Itron, Inc.

TEST REPORT FOR

CCU100
Model: CCU100TD

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.247
(FHSS 902-928MHz)

Report No.: 107462-2

Date of issue: December 5, 2022

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:

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

Representative: Jack McPeck
Customer Reference Number: 266646

REPORT PREPARED BY:

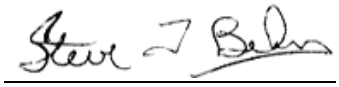
Viviana Prado
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 107462

DATE OF EQUIPMENT RECEIPT: October 26, 2022
DATE(S) OF TESTING: October 26-31 and November 1, 2022

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.
Canyon Park
22116 23rd Drive S.E., 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	NP
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	Pass

NA = Not Applicable
NP = CKC Laboratories Inc. was not contracted to preform 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
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
DSP Power was set to 255 for all tests except Fundamental and Conducted Spurs/Conducted Band Edge, where it was reduced to 200 at time of test to fine tune the power of the unit for Fundamental compliance. The higher power used for other testing is representative of worst-case. This is a test software setting and the manufacturer performs a calibration of each production unit with its appropriate software.

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 (Tower) = Remote SuperRaptor, Remote GPS, Remote Cellular

Equipment Tested:

Device	Manufacturer	Model #	S/N
CCU100	Itron, Inc.	CCU100TD	74049603

Support Equipment:

Device	Manufacturer	Model #	S/N
Laptop	Dell	Latitude E6430	NA
Switch	Netgear	FS105	NA
Antenna (remote ISM)	PCTEL	BOA9028	NA
1dB Attenuator (Qty: 2)	Mini-Circuits	15542 UNAT-1+	NA
Surge Protector	Times Microwave Systems	LP-BTRW-NMP	NA
Antenna (remote WAN)	Taoglas	OMB.6912.03F21	NA
Antenna (remote GPS)	Trimble	101898-00	NA

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	FHSS
Operating Frequency Range:	903-926.8MHz
Number of Hopping Channels:	80 channels (AM), 120 channels (FM)
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):	16kbit/sec AM (OOK) 12.5kbit/sec FM (FSK) 37.5 kbit/sec FM (FSK)
Maximum Duty Cycle:	Tested at 100%
Number of TX Chains:	1
Antenna Type(s) and Gain:	Omni-Directional / 8.15 dBi
Beamforming Type:	NA
Antenna Connection Type:	External Connector
Nominal Input Voltage:	115VAC/60Hz
Firmware / Software used for Test:	ARM FW 2.27.0.0 DSP FW 7.22.0.0 FPGA FW 4.14 SRTest100 4.11.1.99 TeraTerm 4.62
The validity of results is dependent on the stated product details, the accuracy of which the manufacturer assumes full responsibility.	

EUT Photo(s)

CCU Tower

Support Equipment Photo(s)

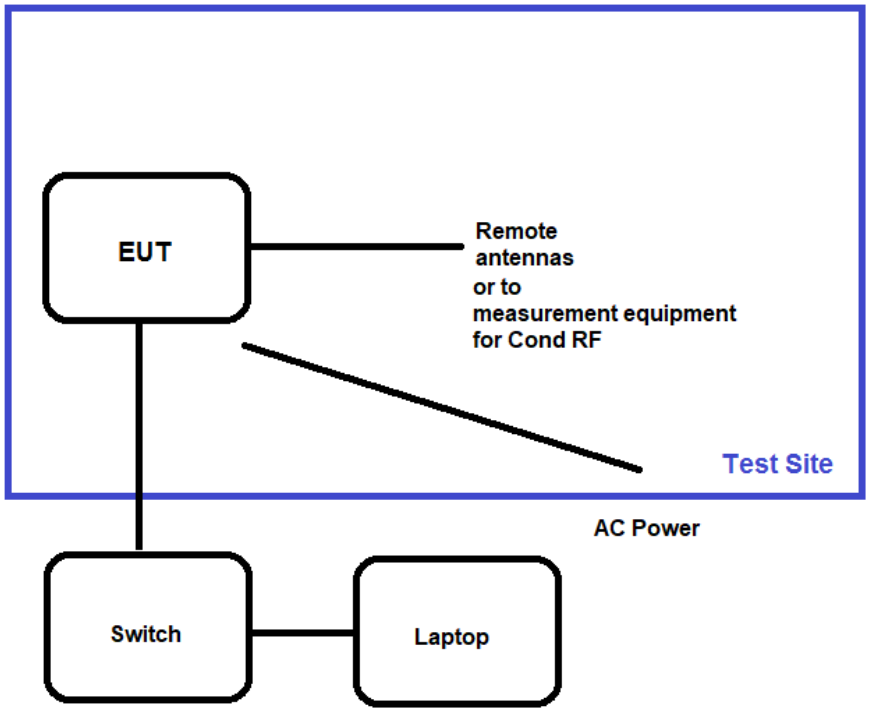
Laptop and Switch

Remote ISM Antenna

Remote WAN and GPS antennas

Block Diagram of Test Setup(s)

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/M. Atkinson
Test Method:	ANSI C63.10 (2013)	Test Date(s):	10/27/2022 to 10/31/2022
Configuration:	1		
Test Setup:	EUT is setup for conducted measurements. It is directly connected to the Signal Analyzer via an Attenuator and a Cable. For the AM channel plan, normal AM modulation is used. For the FM channel plan, a test mode with CW modulation was used.		

Environmental Conditions			
Temperature (ºC)	22-24	Relative Humidity (%):	43-50

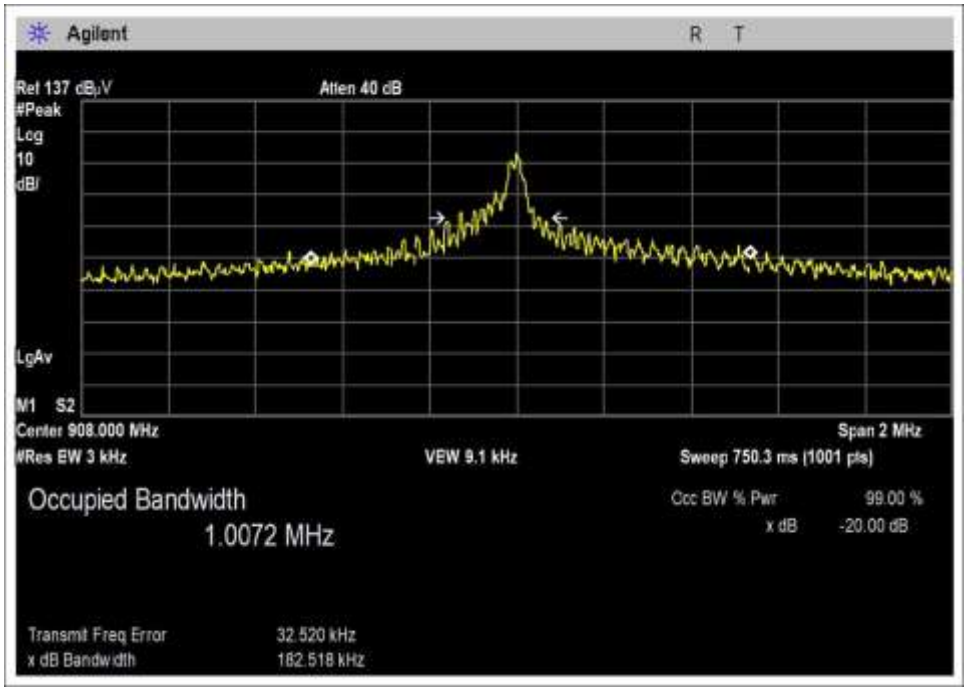
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02872	Spectrum Analyzer	Agilent	E4440A	11/29/2021	11/29/2023
P05503	Attenuator	Narda	766-10	6/8/2021	6/8/2023
P06008	Cable	Andrew	Heliax	9/2/2022	9/2/2024

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

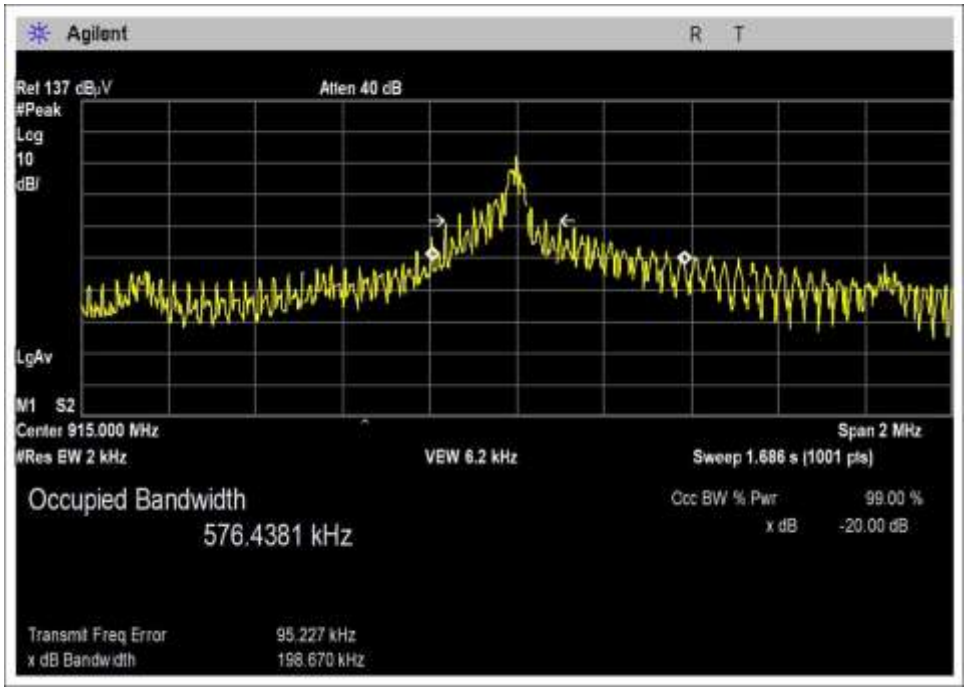
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
908.0	1	AM	182.5	≤500	Pass
915.0	1	AM	198.7	≤500	Pass
923.8	1	AM	170.5	≤500	Pass
903.0	1	FM 12.5k	142.1	≤500	Pass
915.0	1	FM 12.5k	142.7	≤500	Pass
926.8	1	FM 12.5k	142.8	≤500	Pass
903.0	1	FM 37.5k	84.4	≤500	Pass
915.0	1	FM 37.5k	85.7	≤500	Pass
926.8	1	FM 37.5k	86.4	≤500	Pass

Plot(s)

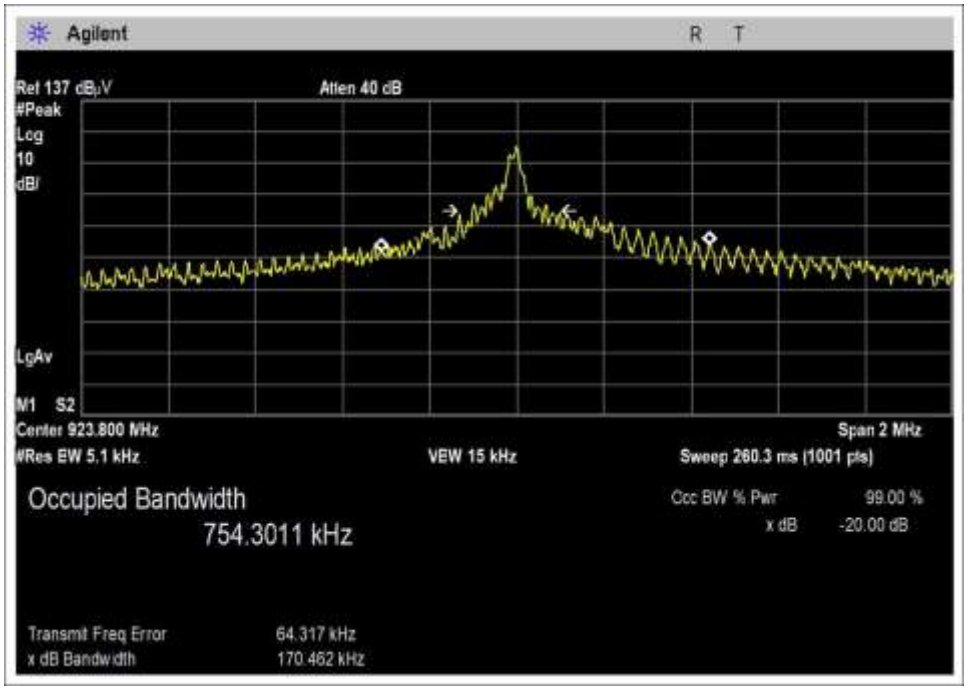
AM



Low Channel

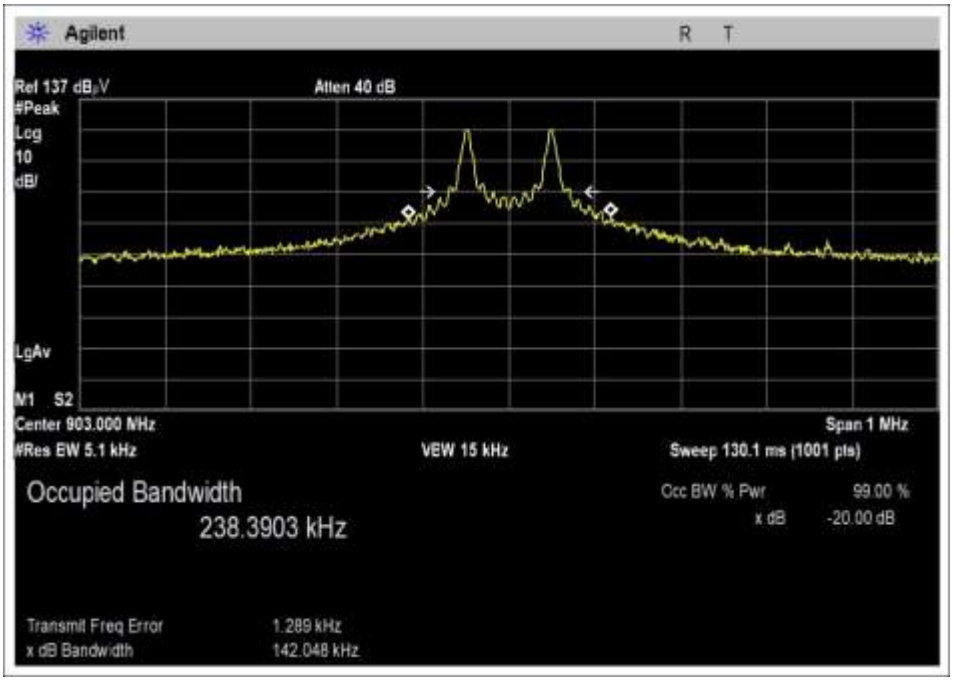


Medium Channel



High Channel

FM 12.5k



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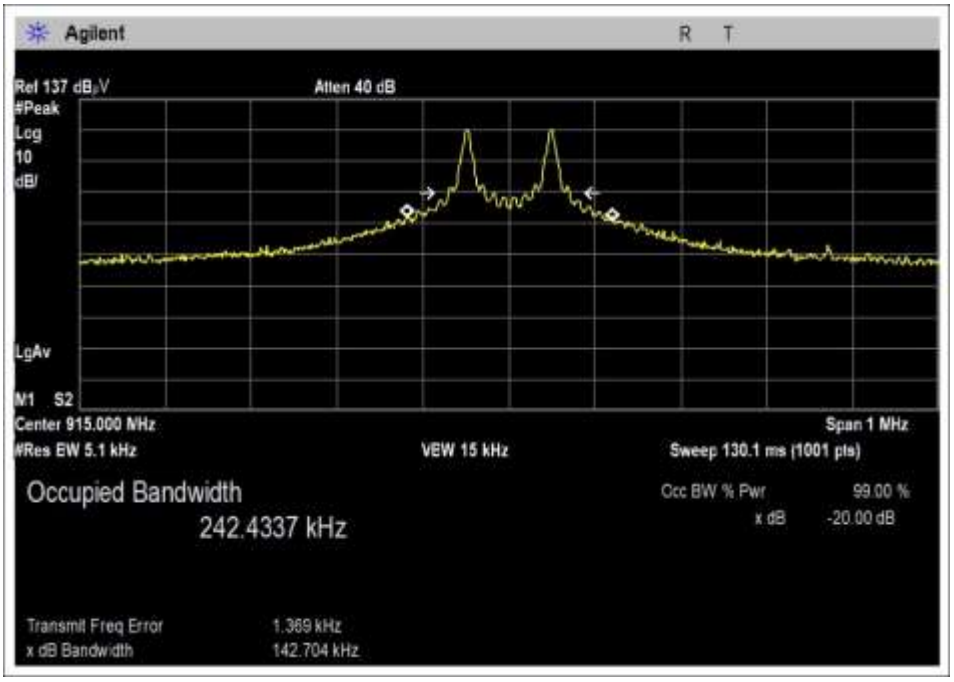
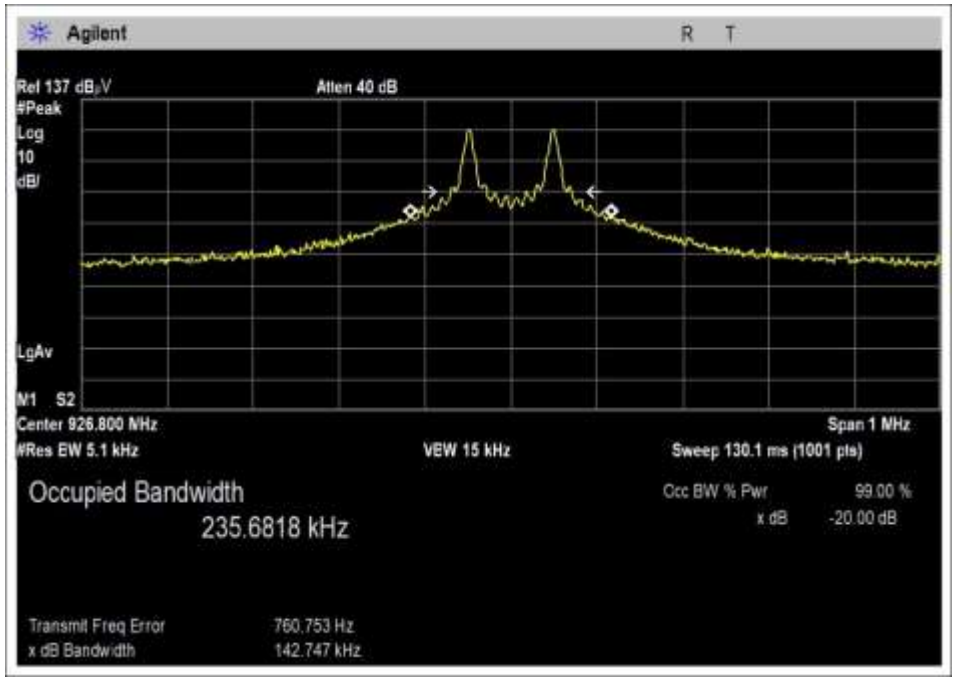
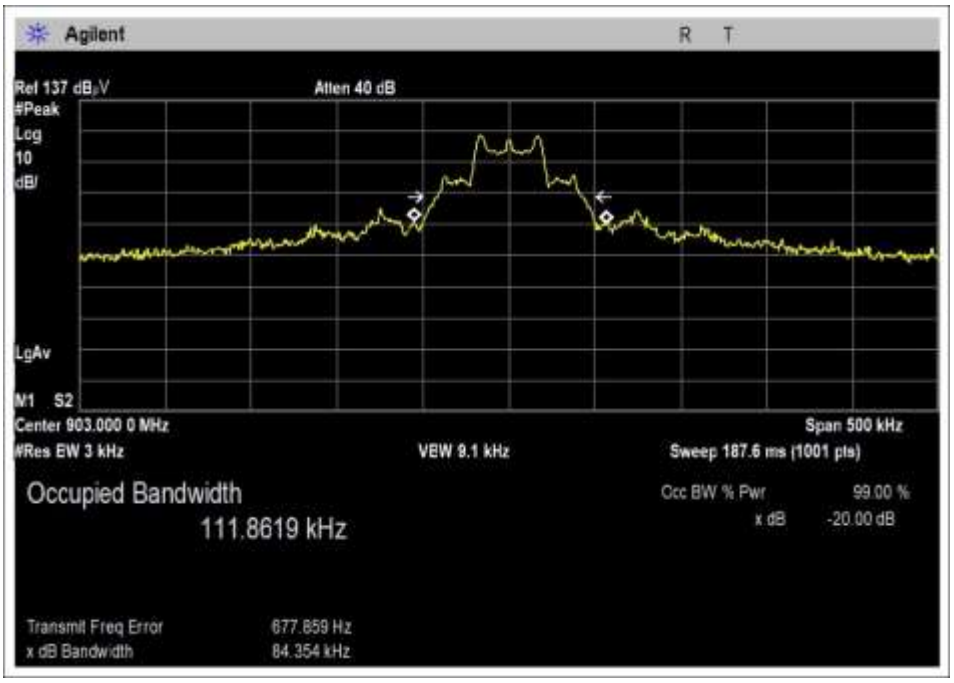


Medium Channel



High Channel

FM 37.5k



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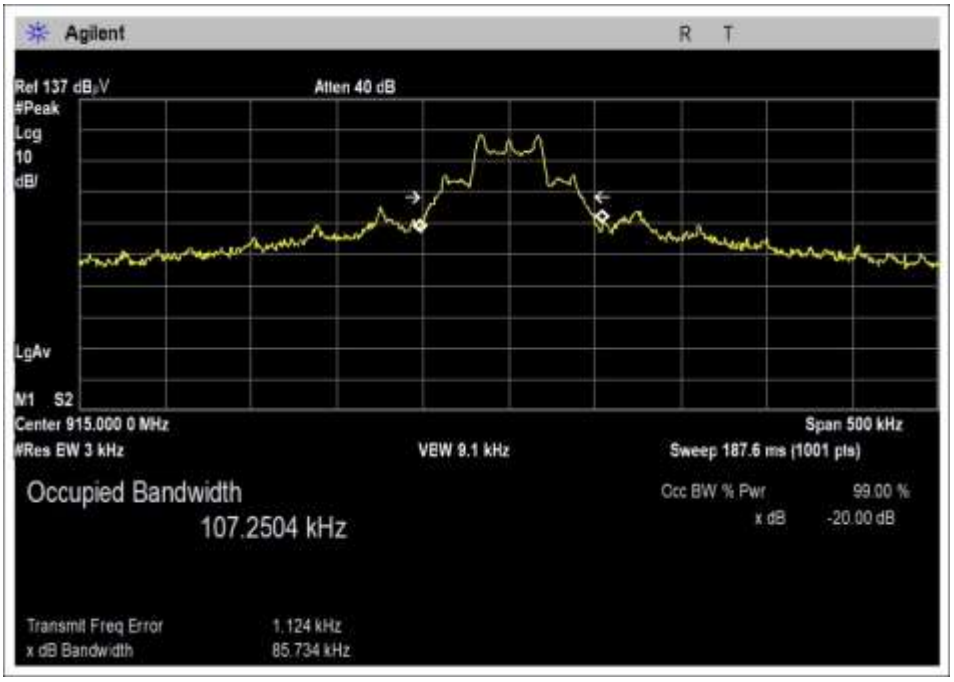
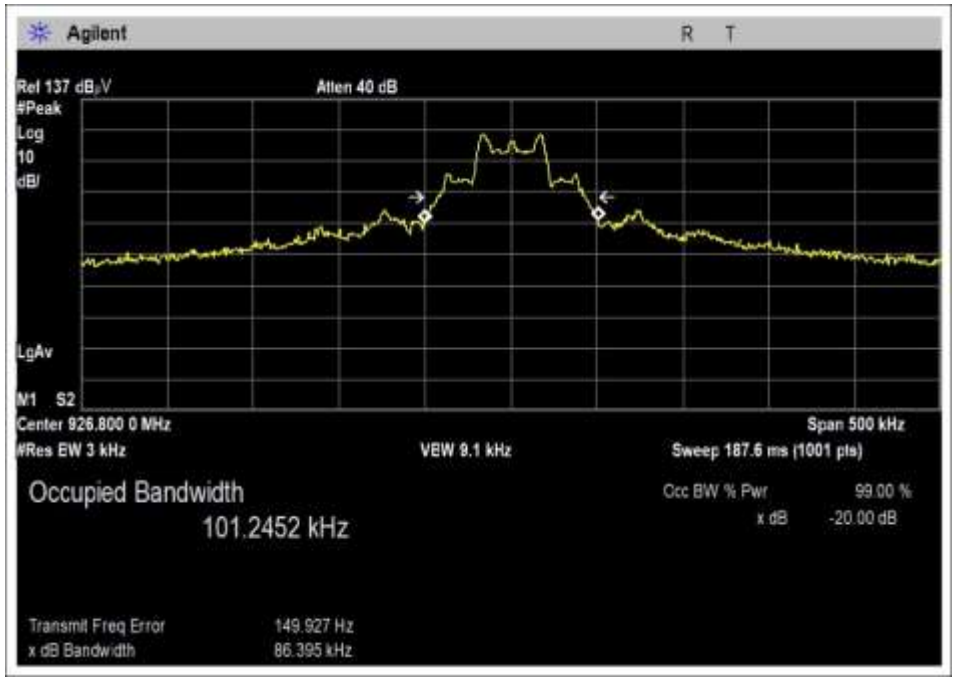


Medium Channel

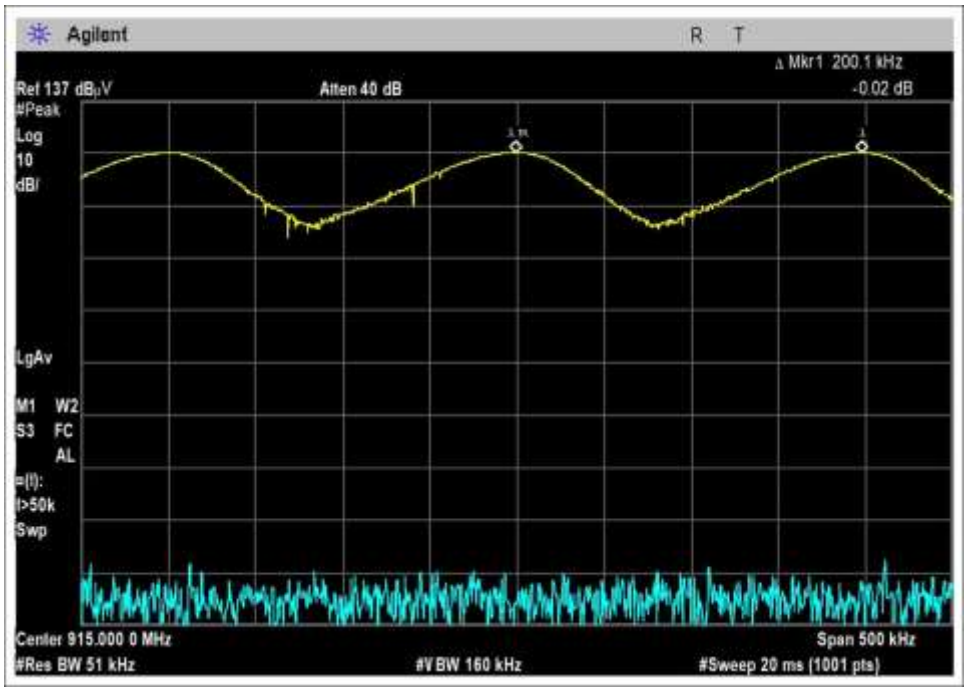


High Channel

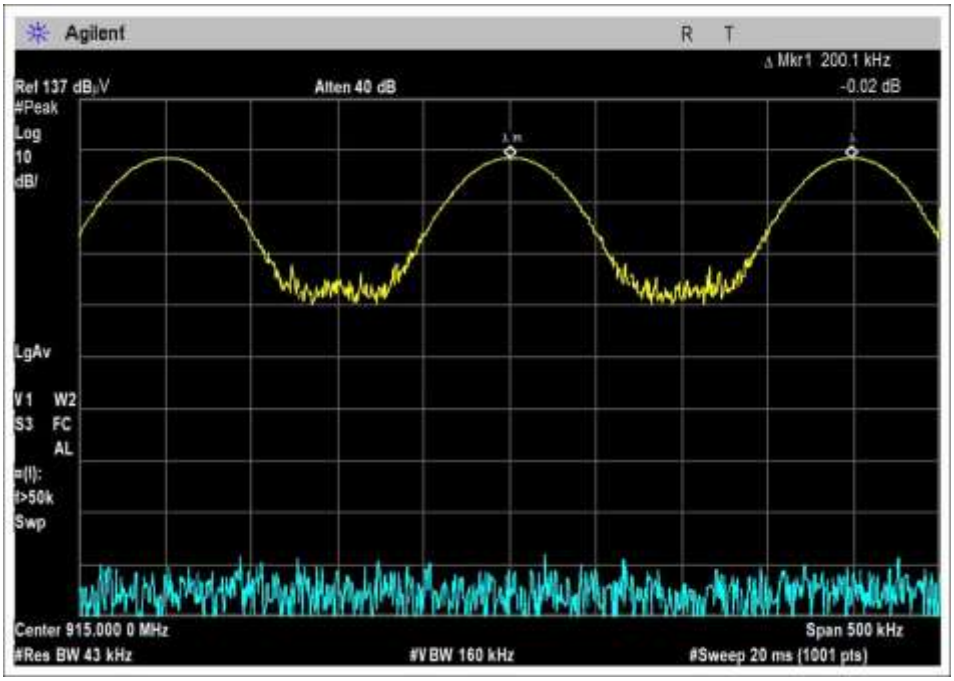
15.247(a)(1) Carrier Separation

Test Data Summary				
Limit applied: 20dB bandwidth of the hopping channel.				
Antenna Port	**Operational Mode**	**Measured (kHz)**	**Limit (kHz)**	**Results**
1	AM channel plan	200.1	>198.7	Pass
1	FM channel plan	200.1	>142.8	Pass

Plot(s)



