

# Insulet Corporation

# TEST REPORT

**SCOPE OF WORK**

EMC TESTING – POD; Model 18338

**REPORT NUMBER**

103328054BOX-001

**ISSUE DATE**

03/12/2018

**PAGES**

67

**DOCUMENT CONTROL NUMBER**

Non-Specific Radio Report Shell Rev. December 2017  
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## EMISSIONS TEST REPORT (FULL COMPLIANCE)

**Report Number:** 103328054BOX-001

**Project Number:** G103328054

**Report Issue Date:** 03/12/2018

**Model(s) Tested:** POD (18338)

**Model(s) Partially Tested:** None

**Model(s) Not Tested but declared equivalent by the client:** None

**Standards:** CFR47 FCC Part 15.247 Subpart C: 02/2018  
CFR47 FCC Part 15 Subpart B: 02/2018  
RSS-247 Issue 2: 02/2017  
ICES-003 Issue 6: 01/2016  
RSS-Gen Issue 4: 11/2014  
RSS-102 Issue 5: 03/2015

Tested by:  
Intertek Testing Services NA, Inc.  
70 Codman Hill Road  
Boxborough, MA 01719  
USA

Client:  
Insulet Corporation  
600 Technology Park Drive  
Suite 200  
Billerica, MA 01821  
USA

Report prepared by



Kouma Sinn / EMC Staff Engineer

Report reviewed by



Vathana Ven / EMC Staff Engineer

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## 1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

## 2 Test Summary

| Section | Test full name                                                                                                                                                        | Result |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 3       | Client Information                                                                                                                                                    | --     |
| 4       | Description of Equipment Under Test and Variant Models                                                                                                                | --     |
| 5       | System Setup and Method                                                                                                                                               | --     |
| 6       | Maximum Peak Output Power and Human RF exposure<br>(CFR47 FCC Part 15 Subpart C:02/2018, Section 15.247 (b)(3)<br>RSS-247 Issue 2: 02/2017, RSS-102 Issue 5: 03/2015) | Pass   |
| 7       | 6 dB Bandwidth and Occupied Bandwidth<br>(CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (a)(2)<br>RSS-247 Issue 2: 02/2017)                                    | Pass   |
| 8       | Maximum Power Spectral Density<br>(CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (e)<br>RSS-247 Issue 2: 02/2017)                                              | Pass   |
| 9       | Band Edge Compliance<br>(CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (d)<br>RSS-247 Issue 2: 02/2017)                                                        | Pass   |
| 10      | Transmitter spurious emissions<br>(CFR47 FCC Part 15 Subpart C: 02/2018, Section 15.247 (d)<br>RSS247 Issue2: 05/2015)                                                | Pass   |
| 11      | Digital Device and Receiver Radiated Spurious Emissions (CFR47<br>FCC Part 15 Subpart B 15.109: 02/2018, ICES-003 Issue 6 January<br>2016)                            | Pass   |
| --      | AC Mains Conducted Emissions<br>FCC 47CFR Part 15.107:2017<br>ICES-003 Issue 6: 01/2016                                                                               | N/A*   |
| 12      | Revision History                                                                                                                                                      | --     |

Notes: Not applicable as the EUT powers from internal battery with no connection to AC mains.

### 3 Client Information

This EUT was tested at the request of:

**Client:** Insulet Corporation  
600 Technology Park Drive  
Suite 200  
Billerica, MA 01821  
USA

**Contact:** Jonathan Hardy  
**Telephone:** (978) 600-7976  
**Fax:** None  
**Email:** Johardy@insulet.com

### 4 Description of Equipment Under Test and Variant Models

**Manufacturer:** Insulet Corporation  
600 Technology Park Drive  
Suite 200  
Billerica, MA 01821  
USA

| Equipment Under Test |                     |              |                       |
|----------------------|---------------------|--------------|-----------------------|
| Description          | Manufacturer        | Model Number | Serial Number         |
| ASM, Pod, Dash       | Insulet Corporation | 18338        | Tx 2402 MHz – 0000798 |
| ASM, Pod, Dash       | Insulet Corporation | 18338        | Tx 2440 MHz – 0000814 |
| ASM, Pod, Dash       | Insulet Corporation | 18338        | Tx 2480 MHz – 0000832 |
| ASM, Pod, Dash       | Insulet Corporation | 18338        | Rx 2402 MHz – 0000655 |

Notes: Multiple samples were used for testing at Low, Mid, High, transmitting channels and receiving channel.

|                     |            |
|---------------------|------------|
| Receive Date:       | 02/23/2018 |
| Received Condition: | Good       |
| Type:               | Production |

| Description of Equipment Under Test (provided by client) |
|----------------------------------------------------------|
| Insulin management system                                |

| Equipment Under Test Power Configuration |               |                 |                  |
|------------------------------------------|---------------|-----------------|------------------|
| Rated Voltage                            | Rated Current | Rated Frequency | Number of Phases |
| 4.5 VDC                                  | < 100 mA      | N/A             | N/A              |

#### Operating modes of the EUT:

| No. | Descriptions of EUT Exercising                              |
|-----|-------------------------------------------------------------|
| 1   | constant_carrier_2402MHz_WithMod_PseudoRandTestPattern_2dBm |
| 2   | constant_carrier_2440MHz_WithMod_PseudoRandTestPattern_2dBm |
| 3   | constant_carrier_2480MHz_WithMod_PseudoRandTestPattern_2dBm |
| 4   | Receive Only_2402MHz                                        |

**Software used by the EUT:**

| No. | Descriptions of EUT Exercising                                                                                 |
|-----|----------------------------------------------------------------------------------------------------------------|
| 1   | Modified QN (PN: 18486) & ER48 (PN: 18483) FW to perform the functions described in the operating mode section |

| Radio/Receiver Characteristics                                                  |                                                                             |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Frequency Band(s)                                                               | 2402-2480 MHz                                                               |
| Modulation Type(s)                                                              | GFSK                                                                        |
| Maximum Output Power                                                            | 2.37 dBm                                                                    |
| Test Channels                                                                   | Low channel – 2402 MHz<br>Mid channel – 2440 MHz<br>High channel – 2480 MHz |
| Occupied Bandwidth                                                              | 1.045 MHz                                                                   |
| Frequency Hopper: Number of Hopping Channels                                    | N/A                                                                         |
| Frequency Hopper: Channel Dwell Time                                            | N/A                                                                         |
| Frequency Hopper: Max interval between two instances of use of the same channel | N/A                                                                         |
| MIMO Information (# of Transmit and Receive antenna ports)                      | N/A                                                                         |
| Equipment Type                                                                  | Standalone                                                                  |
| ETSI LBT/Adaptivity                                                             | None                                                                        |
| ETSI Adaptivity Type                                                            | N/A                                                                         |
| ETSI Temperature Category (I, II, III)                                          | N/A                                                                         |
| ETSI Receiver Category (1, 2, 3)                                                | N/A                                                                         |
| Antenna Type and Gain                                                           | PCB mag loop with -3.6 dBi                                                  |

**Variant Models:**

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

**5 System Setup and Method**

| Cables |             |            |           |          |             |
|--------|-------------|------------|-----------|----------|-------------|
| ID     | Description | Length (m) | Shielding | Ferrites | Termination |
| --     | None        | --         | --        | --       | --          |

| Support Equipment |              |              |               |
|-------------------|--------------|--------------|---------------|
| Description       | Manufacturer | Model Number | Serial Number |
| None              | --           | --           | --            |

**5.1 Method:**

Configuration as required by Configuration as required by FCC Part 15 Subpart C 15.247: 02/2018, FCC Part 15 Subpart B: 02/2018, RSS 247 Issue 2: 02/2017, ICES 003 Issue 6: 01/2016 updated 06/2016, ANSI C 63.10: 2013 and ANSI C 63.4: 2014.

**5.2 EUT Block Diagram:**

## 6 Maximum Peak Output Power and Human RF exposure

### 6.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

**TEST SITE:** EMC Lab

**The EMC Lab** has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

### 6.2 Test Equipment Used:

| Asset     | Description                     | Manufacturer          | Model         | Serial     | Cal Date   | Cal Due    |
|-----------|---------------------------------|-----------------------|---------------|------------|------------|------------|
| DAV002'   | Weather Station                 | Davis Instruments     | 7400          | PE80519A93 | 06/14/2017 | 06/14/2018 |
| ROS005-1' | Signal and Spectrum Analyzer    | Rohde and Schwartz    | FSW43         | 100646     | 11/17/2017 | 11/17/2018 |
| CBLSHF202 | Cable, SMA - SMA, 9kHz-40GHz    | Sucoflex (Huber Suhb) | 104PE         | CBLSHF202  | 08/25/2017 | 08/25/2018 |
| MIN23'    | Attenuator 2 watt 20dB DC-26GHz | Mini Circuits         | BW-S20-2W263+ | MIN23      | 05/26/2017 | 05/26/2018 |

#### Software Utilized:

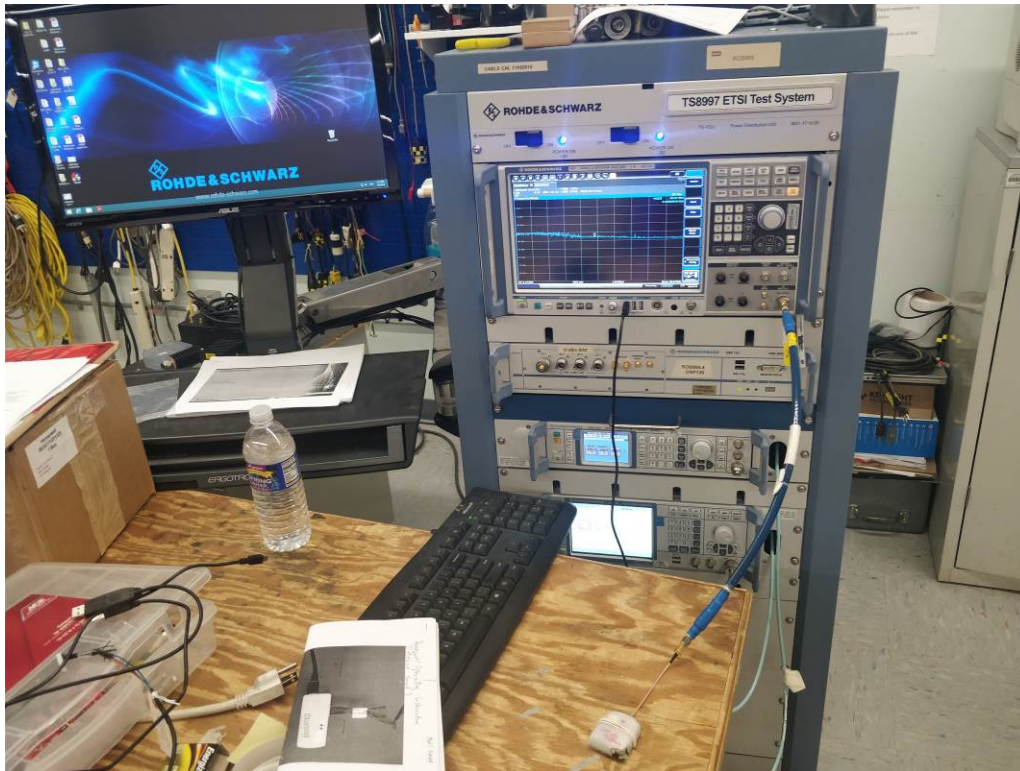
| Name | Manufacturer | Version |
|------|--------------|---------|
| None | --           | --      |

### 6.3 Results:

The sample tested was found to Comply.

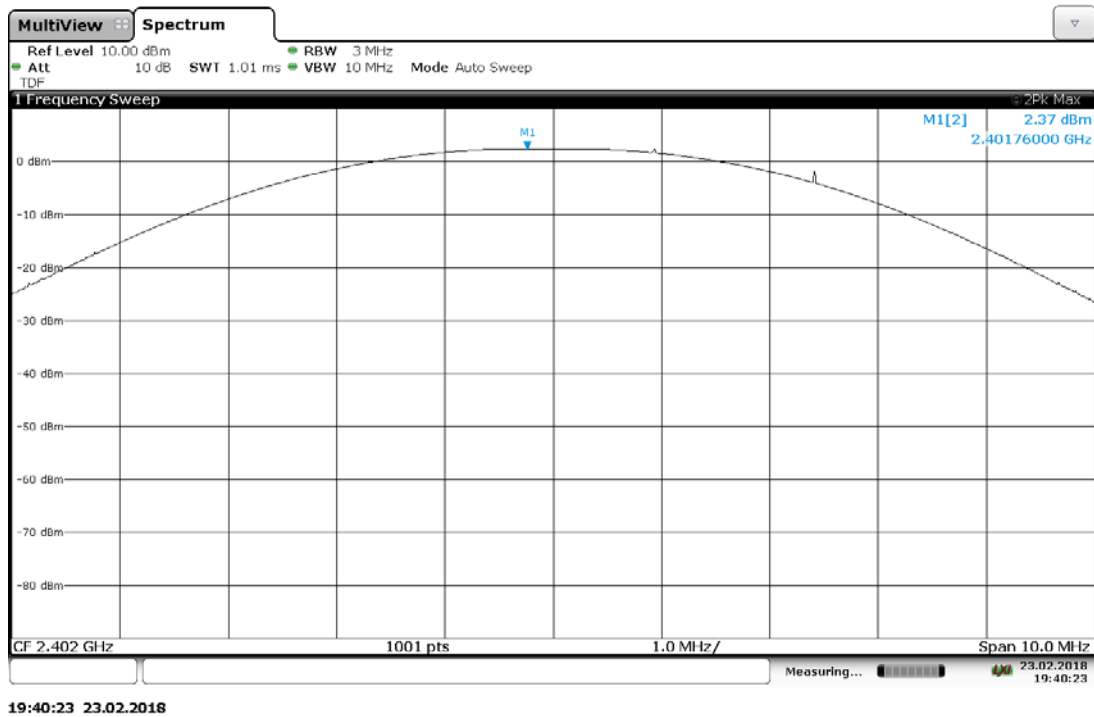
§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt or 30 dBm.

#### 6.4 Setup Photographs:

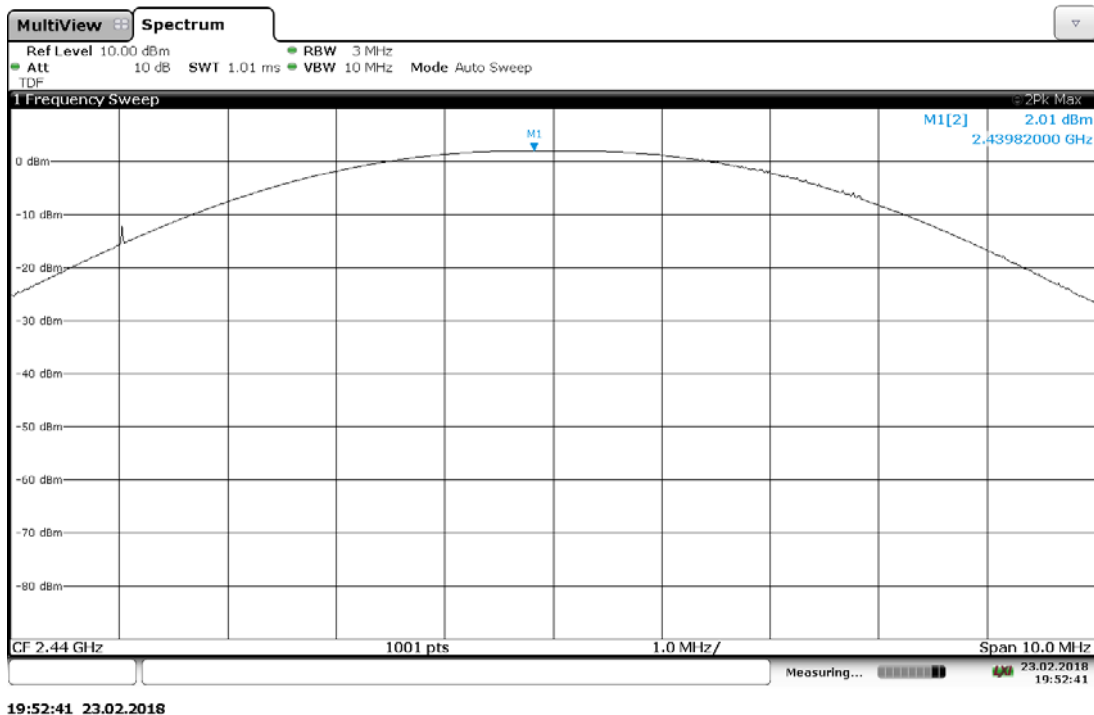


## 6.5 Plots/Data:

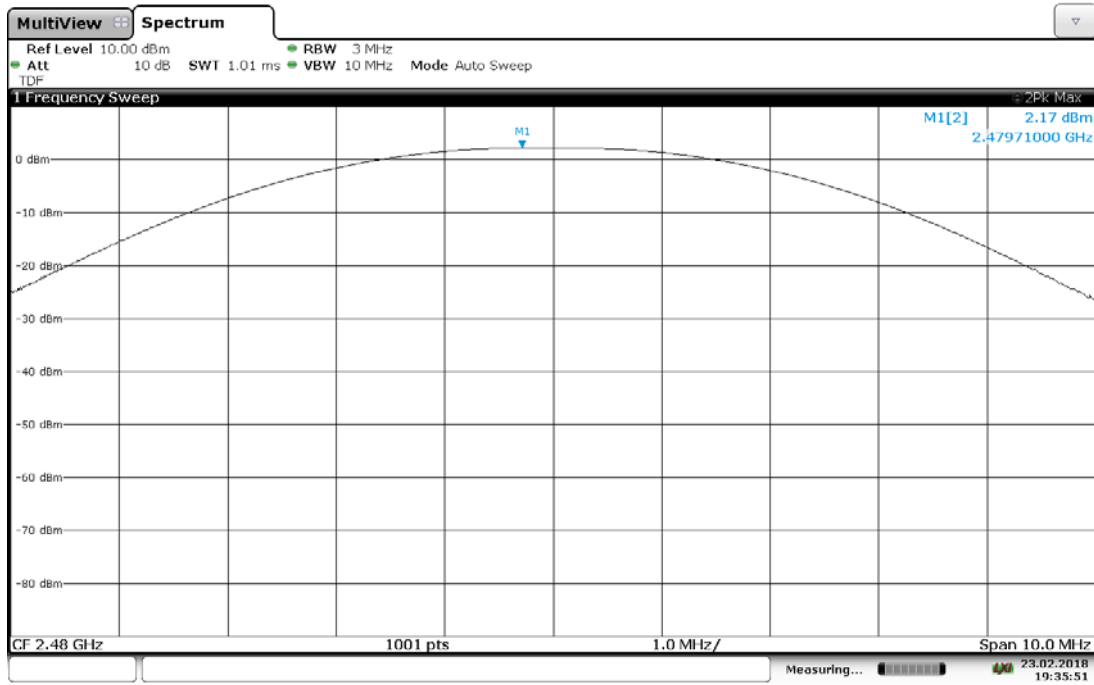
## Low Channel Antenna Port Conducted Power, 2.37 dBm



## Mid Channel Antenna Port Conducted Power, 2.01 dBm



# High Channel Antenna Port Conducted Power, 2.17 dBm



19:35:51 23.02.2018

**SAR Exemption Calculation**

Maximum Conducted Output Power of Transmitter = 2.37dBm = 1.72 mW

**FCC SAR Exemption per KDB 447498**

- a) For 100 MHz to 6 GHz and *test separation distances*  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR,}^{30} \text{ where}$$

- $f_{\text{(GHz)}}$  is the RF channel transmit frequency in GHz

$$= (1.72/5) \cdot (\sqrt{2.402})$$

$$= 0.53 < 3.0 \text{ (below the limit SAR Exempt per FCC)}$$

**RSS 102 SAR Exemption**

**Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance<sup>4,5</sup>**

| Frequency (MHz) | Exemption Limits (mW)                 |                                 |                                 |                                 |                                 |
|-----------------|---------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                 | At separation distance of $\leq 5$ mm | At separation distance of 10 mm | At separation distance of 15 mm | At separation distance of 20 mm | At separation distance of 25 mm |
| $\leq 300$      | 71 mW                                 | 101 mW                          | 132 mW                          | 162 mW                          | 193 mW                          |
| 450             | 52 mW                                 | 70 mW                           | 88 mW                           | 106 mW                          | 123 mW                          |
| 835             | 17 mW                                 | 30 mW                           | 42 mW                           | 55 mW                           | 67 mW                           |
| 1900            | 7 mW                                  | 10 mW                           | 18 mW                           | 34 mW                           | 60 mW                           |
| 2450            | 4 mW                                  | 7 mW                            | 15 mW                           | 30 mW                           | 52 mW                           |
| 3500            | 2 mW                                  | 6 mW                            | 16 mW                           | 32 mW                           | 55 mW                           |
| 5800            | 1 mW                                  | 6 mW                            | 15 mW                           | 27 mW                           | 41 mW                           |

The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit.

The conducted output power of the transmitter 1.72 mW @ 2402 MHz is less than 4 mW limit specified at 2450 MHz, device meets SAR exclusion.

Test Personnel: Naga Suryadevara **N.S**  
Supervising/Reviewing  
Engineer:  
(Where Applicable) N/A  
CFR47 FCC Part 15.247  
RSS-247  
Product Standard: RSS-102  
Input Voltage: Internal Battery Powered  
Pretest Verification w/  
Ambient Signals or  
BB Source: N/A

Test Date: 02/23/2018

Limit Applied: See report section 6.3

Ambient Temperature: 22 °C

Relative Humidity: 18 %

Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

## 7 6 dB Bandwidth and Occupied Bandwidth

### 7.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

**TEST SITE:** EMC Lab

**The EMC Lab** has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

### 7.2 Test Equipment Used:

| Asset     | Description                     | Manufacturer          | Model         | Serial     | Cal Date   | Cal Due    |
|-----------|---------------------------------|-----------------------|---------------|------------|------------|------------|
| DAV002'   | Weather Station                 | Davis Instruments     | 7400          | PE80519A93 | 06/14/2017 | 06/14/2018 |
| ROS005-1' | Signal and Spectrum Analyzer    | Rohde and Schwartz    | FSW43         | 100646     | 11/17/2017 | 11/17/2018 |
| CBLSHF202 | Cable, SMA - SMA, 9kHz-40GHz    | Sucoflex (Huber Suhb) | 104PE         | CBLSHF202  | 08/25/2017 | 08/25/2018 |
| MIN23'    | Attenuator 2 watt 20dB DC-26GHz | Mini Circuits         | BW-S20-2W263+ | MIN23      | 05/26/2017 | 05/26/2018 |

#### Software Utilized:

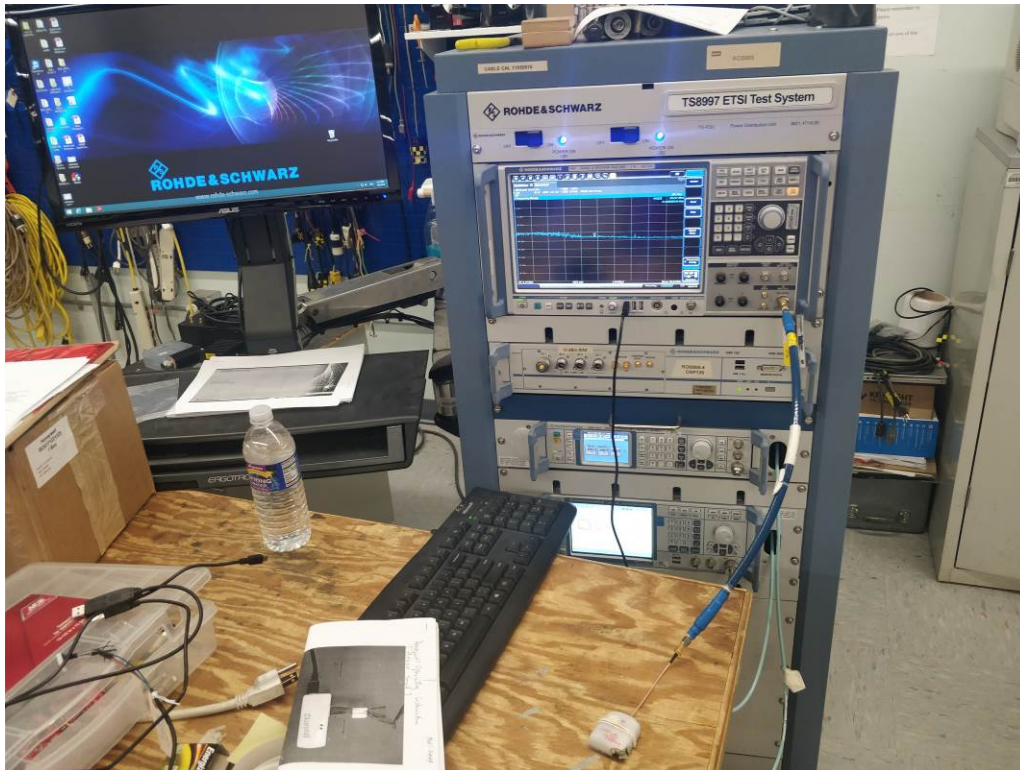
| Name | Manufacturer | Version |
|------|--------------|---------|
| None | --           | --      |

### 7.3 Results:

The sample tested was found to Comply.

