

Itron, Inc.

TEST REPORT FOR

MC3

Model: MC3B*

***(See Appendix A for Manufacturer's Declaration)**

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.247
(FHSS 902-928 MHz)

Report No.: 109570-1

Date of issue: April 30, 2024



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.

Test Certificate # 803.01

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Administrative Information

Test Report Information

REPORT PREPARED FOR:

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2111 N. Molter Road
Liberty Lake, WA 99019

Representative: Jack McPeck
Customer Reference Number: 294642

REPORT PREPARED BY:

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

Project Number: 109570

DATE OF EQUIPMENT RECEIPT:

April 8, 2024

DATE(S) OF TESTING:

April 8 and 14, 2024 and June 17, 2024

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.



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 SE, Suite A
Bothell, WA 98021

Software Versions

| CKC Laboratories Proprietary Software | Version |
|---------------------------------------|---------|
| EMITest Emissions | 5.03.20 |

Site Registration & Accreditation Information

| Location | *NIST CB # | FCC | Canada | Japan |
|--------------------------|------------|--------|--------|--------|
| Canyon Park, Bothell, WA | US0103 | US1024 | 3082C | A-0136 |
| Brea, CA | US0103 | US1024 | 3082D | A-0136 |
| Fremont, CA | US0103 | US1024 | 3082B | A-0136 |
| Mariposa, CA | US0103 | US1024 | 3082A | 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 | NA | Pass |
| 15.247(a)(1) | Carrier Separation | NA | Pass |
| 15.247(a)(1)(i) | Number of Hopping Channels | NA | Pass |
| 15.247(a)(1)(i) | Average Time of Occupancy | NA | Pass |
| 15.247(b)(2) | Output Power | NA | Pass |
| 15.247(d) | RF Conducted Emissions & Band Edge | NA | Pass |
| 15.247(d) | Radiated Emissions & Band Edge | NA | Pass |
| 15.207 | AC Conducted Emissions | NA | NA1 |

NA = Not Applicable

NA1 = Not applicable because EUT is battery powered.

ISO/IEC 17025 Decision Rule

The equipment sample utilized for testing is selected by the manufacturer. The declaration of pass or fail herein is a binary statement for simple acceptance rule (ILAC G8) based upon assessment to the specification(s) listed above, without consideration 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

No modifications were made during testing.

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

None

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 |
|--------|--------------|---------|----------|
| MC3 | Itron, Inc. | MC3B | 74005590 |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|------------------|--------------|------------------------|------------------|
| Laptop | Panasonic | CF-VEK33 | T1126Z |
| Laptop PSU | Panasonic | CF-AA5713A M3 | 5713AM317811923D |
| EUT Power Source | RadioShack | Switching Power Supply | 10A08 |

Configuration 2

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|--------|--------------|---------|----------|
| MC3 | Itron, Inc. | MC3B | 74005590 |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|------------------|--------------|------------------------|------------------|
| Laptop | Panasonic | CF-VEK33 | T1126Z |
| Laptop PSU | Panasonic | CF-AA5713A M3 | 5713AM317811923D |
| EUT Power Source | RadioShack | Switching Power Supply | 10A08 |
| 5dBi Antenna | PCTEL | Generic | NA |
| Receiver Antenna | PCTEL | SUB-0275-001/H | S15180005 |

Configuration 3

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|--------|--------------|---------|----------|
| MC3 | Itron, Inc. | MC3B | 74005590 |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|---------------------------------|------------------------|------------------------|-----------------------|
| Tablet | Panasonic | FZ-G1 | IMEI: 990005071111034 |
| Automobile Adapter (Tablet PSU) | Lind Electronics, inc. | PA1580-3262 FA | 1331 |
| Laptop Dock | Itron, Inc. | Laptop Dock | NA |
| EUT Power Source | RadioShack | Switching Power Supply | 10A08 |
| 5dBi Antenna | PCTEL | Generic | NA |
| Receiver Antenna | PCTEL | SUB-0275-001/H | S15180005 |

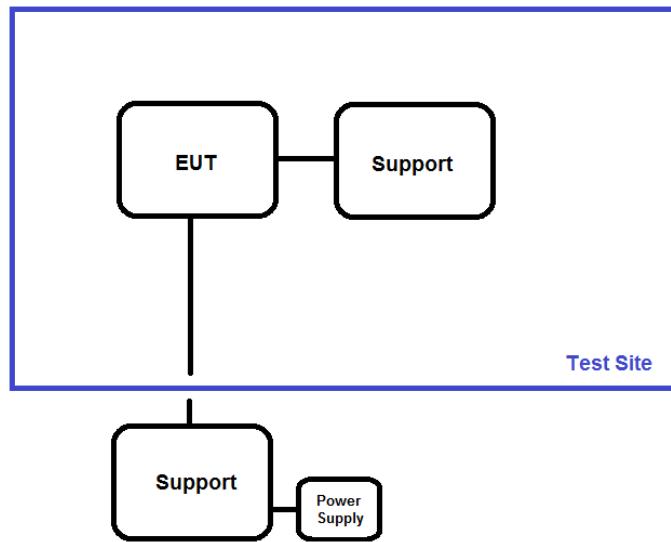
General Product Information:

| Description of EUT | |
|---|--|
| Mobile Collection System | |
| Product Information | Manufacturer-Provided Details |
| Operating Frequencies Tested: | 904.8-924.4 MHz |
| Equipment Type: | Stand-Alone Equipment |
| Type of Wideband System: | FHSS |
| Maximum Duty Cycle: | Tested at 100% |
| Modulation Type(s): | FSK 150kbps |
| Number of TX Chains: | 1 |
| Beamforming Type: | NA |
| Antenna Type(s) and Gain: | Omni / 5 dBi |
| Antenna Connection Type: | External Connector |
| Nominal Input Voltage: | Battery / 13.8VDC |
| Firmware / Software Version(s): | ARM version: 8.00.00.19 DSP version: 7.00.00.57 FPGA version: 3.08 TX version: 0.00 PSoC version: 0.00 MC3 SuperRaptor Test 4.2.0.0 |
| Firmware / Software Description: | <ul style="list-style-type: none"> Radio Firmware consists of 3 separate files - <ul style="list-style-type: none"> ARM code for the ARM Cortex processor contained within the OMAP application processor. DSP code for the Digital Signal Processor contained within the OMAP application processor. FPGA code for the Field Programmable Gate Array Software for testing the EUT consists of MC3Test running on a PC. MC3Test is used to set the transmitter power, frequency, modulation, and data rate during testing. This software is not available to the end user and the end user has no control over transmitter settings. |
| Firmware / Software Setting(s): | TXDAC: 10 PA: 29 |
| Tune-up or Adjustment(s): | None |
| Receiver Bandwidth and Synchronization: | The manufacturer declares the receiver input bandwidth matches the transmit channel bandwidth and shifts frequencies in synchronization with the transmitter. |
| The validity of results is dependent on the stated product details, the accuracy of which the manufacturer assumes full responsibility. | |

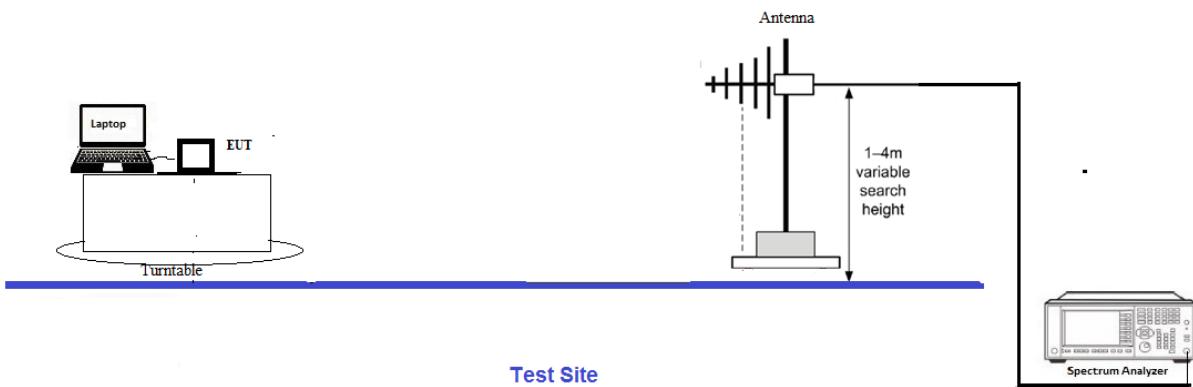
Block Diagram of Test Setup(s)

| Config# | Setup Description of Block Diagram |
|---------|--|
| 1 | EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. |
| 2 | EUT is setup for radiated measurements. Radio is connected to a laptop. |
| 3 | EUT is setup for radiated measurements. Radio is connected to a tablet. |

Test Setup Block Diagram



Radiated test setup



FCC Part 15 Subpart C

15.247(a) Transmitter Characteristics

Test Setup/Conditions

| | | | |
|----------------|--|----------------|--------------|
| Test Location: | Bothell Lab C3 | Test Engineer: | S. Pittsford |
| Test Method: | ANSI C63.10 (2020) | Test Date(s): | 6/17/2024 |
| Configuration: | 1 | | |
| Test Setup: | EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. | | |

Environmental Conditions

| | | | |
|------------------|----|------------------------|----|
| Temperature (°C) | 21 | Relative Humidity (%): | 42 |
|------------------|----|------------------------|----|

Test Equipment

| Asset# | Description | Manufacturer | Model | Cal Date | Cal Due |
|--------|-------------------|--------------|-----------|-----------|-----------|
| 03803 | Spectrum Analyzer | Agilent | E4440A | 2/12/2024 | 2/12/2026 |
| P05748 | Attenuator | Pasternack | PE7004-20 | 2/26/2024 | 2/26/2026 |
| P06452 | Cable | Andrews | Heliax | 2/8/2023 | 2/8/2025 |

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

Test Data Summary

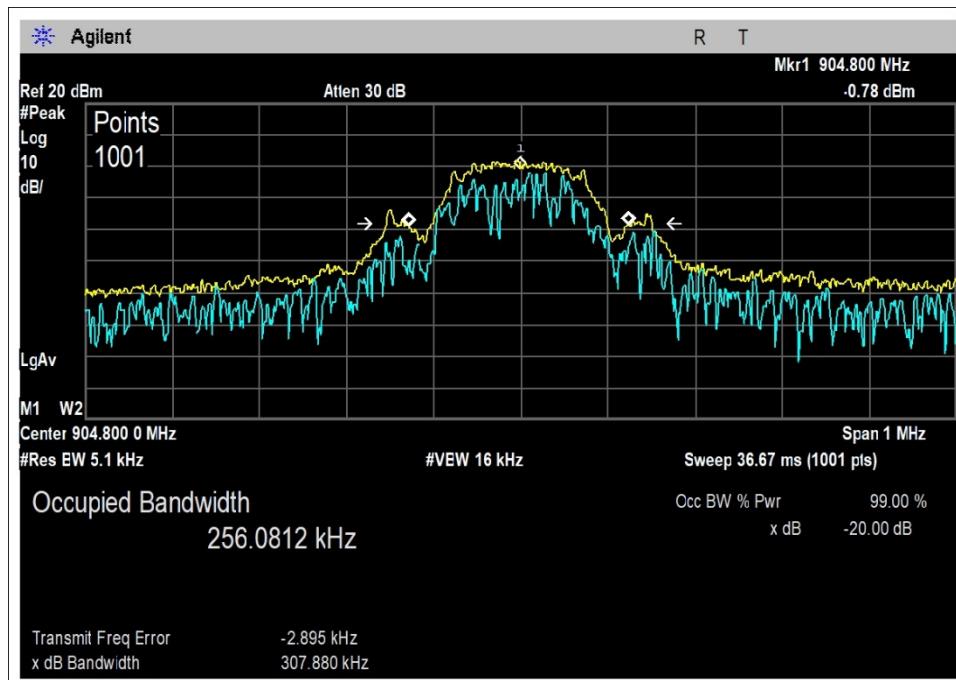
| Frequency (MHz) | Antenna Port | Modulation | Measured (kHz) | Limit (kHz) | Results |
|-----------------|--------------|------------|----------------|-------------|---------|
| 904.8 | 1 | 150kbps | 307.9 | ≤500 | Pass |
| 914 | 1 | 150kbps | 305.9 | ≤500 | Pass |
| 924.4 | 1 | 150kbps | 198.9 | ≤500 | Pass |

15.247(a)(1)(i) 99% Occupied Bandwidth

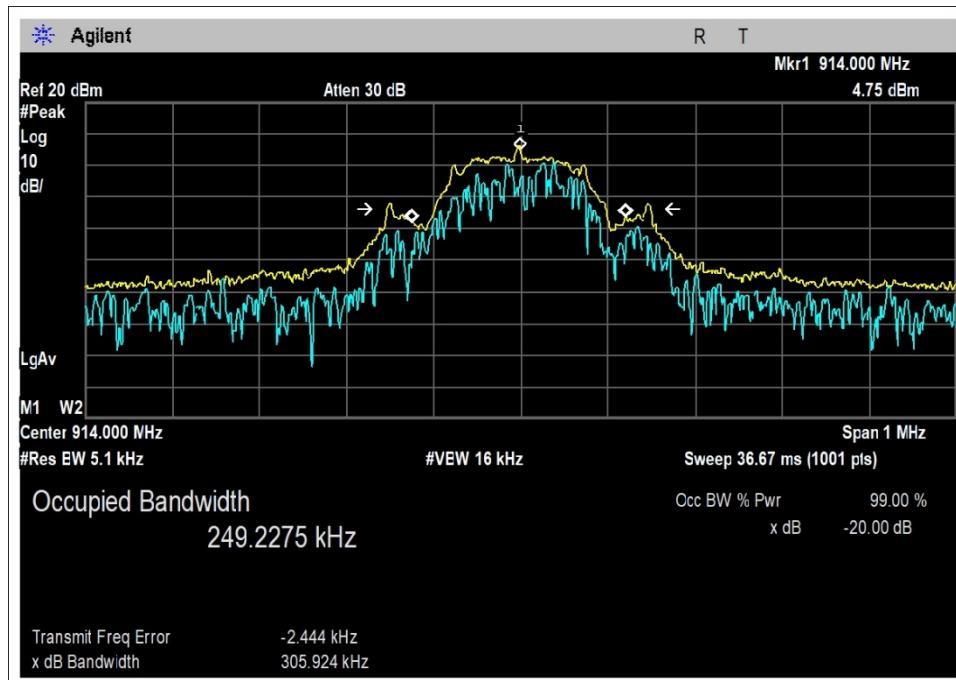
Test Data Summary

| Frequency (MHz) | Antenna Port | Modulation | Measured (kHz) | Limit (kHz) | Results |
|-----------------|--------------|------------|----------------|-------------|---------|
| 904.8 | 1 | 150kbps | 256.1 | None | N/A |
| 914 | 1 | 150kbps | 249.2 | | |
| 924.4 | 1 | 150kbps | 202.3 | | |

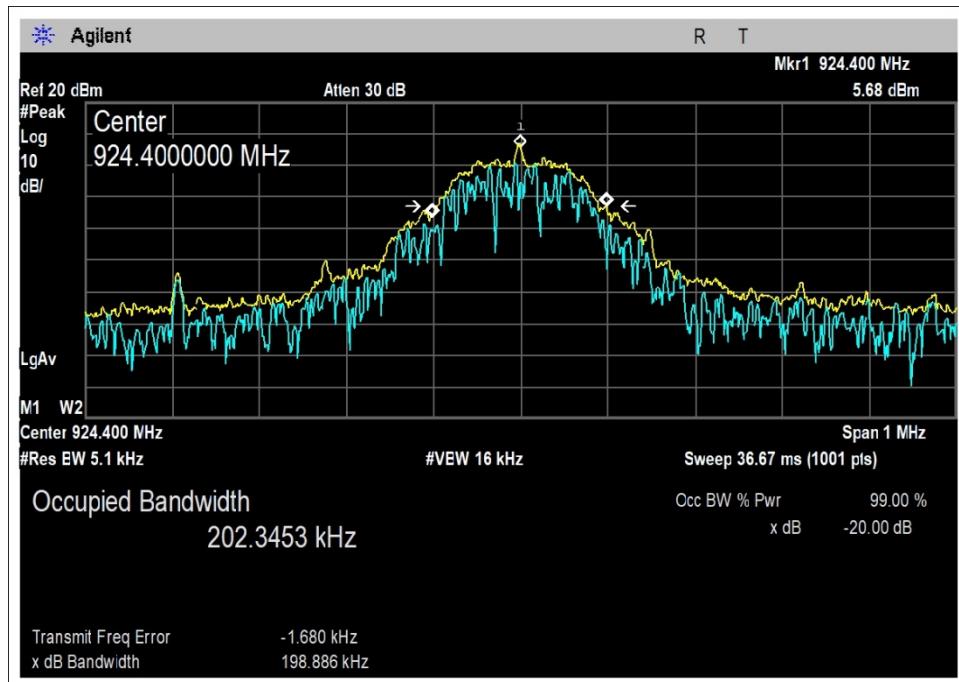
Plot(s)



Low Channel



Middle Channel


Testing the Future
LABORATORIES, INC.