AM Channel Plan



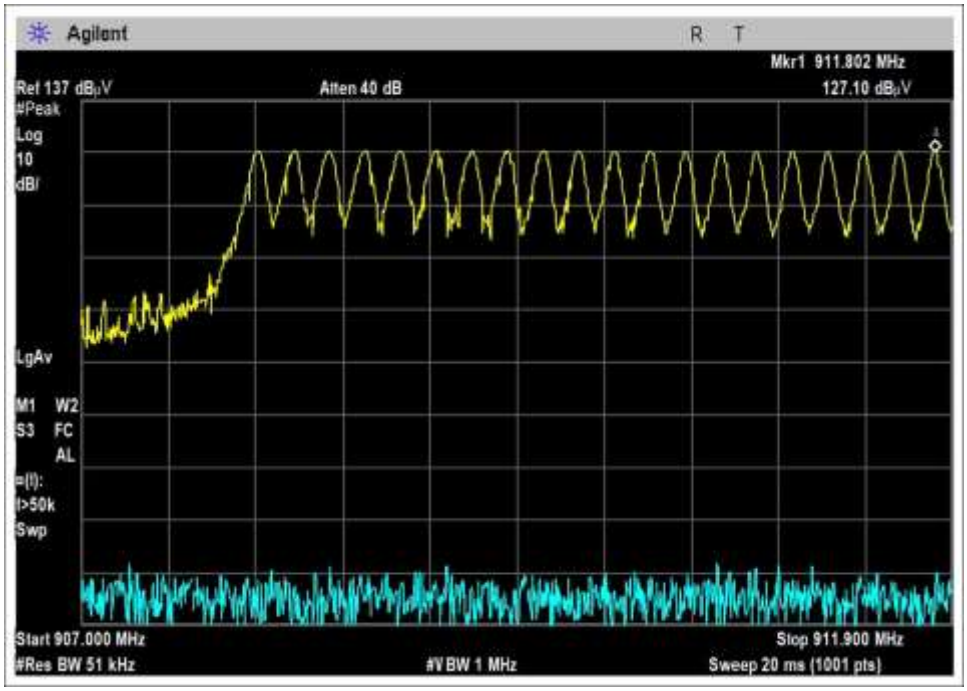
FM Channel Plan

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

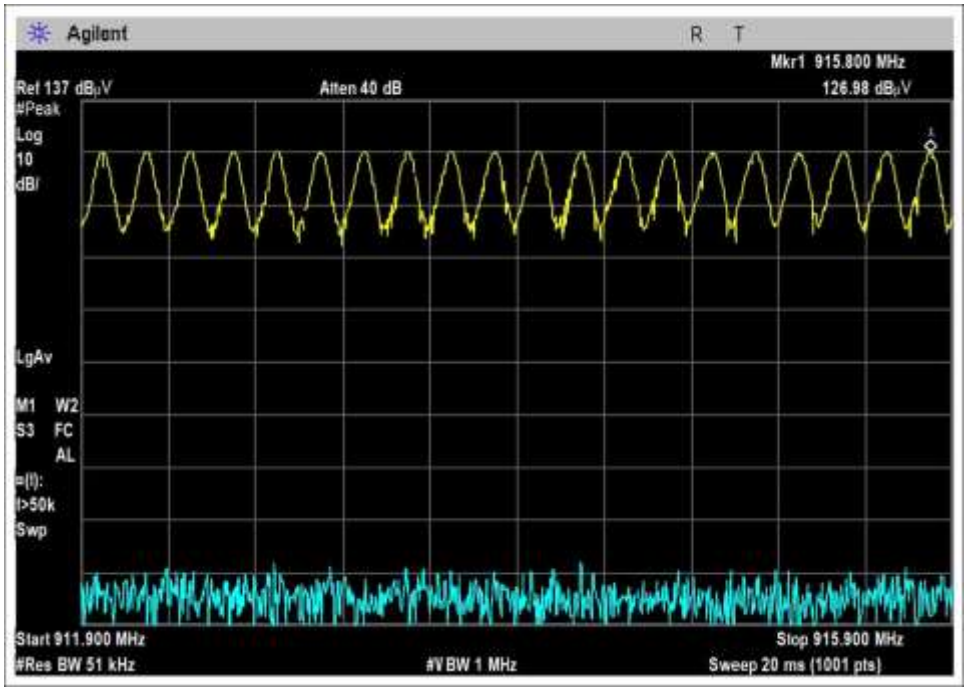
Test Data Summary				
$Limit = \begin{cases} 50\ Channels \mid 20\ dB\ BW < 250kHz \\ 25\ Channels \mid 20\ dB\ BW \geq 250kHz \end{cases}$				
Antenna Port	**Operational Mode**	**Measured (Channels)**	**Limit (Channels)**	**Results**
1	AM channel plan	80	≥50	Pass
1	FM channel plan	120	≥50	Pass

Plot(s)

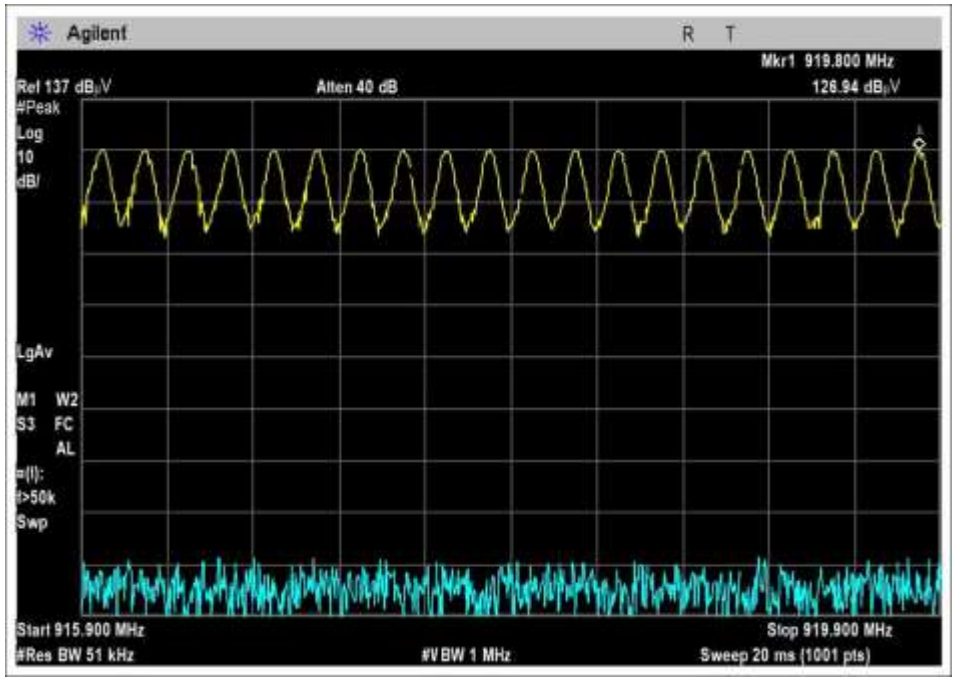
AM Number Channels



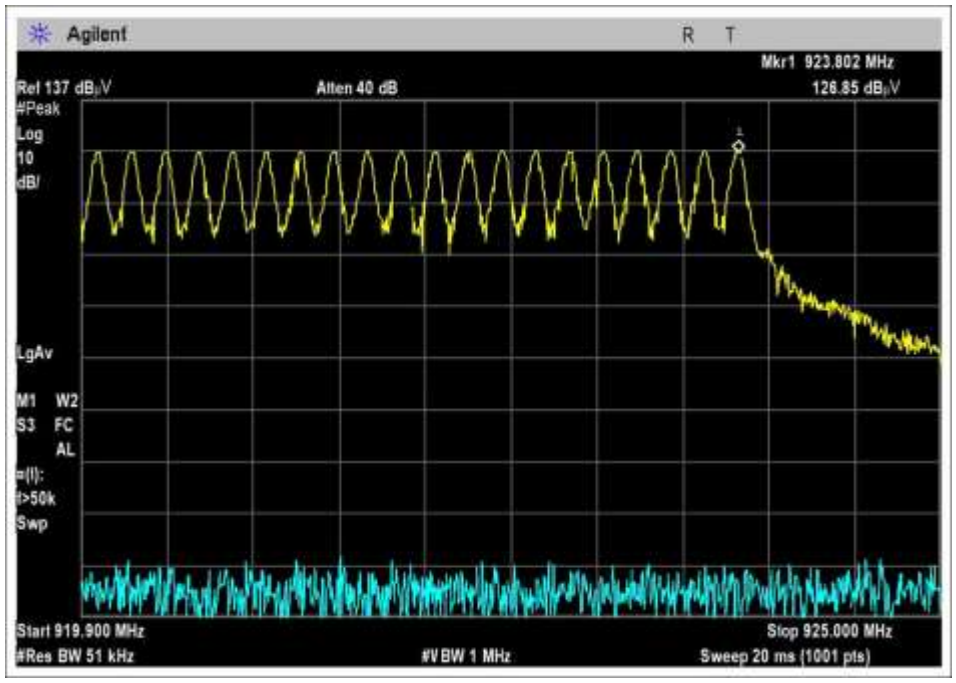
1 to 20



21 to 40

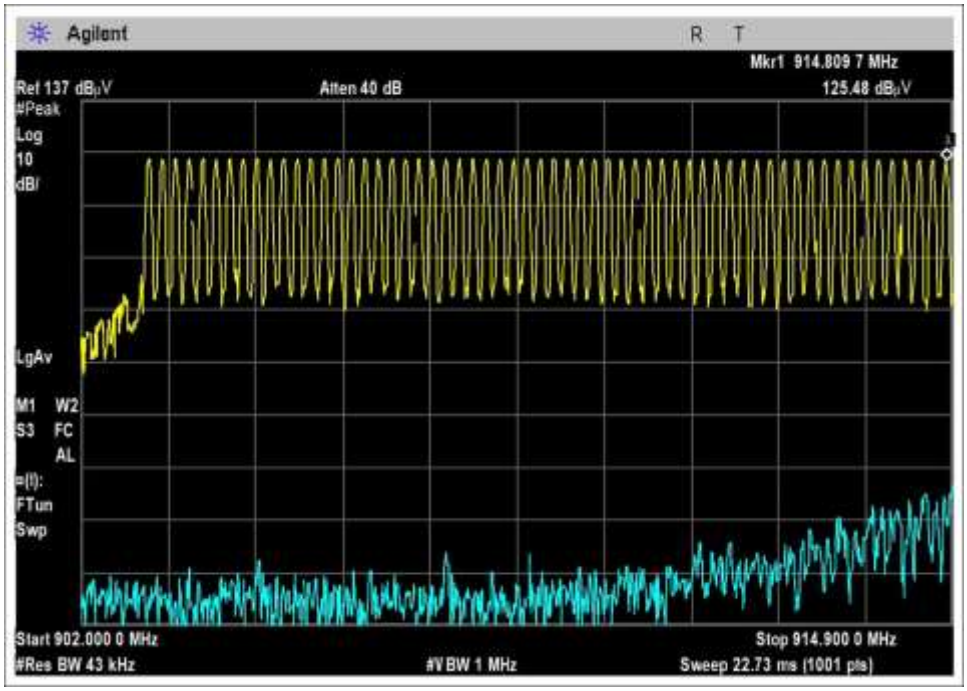


41 to 60

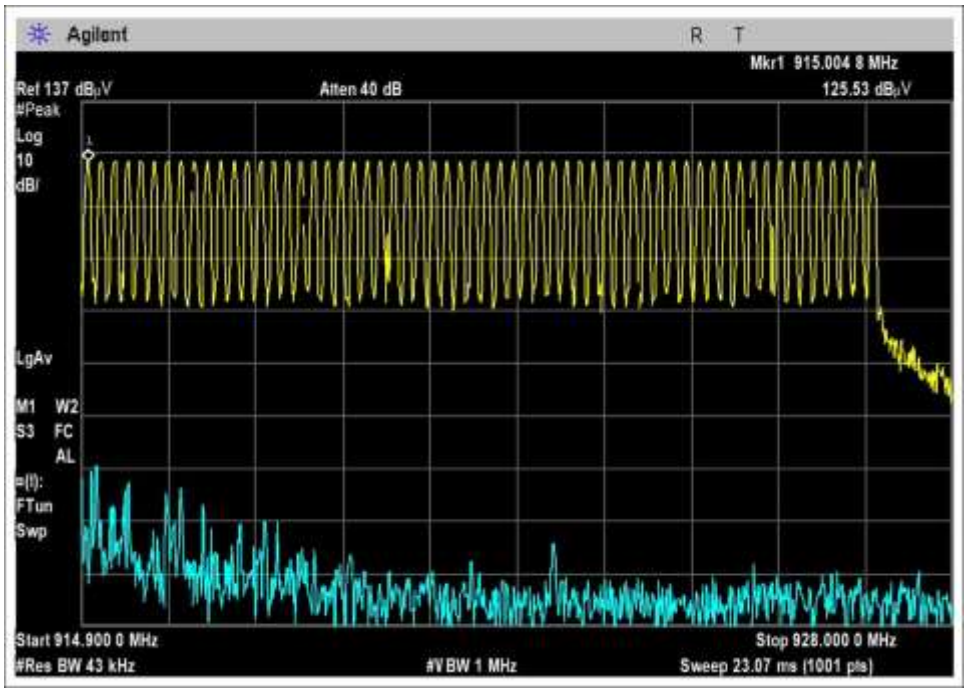


61 to 80

FM Number Channels



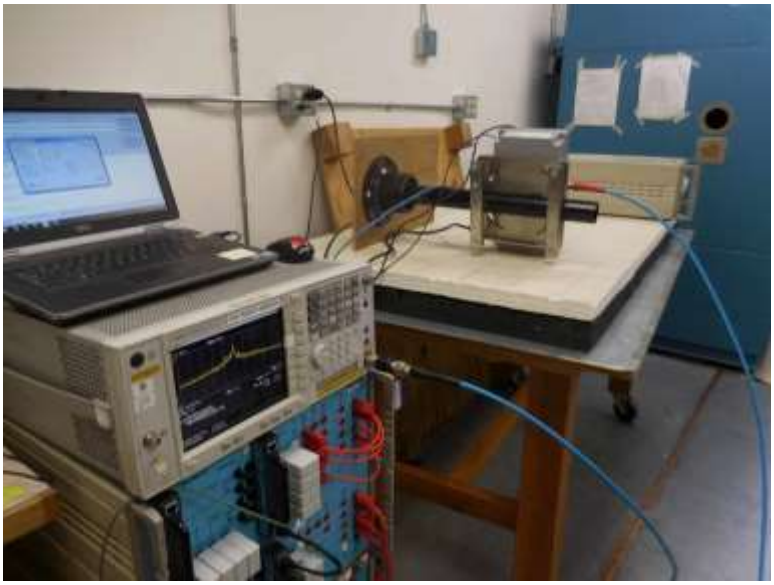
1 to 60



61 to 120

15.247(a) Transmitter Characteristics

Test Setup Photo(s)



15.247(b)(2) Output Power

Test Data Summary - Voltage Variations					
Frequency (MHz)	Modulation / Ant Port	$V_{Minimum}$ (dBm)	$V_{Nominal}$ (dBm)	$V_{Maximum}$ (dBm)	Max Deviation from $V_{Nominal}$ (dB)
908.0	AM	29.8	29.8	29.8	0.0
903.0	FM 12.5k	29.5	29.5	29.5	0.0
903.0	FM 37.5k	29.4	29.4	29.4	0.0

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

Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

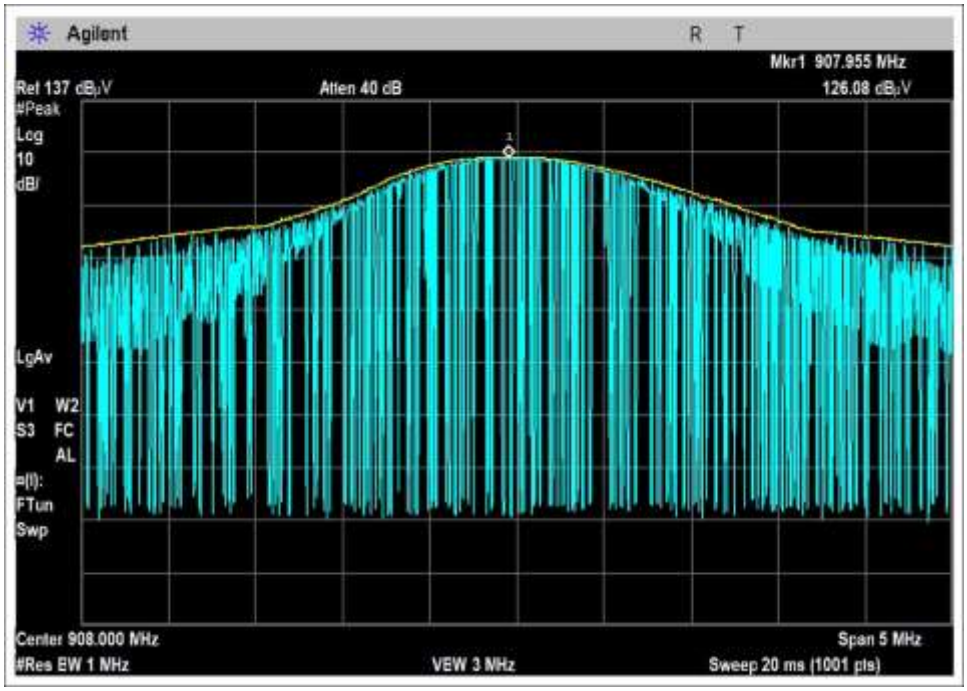
Parameter	Value
$V_{Nominal}$:	115
$V_{Minimum}$:	90
$V_{Maximum}$:	265

Test Data Summary - RF Conducted Measurement					
$Limit = \begin{cases} 30dBm\ Conducted/36dBm\ EIRP \mid \geq 50\ Channels \\ 24dBm\ Conducted/30dBm\ EIRP \mid < 50\ Channels\ (\min 25) \end{cases}$					
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Measured (dBm)	Limit (dBm)	Results
908.0	AM	Omni-Directional / 8.15dBi*	29.8	≤ 30	Pass
915.0	AM	Omni-Directional / 8.15dBi*	29.6	≤ 30	Pass
923.8	AM	Omni-Directional / 8.15dBi*	29.6	≤ 30	Pass
903.0	FM 12.5k	Omni-Directional / 8.15dBi*	29.5	≤ 30	Pass
915.0	FM 12.5k	Omni-Directional / 8.15dBi*	29.3	≤ 30	Pass
926.8	FM 12.5k	Omni-Directional / 8.15dBi*	29.3	≤ 30	Pass
903.0	FM 37.5k	Omni-Directional / 8.15dBi*	29.4	≤ 30	Pass
915.0	FM 37.5k	Omni-Directional / 8.15dBi*	29.2	≤ 30	Pass
926.8	FM 37.5k	Omni-Directional / 8.15dBi*	29.3	≤ 30	Pass

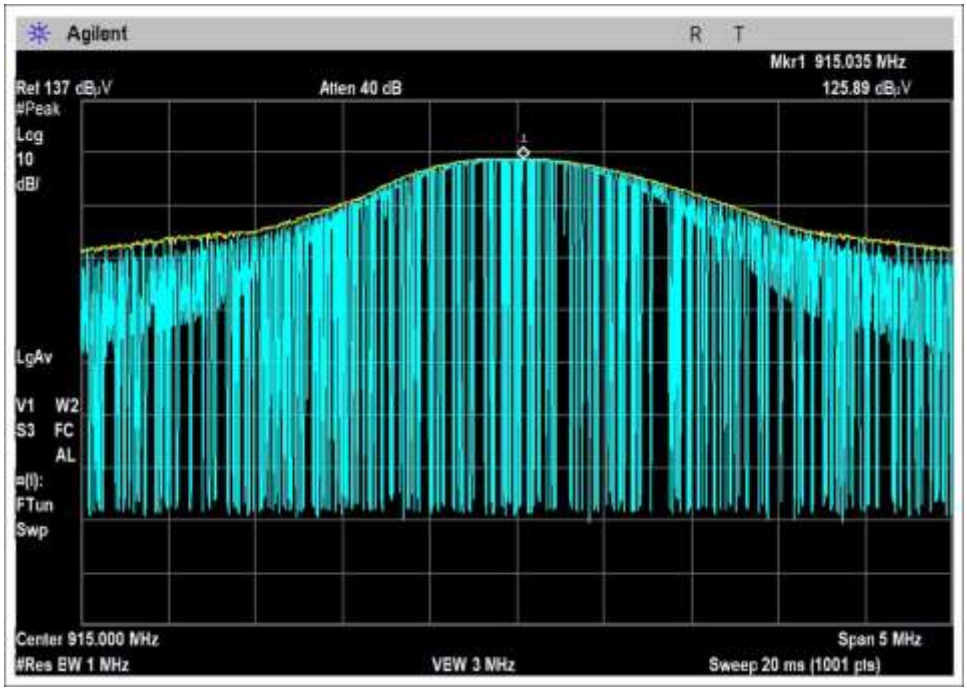
* Net gain is 5.95 dBi. Manufacturer declares minimum of 2.2dB of path loss to remote 8.15dBi antenna.

Plots

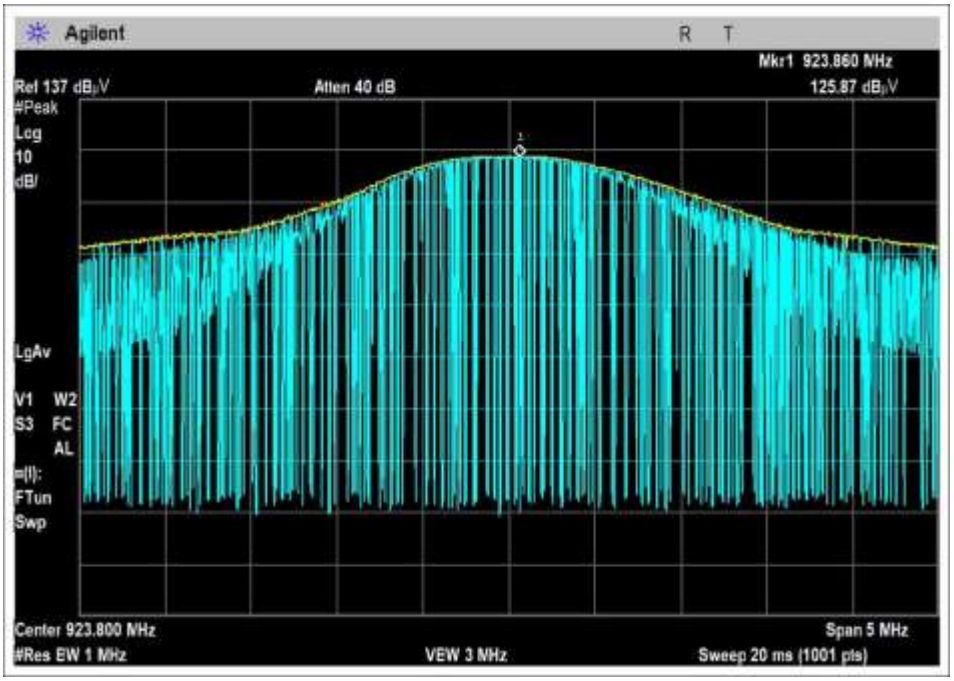
AM



Low Channel

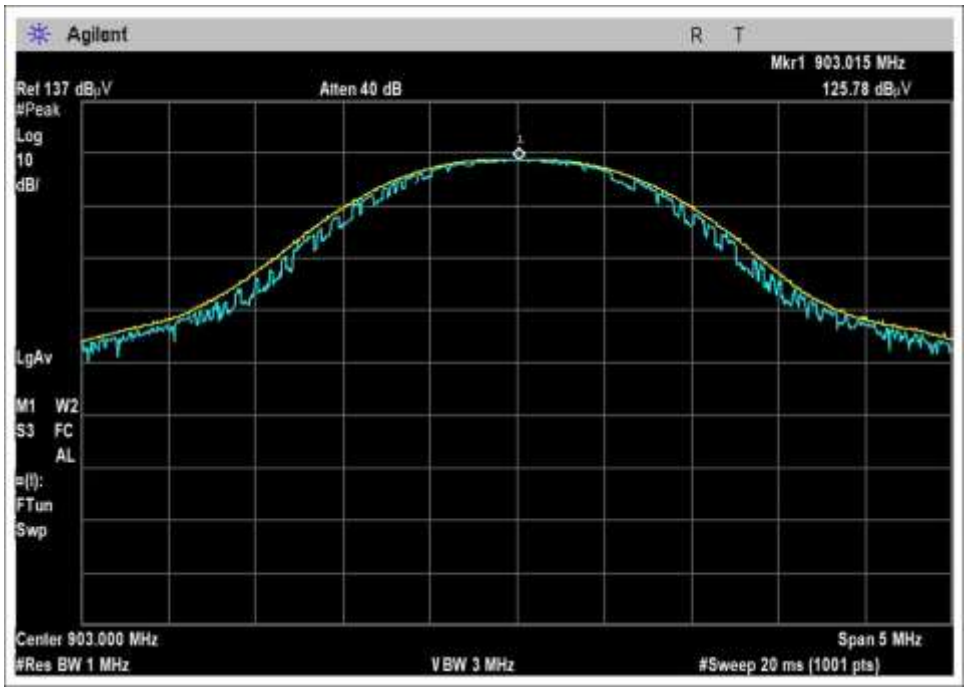


Medium Channel



High Channel

FM 12.5k



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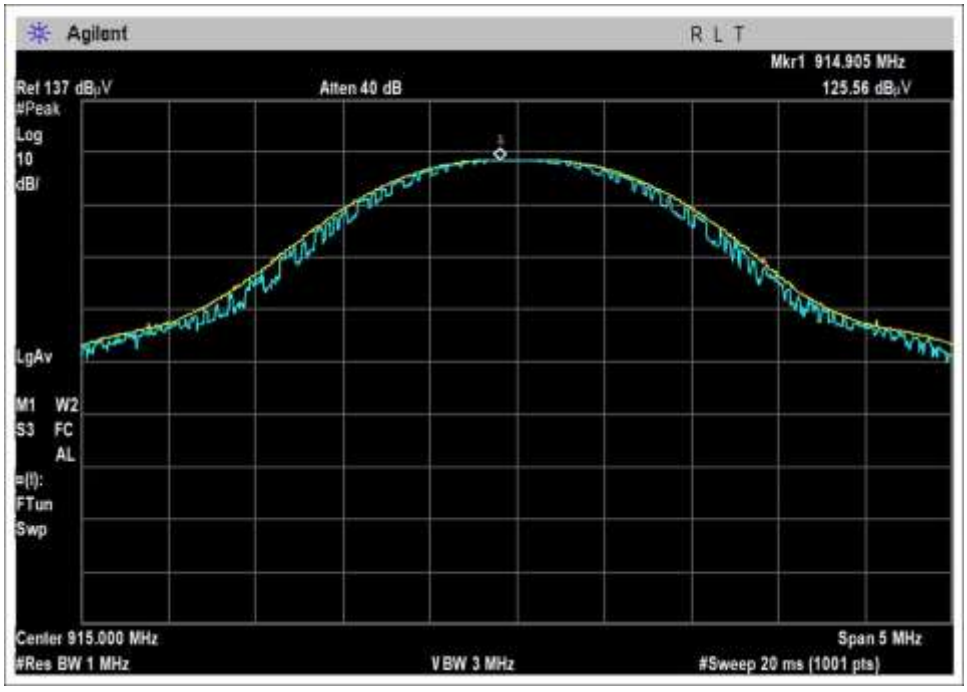
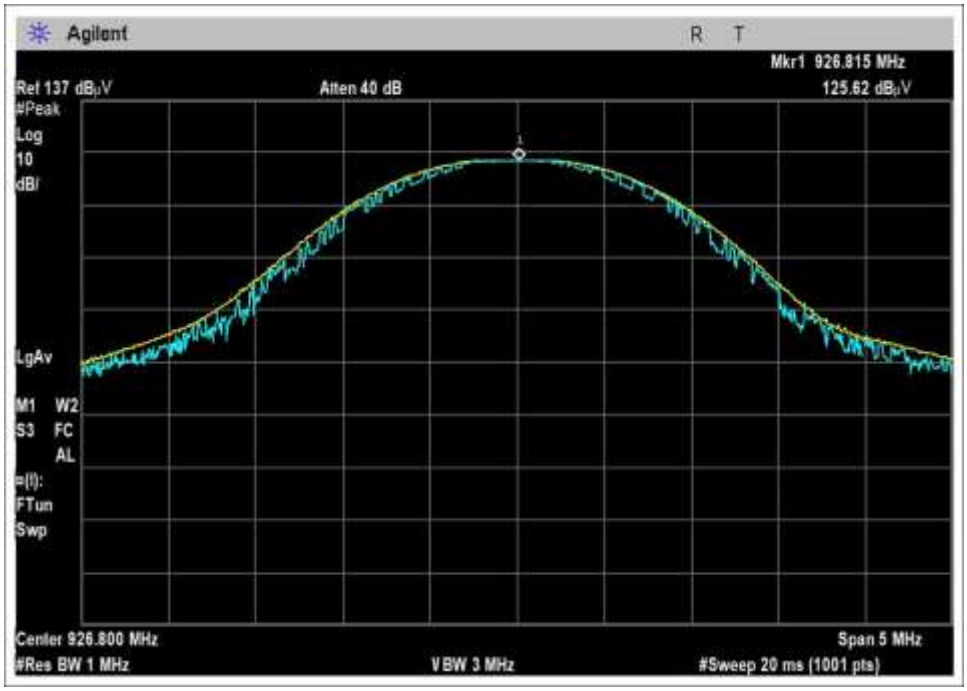
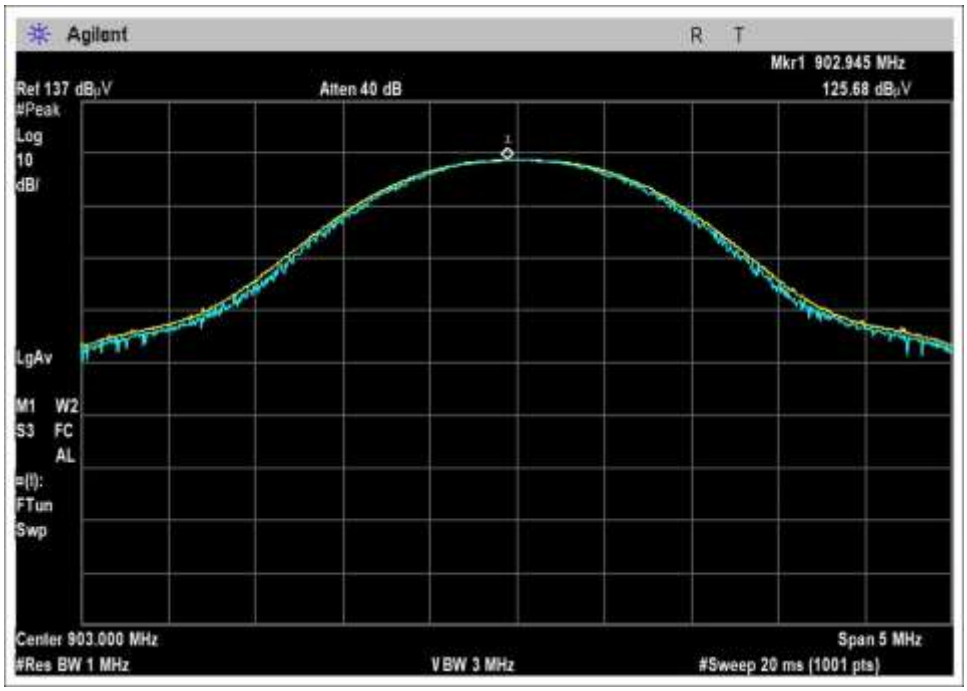


