

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05748	Attenuator	PE7004-20	3/4/2020	3/4/2022
T2	ANP06007	Cable	Helix	1/20/2020	1/20/2022
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021

Measurement Data:

Reading listed by margin.

Test Lead: Antenna Port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB		Dist. Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	1835.000M	45.0	+20.0	+0.7		+0.0	65.7	112.8	-47.1	Anten
2	1805.000M	42.4	+20.0	+0.6		+0.0	63.0	112.8	-49.8	Anten
3	1855.000M	39.7	+20.0	+0.7		+0.0	60.4	112.8	-52.4	Anten

Band Edge

Band Edge Summary

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

Operating Mode: Single Channel (Low and High)

Frequency (MHz)	Modulation	Measured (dBm)	Limit (dBm)	Results
902	FSK	94.7	< 115.5	Pass
928	FSK	79.2	< 115.5	Pass
902	GFSK	97	< 115.7	Pass
928	GFSK	96.3	< 115.7	Pass
902	OFDM	99.1	< 112.8	Pass
928	OFDM	102.2	< 112.8	Pass

Note: All modulations and baud rates were checked, worst case provided.

Band Edge Summary

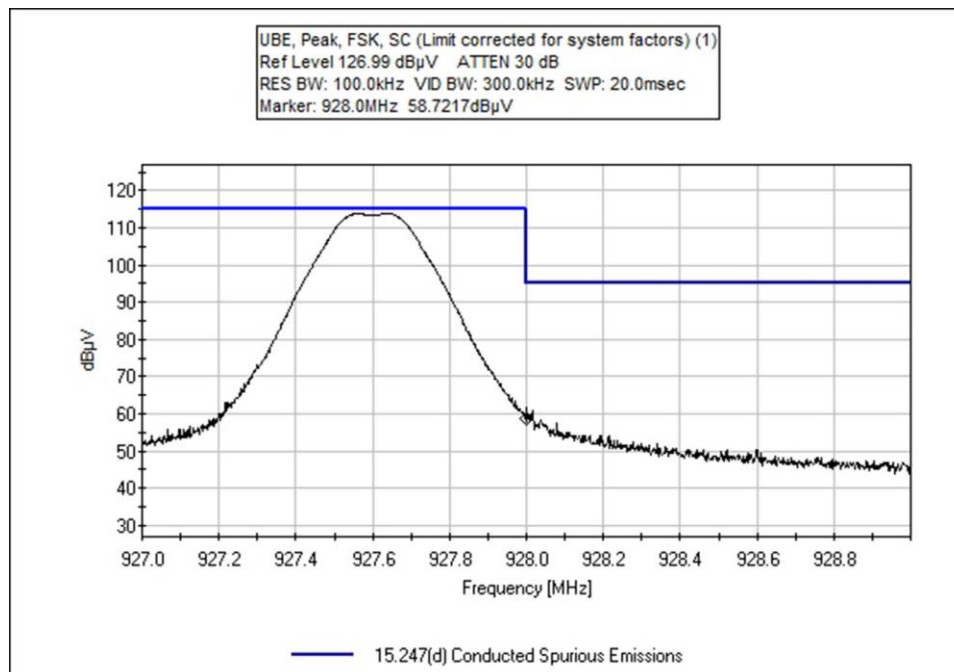
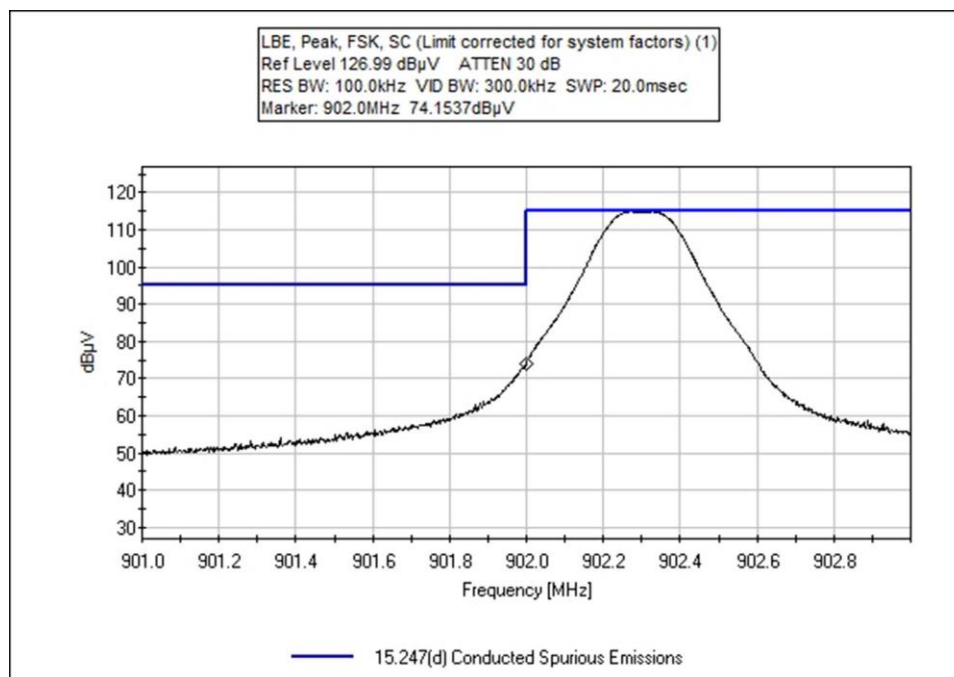
Limit applied: Max Power/100kHz - 20dB.