High Channel

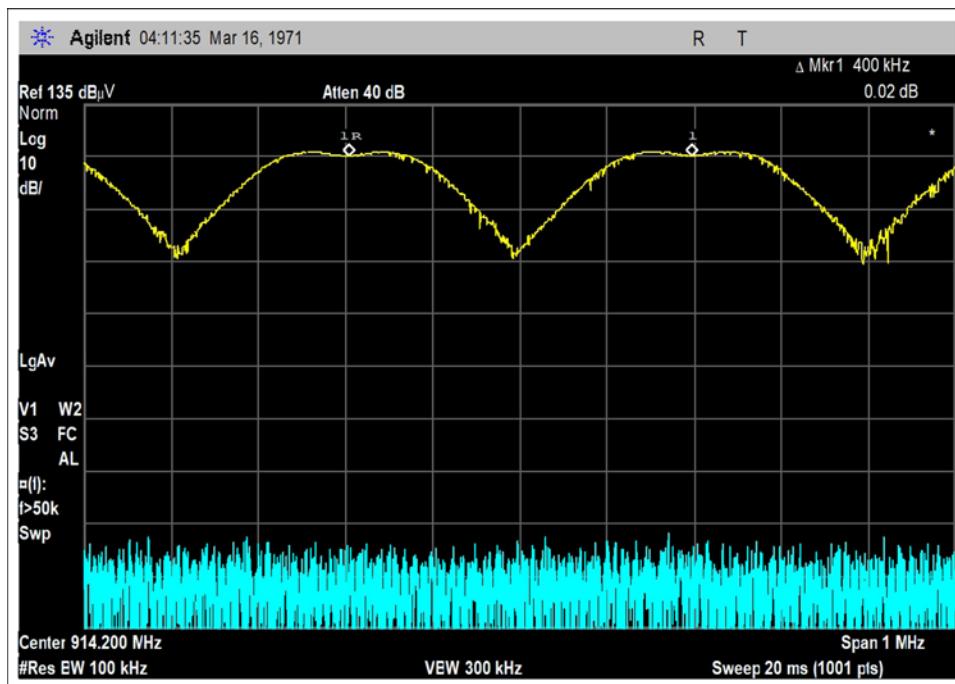
15.247(a)(1) Carrier Separation

Test Data Summary

Limit applied: 20dB bandwidth of the hopping channel.

| Antenna Port | Operational Mode | Measured (kHz) | Limit (kHz) | Results |
|--------------|------------------|----------------|-------------|---------|
| 1 | Hopping | 400 | >307.9 | Pass |

Plot(s)



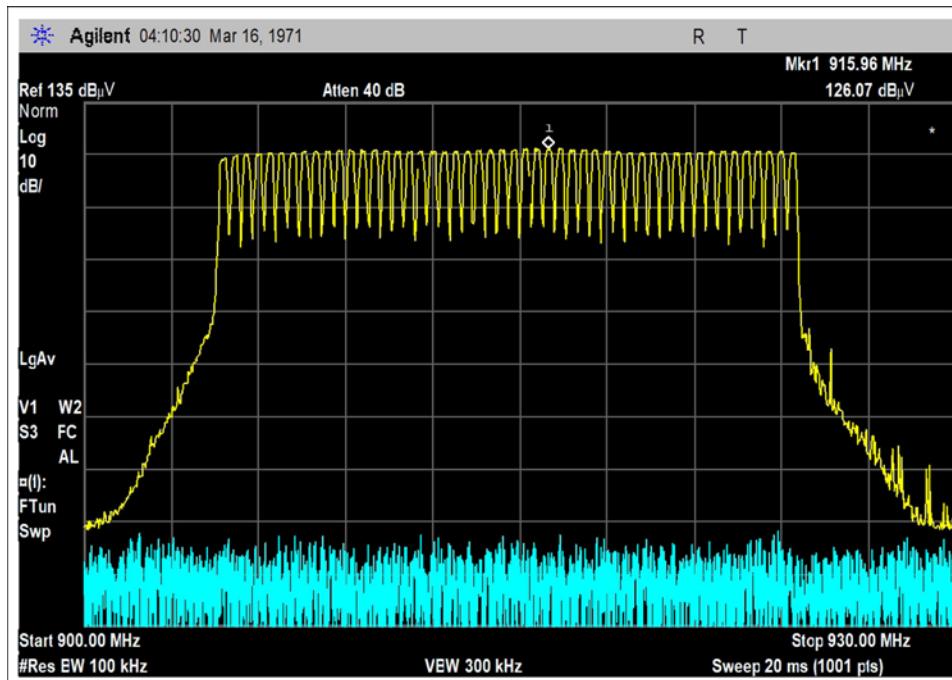
15.247(a)(1)(i) Number of Channels

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 | Hopping | 50 | ≥ 50 | Pass |

Plot(s)



15.247(a)(1)(i) Time of Occupancy

| Test Data Summary | | | | |
|---|------------------|---------------|------------------------|---------|
| Observation Period, P_{obs} is derived from the following: | | | | |
| $P_{obs} = \begin{cases} 20 \text{ Seconds} & 20 \text{ dB BW} < 250 \text{ kHz} \\ 10 \text{ Seconds} & 20 \text{ dB BW} \geq 250 \text{ kHz} \end{cases}$ | | | | |
| Antenna Port | Operational Mode | Measured (ms) | Limit (ms/ P_{obs}) | Results |
| 1 | Hopping | 100 | ≤ 400 | Pass |

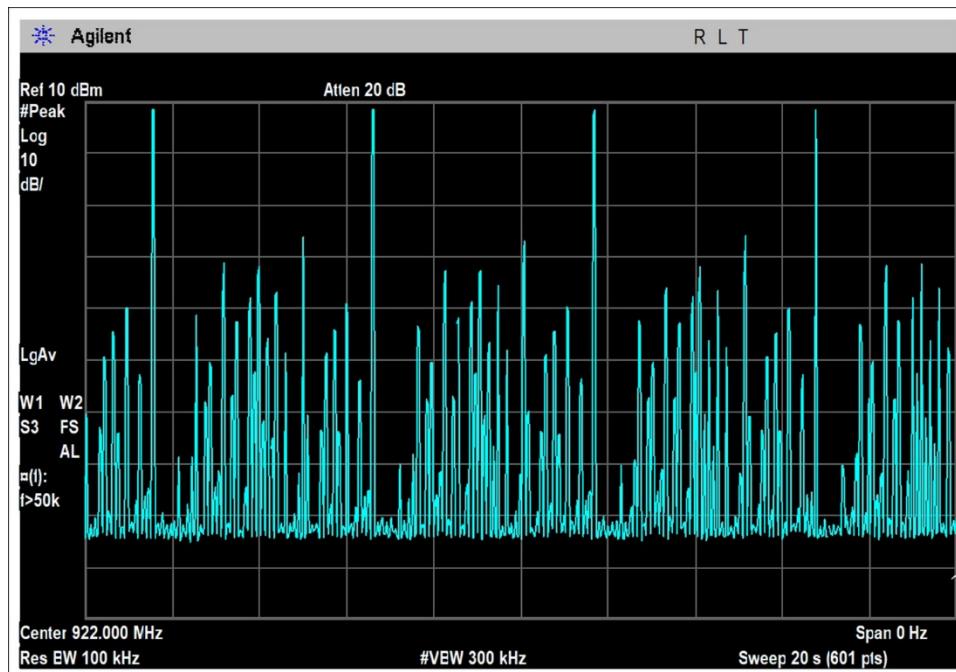
Measured results are calculated as follows:

$$Dwell \text{ time} = \left(\sum_{Bursts} RF \text{ Burst On Time} + \sum_{Control} Control \text{ Signal On time} \right) \Big|_{P_{obs}}$$

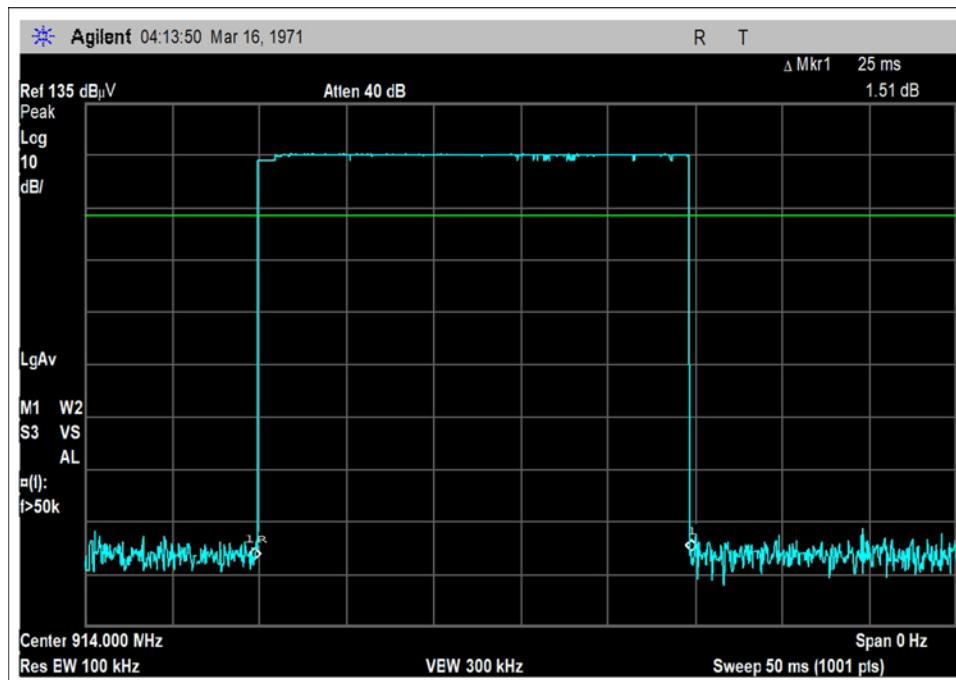
Actual Calculated Values:

| Parameter | Value |
|--|-------|
| Observation Period (P_{obs}): | 20s |
| Number of RF Bursts / P_{obs} : | 4 |
| On time of RF Burst: | 25ms |
| Number of Control or other signals / P_{obs} : | 0 |
| On time of Control or other Signals: | 0 |
| Total Measured On Time: | 100ms |

Plot(s)

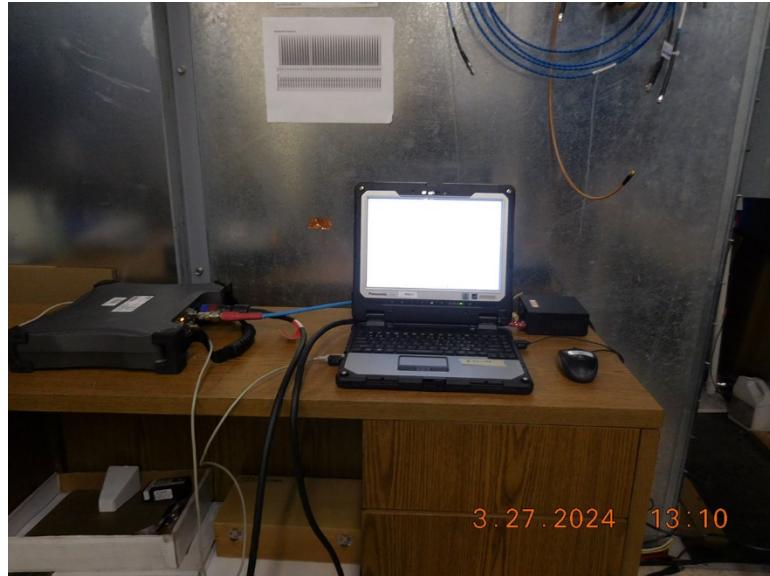


20s



Pulse 25ms

Test Setup Photo(s)



15.247(b)(2) Output Power

| Test Setup/Conditions | | | |
|-----------------------|--|----------------|-------------|
| Test Location: | Bothell Lab C3 | Test Engineer: | M. Harrison |
| Test Method: | ANSI C63.10 (2020) | Test Date(s): | 4/8/2024 |
| Configuration: | 1 | | |
| Test Setup: | EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. | | |

| Environmental Conditions | | | |
|--------------------------|----|------------------------|----|
| Temperature (°C) | 21 | Relative Humidity (%): | 42 |

| Test Equipment | | | | | |
|----------------|------------------------------|--------------|--------|-----------|-----------|
| Asset# | Description | Manufacturer | Model | Cal Date | Cal Due |
| 02673 | PSA Series Spectrum Analyzer | Agilent | E4446A | 3/8/2024 | 3/8/2026 |
| P05503 | Attenuator | Narda | 766-10 | 4/28/2023 | 4/28/2025 |
| P06009 | Cable | Andrew | Heliax | 3/7/2024 | 3/7/2026 |

Test Data Summary - Voltage Variations

This equipment is battery powered. Power output tests were performed using an external power supply to simulate a fresh battery (13.8VDC).

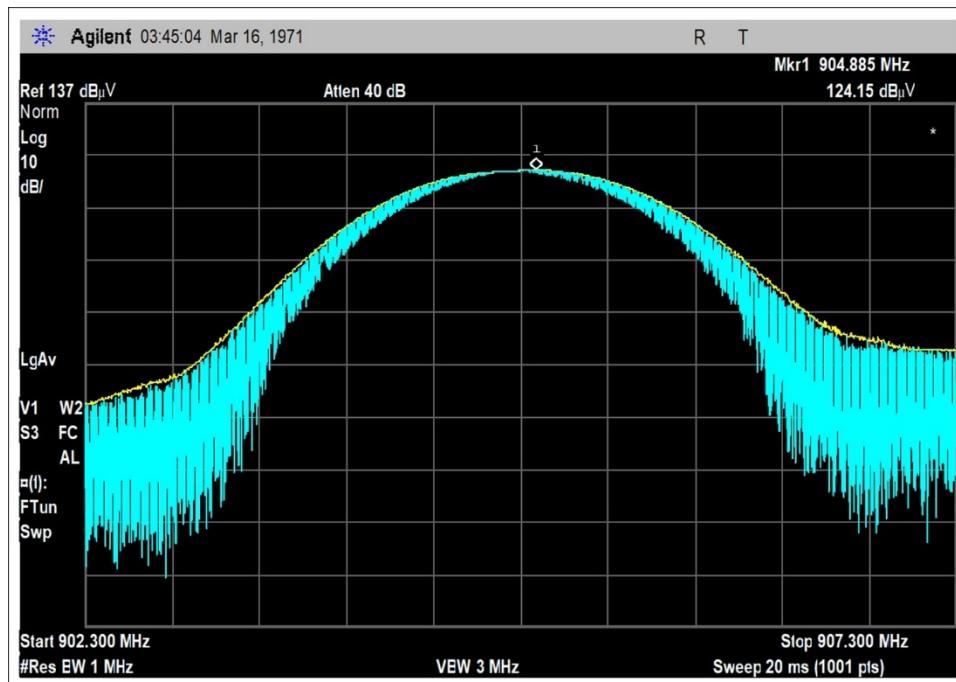
| Test Data Summary - RF Conducted Measurement | | | | | | | |
|--|------------|------------------------|--------------------|-------|------------|-------|---------|
| Frequency (MHz) | Modulation | Ant. Type / Gain (dBi) | RF Conducted (dBm) | | EIRP (dBm) | | Results |
| | | | Measured | Limit | Calculated | Limit | |
| 904.8 | 150kbps | Omni / 5 dBi | 29.0 | ≤ 30 | 34.0 | ≤36 | Pass |
| 914 | 150kbps | Omni / 5 dBi | 29.3 | ≤ 30 | 34.3 | ≤36 | Pass |
| 924.4 | 150kbps | Omni / 5 dBi | 27.9 | ≤ 30 | 32.9 | ≤36 | Pass |

EIRP is calculated as RF conducted power (dBm) + antenna gain (dBi)