Medium Channel

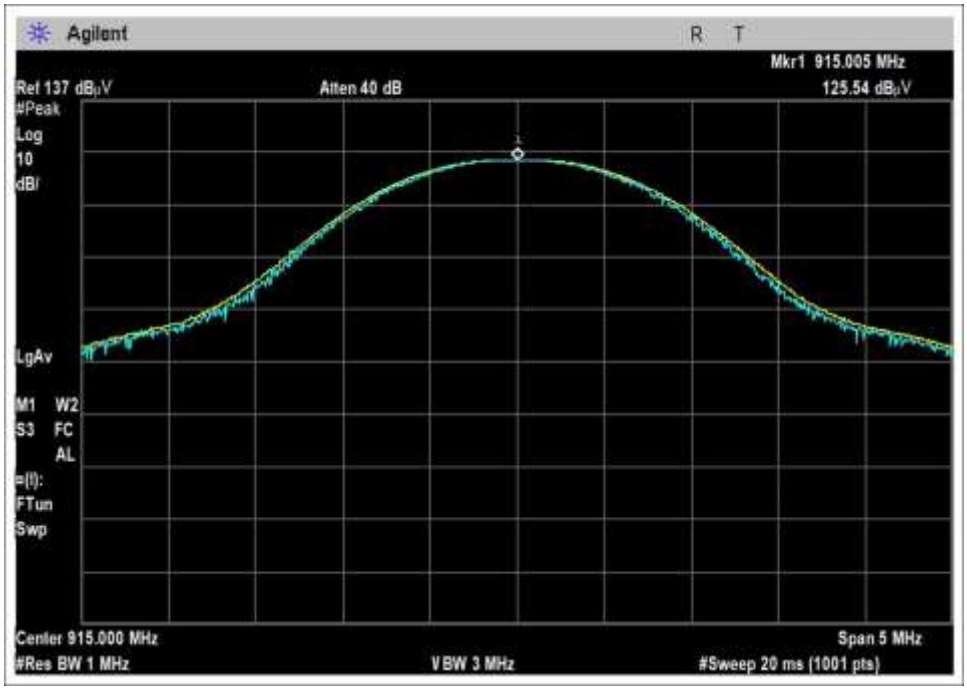


High Channel

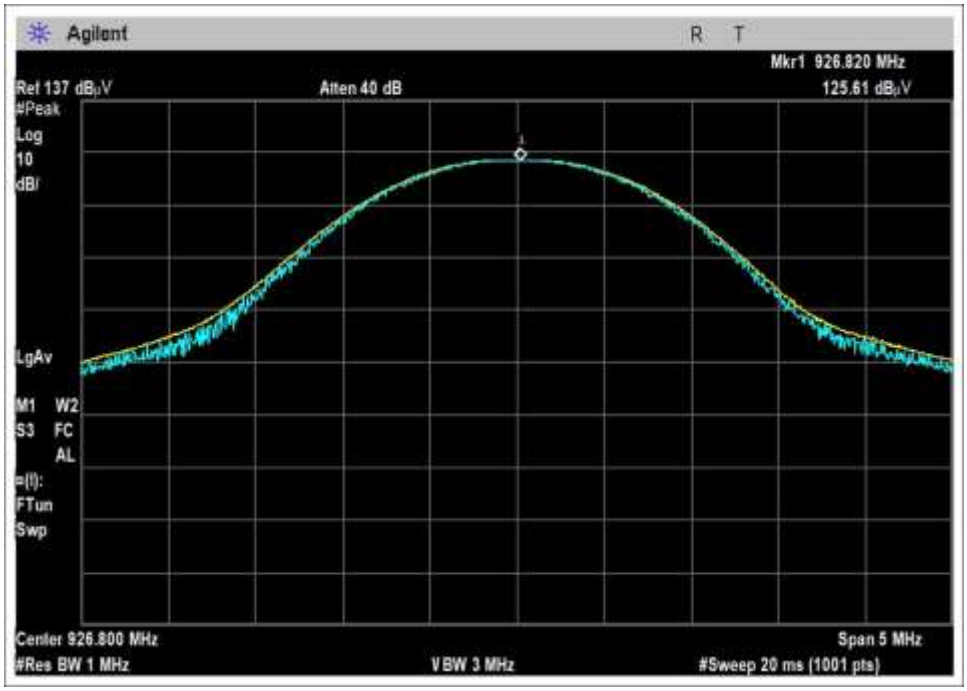
FM 37.5k



Low Channel



Medium Channel



High Channel

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(b) Power Output (902-928 MHz DTS)**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	12:33:17
Tested By:	Matt Harrison	Sequence#:	1
Software:	EMITest 5.03.20		120VAC

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

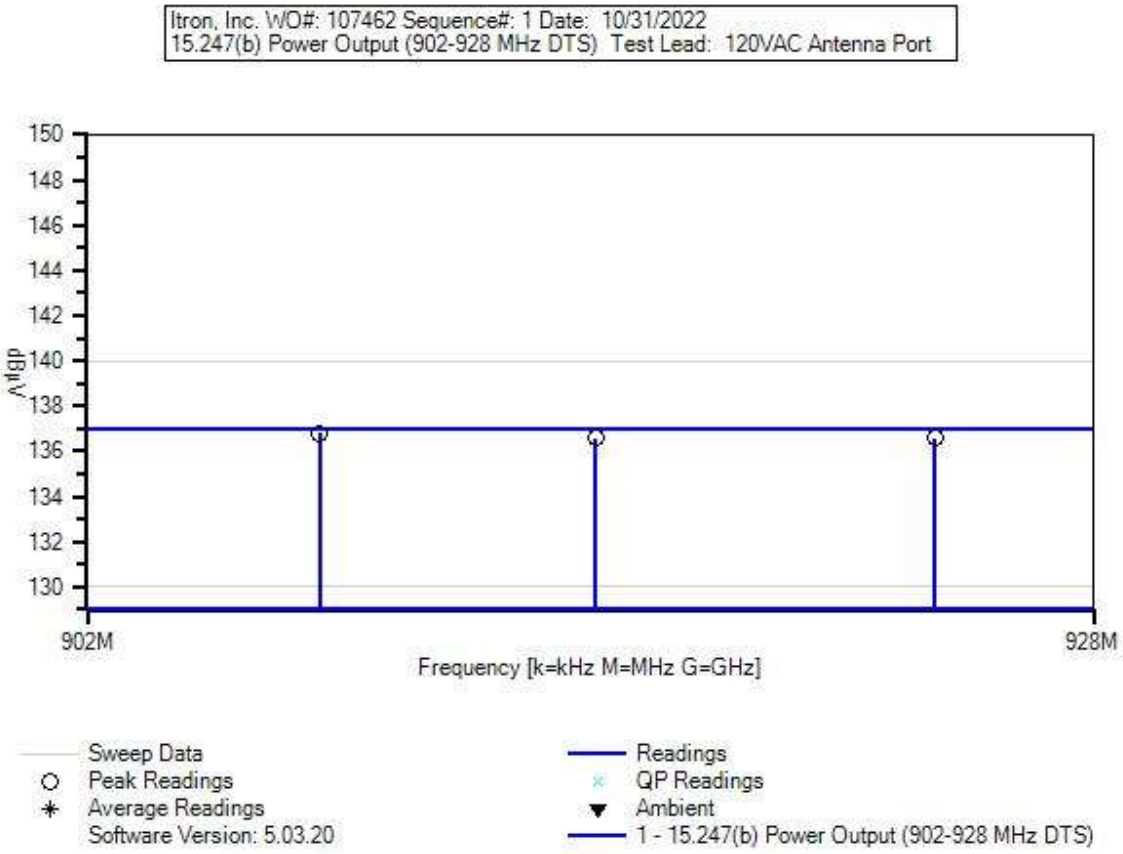
Test Environment Conditions:
Temperature: 21°C
Humidity: 40%
Pressure: 102.5kPa

Frequency Range: Fundamental
Frequency Tested: 908, 915, 923.8
Firmware Power Setting: 200
Protocol /MCS/Modulation: **AM**

Antenna Type: Omni-Directional

Duty Cycle: Tested at 100%

Test Method: ANSI C63.10 (2013)
Test Mode: Continuously Transmitting
Test Setup: EUT is setup for Conducted Measurements. It is directly connected to the SA via an Attenuator.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T3	ANP06008	Cable	Heliax	9/2/2022	9/2/2024

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	907.955M	126.1	+10.1	+0.0	+0.6		+0.0	136.8	137.0 DSP ISM Power 200	-0.2	Anten
2	915.035M	125.9	+10.1	+0.0	+0.6		+0.0	136.6	137.0 DSP ISM Power 200	-0.4	Anten
3	923.860M	125.9	+10.1	+0.0	+0.6		+0.0	136.6	137.0 DSP ISM Power 200	-0.4	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(b) Power Output (902-928 MHz DTS)**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	15:40:48
Tested By:	Matt Harrison	Sequence#:	2
Software:	EMITest 5.03.20		120VAC

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

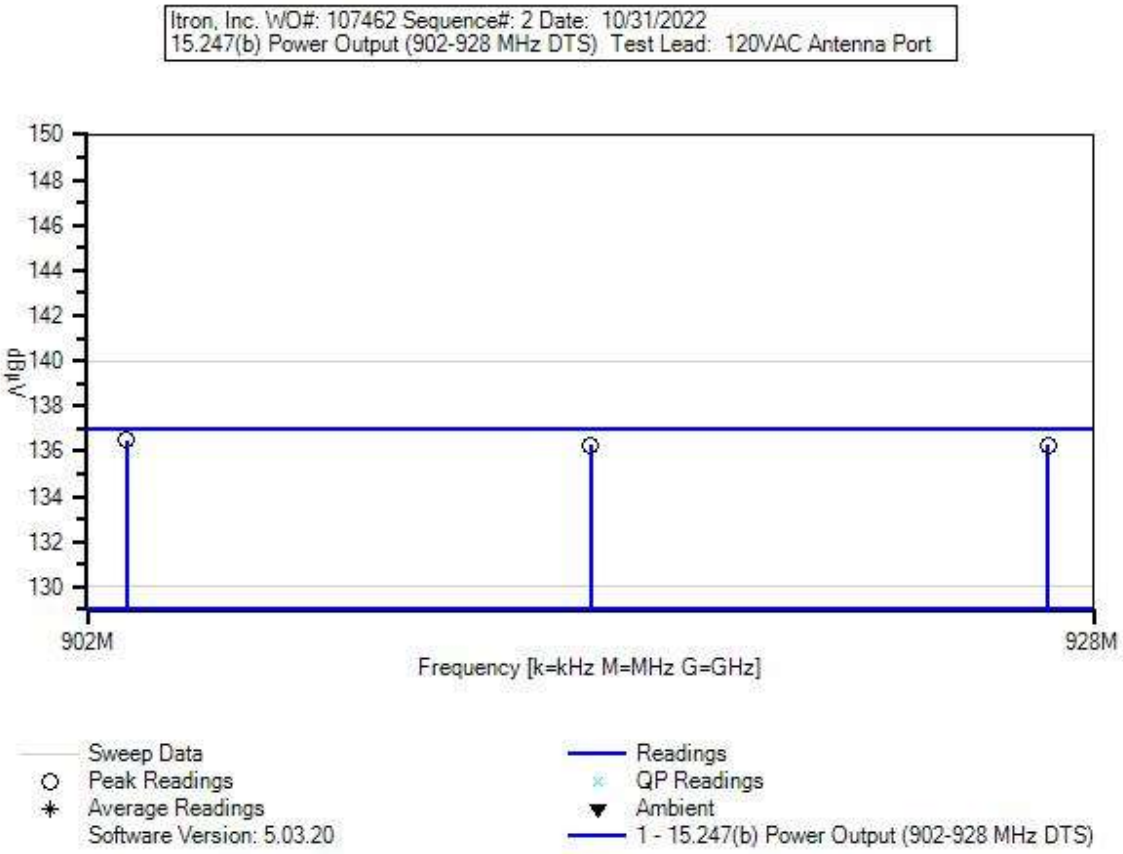
Test Environment Conditions:
Temperature: 21°C
Humidity: 40%
Pressure: 102.5kPa

Frequency Range: Fundamental
Frequency Tested: 903, 915, 926.8
Firmware Power Setting: 200
EUT Firmware:
Protocol /MCS/Modulation: **FM 12.5k**

Antenna Type: Omni-Directional

Duty Cycle: Tested at 100%

Test Method: ANSI C63.10 (2013)
Test Mode: Continuously Transmitting
Test Setup: EUT is setup for Conducted Measurements. It is directly connected to the SA via an Attenuator.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	903.015M	125.8	+10.1	+0.6			+0.0	136.5	137.0	-0.5	Anten
2	914.930M	125.6	+10.1	+0.6			+0.0	136.3	137.0	-0.7	Anten
3	926.815M	125.6	+10.1	+0.6			+0.0	136.3	137.0	-0.7	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(b) Power Output (902-928 MHz DTS)**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	15:43:45
Tested By:	Matt Harrison	Sequence#:	3
Software:	EMITest 5.03.20		120VAC

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

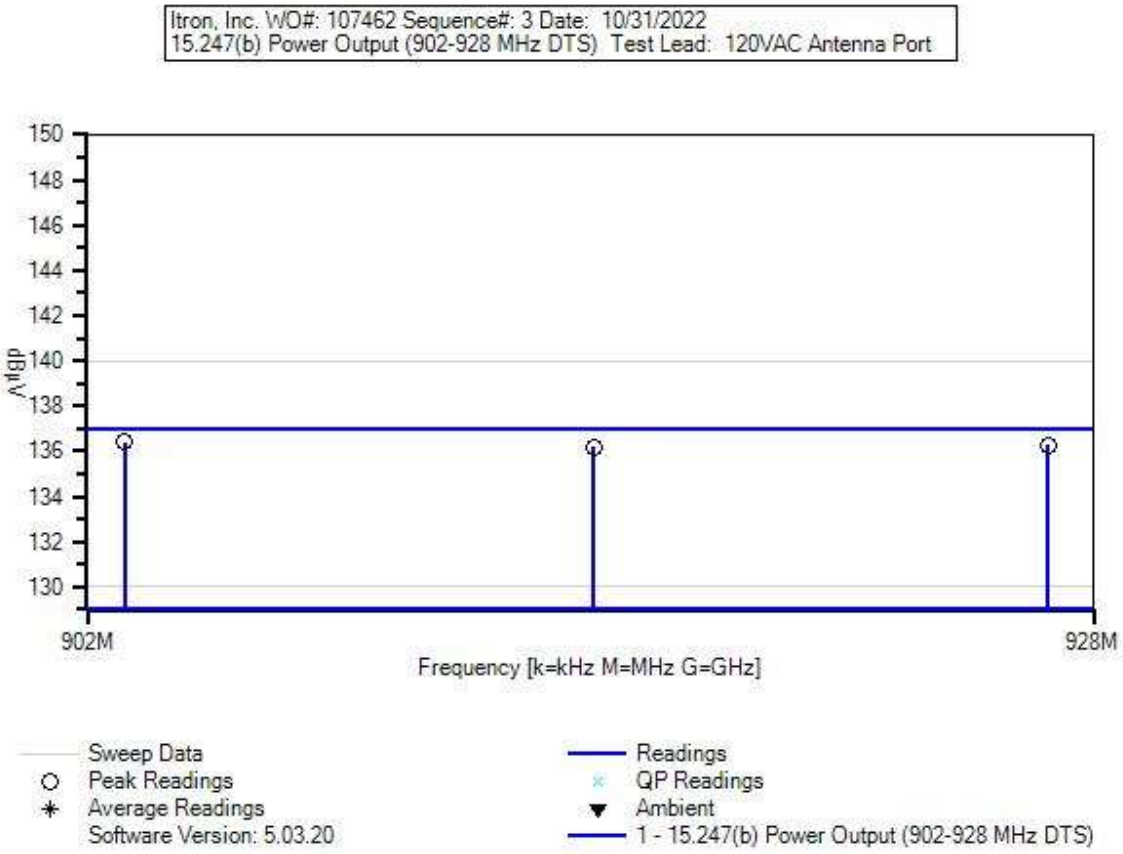
Test Conditions / Notes:

Test Environment Conditions:
Temperature: 21°C
Humidity: 40%
Pressure: 102.5kPa

Frequency Range: Fundamental
Frequency Tested: 903, 915, 926.8
Firmware Power Setting: 200
EUT Firmware:
Protocol /MCS/Modulation: **FM 37.5k**

Antenna Type: Omni-Directional
Duty Cycle: Tested at 100%

Test Method: ANSI C63.10 (2013)
Test Mode: Continuously Transmitting
Test Setup: EUT is setup for Conducted Measurements. It is directly connected to the SA via an Attenuator.



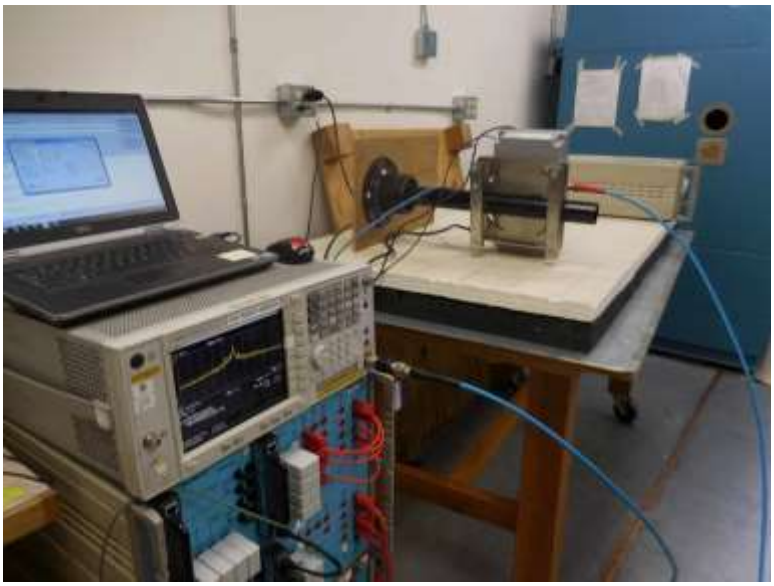
Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	902.945M	125.7	+10.1	+0.6			+0.0	136.4	137.0	-0.6	Anten
2	926.820M	125.6	+10.1	+0.6			+0.0	136.3	137.0	-0.7	Anten
3	915.005M	125.5	+10.1	+0.6			+0.0	136.2	137.0	-0.8	Anten

Test Setup Photo(s)



15.247(d) RF Conducted Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	16:45:26
Tested By:	Michael Atkinson	Sequence#:	1
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

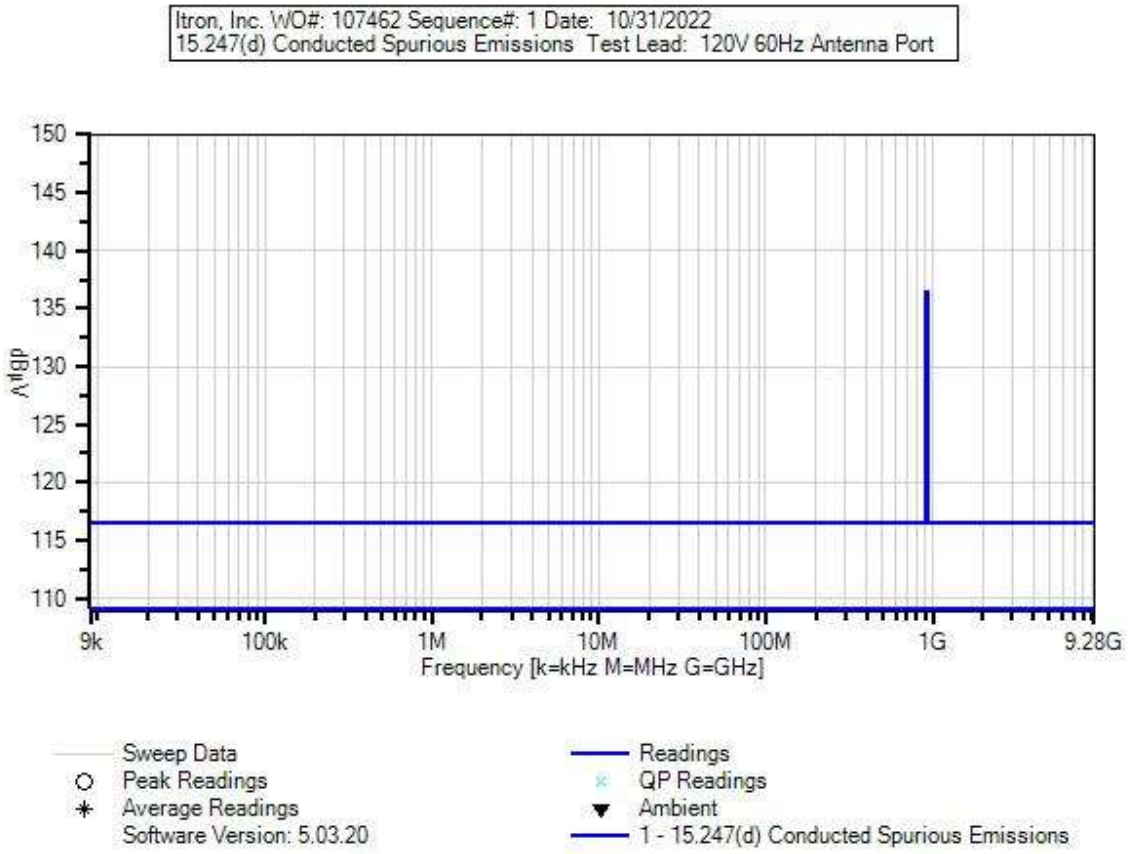
Test Environment Conditions:
Temperature: 21°C
Humidity: 48%
Pressure: 100.9kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-10GHz

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

AM Modulation



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1815.990M	77.0	+10.2	+0.9			+0.0	88.1	116.5	-28.4	Anten
2	1830.003M	76.8	+10.2	+0.9			+0.0	87.9	116.5	-28.6	Anten
3	1847.603M	75.2	+10.2	+0.9			+0.0	86.3	116.5	-30.2	Anten
4	3695.205M	72.6	+10.3	+1.3			+0.0	84.2	116.5	-32.3	Anten
5	3631.996M	72.4	+10.3	+1.3			+0.0	84.0	116.5	-32.5	Anten
6	3660.008M	72.4	+10.3	+1.3			+0.0	84.0	116.5	-32.5	Anten
7	2771.391M	71.2	+10.2	+1.2			+0.0	82.6	116.5	-33.9	Anten
8	2723.971M	71.1	+10.2	+1.2			+0.0	82.5	116.5	-34.0	Anten
9	6355.981M	80.7	+0.0	+1.6			+0.0	82.3	116.5	-34.2	Anten
10	6404.990M	80.5	+0.0	+1.6			+0.0	82.1	116.5	-34.4	Anten
11	5448.009M	80.6	+0.0	+1.5			+0.0	82.1	116.5	-34.4	Anten
12	6466.596M	80.3	+0.0	+1.6			+0.0	81.9	116.5	-34.6	Anten
13	5490.000M	80.4	+0.0	+1.5			+0.0	81.9	116.5	-34.6	Anten
14	5542.790M	80.2	+0.0	+1.5			+0.0	81.7	116.5	-34.8	Anten
15	2744.999M	70.3	+10.2	+1.2			+0.0	81.7	116.5	-34.8	Anten
16	4619.008M	73.0	+0.0	+1.6			+0.0	74.6	116.5	-41.9	Anten
17	4575.001M	71.7	+0.0	+1.6			+0.0	73.3	116.5	-43.2	Anten
18	4539.997M	71.5	+0.0	+1.6			+0.0	73.1	116.5	-43.4	Anten
19	7390.377M	68.7	+0.0	+1.6			+0.0	70.3	116.5	-46.2	Anten
20	7263.973M	68.1	+0.0	+1.6			+0.0	69.7	116.5	-46.8	Anten
21	7320.000M	68.0	+0.0	+1.6			+0.0	69.6	116.5	-46.9	Anten
22	8314.197M	64.4	+0.0	+2.0			+0.0	66.4	116.5	-50.1	Anten
23	8234.952M	63.5	+0.0	+1.9			+0.0	65.4	116.5	-51.1	Anten
24	8171.976M	63.4	+0.0	+1.9			+0.0	65.3	116.5	-51.2	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	16:49:57
Tested By:	Michael Atkinson	Sequence#:	2
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

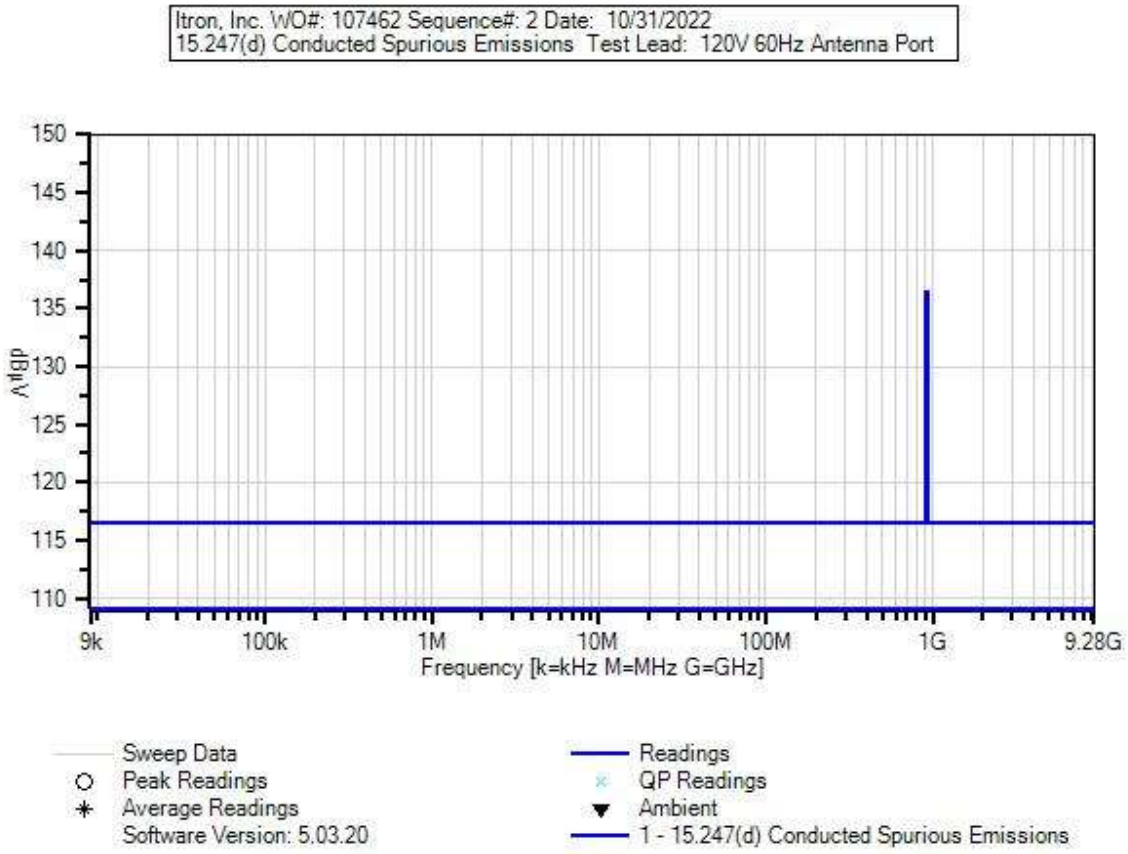
Test Environment Conditions:
Temperature: 21°C
Humidity: 48%
Pressure: 100.9kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-10GHz

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

FM12.5 Modulation



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1829.900M	76.6	+10.2	+0.9			+0.0	87.7	116.5	-28.8	Anten
2	1805.897M	76.5	+10.2	+0.9			+0.0	87.6	116.5	-28.9	Anten
3	1853.700M	75.4	+10.2	+0.9			+0.0	86.5	116.5	-30.0	Anten
4	3707.010M	72.3	+10.3	+1.3			+0.0	83.9	116.5	-32.6	Anten
5	3660.190M	72.1	+10.3	+1.3			+0.0	83.7	116.5	-32.8	Anten
6	2780.546M	71.7	+10.2	+1.2			+0.0	83.1	116.5	-33.4	Anten
7	6487.954M	81.1	+0.0	+1.6			+0.0	82.7	116.5	-33.8	Anten
8	6320.664M	81.0	+0.0	+1.6			+0.0	82.6	116.5	-33.9	Anten
9	5418.306M	81.0	+0.0	+1.5			+0.0	82.5	116.5	-34.0	Anten
10	5560.504M	80.5	+0.0	+1.5			+0.0	82.0	116.5	-34.5	Anten
11	6404.648M	80.2	+0.0	+1.6			+0.0	81.8	116.5	-34.7	Anten
12	2744.838M	70.3	+10.2	+1.2			+0.0	81.7	116.5	-34.8	Anten
13	5490.290M	80.2	+0.0	+1.5			+0.0	81.7	116.5	-34.8	Anten
14	2708.843M	70.2	+10.2	+1.2			+0.0	81.6	116.5	-34.9	Anten
15	4634.250M	73.6	+0.0	+1.5			+0.0	75.1	116.5	-41.4	Anten
16	4574.756M	71.5	+0.0	+1.6			+0.0	73.1	116.5	-43.4	Anten
17	4515.260M	70.8	+0.0	+1.6			+0.0	72.4	116.5	-44.1	Anten
18	7413.966M	68.4	+0.0	+1.6			+0.0	70.0	116.5	-46.5	Anten
19	7319.602M	67.6	+0.0	+1.6			+0.0	69.2	116.5	-47.3	Anten
20	7224.380M	67.5	+0.0	+1.6			+0.0	69.1	116.5	-47.4	Anten
21	8341.658M	64.6	+0.0	+2.0			+0.0	66.6	116.5	-49.9	Anten
22	8127.445M	64.4	+0.0	+1.9			+0.0	66.3	116.5	-50.2	Anten
23	8235.494M	63.1	+0.0	+1.9			+0.0	65.0	116.5	-51.5	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**107462**	Date:	10/31/2022
Test Type:	**Conducted Emissions**	Time:	16:52:39
Tested By:	Michael Atkinson	Sequence#:	3
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

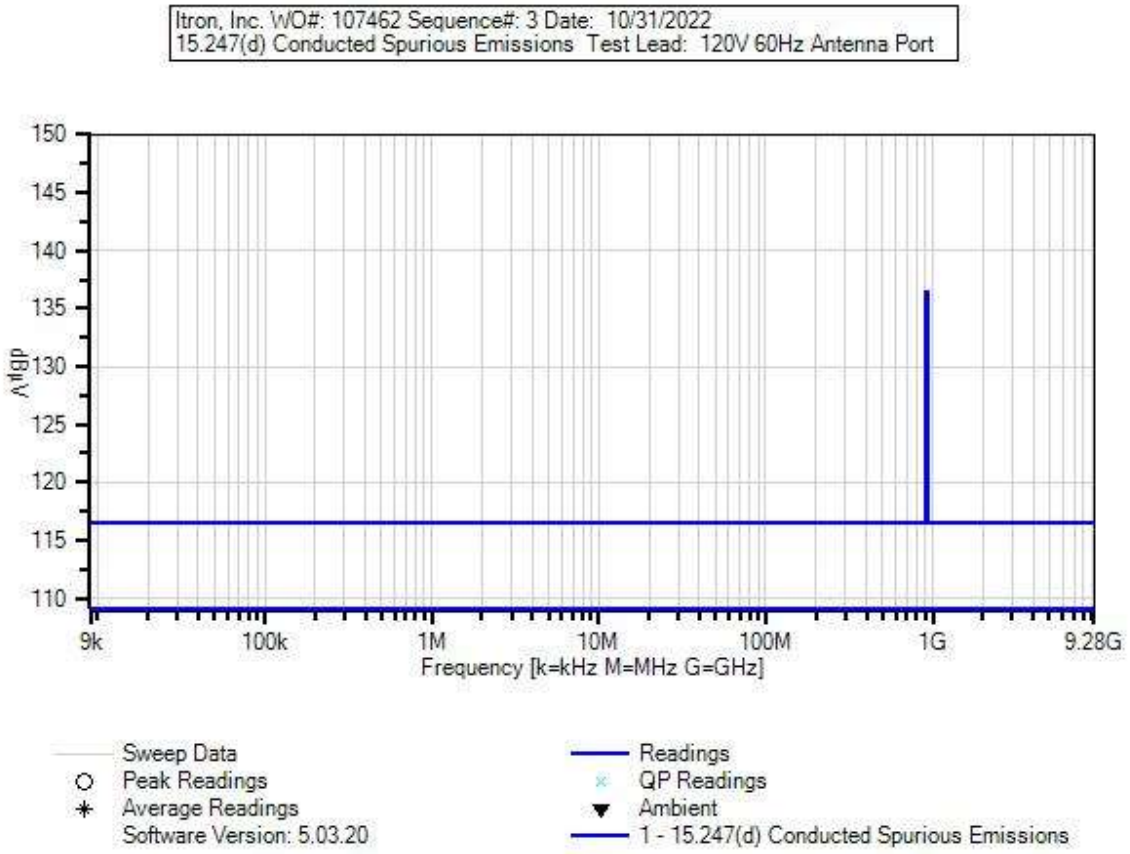
Test Environment Conditions:
Temperature: 21°C
Humidity: 48%
Pressure: 100.9kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-10GHz