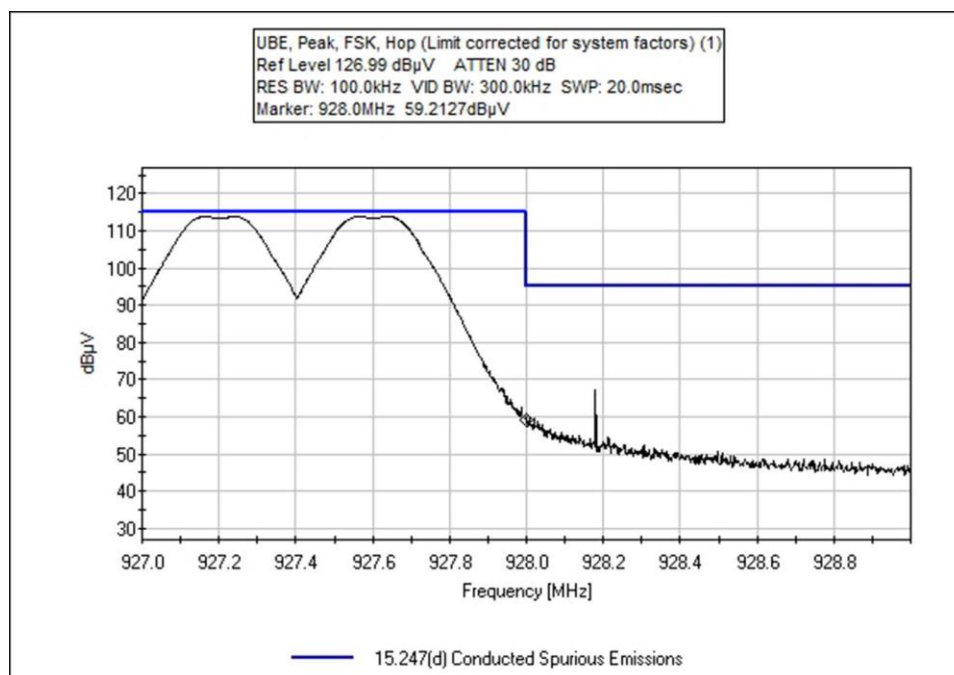
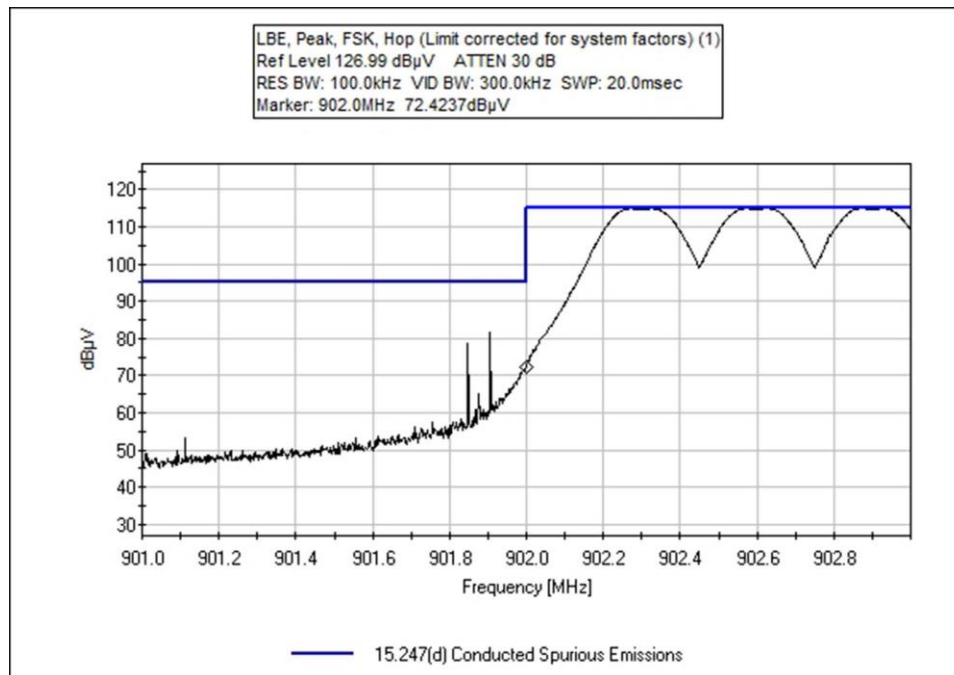
Operating Mode: Hopping

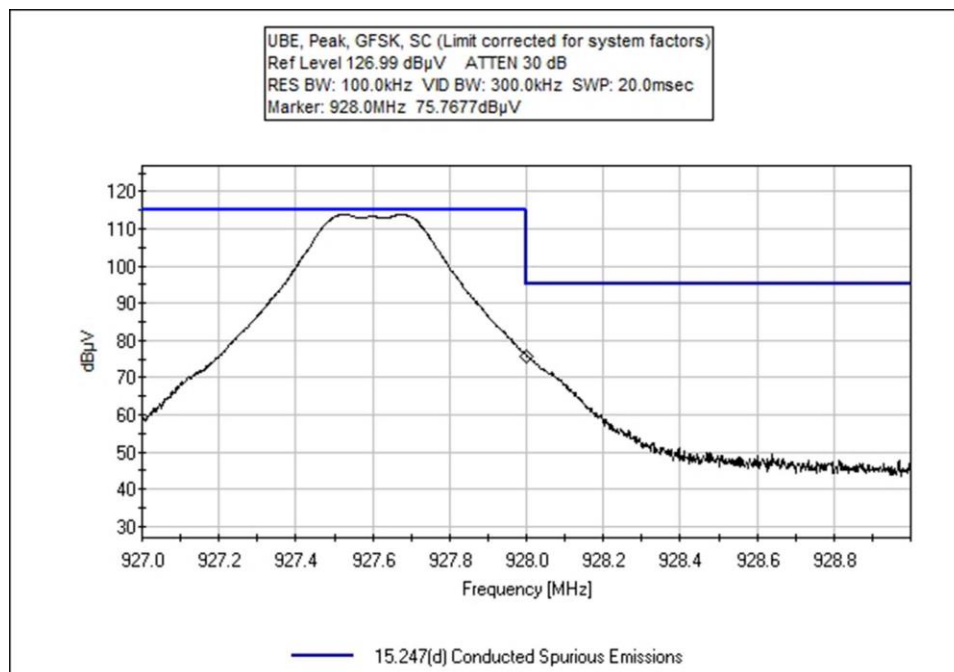
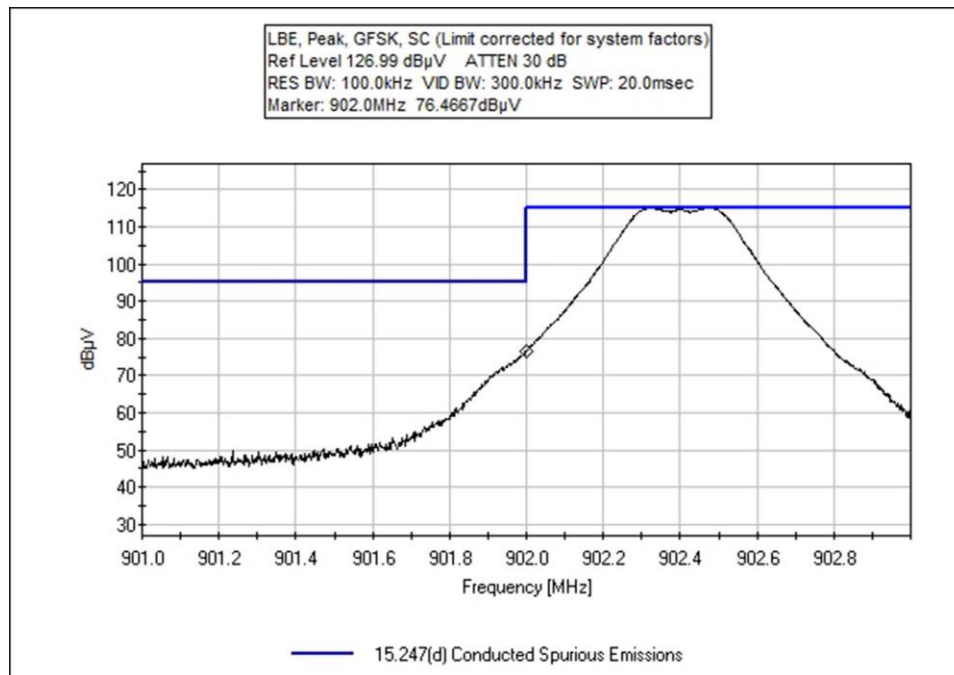
Frequency (MHz)	Modulation	Measured (dBμV)	Limit (dBμV)	Results
902	FSK	92.9	< 115.5	Pass
928	FSK	79.7	< 115.5	Pass
902	GFSK	97.3	< 115.7	Pass
928	GFSK	96.6	< 115.7	Pass
902	OFDM	97.9	< 112.8	Pass
928	OFDM	99.4	< 112.8	Pass