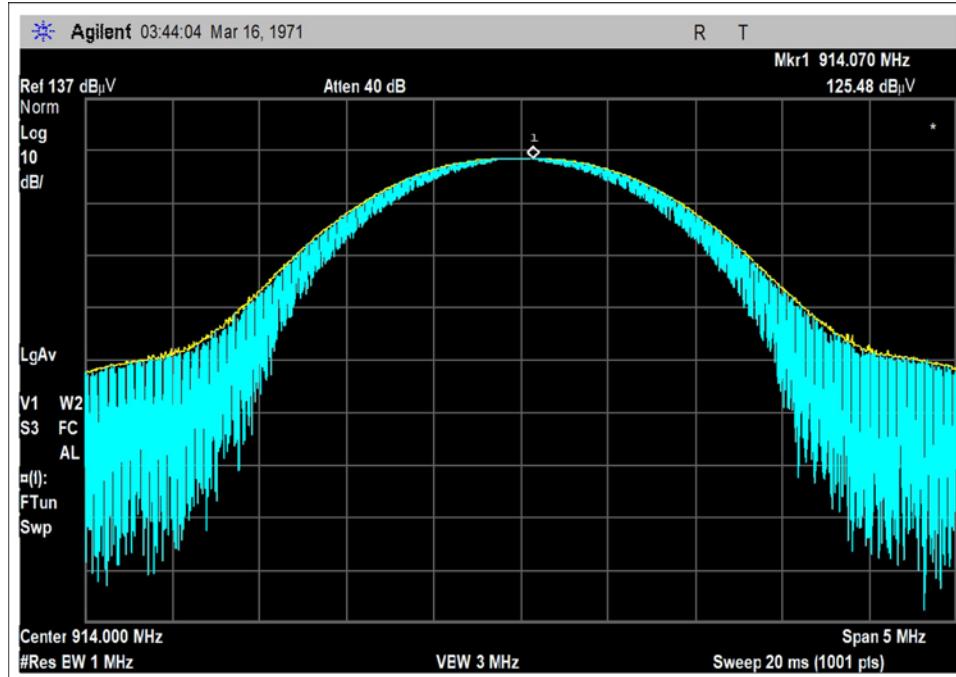
The RF conducted power limit is calculated according to the maximum allowed RF conducted power with a maximum of 6dBi gain antenna in accordance with 15.247(b):

$$Limit = 30 \text{ (or 24)} - Roundup(G - 6)$$

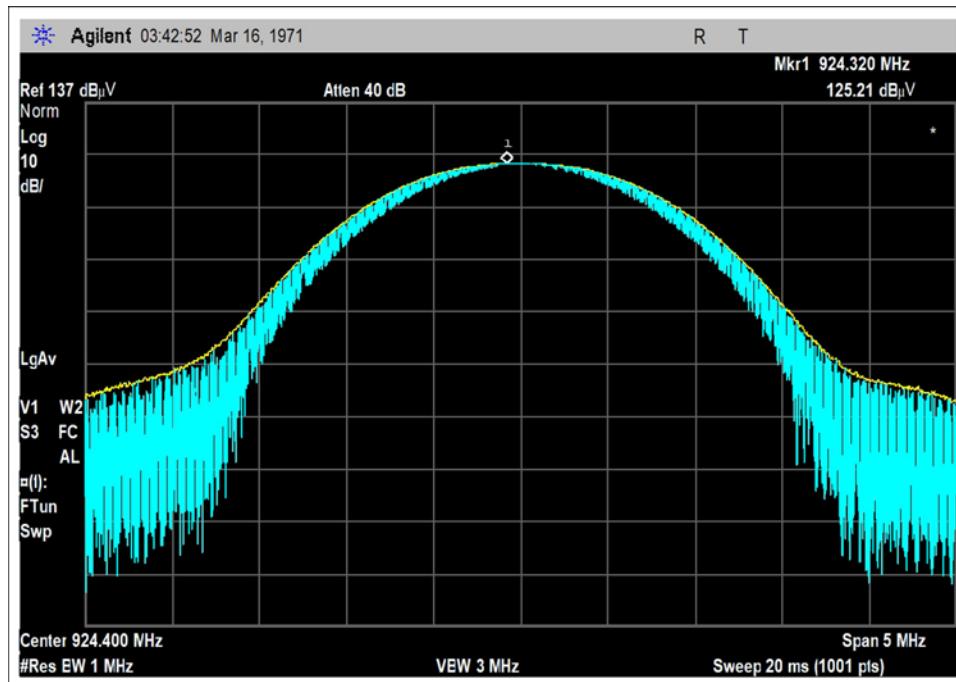
Plots



Low Channel



Middle Channel



High Channel

Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(b) Power Output (902-928 MHz FHSS >50 Channels)**
 Work Order #: **109570** Date: 4/8/2024
 Test Type: **Conducted Emissions** Time: 07:52:09
 Tested By: Matt Harrison Sequence#: 1
 Software: EMITest 5.03.20 VDC: 13.8VDC

Equipment Tested:

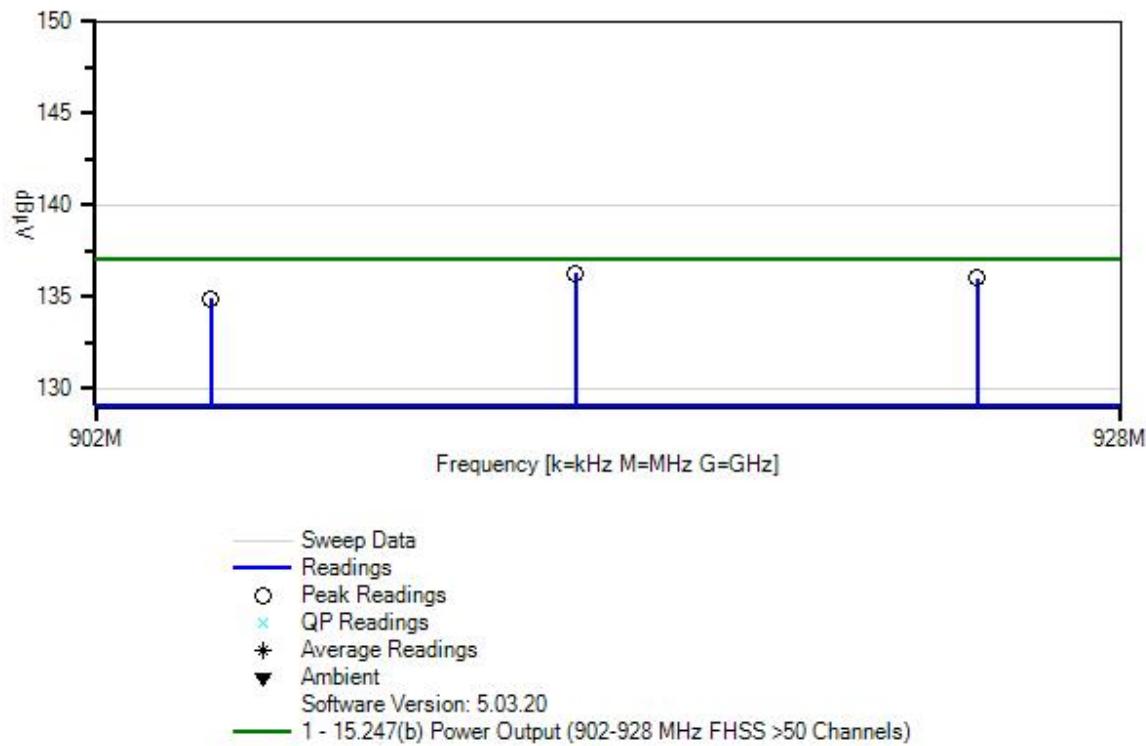
| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

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

Test Conditions / Notes:

| |
|--|
| Test Environment Conditions: |
| Temperature: 20°C |
| Humidity: 42% |
| Pressure: 100.3kPa |
| Test Method: ANSI C63.10 |
| Test Mode: Modulated Tx |
| Test Setup: EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. |
| Band of Operation: 902-928 MHz |
| Frequency Tested: 904.8, 914, 924.4 MHz |
| Firmware Power Setting: 06 01 30 |
| Protocol /MCS/Modulation: FSK 150kbps |
| Duty Cycle: 100% |
| Antenna Type: External Omni |
| Antenna Gain : 5 dBi. |
| EUT Firmware: See Report Details |
| Modifications: None |

Itron, Inc. WO#: 109570 Sequence#: 1 Date: 4/8/2024
 15.247(b) Power Output (902-928 MHz FHSS >50 Channels) Test Lead: 13.8VDC RF Port

Test Equipment:

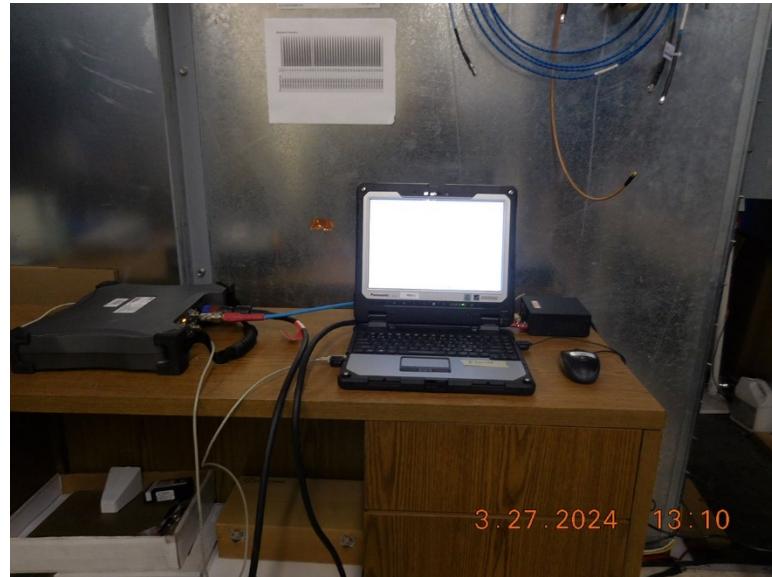
| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|-------------------|--------|------------------|--------------|
| T1 | ANP05503 | Attenuator | 766-10 | 4/28/2023 | 4/28/2025 |
| T2 | ANP06009 | Cable | Heliax | 3/7/2024 | 3/7/2026 |
| | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |

Measurement Data: Reading listed by margin.

Test Lead: RF Port

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | dB | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|---|-------------|--------------------|----------|----------|----|---------------|--------------------|--------------------|--------------|--------------|
| 1 | 914.070M | 125.5 | +10.2 | +0.6 | | +0.0 | 136.3 | 137.0 | -0.7 | RF Po |
| 2 | 924.320M | 125.2 | +10.2 | +0.6 | | +0.0 | 136.0 | 137.0 | -1.0 | RF Po |
| 3 | 904.885M | 124.2 | +10.2 | +0.5 | | +0.0 | 134.9 | 137.0 | -2.1 | RF Po |

Test Setup Photo(s)



15.247(d) RF Conducted Emissions & Band Edge

Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **109570** Date: 4/8/2024
 Test Type: **Conducted Emissions** Time: 08:14:53
 Tested By: Matt Harrison Sequence#: 3
 Software: EMITest 5.03.20 13.8VDC

Equipment Tested:

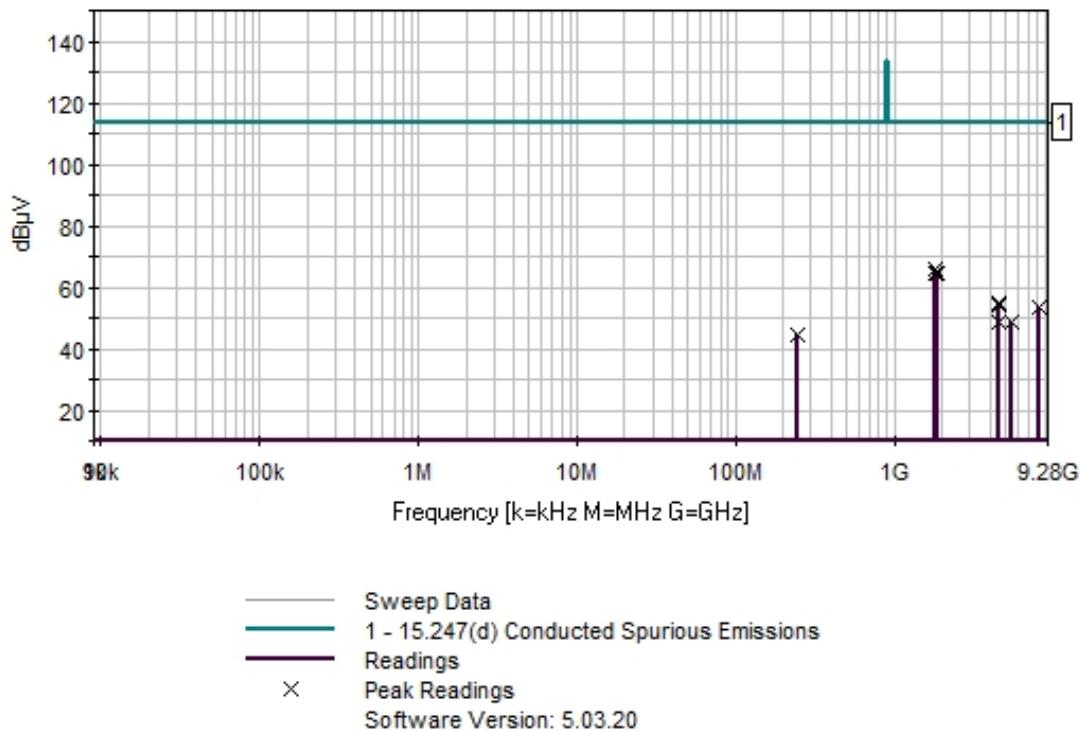
| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 1 | | | |

Support Equipment:

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

Test Conditions / Notes:

| |
|--|
| Test Environment Conditions: |
| Temperature: 20°C |
| Humidity: 42% |
| Pressure: 100.3kPa |
| Test Method: ANSI C63.10 |
| Test Mode: Modulated Tx |
| Test Setup: EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. |
| Band of Operation: 902-928 MHz |
| Frequency Tested: 904.8, 914, 924.4 MHz |
| Firmware Power Setting: 06 01 30 |
| Protocol /MCS/Modulation: FSK 150kbps |
| Duty Cycle: 100% |
| Antenna Type: External Omni |
| Antenna Gain: 5 dBi. |
| EUT Firmware: See Report Details |
| Modifications: None |

Itron, Inc. WO#: 109570 Sequence#: 3 Date: 4/8/2024
 15.247(d) Conducted Spurious Emissions Test Lead: 13.8VDC RF Port

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|-------------------|--------|------------------|--------------|
| T1 | ANP05503 | Attenuator | 766-10 | 4/28/2023 | 4/28/2025 |
| T2 | ANP06009 | Cable | Heliax | 3/7/2024 | 3/7/2026 |
| | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |

| Measurement Data: | | | Reading listed by margin. | | | Test Lead: RF Port | | | | |
|--------------------------|-------------|--------------------|---------------------------|----------|----|--------------------|--------------------|--------------------|--------------|--------------|
| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | dB | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
| 1 | 1827.918M | 54.6 | +10.2 | +0.8 | | +0.0 | 65.6 | 113.5 | -47.9 | RF Po |
| 2 | 1809.680M | 53.7 | +10.2 | +0.8 | | +0.0 | 64.7 | 113.5 | -48.8 | RF Po |
| 3 | 1848.692M | 53.3 | +10.2 | +0.8 | | +0.0 | 64.3 | 113.5 | -49.2 | RF Po |
| 4 | 4621.802M | 53.8 | +0.0 | +1.3 | | +0.0 | 55.1 | 113.5 | -58.4 | RF Po |
| 5 | 4569.800M | 53.1 | +0.0 | +1.3 | | +0.0 | 54.4 | 113.5 | -59.1 | RF Po |
| 6 | 8319.898M | 53.5 | +0.0 | +0.0 | | +0.0 | 53.5 | 113.5 | -60.0 | RF Po |
| 7 | 5429.092M | 47.1 | +0.0 | +1.6 | | +0.0 | 48.7 | 113.5 | -64.8 | RF Po |
| 8 | 4523.792M | 47.3 | +0.0 | +1.3 | | +0.0 | 48.6 | 113.5 | -64.9 | RF Po |
| 9 | 245.800M | 33.7 | +10.2 | +0.3 | | +0.0 | 44.2 | 113.5 | -69.3 | RF Po |

