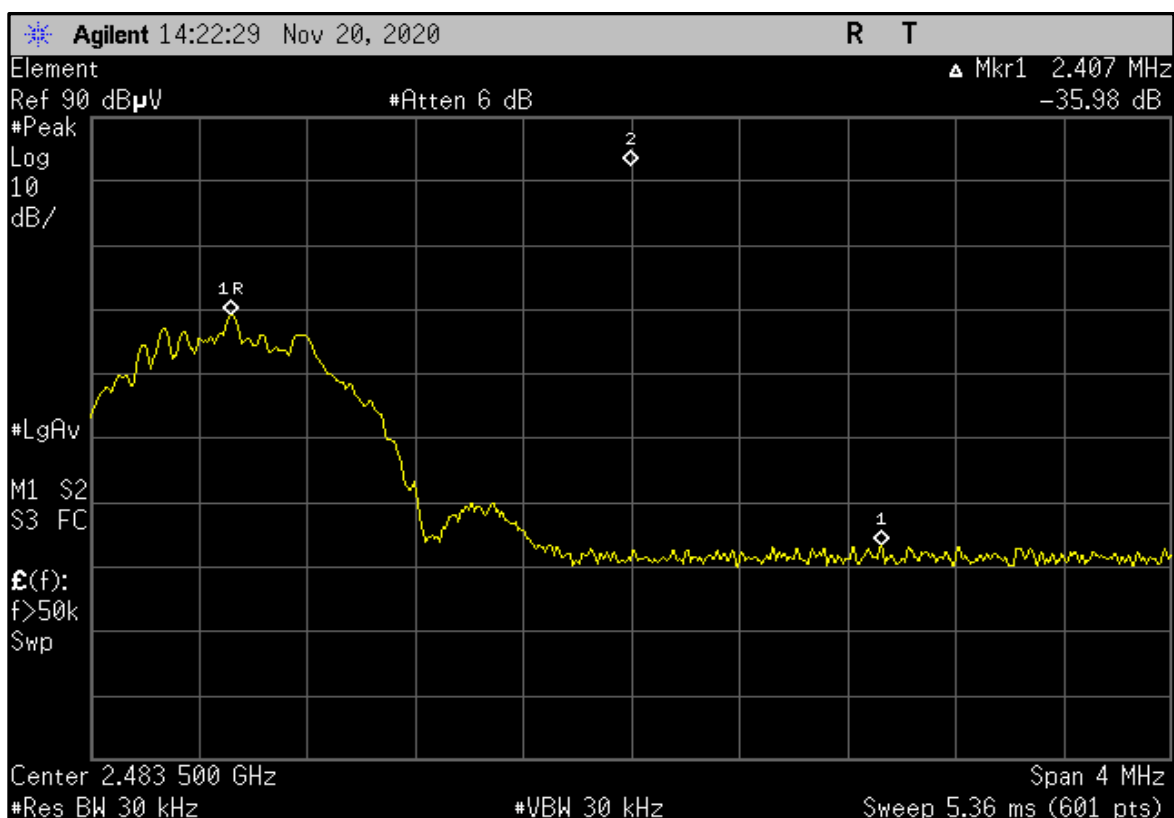
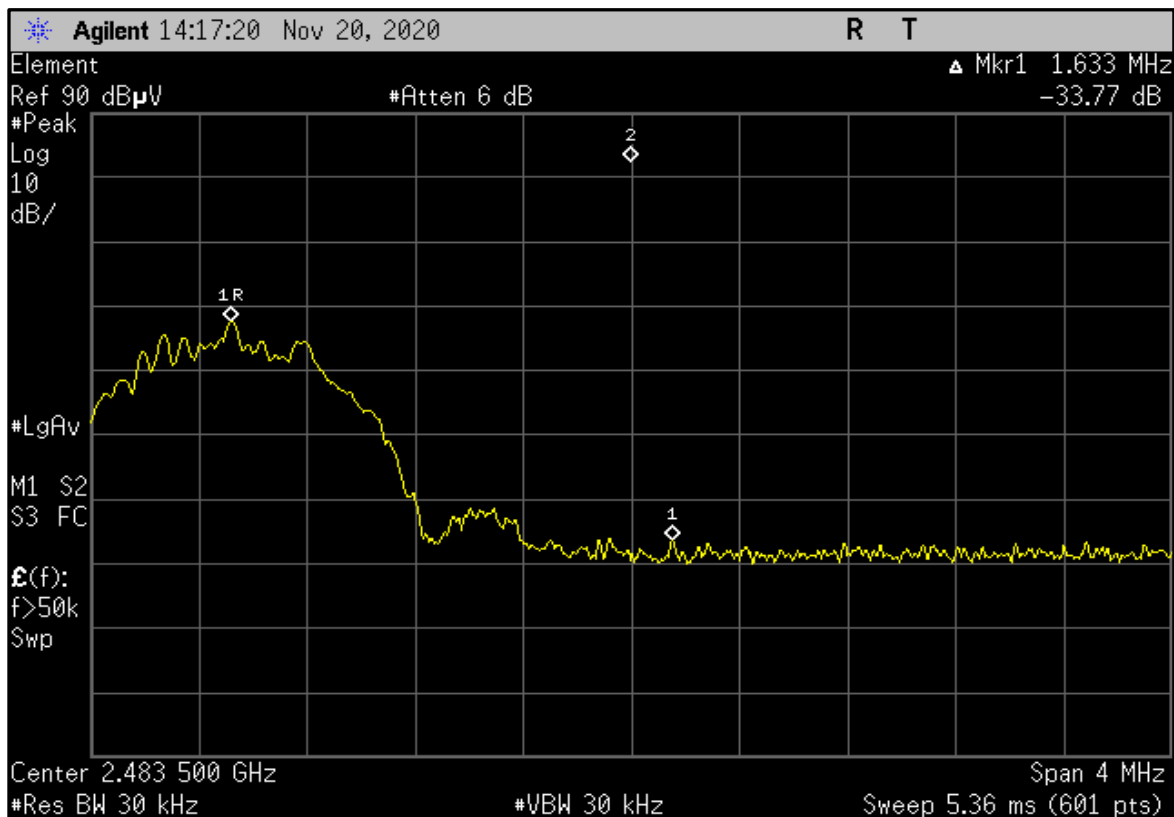
High Ch., Port 8, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



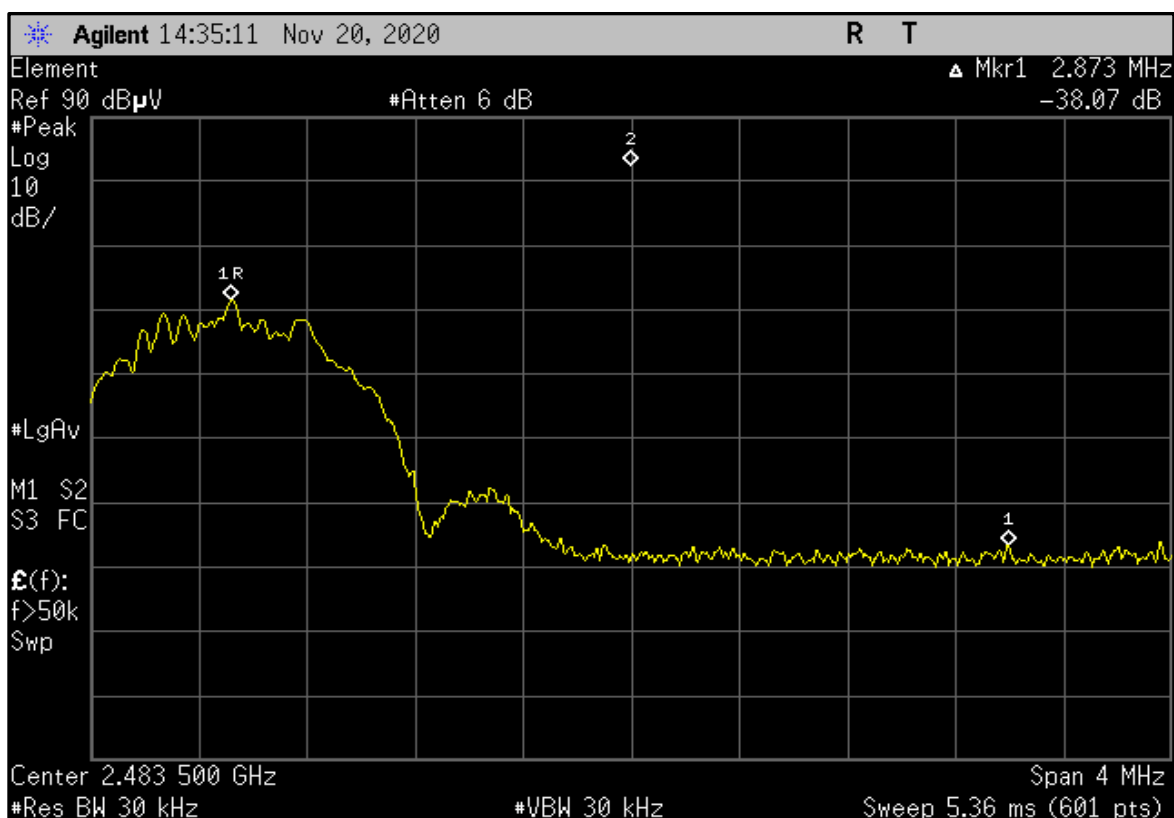
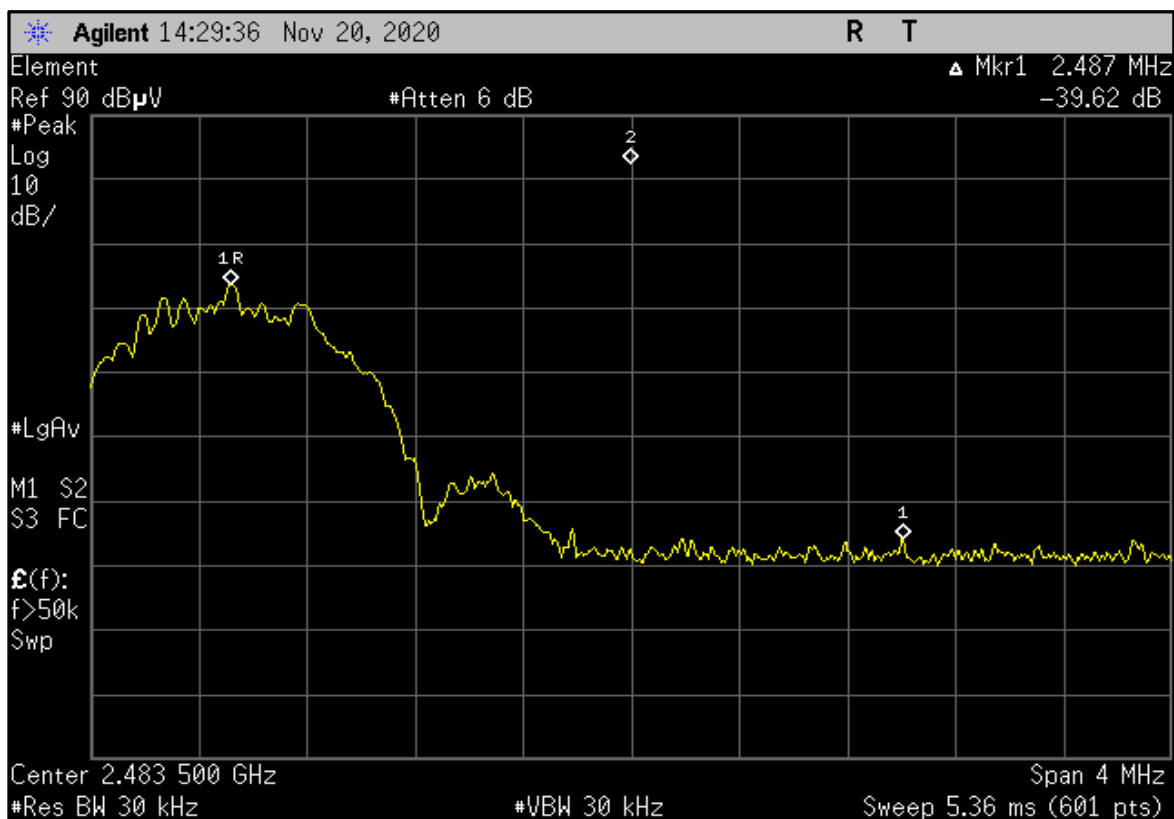
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



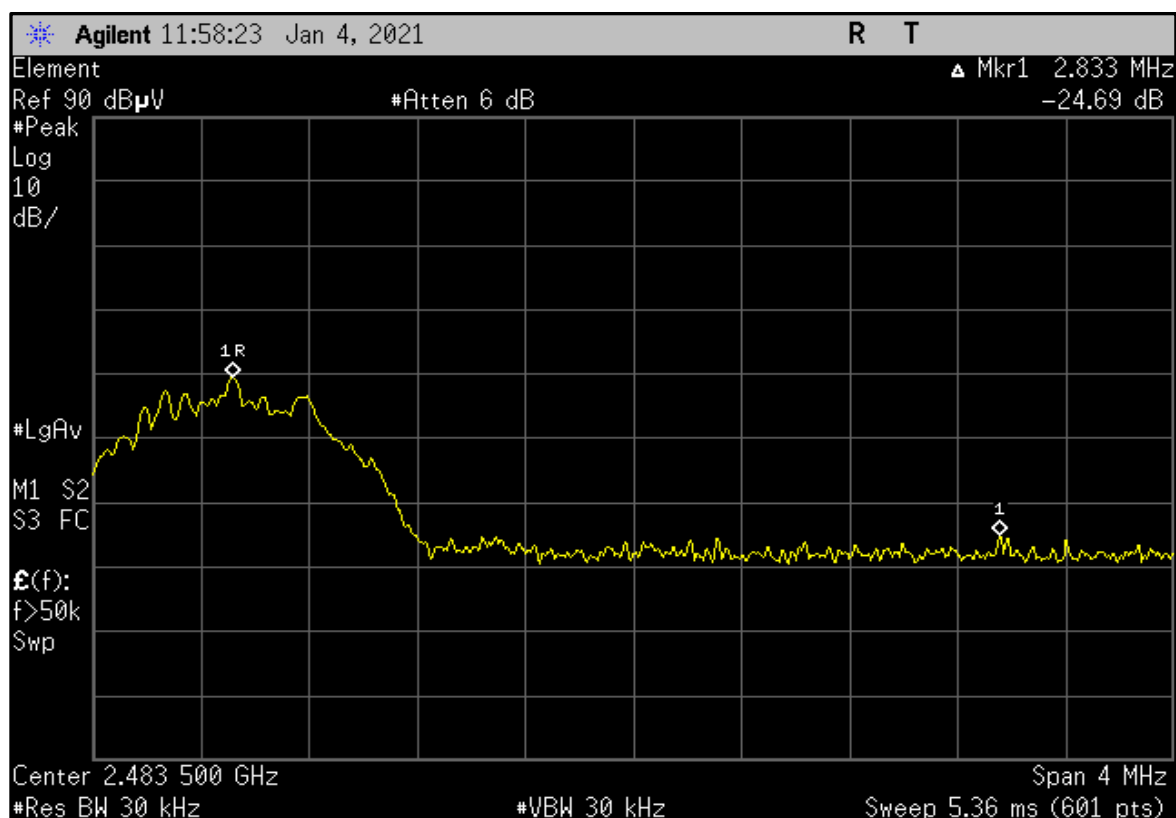
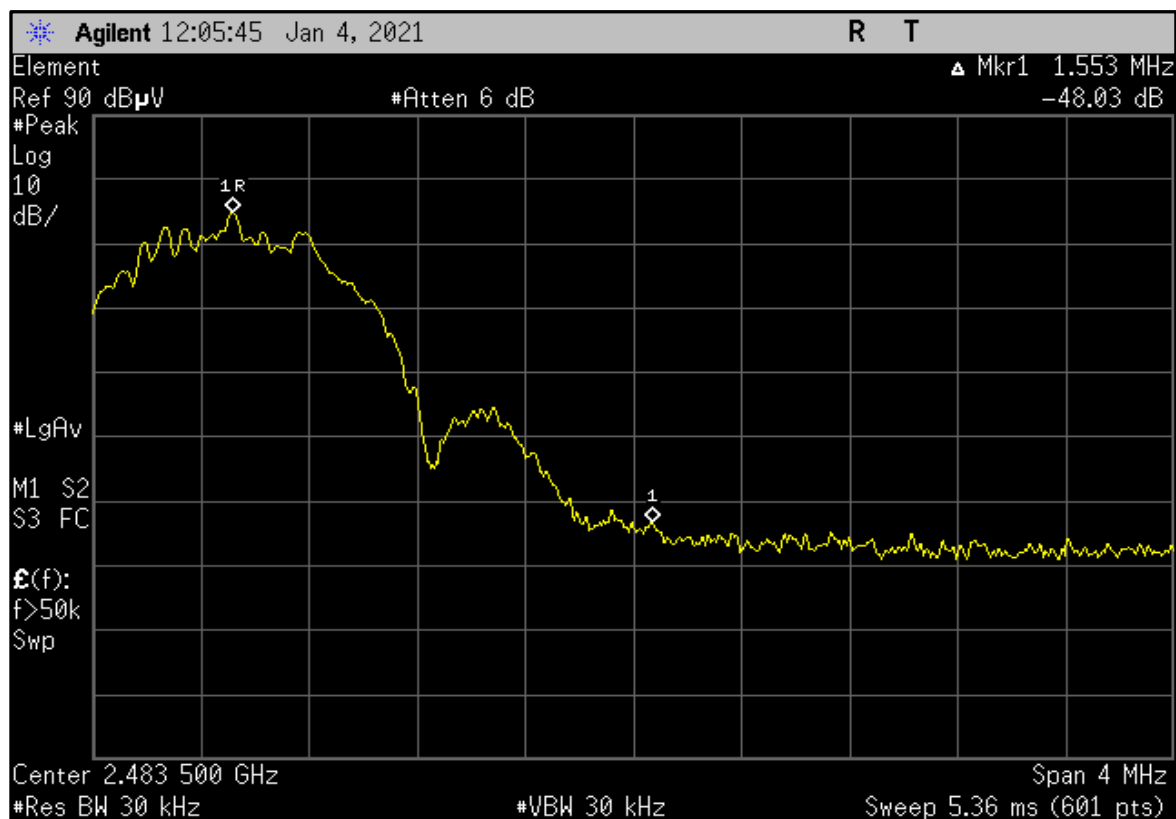
High Ch., Port 8, EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



High Ch., Port7, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



High Ch., Port7, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS

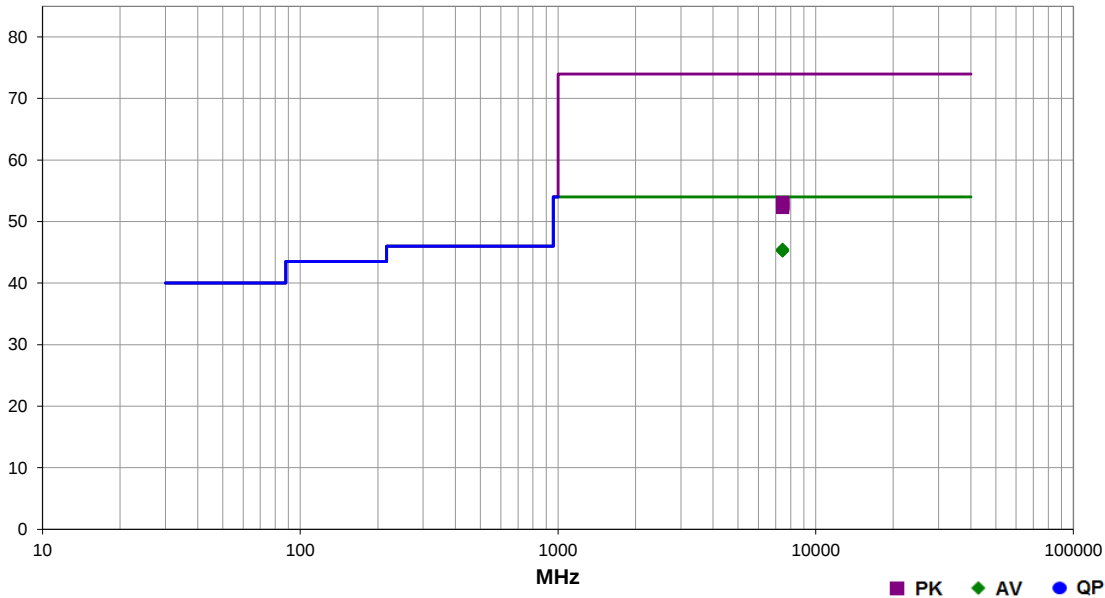


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                            |                        |            |                                                                                    |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                   | Date:                  | 2020-11-20 |  |
| Project:        | None                                                                                                                                                                                                                                       | Temperature:           | 23.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                       | Humidity:              | 35.3% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                              | Barometric Pres.:      | 1033 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                            | Tested by: Brian Fahey |            |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                  |                        |            |                                                                                    |
| Configuration:  | 1                                                                                                                                                                                                                                          |                        |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                     |                        |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                       |                        |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                        |                        |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -8 dBm, High Channel = 2482 MHz.                                                                                                              |                        |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                       |                        |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. Spot check for worst case harmonic from 0 dBm power setting measurements. Port 7 measurements were taken on 1/4/21. |                        |            |                                                                                    |
|                 | The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478).           |                        |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2021     | ANSI C63.10:2013 |

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 6 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                             |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------|
| 7446.950   | 27.3             | 15.0        | 1.5                     | 104.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.5              | 54.0                 | -8.5                   | High Ch., Port 7, EUT Vert, Ant Vert |
| 7445.675   | 27.2             | 15.0        | 1.5                     | 187.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Vert, Ant Vert |
| 7447.067   | 27.1             | 15.0        | 1.5                     | 158.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 8, EUT Vert, Ant Vert |
| 7446.333   | 27.0             | 15.0        | 4.0                     | 8.0               | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Vert, Ant Vert |
| 7444.092   | 38.1             | 15.0        | 1.5                     | 187.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 53.1              | 74.0                 | -20.9                  | High Ch., Port 7, EUT Vert, Ant Vert |
| 7447.808   | 37.9             | 15.0        | 1.5                     | 158.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.9              | 74.0                 | -21.1                  | High Ch., Port 8, EUT Vert, Ant Vert |
| 7445.292   | 37.8             | 15.0        | 1.5                     | 104.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.8              | 74.0                 | -21.2                  | High Ch., Port 7, EUT Vert, Ant Vert |
| 7446.908   | 37.3             | 15.0        | 4.0                     | 8.0               | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.3              | 74.0                 | -21.7                  | High Ch., Port 8, EUT Vert, Ant Vert |

# SPURIOUS RADIATED EMISSIONS

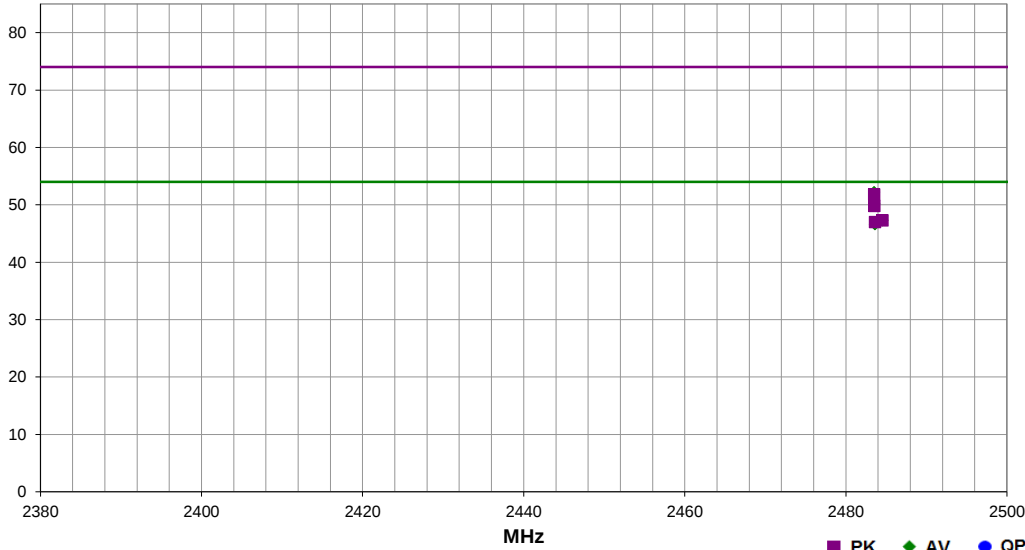


EnviRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-11-20 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 23.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1033 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -8 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/4/21. |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2021 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 7 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



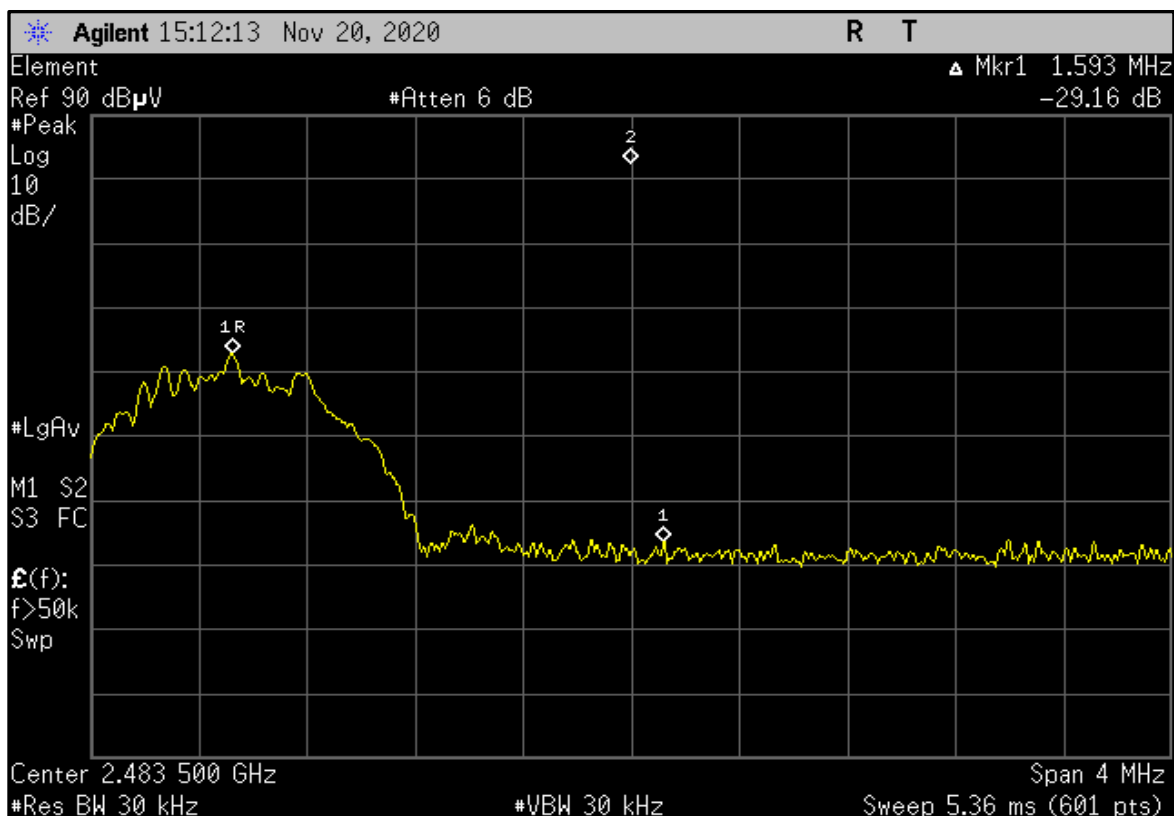
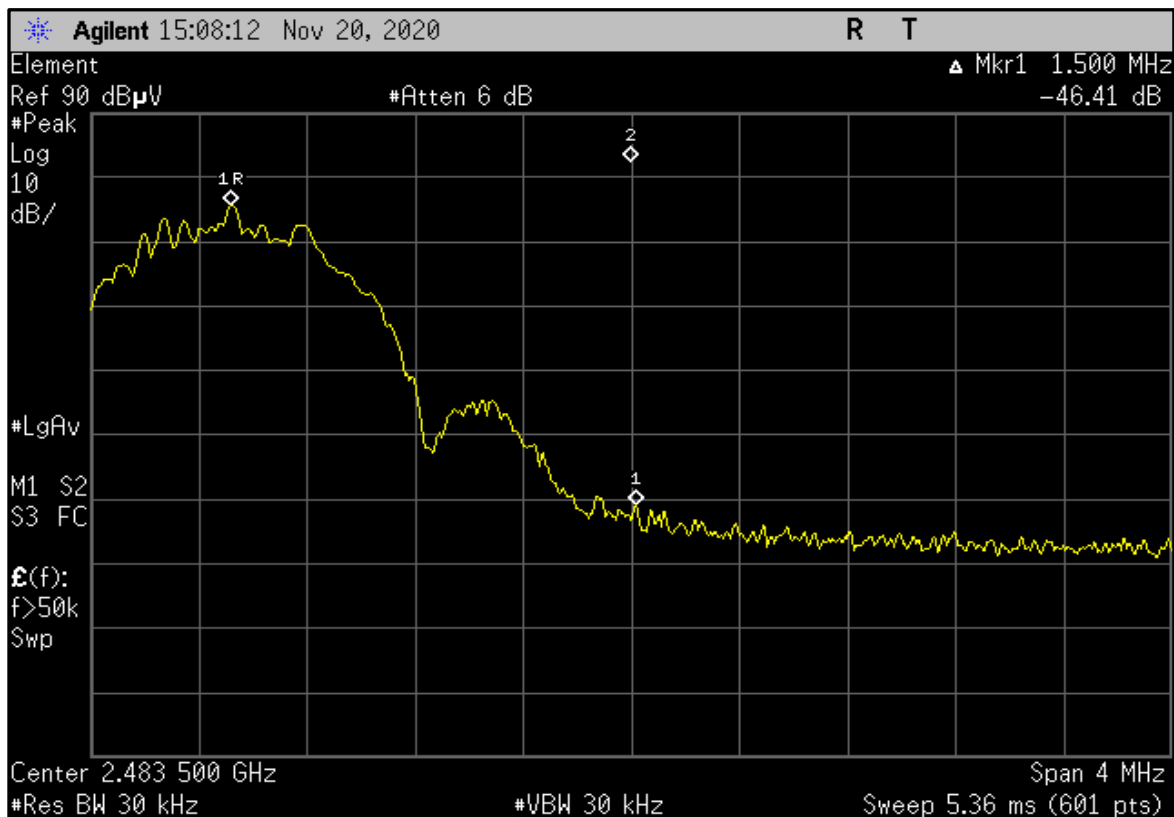
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2483.520   | 29.8                        | -0.8        | 1.5                     | 152.0             | 3.2                               | 20.0                      | Horz                     | AV       | 0.0                      | 52.2              | 54.0                 | -1.8                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 76.2dBuV + -46.4dBc = 29.8dBuV (calc. amp.) |
| 2483.540   | 27.8                        | -0.8        | 1.5                     | 160.0             | 3.2                               | 20.0                      | Horz                     | AV       | 0.0                      | 50.2              | 54.0                 | -3.8                   | High Ch., Port 7, EUT on Side, Ant on Side: Fund 75.6dBuV + -47.8dBc = 27.8dBuV (calc. amp.) |
| 2484.540   | 24.9                        | -0.8        | 3.8                     | 182.0             | 3.2                               | 20.0                      | Vert                     | AV       | 0.0                      | 47.3              | 54.0                 | -6.7                   | High Ch., Port 7, EUT on Side, Ant on Side: Fund 60.2dBuV + -35.3dBc = 24.9dBuV (calc. amp.) |
| 2483.620   | 24.2                        | -0.8        | 1.6                     | 230.0             | 3.2                               | 20.0                      | Vert                     | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 53.4dBuV + -29.2dBc = 24.2dBuV (calc. amp.) |
| 2483.520   | 32.6                        | -0.8        | 1.5                     | 152.0             | 0.0                               | 20.0                      | Horz                     | PK       | 0.0                      | 51.8              | 74.0                 | -22.2                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 79.0dBuV + -46.4dBc = 32.6dBuV (calc. amp.) |
| 2483.540   | 30.6                        | -0.8        | 1.5                     | 160.0             | 0.0                               | 20.0                      | Horz                     | PK       | 0.0                      | 49.8              | 74.0                 | -24.2                  | High Ch., Port 7, EUT on Side, Ant on Side: Fund 78.4dBuV + -47.8dBc = 30.6dBuV (calc. amp.) |
| 2484.540   | 28.1                        | -0.8        | 3.8                     | 182.0             | 0.0                               | 20.0                      | Vert                     | PK       | 0.0                      | 47.3              | 74.0                 | -26.7                  | High Ch., Port 7, EUT on Side, Ant on Side: Fund 63.4dBuV + -35.3dBc = 28.1dBuV (calc. amp.) |
| 2483.620   | 27.8                        | -0.8        | 1.6                     | 230.0             | 0.0                               | 20.0                      | Vert                     | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 57.0dBuV + -29.2dBc = 27.8dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



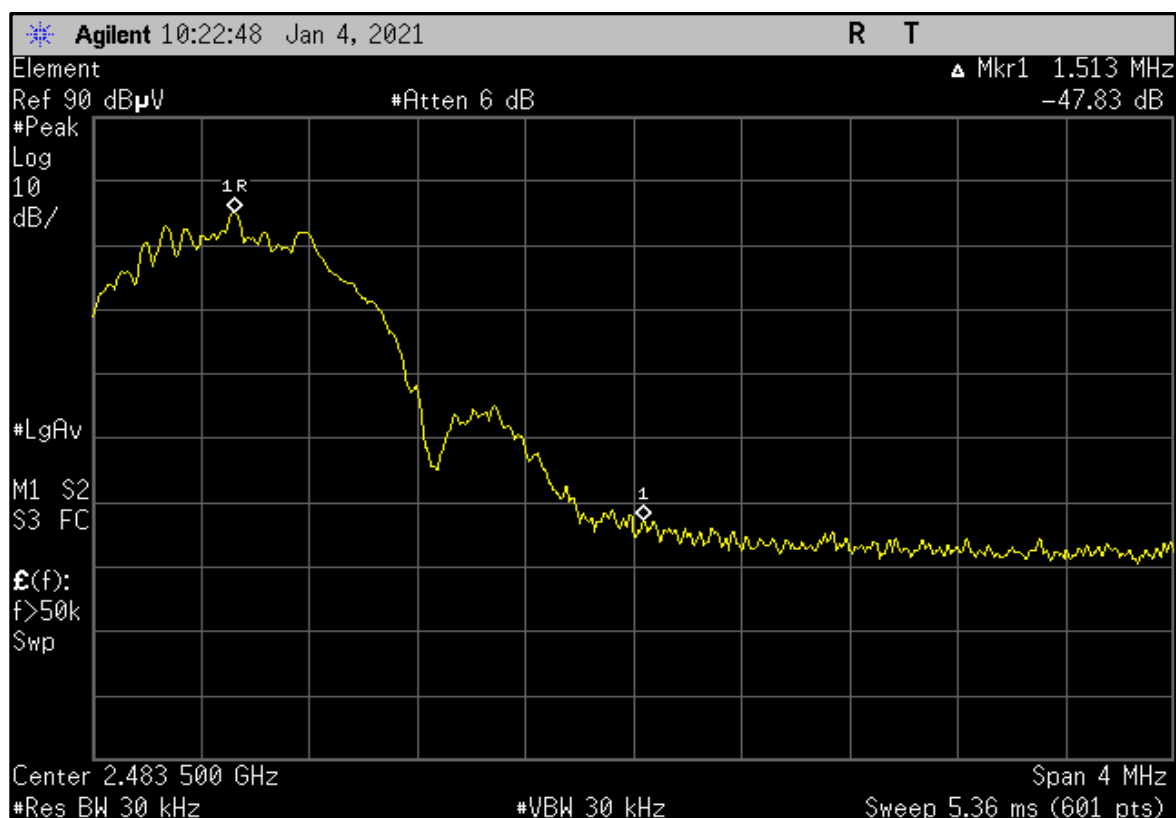
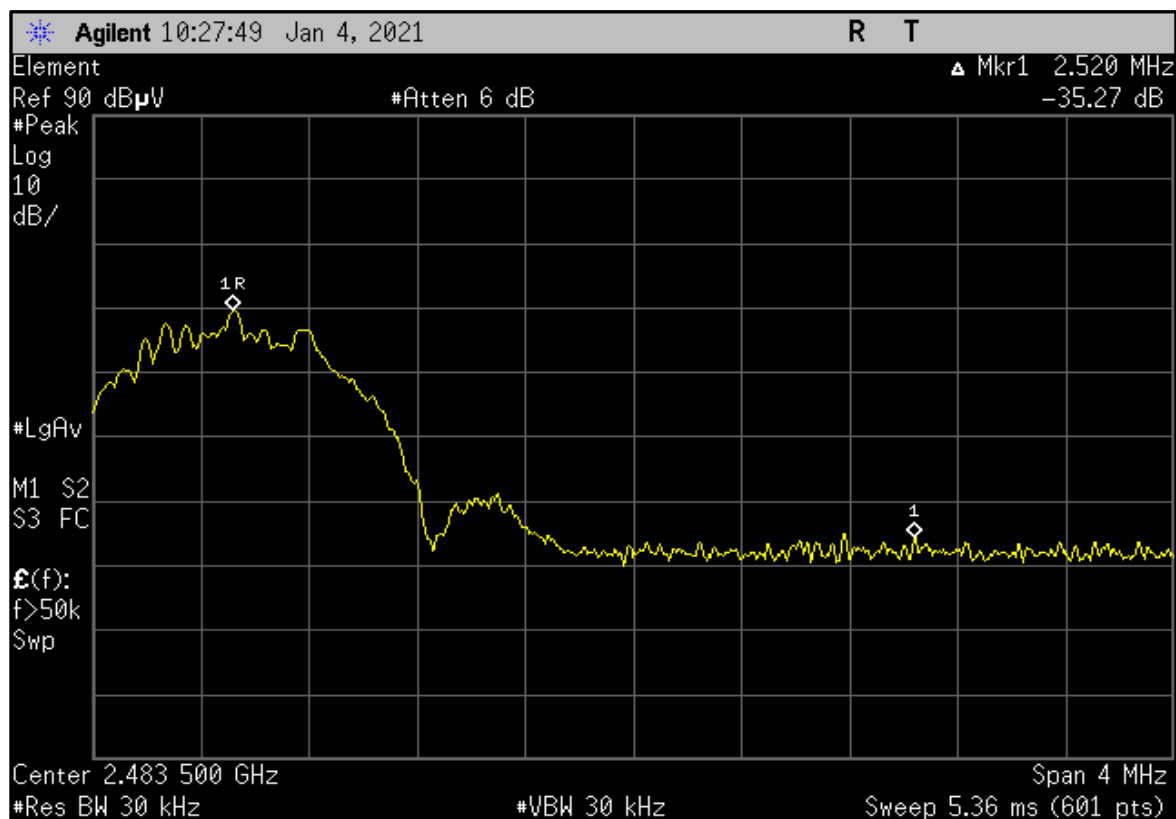
High Ch., Port 8, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



High Ch., Port 7, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS

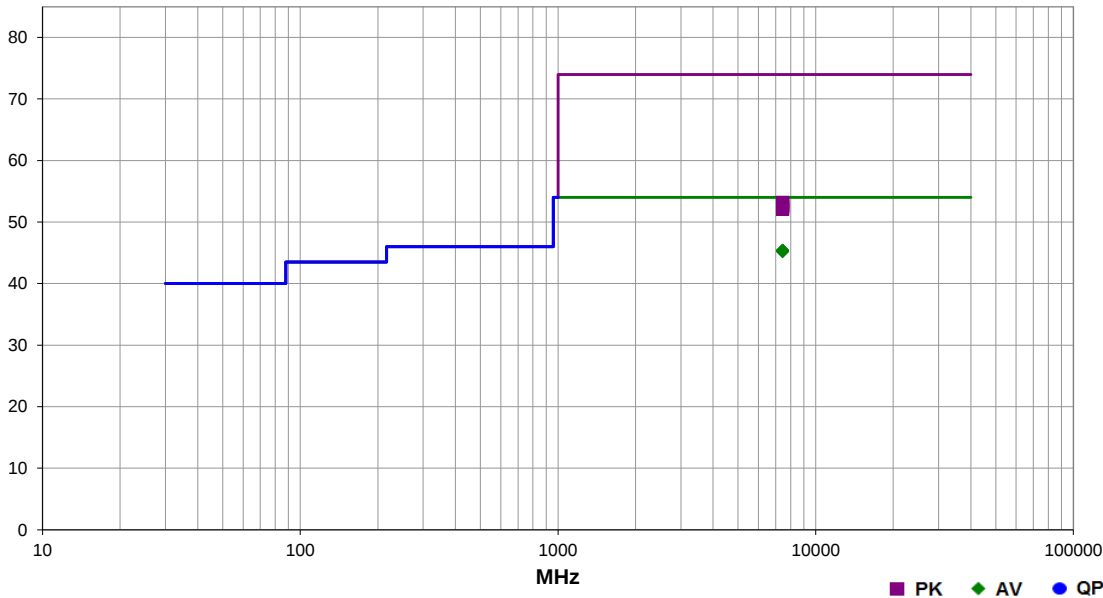


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                            |                   |            |                                                                                    |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                   | Date:             | 2020-11-20 |  |
| Project:        | None                                                                                                                                                                                                                                       | Temperature:      | 23.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                       | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                              | Barometric Pres.: | 1033 mbar  | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                  |                   |            |                                                                                    |
| Configuration:  | 2                                                                                                                                                                                                                                          |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                     |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                      |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24130P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -8 dBm, High Channel = 2482 MHz.                                                                                                              |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. Spot check for worst case harmonic from 0 dBm power setting measurements. Port 7 measurements were taken on 1/4/21. |                   |            |                                                                                    |
|                 | The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478).           |                   |            |                                                                                    |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2021     | ANSI C63.10:2013 |

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 8 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                             |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------|
| 7443.592   | 27.2             | 15.0        | 1.1                     | 289.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Vert, Ant Vert |
| 7445.958   | 27.2             | 15.0        | 1.5                     | 193.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT Vert, Ant Vert |
| 7445.325   | 27.1             | 15.0        | 1.5                     | 341.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 8, EUT Vert, Ant Vert |
| 7444.467   | 27.0             | 15.0        | 1.5                     | 86.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Vert, Ant Vert |
| 7446.925   | 38.2             | 15.0        | 1.5                     | 86.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 53.2              | 74.0                 | -20.8                  | High Ch., Port 8, EUT Vert, Ant Vert |
| 7448.433   | 37.7             | 15.0        | 1.5                     | 193.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.7              | 74.0                 | -21.3                  | High Ch., Port 7, EUT Vert, Ant Vert |
| 7443.817   | 37.5             | 15.0        | 1.5                     | 341.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.5              | 74.0                 | -21.5                  | High Ch., Port 8, EUT Vert, Ant Vert |
| 7448.150   | 37.1             | 15.0        | 1.1                     | 289.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 52.1              | 74.0                 | -21.9                  | High Ch., Port 7, EUT Vert, Ant Vert |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Antenna PN: T24190P10006GT, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.