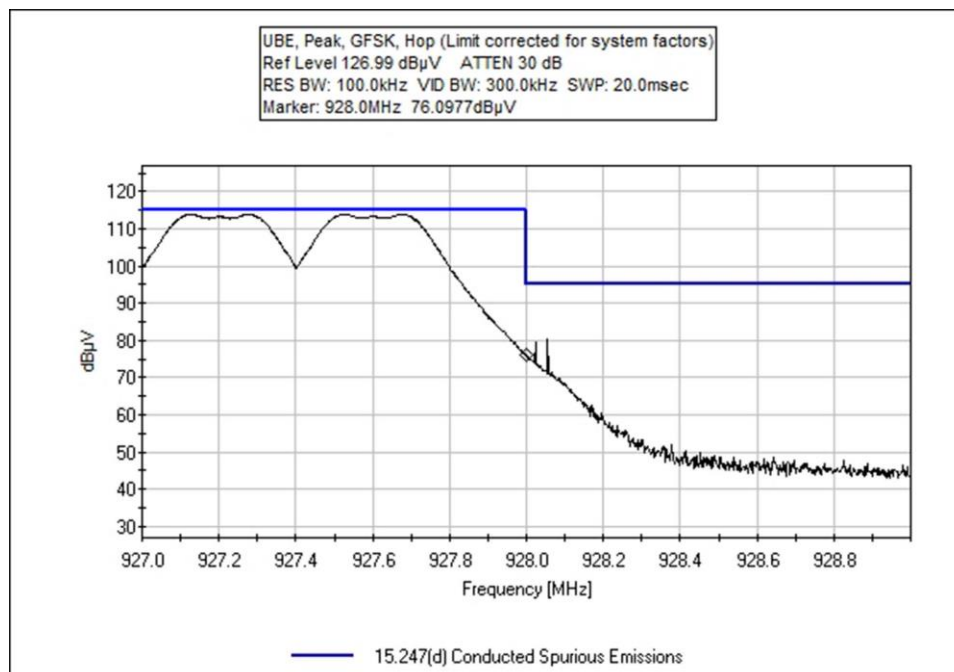
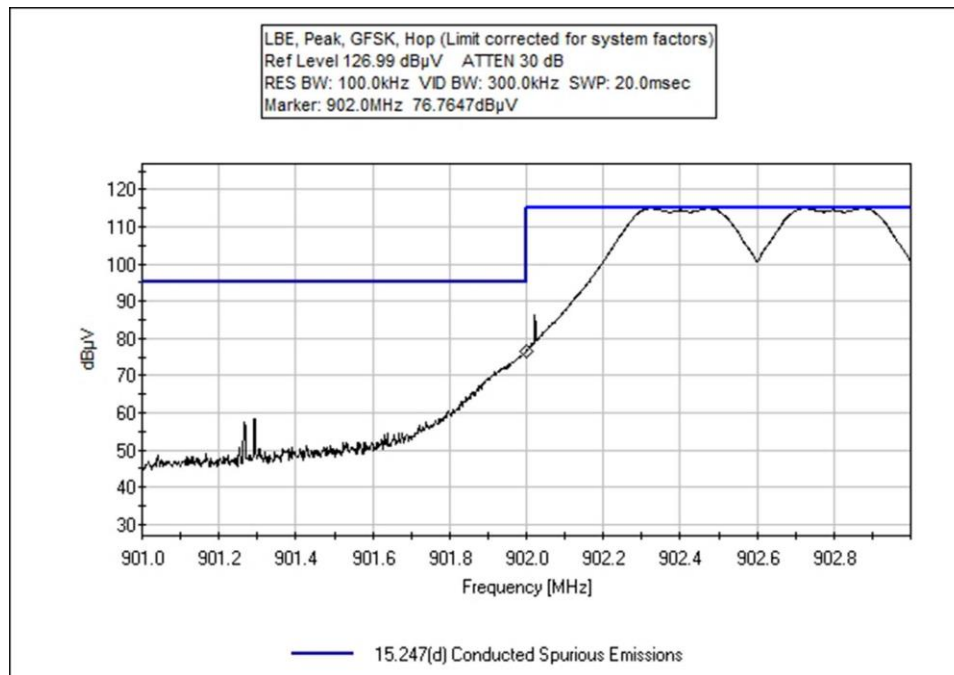
Note: All modulations and baud rates were checked, worst case provided.