Band Edge

Band Edge Summary – Single Channel Mode

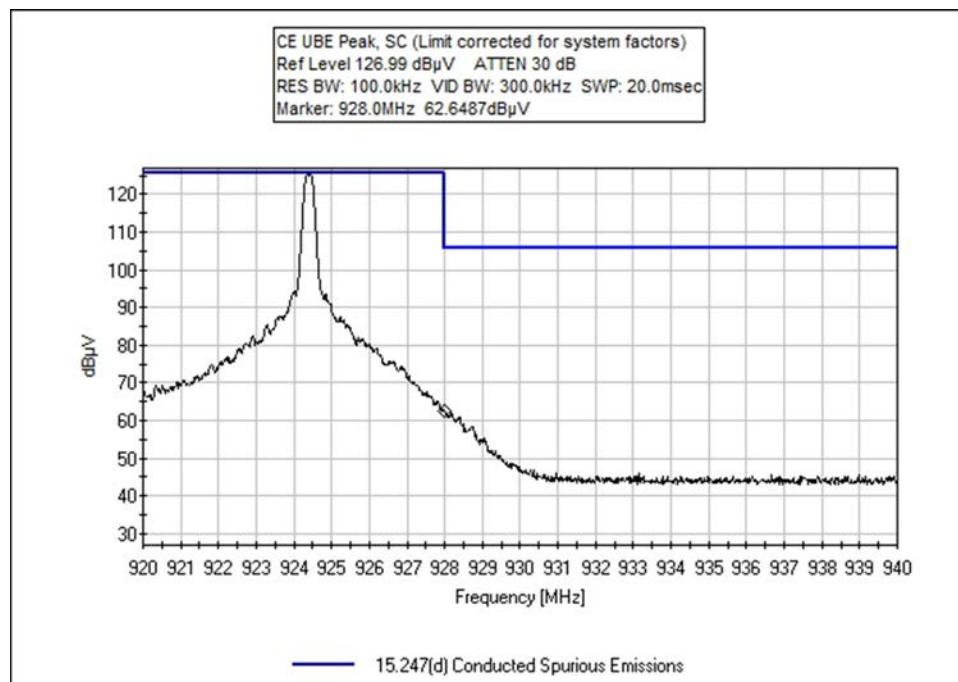
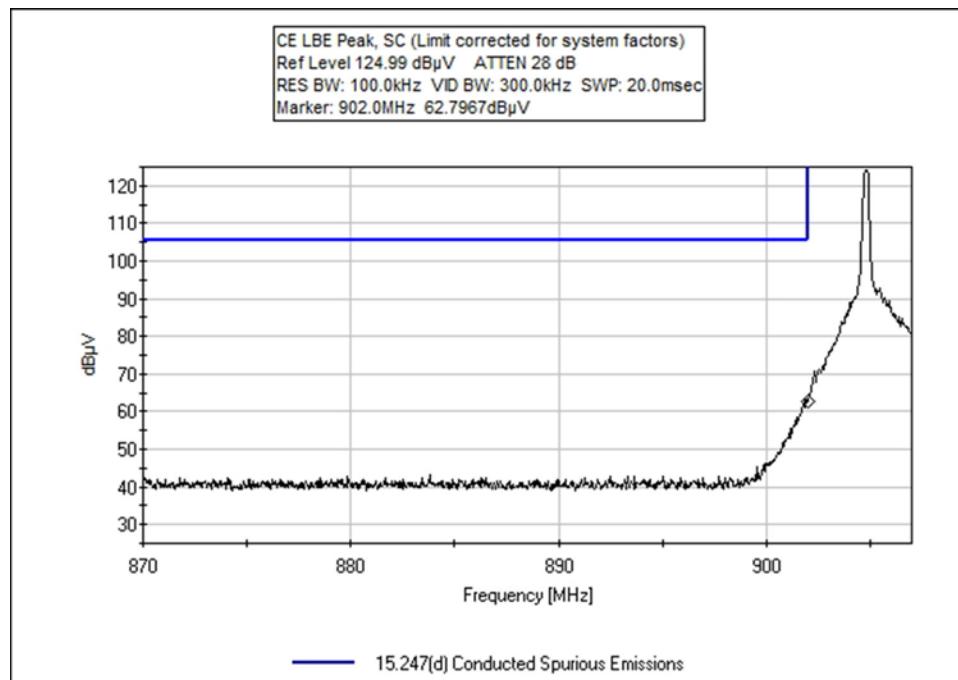
| Frequency (MHz) | Modulation | Measured (dB μ V) | Limit (dB μ V) | Results |
|-----------------|------------|-----------------------|--------------------|---------|
| 902 | 150kbps | 73.5 | < 116.4 | Pass |
| 928 | 150kbps | 73.4 | < 116.4 | Pass |

Band Edge Summary – Hopping Mode

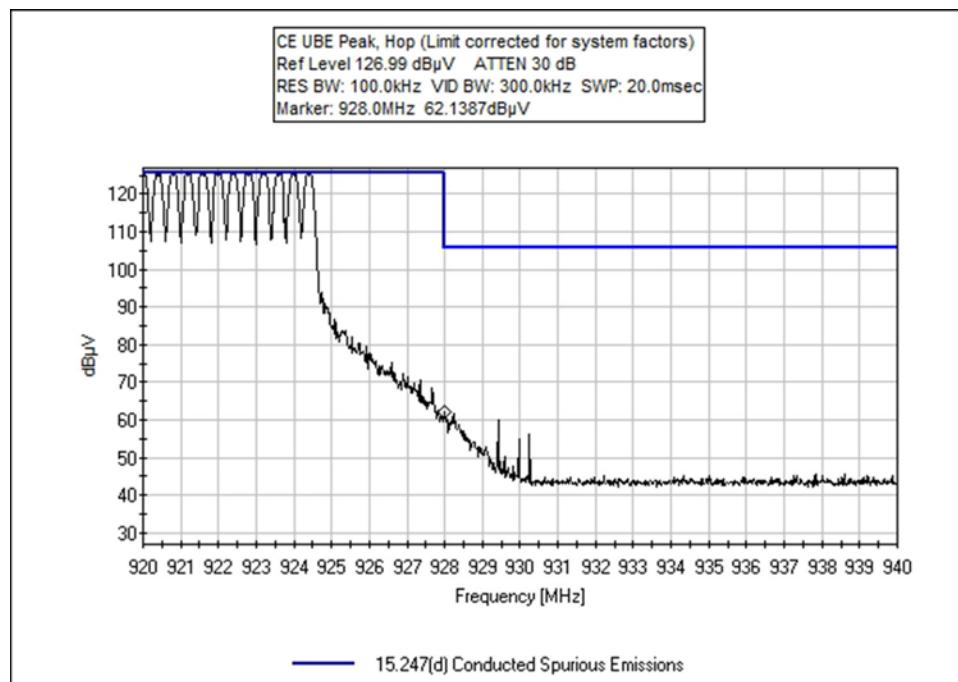
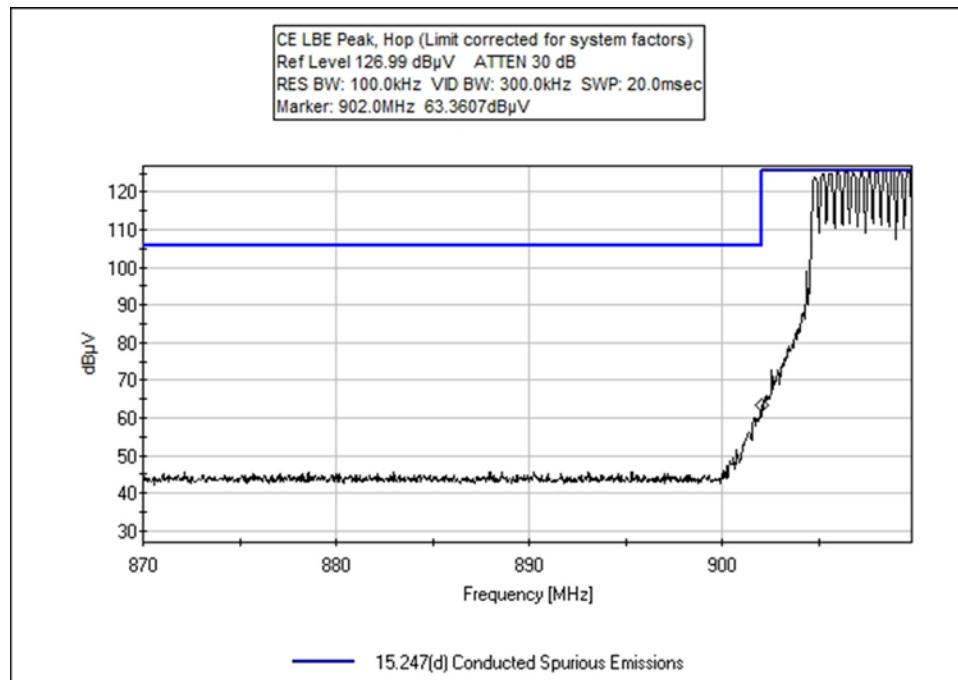
| Frequency (MHz) | Modulation | Measured (dB μ V) | Limit (dB μ V) | Results |
|-----------------|------------|-----------------------|--------------------|---------|
| 902 | 150kbps | 74.1 | < 116.4 | Pass |
| 928 | 150kbps | 72.9 | < 116.4 | Pass |

Band Edge Plots

Single Channel



Hopping



Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **109570** Date: 4/8/2024
 Test Type: **Conducted Emissions** Time: 08:07:54
 Tested By: Matt Harrison Sequence#: 2
 Software: EMITest 5.03.20 13.8VDC

Equipment Tested:

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

Support Equipment:

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

Test Conditions / Notes:

| |
|--|
| Test Environment Conditions: Temperature: 20°C Humidity: 42% Pressure: 100.3kPa |
| Test Method: ANSI C63.10 |
| Test Mode: Modulated Tx |
| Test Setup: EUT is setup for conducted measurements. The antenna port is directly connected to a spectrum analyzer via cable and attenuator. |
| Band of Operation: 902-928 MHz |
| Frequency Tested: 904.8, 914, 924.4 MHz |
| Firmware Power Setting: 06 01 30 |
| Protocol /MCS/Modulation: FSK 150kbps |
| Duty Cycle: 100% |
| Antenna Type: External Omni |
| Antenna Gain: 5 dBi. |
| EUT Firmware: See Report Details |
| Modifications: None |

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|-------------------|--------|------------------|--------------|
| T1 | ANP05503 | Attenuator | 766-10 | 4/28/2023 | 4/28/2025 |
| T2 | ANP06009 | Cable | Heliax | 3/7/2024 | 3/7/2026 |
| T3 | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |

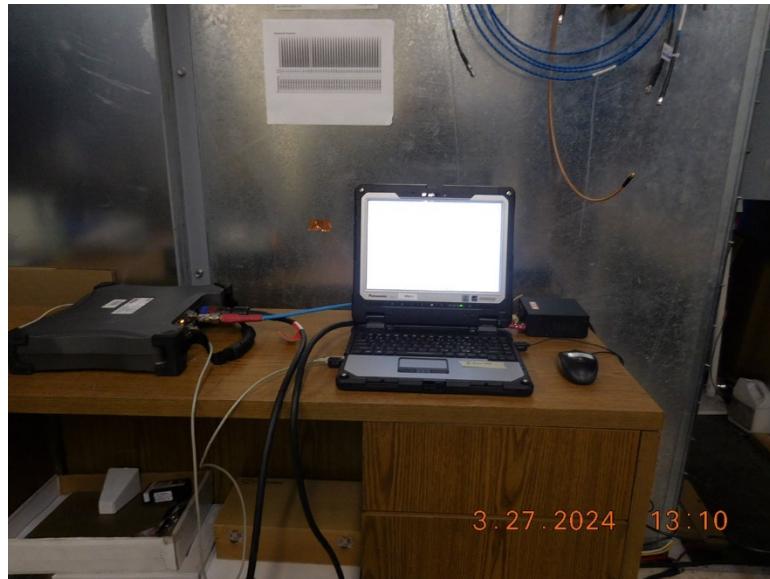
Measurement Data:

Reading listed by margin.

Test Lead: RF Port

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dB μ V | Spec dB μ V | Margin dB | Polar Ant |
|---|-------------|--------------------|----------|----------|----------|----|---------------|--------------------|--------------------|--------------|--------------|
| 1 | 902.000M | 63.4 | +10.2 | +0.5 | +0.0 | | +0.0 | 74.1 | 116.4 | -42.3 | RF Po Hop |
| 2 | 902.000M | 62.8 | +10.2 | +0.5 | +0.0 | | +0.0 | 73.5 | 116.4 | -42.9 | RF Po SC |
| 3 | 928.000M | 62.6 | +10.2 | +0.6 | +0.0 | | +0.0 | 73.4 | 116.4 | -43.0 | RF Po SC |
| 4 | 928.000M | 62.1 | +10.2 | +0.6 | +0.0 | | +0.0 | 72.9 | 116.4 | -43.5 | RF Po Hop |

Test Setup Photo(s)



15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **109570** Date: 4/8/2024
 Test Type: **Radiated Scan** Time: 14:05:14
 Tested By: Matt Harrison Sequence#: 4
 Software: EMITest 5.03.20

Equipment Tested:

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

Support Equipment:

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

Test Conditions / Notes:

Test Environment Conditions:
 Temperature: 20°C
 Humidity: 42%
 Pressure: 100.3kPa

Test Method: ANSI C63.10
 Test Mode: Modulated Tx
 Test Setup: EUT is setup in a tabletop configuration. It is connected to 2 RX antennas, 1Tx/GPS RX antenna, a laptop, and a power supply. X, Y, Z and both polarities were explored, worst-case data provided.

Frequency Range: 9k-10GHz
 Band of Operation: 902-928 MHz
 Frequency Tested: 904.8, 914, 924.4 MHz
 Firmware Power Setting: 06 01 30
 Protocol /MCS/Modulation: FSK 150kbps
 Duty Cycle: 100%

Antenna Type: External Omni
 Antenna Gain: 5 dBi.
 EUT Firmware: See Report Details
 Modifications: None

Itron, Inc. WO#: 109570 Sequence#: 4 Date: 4/8/2024
 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|-----|-------------|--------------------|-------------------|------------------|--------------|
| T1 | ANP06011 | Cable | Heliax | 11/16/2023 | 11/16/2025 |
| T2 | ANP05333 | Cable | Heliax | 8/8/2023 | 8/8/2025 |
| T3 | ANP05360 | Cable | RG214 | 8/8/2023 | 8/8/2025 |
| T4 | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |
| T5 | AN03824 | Biconilog Antenna | 3142E | 5/9/2023 | 5/9/2025 |
| T6 | AN03540 | Preamp | 83017A | 3/24/2023 | 3/24/2025 |
| T7 | AN02374ANSI | Horn Antenna | RGA-60 | 5/26/2023 | 5/26/2025 |
| T8 | ANP07746 | Attenuator | PE7004-6 | 2/16/2023 | 2/16/2025 |
| T9 | ANP06515 | Cable | Heliax | 2/28/2024 | 2/28/2026 |
| T10 | ANP07504 | Cable | CLU40-KMFM-02.00F | 1/19/2024 | 1/19/2026 |
| T11 | AN03170 | High Pass Filter | HM1155-11SS | 9/27/2023 | 9/27/2025 |
| T12 | AN02307 | Preamp | 8447D | 8/9/2023 | 8/9/2025 |
| T13 | ANP08072 | Band Reject Filter | BC50722 | 10/3/2023 | 10/3/2025 |

| 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 | dB μ V | dB | dB | dB | dB | Table | dB μ V/m | dB μ V/m | dB | Ant |
| 1 | 37.511M | 43.1 | +0.0 | +0.3 | +0.4 | +0.0 | +0.0 | 33.8 | 40.0 | -6.2 | Vert |
| | | | +17.6 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | +0.0 | -27.7 | | | | | |
| | | | +0.1 | | | | | | | | |
| 2 | 74.931M | 46.2 | +0.1 | +0.4 | +0.6 | +0.0 | +0.0 | 32.7 | 40.0 | -7.3 | Vert |
| | QP | | +12.9 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | +0.0 | -27.6 | | | | | |
| | | | +0.1 | | | | | | | | |
| ^ | 74.931M | 54.6 | +0.1 | +0.4 | +0.6 | +0.0 | +0.0 | 41.1 | 40.0 | +1.1 | Vert |
| | | | +12.9 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | +0.0 | -27.6 | | | | | |
| | | | +0.1 | | | | | | | | |
| 4 | 3697.600M | 37.4 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 46.1 | 54.0 | -7.9 | Vert |
| | | | +0.0 | -33.9 | +31.6 | +5.9 | | | | | |
| | | | +3.4 | +0.5 | +0.3 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| 5 | 7312.000M | 23.6 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 39.2 | 54.0 | -14.8 | Vert |
| | Ave | | +0.0 | -35.0 | +37.1 | +5.9 | | | | | |
| | | | +5.0 | +0.6 | +0.5 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| ^ | 7312.000M | 36.9 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 52.5 | 54.0 | -1.5 | Vert |
| | | | +0.0 | -35.0 | +37.1 | +5.9 | | | | | |
| | | | +5.0 | +0.6 | +0.5 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| 7 | 7395.200M | 23.2 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 38.9 | 54.0 | -15.1 | Vert |
| | Ave | | +0.0 | -35.1 | +37.3 | +5.9 | | | | | |
| | | | +5.0 | +0.6 | +0.5 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| ^ | 7395.200M | 38.0 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 53.7 | 54.0 | -0.3 | Vert |
| | | | +0.0 | -35.1 | +37.3 | +5.9 | | | | | |
| | | | +5.0 | +0.6 | +0.5 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| 9 | 5428.420M | 24.0 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 36.7 | 54.0 | -17.3 | Vert |
| | Ave | | +0.0 | -33.8 | +34.4 | +5.8 | | | | | |
| | | | +4.2 | +0.5 | +0.4 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| ^ | 5428.420M | 39.2 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 51.9 | 54.0 | -2.1 | Vert |
| | | | +0.0 | -33.8 | +34.4 | +5.8 | | | | | |
| | | | +4.2 | +0.5 | +0.4 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |

| | | | | | | | | | | | |
|----|-----------|------|------|-------|-------|------|------|------|-------|-------|------|
| 11 | 2714.400M | 30.1 | +0.8 | +0.0 | +0.0 | +0.0 | +0.0 | 35.2 | 54.0 | -18.8 | Vert |
| | Ave | | +0.0 | -34.5 | +29.3 | +5.9 | | | 904.8 | | |
| | | | +2.8 | +0.5 | +0.3 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| ^ | 2714.400M | 42.8 | +0.8 | +0.0 | +0.0 | +0.0 | +0.0 | 47.9 | 54.0 | -6.1 | Vert |
| | | | +0.0 | -34.5 | +29.3 | +5.9 | | | 904.8 | | |
| | | | +2.8 | +0.5 | +0.3 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| 13 | 3656.000M | 25.1 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 33.4 | 54.0 | -20.6 | Vert |
| | Ave | | +0.0 | -34.0 | +31.4 | +5.9 | | | 914 | | |
| | | | +3.4 | +0.4 | +0.3 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |
| ^ | 3656.000M | 39.7 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 48.0 | 54.0 | -6.0 | Vert |
| | | | +0.0 | -34.0 | +31.4 | +5.9 | | | 914 | | |
| | | | +3.4 | +0.4 | +0.3 | +0.0 | | | | | |
| | | | +0.0 | | | | | | | | |

