

# Ittron, Inc.

## TEST REPORT FOR

### CCU100

**Models: CCU100C\* and CCU100RC\***

(\*See Appendix A for Manufacturer Declaration)

## Tested to The Following Standards:

**FCC Part 15 Subpart C Section(s)**

**15.207 & 15.247  
(FHSS 902-928 MHz)**

**Report No.: 103221-2**

**Date of issue: April 17, 2020**



**Test Certificate # 803.01**

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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## ADMINISTRATIVE INFORMATION

### Test Report Information

**REPORT PREPARED FOR:**

Ittron, Inc.  
2111 N. Molter Road  
Liberty Lake WA 99019

Representative: Jay Holcomb  
Customer Reference Number: 193369

**DATE OF EQUIPMENT RECEIPT:**

**DATE(S) OF TESTING:**

**REPORT PREPARED BY:**

Terri Rayle  
CKC Laboratories, Inc.  
5046 Sierra Pines Drive  
Mariposa, CA 95338

Project Number: 103221

December 13, 2019

December 13-18, 2019, January 21-25, 2020

April 15-16, 2020 and May 1, 2020

### Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

A handwritten signature in black ink, reading "Steve Behm", is written over a horizontal line.

**Steve Behm**  
**Director of Quality Assurance & Engineering Services**  
**CKC Laboratories, Inc.**

## Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):  
CKC Laboratories, Inc.  
22116 23rd Drive S.E., Suite A  
Canyon Park, Bothell, WA 98021

## Software Versions

| CKC Laboratories Proprietary Software | Version |
|---------------------------------------|---------|
| EMITest Emissions                     | 5.03.12 |

## Site Registration & Accreditation Information

| Location                 | *NIST CB # | FCC    | Japan  |
|--------------------------|------------|--------|--------|
| Canyon Park, Bothell, WA | US0081     | US1022 | A-0136 |
| Brea, CA                 | US0060     | US1025 | A-0136 |
| Fremont, CA              | US0082     | US1023 | A-0136 |
| Mariposa, CA             | US0103     | US1024 | A-0136 |

\*CKC's list of NIST designated countries can be found at: <https://standards.gov/cabs/designations.html>

## SUMMARY OF RESULTS

### Standard / Specification: FCC Part 15 Subpart C - 15.247 (FHSS 902-928MHz)

| Test Procedure  | Description                        | Modifications  | Results |
|-----------------|------------------------------------|----------------|---------|
| 15.247(a)(1)(i) | Occupied Bandwidth                 | Mod. #1 and #2 | Pass    |
| 15.247(a)(1)    | Carrier Separation                 | Mod. #1 and #2 | Pass    |
| 15.247(a)(1)(i) | Number of Hopping Channels         | Mod. #1 and #2 | Pass    |
| 15.247(a)(1)(i) | Average Time of Occupancy          | Mod. #1 and #2 | NP      |
| 15.247(b)(2)    | Output Power                       | Mod. #1 and #2 | Pass    |
| 15.247(d)       | RF Conducted Emissions & Band Edge | Mod. #1 and #2 | Pass    |
| 15.247(d)       | Radiated Emissions & Band Edge     | Mod. #1 and #2 | Pass    |
| 15.207          | AC Conducted Emissions             | Mod. #1 and #2 | Pass    |

NA = Not Applicable

NP = CKC Laboratories was not contracted to perform test.

#### ISO/IEC 17025 Decision Rule

The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

## Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

#### Summary of Conditions

Modification #1: Added ferrite Laird Technologies – 28B0355-000 with no turns on battery cable.

Modification #2: Mounting plate ground was removed

**Modifications listed above must be incorporated into all production units.**

## Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

#### Summary of Conditions

The models tested are the CCU100C and the CCU100RC.

The CCU100C becomes the CCU100RC with a different set of antennas installed. (The R is for remote, so for the remote set of antennas installed).

Models CCU100C and CCU100RC configurations were checked and worst-case provided for testing unless referenced differently in the test section.

## EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

### Configuration 1

#### Equipment Tested:

| Device | Manufacturer | Model # | S/N      |
|--------|--------------|---------|----------|
| CCU100 | Itron, Inc.  | CCU100C | 74048330 |

#### Support Equipment:

| Device                  | Manufacturer | Model #       | S/N |
|-------------------------|--------------|---------------|-----|
| Omnidirectional Antenna | PCTEL        | BOA9025NM-ITR | NA  |
| Omnidirectional Antenna | PCTEL        | MHO3G4G02NM   | NA  |

### Configuration 2

#### Equipment Tested:

| Device | Manufacturer | Model #  | S/N      |
|--------|--------------|----------|----------|
| CCU100 | Itron, Inc.  | CCU100RC | 74048330 |

#### Support Equipment:

| Device                  | Manufacturer  | Model #        | S/N |
|-------------------------|---------------|----------------|-----|
| Omnidirectional Antenna | PCTEL         | BOA9028        | NA  |
| Omnidirectional Antenna | Taoglas       | OMB.6912.03F21 | NA  |
| Attenuator 1dB (x2)     | Mini Circuits | UNAT-1+        | NA  |

### Configuration 3

#### Equipment Tested:

| Device | Manufacturer | Model # | S/N      |
|--------|--------------|---------|----------|
| CCU100 | Itron, Inc.  | CCU100C | 74048333 |

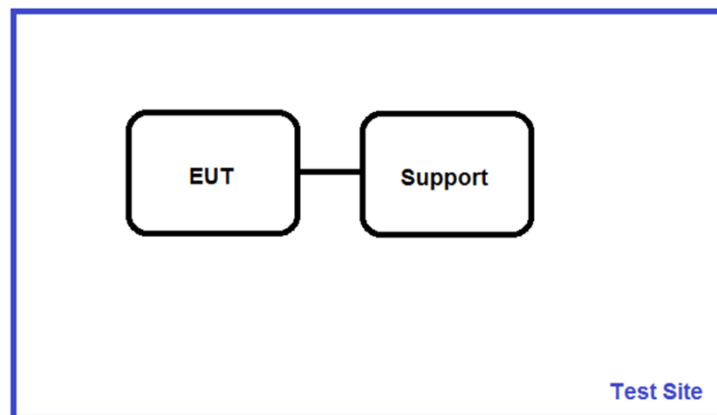
#### Support Equipment:

| Device                  | Manufacturer | Model #       | S/N |
|-------------------------|--------------|---------------|-----|
| Omnidirectional Antenna | PCTEL        | BOA9025NM-ITR | NA  |

## General Product Information:

| Product Information                     | Manufacturer-Provided Details                                                                                                                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Type:                         | Stand-Alone Equipment                                                                                                                                         |
| Type of Wideband System:                | FHSS                                                                                                                                                          |
| Operating Frequency Range:              | 903-926.8 MHz (FSK 12.5k and FSK 37.5k)<br>908-923.8MHz (AM)                                                                                                  |
| Number of Hopping Channels:             | 120 (FSK 12.5k and FSK 37.5k)<br>80 (AM)                                                                                                                      |
| Receiver Bandwidth and Synchronization: | The manufacturer declares the receiver input bandwidth matches the transmit channel bandwidth and shifts frequencies in synchronization with the transmitter. |
| Modulation Type(s):                     | 37.5 kbit/sec FM (FSK)<br>12.5kbit/sec FM (FSK)<br>16.384kbit/sec AM (OOK)                                                                                    |
| Maximum Duty Cycle:                     | Tested 100% Modulated                                                                                                                                         |
| Number of TX Chains:                    | 1                                                                                                                                                             |
| Antenna Type(s) and Gain:               | Omnidirectional, 5.5dBi<br>Omnidirectional, 8.15dBi with 2dB attenuation                                                                                      |
| Beamforming Type:                       | NA                                                                                                                                                            |
| Antenna Connection Type:                | External Connector                                                                                                                                            |
| Nominal Input Voltage:                  | 115VAC                                                                                                                                                        |
| Firmware / Software used for Test:      | ARM = Version 2.27.0.0, DSP = Version 7.22.0.0 and FPGA = Version 4.14,<br>SR Test 100 version 4.11.1.42                                                      |

## Test Setup Block Diagram



## FCC Part 15 Subpart C

### 15.247(a) Transmitter Characteristics

| Test Setup/Conditions |                                                                                                                                                                                                                                                                                             |                |             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|
| Test Location:        | Bothell Lab Bench                                                                                                                                                                                                                                                                           | Test Engineer: | M. Harrison |
| Test Method:          | ANSI C63.10 (2013)                                                                                                                                                                                                                                                                          | Test Date(s):  | 4/16/2020   |
| Configuration:        | 1                                                                                                                                                                                                                                                                                           |                |             |
| Test Setup:           | <p>The equipment under test (EUT) is placed on the tabletop.<br/> The output of the EUT is connected to the spectrum analyzer using a coaxial cable and attenuator.<br/> The EUT is transmitting at its rated output power.</p> <p>Modification #1 and #2 were in place during testing.</p> |                |             |

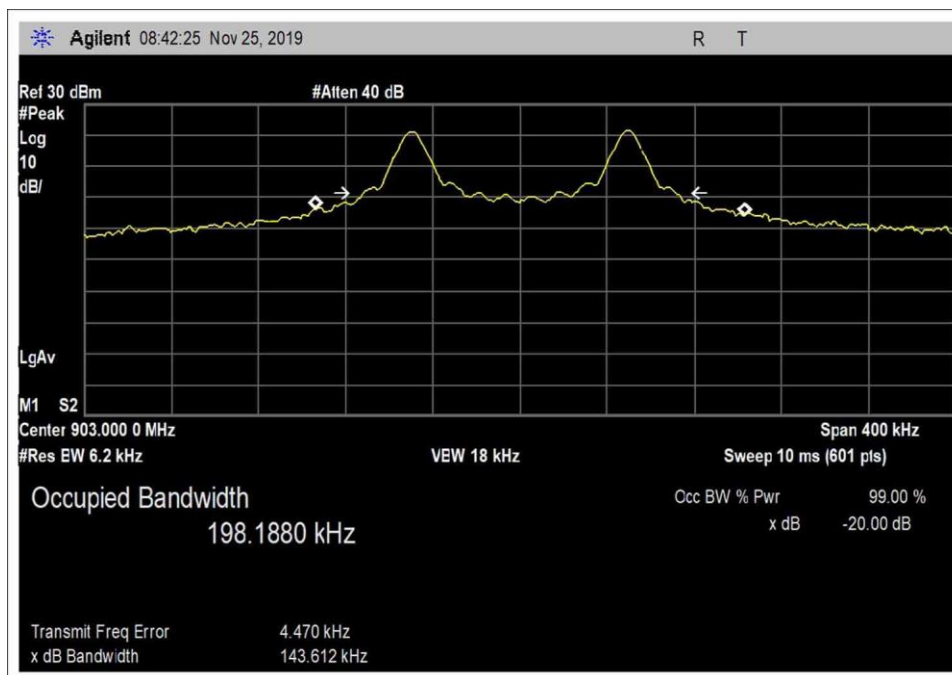
| Environmental Conditions |    |                        |    |
|--------------------------|----|------------------------|----|
| Temperature (°C)         | 22 | Relative Humidity (%): | 35 |

| Test Equipment |                   |              |          |            |            |
|----------------|-------------------|--------------|----------|------------|------------|
| Asset#         | Description       | Manufacturer | Model    | Cal Date   | Cal Due    |
| 02871          | Spectrum Analyzer | Agilent      | E4440A   | 10/15/2019 | 10/15/2021 |
| P07227         | Attenuator        | Pasternack   | PE7004-6 | 10/2/2019  | 10/2/2021  |

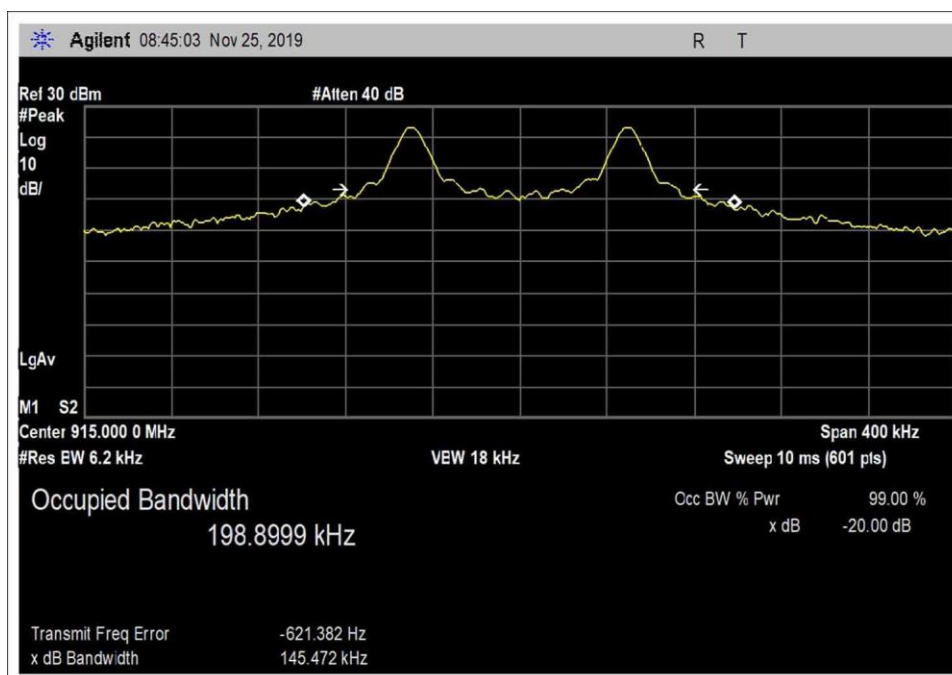
## 15.247(a)(1)(i) 20 dB Bandwidth

| Test Data Summary |              |             |                |             |         |
|-------------------|--------------|-------------|----------------|-------------|---------|
| Frequency (MHz)   | Antenna Port | Modulation  | Measured (kHz) | Limit (kHz) | Results |
| 903               | 1            | FM 12.5kbps | 143.61         | ≤500        | Pass    |
| 915               | 1            | FM 12.5kbps | 145.47         | ≤500        | Pass    |
| 926.8             | 1            | FM 12.5kbps | 143.76         | ≤500        | Pass    |
| 903               | 1            | FM 37.5kbps | 83.58          | ≤500        | Pass    |
| 915               | 1            | FM 37.5kbps | 85.55          | ≤500        | Pass    |
| 926.8             | 1            | FM 37.5kbps | 86.4           | ≤500        | Pass    |
| 908               | 1            | AM          | 297.54         | ≤500        | Pass    |
| 915               | 1            | AM          | 269.1          | ≤500        | Pass    |
| 923.8             | 1            | AM          | 313.45         | ≤500        | Pass    |

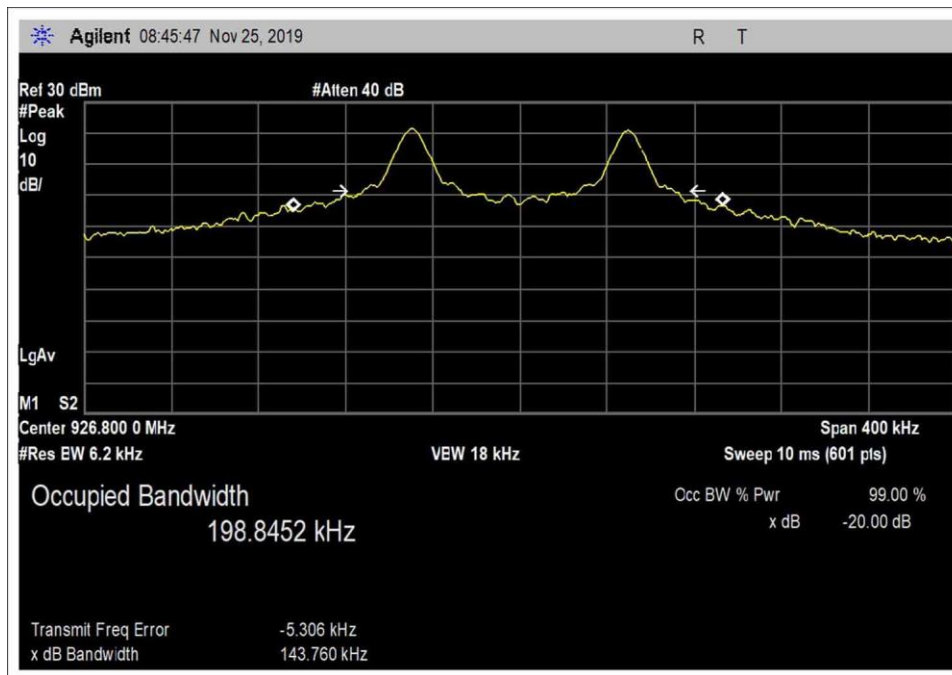
## Plot(s)