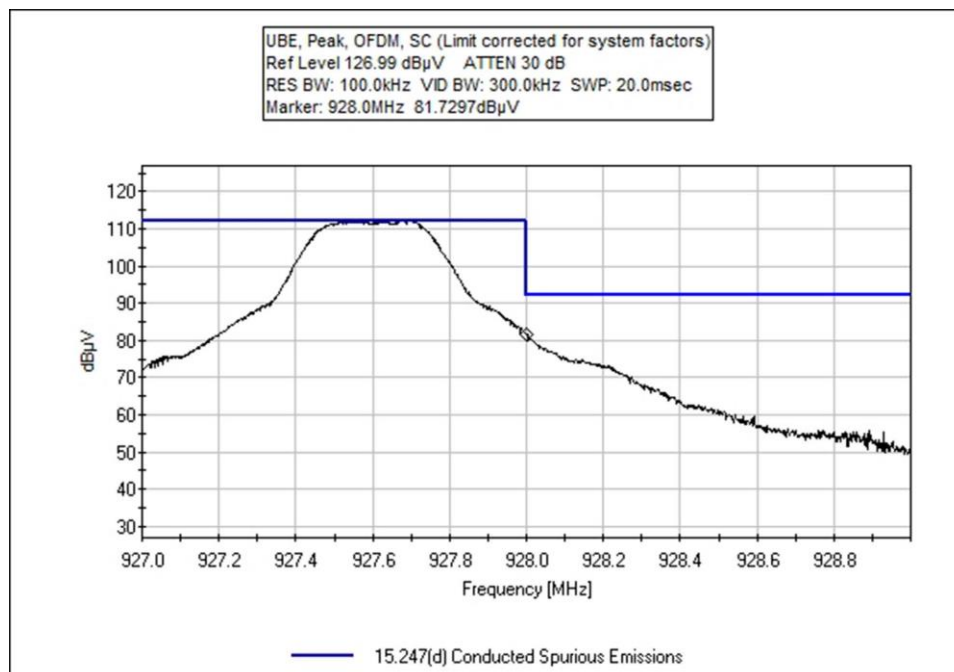
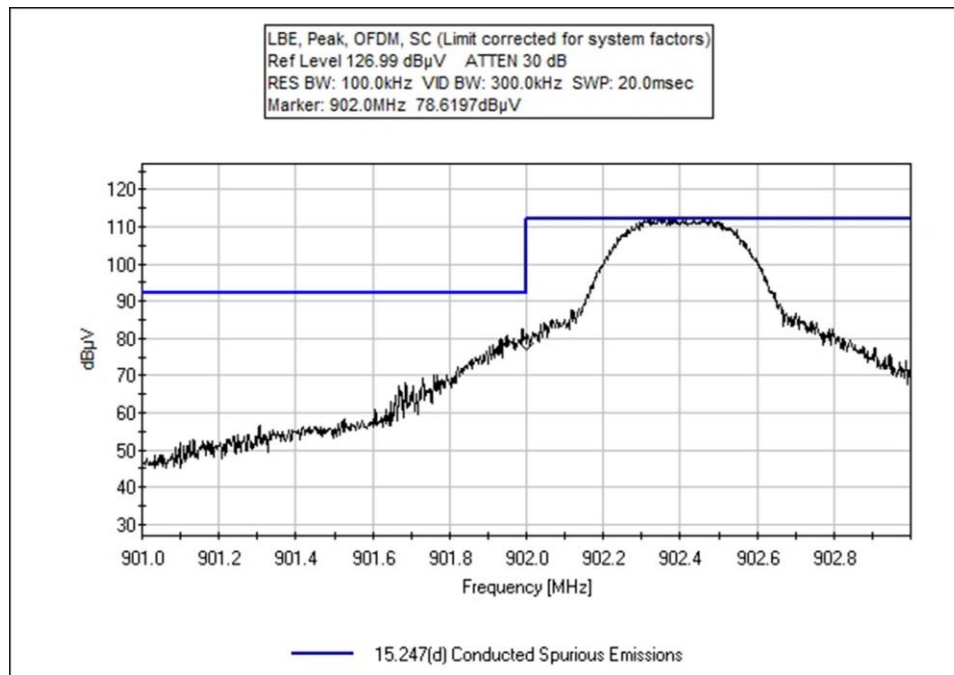
Band Edge Plots

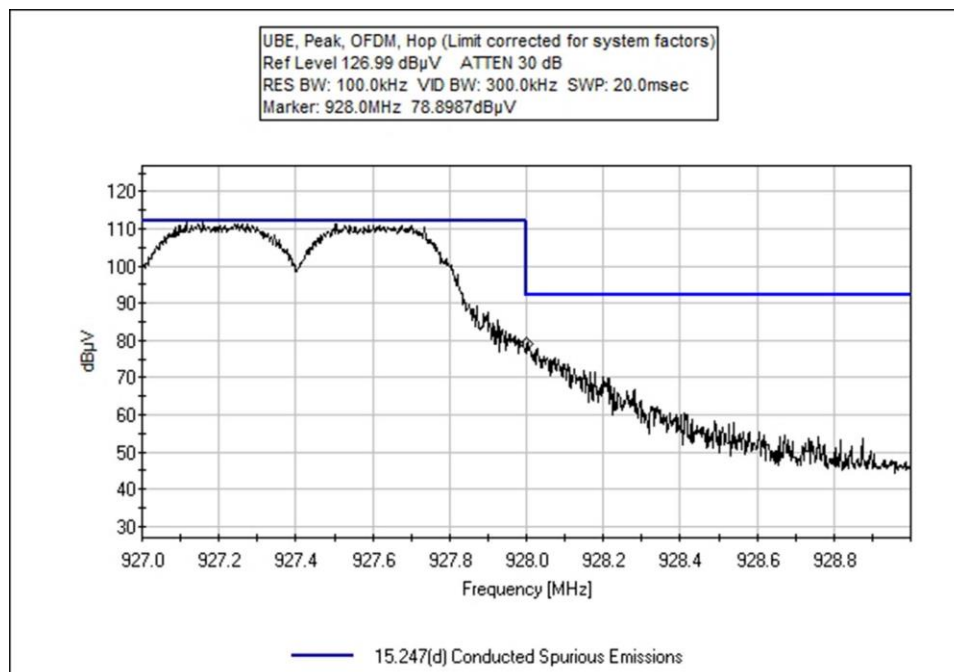
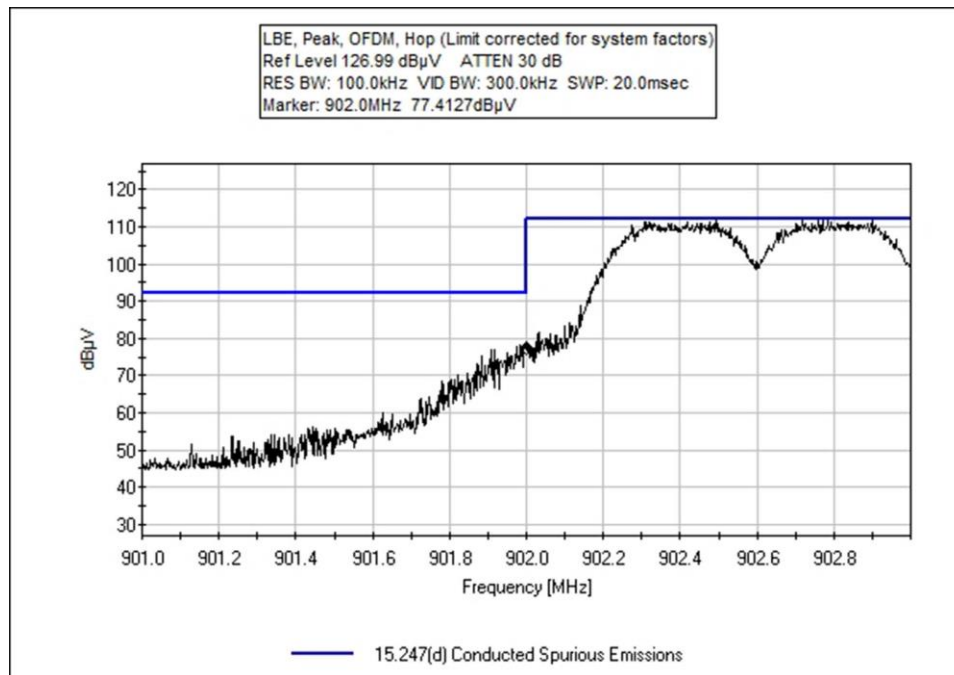












Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **104631** Date: 1/6/2021
 Test Type: **Conducted Emissions** Time: 14:03:18
 Tested By: Matt Harrison Sequence#: 11
 Software: EMITest 5.03.19 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: 23°C
Relative Humidity: 41%
Atmospheric Pressure: 101.6kPa
Test Method: ANSI C63.10 (2013)
Frequency Range: 902-928MHz
Test Setup:
The equipment under test (EUT) is setup for direct antenna port measurements. The EUT is transmitting continuous wave at its rated output power.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05748	Attenuator	PE7004-20	3/4/2020	3/4/2022
T2	ANP06007	Cable	Heliac	1/20/2020	1/20/2022
T3	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021

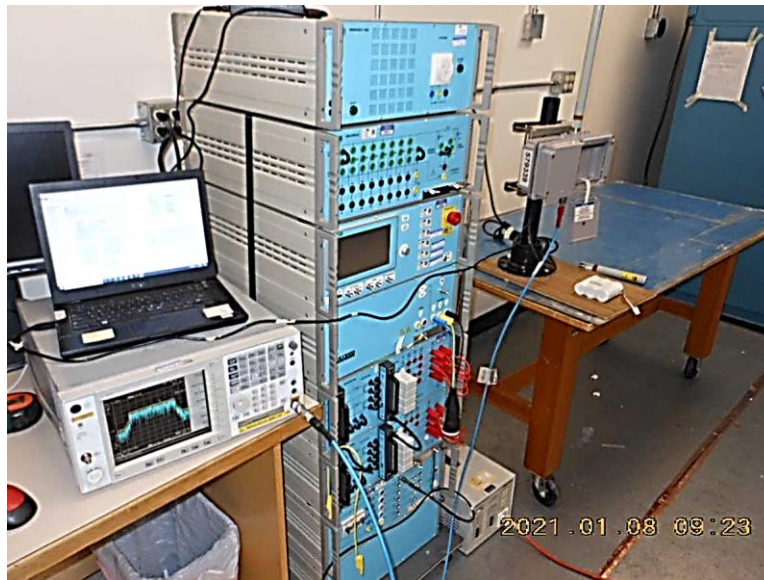
Measurement Data:

Reading listed by margin.

Test Lead: Antenna Port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist. dB	Dist. Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	902.328M	115.0	+20.0	+0.5	+0.0	+0.0	+0.0	135.5	135.5	+0.0	Anten
									SC		
2	902.000M	74.2	+20.0	+0.5	+0.0	+0.0	+0.0	94.7	115.5	-20.8	Anten
									SC		
3	902.000M	72.4	+20.0	+0.5	+0.0	+0.0	+0.0	92.9	115.5	-22.6	Anten
									Hop		
4	928.000M	59.2	+20.0	+0.5	+0.0	+0.0	+0.0	79.7	115.5	-35.8	Anten
									Hop		
5	928.000M	58.7	+20.0	+0.5	+0.0	+0.0	+0.0	79.2	115.5	-36.3	Anten
									SC		

Test Setup Photo(s)



15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 15:06:28
 Tested By: Matt Harrison Sequence#: 1
 Software: EMITest 5.03.19

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

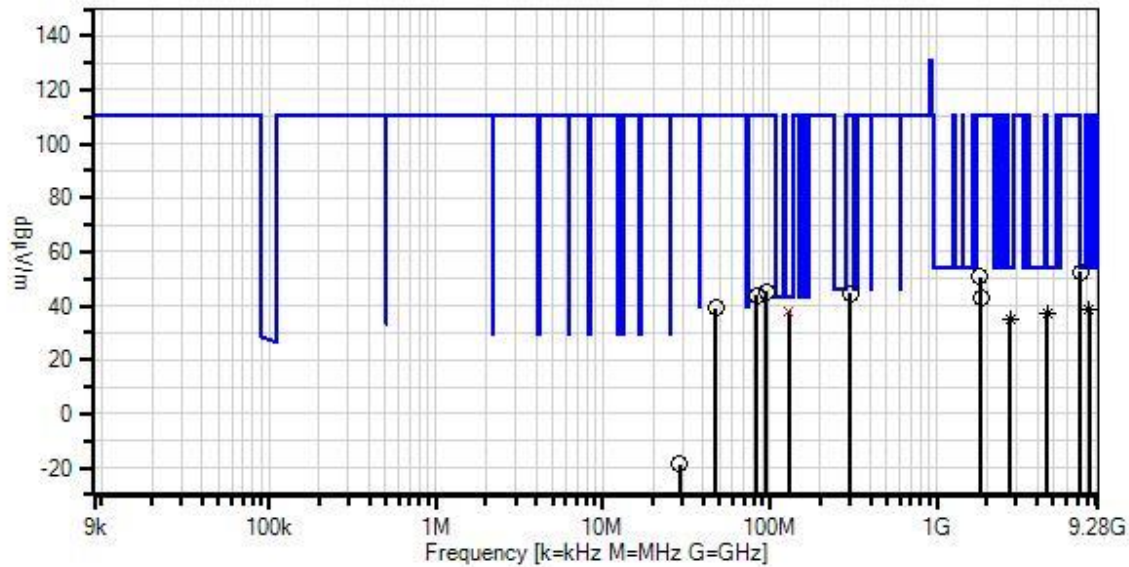
Test Environment Conditions:
 Temperature: 23°C
 Relative Humidity: 41%
 Atmospheric Pressure: 101.6kPa

 Test Method: ANSI C63.10 (2013)

 Frequency Range: 9kHz-9.28GHz

 Test Setup:
 The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.
 FSK Modulation

Ittron, Inc. WO#: 104631 Sequence#: 1 Date: 1/7/2021
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert/Horz