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **109570** Date: 4/14/2024
 Test Type: **Radiated Scan** Time: 10:33:34
 Tested By: Steven Pittsford Sequence#: 4
 Software: EMITest 5.03.20

Equipment Tested:

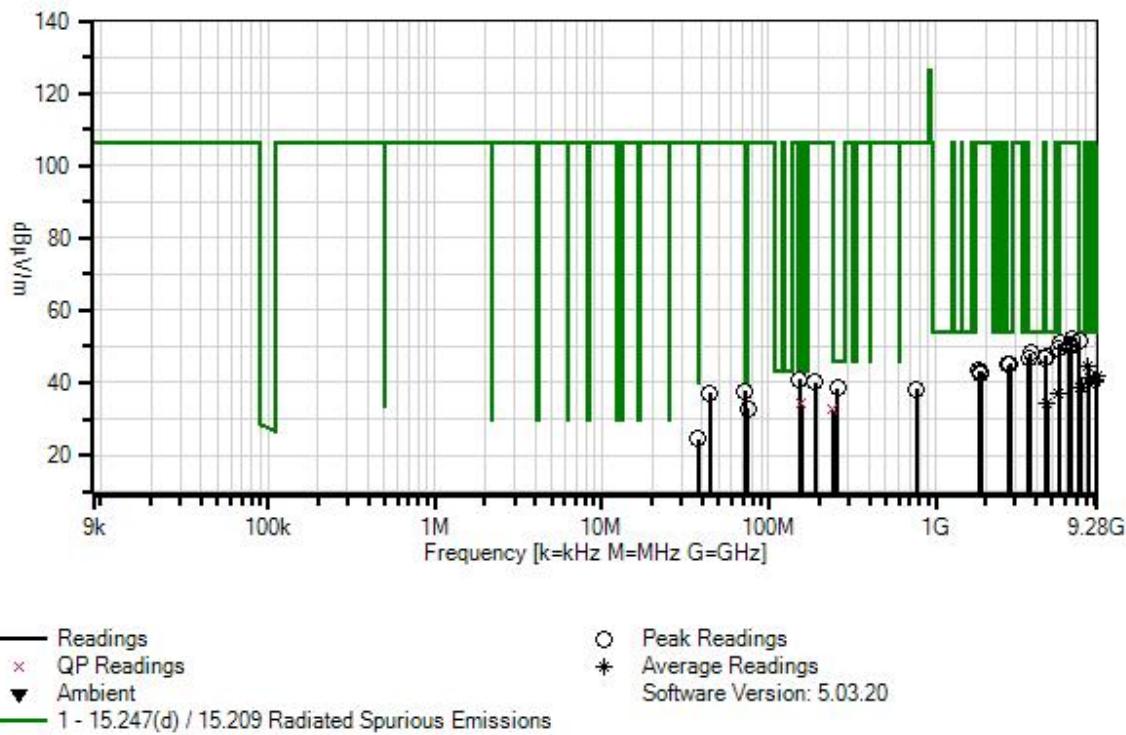
| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 3 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 3 | | | |

Test Conditions / Notes:

| |
|--|
| Test Environment Conditions: |
| Temperature: 20°C |
| Humidity: 42% |
| Pressure: 100.3kPa |
| Test Method: ANSI C63.10 |
| Test Mode: Modulated Tx |
| Test Setup: EUT is setup in a tabletop configuration. It is connected to 2 RX antennas, 1Tx/GPS RX antenna, a Tablet, and a power supply. X, Y, Z and both polarities were explored, worst-case data provided. |
| Frequency Range: 9k-10GHz |
| Band of Operation: 902-928 MHz |
| Frequency Tested: 904.8, 914, 924.4 MHz |
| Firmware Power Setting: 06 01 30 |
| Protocol /MCS/Modulation: FSK 150kbps |
| Duty Cycle: 100% |
| Antenna Type: External Omni |
| Antenna Gain: 5 dBi. |
| EUT Firmware: See Report Details |
| Modifications: None |

Itron, Inc. WO#: 109570 Sequence#: 4 Date: 4/14/2024
 15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|-----|-------------|--------------------|-------------------|------------------|--------------|
| T1 | ANP06011 | Cable | Heliax | 11/16/2023 | 11/16/2025 |
| T2 | ANP05333 | Cable | Heliax | 8/8/2023 | 8/8/2025 |
| T3 | ANP05360 | Cable | RG214 | 8/8/2023 | 8/8/2025 |
| | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |
| T4 | AN03824 | Biconilog Antenna | 3142E | 5/9/2023 | 5/9/2025 |
| T5 | AN03540 | Preamp | 83017A | 3/24/2023 | 3/24/2025 |
| T6 | AN02374ANSI | Horn Antenna | RGA-60 | 5/26/2023 | 5/26/2025 |
| T7 | ANP07746 | Attenuator | PE7004-6 | 2/16/2023 | 2/16/2025 |
| T8 | ANP06515 | Cable | Heliax | 2/28/2024 | 2/28/2026 |
| T9 | ANP07504 | Cable | CLU40-KMFM-02.00F | 1/19/2024 | 1/19/2026 |
| T10 | AN03170 | High Pass Filter | HM1155-11SS | 9/27/2023 | 9/27/2025 |
| T11 | AN02307 | Preamp | 8447D | 8/9/2023 | 8/9/2025 |
| T12 | ANP08072 | Band Reject Filter | BC50722 | 10/3/2023 | 10/3/2025 |

| 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 | Table | dB μ V/m | dB μ V/m | | |
| | MHz | dB μ V | dB | dB | dB | dB | | | | | |
| 1 | 3698.420M | 39.4 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 48.1 | 54.0 | -5.9 | Vert |
| | | | -33.9 | +31.6 | +5.9 | +3.4 | | | 924.4 | | 192 |
| | | | +0.5 | +0.3 | +0.0 | +0.0 | | | | | |
| 2 | 4570.000M | 37.0 | +1.1 | +0.0 | +0.0 | +0.0 | +0.0 | 47.3 | 54.0 | -6.7 | Vert |
| | | | -33.8 | +32.2 | +5.9 | +3.9 | | | 914 | | 192 |
| | | | +0.6 | +0.4 | +0.0 | +0.0 | | | | | |
| 3 | 3619.900M | 38.5 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 46.9 | 54.0 | -7.1 | Vert |
| | | | -34.0 | +31.4 | +5.9 | +3.4 | | | 904.8 | | 192 |
| | | | +0.4 | +0.4 | +0.0 | +0.0 | | | | | |
| 4 | 4523.660M | 36.8 | +1.0 | +0.0 | +0.0 | +0.0 | +0.0 | 46.9 | 54.0 | -7.1 | Vert |
| | | | -33.8 | +32.1 | +5.9 | +3.8 | | | 904.8 | | 192 |
| | | | +0.7 | +0.4 | +0.0 | +0.0 | | | | | |
| 5 | 75.080M | 46.3 | +0.1 | +0.4 | +0.6 | +12.9 | +0.0 | 32.8 | 40.0 | -7.2 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.6 | +0.1 | | | | | |
| 6 | 3656.000M | 38.3 | +0.9 | +0.0 | +0.0 | +0.0 | +0.0 | 46.6 | 54.0 | -7.4 | Vert |
| | | | -34.0 | +31.4 | +5.9 | +3.4 | | | 914 | | 192 |
| | | | +0.4 | +0.3 | +0.0 | +0.0 | | | | | |
| 7 | 256.400M | 44.2 | +0.2 | +0.8 | +1.2 | +18.6 | +0.0 | 38.4 | 46.0 | -7.6 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -26.8 | +0.2 | | | | | |
| 8 | 2771.570M | 40.2 | +0.8 | +0.0 | +0.0 | +0.0 | +0.0 | 45.3 | 54.0 | -8.7 | Vert |
| | | | -34.5 | +29.3 | +5.9 | +2.8 | | | 924.4 | | 192 |
| | | | +0.5 | +0.3 | +0.0 | +0.0 | | | | | |
| 9 | 2714.595M | 39.9 | +0.8 | +0.0 | +0.0 | +0.0 | +0.0 | 45.0 | 54.0 | -9.0 | Vert |
| | | | -34.5 | +29.3 | +5.9 | +2.8 | | | 904.8 | | 192 |
| | | | +0.5 | +0.3 | +0.0 | +0.0 | | | | | |
| 10 | 2742.000M | 39.8 | +0.8 | +0.0 | +0.0 | +0.0 | +0.0 | 44.9 | 54.0 | -9.1 | Vert |
| | | | -34.5 | +29.3 | +5.9 | +2.8 | | | 914 | | 192 |
| | | | +0.5 | +0.3 | +0.0 | +0.0 | | | | | |
| 11 | 156.800M | 43.1 | +0.1 | +0.6 | +0.9 | +16.6 | +0.0 | 34.3 | 43.5 | -9.2 | Vert |
| | QP | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.2 | +0.2 | | | | | |
| ^ | 156.800M | 48.9 | +0.1 | +0.6 | +0.9 | +16.6 | +0.0 | 40.1 | 43.5 | -3.4 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.2 | +0.2 | | | | | |
| 13 | 8142.860M | 26.9 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 44.7 | 54.0 | -9.3 | Vert |
| | Ave | | -35.4 | +38.8 | +6.0 | +5.3 | | | 904.8 | | 192 |
| | | | +0.8 | +0.5 | +0.0 | +0.0 | | | | | |
| ^ | 8142.860M | 36.0 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 53.8 | 54.0 | -0.2 | Vert |
| | | | -35.4 | +38.8 | +6.0 | +5.3 | | | 904.8 | | 192 |
| | | | +0.8 | +0.5 | +0.0 | +0.0 | | | | | |

| | | | | | | | | | | | |
|----|-----------|------|-------|-------|-------|-------|------|------|-------|-------|------|
| 15 | 8321.365M | 23.5 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 41.2 | 54.0 | -12.8 | Vert |
| | Ave | | -35.3 | +38.3 | +5.9 | +5.3 | 360 | | 924.4 | | 192 |
| | | | +1.0 | +0.7 | +0.0 | +0.0 | | | | | |
| ^ | 8321.365M | 40.1 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 57.8 | 54.0 | +3.8 | Vert |
| | | | -35.3 | +38.3 | +5.9 | +5.3 | 314 | | 924.4 | | 192 |
| | | | +1.0 | +0.7 | +0.0 | +0.0 | | | | | |
| 17 | 9140.000M | 22.5 | +1.6 | +0.0 | +0.0 | +0.0 | +0.0 | 40.9 | 54.0 | -13.1 | Vert |
| | Ave | | -34.7 | +37.7 | +5.9 | +6.1 | | | 914 | | 192 |
| ^ | 9140.000M | 36.7 | +1.6 | +0.0 | +0.0 | +0.0 | +0.0 | 55.1 | 54.0 | +1.1 | Vert |
| | | | -34.7 | +37.7 | +5.9 | +6.1 | | | 914 | | 192 |
| | | | +0.9 | +0.9 | +0.0 | +0.0 | | | | | |
| 19 | 240.400M | 39.0 | +0.2 | +0.8 | +1.1 | +18.1 | +0.0 | 32.5 | 46.0 | -13.5 | Vert |
| | QP | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -26.9 | +0.2 | | | | | |
| ^ | 240.400M | 46.1 | +0.2 | +0.8 | +1.1 | +18.1 | +0.0 | 39.6 | 46.0 | -6.4 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -26.9 | +0.2 | | | | | |
| 21 | 9046.830M | 22.1 | +1.7 | +0.0 | +0.0 | +0.0 | +0.0 | 40.2 | 54.0 | -13.8 | Vert |
| | Ave | | -34.8 | +37.9 | +5.9 | +6.0 | | | 904.8 | | 192 |
| | | | +0.8 | +0.6 | +0.0 | +0.0 | | | | | |
| ^ | 9046.830M | 35.3 | +1.7 | +0.0 | +0.0 | +0.0 | +0.0 | 53.4 | 54.0 | -0.6 | Vert |
| | | | -34.8 | +37.9 | +5.9 | +6.0 | | | 904.8 | | 192 |
| | | | +0.8 | +0.6 | +0.0 | +0.0 | | | | | |
| 23 | 8226.000M | 22.3 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 39.8 | 54.0 | -14.2 | Vert |
| | Ave | | -35.4 | +38.5 | +5.9 | +5.3 | | | 914 | | 192 |
| | | | +0.9 | +0.5 | +0.0 | +0.0 | | | | | |
| ^ | 8226.000M | 36.1 | +1.8 | +0.0 | +0.0 | +0.0 | +0.0 | 53.6 | 54.0 | -0.4 | Vert |
| | | | -35.4 | +38.5 | +5.9 | +5.3 | | | 914 | | 192 |
| | | | +0.9 | +0.5 | +0.0 | +0.0 | | | | | |
| 25 | 7395.070M | 22.9 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 38.6 | 54.0 | -15.4 | Vert |
| | Ave | | -35.1 | +37.3 | +5.9 | +5.0 | 360 | | 924.4 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| ^ | 7395.070M | 40.2 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 55.9 | 54.0 | +1.9 | Vert |
| | | | -35.1 | +37.3 | +5.9 | +5.0 | 222 | | 924.4 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| 27 | 7312.000M | 23.0 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 38.6 | 54.0 | -15.4 | Vert |
| | Ave | | -35.0 | +37.1 | +5.9 | +5.0 | | | 914 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| ^ | 7312.000M | 36.3 | +1.5 | +0.0 | +0.0 | +0.0 | +0.0 | 51.9 | 54.0 | -2.1 | Vert |
| | | | -35.0 | +37.1 | +5.9 | +5.0 | | | 914 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| 29 | 37.910M | 34.0 | +0.0 | +0.3 | +0.4 | +17.4 | +0.0 | 24.5 | 40.0 | -15.5 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.7 | +0.1 | | | | | |
| 30 | 5426.605M | 24.6 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 37.3 | 54.0 | -16.7 | Vert |
| | Ave | | -33.8 | +34.4 | +5.8 | +4.2 | 360 | | 904.8 | | 192 |
| | | | +0.5 | +0.4 | +0.0 | +0.0 | | | | | |
| ^ | 5426.605M | 36.2 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 48.9 | 54.0 | -5.1 | Vert |
| | | | -33.8 | +34.4 | +5.8 | +4.2 | | | 904.8 | | 192 |
| | | | +0.5 | +0.4 | +0.0 | +0.0 | | | | | |