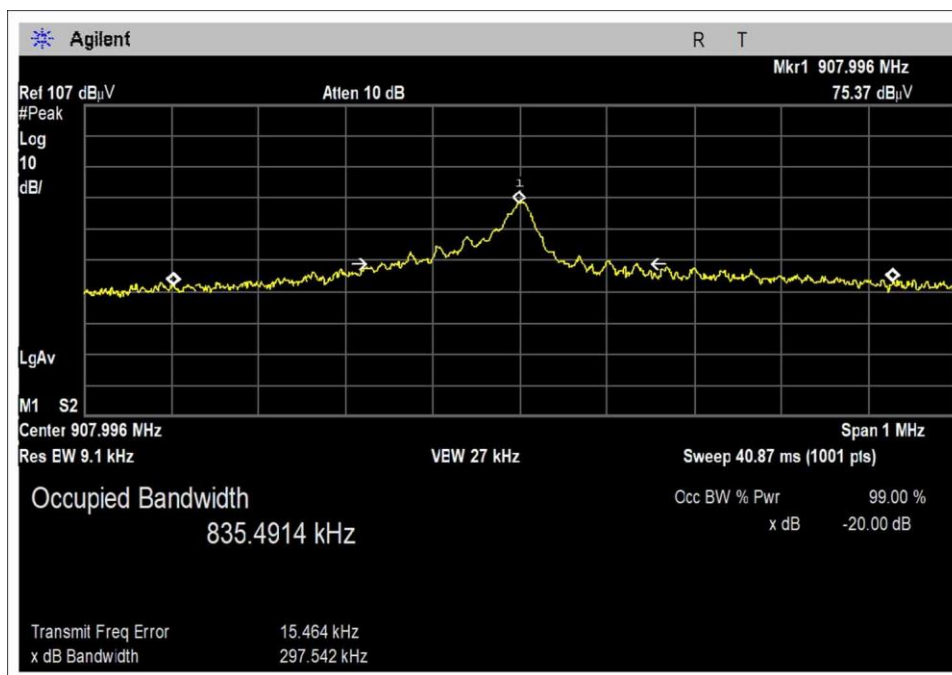
FSK Low Channel



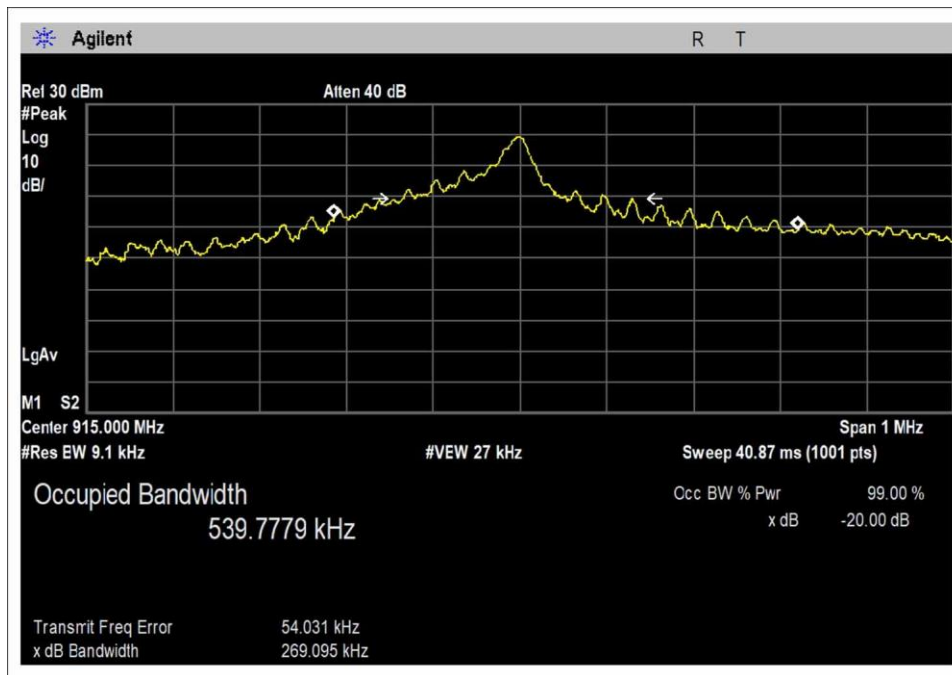
FSK Middle Channel



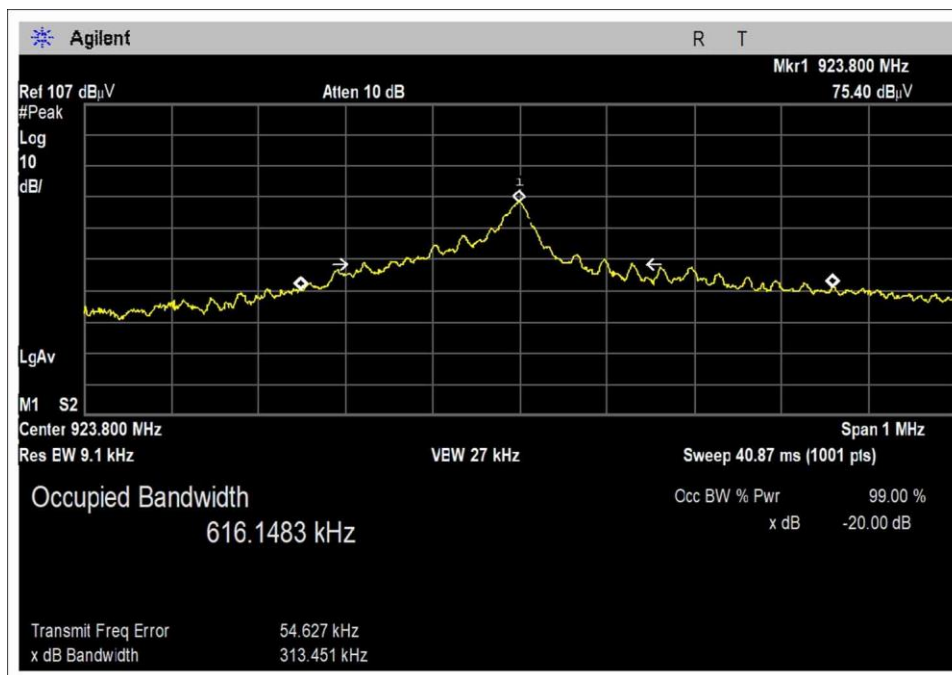
FSK High Channel



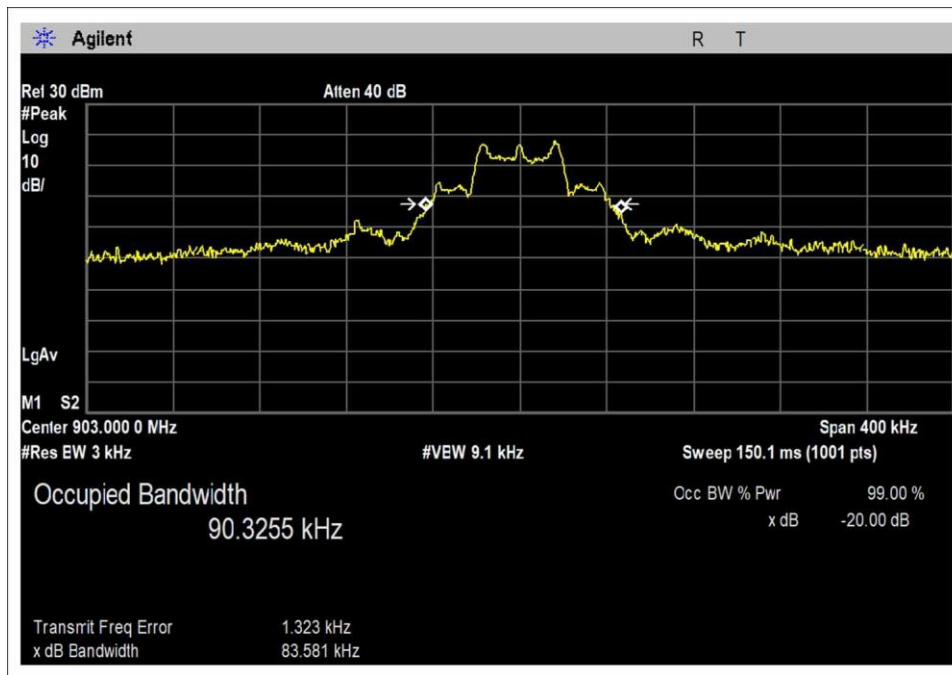
AM Low Channel



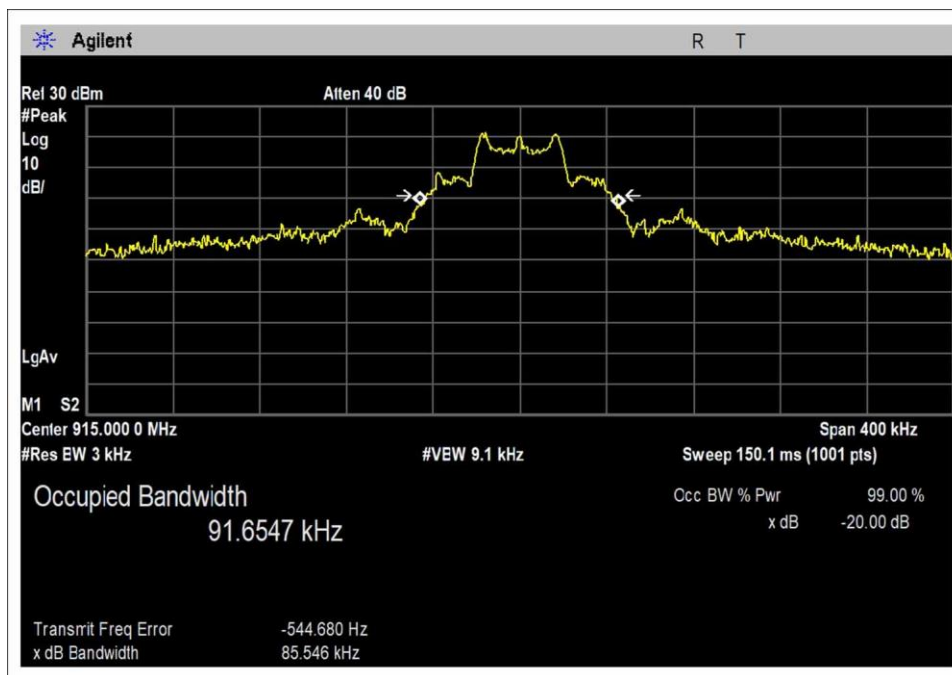
AM Middle Channel



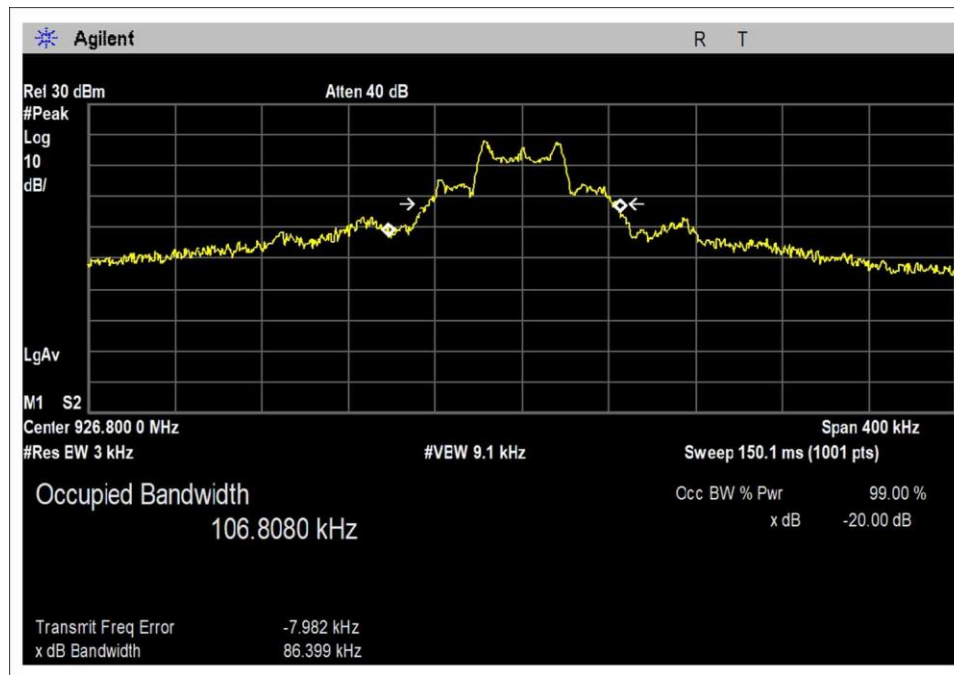
AM High Channel



FM 37.5kbps Low Channel



FM 37.5kbps Middle Channel

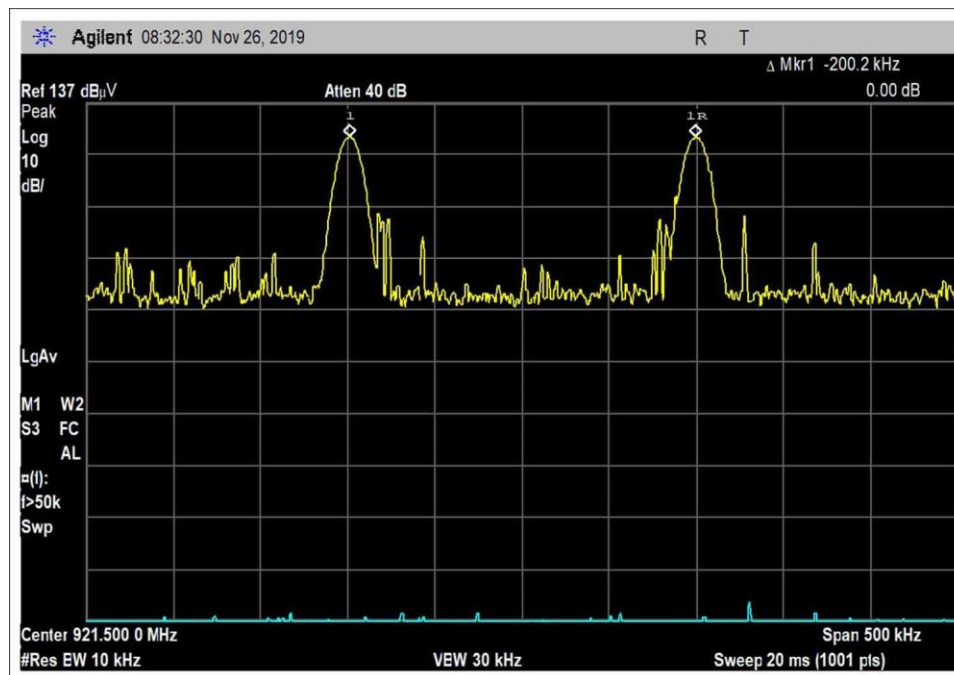


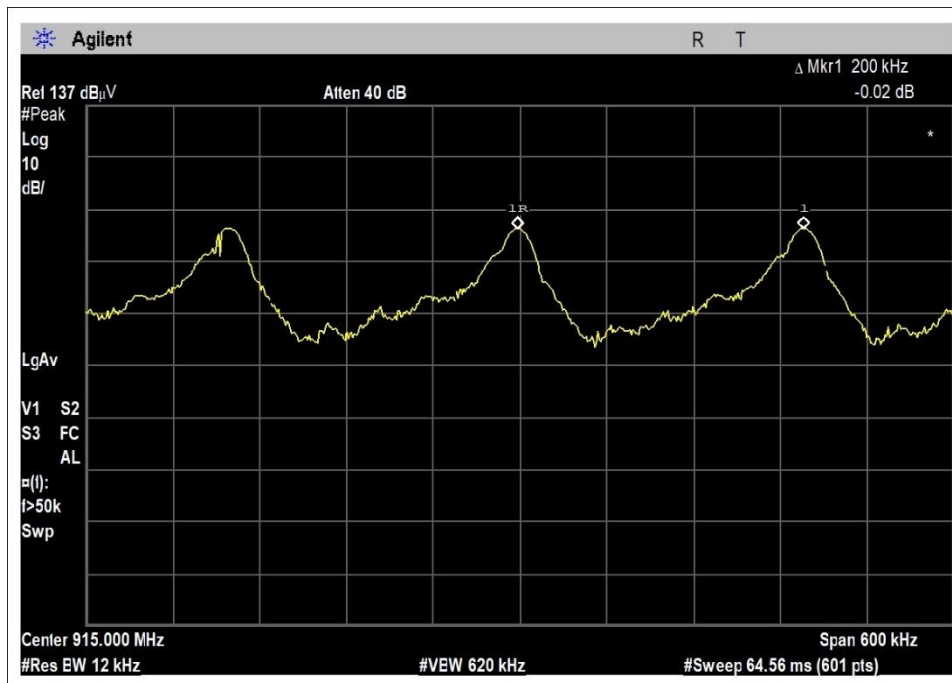
FM 37.5kbps High Channel

## 15.247(a)(1) Carrier Separation

| Test Data Summary             |                                |                |             |         |
|-------------------------------|--------------------------------|----------------|-------------|---------|
| Limit applied: minimum 25kHz. |                                |                |             |         |
| Antenna Port                  | Operational Mode               | Measured (kHz) | Limit (kHz) | Results |
| 1                             | Transmitting, FSK Channel Plan | 200.2          | >25         | Pass    |
| 1                             | Transmitting, AM Channel Plan  | 200.0          | >25         | Pass    |

## Plot(s)

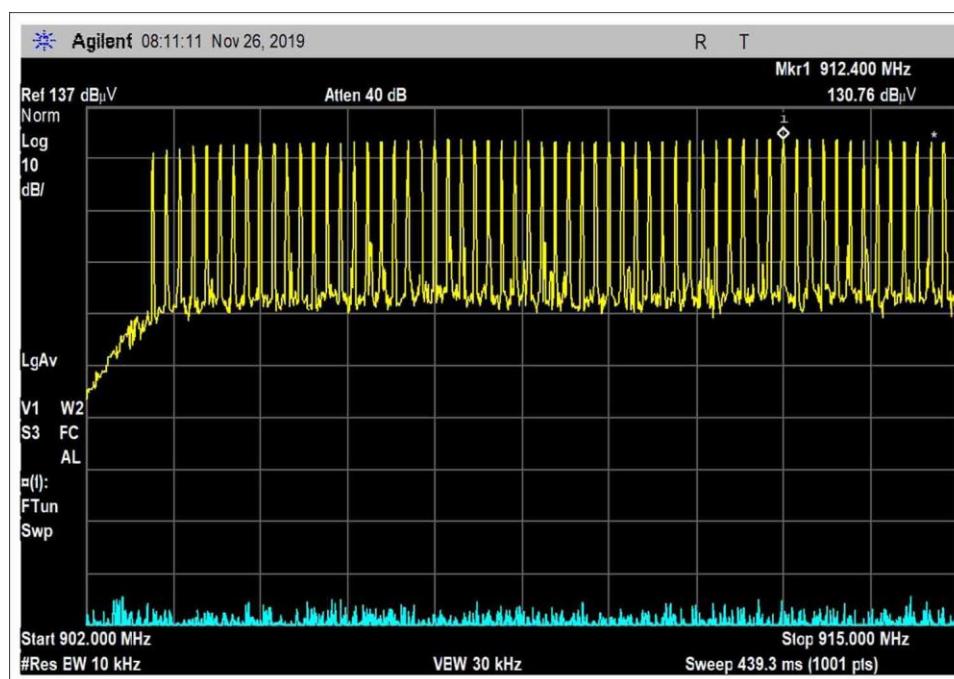


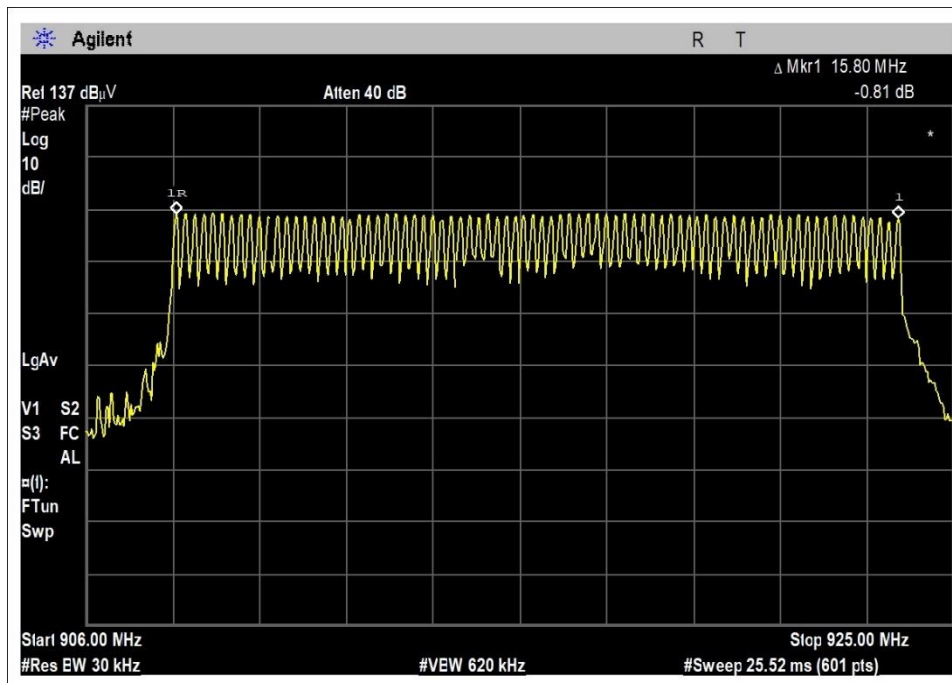
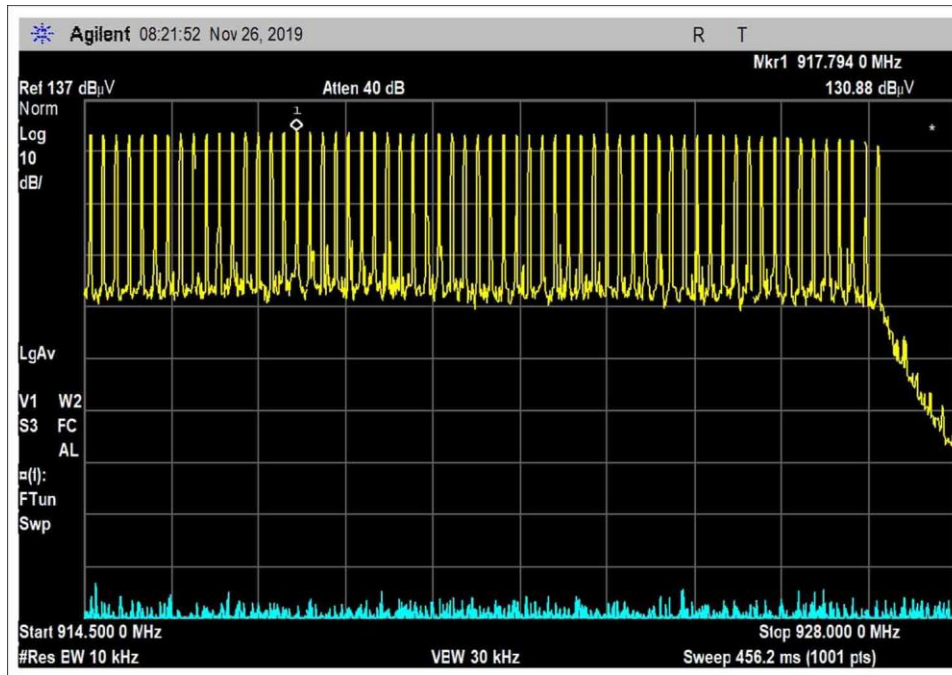


## 15.247(a)(1)(i) Number of Hopping Channels

| Test Data Summary                                                                                                                                                      |                                |                     |                  |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|------------------|---------|
| $\text{Limit} = \begin{cases} 50 \text{ Channels} &   20 \text{ dB BW} < 250 \text{ kHz} \\ 25 \text{ Channels} &   20 \text{ dB BW} \geq 250 \text{ kHz} \end{cases}$ |                                |                     |                  |         |
| Antenna Port                                                                                                                                                           | Operational Mode               | Measured (Channels) | Limit (Channels) | Results |
| 1                                                                                                                                                                      | Transmitting, FSK Channel Plan | 120                 | $\geq 25$        | Pass    |
| 1                                                                                                                                                                      | Transmitting, AM Channel Plan  | 80                  | $\geq 25$        | Pass    |

## Plot(s)





Test Setup Photo(s)



## 15.247(b)(1) Output Power

### Test Data Summary - Voltage Variations

| Frequency (MHz) | Modulation / Ant Port        | V <sub>Minimum</sub> (dBm) | V <sub>Nominal</sub> (dBm) | V <sub>Maximum</sub> (dBm) | Max Deviation from V <sub>Nominal</sub> (dB) |
|-----------------|------------------------------|----------------------------|----------------------------|----------------------------|----------------------------------------------|
| 903             | FSK 12.5kbps (worst case)/ 1 | 28.1                       | 28.3                       | 28.2                       | 0.2                                          |
| 915             | FSK 12.5kbps (worst case)/ 1 | 29.7                       | 29.7                       | 29.7                       | 0.0                                          |
| 926.8           | FSK 12.5kbps (worst case)/ 1 | 28.0                       | 27.9                       | 28.0                       | 0.1                                          |

Test performed using operational mode with the highest output power, representing worst case.