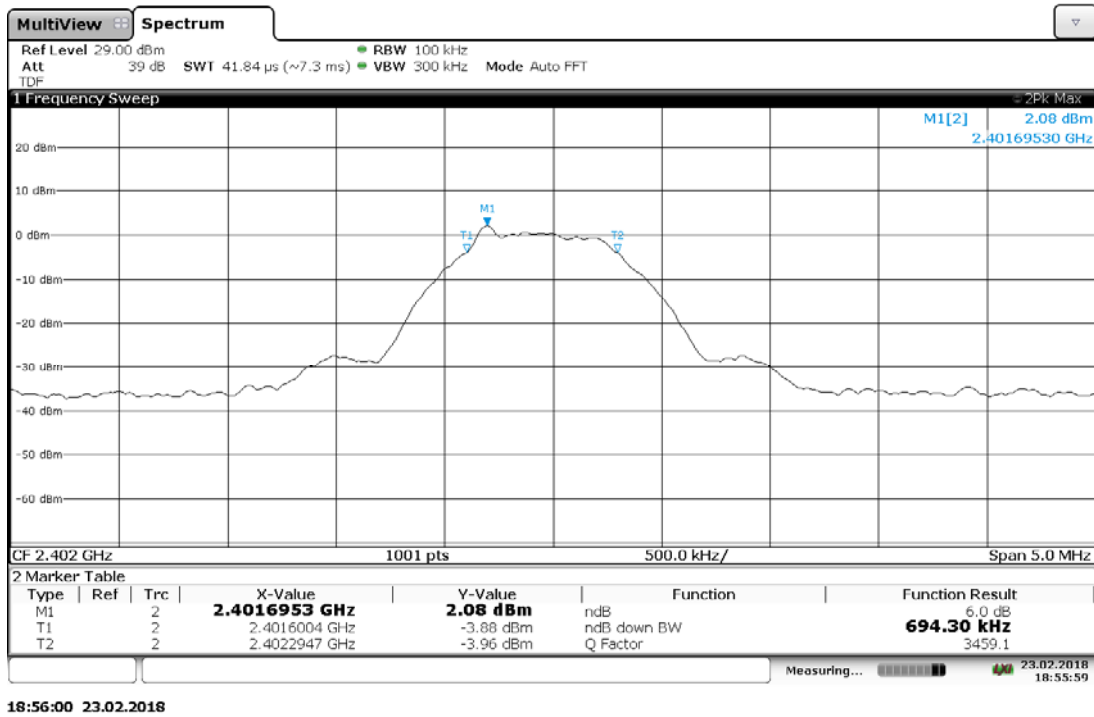
§15.247 (a) (2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 7.4 Setup Photographs:

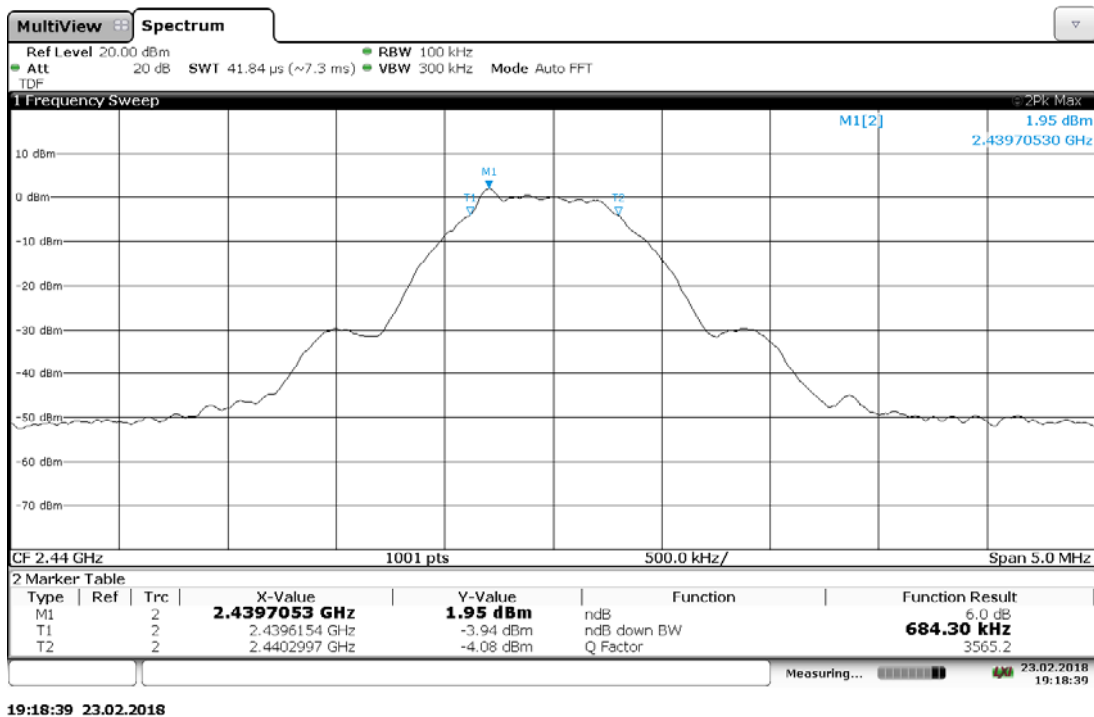


## 7.5 Plots/Data:

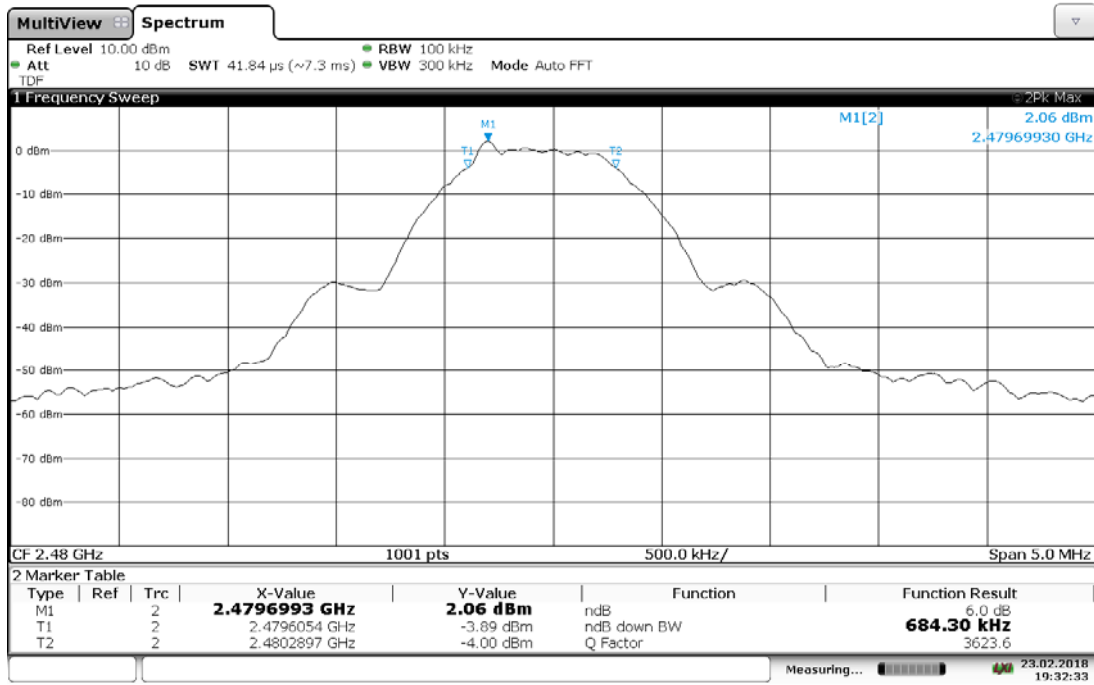
### Low Channel 6 dB Bandwidth, 694.3 kHz



### Mid Channel 6 dB Bandwidth, 684.30 kHz

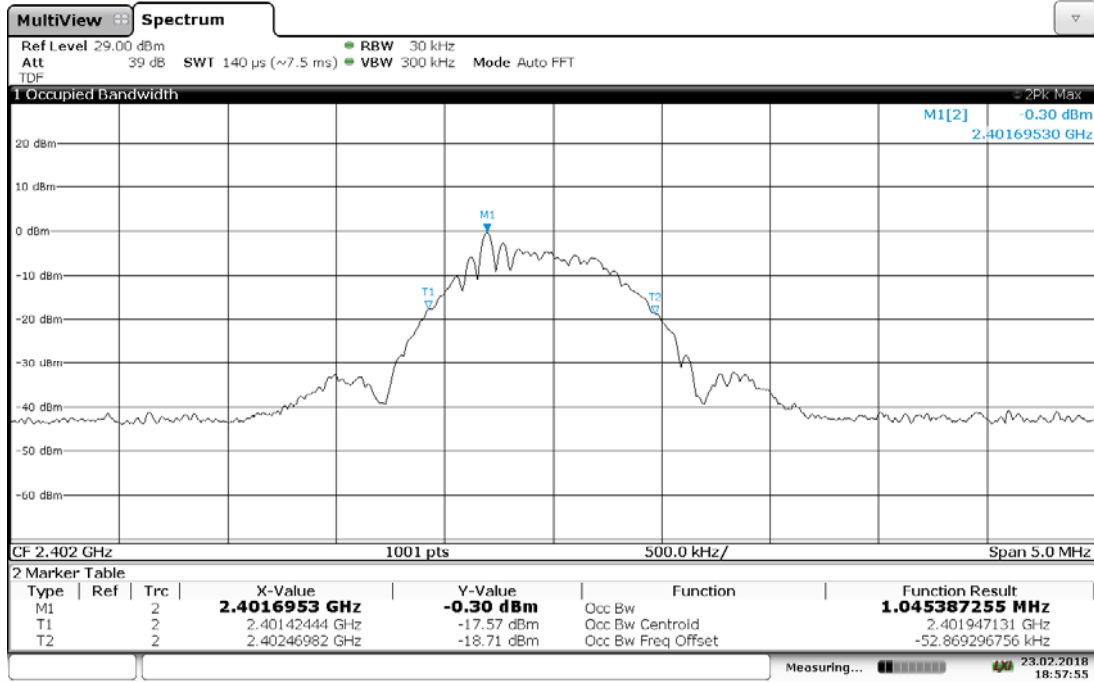


### High Channel 6 dB Bandwidth, 684.30 kHz



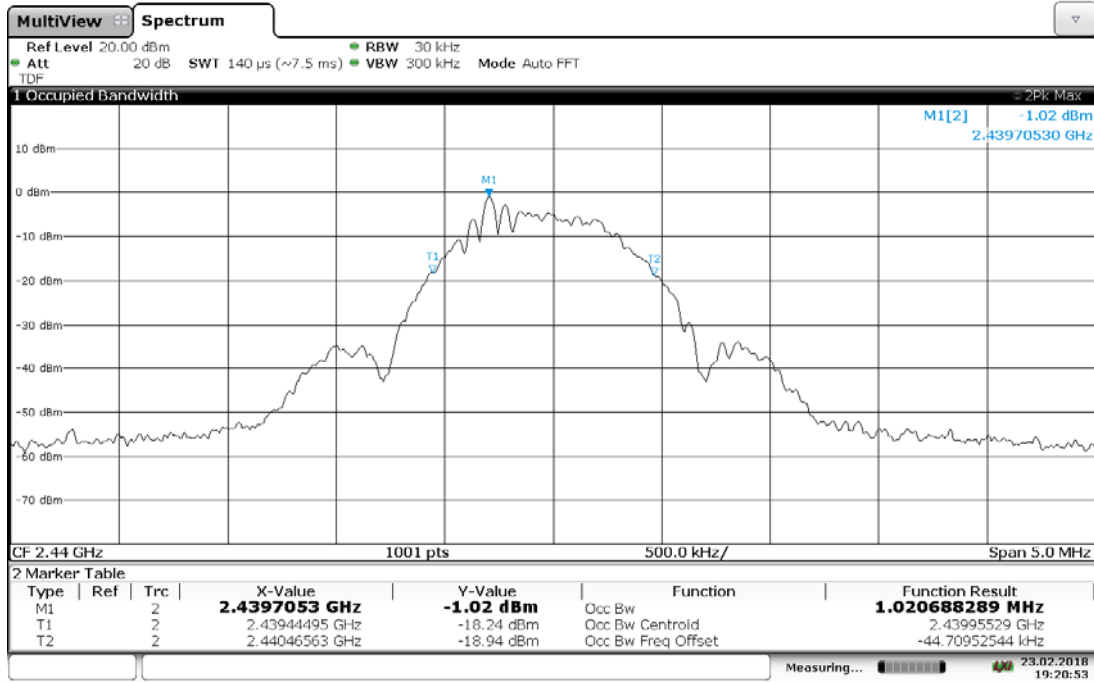
19:32:33 23.02.2018

### Low Channel Occupied Bandwidth, 1.045 MHz



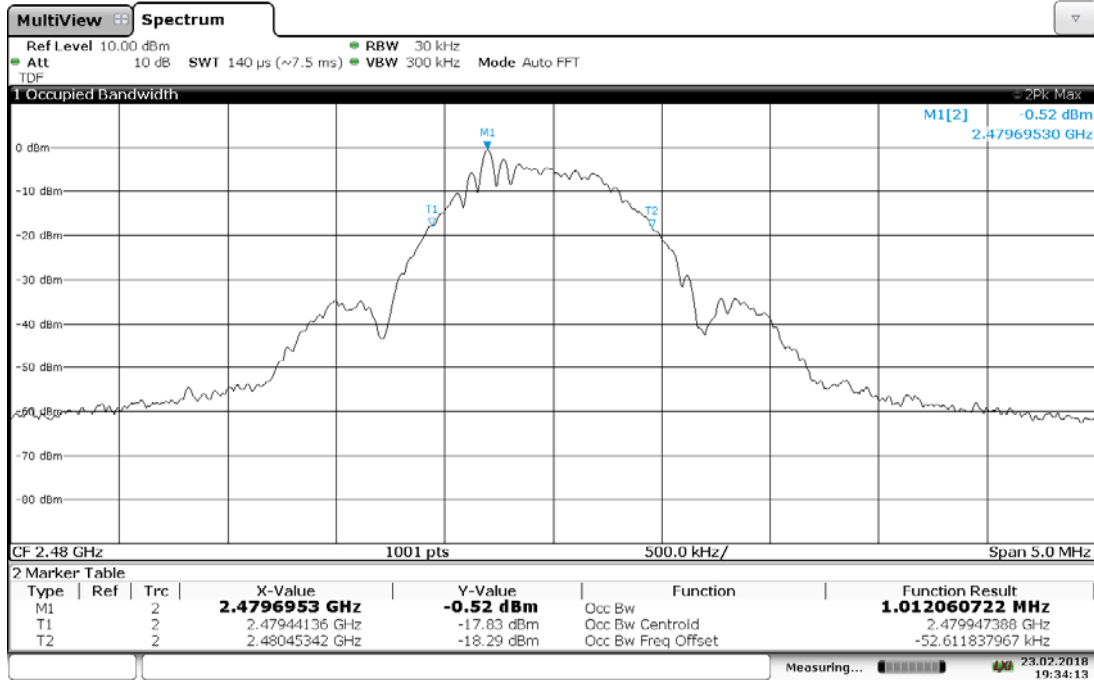
18:57:56 23.02.2018

### Mid Channel Occupied Bandwidth, 1.021 MHz



19:20:54 23.02.2018

### High Channel Occupied Bandwidth, 1.012 MHz



19:34:13 23.02.2018

Test Personnel: Naga Suryadevara *N.S*  
Supervising/Reviewing  
Engineer:  
(Where Applicable) N/A  
Product Standard: CFR47 FCC Part 15.247  
RSS-247  
Input Voltage: RSS-102  
Internal Battery Powered  
Pretest Verification w/  
Ambient Signals or  
BB Source: N/A

Test Date: 02/23/2018

Limit Applied: See report section 7.3

Ambient Temperature: 22 °C

Relative Humidity: 18 %

Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

## 8 Maximum Power Spectral Density

### 8.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, and ANSI C63.10.

**TEST SITE:** EMC Lab

**The EMC Lab** has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

### 8.2 Test Equipment Used:

| Asset     | Description                     | Manufacturer          | Model         | Serial     | Cal Date   | Cal Due    |
|-----------|---------------------------------|-----------------------|---------------|------------|------------|------------|
| DAV002'   | Weather Station                 | Davis Instruments     | 7400          | PE80519A93 | 06/14/2017 | 06/14/2018 |
| ROS005-1' | Signal and Spectrum Analyzer    | Rohde and Schwartz    | FSW43         | 100646     | 11/17/2017 | 11/17/2018 |
| CBLSHF202 | Cable, SMA - SMA, 9kHz-40GHz    | Sucoflex (Huber Suhb) | 104PE         | CBLSHF202  | 08/25/2017 | 08/25/2018 |
| MIN23'    | Attenuator 2 watt 20dB DC-26GHz | Mini Circuits         | BW-S20-2W263+ | MIN23      | 05/26/2017 | 05/26/2018 |

#### Software Utilized:

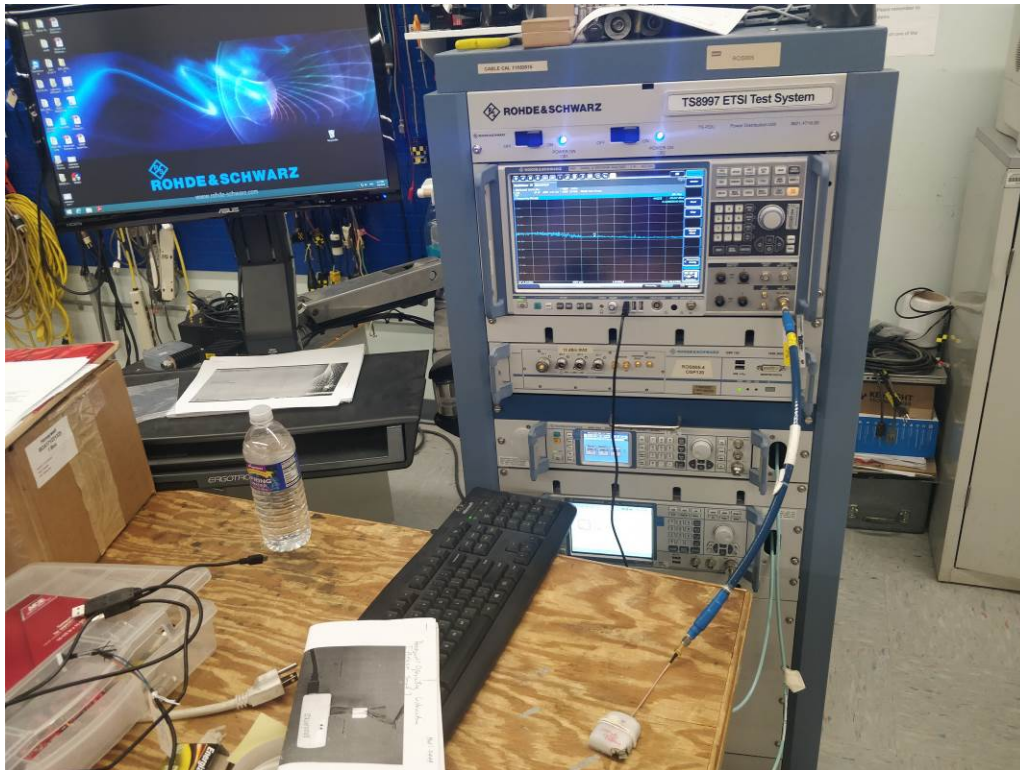
| Name | Manufacturer | Version |
|------|--------------|---------|
|      |              |         |

### 8.3 Results:

The sample tested was found to Comply.

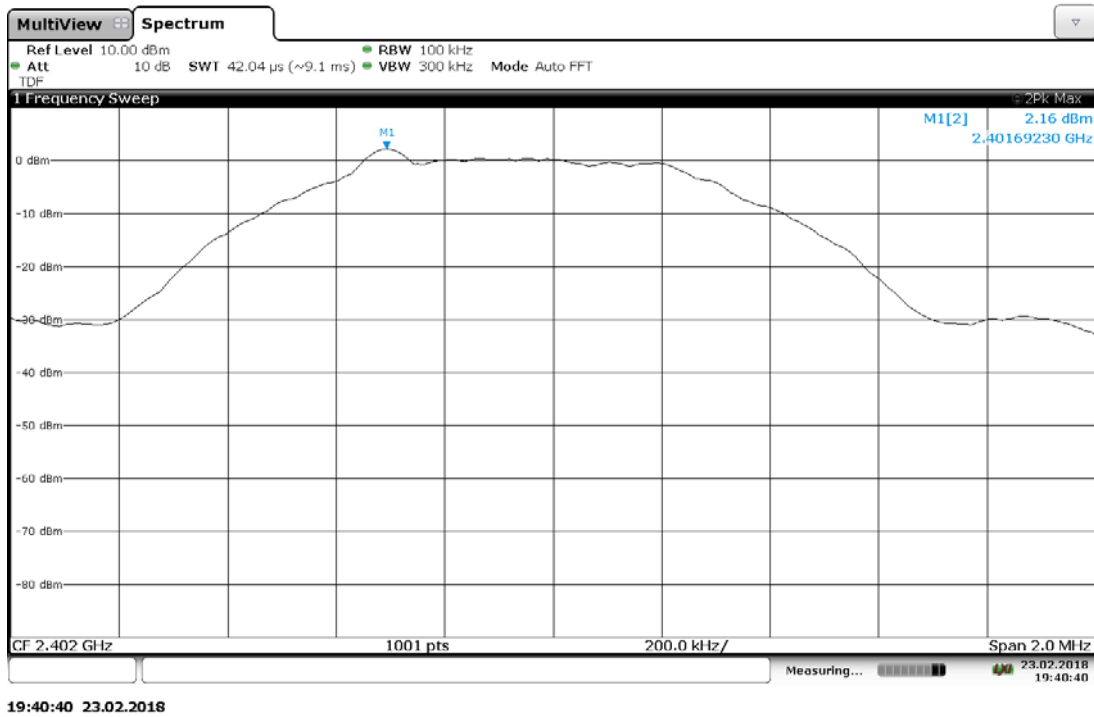
§15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### 8.4 Setup Photographs:

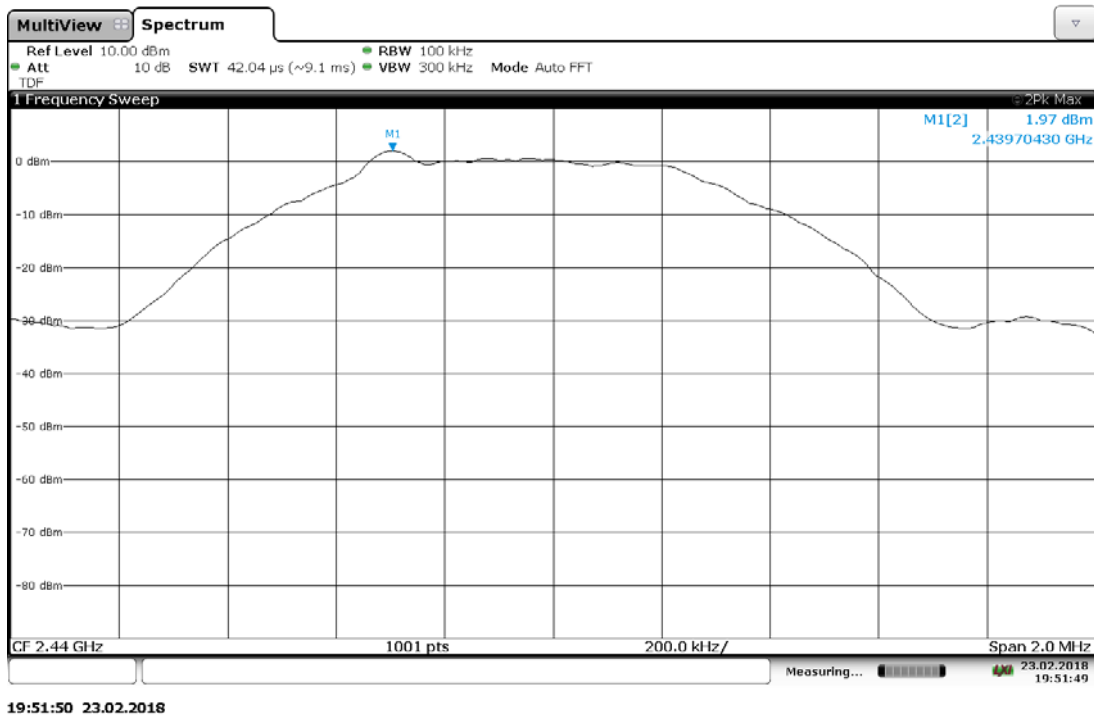


## 8.5 Plots/Data:

### Low Channel Power Spectral Density, 2.16 dBm



### Mid Channel Power Spectral Density, 1.97 dBm



## High Channel Power Spectral Density, 2.05 dBm



19:35:16 23.02.2018

Test Personnel: Naga Suryadevara *N.S*  
Supervising/Reviewing Engineer:  
(Where Applicable) N/A  
CFR47 FCC Part 15.247  
RSS-247  
Product Standard: RSS-102  
Input Voltage: Internal Battery Powered  
Pretest Verification w/  
Ambient Signals or  
BB Source: N/A