DTS Tx, Antenna PN: T24190P10006GT, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

POE via 120VAC/60Hz

24VDC via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 19

SYNA0309 - 18

SYNA0317 - 3

SYNA0317 - 4

## FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz

Stop Frequency | 26000 MHz

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHK | NCR        | 0 mo     |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-07                | AHX | NCR        | 0 mo     |
| Antenna - Double Ridge       | ETS Lindgren             | 3115                   | AIR | 2020-07-07 | 24 mo    |
| Antenna - Double Ridge       | A.H. Systems, Inc.       | SAS-574                | AXV | 2020-06-03 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVJ | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AVL | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AVP | 2020-03-02 | 12 mo    |
| Antenna - Biconilog          | EMCO                     | 3142                   | AXB | 2020-04-15 | 24 mo    |
| Cable                        | D-Coax                   | None                   | OC4 | 2019-12-16 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 30-1GHz cables         | OCW | 2020-05-01 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 1-8GHz cables          | OCX | 2020-03-02 | 12 mo    |
| Cable                        | ESM Cable Corp.          | 8-18GHz cables         | OCY | 2020-03-02 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAD | 2020-07-01 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | JSDWK42-18004000-60-5P | PAN | 2019-12-16 | 12 mo    |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HGC | 2020-03-11 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | HGK | 2020-01-20 | 12 mo    |
| Attenuator                   | S.M. Electronics         | SA6-20                 | REO | 2020-01-21 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |



## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

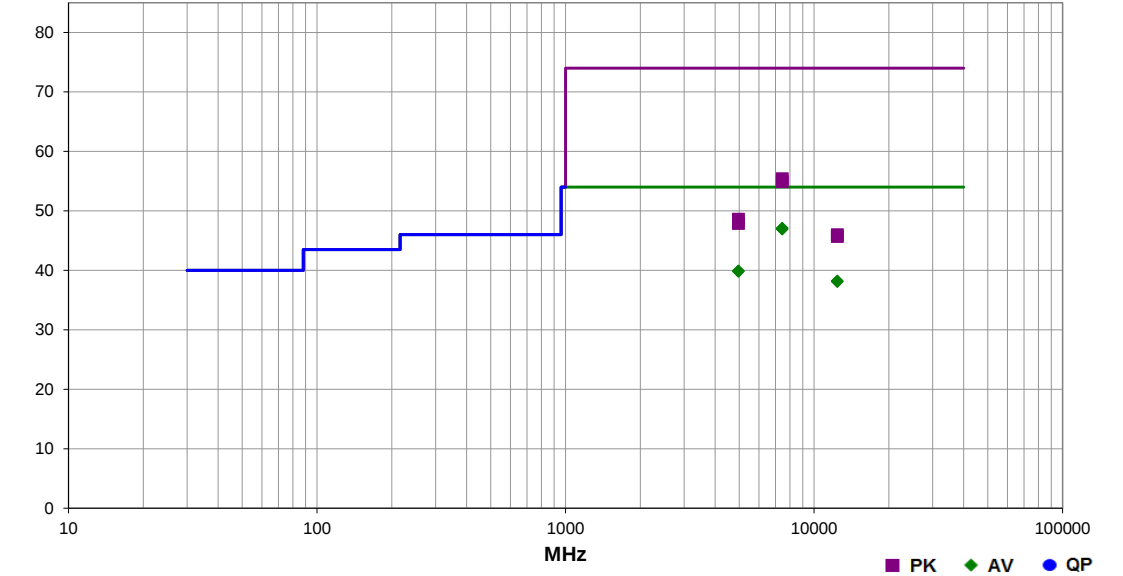
Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .



# SPURIOUS RADIATED EMISSIONS

|                   |                                                                                                                                                                                                                                                                                                                                                             |                       |            |                                                                                    |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|------------------------------------------------------------------------------------|
| EmRS 2020.06.24.4 |                                                                                                                                                                                                                                                                                                                                                             | PSA-ESCI 2020.06.24.2 |            |                                                                                    |
| Work Order:       | SYNA0309                                                                                                                                                                                                                                                                                                                                                    | Date:                 | 2020-10-29 |  |
| Project:          | None                                                                                                                                                                                                                                                                                                                                                        | Temperature:          | 19.5 °C    |                                                                                    |
| Job Site:         | OC07                                                                                                                                                                                                                                                                                                                                                        | Humidity:             | 41.8% RH   |                                                                                    |
| Serial Number:    | Rev. 10 - 012                                                                                                                                                                                                                                                                                                                                               | Barometric Pres.:     | 1019 mbar  |                                                                                    |
| EUT:              | RadioNode                                                                                                                                                                                                                                                                                                                                                   |                       |            |                                                                                    |
| Configuration:    | 19                                                                                                                                                                                                                                                                                                                                                          |                       |            |                                                                                    |
| Customer:         | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                      |                       |            |                                                                                    |
| Attendees:        | None                                                                                                                                                                                                                                                                                                                                                        |                       |            |                                                                                    |
| EUT Power:        | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                         |                       |            |                                                                                    |
| Operating Mode:   | DTS Tx, Antenna PN: T24190P10006GT, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.                                                                                                                                                                                                                                      |                       |            |                                                                                    |
| Deviations:       | None                                                                                                                                                                                                                                                                                                                                                        |                       |            |                                                                                    |
| Comments:         | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous BTLE testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) |                       |            |                                                                                    |

|                     |  |                  |  |
|---------------------|--|------------------|--|
| Test Specifications |  | Test Method      |  |
| FCC 15.247:2020     |  | ANSI C63.10:2013 |  |



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------------------|
| 7445.340   | 31.6             | 12.3        | 2.9                     | 105.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | High Ch, Port 8, EUT Horz, Antenna Horz |
| 7445.403   | 31.4             | 12.3        | 1.5                     | 20.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | High Ch, Port 8, EUT Vert, Antenna Vert |
| 4963.200   | 32.2             | 4.5         | 1.5                     | 352.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 39.9              | 54.0                 | -14.1                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 4963.287   | 32.1             | 4.5         | 2.8                     | 258.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 39.8              | 54.0                 | -14.2                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 12410.930  | 29.1             | 5.9         | 1.5                     | 299.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 38.2              | 54.0                 | -15.8                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 12409.400  | 29.0             | 5.9         | 1.4                     | 360.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 38.1              | 54.0                 | -15.9                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 7445.060   | 43.1             | 12.3        | 2.9                     | 105.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 55.4              | 74.0                 | -18.6                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 7446.833   | 42.6             | 12.3        | 1.5                     | 20.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 54.9              | 74.0                 | -19.1                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 4963.207   | 44.1             | 4.5         | 1.5                     | 352.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 48.6              | 74.0                 | -25.4                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 4964.703   | 43.4             | 4.5         | 2.8                     | 258.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch, Port 8, EUT Horz, Antenna Horz |
| 12410.450  | 40.1             | 5.9         | 1.4                     | 360.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 46.0              | 74.0                 | -28.0                  | High Ch, Port 8, EUT Vert, Antenna Vert |
| 12409.910  | 39.8             | 5.9         | 1.5                     | 299.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 45.7              | 74.0                 | -28.3                  | High Ch, Port 8, EUT Horz, Antenna Horz |

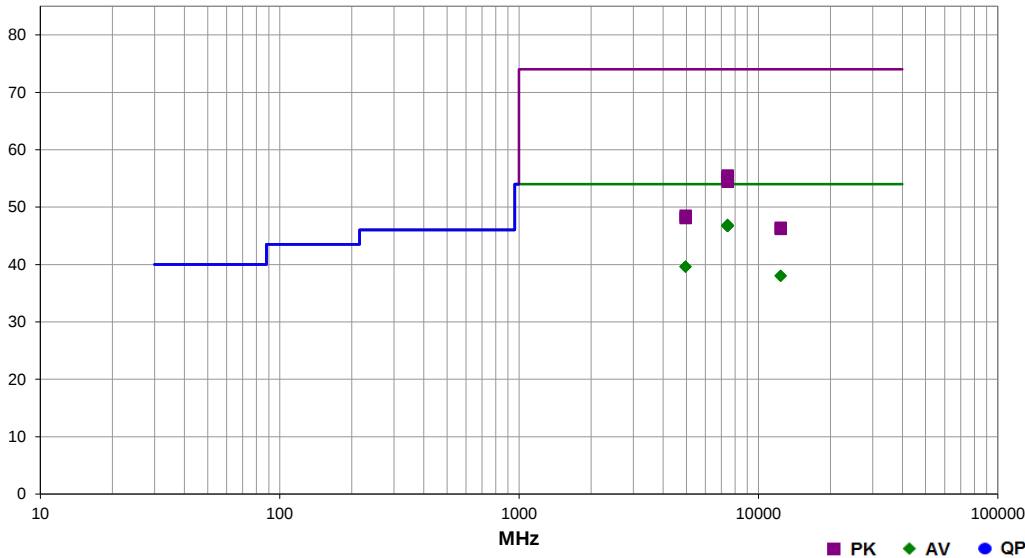
# SPURIOUS RADIATED EMISSIONS



|                 |               |                                                                                                                                                                                                                                                                                           |            |                                                                                    |
|-----------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309      | Date:                                                                                                                                                                                                                                                                                     | 2020-10-28 |  |
| Project:        | None          | Temperature:                                                                                                                                                                                                                                                                              | 20 °C      |                                                                                    |
| Job Site:       | OC07          | Humidity:                                                                                                                                                                                                                                                                                 | 33.6% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 012 | Barometric Pres.:                                                                                                                                                                                                                                                                         | 1021 mbar  |                                                                                    |
| EUT:            |               | RadioNode                                                                                                                                                                                                                                                                                 |            |                                                                                    |
| Configuration:  |               | 18                                                                                                                                                                                                                                                                                        |            |                                                                                    |
| Customer:       |               | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                    |            |                                                                                    |
| Attendees:      |               | None                                                                                                                                                                                                                                                                                      |            |                                                                                    |
| EUT Power:      |               | 24VDC                                                                                                                                                                                                                                                                                     |            |                                                                                    |
| Operating Mode: |               | DTS Tx, Antenna PN: T24190P10006GT, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = 0 dBm, High Channel = 2482 MHz.                                                                                                                                                                    |            |                                                                                    |
| Deviations:     |               | None                                                                                                                                                                                                                                                                                      |            |                                                                                    |
| Comments:       |               | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. $DCCF(dB) = 10 \cdot \log(1/0.478)$ |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 126 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-----------------------------------------------|
| 7444.067   | 31.4             | 12.3        | 1.5                     | 303.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.425   | 31.3             | 12.3        | 1.5                     | 288.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.608   | 31.2             | 12.3        | 1.5                     | 288.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7445.375   | 31.2             | 12.3        | 3.7                     | 0.0               | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7443.692   | 31.2             | 12.3        | 1.8                     | 151.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 7444.983   | 31.2             | 12.3        | 1.5                     | 73.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 4962.042   | 32.0             | 4.4         | 1.5                     | 21.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.6              | 54.0                 | -14.4                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4961.550   | 32.0             | 4.4         | 1.5                     | 164.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.6              | 54.0                 | -14.4                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 12409.720  | 28.9             | 5.9         | 1.6                     | 44.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 38.0              | 54.0                 | -16.0                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 12407.790  | 28.9             | 5.9         | 1.9                     | 73.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 38.0              | 54.0                 | -16.0                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7444.658   | 43.2             | 12.3        | 1.5                     | 288.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.5              | 74.0                 | -18.5                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7448.108   | 42.9             | 12.3        | 1.5                     | 73.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 55.2              | 74.0                 | -18.8                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 7446.083   | 42.8             | 12.3        | 1.5                     | 303.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.1              | 74.0                 | -18.9                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 7445.050   | 42.5             | 12.3        | 3.7                     | 0.0               | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.8              | 74.0                 | -19.2                  | High Ch, Port 8, EUT Vert, Antenna Vert       |
| 7448.267   | 42.4             | 12.3        | 1.8                     | 151.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 54.7              | 74.0                 | -19.3                  | High Ch, Port 8, EUT Horz, Antenna Horz       |
| 7445.042   | 42.1             | 12.3        | 1.5                     | 288.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.4              | 74.0                 | -19.6                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4962.308   | 44.1             | 4.4         | 1.5                     | 164.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.5              | 74.0                 | -25.5                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 4966.183   | 43.5             | 4.6         | 1.5                     | 21.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 12408.950  | 40.5             | 5.9         | 1.9                     | 73.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.4              | 74.0                 | -27.6                  | High Ch, Port 8, EUT On Side, Antenna On Side |
| 12407.500  | 40.3             | 5.9         | 1.6                     | 44.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.2              | 74.0                 | -27.8                  | High Ch, Port 8, EUT On Side, Antenna On Side |

# SPURIOUS RADIATED EMISSIONS

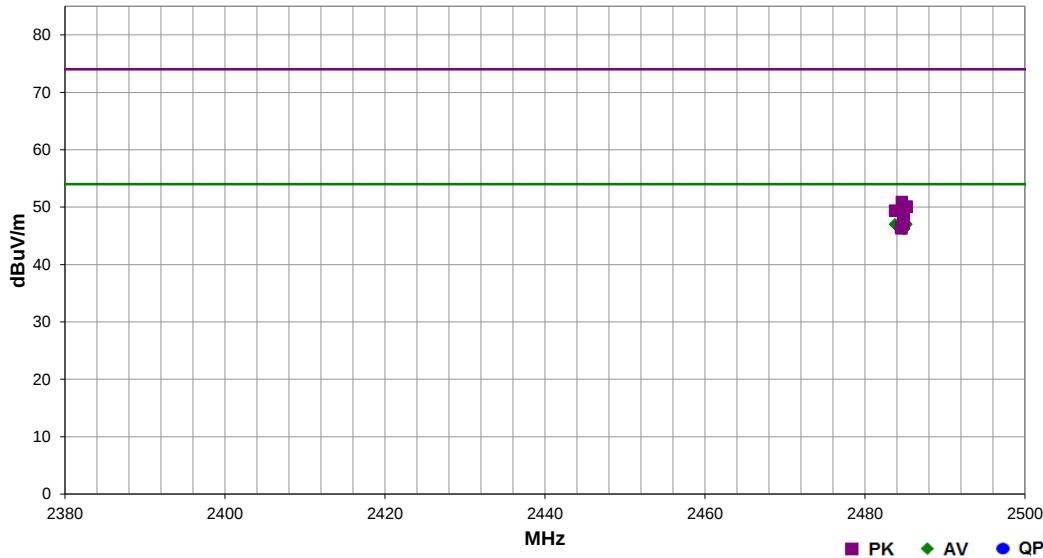


EnrRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                                                                                      | Date:             | 2020-11-23 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                          | Temperature:      | 22 °C      |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                          | Humidity:         | 38.1% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                 | Barometric Pres.: | 1018 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                     |                   |            |                                                                                    |
| Configuration:  | 3                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                        |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                           |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24190P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz                                                                                                                                                                                                  |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478) . Port 7 measurements were taken on 1/4/21. |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2021 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 43 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                        |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------------|
| 2484.620   | 25.0                        | -0.8        | 1.5                     | 331.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.4              | 54.0                 | -6.6                   | High Ch., Port 7, EUT Vert, Ant Vert: Fund 38.4dBuV + -13.4dBc = 25.0dBuV (calc. amp.)       |
| 2484.840   | 24.7                        | -0.8        | 4.0                     | 160.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | High Ch., Port 8, EUT Horz, Ant Horz: Fund 47.8dBuV + -23.1dBc = 24.7dBuV (calc. amp.)       |
| 2485.207   | 24.6                        | -0.8        | 1.5                     | 82.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 40.5dBuV + -15.9dBc = 24.6dBuV (calc. amp.) |
| 2483.760   | 24.6                        | -0.8        | 3.4                     | 9.0               | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., Port 7, EUT Horz, Ant Horz: Fund 42.4dBuV + -17.8dBc = 24.6dBuV (calc. amp.)       |
| 2484.787   | 24.3                        | -0.8        | 1.8                     | 134.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 44.0dBuV + -19.7dBc = 24.3dBuV (calc. amp.)       |
| 2484.513   | 24.2                        | -0.8        | 1.8                     | 163.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 60.2dBuV + -36.0dBc = 24.2dBuV (calc. amp.)       |
| 2484.573   | 24.0                        | -0.8        | 1.5                     | 161.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., Port 8, EUT on Side, Ant on Side: Fund 61.0dBuV + -37.0dBc = 24.0dBuV (calc. amp.) |
| 2484.867   | 23.7                        | -0.8        | 3.6                     | 82.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.1              | 54.0                 | -7.9                   | High Ch., Port 8, EUT Horz, Ant Horz: Fund 47.1dBuV + -23.4dBc = 23.7dBuV (calc. amp.)       |
| 2484.620   | 31.7                        | -0.8        | 1.5                     | 331.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 50.9              | 74.0                 | -23.1                  | High Ch., Port 7, EUT Vert, Ant Vert: Fund 45.1dBuV + -13.4dBc = 31.7dBuV (calc. amp.)       |
| 2485.207   | 30.9                        | -0.8        | 1.5                     | 82.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 50.1              | 74.0                 | -23.9                  | High Ch., Port 8, EUT on Side, Ant on Side: Fund 46.8dBuV + -15.9dBc = 30.9dBuV (calc. amp.) |
| 2483.760   | 30.2                        | -0.8        | 3.4                     | 9.0               | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.4              | 74.0                 | -24.6                  | High Ch., Port 7, EUT Horz, Ant Horz: Fund 48.0dBuV + -17.8dBc = 30.2dBuV (calc. amp.)       |
| 2484.787   | 29.3                        | -0.8        | 1.8                     | 134.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.5              | 74.0                 | -25.5                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 49.0dBuV + -19.7dBc = 29.3dBuV (calc. amp.)       |
| 2484.840   | 29.1                        | -0.8        | 4.0                     | 160.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.3              | 74.0                 | -25.7                  | High Ch., Port 8, EUT Horz, Ant Horz: Fund 52.2dBuV + -23.1dBc = 29.1dBuV (calc. amp.)       |
| 2484.867   | 28.1                        | -0.8        | 3.6                     | 82.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.3              | 74.0                 | -26.7                  | High Ch., Port 8, EUT Horz, Ant Horz: Fund 51.5dBuV + -23.4dBc = 28.1dBuV (calc. amp.)       |
| 2484.513   | 27.3                        | -0.8        | 1.8                     | 163.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.5              | 74.0                 | -27.5                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 63.3dBuV + -36.0dBc = 27.3dBuV (calc. amp.)       |

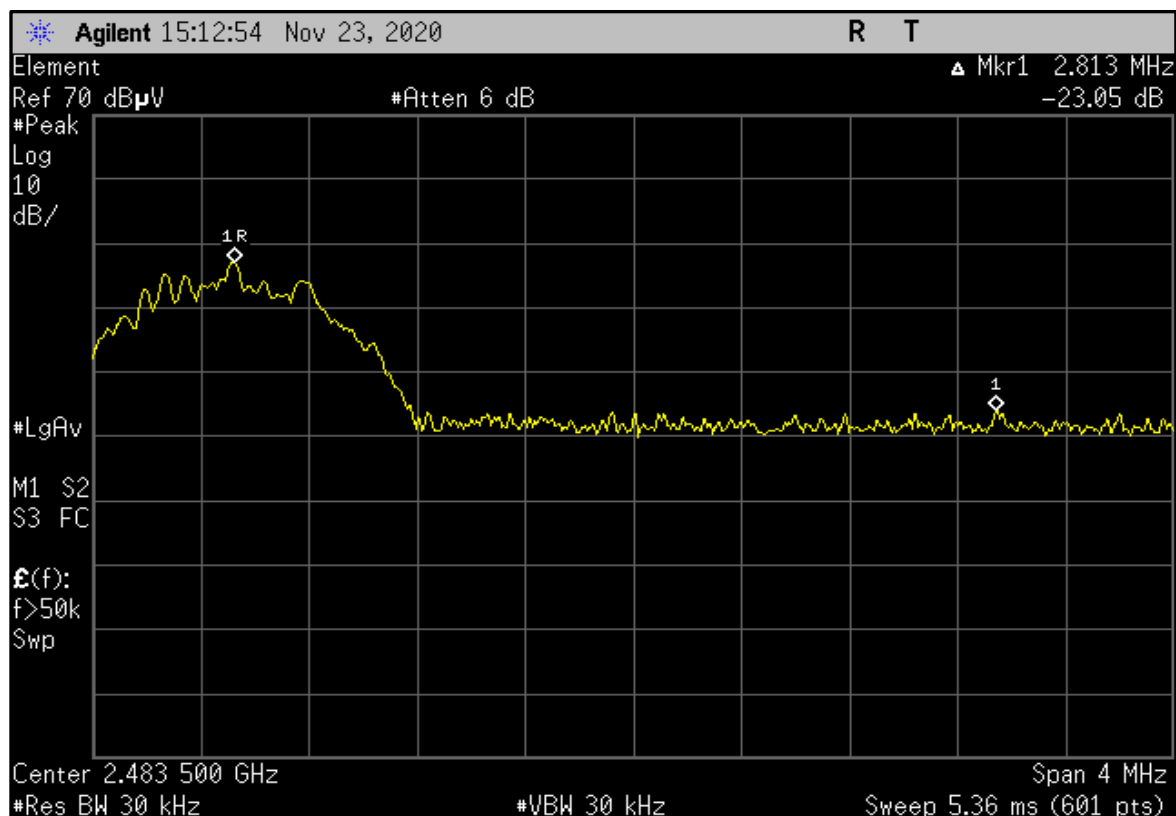
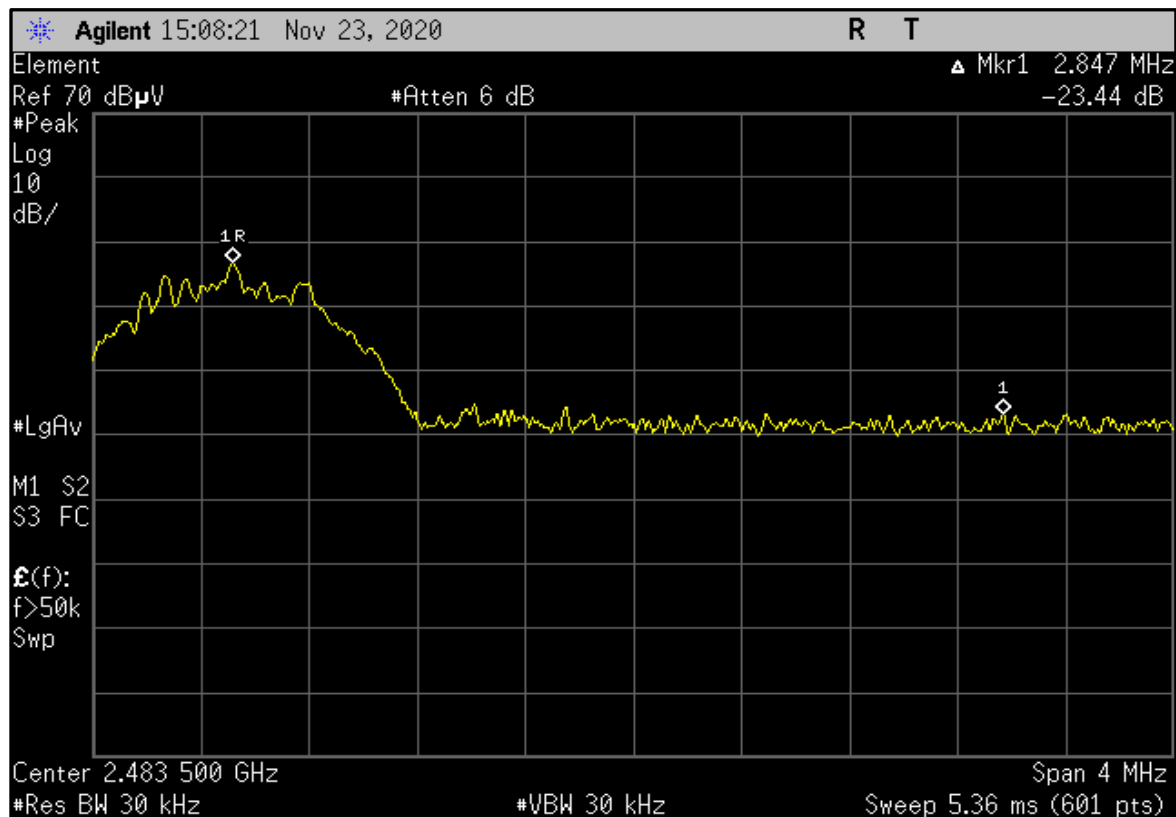
| Freq<br>(MHz) | Calculated<br>Amplitude<br>(dBuV) | Factor<br>(dB) | Antenna Height<br>(meters) | Azimuth<br>(degrees) | Duty Cycle<br>Correction<br>Factor<br>(dB) | External<br>Attenuation<br>(dB) | Polarity/<br>Transducer<br>Type | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>(dBuV/m) | Spec. Limit<br>(dBuV/m) | Compared to<br>Spec.<br>(dB) | Marker Delta Comments                                                                           |
|---------------|-----------------------------------|----------------|----------------------------|----------------------|--------------------------------------------|---------------------------------|---------------------------------|----------|--------------------------------|----------------------|-------------------------|------------------------------|-------------------------------------------------------------------------------------------------|
| 2484.573      | 27.1                              | -0.8           | 1.5                        | 161.0                | 0.0                                        | 20.0                            | Horz                            | PK       | 0.0                            | 46.3                 | 74.0                    | -27.7                        | High Ch., Port 8, EUT on Side, Ant on Side: Fund<br>64.1dBuV + -37.0dBc = 27.1dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Horz, Ant Horz

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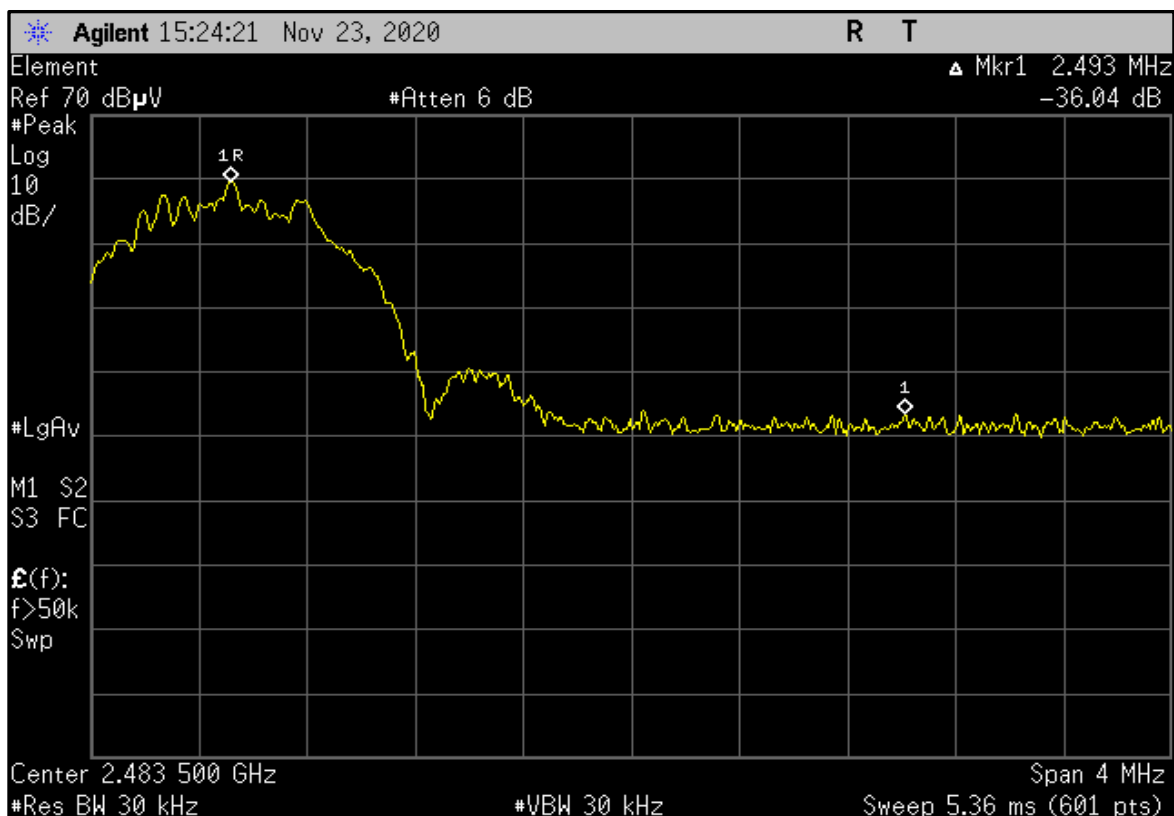
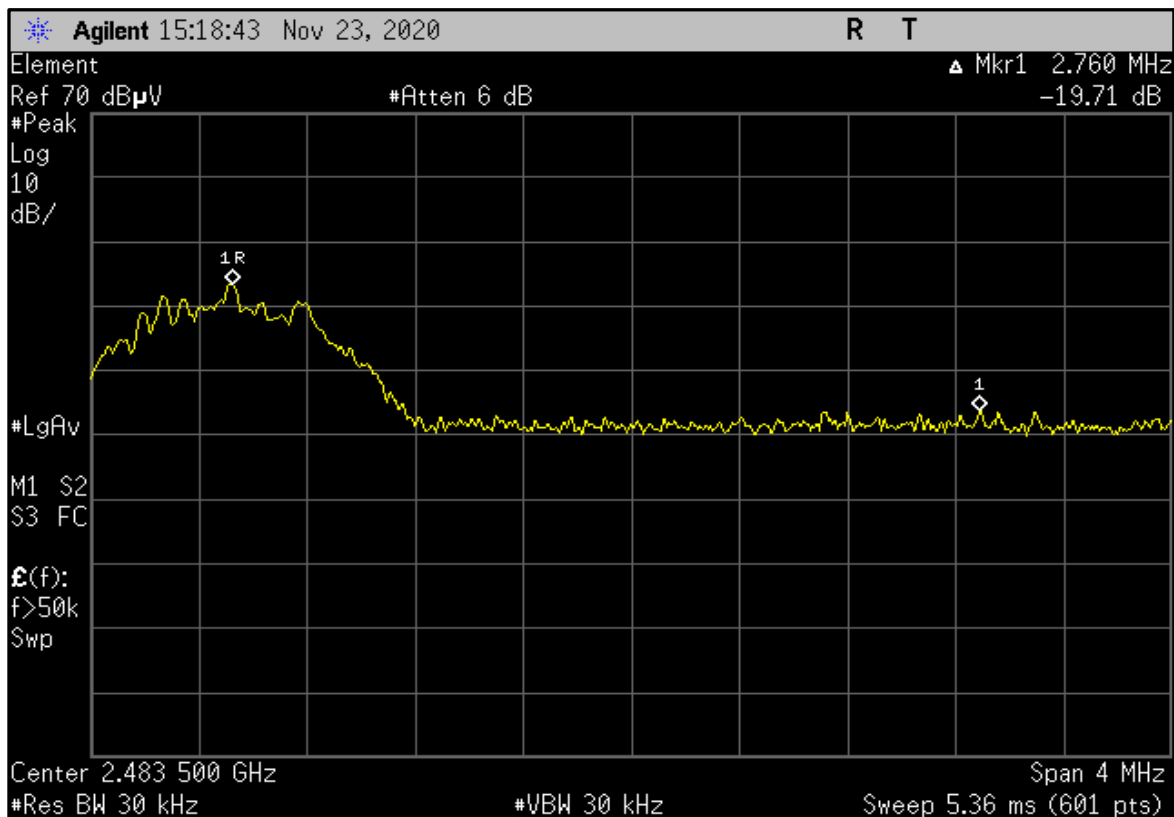
High Ch., Port 8, EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



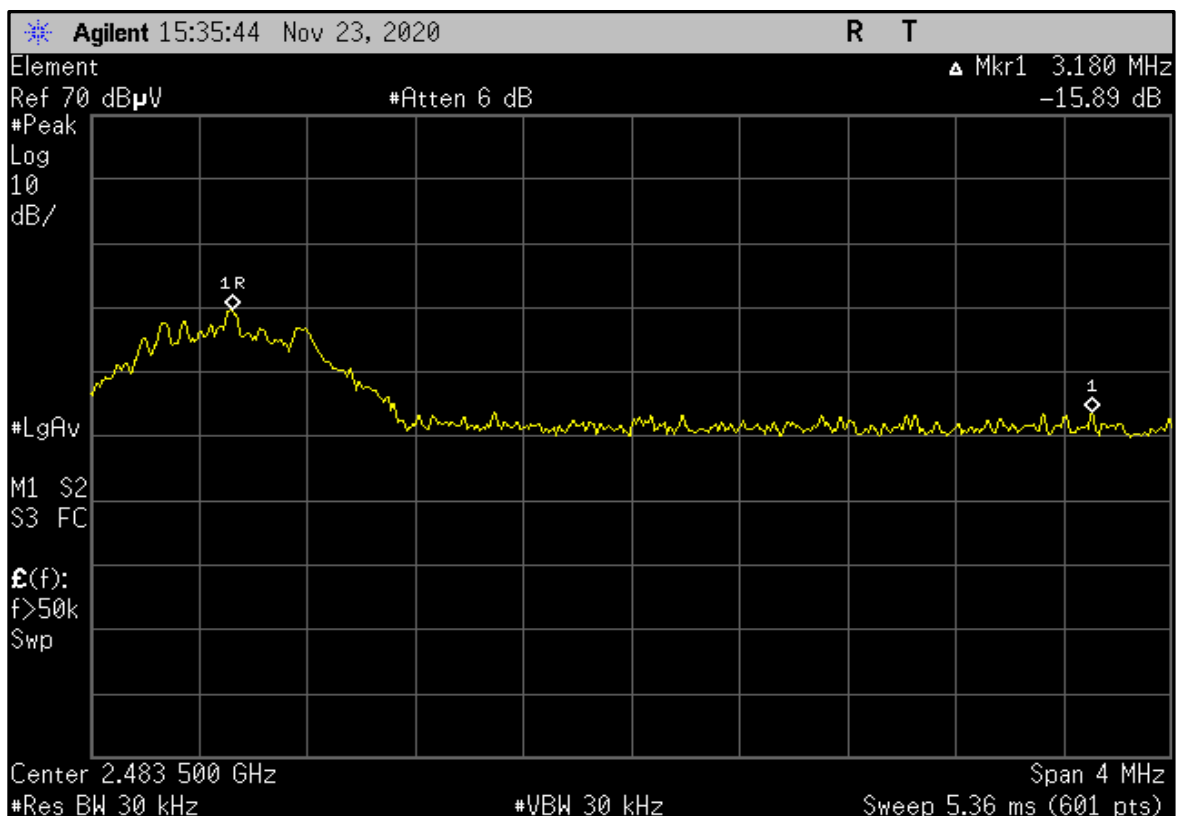
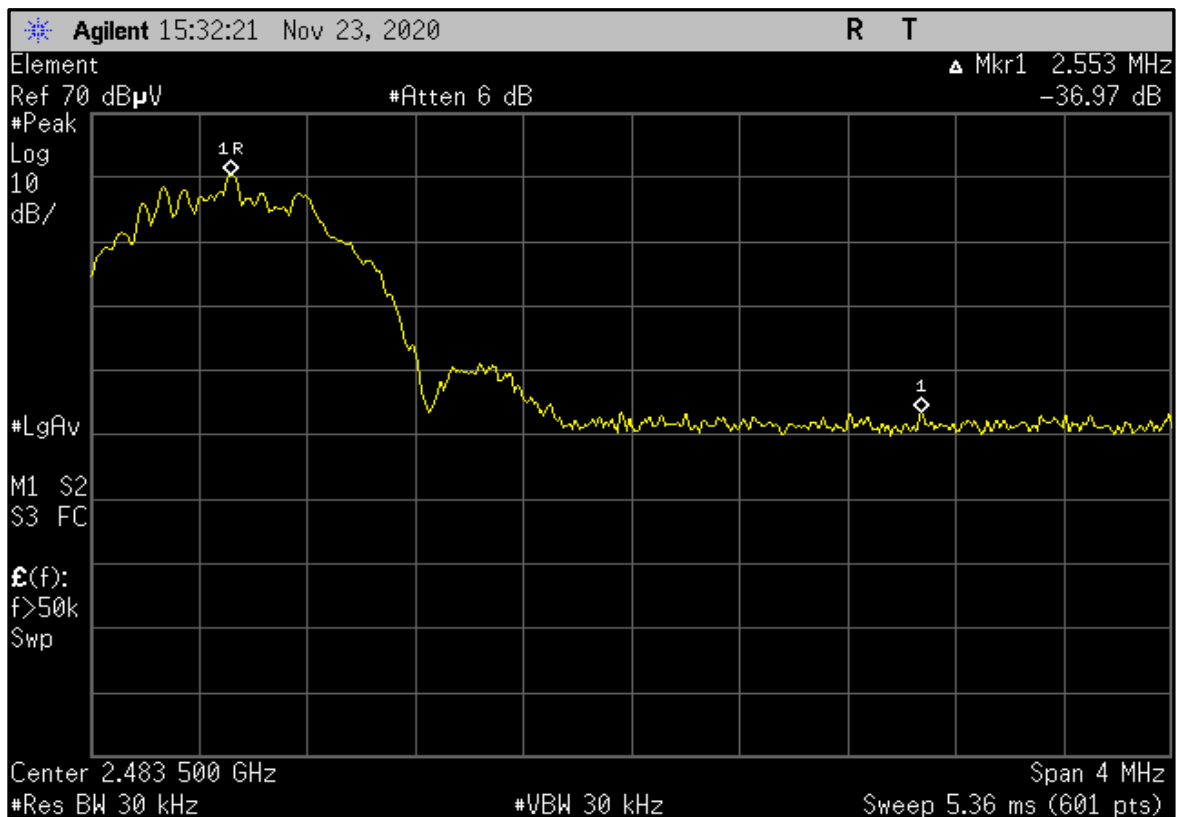
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



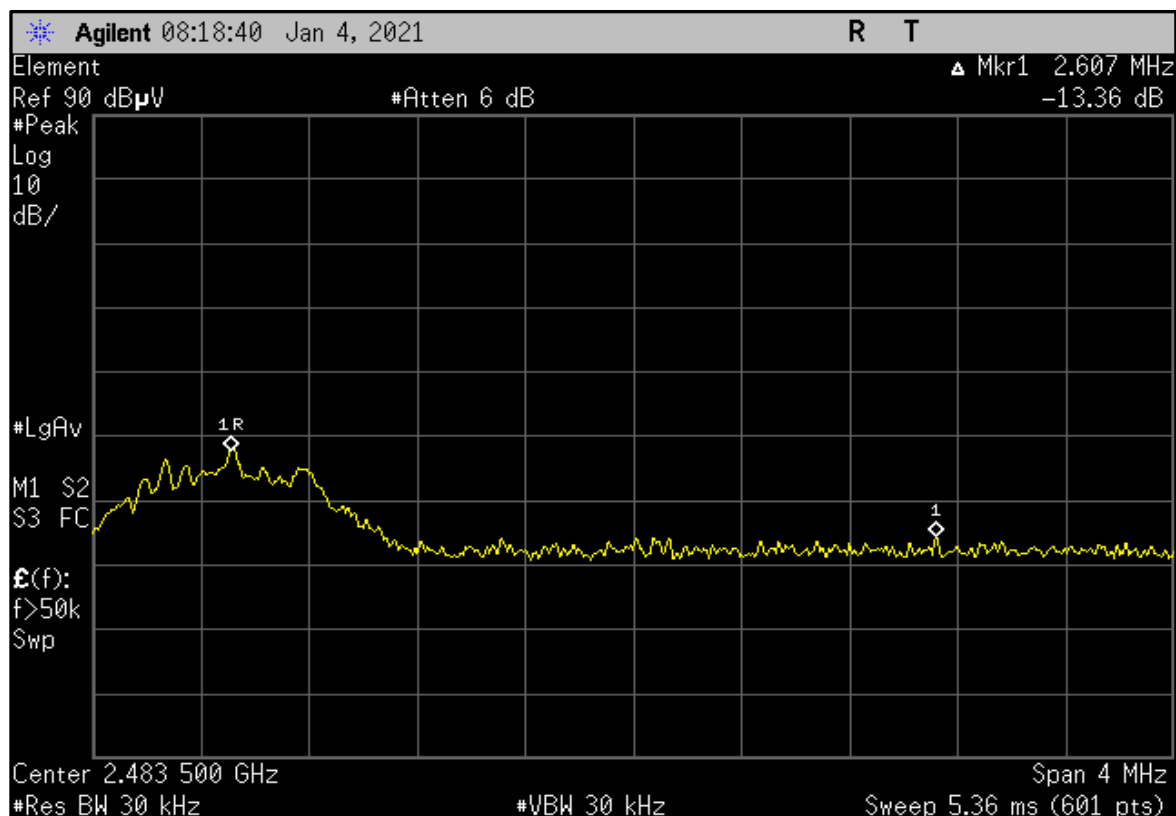
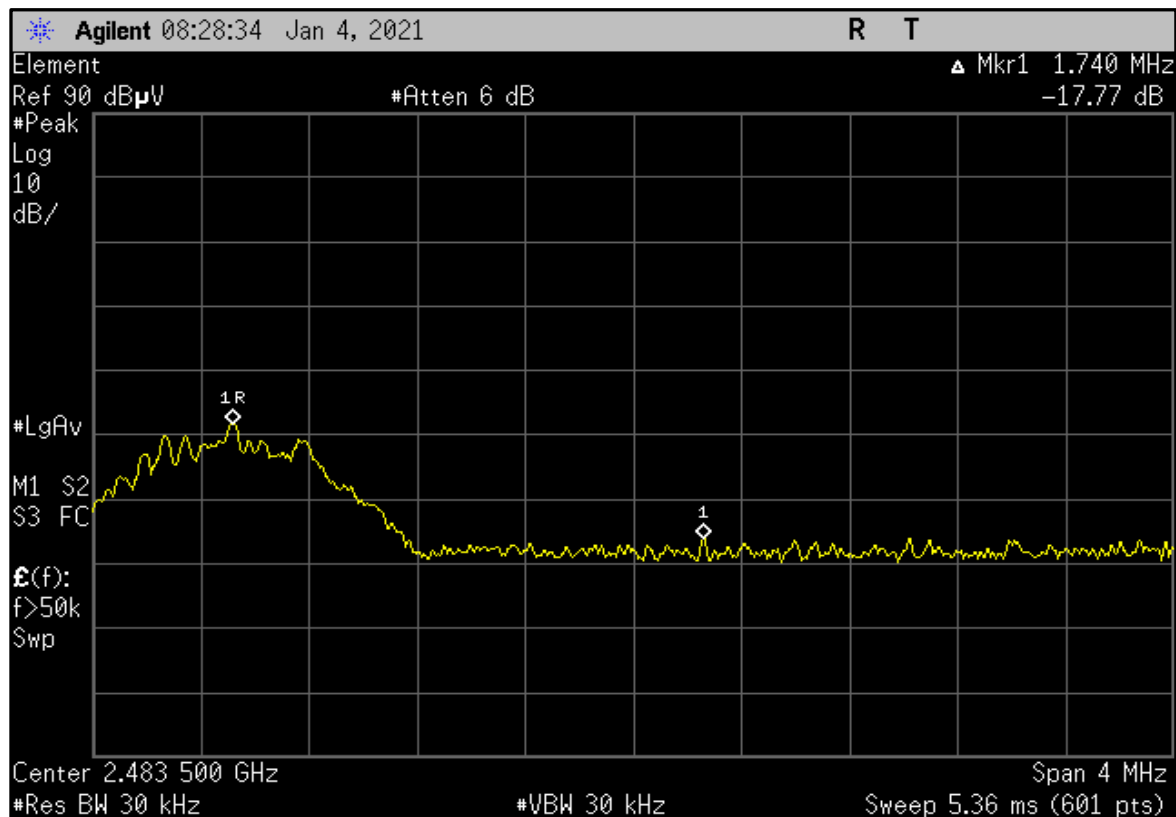
High Ch., Port 8, EUT on Side, Ant on Side