### Parameter Definitions:

Measurements performed at input voltage V<sub>Nominal</sub> ± 15%.

| Parameter              | Value |
|------------------------|-------|
| V <sub>Nominal</sub> : | 115   |
| V <sub>Minimum</sub> : | 98    |
| V <sub>Maximum</sub> : | 132   |

### Test Data Summary - RF Conducted Measurement

Configuration 1

Limit =  $\begin{cases} 30\text{dBm Conducted}/36\text{dBm EIRP} & | \geq 50 \text{ Channels} \\ 24\text{dBm Conducted}/30\text{dBm EIRP} & | < 50 \text{ Channels (min 25)} \end{cases}$

| Frequency (MHz) | Modulation / Ant Port        | Ant. Type / Gain (dBi) | Measured (dBm) | Limit (dBm) | Results |
|-----------------|------------------------------|------------------------|----------------|-------------|---------|
| 903             | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/5.5    | 28.3           | ≤30         | Pass    |
| 915             | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/5.5    | 29.7           | ≤30         | Pass    |
| 926.8           | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/5.5    | 27.9           | ≤30         | Pass    |

### Test Data Summary - RF Conducted Measurement

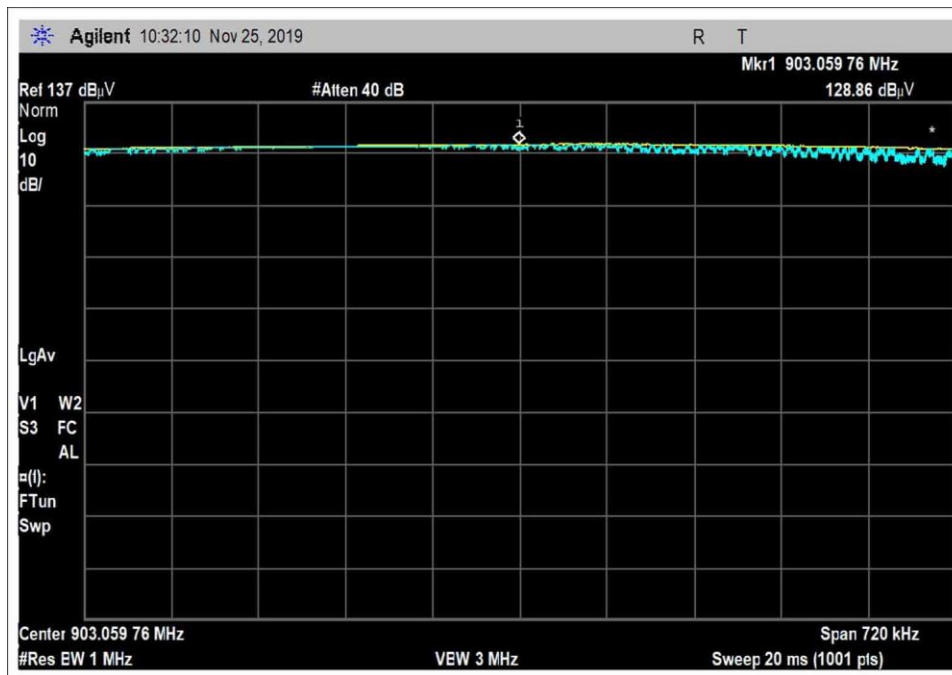
Configuration 2

Limit =  $\begin{cases} 30\text{dBm Conducted}/36\text{dBm EIRP} & | \geq 50 \text{ Channels} \\ 24\text{dBm Conducted}/30\text{dBm EIRP} & | < 50 \text{ Channels (min 25)} \end{cases}$

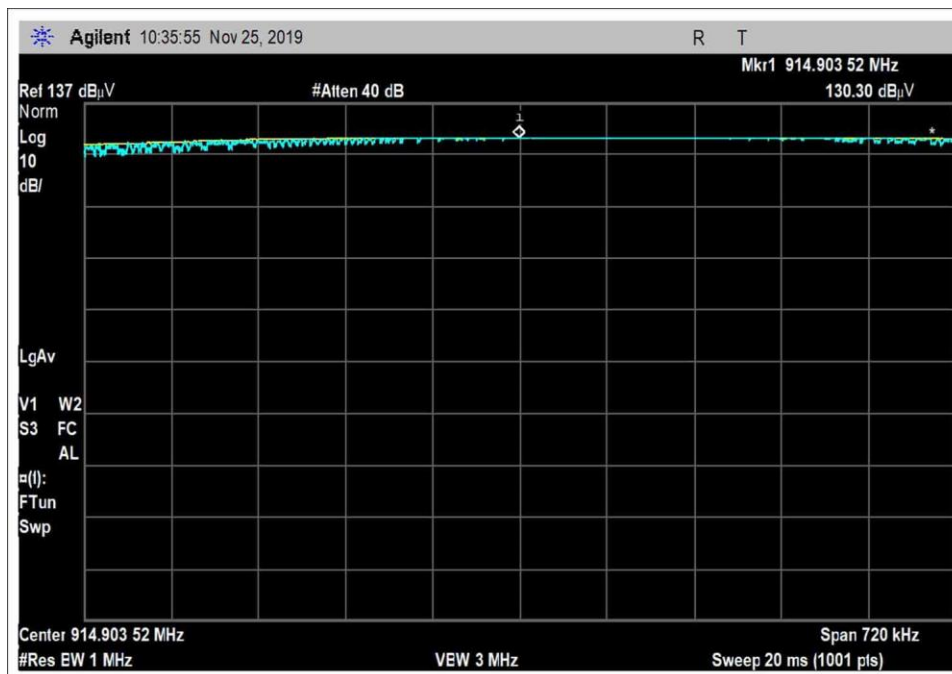
| Frequency (MHz) | Modulation / Ant Port        | Ant. Type / Gain (dBi) | Measured (dBm) | Limit (dBm) | Results |
|-----------------|------------------------------|------------------------|----------------|-------------|---------|
| 903             | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/8.15*  | 28.3           | ≤30         | Pass    |
| 915             | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/8.15*  | 29.7           | ≤30         | Pass    |
| 926.8           | FSK 12.5kbps (worst case)/ 1 | Omnidirectional/8.15*  | 27.9           | ≤30         | Pass    |

\*Manufacturer declares 2 dB of system loss via cable and attenuators to be attached before antenna

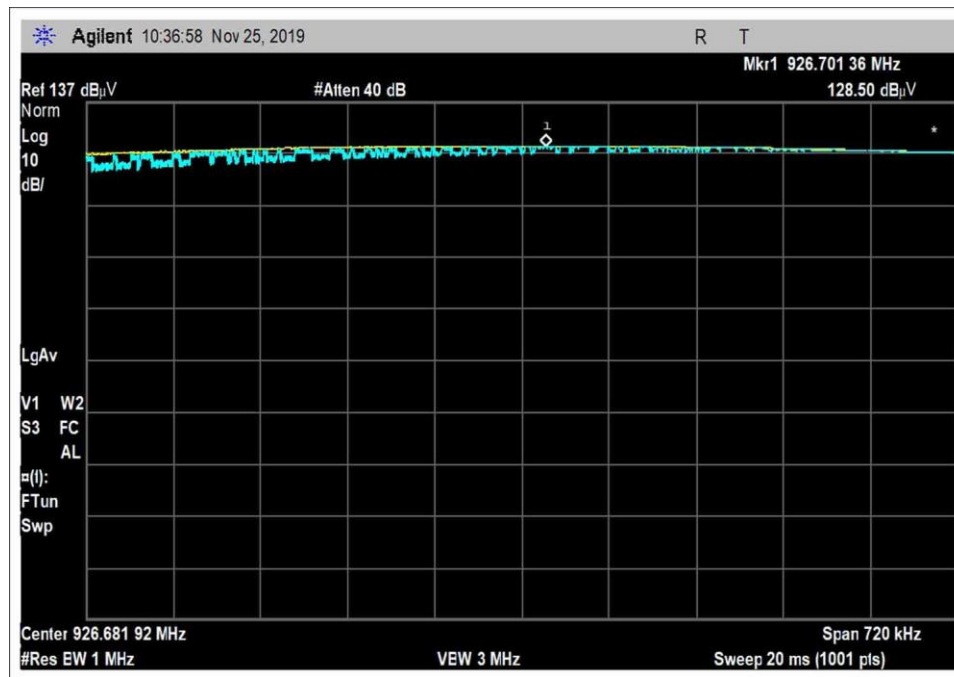
## Plots



Low Channel



Middle Channel



High Channel

## Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(b) Power Output (902-928 MHz DTS)**  
 Work Order #: **103221** Date: 11/25/2019  
 Test Type: **Conducted Emissions** Time: 10:36:17  
 Tested By: Matthew Harrison Sequence#: 19  
 Software: EMITest 5.03.12 120V 60Hz

### Equipment Tested:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

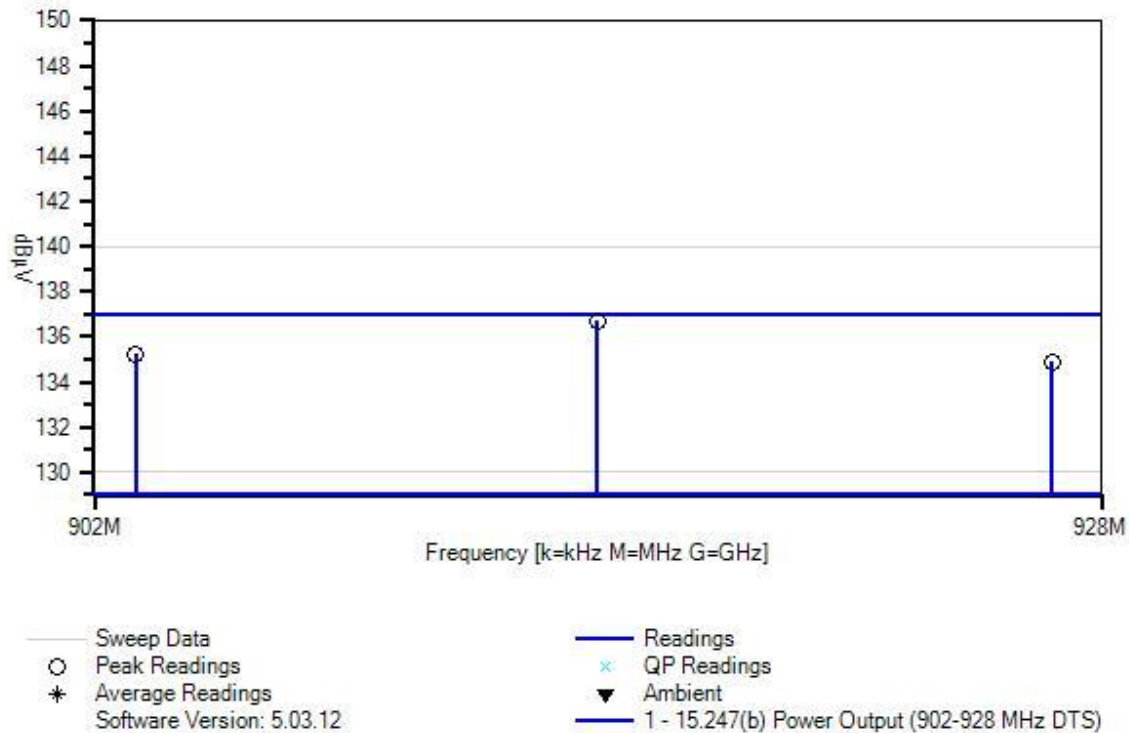
### Support Equipment:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

### Test Conditions / Notes:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 903-926.8MHz<br>Frequency tested: 903, 915, 926.8 MHz<br>Firmware power setting: Max<br><br>Antenna type: Omnidirectional<br>Antenna Gain: 5.5 dBi.<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br><br>The equipment under test (EUT) is placed on the tabletop. The output of the EUT is connected to the spectrum analyzer using a coaxial cable and attenuator. The EUT is transmitting at its rated output power.<br><br>Modification #1 and #2 were in place during testing. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WO#: 103221 Sequence#: 19 Date: 11/25/2019  
15.247(b) Power Output (902-928 MHz DTS) Test Lead: 120V 60Hz Antenna Port



#### Test Equipment:

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
|    | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

#### Measurement Data:

Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | dB | dB | Dist<br>Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----|----|---------------|--------------|--------------|--------------|--------------|
| 1 | 914.904M    | 130.3        | +5.9     | +0.5     |    |    | +0.0          | 136.7        | 137.0        | -0.3         | Anten        |
| 2 | 903.060M    | 128.9        | +5.9     | +0.5     |    |    | +0.0          | 135.3        | 137.0        | -1.7         | Anten        |
| 3 | 926.701M    | 128.5        | +5.9     | +0.5     |    |    | +0.0          | 134.9        | 137.0        | -2.1         | Anten        |



Test Setup Photo(s)



**15.35(c) Duty Cycle Correction Factor**

| Test Data Summary |                  |                                           |                    |
|-------------------|------------------|-------------------------------------------|--------------------|
| Antenna Port      | Operational Mode | Declared On Time (mS / P <sub>obs</sub> ) | Declared DCCF (dB) |
| 1                 | Normal           | 23.8                                      | 12.5               |

## 15.247(d) RF Conducted Emissions & Band Edge

### Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 11/25/2019  
 Test Type: **Conducted Emissions** Time: 1:03:56 PM  
 Tested By: Matthew Harrison Sequence#: 21  
 Software: EMITest 5.03.12 120V 60Hz

#### Equipment Tested:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

#### Support Equipment:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

#### Test Conditions / Notes:

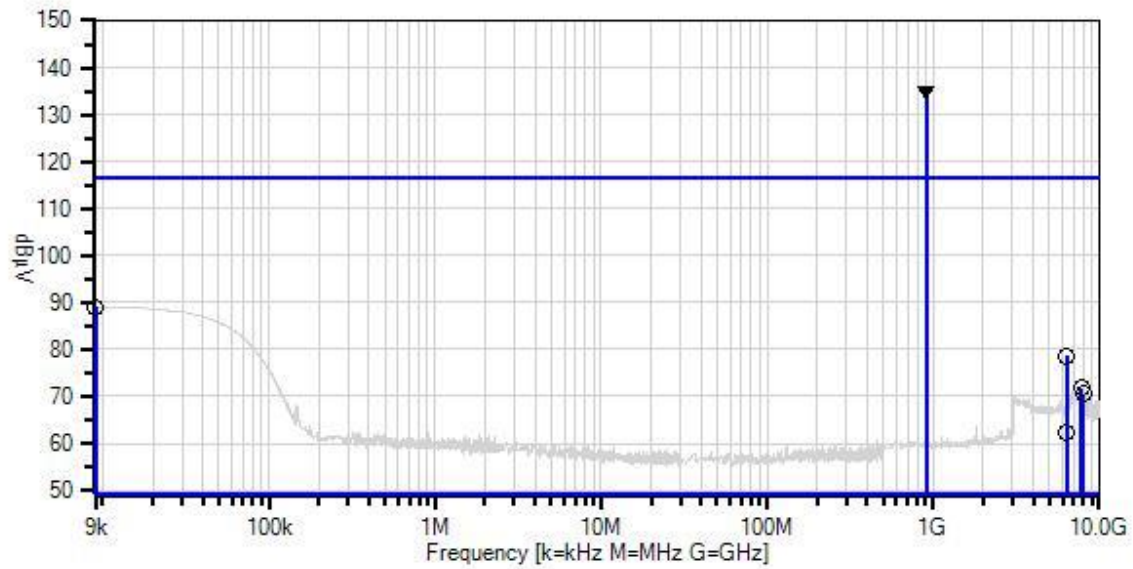
Temperature: 23° C  
 Humidity: 39%  
 Pressure: 101.1 kPa

Frequency Range: 9k-10GHz  
 Frequency tested: Low  
 Firmware power setting: Max  
 Modulation: FSK 12.5, FSK 37.5, and AM investigated, overall worst case spur reported for each, otherwise FSK 12.5k is representative of worst case.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013  
 Test Mode: Transmitting  
 Test Setup: EUT is setup in for conducted measurements.  
 Modifications #1 and #2 were in place during testing.

Itron, Inc. WD#: 103221 Sequence#: 21 Date: 11/25/2019  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



— Sweep Data  
○ Peak Readings  
\* Average Readings  
— Readings  
× QP Readings  
▼ Ambient  
— 1 - 15.247(d) Conducted Spurious Emissions  
Software Version: 5.03.12

**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Heliac   | 8/24/2018        | 8/24/2020    |
| T3 | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 905.936M    | 128.5        | +5.9     | +0.5     | +0.0     | +0.0       |       | 134.9        | 116.7        | +18.2        | Anten        |
|   | Ambient     |              |          |          |          |            |       |              |              |              |              |
| 2 | 9.000k      | 83.2         | +5.8     | +0.0     | +0.0     | +0.0       |       | 89.0         | 116.7        | -27.7        | Anten        |
| 3 | 6318.773M   | 70.8         | +6.1     | +1.8     | +0.0     | +0.0       |       | 78.7         | 116.7        | -38.0        | Anten        |
|   |             |              |          |          |          |            |       |              | 12k FSK      |              |              |
| 4 | 6319.400M   | 70.7         | +6.1     | +1.8     | +0.0     | +0.0       |       | 78.6         | 116.7        | -38.1        | Anten        |
|   |             |              |          |          |          |            |       |              | 37.5k FSK    |              |              |
| 5 | 7742.040M   | 63.0         | +6.3     | +2.5     | +0.0     | +0.0       |       | 71.8         | 116.7        | -44.9        | Anten        |
|   |             |              |          |          |          |            |       |              | 12k FSK      |              |              |
| 6 | 8001.269M   | 61.8         | +6.3     | +2.5     | +0.0     | +0.0       |       | 70.6         | 116.7        | -46.1        | Anten        |
|   |             |              |          |          |          |            |       |              | 12k FSK      |              |              |
| 7 | 6356.010M   | 54.4         | +6.1     | +1.8     | +0.0     | +0.0       |       | 62.3         | 116.7        | -54.4        | Anten        |
|   |             |              |          |          |          |            |       |              | AM           |              |              |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 11/25/2019  
 Test Type: **Conducted Emissions** Time: 1:42:19 PM  
 Tested By: Matthew Harrison Sequence#: 22  
 Software: EMITest 5.03.12 120V 60Hz

***Equipment Tested:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

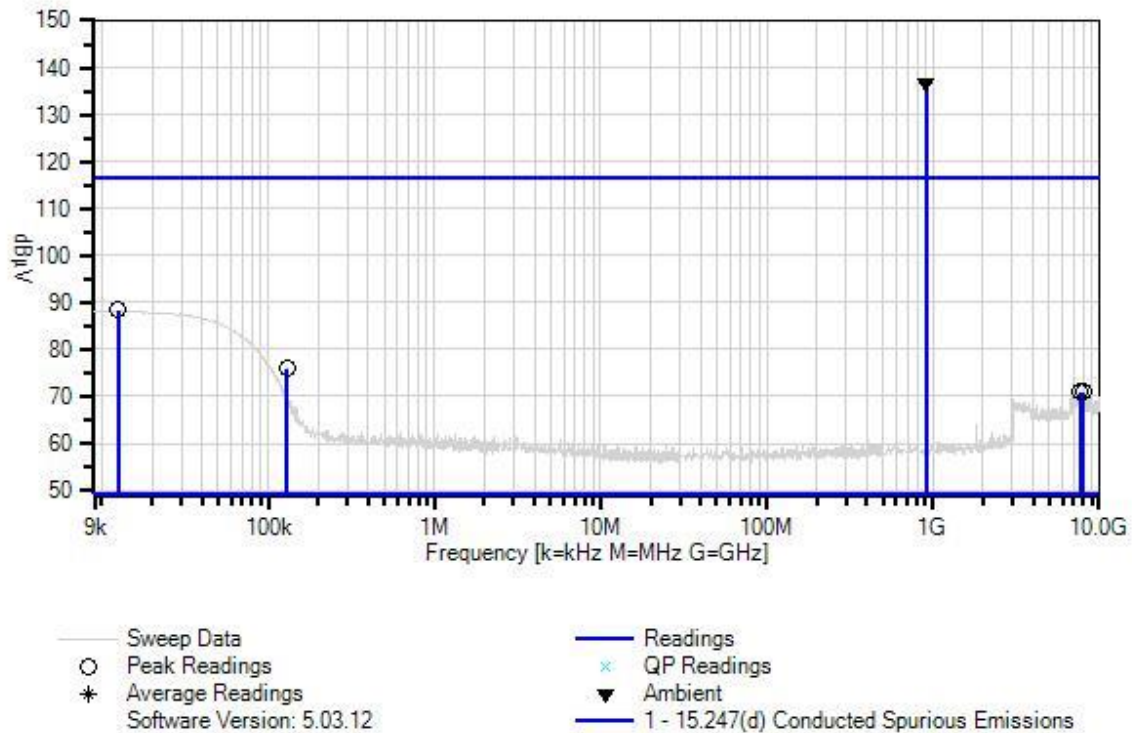
***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Test Conditions / Notes:***

|                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 9kHz-10GHz<br>Frequency tested: 915 MHz<br>Firmware power setting: Max<br><br>Antenna type: Omnidirectional<br>Antenna Gain: 5.5 dBi.<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup for conducted measurements.<br><br>Modification #1 and #2 were in place during testing. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WD#: 103221 Sequence#: 22 Date: 11/25/2019  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
| T3 | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 913.311M    | 130.3        | +5.9     | +0.5     | +0.0     | +0.0       | 136.7 | 116.7        | +20.0        | Anten        |              |
|   | Ambient     |              |          |          |          |            |       |              |              |              |              |
| 2 | 12.553k     | 82.5         | +5.8     | +0.0     | +0.0     | +0.0       | 88.3  | 116.7        | -28.4        | Anten        |              |
|   |             |              |          |          |          |            |       |              |              |              |              |
| 3 | 130.370k    | 70.2         | +5.8     | +0.0     | +0.0     | +0.0       | 76.0  | 116.7        | -40.7        | Anten        |              |
|   |             |              |          |          |          |            |       |              |              |              |              |

|   |           |      |      |      |      |      |      |       |       |       |
|---|-----------|------|------|------|------|------|------|-------|-------|-------|
| 4 | 7653.547M |      |      |      | +0.0 | +0.0 | 71.0 | 116.7 | -45.7 | Anten |
|   |           | 62.2 | +6.3 | +2.5 |      |      |      |       |       |       |
| 5 | 7988.429M |      |      |      | +0.0 | +0.0 | 71.0 | 116.7 | -45.7 | Anten |
|   |           | 62.2 | +6.3 | +2.5 |      |      |      |       |       |       |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 11/25/2019  
 Test Type: **Conducted Emissions** Time: 1:53:24 PM  
 Tested By: Matthew Harrison Sequence#: 23  
 Software: EMITest 5.03.12 120V 60Hz