| | | | | | | | | | | | |
|----|-----------|------|-------|-------|-------|-------|------|------|-------|-------|------|
| 32 | 4622.225M | 23.8 | +1.1 | +0.0 | +0.0 | +0.0 | +0.0 | 34.3 | 54.0 | -19.7 | Vert |
| | Ave | | -33.8 | +32.4 | +5.9 | +3.9 | 360 | | 924.4 | | 192 |
| | | | +0.5 | +0.5 | +0.0 | +0.0 | | | | | |
| ^ | 4622.225M | 38.6 | +1.1 | +0.0 | +0.0 | +0.0 | +0.0 | 49.1 | 54.0 | -4.9 | Vert |
| | | | -33.8 | +32.4 | +5.9 | +3.9 | | | 924.4 | | 192 |
| | | | +0.5 | +0.5 | +0.0 | +0.0 | | | | | |
| 34 | 6472.120M | 38.2 | +1.3 | +0.0 | +0.0 | +0.0 | +0.0 | 52.1 | 106.4 | -54.3 | Vert |
| | | | -34.3 | +34.7 | +5.9 | +5.2 | 102 | | 924.4 | | 192 |
| | | | +0.5 | +0.6 | +0.0 | +0.0 | | | | | |
| 35 | 7239.345M | 36.4 | +1.4 | +0.0 | +0.0 | +0.0 | +0.0 | 51.5 | 106.4 | -54.9 | Vert |
| | | | -35.0 | +36.9 | +5.9 | +4.9 | | | 904.8 | | 192 |
| | | | +0.5 | +0.5 | +0.0 | +0.0 | | | | | |
| 36 | 5545.200M | 38.3 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 51.0 | 106.4 | -55.4 | Vert |
| | | | -33.8 | +34.4 | +5.8 | +4.2 | | | 924.4 | | 192 |
| | | | +0.4 | +0.5 | +0.0 | +0.0 | | | | | |
| 37 | 6398.000M | 36.7 | +1.3 | +0.0 | +0.0 | +0.0 | +0.0 | 50.6 | 106.4 | -55.8 | Vert |
| | | | -34.2 | +34.7 | +5.9 | +5.1 | | | 914 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| 38 | 6333.000M | 36.2 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 49.9 | 106.4 | -56.5 | Vert |
| | | | -34.2 | +34.7 | +5.9 | +5.0 | | | 904.8 | | 192 |
| | | | +0.6 | +0.5 | +0.0 | +0.0 | | | | | |
| 39 | 5484.000M | 36.7 | +1.2 | +0.0 | +0.0 | +0.0 | +0.0 | 49.4 | 106.4 | -57.0 | Vert |
| | | | -33.8 | +34.4 | +5.8 | +4.2 | | | 914 | | 192 |
| | | | +0.4 | +0.5 | +0.0 | +0.0 | | | | | |
| 40 | 1811.160M | 41.5 | +0.6 | +0.0 | +0.0 | +0.0 | +0.0 | 43.4 | 106.4 | -63.0 | Vert |
| | | | -35.1 | +27.4 | +5.9 | +2.3 | | | 904.8 | | 192 |
| | | | +0.4 | +0.4 | +0.0 | +0.0 | | | | | |
| 41 | 1849.480M | 40.9 | +0.6 | +0.0 | +0.0 | +0.0 | +0.0 | 43.2 | 106.4 | -63.2 | Vert |
| | | | -35.0 | +27.7 | +5.9 | +2.3 | | | 924.4 | | 192 |
| | | | +0.4 | +0.4 | +0.0 | +0.0 | | | | | |
| 42 | 1828.000M | 40.2 | +0.6 | +0.0 | +0.0 | +0.0 | +0.0 | 42.2 | 106.4 | -64.2 | Vert |
| | | | -35.1 | +27.5 | +5.9 | +2.3 | | | 914 | | 192 |
| | | | +0.4 | +0.4 | +0.0 | +0.0 | | | | | |
| 43 | 9245.025M | 23.6 | +1.6 | +0.0 | +0.0 | +0.0 | +0.0 | 42.0 | 106.4 | -64.4 | Vert |
| | Ave | | -34.7 | +37.8 | +5.9 | +6.2 | 360 | | 924.4 | | 192 |
| | | | +1.0 | +0.6 | +0.0 | +0.0 | | | | | |
| ^ | 9245.025M | 41.1 | +1.6 | +0.0 | +0.0 | +0.0 | +0.0 | 59.5 | 106.4 | -46.9 | Vert |
| | | | -34.7 | +37.8 | +5.9 | +6.2 | 360 | | 924.4 | | 192 |
| | | | +1.0 | +0.6 | +0.0 | +0.0 | | | | | |
| 45 | 153.600M | 50.4 | +0.1 | +0.6 | +0.9 | +16.1 | +0.0 | 41.0 | 106.4 | -65.4 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.3 | +0.2 | | | | | |

| | | | | | | | | | | | |
|----|----------|------|------|------|-------|-------|------|------|-------|-------|------|
| 46 | 190.400M | 49.8 | +0.2 | +0.7 | +1.0 | +15.4 | +0.0 | 40.2 | 106.4 | -66.2 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.1 | +0.2 | | | | | |
| 47 | 764.900M | 32.4 | +0.4 | +1.4 | +2.5 | +28.7 | +0.0 | 38.3 | 106.4 | -68.1 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.6 | +0.5 | | | | | |
| 48 | 71.930M | 51.1 | +0.1 | +0.4 | +0.6 | +13.0 | +0.0 | 37.7 | 106.4 | -68.7 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.6 | +0.1 | | | | | |
| 49 | 44.420M | 49.9 | +0.0 | +0.3 | +0.4 | +14.1 | +0.0 | 37.1 | 106.4 | -69.3 | Vert |
| | | | +0.0 | +0.0 | +0.0 | +0.0 | | | | | |
| | | | +0.0 | +0.0 | -27.7 | +0.1 | | | | | |

Band Edge

Band Edge Summary – Single Channel Mode Configuration 2

| Frequency (MHz) | Modulation | Ant. Type | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------|-----------------------------|--------------------|---------|
| 614 | 150kbps | Omni | 40.4 | <46 | Pass |
| 902 | | | 62.6 | <109.3 | Pass |
| 928 | | | 63.8 | <109.3 | Pass |
| 960 | | | 49.4 | <54 | Pass |

Band Edge Summary – Hopping Mode Configuration 2

| Frequency (MHz) | Modulation | Ant. Type | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------|-----------------------------|--------------------|---------|
| 614 | 150kbps | Omni | 40.7 | <46 | Pass |
| 902 | | | 62.5 | <109.3 | Pass |
| 928 | | | 61.3 | <109.3 | Pass |
| 960 | | | 49.8 | <54 | Pass |

Band Edge Summary – Single Channel Mode Configuration 3

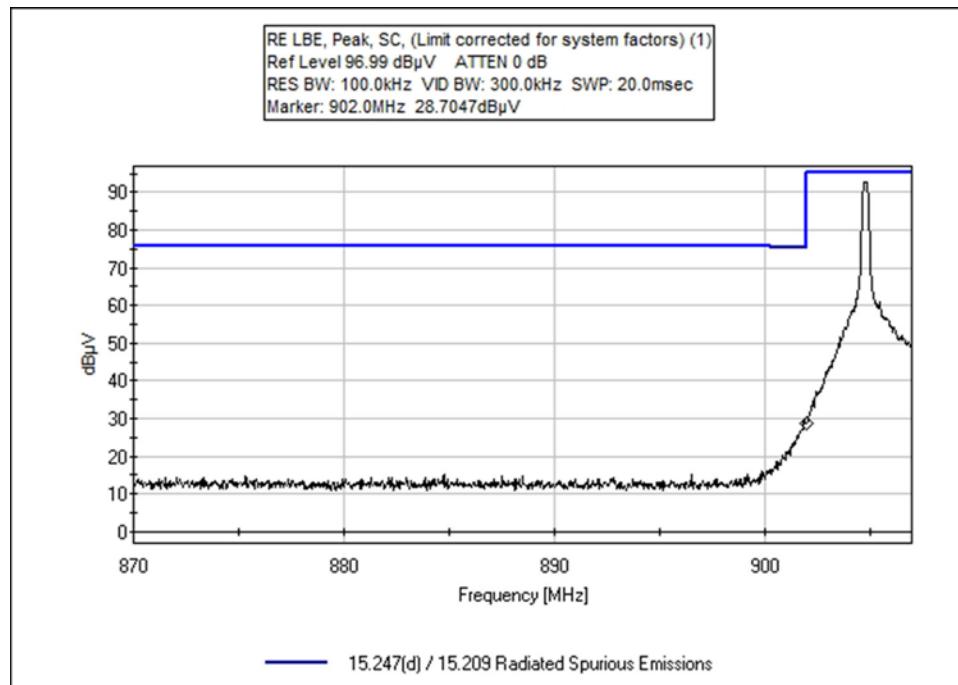
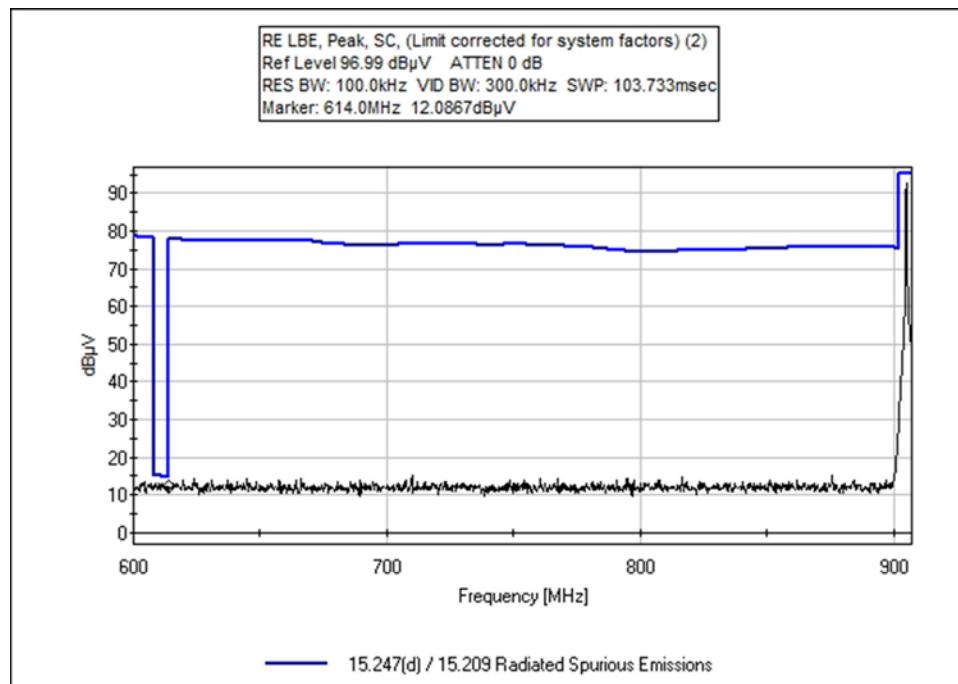
| Frequency (MHz) | Modulation | Ant. Type | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------|-----------------------------|--------------------|---------|
| 614 | 150kbps | Omni | 40.7 | <46 | Pass |
| 902 | | | 62.5 | <109.3 | Pass |
| 928 | | | 61.3 | <109.3 | Pass |
| 960 | | | 49.8 | <54 | Pass |

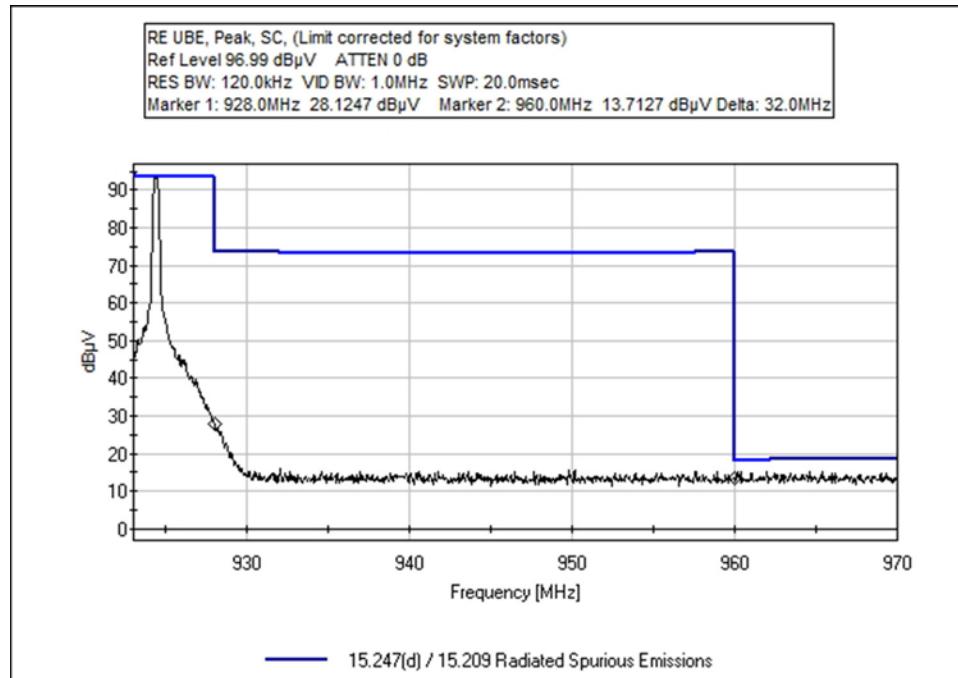
Band Edge Summary – Hopping Mode Configuration 3

| Frequency (MHz) | Modulation | Ant. Type | Field Strength (dBuV/m @3m) | Limit (dBuV/m @3m) | Results |
|-----------------|------------|-----------|-----------------------------|--------------------|---------|
| 614 | 150kbps | Omni | 40.7 | <46 | Pass |
| 902 | | | 60.5 | <109.3 | Pass |
| 928 | | | 64.2 | <109.3 | Pass |
| 960 | | | 49.0 | <54 | Pass |

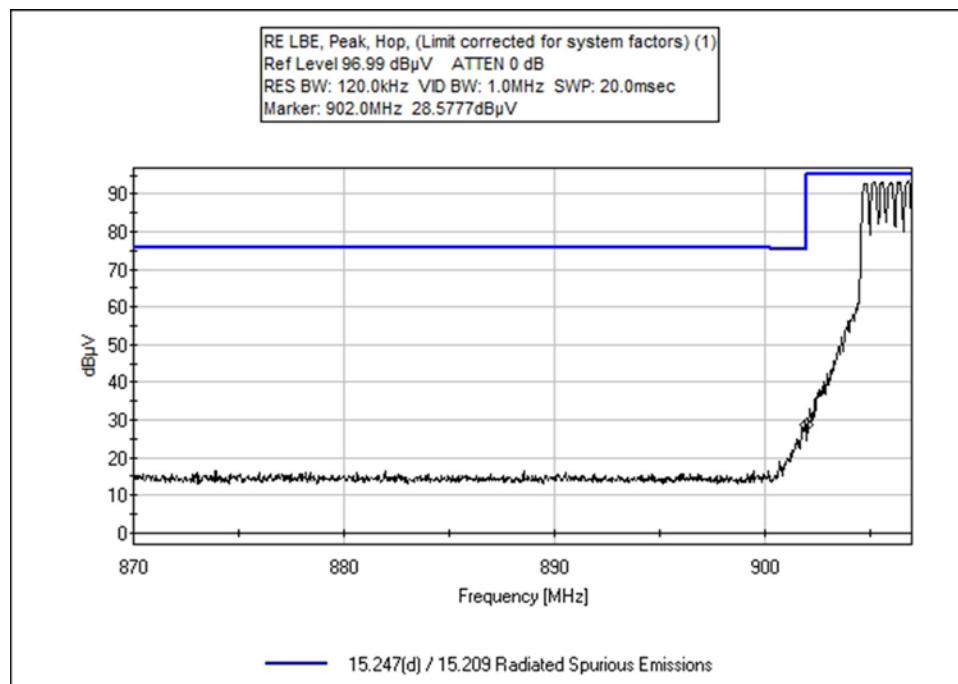
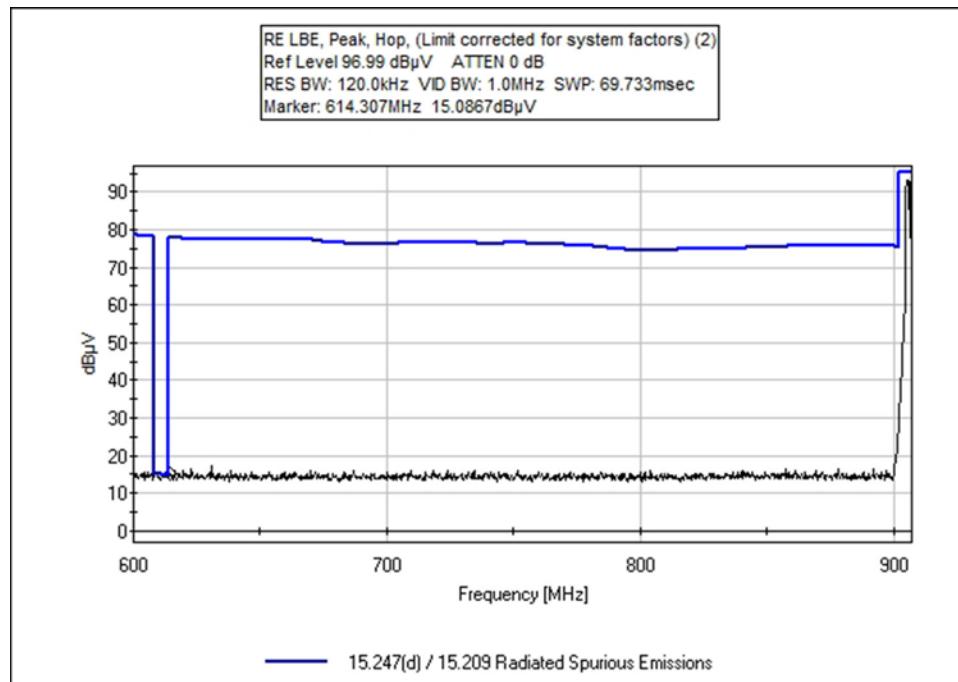
Band Edge Plots