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

○ Peak Readings
 * Average Readings
 Software Version: 5.03.19

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T2	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T3	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T4	ANP06515	Cable	Heliac	7/1/2020	7/1/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	ANP07505	Cable	CLU40-KMKM- 02.00F	1/17/2019	1/17/2021
T7	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T8	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T9	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T10	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T11	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist.	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	129.625M	23.1	+0.0 +0.1 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.0 +8.0 +0.0	+0.0	38.2	43.5	-5.3	Vert/
^	129.625M	26.0	+0.0 +0.1 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.0 +8.0 +0.0	+0.0	41.1	43.5	-2.4	Vert/
3	8120.435M	19.1	-35.0 +1.3 +0.0	+37.0 +0.3 +0.0	+9.8 +0.8 +0.0	+5.3 +0.0 +0.0	+0.0	38.6	54.0	-15.4	Vert/
^	8120.435M	33.9	-35.0 +1.3 +0.0	+37.0 +0.3 +0.0	+9.8 +0.8 +0.0	+5.3 +0.0 +0.0	+0.0	53.4	54.0	-0.6	Vert/
5	4576.140M	23.2	-33.7 +0.9 +0.0	+31.9 +0.5 +0.0	+9.8 +0.6 +0.0	+3.8 +0.0 +0.0	+0.0	37.0	54.0	-17.0	Vert/
^	4576.140M	35.4	-33.7 +0.9 +0.0	+31.9 +0.5 +0.0	+9.8 +0.6 +0.0	+3.8 +0.0 +0.0	+0.0	49.2	54.0	-4.8	Vert/
7	2745.600M	26.2	-34.1 +0.7 +0.0	+28.4 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	34.8	54.0	-19.2	Vert/
^	2745.600M	38.2	-34.1 +0.7 +0.0	+28.4 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	46.8	54.0	-7.2	Vert/
9	7218.525M	33.5	-34.5 +1.1 +0.0	+36.5 +0.4 +0.0	+9.9 +0.4 +0.0	+5.1 +0.0 +0.0	+0.0	52.4	110.8	-58.4	Vert/
10	1804.545M	46.1	-34.8 +0.5 +0.0	+26.1 +0.2 +0.0	+10.0 +0.5 +0.0	+2.3 +0.0 +0.0	+0.0	50.9	110.8	-59.9	Vert/
11	96.000M	30.6	+0.0 +0.1 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.6	+0.0 +7.7 +0.0	+0.0	45.3	110.8	-65.5	Vert/
12	302.600M	23.3	+0.0 +0.2 +5.8	+0.0 +0.0 +0.9	+0.0 +0.0 +1.1	+0.0 +13.2 +0.0	+0.0	44.5	110.8	-66.3	Vert/
13	83.400M	30.3	+0.0 +0.1 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.5	+0.0 +6.8 +0.0	+0.0	43.9	110.8	-66.9	Vert/

14	1830.555M	37.7	-34.8 +0.5 +0.0	+26.3 +0.2 +0.0	+10.0 +0.4 +0.0	+2.4 +0.0 +0.0	+0.0	42.7	110.8	-68.1	Vert/
15	47.500M	23.9	+0.0 +0.1 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.4	+0.0 +8.5 +0.0	+0.0	39.1	110.8	-71.7	Vert/
16	28.806M	16.4	+0.0 +0.1 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +4.7	-40.0	-18.5	110.8	-129.3	Vert/
17	132.516k	36.4	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +9.5	-80.0	-34.1	110.8	-144.9	Vert/

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 14:59:34
 Tested By: Matt Harrison Sequence#: 2
 Software: EMITest 5.03.19

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

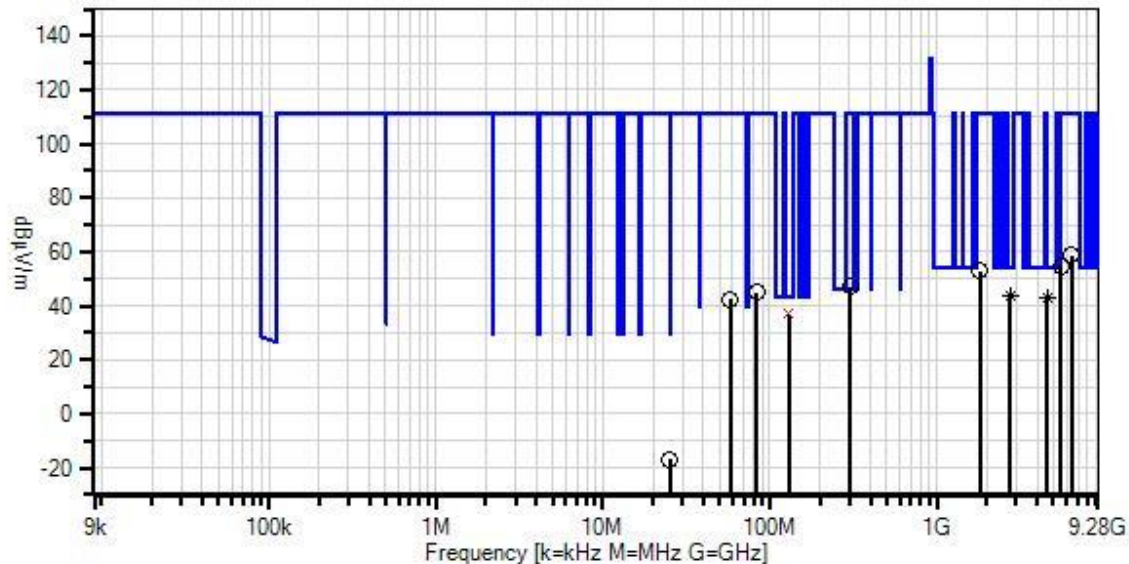
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Environment Conditions: Temperature: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 9kHz-9.28GHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported. GFSK Modulation

Ittron, Inc. W/O#: 104631 Sequence#: 2 Date: 1/7/2021
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert/Horz