***Equipment Tested:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

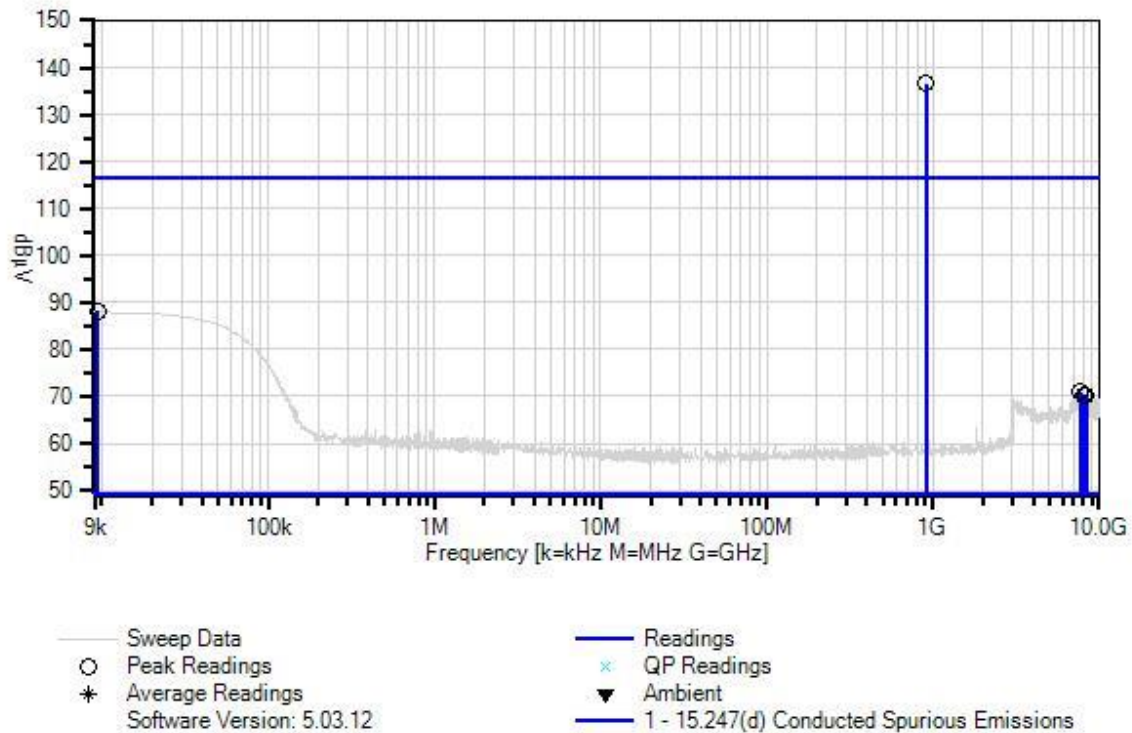
***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Test Conditions / Notes:***

|                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 9kHz-10GHz<br>Frequency tested: 926.8 MHz<br>Firmware power setting: Max<br><br>Antenna type: Omnidirectional<br>Antenna Gain: 5.5 dBi.<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup for conducted measurements.<br><br>Modification #1 and #2 were in place during testing. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WD#: 103221 Sequence#: 23 Date: 11/25/2019  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
|    | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | dB | dB | Dist<br>Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----|----|---------------|--------------|--------------|--------------|--------------|
| 1 | 913.311M    | 130.2        | +5.9     | +0.5     |    |    | +0.0          | 136.6        | 116.7        | +19.9        | Anten        |
| 2 | 9.410k      | 82.3         | +5.8     | +0.0     |    |    | +0.0          | 88.1         | 116.7        | -28.6        | Anten        |
| 3 | 7734.665M   | 62.2         | +6.3     | +2.5     |    |    | +0.0          | 71.0         | 116.7        | -45.7        | Anten        |

|   |           |      |      |      |      |      |       |       |       |
|---|-----------|------|------|------|------|------|-------|-------|-------|
| 4 | 8022.669M |      |      |      | +0.0 | 70.4 | 116.7 | -46.3 | Anten |
|   |           | 61.6 | +6.3 | +2.5 |      |      |       |       |       |
| 5 | 8288.025M |      |      |      | +0.0 | 70.4 | 116.7 | -46.3 | Anten |
|   |           | 61.6 | +6.3 | +2.5 |      |      |       |       |       |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 12/13/2019  
 Test Type: **Conducted Emissions** Time: 09:47:11  
 Tested By: Michael Atkinson Sequence#: 34  
 Software: EMITest 5.03.12 120V 60Hz

***Equipment Tested:***

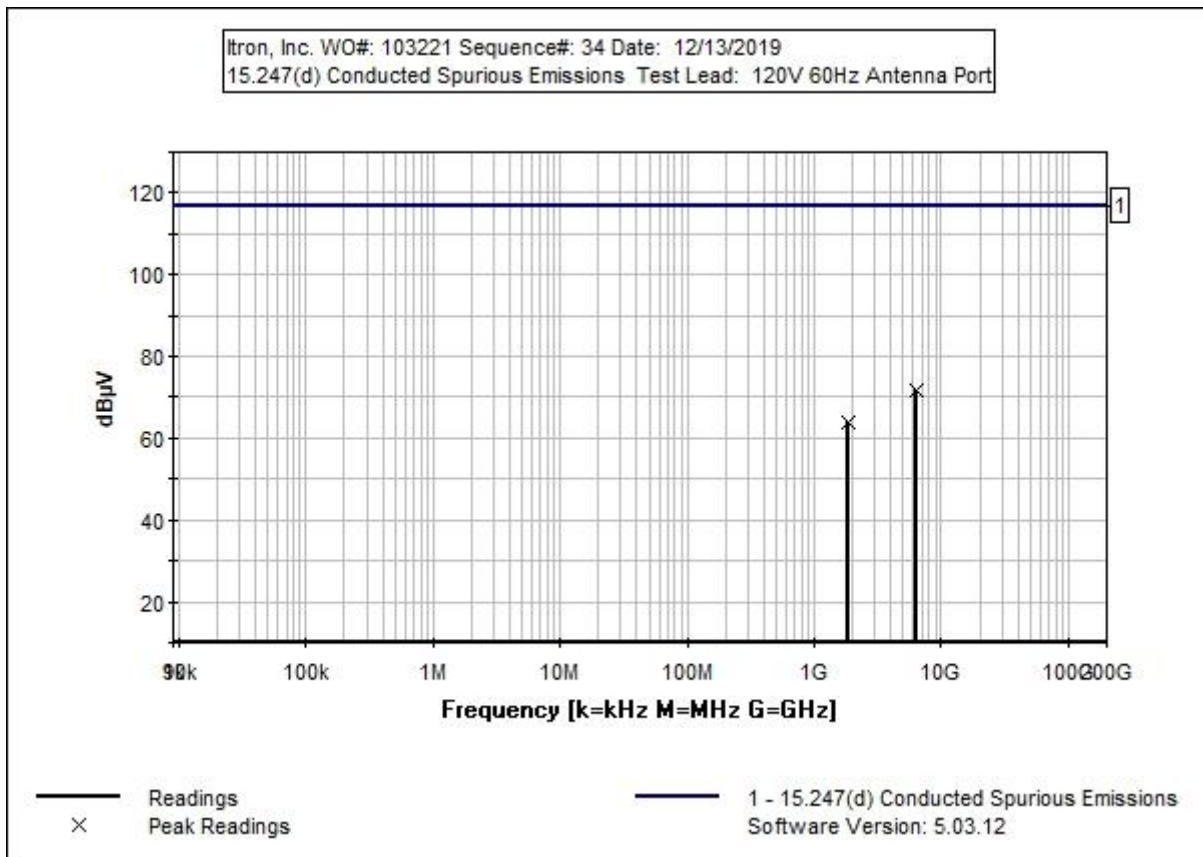
| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Test Conditions / Notes:***

|                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 9kHz-10GHz<br>Frequency tested: Hopping<br>Firmware power setting: Max<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup for conducted measurements.<br><br>Modification #1 and #2 were in place during testing. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
|    | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | Dist<br>dB | Corr<br>dB | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|------------|------------|--------------|--------------|--------------|
| 1 | 6341.410M   | 63.7         | +6.1     | +1.8     | +0.0       | 71.6       | 116.7        | -45.1        | Anten        |
| 2 | 1836.190M   | 57.0         | +5.9     | +0.9     | +0.0       | 63.8       | 116.7        | -52.9        | Anten        |

## Band Edge

### Band Edge Summary

Limit applied: Max Power/100kHz - 20dB.

Operating Mode: Single Channel (Low and High)

| Frequency (MHz) | Modulation | Measured (dBm) | Limit (dBm) | Results |
|-----------------|------------|----------------|-------------|---------|
| 902             | FM 12.5k   | -8.8           | <9.7        | Pass    |
| 928             | FM 12.5k   | -22            | <9.7        | Pass    |
| 902             | FM 37.5k   | -12.3          | <9.7        | Pass    |
| 928             | FM 37.5k   | -25.2          | <9.7        | Pass    |
| 902             | AM         | -24            | <9.7        | Pass    |
| 928             | AM         | -26.6          | <9.7        | Pass    |

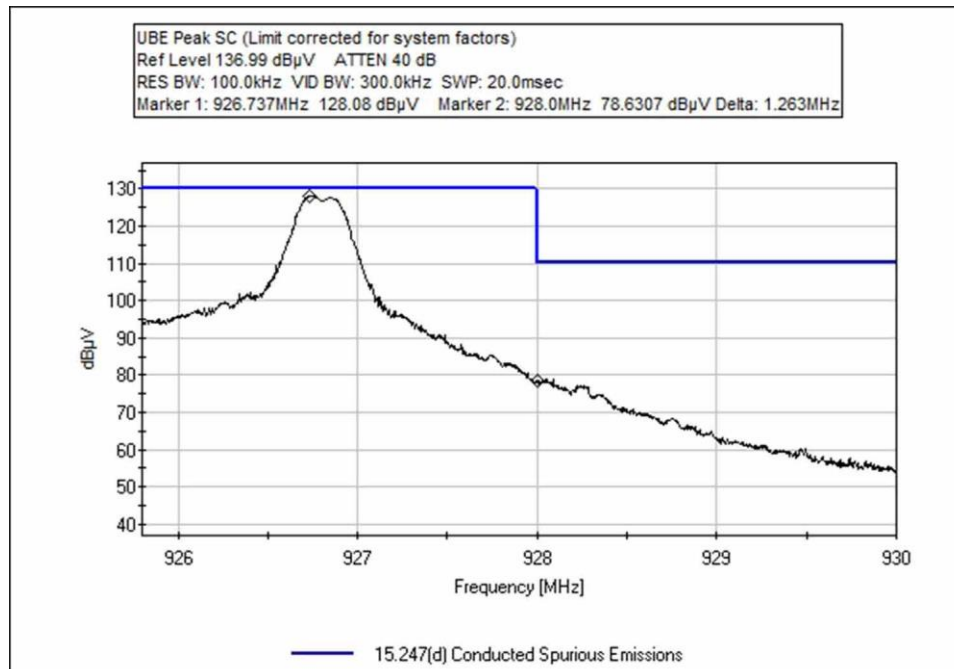
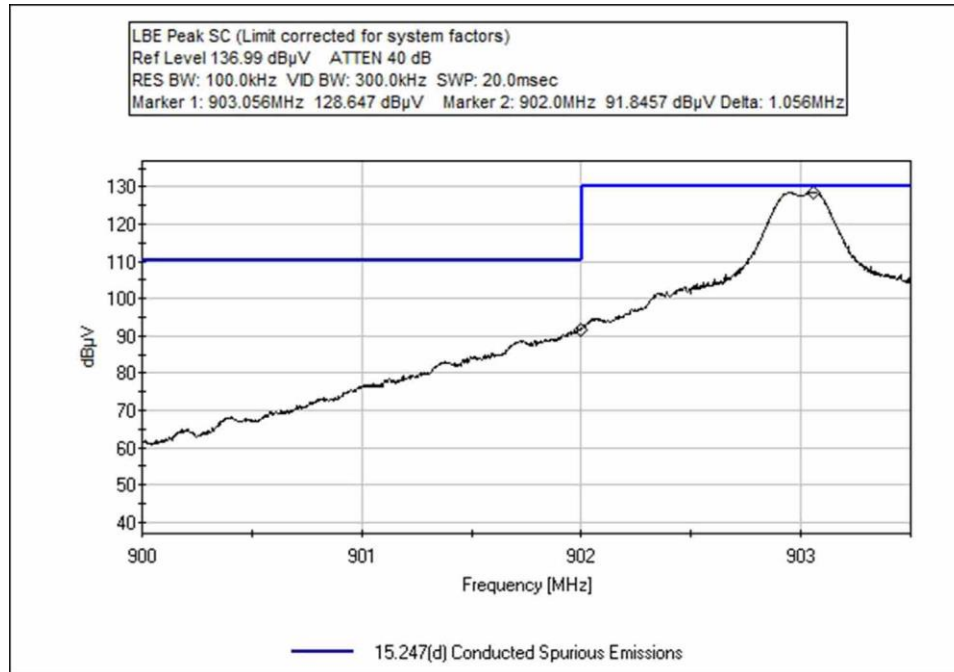
### Band Edge Summary

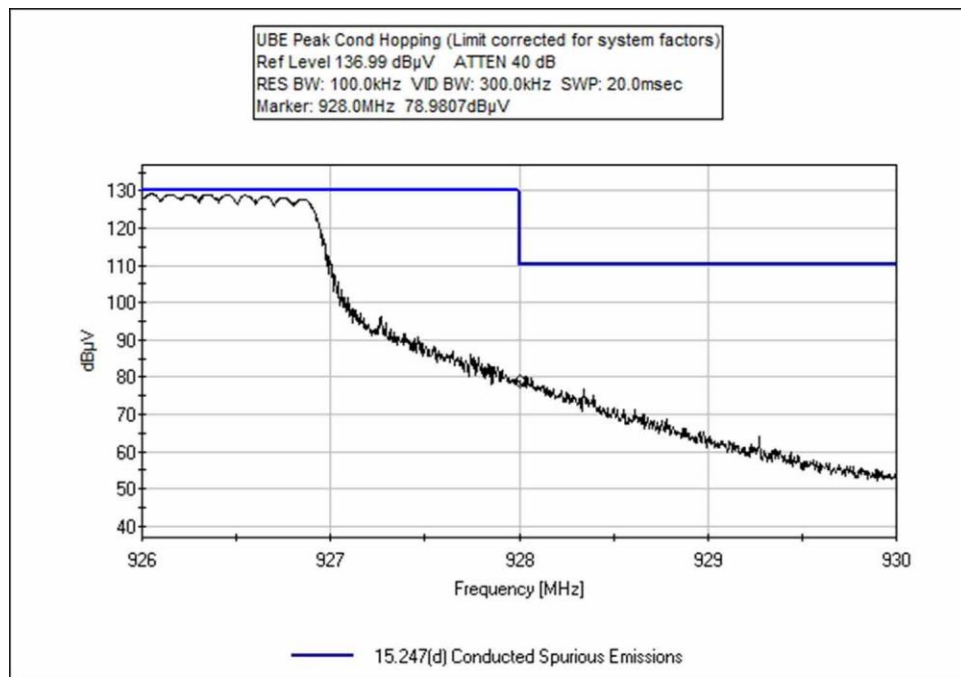
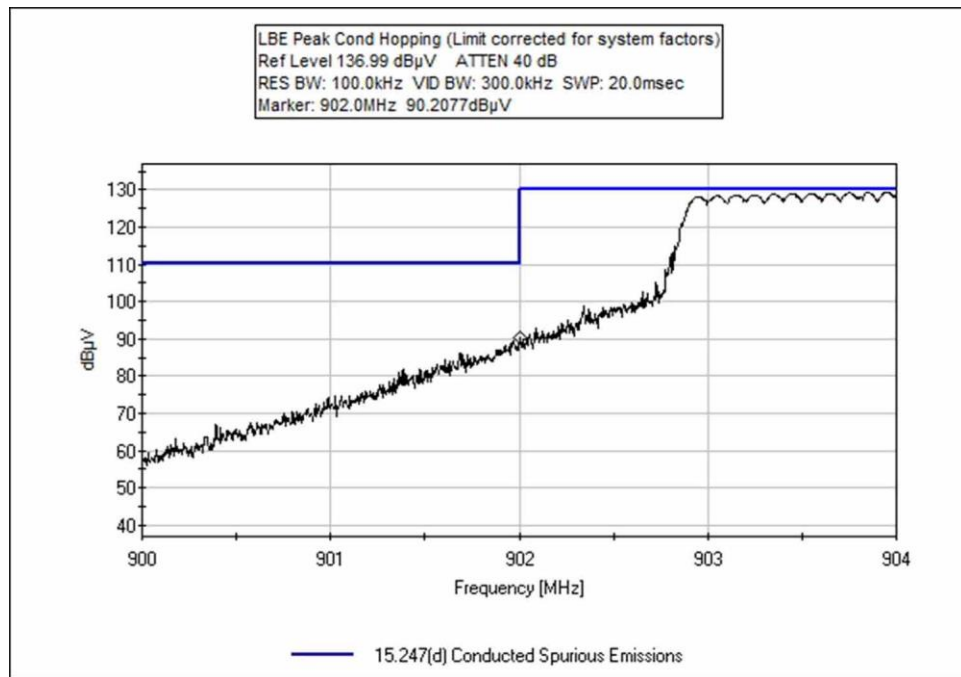
Limit applied: Max Power/100kHz - 20dB.

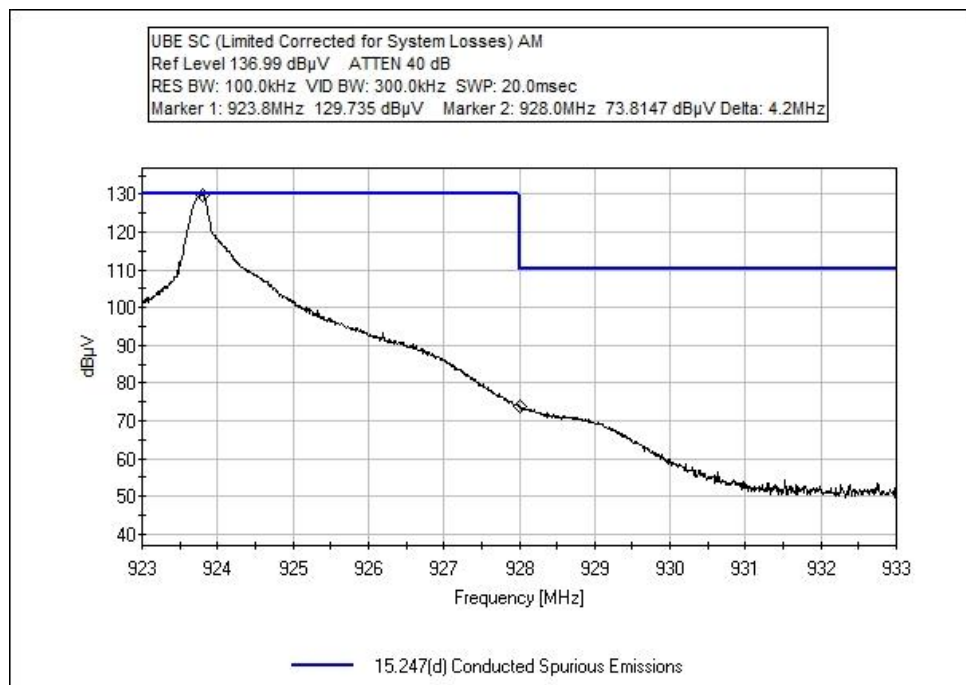
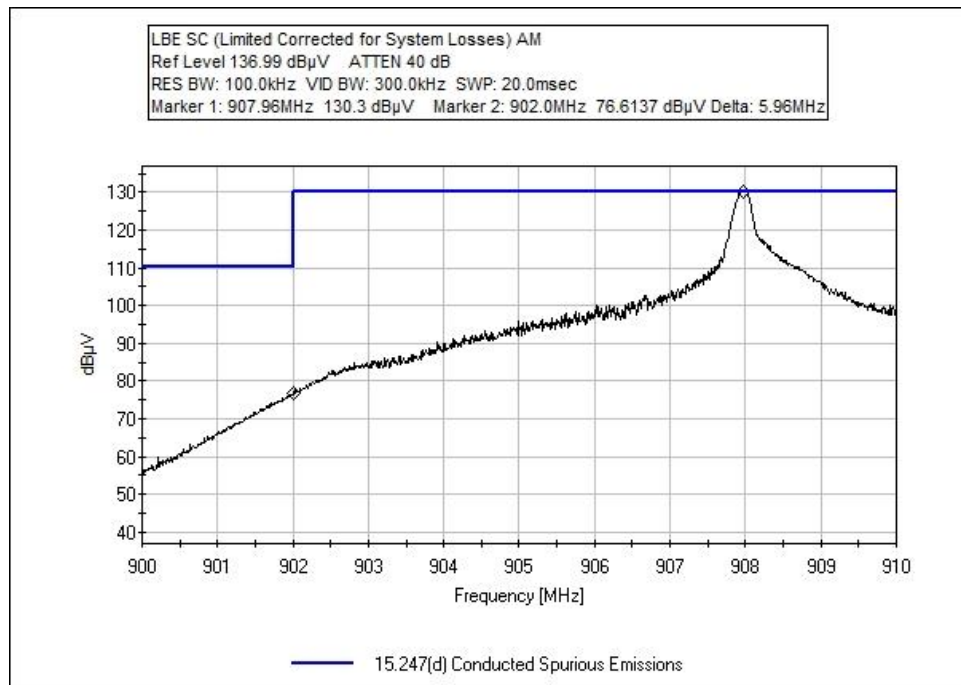
Operating Mode: Hopping