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



High Ch., Port 7, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS

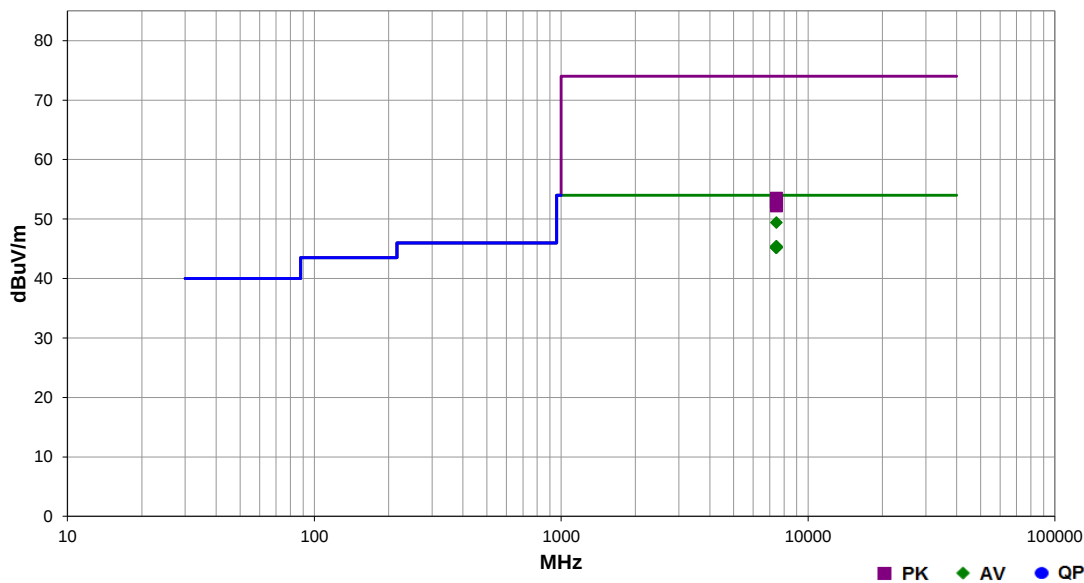


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                        |                   |            |                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                               | Date:             | 2020-11-23 |  |
| Project:        | None                                                                                                                                                                                                                                                                   | Temperature:      | 22 °C      |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                   | Humidity:         | 38.1% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                          | Barometric Pres.: | 1018 mbar  | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Configuration:  | 3                                                                                                                                                                                                                                                                      |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Antenna PN: T24190P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz                                                                                                                                           |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. Spot check for worst case harmonic from 0 dBm power setting measurements due to a reduction in power. Port 7 measurements were taken on 1/4/21. |                   |            |                                                                                    |
|                 | The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478).                                       |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2021 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 44 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7444.892   | 31.2             | 15.0        | 1.5                     | 201.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 49.4              | 54.0                 | -4.6                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7445.108   | 27.2             | 15.0        | 3.6                     | 119.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7445.033   | 27.2             | 15.0        | 1.9                     | 155.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7445.708   | 27.0             | 15.0        | 1.5                     | 172.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7444.008   | 27.0             | 15.0        | 1.3                     | 1.0               | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7445.258   | 27.0             | 15.0        | 1.8                     | 58.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7445.592   | 27.0             | 15.0        | 1.5                     | 2.0               | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Horz, Ant Horz       |
| 7446.967   | 27.0             | 15.0        | 1.5                     | 168.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT Horz, Ant Horz       |
| 7447.825   | 38.5             | 15.0        | 1.5                     | 201.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 53.5              | 74.0                 | -20.5                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7444.992   | 38.1             | 15.0        | 3.6                     | 119.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 53.1              | 74.0                 | -20.9                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7448.333   | 38.0             | 15.0        | 1.9                     | 155.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 53.0              | 74.0                 | -21.0                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7443.733   | 37.8             | 15.0        | 1.8                     | 58.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.8              | 74.0                 | -21.2                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7447.175   | 37.7             | 15.0        | 1.5                     | 2.0               | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.7              | 74.0                 | -21.3                  | High Ch., Port 8, EUT Horz, Ant Horz       |
| 7446.808   | 37.5             | 15.0        | 1.3                     | 1.0               | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.5              | 74.0                 | -21.5                  | High Ch., Port 8, EUT Vert, Ant Vert       |
| 7447.508   | 37.3             | 15.0        | 1.5                     | 168.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.3              | 74.0                 | -21.7                  | High Ch., Port 8, EUT Horz, Ant Horz       |
| 7448.300   | 37.2             | 15.0        | 1.5                     | 172.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.2              | 74.0                 | -21.8                  | High Ch., Port 8, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

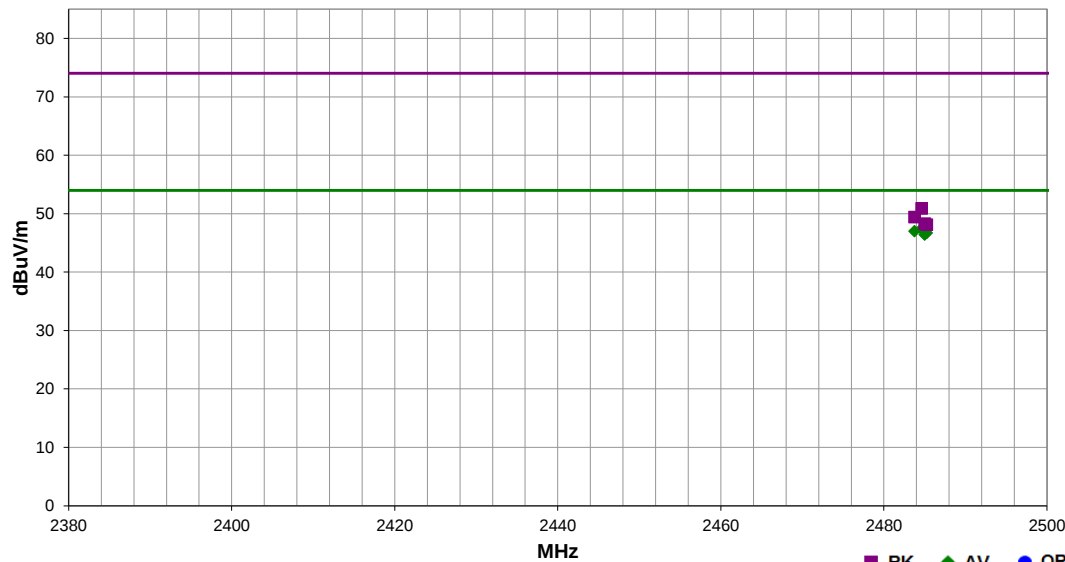


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-11-23 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.9 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 37% RH     |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1017 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 4                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                        |
| Operating Mode: | DTS Tx, Antenna PN: T24190P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz                                                                                                                                                                                                                                                                      |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Port 7 measurements were taken on 1/4/21. |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2021     | ANSI C63.10:2013 |

| Run # | 77 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



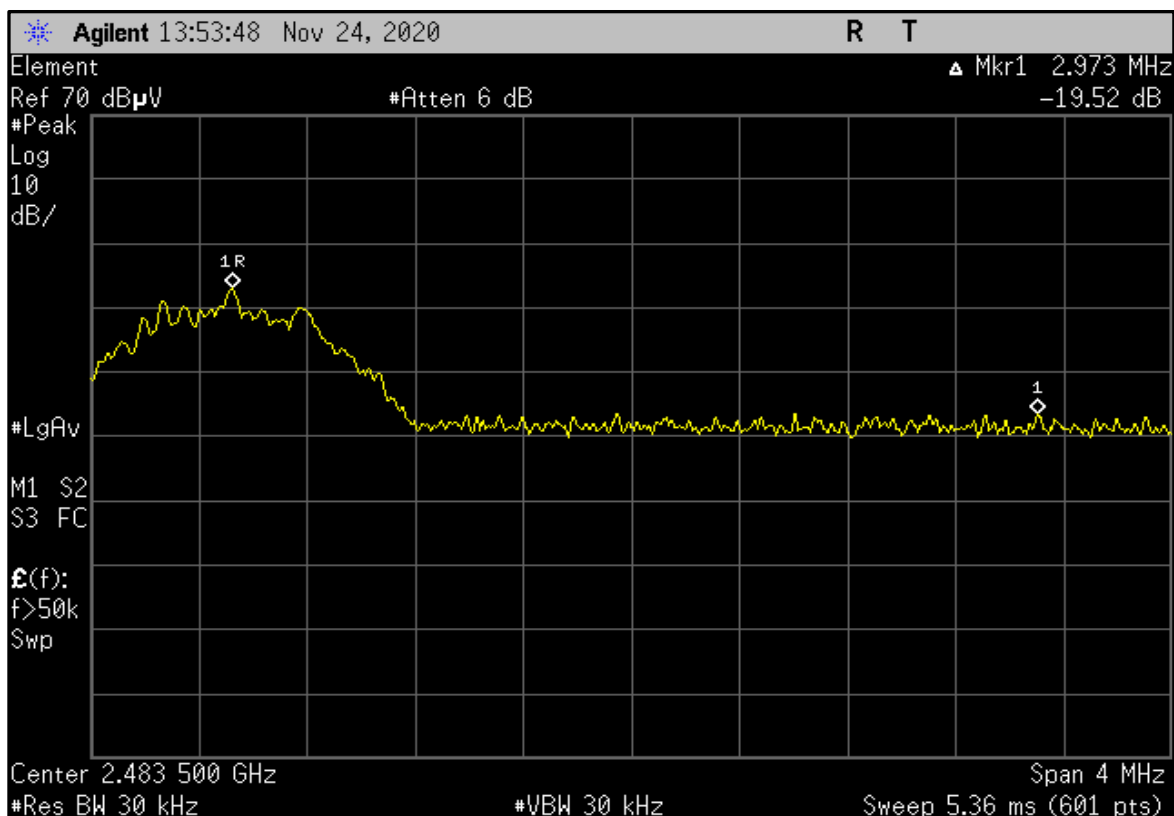
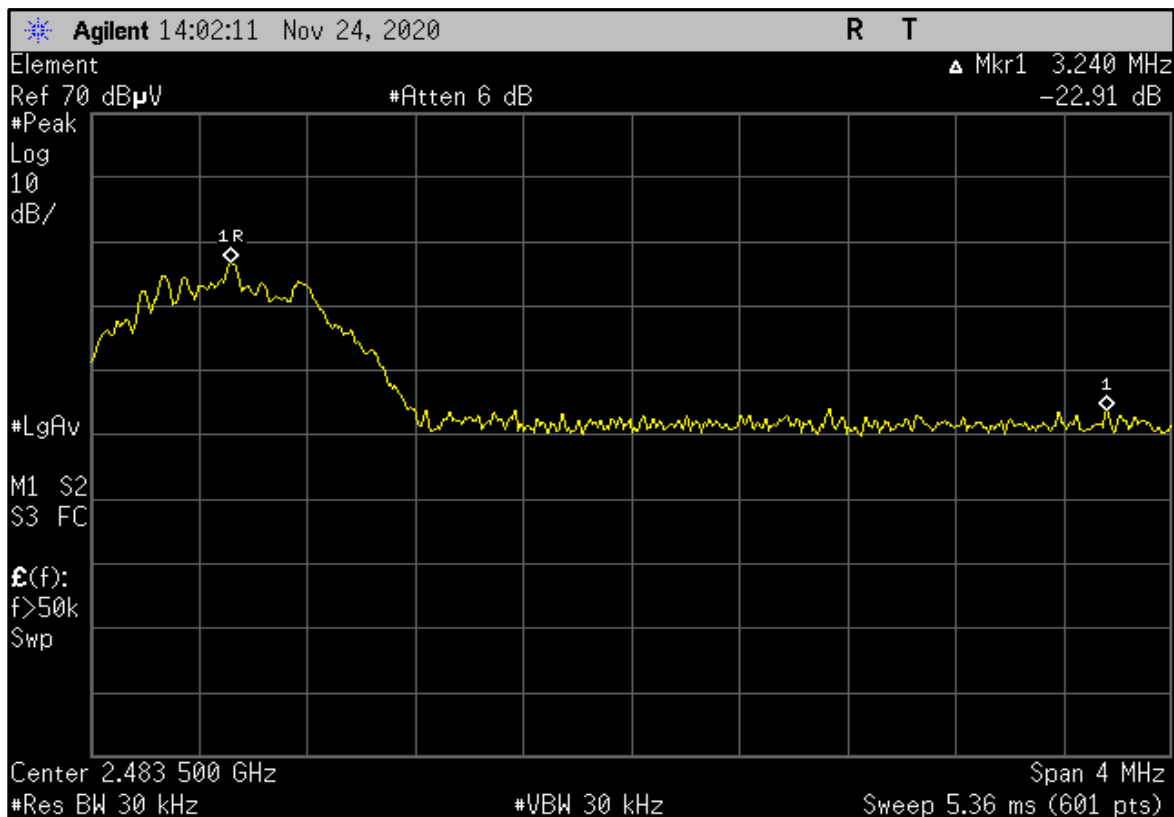
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                  |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------------|
| 2484.620   | 25.0                        | -0.8        | 1.5                     | 331.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.4              | 54.0                 | -6.6                   | High Ch., Port 7, EUT Vert, Ant Vert: Fund 38.4dBuV + -13.4dBc = 25.0dBuV (calc. amp.) |
| 2483.760   | 24.6                        | -0.8        | 3.4                     | 9.0               | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., Port 7, EUT Horz, Ant Horz: Fund 42.4dBuV + -17.8dBc = 24.6dBuV (calc. amp.) |
| 2485.260   | 24.3                        | -0.8        | 4.0                     | 158.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | High Ch., Port 8, EUT Horz, Ant Horz: Fund 47.2dBuV + -22.9dBc = 24.3dBuV (calc. amp.) |
| 2485.000   | 24.0                        | -0.8        | 1.5                     | 134.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., Port 8, EUT Vert, Ant Vert: Fund 43.5dBuV + -19.5dBc = 24.0dBuV (calc. amp.) |
| 2484.620   | 31.7                        | -0.8        | 1.5                     | 331.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 50.9              | 74.0                 | -23.1                  | High Ch., Port 7, EUT Vert, Ant Vert: Fund 45.1dBuV + -13.4dBc = 31.7dBuV (calc. amp.) |
| 2483.760   | 30.2                        | -0.8        | 3.4                     | 9.0               | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.4              | 74.0                 | -24.6                  | High Ch., Port 7, EUT Horz, Ant Horz: Fund 48.0dBuV + -17.8dBc = 30.2dBuV (calc. amp.) |
| 2485.000   | 29.1                        | -0.8        | 1.5                     | 134.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.3              | 74.0                 | -25.7                  | High Ch., Port 8, EUT Vert, Ant Vert: Fund 48.6dBuV + -19.5dBc = 29.1dBuV (calc. amp.) |
| 2485.260   | 28.9                        | -0.8        | 4.0                     | 158.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch., Port 8, EUT Horz, Ant Horz: Fund 51.8dBuV + -22.9dBc = 28.9dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 8, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



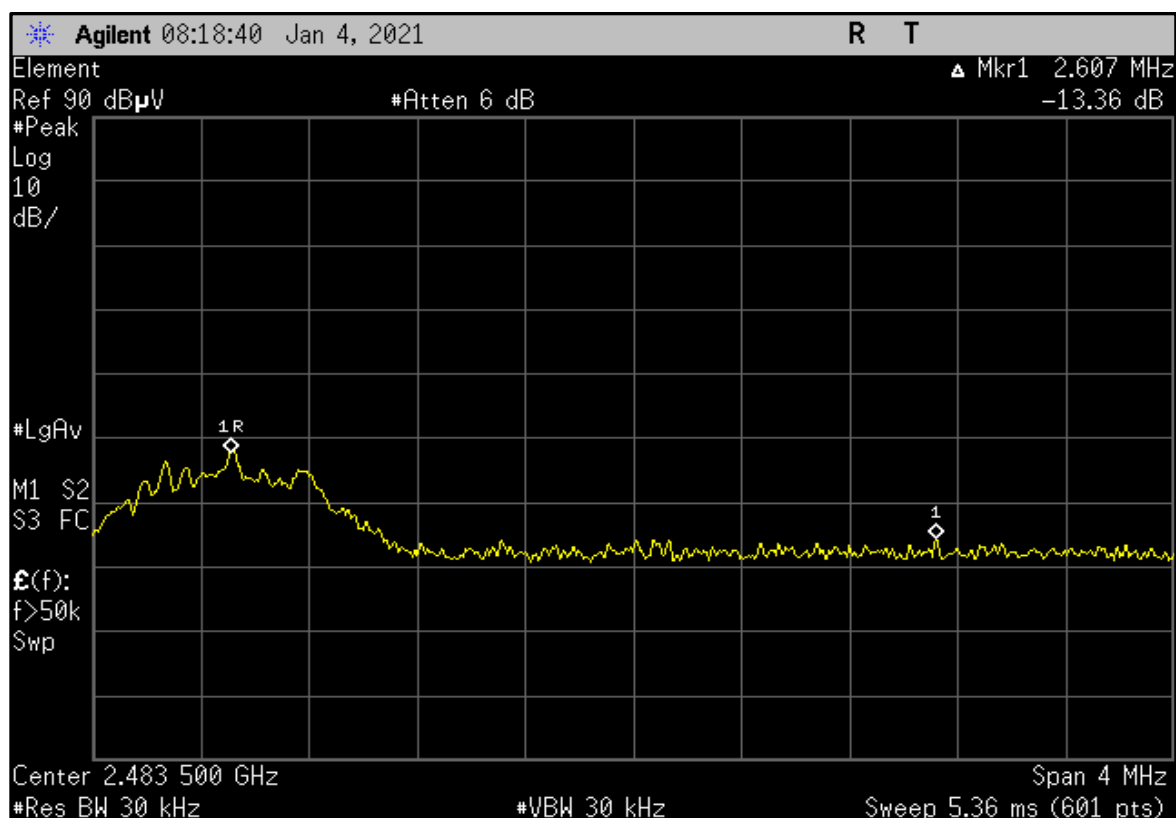
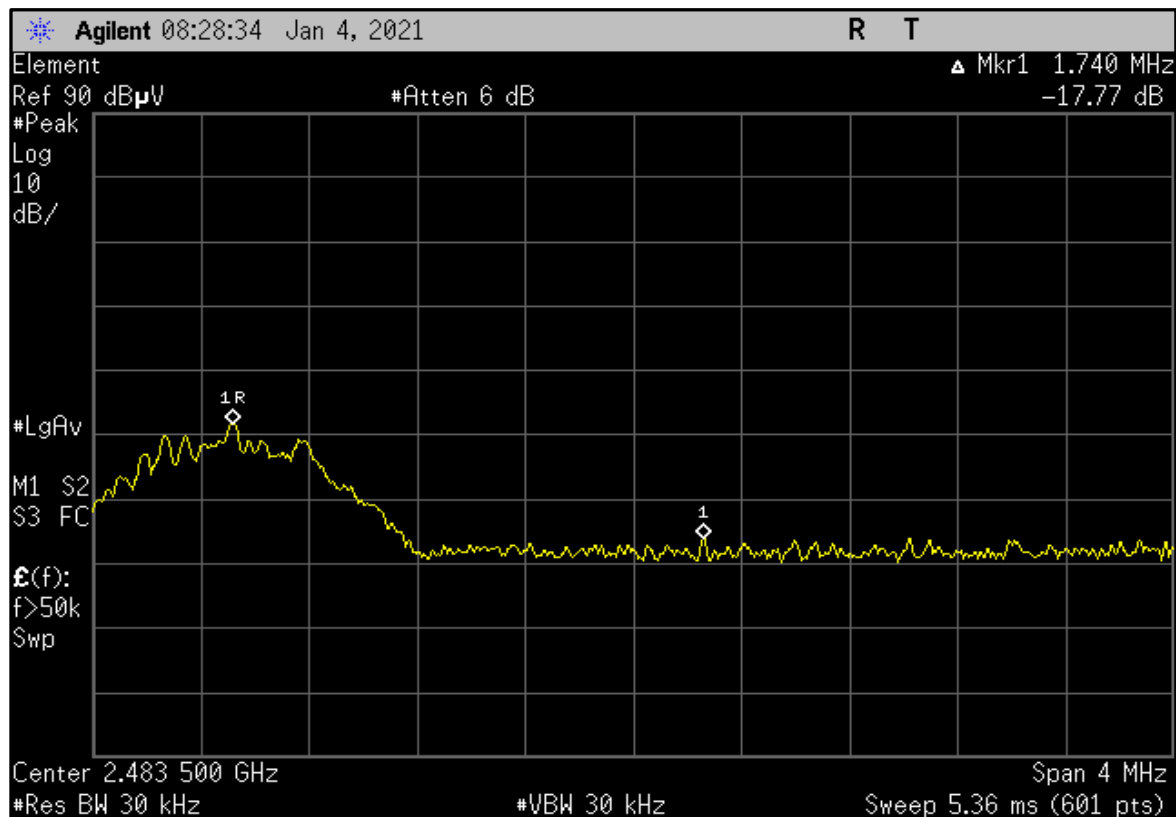
High Ch., Port 8, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



High Ch., Port 7, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



High Ch., Port 7, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS

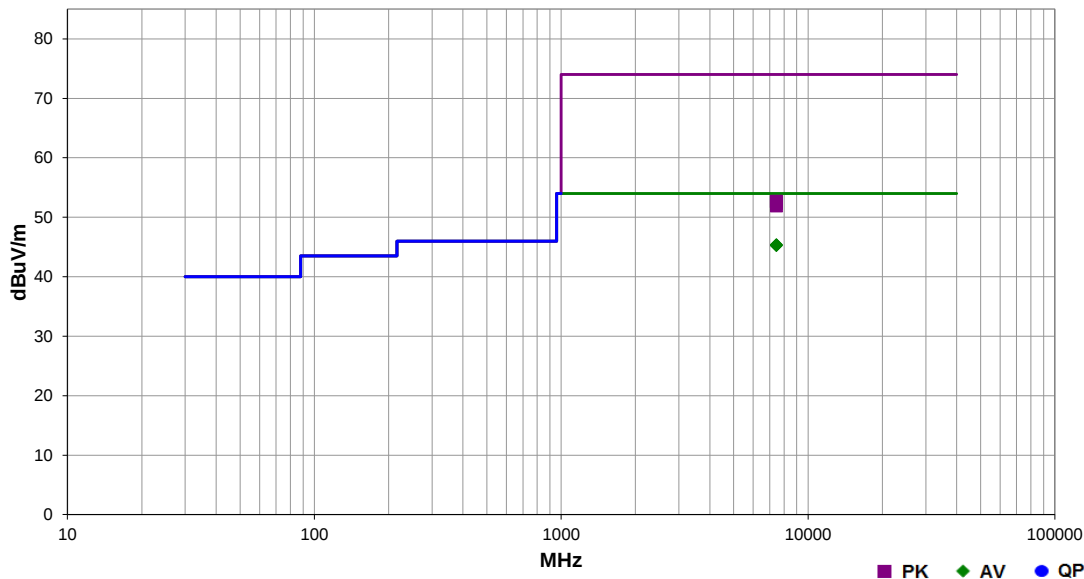


EmiRS 2020.06.24.4 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |            |  |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:     | SYNA0317                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Date:             | 2020-11-23 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Temperature:      | 22 °C      |  |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Humidity:         | 38.1% RH   |  |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Barometric Pres.: | 1018 mbar  |  |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            |  |
| Configuration:  | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |            |  |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |            |  |
| Operating Mode: | DTS Tx, Antenna PN: T24190P10006GT, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Power Setting = -4 dBm, High Channel = 2482 MHz                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |            |  |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. Spot check for worst case harmonic from 0 dBm power setting measurements due to a reduction in power. Port 7 measurements were taken on 1/4/21.<br><br>The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |  |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2021     | ANSI C63.10:2013 |

| Run # | 46 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                                   |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------|
| 7447.175   | 27.2             | 15.0        | 1.6                     | 38.0              | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.4              | 54.0                 | -8.6                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7447.108   | 27.1             | 15.0        | 1.5                     | 264.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7446.867   | 27.1             | 15.0        | 1.5                     | 242.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 45.3              | 54.0                 | -8.7                   | High Ch., Port 7, EUT on Side, Ant on Side |
| 7447.158   | 27.0             | 15.0        | 1.5                     | 283.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 45.2              | 54.0                 | -8.8                   | High Ch., Port 8, EUT on Side, Ant on Side |
| 7447.125   | 37.7             | 15.0        | 1.5                     | 264.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.7              | 74.0                 | -21.3                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7443.600   | 37.6             | 15.0        | 1.5                     | 242.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., Port 7, EUT on Side, Ant on Side |
| 7445.850   | 37.3             | 15.0        | 1.5                     | 283.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 52.3              | 74.0                 | -21.7                  | High Ch., Port 8, EUT on Side, Ant on Side |
| 7447.417   | 36.9             | 15.0        | 1.6                     | 38.0              | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 51.9              | 74.0                 | -22.1                  | High Ch., Port 7, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Port 8, Antenna PN: WSA.2400.A.101151, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

POE via 120VAC/60Hz

24VDC via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0309 - 9

SYNA0309 - 10

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |        |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 26 GHz |
|-----------------|--------|----------------|--------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2019-11-08 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (see

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.04.03.0

and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS



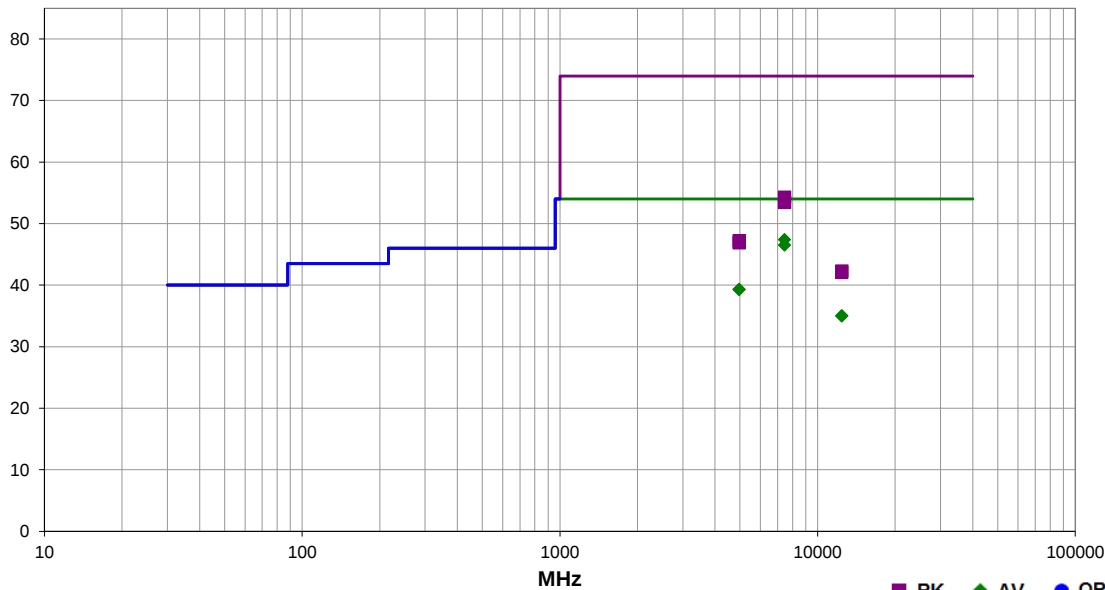
EmiRS 2020.06.24.4

PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                        |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:                  | 2020-10-05 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:           | 21.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:              | 55.9% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.:      | 1026 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                         | Tested by: Brian Fahey |            |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                        |            |                                                                                    |
| Configuration:  | 10                                                                                                                                                                                                                                                                                                                                                      |                        |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                        |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                        |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                        |            |                                                                                    |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: WSA.2400.A.101151, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                        |                        |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                        |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                        |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 177 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                           |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|------------------------------------|
| 7446.692   | 29.2             | 15.0        | 3.1                     | 56.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 47.4              | 54.0                 | -6.6                   | High Ch., EUT on Side, Ant on Side |
| 7446.600   | 28.3             | 15.0        | 1.5                     | 104.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 46.5              | 54.0                 | -7.5                   | High Ch., EUT Horz, Ant Horz       |
| 4962.775   | 26.6             | 9.5         | 1.5                     | 208.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Horz, Ant Horz       |
| 4962.750   | 26.6             | 9.5         | 1.5                     | 23.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT on Side, Ant on Side |
| 12412.080  | 26.8             | 5.0         | 1.5                     | 305.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.0              | 54.0                 | -19.0                  | High Ch., EUT on Side, Ant on Side |
| 12412.080  | 26.8             | 5.0         | 1.5                     | 40.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 35.0              | 54.0                 | -19.0                  | High Ch., EUT Horz, Ant Horz       |
| 7446.575   | 39.3             | 15.0        | 3.1                     | 56.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.3              | 74.0                 | -19.7                  | High Ch., EUT on Side, Ant on Side |
| 7446.892   | 38.5             | 15.0        | 1.5                     | 104.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.5              | 74.0                 | -20.5                  | High Ch., EUT Horz, Ant Horz       |
| 4962.958   | 37.7             | 9.5         | 1.5                     | 23.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | High Ch., EUT on Side, Ant on Side |
| 4962.058   | 37.4             | 9.5         | 1.5                     | 208.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  | High Ch., EUT Horz, Ant Horz       |
| 12411.660  | 37.3             | 5.0         | 1.5                     | 40.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 42.3              | 74.0                 | -31.7                  | High Ch., EUT Horz, Ant Horz       |
| 12408.380  | 37.1             | 5.0         | 1.5                     | 305.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.1              | 74.0                 | -31.9                  | High Ch., EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

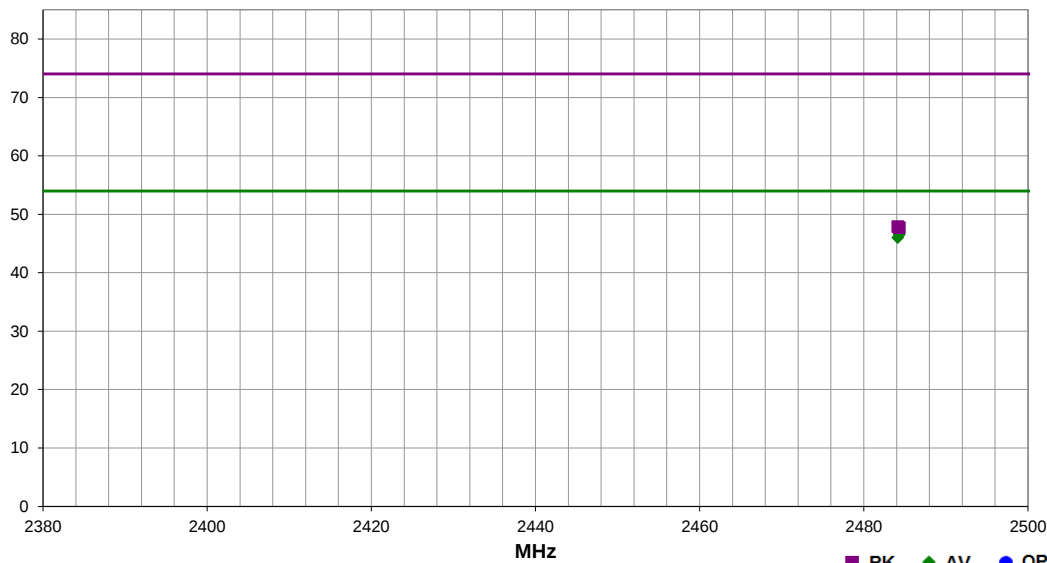


EmIRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-10-05 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 21.9 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 55.9% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1026 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 10                                                                                                                                                                                                                                                                                                                                                      |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: WSA.2400.A.101151, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                        |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 179 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



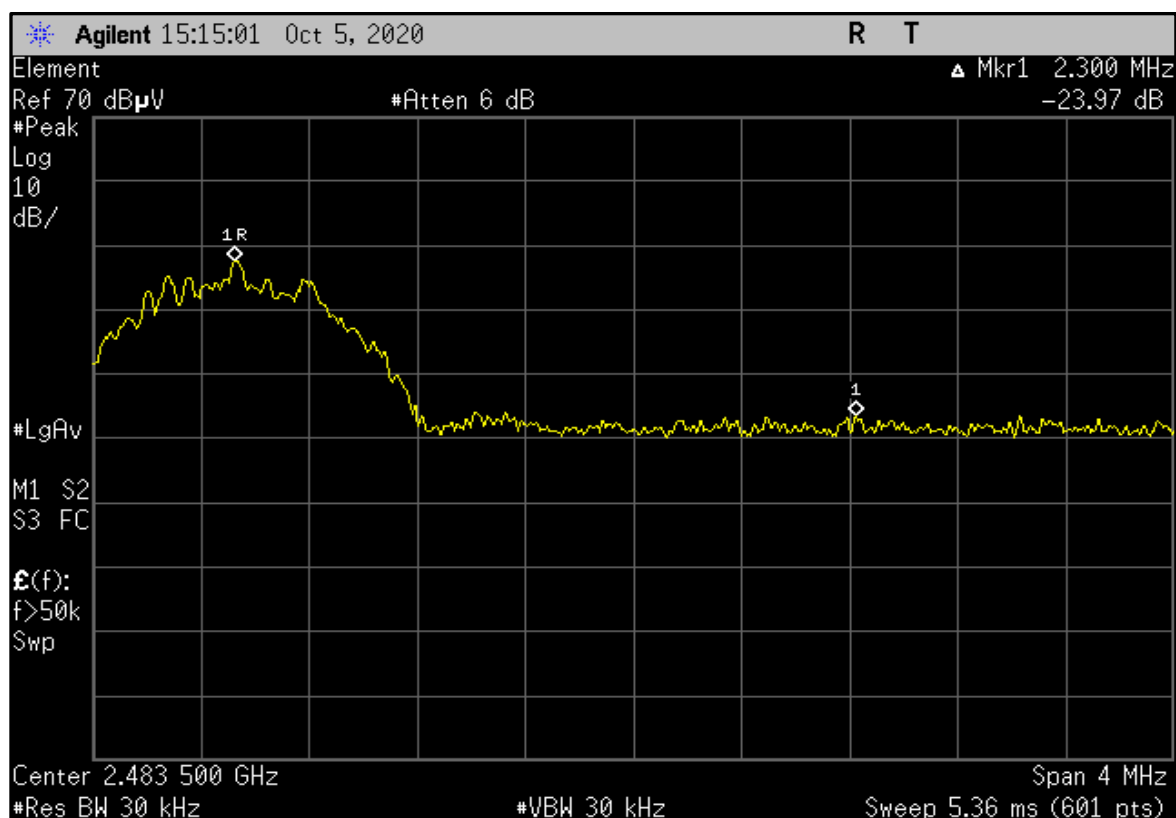
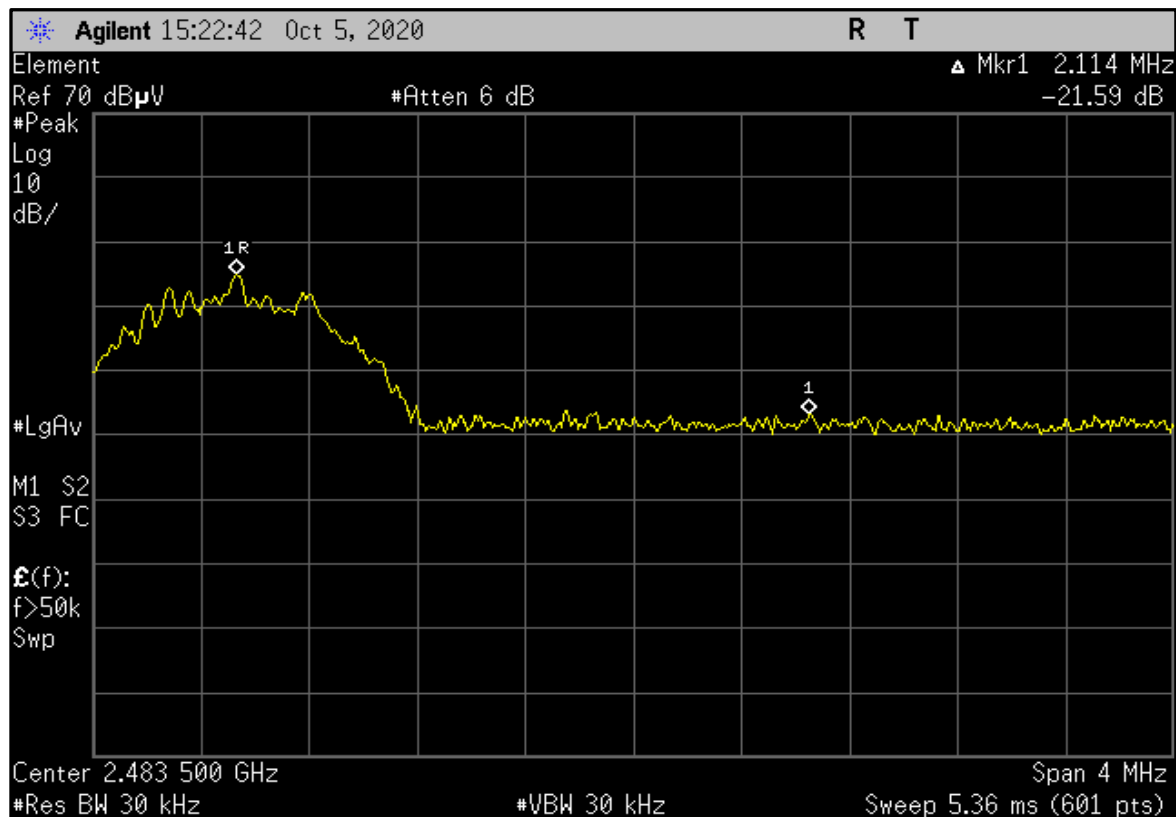
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                         |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------------------------------------------------------|
| 2484.327   | 24.1                        | -0.8        | 1.5                     | 324.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.5              | 54.0                 | -7.5                   | High Ch., EUT Horz, Ant Horz: Fund 48.1dBuV + 24.0dBc = 24.1dBuV (calc. amp.) |
| 2484.147   | 23.6                        | -0.8        | 3.3                     | 303.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.0              | 54.0                 | -8.0                   | High Ch., EUT Horz, Ant Horz: Fund 45.2dBuV + 21.6dBc = 23.6dBuV (calc. amp.) |
| 2484.147   | 28.7                        | -0.8        | 3.3                     | 303.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch., EUT Horz, Ant Horz: Fund 50.3dBuV + 21.6dBc = 28.7dBuV (calc. amp.) |
| 2484.327   | 28.5                        | -0.8        | 1.5                     | 324.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.7              | 74.0                 | -26.3                  | High Ch., EUT Horz, Ant Horz: Fund 52.5dBuV + 24.0dBc = 28.5dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT on Side, Ant on Side

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High Ch., EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



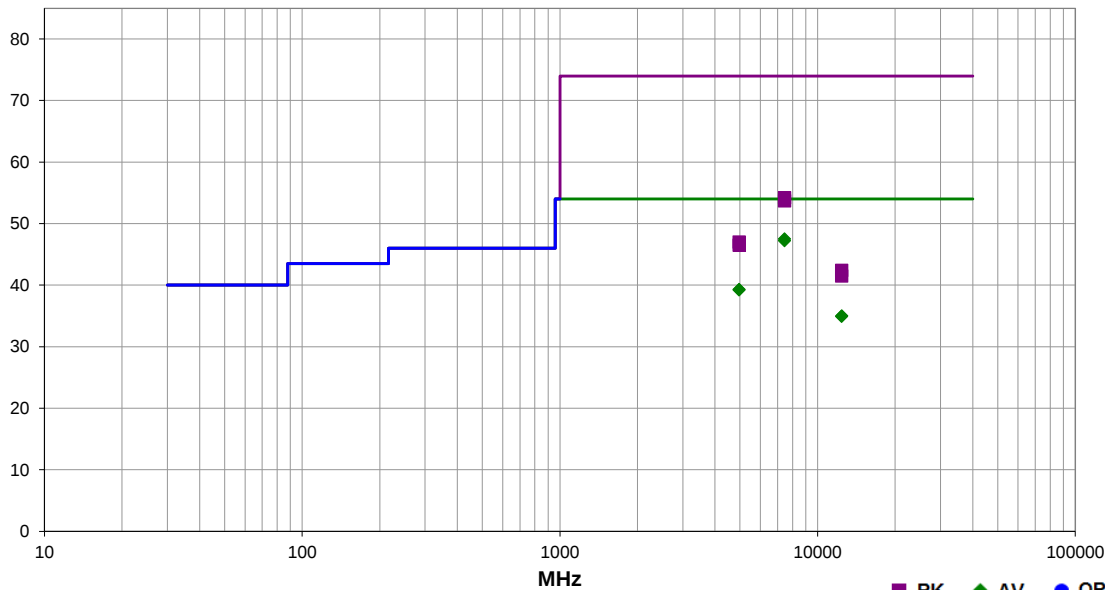
EmiRS 2020.06.24.4

PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                        |            |                                                                                    |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:                  | 2020-10-05 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:           | 21.9 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:              | 55.9% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.:      | 1026 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                         | Tested by: Brian Fahey |            |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                               |                        |            |                                                                                    |
| Configuration:  | 9                                                                                                                                                                                                                                                                                                                                                       |                        |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                        |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                        |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                        |            |                                                                                    |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: WSA.2400.A.101151, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                        |                        |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                        |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                        |            |                                                                                    |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 183 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                           |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|------------------------------------|
| 7446.683   | 29.3             | 15.0        | 1.4                     | 68.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 47.5              | 54.0                 | -6.5                   | High Ch., EUT on Side, Ant on Side |
| 7445.508   | 29.0             | 15.0        | 2.5                     | 300.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | High Ch., EUT Horz, Ant Horz       |
| 4962.167   | 26.6             | 9.5         | 1.5                     | 184.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Horz, Ant Horz       |
| 4962.258   | 26.5             | 9.5         | 4.0                     | 12.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.2              | 54.0                 | -14.8                  | High Ch., EUT on Side, Ant on Side |
| 12411.840  | 26.8             | 5.0         | 1.5                     | 0.0               | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 35.0              | 54.0                 | -19.0                  | High Ch., EUT on Side, Ant on Side |
| 12410.930  | 26.7             | 5.0         | 1.5                     | 172.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 34.9              | 54.0                 | -19.1                  | High Ch., EUT Horz, Ant Horz       |
| 7446.817   | 39.2             | 15.0        | 1.4                     | 68.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 54.2              | 74.0                 | -19.8                  | High Ch., EUT on Side, Ant on Side |
| 7445.467   | 38.7             | 15.0        | 2.5                     | 300.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 53.7              | 74.0                 | -20.3                  | High Ch., EUT Horz, Ant Horz       |
| 4962.608   | 37.5             | 9.5         | 4.0                     | 12.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., EUT on Side, Ant on Side |
| 4963.675   | 37.0             | 9.5         | 1.5                     | 184.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.5              | 74.0                 | -27.5                  | High Ch., EUT Horz, Ant Horz       |
| 12409.680  | 37.4             | 5.0         | 1.5                     | 0.0               | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.4              | 74.0                 | -31.6                  | High Ch., EUT on Side, Ant on Side |
| 12408.400  | 36.5             | 5.0         | 1.5                     | 172.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 41.5              | 74.0                 | -32.5                  | High Ch., EUT Horz, Ant Horz       |

# SPURIOUS RADIATED EMISSIONS

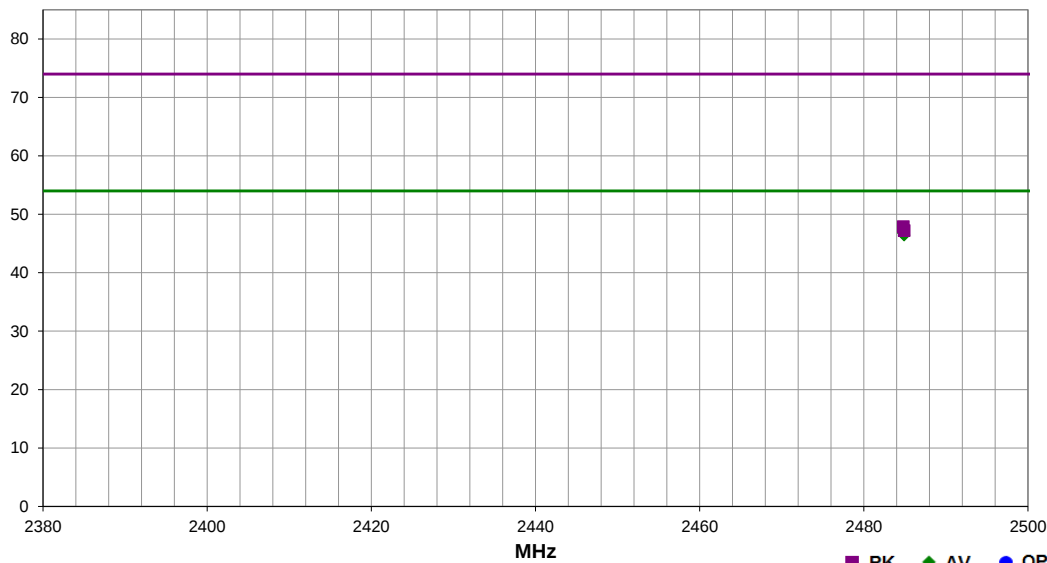


EmIRS 2020.06.24.4 PSA-ESCI 2020.04.03.0

|                 |                                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0309                                                                                                                                                                                                                                                                                                                                                | Date:             | 2020-10-05 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                    | Temperature:      | 21.9 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                    | Humidity:         | 55.9% RH   |                        |
| Serial Number:  | Rev. 10 - 002                                                                                                                                                                                                                                                                                                                                           | Barometric Pres.: | 1026 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey |
| Configuration:  | 9                                                                                                                                                                                                                                                                                                                                                       |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                     |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Antenna PN: WSA.2400.A.101151, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2482 MHz.                                                                                                                                                                                                                                        |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 185 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