Test Date: 02/23/2018Limit Applied: See report section 8.3Ambient Temperature: 22 °CRelative Humidity: 18 %Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

## 9 Band Edge Compliance

### 9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247 RSS 247, ANSI C 63.10, and ANSI C 63.4.

**TEST SITE:** EMC Lab & 10m ALSE

**The EMC Lab** has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

**The 10m ALSE** is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

### Measurement Uncertainty

| Measurement             | Frequency Range | Expanded Uncertainty (k=2) | Ucisprr |
|-------------------------|-----------------|----------------------------|---------|
| Radiated Emissions, 10m | 30-1000 MHz     | 4.6dB                      | 6.3 dB  |
| Radiated Emissions, 3m  | 30-1000 MHz     | 5.3 dB                     | 6.3 dB  |
| Radiated Emissions, 3m  | 1-6 GHz         | 4.5 dB                     | 5.2 dB  |
| Radiated Emissions, 3m  | 6-15 GHz        | 5.2 dB                     | 5.5 dB  |
| Radiated Emissions, 3m  | 15-18 GHz       | 5.0 dB                     | 5.5 dB  |
| Radiated Emissions, 3m  | 18-40 GHz       | 5.0 dB                     | 5.5 dB  |

As shown in the table above our radiated emissions  $U_{lab}$  is less than the corresponding  $U_{CISPR}$  reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

### Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB/m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V/m}$$

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

**9.2 Test Equipment Used:**

| Asset    | Description                            | Manufacturer      | Model             | Serial     | Cal Date   | Cal Due    |
|----------|----------------------------------------|-------------------|-------------------|------------|------------|------------|
| DAV002'  | Weather Station                        | Davis Instruments | 7400              | PE80519A93 | 06/14/2017 | 06/14/2018 |
| 145128'  | EMI Receiver (20 Hz - 40 GHz)          | Rohde & Schwarz   | ESIB 40           | 839283/001 | 03/15/2017 | 03/15/2018 |
| ETS002'  | 1-18GHz DRG Horn Antenna               | ETS Lindgren      | 3117              | 00143260   | 05/22/2017 | 05/22/2018 |
| 145-416' | Cables 145-420 145-423 145-425 145-408 | Huber + Suhner    | 3m Track B cables | multiple   | 07/25/2017 | 07/25/2018 |

**Software Utilized:**

| Name | Manufacturer | Version |
|------|--------------|---------|
| None | --           | --      |

| Asset      | Description                     | Manufacturer            | Model         | Serial     | Cal Date   | Cal Due    |
|------------|---------------------------------|-------------------------|---------------|------------|------------|------------|
| DAV002'    | Weather Station                 | Davis Instruments       | 7400          | PE80519A93 | 06/14/2017 | 06/14/2018 |
| ROS005-1'  | Signal and Spectrum Analyzer    | Rohde and Schwartz      | FSW43         | 100646     | 11/17/2017 | 11/17/2018 |
| CBLSHF202' | Cable, SMA - SMA, 9kHz-40GHz    | Sucoflex (Huber Suhner) | 104PE         | CBLSHF202  | 08/25/2017 | 08/25/2018 |
| MIN23'     | Attenuator 2 watt 20dB DC-26GHz | Mini Circuits           | BW-S20-2W263+ | MIN23      | 05/26/2017 | 05/26/2018 |

**Software Utilized:**

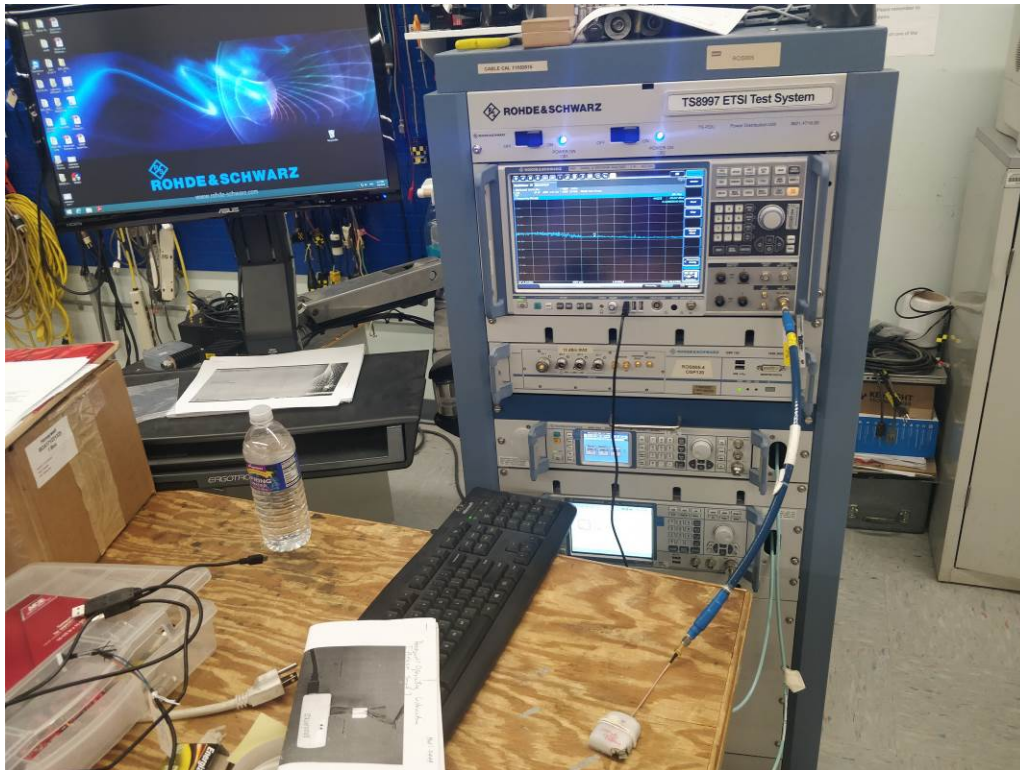
| Name | Manufacturer | Version |
|------|--------------|---------|
| None | --           | --      |

**9.3 Results:**

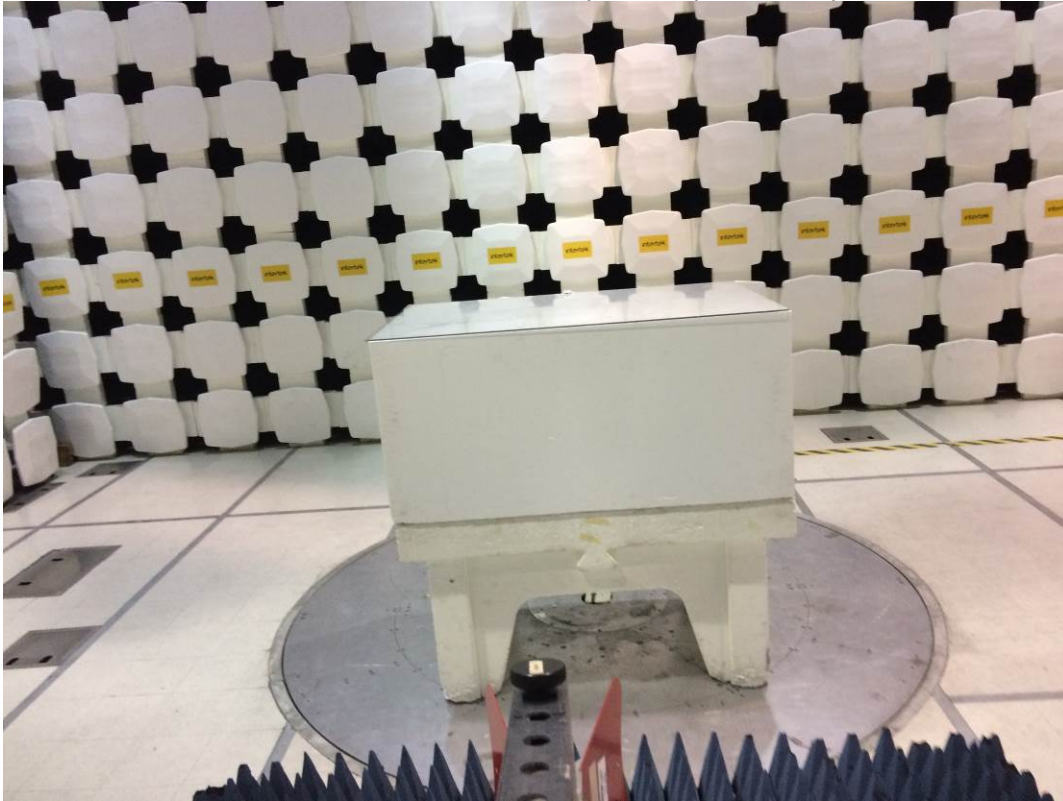
The sample tested was found to Comply.

15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

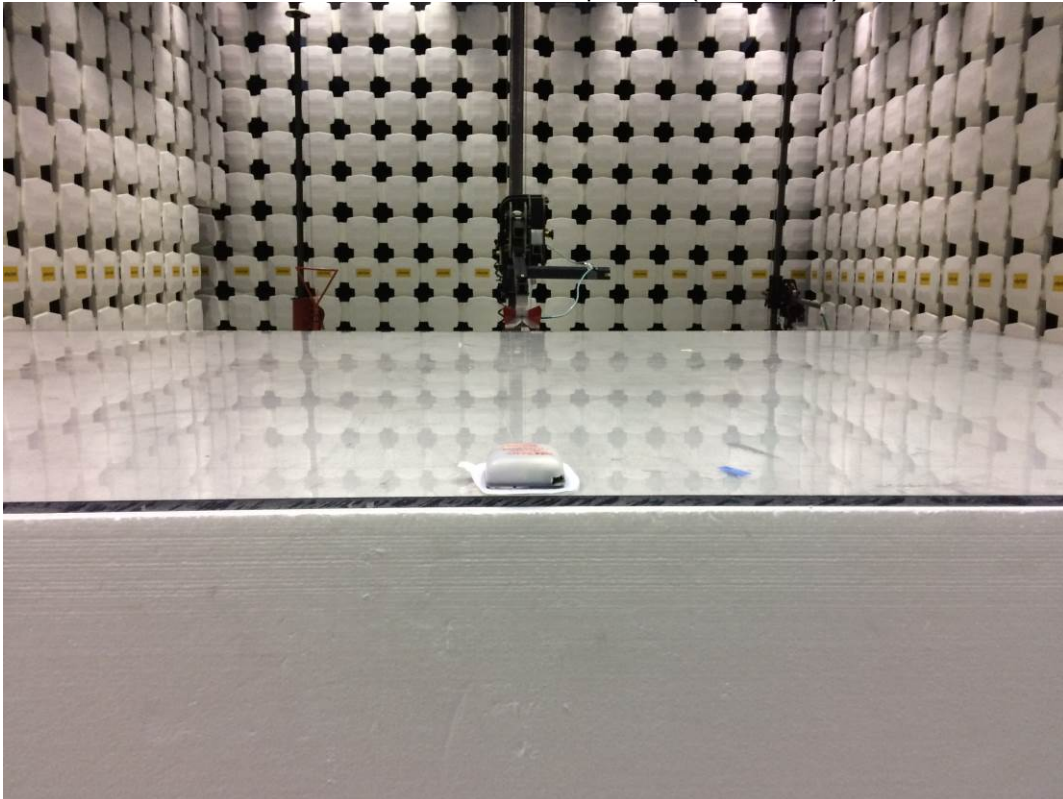
#### 9.4 Setup Photographs:



Radiated Emissions Test Setup X-axis (Worst-case)

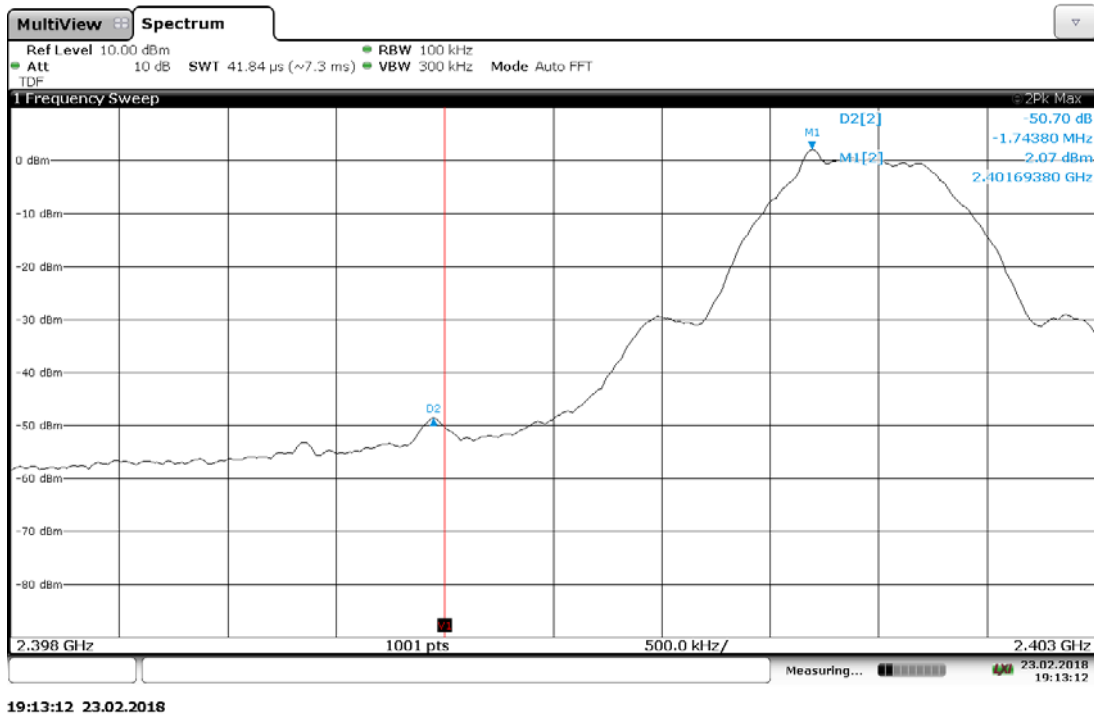


Radiated Emissions Test Setup X-axis (Worst-case)

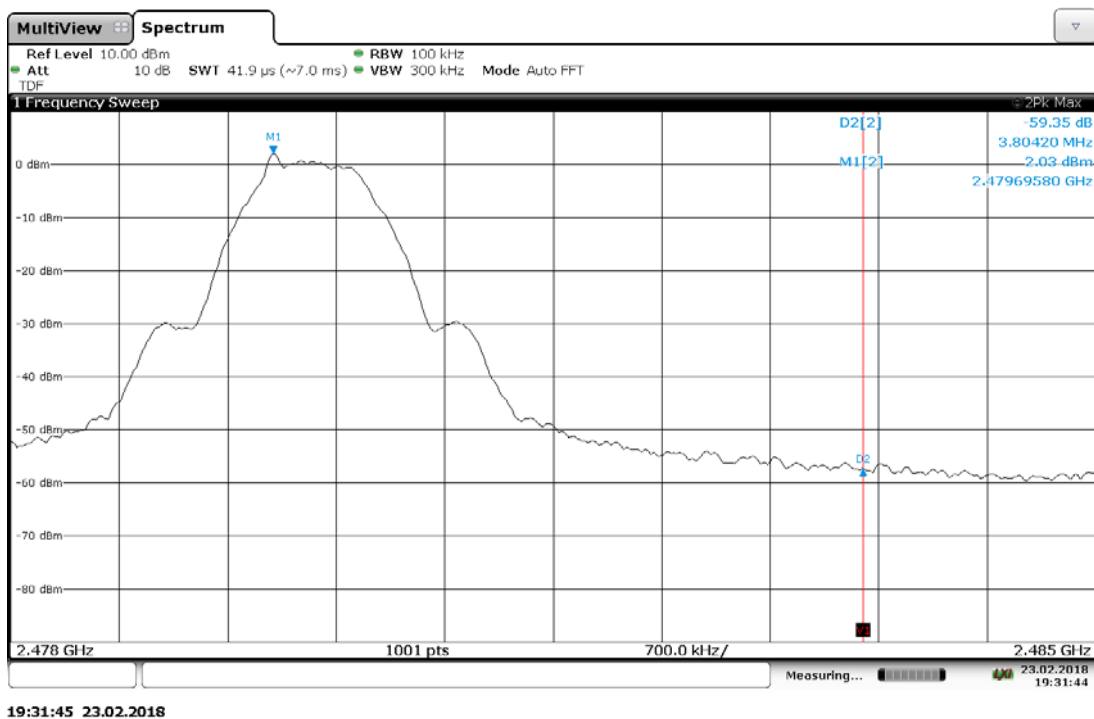


## 9.5 Plots/Data:

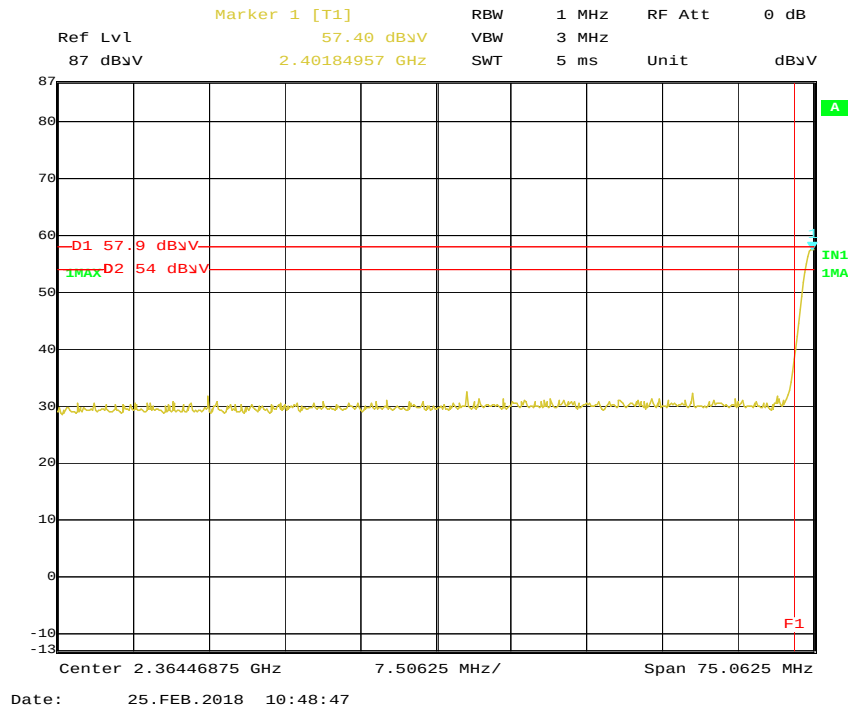
### Antenna Port Conducted Lower Band Edge



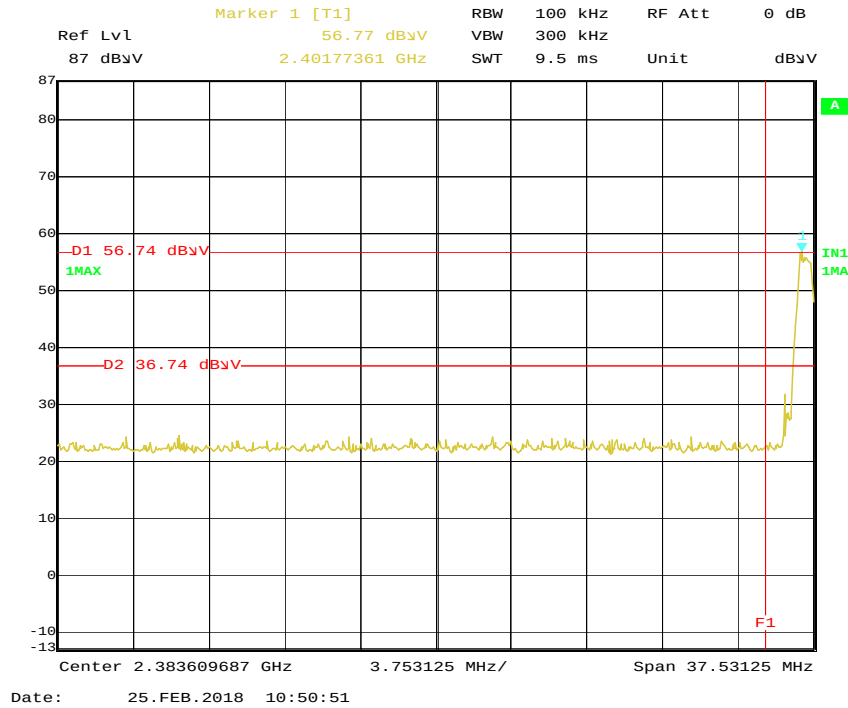
### Antenna Port Conducted Upper Band Edge



### Radiated Lower Band Edge (ResBW = 1 MHz)

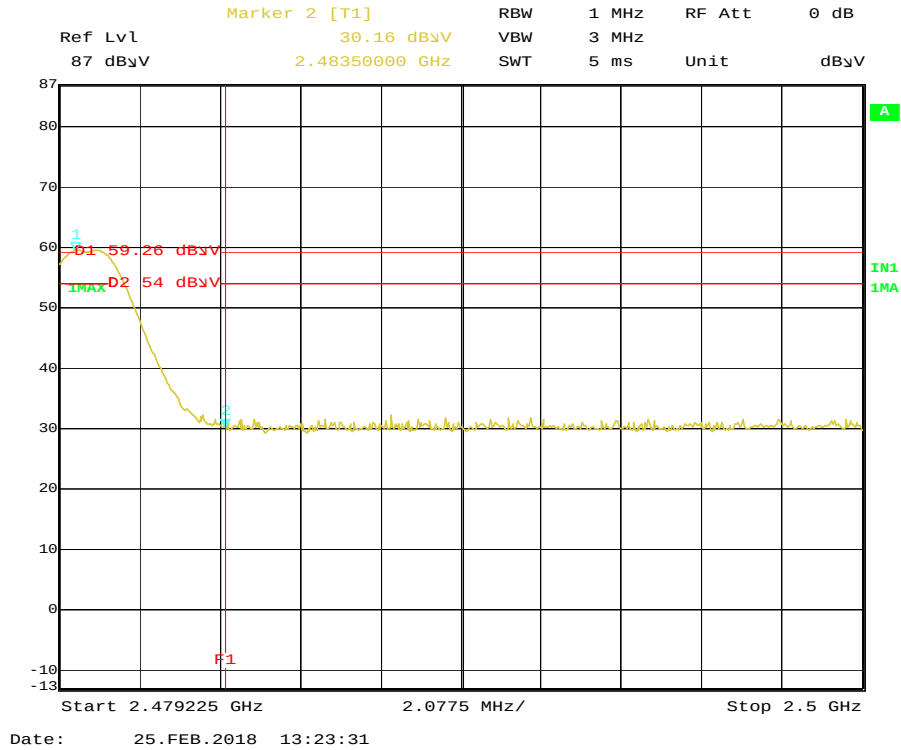


### Radiated Lower Band Edge (ResBW = 100 kHz)

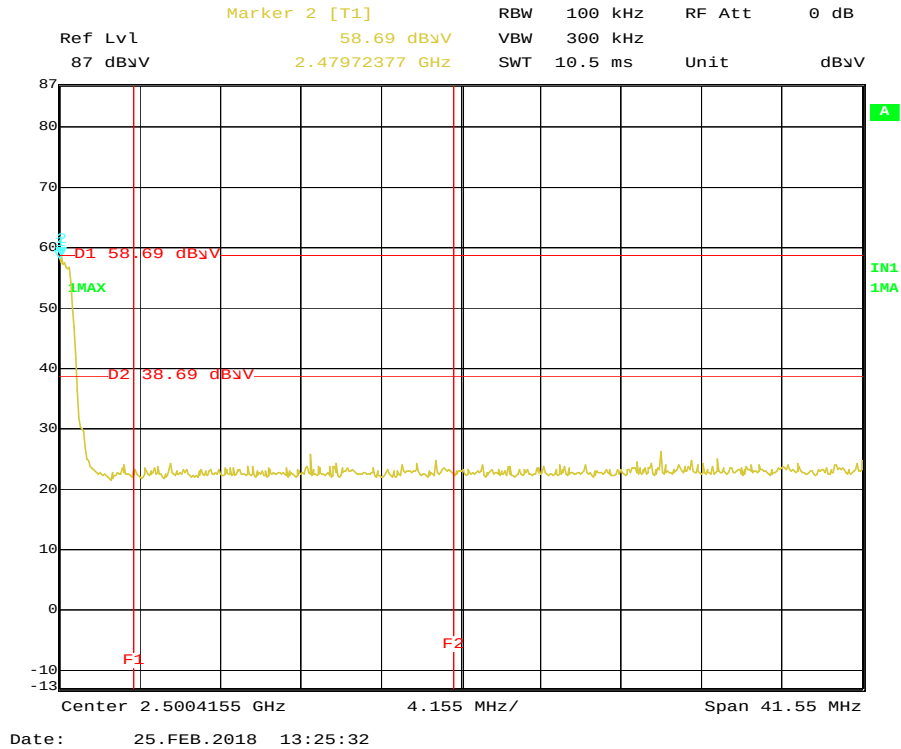


Notes: No emission was detected at the band edge. The measurement was measured in the worst-case axis (X-axis).