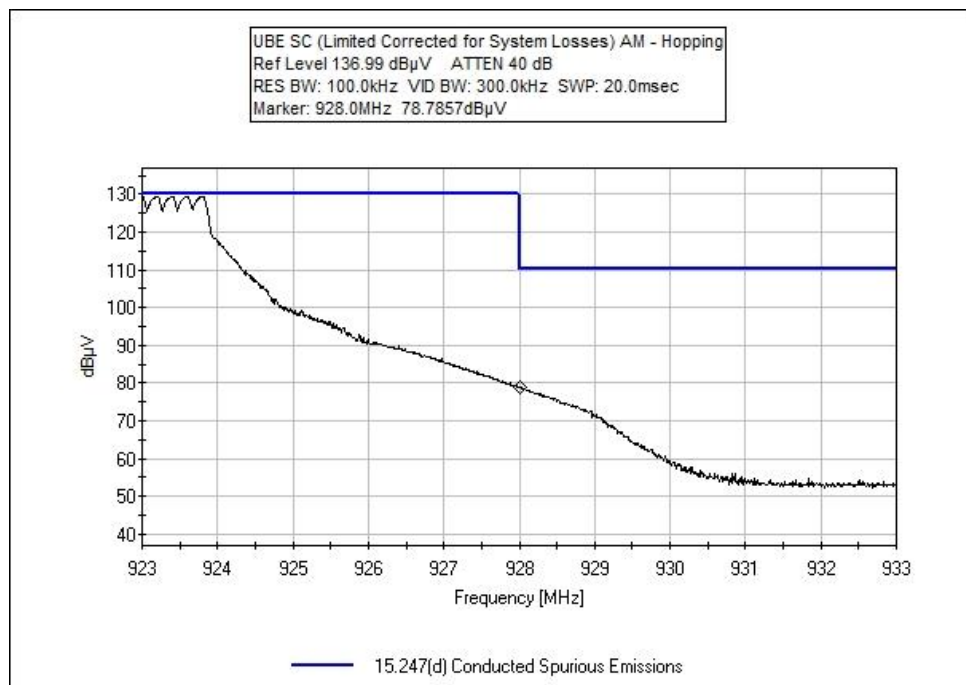
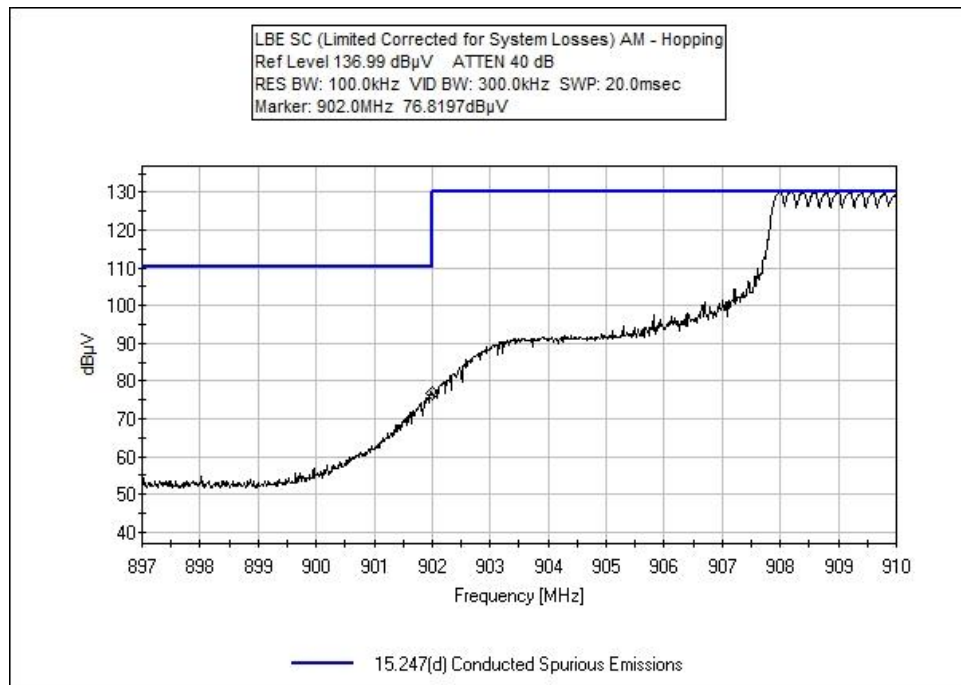
| Frequency (MHz) | Modulation | Measured (dBm) | Limit (dBm) | Results |
|-----------------|------------|----------------|-------------|---------|
| 902             | FM 12.5k   | -10.4          | <9.7        | Pass    |
| 928             | FM 12.5k   | -21.6          | <9.7        | Pass    |
| 902             | FM 37.5k   | -13.9          | <9.7        | Pass    |
| 928             | FM 37.5k   | -26.4          | <9.7        | Pass    |
| 902             | AM         | -23.8          | <9.7        | Pass    |
| 928             | AM         | -21.8          | <9.7        | Pass    |

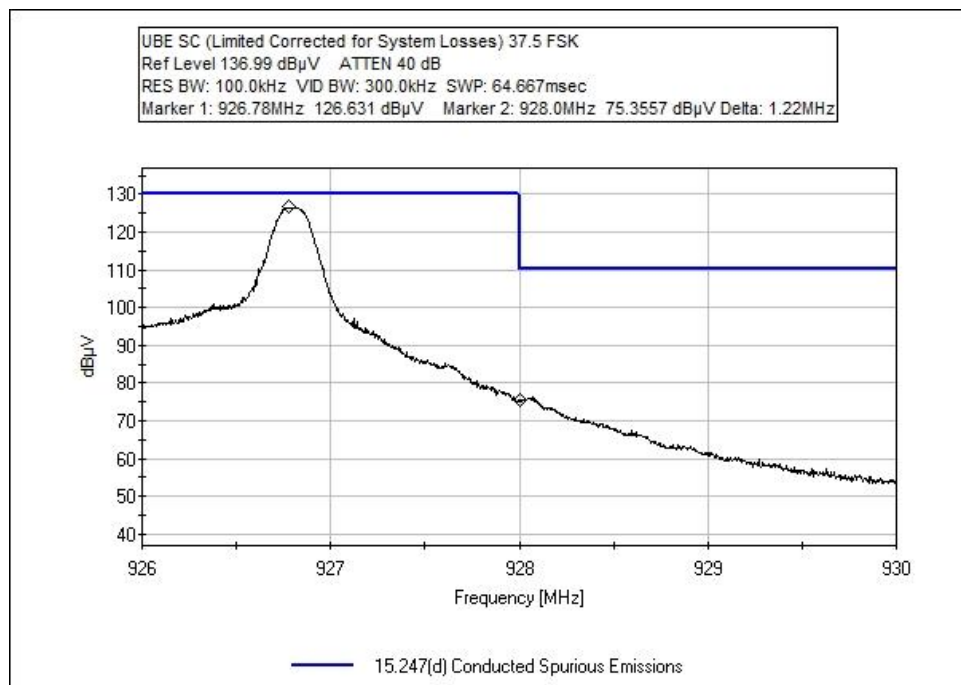
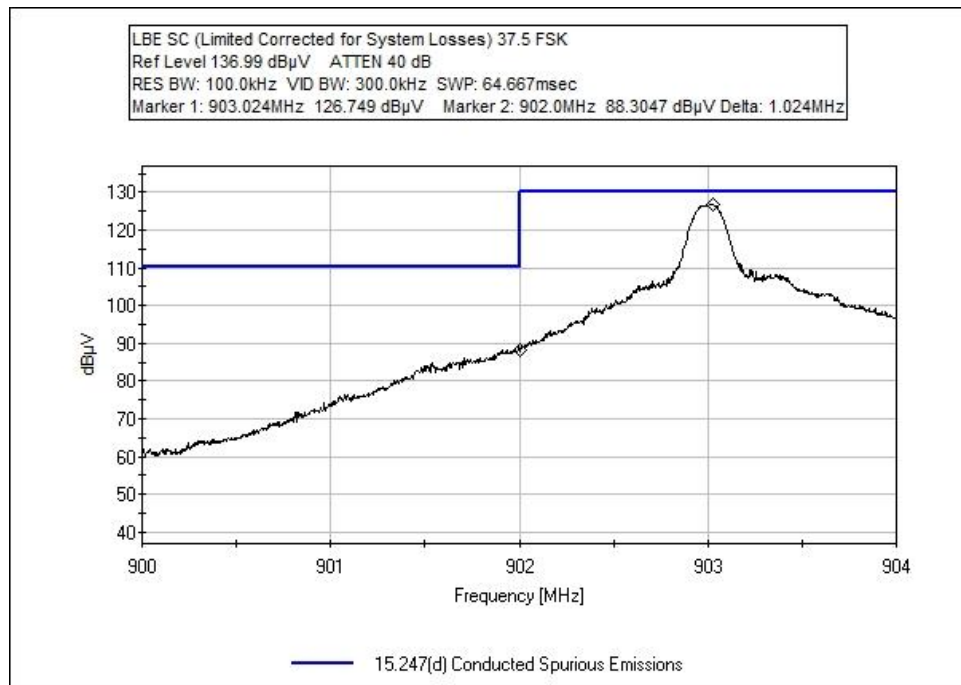
## Band Edge Plots

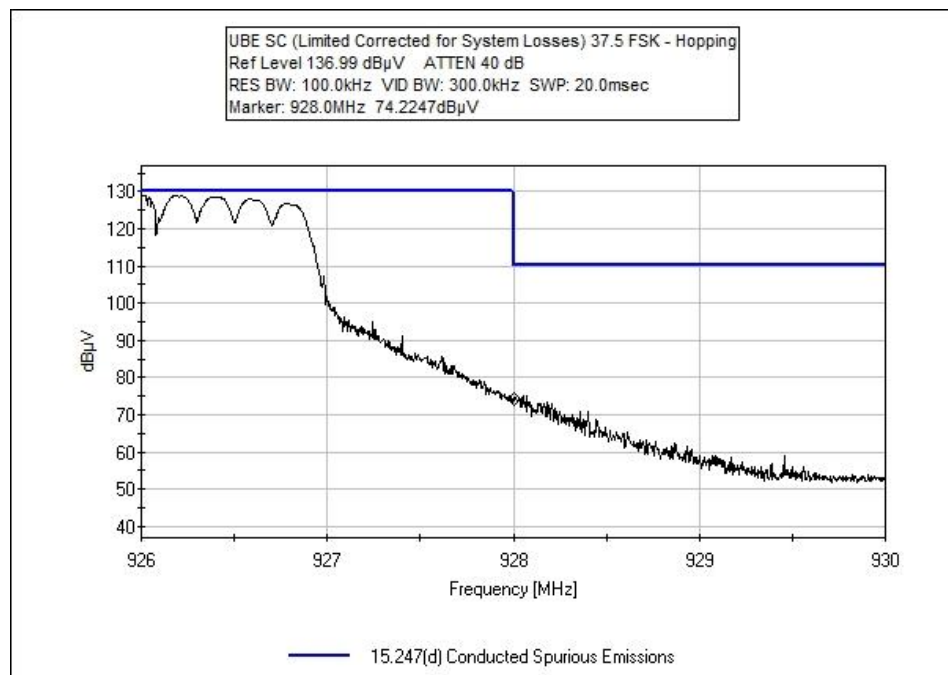
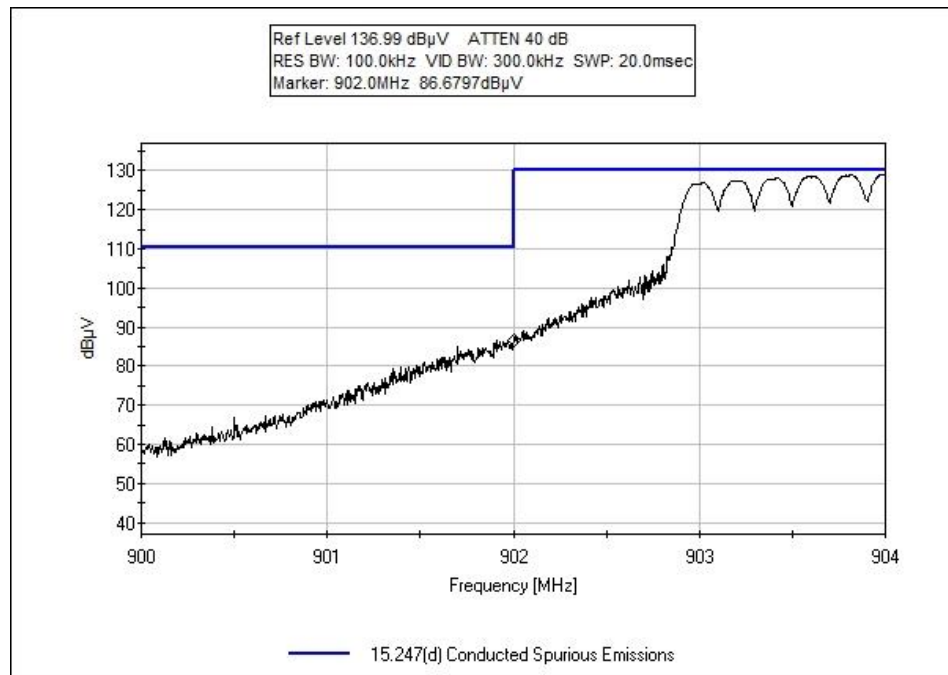












### Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 12/13/2019  
 Test Type: **Conducted Emissions** Time: 09:38:08  
 Tested By: Michael Atkinson Sequence#: 24  
 Software: EMITest 5.03.12 120V 60Hz

#### *Equipment Tested:*

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

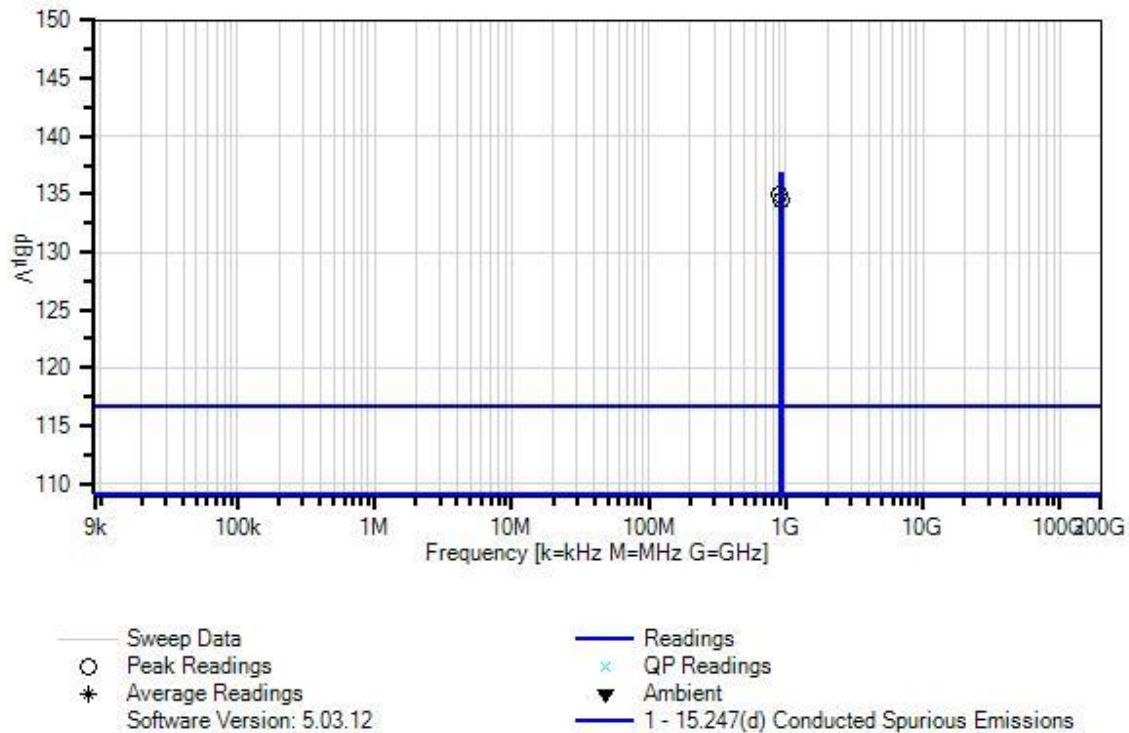
#### *Support Equipment:*

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

#### *Test Conditions / Notes:*

|                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 900-930MHz<br>Frequency tested: 903, 926.8 MHz<br>Firmware power setting: Max<br>Modulation: FSK 12.5k<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup in for conducted measurements.<br><br>Modification #1 and #2 were in place during testing. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WD#: 103221 Sequence#: 24 Date: 12/13/2019  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
| T3 | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 903.056M    | 128.6        | +5.9     | +0.5     | +0.0     | +0.0       |       | 135.0        | 136.7        | -1.7         | Anten        |
| 2 | 926.737M    | 128.1        | +5.9     | +0.5     | +0.0     | +0.0       |       | 134.5        | 136.7        | -2.2         | Anten        |
| 3 | 902.000M    | 91.8         | +5.9     | +0.5     | +0.0     | +0.0       |       | 98.2         | 116.7        | -18.5        | Anten        |

|   |          |      |      |      |      |      |      |         |       |       |
|---|----------|------|------|------|------|------|------|---------|-------|-------|
| 4 | 902.000M |      |      |      | +0.0 | +0.0 | 96.6 | 116.7   | -20.1 | Anten |
|   |          | 90.2 | +5.9 | +0.5 |      |      |      |         |       |       |
|   |          |      |      |      |      |      |      | Hopping |       |       |
| 5 | 928.000M |      |      |      | +0.0 | +0.0 | 85.4 | 116.7   | -31.3 | Anten |
|   |          | 79.0 | +5.9 | +0.5 |      |      |      |         |       |       |
|   |          |      |      |      |      |      |      | Hopping |       |       |
| 6 | 928.000M |      |      |      | +0.0 | +0.0 | 85.0 | 116.7   | -31.7 | Anten |
|   |          | 78.6 | +5.9 | +0.5 |      |      |      |         |       |       |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) Conducted Spurious Emissions**  
 Work Order #: **103221** Date: 4/29/2020  
 Test Type: **Conducted Emissions** Time: 15:24:27  
 Tested By: Michael Atkinson Sequence#: 24  
 Software: EMITest 5.03.12 120V 60Hz

***Equipment Tested:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

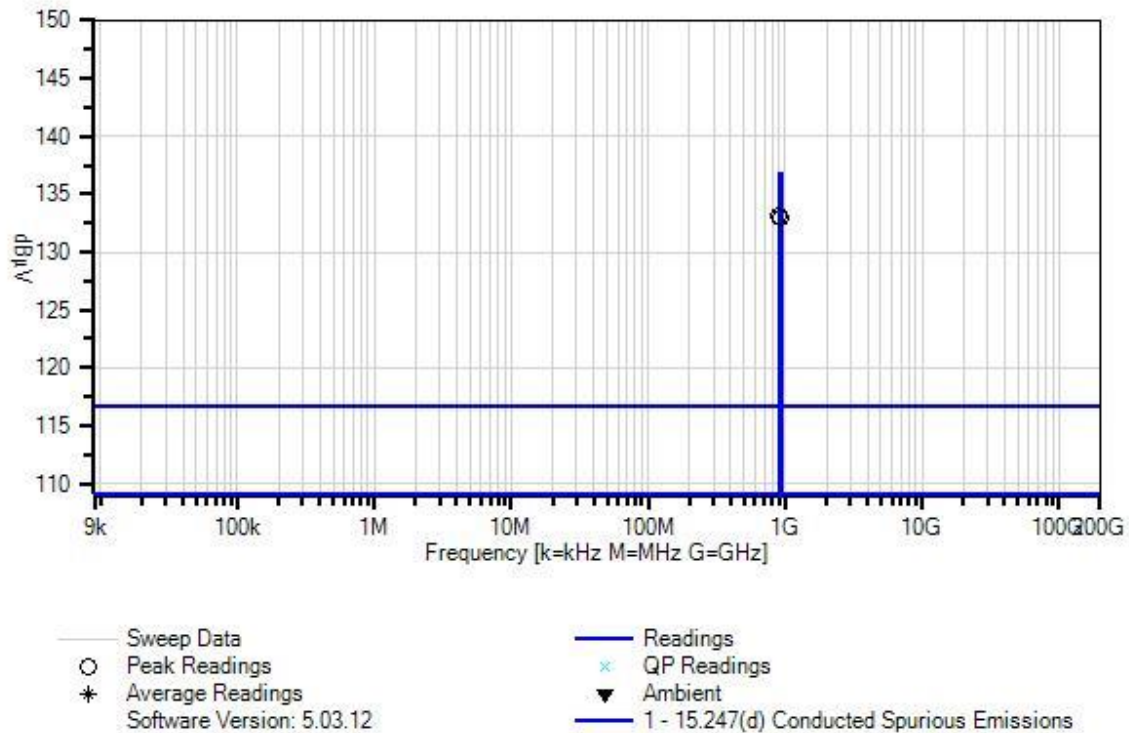
***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Test Conditions / Notes:***

|                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 900-930MHz<br>Frequency tested: 903, 926.8 MHz<br>Firmware power setting: Max<br>Modulation: FSK 37.5k<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup in for conducted measurements.<br>Modification #1 and #2 were in place during testing. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WD#: 103221 Sequence#: 24 Date: 4/29/2020  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
| T3 | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| # | Freq<br>MHz | Rdng<br>dBuV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBuV | Spec<br>dBuV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 903.024M    | 126.7        | +5.9     | +0.5     | +0.0     | +0.0       |       | 133.1        | 136.7        | -3.6         | Anten        |
| 2 | 926.780M    | 126.6        | +5.9     | +0.5     | +0.0     | +0.0       |       | 133.0        | 136.7        | -3.7         | Anten        |
| 3 | 902.000M    | 88.3         | +5.9     | +0.5     | +0.0     | +0.0       |       | 94.7         | 116.7        | -22.0        | Anten        |

|         |          |      |      |      |      |      |      |       |       |       |
|---------|----------|------|------|------|------|------|------|-------|-------|-------|
| 4       | 902.000M | 86.7 | +5.9 | +0.5 | +0.0 | +0.0 | 93.1 | 116.7 | -23.6 | Anten |
| Hopping |          |      |      |      |      |      |      |       |       |       |
| 5       | 928.000M | 75.4 | +5.9 | +0.5 | +0.0 | +0.0 | 81.8 | 116.7 | -34.9 | Anten |
| Hopping |          |      |      |      |      |      |      |       |       |       |
| 6       | 928.000M | 74.2 | +5.9 | +0.5 | +0.0 | +0.0 | 80.6 | 116.7 | -36.1 | Anten |
| Hopping |          |      |      |      |      |      |      |       |       |       |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362