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

FM37.5 Modulation



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1830.036M	76.5	+10.2	+0.9			+0.0	87.6	116.5	-28.9	Anten
2	1806.028M	76.4	+10.2	+0.9			+0.0	87.5	116.5	-29.0	Anten
3	1853.558M	75.4	+10.2	+0.9			+0.0	86.5	116.5	-30.0	Anten
4	3612.078M	72.9	+10.3	+1.3			+0.0	84.5	116.5	-32.0	Anten
5	3707.272M	72.3	+10.3	+1.3			+0.0	83.9	116.5	-32.6	Anten
6	3660.076M	72.1	+10.3	+1.3			+0.0	83.7	116.5	-32.8	Anten
7	2780.442M	71.9	+10.2	+1.2			+0.0	83.3	116.5	-33.2	Anten
8	6487.474M	81.0	+0.0	+1.6			+0.0	82.6	116.5	-33.9	Anten
9	6320.882M	80.9	+0.0	+1.6			+0.0	82.5	116.5	-34.0	Anten
10	5418.084M	80.9	+0.0	+1.5			+0.0	82.4	116.5	-34.1	Anten
11	5560.692M	80.4	+0.0	+1.5			+0.0	81.9	116.5	-34.6	Anten
12	6405.118M	80.2	+0.0	+1.6			+0.0	81.8	116.5	-34.7	Anten
13	5489.906M	80.3	+0.0	+1.5			+0.0	81.8	116.5	-34.7	Anten
14	2745.050M	70.3	+10.2	+1.2			+0.0	81.7	116.5	-34.8	Anten
15	2709.056M	70.1	+10.2	+1.2			+0.0	81.5	116.5	-35.0	Anten
16	4633.920M	73.5	+0.0	+1.5			+0.0	75.0	116.5	-41.5	Anten
17	4574.928M	71.6	+0.0	+1.6			+0.0	73.2	116.5	-43.3	Anten
18	4515.068M	70.8	+0.0	+1.6			+0.0	72.4	116.5	-44.1	Anten
19	7414.512M	69.1	+0.0	+1.6			+0.0	70.7	116.5	-45.8	Anten
20	7319.892M	67.7	+0.0	+1.6			+0.0	69.3	116.5	-47.2	Anten
21	7224.150M	67.4	+0.0	+1.6			+0.0	69.0	116.5	-47.5	Anten
22	8341.372M	63.8	+0.0	+2.0			+0.0	65.8	116.5	-50.7	Anten
23	8127.148M	63.5	+0.0	+1.9			+0.0	65.4	116.5	-51.1	Anten
24	8235.152M	63.3	+0.0	+1.9			+0.0	65.2	116.5	-51.3	Anten

Band Edge

Band Edge Summary				
Limit applied: Max Power/100kHz - 20dB. Operating Mode: Single Channel (Low and High)				
Frequency (MHz)	**Modulation**	**Measured (dBµV)**	**Limit (dBµV)**	**Results**
902	AM	91.2	<116.5	Pass
928	AM	100.4	<116.5	Pass
902	FM 12.5	103.0	<116.5	Pass
928	FM 12.5	96.8	<116.5	Pass
902	FM 37.5	102.3	<116.5	Pass
928	FM 37.5	97.0	<116.5	Pass

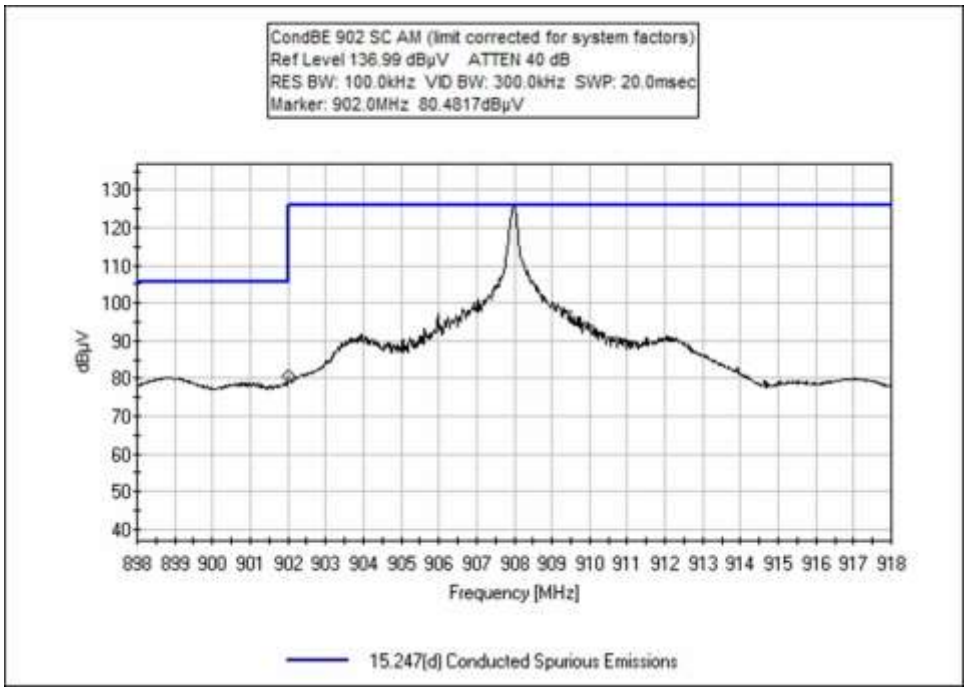
Note: Limit converted to dBµV from dBm, for 50ohm system dBm-107 = dBµV

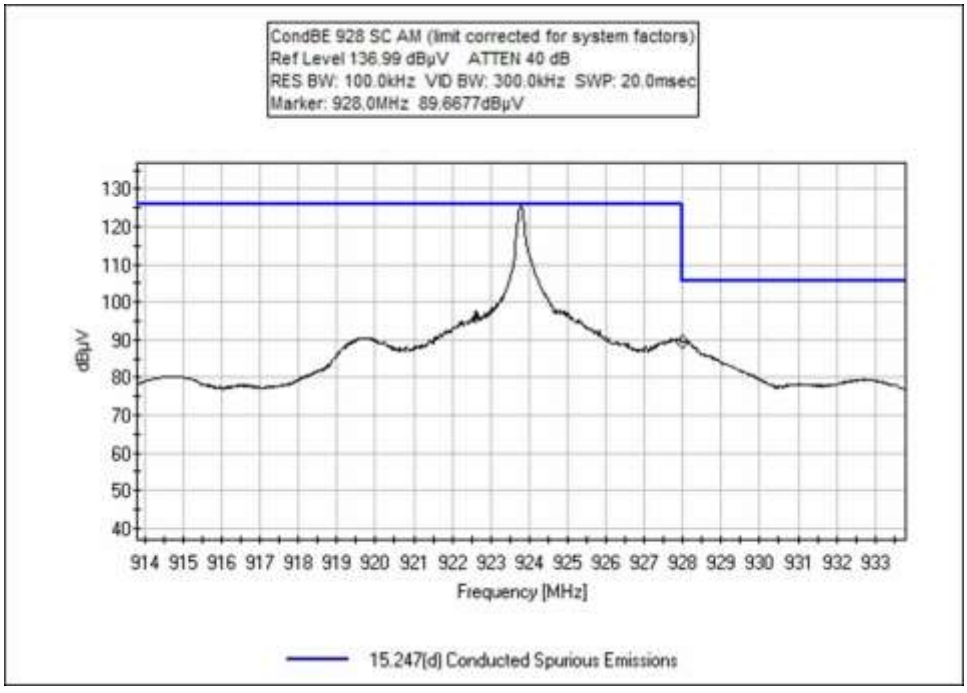
Band Edge Summary				
Limit applied: Max Power/100kHz - 20dB. Operating Mode: Hopping				
Frequency (MHz)	**Modulation**	**Measured (dBm)**	**Limit (dBm)**	**Results**
902	AM	93.4	<116.5	Pass
928	AM	99.4	<116.5	Pass
902	FM 12.5	99.8	<116.5	Pass
928	FM 12.5	96.9	<116.5	Pass
902	FM 37.5	100.6	<116.5	Pass
928	FM 37.5	97.5	<116.5	Pass

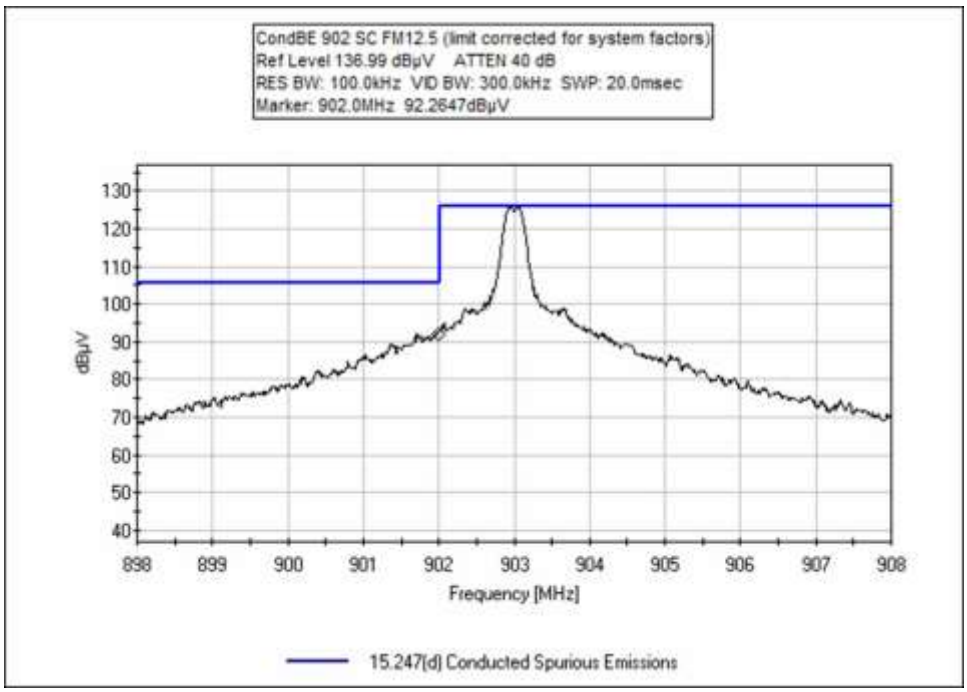
Note: Limit converted to dBµV from dBm, for 50ohm system dBm-107 = dBµV

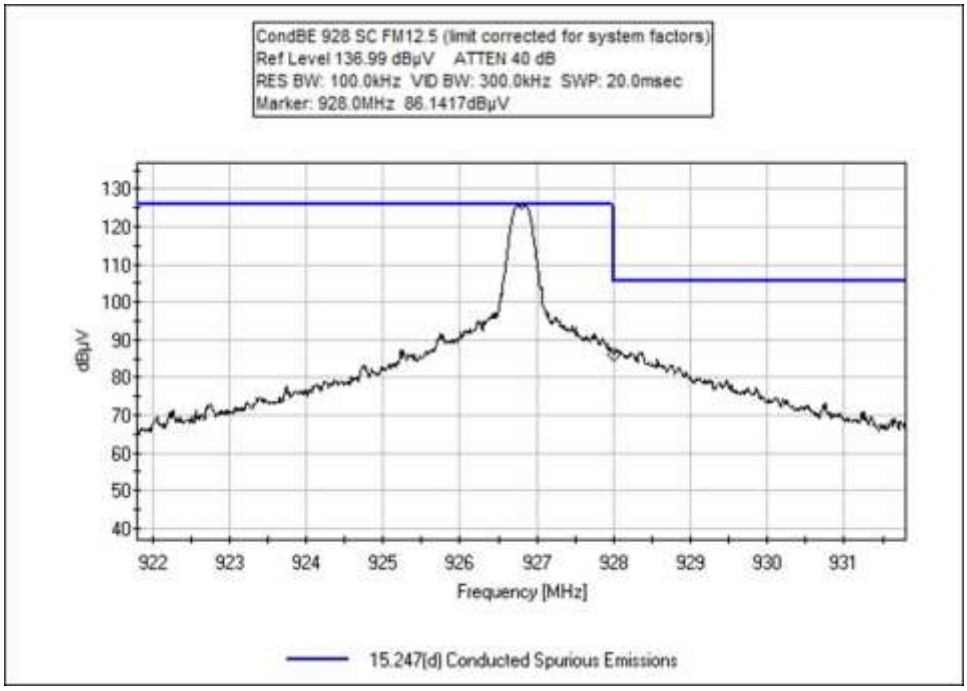
Band Edge Plots

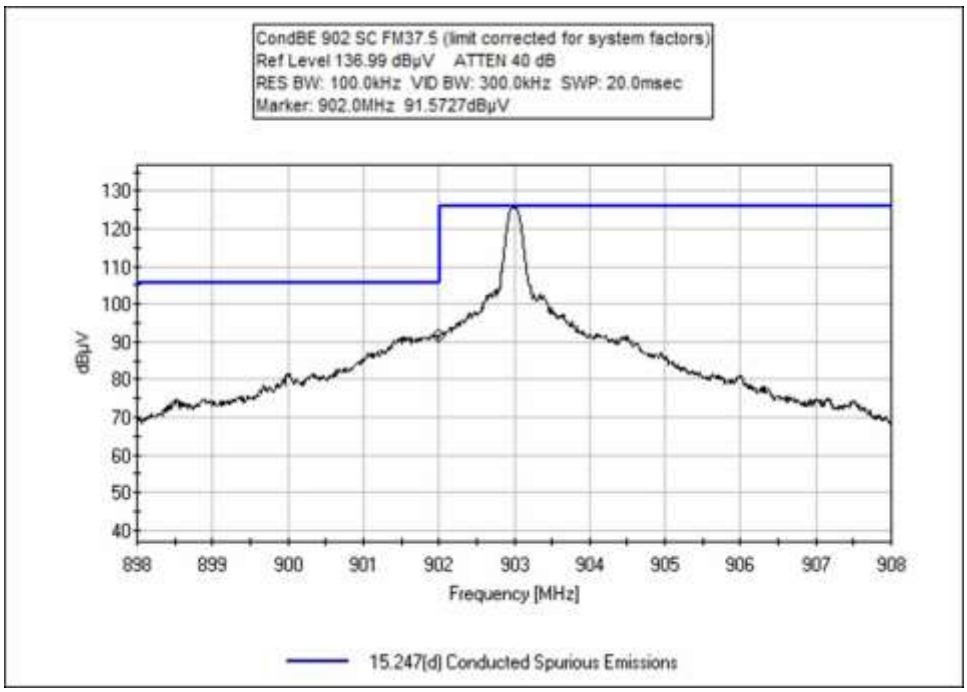
Single Channel (Low and High)

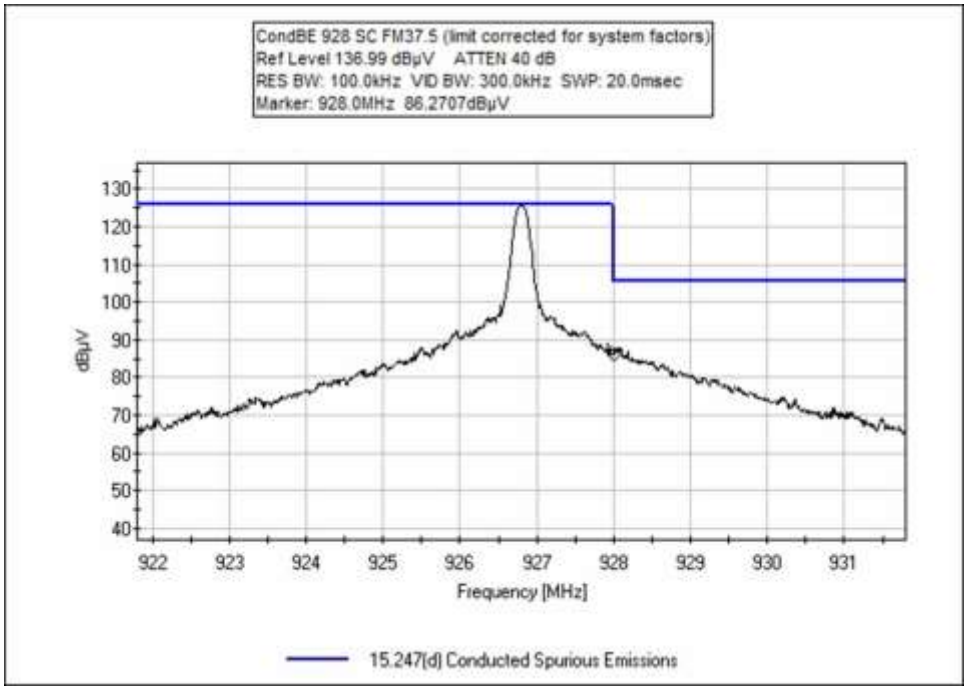




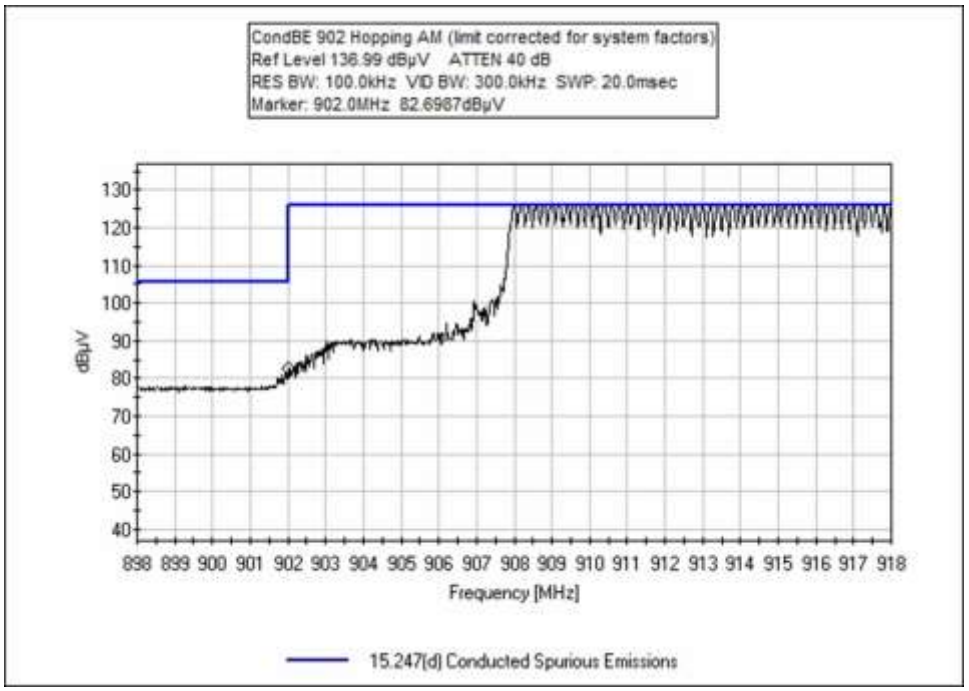

CondBE 902 SC FM12.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 92.2647dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
898
899
900
901
902
903
904
905
906
907
908
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

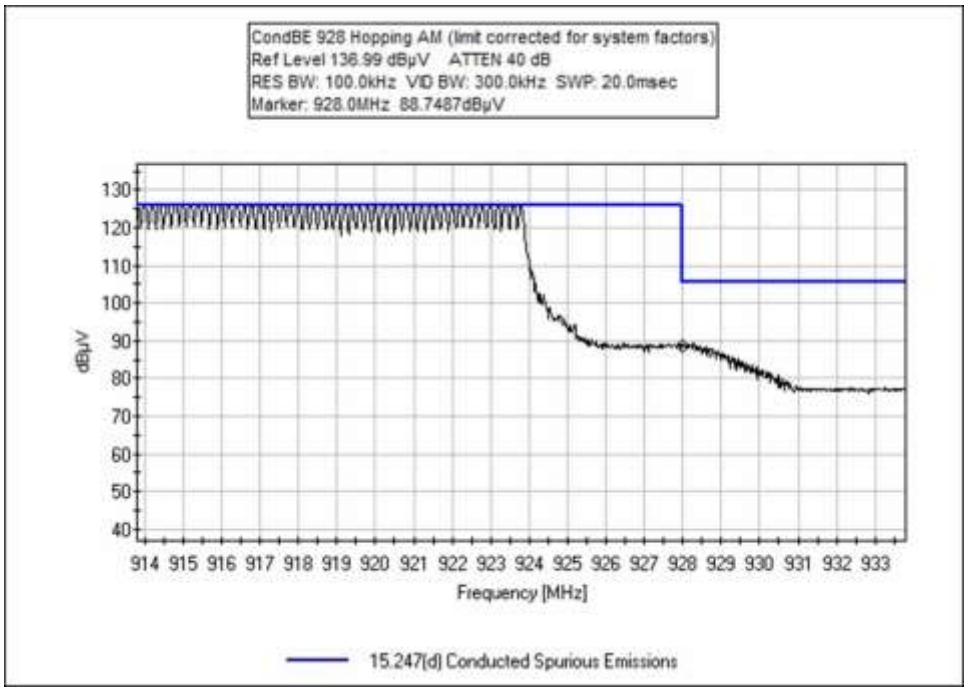

CondBE 928 SC FM12.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 86.1417dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
922
923
924
925
926
927
928
929
930
931
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

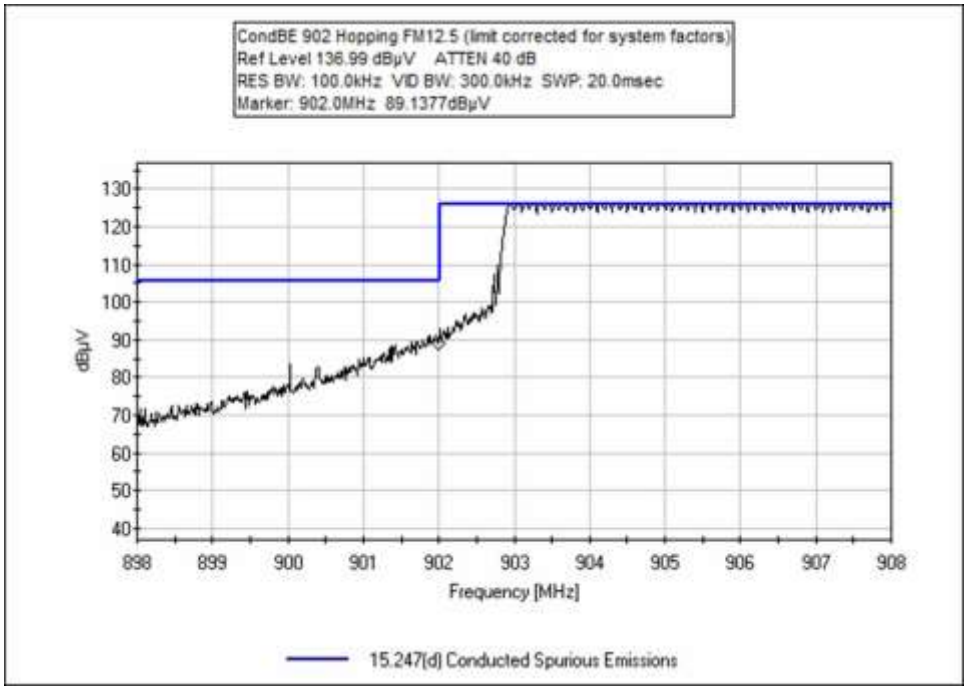

CondBE 902 SC FM37.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 91.5727dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
898
899
900
901
902
903
904
905
906
907
908
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

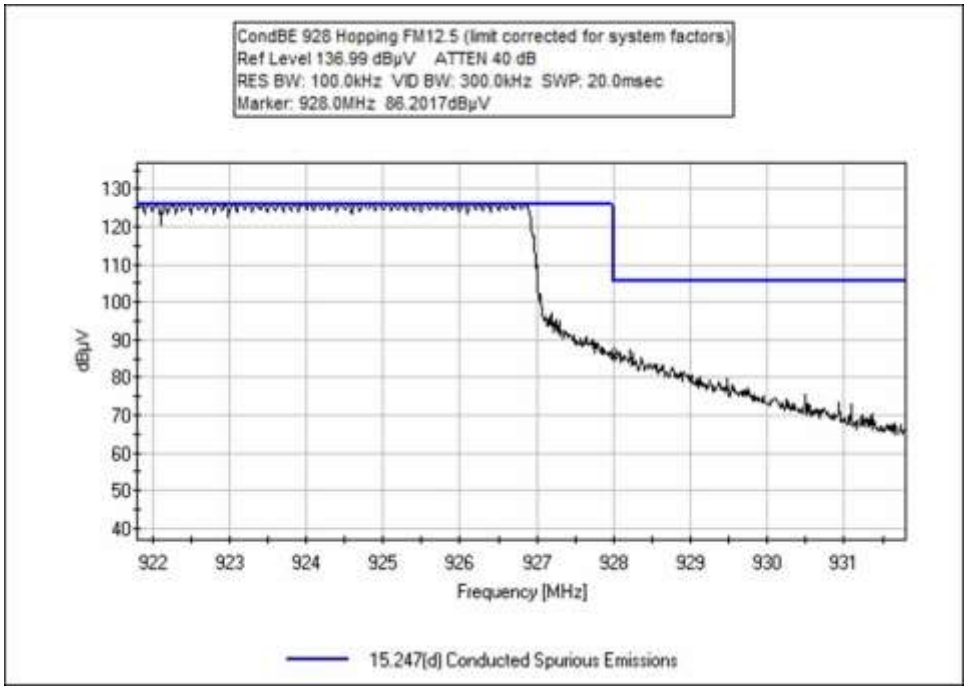

CondBE 928 SC FM37.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 86.2707dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
922
923
924
925
926
927
928
929
930
931
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

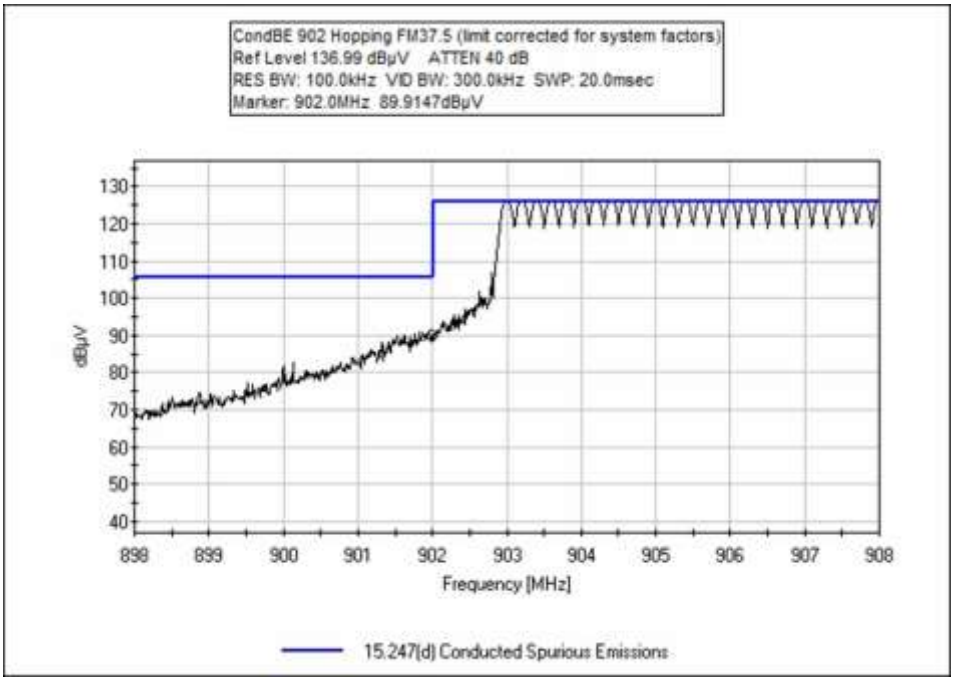
Hopping

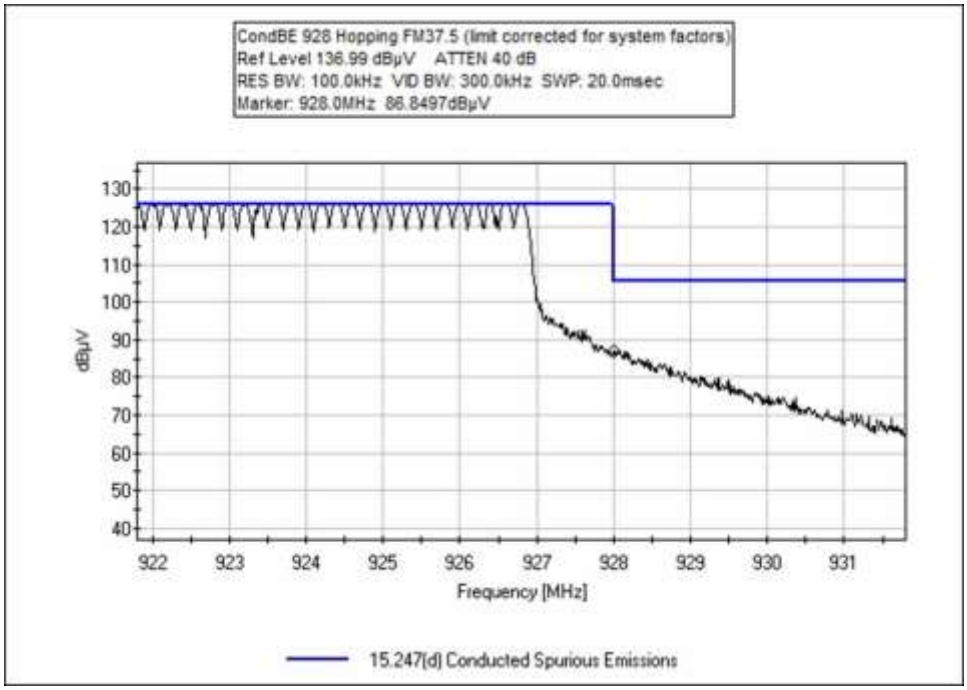

CondBE 902 Hopping AM (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 82.6987dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


CondBE 928 Hopping AM (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 88.7487dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


CondBE 902 Hopping FM12.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 89.1377dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
898
899
900
901
902
903
904
905
906
907
908
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


CondBE 928 Hopping FM12.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 86.2017dBµV
dBµV
130
120
110
100
90
80
70
60
50
40
922
923
924
925
926
927
928
929
930
931
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


CondBE 902 Hopping FM37.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 89.9147dBµV
dBµV
Frequency [MHz]
15.247(d) Conducted Spurious Emissions


CondBE 928 Hopping FM37.5 (limit corrected for system factors)
Ref Level 136.99 dBµV ATTEN 40 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 86.8497dBµV
dBµV
Frequency [MHz]
15.247(d) Conducted Spurious Emissions

Test Setup / Conditions / Data

Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717
Customer: **Itron, Inc.**
Specification: **15.247(d) Conducted Spurious Emissions**
Work Order #: **107462** Date: 11/1/2022
Test Type: **Conducted Emissions** Time: 16:42:02
Tested By: Michael Atkinson Sequence#: 4
Software: EMITest 5.03.20 120V 60Hz

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: 21.7°C
Humidity: 48%
Pressure: 100.8kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

AM Modulation

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	928.000M	89.7	+10.1	+0.6			+0.0	100.4	116.5 SC	-16.1	Anten
2	928.000M	88.7	+10.1	+0.6			+0.0	99.4	116.5 Hopping	-17.1	Anten
3	902.000M	82.7	+10.1	+0.6			+0.0	93.4	116.5 Hopping	-23.1	Anten
4	902.000M	80.5	+10.1	+0.6			+0.0	91.2	116.5 SC	-25.3	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**107462**	Date:	11/1/2022
Test Type:	**Conducted Emissions**	Time:	16:52:13
Tested By:	Michael Atkinson	Sequence#:	5
Software:	EMITest 5.03.20		120V 60Hz

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: 21.7°C
Humidity: 48%
Pressure: 100.8kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

FM12.5 Modulation

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	902.000M	92.3	+10.1	+0.6			+0.0	103.0	116.5 SC	-13.5	Anten
2	902.000M	89.1	+10.1	+0.6			+0.0	99.8	116.5 Hopping	-16.7	Anten
3	928.000M	86.2	+10.1	+0.6			+0.0	96.9	116.5 Hopping	-19.6	Anten
4	928.000M	86.1	+10.1	+0.6			+0.0	96.8	116.5 SC	-19.7	Anten

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**107462**	Date:	11/1/2022
Test Type:	**Conducted Emissions**	Time:	17:04:08
Tested By:	Michael Atkinson	Sequence#:	6
Software:	EMITest 5.03.20		120V 60Hz

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: 21.7°C
Humidity: 48%
Pressure: 100.8kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

EUT is continuously transmitting with modulation, connected to spectrum analyzer directly through appropriate attenuation.