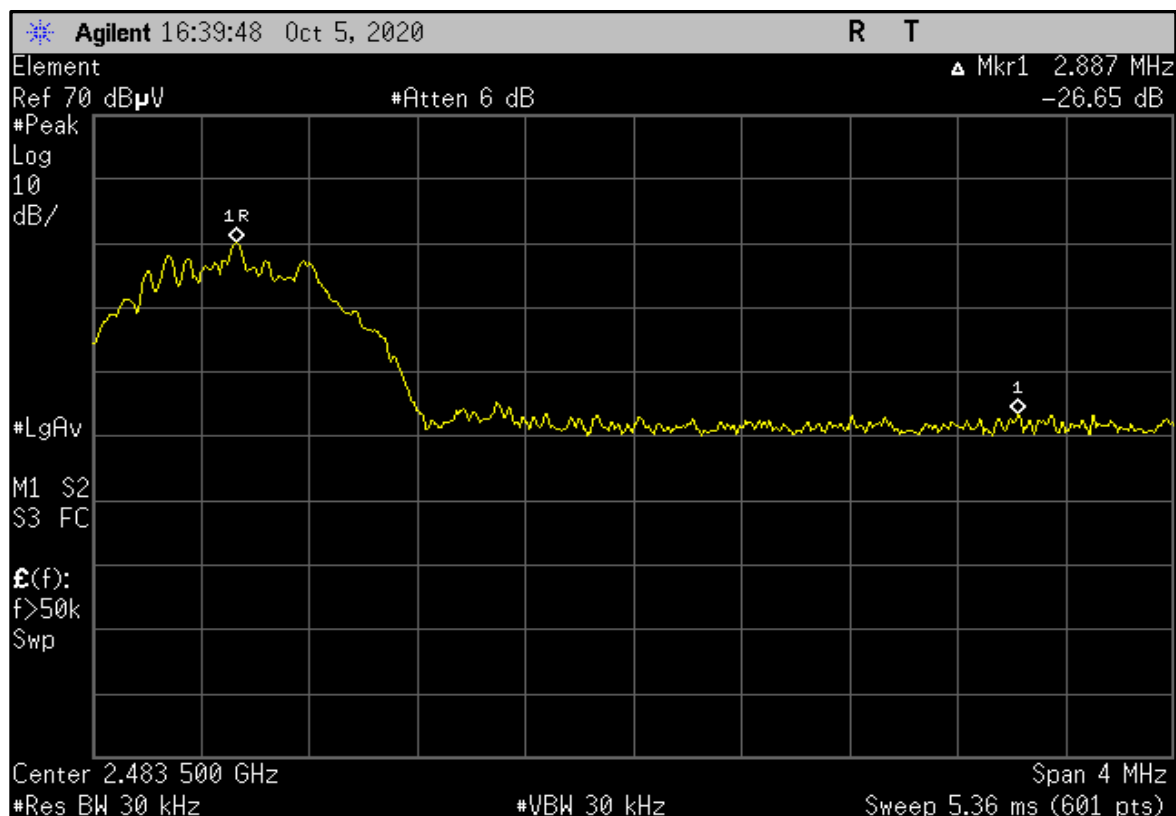
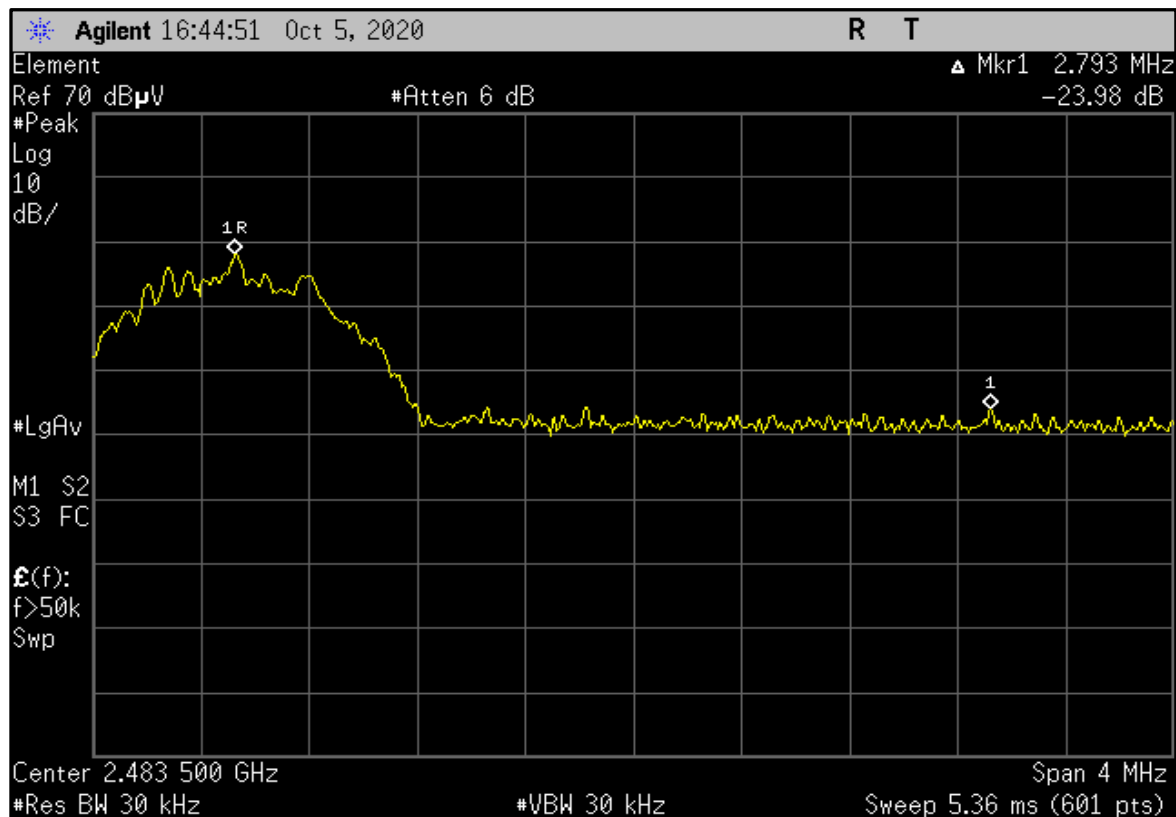
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                         |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------------------------------------------------------|
| 2484.820   | 24.4                        | -0.8        | 4.0                     | 90.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | High Ch., EUT Horz, Ant Horz: Fund 48.4dBuV + 24.0dBc = 24.4dBuV (calc. amp.) |
| 2484.920   | 24.0                        | -0.8        | 1.0                     | 320.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., EUT Horz, Ant Horz: Fund 50.6dBuV + 26.6dBc = 24.0dBuV (calc. amp.) |
| 2484.820   | 28.7                        | -0.8        | 4.0                     | 90.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | High Ch., EUT Horz, Ant Horz: Fund 52.7dBuV + 24.0dBc = 28.7dBuV (calc. amp.) |
| 2484.920   | 28.0                        | -0.8        | 1.0                     | 320.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | High Ch., EUT Horz, Ant Horz: Fund 54.6dBuV + 26.6dBc = 28.0dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Horz, Ant Horz

PSA-ESCI 2020.04.03.0



High Ch., EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.

Simultaneous Tx mode: BTLE Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.

## POWER SETTINGS INVESTIGATED

POE via 120VAC/60Hz

24VDC via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0313 - 1

SYNA0313 - 2

## FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 26 GHz

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2020-11-06 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

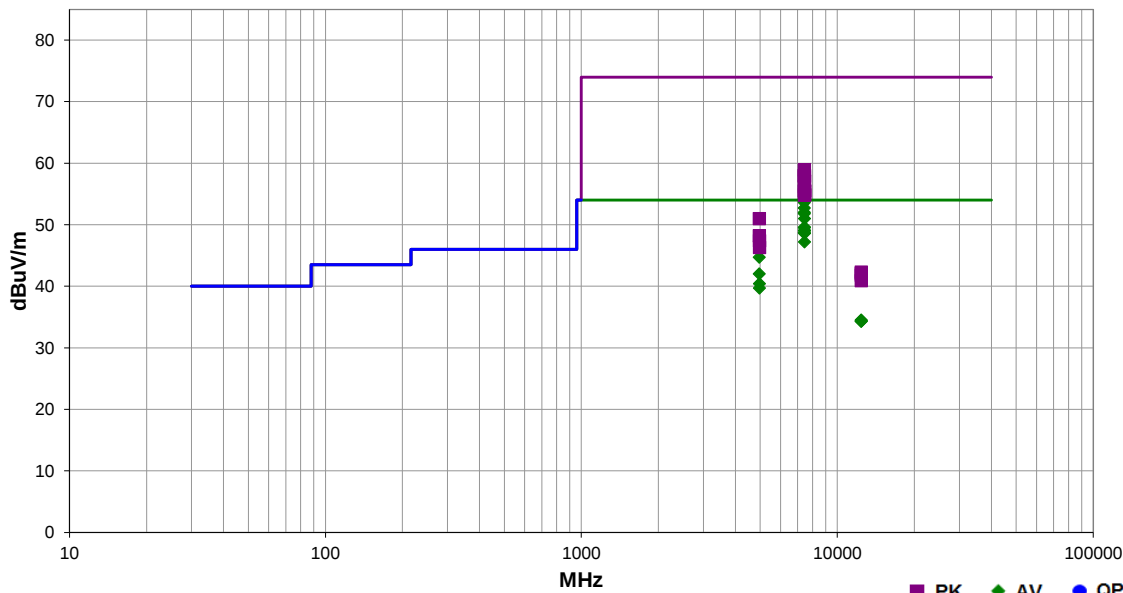


EmiRS 2020.12.09.0

PSA-ESCI 2020.06.24.2

|                     |                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:         | SYNA0313                                                                                                                                                                                                                                                                                                                                     | Date:             | 2020-12-14 |  |
| Project:            | None                                                                                                                                                                                                                                                                                                                                         | Temperature:      | 25.7 °C    |                                                                                    |
| Job Site:           | NC01                                                                                                                                                                                                                                                                                                                                         | Humidity:         | 29.2% RH   |                                                                                    |
| Serial Number:      | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                | Barometric Pres.: | 1026 mbar  |                                                                                    |
| EUT:                | RadioNode                                                                                                                                                                                                                                                                                                                                    |                   |            |                                                                                    |
| Configuration:      | 2                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Customer:           | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Attendees:          | None                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| EUT Power:          | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                        |                   |            |                                                                                    |
| Operating Mode:     | Simultaneous Tx mode: BTLE Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.           |                   |            |                                                                                    |
| Deviations:         | None                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Comments:           | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |
| Test Specifications |                                                                                                                                                                                                                                                                                                                                              |                   |            | Test Method                                                                        |
| FCC 15.247:2020     |                                                                                                                                                                                                                                                                                                                                              |                   |            | ANSI C63.10:2013                                                                   |

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 5 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                           |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|------------------------------------|
| 7440.650   | 35.4             | 15.0        | 1.5                     | 15.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 53.6              | 54.0                 | -0.4                   | High Ch., EUT Horz, Ant Horz       |
| 7439.467   | 34.5             | 15.0        | 3.2                     | 320.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 52.7              | 54.0                 | -1.3                   | High Ch., EUT Vert, Ant Vert       |
| 7440.567   | 33.8             | 15.0        | 2.2                     | 255.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 52.0              | 54.0                 | -2.0                   | High Ch., EUT on Side, Ant on Side |
| 7440.617   | 33.6             | 15.0        | 1.6                     | 106.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 51.8              | 54.0                 | -2.2                   | DTS, EUT Vert, Ant Vert            |
| 7446.708   | 32.8             | 15.0        | 2.0                     | 249.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 51.0              | 54.0                 | -3.0                   | DTS, EUT on Side, Ant on Side      |
| 7446.592   | 31.4             | 15.0        | 1.5                     | 54.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 49.6              | 54.0                 | -4.4                   | DTS, EUT Horz, Ant Horz            |
| 7440.517   | 31.3             | 15.0        | 1.8                     | 27.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 49.5              | 54.0                 | -4.5                   | High Ch., EUT Horz, Ant Horz       |
| 7446.525   | 30.9             | 15.0        | 1.5                     | 357.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 49.1              | 54.0                 | -4.9                   | DTS, EUT Vert, Ant Vert            |
| 7445.433   | 30.8             | 15.0        | 1.5                     | 48.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 49.0              | 54.0                 | -5.0                   | DTS, EUT Horz, Ant Horz            |
| 7440.775   | 30.5             | 15.0        | 1.4                     | 87.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.7              | 54.0                 | -5.3                   | High Ch., EUT on Side, Ant on Side |
| 7445.542   | 30.4             | 15.0        | 3.1                     | 200.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.6              | 54.0                 | -5.4                   | DTS, EUT on Side, Ant on Side      |
| 7446.567   | 29.0             | 15.0        | 3.0                     | 137.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Vert, Ant Vert            |
| 4959.992   | 32.0             | 9.5         | 1.0                     | 54.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 44.7              | 54.0                 | -9.3                   | High Ch., EUT Horz, Ant Horz       |
| 4960.050   | 29.3             | 9.5         | 3.3                     | 149.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 42.0              | 54.0                 | -12.0                  | High Ch., EUT Vert, Ant Vert       |
| 4964.042   | 27.7             | 9.5         | 1.5                     | 355.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.4              | 54.0                 | -13.6                  | DTS, EUT on Side, Ant on Side      |
| 4963.733   | 27.0             | 9.5         | 1.5                     | 162.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.7              | 54.0                 | -14.3                  | DTS, EUT Vert, Ant Vert            |
| 7440.767   | 43.9             | 15.0        | 1.5                     | 15.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 58.9              | 74.0                 | -15.1                  | High Ch., EUT Horz, Ant Horz       |
| 7440.125   | 43.0             | 15.0        | 1.6                     | 106.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 58.0              | 74.0                 | -16.0                  | High Ch., EUT Vert, Ant Vert       |
| 7440.517   | 43.0             | 15.0        | 3.2                     | 320.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 58.0              | 74.0                 | -16.0                  | High Ch., EUT Vert, Ant Vert       |
| 7439.242   | 42.8             | 15.0        | 2.2                     | 255.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 57.8              | 74.0                 | -16.2                  | High Ch., EUT on Side, Ant on Side |
| 7446.525   | 42.1             | 15.0        | 2.0                     | 249.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 57.1              | 74.0                 | -16.9                  | DTS, EUT on Side, Ant on Side      |

| Freq<br>(MHz) | Amplitude<br>(dBuV) | Factor<br>(dB) | Antenna Height<br>(meters) | Azimuth<br>(degrees) | Duty Cycle<br>Correction<br>Factor<br>(dB) | External<br>Attenuation<br>(dB) | Polarity/<br>Transducer<br>Type | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>(dBuV/m) | Spec. Limit<br>(dBuV/m) | Compared to<br>Spec.<br>(dB) | Comments                           |
|---------------|---------------------|----------------|----------------------------|----------------------|--------------------------------------------|---------------------------------|---------------------------------|----------|--------------------------------|----------------------|-------------------------|------------------------------|------------------------------------|
| 7440.867      | 41.2                | 15.0           | 1.8                        | 27.0                 | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 56.2                 | 74.0                    | -17.8                        | High Ch., EUT Horz, Ant Horz       |
| 7445.450      | 40.5                | 15.0           | 1.5                        | 54.0                 | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 55.5                 | 74.0                    | -18.5                        | DTS, EUT Horz, Ant Horz            |
| 7446.508      | 40.5                | 15.0           | 1.5                        | 357.0                | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 55.5                 | 74.0                    | -18.5                        | DTS, EUT Vert, Ant Vert            |
| 7439.292      | 40.5                | 15.0           | 1.4                        | 87.0                 | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 55.5                 | 74.0                    | -18.5                        | High Ch., EUT on Side, Ant on Side |
| 7446.858      | 40.0                | 15.0           | 1.5                        | 48.0                 | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 55.0                 | 74.0                    | -19.0                        | DTS, EUT Horz, Ant Horz            |
| 7447.167      | 39.9                | 15.0           | 3.0                        | 137.0                | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 54.9                 | 74.0                    | -19.1                        | DTS, EUT Vert, Ant Vert            |
| 7446.117      | 39.8                | 15.0           | 3.1                        | 200.0                | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 54.8                 | 74.0                    | -19.2                        | DTS, EUT on Side, Ant on Side      |
| 12401.150     | 26.4                | 4.9            | 1.4                        | 176.0                | 3.2                                        | 0.0                             | Vert                            | AV       | 0.0                            | 34.5                 | 54.0                    | -19.5                        | High Ch., EUT Vert, Ant Vert       |
| 12407.780     | 26.2                | 5.0            | 1.5                        | 232.0                | 3.2                                        | 0.0                             | Horz                            | AV       | 0.0                            | 34.4                 | 54.0                    | -19.6                        | DTS, EUT on Side, Ant on Side      |
| 12401.540     | 26.2                | 4.9            | 1.5                        | 245.0                | 3.2                                        | 0.0                             | Horz                            | AV       | 0.0                            | 34.3                 | 54.0                    | -19.7                        | High Ch., EUT Horz, Ant Horz       |
| 12412.230     | 26.1                | 5.0            | 1.5                        | 98.0                 | 3.2                                        | 0.0                             | Vert                            | AV       | 0.0                            | 34.3                 | 54.0                    | -19.7                        | DTS, EUT Vert, Ant Vert            |
| 4960.150      | 41.5                | 9.5            | 1.0                        | 54.0                 | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 51.0                 | 74.0                    | -23.0                        | High Ch., EUT Horz, Ant Horz       |
| 4960.583      | 38.7                | 9.5            | 3.3                        | 149.0                | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 48.2                 | 74.0                    | -25.8                        | High Ch., EUT Vert, Ant Vert       |
| 4963.358      | 37.9                | 9.5            | 1.5                        | 355.0                | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 47.4                 | 74.0                    | -26.6                        | DTS, EUT on Side, Ant on Side      |
| 4966.325      | 36.8                | 9.5            | 1.5                        | 162.0                | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 46.3                 | 74.0                    | -27.7                        | DTS, EUT Vert, Ant Vert            |
| 12400.390     | 37.4                | 4.9            | 1.5                        | 245.0                | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 42.3                 | 74.0                    | -31.7                        | High Ch., EUT Horz, Ant Horz       |
| 12401.510     | 37.2                | 4.9            | 1.4                        | 176.0                | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 42.1                 | 74.0                    | -31.9                        | High Ch., EUT Vert, Ant Vert       |
| 12409.890     | 36.8                | 5.0            | 1.5                        | 232.0                | 0.0                                        | 0.0                             | Horz                            | PK       | 0.0                            | 41.8                 | 74.0                    | -32.2                        | DTS, EUT on Side, Ant on Side      |
| 12407.930     | 35.9                | 5.0            | 1.5                        | 98.0                 | 0.0                                        | 0.0                             | Vert                            | PK       | 0.0                            | 40.9                 | 74.0                    | -33.1                        | DTS, EUT Vert, Ant Vert            |

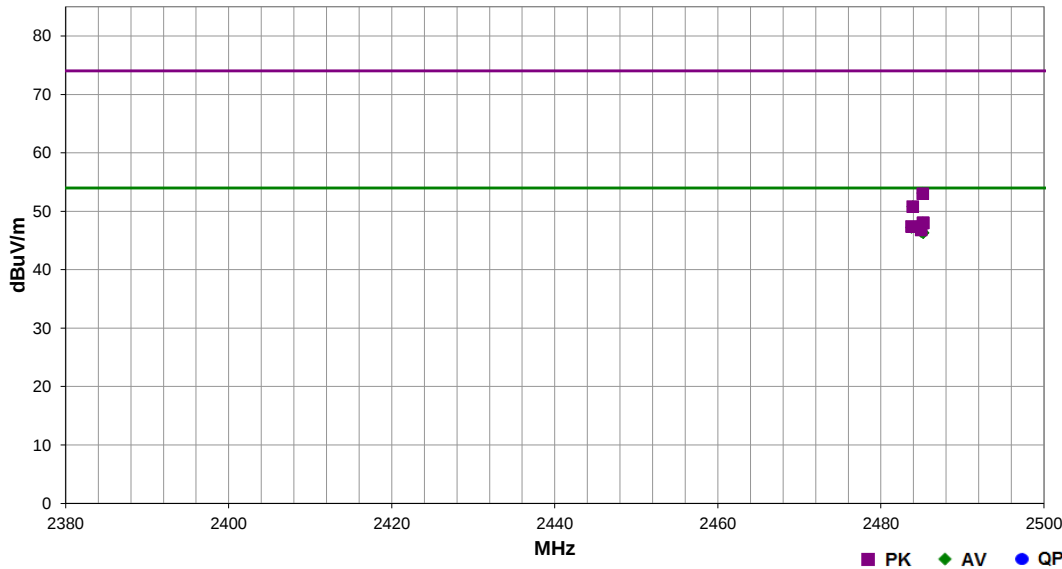
# SPURIOUS RADIATED EMISSIONS



EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                                                  |                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:                                      | SYNA0313                                                                                                                                                                                                                                                                                                                                     | Date:             | 2020-12-14 |                        |
| Project:                                         | None                                                                                                                                                                                                                                                                                                                                         | Temperature:      | 25.7 °C    |                        |
| Job Site:                                        | NC01                                                                                                                                                                                                                                                                                                                                         | Humidity:         | 29.2% RH   |                        |
| Serial Number:                                   | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                | Barometric Pres.: | 1026 mbar  |                        |
| EUT: RadioNode                                   |                                                                                                                                                                                                                                                                                                                                              |                   |            | Tested by: Brian Fahey |
| Configuration: 2                                 |                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Customer: Walt Disney Parks and Resorts US, Inc. |                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Attendees: None                                  |                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power: 24VDC via 120VAC/60Hz                 |                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Operating Mode:                                  | Simultaneous Tx mode: BTLE Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.           |                   |            |                        |
| Deviations:                                      | None                                                                                                                                                                                                                                                                                                                                         |                   |            |                        |
| Comments:                                        | See comments below for Channel, EUT orientations. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |
| Test Specifications                              |                                                                                                                                                                                                                                                                                                                                              | Test Method       |            |                        |
| FCC 15.247:2020                                  |                                                                                                                                                                                                                                                                                                                                              | ANSI C63.10:2013  |            |                        |

|       |   |                   |   |                   |           |         |      |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
| Run # | 7 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|



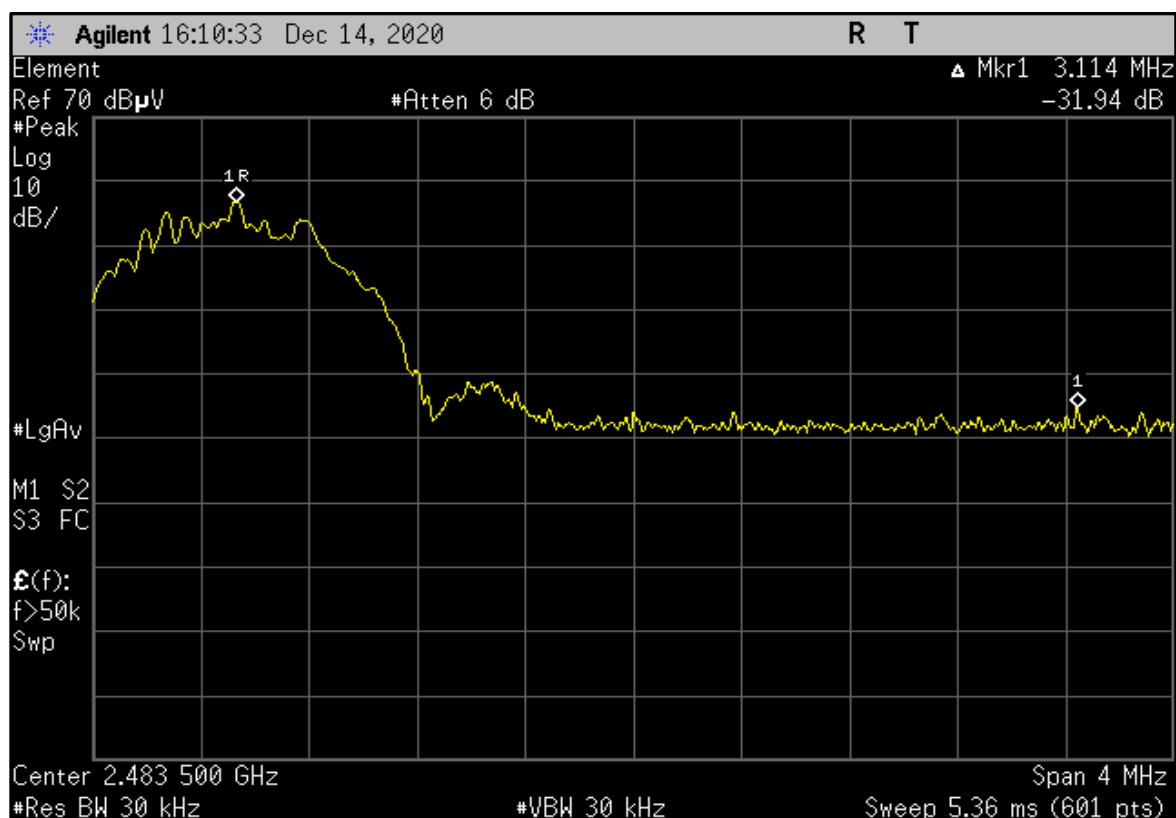
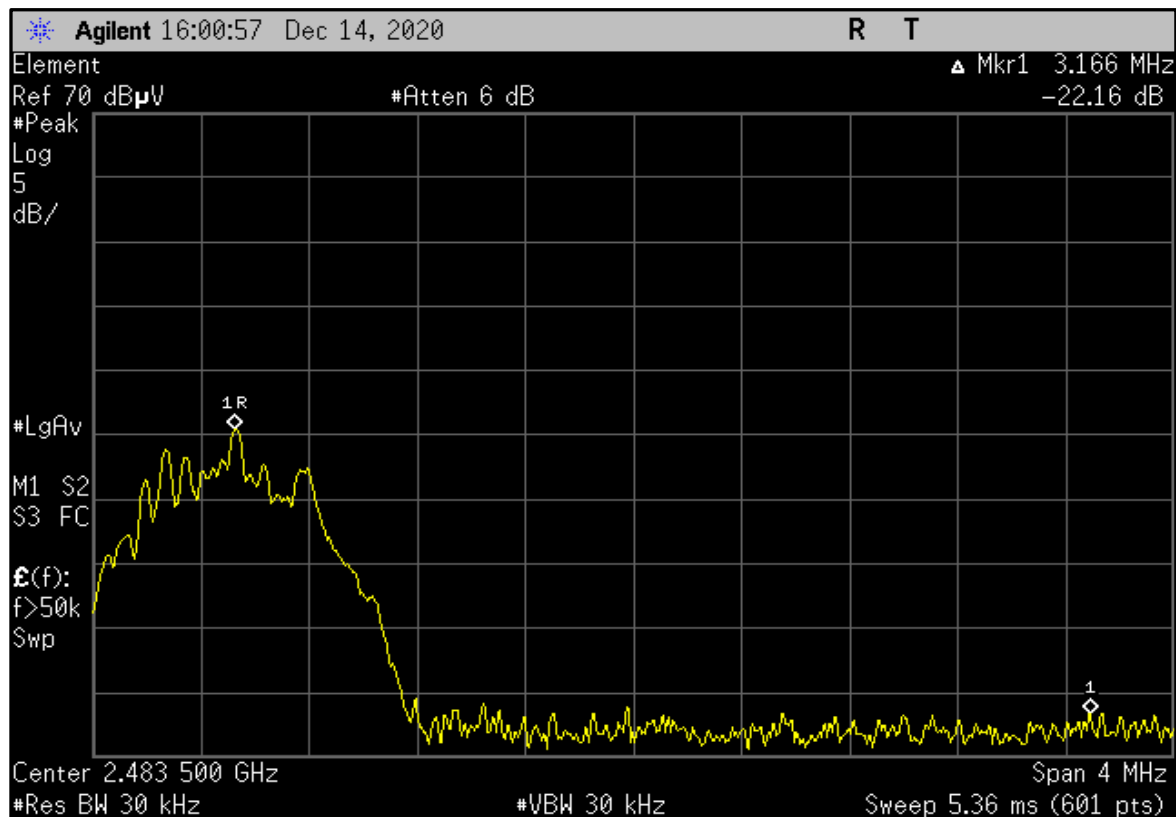
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                            |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------|
| 2485.133   | 30.7                        | -0.8        | 1.5                     | 336.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 53.1              | 54.0                 | -0.9                   | DTS, EUT Horz, Ant Horz: Fund 62.0dBuV + -31.3dBc = 30.7dBuV (calc. amp.)        |
| 2483.900   | 28.4                        | -0.8        | 1.9                     | 306.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 50.8              | 54.0                 | -3.2                   | DTS, EUT Vert, Ant Vert: Fund 60.4dBuV + -32.0dBc = 28.4dBuV (calc. amp.)        |
| 2485.147   | 25.6                        | -0.8        | 1.9                     | 304.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 48.0              | 54.0                 | -6.0                   | DTS, EUT on Side, Ant on Side.: Fund 57.5dBuV + -31.9dBc = 25.6dBuV (calc. amp.) |
| 2483.747   | 24.8                        | -0.8        | 1.5                     | 157.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Vert, Ant Vert: Fund 56.9dBuV + -32.1dBc = 24.8dBuV (calc. amp.)        |
| 2484.933   | 24.1                        | -0.8        | 1.5                     | 306.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.5              | 54.0                 | -7.5                   | DTS, EUT on Side, Ant on Side.: Fund 53.3dBuV + -29.2dBc = 24.1dBuV (calc. amp.) |
| 2485.193   | 23.9                        | -0.8        | 2.1                     | 344.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.3              | 54.0                 | -7.7                   | DTS, EUT Horz, Ant Horz: Fund 46.1dBuV + -22.2dBc = 23.9dBuV (calc. amp.)        |
| 2485.133   | 33.8                        | -0.8        | 1.5                     | 336.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 53.0              | 74.0                 | -21.0                  | DTS, EUT Horz, Ant Horz: Fund 65.1dBuV + -31.3dBc = 33.8dBuV (calc. amp.)        |
| 2483.900   | 31.6                        | -0.8        | 1.9                     | 306.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 50.8              | 74.0                 | -23.2                  | DTS, EUT Vert, Ant Vert: Fund 63.6dBuV + -32.0dBc = 31.6dBuV (calc. amp.)        |
| 2485.193   | 28.8                        | -0.8        | 2.1                     | 344.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | DTS, EUT Horz, Ant Horz: Fund 51.0dBuV + -22.2dBc = 28.8dBuV (calc. amp.)        |
| 2485.147   | 28.8                        | -0.8        | 1.9                     | 304.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | DTS, EUT on Side, Ant on Side.: Fund 60.7dBuV + -31.9dBc = 28.8dBuV (calc. amp.) |
| 2483.747   | 28.2                        | -0.8        | 1.5                     | 157.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | DTS, EUT Vert, Ant Vert: Fund 60.3dBuV + -32.1dBc = 28.2dBuV (calc. amp.)        |
| 2484.933   | 27.6                        | -0.8        | 1.5                     | 306.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | DTS, EUT on Side, Ant on Side.: Fund 56.8dBuV + -29.2dBc = 27.6dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



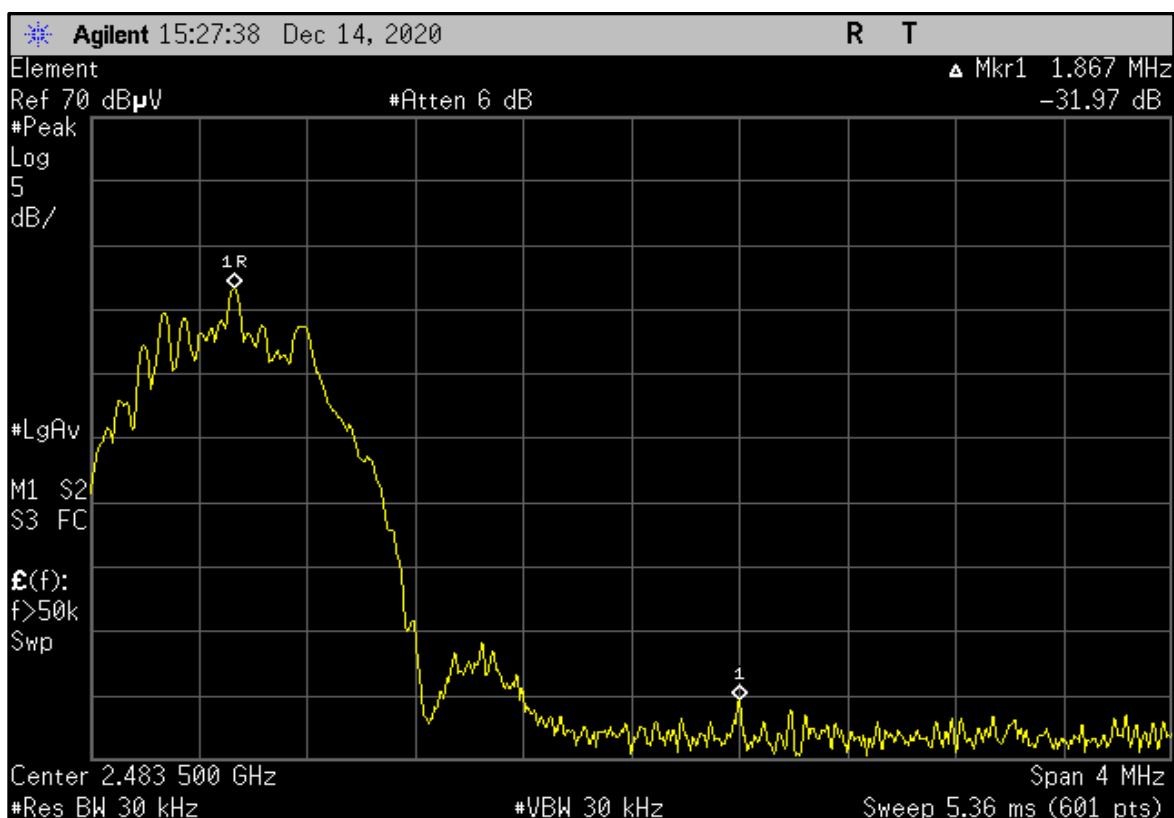
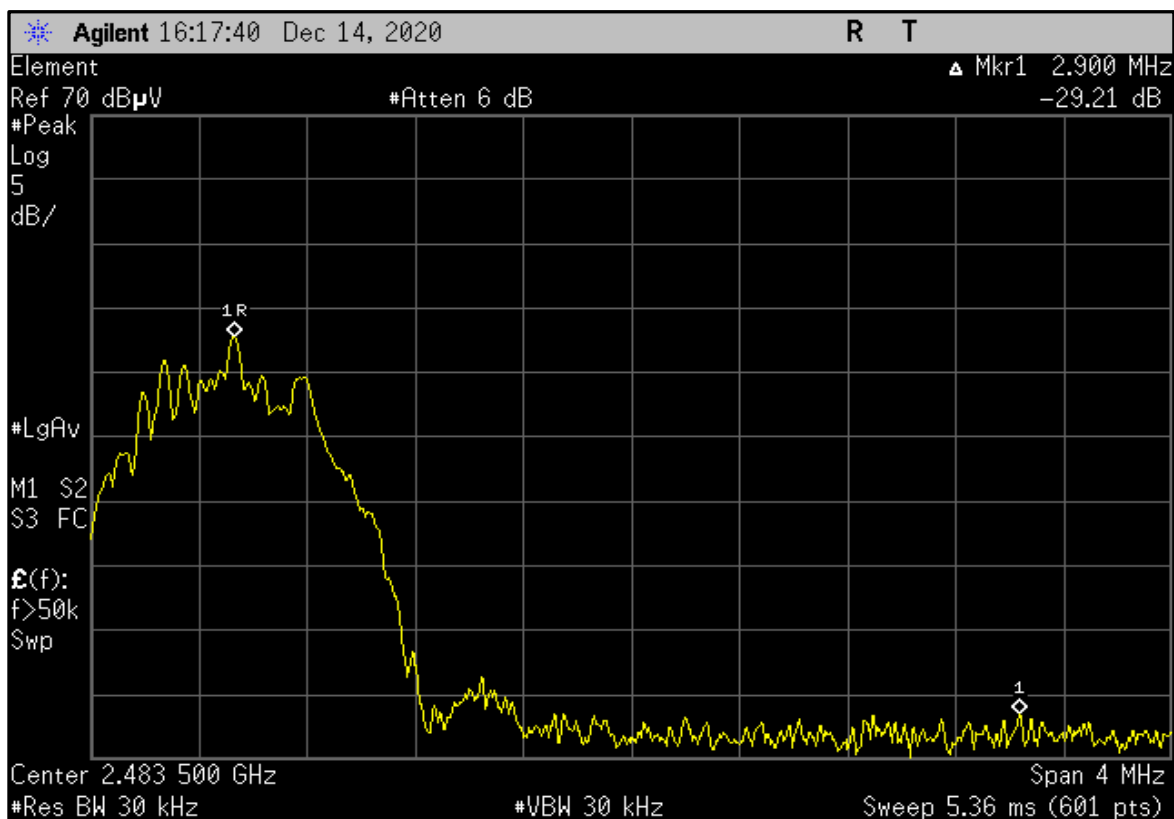
DTS, EUT on Side, Ant on Side.

# SPURIOUS RADIATED EMISSIONS



DTS, EUT on Side, Ant on Side.