Customer: **Itron, Inc.**

Specification: **15.247(d) Conducted Spurious Emissions**

Work Order #: **103221**

Date: 4/29/2020

Test Type: **Conducted Emissions**

Time: 15:50:02

Tested By: Michael Atkinson

Sequence#: 25

Software: EMITest 5.03.12

120V 60Hz

***Equipment Tested:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

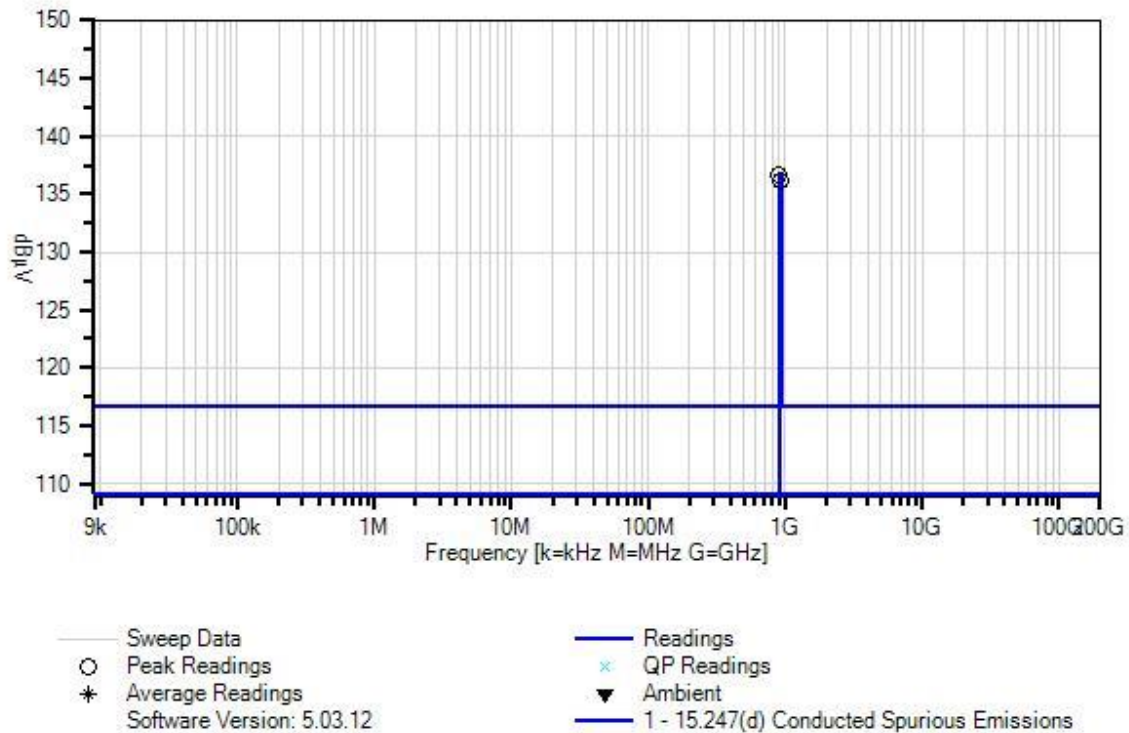
***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

***Test Conditions / Notes:***

|                                                         |
|---------------------------------------------------------|
| Temperature: 23° C                                      |
| Humidity: 39%                                           |
| Pressure: 101.1 kPa                                     |
| Frequency Range: 900-930MHz                             |
| Frequency tested: 908, 923.8 MHz                        |
| Firmware power setting: Max                             |
| Modulation: AM                                          |
| Duty Cycle: 100% Modulated                              |
| Test Method: ANSI C63.10: 2013                          |
| Test Mode: Transmitting                                 |
| Test Setup: EUT is setup in for conducted measurements. |
| Modification #1 and #2 were in place during testing.    |

Itron, Inc. WO#: 103221 Sequence#: 25 Date: 4/29/2020  
15.247(d) Conducted Spurious Emissions Test Lead: 120V 60Hz Antenna Port



**Test Equipment:**

| ID | Asset #  | Description       | Model    | Calibration Date | Cal Due Date |
|----|----------|-------------------|----------|------------------|--------------|
| T1 | ANP07227 | Attenuator        | PE7004-6 | 10/2/2019        | 10/2/2021    |
| T2 | ANP05546 | Cable             | Helix    | 8/24/2018        | 8/24/2020    |
| T3 | AN02871  | Spectrum Analyzer | E4440A   | 10/15/2019       | 10/15/2021   |

**Measurement Data:** Reading listed by margin.

Test Lead: Antenna Port

| #       | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Anten |
|---------|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|----------------|
| 1       | 907.960M    | 130.3        | +5.9     | +0.5     | +0.0     | +0.0       |       | 136.7        | 136.7        | +0.0         | Anten          |
| 2       | 923.800M    | 129.7        | +5.9     | +0.5     | +0.0     | +0.0       |       | 136.1        | 136.7        | -0.6         | Anten          |
| 3       | 928.000M    | 78.8         | +5.9     | +0.5     | +0.0     | +0.0       |       | 85.2         | 116.7        | -31.5        | Anten          |
| Hopping |             |              |          |          |          |            |       |              |              |              |                |

|         |          |      |      |      |      |      |      |       |       |       |
|---------|----------|------|------|------|------|------|------|-------|-------|-------|
| 4       | 902.000M | 76.8 | +5.9 | +0.5 | +0.0 | +0.0 | 83.2 | 116.7 | -33.5 | Anten |
| Hopping |          |      |      |      |      |      |      |       |       |       |
| 5       | 902.000M | 76.6 | +5.9 | +0.5 | +0.0 | +0.0 | 83.0 | 116.7 | -33.7 | Anten |
| 6       | 928.000M | 74.0 | +5.9 | +0.5 | +0.0 | +0.0 | 80.4 | 116.7 | -36.3 | Anten |

### Test Setup Photo(s)



## 15.247(d) Radiated Emissions & Band Edge

### Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**  
 Work Order #: **103221** Date: 4/29/2020  
 Test Type: **Radiated Scan** Time: 16:17:40  
 Tested By: Matthew Harrison Sequence#: 11  
 Software: EMITest 5.03.12

#### Equipment Tested:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

#### Support Equipment:

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 |              |         |     |

#### Test Conditions / Notes:

Temperature: 23° C  
 Humidity: 39%  
 Pressure: 101.1 kPa

Frequency Range: 9kHz-10GHz  
 Frequency tested: Low, Mid High  
 Firmware power setting: Max  
 Modulation: FSK 12.5, FSK 37.5, and AM investigated, overall worst case reported. Worst case spur for each modulation type noted in table. This antenna configuration also worst produced worst case spurs compared to 8.15dBi configuration.

Antenna type: Omnidirectional  
 Antenna Gain: 5.5 dBi.

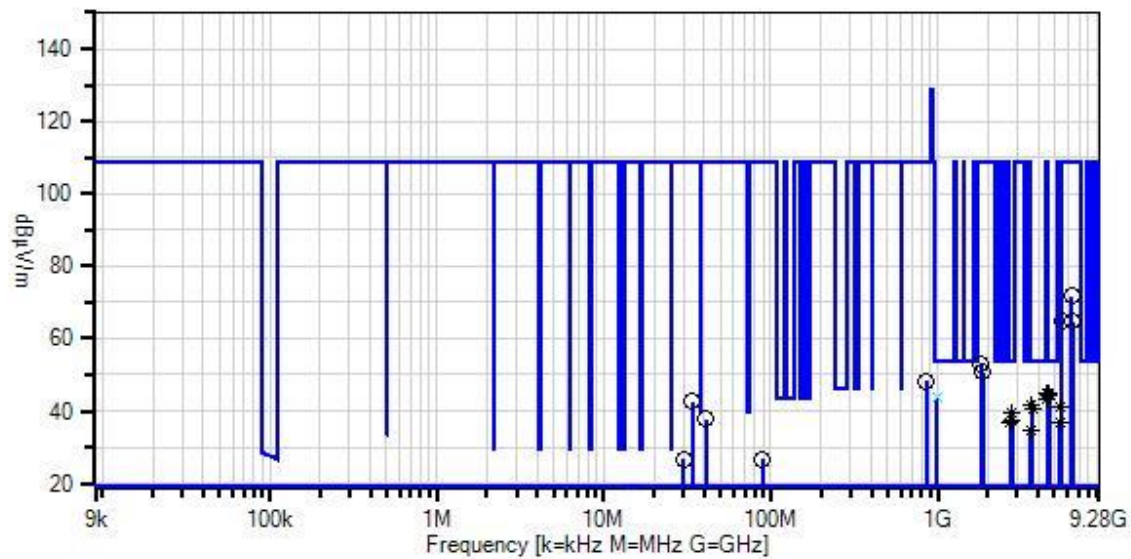
Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013  
 Test Mode: Transmitting  
 Test Setup: EUT is setup in a tabletop configuration on a Styrofoam table.  
 Below 1GHz set 80cm high.  
 Above 1GHz set 1.5m high

Co-Location testing was performed with Wi-Fi, Cell, and FHSS radios transmitting simultaneously in both CCU100C and CCU100RC configurations.

Modification #1 and #2 were in place during testing.

Itron, Inc. WO#: 103221 Sequence#: 11 Date: 4/29/2020  
 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert



— Sweep Data  
 ○ Peak Readings  
 \* Average Readings  
 Software Version: 5.03.12

— Readings  
 × QP Readings  
 ▼ Ambient  
 — 1 - 15.247(d) / 15.209 Radiated Spurious Emissions

**Test Equipment:**

| ID  | Asset #  | Description                                | Model                 | Calibration Date | Cal Due Date |
|-----|----------|--------------------------------------------|-----------------------|------------------|--------------|
| T1  | AN02307  | Preamp                                     | 8447D                 | 1/15/2018        | 1/15/2020    |
| T2  | AN03628  | Biconilog Antenna                          | 3142E                 | 6/11/2019        | 6/11/2021    |
| T3  | ANP06123 | Attenuator                                 | 18N-6                 | 4/5/2019         | 4/5/2021     |
| T4  | ANP05305 | Cable                                      | ETSI-50T              | 9/6/2019         | 9/6/2021     |
| T5  | ANP05360 | Cable                                      | RG214                 | 1/31/2018        | 1/31/2020    |
| T6  | ANP06540 | Cable                                      | Heliac                | 8/23/2019        | 8/23/2021    |
| T7  | AN02673  | Spectrum Analyzer                          | E4446A                | 2/22/2019        | 2/22/2021    |
| T8  | AN00052  | Loop Antenna                               | 6502                  | 5/7/2018         | 5/7/2020     |
| T9  | ANP06515 | Cable                                      | Heliac                | 6/29/2018        | 6/29/2020    |
| T10 | AN03540  | Preamp                                     | 83017A                | 5/13/2019        | 5/13/2021    |
| T11 | AN01467  | Horn Antenna-<br>ANSI C63.5<br>Calibration | 3115                  | 7/5/2019         | 7/5/2021     |
| T12 | ANP07504 | Cable                                      | CLU40-KMKM-<br>02.00F | 1/17/2019        | 1/17/2021    |
| T13 | ANP06242 | Attenuator                                 | 54A-10                | 3/13/2018        | 3/13/2020    |
| T14 | AN03170  | High Pass Filter                           | HM1155-11SS           | 10/23/2019       | 10/23/2021   |
| T15 | ANDCCF   | Duty Cycle<br>Correction Factor            | Multiple              | 10/1/2019        | 10/1/2021    |

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

| # | Freq      | Rdng | T1   | T2    | T3    | T4   | Dist  | Corr   | Spec      | Margin | Polar |
|---|-----------|------|------|-------|-------|------|-------|--------|-----------|--------|-------|
|   |           |      | T5   | T6    | T7    | T8   |       |        |           |        |       |
|   |           |      | T9   | T10   | T11   | T12  |       |        |           |        |       |
|   |           |      | T13  | T14   | T15   |      |       |        |           |        |       |
|   | MHz       | dBμV | dB   | dB    | dB    | dB   | Table | dBμV/m | dBμV/m    | dB     | Ant   |
| 1 | 4514.910M |      |      |       | +0.0  | +0.0 | +0.0  | 45.0   | 54.0      | -9.0   | Vert  |
|   |           | 43.4 | +0.0 | +0.0  | +0.0  | +0.0 |       |        |           |        |       |
|   | Ave       |      | +0.0 | +0.9  | +31.8 | +0.7 |       |        | 37.5k FSK |        |       |
|   |           |      | +3.9 | -33.7 | +12.5 |      |       |        |           |        |       |
|   |           |      | +9.9 | +0.6  |       |      |       |        |           |        |       |
| 2 | 4575.000M |      |      |       | +0.0  | +0.0 | +0.0  | 44.8   | 54.0      | -9.2   | Vert  |
|   |           | 43.0 | +0.0 | +0.0  | +0.0  | +0.0 |       |        |           |        |       |
|   | Ave       |      | +0.0 | +0.9  | +31.9 | +0.7 |       |        |           |        |       |
|   |           |      | +4.0 | -33.7 | +12.5 |      |       |        |           |        |       |
|   |           |      | +9.9 | +0.6  |       |      |       |        |           |        |       |
| ^ | 4575.000M |      |      |       | +0.0  | +0.0 | +0.0  | 62.9   | 54.0      | +8.9   | Vert  |
|   |           | 48.6 | +0.0 | +0.0  | +0.0  | +0.0 |       |        |           |        |       |
|   |           |      | +0.0 | +0.9  | +31.9 | +0.7 |       |        |           |        |       |
|   |           |      | +4.0 | -33.7 | +0.0  |      |       |        |           |        |       |
|   |           |      | +9.9 | +0.6  |       |      |       |        |           |        |       |

|    |           |      |      |       |       |      |      |          |       |       |
|----|-----------|------|------|-------|-------|------|------|----------|-------|-------|
| 4  | 4634.350M |      |      | +0.0  | +0.0  | +0.0 | 44.2 | 54.0     | -9.8  | Vert  |
|    |           | 42.2 | +0.0 | +0.0  | +0.0  |      |      |          |       |       |
|    | Ave       |      | +0.0 | +0.9  | +32.1 | +0.6 |      |          |       |       |
|    |           |      | +4.0 | -33.6 | +12.5 |      |      |          |       |       |
|    |           |      | +9.9 | +0.6  |       |      |      |          |       |       |
| ^  | 4634.350M |      |      | +0.0  | +0.0  | +0.0 | 64.3 | 54.0     | +10.3 | Vert  |
|    |           | 49.8 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +0.0 | +0.9  | +32.1 | +0.6 |      |          |       |       |
|    |           |      | +4.0 | -33.6 | +0.0  |      |      |          |       |       |
|    |           |      | +9.9 | +0.6  |       |      |      |          |       |       |
| 6  | 991.310M  |      | -    | +5.9  | +1.5  | +0.0 | 43.7 | 54.0     | -10.3 | Horiz |
|    |           | 35.8 | 27.0 | +25.0 | +0.0  | +0.0 |      |          |       |       |
|    | QP        |      | +2.1 | +0.4  | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +0.0 | +0.0  | +0.0  |      |      |          |       |       |
|    |           |      | +0.0 | +0.0  |       |      |      |          |       |       |
| ^  | 991.310M  |      | -    | +5.9  | +1.5  | +0.0 | 49.1 | 54.0     | -4.9  | Horiz |
|    |           | 41.2 | 27.0 | +25.0 | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +2.1 | +0.4  | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +0.0 | +0.0  | +0.0  |      |      |          |       |       |
|    |           |      | +0.0 | +0.0  |       |      |      |          |       |       |
| 8  | 4540.010M |      |      | +0.0  | +0.0  | +0.0 | 43.2 | 54.0     | -10.8 | Vert  |
|    |           | 41.5 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    | Ave       |      | +0.0 | +0.9  | +31.9 | +0.7 |      | AM       |       |       |
|    |           |      | +3.9 | -33.7 | +12.5 |      |      |          |       |       |
|    |           |      | +9.9 | +0.6  |       |      |      |          |       |       |
| 9  | 4514.930M |      |      | +0.0  | +0.0  | +0.0 | 43.1 | 54.0     | -10.9 | Vert  |
|    |           | 41.5 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    | Ave       |      | +0.0 | +0.9  | +31.8 | +0.7 |      | 12.5 FSK |       |       |
|    |           |      | +3.9 | -33.7 | +12.5 |      |      |          |       |       |
|    |           |      | +9.9 | +0.6  |       |      |      |          |       |       |
| ^  | 4514.910M |      |      | +0.0  | +0.0  | +0.0 | 63.9 | 54.0     | +9.9  | Vert  |
|    |           | 49.8 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +0.0 | +0.9  | +31.8 | +0.7 |      |          |       |       |
|    |           |      | +3.9 | -33.7 | +0.0  |      |      |          |       |       |
|    |           |      | +9.9 | +0.6  |       |      |      |          |       |       |
| 11 | 3660.020M |      |      | +0.0  | +0.0  | +0.0 | 41.5 | 54.0     | -12.5 | Vert  |
|    |           | 41.9 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    | Ave       |      | +0.0 | +0.9  | +30.5 | +0.5 |      |          |       |       |
|    |           |      | +3.7 | -33.7 | +12.5 |      |      |          |       |       |
|    |           |      | +9.7 | +0.5  |       |      |      |          |       |       |
| ^  | 3660.020M |      |      | +0.0  | +0.0  | +0.0 | 60.2 | 54.0     | +6.2  | Vert  |
|    |           | 48.1 | +0.0 | +0.0  | +0.0  | +0.0 |      |          |       |       |
|    |           |      | +0.0 | +0.9  | +30.5 | +0.5 |      |          |       |       |
|    |           |      | +3.7 | -33.7 | +0.0  |      |      |          |       |       |
|    |           |      | +9.7 | +0.5  |       |      |      |          |       |       |

|    |           |      |      |       |       |      |      |      |      |       |      |
|----|-----------|------|------|-------|-------|------|------|------|------|-------|------|
| 13 | 3707.030M |      |      |       | +0.0  | +0.0 | +0.0 | 40.5 | 54.0 | -13.5 | Vert |
|    |           | 40.7 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    | Ave       |      | +0.0 | +0.9  | +30.6 | +0.5 |      |      |      |       |      |
|    |           |      | +3.8 | -33.7 | +12.5 |      |      |      |      |       |      |
|    |           |      | +9.7 | +0.5  |       |      |      |      |      |       |      |
| ^  | 3707.030M |      |      |       | +0.0  | +0.0 | +0.0 | 60.7 | 54.0 | +6.7  | Vert |
|    |           | 48.4 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    |           |      | +0.0 | +0.9  | +30.6 | +0.5 |      |      |      |       |      |
|    |           |      | +3.8 | -33.7 | +0.0  |      |      |      |      |       |      |
|    |           |      | +9.7 | +0.5  |       |      |      |      |      |       |      |
| 15 | 2780.520M |      |      |       | +0.0  | +0.0 | +0.0 | 39.7 | 54.0 | -14.3 | Vert |
|    |           | 44.0 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    | Ave       |      | +0.0 | +0.7  | +28.5 | +0.2 |      |      |      |       |      |
|    |           |      | +2.6 | -34.1 | +12.5 |      |      |      |      |       |      |
|    |           |      | +9.9 | +0.4  |       |      |      |      |      |       |      |
| ^  | 2780.520M |      |      |       | +0.0  | +0.0 | +0.0 | 57.9 | 54.0 | +3.9  | Vert |
|    |           | 49.7 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    |           |      | +0.0 | +0.7  | +28.5 | +0.2 |      |      |      |       |      |
|    |           |      | +2.6 | -34.1 | +0.0  |      |      |      |      |       |      |
|    |           |      | +9.9 | +0.4  |       |      |      |      |      |       |      |
| 17 | 2745.070M |      |      |       | +0.0  | +0.0 | +0.0 | 37.1 | 54.0 | -16.9 | Vert |
|    |           | 41.5 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    | Ave       |      | +0.0 | +0.7  | +28.4 | +0.2 |      |      |      |       |      |
|    |           |      | +2.6 | -34.1 | +12.5 |      |      |      |      |       |      |
|    |           |      | +9.9 | +0.4  |       |      |      |      |      |       |      |
| ^  | 2745.070M |      |      |       | +0.0  | +0.0 | +0.0 | 56.2 | 54.0 | +2.2  | Vert |
|    |           | 48.1 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    |           |      | +0.0 | +0.7  | +28.4 | +0.2 |      |      |      |       |      |
|    |           |      | +2.6 | -34.1 | +0.0  |      |      |      |      |       |      |
|    |           |      | +9.9 | +0.4  |       |      |      |      |      |       |      |
| 19 | 5417.610M |      |      |       | +0.0  | +0.0 | +0.0 | 36.9 | 54.0 | -17.1 | Vert |
|    |           | 33.6 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    | Ave       |      | +0.0 | +1.0  | +33.4 | +0.4 |      |      |      |       |      |
|    |           |      | +4.5 | -33.7 | +12.5 |      |      |      |      |       |      |
|    |           |      | +9.8 | +0.4  |       |      |      |      |      |       |      |
| ^  | 5417.610M |      |      |       | +0.0  | +0.0 | +0.0 | 61.4 | 54.0 | +7.4  | Vert |
|    |           | 45.6 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    |           |      | +0.0 | +1.0  | +33.4 | +0.4 |      |      |      |       |      |
|    |           |      | +4.5 | -33.7 | +0.0  |      |      |      |      |       |      |
|    |           |      | +9.8 | +0.4  |       |      |      |      |      |       |      |
| 21 | 2709.110M |      |      |       | +0.0  | +0.0 | +0.0 | 36.6 | 54.0 | -17.4 | Vert |
|    |           | 41.1 | +0.0 | +0.0  | +0.0  | +0.0 |      |      |      |       |      |
|    | Ave       |      | +0.0 | +0.7  | +28.3 | +0.2 |      |      |      |       |      |
|    |           |      | +2.6 | -34.1 | +12.5 |      |      |      |      |       |      |
|    |           |      | +9.9 | +0.4  |       |      |      |      |      |       |      |