FM37.5 Modulation

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05503	Attenuator	766-10	6/8/2021	6/8/2023
T2	ANP06008	Cable	Heliax	9/2/2022	9/2/2024
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	902.000M	91.6	+10.1	+0.6			+0.0	102.3	116.5 SC	-14.2	Anten
2	902.000M	89.9	+10.1	+0.6			+0.0	100.6	116.5 Hopping	-15.9	Anten
3	928.000M	86.8	+10.1	+0.6			+0.0	97.5	116.5 Hopping	-19.0	Anten
4	928.000M	86.3	+10.1	+0.6			+0.0	97.0	116.5 SC	-19.5	Anten

Test Setup Photo(s)

15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/28/2022
Test Type:	**Maximized Emissions**	Time:	13:04:37
Tested By:	Matt Harrison	Sequence#:	1
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

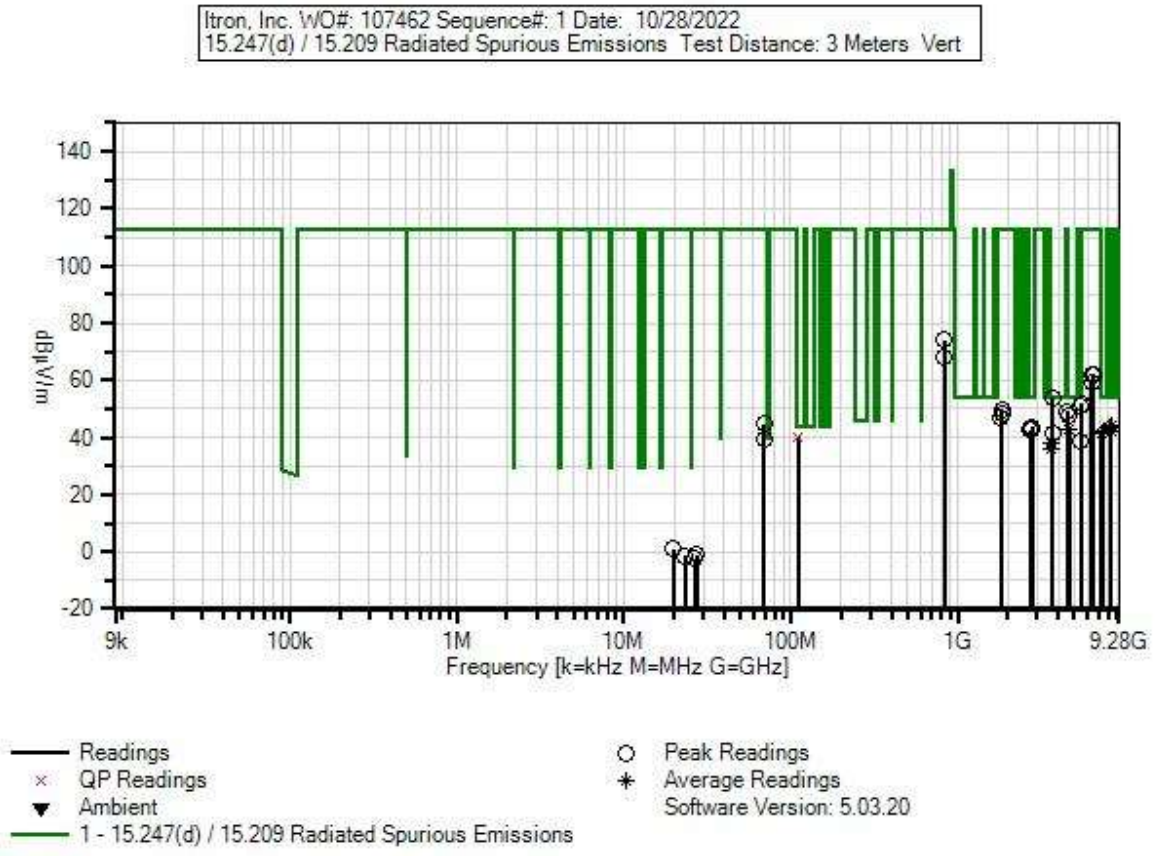
Test Environment Conditions:
Temperature: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-9.28GHz

Test Setup: Unit is on foam table 80cm high for below 1GHz and 150cm high for above 1GHz. Horizontal and Vertical antenna polarities investigated, worst-case reported; unit is continuously transmitting with modulation.

AM Modulation, LMH channels.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T5	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T6	AN00052	Loop Antenna	6502	5/11/2022	5/11/2024
T7	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T8	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T9	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T10	AN03170	High Pass Filter	HM1155-11SS	9/16/2021	9/16/2023
T11	ANDCCF	Duty Cycle Correction Factor		No Cal Required	No Cal Required

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	3695.080M	51.3	+0.0 +0.0 +0.3	+0.6 +0.0 +0.2	+3.3 -33.8 +0.0	+0.0 +31.9	+0.0	53.8	54.0	-0.2	Horiz
2	5447.935M	44.4	+0.0 +0.0 +0.5	+0.8 +0.0 +0.4	+4.0 -33.6 +0.0	+0.0 +34.7	+0.0	51.2	54.0	-2.8	Horiz
3	110.780M QP	25.0	+0.0 +14.1 +0.0	+0.1 +0.0 +0.0	+0.5 +0.0 +0.0	+0.7 +0.0	+0.0	40.4	43.5	-3.1	Vert
^	110.780M	30.8	+0.0 +14.1 +0.0	+0.1 +0.0 +0.0	+0.5 +0.0 +0.0	+0.7 +0.0	+0.0	46.2	43.5	+2.7	Vert
5	4540.020M	45.5	+0.0 +0.0 +0.3	+0.6 +0.0 +0.6	+3.5 -33.6 +0.0	+0.0 +32.1	+0.0	49.0	54.0	-5.0	Horiz
6	4574.685M	44.0	+0.0 +0.0 +0.4	+0.6 +0.0 +0.5	+3.5 -33.6 +0.0	+0.0 +32.2	+0.0	47.6	54.0	-6.4	Horiz
7	8235.160M Ave	44.9	+0.0 +0.0 +0.7	+1.2 +0.0 +0.8	+5.1 -34.9 +12.5	+0.0 +38.6	+0.0	43.9	54.0	-10.1	Vert
^	8235.160M	44.9	+0.0 +0.0 +0.7	+1.2 +0.0 +0.8	+5.1 -34.9 +0.0	+0.0 +38.6	+0.0	56.4	54.0	+2.4	Vert
9	2771.450M	44.6	+0.0 +0.0 +0.5	+0.5 +0.0 +0.3	+2.7 -34.1 +0.0	+0.0 +29.3	+0.0	43.8	54.0	-10.2	Horiz
10	8172.100M Ave	44.4	+0.0 +0.0 +0.7	+1.2 +0.0 +0.7	+5.1 -35.0 +12.5	+0.0 +38.6	+0.0	43.2	54.0	-10.8	Vert
^	8172.100M	44.4	+0.0 +0.0 +0.7	+1.2 +0.0 +0.7	+5.1 -35.0 +0.0	+0.0 +38.6	+0.0	55.7	54.0	+1.7	Vert
12	4618.955M Ave	51.5	+0.0 +0.0 +0.4	+0.6 +0.0 +0.4	+3.5 -33.6 +12.5	+0.0 +32.4	+0.0	42.7	54.0	-11.3	Horiz
^	4618.955M	51.5	+0.0 +0.0 +0.4	+0.6 +0.0 +0.4	+3.5 -33.6 +0.0	+0.0 +32.4	+0.0	55.2	54.0	+1.2	Horiz
14	2724.335M	43.4	+0.0 +0.0 +0.5	+0.5 +0.0 +0.2	+2.7 -34.1 +0.0	+0.0 +29.4	+0.0	42.6	54.0	-11.4	Vert
15	2745.055M	43.3	+0.0 +0.0 +0.5	+0.5 +0.0 +0.3	+2.7 -34.1 +0.0	+0.0 +29.3	+0.0	42.5	54.0	-11.5	Vert

16	8314.440M	43.0	+0.0	+1.2	+5.2	+0.0	+0.0	42.3	54.0	-11.7	Vert
	Ave		+0.0	+0.0	-34.9	+38.7					
			+0.7	+0.9	+12.5						
^	8314.440M	43.0	+0.0	+1.2	+5.2	+0.0	+0.0	54.8	54.0	+0.8	Vert
			+0.0	+0.0	-34.9	+38.7					
			+0.7	+0.9	+0.0						
18	7390.460M	45.1	+0.0	+1.3	+4.5	+0.0	+0.0	42.3	54.0	-11.7	Horiz
	Ave		+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+12.5						
^	7390.460M	45.1	+0.0	+1.3	+4.5	+0.0	+0.0	54.8	54.0	+0.8	Horiz
			+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+0.0						
20	7263.870M	45.1	+0.0	+1.2	+4.5	+0.0	+0.0	41.6	54.0	-12.4	Vert
	Ave		+0.0	+0.0	-34.9	+37.2					
			+0.7	+0.3	+12.5						
^	7263.870M	45.1	+0.0	+1.2	+4.5	+0.0	+0.0	54.1	54.0	+0.1	Vert
			+0.0	+0.0	-34.9	+37.2					
			+0.7	+0.3	+0.0						
22	7320.020M	44.3	+0.0	+1.3	+4.5	+0.0	+0.0	41.5	54.0	-12.5	Horiz
	Ave		+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+12.5						
^	7320.020M	44.3	+0.0	+1.3	+4.5	+0.0	+0.0	54.0	54.0	+0.0	Horiz
			+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+0.0						
24	3695.080M	51.3	+0.0	+0.6	+3.3	+0.0	+0.0	41.3	54.0	-12.7	Horiz
			+0.0	+0.0	-33.8	+31.9					
			+0.3	+0.2	+12.5						
25	5447.935M	44.4	+0.0	+0.8	+4.0	+0.0	+0.0	38.7	54.0	-15.3	Horiz
			+0.0	+0.0	-33.6	+34.7					
			+0.5	+0.4	+12.5						
26	3659.945M	48.0	+0.0	+0.6	+3.3	+0.0	+0.0	37.9	54.0	-16.1	Horiz
	Ave		+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+12.5						
^	3659.945M	48.0	+0.0	+0.6	+3.3	+0.0	+0.0	50.4	54.0	-3.6	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+0.0						
28	3632.495M	46.2	+0.0	+0.6	+3.3	+0.0	+0.0	36.2	54.0	-17.8	Horiz
	Ave		+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.3	+12.5						
^	3632.495M	46.2	+0.0	+0.6	+3.3	+0.0	+0.0	48.7	54.0	-5.3	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.3	+0.0						
30	829.300M	40.8	+0.0	+0.3	+1.4	+2.2	+0.0	74.0	113.0	-39.0	Vert
			+29.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
31	830.200M	34.9	+0.0	+0.3	+1.4	+2.2	+0.0	68.1	113.0	-44.9	Horiz
			+29.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
32	6466.780M	54.4	+0.0	+0.9	+4.5	+0.0	+0.0	62.0	113.0	-51.0	Vert
			+0.0	+0.0	-34.0	+34.9					
			+0.7	+0.6	+0.0						

33	6404.525M	54.4	+0.0 +0.0 +0.6	+0.9 +0.0 +0.5	+4.5 -34.0 +0.0	+0.0 +35.0	+0.0	61.9	113.0	-51.1	Vert
34	6355.625M	51.5	+0.0 +0.0 +0.6	+0.9 +0.0 +0.4	+4.4 -34.0 +0.0	+0.0 +35.1	+0.0	58.9	113.0	-54.1	Vert
35	5542.715M	45.1	+0.0 +0.0 +0.5	+0.8 +0.0 +0.5	+4.0 -33.6 +0.0	+0.0 +34.6	+0.0	51.9	113.0	-61.1	Vert
36	5490.285M	44.1	+0.0 +0.0 +0.5	+0.8 +0.0 +0.4	+4.0 -33.6 +0.0	+0.0 +34.7	+0.0	50.9	113.0	-62.1	Vert
37	1830.145M	53.3	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.5	+0.0	49.5	113.0	-63.5	Vert
38	1847.715M	52.3	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.6	+0.0	48.6	113.0	-64.4	Vert
39	1815.760M	50.9	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.4	+0.0	47.0	113.0	-66.0	Vert
40	68.800M	30.9	+0.0 +12.9 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.5 +0.0	+0.0	44.8	113.0	-68.2	Vert
41	68.800M	25.6	+0.0 +12.9 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.5 +0.0	+0.0	39.5	113.0	-73.5	Horiz
42	19.702M	34.4	+0.0 +0.0 +0.0	+0.1 +6.4 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	1.1	113.0	-111.9	Perp/
43	27.164M	33.7	+0.0 +0.0 +0.0	+0.1 +4.9 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-1.1	113.0	-114.1	Perp/
44	23.134M	32.2	+0.0 +0.0 +0.0	+0.1 +6.1 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-1.4	113.0	-114.4	Perp/
45	26.597M	32.0	+0.0 +0.0 +0.0	+0.1 +5.2 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-2.5	113.0	-115.5	Perp/
46	33.393k	45.3	+0.0 +0.0 +0.0	+0.1 +10.8 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0	-80.0	-23.8	113.0	-136.8	Perp/

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/29/2022
Test Type:	**Maximized Emissions**	Time:	08:20:10
Tested By:	Matt Harrison	Sequence#:	2
Software:	EMITest 5.03.20		

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: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-9.28GHz

Test Setup: Unit is on foam table 80cm high for below 1GHz and 150cm high for above 1GHz. Horizontal and Vertical antenna polarities investigated, worst-case reported; unit is continuously transmitting with modulation.

FM 12.5k Modulation, LMH channels.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T5	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T6	AN00052	Loop Antenna	6502	5/11/2022	5/11/2024
T7	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T8	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T9	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T10	AN03170	High Pass Filter	HM1155-11SS	9/16/2021	9/16/2023
T11	ANDCCF	Duty Cycle Correction Factor		No Cal Required	No Cal Required

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	110.780M	25.0	+0.0	+0.1	+0.5	+0.7	+0.0	40.4	43.5	-3.1	Vert
	QP		+14.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	110.780M	31.0	+0.0	+0.1	+0.5	+0.7	+0.0	46.4	43.5	+2.9	Vert
			+14.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
3	4575.450M	43.8	+0.0	+0.6	+3.5	+0.0	+0.0	47.4	54.0	-6.6	Horiz
			+0.0	+0.0	-33.6	+32.2					
			+0.4	+0.5	+0.0						
4	4514.595M	42.2	+0.0	+0.6	+3.5	+0.0	+0.0	45.7	54.0	-8.3	Horiz
			+0.0	+0.0	-33.6	+32.2					
			+0.3	+0.5	+0.0						
5	2709.130M	45.8	+0.0	+0.5	+2.7	+0.0	+0.0	45.1	54.0	-8.9	Horiz
			+0.0	+0.0	-34.1	+29.5					
			+0.5	+0.2	+0.0						
6	2780.520M	44.9	+0.0	+0.5	+2.7	+0.0	+0.0	44.1	54.0	-9.9	Vert
			+0.0	+0.0	-34.1	+29.3					
			+0.5	+0.3	+0.0						
7	2745.300M	43.9	+0.0	+0.5	+2.7	+0.0	+0.0	43.1	54.0	-10.9	Vert
			+0.0	+0.0	-34.1	+29.3					
			+0.5	+0.3	+0.0						
8	7320.365M	44.7	+0.0	+1.3	+4.5	+0.0	+0.0	41.9	54.0	-12.1	Vert
	Ave		+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+12.5						
^	7320.365M	44.7	+0.0	+1.3	+4.5	+0.0	+0.0	54.4	54.0	+0.4	Vert
			+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+0.0						
10	5418.365M	47.5	+0.0	+0.8	+4.0	+0.0	+0.0	41.9	54.0	-12.1	Horiz
	Ave		+0.0	+0.0	-33.6	+34.7					
			+0.6	+0.4	+12.5						
^	5418.365M	47.5	+0.0	+0.8	+4.0	+0.0	+0.0	54.4	54.0	+0.4	Horiz
			+0.0	+0.0	-33.6	+34.7					
			+0.6	+0.4	+0.0						
12	8127.360M	43.2	+0.0	+1.2	+5.1	+0.0	+0.0	41.8	54.0	-12.2	Vert
	Ave		+0.0	+0.0	-35.1	+38.6					
			+0.7	+0.6	+12.5						
^	8127.360M	43.2	+0.0	+1.2	+5.1	+0.0	+0.0	54.3	54.0	+0.3	Vert
			+0.0	+0.0	-35.1	+38.6					
			+0.7	+0.6	+0.0						
14	8234.680M	42.7	+0.0	+1.2	+5.1	+0.0	+0.0	41.7	54.0	-12.3	Horiz
	Ave		+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.8	+12.5						
^	8234.680M	42.7	+0.0	+1.2	+5.1	+0.0	+0.0	54.2	54.0	+0.2	Horiz
			+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.8	+0.0						

16	9149.635M	42.7	+0.0	+0.9	+5.0	+0.0	+0.0	41.2	54.0	-12.8	Horiz
	Ave		+0.0	+0.0	-34.4	+37.7					
			+0.7	+1.1	+12.5						
	^ 9149.635M	42.7	+0.0	+0.9	+5.0	+0.0	+0.0	53.7	54.0	-0.3	Horiz
			+0.0	+0.0	-34.4	+37.7					
			+0.7	+1.1	+0.0						
18	9029.315M	43.0	+0.0	+0.9	+4.9	+0.0	+0.0	41.0	54.0	-13.0	Horiz
	Ave		+0.0	+0.0	-34.7	+38.0					
			+0.7	+0.7	+12.5						
	^ 9029.315M	43.0	+0.0	+0.9	+4.9	+0.0	+0.0	53.5	54.0	-0.5	Horiz
			+0.0	+0.0	-34.7	+38.0					
			+0.7	+0.7	+0.0						
20	7413.710M	43.3	+0.0	+1.3	+4.5	+0.0	+0.0	40.5	54.0	-13.5	Horiz
	Ave		+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+12.5						
	^ 7413.710M	43.3	+0.0	+1.3	+4.5	+0.0	+0.0	53.0	54.0	-1.0	Horiz
			+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+0.0						
22	8340.780M	41.2	+0.0	+1.2	+5.2	+0.0	+0.0	40.4	54.0	-13.6	Horiz
	Ave		+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.9	+12.5						
	^ 8340.780M	41.2	+0.0	+1.2	+5.2	+0.0	+0.0	52.9	54.0	-1.1	Horiz
			+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.9	+0.0						
24	4633.750M	47.2	+0.0	+0.6	+3.6	+0.0	+0.0	38.5	54.0	-15.5	Vert
	Ave		+0.0	+0.0	-33.6	+32.4					
			+0.4	+0.4	+12.5						
	^ 4633.750M	47.2	+0.0	+0.6	+3.6	+0.0	+0.0	51.0	54.0	-3.0	Vert
			+0.0	+0.0	-33.6	+32.4					
			+0.4	+0.4	+0.0						
26	3660.155M	48.5	+0.0	+0.6	+3.3	+0.0	+0.0	38.4	54.0	-15.6	Horiz
	Ave		+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+12.5						
	^ 3660.155M	48.5	+0.0	+0.6	+3.3	+0.0	+0.0	50.9	54.0	-3.1	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+0.0						
28	3707.055M	46.3	+0.0	+0.6	+3.3	+0.0	+0.0	36.4	54.0	-17.6	Horiz
	Ave		+0.0	+0.0	-33.8	+32.0					
			+0.3	+0.2	+12.5						
	^ 3707.055M	46.3	+0.0	+0.6	+3.3	+0.0	+0.0	48.9	54.0	-5.1	Horiz
			+0.0	+0.0	-33.8	+32.0					
			+0.3	+0.2	+0.0						
30	3612.095M	46.1	+0.0	+0.5	+3.2	+0.0	+0.0	35.9	54.0	-18.1	Horiz
	Ave		+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.3	+12.5						
	^ 3612.095M	46.1	+0.0	+0.5	+3.2	+0.0	+0.0	48.4	54.0	-5.6	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.3	+0.0						
32	6487.225M	56.2	+0.0	+0.9	+4.5	+0.0	+0.0	63.8	108.0	-44.2	Vert
			+0.0	+0.0	-34.0	+34.9					
			+0.7	+0.6	+0.0						

33	6404.675M	54.8	+0.0 +0.0 +0.6	+0.9 +0.0 +0.5	+4.5 -34.0 +0.0	+0.0 +35.0	+0.0	62.3	108.0	-45.7	Horiz
34	6321.330M	51.8	+0.0 +0.0 +0.6	+0.9 +0.0 +0.4	+4.4 -34.0 +0.0	+0.0 +35.2	+0.0	59.3	108.0	-48.7	Horiz
35	7224.295M	45.7	+0.0 +0.0 +0.7	+1.2 +0.0 +0.2	+4.6 -34.9 +0.0	+0.0 +37.0	+0.0	54.5	108.0	-53.5	Horiz
36	9267.585M	41.5	+0.0 +0.0 +0.7	+1.0 +0.0 +1.4	+5.0 -34.2 +0.0	+0.0 +38.0	+0.0	53.4	108.0	-54.6	Horiz
37	5489.735M	45.3	+0.0 +0.0 +0.5	+0.8 +0.0 +0.4	+4.0 -33.6 +0.0	+0.0 +34.7	+0.0	52.1	108.0	-55.9	Horiz
38	5560.560M	44.7	+0.0 +0.0 +0.5	+0.8 +0.0 +0.5	+4.0 -33.6 +0.0	+0.0 +34.5	+0.0	51.4	108.0	-56.6	Vert
39	68.800M	33.4	+0.0 +12.9 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.5 +0.0	+0.0	47.3	108.0	-60.7	Vert
40	1853.615M	50.8	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.7	+0.0	47.2	108.0	-60.8	Vert
41	1805.820M	51.0	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.3	+0.0	47.0	108.0	-61.0	Vert
42	1829.935M	50.3	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.5	+0.0	46.5	108.0	-61.5	Vert
43	50.400M	28.9	+0.0 +12.4 +0.0	+0.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.5 +0.0	+0.0	42.2	108.0	-65.8	Vert
44	19.702M	35.4	+0.0 +0.0 +0.0	+0.1 +6.4 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	2.1	108.0	-105.9	Perp/
45	23.134M	33.2	+0.0 +0.0 +0.0	+0.1 +6.1 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-0.4	108.0	-108.4	Perp/
46	27.164M	34.3	+0.0 +0.0 +0.0	+0.1 +4.9 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-0.5	108.0	-108.5	Perp/
47	27.343M	32.0	+0.0 +0.0 +0.0	+0.1 +4.8 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-2.9	108.0	-110.9	Perp/

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/29/2022
Test Type:	**Maximized Emissions**	Time:	09:22:40
Tested By:	Matt Harrison	Sequence#:	3
Software:	EMITest 5.03.20		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

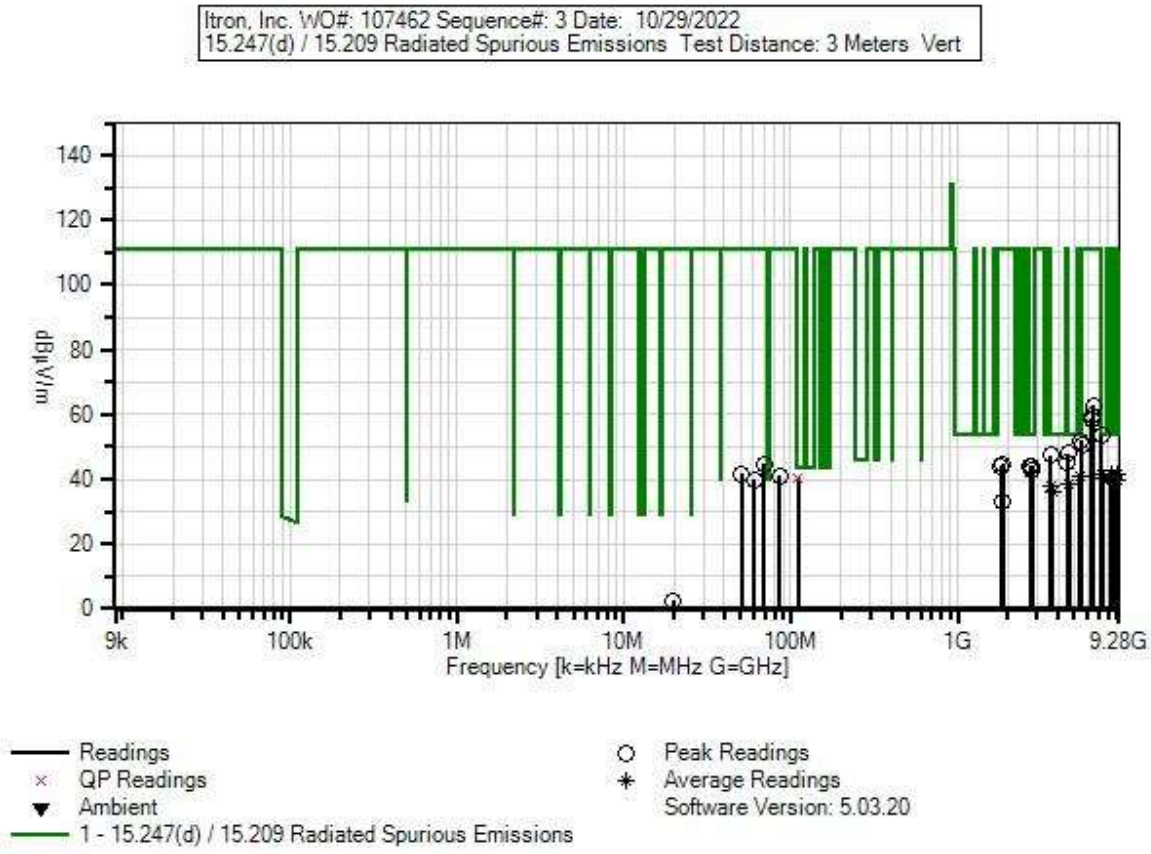
Test Environment Conditions:
Temperature: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: 9kHz-9.28GHz

Test Setup: Unit is on foam table 80cm high for below 1GHz and 150cm high for above 1GHz. Horizontal and Vertical antenna polarities investigated, worst-case reported, unit is continuously transmitting with modulation.