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T2	AN01467	Horn Antenna- ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T3	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T4	ANP06515	Cable	Heliac	7/1/2020	7/1/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	ANP07505	Cable	CLU40-KMKM- 02.00F	1/17/2019	1/17/2021
T7	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T8	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T9	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T10	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T11	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist.	Corr	Spec	Margin	Polar
	MHz	dB μ V	dB	dB	dB	dB	Table	dB μ V/m	dB μ V/m	dB	Ant
1	129.518M	21.6	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.6 +8.0 +0.0	+0.0	37.2	43.5	-6.3	Vert/
^	129.518M	24.6	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.6 +8.0 +0.0	+0.0	40.2	43.5	-3.3	Vert/
3	2745.600M	35.0	-34.1 +0.7 +0.0	+28.4 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	43.6	54.0	-10.4	Vert/
^	2745.600M	43.3	-34.1 +0.7 +0.0	+28.4 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	51.9	54.0	-2.1	Vert/
5	4576.000M	29.2	-33.7 +0.9 +0.0	+31.9 +0.5 +0.0	+9.8 +0.6 +0.0	+3.8 +0.0 +0.0	+0.0	43.0	54.0	-11.0	Vert/
^	4576.000M	40.3	-33.7 +0.9 +0.0	+31.9 +0.5 +0.0	+9.8 +0.6 +0.0	+3.8 +0.0 +0.0	+0.0	54.1	54.0	+0.1	Vert/
7	6406.420M	41.0	-34.2 +1.1 +0.0	+34.6 +0.5 +0.0	+10.0 +0.5 +0.0	+5.3 +0.0 +0.0	+0.0	58.8	111.4	-52.6	Vert/
8	5559.820M	38.6	-33.7 +1.0 +0.0	+33.7 +0.5 +0.0	+9.8 +0.4 +0.0	+4.4 +0.0 +0.0	+0.0	54.7	111.4	-56.7	Vert/
9	1804.560M	48.3	-34.8 +0.5 +0.0	+26.1 +0.2 +0.0	+10.0 +0.5 +0.0	+2.3 +0.0 +0.0	+0.0	53.1	111.4	-58.3	Vert/
10	302.600M	25.2	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0 +0.0 +1.1	+0.9 +13.2 +0.0	+0.0	47.1	111.4	-64.3	Vert/
11	83.400M	30.9	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.5	+0.5 +6.8 +0.0	+0.0	44.9	111.4	-66.5	Vert/
12	58.100M	27.9	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.4	+0.4 +7.6 +0.0	+0.0	42.5	111.4	-68.9	Vert/
13	25.284M	16.2	+0.0 +0.1 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +6.4	-40.0	-17.0	111.4	-128.4	Vert/
14	132.516k	36.4	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +9.5	-80.0	-34.1	111.4	-145.5	Vert/

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 14:55:26
 Tested By: Matt Harrison Sequence#: 3
 Software: EMITest 5.03.19

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

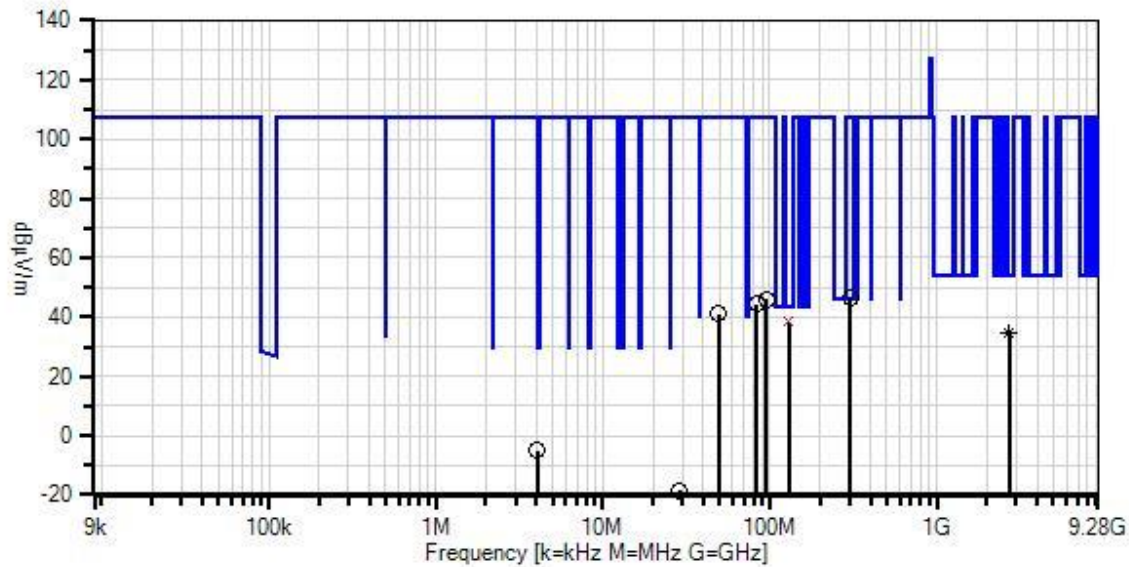
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Test Environment Conditions: Temperature: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 9kHz-9.28GHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported. OFDM FHSS Modulation
--

Ittron, Inc. W/O#: 104631 Sequence#: 3 Date: 1/7/2021
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Vert/Horz



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

○ Peak Readings
* Average Readings
Software Version: 5.03.19

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T1	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T2	AN01467	Horn Antenna- ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T3	ANP06243	Attenuator	54A-10	1/27/2020	1/27/2022
T4	ANP06515	Cable	Heliac	7/1/2020	7/1/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	ANP07505	Cable	CLU40-KMKM- 02.00F	1/17/2019	1/17/2021
T7	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T8	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T9	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T10	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T11	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T12	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist.	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	129.776M	22.7	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.6 +8.0 +0.0	+0.0	38.3	43.5	-5.2	Vert/
^	129.776M	26.1	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.7	+0.6 +8.0 +0.0	+0.0	41.7	43.5	-1.8	Vert/
3	2707.200M	26.2	-34.1 +0.7 +0.0	+28.3 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	34.7	54.0	-19.3	Vert/
^	2707.200M	41.0	-34.1 +0.7 +0.0	+28.3 +0.3 +0.0	+10.0 +0.4 +0.0	+2.9 +0.0 +0.0	+0.0	49.5	54.0	-4.5	Vert/
5	302.600M	24.9	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0 +0.0 +1.1	+0.9 +13.2 +0.0	+0.0	46.8	107.3	-60.5	Vert/
6	96.000M	30.9	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0 +0.0 +0.6	+0.5 +7.7 +0.0	+0.0	46.0	107.3	-61.3	Vert/
7	83.400M	30.2	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.5	+0.5 +6.8 +0.0	+0.0	44.2	107.3	-63.1	Vert/
8	49.400M	26.6	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0 +0.0 +0.4	+0.4 +7.6 +0.0	+0.0	41.2	107.3	-66.1	Vert/
9	4.060M	25.7	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +9.3	-40.0	-4.9	107.3	-112.2	Vert/
10	28.687M	16.3	+0.0 +0.1 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +4.8	-40.0	-18.5	107.3	-125.8	Vert/
11	22.113k	46.5	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +12.3	-80.0	-21.2	107.3	-128.5	Vert/

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	FSK	Omnidirectional / 2.6dBi	39.8	<46	Pass
902	FSK	Omnidirectional / 2.6dBi	88.9	< 110.8	Pass
928	FSK	Omnidirectional / 2.6dBi	75.2	< 110.8	Pass
960	FSK	Omnidirectional / 2.6dBi	46.3	<54	Pass
614	GFSK	Omnidirectional / 2.6dBi	39.6	<46	Pass
902	GFSK	Omnidirectional / 2.6dBi	93.3	< 111.4	Pass
928	GFSK	Omnidirectional / 2.6dBi	93.3	< 111.4	Pass
960	GFSK	Omnidirectional / 2.6dBi	47.2	<54	Pass
614	OFDM	Omnidirectional / 2.6dBi	39.5	<46	Pass
902	OFDM	Omnidirectional / 2.6dBi	91.7	< 107.3	Pass
928	OFDM	Omnidirectional / 2.6dBi	95.4	< 107.3	Pass
960	OFDM	Omnidirectional / 2.6dBi	46.1	<54	Pass

Note: All modulations and baud rates were checked, worst case provided.