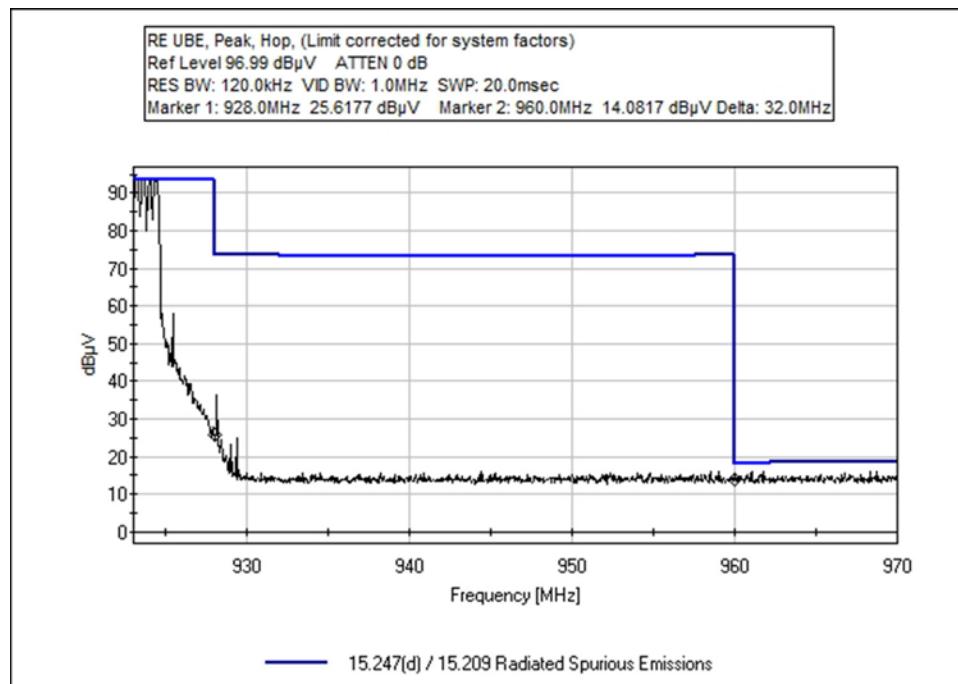
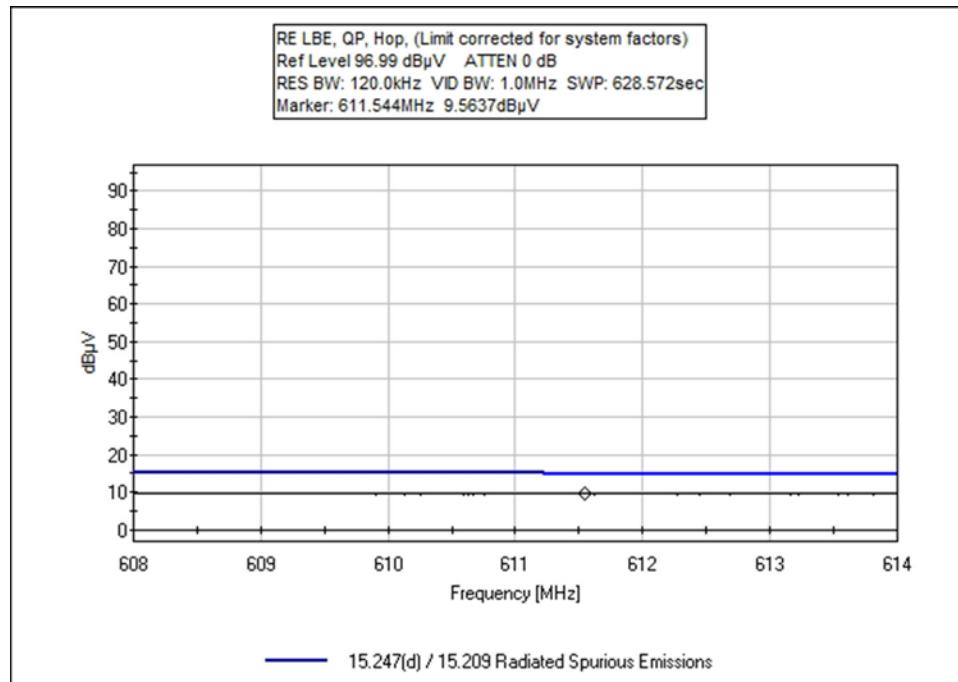
Configuration 2 Single Channel



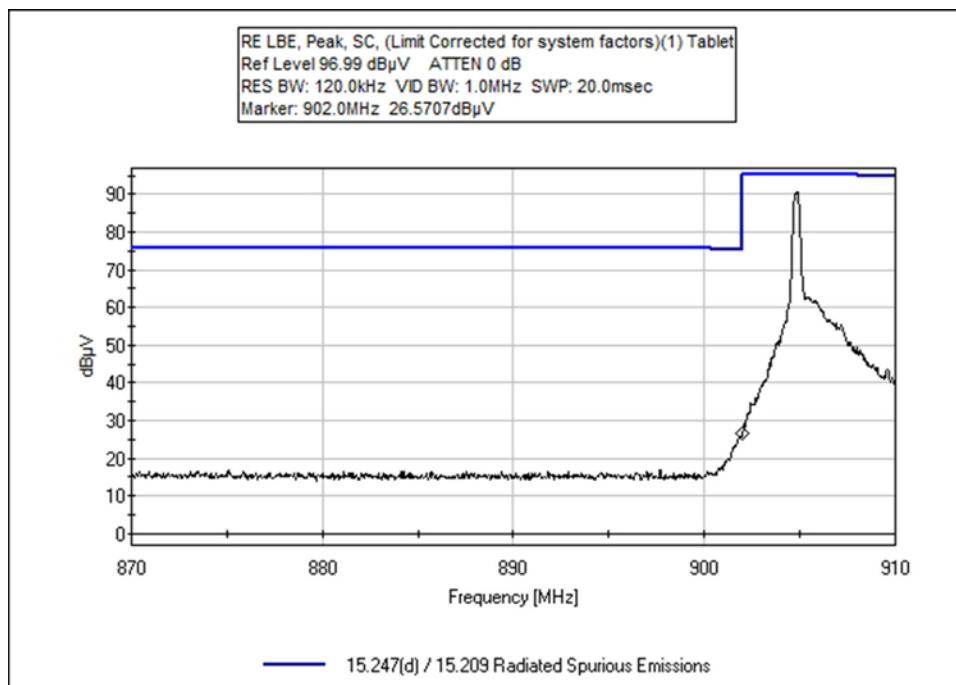
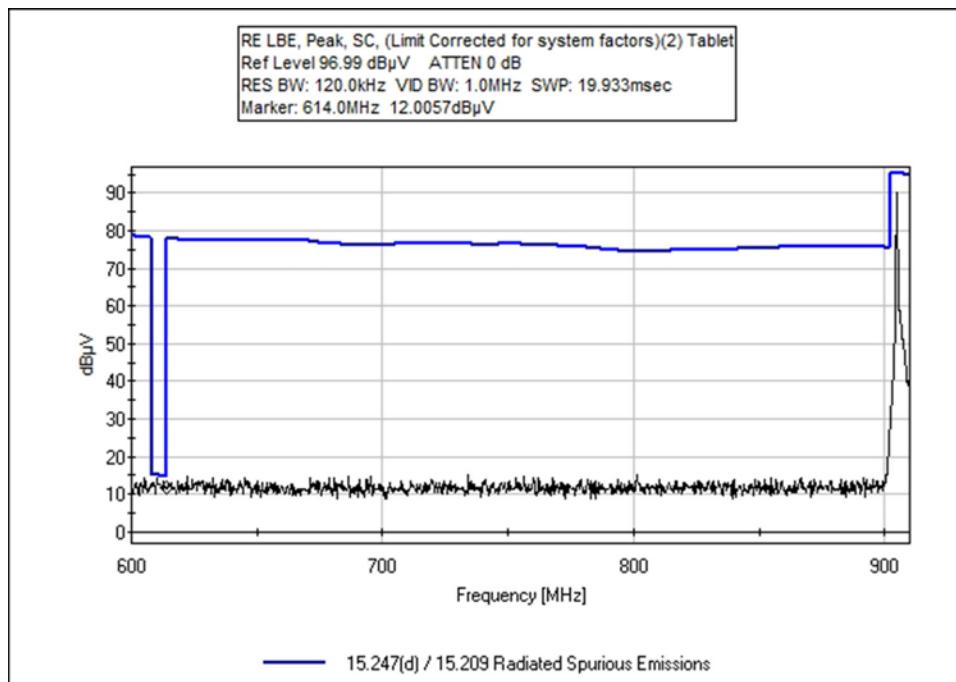


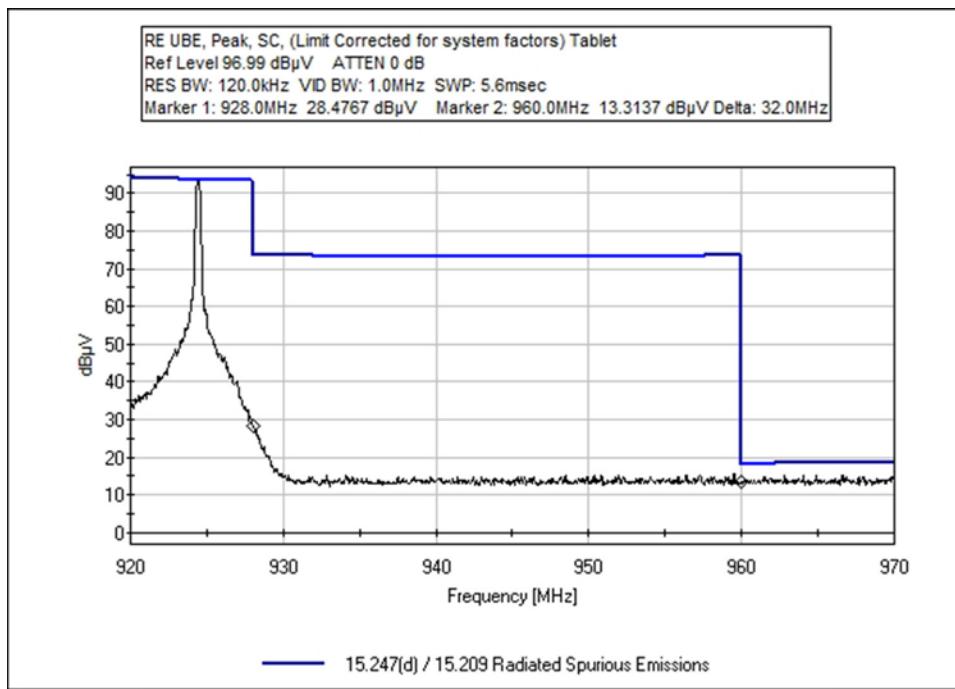
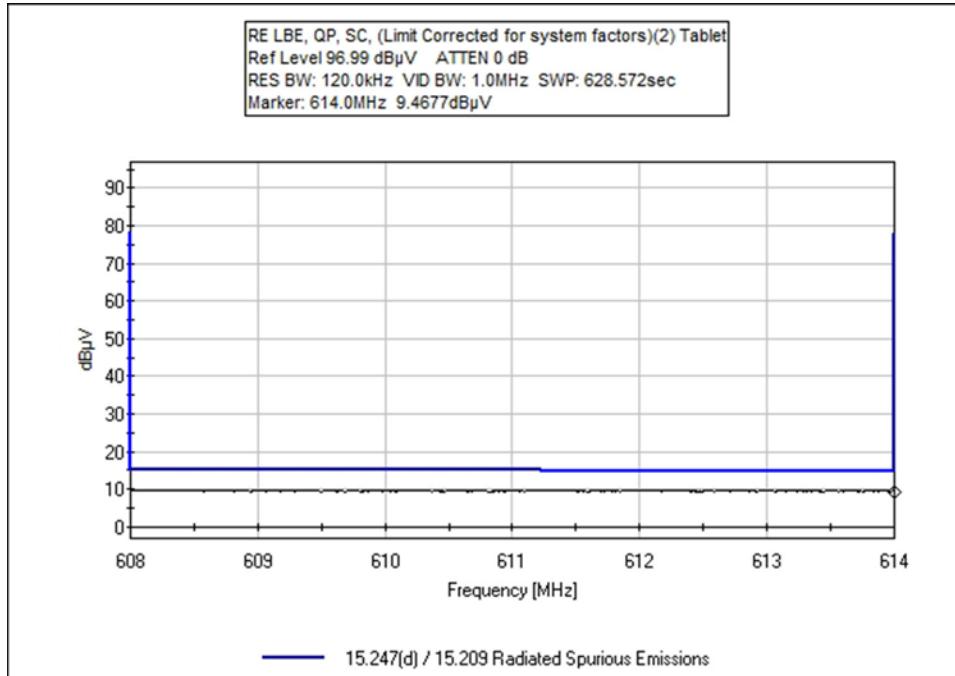
Hopping



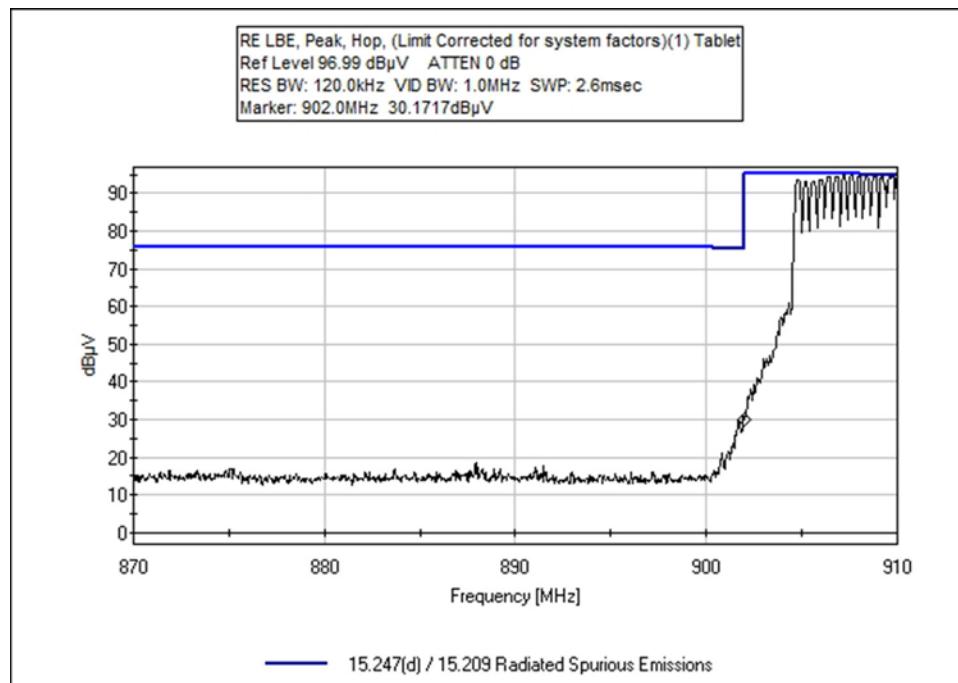
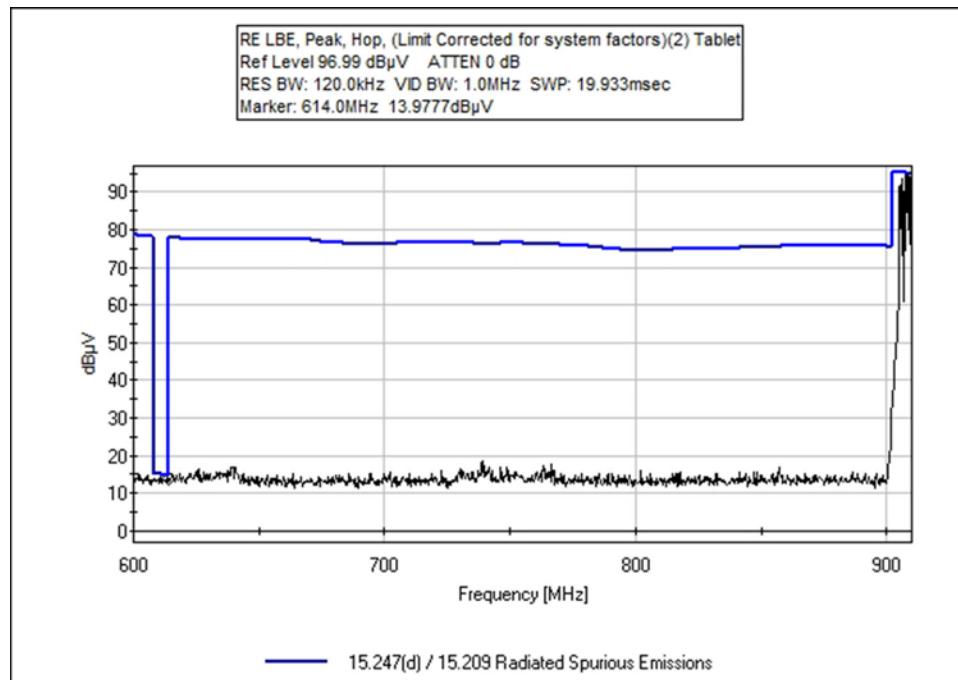