FM 37.5k Modulation, LMH channels.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T5	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023
T6	AN00052	Loop Antenna	6502	5/11/2022	5/11/2024
T7	AN03540	Preamp	83017A	5/14/2021	5/14/2023
T8	AN02374ANSI	Horn Antenna	RGA-60	5/25/2021	5/25/2023
T9	ANP07504	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T10	AN03170	High Pass Filter	HM1155-11SS	9/16/2021	9/16/2023
T11	ANDCCF	Duty Cycle Correction Factor		No Cal Required	No Cal Required

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	110.760M	25.0	+0.0	+0.1	+0.5	+0.7	+0.0	40.4	43.5	-3.1	Vert
	QP		+14.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	110.760M	30.2	+0.0	+0.1	+0.5	+0.7	+0.0	45.6	43.5	+2.1	Vert
			+14.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
3	4575.115M	44.4	+0.0	+0.6	+3.5	+0.0	+0.0	48.0	54.0	-6.0	Horiz
			+0.0	+0.0	-33.6	+32.2					
			+0.4	+0.5	+0.0						
4	3611.935M	45.1	+0.0	+0.5	+3.2	+0.0	+0.0	47.4	54.0	-6.6	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.3	+0.0						
5	4514.960M	41.4	+0.0	+0.6	+3.5	+0.0	+0.0	44.9	54.0	-9.1	Horiz
			+0.0	+0.0	-33.6	+32.2					
			+0.3	+0.5	+0.0						
6	2709.035M	44.8	+0.0	+0.5	+2.7	+0.0	+0.0	44.1	54.0	-9.9	Horiz
			+0.0	+0.0	-34.1	+29.5					
			+0.5	+0.2	+0.0						
7	2780.155M	44.8	+0.0	+0.5	+2.7	+0.0	+0.0	44.0	54.0	-10.0	Vert
			+0.0	+0.0	-34.1	+29.3					
			+0.5	+0.3	+0.0						
8	2745.210M	43.7	+0.0	+0.5	+2.7	+0.0	+0.0	42.9	54.0	-11.1	Vert
			+0.0	+0.0	-34.1	+29.3					
			+0.5	+0.3	+0.0						
9	8234.960M	42.7	+0.0	+1.2	+5.1	+0.0	+0.0	41.7	54.0	-12.3	Horiz
	Ave		+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.8	+12.5						
^	8234.960M	42.7	+0.0	+1.2	+5.1	+0.0	+0.0	54.2	54.0	+0.2	Horiz
			+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.8	+0.0						
11	9149.865M	42.9	+0.0	+0.9	+5.0	+0.0	+0.0	41.4	54.0	-12.6	Horiz
	Ave		+0.0	+0.0	-34.4	+37.7					
			+0.7	+1.1	+12.5						
^	9149.865M	42.9	+0.0	+0.9	+5.0	+0.0	+0.0	53.9	54.0	-0.1	Horiz
			+0.0	+0.0	-34.4	+37.7					
			+0.7	+1.1	+0.0						
13	7320.015M	44.1	+0.0	+1.3	+4.5	+0.0	+0.0	41.3	54.0	-12.7	Vert
	Ave		+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+12.5						
^	7320.015M	44.1	+0.0	+1.3	+4.5	+0.0	+0.0	53.8	54.0	-0.2	Vert
			+0.0	+0.0	-34.9	+37.5					
			+0.7	+0.6	+0.0						

15	5417.995M	46.6	+0.0	+0.8	+4.0	+0.0	+0.0	41.0	54.0	-13.0	Horiz
	Ave		+0.0	+0.0	-33.6	+34.7					
			+0.6	+0.4	+12.5						
^	5417.995M	46.6	+0.0	+0.8	+4.0	+0.0	+0.0	53.5	54.0	-0.5	Horiz
			+0.0	+0.0	-33.6	+34.7					
			+0.6	+0.4	+0.0						
17	8126.470M	42.0	+0.0	+1.2	+5.1	+0.0	+0.0	40.6	54.0	-13.4	Vert
	Ave		+0.0	+0.0	-35.1	+38.6					
			+0.7	+0.6	+12.5						
^	8126.470M	42.0	+0.0	+1.2	+5.1	+0.0	+0.0	53.1	54.0	-0.9	Vert
			+0.0	+0.0	-35.1	+38.6					
			+0.7	+0.6	+0.0						
19	7414.270M	43.1	+0.0	+1.3	+4.4	+0.0	+0.0	40.2	54.0	-13.8	Horiz
	Ave		+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+12.5						
^	7414.270M	43.1	+0.0	+1.3	+4.4	+0.0	+0.0	52.7	54.0	-1.3	Horiz
			+0.0	+0.0	-34.9	+37.4					
			+0.7	+0.7	+0.0						
21	9030.530M	42.0	+0.0	+0.9	+4.9	+0.0	+0.0	40.0	54.0	-14.0	Vert
	Ave		+0.0	+0.0	-34.7	+38.0					
			+0.7	+0.7	+12.5						
^	9030.530M	42.0	+0.0	+0.9	+4.9	+0.0	+0.0	52.5	54.0	-1.5	Vert
			+0.0	+0.0	-34.7	+38.0					
			+0.7	+0.7	+0.0						
23	8341.160M	40.7	+0.0	+1.2	+5.2	+0.0	+0.0	39.9	54.0	-14.1	Vert
	Ave		+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.9	+12.5						
^	8341.160M	40.7	+0.0	+1.2	+5.2	+0.0	+0.0	52.4	54.0	-1.6	Vert
			+0.0	+0.0	-34.9	+38.6					
			+0.7	+0.9	+0.0						
25	4634.135M	47.1	+0.0	+0.6	+3.6	+0.0	+0.0	38.4	54.0	-15.6	Vert
	Ave		+0.0	+0.0	-33.6	+32.4					
			+0.4	+0.4	+12.5						
^	4634.135M	47.1	+0.0	+0.6	+3.6	+0.0	+0.0	50.9	54.0	-3.1	Vert
			+0.0	+0.0	-33.6	+32.4					
			+0.4	+0.4	+0.0						
27	3659.960M	48.2	+0.0	+0.6	+3.3	+0.0	+0.0	38.1	54.0	-15.9	Horiz
	Ave		+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+12.5						
^	3659.960M	48.2	+0.0	+0.6	+3.3	+0.0	+0.0	50.6	54.0	-3.4	Horiz
			+0.0	+0.0	-33.8	+31.7					
			+0.4	+0.2	+0.0						
29	3707.240M	46.1	+0.0	+0.6	+3.3	+0.0	+0.0	36.2	54.0	-17.8	Horiz
	Ave		+0.0	+0.0	-33.8	+32.0					
			+0.3	+0.2	+12.5						
^	3707.240M	46.1	+0.0	+0.6	+3.3	+0.0	+0.0	48.7	54.0	-5.3	Horiz
			+0.0	+0.0	-33.8	+32.0					
			+0.3	+0.2	+0.0						
31	6487.280M	55.2	+0.0	+0.9	+4.5	+0.0	+0.0	62.8	111.0	-48.2	Vert
			+0.0	+0.0	-34.0	+34.9					
			+0.7	+0.6	+0.0						

32	6404.950M	52.3	+0.0 +0.0 +0.6	+0.9 +0.0 +0.5	+4.5 -34.0 +0.0	+0.0 +35.0	+0.0	59.8	111.0	-51.2	Vert
33	6321.295M	51.0	+0.0 +0.0 +0.6	+0.9 +0.0 +0.4	+4.4 -34.0 +0.0	+0.0 +35.2	+0.0	58.5	111.0	-52.5	Vert
34	7224.205M	45.1	+0.0 +0.0 +0.7	+1.2 +0.0 +0.2	+4.6 -34.9 +0.0	+0.0 +37.0	+0.0	53.9	111.0	-57.1	Horiz
35	5489.815M	45.1	+0.0 +0.0 +0.5	+0.8 +0.0 +0.4	+4.0 -33.6 +0.0	+0.0 +34.7	+0.0	51.9	111.0	-59.1	Horiz
36	5560.390M	44.2	+0.0 +0.0 +0.5	+0.8 +0.0 +0.5	+4.0 -33.6 +0.0	+0.0 +34.5	+0.0	50.9	111.0	-60.1	Vert
37	1853.575M	48.4	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.7	+0.0	44.8	111.0	-66.2	Vert
38	68.800M	30.8	+0.0 +12.9 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.5 +0.0	+0.0	44.7	111.0	-66.3	Vert
39	1806.035M	48.1	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +0.0	+0.0 +27.3	+0.0	44.1	111.0	-66.9	Horiz
40	50.400M	28.5	+0.0 +12.4 +0.0	+0.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.5 +0.0	+0.0	41.8	111.0	-69.2	Vert
41	85.300M	27.6	+0.0 +12.4 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.6 +0.0	+0.0	41.1	111.0	-69.9	Vert
42	60.100M	26.3	+0.0 +12.6 +0.0	+0.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.5 +0.0	+0.0	39.9	111.0	-71.1	Horiz
43	1830.155M	49.5	+0.0 +0.0 +0.3	+0.4 +0.0 +0.6	+2.1 -34.7 +12.5	+0.0 +27.5	+0.0	33.2	111.0	-77.8	Vert
44	19.702M	35.8	+0.0 +0.0 +0.0	+0.1 +6.4 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	2.5	111.0	-108.5	Perp/
45	23.134M	31.0	+0.0 +0.0 +0.0	+0.1 +6.1 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-2.6	111.0	-113.6	Perp/
46	27.164M	32.1	+0.0 +0.0 +0.0	+0.1 +4.9 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-2.7	111.0	-113.7	Perp/
47	27.881M	30.9	+0.0 +0.0 +0.0	+0.1 +4.6 +0.0	+0.2 +0.0 +0.0	+0.0 +0.0	-40.0	-4.2	111.0	-115.2	Perp/

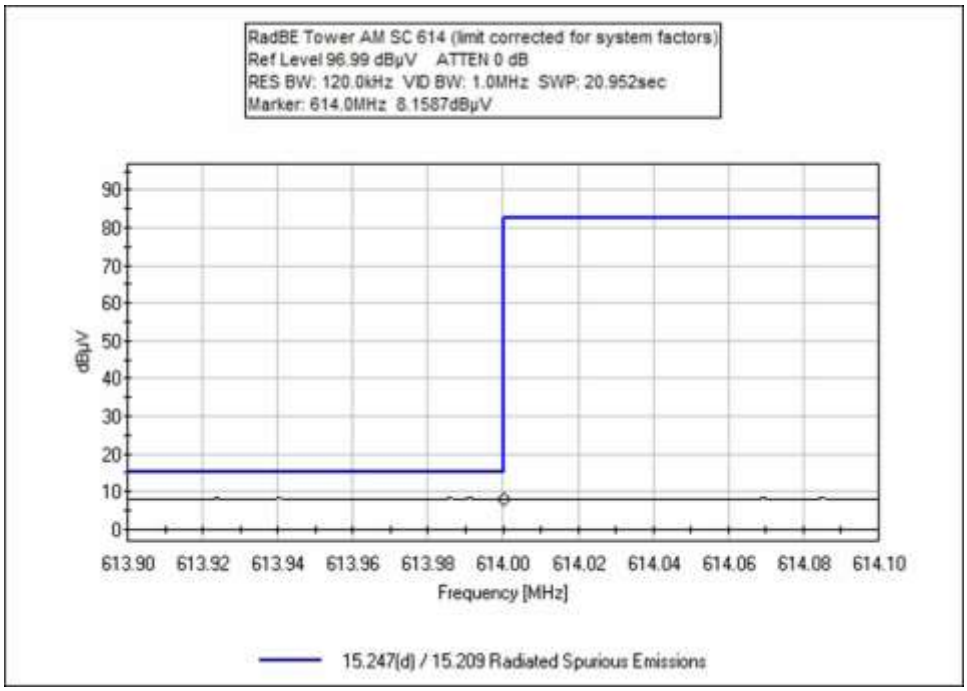
Band Edge

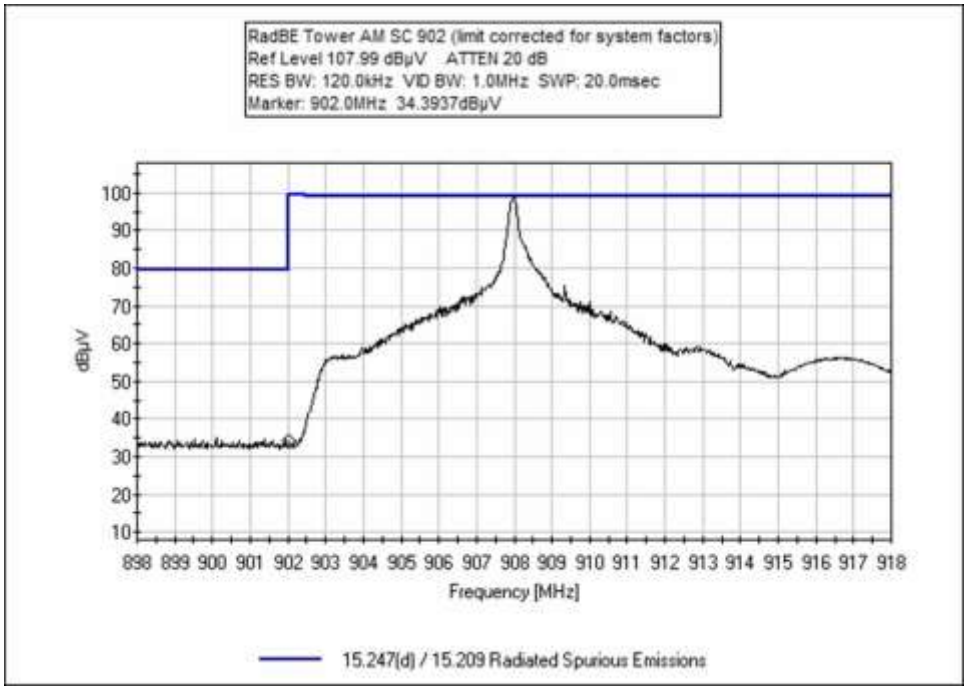
Band Edge Summary					
Operating Mode: Single Channel (Low and High)					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	AM	Omnidirectional	38.8	<46	Pass
902	AM	Omnidirectional	68.0	<113	Pass
928	AM	Omnidirectional	58.2	<113	Pass
960	AM	Omnidirectional	42.8	<54	Pass
614	FM 12.5k	Omnidirectional	38.5	<46	Pass
902	FM 12.5k	Omnidirectional	56.7	<108	Pass
928	FM 12.5k	Omnidirectional	58.2	<111	Pass
960	FM 12.5k	Omnidirectional	42.8	<54	Pass
614	FM 37.5k	Omnidirectional	38.6	<46	Pass
902	FM 37.5k	Omnidirectional	58.7	<108	Pass
928	FM 37.5k	Omnidirectional	57.7	<111	Pass
960	FM 37.5k	Omnidirectional	42.9	<54	Pass

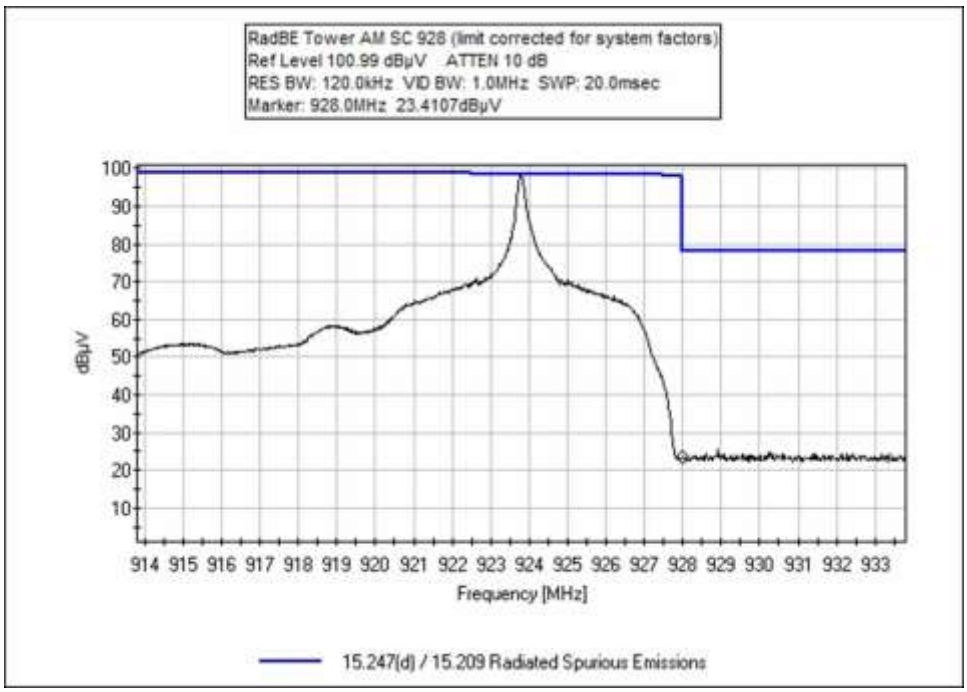
Band Edge Summary					
Operating Mode: Hopping					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	AM	Omnidirectional	38.5	<46	Pass
902	AM	Omnidirectional	58.2	<113	Pass
928	AM	Omnidirectional	58.3	<113	Pass
960	AM	Omnidirectional	42.7	<54	Pass
614	FM 12.5k	Omnidirectional	38.5	<46	Pass
902	FM 12.5k	Omnidirectional	58	<108	Pass
928	FM 12.5k	Omnidirectional	58.1	<111	Pass
960	FM 12.5k	Omnidirectional	42.7	<54	Pass
614	FM 37.5k	Omnidirectional	38.5	<46	Pass
902	FM 37.5k	Omnidirectional	57.3	<108	Pass
928	FM 37.5k	Omnidirectional	59.0	<111	Pass
960	FM 37.5k	Omnidirectional	42.8	<54	Pass

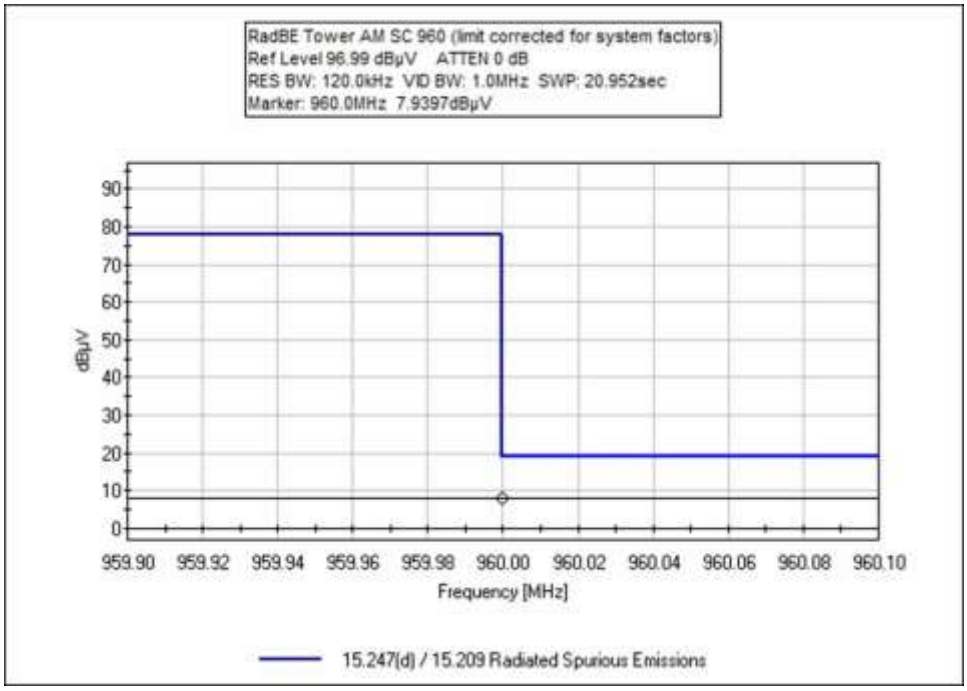
Band Edge Plots

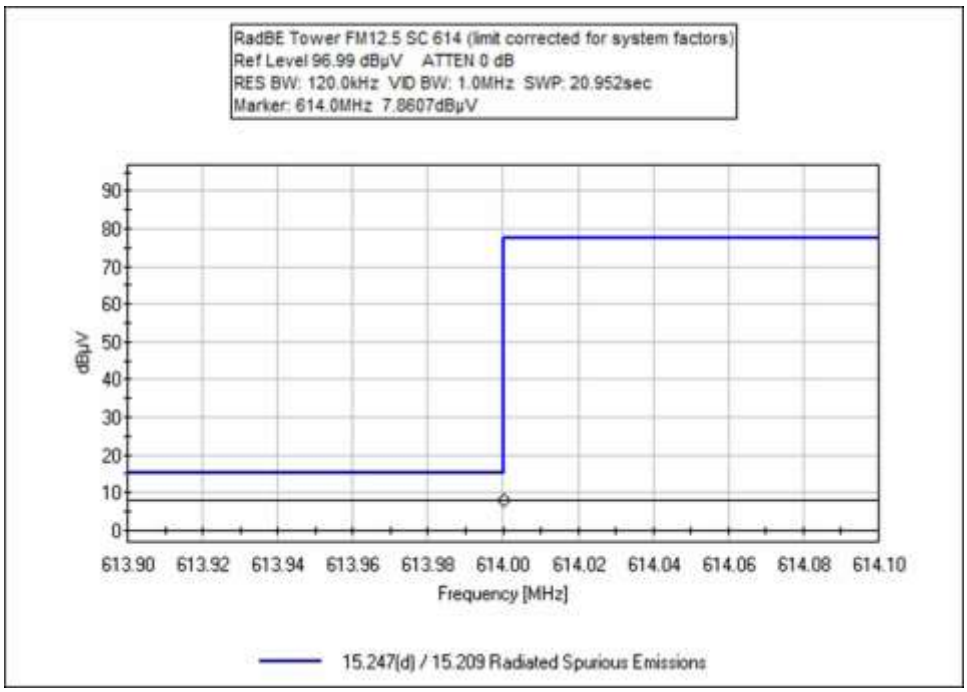
Single Channel (Low and High)

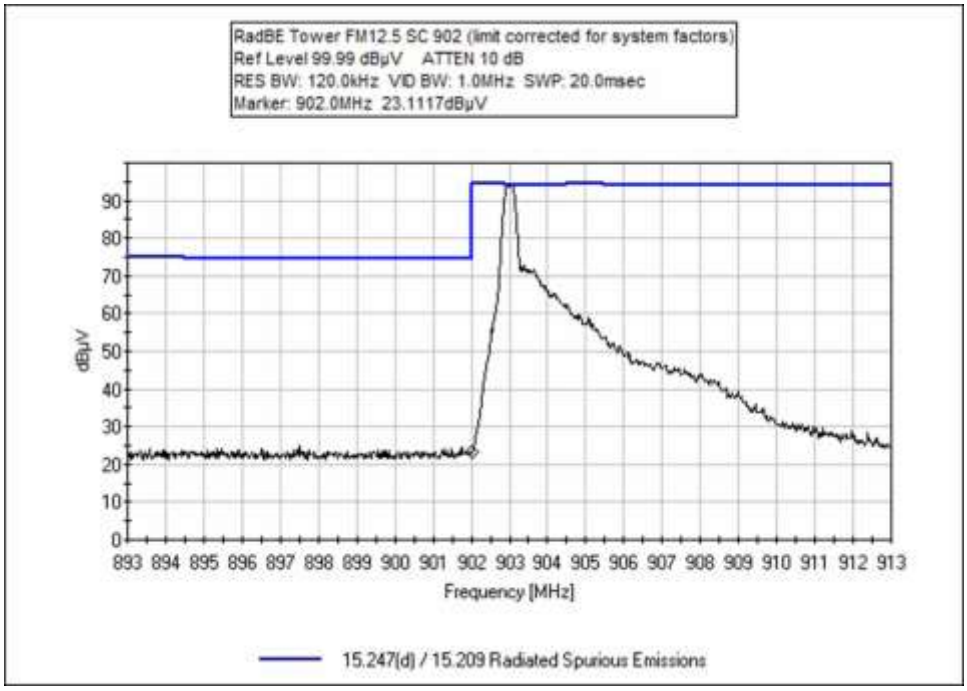


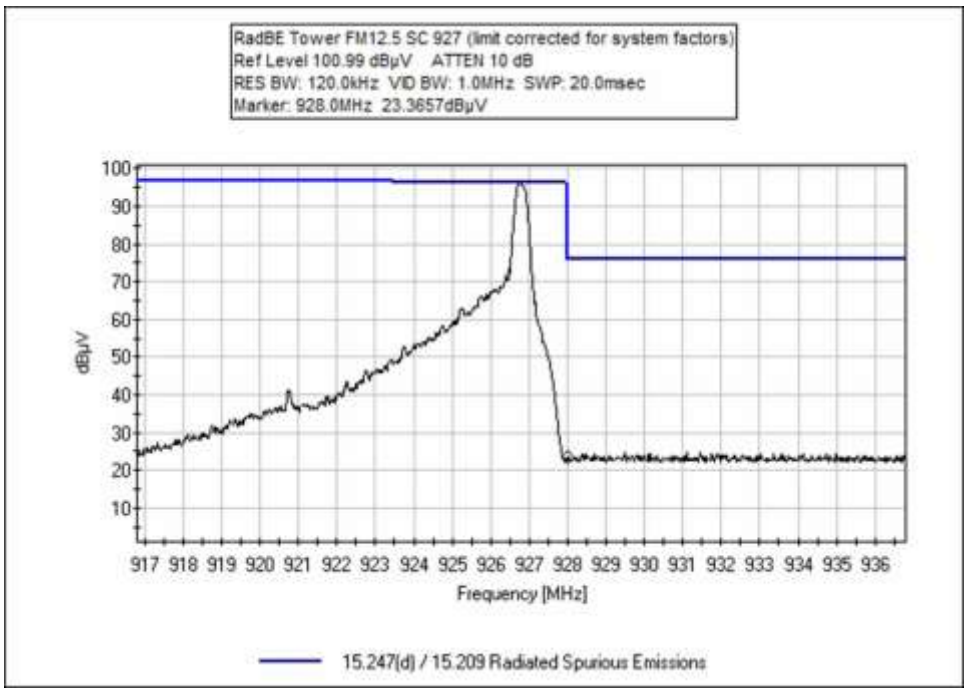


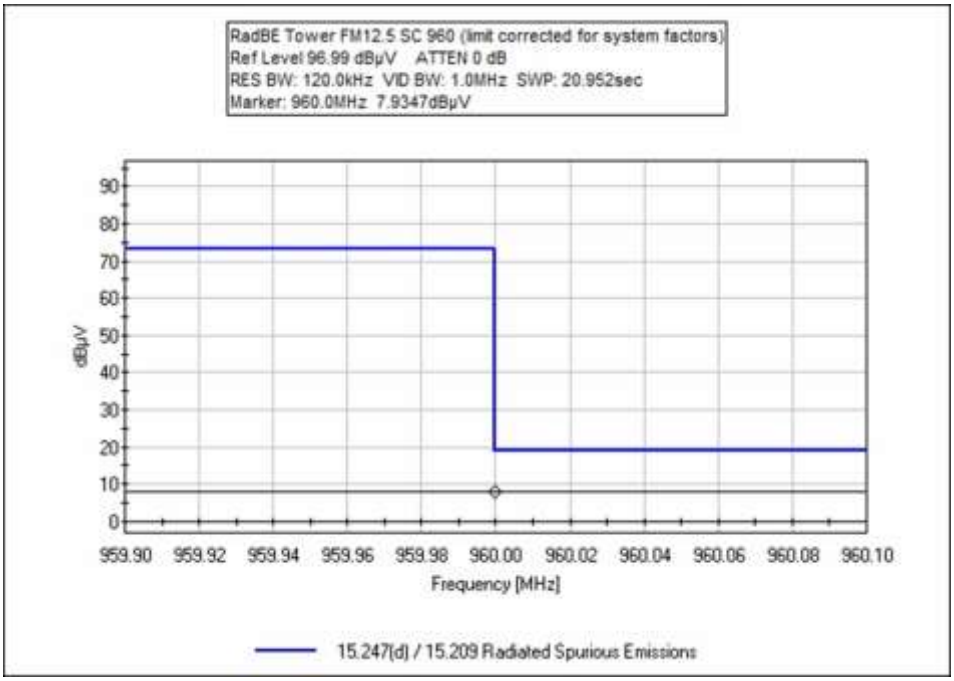

RadBE Tower AM SC 928 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 928.0MHz 23.4107dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

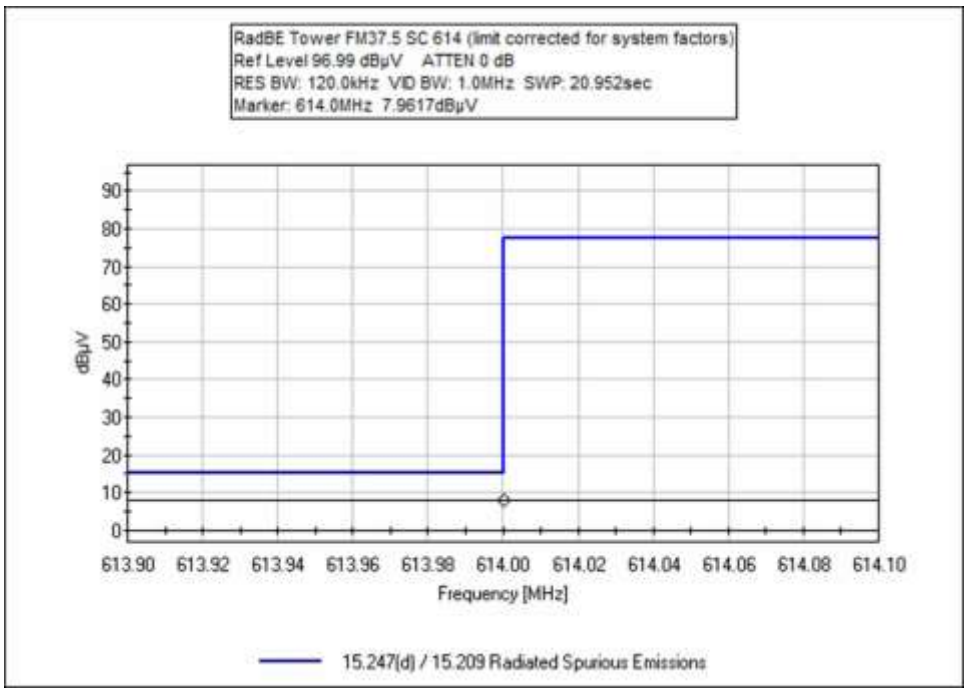

RadBE Tower AM SC 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.9397dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.90 959.92 959.94 959.96 959.98 960.00 960.02 960.04 960.06 960.08 960.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

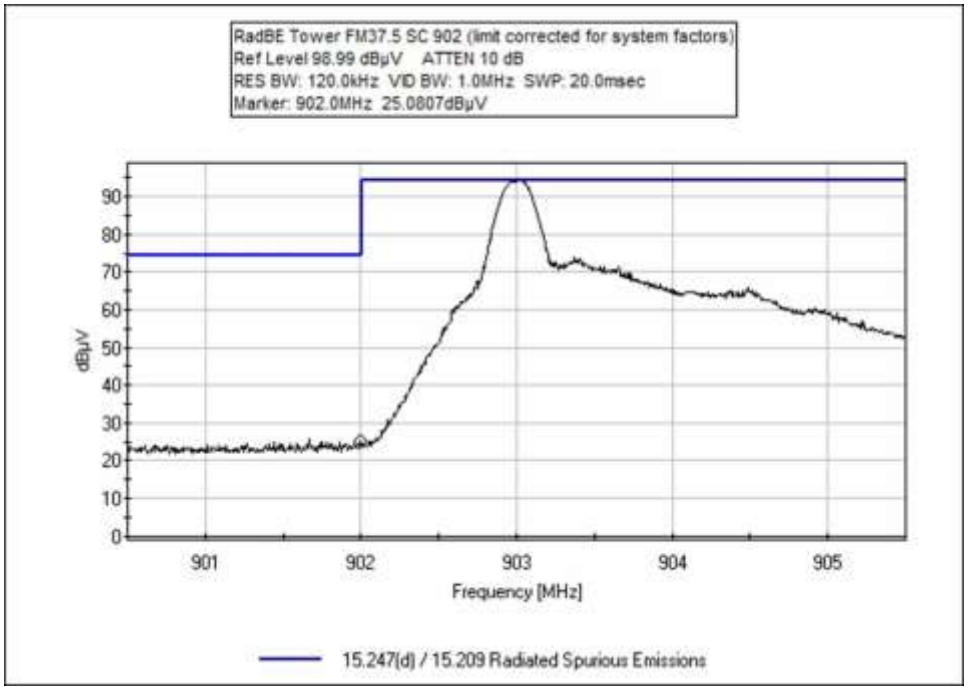

RadBE Tower FM12.5 SC 614 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 614.0MHz 7.8607dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

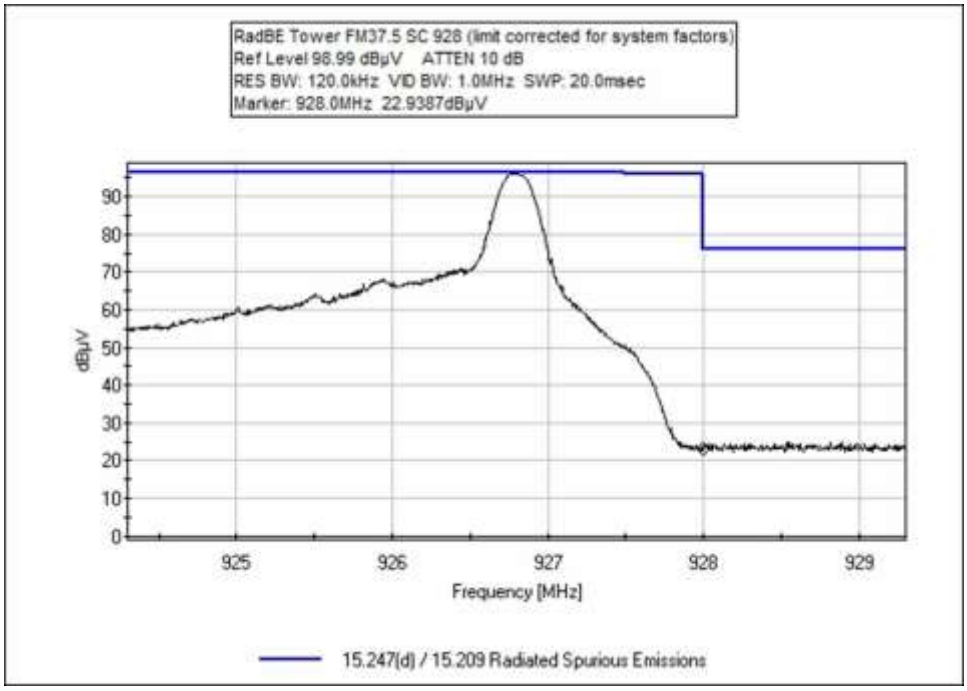

RadBE Tower FM12.5 SC 902 (limit corrected for system factors)
Ref Level 99.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 902.0MHz 23.1117dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