### Radiated Upper Band Edge (ResBW = 1 MHz)



### Radiated Upper Band Edge (ResBW = 100 kHz)



Notes: No emission was detected at the band edge. The measurement was measured in the worst-case axis (X-axis).

|                                                             |                            |                       |                        |
|-------------------------------------------------------------|----------------------------|-----------------------|------------------------|
| Test Personnel:                                             | Naga Suryadevara <i>NS</i> | Test Date:            | 02/23/2018             |
|                                                             | Kouma Sinn <i>KPS</i>      |                       | 02/25/2018             |
| Supervising/Reviewing Engineer:<br>(Where Applicable)       | N/A                        |                       |                        |
| Product Standard:                                           | CFR47 FCC Part 15.247      | Limit Applied:        | See report section 8.3 |
| Input Voltage:                                              | RSS-247                    |                       |                        |
| Pretest Verification w/<br>Ambient Signals or<br>BB Source: | Internal Battery Powered   | Ambient Temperature:  | 19 °C                  |
|                                                             | BB Source                  | Relative Humidity:    | 28 %                   |
|                                                             |                            | Atmospheric Pressure: | 1012 mbars             |

Deviations, Additions, or Exclusions: None

## 10 Transmitter spurious emissions

### 10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247, FCC Part 15 Subpart B, RSS 247 ICES 003, ANSI C 63.10, and ANSI C 63.4.

**TEST SITE:** EMC Lab & 10m ALSE

**The EMC Lab** has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

**The 10m ALSE** is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

### Measurement Uncertainty

| Measurement             | Frequency Range | Expanded Uncertainty (k=2) | Ucisprr |
|-------------------------|-----------------|----------------------------|---------|
| Radiated Emissions, 10m | 30-1000 MHz     | 4.6dB                      | 6.3 dB  |
| Radiated Emissions, 3m  | 30-1000 MHz     | 5.3 dB                     | 6.3 dB  |
| Radiated Emissions, 3m  | 1-6 GHz         | 4.5 dB                     | 5.2 dB  |
| Radiated Emissions, 3m  | 6-15 GHz        | 5.2 dB                     | 5.5 dB  |
| Radiated Emissions, 3m  | 15-18 GHz       | 5.0 dB                     | 5.5 dB  |
| Radiated Emissions, 3m  | 18-40 GHz       | 5.0 dB                     | 5.5 dB  |

As shown in the table above our radiated emissions  $U_{lab}$  is less than the corresponding  $U_{CISPR}$  reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

### Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V  
AF = 7.4 dB/m  
CF = 1.6 dB  
AG = 29.0 dB  
FS = 32 dB $\mu$ V/m

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB $\mu$ V

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

## 10.2 Test Equipment Used:

Test equipment used for radiated measurements

| Asset    | Description                             | Manufacturer         | Model                | Serial     | Cal Date   | Cal Due    |
|----------|-----------------------------------------|----------------------|----------------------|------------|------------|------------|
| DAV002'  | Weather Station                         | Davis Instruments    | 7400                 | PE80519A93 | 06/14/2017 | 06/14/2018 |
| REA008'  | band reject filter 2.4GHz               | Reactel, Inc         | 12RX7-2441.75-x140 S | 17-01      | 07/07/2017 | 07/07/2018 |
| 145128'  | EMI Receiver (20 Hz - 40 Ghz)           | Rohde & Schwarz      | ESIB 40              | 839283/001 | 03/15/2017 | 03/15/2018 |
| 145014'  | Preamplifier (1 GHz to 26.5 GHz)        | Hewlett Packard      | 8449B                | 3008A00232 | 06/03/2017 | 06/03/2018 |
| ETS002'  | 1-18GHz DRG Horn Antenna                | ETS Lindgren         | 3117                 | 00143260   | 05/22/2017 | 05/22/2018 |
| 145-416' | Cables 145-420 145-423 145-425 145-408  | Huber + Suhner       | 3m Track B cables    | multiple   | 07/25/2017 | 07/25/2018 |
| 145145'  | Broadband Hybrid Antenna 30 MHz - 3 GHz | Sunol Sciences Corp. | JB3                  | A122313    | 05/02/2017 | 05/02/2018 |
| PRE11'   | 50dB gain pre-amp                       | Keith H              | PRE11                | PRE11      | 12/02/2017 | 12/02/2018 |
| 145-410' | Cables 145-420 145-421 145-422 145-406  | Huber + Suhner       | 10m Track A Cables   | multiple   | 07/25/2017 | 07/25/2018 |

| Name              | Manufacturer | Version   |
|-------------------|--------------|-----------|
| BAT-EMC Emissions | Nexio        | 3.16.0.69 |

Test equipment used for conducted measurements

| Asset      | Description                     | Manufacturer            | Model         | Serial     | Cal Date   | Cal Due    |
|------------|---------------------------------|-------------------------|---------------|------------|------------|------------|
| DAV002'    | Weather Station                 | Davis Instruments       | 7400          | PE80519A93 | 06/14/2017 | 06/14/2018 |
| ROS005-1'  | Signal and Spectrum Analyzer    | Rohde and Schwartz      | FSW43         | 100646     | 11/17/2017 | 11/17/2018 |
| CBLSHF202' | Cable, SMA - SMA, 9kHz-40GHz    | Sucoflex (Huber Suhner) | 104PE         | CBLSHF202  | 08/25/2017 | 08/25/2018 |
| MIN23'     | Attenuator 2 watt 20dB DC-26GHz | Mini Circuits           | BW-S20-2W263+ | MIN23      | 05/26/2017 | 05/26/2018 |

Software Utilized:

| Name | Manufacturer | Version |
|------|--------------|---------|
| None |              |         |

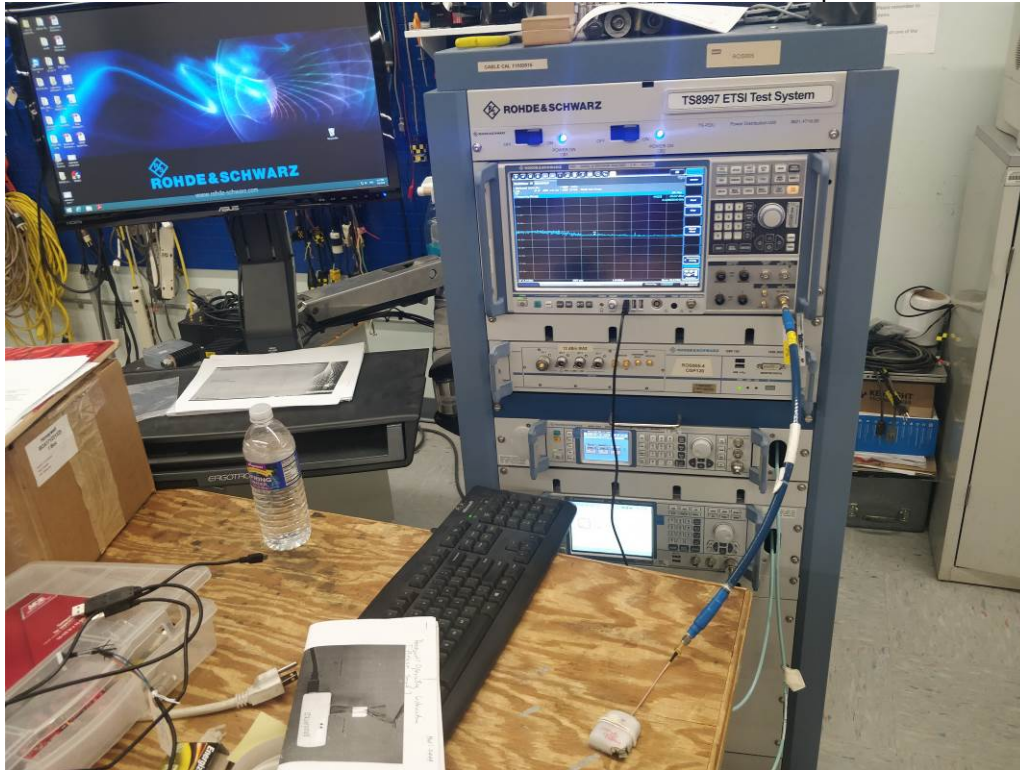
## 10.3 Results:

The sample tested was found to Comply.

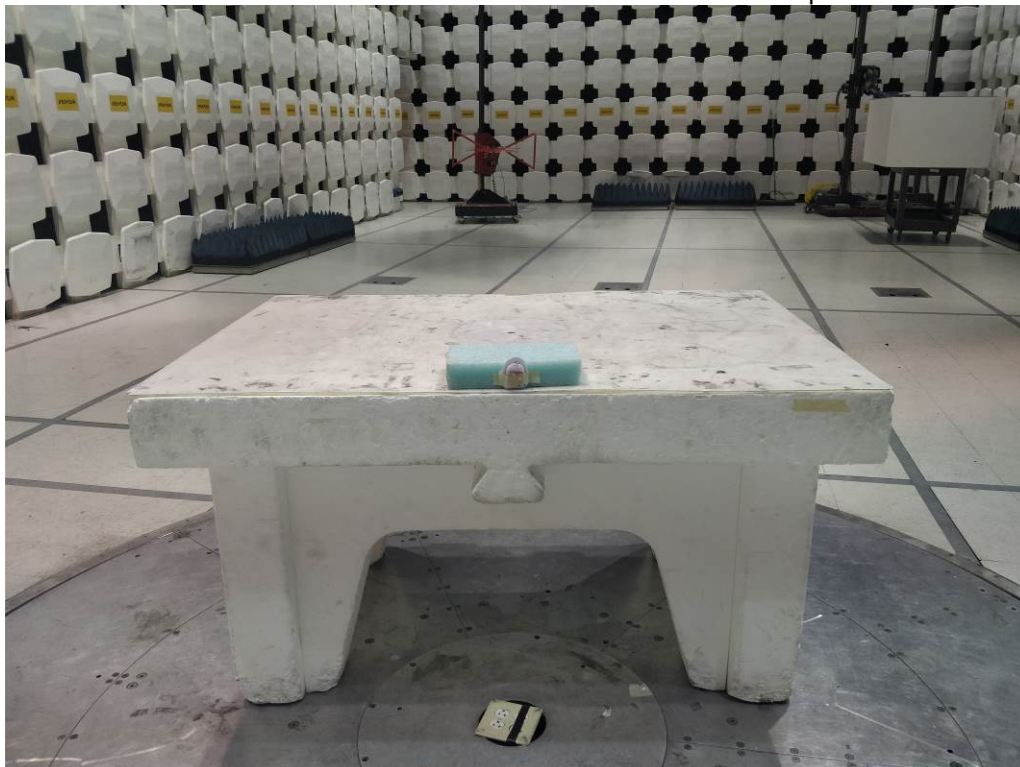
15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

#### 10.4 Setup Photographs:

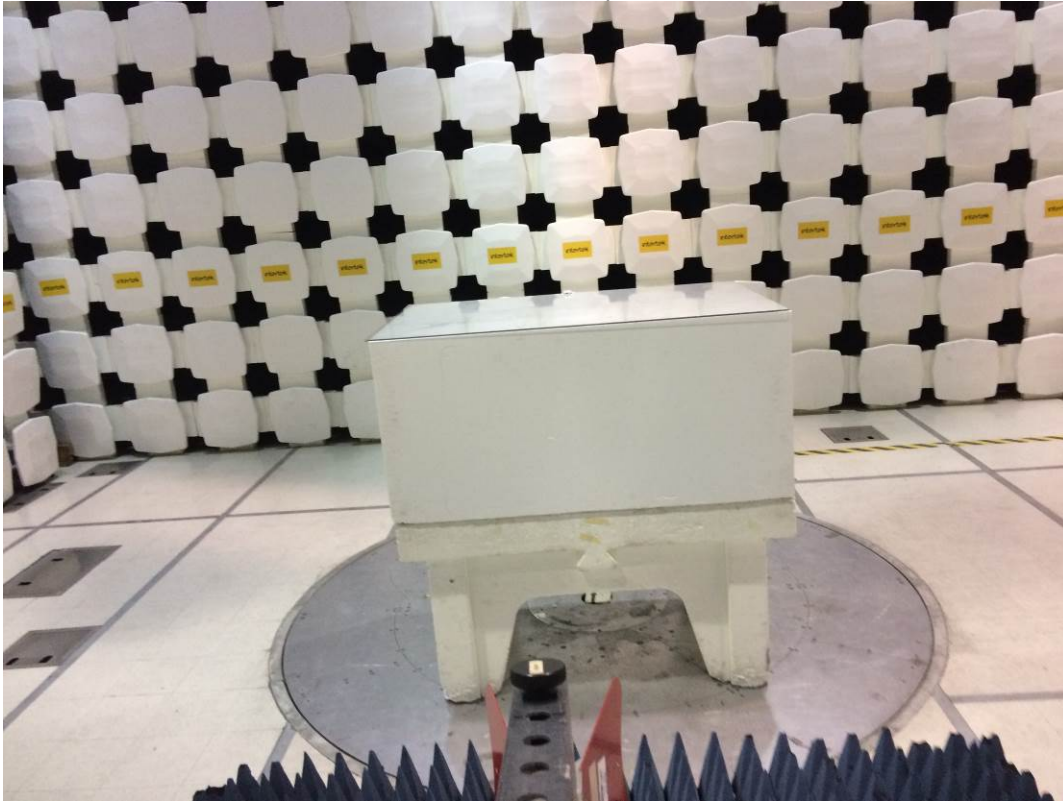
30 MHz - 25 GHz Antenna Port Conducted Test Setup



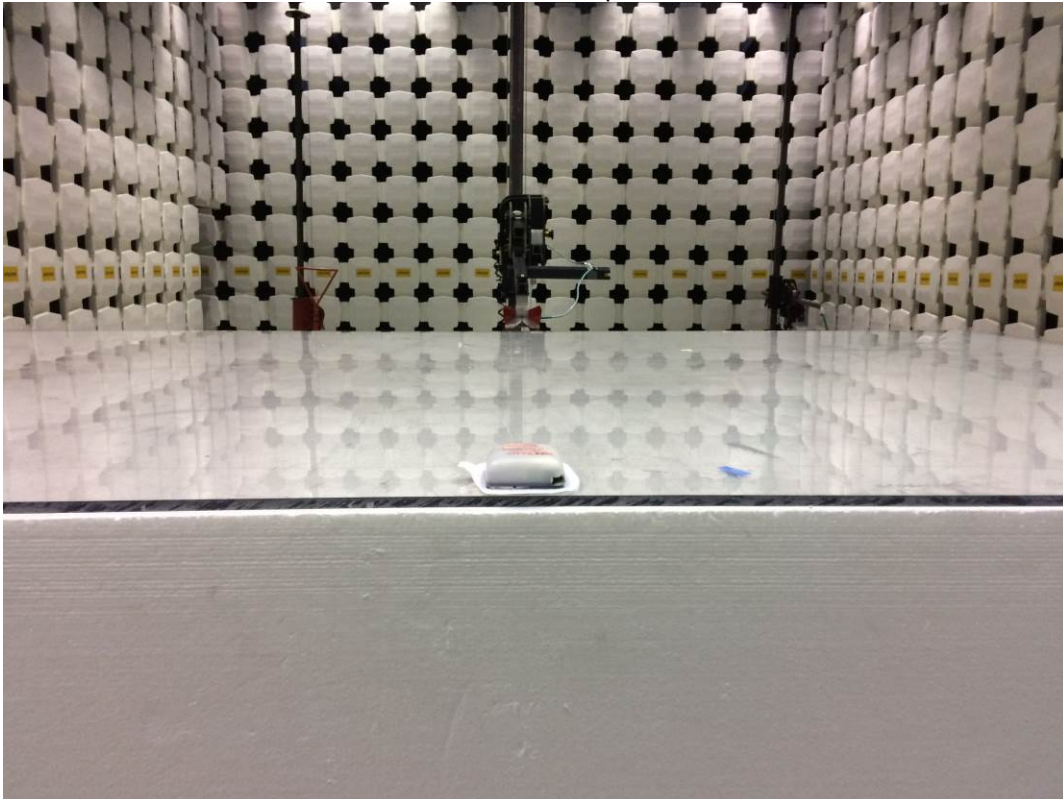
30 MHz - 1000 MHz Radiated Emissions Test Setup