PSA-ESCI 2020.06.24.2



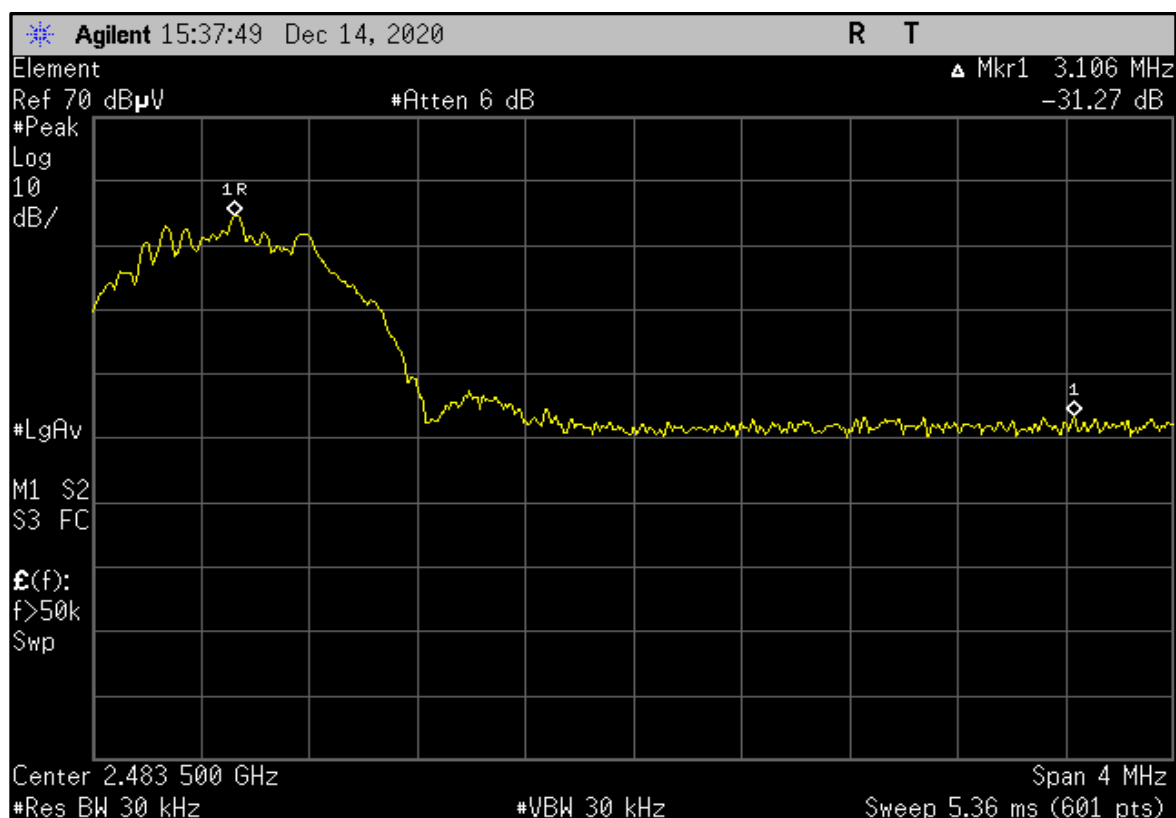
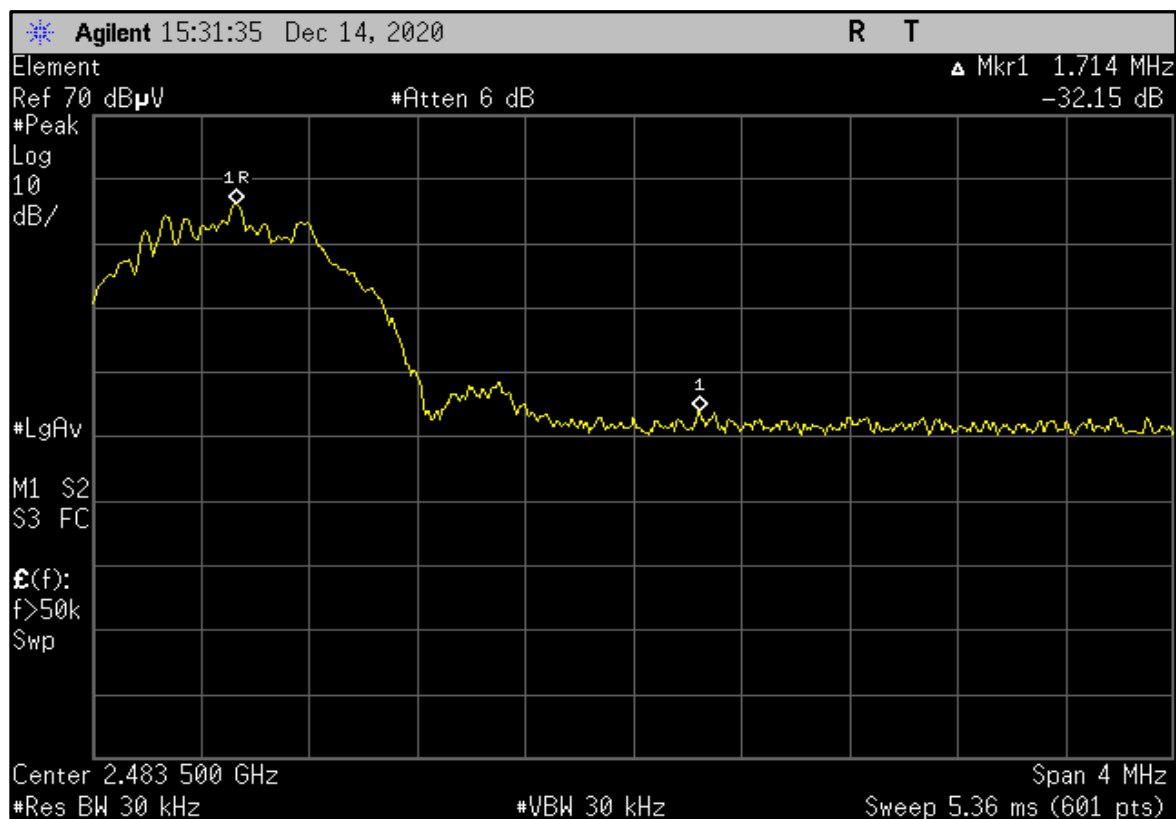
DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



DTS, EUT Horz, Ant Horz

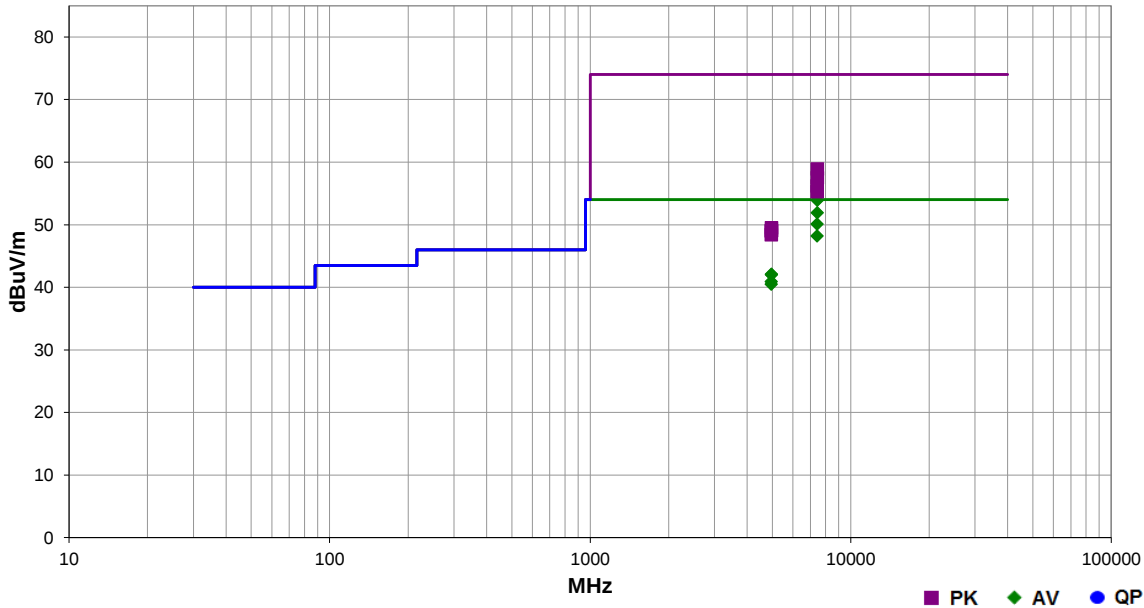
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.7 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 29.2% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1026 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                        |
| Operating Mode: | Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

| Test Specifications |   |                   |   |                   | Test Method      |         |      |
|---------------------|---|-------------------|---|-------------------|------------------|---------|------|
| FCC 15.247:2020     |   |                   |   |                   | ANSI C63.10:2013 |         |      |
|                     |   |                   |   |                   |                  |         |      |
| Run #               | 8 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m)        | Results | Pass |

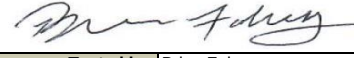


| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.458   | 35.7             | 15.0        | 2.2                     | 227.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 53.9              | 54.0                 | -0.1                   | DTS, EUT on Side, Ant on Side |
| 7446.625   | 33.7             | 15.0        | 1.6                     | 328.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 51.9              | 54.0                 | -2.1                   | DTS, EUT Vert, Ant Vert       |
| 7440.667   | 31.9             | 15.0        | 1.6                     | 33.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 50.1              | 54.0                 | -3.9                   | High Ch., EUT Horz, Ant Horz  |
| 7440.533   | 30.0             | 15.0        | 1.3                     | 248.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.2              | 54.0                 | -5.8                   | High Ch., EUT Vert, Ant Vert  |
| 4964.142   | 29.4             | 9.5         | 1.5                     | 8.0               | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 42.1              | 54.0                 | -11.9                  | DTS, EUT Horz, Ant Horz       |
| 4963.900   | 29.3             | 9.5         | 1.4                     | 323.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 42.0              | 54.0                 | -12.0                  | DTS, EUT Vert, Ant Vert       |
| 4960.075   | 28.2             | 9.5         | 1.5                     | 334.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.9              | 54.0                 | -13.1                  | High Ch., EUT Horz, Ant Horz  |
| 4960.008   | 27.8             | 9.5         | 3.6                     | 146.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 40.5              | 54.0                 | -13.5                  | High Ch., EUT Vert, Ant Vert  |
| 7446.867   | 43.9             | 15.0        | 2.2                     | 227.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 58.9              | 74.0                 | -15.1                  | DTS, EUT on Side, Ant on Side |
| 7445.200   | 42.5             | 15.0        | 1.6                     | 328.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 57.5              | 74.0                 | -16.5                  | DTS, EUT Vert, Ant Vert       |
| 7440.708   | 41.2             | 15.0        | 1.6                     | 33.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 56.2              | 74.0                 | -17.8                  | High Ch., EUT Horz, Ant Horz  |
| 7439.667   | 40.3             | 15.0        | 1.3                     | 248.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 55.3              | 74.0                 | -18.7                  | High Ch., EUT Vert, Ant Vert  |
| 4963.475   | 40.0             | 9.5         | 1.4                     | 323.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 49.5              | 74.0                 | -24.5                  | DTS, EUT Vert, Ant Vert       |
| 4963.800   | 39.6             | 9.5         | 1.5                     | 8.0               | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | DTS, EUT Horz, Ant Horz       |
| 4960.808   | 39.5             | 9.5         | 1.5                     | 334.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 49.0              | 74.0                 | -25.0                  | High Ch., EUT Horz, Ant Horz  |
| 4959.983   | 38.9             | 9.5         | 3.6                     | 146.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | High Ch., EUT Vert, Ant Vert  |

# SPURIOUS RADIATED EMISSIONS

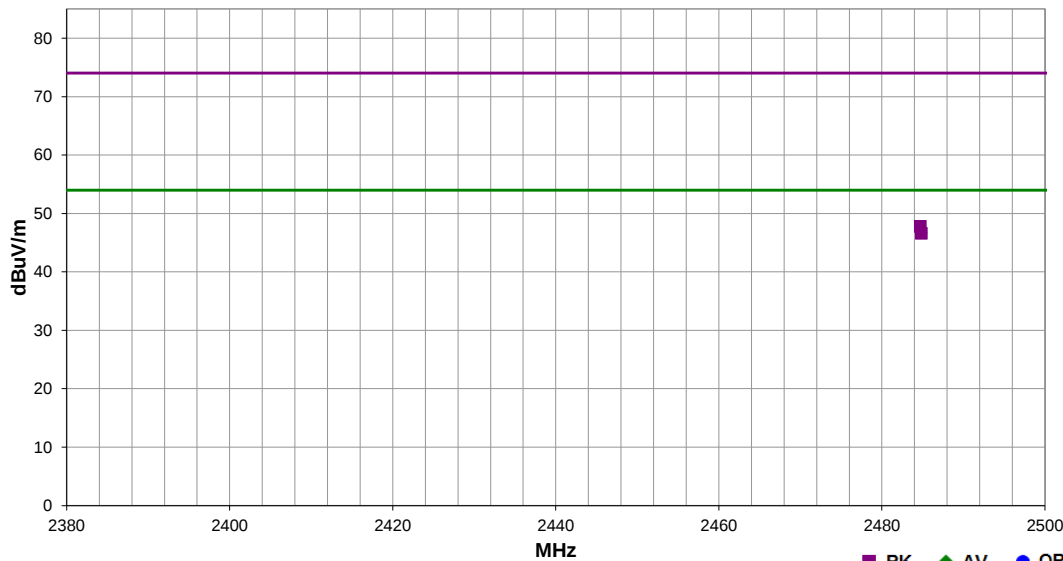


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.7 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 29.2% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1026 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |
| Operating Mode: | Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 9 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|---|-------------------|---|-------------------|-----------|---------|------|
|-------|---|-------------------|---|-------------------|-----------|---------|------|



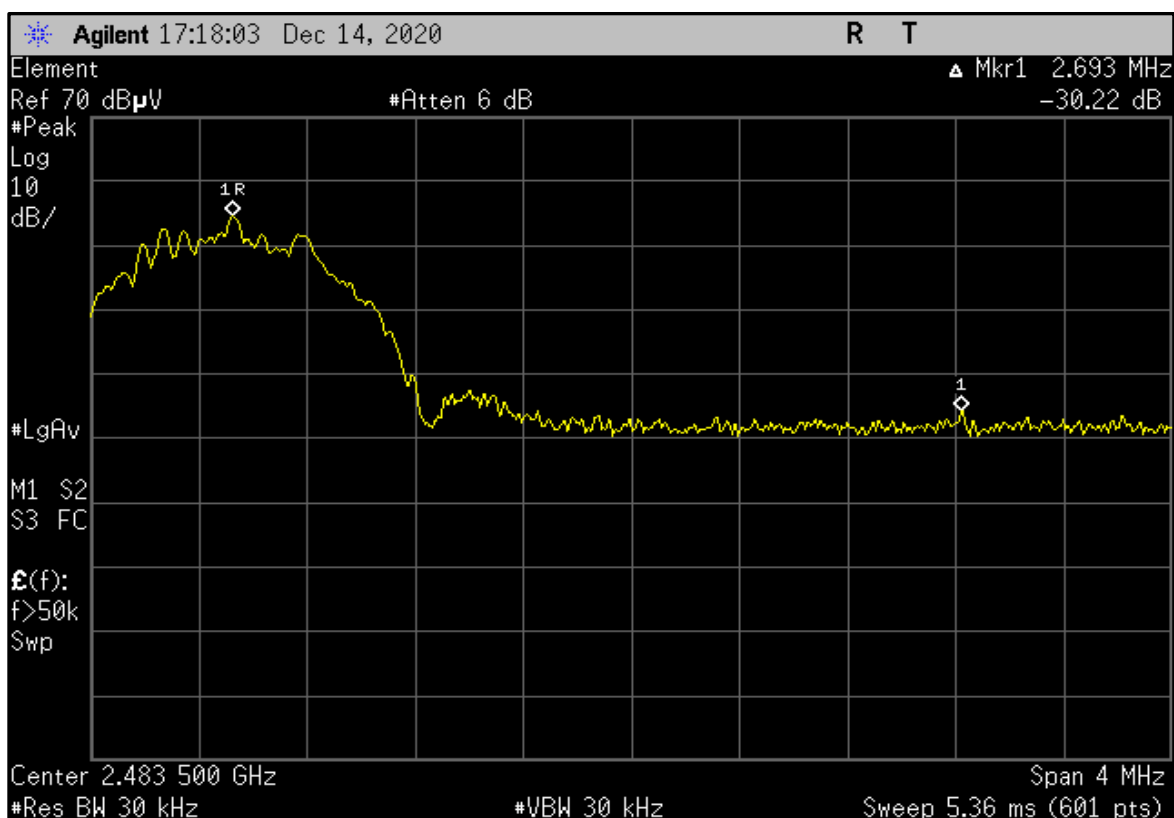
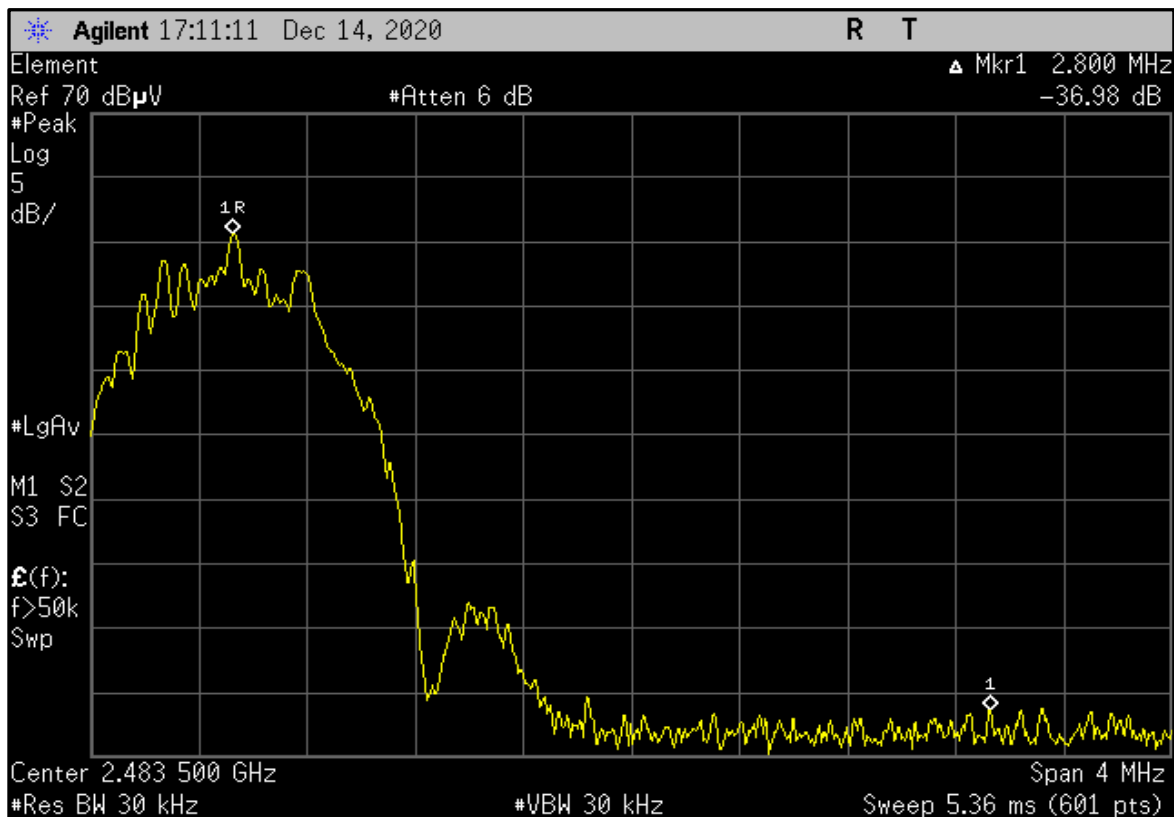
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                      |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------|
| 2484.720   | 24.8                        | -0.8        | 1.5                     | 154.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Vert, Ant Vert: Fund 55.0dBuV + - 30.2dBc = 24.8dBuV (calc. amp.) |
| 2484.827   | 24.3                        | -0.8        | 1.5                     | 316.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | DTS, EUT Horz, Ant Horz: Fund 61.3dBuV + - 37.0dBc = 24.3dBuV (calc. amp.) |
| 2484.720   | 28.6                        | -0.8        | 1.5                     | 154.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.8              | 74.0                 | -26.2                  | DTS, EUT Vert, Ant Vert: Fund 58.8dBuV + - 30.2dBc = 28.6dBuV (calc. amp.) |
| 2484.827   | 27.4                        | -0.8        | 1.5                     | 316.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.6              | 74.0                 | -27.4                  | DTS, EUT Horz, Ant Horz: Fund 64.4dBuV + - 37.0dBc = 27.4dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS

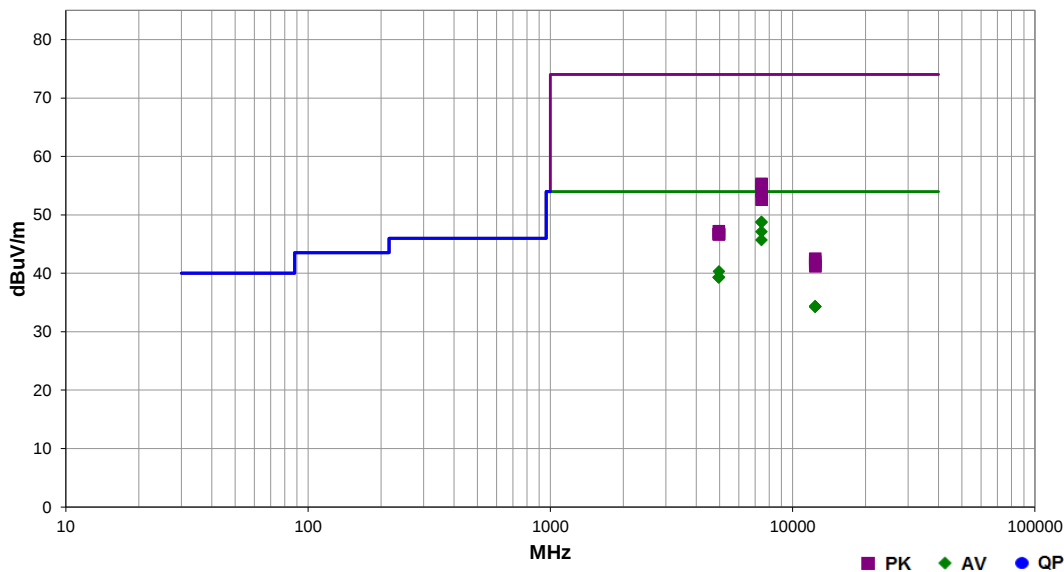


EmR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.7 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 29.2% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1026 mbar  |                                                                                    |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode: | Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 10 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7446.633   | 30.6             | 15.0        | 1.5                     | 329.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 48.8              | 54.0                 | -5.2                   | DTS, EUT on Side, Ant on Side |
| 7446.567   | 30.5             | 15.0        | 1.5                     | 74.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.7              | 54.0                 | -5.3                   | DTS, EUT Vert, Ant Vert       |
| 7439.483   | 28.9             | 15.0        | 1.0                     | 10.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | High Ch., EUT Horz, Ant Horz  |
| 7440.808   | 27.5             | 15.0        | 1.4                     | 64.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 45.7              | 54.0                 | -8.3                   | High Ch., EUT Vert, Ant Vert  |
| 4963.875   | 27.6             | 9.5         | 3.7                     | 159.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.3              | 54.0                 | -13.7                  | DTS, EUT on Side, Ant on Side |
| 4961.167   | 26.6             | 9.5         | 1.4                     | 206.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Vert, Ant Vert  |
| 4962.617   | 26.6             | 9.5         | 1.5                     | 315.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | DTS, EUT Vert, Ant Vert       |
| 4959.608   | 26.6             | 9.5         | 1.5                     | 114.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Horz, Ant Horz  |
| 7445.308   | 40.3             | 15.0        | 1.5                     | 329.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.3              | 74.0                 | -18.7                  | DTS, EUT on Side, Ant on Side |
| 7445.583   | 40.0             | 15.0        | 1.5                     | 74.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 55.0              | 74.0                 | -19.0                  | DTS, EUT Vert, Ant Vert       |
| 12401.240  | 26.2             | 4.9         | 1.5                     | 86.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 34.3              | 54.0                 | -19.7                  | High Ch., EUT Horz, Ant Horz  |
| 12407.520  | 26.1             | 5.0         | 1.5                     | 301.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 34.3              | 54.0                 | -19.7                  | DTS, EUT on Side, Ant on Side |
| 12401.700  | 26.2             | 4.9         | 1.5                     | 53.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 34.3              | 54.0                 | -19.7                  | High Ch., EUT Vert, Ant Vert  |
| 12409.190  | 26.1             | 5.0         | 1.5                     | 147.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 34.3              | 54.0                 | -19.7                  | DTS, EUT Vert, Ant Vert       |
| 7440.892   | 39.0             | 15.0        | 1.0                     | 10.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 54.0              | 74.0                 | -20.0                  | High Ch., EUT Horz, Ant Horz  |
| 7440.183   | 37.6             | 15.0        | 1.4                     | 64.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 52.6              | 74.0                 | -21.4                  | High Ch., EUT Vert, Ant Vert  |
| 4963.442   | 37.7             | 9.5         | 3.7                     | 159.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | DTS, EUT on Side, Ant on Side |
| 4959.517   | 37.2             | 9.5         | 1.4                     | 206.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.7              | 74.0                 | -27.3                  | High Ch., EUT Vert, Ant Vert  |
| 4963.567   | 37.2             | 9.5         | 1.5                     | 315.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 46.7              | 74.0                 | -27.3                  | DTS, EUT Vert, Ant Vert       |
| 4960.975   | 37.2             | 9.5         | 1.5                     | 114.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 46.7              | 74.0                 | -27.3                  | High Ch., EUT Horz, Ant Horz  |
| 12401.140  | 37.6             | 4.9         | 1.5                     | 53.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 42.5              | 74.0                 | -31.5                  | High Ch., EUT Vert, Ant Vert  |
| 12401.300  | 37.1             | 4.9         | 1.5                     | 86.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 42.0              | 74.0                 | -32.0                  | High Ch., EUT Horz, Ant Horz  |
| 12408.770  | 36.4             | 5.0         | 1.5                     | 147.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 41.4              | 74.0                 | -32.6                  | DTS, EUT Vert, Ant Vert       |
| 12410.580  | 36.2             | 5.0         | 1.5                     | 301.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 41.2              | 74.0                 | -32.8                  | DTS, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

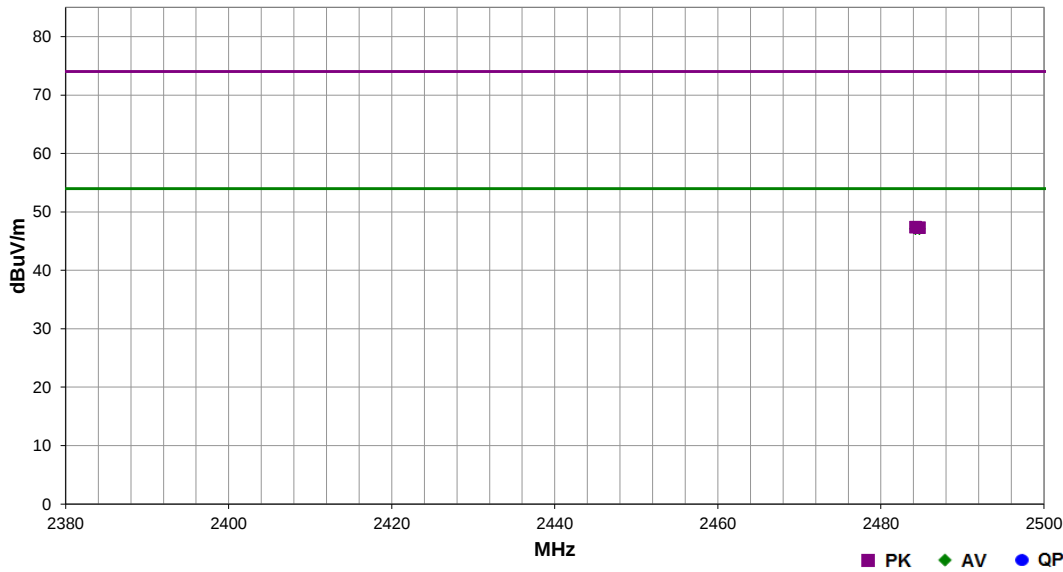


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.7 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 29.2% RH   |  |
| Serial Number:         | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1026 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| Configuration:         | 1                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| EUT Power:             | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |  |
| Operating Mode:        | Simultaneous Tx mode: BTLE Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |  |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 12 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



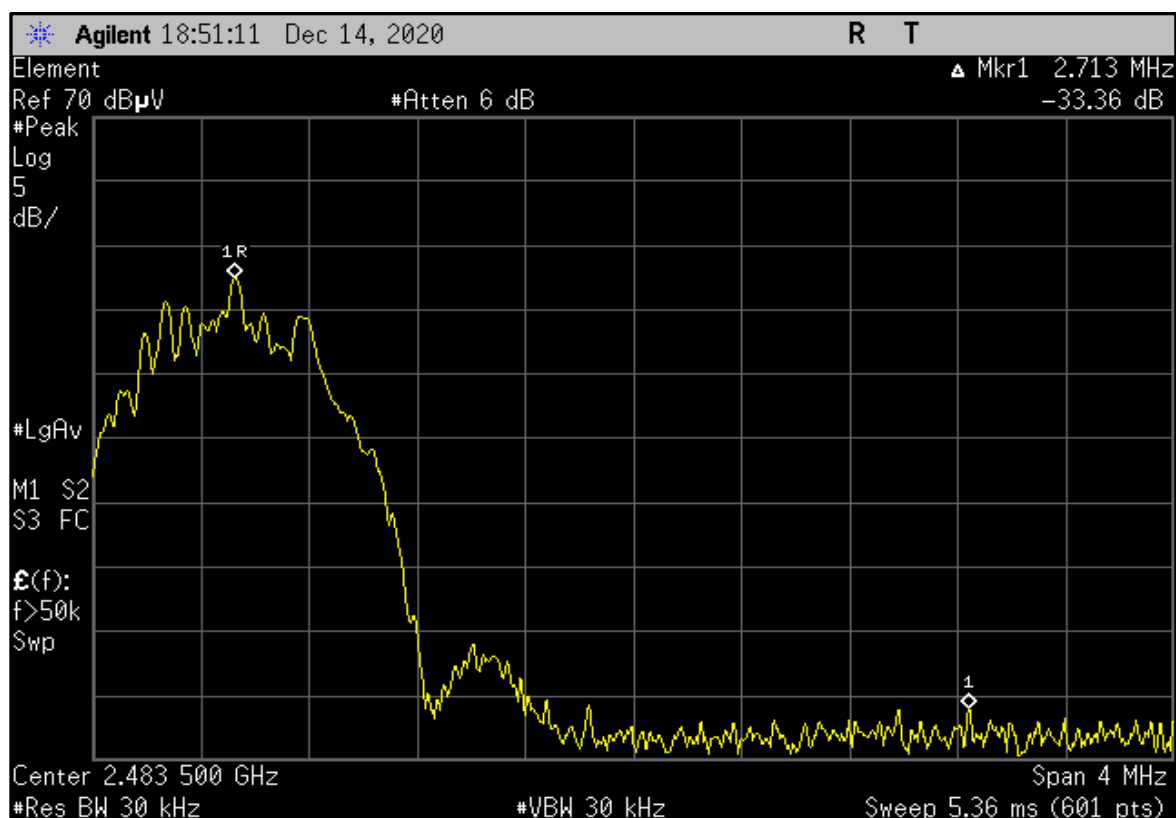
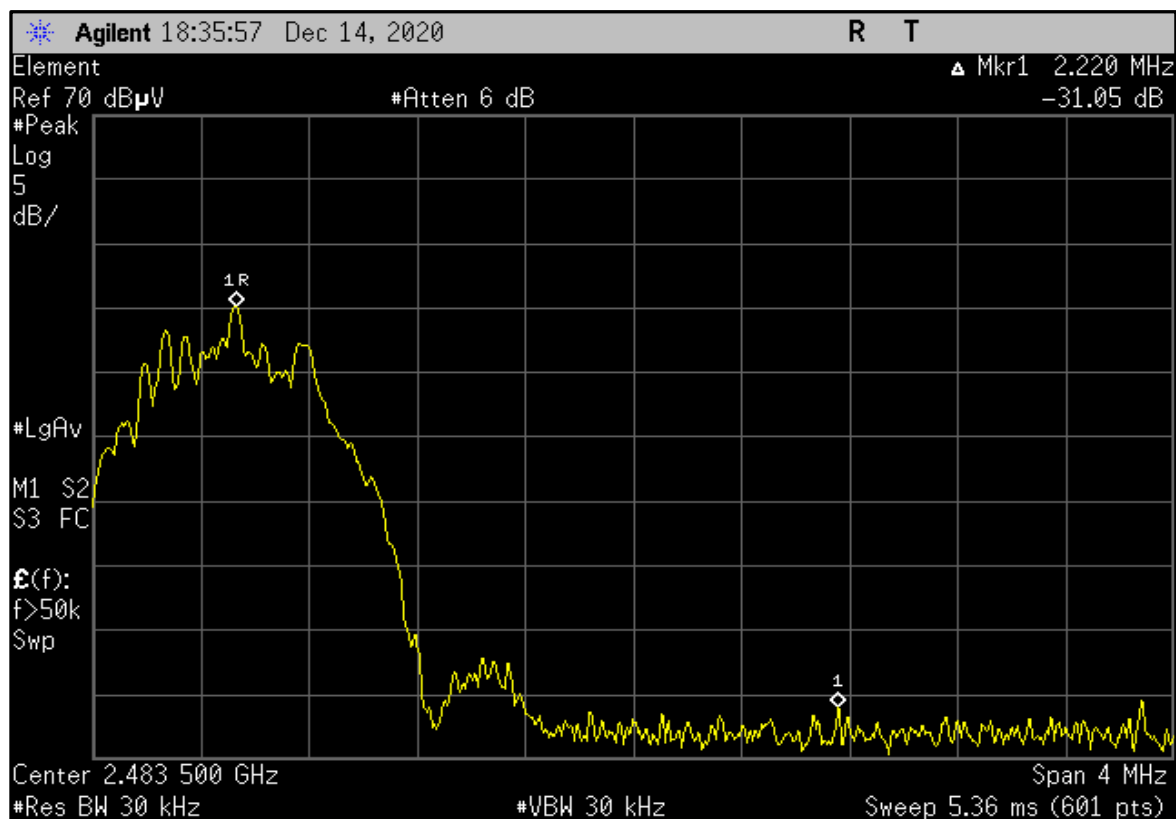
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                      |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------|
| 2484.253   | 24.7                        | -0.8        | 1.5                     | 234.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | DTS, EUT Vert, Ant Vert: Fund 55.8dBuV + - 31.1dBc = 24.7dBuV (calc. amp.) |
| 2484.740   | 24.7                        | -0.8        | 1.5                     | 300.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.1              | 54.0                 | -6.9                   | DTS, EUT Horz, Ant Horz: Fund 58.1dBuV + - 33.4dBc = 24.7dBuV (calc. amp.) |
| 2484.253   | 28.2                        | -0.8        | 1.5                     | 234.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | DTS, EUT Vert, Ant Vert: Fund 59.3dBuV + - 31.1dBc = 28.2dBuV (calc. amp.) |
| 2484.740   | 28.1                        | -0.8        | 1.5                     | 300.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.3              | 74.0                 | -26.7                  | DTS, EUT Horz, Ant Horz: Fund 61.5dBuV + - 33.4dBc = 28.1dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



DTS, EUT Horz, Ant Horz

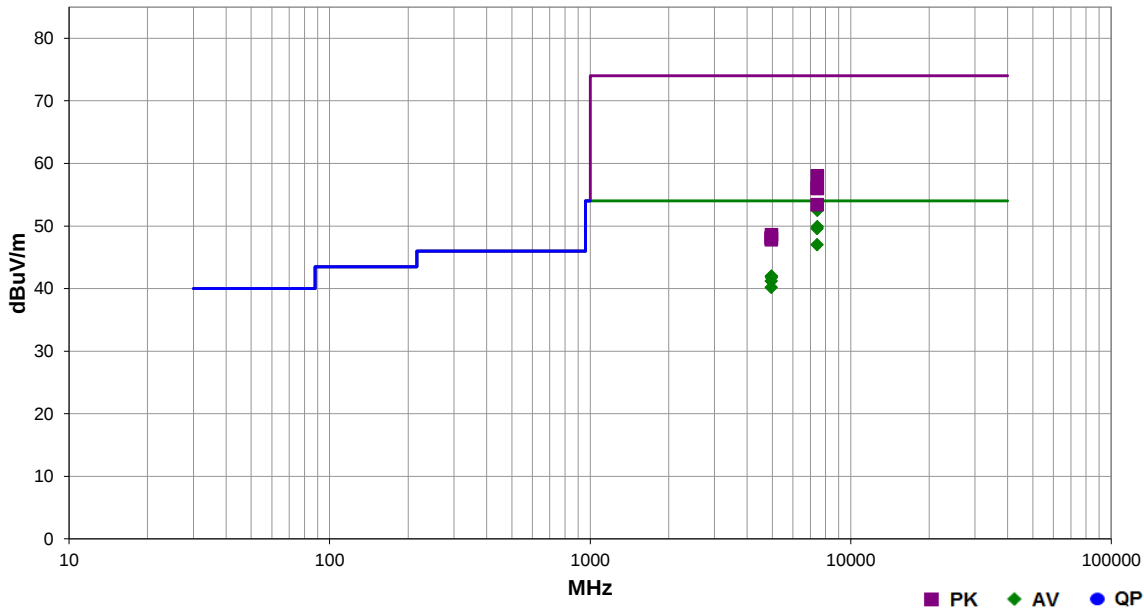
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.1 °C    |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 28.9% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1016 mbar  |                                                                                    |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey                                                             |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode: | Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |

| Test Specifications |    |                   |   |                   | Test Method      |         |      |
|---------------------|----|-------------------|---|-------------------|------------------|---------|------|
| FCC 15.247:2020     |    |                   |   |                   | ANSI C63.10:2013 |         |      |
| Run #               | 16 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m)        | Results | Pass |



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.508   | 34.3             | 15.0        | 3.2                     | 319.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 52.5              | 54.0                 | -1.5                   | DTS, EUT on Side, Ant on Side |
| 7446.683   | 31.7             | 15.0        | 1.5                     | 179.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 49.9              | 54.0                 | -4.1                   | DTS, EUT Vert, Ant Vert       |
| 7439.475   | 31.4             | 15.0        | 1.4                     | 18.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 49.6              | 54.0                 | -4.4                   | High Ch., EUT Horz, Ant Horz  |
| 7440.625   | 28.8             | 15.0        | 1.5                     | 184.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | High Ch., EUT Vert, Ant Vert  |
| 4964.175   | 29.3             | 9.5         | 1.5                     | 355.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 42.0              | 54.0                 | -12.0                  | DTS, EUT on Side, Ant on Side |
| 4963.992   | 29.1             | 9.5         | 2.6                     | 328.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 41.8              | 54.0                 | -12.2                  | DTS, EUT Vert, Ant Vert       |
| 4960.000   | 28.5             | 9.5         | 1.3                     | 321.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 41.2              | 54.0                 | -12.8                  | High Ch., EUT Horz, Ant Horz  |
| 4960.108   | 27.5             | 9.5         | 1.5                     | 131.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 40.2              | 54.0                 | -13.8                  | High Ch., EUT Vert, Ant Vert  |
| 7446.608   | 43.0             | 15.0        | 3.2                     | 319.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 58.0              | 74.0                 | -16.0                  | DTS, EUT on Side, Ant on Side |
| 7440.700   | 41.1             | 15.0        | 1.4                     | 18.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 56.1              | 74.0                 | -17.9                  | High Ch., EUT Horz, Ant Horz  |
| 7446.825   | 41.0             | 15.0        | 1.5                     | 179.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 56.0              | 74.0                 | -18.0                  | DTS, EUT Vert, Ant Vert       |
| 7439.075   | 38.4             | 15.0        | 1.5                     | 184.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 53.4              | 74.0                 | -20.6                  | High Ch., EUT Vert, Ant Vert  |
| 4963.892   | 39.1             | 9.5         | 2.6                     | 328.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.6              | 74.0                 | -25.4                  | DTS, EUT Vert, Ant Vert       |
| 4962.383   | 38.6             | 9.5         | 1.5                     | 355.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | DTS, EUT on Side, Ant on Side |
| 4959.267   | 38.6             | 9.5         | 1.5                     | 131.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 48.1              | 74.0                 | -25.9                  | High Ch., EUT Vert, Ant Vert  |
| 4961.175   | 38.3             | 9.5         | 1.3                     | 321.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.8              | 74.0                 | -26.2                  | High Ch., EUT Horz, Ant Horz  |

# SPURIOUS RADIATED EMISSIONS

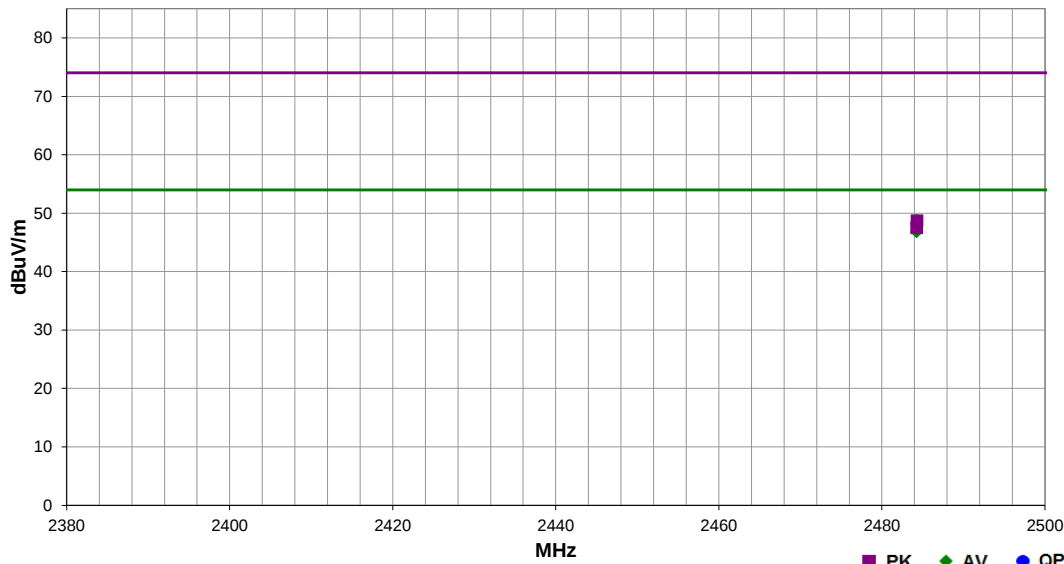


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-14 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 25.1 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 28.9% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1016 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                        |
| Operating Mode: | Simultaneous Tx mode: BTLE Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, High Channel = 2480 MHz; DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. BLE Power setting = 0 dBm, DTS Power setting = 4 dBm.                                                                                |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 17 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



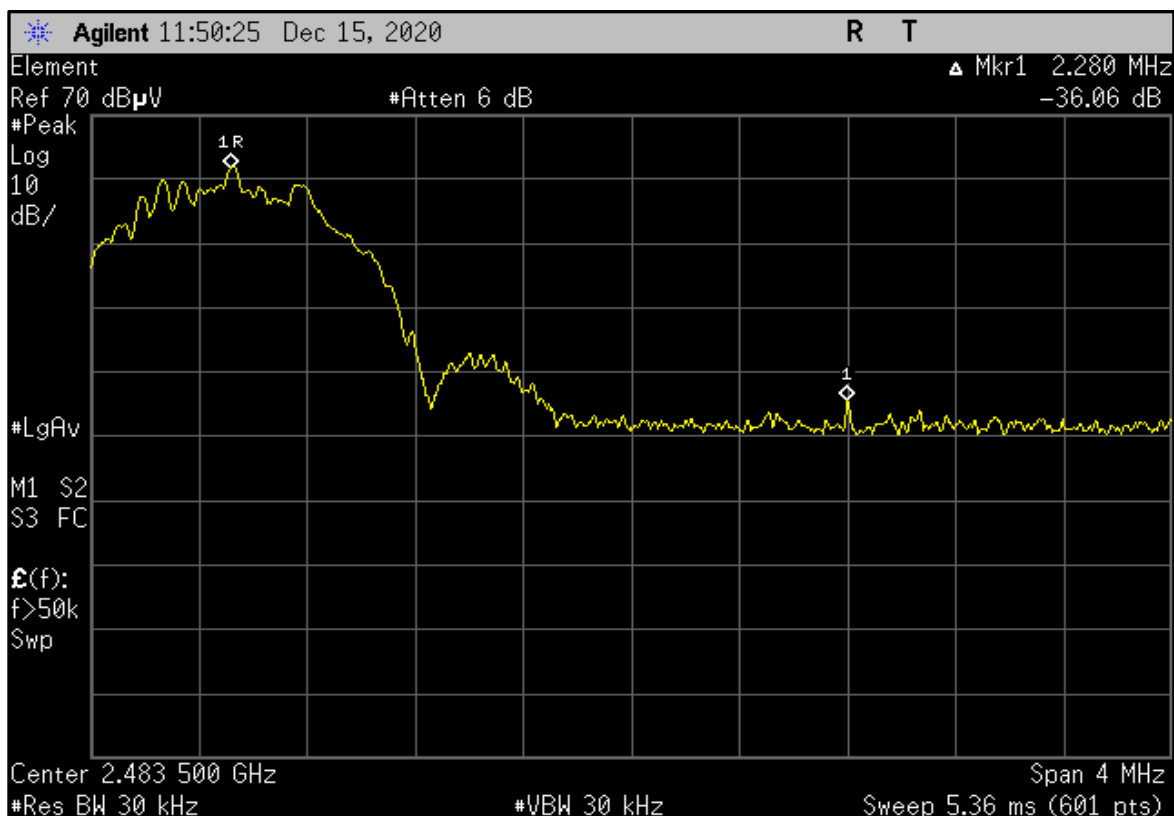
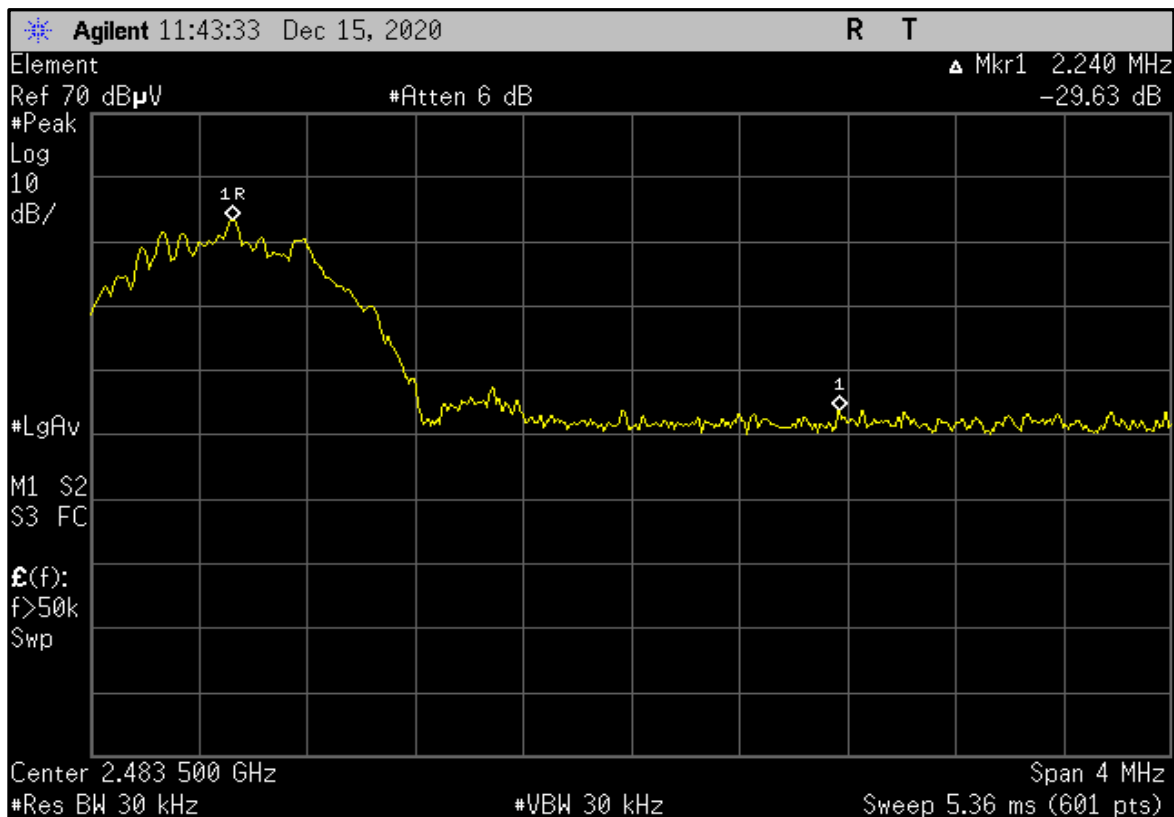
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                      |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------|
| 2484.300   | 26.4                        | -0.8        | 1.5                     | 321.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 48.8              | 54.0                 | -5.2                   | DTS, EUT Horz, Ant Horz: Fund 62.5dBuV + - 36.1dBc = 26.4dBuV (calc. amp.) |
| 2484.267   | 24.4                        | -0.8        | 1.5                     | 56.0              | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | DTS, EUT Vert, Ant Vert: Fund 54.0dBuV + - 29.6dBc = 24.4dBuV (calc. amp.) |
| 2484.300   | 29.5                        | -0.8        | 1.5                     | 321.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 48.7              | 74.0                 | -25.3                  | DTS, EUT Horz, Ant Horz: Fund 65.6dBuV + - 36.1dBc = 29.5dBuV (calc. amp.) |
| 2484.267   | 28.3                        | -0.8        | 1.5                     | 56.0              | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | DTS, EUT Vert, Ant Vert: Fund 57.9dBuV + - 29.6dBc = 28.3dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



DTS, EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## MODES OF OPERATION

DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz.

DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz.

DTS Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz.

DTS Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz.

## POWER SETTINGS INVESTIGATED

24VDC via 120VAC/60Hz

POE via 120VAC/60Hz

## CONFIGURATIONS INVESTIGATED

SYNA0313 - 2

SYNA0313 - 1

## FREQUENCY RANGE INVESTIGATED

|                 |        |                |        |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 26 GHz |
|-----------------|--------|----------------|--------|

## SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

## TEST EQUIPMENT

| Description                  | Manufacturer             | Model                  | ID  | Last Cal.  | Interval |
|------------------------------|--------------------------|------------------------|-----|------------|----------|
| Cable                        | Northwest EMC            | N/A                    | NC8 | 2020-02-07 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-18002650-25-10P | AOD | 2020-02-07 | 12 mo    |
| Antenna - Standard Gain      | ETS Lindgren             | 3160-09                | AIY | NCR        | 0 mo     |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-12001800-30-10P | AOJ | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-08                | AHO | NCR        | 0 mo     |
| Cable                        | High Speed Interconnects | EW292A-NGNG-300        | NC3 | 2020-08-28 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-6F-08001200-30-10P | AOK | 2020-08-26 | 12 mo    |
| Antenna - Standard Gain      | EMCO                     | 3160-07                | AHP | NCR        | 0 mo     |
| Filter - High Pass           | Micro-Tronics            | HPM50111               | HHI | 2020-09-25 | 12 mo    |
| Attenuator                   | Fairview Microwave       | SA18E-20               | AQV | 2020-07-28 | 12 mo    |
| Cable                        | Northwest EMC            | 3115 Horn Cable        | NC2 | 2020-04-20 | 12 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AMF-3D-00100800-32-13P | AVZ | 2020-04-20 | 12 mo    |
| Antenna - Double Ridge       | EMCO                     | 3115                   | AHM | 2020-07-01 | 24 mo    |
| Amplifier - Pre-Amplifier    | Miteq                    | AM-1616-1000           | PAB | 2020-01-28 | 12 mo    |
| Antenna - Biconilog          | Teseq                    | CBL 6141B              | AYL | 2019-09-25 | 24 mo    |
| Cable                        | Northwest EMC            | Bilog Cables           | NC1 | 2020-01-28 | 12 mo    |
| Filter - Low Pass            | Micro-Tronics            | LPM50004               | LFF | 2020-11-06 | 12 mo    |
| Analyzer - Spectrum Analyzer | Agilent                  | E4440A                 | AAX | 2020-04-15 | 12 mo    |

# SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2020.06.24.2

## TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector  
PK = Peak Detector  
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of  $10 \cdot \text{LOG}(1/\text{dc})$ .

# SPURIOUS RADIATED EMISSIONS

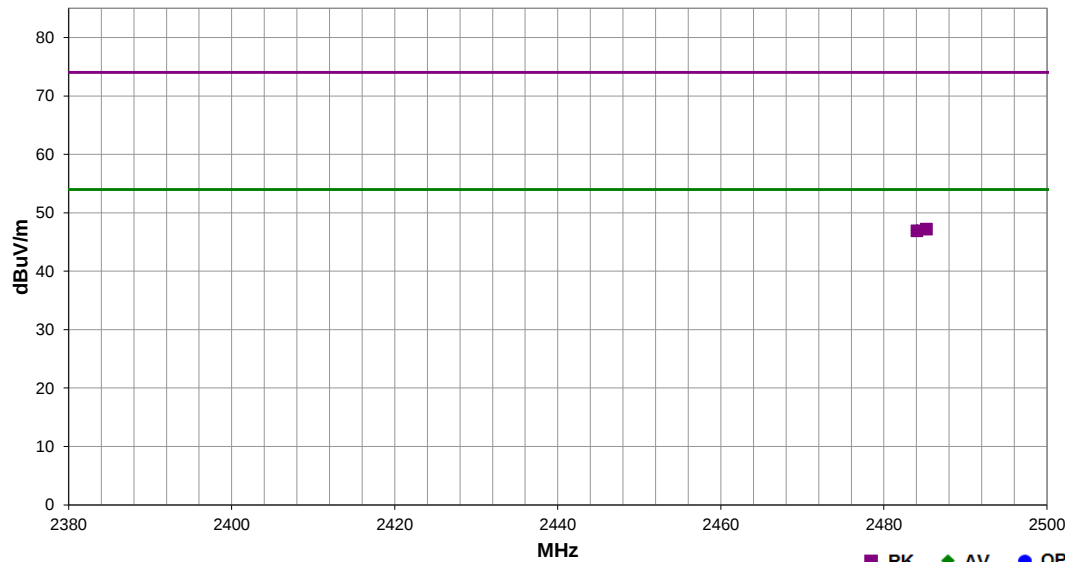


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            |                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Temperature:      | 26.4 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Humidity:         | 29.5% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Barometric Pres.: | 1018 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            | Tested by: Brian Fahey |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Operating Mode: | DTS Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                                     |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 2, full test based on the client's test plan. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 67 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|

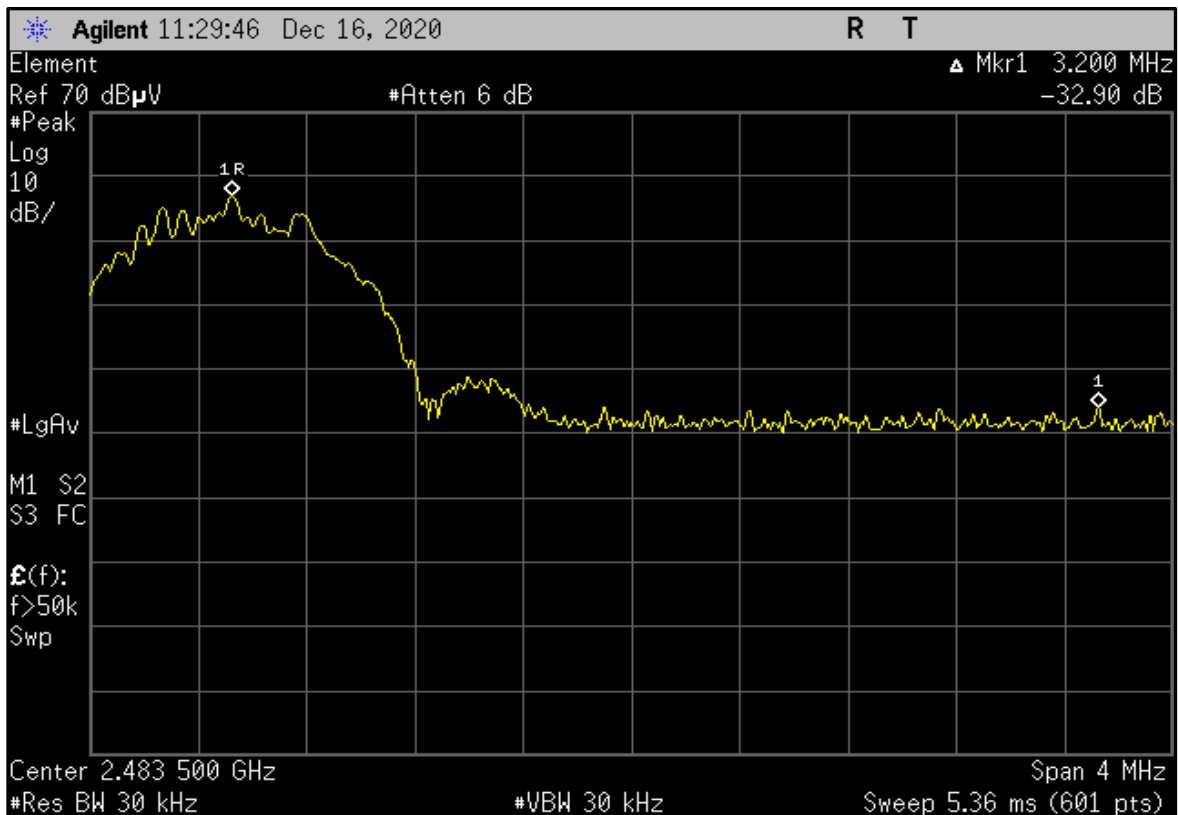
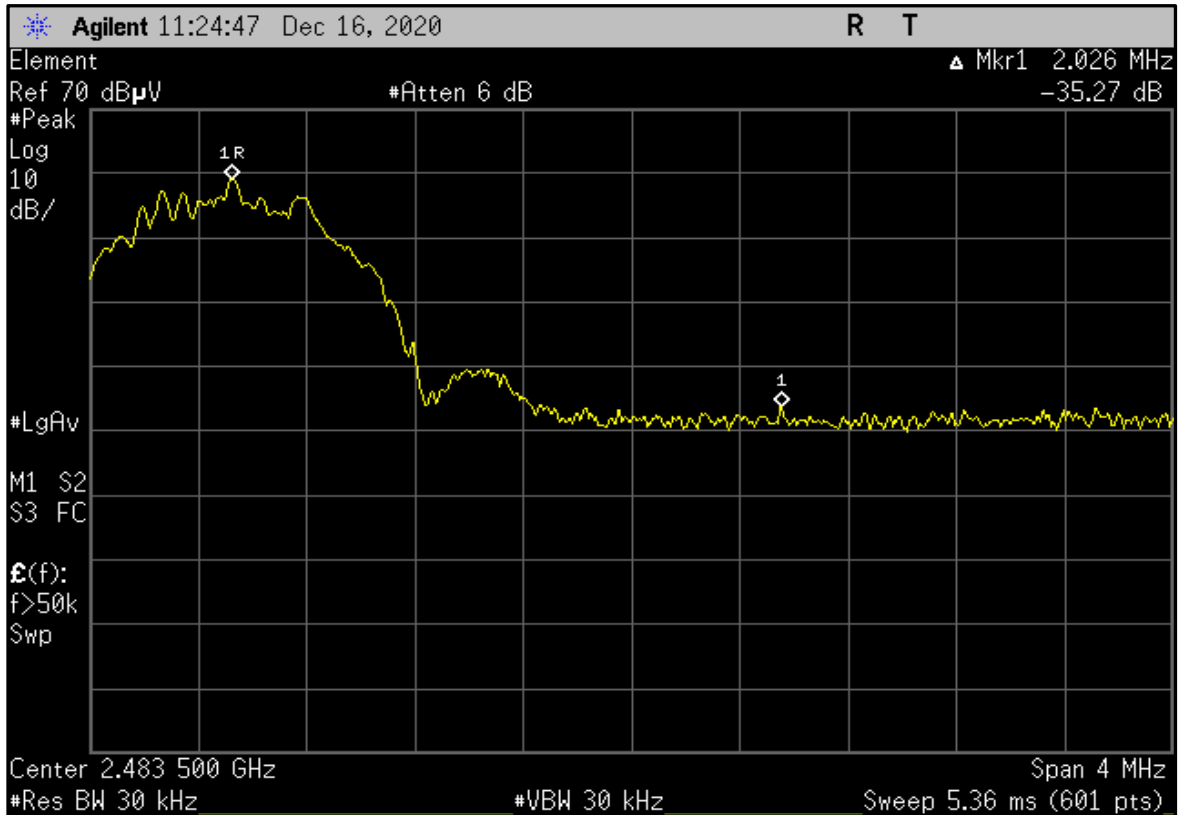


| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2485.227   | 24.8                        | -0.8        | 1.5                     | 325.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Vert, Ant Vert: Fund 57.7dBuV + -32.9dBc = 24.8dBuV (calc. amp.)       |
| 2484.053   | 24.6                        | -0.8        | 1.4                     | 300.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | DTS, EUT on Side, Ant on Side: Fund 59.9dBuV + -35.3dBc = 24.6dBuV (calc. amp.) |
| 2485.227   | 28.0                        | -0.8        | 1.5                     | 325.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | DTS, EUT Vert, Ant Vert: Fund 60.9dBuV + -32.9dBc = 28.0dBuV (calc. amp.)       |
| 2484.053   | 27.7                        | -0.8        | 1.4                     | 300.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  | DTS, EUT on Side, Ant on Side: Fund 63.0dBuV + -35.3dBc = 27.7dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS

DTS, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS

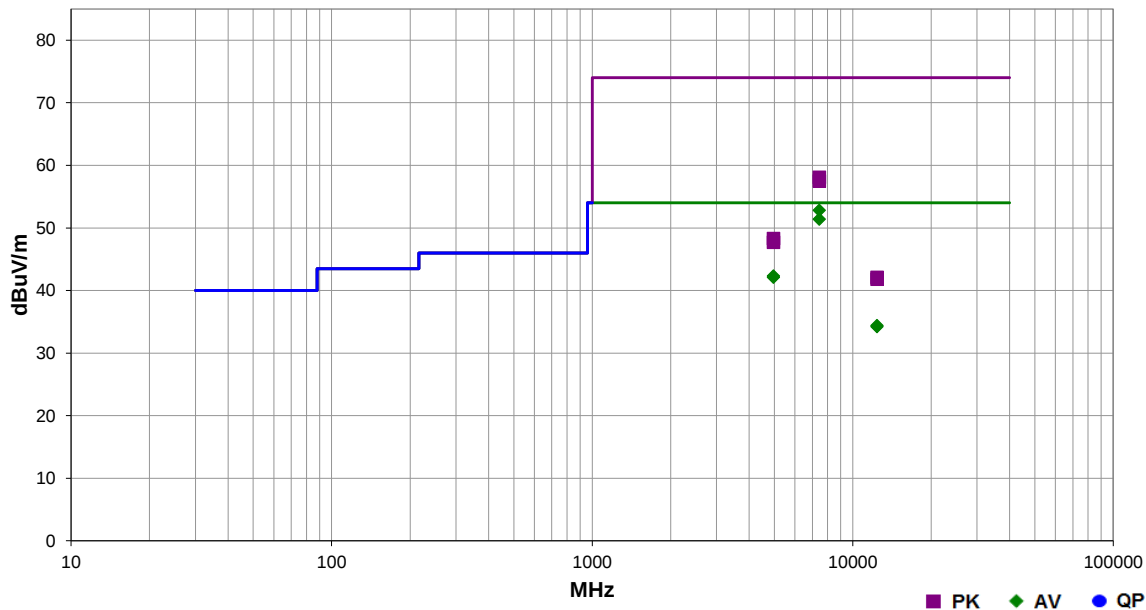


EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            |                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Temperature:      | 22.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Humidity:         | 35.3% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Barometric Pres.: | 1018 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |            | Tested by: Brian Fahey |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |            |                        |
| Operating Mode: | DTS Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                                     |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 2, full test based on the client's test plan. The worst case EUT orientations from the previous testing were used. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 68 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.567   | 34.6             | 15.0        | 2.7                     | 332.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 52.8              | 54.0                 | -1.2                   | DTS, EUT Vert, Ant Vert       |
| 7446.592   | 33.2             | 15.0        | 1.7                     | 216.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 51.4              | 54.0                 | -2.6                   | DTS, EUT on Side, Ant on Side |
| 4963.875   | 29.6             | 9.5         | 4.0                     | 336.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 42.3              | 54.0                 | -11.7                  | DTS, EUT Vert, Ant Vert       |
| 4964.117   | 29.4             | 9.5         | 2.8                     | 247.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 42.1              | 54.0                 | -11.9                  | DTS, EUT on Side, Ant on Side |
| 7445.533   | 43.1             | 15.0        | 2.7                     | 332.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 58.1              | 74.0                 | -15.9                  | DTS, EUT Vert, Ant Vert       |
| 7446.542   | 42.5             | 15.0        | 1.7                     | 216.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 57.5              | 74.0                 | -16.5                  | DTS, EUT on Side, Ant on Side |
| 12408.850  | 26.2             | 5.0         | 1.5                     | 126.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 34.4              | 54.0                 | -19.6                  | DTS, EUT Vert, Ant Vert       |
| 12407.680  | 26.0             | 5.0         | 1.5                     | 8.0               | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 34.2              | 54.0                 | -19.8                  | DTS, EUT on Side, Ant on Side |
| 4963.467   | 38.8             | 9.5         | 4.0                     | 336.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 48.3              | 74.0                 | -25.7                  | DTS, EUT Vert, Ant Vert       |
| 4963.625   | 38.2             | 9.5         | 2.8                     | 247.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 47.7              | 74.0                 | -26.3                  | DTS, EUT on Side, Ant on Side |
| 12409.630  | 37.1             | 5.0         | 1.5                     | 126.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 42.1              | 74.0                 | -31.9                  | DTS, EUT Vert, Ant Vert       |
| 12409.790  | 36.8             | 5.0         | 1.5                     | 8.0               | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 41.8              | 74.0                 | -32.2                  | DTS, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

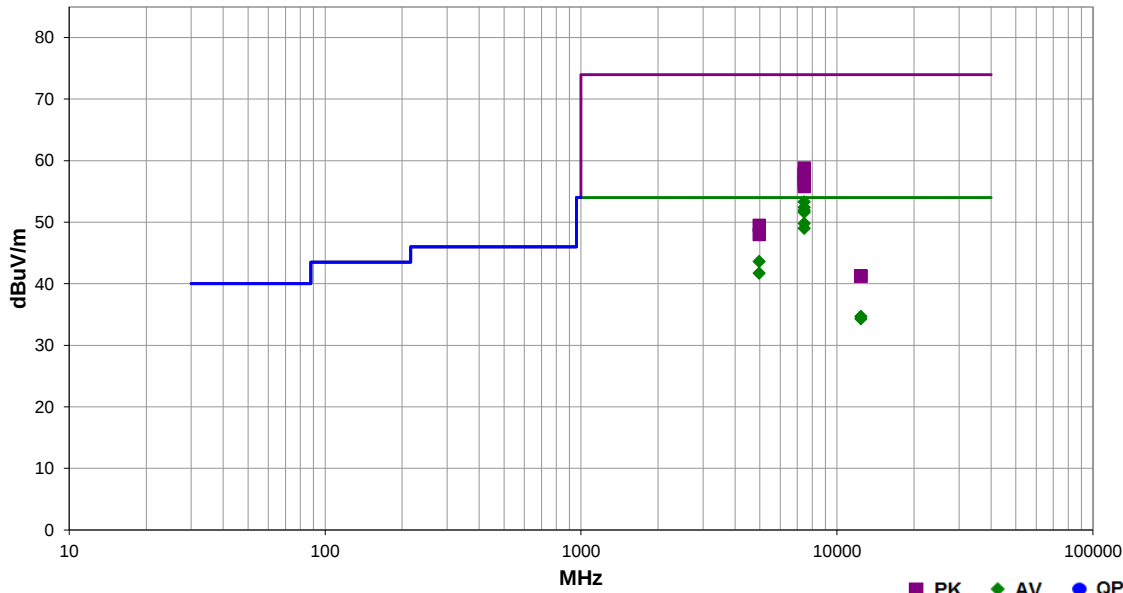


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                        | Date:             | 2020-12-15 |  |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                            | Temperature:      | 23 °C      |                                                                                    |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                            | Humidity:         | 34.5% RH   |                                                                                    |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                   | Barometric Pres.: | 1017 mbar  | Tested by: Brian Fahey                                                             |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                           |                   |            |                                                                                    |
| Operating Mode: | DTS Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                |                   |            |                                                                                    |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Comments:       | See comments below for Channel, EUT orientations. Step 2, full test based on the client's test plan. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 63 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7446.617   | 35.1             | 15.0        | 1.7                     | 234.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 53.3              | 54.0                 | -0.7                   | DTS, EUT on Side, Ant on Side |
| 7445.517   | 34.2             | 15.0        | 1.2                     | 14.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 52.4              | 54.0                 | -1.6                   | DTS, EUT Horz, Ant Horz       |
| 7445.475   | 33.7             | 15.0        | 1.5                     | 327.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 51.9              | 54.0                 | -2.1                   | DTS, EUT Vert, Ant Vert       |
| 7446.625   | 33.4             | 15.0        | 2.5                     | 352.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 51.6              | 54.0                 | -2.4                   | DTS, EUT Horz, Ant Horz       |
| 7445.533   | 31.6             | 15.0        | 1.7                     | 315.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 49.8              | 54.0                 | -4.2                   | DTS, EUT on Side, Ant on Side |
| 7445.458   | 30.8             | 15.0        | 1.5                     | 299.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 49.0              | 54.0                 | -5.0                   | DTS, EUT Vert, Ant Vert       |
| 4964.058   | 30.9             | 9.5         | 1.1                     | 108.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 43.6              | 54.0                 | -10.4                  | DTS, EUT on Side, Ant on Side |
| 4964.200   | 29.0             | 9.5         | 1.4                     | 307.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 41.7              | 54.0                 | -12.3                  | DTS, EUT Vert, Ant Vert       |
| 7446.750   | 43.8             | 15.0        | 1.7                     | 234.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 58.8              | 74.0                 | -15.2                  | DTS, EUT on Side, Ant on Side |
| 7445.733   | 42.9             | 15.0        | 1.2                     | 14.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 57.9              | 74.0                 | -16.1                  | DTS, EUT Horz, Ant Horz       |
| 7446.925   | 42.8             | 15.0        | 1.5                     | 327.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 57.8              | 74.0                 | -16.2                  | DTS, EUT Vert, Ant Vert       |
| 7445.308   | 42.0             | 15.0        | 2.5                     | 352.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 57.0              | 74.0                 | -17.0                  | DTS, EUT Horz, Ant Horz       |
| 7446.433   | 41.3             | 15.0        | 1.7                     | 315.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 56.3              | 74.0                 | -17.7                  | DTS, EUT on Side, Ant on Side |
| 7446.833   | 40.8             | 15.0        | 1.5                     | 299.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 55.8              | 74.0                 | -18.2                  | DTS, EUT Vert, Ant Vert       |
| 12409.080  | 26.5             | 5.0         | 1.5                     | 205.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 34.7              | 54.0                 | -19.3                  | DTS, EUT Vert, Ant Vert       |
| 12409.200  | 26.1             | 5.0         | 1.5                     | 72.0              | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 34.3              | 54.0                 | -19.7                  | DTS, EUT on Side, Ant on Side |
| 4964.733   | 40.0             | 9.5         | 1.1                     | 108.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 49.5              | 74.0                 | -24.5                  | DTS, EUT on Side, Ant on Side |
| 4964.267   | 38.5             | 9.5         | 1.4                     | 307.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | DTS, EUT Vert, Ant Vert       |
| 12409.210  | 36.3             | 5.0         | 1.5                     | 205.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 41.3              | 74.0                 | -32.7                  | DTS, EUT Vert, Ant Vert       |
| 12409.140  | 36.2             | 5.0         | 1.5                     | 72.0              | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 41.2              | 74.0                 | -32.8                  | DTS, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

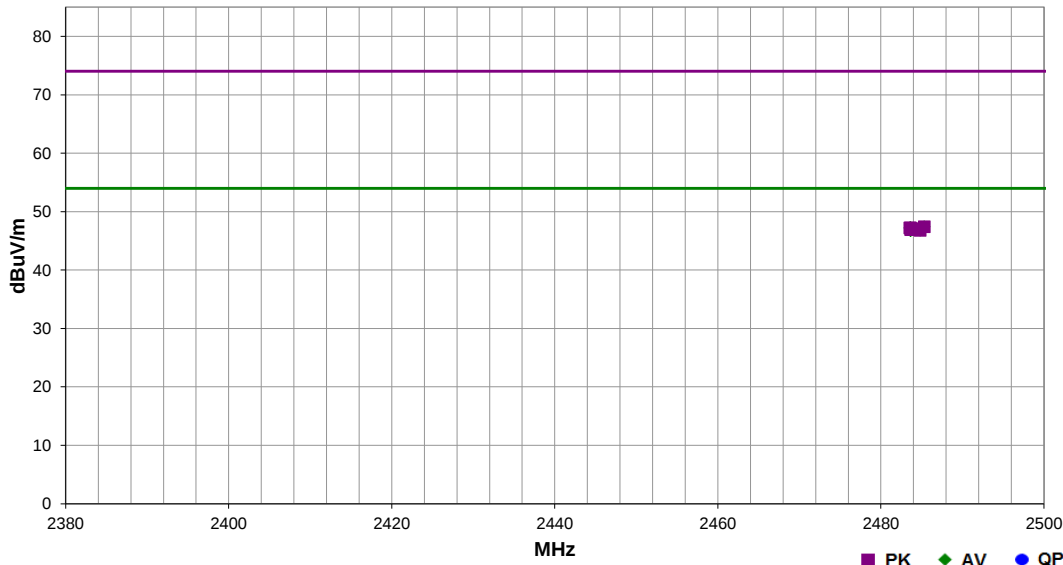


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                        | Date:             | 2020-12-16 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                            | Temperature:      | 26.4 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                            | Humidity:         | 29.5% RH   |                                                                                    |             |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                   | Barometric Pres.: | 1018 mbar  |                                                                                    |             |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                       |                   |            |                                                                                    |             |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                          |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |             |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                           |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Port 7, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Ch. = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. Step 2, full test based on the client's test plan. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |             |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 66 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



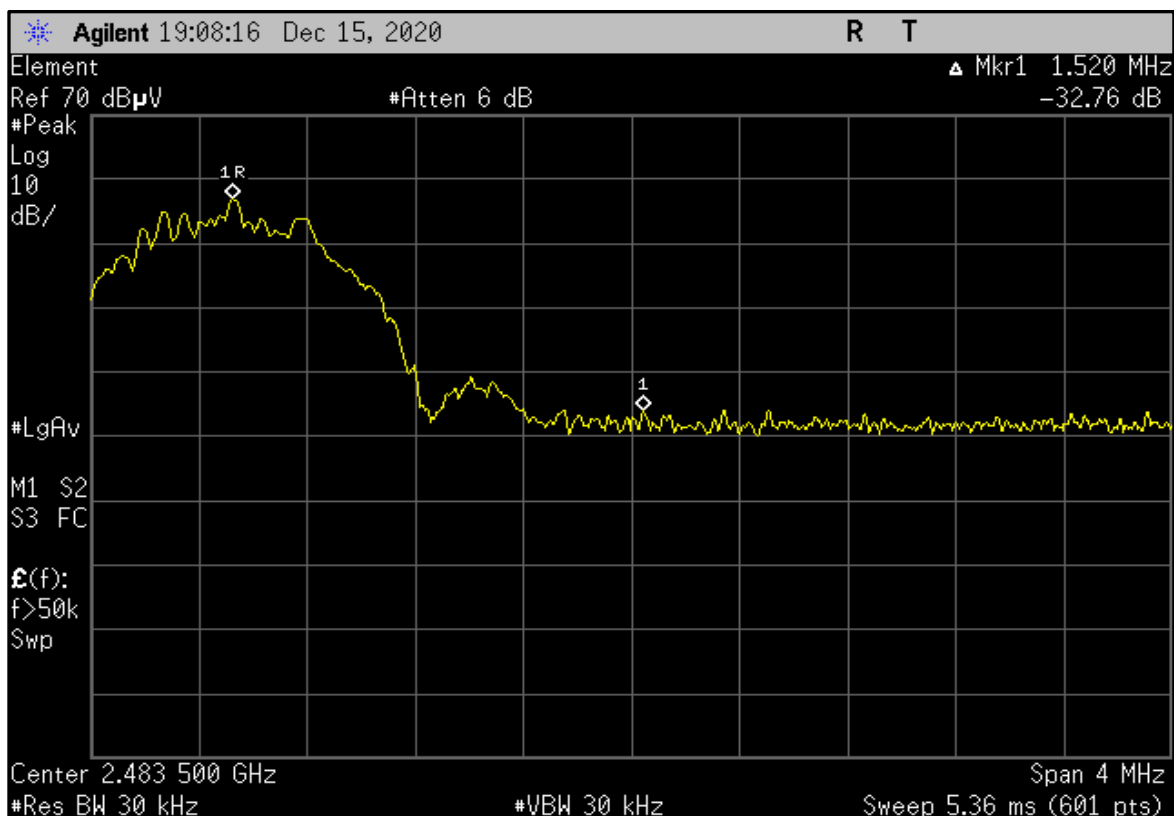
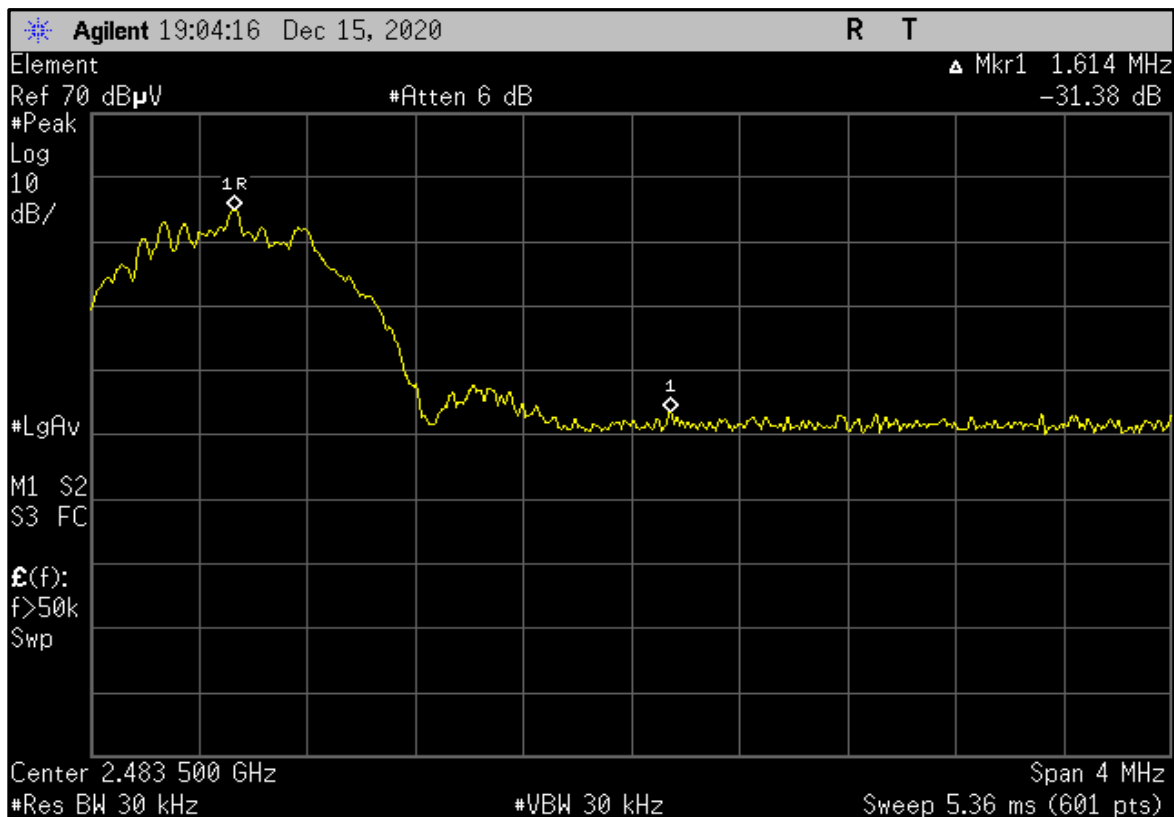
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                            |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|----------------------------------------------------------------------------------|
| 2485.327   | 25.0                        | -0.8        | 1.5                     | 325.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.4              | 54.0                 | -6.6                   | DTS, EUT Vert, Ant Vert: Fund 57.5dBuV + - 32.5dBc = 25.0dBuV (calc. amp.)       |
| 2483.627   | 24.9                        | -0.8        | 2.0                     | 301.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.3              | 54.0                 | -6.7                   | DTS, EUT on Side, Ant on Side: Fund 59.5dBuV + - 34.6dBc = 24.9dBuV (calc. amp.) |
| 2483.547   | 24.8                        | -0.8        | 1.9                     | 235.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Horz, Ant Horz: Fund 57.6dBuV + - 32.8dBc = 24.8dBuV (calc. amp.)       |
| 2484.740   | 24.6                        | -0.8        | 1.6                     | 106.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | DTS, EUT Vert, Ant Vert: Fund 57.0dBuV + - 32.4dBc = 24.6dBuV (calc. amp.)       |
| 2484.807   | 24.4                        | -0.8        | 1.5                     | 309.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | DTS, EUT on Side, Ant on Side: Fund 59.3dBuV + - 34.9dBc = 24.4dBuV (calc. amp.) |
| 2483.647   | 24.3                        | -0.8        | 1.5                     | 30.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | DTS, EUT Horz, Ant Horz: Fund 55.7dBuV + - 31.4dBc = 24.3dBuV (calc. amp.)       |
| 2485.327   | 28.2                        | -0.8        | 1.5                     | 325.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | DTS, EUT Vert, Ant Vert: Fund 60.7dBuV + - 32.5dBc = 28.2dBuV (calc. amp.)       |
| 2483.547   | 28.0                        | -0.8        | 1.9                     | 235.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | DTS, EUT Horz, Ant Horz: Fund 60.8dBuV + - 32.8dBc = 28.0dBuV (calc. amp.)       |
| 2483.627   | 28.0                        | -0.8        | 2.0                     | 301.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.2              | 74.0                 | -26.8                  | DTS, EUT on Side, Ant on Side: Fund 62.6dBuV + - 34.6dBc = 28.0dBuV (calc. amp.) |
| 2484.740   | 27.9                        | -0.8        | 1.6                     | 106.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.1              | 74.0                 | -26.9                  | DTS, EUT Vert, Ant Vert: Fund 60.3dBuV + - 32.4dBc = 27.9dBuV (calc. amp.)       |
| 2483.647   | 27.7                        | -0.8        | 1.5                     | 30.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  | DTS, EUT Horz, Ant Horz: Fund 59.1dBuV + - 31.4dBc = 27.7dBuV (calc. amp.)       |
| 2484.807   | 27.6                        | -0.8        | 1.5                     | 309.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | DTS, EUT on Side, Ant on Side: Fund 62.5dBuV + - 34.9dBc = 27.6dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Horz, Ant Horz

PSA-ESCI 2020.06.24.2



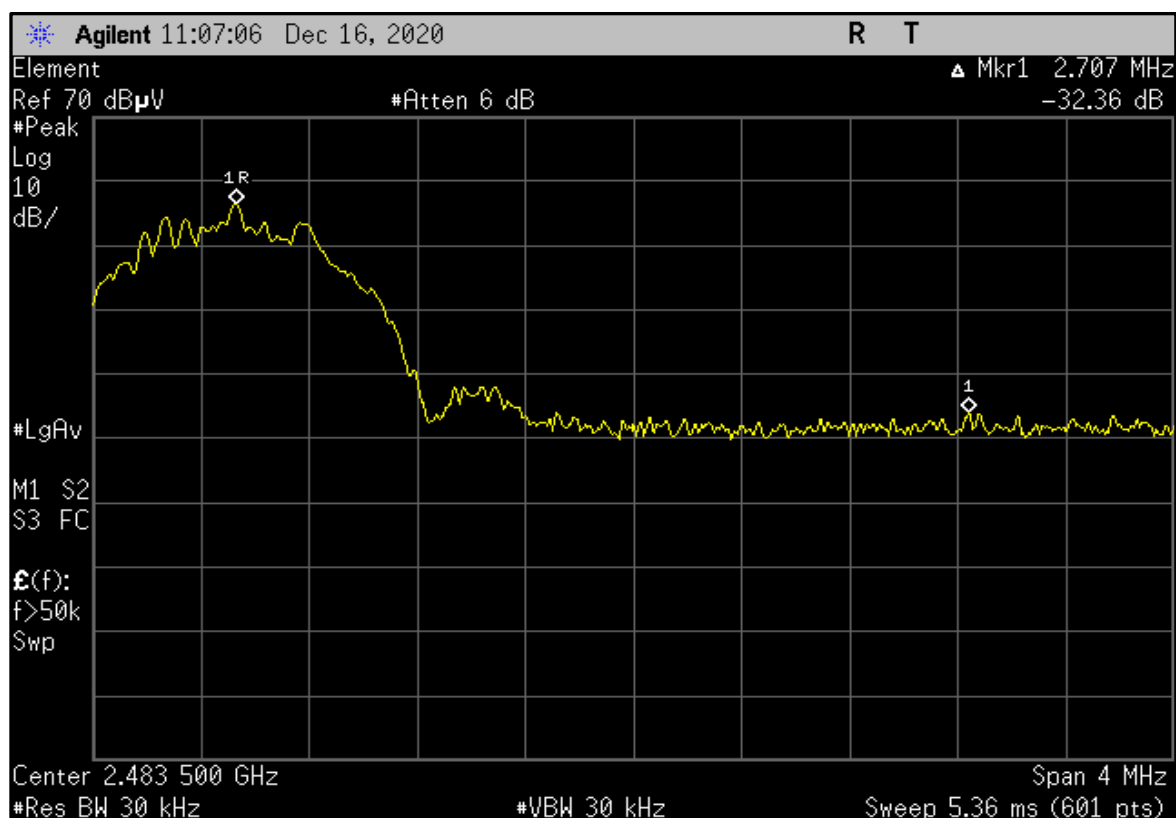
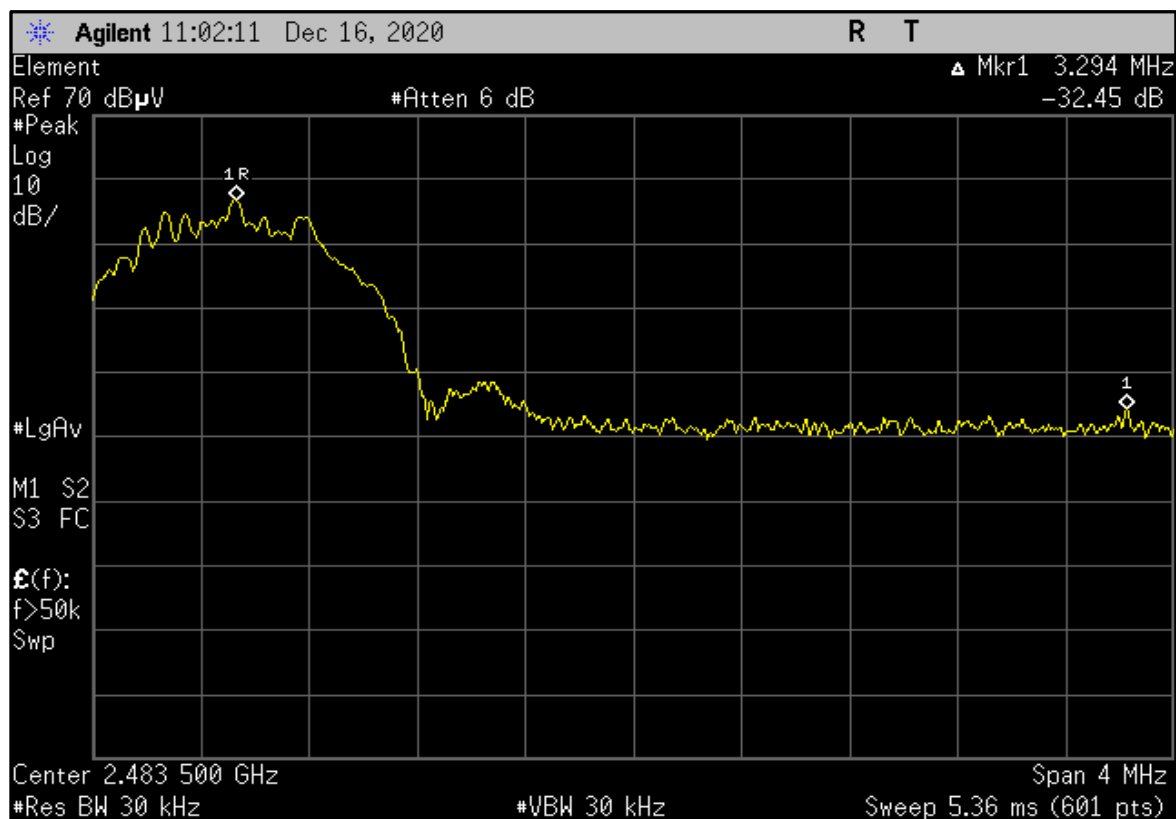
DTS, EUT Horz, Ant Horz

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



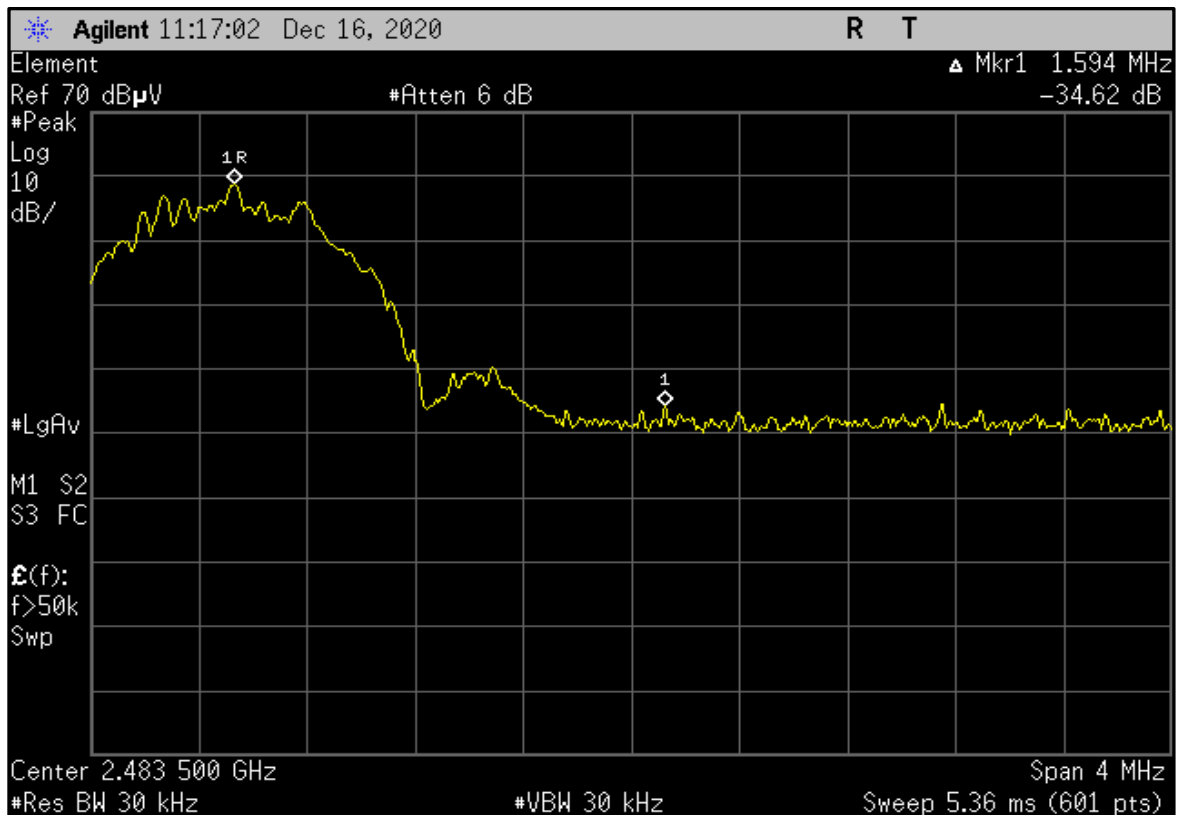
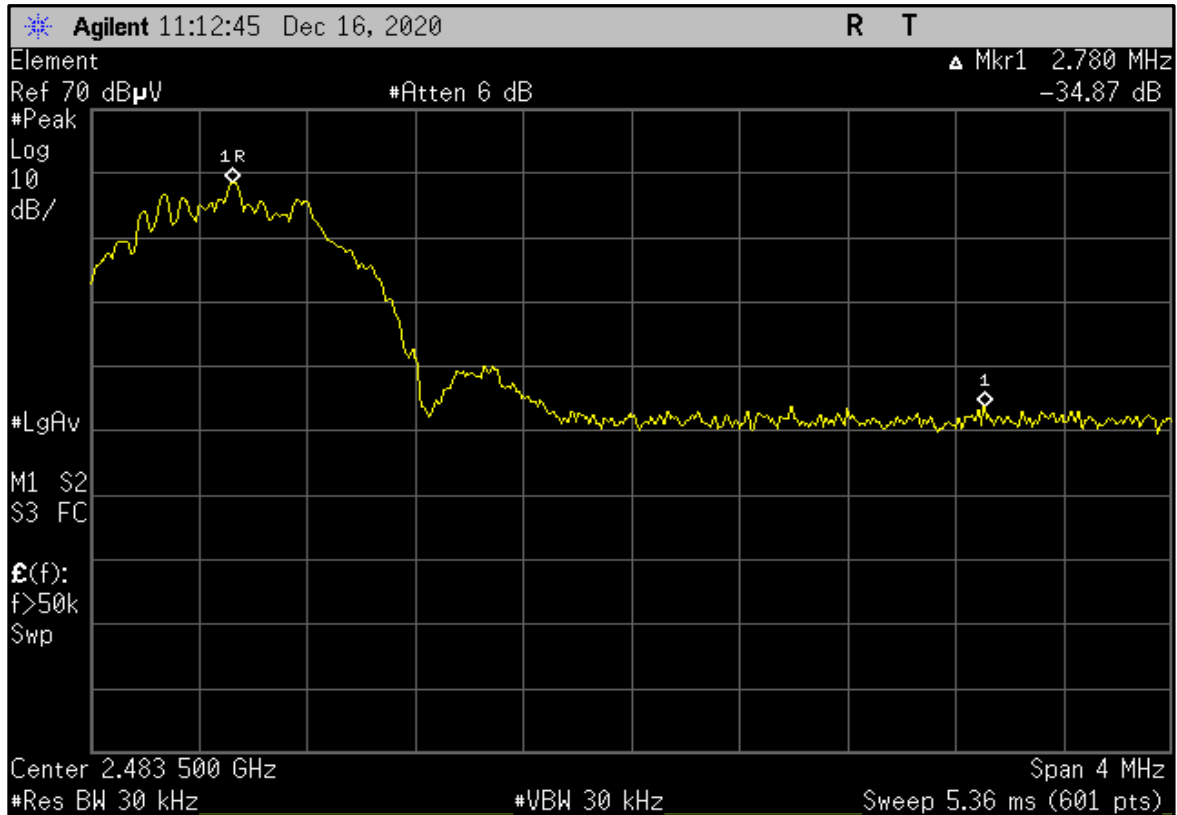
DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