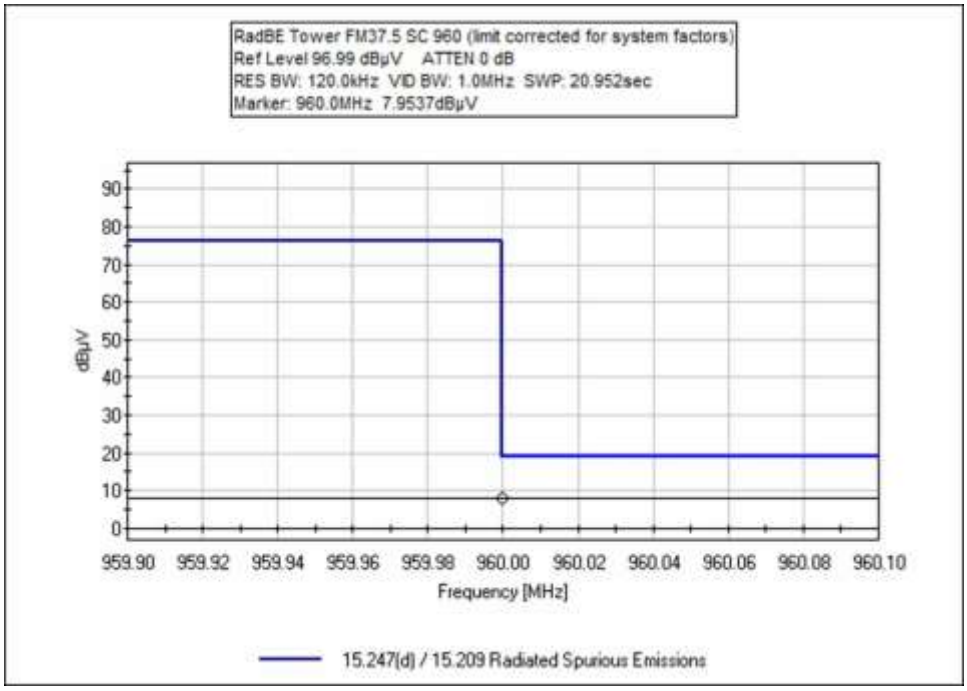

RadBE Tower FM12.5 SC 927 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 928.0MHz 23.3657dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM12.5 SC 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.9347dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.90 959.92 959.94 959.96 959.98 960.00 960.02 960.04 960.06 960.08 960.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

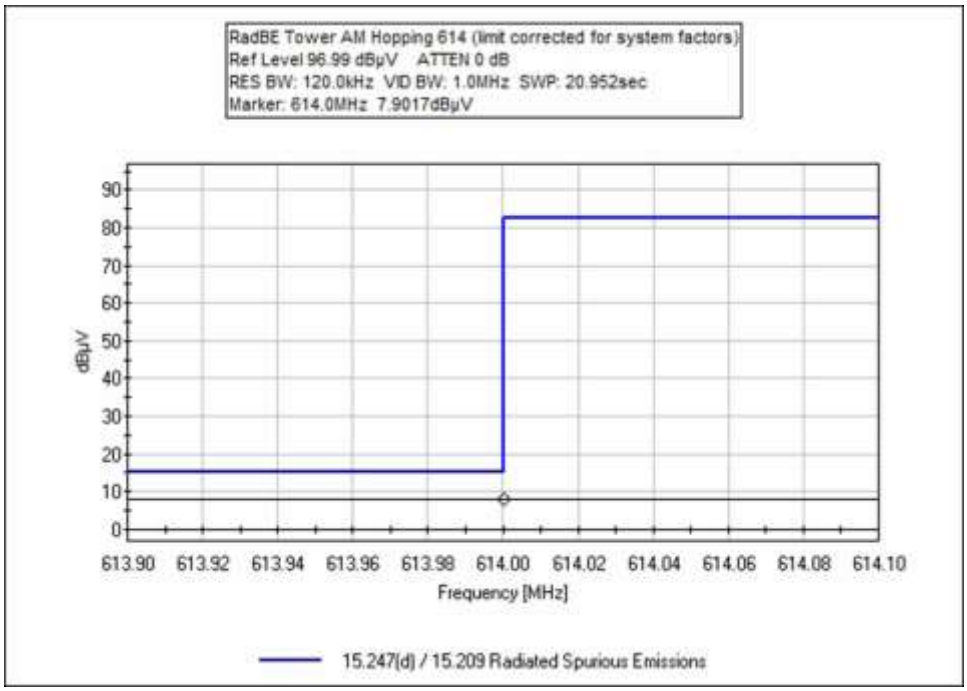

RadBE Tower FM37.5 SC 614 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 614.0MHz 7.9617dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

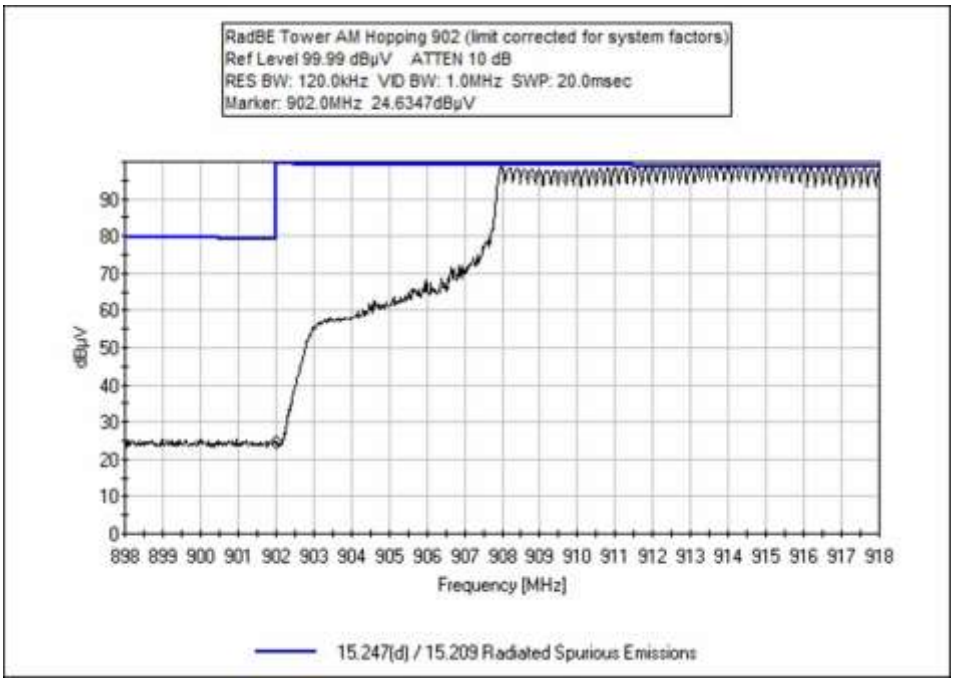

RadBE Tower FM37.5 SC 902 (limit corrected for system factors)
Ref Level 98.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 902.0MHz 25.0807dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
901 902 903 904 905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

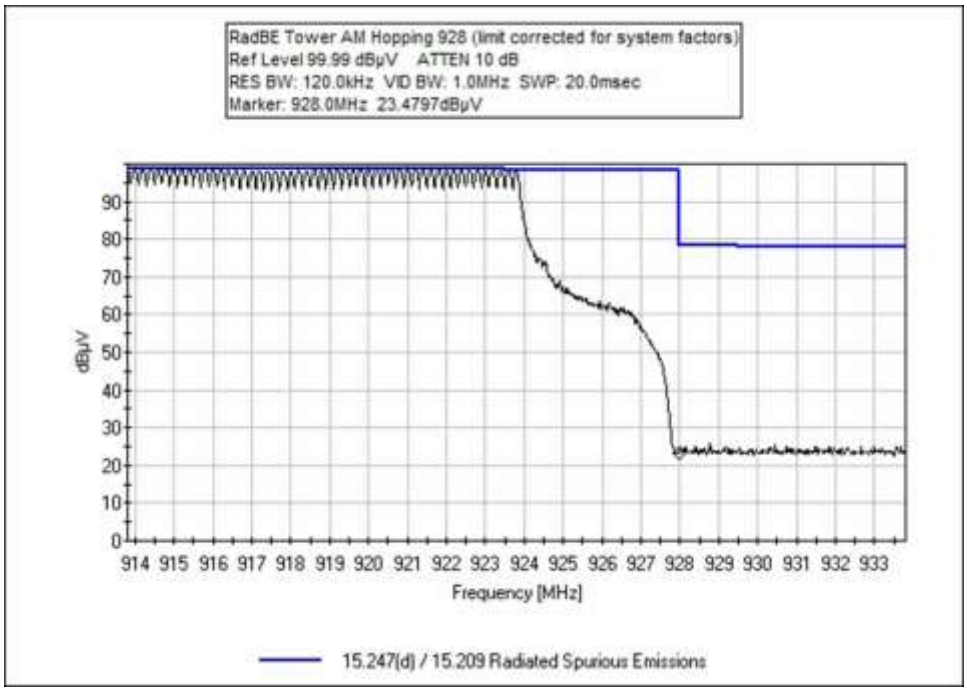

RadBE Tower FM37.5 SC 928 (limit corrected for system factors)
Ref Level 98.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 928.0MHz 22.9387dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

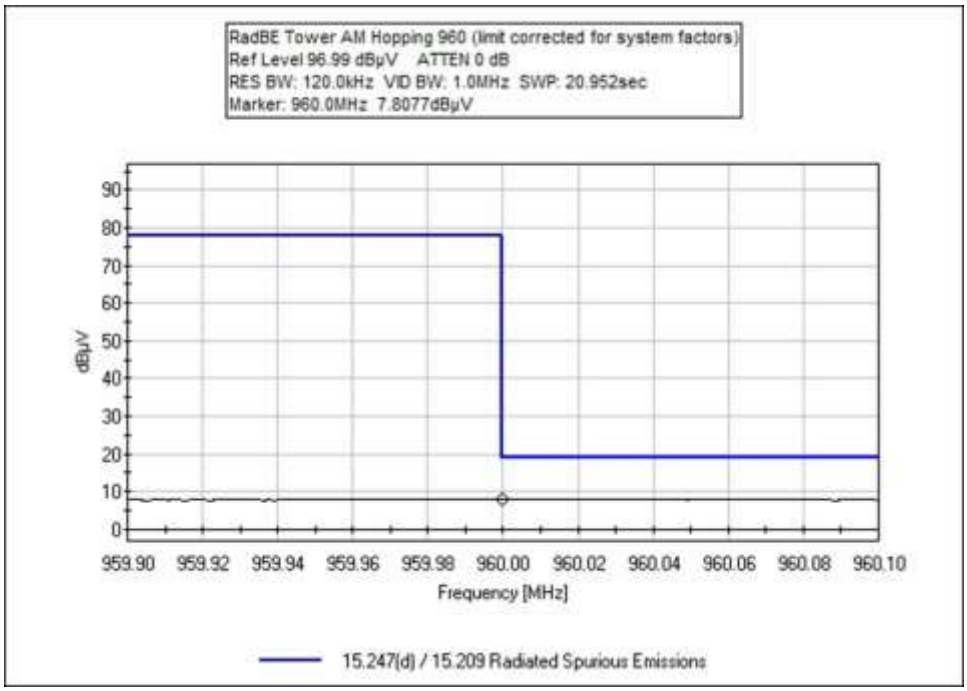

RadBE Tower FM37.5 SC 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.9537dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

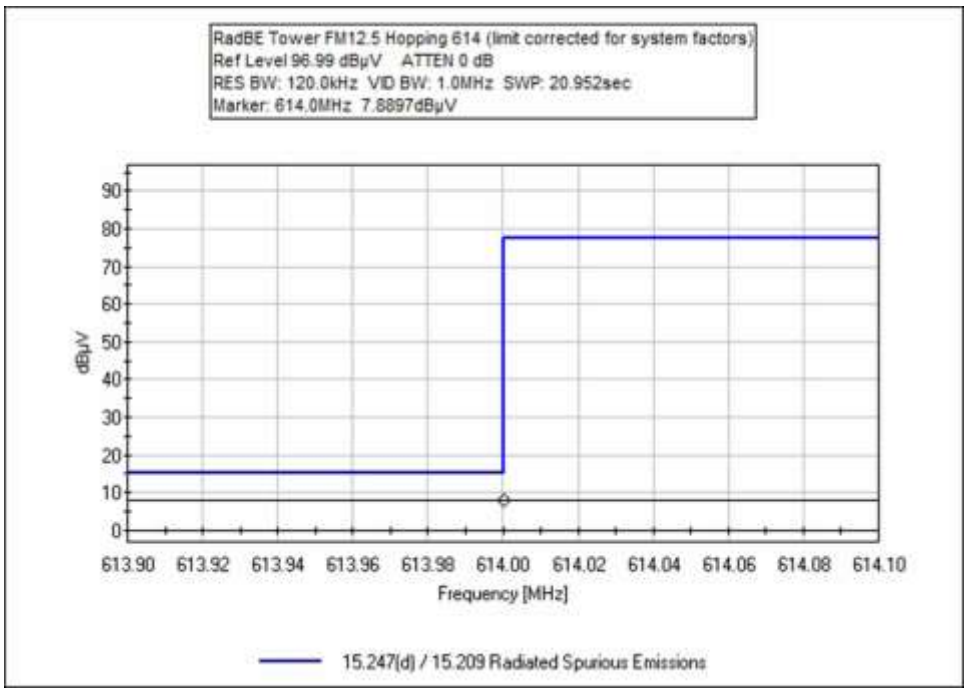
Hopping

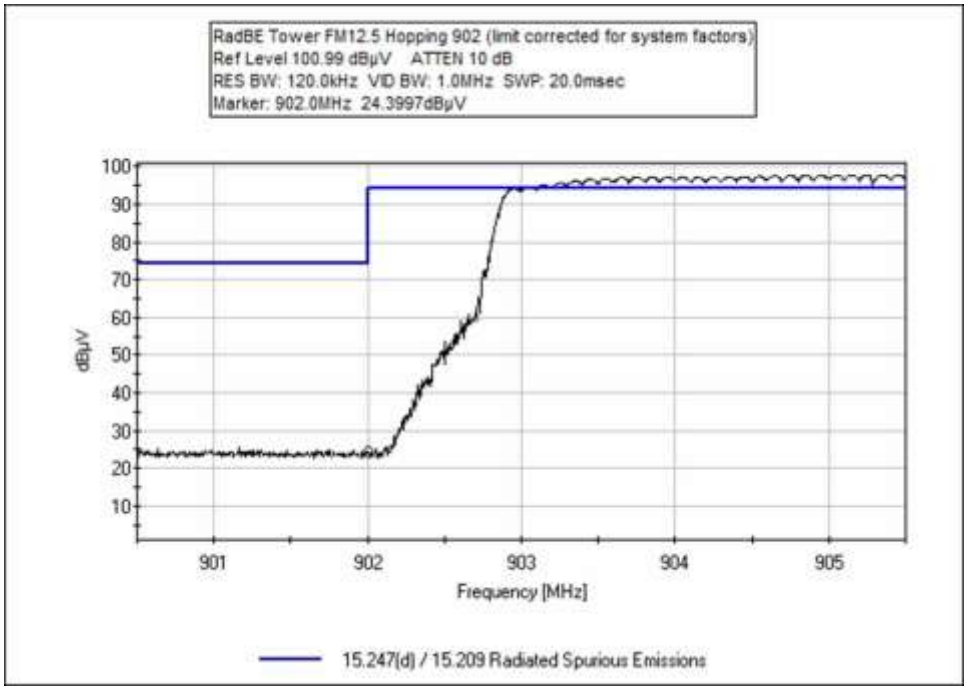

RadBE Tower AM Hopping 614 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 614.0MHz 7.9017dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

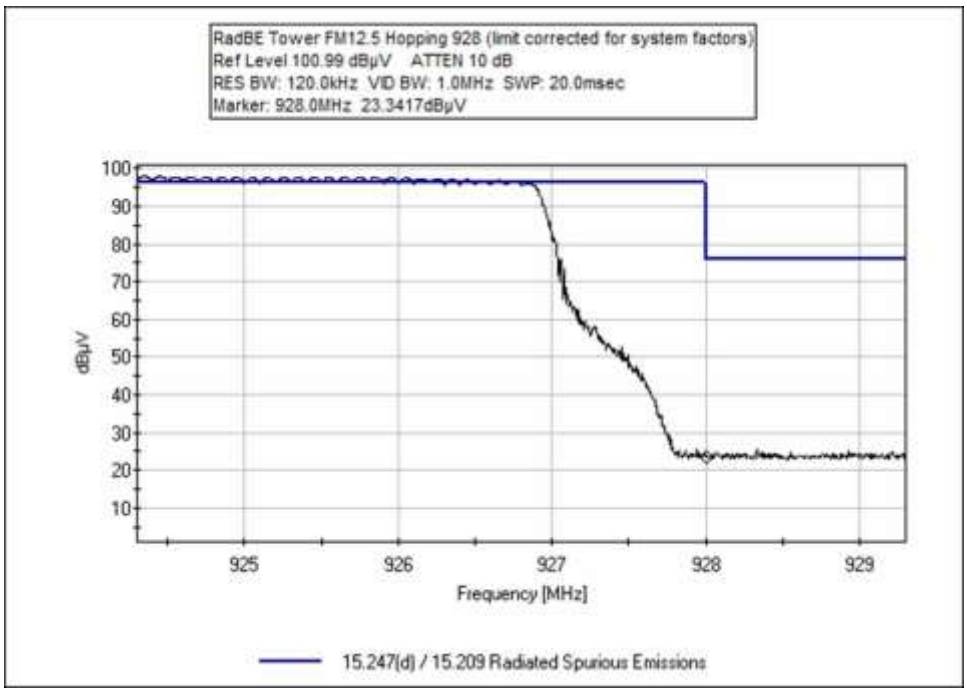

RadBE Tower AM Hopping 902 (limit corrected for system factors)
Ref Level 99.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 902.0MHz 24.6347dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

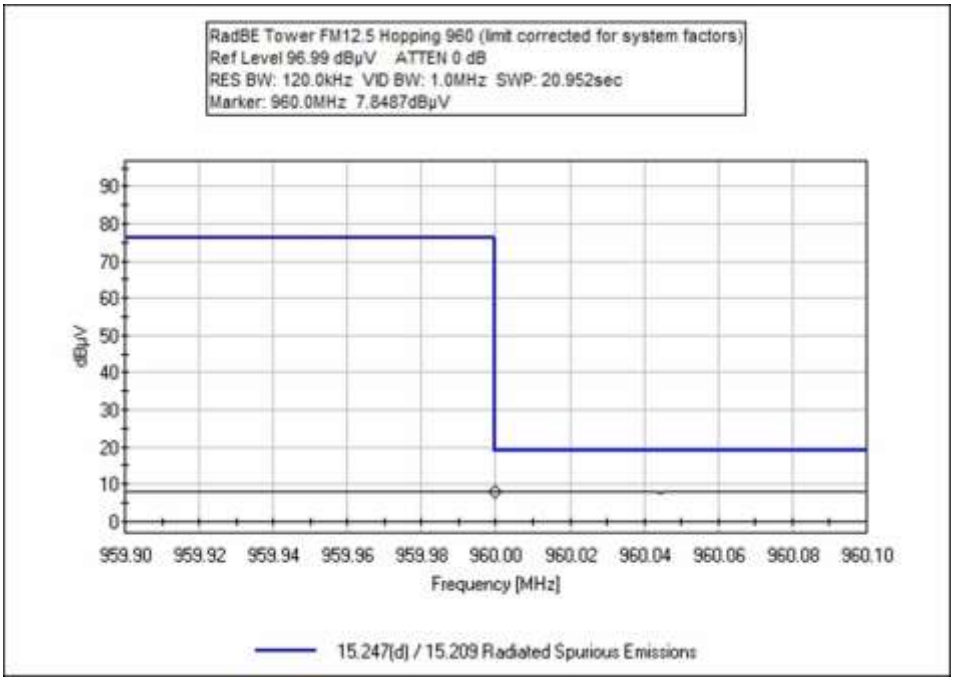

RadBE Tower AM Hopping 928 (limit corrected for system factors)
Ref Level 99.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 928.0MHz 23.4797dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

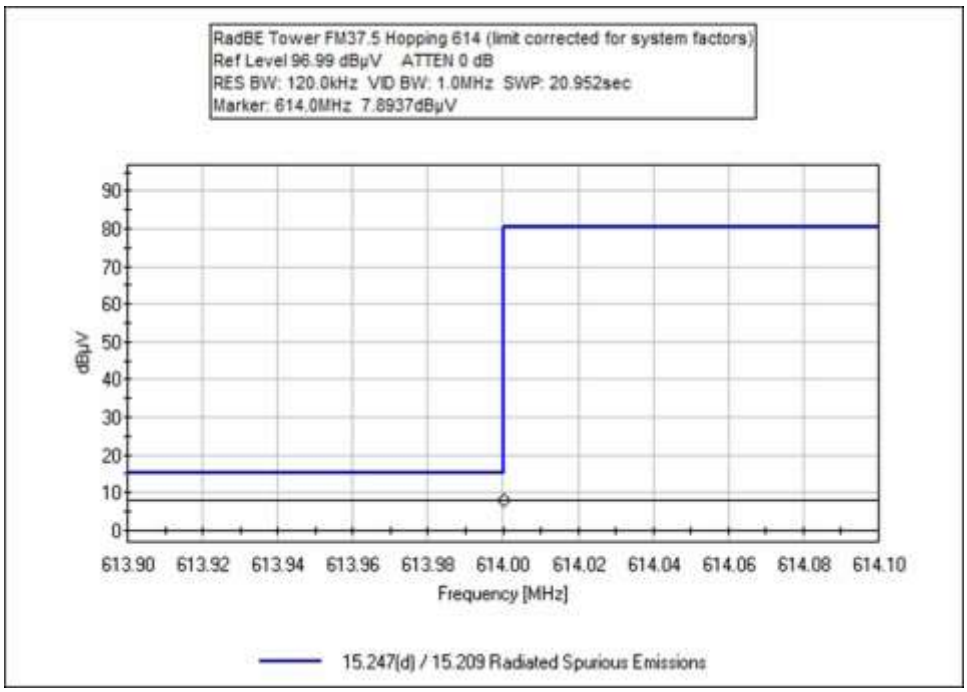

RadBE Tower AM Hopping 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.8077dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.90 959.92 959.94 959.96 959.98 960.00 960.02 960.04 960.06 960.08 960.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

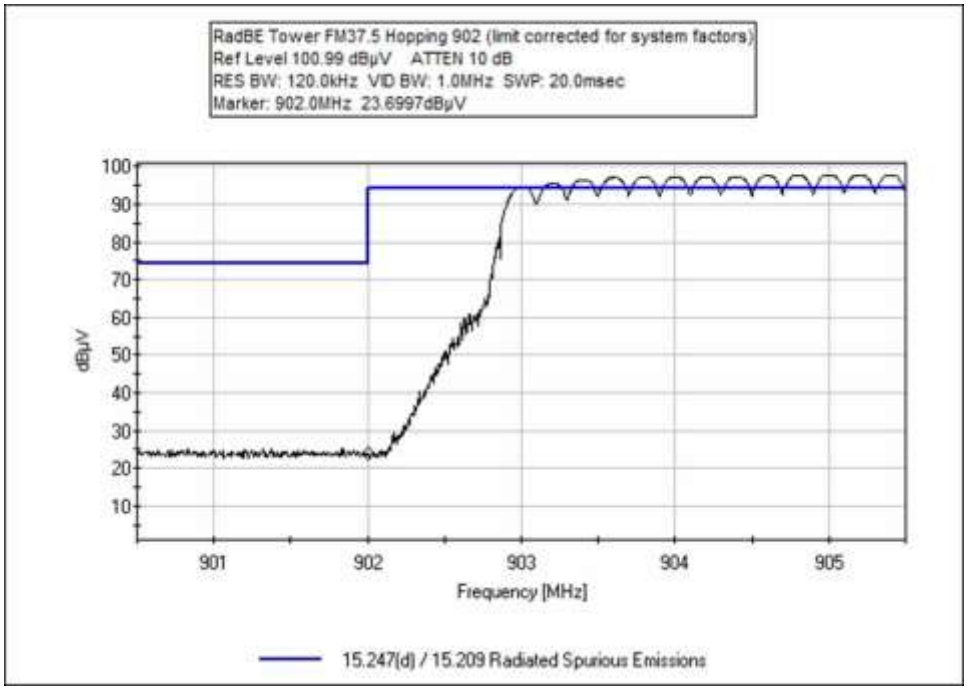

RadBE Tower FM12.5 Hopping 614 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 614.0MHz 7.8897dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

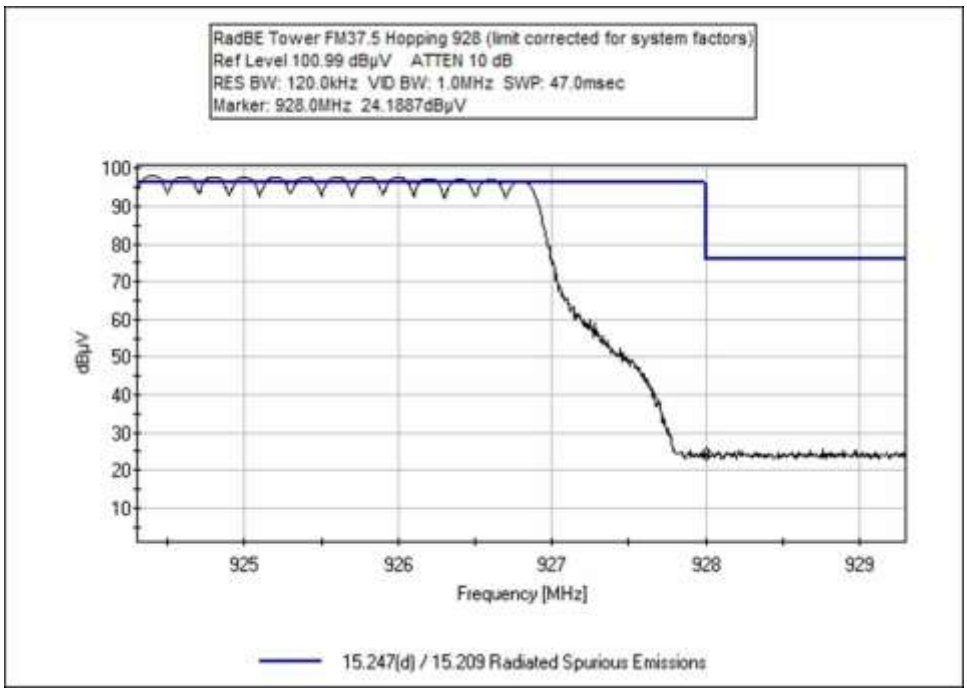

RadBE Tower FM12.5 Hopping 902 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 902.0MHz 24.3997dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901 902 903 904 905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

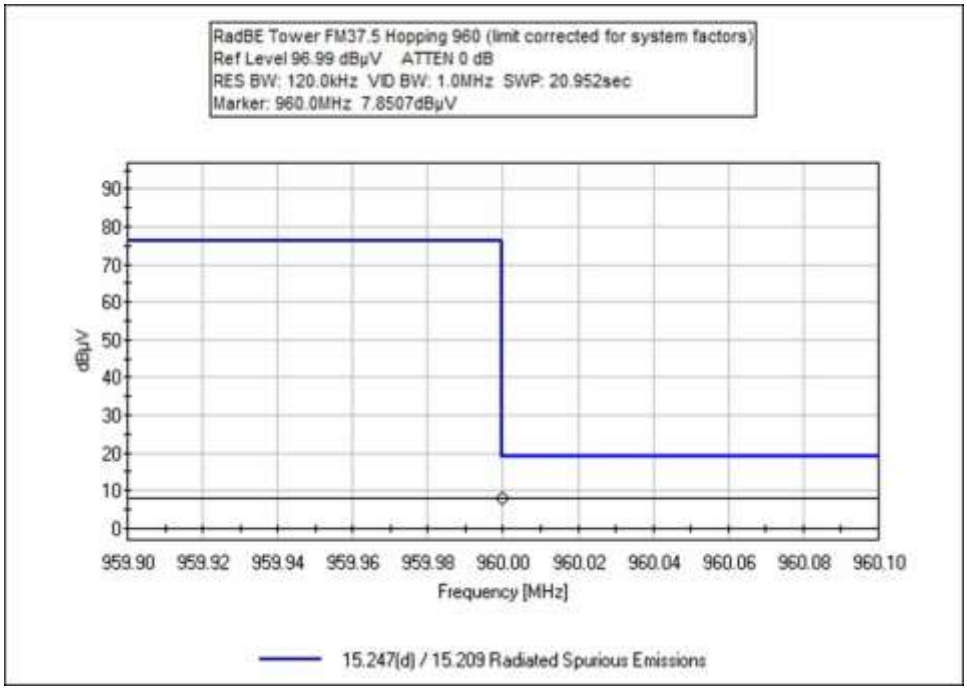

RadBE Tower FM12.5 Hopping 928 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 928.0MHz 23.3417dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
925
926
927
928
929
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM12.5 Hopping 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.8487dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.90
959.92
959.94
959.96
959.98
960.00
960.02
960.04
960.06
960.08
960.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM37.5 Hopping 614 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 614.0MHz 7.8937dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM37.5 Hopping 902 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.0msec
Marker: 902.0MHz 23.6997dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901 902 903 904 905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM37.5 Hopping 928 (limit corrected for system factors)
Ref Level 100.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 47.0msec
Marker: 928.0MHz 24.1887dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
925
926
927
928
929
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE Tower FM37.5 Hopping 960 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.0MHz SWP: 20.952sec
Marker: 960.0MHz 7.8507dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.90
959.92
959.94
959.96
959.98
960.00
960.02
960.04
960.06
960.08
960.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/27/2022
Test Type:	**Maximized Emissions**	Time:	17:39:40
Tested By:	Michael Atkinson	Sequence#:	1
Software:	EMITest 5.03.20		

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: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

Test Setup: Unit is on foam table 80cm high. Horizontal and Vertical antenna polarities investigated, worst-case reported, unit is continuously transmitting with modulation.

AM Modulation

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T5	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	614.000M	8.2	+0.0	+0.3	+1.2	+1.9	+0.0	38.8	46.0	-7.2	Vert
	QP		+27.2						SC		
2	614.000M	7.9	+0.0	+0.3	+1.2	+1.9	+0.0	38.5	46.0	-7.5	Vert
	QP		+27.2						Hopping		
3	960.000M	7.9	+0.0	+0.3	+1.5	+2.4	+0.0	42.8	54.0	-11.2	Vert
	QP		+30.7						SC		
4	960.000M	7.8	+0.0	+0.3	+1.5	+2.4	+0.0	42.7	54.0	-11.3	Vert
	QP		+30.7						Hopping		
5	902.000M	34.4	+0.0	+0.3	+1.4	+2.3	+0.0	68.0	113.0	-45.0	Vert
			+29.6						SC		
6	928.000M	23.5	+0.0	+0.3	+1.5	+2.4	+0.0	58.3	113.0	-54.7	Vert
			+30.6						Hopping		
7	928.000M	23.4	+0.0	+0.3	+1.5	+2.4	+0.0	58.2	113.0	-54.8	Vert
			+30.6						SC		
8	902.000M	24.6	+0.0	+0.3	+1.4	+2.3	+0.0	58.2	113.0	-54.8	Vert
			+29.6						Hopping		

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/27/2022
Test Type:	**Maximized Emissions**	Time:	19:15:23
Tested By:	Michael Atkinson	Sequence#:	2
Software:	EMITest 5.03.20		

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: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

Test Setup: Unit is on foam table 80cm high. Horizontal and Vertical antenna polarities investigated, worst-case reported, unit is continuously transmitting with modulation.