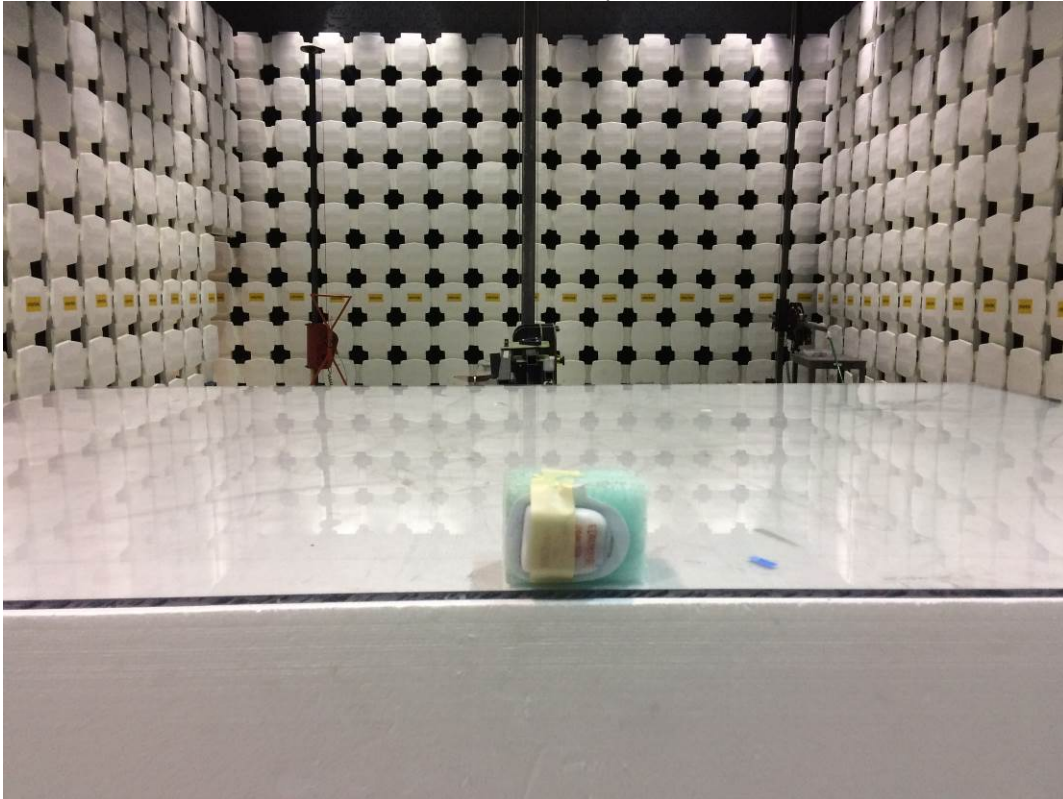
1-18 GHz Test Setup X-axis



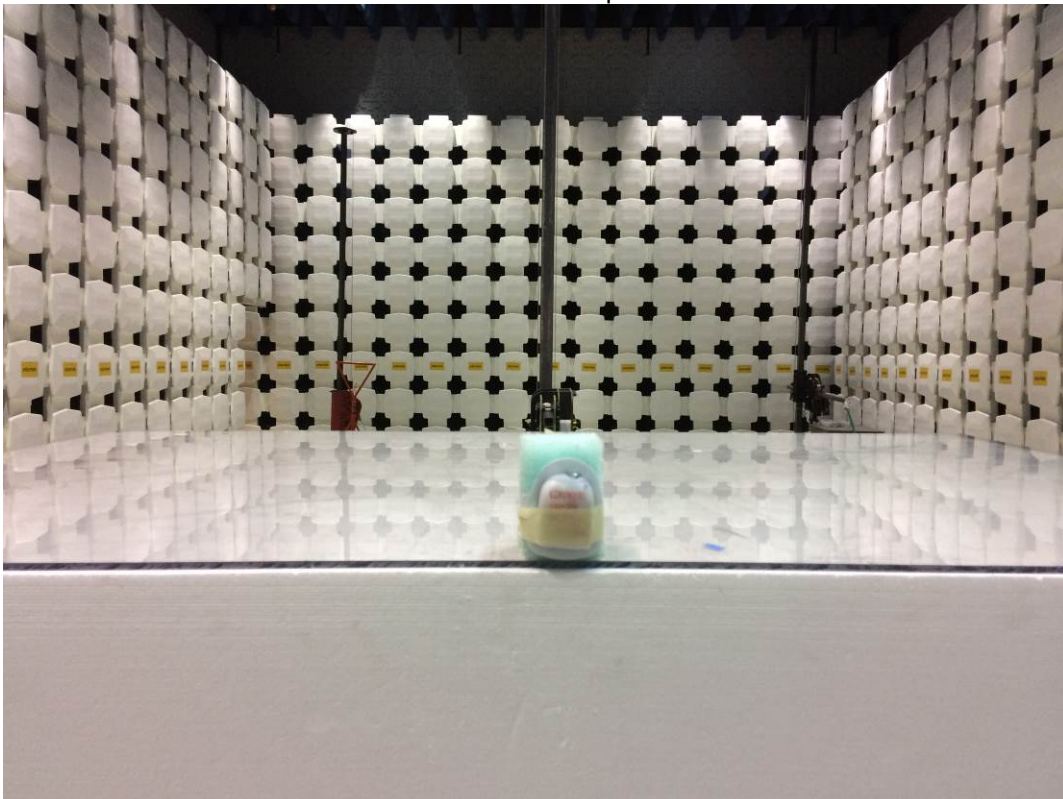
1-18 GHz Test Setup X-axis



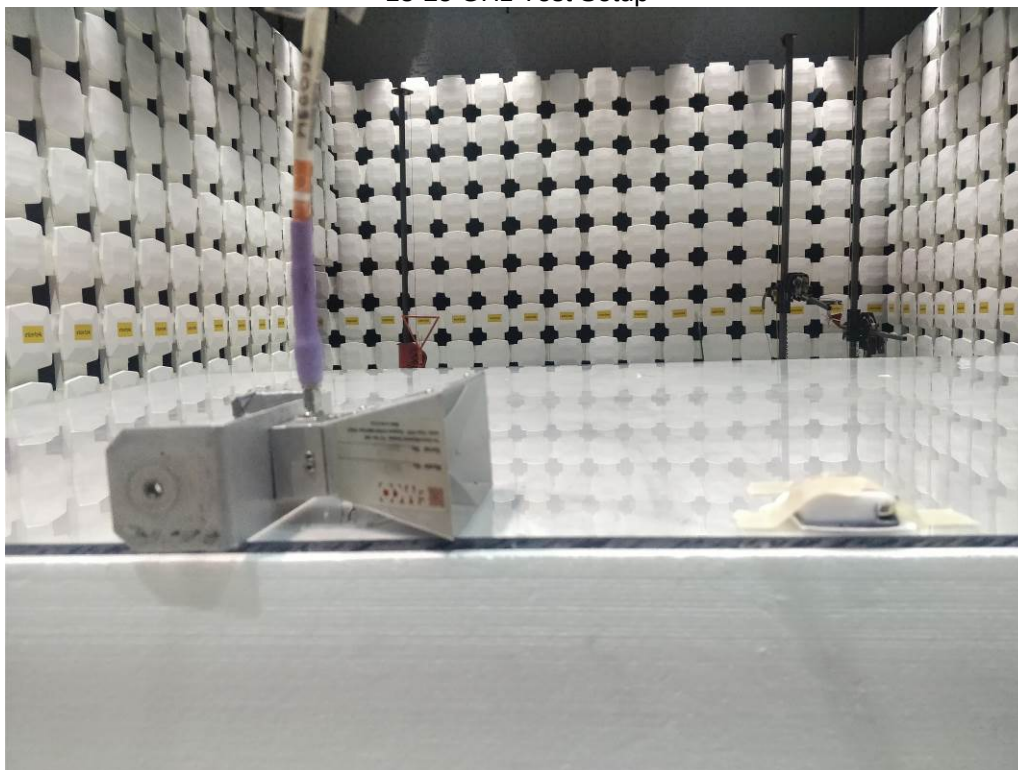
1-18 GHz Test Setup Y-axis



1-18 GHz Test Setup Z-axis

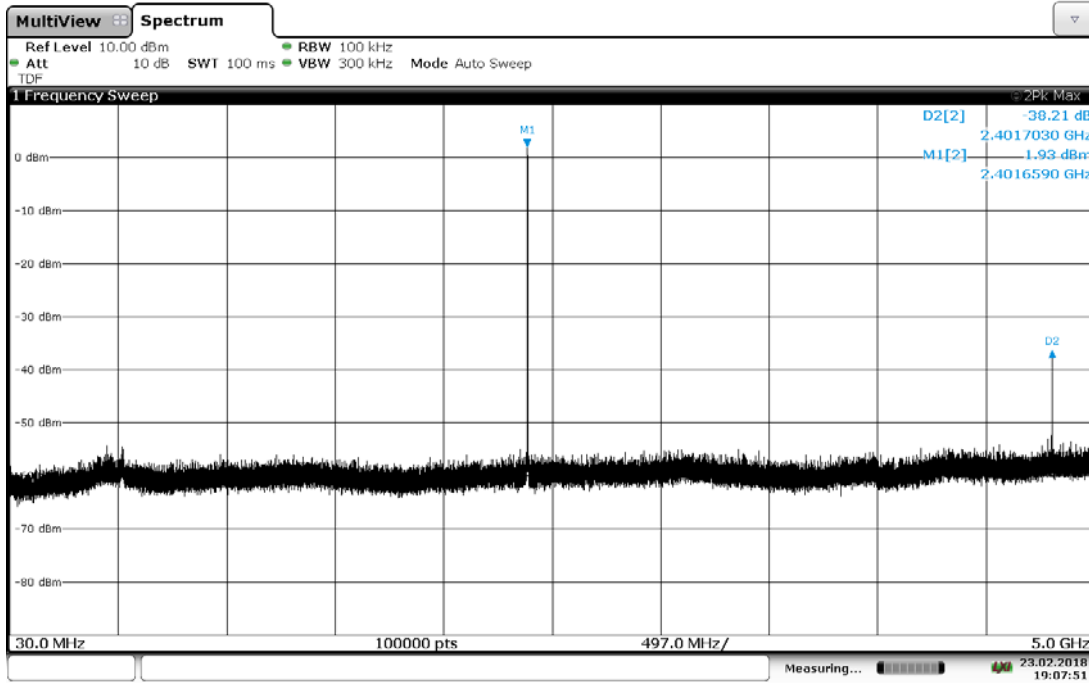


18-25 GHz Test Setup



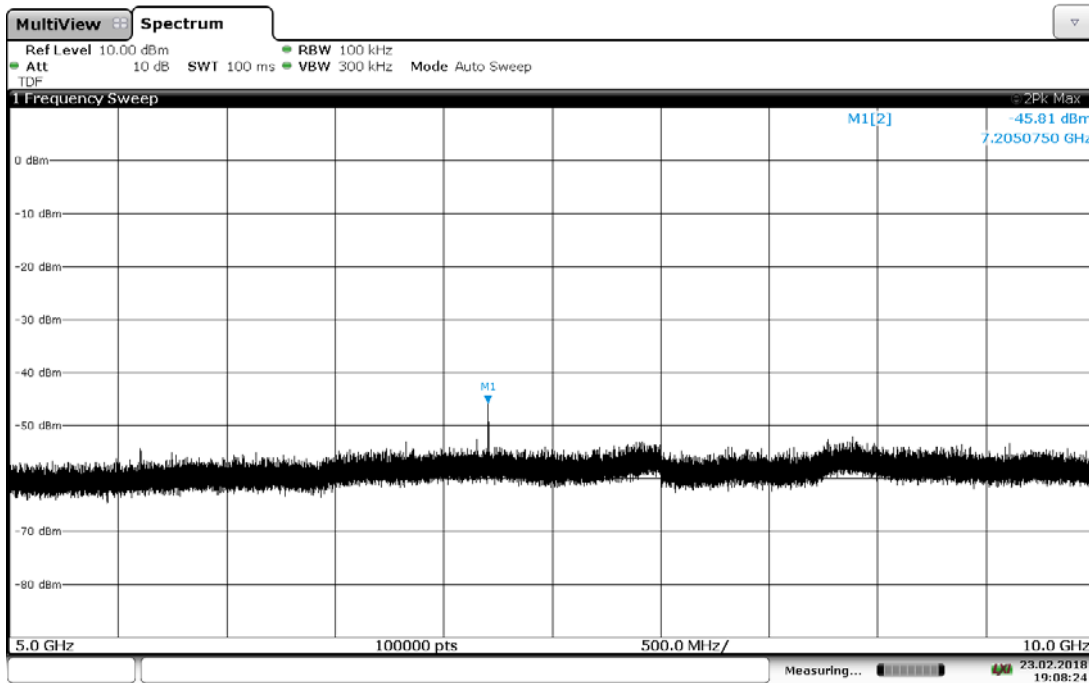
## 10.5 Plots/Data:

### Low Channel Antenna Port Conducted Spurious Emissions, 30 MHz-5 GHz



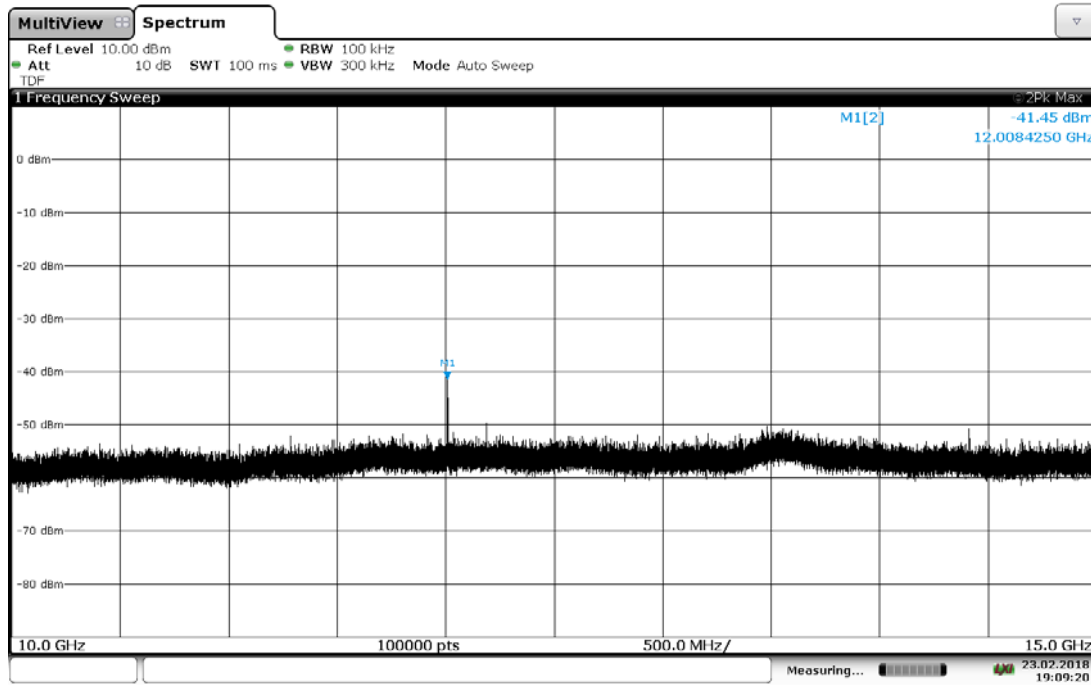
19:07:51 23.02.2018

### Low Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



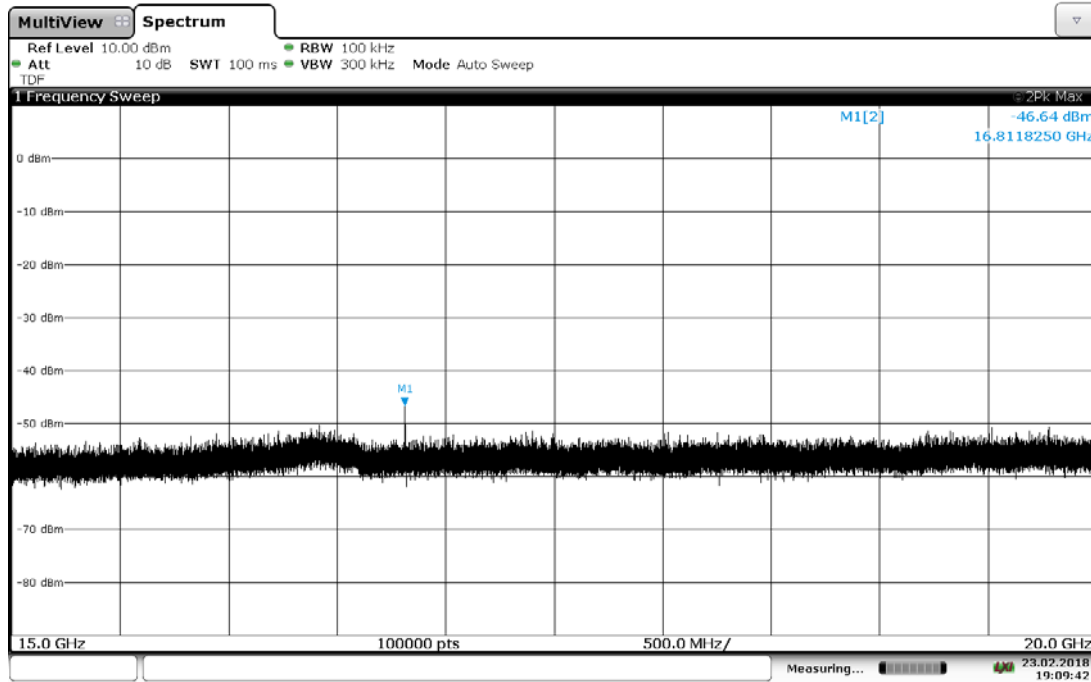
19:08:24 23.02.2018

### Low Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz



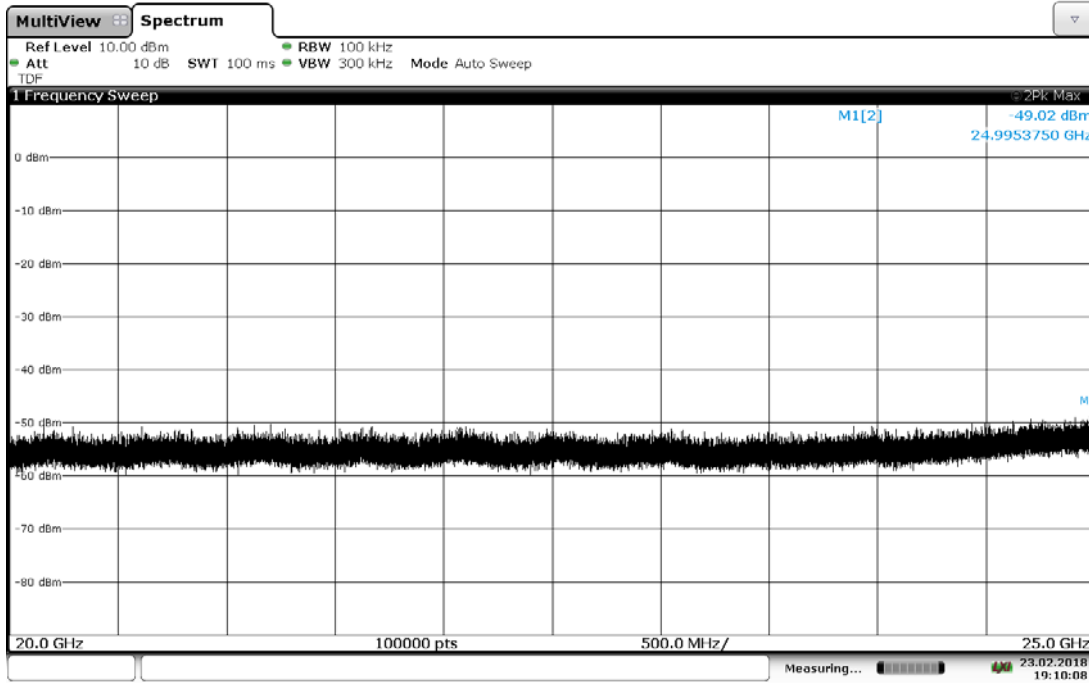
19:09:20 23.02.2018

### Low Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz



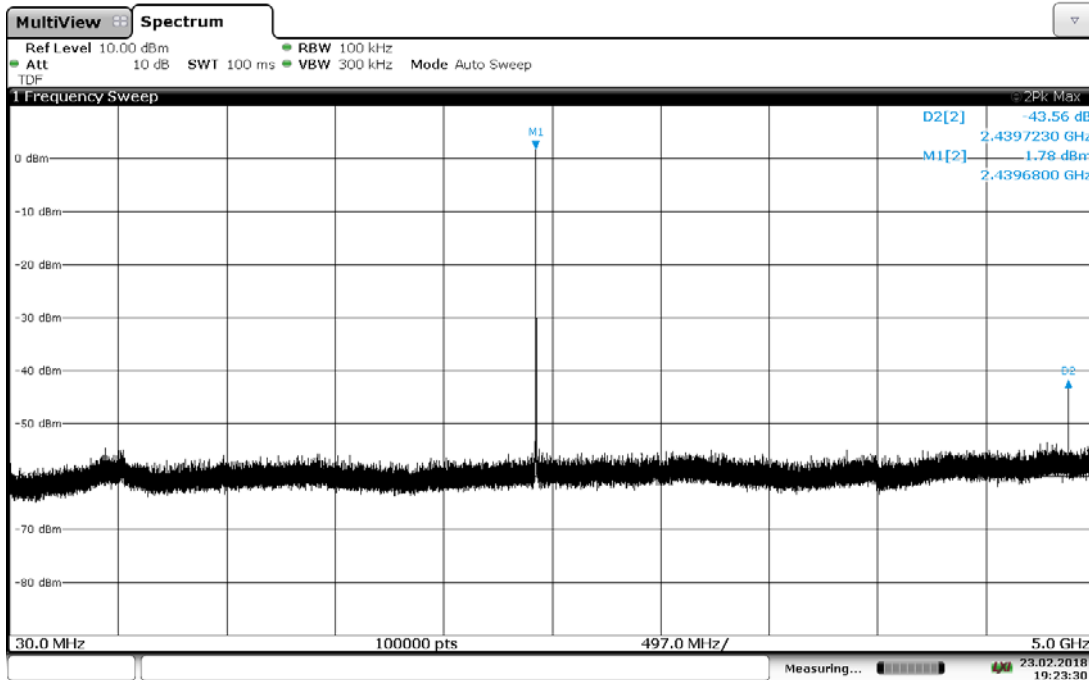
19:09:42 23.02.2018

### Low Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



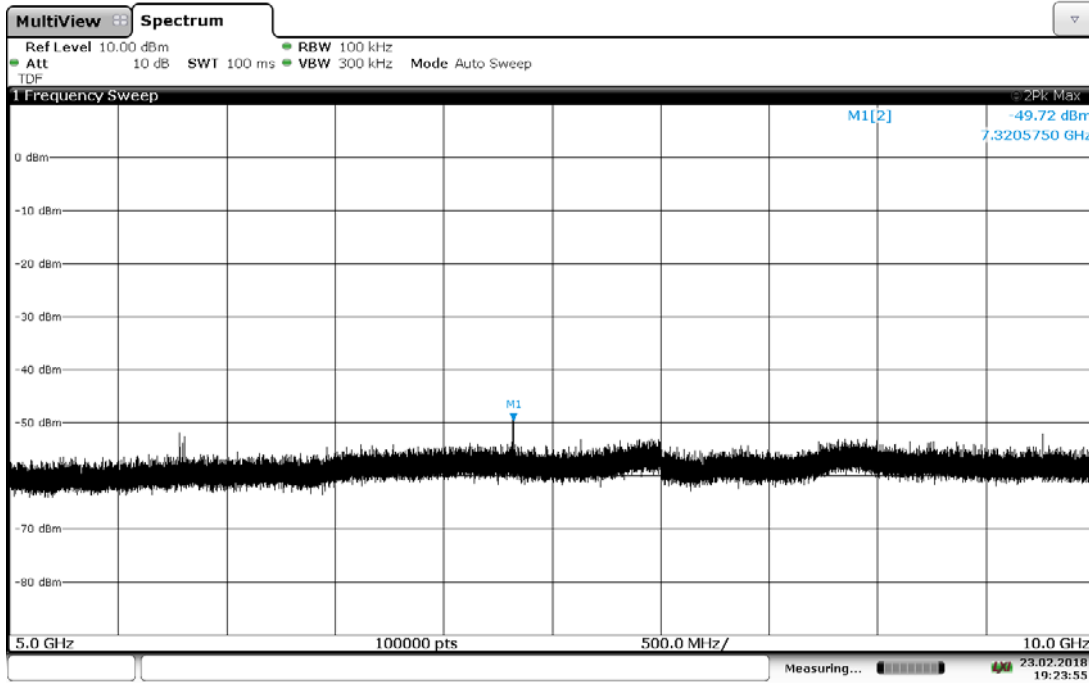
19:10:09 23.02.2018

### Mid Channel Antenna Port Conducted Spurious Emissions, 30 MHz-5 GHz



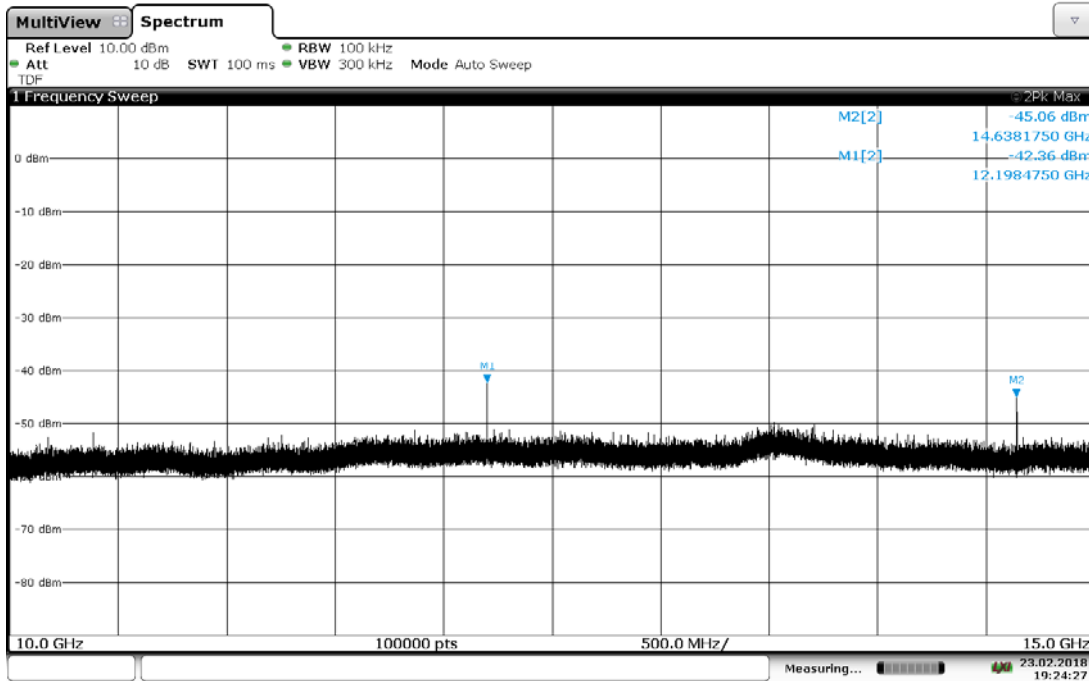
19:23:30 23.02.2018

### Mid Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



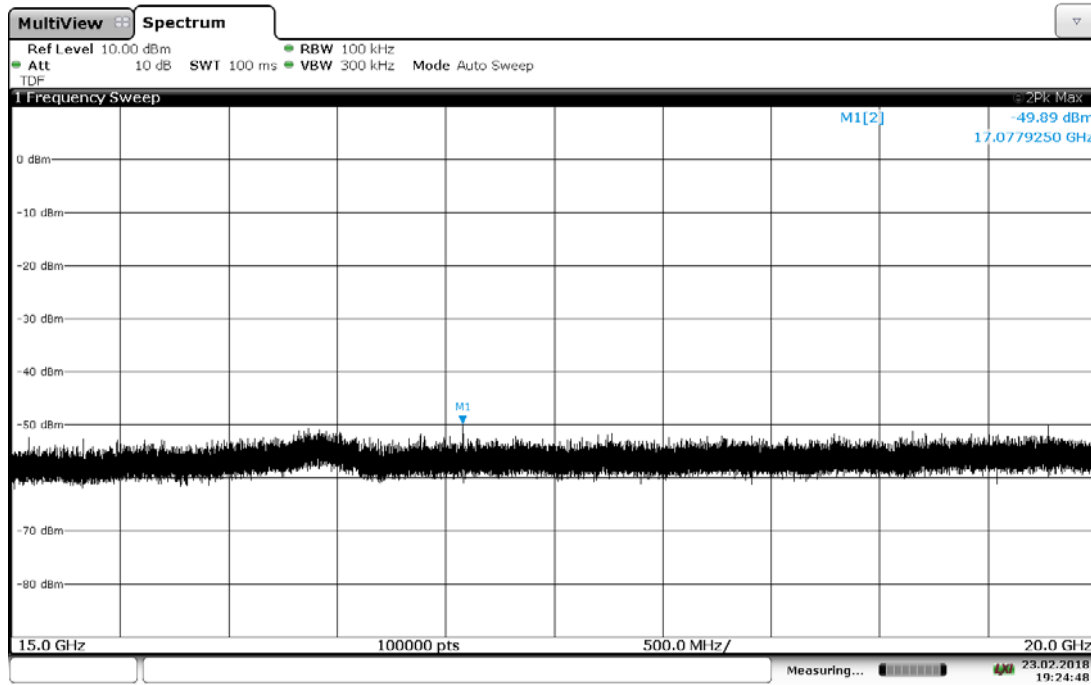
19:23:55 23.02.2018

### Mid Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz



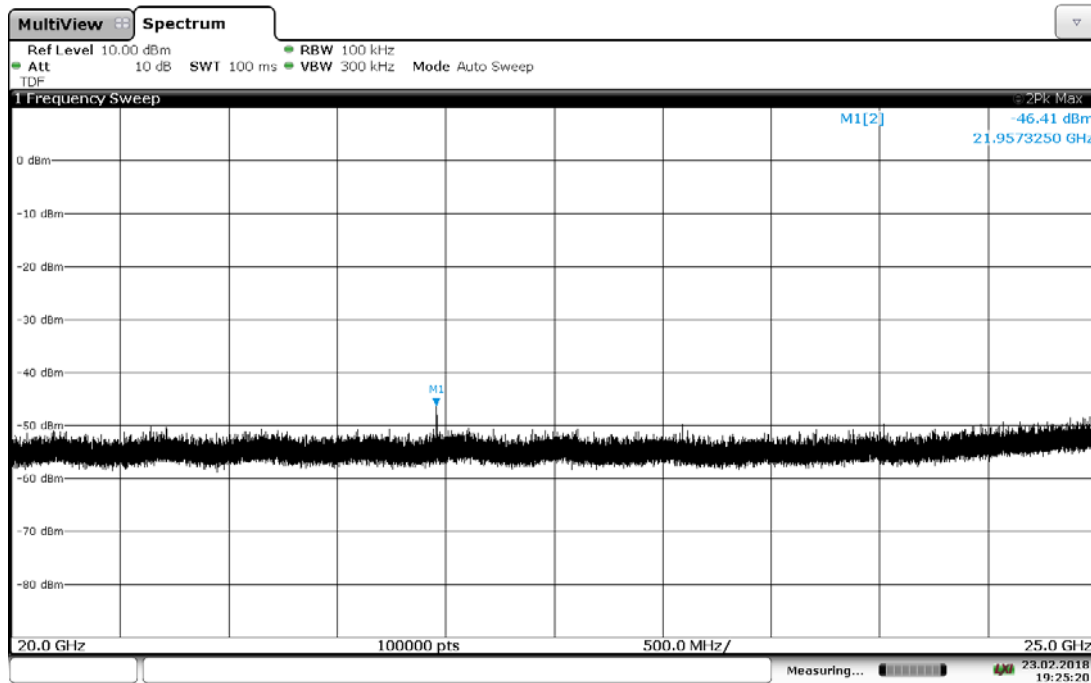
19:24:28 23.02.2018

### Mid Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz



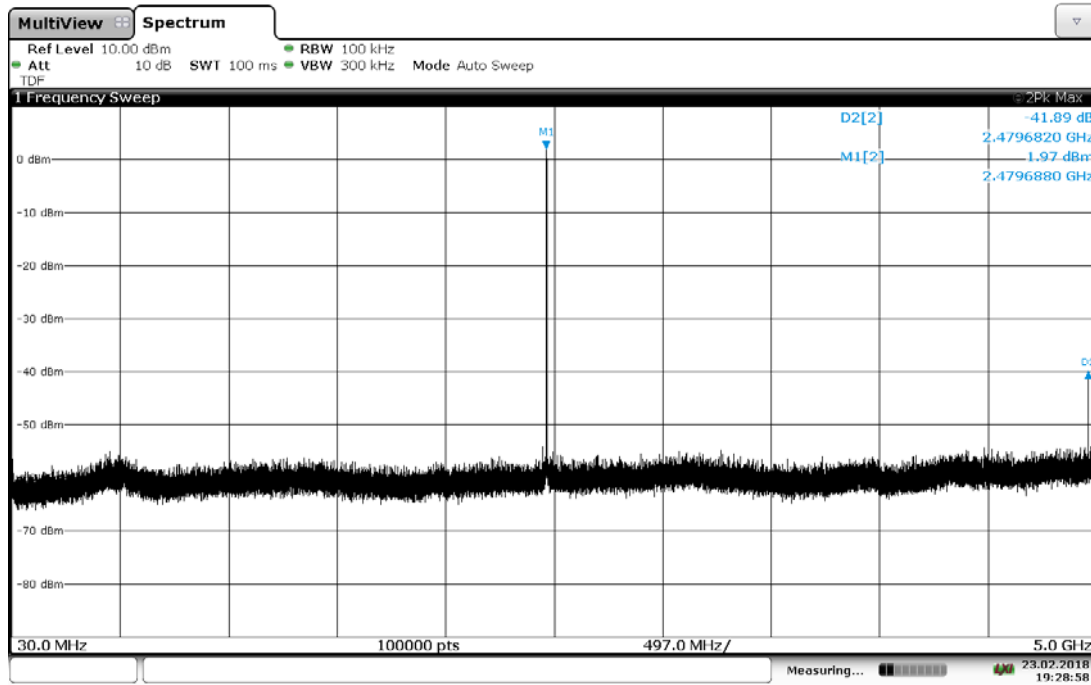
19:24:48 23.02.2018

### Mid Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



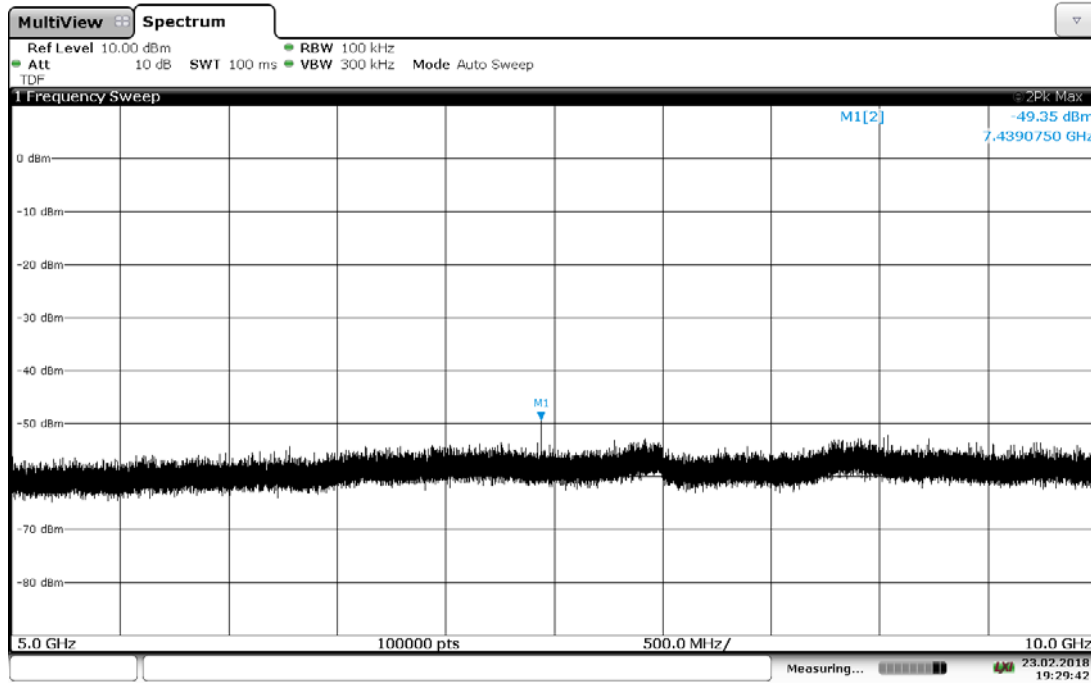
19:25:21 23.02.2018

# High Channel Antenna Port Conducted Spurious Emissions, 30 MHz-5 GHz



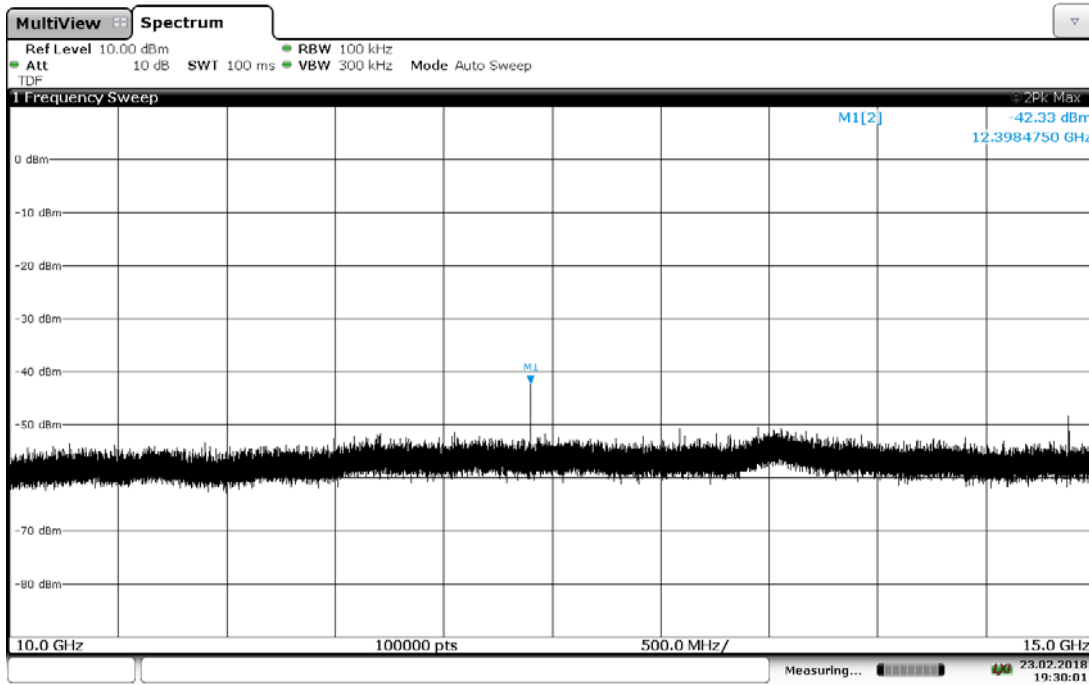
19:28:58 23.02.2018

# High Channel Antenna Port Conducted Spurious Emissions, 5-10 GHz



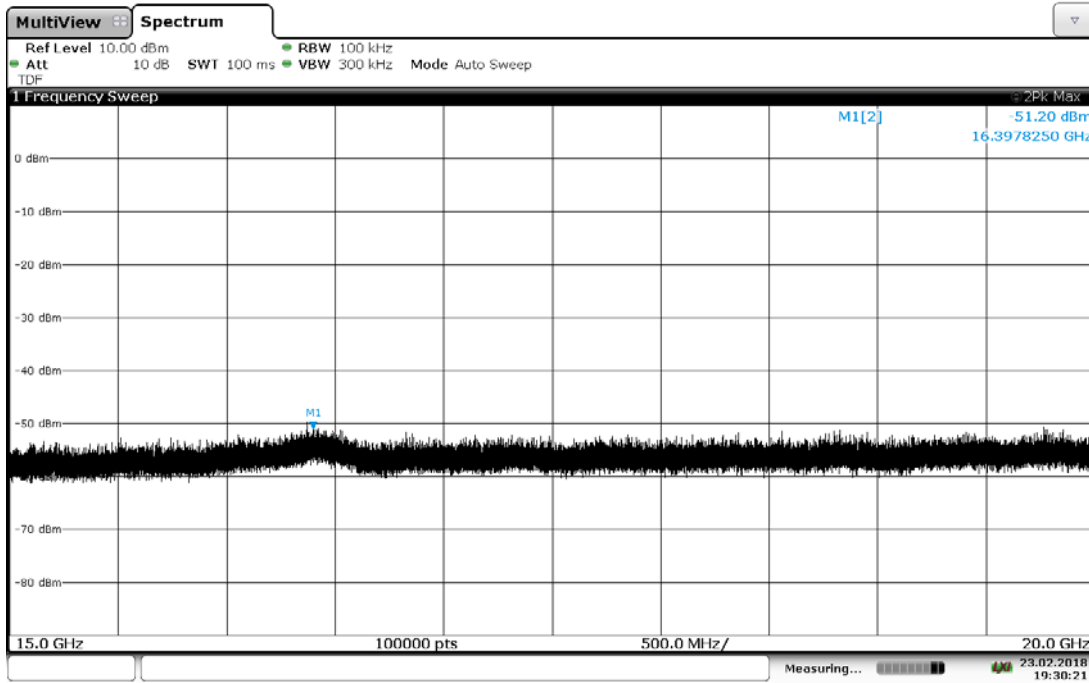
19:29:42 23.02.2018

### High Channel Antenna Port Conducted Spurious Emissions, 10-15 GHz



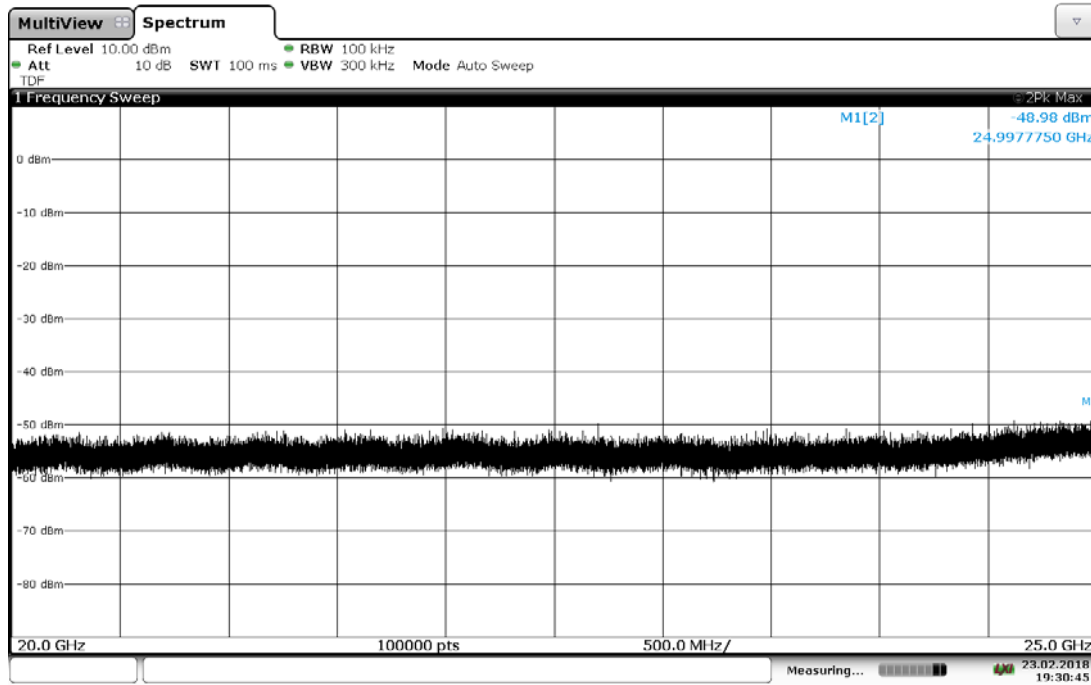
19:30:02 23.02.2018

### High Channel Antenna Port Conducted Spurious Emissions, 15-20 GHz



19:30:22 23.02.2018

### High Channel Antenna Port Conducted Spurious Emissions, 20-25 GHz



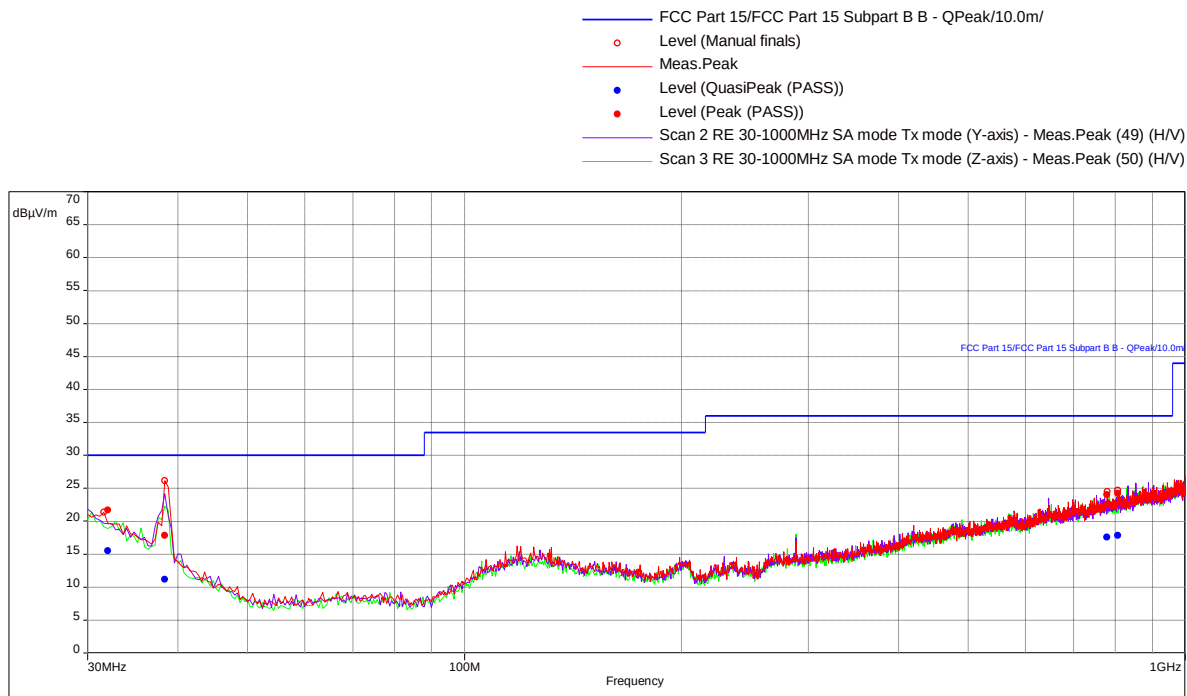
19:30:45 23.02.2018

## Low Channel Radiated Spurious Emissions (X, Y, Z -axis), 30-1000 MHz

### Test Information:

|                           |                      |
|---------------------------|----------------------|
| Date and Time             | 2/25/2018 6:32:28 AM |
| Client and Project Number | Insulet              |
| Engineer                  | Naga Suryadevara     |
| Temperature               | 19C                  |
| Humidity                  | 27%                  |
| Atmospheric Pressure      | 1014mbars            |
| Comments                  | Scan 1 RE 30-1000MHz |

### Graph:



### Results:

#### QuasiPeak (PASS) (4)

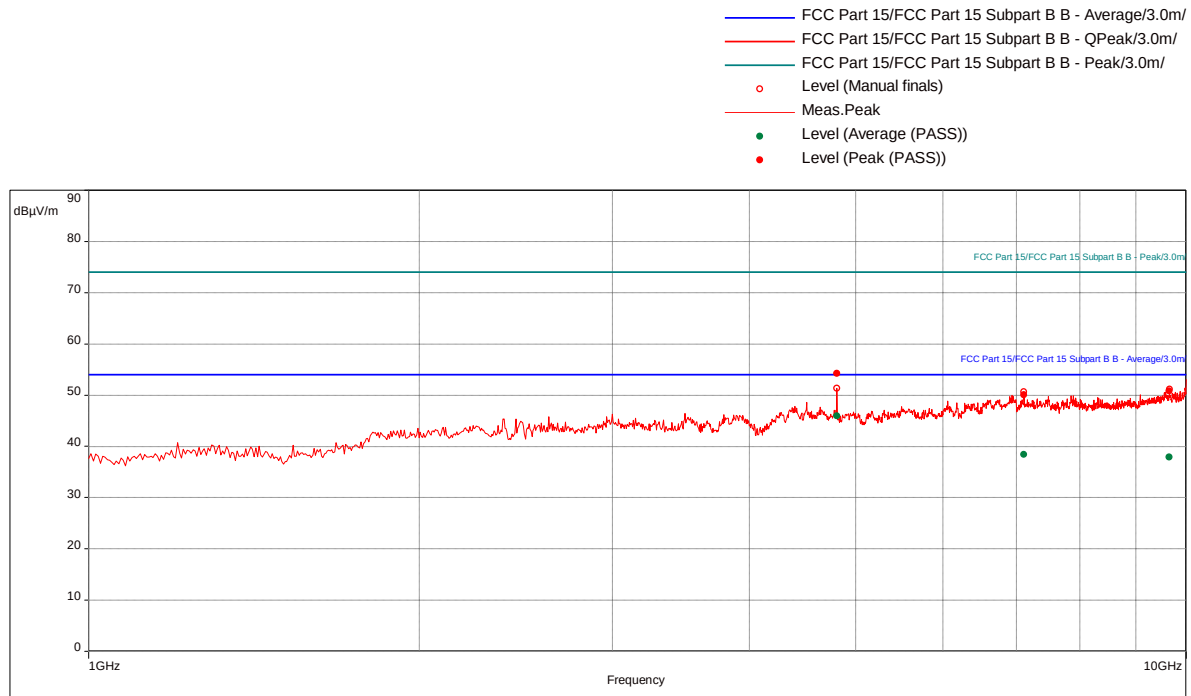
| Frequency (MHz) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW       | Correction (dB) |
|-----------------|----------------|-------------|-------------|------------|----------|-----------|-----------------|
| 31.82105263     | 30.00          | -14.51      | 284.00      | 2.49       | Vertical | 120000.00 | -23.93          |
| 38.49473684     | 30.00          | -18.81      | 79.00       | 1.54       | Vertical | 120000.00 | -28.89          |
| 778.6631579     | 36.00          | -18.43      | 152.00      | 4.00       | Vertical | 120000.00 | -18.21          |
| 806.1789474     | 36.00          | -18.16      | 232.00      | 3.21       | Vertical | 120000.00 | -17.94          |

Notes: X, Y, Z, axis data were combined into one plot.

## Low Channel Radiated Spurious Emissions (X-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 9:41:52 AM                  |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 1: 1 to 10 GHz 2402 MHz (X-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.421053     | 54.27          | 74.00          | -19.73      | 274.00      | 1.30       | Vertical   | 1000000.00 | 9.27            |
| 7112.894737     | 50.06          | 74.00          | -23.94      | 216.00      | 2.73       | Horizontal | 1000000.00 | 11.98           |
| 9651.842105     | 50.86          | 74.00          | -23.14      | 350.00      | 3.46       | Vertical   | 1000000.00 | 13.06           |

## Average (PASS) (3)

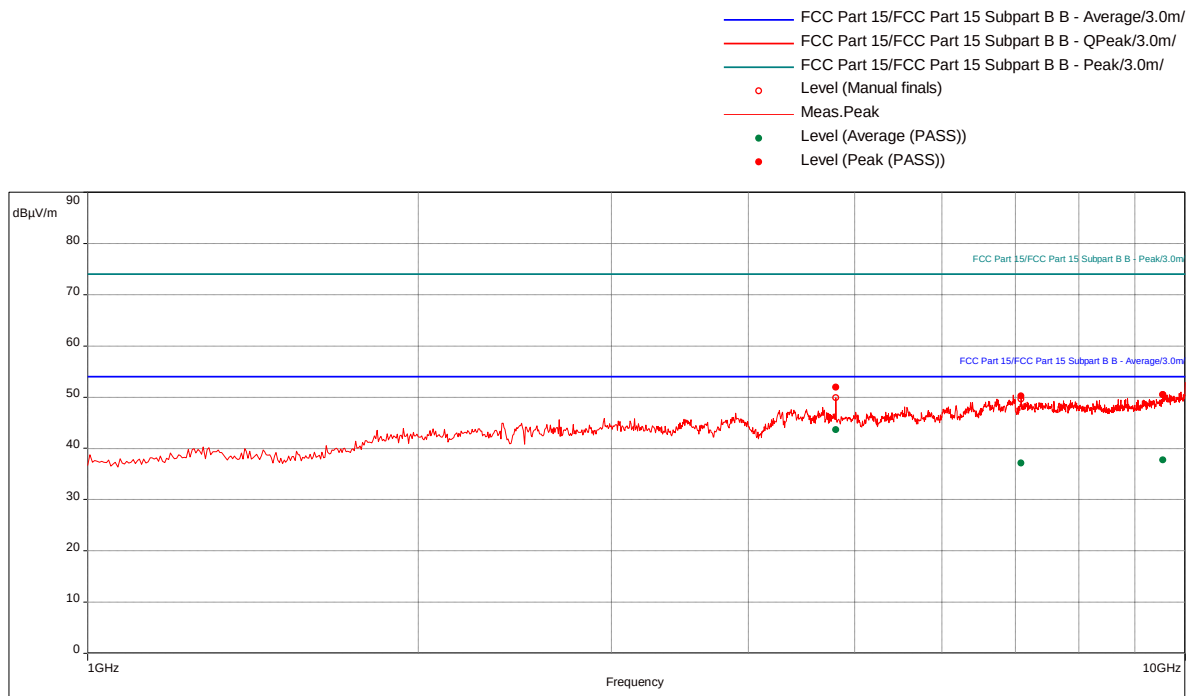
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.421053     | 45.94          | 54.00          | -8.06       | 274.00      | 1.30       | Vertical   | 1000000.00 | 9.27            |
| 7112.894737     | 38.43          | 54.00          | -15.57      | 216.00      | 2.73       | Horizontal | 1000000.00 | 11.98           |
| 9651.842105     | 37.92          | 54.00          | -16.08      | 350.00      | 3.46       | Vertical   | 1000000.00 | 13.06           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## Low Channel Radiated Spurious Emissions (Y-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 10:09:53 AM                 |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 2: 1 to 10 GHz 2402 MHz (Y-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.684211     | 51.97          | 74.00          | -22.03      | 283.00      | 1.41       | Vertical   | 1000000.00 | 9.27            |
| 7085.789474     | 50.20          | 74.00          | -23.80      | 313.00      | 2.86       | Horizontal | 1000000.00 | 11.98           |
| 9538.684211     | 50.48          | 74.00          | -23.52      | 320.00      | 1.29       | Horizontal | 1000000.00 | 12.81           |

## Average (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.684211     | 43.64          | 54.00          | -10.36      | 283.00      | 1.41       | Vertical   | 1000000.00 | 9.27            |
| 7085.789474     | 37.16          | 54.00          | -16.84      | 313.00      | 2.86       | Horizontal | 1000000.00 | 11.98           |
| 9538.684211     | 37.75          | 54.00          | -16.25      | 320.00      | 1.29       | Horizontal | 1000000.00 | 12.81           |

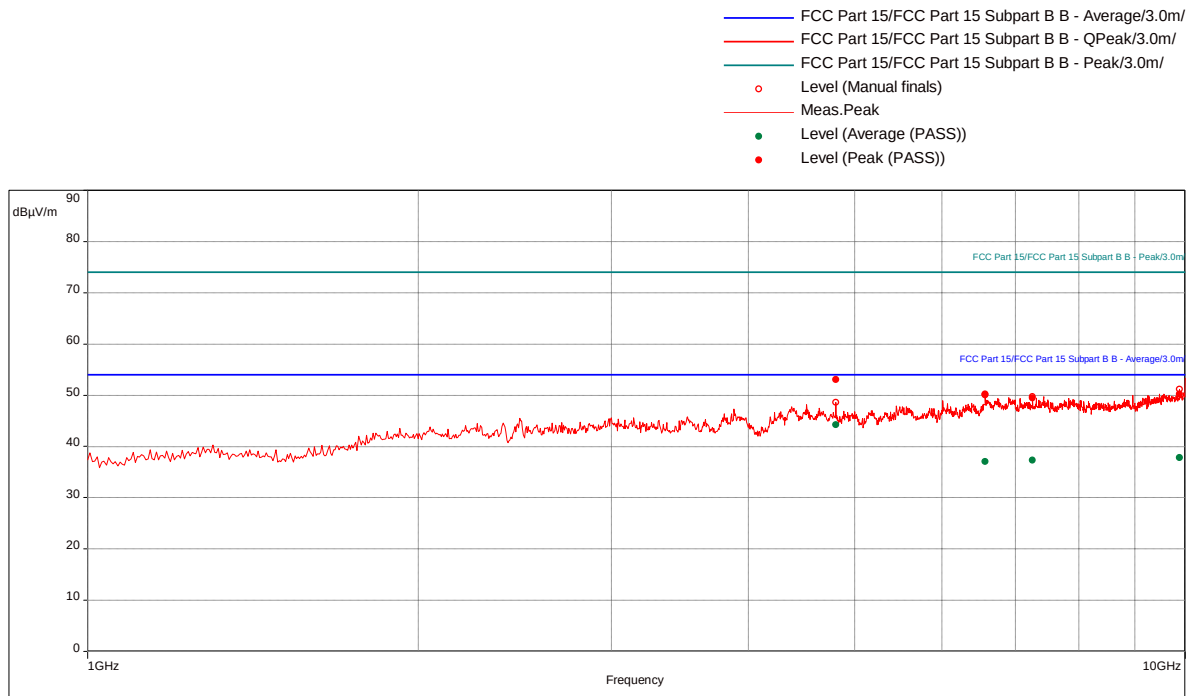
Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