|    |           |      |       |       |       |      |      |       |       |       |
|----|-----------|------|-------|-------|-------|------|------|-------|-------|-------|
| ^  | 2709.110M |      |       | +0.0  | +0.0  | +0.0 | 56.0 | 54.0  | +2.0  | Vert  |
|    |           | 48.0 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +0.7  | +28.3 | +0.2 |      |       |       |       |
|    |           |      | +2.6  | -34.1 | +0.0  |      |      |       |       |       |
|    |           |      | +9.9  | +0.4  |       |      |      |       |       |       |
| 23 | 3611.770M |      |       | +0.0  | +0.0  | +0.0 | 34.8 | 54.0  | -19.2 | Vert  |
|    |           | 35.6 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           | Ave  | +0.0  | +0.8  | +30.3 | +0.6 |      |       |       |       |
|    |           |      | +3.6  | -33.8 | +12.5 |      |      |       |       |       |
|    |           |      | +9.7  | +0.5  |       |      |      |       |       |       |
| ^  | 3611.770M |      |       | +0.0  | +0.0  | +0.0 | 58.0 | 54.0  | +4.0  | Vert  |
|    |           | 46.3 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +0.8  | +30.3 | +0.6 |      |       |       |       |
|    |           |      | +3.6  | -33.8 | +0.0  |      |      |       |       |       |
|    |           |      | +9.7  | +0.5  |       |      |      |       |       |       |
| 25 | 6319.940M |      |       | +0.0  | +0.0  | +0.0 | 71.7 | 108.8 | -37.1 | Horiz |
|    |           | 54.0 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +1.0  | +34.6 | +0.5 |      |       |       |       |
|    |           |      | +5.2  | -34.1 | +0.0  |      |      |       |       |       |
|    |           |      | +10.0 | +0.5  |       |      |      |       |       |       |
| 26 | 5560.480M |      |       | +0.0  | +0.0  | +0.0 | 64.9 | 108.8 | -43.9 | Vert  |
|    |           | 48.8 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +1.0  | +33.7 | +0.4 |      |       |       |       |
|    |           |      | +4.5  | -33.7 | +0.0  |      |      |       |       |       |
|    |           |      | +9.8  | +0.4  |       |      |      |       |       |       |
| 27 | 6404.630M |      |       | +0.0  | +0.0  | +0.0 | 64.7 | 108.8 | -44.1 | Vert  |
|    |           | 46.8 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +1.1  | +34.6 | +0.6 |      |       |       |       |
|    |           |      | +5.4  | -34.2 | +0.0  |      |      |       |       |       |
|    |           |      | +9.9  | +0.5  |       |      |      |       |       |       |
| 28 | 1806.180M |      |       | +0.0  | +0.0  | +0.0 | 52.8 | 108.8 | -56.0 | Vert  |
|    |           | 48.2 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +0.5  | +26.1 | +0.2 |      |       |       |       |
|    |           |      | +2.2  | -34.8 | +0.0  |      |      |       |       |       |
|    |           |      | +9.9  | +0.5  |       |      |      |       |       |       |
| 29 | 1853.600M |      |       | +0.0  | +0.0  | +0.0 | 50.8 | 108.8 | -58.0 | Horiz |
|    |           | 45.7 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +0.5  | +26.5 | +0.2 |      |       |       |       |
|    |           |      | +2.3  | -34.7 | +0.0  |      |      |       |       |       |
|    |           |      | +9.9  | +0.4  |       |      |      |       |       |       |
| 30 | 1830.090M |      |       | +0.0  | +0.0  | +0.0 | 50.6 | 108.8 | -58.2 | Vert  |
|    |           | 45.8 | +0.0  | +0.0  | +0.0  | +0.0 |      |       |       |       |
|    |           |      | +0.0  | +0.5  | +26.3 | +0.2 |      |       |       |       |
|    |           |      | +2.3  | -34.8 | +0.0  |      |      |       |       |       |
|    |           |      | +9.9  | +0.4  |       |      |      |       |       |       |

|    |           |      |      |       |       |       |       |       |        |       |
|----|-----------|------|------|-------|-------|-------|-------|-------|--------|-------|
| 31 | 855.500M  | -    |      | +5.8  | +1.4  | +0.0  | 48.4  | 108.8 | -60.4  | Vert  |
|    |           | 42.8 | 27.6 | +23.8 | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +1.9 | +0.3  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.0 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 32 | 33.900M   | -    |      | +5.8  | +0.3  | +0.0  | 42.5  | 108.8 | -66.3  | Vert  |
|    |           | 49.2 | 28.0 | +14.8 | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.3 | +0.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.0 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 33 | 5489.780M |      |      | +0.0  | +0.0  | +0.0  | 40.9  | 108.8 | -67.9  | Vert  |
|    |           | 37.5 | +0.0 | +0.0  | +0.0  | +0.0  |       |       |        |       |
|    | Ave       |      | +0.0 | +1.0  | +33.5 | +0.4  |       |       |        |       |
|    |           |      | +4.5 | -33.7 | +12.5 |       |       |       |        |       |
|    |           |      | +9.8 | +0.4  |       |       |       |       |        |       |
| ^  | 5489.780M |      |      | +0.0  | +0.0  | +0.0  | 62.4  | 108.8 | -46.4  | Vert  |
|    |           | 46.5 | +0.0 | +0.0  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.0 | +1.0  | +33.5 | +0.4  |       |       |        |       |
|    |           |      | +4.5 | -33.7 | +0.0  |       |       |       |        |       |
|    |           |      | +9.8 | +0.4  |       |       |       |       |        |       |
| 35 | 40.700M   | -    |      | +5.8  | +0.3  | +0.0  | 37.8  | 108.8 | -71.0  | Vert  |
|    |           | 47.4 | 27.9 | +11.8 | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.3 | +0.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.0 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 36 | 89.200M   | -    |      | +5.8  | +0.4  | +0.0  | 26.6  | 108.8 | -82.2  | Horiz |
|    |           | 40.5 | 27.8 | +7.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.5 | +0.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.0 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 37 | 30.000M   |      |      | +0.0  | +0.0  | +0.0  | 26.6  | 108.8 | -82.2  | Para  |
|    |           | 20.6 | +0.0 | +0.0  | +0.0  | +5.6  |       |       |        |       |
|    |           |      | +0.0 | +0.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.3 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 38 | 14.150M   |      |      | +0.0  | +0.0  | -40.0 | -9.5  | 108.8 | -118.3 | Perp  |
|    |           | 21.2 | +0.0 | +0.0  | +0.0  | +9.1  |       |       |        |       |
|    |           |      | +0.0 | +0.0  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.2 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |
| 39 | 15.165M   |      |      | +0.0  | +0.0  | -40.0 | -11.0 | 108.8 | -119.8 | Perp  |
|    |           | 19.6 | +0.0 | +0.0  | +0.0  | +9.1  |       |       |        |       |
|    |           |      | +0.0 | +0.1  | +0.0  | +0.0  |       |       |        |       |
|    |           |      | +0.2 | +0.0  | +0.0  |       |       |       |        |       |
|    |           |      | +0.0 | +0.0  |       |       |       |       |        |       |

|    |         |      |      |      |      |       |       |       |       |        |      |
|----|---------|------|------|------|------|-------|-------|-------|-------|--------|------|
| 40 | 29.254M |      |      |      | +0.0 | +0.0  | -40.0 | -14.2 | 108.8 | -123.0 | Perp |
|    |         | 19.6 | +0.0 | +0.0 | +0.0 | +5.8  |       |       |       |        |      |
|    |         |      | +0.0 | +0.1 | +0.0 | +0.0  |       |       |       |        |      |
|    |         |      | +0.3 | +0.0 | +0.0 |       |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 |      |       |       |       |       |        |      |
| 41 | 29.343M |      |      |      | +0.0 | +0.0  | -40.0 | -16.6 | 108.8 | -125.4 | Para |
|    |         | 17.2 | +0.0 | +0.0 | +0.0 | +5.8  |       |       |       |        |      |
|    |         |      | +0.0 | +0.1 | +0.0 | +0.0  |       |       |       |        |      |
|    |         |      | +0.3 | +0.0 | +0.0 |       |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 |      |       |       |       |       |        |      |
| 42 | 13.935k |      |      |      | +0.0 | +0.0  | -80.0 | -18.9 | 108.8 | -127.7 | Perp |
|    |         | 48.1 | +0.0 | +0.0 | +0.0 | +13.0 |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 | +0.0 | +0.0  |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 | +0.0 |       |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 |      |       |       |       |       |        |      |
| 43 | 62.298k |      |      |      | +0.0 | +0.0  | -80.0 | -30.1 | 108.8 | -138.9 | Para |
|    |         | 40.2 | +0.0 | +0.0 | +0.0 | +9.7  |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 | +0.0 | +0.0  |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 | +0.0 |       |       |       |       |        |      |
|    |         |      | +0.0 | +0.0 |      |       |       |       |       |        |      |

Test Location: CKC Laboratories, Inc. · 22116 23rd Dr SE · Bothell, WA 98021 · 800-500-4362  
 Customer: **Itron, Inc.**  
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**  
 Work Order #: **103221** Date: 11/23/2019  
 Test Type: **Radiated Scan** Time: 10:51:05  
 Tested By: Matthew Harrison Sequence#: 16  
 Software: EMITest 5.03.12

***Equipment Tested:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 2 |              |         |     |

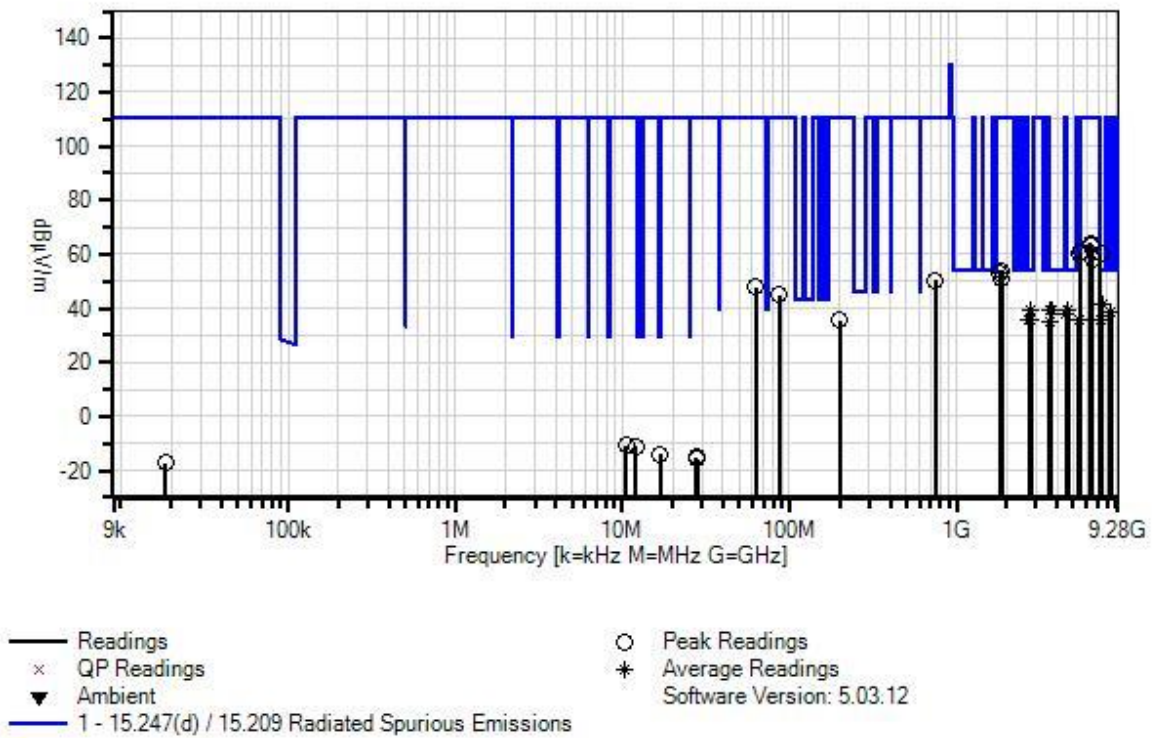
***Support Equipment:***

| Device          | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 2 |              |         |     |

***Test Conditions / Notes:***

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature: 23° C<br>Humidity: 39%<br>Pressure: 101.1 kPa<br><br>Frequency Range: 9kHz-10GHz<br>Frequency tested:<br>Firmware power setting: Max<br><br>Antenna type: Omnidirectional<br>Antenna Gain: 8.15 dBi.<br><br>Duty Cycle: 100% Modulated<br><br>Test Method: ANSI C63.10: 2013<br>Test Mode: Transmitting<br>Test Setup: EUT is setup in a tabletop configuration on a Styrofoam table:<br>Below 1GHz set 80cm high.<br>Above 1GHz set 1.5m high<br><br>Co-Location testing was performed with Wi-Fi, Cell, and FHSS radios transmitting simultaneously in both CCU100C and CCU100RC configurations.<br><br>Modification #1 and #2 were in place during testing. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Itron, Inc. WO#: 103221 Sequence#: 16 Date: 11/23/2019  
 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Horiz



**Test Equipment:**

| ID  | Asset #  | Description                         | Model             | Calibration Date | Cal Due Date |
|-----|----------|-------------------------------------|-------------------|------------------|--------------|
| T1  | AN03628  | Biconilog Antenna                   | 3142E             | 6/11/2019        | 6/11/2021    |
| T2  | ANP06123 | Attenuator                          | 18N-6             | 4/5/2019         | 4/5/2021     |
| T3  | ANP05305 | Cable                               | ETSI-50T          | 9/6/2019         | 9/6/2021     |
| T4  | ANP05360 | Cable                               | RG214             | 1/31/2018        | 1/31/2020    |
| T5  | ANP06540 | Cable                               | Heliast           | 8/23/2019        | 8/23/2021    |
|     | AN02673  | Spectrum Analyzer                   | E4446A            | 2/22/2019        | 2/22/2021    |
| T6  | AN00052  | Loop Antenna                        | 6502              | 5/7/2018         | 5/7/2020     |
| T7  | ANP06515 | Cable                               | Heliast           | 6/29/2018        | 6/29/2020    |
| T8  | AN03540  | Preamplifier                        | 83017A            | 5/13/2019        | 5/13/2021    |
| T9  | AN01467  | Horn Antenna-ANSI C63.5 Calibration | 3115              | 7/5/2019         | 7/5/2021     |
| T10 | ANP07504 | Cable                               | CLU40-KMKM-02.00F | 1/17/2019        | 1/17/2021    |
| T11 | ANP06242 | Attenuator                          | 54A-10            | 3/13/2018        | 3/13/2020    |
| T12 | AN03170  | High Pass Filter                    | HM1155-11SS       | 10/23/2019       | 10/23/2021   |
| T13 | ANDCCF   | Duty Cycle Correction Factor        | Multiple          | 10/1/2019        | 10/1/2021    |

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

| # | Freq      | Rdng | T1    | T2   | T3   | T4   | Dist  | Corr   | Spec   | Margin | Polar |
|---|-----------|------|-------|------|------|------|-------|--------|--------|--------|-------|
|   |           |      | T5    | T6   | T7   | T8   |       |        |        |        |       |
|   |           |      | T9    | T10  | T11  | T12  |       |        |        |        |       |
|   |           |      | T13   |      |      |      |       |        |        |        |       |
|   | MHz       | dBμV | dB    | dB   | dB   | dB   | Table | dBμV/m | dBμV/m | dB     | Ant   |
| 1 | 7414.020M | 33.9 | +0.0  | +0.0 | +0.0 | +0.0 | +0.0  | 41.7   | 54.0   | -12.3  | Horiz |
|   | Ave       |      | +1.5  | +0.0 | +9.9 | +0.6 |       |        |        |        |       |
|   |           |      | +37.1 | +0.4 |      |      |       |        |        |        |       |
|   |           |      | +12.5 |      |      |      |       |        |        |        |       |
| ^ | 7414.020M | 43.3 | +0.0  | +0.0 | +0.0 | +0.0 | +0.0  | 63.6   | 54.0   | +9.6   | Horiz |
|   |           |      | +1.5  | +0.0 | +9.9 | +0.6 |       |        |        |        |       |
|   |           |      | +37.1 | +0.4 |      |      |       |        |        |        |       |
|   |           |      | +0.0  |      |      |      |       |        |        |        |       |
| 3 | 4634.170M | 37.6 | +0.0  | +0.0 | +0.0 | +0.0 | +0.0  | 39.6   | 54.0   | -14.4  | Vert  |
|   | Ave       |      | +0.9  | +0.0 | +9.9 | +0.6 |       |        |        |        |       |
|   |           |      | +32.1 | +0.6 |      |      |       |        |        |        |       |
|   |           |      | +12.5 |      |      |      |       |        |        |        |       |
| ^ | 4634.170M | 45.0 | +0.0  | +0.0 | +0.0 | +0.0 | +0.0  | 59.5   | 54.0   | +5.5   | Vert  |
|   |           |      | +0.9  | +0.0 | +9.9 | +0.6 |       |        |        |        |       |
|   |           |      | +32.1 | +0.6 |      |      |       |        |        |        |       |
|   |           |      | +0.0  |      |      |      |       |        |        |        |       |

|    |           |      |       |      |      |       |      |      |      |       |       |
|----|-----------|------|-------|------|------|-------|------|------|------|-------|-------|
| 5  | 2780.305M |      |       |      |      |       |      |      |      |       |       |
|    |           | 43.9 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |       |
|    | Ave       |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |       |
|    |           |      | +28.5 | +0.2 |      |       |      |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |      |       |       |
| ^  | 2780.305M |      |       |      | +0.0 | +0.0  | +0.0 | 39.6 | 54.0 | -14.4 | Vert  |
|    |           | 48.6 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |       |
|    |           |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |       |
|    |           |      | +28.5 | +0.2 |      |       |      |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |      |       |       |
| 7  | 3660.200M |      |       |      | +0.0 | +0.0  | +0.0 | 39.4 | 54.0 | -14.6 | Vert  |
|    |           | 39.8 | +0.0  | +0.0 | +3.7 | -33.7 |      |      |      |       |       |
|    | Ave       |      | +0.9  | +0.0 | +9.7 | +0.5  |      |      |      |       |       |
|    |           |      | +30.5 | +0.5 |      |       |      |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |      |       |       |
| ^  | 3660.200M |      |       |      | +0.0 | +0.0  | +0.0 | 58.6 | 54.0 | +4.6  | Vert  |
|    |           | 46.5 | +0.0  | +0.0 | +3.7 | -33.7 |      |      |      |       |       |
|    |           |      | +0.9  | +0.0 | +9.7 | +0.5  |      |      |      |       |       |
|    |           |      | +30.5 | +0.5 |      |       |      |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |      |       |       |
| 9  | 3706.950M |      |       |      | +0.0 | +0.0  | +0.0 | 39.3 | 54.0 | -14.7 | Vert  |
|    |           | 39.5 | +0.0  | +0.0 | +3.8 | -33.7 |      |      |      |       |       |
|    | Ave       |      | +0.9  | +0.0 | +9.7 | +0.5  |      |      |      |       |       |
|    |           |      | +30.6 | +0.5 |      |       |      |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |      |       |       |
| ^  | 3706.950M |      |       |      | +0.0 | +0.0  | +0.0 | 58.9 | 54.0 | +4.9  | Vert  |
|    |           | 46.6 | +0.0  | +0.0 | +3.8 | -33.7 |      |      |      |       |       |
|    |           |      | +0.9  | +0.0 | +9.7 | +0.5  |      |      |      |       |       |
|    |           |      | +30.6 | +0.5 |      |       |      |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |      |       |       |
| 11 | 4574.885M |      |       |      | +0.0 | +0.0  | +0.0 | 39.3 | 54.0 | -14.7 | Vert  |
|    |           | 37.5 | +0.0  | +0.0 | +4.0 | -33.7 |      |      |      |       |       |
|    | Ave       |      | +0.9  | +0.0 | +9.9 | +0.6  |      |      |      |       |       |
|    |           |      | +31.9 | +0.7 |      |       |      |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |      |       |       |
| ^  | 4574.885M |      |       |      | +0.0 | +0.0  | +0.0 | 59.0 | 54.0 | +5.0  | Vert  |
|    |           | 44.7 | +0.0  | +0.0 | +4.0 | -33.7 |      |      |      |       |       |
|    |           |      | +0.9  | +0.0 | +9.9 | +0.6  |      |      |      |       |       |
|    |           |      | +31.9 | +0.7 |      |       |      |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |      |       |       |
| 13 | 8340.870M |      |       |      | +0.0 | +0.0  | +0.0 | 38.7 | 54.0 | -15.3 | Horiz |
|    |           | 30.4 | +0.0  | +0.0 | +5.8 | -34.9 |      |      |      |       |       |
|    | Ave       |      | +1.7  | +0.0 | +9.9 | +0.8  |      |      |      |       |       |
|    |           |      | +37.0 | +0.5 |      |       |      |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |      |       |       |