DTS, EUT on Side, Ant on Side

PSA-ESCI 2020.06.24.2



DTS, EUT on Side, Ant on Side

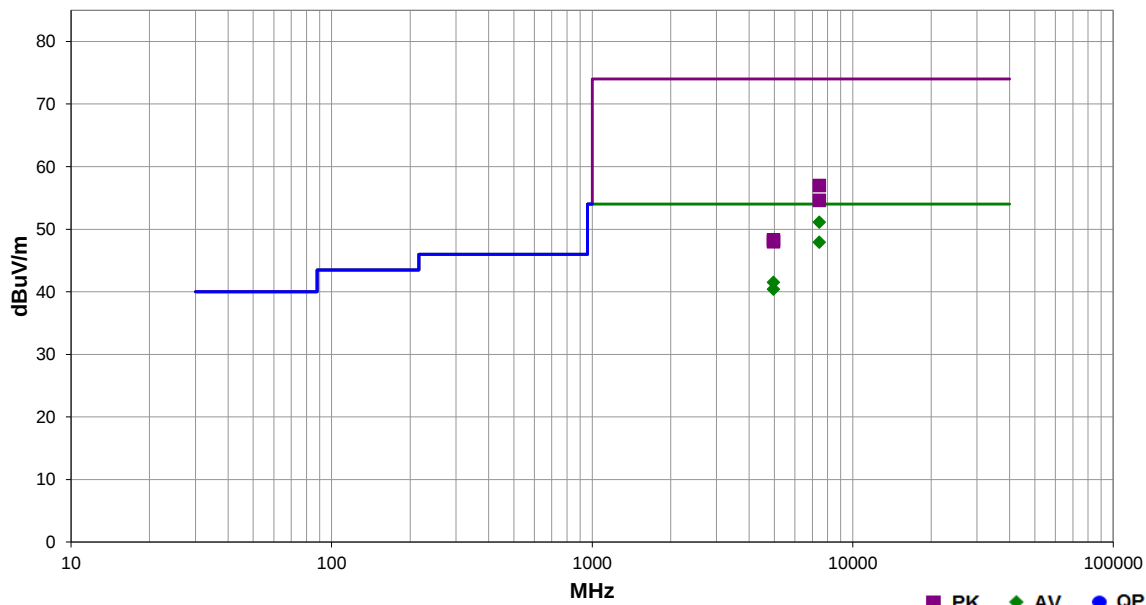
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:         | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                                                                                    |
| Job Site:           | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:      | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                                                                                    |
|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey                                                             |
| EUT:                | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |
| Configuration:      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:           | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:          | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode:     | DTS Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Deviations:         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:           | See comments below for Channel, EUT orientations. Step 4, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |
| Test Specifications |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Test Method                                                                        |
| FCC 15.247:2020     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | ANSI C63.10:2013                                                                   |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 90 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.558   | 32.9             | 15.0        | 2.1                     | 237.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 51.1              | 54.0                 | -2.9                   | DTS, EUT on Side, Ant on Side |
| 7446.658   | 29.7             | 15.0        | 1.5                     | 173.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 47.9              | 54.0                 | -6.1                   | DTS, EUT Vert, Ant Vert       |
| 4963.917   | 28.8             | 9.5         | 2.3                     | 260.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 41.5              | 54.0                 | -12.5                  | DTS, EUT Vert, Ant Vert       |
| 4963.933   | 27.7             | 9.5         | 1.5                     | 275.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 40.4              | 54.0                 | -13.6                  | DTS, EUT on Side, Ant on Side |
| 7446.808   | 42.0             | 15.0        | 2.1                     | 237.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 57.0              | 74.0                 | -17.0                  | DTS, EUT on Side, Ant on Side |
| 7446.725   | 39.6             | 15.0        | 1.5                     | 173.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 54.6              | 74.0                 | -19.4                  | DTS, EUT Vert, Ant Vert       |
| 4963.675   | 38.8             | 9.5         | 2.3                     | 260.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 48.3              | 74.0                 | -25.7                  | DTS, EUT Vert, Ant Vert       |
| 4963.775   | 38.5             | 9.5         | 1.5                     | 275.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | DTS, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

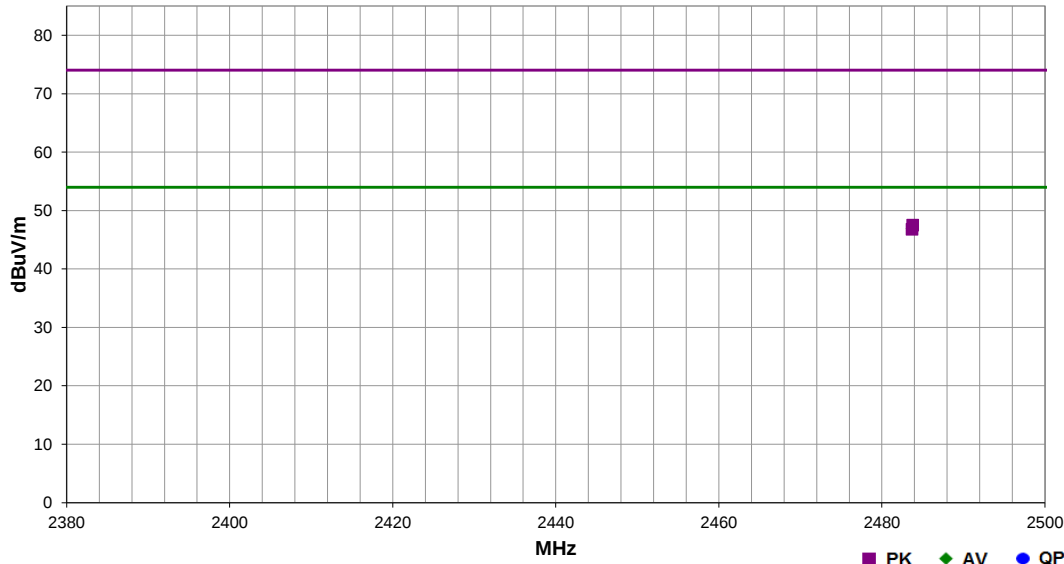


EmIRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |  |
| Serial Number:         | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| Configuration:         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| EUT Power:             | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |  |
| Operating Mode:        | DTS Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. Step 4, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |  |

|                     |                 |             |                  |
|---------------------|-----------------|-------------|------------------|
| Test Specifications | FCC 15.247:2020 | Test Method | ANSI C63.10:2013 |
|---------------------|-----------------|-------------|------------------|

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 91 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



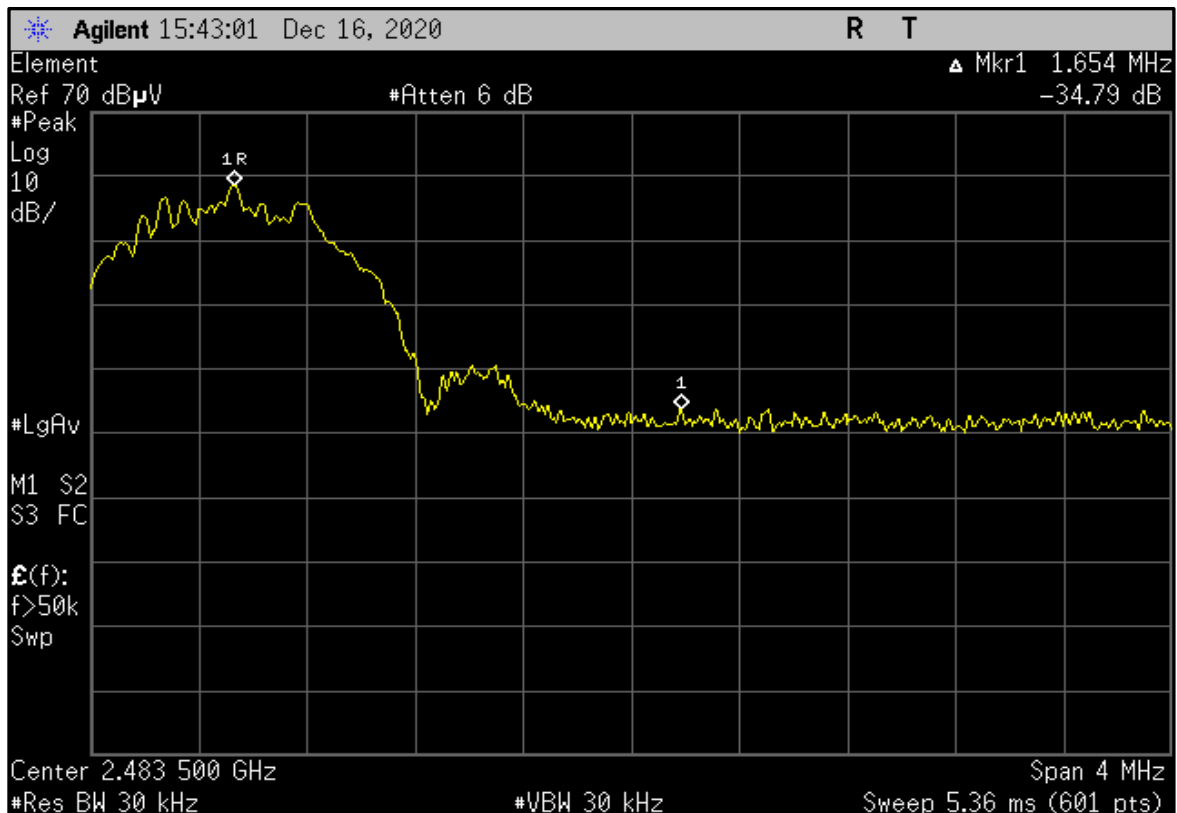
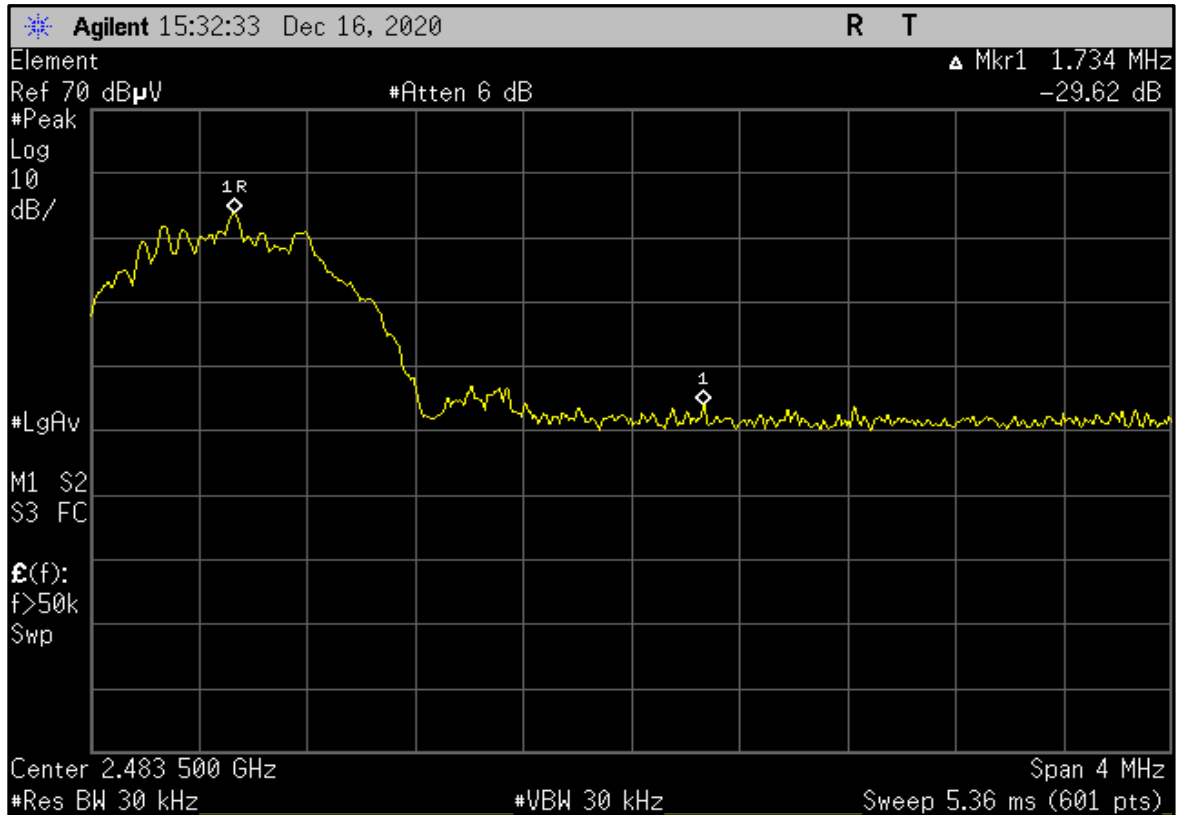
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2483.767   | 24.8                        | -0.8        | 1.7                     | 315.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 47.2              | 54.0                 | -6.8                   | DTS, EUT Vert, Ant Vert: Fund 54.4dBuV + -29.6dBc = 24.8dBuV (calc. amp.)       |
| 2483.687   | 24.5                        | -0.8        | 1.0                     | 275.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | DTS, EUT on Side, Ant on Side: Fund 59.3dBuV + -34.8dBc = 24.5dBuV (calc. amp.) |
| 2483.767   | 28.3                        | -0.8        | 1.7                     | 315.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.5              | 74.0                 | -26.5                  | DTS, EUT Vert, Ant Vert: Fund 57.9dBuV + -29.6dBc = 28.3dBuV (calc. amp.)       |
| 2483.687   | 27.6                        | -0.8        | 1.0                     | 275.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | DTS, EUT on Side, Ant on Side: Fund 62.4dBuV + -34.8dBc = 27.6dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



DTS, EUT on Side, Ant on Side

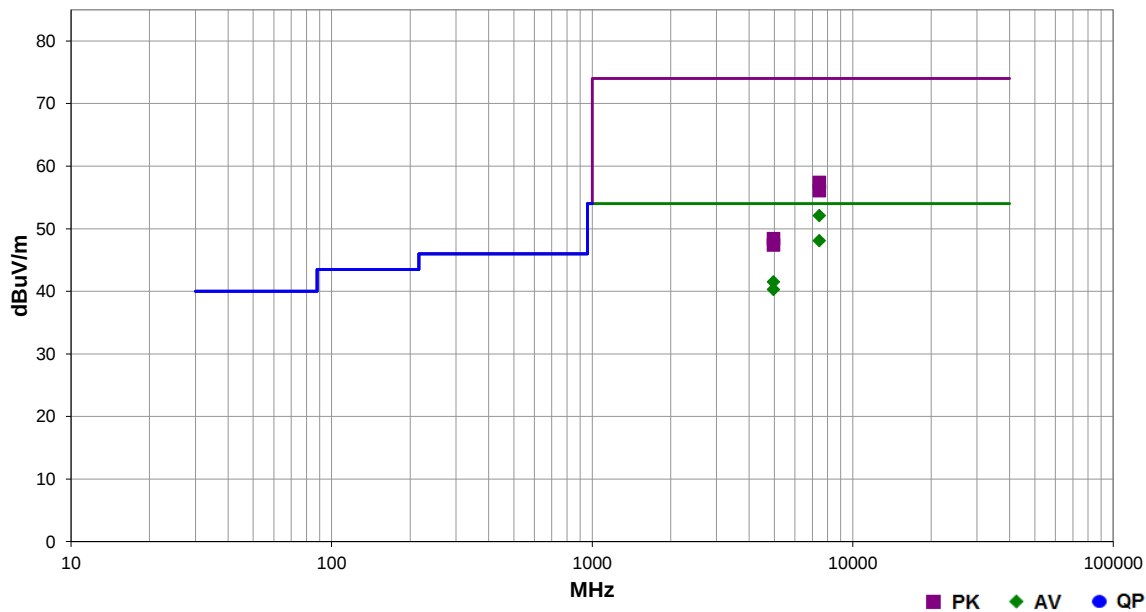
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |                   |            |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|------------|------------------------|
| Work Order:                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SYNA0313      | Date:             | 2020-12-16 |                        |
| Project:                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | None          | Temperature:      | 22.6 °C    |                        |
| Job Site:                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | NC01          | Humidity:         | 35.3% RH   |                        |
| Serial Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Rev. 10 - 007 | Barometric Pres.: | 1018 mbar  |                        |
| EUT: RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                   |            | Tested by: Brian Fahey |
| Configuration: 2                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                   |            |                        |
| Customer: Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                   |            |                        |
| Attendees: None                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |                   |            |                        |
| EUT Power: 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                   |            |                        |
| Operating Mode: DTS Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                        |               |                   |            |                        |
| Deviations: None                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                   |            |                        |
| Comments: See comments below for Channel, EUT orientations. Step 4, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |               |                   |            |                        |
| Test Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | Test Method       |            |                        |
| FCC 15.247:2020                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               | ANSI C63.10:2013  |            |                        |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 92 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7446.583   | 33.9             | 15.0        | 2.2                     | 233.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 52.1              | 54.0                 | -1.9                   | DTS, EUT on Side, Ant on Side |
| 7446.583   | 29.9             | 15.0        | 1.6                     | 173.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 48.1              | 54.0                 | -5.9                   | DTS, EUT Vert, Ant Vert       |
| 4963.992   | 28.8             | 9.5         | 1.3                     | 323.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 41.5              | 54.0                 | -12.5                  | DTS, EUT on Side, Ant on Side |
| 4963.775   | 27.6             | 9.5         | 1.5                     | 141.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 40.3              | 54.0                 | -13.7                  | DTS, EUT Vert, Ant Vert       |
| 7446.483   | 42.4             | 15.0        | 2.2                     | 233.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 57.4              | 74.0                 | -16.6                  | DTS, EUT on Side, Ant on Side |
| 7446.725   | 41.1             | 15.0        | 1.6                     | 173.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 56.1              | 74.0                 | -17.9                  | DTS, EUT Vert, Ant Vert       |
| 4963.808   | 38.9             | 9.5         | 1.3                     | 323.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 48.4              | 74.0                 | -25.6                  | DTS, EUT on Side, Ant on Side |
| 4965.242   | 37.9             | 9.5         | 1.5                     | 141.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.4              | 74.0                 | -26.6                  | DTS, EUT Vert, Ant Vert       |

# SPURIOUS RADIATED EMISSIONS



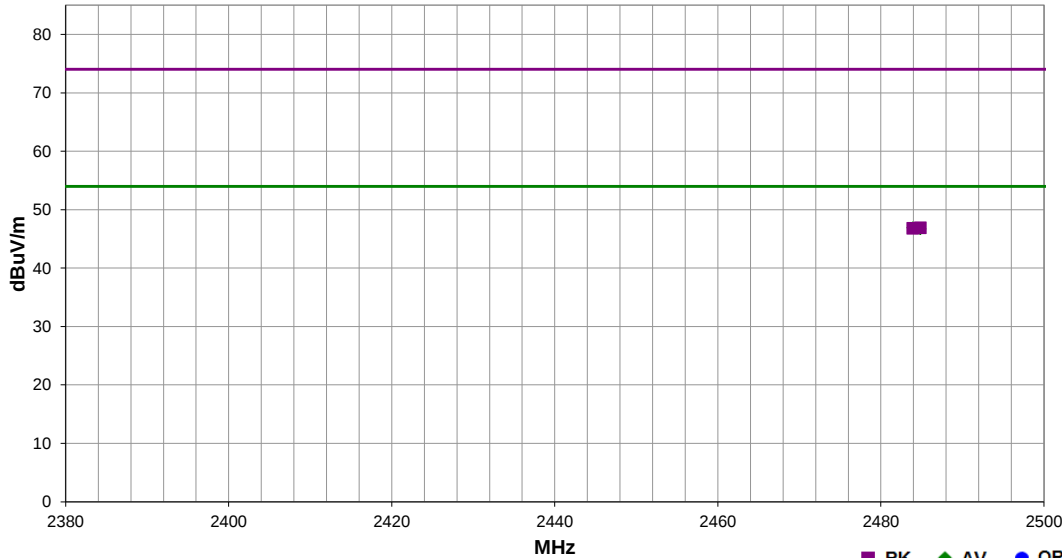
EmiRS 2020.12.09.0

PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Ant Cable A1, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 4, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 93 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



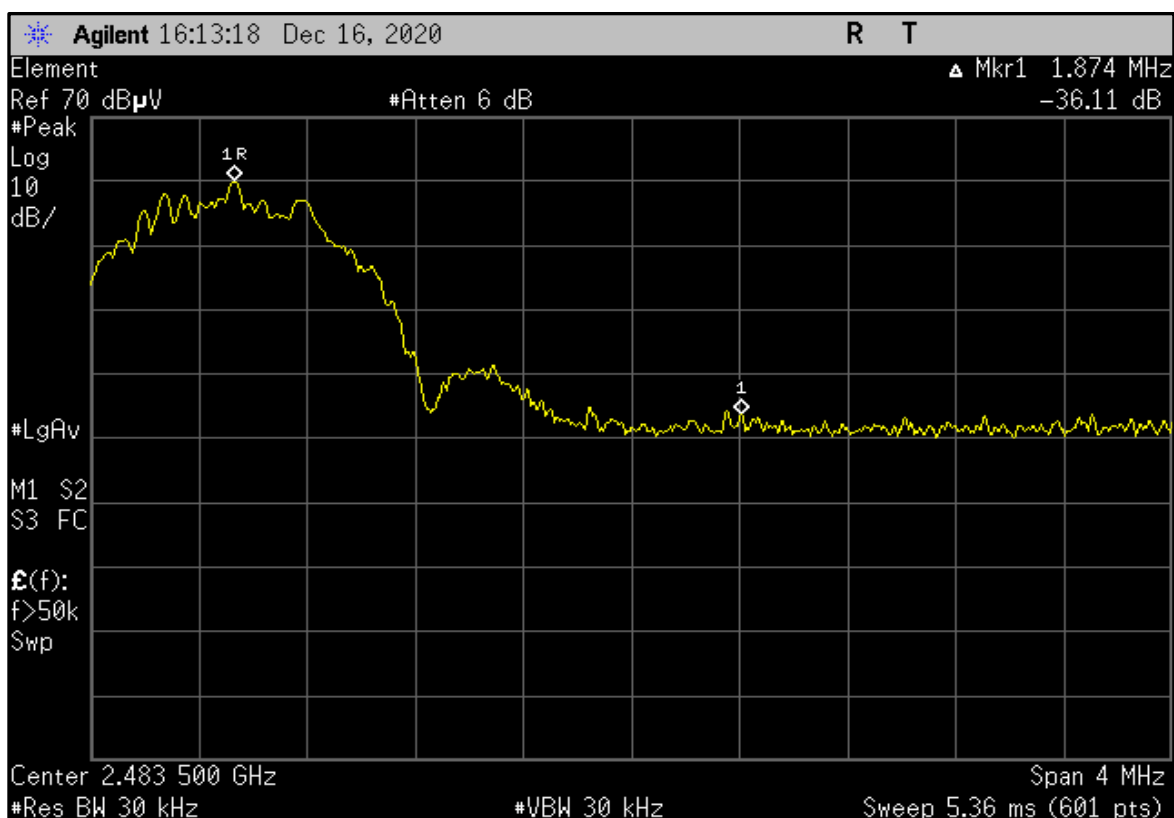
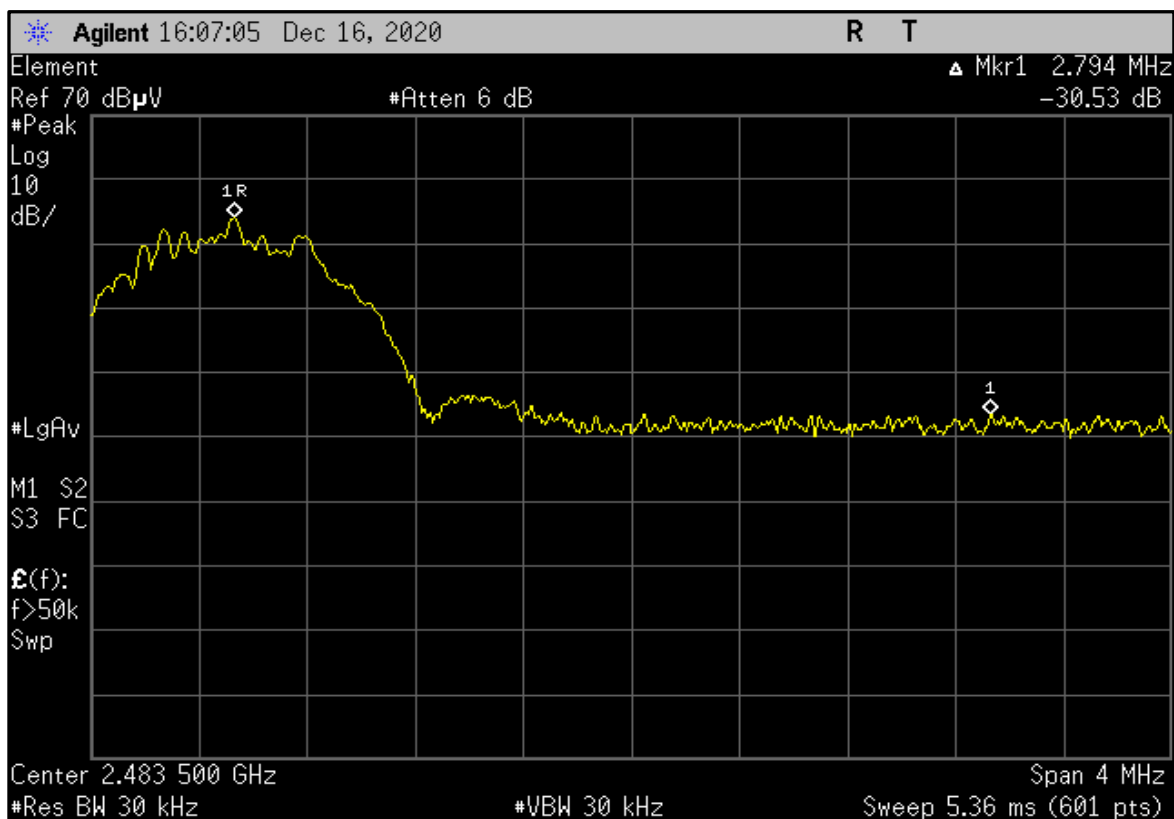
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2483.907   | 24.5                        | -0.8        | 1.0                     | 272.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | DTS, EUT on Side, Ant on Side: Fund 60.6dBuV + -36.1dBc = 24.5dBuV (calc. amp.) |
| 2484.827   | 24.3                        | -0.8        | 1.8                     | 316.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.7              | 54.0                 | -7.3                   | DTS, EUT Vert, Ant Vert: Fund 54.8dBuV + -30.5dBc = 24.3dBuV (calc. amp.)       |
| 2484.827   | 27.7                        | -0.8        | 1.8                     | 316.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.9              | 74.0                 | -27.1                  | DTS, EUT Vert, Ant Vert: Fund 58.2dBuV + -30.5dBc = 27.7dBuV (calc. amp.)       |
| 2483.907   | 27.6                        | -0.8        | 1.0                     | 272.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | DTS, EUT on Side, Ant on Side: Fund 63.7dBuV + -36.1dBc = 27.6dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

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DTS, EUT on Side, Ant on Side

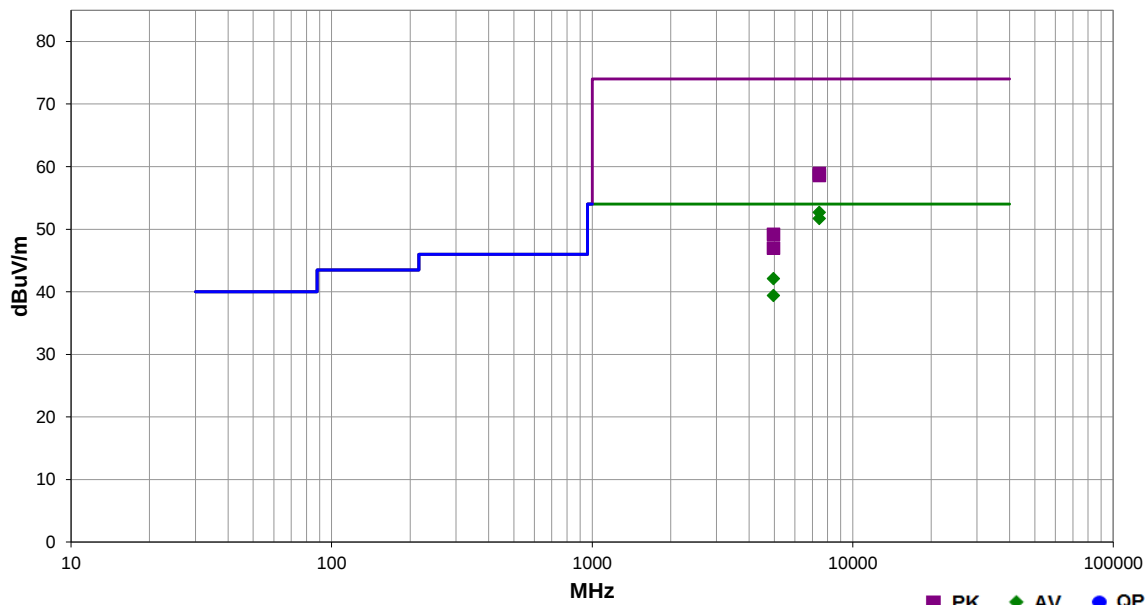
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESC1 2020.06.24.2

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:         | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                                                                                    |
| Job Site:           | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:      | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                                                                                    |
| EUT:                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | RadioNode         |            |                                                                                    |
| Configuration:      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:           | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:          | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode:     | DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Deviations:         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:           | See comments below for Channel, EUT orientations. Step 6, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |
| Test Specifications |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Test Method                                                                        |
| FCC 15.247:2020     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | ANSI C63.10:2013                                                                   |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 100 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7445.523   | 34.5             | 15.0        | 2.1                     | 146.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 52.7              | 54.0                 | -1.3                   | DTS, EUT on Side, Ant on Side |
| 7445.513   | 33.5             | 15.0        | 2.3                     | 184.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 51.7              | 54.0                 | -2.3                   | DTS, EUT Vert, Ant Vert       |
| 4963.970   | 29.4             | 9.5         | 1.5                     | 246.0             | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 42.1              | 54.0                 | -11.9                  | DTS, EUT on Side, Ant on Side |
| 4964.003   | 26.7             | 9.5         | 1.5                     | 200.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.4              | 54.0                 | -14.6                  | DTS, EUT Vert, Ant Vert       |
| 7445.240   | 43.9             | 15.0        | 2.1                     | 146.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 58.9              | 74.0                 | -15.1                  | DTS, EUT on Side, Ant on Side |
| 7446.837   | 43.6             | 15.0        | 2.3                     | 184.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 58.6              | 74.0                 | -15.4                  | DTS, EUT Vert, Ant Vert       |
| 4964.150   | 39.7             | 9.5         | 1.5                     | 246.0             | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 49.2              | 74.0                 | -24.8                  | DTS, EUT on Side, Ant on Side |
| 4964.183   | 37.5             | 9.5         | 1.5                     | 200.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | DTS, EUT Vert, Ant Vert       |

# SPURIOUS RADIATED EMISSIONS

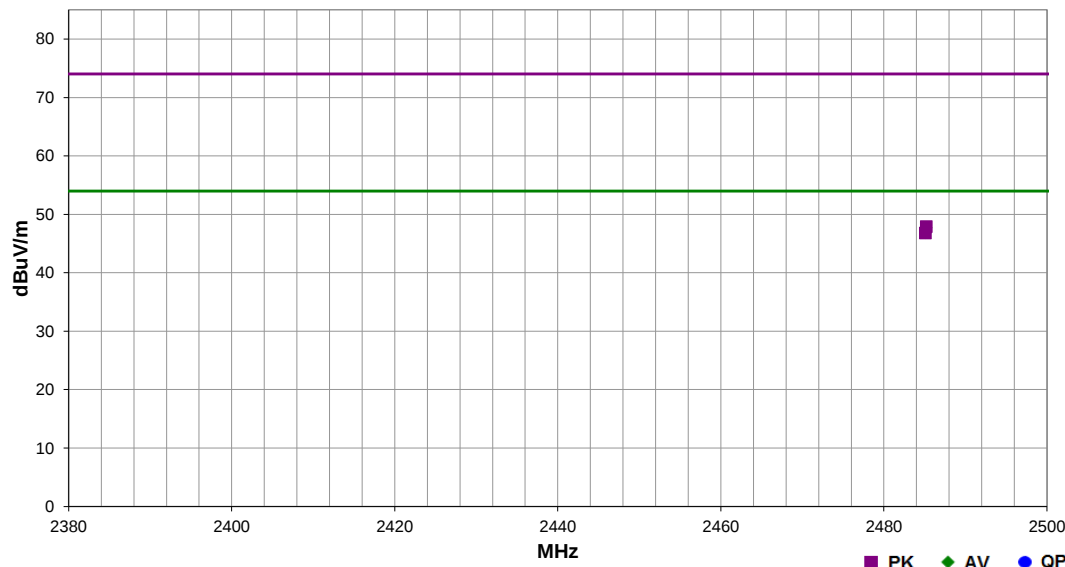


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |  |
| Serial Number:         | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| Configuration:         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| EUT Power:             | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |  |
| Operating Mode:        | DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. Step 6, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |  |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 101 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|

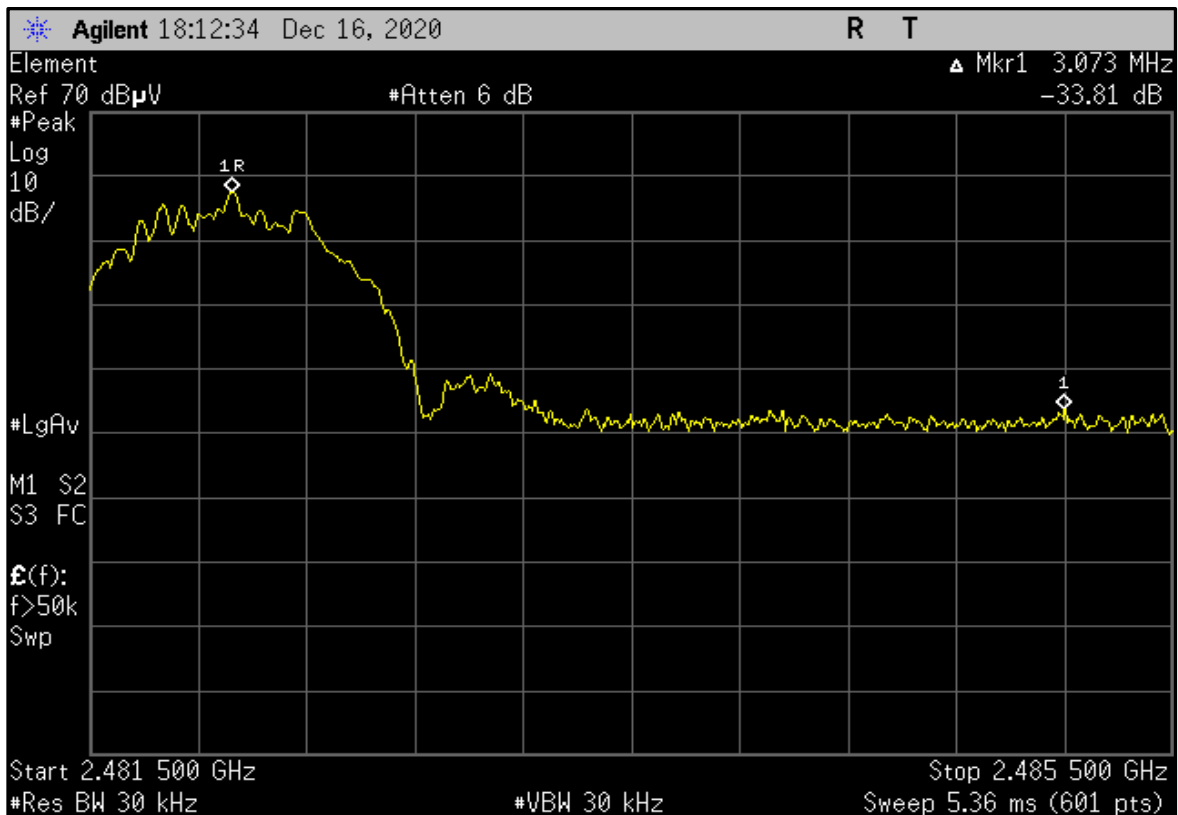
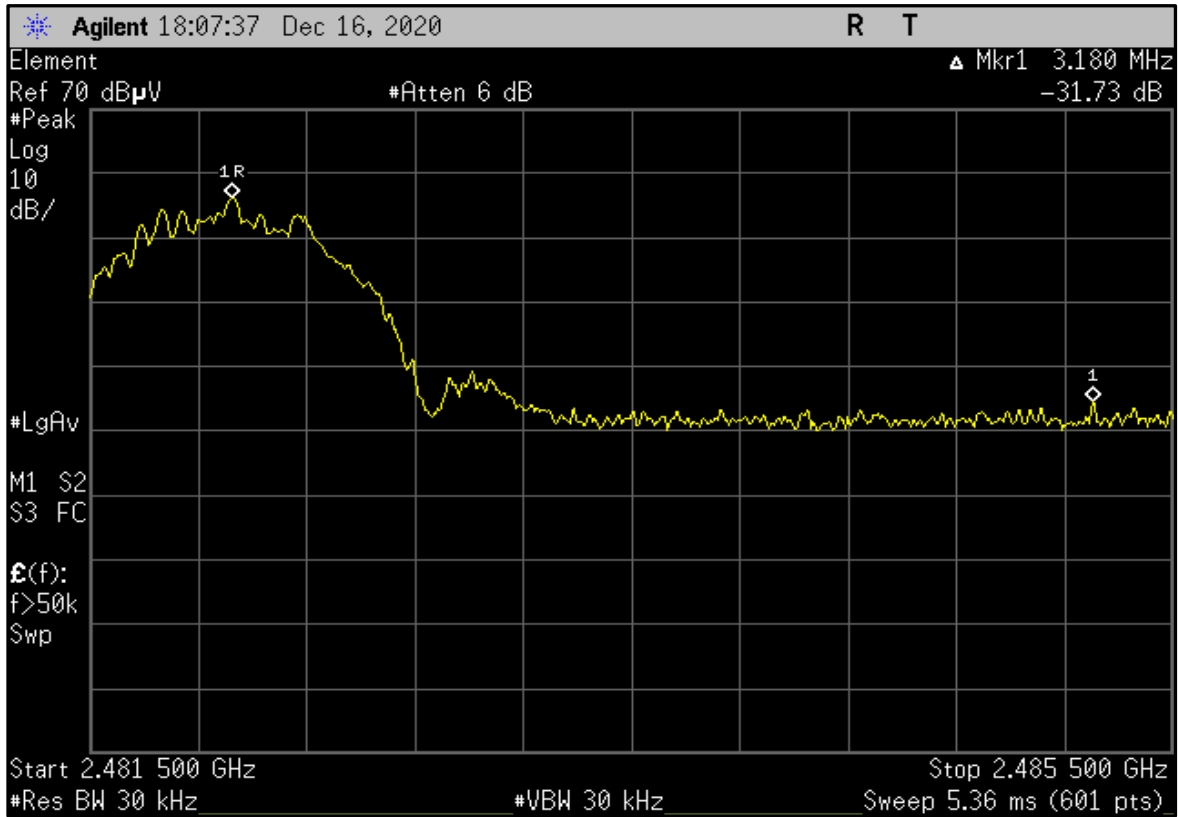


| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2485.207   | 25.3                        | -0.8        | 1.5                     | 153.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.7              | 54.0                 | -6.3                   | DTS, EUT on Side, Ant on Side: Fund 57.0dBuV + -31.7dBc = 25.3dBuV (calc. amp.) |
| 2485.100   | 24.4                        | -0.8        | 1.5                     | 4.0               | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | DTS, EUT Vert, Ant Vert: Fund 58.2dBuV + -33.8dBc = 24.4dBuV (calc. amp.)       |
| 2485.207   | 28.7                        | -0.8        | 1.5                     | 153.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.9              | 74.0                 | -26.1                  | DTS, EUT on Side, Ant on Side: Fund 60.4dBuV + -31.7dBc = 28.7dBuV (calc. amp.) |
| 2485.100   | 27.6                        | -0.8        | 1.5                     | 4.0               | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.8              | 74.0                 | -27.2                  | DTS, EUT Vert, Ant Vert: Fund 61.4dBuV + -33.8dBc = 27.6dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS

DTS, EUT on Side, Ant on Side

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DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS

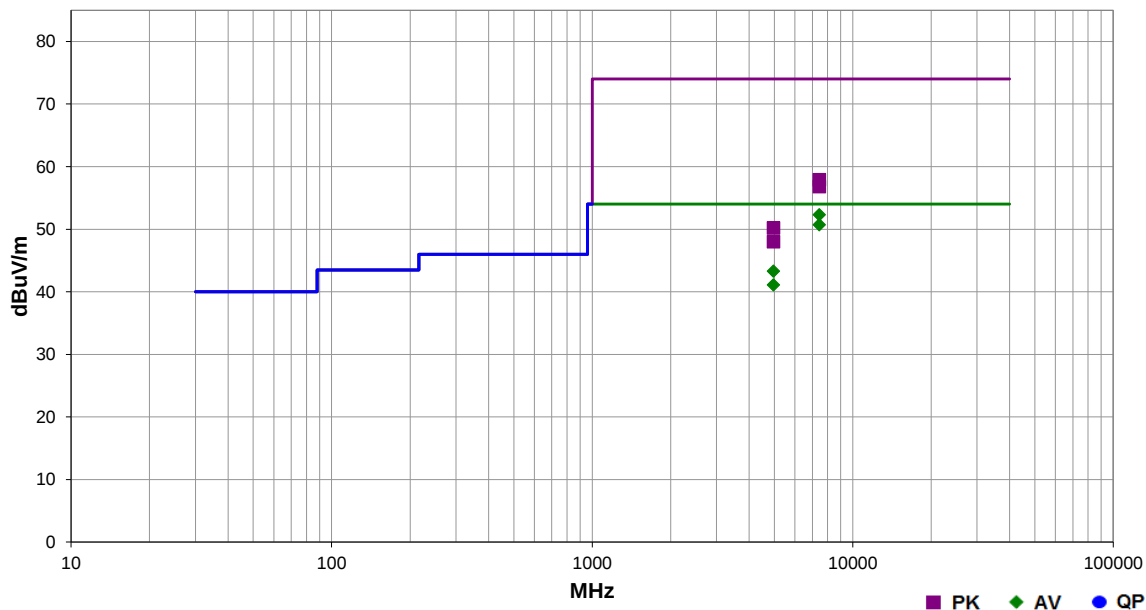


EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                        |
| Operating Mode: | DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 6, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |    |                   |   |                   |           |         |      |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 94 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7446.708   | 34.1             | 15.0        | 1.9                     | 174.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 52.3              | 54.0                 | -1.7                   | DTS, EUT on Side, Ant on Side |
| 7445.475   | 32.5             | 15.0        | 1.5                     | 273.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 50.7              | 54.0                 | -3.3                   | DTS, EUT Vert, Ant Vert       |
| 4963.942   | 30.6             | 9.5         | 2.4                     | 246.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 43.3              | 54.0                 | -10.7                  | DTS, EUT on Side, Ant on Side |
| 4964.050   | 28.4             | 9.5         | 3.7                     | 257.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 41.1              | 54.0                 | -12.9                  | DTS, EUT Vert, Ant Vert       |
| 7445.317   | 42.9             | 15.0        | 1.9                     | 174.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 57.9              | 74.0                 | -16.1                  | DTS, EUT on Side, Ant on Side |
| 7445.425   | 41.8             | 15.0        | 1.5                     | 273.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 56.8              | 74.0                 | -17.2                  | DTS, EUT Vert, Ant Vert       |
| 4963.992   | 40.7             | 9.5         | 2.4                     | 246.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 50.2              | 74.0                 | -23.8                  | DTS, EUT on Side, Ant on Side |
| 4964.400   | 38.5             | 9.5         | 3.7                     | 257.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 48.0              | 74.0                 | -26.0                  | DTS, EUT Vert, Ant Vert       |

# SPURIOUS RADIATED EMISSIONS

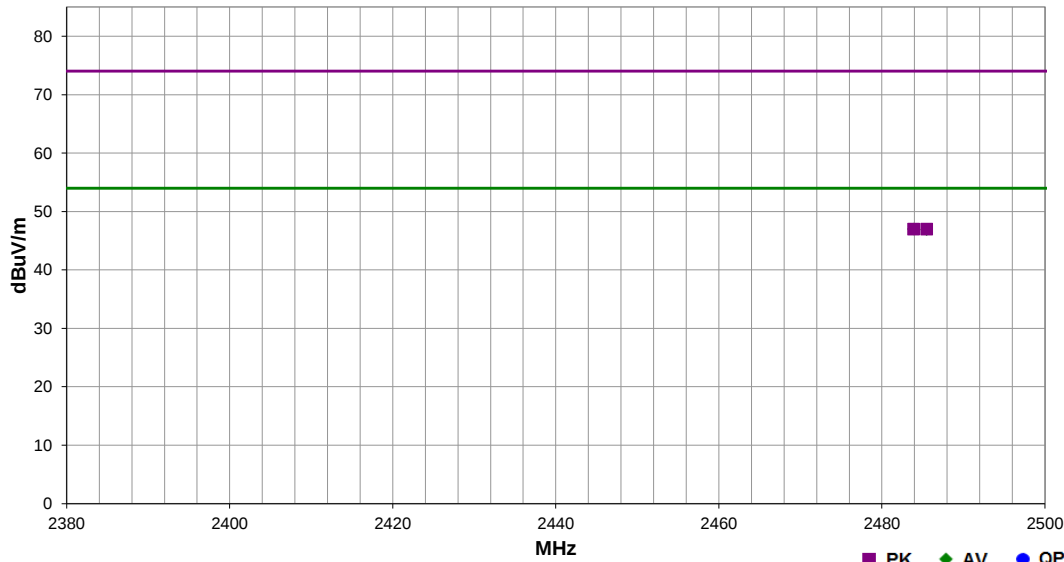


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|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|
| Work Order:            | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |  |
| Job Site:              | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |  |
| Serial Number:         | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |  |
| Tested by: Brian Fahey |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |  |
| EUT:                   | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |  |
| Configuration:         | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |  |
| Customer:              | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |  |
| Attendees:             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| EUT Power:             | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |  |
| Operating Mode:        | DTS Tx, Port 7, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Deviations:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |  |
| Comments:              | See comments below for Channel, EUT orientations. Step 6, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |  |

| Test Specifications | Test Method      |
|---------------------|------------------|
| FCC 15.247:2020     | ANSI C63.10:2013 |

| Run # | 95 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|----|-------------------|---|-------------------|-----------|---------|------|
|-------|----|-------------------|---|-------------------|-----------|---------|------|



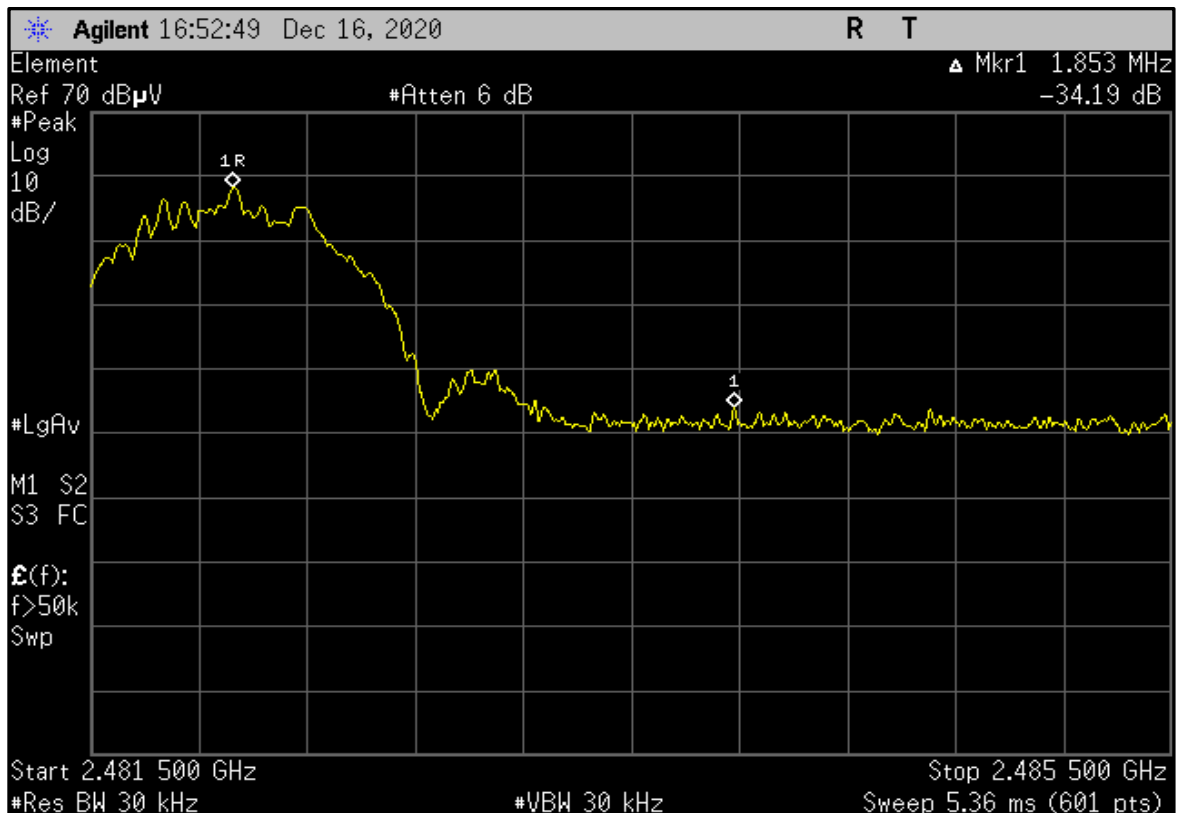
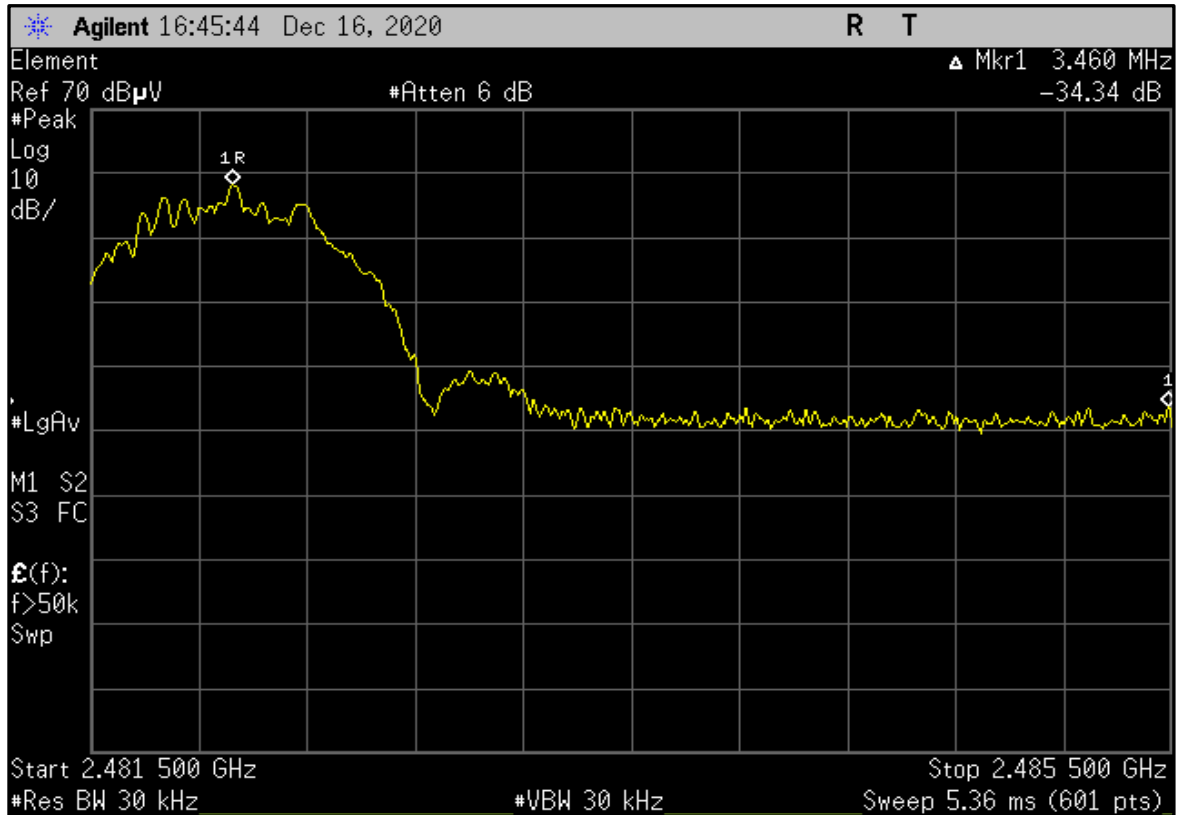
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2483.880   | 24.6                        | -0.8        | 2.0                     | 232.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 47.0              | 54.0                 | -7.0                   | DTS, EUT on Side, Ant on Side: Fund 58.8dBuV + -34.2dBc = 24.6dBuV (calc. amp.) |
| 2485.487   | 24.5                        | -0.8        | 1.5                     | 44.0              | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.9              | 54.0                 | -7.1                   | DTS, EUT Vert, Ant Vert: Fund 58.8dBuV + -34.3dBc = 24.5dBuV (calc. amp.)       |
| 2485.487   | 27.8                        | -0.8        | 1.5                     | 44.0              | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | DTS, EUT Vert, Ant Vert: Fund 62.1dBuV + -34.3dBc = 27.8dBuV (calc. amp.)       |
| 2483.880   | 27.8                        | -0.8        | 2.0                     | 232.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | DTS, EUT on Side, Ant on Side: Fund 62.0dBuV + -34.2dBc = 27.8dBuV (calc. amp.) |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT Vert, Ant Vert

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DTS, EUT on Side, Ant on Side

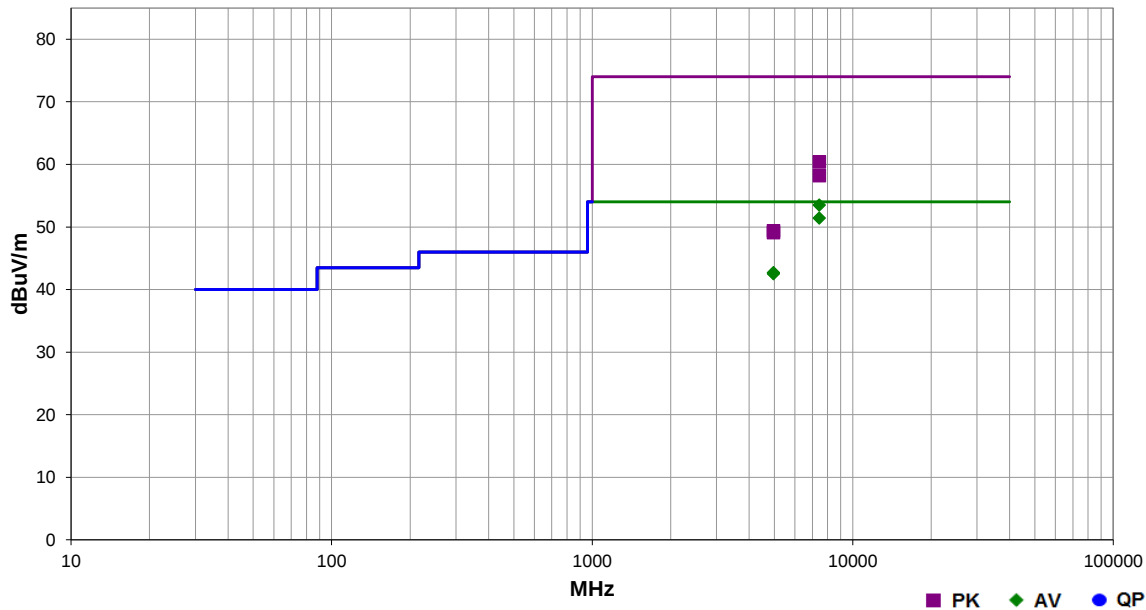
# SPURIOUS RADIATED EMISSIONS



EmiR5 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|
| Work Order:         | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |
| Project:            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                                                                                    |
| Job Site:           | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 35.3% RH   |                                                                                    |
| Serial Number:      | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1018 mbar  |                                                                                    |
| EUT:                | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            | Tested by: Brian Fahey                                                             |
| Configuration:      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |
| Customer:           | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |
| Attendees:          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| EUT Power:          | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                                                                                    |
| Operating Mode:     | DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Deviations:         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |
| Comments:           | See comments below for Channel, EUT orientations. Step 8, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |
| Test Specifications |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Test Method                                                                        |
| FCC 15.247:2020     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | ANSI C63.10:2013                                                                   |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 102 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                      |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|--------------------------|----------|--------------------------|-------------------|----------------------|------------------------|-------------------------------|
| 7446.640   | 35.3             | 15.0        | 2.1                     | 250.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 53.5              | 54.0                 | -0.5                   | DTS, EUT on Side, Ant on Side |
| 7445.557   | 33.2             | 15.0        | 1.5                     | 318.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 51.4              | 54.0                 | -2.6                   | DTS, EUT Vert, Ant Vert       |
| 4963.963   | 30.0             | 9.5         | 1.8                     | 322.0             | 3.2                               | 0.0                       | Vert                     | AV       | 0.0                      | 42.7              | 54.0                 | -11.3                  | DTS, EUT Vert, Ant Vert       |
| 4964.027   | 29.8             | 9.5         | 1.5                     | 272.0             | 3.2                               | 0.0                       | Horz                     | AV       | 0.0                      | 42.5              | 54.0                 | -11.5                  | DTS, EUT on Side, Ant on Side |
| 7445.247   | 45.4             | 15.0        | 2.1                     | 250.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 60.4              | 74.0                 | -13.6                  | DTS, EUT on Side, Ant on Side |
| 7445.733   | 43.2             | 15.0        | 1.5                     | 318.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 58.2              | 74.0                 | -15.8                  | DTS, EUT Vert, Ant Vert       |
| 4964.080   | 39.9             | 9.5         | 1.8                     | 322.0             | 0.0                               | 0.0                       | Vert                     | PK       | 0.0                      | 49.4              | 74.0                 | -24.6                  | DTS, EUT Vert, Ant Vert       |
| 4963.740   | 39.6             | 9.5         | 1.5                     | 272.0             | 0.0                               | 0.0                       | Horz                     | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | DTS, EUT on Side, Ant on Side |

# SPURIOUS RADIATED EMISSIONS

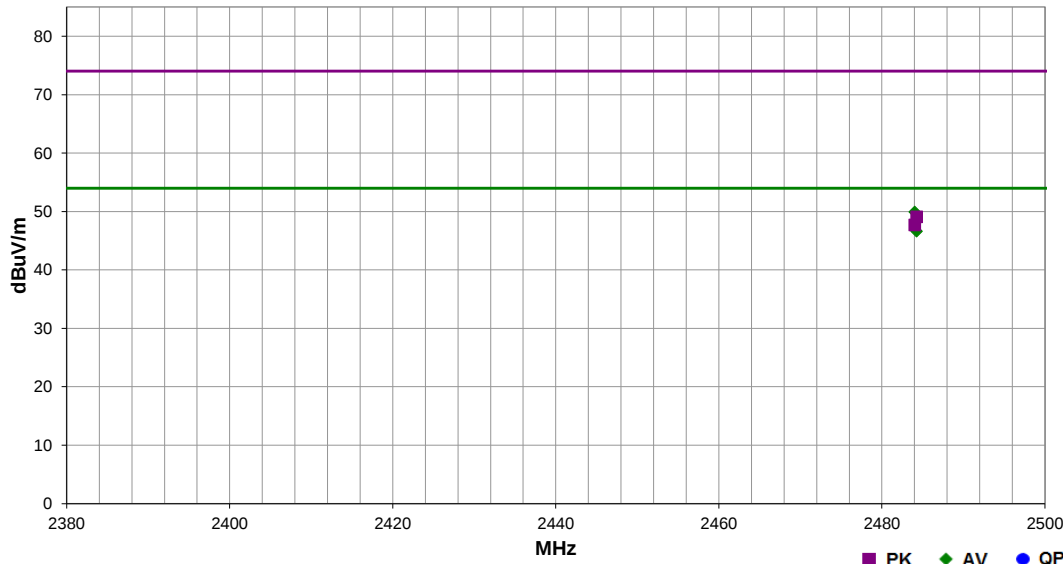


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|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 36.4% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1006 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | POE via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 8, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 103 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



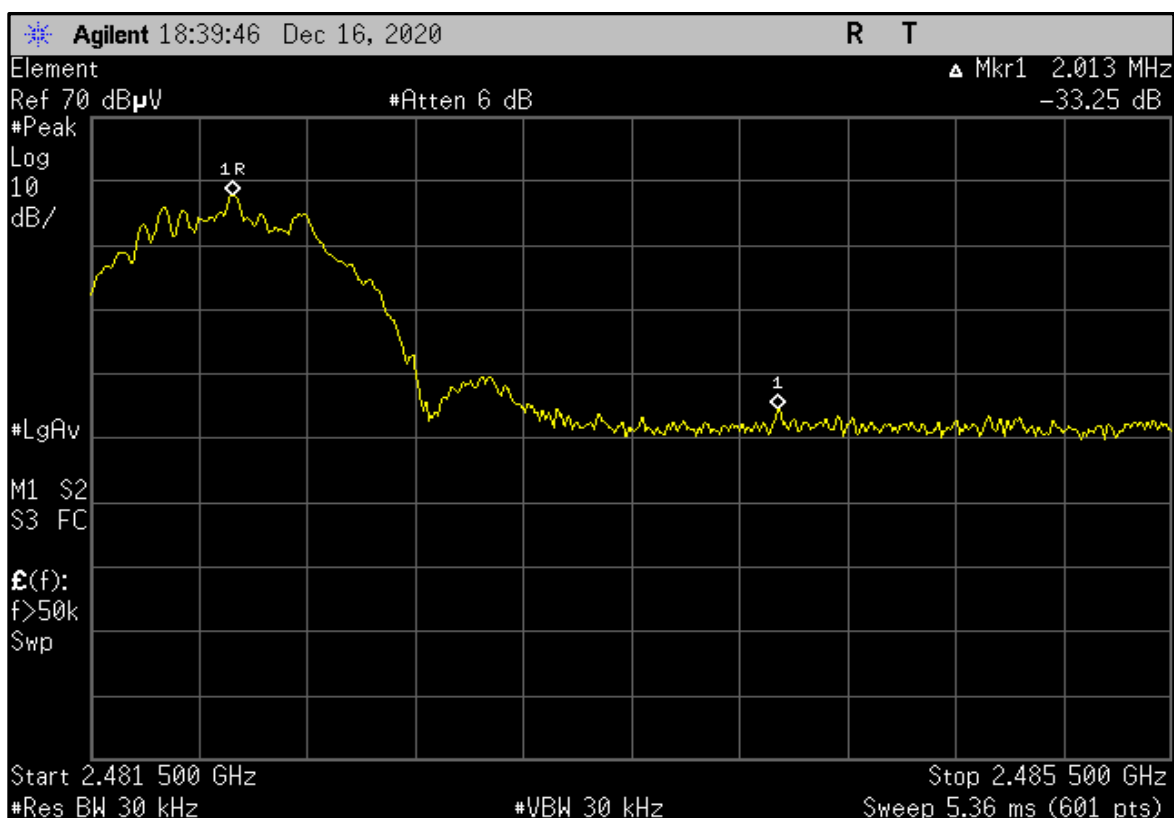
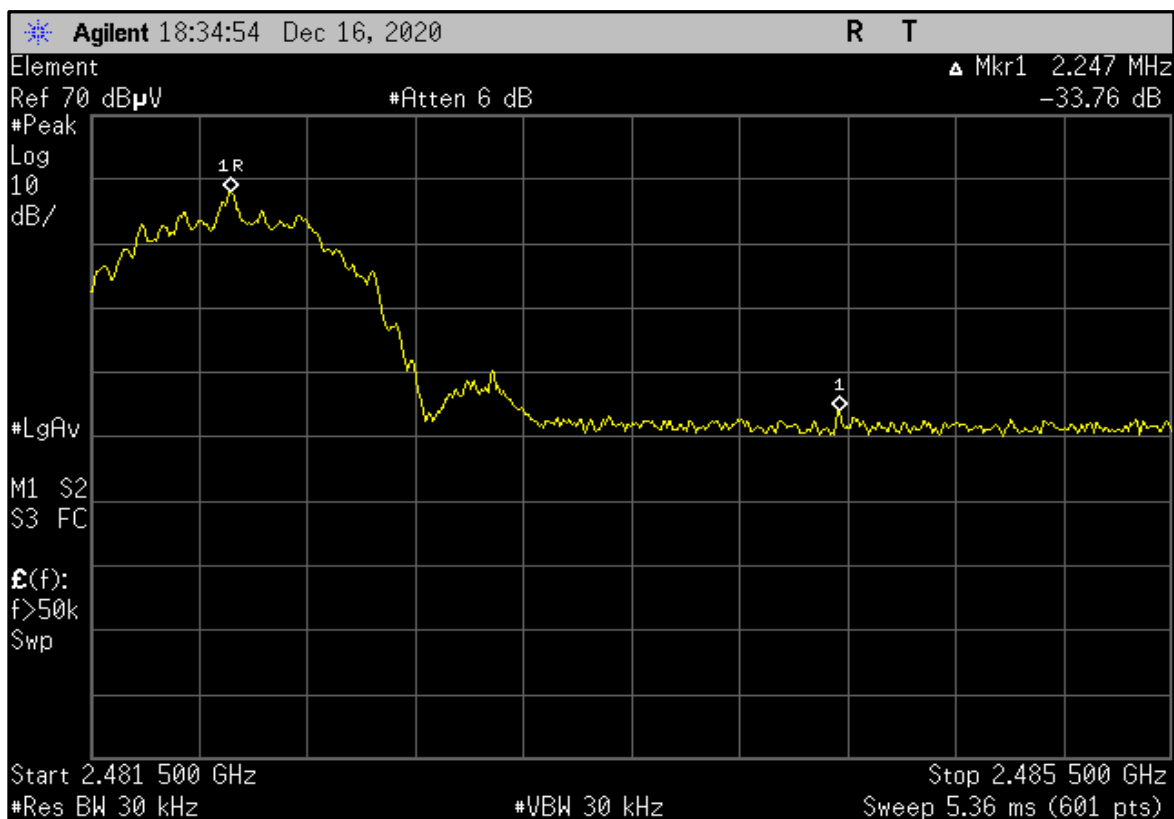
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                           |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|---------------------------------------------------------------------------------|
| 2484.040   | 27.5                        | -0.8        | 1.5                     | 317.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 49.9              | 54.0                 | -4.1                   | DTS, EUT Vert, Ant Vert: Fund 60.7dBuV + -33.2dBc = 27.5dBuV (calc. amp.)       |
| 2484.267   | 24.2                        | -0.8        | 1.5                     | 258.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.6              | 54.0                 | -7.4                   | DTS, EUT on Side, Ant on Side: Fund 58.0dBuV + -33.8dBc = 24.2dBuV (calc. amp.) |
| 2484.267   | 29.9                        | -0.8        | 1.5                     | 258.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 49.1              | 74.0                 | -24.9                  | DTS, EUT on Side, Ant on Side: Fund 63.7dBuV + -33.8dBc = 29.9dBuV (calc. amp.) |
| 2484.040   | 28.5                        | -0.8        | 1.5                     | 317.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 47.7              | 74.0                 | -26.3                  | DTS, EUT Vert, Ant Vert: Fund 61.7dBuV + -33.2dBc = 28.5dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



DTS, EUT on Side, Ant on Side

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DTS, EUT Vert, Ant Vert

# SPURIOUS RADIATED EMISSIONS



EmiRS 2020.12.09.0

PSA-ESCI 2020.06.24.2

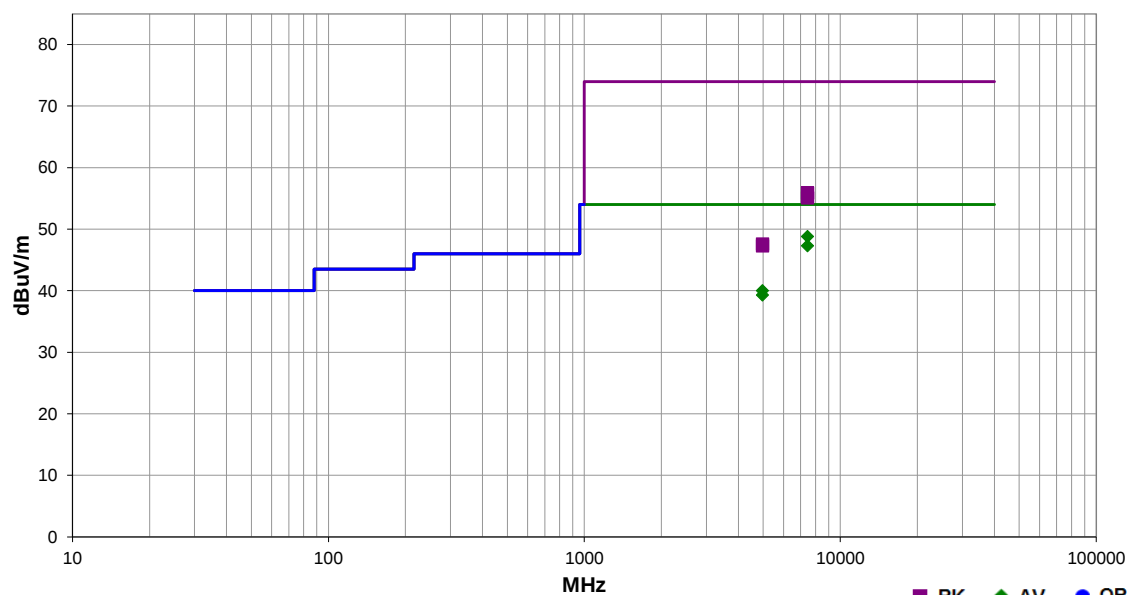
EmRS 2020.12.09.0

PSA-ESCI 2020.06.24

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                                                                                    |             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------------------------------------------------------------------|-------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |  |             |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                                                                                    |             |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 36.4% RH   |                                                                                    |             |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1006 mbar  | Tested by:                                                                         | Brian Fahey |
| EUT:            | RadioNode                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |            |                                                                                    |             |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                                                                                    |             |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                                                                                    |             |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |             |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                                                                                    |             |
| Operating Mode: | DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |             |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                                                                                    |             |
| Comments:       | See comments below for Channel, EUT orientations. Step 8, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                                                                                    |             |

|                            |                    |
|----------------------------|--------------------|
| <b>Test Specifications</b> | <b>Test Method</b> |
| FCC 15.247:2020            | ANSI C63.10:2013   |

|              |     |                          |   |                          |           |                |      |
|--------------|-----|--------------------------|---|--------------------------|-----------|----------------|------|
| <b>Run #</b> | 108 | <b>Test Distance (m)</b> | 3 | <b>Antenna Height(s)</b> | 1 to 4(m) | <b>Results</b> | Pass |
|--------------|-----|--------------------------|---|--------------------------|-----------|----------------|------|



| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments                           |
|------------|------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|------------------------------------|
| 7446.703   | 30.6             | 15.0        | 1.0                     | 26.0              | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 48.8              | 54.0                 | -5.2                   | High Ch., EUT on Side, Ant on Side |
| 7446.617   | 29.1             | 15.0        | 1.6                     | 31.0              | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 47.3              | 54.0                 | -6.7                   | High Ch., EUT Vert, Ant Vert       |
| 4963.940   | 27.3             | 9.5         | 3.3                     | 4.0               | 3.2                               | 0.0                       | Horz                      | AV       | 0.0                      | 40.0              | 54.0                 | -14.0                  | High Ch., EUT on Side, Ant on Side |
| 4964.093   | 26.6             | 9.5         | 1.7                     | 226.0             | 3.2                               | 0.0                       | Vert                      | AV       | 0.0                      | 39.3              | 54.0                 | -14.7                  | High Ch., EUT Vert, Ant Vert       |
| 7445.197   | 40.9             | 15.0        | 1.0                     | 26.0              | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 55.9              | 74.0                 | -18.1                  | High Ch., EUT on Side, Ant on Side |
| 7446.920   | 40.1             | 15.0        | 1.6                     | 31.0              | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 55.1              | 74.0                 | -18.9                  | High Ch., EUT Vert, Ant Vert       |
| 4964.030   | 38.1             | 9.5         | 3.3                     | 4.0               | 0.0                               | 0.0                       | Horz                      | PK       | 0.0                      | 47.6              | 74.0                 | -26.4                  | High Ch., EUT on Side, Ant on Side |
| 4964.143   | 37.8             | 9.5         | 1.7                     | 226.0             | 0.0                               | 0.0                       | Vert                      | PK       | 0.0                      | 47.3              | 74.0                 | -26.7                  | High Ch., EUT Vert, Ant Vert       |

# SPURIOUS RADIATED EMISSIONS

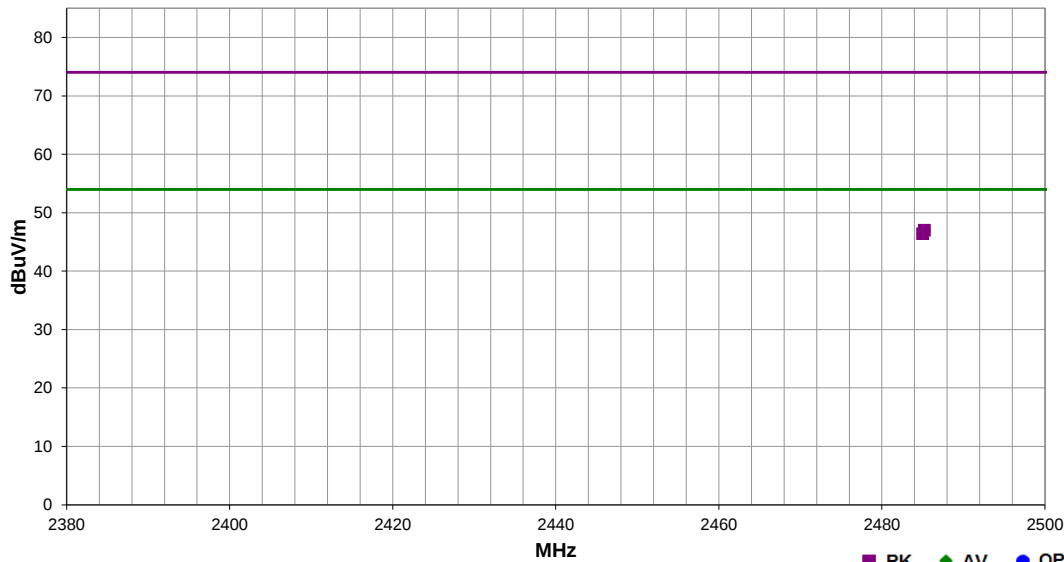


EmiRS 2020.12.09.0 PSA-ESCI 2020.06.24.2

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            |                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------------------|
| Work Order:     | SYNA0313                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date:             | 2020-12-16 |                        |
| Project:        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature:      | 22.6 °C    |                        |
| Job Site:       | NC01                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Humidity:         | 36.4% RH   |                        |
| Serial Number:  | Rev. 10 - 007                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Barometric Pres.: | 1006 mbar  |                        |
| EUT: RadioNode  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |            | Tested by: Brian Fahey |
| Configuration:  | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |            |                        |
| Customer:       | Walt Disney Parks and Resorts US, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |            |                        |
| Attendees:      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| EUT Power:      | 24VDC via 120VAC/60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |                        |
| Operating Mode: | DTS Tx, Port 8, Ant Cable A2, Antenna PN: MA510.C.CG.005, GFSK, Packet Length = 63, PRBS9, 1 Mbps, Single Channel = 2482 MHz. Power setting = 4 dBm.                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Deviations:     | None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |            |                        |
| Comments:       | See comments below for Channel, EUT orientations. Step 8, spot check based on the client's test plan. The worst case EUT orientations were used from previous testing. The provided test software configured the radio with a duty cycle of 47.8% . Per ANSI C63.10 test methods, the RMS data was corrected with a carrier duty cycle correction factor (DCCF) of 3.2 dB. DCCF (dB) = 10*log(1/0.478). Final product output power setting will not exceed 0 dBm. |                   |            |                        |

|                     |                  |
|---------------------|------------------|
| Test Specifications | Test Method      |
| FCC 15.247:2020     | ANSI C63.10:2013 |

|       |     |                   |   |                   |           |         |      |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|
| Run # | 109 | Test Distance (m) | 3 | Antenna Height(s) | 1 to 4(m) | Results | Pass |
|-------|-----|-------------------|---|-------------------|-----------|---------|------|



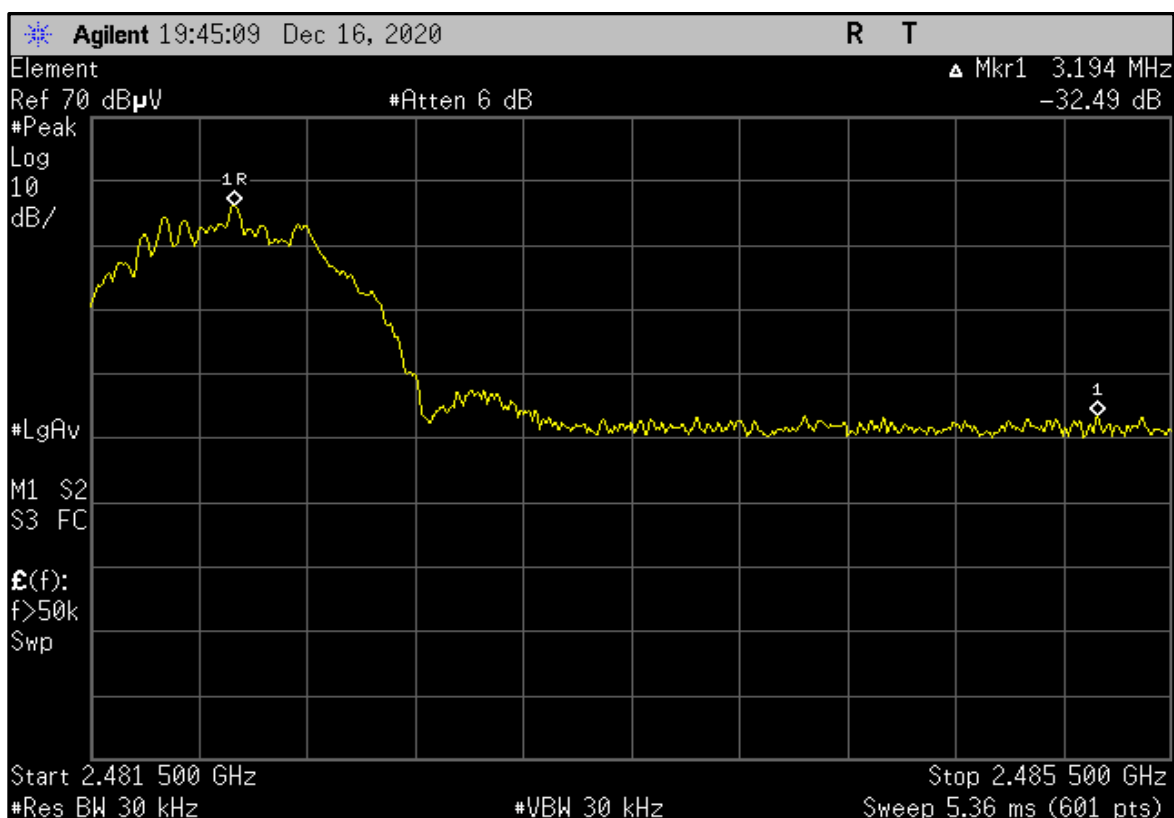
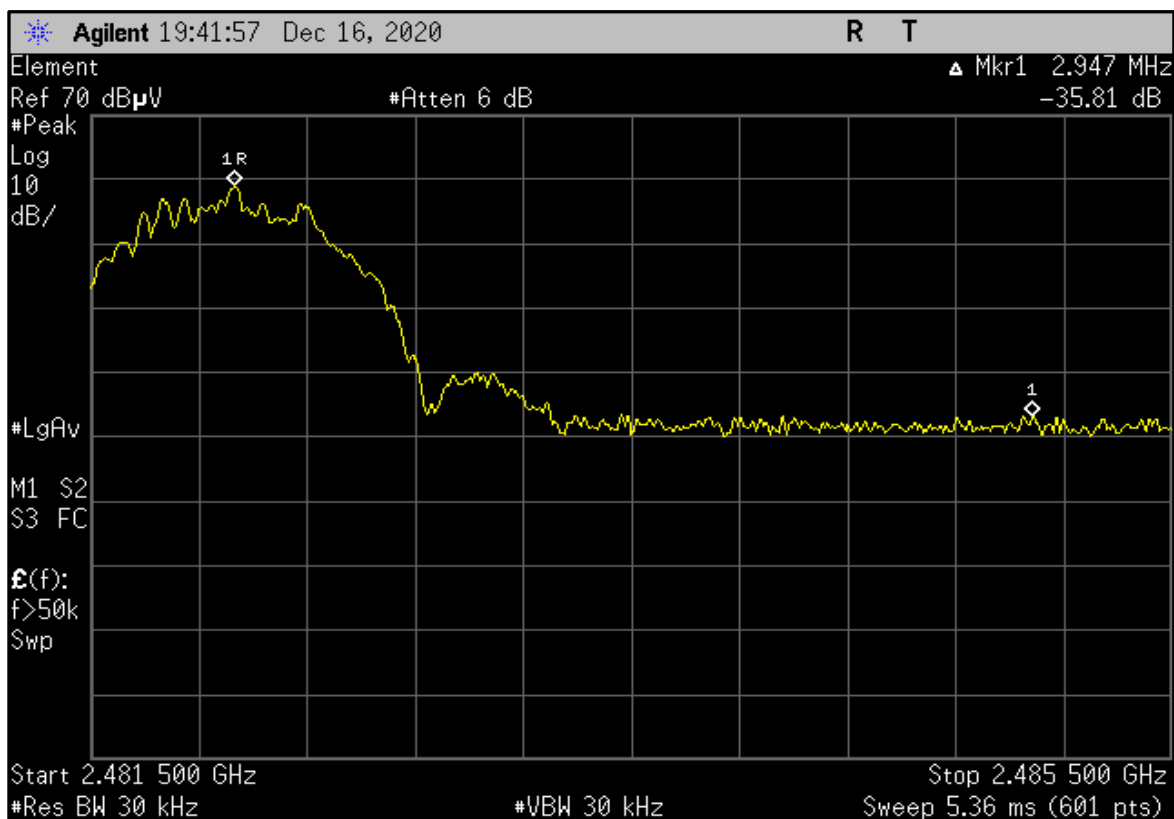
| Freq (MHz) | Calculated Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Marker Delta Comments                                                                |
|------------|-----------------------------|-------------|-------------------------|-------------------|-----------------------------------|---------------------------|---------------------------|----------|--------------------------|-------------------|----------------------|------------------------|--------------------------------------------------------------------------------------|
| 2485.227   | 24.4                        | -0.8        | 1.4                     | 285.0             | 3.2                               | 20.0                      | Vert                      | AV       | 0.0                      | 46.8              | 54.0                 | -7.2                   | High Ch., EUT on Side, Ant on Side: Fund 56.9dBuV + -32.5dBc = 24.4dBuV (calc. amp.) |
| 2484.980   | 24.0                        | -0.8        | 1.5                     | 314.0             | 3.2                               | 20.0                      | Horz                      | AV       | 0.0                      | 46.4              | 54.0                 | -7.6                   | High Ch., EUT Vert, Ant Vert: Fund 59.8dBuV + -35.8dBc = 24.0dBuV (calc. amp.)       |
| 2485.227   | 27.8                        | -0.8        | 1.4                     | 285.0             | 0.0                               | 20.0                      | Vert                      | PK       | 0.0                      | 47.0              | 74.0                 | -27.0                  | High Ch., EUT on Side, Ant on Side: Fund 60.3dBuV + -32.5dBc = 27.8dBuV (calc. amp.) |
| 2484.980   | 27.2                        | -0.8        | 1.5                     | 314.0             | 0.0                               | 20.0                      | Horz                      | PK       | 0.0                      | 46.4              | 74.0                 | -27.6                  | High Ch., EUT Vert, Ant Vert: Fund 63.0dBuV + -35.8dBc = 27.2dBuV (calc. amp.)       |

# SPURIOUS RADIATED EMISSIONS



High Ch., EUT Vert, Ant Vert

PSA-ESCI 2020.06.24.2



High Ch., EUT on Side, Ant on Side