### Low Channel Radiated Spurious Emissions (Z-axis), 1-25 GHz

**Test Information:**

|                           |                                        |
|---------------------------|----------------------------------------|
| Date and Time             | 2/25/2018 10:34:11 AM                  |
| Client and Project Number | Insulet                                |
| Engineer                  | Kouma Sinn                             |
| Temperature               | 19C                                    |
| Humidity                  | 28%                                    |
| Atmospheric Pressure      | 1012mbars                              |
| Comments                  | Scan 3: 1 to 10 GHz_ 2402 MHz (Z-axis) |

**Graph:**



**Results:**

**Peak (PASS) (4)**

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.421053     | 53.05          | 74.00          | -20.95      | 187.00      | 3.12       | Horizontal | 1000000.00 | 9.27            |
| 6573.421053     | 50.20          | 74.00          | -23.80      | 128.00      | 3.51       | Vertical   | 1000000.00 | 11.33           |
| 7256.315789     | 49.48          | 74.00          | -24.52      | 259.00      | 2.80       | Vertical   | 1000000.00 | 11.94           |
| 9879.210526     | 50.23          | 74.00          | -23.77      | 55.00       | 1.57       | Horizontal | 1000000.00 | 13.62           |

**Average (PASS) (4)**

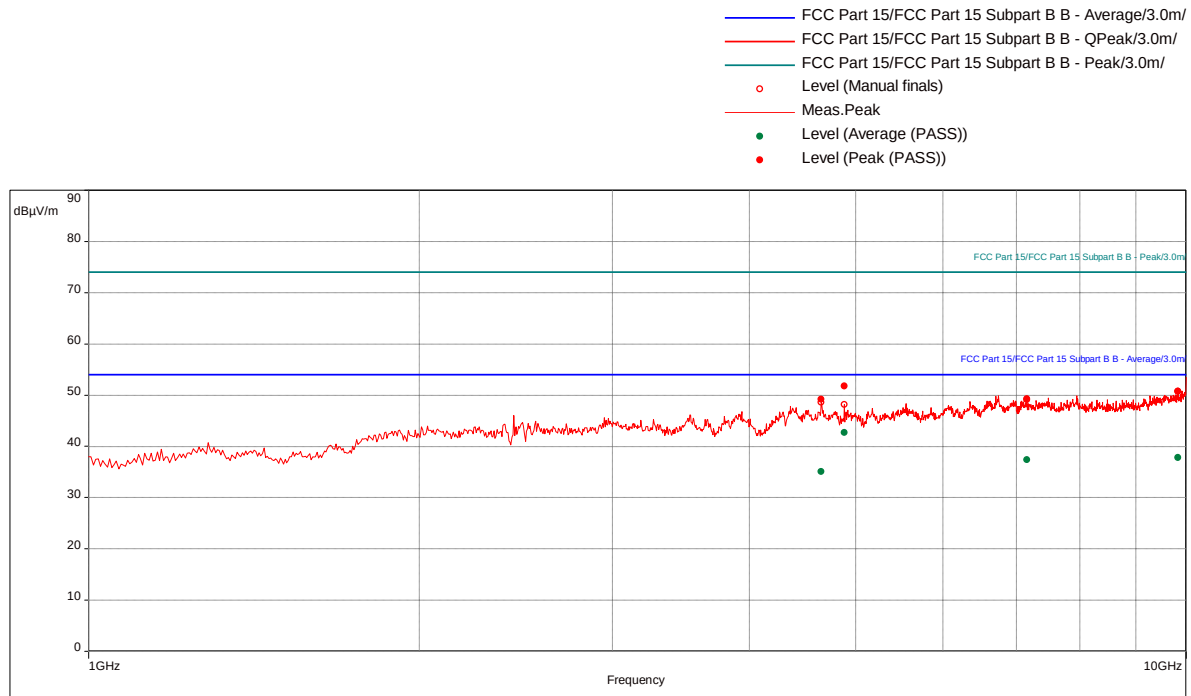
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4803.421053     | 44.26          | 54.00          | -9.74       | 187.00      | 3.12       | Horizontal | 1000000.00 | 9.27            |
| 6573.421053     | 37.05          | 54.00          | -16.95      | 128.00      | 3.51       | Vertical   | 1000000.00 | 11.33           |
| 7256.315789     | 37.28          | 54.00          | -16.72      | 259.00      | 2.80       | Vertical   | 1000000.00 | 11.94           |
| 9879.210526     | 37.79          | 54.00          | -16.21      | 55.00       | 1.57       | Horizontal | 1000000.00 | 13.62           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## Mid Channel Radiated Spurious Emissions (X-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 11:31:56 AM                 |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 4: 1 to 10 GHz 2440 MHz (X-axis) |

**Graph:****Results:**

## Peak (PASS) (4)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4651.052632     | 49.22          | 74.00          | -24.78      | 0.00        | 2.50       | Vertical   | 1000000.00 | 9.65            |
| 4879.473684     | 51.77          | 74.00          | -22.23      | 40.00       | 1.92       | Horizontal | 1000000.00 | 9.21            |
| 7158.947368     | 49.26          | 74.00          | -24.74      | 54.00       | 1.83       | Vertical   | 1000000.00 | 12.00           |
| 9829.473684     | 50.72          | 74.00          | -23.28      | 270.00      | 2.43       | Horizontal | 1000000.00 | 13.45           |

## Average (PASS) (4)

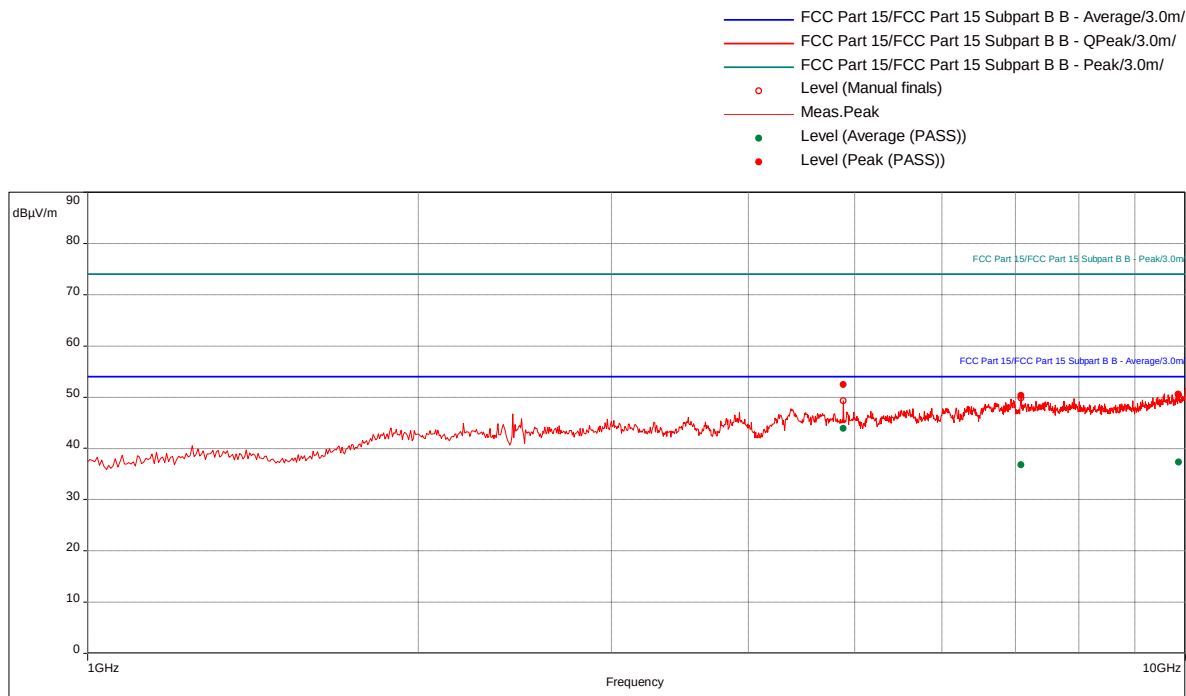
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4651.052632     | 35.07          | 54.00          | -18.93      | 0.00        | 2.50       | Vertical   | 1000000.00 | 9.65            |
| 4879.473684     | 42.71          | 54.00          | -11.29      | 40.00       | 1.92       | Horizontal | 1000000.00 | 9.21            |
| 7158.947368     | 37.42          | 54.00          | -16.58      | 54.00       | 1.83       | Vertical   | 1000000.00 | 12.00           |
| 9829.473684     | 37.80          | 54.00          | -16.20      | 270.00      | 2.43       | Horizontal | 1000000.00 | 13.45           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## Mid Channel Radiated Spurious Emissions (Y-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 11:57:59 AM                 |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 5: 1 to 10 GHz 2440 MHz (Y-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4879.473684     | 52.46          | 74.00          | -21.54      | 283.00      | 1.22       | Vertical   | 1000000.00 | 9.21            |
| 7085.263158     | 50.32          | 74.00          | -23.68      | 47.00       | 1.61       | Horizontal | 1000000.00 | 11.98           |
| 9857.894737     | 50.43          | 74.00          | -23.57      | 313.00      | 3.24       | Horizontal | 1000000.00 | 13.56           |

## Average (PASS) (3)

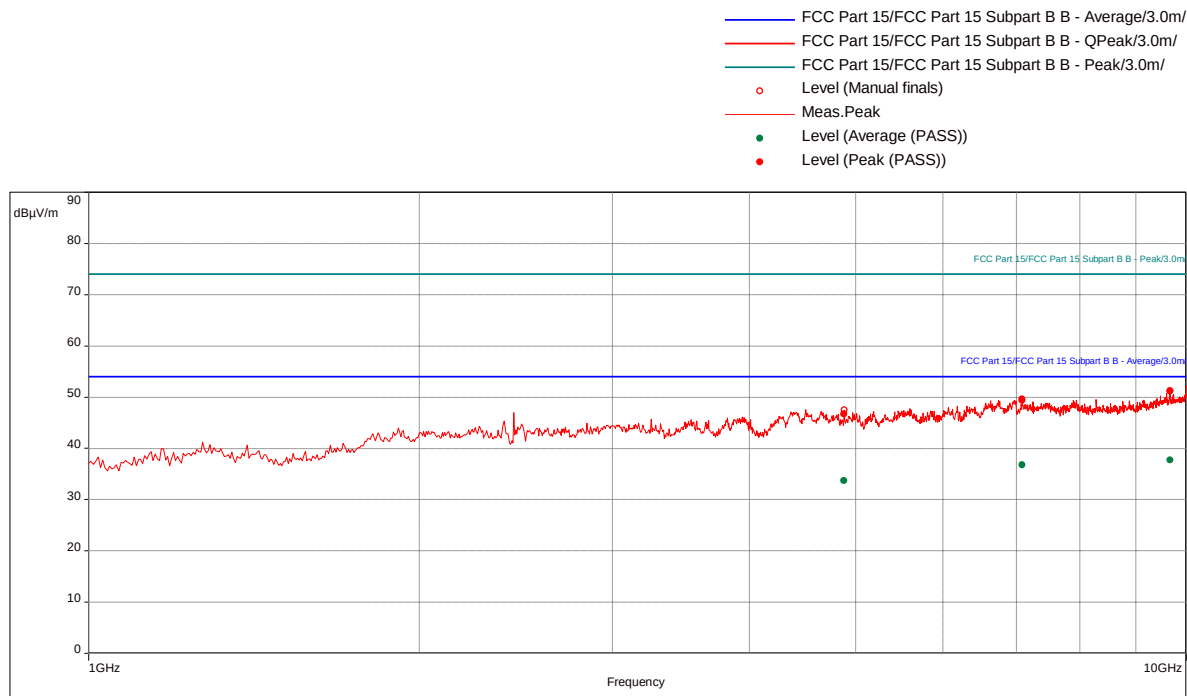
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4879.473684     | 43.85          | 54.00          | -10.15      | 283.00      | 1.22       | Vertical   | 1000000.00 | 9.21            |
| 7085.263158     | 36.75          | 54.00          | -17.25      | 47.00       | 1.61       | Horizontal | 1000000.00 | 11.98           |
| 9857.894737     | 37.27          | 54.00          | -16.73      | 313.00      | 3.24       | Horizontal | 1000000.00 | 13.56           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## Mid Channel Radiated Spurious Emissions (Z-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 12:20:48 PM                 |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 6: 1 to 10 GHz 2440 MHz (Z-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4877.368421     | 46.75          | 74.00          | -27.25      | 187.00      | 3.73       | Horizontal | 1000000.00 | 9.21            |
| 7085.789474     | 49.65          | 74.00          | -24.35      | 0.00        | 3.05       | Vertical   | 1000000.00 | 11.98           |
| 9666.842105     | 51.16          | 74.00          | -22.84      | 299.00      | 2.60       | Vertical   | 1000000.00 | 13.08           |

## Average (PASS) (3)

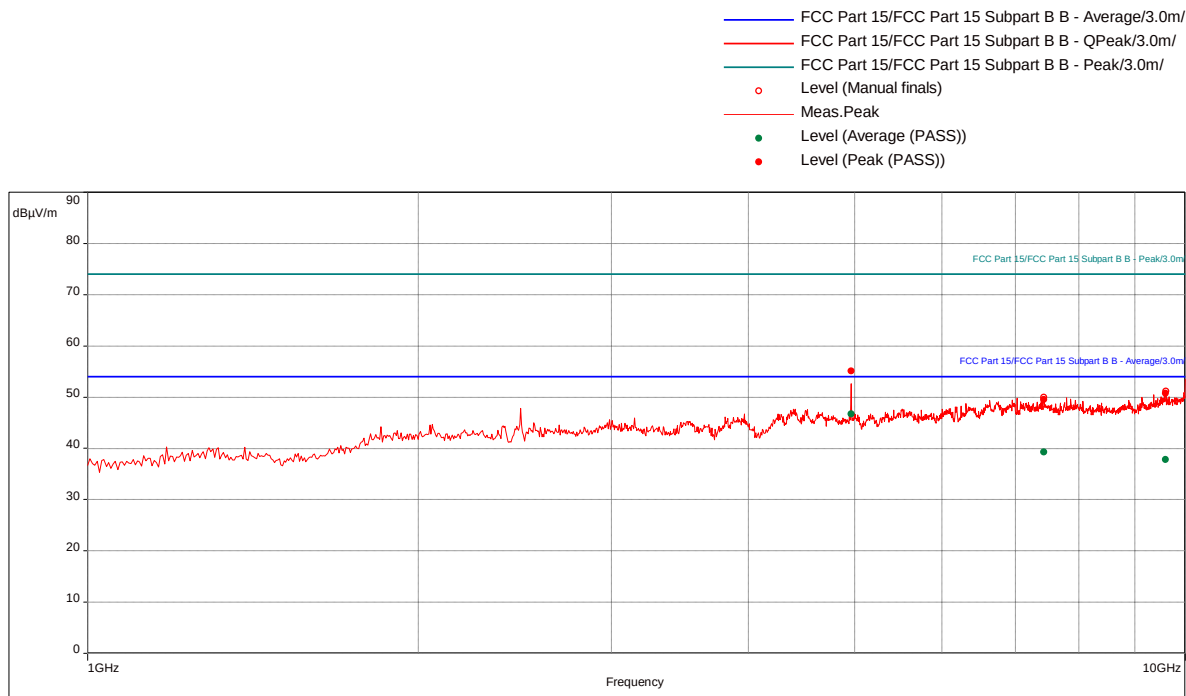
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4877.368421     | 33.73          | 54.00          | -20.27      | 187.00      | 3.73       | Horizontal | 1000000.00 | 9.21            |
| 7085.789474     | 36.75          | 54.00          | -17.25      | 0.00        | 3.05       | Vertical   | 1000000.00 | 11.98           |
| 9666.842105     | 37.77          | 54.00          | -16.23      | 299.00      | 2.60       | Vertical   | 1000000.00 | 13.08           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## High Channel Radiated Spurious Emissions (X-axis), 1-25 GHz

**Test Information:**

|                           |                                       |
|---------------------------|---------------------------------------|
| Date and Time             | 2/25/2018 12:42:43 PM                 |
| Client and Project Number | Insulet                               |
| Engineer                  | Kouma Sinn                            |
| Temperature               | 19C                                   |
| Humidity                  | 28%                                   |
| Atmospheric Pressure      | 1012mbars                             |
| Comments                  | Scan 7: 1 to 10 GHz 2480 MHz (X-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4960.263158     | 55.08          | 74.00          | -18.92      | 85.00       | 1.26       | Vertical   | 1000000.00 | 9.32            |
| 7430.789474     | 49.55          | 74.00          | -24.45      | 62.00       | 1.76       | Horizontal | 1000000.00 | 11.87           |
| 9596.578947     | 50.77          | 74.00          | -23.23      | 99.00       | 1.33       | Horizontal | 1000000.00 | 12.96           |

## Average (PASS) (3)

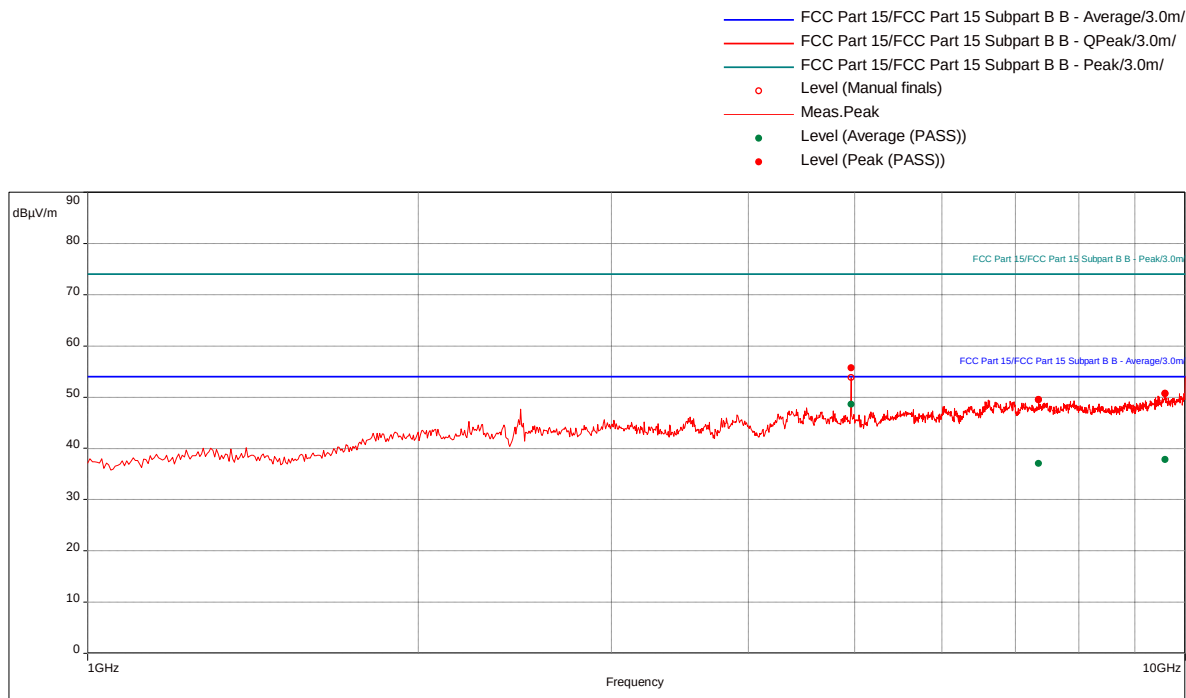
| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4960.263158     | 46.74          | 54.00          | -7.26       | 85.00       | 1.26       | Vertical   | 1000000.00 | 9.32            |
| 7430.789474     | 39.29          | 54.00          | -14.71      | 62.00       | 1.76       | Horizontal | 1000000.00 | 11.87           |
| 9596.578947     | 37.82          | 54.00          | -16.18      | 99.00       | 1.33       | Horizontal | 1000000.00 | 12.96           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

## High Channel Radiated Spurious Emissions (Y-axis), 1-25 GHz

**Test Information:**

|                           |                                      |
|---------------------------|--------------------------------------|
| Date and Time             | 2/25/2018 1:03:36 PM                 |
| Client and Project Number | Insulet                              |
| Engineer                  | Kouma Sinn                           |
| Temperature               | 19C                                  |
| Humidity                  | 28%                                  |
| Atmospheric Pressure      | 1012mbars                            |
| Comments                  | Scan 8: 1 to 10GHz 2480 MHz (Y-axis) |

**Graph:****Results:**

## Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|----------|------------|-----------------|
| 4959.473684     | 55.73          | 74.00          | -18.27      | 76.00       | 1.22       | Vertical | 1000000.00 | 9.31            |
| 7356.315789     | 49.44          | 74.00          | -24.56      | 344.00      | 3.99       | Vertical | 1000000.00 | 11.90           |
| 9591.578947     | 50.62          | 74.00          | -23.38      | 99.00       | 1.69       | Vertical | 1000000.00 | 12.95           |

## Average (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|----------|------------|-----------------|
| 4959.473684     | 48.62          | 54.00          | -5.38       | 76.00       | 1.22       | Vertical | 1000000.00 | 9.31            |
| 7356.315789     | 37.08          | 54.00          | -16.92      | 344.00      | 3.99       | Vertical | 1000000.00 | 11.90           |
| 9591.578947     | 37.81          | 54.00          | -16.19      | 99.00       | 1.69       | Vertical | 1000000.00 | 12.95           |

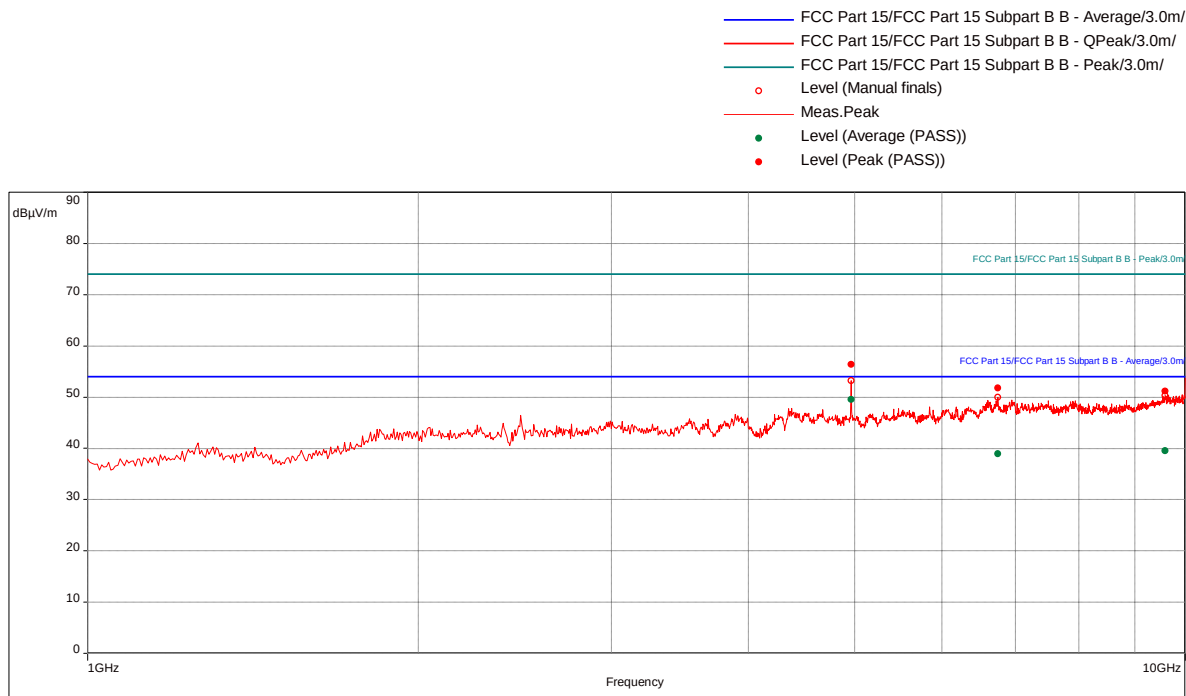
Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

# High Channel Radiated Spurious Emissions (Z-axis), 1-25 GHz

## Test Information:

|                           |                                      |
|---------------------------|--------------------------------------|
| Date and Time             | 2/25/2018 1:23:25 PM                 |
| Client and Project Number | Insulet                              |
| Engineer                  | Kouma Sinn                           |
| Temperature               | 19C                                  |
| Humidity                  | 28%                                  |
| Atmospheric Pressure      | 1012mbars                            |
| Comments                  | Scan 9: 1 to 10GHz 2480 MHz (Z-axis) |