|    |           |      |       |      |      |       |      |      |       |       |
|----|-----------|------|-------|------|------|-------|------|------|-------|-------|
| ^  | 8340.870M |      |       | +0.0 | +0.0 | +0.0  | 62.6 | 54.0 | +8.6  | Horiz |
|    |           | 41.8 | +0.0  | +0.0 | +5.8 | -34.9 |      |      |       |       |
|    |           |      | +1.7  | +0.0 | +9.9 | +0.8  |      |      |       |       |
|    |           |      | +37.0 | +0.5 |      |       |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |       |       |
| 15 | 8234.270M |      |       | +0.0 | +0.0 | +0.0  | 38.5 | 54.0 | -15.5 | Vert  |
|    |           | 30.3 | +0.0  | +0.0 | +5.7 | -35.0 |      |      |       |       |
|    |           | Ave  | +1.7  | +0.0 | +9.9 | +0.9  |      |      |       |       |
|    |           |      | +37.0 | +0.5 |      |       |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |       |       |
| ^  | 8234.270M |      |       | +0.0 | +0.0 | +0.0  | 63.4 | 54.0 | +9.4  | Vert  |
|    |           | 42.7 | +0.0  | +0.0 | +5.7 | -35.0 |      |      |       |       |
|    |           |      | +1.7  | +0.0 | +9.9 | +0.9  |      |      |       |       |
|    |           |      | +37.0 | +0.5 |      |       |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |       |       |
| 17 | 4514.585M |      |       | +0.0 | +0.0 | +0.0  | 37.8 | 54.0 | -16.2 | Vert  |
|    |           | 36.2 | +0.0  | +0.0 | +3.9 | -33.7 |      |      |       |       |
|    |           | Ave  | +0.9  | +0.0 | +9.9 | +0.6  |      |      |       |       |
|    |           |      | +31.8 | +0.7 |      |       |      |      |       |       |
|    |           |      | +12.5 |      |      |       |      |      |       |       |
| ^  | 4514.585M |      |       | +0.0 | +0.0 | +0.0  | 59.5 | 54.0 | +5.5  | Vert  |
|    |           | 45.4 | +0.0  | +0.0 | +3.9 | -33.7 |      |      |       |       |
|    |           |      | +0.9  | +0.0 | +9.9 | +0.6  |      |      |       |       |
|    |           |      | +31.8 | +0.7 |      |       |      |      |       |       |
|    |           |      | +0.0  |      |      |       |      |      |       |       |

|    |           |      |       |      |      |       |      |      |      |       |      |
|----|-----------|------|-------|------|------|-------|------|------|------|-------|------|
| 19 | 5418.380M |      |       |      | +0.0 | +0.0  | +0.0 | 36.1 | 54.0 | -17.9 | Vert |
|    |           | 32.8 | +0.0  | +0.0 | +4.5 | -33.7 |      |      |      |       |      |
|    | Ave       |      | +1.0  | +0.0 | +9.8 | +0.4  |      |      |      |       |      |
|    |           |      | +33.4 | +0.4 |      |       |      |      |      |       |      |
|    |           |      | +12.5 |      |      |       |      |      |      |       |      |
| ^  | 5418.380M |      |       |      | +0.0 | +0.0  | +0.0 | 59.5 | 54.0 | +5.5  | Vert |
|    |           | 43.7 | +0.0  | +0.0 | +4.5 | -33.7 |      |      |      |       |      |
|    |           |      | +1.0  | +0.0 | +9.8 | +0.4  |      |      |      |       |      |
|    |           |      | +33.4 | +0.4 |      |       |      |      |      |       |      |
|    |           |      | +0.0  |      |      |       |      |      |      |       |      |
| 21 | 2744.715M |      |       |      | +0.0 | +0.0  | +0.0 | 35.9 | 54.0 | -18.1 | Vert |
|    |           | 40.3 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |      |
|    | Ave       |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |      |
|    |           |      | +28.4 | +0.2 |      |       |      |      |      |       |      |
|    |           |      | +12.5 |      |      |       |      |      |      |       |      |
| ^  | 2744.715M |      |       |      | +0.0 | +0.0  | +0.0 | 55.9 | 54.0 | +1.9  | Vert |
|    |           | 47.8 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |      |
|    |           |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |      |
|    |           |      | +28.4 | +0.2 |      |       |      |      |      |       |      |
|    |           |      | +0.0  |      |      |       |      |      |      |       |      |
| 23 | 2709.120M |      |       |      | +0.0 | +0.0  | +0.0 | 35.7 | 54.0 | -18.3 | Vert |
|    |           | 40.2 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |      |
|    | Ave       |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |      |
|    |           |      | +28.3 | +0.2 |      |       |      |      |      |       |      |
|    |           |      | +12.5 |      |      |       |      |      |      |       |      |
| ^  | 2709.120M |      |       |      | +0.0 | +0.0  | +0.0 | 54.8 | 54.0 | +0.8  | Vert |
|    |           | 46.8 | +0.0  | +0.0 | +2.6 | -34.1 |      |      |      |       |      |
|    |           |      | +0.7  | +0.0 | +9.9 | +0.4  |      |      |      |       |      |
|    |           |      | +28.3 | +0.2 |      |       |      |      |      |       |      |
|    |           |      | +0.0  |      |      |       |      |      |      |       |      |
| 25 | 7319.185M |      |       |      | +0.0 | +0.0  | +0.0 | 35.5 | 54.0 | -18.5 | Vert |
|    |           | 28.2 | +0.0  | +0.0 | +5.4 | -34.6 |      |      |      |       |      |
|    | Ave       |      | +1.3  | +0.0 | +9.9 | +0.6  |      |      |      |       |      |
|    |           |      | +36.8 | +0.4 |      |       |      |      |      |       |      |
|    |           |      | +12.5 |      |      |       |      |      |      |       |      |
| ^  | 7319.185M |      |       |      | +0.0 | +0.0  | +0.0 | 61.9 | 54.0 | +7.9  | Vert |
|    |           | 42.1 | +0.0  | +0.0 | +5.4 | -34.6 |      |      |      |       |      |
|    |           |      | +1.3  | +0.0 | +9.9 | +0.6  |      |      |      |       |      |
|    |           |      | +36.8 | +0.4 |      |       |      |      |      |       |      |
|    |           |      | +0.0  |      |      |       |      |      |      |       |      |
| 27 | 3612.340M |      |       |      | +0.0 | +0.0  | +0.0 | 34.9 | 54.0 | -19.1 | Vert |
|    |           | 35.7 | +0.0  | +0.0 | +3.6 | -33.8 |      |      |      |       |      |
|    | Ave       |      | +0.8  | +0.0 | +9.7 | +0.5  |      |      |      |       |      |
|    |           |      | +30.3 | +0.6 |      |       |      |      |      |       |      |
|    |           |      | +12.5 |      |      |       |      |      |      |       |      |

|    |           |      |       |      |       |       |      |       |       |       |
|----|-----------|------|-------|------|-------|-------|------|-------|-------|-------|
| ^  | 3612.340M |      |       | +0.0 | +0.0  | +0.0  | 57.0 | 54.0  | +3.0  | Vert  |
|    |           | 45.3 | +0.0  | +0.0 | +3.6  | -33.8 |      |       |       |       |
|    |           |      | +0.8  | +0.0 | +9.7  | +0.5  |      |       |       |       |
|    |           |      | +30.3 | +0.6 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 29 | 6319.895M |      |       | +0.0 | +0.0  | +0.0  | 64.1 | 110.4 | -46.3 | Horiz |
|    |           | 46.4 | +0.0  | +0.0 | +5.2  | -34.1 |      |       |       |       |
|    |           |      | +1.0  | +0.0 | +10.0 | +0.5  |      |       |       |       |
|    |           |      | +34.6 | +0.5 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 30 | 6405.410M |      |       | +0.0 | +0.0  | +0.0  | 63.5 | 110.4 | -46.9 | Horiz |
|    |           | 45.6 | +0.0  | +0.0 | +5.4  | -34.2 |      |       |       |       |
|    |           |      | +1.1  | +0.0 | +9.9  | +0.5  |      |       |       |       |
|    |           |      | +34.6 | +0.6 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 31 | 5560.445M |      |       | +0.0 | +0.0  | +0.0  | 61.0 | 110.4 | -49.4 | Horiz |
|    |           | 44.9 | +0.0  | +0.0 | +4.5  | -33.7 |      |       |       |       |
|    |           |      | +1.0  | +0.0 | +9.8  | +0.4  |      |       |       |       |
|    |           |      | +33.7 | +0.4 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 32 | 5489.770M |      |       | +0.0 | +0.0  | +0.0  | 60.5 | 110.4 | -49.9 | Vert  |
|    |           | 44.6 | +0.0  | +0.0 | +4.5  | -33.7 |      |       |       |       |
|    |           |      | +1.0  | +0.0 | +9.8  | +0.4  |      |       |       |       |
|    |           |      | +33.5 | +0.4 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 33 | 7224.790M |      |       | +0.0 | +0.0  | +0.0  | 60.1 | 110.4 | -50.3 | Horiz |
|    |           | 40.9 | +0.0  | +0.0 | +5.3  | -34.5 |      |       |       |       |
|    |           |      | +1.1  | +0.0 | +9.9  | +0.4  |      |       |       |       |
|    |           |      | +36.5 | +0.5 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 34 | 6487.975M |      |       | +0.0 | +0.0  | +0.0  | 58.0 | 110.4 | -52.4 | Horiz |
|    |           | 39.9 | +0.0  | +0.0 | +5.6  | -34.2 |      |       |       |       |
|    |           |      | +1.2  | +0.0 | +9.9  | +0.5  |      |       |       |       |
|    |           |      | +34.5 | +0.6 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 35 | 1853.665M |      |       | +0.0 | +0.0  | +0.0  | 53.5 | 110.4 | -56.9 | Vert  |
|    |           | 48.4 | +0.0  | +0.0 | +2.3  | -34.7 |      |       |       |       |
|    |           |      | +0.5  | +0.0 | +9.9  | +0.4  |      |       |       |       |
|    |           |      | +26.5 | +0.2 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |
| 36 | 1806.220M |      |       | +0.0 | +0.0  | +0.0  | 53.2 | 110.4 | -57.2 | Vert  |
|    |           | 48.6 | +0.0  | +0.0 | +2.2  | -34.8 |      |       |       |       |
|    |           |      | +0.5  | +0.0 | +9.9  | +0.5  |      |       |       |       |
|    |           |      | +26.1 | +0.2 |       |       |      |       |       |       |
|    |           |      | +0.0  |      |       |       |      |       |       |       |

|    |           |      |       |      |      |       |       |       |       |        |       |
|----|-----------|------|-------|------|------|-------|-------|-------|-------|--------|-------|
| 37 | 1829.650M |      |       |      | +0.0 | +0.0  | +0.0  | 51.0  | 110.4 | -59.4  | Horiz |
|    |           | 46.2 | +0.0  | +0.0 | +2.3 | -34.8 |       |       |       |        |       |
|    |           |      | +0.5  | +0.0 | +9.9 | +0.4  |       |       |       |        |       |
|    |           |      | +26.3 | +0.2 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 38 | 749.700M  |      |       |      | +1.3 | +1.7  | +0.0  | 50.4  | 110.4 | -60.0  | Horiz |
|    |           | 18.1 | +23.2 | +5.8 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.3  | +0.0 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 39 | 63.000M   |      |       |      | +0.4 | +0.4  | +0.0  | 48.0  | 110.4 | -62.4  | Vert  |
|    |           | 33.7 | +7.6  | +5.8 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.1  | +0.0 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 40 | 86.300M   |      |       |      | +0.4 | +0.5  | +0.0  | 44.9  | 110.4 | -65.5  | Vert  |
|    |           | 31.1 | +7.0  | +5.8 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.1  | +0.0 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 41 | 198.800M  |      |       |      | +0.7 | +0.8  | +0.0  | 35.7  | 110.4 | -74.7  | Vert  |
|    |           | 18.4 | +9.8  | +5.8 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.2  | +0.0 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 42 | 10.568M   |      |       |      | +0.0 | +0.0  | -40.0 | -10.8 | 110.4 | -121.2 | Perp  |
|    |           | 19.8 | +0.0  | +0.0 | +0.2 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +9.2 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 43 | 12.090M   |      |       |      | +0.0 | +0.0  | -40.0 | -10.9 | 110.4 | -121.3 | Perp  |
|    |           | 19.7 | +0.0  | +0.0 | +0.2 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +9.2 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 44 | 16.896M   |      |       |      | +0.0 | +0.0  | -40.0 | -13.9 | 110.4 | -124.3 | Perp  |
|    |           | 17.2 | +0.0  | +0.0 | +0.2 | +0.0  |       |       |       |        |       |
|    |           |      | +0.1  | +8.6 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |
| 45 | 27.702M   |      |       |      | +0.0 | +0.0  | -40.0 | -14.9 | 110.4 | -125.3 | Para  |
|    |           | 18.5 | +0.0  | +0.0 | +0.3 | +0.0  |       |       |       |        |       |
|    |           |      | +0.1  | +6.2 | +0.0 | +0.0  |       |       |       |        |       |
|    |           |      | +0.0  | +0.0 |      |       |       |       |       |        |       |
|    |           |      | +0.0  |      |      |       |       |       |       |        |       |

|    |         |      |      |       |      |      |       |       |       |        |      |
|----|---------|------|------|-------|------|------|-------|-------|-------|--------|------|
| 46 | 28.209M |      |      |       | +0.0 | +0.0 | -40.0 | -15.6 | 110.4 | -126.0 | Perp |
|    |         | 17.9 | +0.0 | +0.0  | +0.3 | +0.0 |       |       |       |        |      |
|    |         |      | +0.1 | +6.1  | +0.0 | +0.0 |       |       |       |        |      |
|    |         |      | +0.0 | +0.0  |      |      |       |       |       |        |      |
|    |         |      | +0.0 |       |      |      |       |       |       |        |      |
| 47 | 18.588k |      |      |       | +0.0 | +0.0 | -80.0 | -17.3 | 110.4 | -127.7 | Perp |
|    |         | 50.6 | +0.0 | +0.0  | +0.0 | +0.0 |       |       |       |        |      |
|    |         |      | +0.0 | +12.1 | +0.0 | +0.0 |       |       |       |        |      |
|    |         |      | +0.0 | +0.0  |      |      |       |       |       |        |      |
|    |         |      | +0.0 |       |      |      |       |       |       |        |      |
| 48 | 80.346k |      |      |       | +0.0 | +0.0 | -80.0 | -30.4 | 110.4 | -140.8 | Para |
|    |         | 39.9 | +0.0 | +0.0  | +0.0 | +0.0 |       |       |       |        |      |
|    |         |      | +0.0 | +9.7  | +0.0 | +0.0 |       |       |       |        |      |
|    |         |      | +0.0 | +0.0  |      |      |       |       |       |        |      |
|    |         |      | +0.0 |       |      |      |       |       |       |        |      |

## Band Edge

### Band Edge Summary

Configuration 1

Operating Mode: Single Channel (Low and High)

| Frequency (MHz) | Modulation | Ant. Type       | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------------|-----------------------------|--------------------|---------|
| 614             | FM 12.5k   | Omnidirectional | 39.4                        | <46                | Pass    |
| 902             | FM 12.5k   | Omnidirectional | 92.3                        | <108.8             | Pass    |
| 928             | FM 12.5k   | Omnidirectional | 78.1                        | < 108.8            | Pass    |
| 960             | FM 12.5k   | Omnidirectional | 48.2                        | <54                | Pass    |
| 614             | FM 37.5k   | Omnidirectional | 43.2                        | <46                | Pass    |
| 902             | FM 37.5k   | Omnidirectional | 89.3                        | <108.8             | Pass    |
| 928             | FM 37.5k   | Omnidirectional | 85.1                        | < 108.8            | Pass    |
| 960             | FM 37.5k   | Omnidirectional | 49.3                        | <54                | Pass    |
| 614             | AM         | Omnidirectional | 38.2                        | <46                | Pass    |
| 902             | AM         | Omnidirectional | 76.0                        | <108.8             | Pass    |
| 928             | AM         | Omnidirectional | 73.3                        | < 108.8            | Pass    |
| 960             | AM         | Omnidirectional | 42.5                        | <54                | Pass    |

### Band Edge Summary

Configuration 1

Operating Mode: Hopping

| Frequency (MHz) | Modulation | Ant. Type       | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------------|-----------------------------|--------------------|---------|
| 614             | FM 12.5k   | Omnidirectional | 43.7                        | <46                | Pass    |
| 902             | FM 12.5k   | Omnidirectional | 87.7                        | <108.8             | Pass    |
| 928             | FM 12.5k   | Omnidirectional | 77.1                        | < 108.8            | Pass    |
| 960             | FM 12.5k   | Omnidirectional | 47.4                        | <54                | Pass    |
| 614             | FM 37.5k   | Omnidirectional | 25.1                        | <46                | Pass    |
| 902             | FM 37.5k   | Omnidirectional | 86.7                        | <108.8             | Pass    |
| 928             | FM 37.5k   | Omnidirectional | 83                          | < 108.8            | Pass    |
| 960             | FM 37.5k   | Omnidirectional | 50.4                        | <54                | Pass    |
| 614             | AM         | Omnidirectional | 38.3                        | <46                | Pass    |
| 902             | AM         | Omnidirectional | 73.3                        | <108.8             | Pass    |
| 928             | AM         | Omnidirectional | 76.0                        | < 108.8            | Pass    |
| 960             | AM         | Omnidirectional | 42.8                        | <54                | Pass    |

### Band Edge Summary

Configuration 2

Operating Mode: Single Channel (Low and High)

| Frequency (MHz) | Modulation | Ant. Type       | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------------|-----------------------------|--------------------|---------|
| 614             | FM 12.5k   | Omnidirectional | 39.3                        | <46                | Pass    |
| 902             | FM 12.5k   | Omnidirectional | 90.0                        | <110.4             | Pass    |
| 928             | FM 12.5k   | Omnidirectional | 77.7                        | < 110.4            | Pass    |
| 960             | FM 12.5k   | Omnidirectional | 46.1                        | <54                | Pass    |
| 614             | FM 37.5k   | Omnidirectional | 25.8                        | <46                | Pass    |
| 902             | FM 37.5k   | Omnidirectional | 88.8                        | <110.4             | Pass    |
| 928             | FM 37.5k   | Omnidirectional | 81.3                        | < 110.4            | Pass    |
| 960             | FM 37.5k   | Omnidirectional | 48.5                        | <54                | Pass    |
| 614             | AM         | Omnidirectional | 38.3                        | <46                | Pass    |
| 902             | AM         | Omnidirectional | 76.2                        | <110.4             | Pass    |
| 928             | AM         | Omnidirectional | 74.4                        | < 110.4            | Pass    |
| 960             | AM         | Omnidirectional | 42.5                        | <54                | Pass    |

### Band Edge Summary

Configuration 2

Operating Mode: Hopping

| Frequency (MHz) | Modulation | Ant. Type       | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------------|-----------------------------|--------------------|---------|
| 614             | FM 12.5k   | Omnidirectional | 44.7                        | <46                | Pass    |
| 902             | FM 12.5k   | Omnidirectional | 87.8                        | <110.4             | Pass    |
| 928             | FM 12.5k   | Omnidirectional | 77.1                        | < 110.4            | Pass    |
| 960             | FM 12.5k   | Omnidirectional | 48.6                        | <54                | Pass    |
| 614             | FM 37.5k   | Omnidirectional | 25.6                        | <46                | Pass    |
| 902             | FM 37.5k   | Omnidirectional | 84                          | <110.4             | Pass    |
| 928             | FM 37.5k   | Omnidirectional | 80.3                        | < 110.4            | Pass    |
| 960             | FM 37.5k   | Omnidirectional | 50.9                        | <54                | Pass    |
| 614             | AM         | Omnidirectional | 38.2                        | <46                | Pass    |
| 902             | AM         | Omnidirectional | 74.7                        | <110.4             | Pass    |
| 928             | AM         | Omnidirectional | 75.7                        | < 110.4            | Pass    |
| 960             | AM         | Omnidirectional | 42.5                        | <54                | Pass    |

## Band Edge Plots

### Configuration 1 - FSK 12.5 kbps