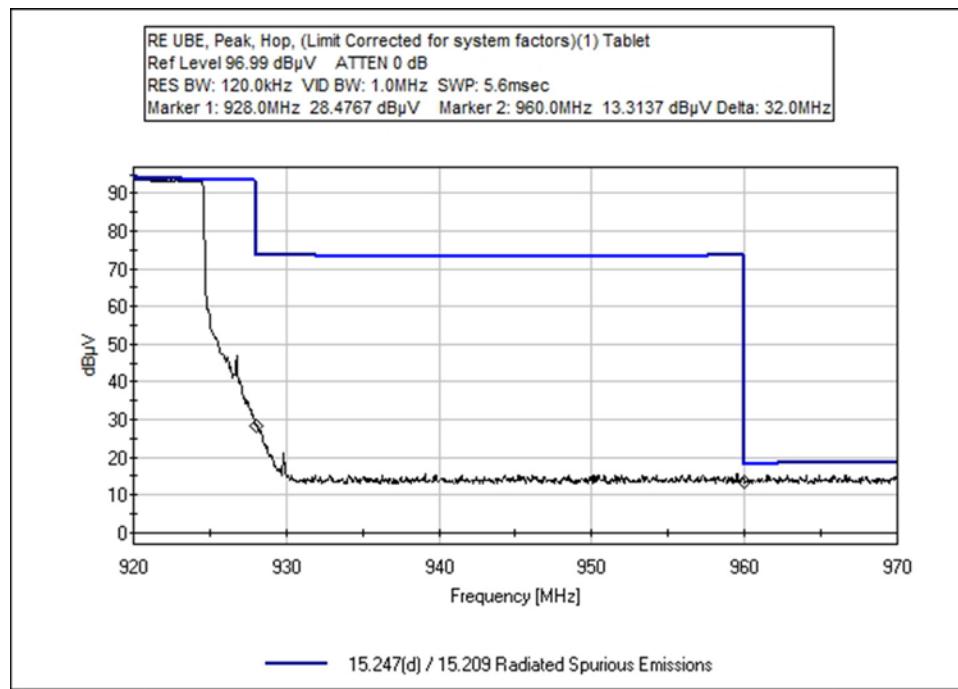
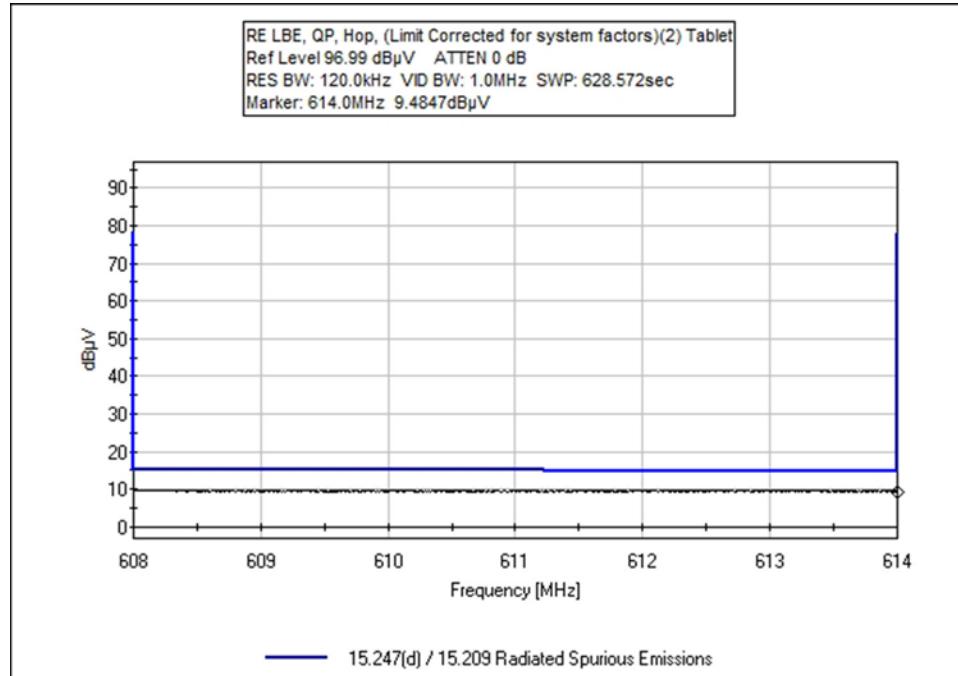
Configuration 3
Single Channel





Hopping





Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **109570** Date: 4/8/2024
 Test Type: **Radiated Scan** Time: 13:49:00
 Tested By: Matt Harrison Sequence#: 5
 Software: EMITest 5.03.20

Equipment Tested:

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

Support Equipment:

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

Test Conditions / Notes:

Test Environment Conditions:
 Temperature: 20°C
 Humidity: 42%
 Pressure: 100.3kPa

Test Method: ANSI C63.10
 Test Mode: Modulated Tx
 Test Setup: EUT is setup in a tabletop configuration. It is connected to 2 RX antennas, 1Tx/GPS RX antenna, a laptop, and a power supply. X, Y, Z and both polarities were explored, worst-case data provided.

Frequency Range: 600-980MHz
 Band of Operation: 902-928 MHz
 Frequency Tested: 904.8, 914, 924.4 MHz
 Firmware Power Setting: 06 01 30
 Protocol /MCS/Modulation: FSK 150kbps
 Duty Cycle: 100%

Antenna Type: External Omni
 Antenna Gain: 5 dBi.
 EUT Firmware: See Report Details
 Modifications: None

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|-------------------|--------|------------------|--------------|
| T1 | ANP06011 | Cable | Heliax | 11/16/2023 | 11/16/2025 |
| T2 | ANP05333 | Cable | Heliax | 8/8/2023 | 8/8/2025 |
| T3 | ANP05360 | Cable | RG214 | 8/8/2023 | 8/8/2025 |
| T4 | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |
| T5 | AN03824 | Biconilog Antenna | 3142E | 5/9/2023 | 5/9/2025 |

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

| # | Freq | Rdng | T1 | T2 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|----|----------|------|-------|------------|------|------|-------|--------------|--------------|--------|-------|
| | | | T5 | | | | Table | dB μ V/m | dB μ V/m | | |
| | | | MHz | dB μ V | dB | dB | | | | | Ant |
| 1 | 960.000M | 14.1 | +0.4 | +1.6 | +2.6 | +0.0 | +0.0 | 49.8 | 54.0 | -4.2 | Vert |
| | | | +31.1 | | | | | | | | |
| 2 | 960.000M | 13.7 | +0.4 | +1.6 | +2.6 | +0.0 | +0.0 | 49.4 | 54.0 | -4.6 | Vert |
| | | | +31.1 | | | | | | | | SC |
| 3 | 611.544M | 9.6 | +0.3 | +1.2 | +2.3 | +0.0 | +0.0 | 40.7 | 46.0 | -5.3 | Vert |
| | QP | | +27.3 | | | | | | | | Hop |
| ^ | 611.544M | 15.8 | +0.3 | +1.2 | +2.3 | +0.0 | +0.0 | 46.9 | 46.0 | +0.9 | Vert |
| | | | +27.3 | | | | | | | | Hop |
| 5 | 614.000M | 9.2 | +0.3 | +1.2 | +2.3 | +0.0 | +0.0 | 40.4 | 46.0 | -5.6 | Vert |
| | QP | | +27.4 | | | | | | | | SC |
| ^ | 614.000M | 12.1 | +0.3 | +1.2 | +2.3 | +0.0 | +0.0 | 43.3 | 46.0 | -2.7 | Vert |
| | | | +27.4 | | | | | | | | SC |
| 7 | 928.000M | 28.1 | +0.4 | +1.5 | +2.6 | +0.0 | +0.0 | 63.8 | 109.3 | -45.5 | Vert |
| | | | +31.2 | | | | | | | | SC |
| 8 | 902.000M | 28.7 | +0.4 | +1.5 | +2.5 | +0.0 | +0.0 | 62.6 | 109.3 | -46.7 | Vert |
| | | | +29.5 | | | | | | | | SC |
| 9 | 902.000M | 28.6 | +0.4 | +1.5 | +2.5 | +0.0 | +0.0 | 62.5 | 109.3 | -46.8 | Vert |
| | | | +29.5 | | | | | | | | Hop |
| 10 | 928.000M | 25.6 | +0.4 | +1.5 | +2.6 | +0.0 | +0.0 | 61.3 | 109.3 | -48.0 | Vert |
| | | | +31.2 | | | | | | | | Hop |

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **109570** Date: 4/14/2024
 Test Type: **Radiated Scan** Time: 08:32:06
 Tested By: Steven Pittsford Sequence#: 5
 Software: EMITest 5.03.20

Equipment Tested:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 3 | | | |

Support Equipment:

| Device | Manufacturer | Model # | S/N |
|-----------------|--------------|---------|-----|
| Configuration 3 | | | |

Test Conditions / Notes:

| |
|---|
| Test Environment Conditions: |
| Temperature: 19°C |
| Humidity: 43% |
| Pressure: 101kPa |
| Test Method: ANSI C63.10 |
| Test Mode: Modulated Tx |
| Test Setup: EUT is setup in a tabletop configuration. It is connected to 2 RX antennas, 1Tx/GPS RX antenna, a Tablet and a power supply. X, Y, Z and both polarities were explored, worst-case data provided. |
| Frequency Range: 600-980MHz |
| Band of Operation: 902-928 MHz |
| Frequency Tested: 904.8, 914, 924.4 MHz |
| Firmware Power Setting: 06 01 30 |
| Protocol /MCS/Modulation: FSK 150kbps |
| Duty Cycle: 100% |
| Antenna Type: External Omni |
| Antenna Gain: 5 dBi. |
| EUT Firmware: See Report Details |
| Modifications: None |

Test Equipment:

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|----|----------|-------------------|--------|------------------|--------------|
| T1 | ANP06011 | Cable | Heliax | 11/16/2023 | 11/16/2025 |
| T2 | ANP05333 | Cable | Heliax | 8/8/2023 | 8/8/2025 |
| T3 | ANP05360 | Cable | RG214 | 8/8/2023 | 8/8/2025 |
| | AN02673 | Spectrum Analyzer | E4446A | 3/8/2024 | 3/8/2026 |
| T4 | AN03824 | Biconilog Antenna | 3142E | 5/9/2023 | 5/9/2025 |

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

| # | Freq MHz | Rdng dB μ V | T1 dB | T2 dB | T3 dB | T4 dB | Dist Table | Corr dB μ V/m | Spec dB μ V/m | Margin dB | Polar Ant |
|----|----------------|--------------------|----------|----------|----------|----------|---------------|----------------------|----------------------|--------------|--------------|
| 1 | 960.000M | 13.3 | +0.4 | +1.6 | +2.6 | +31.1 | +0.0 | 49.0 | 54.0 | -5.0 | Vert SC |
| 2 | 960.000M | 13.3 | +0.4 | +1.6 | +2.6 | +31.1 | +0.0 | 49.0 | 54.0 | -5.0 | Vert Hop |
| 3 | 614.000M QP | 9.5 | +0.3 | +1.2 | +2.3 | +27.4 | +0.0 | 40.7 | 46.0 | -5.3 | Vert Hop |
| 4 | 614.000M QP | 9.5 | +0.3 | +1.2 | +2.3 | +27.4 | +0.0 | 40.7 | 46.0 | -5.3 | Vert SC |
| ^ | 614.000M | 14.0 | +0.3 | +1.2 | +2.3 | +27.4 | +0.0 | 45.2 | 46.0 | -0.8 | Vert Hop |
| ^ | 614.000M | 12.0 | +0.3 | +1.2 | +2.3 | +27.4 | +0.0 | 43.2 | 46.0 | -2.8 | Vert SC |
| 7 | 928.000M | 28.5 | +0.4 | +1.5 | +2.6 | +31.2 | +0.0 | 64.2 | 109.3 | -45.1 | Vert Hop |
| 8 | 928.000M | 28.5 | +0.4 | +1.5 | +2.6 | +31.2 | +0.0 | 64.2 | 109.3 | -45.1 | Vert SC |
| 9 | 902.000M | 30.2 | +0.4 | +1.5 | +2.5 | +29.5 | +0.0 | 64.1 | 109.3 | -45.2 | Vert Hop |
| 10 | 902.000M | 26.6 | +0.4 | +1.5 | +2.5 | +29.5 | +0.0 | 60.5 | 109.3 | -48.8 | Vert SC |

Test Setup Photo(s)

Configuration 2



Below 1GHz; View 1



Below 1GHz; View 2

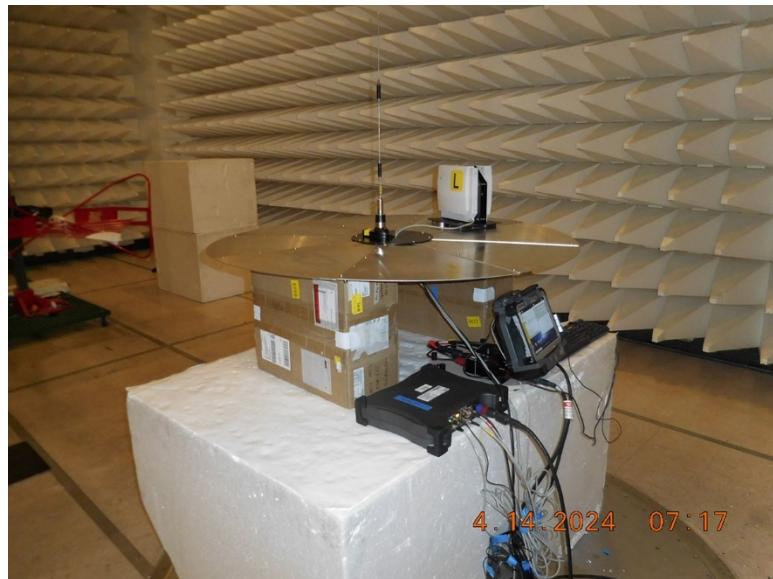


Above 1GHz; View 1

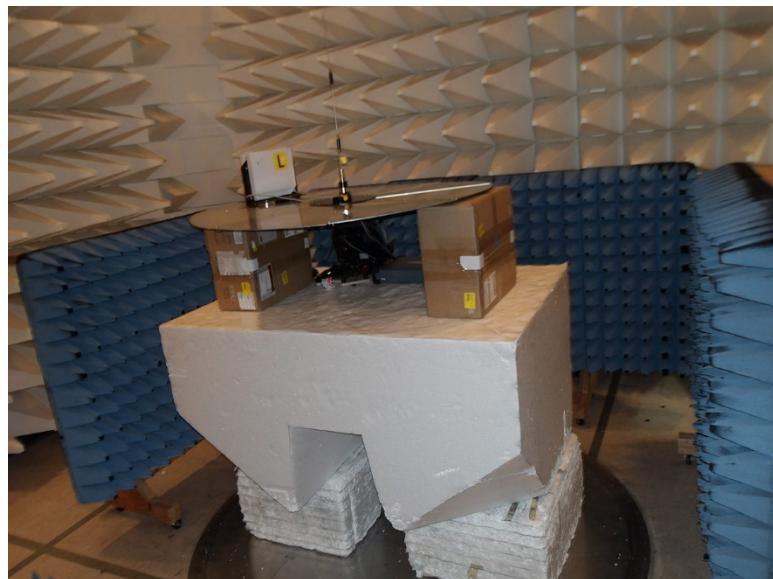


Above 1GHz; View 2

Configuration 3



Below 1GHz



Above 1GHz; View 1



Above 1GHz; View 2

Appendix A: Manufacturer Declaration

The manufacturer declares that the **MC3** model: **MC3B** tested is representative of the **MC3Lite** model: **MC3Lite**.

Supplemental Information

Measurement Uncertainty

| Uncertainty Value | Parameter |
|------------------------|---------------------------|
| 5.77 dB | Radiated Emissions |
| 0.673 dB | RF Conducted Measurements |
| 5.77×10^{-10} | Frequency Deviation |
| 0.00005 s | Time Deviation |
| 3.18 dB | Mains Conducted Emissions |

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in $\text{dB}\mu\text{V}/\text{m}$, the spectrum analyzer reading in $\text{dB}\mu\text{V}$ was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

| SAMPLE CALCULATIONS | |
|-----------------------|-------------------------------------|
| Meter reading | ($\text{dB}\mu\text{V}$) |
| + Antenna Factor | (dB/m) |
| + Cable Loss | (dB) |
| - Distance Correction | (dB) |
| - Preamplifier Gain | (dB) |
| = Corrected Reading | ($\text{dB}\mu\text{V}/\text{m}$) |

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

| MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|--|---------------------|------------------|-------------------|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 9 kHz | 150 kHz | 200 Hz |
| RADIATED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 30 MHz | 1000 MHz | 120 kHz |
| RADIATED EMISSIONS | 1000 MHz | >1 GHz | 1 MHz |

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

End of Report