## Graph:



## Results:

### Peak (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4959.473684     | 56.37          | 74.00          | -17.63      | 164.00      | 2.95       | Horizontal | 1000000.00 | 9.31            |
| 6749.210526     | 51.80          | 74.00          | -22.20      | 69.00       | 3.74       | Horizontal | 1000000.00 | 11.67           |
| 9588.684211     | 51.16          | 74.00          | -22.84      | 150.00      | 1.83       | Horizontal | 1000000.00 | 12.94           |

### Average (PASS) (3)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 4959.473684     | 49.51          | 54.00          | -4.49       | 164.00      | 2.95       | Horizontal | 1000000.00 | 9.31            |
| 6749.210526     | 38.96          | 54.00          | -15.04      | 69.00       | 3.74       | Horizontal | 1000000.00 | 11.67           |
| 9588.684211     | 39.52          | 54.00          | -14.48      | 150.00      | 1.83       | Horizontal | 1000000.00 | 12.94           |

Notes: Test was performed manually from 10-25 GHz with no emissions were detected.

|                                                       |                                                                 |                       |                                    |
|-------------------------------------------------------|-----------------------------------------------------------------|-----------------------|------------------------------------|
| Test Personnel:                                       | Naga Suryadevara <i>NS</i>                                      | Test Date:            | 02/25/2018 (3 <sup>rd</sup> shift) |
|                                                       | Kouma Sinn <i>KPS</i>                                           |                       | 02/25/2018 (1 <sup>st</sup> shift) |
| Supervising/Reviewing Engineer:                       |                                                                 |                       |                                    |
| (Where Applicable)                                    | N/A                                                             |                       |                                    |
| Product Standard:                                     | FCC Part 15.247,<br>FCC Part 15 Subpart B,<br>RSS-247, ICES-003 | Limit Applied:        | See report section 10.3            |
| Input Voltage:                                        | Internal Battery                                                | Ambient Temperature:  | 19, 19 °C                          |
| Pretest Verification w/ Ambient Signals or BB Source: | BB Source                                                       | Relative Humidity:    | 27, 28 %                           |
|                                                       |                                                                 | Atmospheric Pressure: | 1014, 1012 mbars                   |

Deviations, Additions, or Exclusions: None

## 11 Digital Device and Receiver Radiated Spurious Emissions

### 11.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B, ICES 003, and ANSI C 63.4.

**TEST SITE:** 10m ALSE

**The 10m ALSE** is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

#### Measurement Uncertainty

| Measurement             | Frequency Range | Expanded Uncertainty (k=2) | Ucisp  |
|-------------------------|-----------------|----------------------------|--------|
| Radiated Emissions, 10m | 30-1000 MHz     | 4.6dB                      | 6.3 dB |
| Radiated Emissions, 3m  | 30-1000 MHz     | 5.3 dB                     | 6.3 dB |
| Radiated Emissions, 3m  | 1-6 GHz         | 4.5 dB                     | 5.2 dB |
| Radiated Emissions, 3m  | 6-15 GHz        | 5.2 dB                     | 5.5 dB |
| Radiated Emissions, 3m  | 15-18 GHz       | 5.0 dB                     | 5.5 dB |
| Radiated Emissions, 3m  | 18-40 GHz       | 5.0 dB                     | 5.5 dB |

As shown in the table above our radiated emissions  $U_{lab}$  is less than the corresponding  $U_{CISPR}$  reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

### Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB/m}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}\mu\text{V/m}$$

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

**11.2 Test Equipment Used:**

| Asset    | Description                             | Manufacturer         | Model              | Serial     | Cal Date   | Cal Due    |
|----------|-----------------------------------------|----------------------|--------------------|------------|------------|------------|
| DAV002'  | Weather Station                         | Davis Instruments    | 7400               | PE80519A93 | 06/14/2017 | 06/14/2018 |
| 145128'  | EMI Receiver (20 Hz - 40 GHz)           | Rohde & Schwarz      | ESIB 40            | 839283/001 | 03/15/2017 | 03/15/2018 |
| 145014'  | Preamplifier (1 GHz to 26.5 GHz)        | Hewlett Packard      | 8449B              | 3008A00232 | 06/03/2017 | 06/03/2018 |
| ETS002'  | 1-18GHz DRG Horn Antenna                | ETS Lindgren         | 3117               | 00143260   | 05/22/2017 | 05/22/2018 |
| 145-416' | Cables 145-420 145-423 145-425 145-408  | Huber + Suhner       | 3m Track B cables  | multiple   | 07/25/2017 | 07/25/2018 |
| 145145'  | Broadband Hybrid Antenna 30 MHz - 3 GHz | Sunol Sciences Corp. | JB3                | A122313    | 05/02/2017 | 05/02/2018 |
| PRE11'   | 50dB gain pre-amp                       | Keith H              | PRE11              | PRE11      | 12/02/2017 | 12/02/2018 |
| 145-410' | Cables 145-420 145-421 145-422 145-406  | Huber + Suhner       | 10m Track A Cables | multiple   | 07/25/2017 | 07/25/2018 |

**Software Utilized:**

| Name              | Manufacturer | Version   |
|-------------------|--------------|-----------|
| BAT-EMC Emissions | Nexio        | 3.16.0.69 |

**11.3 Results:**

The sample tested was found to Comply.

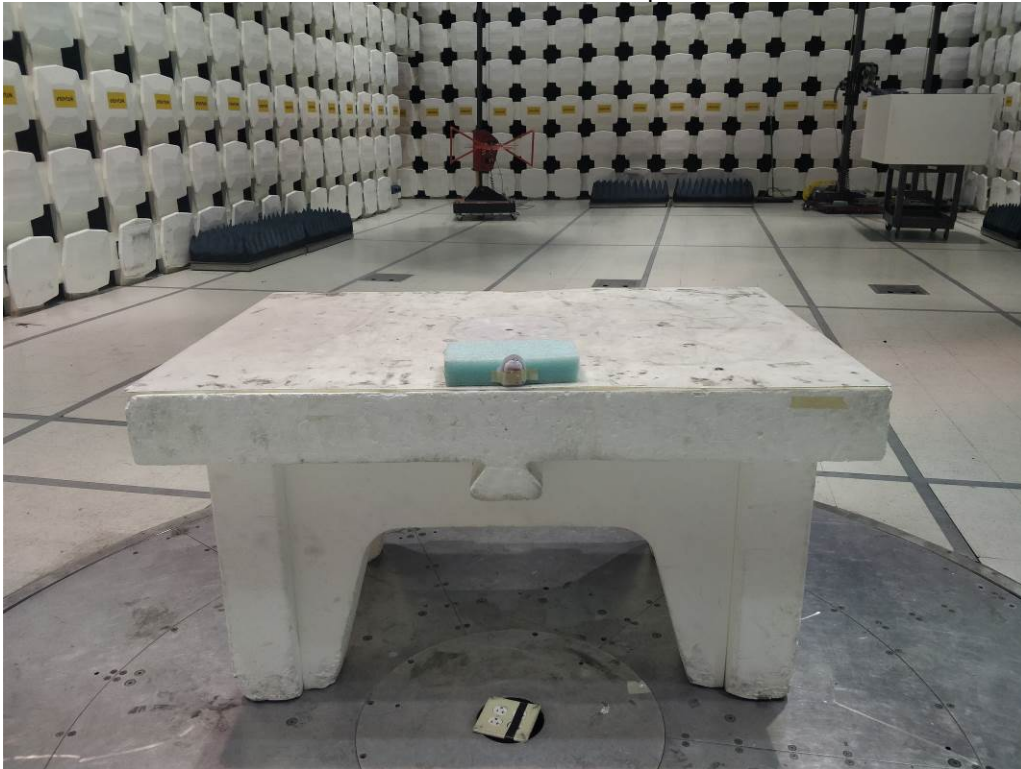
**§15.209 Radiated emission limits; general requirements.**

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

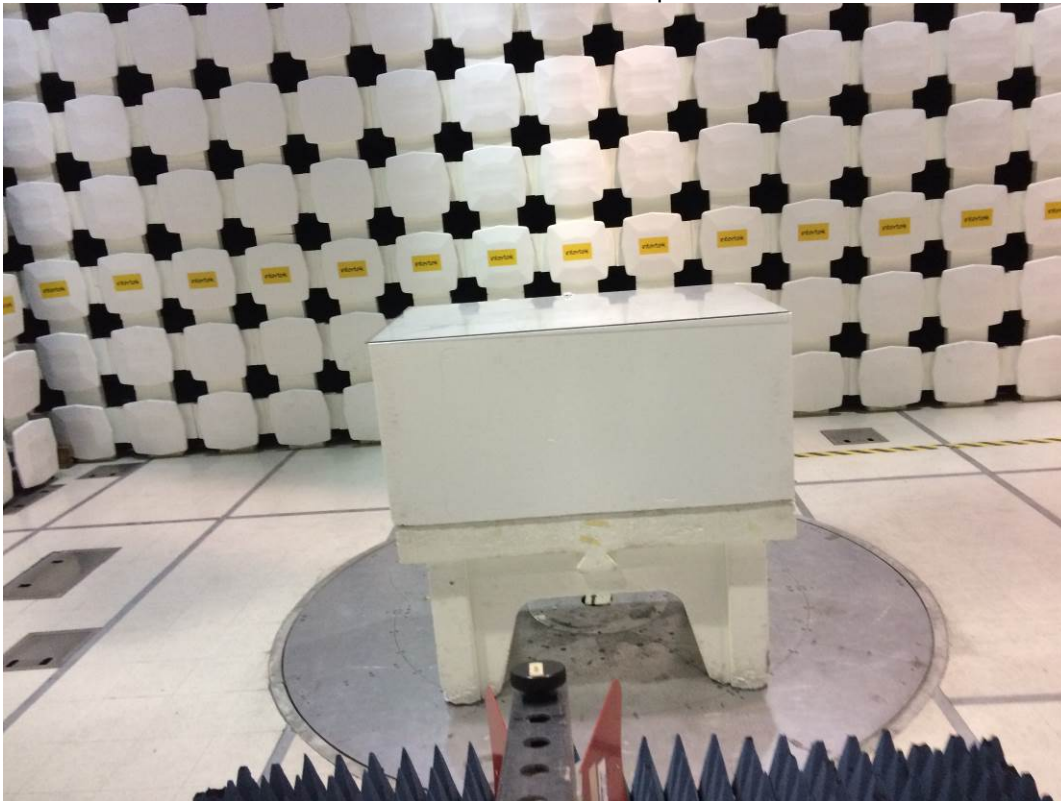
| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            |
| 1.705-30.0      | 30                                | 30                            |
| 30-88           | 100**                             | 3                             |
| 88-216          | 150**                             | 3                             |
| 216-960         | 200**                             | 3                             |
| Above 960       | 500                               | 3                             |

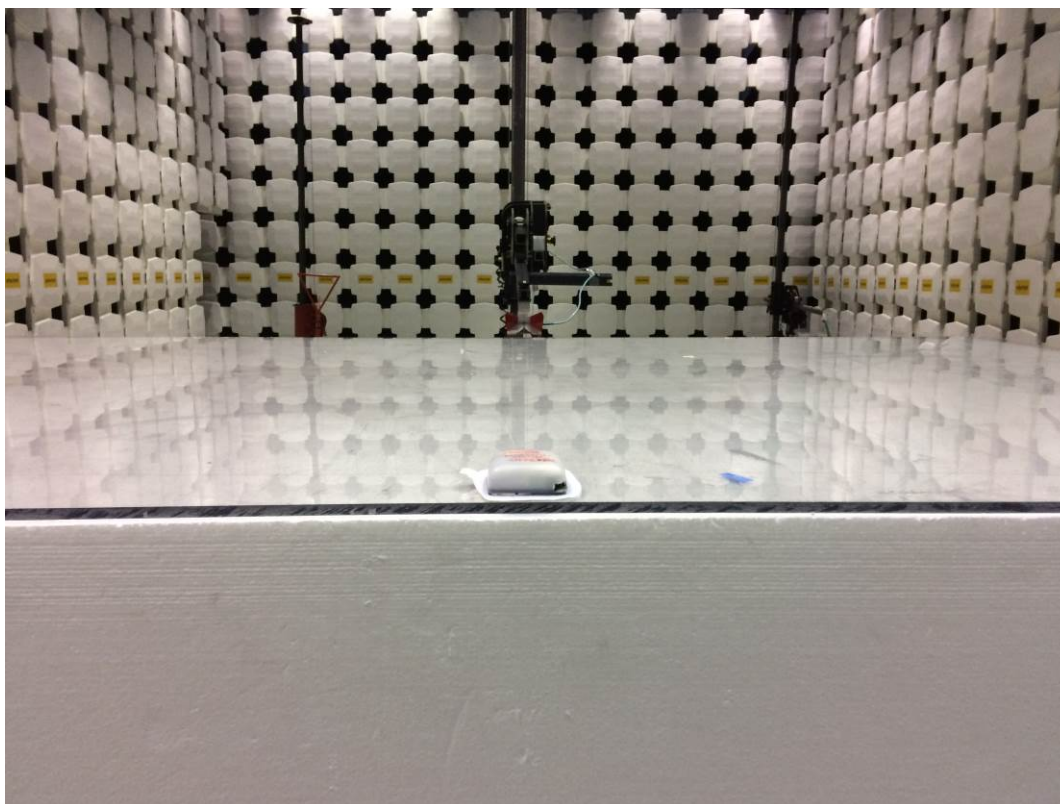
**11.4 Setup Photographs:**

30-1000 MHz Test Setup



1-12.5 GHz Test Setup





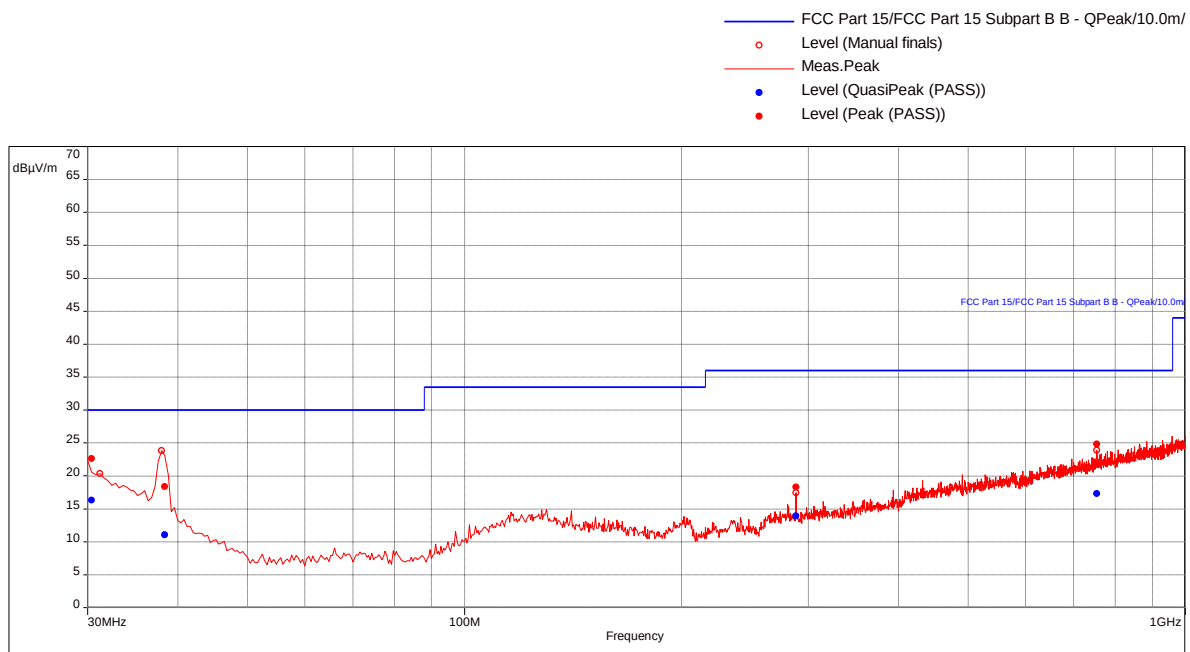
## 11.5 Plots/Data:

### Digital Device Radiated Spurious Emissions (X-axis), 30-1000 MHz

#### Test Information:

|                           |                                               |
|---------------------------|-----------------------------------------------|
| Date and Time             | 2/25/2018 7:08:35 AM                          |
| Client and Project Number | Insulet                                       |
| Engineer                  | Naga Suryadevara                              |
| Temperature               | 19C                                           |
| Humidity                  | 27%                                           |
| Atmospheric Pressure      | 1014mbars                                     |
| Comments                  | Scan 4 RE 30-1000MHz SA mode Rx mode (X-axis) |

#### Graph:



#### Results:

##### QuasiPeak (PASS) (4)

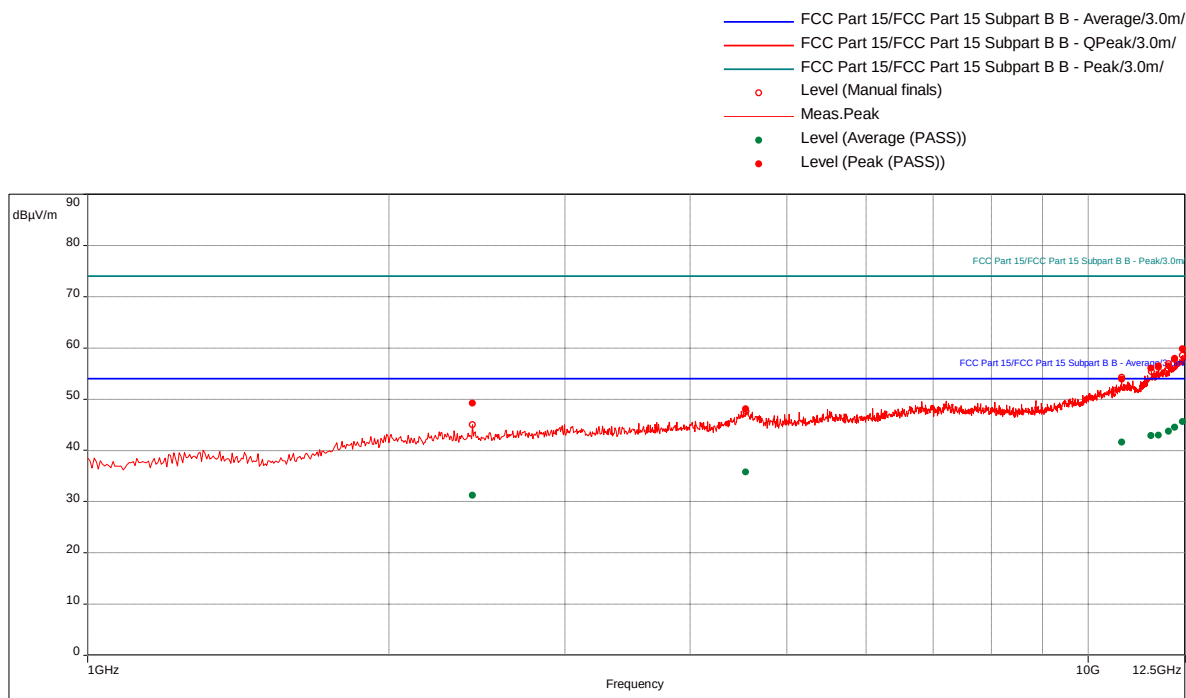
| Frequency (MHz) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW       | Correction (dB) |
|-----------------|----------------|-------------|-------------|------------|----------|-----------|-----------------|
| 30.6            | 30.00          | -13.71      | 343.00      | 1.59       | Vertical | 120000.00 | -22.97          |
| 38.22105263     | 30.00          | -18.93      | 78.00       | 3.95       | Vertical | 120000.00 | -28.68          |
| 288.5263158     | 36.00          | -22.06      | 217.00      | 1.45       | Vertical | 120000.00 | -28.72          |
| 754.1789474     | 36.00          | -18.72      | 209.00      | 3.66       | Vertical | 120000.00 | -18.57          |

## Digital Device Radiated Spurious Emissions (X-axis), 1-12.5 GHz

## Test Information:

|                           |                                   |
|---------------------------|-----------------------------------|
| Date and Time             | 2/25/2018 2:07:51 PM              |
| Client and Project Number | Insulet                           |
| Engineer                  | Kouma Sinn                        |
| Temperature               | 19C                               |
| Humidity                  | 28%                               |
| Atmospheric Pressure      | 1012mbars                         |
| Comments                  | Scan 10: 1 to 12.5 GHz Rx 2402MHz |

## Graph:



## Results:

## Peak (PASS) (8)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 2426.052632     | 49.17          | 74.00          | -24.83      | 217.00      | 3.34       | Vertical   | 1000000.00 | 5.25            |
| 4547.368421     | 48.10          | 74.00          | -25.90      | 166.00      | 1.60       | Horizontal | 1000000.00 | 10.14           |
| 10803.68421     | 53.87          | 74.00          | -20.13      | 18.00       | 3.46       | Vertical   | 1000000.00 | 16.87           |
| 11561.84211     | 56.02          | 74.00          | -17.98      | 194.00      | 2.11       | Horizontal | 1000000.00 | 19.68           |
| 11759.21053     | 56.45          | 74.00          | -17.55      | 267.00      | 3.72       | Horizontal | 1000000.00 | 20.38           |
| 12028.68421     | 56.50          | 74.00          | -17.50      | 25.00       | 2.34       | Vertical   | 1000000.00 | 21.23           |
| 12202.36842     | 57.92          | 74.00          | -16.08      | 342.00      | 1.00       | Vertical   | 1000000.00 | 21.57           |
| 12418.15789     | 59.79          | 74.00          | -14.21      | 106.00      | 2.03       | Vertical   | 1000000.00 | 22.52           |

## Average (PASS) (8)

| Frequency (MHz) | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW        | Correction (dB) |
|-----------------|----------------|----------------|-------------|-------------|------------|------------|------------|-----------------|
| 2426.052632     | 31.27          | 54.00          | -22.73      | 217.00      | 3.34       | Vertical   | 1000000.00 | 5.25            |
| 4547.368421     | 35.79          | 54.00          | -18.21      | 166.00      | 1.60       | Horizontal | 1000000.00 | 10.14           |
| 10803.68421     | 41.56          | 54.00          | -12.44      | 18.00       | 3.46       | Vertical   | 1000000.00 | 16.87           |
| 11561.84211     | 42.90          | 54.00          | -11.10      | 194.00      | 2.11       | Horizontal | 1000000.00 | 19.68           |
| 11759.21053     | 42.98          | 54.00          | -11.02      | 267.00      | 3.72       | Horizontal | 1000000.00 | 20.38           |
| 12028.68421     | 43.73          | 54.00          | -10.27      | 25.00       | 2.34       | Vertical   | 1000000.00 | 21.23           |
| 12202.36842     | 44.49          | 54.00          | -9.51       | 342.00      | 1.00       | Vertical   | 1000000.00 | 21.57           |
| 12418.15789     | 45.65          | 54.00          | -8.35       | 106.00      | 2.03       | Vertical   | 1000000.00 | 22.52           |

|                                                       |                                    |                       |                                          |
|-------------------------------------------------------|------------------------------------|-----------------------|------------------------------------------|
| Test Personnel:                                       | <u>Naga Suryadevara</u> <i>N.S</i> | Test Date:            | <u>02/25/2018 (2<sup>nd</sup> shift)</u> |
|                                                       | <u>Kouma Sinn</u> <i>KPS</i>       |                       | <u>02/25/2018 (1<sup>st</sup> shift)</u> |
| Supervising/Reviewing Engineer:                       |                                    |                       |                                          |
| (Where Applicable)                                    | <u>N/A</u>                         |                       |                                          |
| Product Standard:                                     | <u>FCC Part 15 Subpart B,</u>      | Limit Applied:        | <u>See report section 11.3</u>           |
| Input Voltage:                                        | <u>ICES-003</u>                    |                       |                                          |
| Pretest Verification w/ Ambient Signals or BB Source: | <u>Internal Battery</u>            | Ambient Temperature:  | <u>19, 19 °C</u>                         |
|                                                       | <u>BB Source</u>                   | Relative Humidity:    | <u>27, 28 %</u>                          |
|                                                       |                                    | Atmospheric Pressure: | <u>1014, 1012 mbars</u>                  |

Deviations, Additions, or Exclusions: None

**12 Revision History**

| Revision Level | Date       | Report Number    | Prepared By    | Reviewed By    | Notes          |
|----------------|------------|------------------|----------------|----------------|----------------|
| 0              | 03/02/2018 | 103328054BOX-001 | KPS <i>KPS</i> | VFV <i>VFV</i> | Original Issue |
|                |            |                  |                |                |                |
|                |            |                  |                |                |                |
|                |            |                  |                |                |                |
|                |            |                  |                |                |                |
|                |            |                  |                |                |                |