FM12.5 Modulation

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T5	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5								
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	614.000M	7.9	+0.0	+0.3	+1.2	+1.9	+0.0	38.5	46.0	-7.5	Vert
	QP		+27.2						Hopping		
2	614.000M	7.9	+0.0	+0.3	+1.2	+1.9	+0.0	38.5	46.0	-7.5	Vert
	QP		+27.2						SC		
3	960.000M	7.9	+0.0	+0.3	+1.5	+2.4	+0.0	42.8	54.0	-11.2	Vert
	QP		+30.7						SC		
4	960.000M	7.8	+0.0	+0.3	+1.5	+2.4	+0.0	42.7	54.0	-11.3	Vert
	QP		+30.7						Hopping		
5	902.000M	24.4	+0.0	+0.3	+1.4	+2.3	+0.0	58.0	108.0	-50.0	Vert
			+29.6						Hopping		
6	902.000M	23.1	+0.0	+0.3	+1.4	+2.3	+0.0	56.7	108.0	-51.3	Vert
			+29.6						SC		
7	928.000M	23.4	+0.0	+0.3	+1.5	+2.4	+0.0	58.2	111.0	-52.8	Vert
			+30.6						SC		
8	928.000M	23.3	+0.0	+0.3	+1.5	+2.4	+0.0	58.1	111.0	-52.9	Vert
			+30.6						Hopping		

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**107462**	Date:	10/27/2022
Test Type:	**Maximized Emissions**	Time:	20:06:55
Tested By:	Michael Atkinson	Sequence#:	3
Software:	EMITest 5.03.20		

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: 24°C
Humidity: 51%
Pressure: 101.5kPa

Test Method: ANSI C63.10 (2013)

Frequency: Band Edge

Test Setup: Unit is on foam table 80cm high. Horizontal and Vertical antenna polarities investigated, worst-case reported, unit is continuously transmitting with modulation.

FM37.5 Modulation

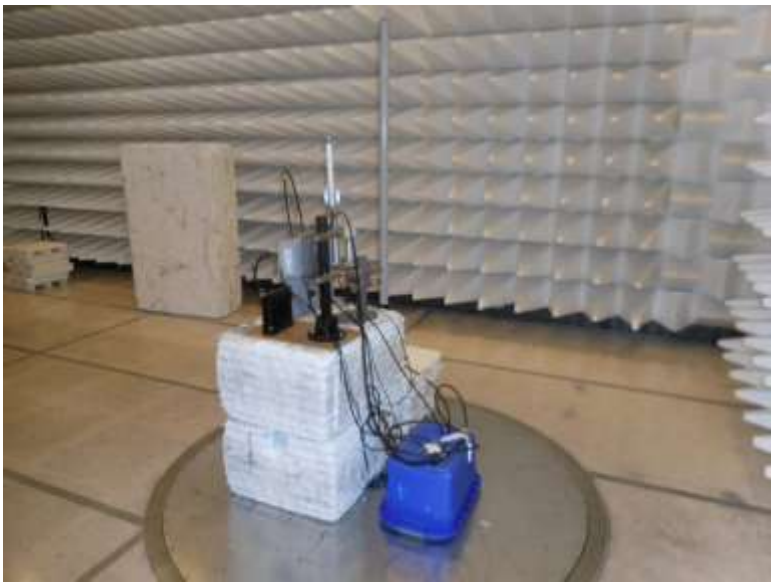
Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T1	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T2	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T3	ANP05360	Cable	RG214	2/4/2022	2/4/2024
T4	AN03628	Biconilog Antenna	3142E	6/3/2021	6/3/2023

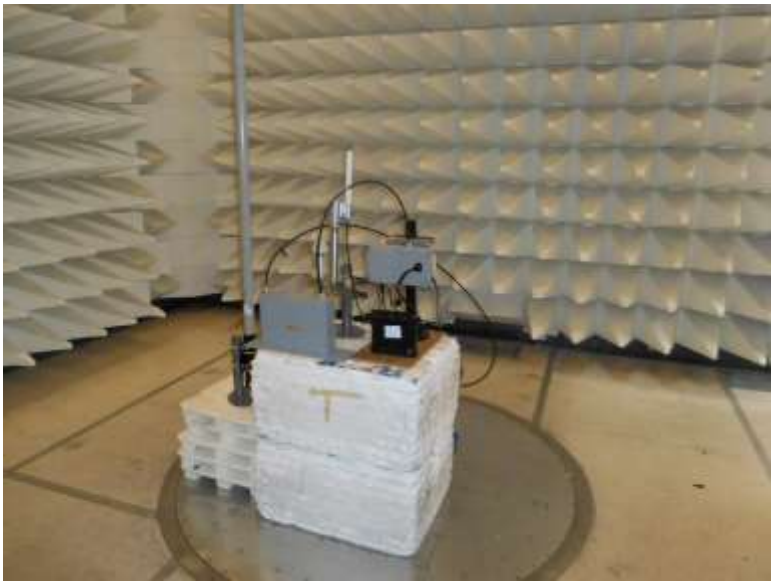
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M QP	8.0	+0.3	+1.2	+1.9	+27.2	+0.0	38.6	46.0 SC	-7.4	Vert
2	614.000M QP	7.9	+0.3	+1.2	+1.9	+27.2	+0.0	38.5	46.0 Hopping	-7.5	Vert
3	960.000M QP	8.0	+0.3	+1.5	+2.4	+30.7	+0.0	42.9	54.0 SC	-11.1	Vert
4	960.000M QP	7.9	+0.3	+1.5	+2.4	+30.7	+0.0	42.8	54.0 Hopping	-11.2	Vert
5	902.000M	25.1	+0.3	+1.4	+2.3	+29.6	+0.0	58.7	108.0 SC	-49.3	Vert
6	902.000M	23.7	+0.3	+1.4	+2.3	+29.6	+0.0	57.3	108.0 Hopping	-50.7	Vert
7	928.000M	24.2	+0.3	+1.5	+2.4	+30.6	+0.0	59.0	111.0 Hopping	-52.0	Vert
8	928.000M	22.9	+0.3	+1.5	+2.4	+30.6	+0.0	57.7	111.0 SC	-53.3	Vert

Test Setup Photo(s)

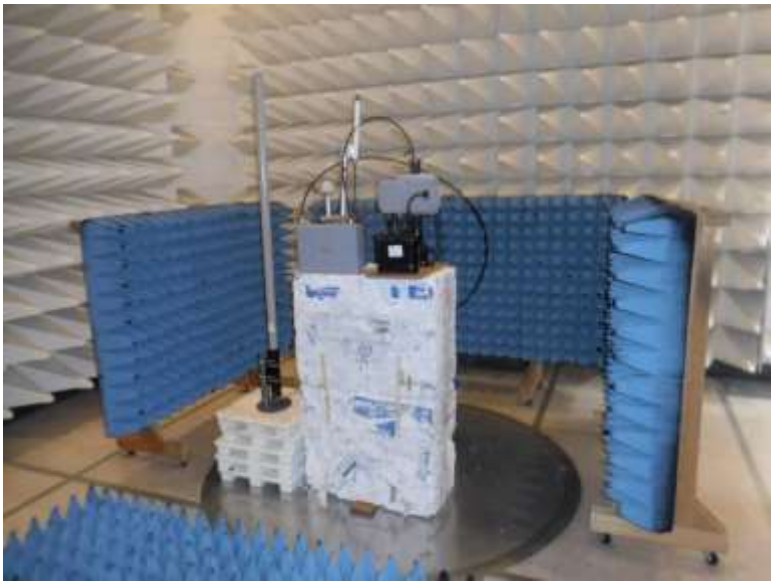


Below 1GHz; View 1



Below 1GHz; View 2

Above 1GHz; View 1



Above 1GHz; View 2

GPS Antenna Investigation

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**107462**	Date:	10/26/2022
Test Type:	**Conducted Emissions**	Time:	19:40:44
Tested By:	Michael Atkinson	Sequence#:	4
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

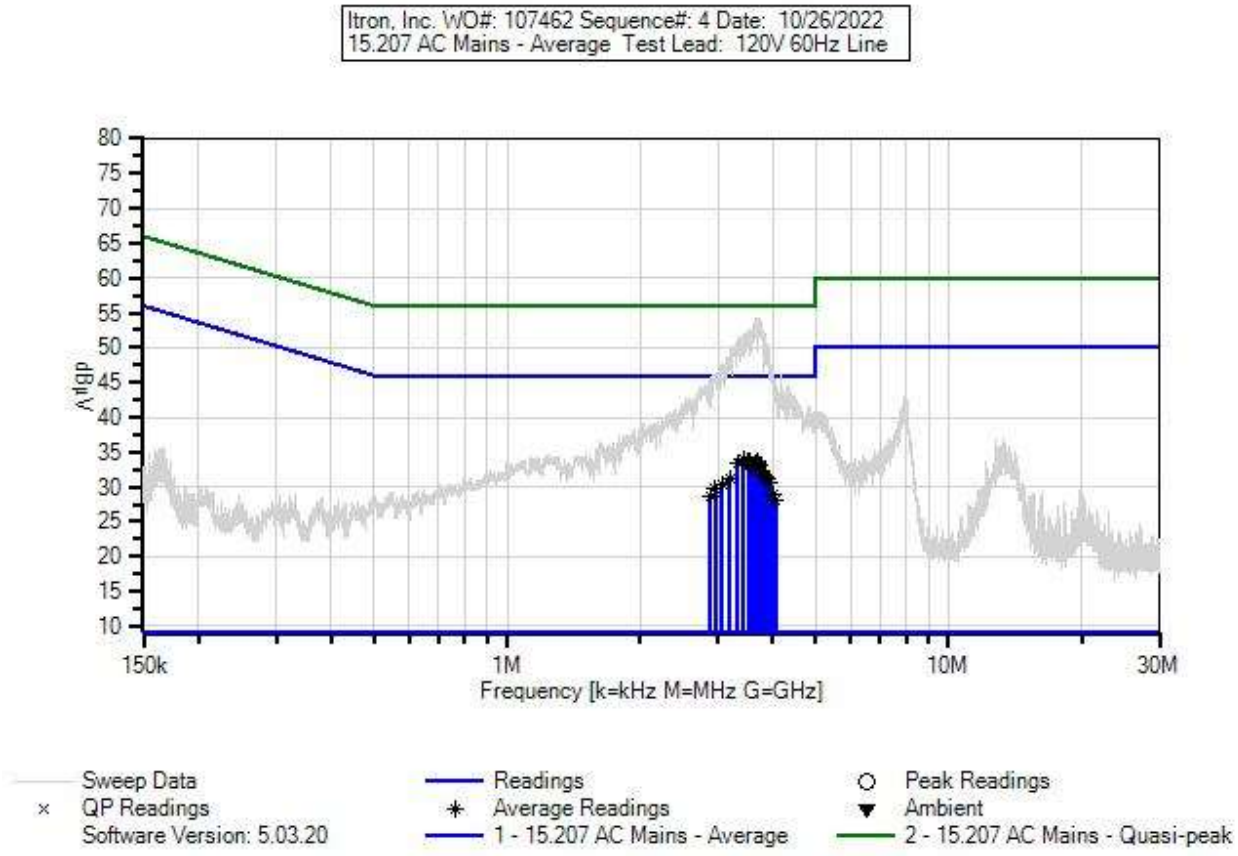
Test Environment Conditions:
Temperature: 24°C
Humidity: 43%
Pressure: 101.9kPa

Test Method: ANSI C63.10 (2013)

Frequency: 0.15-30MHz

Test Setup: Wi-Fi On (802.11b 2442MHz), Cell On (1880MHz), ISM on (FM12.5, 915)

AM, FM12.5, and FM37.5 modulations investigated, worst-case reported. Also investigated with GPS antenna PN 57861-20, investigated with RV50 and RV50x cell modems, worst-case data reported.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/5/2022	1/5/2024
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP06219	Attenuator	768-10	3/23/2022	3/23/2024
T5	AN01311	50uH LISN-Line1 (L)	3816/2	2/23/2022	2/23/2024
	AN01311	50uH LISN-Line2 (N)	3816/2	2/23/2022	2/23/2024

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	3.433M	24.6	+0.0	+0.1	+0.1	+9.1	+0.0	34.0	46.0	-12.0	Line
	Ave		+0.1								
^	3.433M	42.4	+0.0	+0.1	+0.1	+9.1	+0.0	51.8	46.0	+5.8	Line
			+0.1								
3	3.523M	24.4	+0.0	+0.1	+0.1	+9.1	+0.0	33.8	46.0	-12.2	Line
	Ave		+0.1								
^	3.523M	43.2	+0.0	+0.1	+0.1	+9.1	+0.0	52.6	46.0	+6.6	Line
			+0.1								
5	3.535M	24.4	+0.0	+0.1	+0.1	+9.1	+0.0	33.8	46.0	-12.2	Line
	Ave		+0.1								
^	3.535M	43.3	+0.0	+0.1	+0.1	+9.1	+0.0	52.7	46.0	+6.7	Line
			+0.1								
7	3.699M	24.3	+0.0	+0.1	+0.1	+9.1	+0.0	33.7	46.0	-12.3	Line
	Ave		+0.1								
8	3.707M	24.2	+0.0	+0.1	+0.1	+9.1	+0.0	33.6	46.0	-12.4	Line
	Ave		+0.1								
^	3.699M	44.8	+0.0	+0.1	+0.1	+9.1	+0.0	54.2	46.0	+8.2	Line
			+0.1								
^	3.707M	44.7	+0.0	+0.1	+0.1	+9.1	+0.0	54.1	46.0	+8.1	Line
			+0.1								
11	3.656M	24.1	+0.0	+0.1	+0.1	+9.1	+0.0	33.5	46.0	-12.5	Line
	Ave		+0.1								
^	3.656M	44.8	+0.0	+0.1	+0.1	+9.1	+0.0	54.2	46.0	+8.2	Line
			+0.1								
13	3.332M	24.1	+0.0	+0.1	+0.1	+9.1	+0.0	33.5	46.0	-12.5	Line
	Ave		+0.1								
^	3.332M	42.3	+0.0	+0.1	+0.1	+9.1	+0.0	51.7	46.0	+5.7	Line
			+0.1								
15	3.676M	24.0	+0.0	+0.1	+0.1	+9.1	+0.0	33.4	46.0	-12.6	Line
	Ave		+0.1								
^	3.676M	44.0	+0.0	+0.1	+0.1	+9.1	+0.0	53.4	46.0	+7.4	Line
			+0.1								
17	3.552M	23.8	+0.0	+0.1	+0.1	+9.1	+0.0	33.2	46.0	-12.8	Line
	Ave		+0.1								
^	3.552M	43.1	+0.0	+0.1	+0.1	+9.1	+0.0	52.5	46.0	+6.5	Line
			+0.1								
19	3.575M	23.8	+0.0	+0.1	+0.1	+9.1	+0.0	33.2	46.0	-12.8	Line
	Ave		+0.1								
^	3.575M	43.0	+0.0	+0.1	+0.1	+9.1	+0.0	52.4	46.0	+6.4	Line
			+0.1								
21	3.727M	23.8	+0.0	+0.1	+0.1	+9.1	+0.0	33.2	46.0	-12.8	Line
	Ave		+0.1								
^	3.727M	44.9	+0.0	+0.1	+0.1	+9.1	+0.0	54.3	46.0	+8.3	Line
			+0.1								

23 Ave	3.739M	23.6	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	33.0	46.0	-13.0	Line
^	3.739M	44.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	53.5	46.0	+7.5	Line
25 Ave	3.597M	23.5	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	32.9	46.0	-13.1	Line
^	3.597M	43.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	52.6	46.0	+6.6	Line
27 Ave	3.777M	22.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	32.3	46.0	-13.7	Line
^	3.777M	44.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	53.8	46.0	+7.8	Line
29 Ave	3.822M	22.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.8	46.0	-14.2	Line
^	3.822M	42.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	52.3	46.0	+6.3	Line
31 Ave	3.863M	22.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.5	46.0	-14.5	Line
32 Ave	3.855M	22.0	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.4	46.0	-14.6	Line
^	3.855M	42.7	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	52.1	46.0	+6.1	Line
34 Ave	3.187M	21.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.2	46.0	-14.8	Line
^	3.187M	39.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	49.3	46.0	+3.3	Line
36 Ave	3.867M	21.6	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.0	46.0	-15.0	Line
^	3.867M	42.5	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	51.9	46.0	+5.9	Line
^	3.863M	42.5	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	51.9	46.0	+5.9	Line
39 Ave	3.929M	21.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.7	46.0	-15.3	Line
^	3.929M	39.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	48.6	46.0	+2.6	Line
41 Ave	3.068M	20.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.2	46.0	-15.8	Line
^	3.068M	38.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	47.7	46.0	+1.7	Line
43 Ave	2.957M	20.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	29.8	46.0	-16.2	Line
^	2.957M	37.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.5	46.0	+0.5	Line

45	4.003M Ave	19.6	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	29.0	46.0	-17.0	Line
^	4.003M	37.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.5	46.0	+0.5	Line
47	2.891M Ave	19.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	28.6	46.0	-17.4	Line
^	2.891M	36.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	45.5	46.0	-0.5	Line
49	4.047M Ave	18.7	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	28.1	46.0	-17.9	Line
^	4.047M	37.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.6	46.0	+0.6	Line

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**107462**	Date:	10/26/2022
Test Type:	**Conducted Emissions**	Time:	19:18:02
Tested By:	Michael Atkinson	Sequence#:	3
Software:	EMITest 5.03.20		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

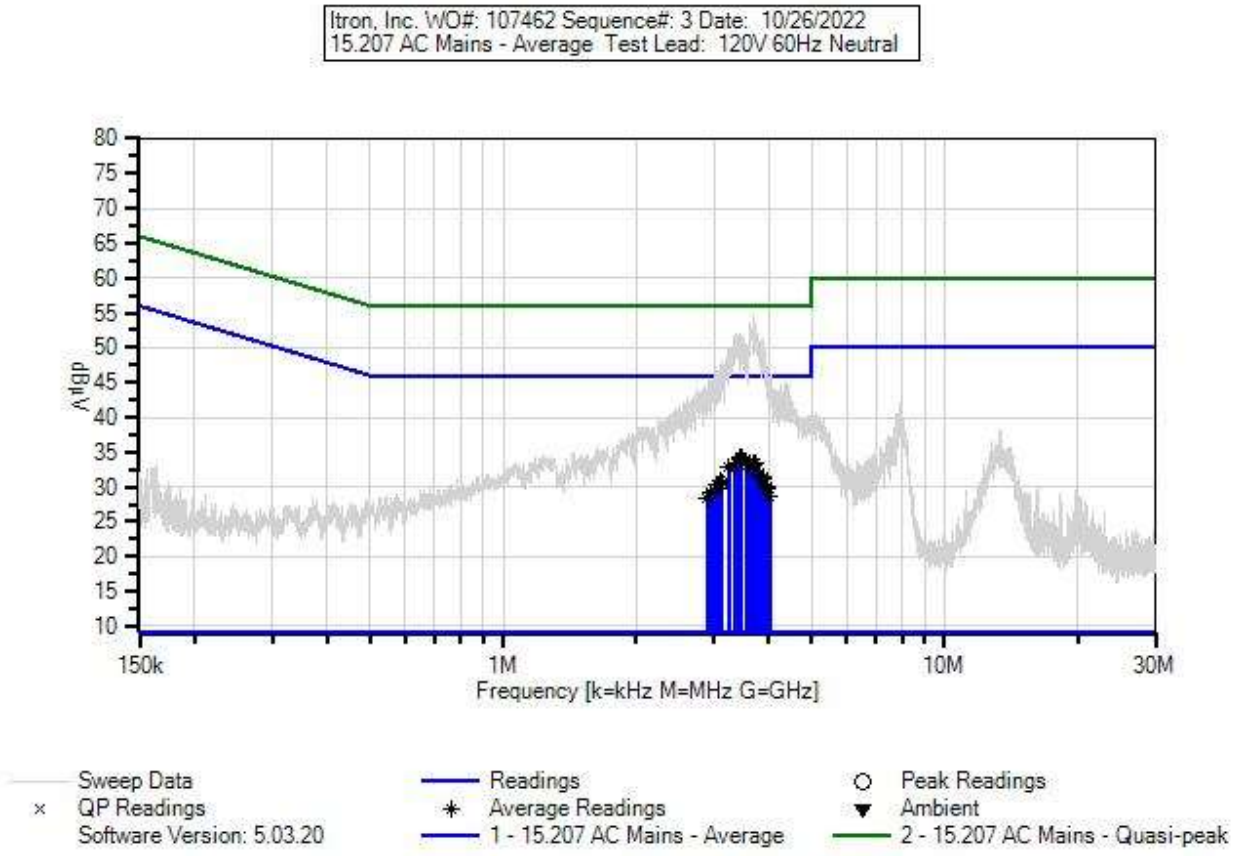
Test Environment Conditions:
Temperature: 24°C
Humidity: 43%
Pressure: 101.9kPa

Test Method: ANSI C63.10 (2013)

Frequency: 0.15-30MHz

Test Setup: Wi-Fi On (802.11b 2442MHz), Cell On (1880MHz), ISM on (FM12.5, 915)

AM, FM12.5, and FM37.5 modulations investigated, worst-case reported. Also investigated with GPS antenna PN 57861-20, investigated with RV50 and RV50x cell modems, worst-case data reported.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/29/2021	11/29/2023
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/5/2022	1/5/2024
T2	ANP06540	Cable	Heliax	1/17/2022	1/17/2024
T3	ANP05305	Cable	ETSI-50T	9/15/2021	9/15/2023
T4	ANP06219	Attenuator	768-10	3/23/2022	3/23/2024
	AN01311	50uH LISN-Line1 (L)	3816/2	2/23/2022	2/23/2024
T5	AN01311	50uH LISN-Line2 (N)	3816/2	2/23/2022	2/23/2024

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	3.473M	24.9	+0.0	+0.1	+0.1	+9.1	+0.0	34.3	46.0	-11.7	Neutr
	Ave		+0.1								
^	3.473M	42.9	+0.0	+0.1	+0.1	+9.1	+0.0	52.3	46.0	+6.3	Neutr
			+0.1								
3	3.452M	24.8	+0.0	+0.1	+0.1	+9.1	+0.0	34.2	46.0	-11.8	Neutr
	Ave		+0.1								
^	3.452M	42.8	+0.0	+0.1	+0.1	+9.1	+0.0	52.2	46.0	+6.2	Neutr
			+0.1								
5	3.428M	24.6	+0.0	+0.1	+0.1	+9.1	+0.0	34.0	46.0	-12.0	Neutr
	Ave		+0.1								
^	3.428M	43.3	+0.0	+0.1	+0.1	+9.1	+0.0	52.7	46.0	+6.7	Neutr
			+0.1								
7	3.562M	24.2	+0.0	+0.1	+0.1	+9.1	+0.0	33.6	46.0	-12.4	Neutr
	Ave		+0.1								
^	3.562M	41.3	+0.0	+0.1	+0.1	+9.1	+0.0	50.7	46.0	+4.7	Neutr
			+0.1								
9	3.634M	24.1	+0.0	+0.1	+0.1	+9.1	+0.0	33.5	46.0	-12.5	Neutr
	Ave		+0.1								
^	3.634M	43.9	+0.0	+0.1	+0.1	+9.1	+0.0	53.3	46.0	+7.3	Neutr
			+0.1								
11	3.697M	24.1	+0.0	+0.1	+0.1	+9.1	+0.0	33.5	46.0	-12.5	Neutr
	Ave		+0.1								
12	3.618M	23.9	+0.0	+0.1	+0.1	+9.1	+0.0	33.3	46.0	-12.7	Neutr
	Ave		+0.1								
^	3.618M	44.0	+0.0	+0.1	+0.1	+9.1	+0.0	53.4	46.0	+7.4	Neutr
			+0.1								
14	3.732M	23.9	+0.0	+0.1	+0.1	+9.1	+0.0	33.3	46.0	-12.7	Neutr
	Ave		+0.1								
^	3.732M	43.6	+0.0	+0.1	+0.1	+9.1	+0.0	53.0	46.0	+7.0	Neutr
			+0.1								
16	3.707M	23.8	+0.0	+0.1	+0.1	+9.1	+0.0	33.2	46.0	-12.8	Neutr
	Ave		+0.1								
^	3.697M	45.3	+0.0	+0.1	+0.1	+9.1	+0.0	54.7	46.0	+8.7	Neutr
			+0.1								
^	3.707M	44.7	+0.0	+0.1	+0.1	+9.1	+0.0	54.1	46.0	+8.1	Neutr
			+0.1								
19	3.580M	23.6	+0.0	+0.1	+0.1	+9.1	+0.0	33.0	46.0	-13.0	Neutr
	Ave		+0.1								
^	3.580M	40.4	+0.0	+0.1	+0.1	+9.1	+0.0	49.8	46.0	+3.8	Neutr
			+0.1								
21	3.248M	23.4	+0.0	+0.1	+0.1	+9.1	+0.0	32.8	46.0	-13.2	Neutr
	Ave		+0.1								
^	3.248M	40.4	+0.0	+0.1	+0.1	+9.1	+0.0	49.8	46.0	+3.8	Neutr
			+0.1								

23 Ave	3.342M	23.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	32.8	46.0	-13.2	Neutr
^	3.342M	42.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	51.6	46.0	+5.6	Neutr
25 Ave	3.811M	22.5	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.9	46.0	-14.1	Neutr
^	3.811M	43.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	53.3	46.0	+7.3	Neutr
27 Ave	3.870M	21.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.3	46.0	-14.7	Neutr
^	3.870M	41.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	51.2	46.0	+5.2	Neutr
29 Ave	3.860M	21.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.2	46.0	-14.8	Neutr
^	3.860M	41.7	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	51.1	46.0	+5.1	Neutr
31 Ave	3.890M	21.7	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	31.1	46.0	-14.9	Neutr
^	3.890M	41.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	50.8	46.0	+4.8	Neutr
33 Ave	3.108M	21.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.8	46.0	-15.2	Neutr
^	3.108M	38.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	47.5	46.0	+1.5	Neutr
35 Ave	3.125M	21.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.5	46.0	-15.5	Neutr
^	3.125M	38.6	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	48.0	46.0	+2.0	Neutr
37 Ave	3.079M	20.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.3	46.0	-15.7	Neutr
^	3.079M	37.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.7	46.0	+0.7	Neutr
39 Ave	3.036M	20.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.2	46.0	-15.8	Neutr
^	3.036M	37.2	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.6	46.0	+0.6	Neutr
41 Ave	3.945M	20.7	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	30.1	46.0	-15.9	Neutr
^	3.945M	38.4	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	47.8	46.0	+1.8	Neutr
43 Ave	3.970M	20.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	29.7	46.0	-16.3	Neutr
^	3.970M	36.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.2	46.0	+0.2	Neutr
45 Ave	3.059M	20.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	29.7	46.0	-16.3	Neutr
^	3.059M	37.1	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.5	46.0	+0.5	Neutr
47 Ave	2.961M	19.9	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	29.3	46.0	-16.7	Neutr
^	2.961M	36.8	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.2	46.0	+0.2	Neutr

49 Ave	4.017M	19.3	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	28.7	46.0	-17.3	Neutr
^	4.017M	37.5	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	46.9	46.0	+0.9	Neutr
51 Ave	2.902M	19.0	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	28.4	46.0	-17.6	Neutr
^	2.902M	35.6	+0.0 +0.1	+0.1	+0.1	+9.1	+0.0	45.0	46.0	-1.0	Neutr

Test Setup Photo(s)

Appendix A: Customer Provided Data

15.35(c) Duty Cycle Correction Factor

Test Data Summary			
Antenna Port	**Operational Mode**	**Measured On Time (mS / P_{obs})**	**Declared DCCF (dB)**
1	Operating	23.8	12.5

Observation Period, P_{obs} is the duration of the pulse train or maximum 100mS

Measured results are calculated as follows:

$$On\ Time = \left(\sum_{Bursts} RF\ Burst\ On\ Time + \sum_{Control} Control\ Signal\ On\ time \right) \Bigg|_{P_{obs}\ (\max 100ms)}$$

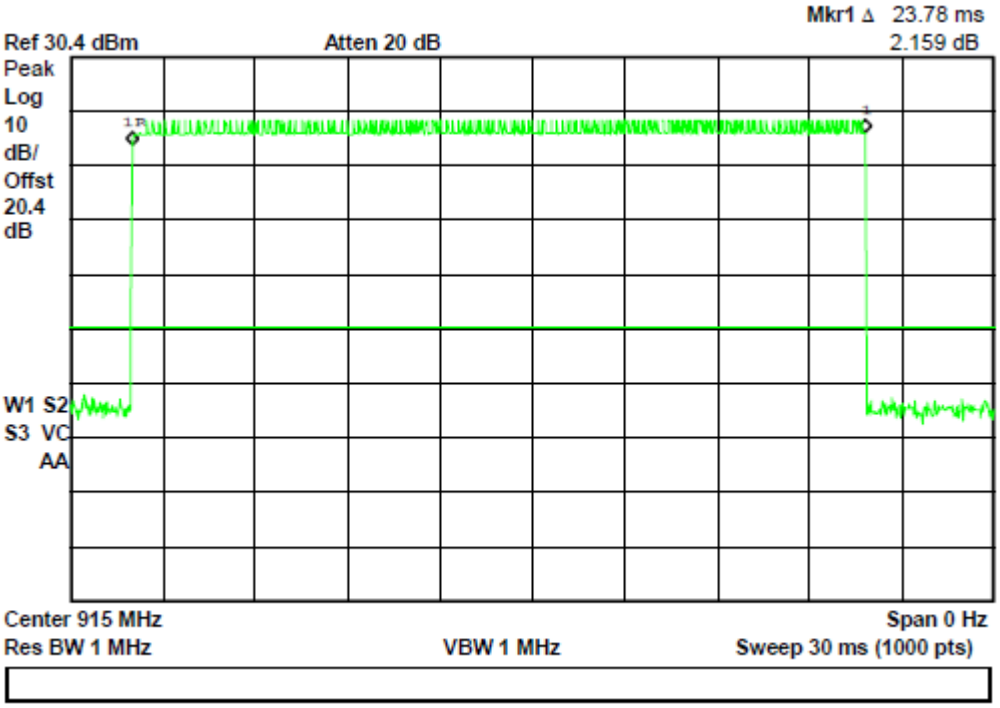
Measured Values:

Parameter	Value
Observation Period (P_{obs}):	100
Number of RF Bursts / P_{obs}:	1
On time of RF Burst:	23.8
Number of Control or other signals / P_{obs}:	0
On time of Control or other Signals:	0
Total Measured On Time:	23.8

Duty Cycle Correction Factor (DCCF) is calculated in accordance with ANSI C63.10:

$$DCCF = 20 \cdot Log\left(\frac{On\ Time}{P_{obs}}\right)$$

Duty Cycle Correction Factor Test Data



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

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 dBµV/m, the spectrum analyzer reading in dBµV 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	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/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.