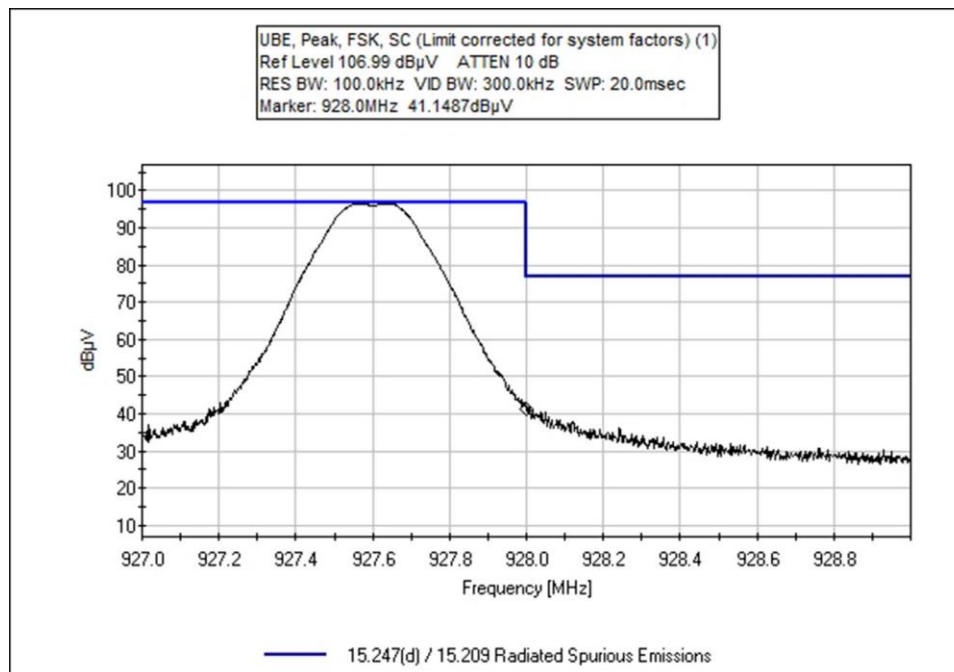
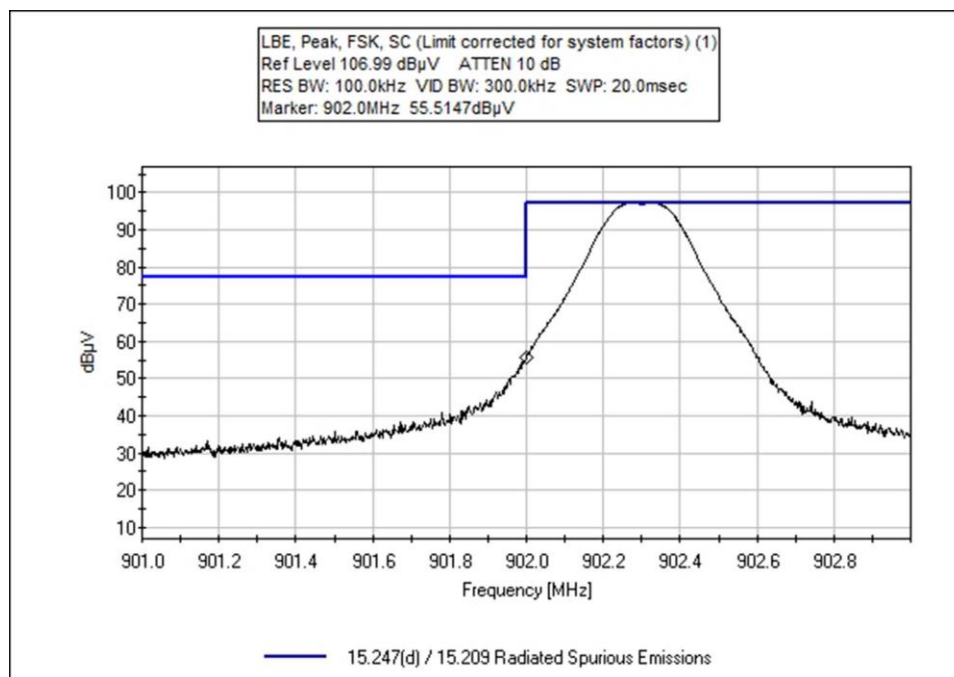
Band Edge Summary

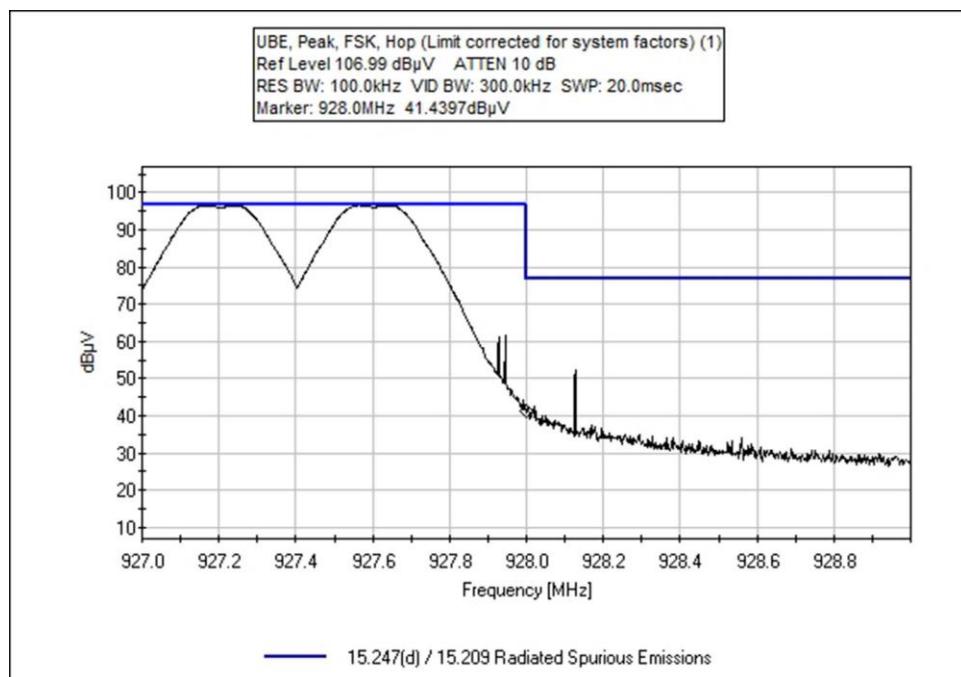
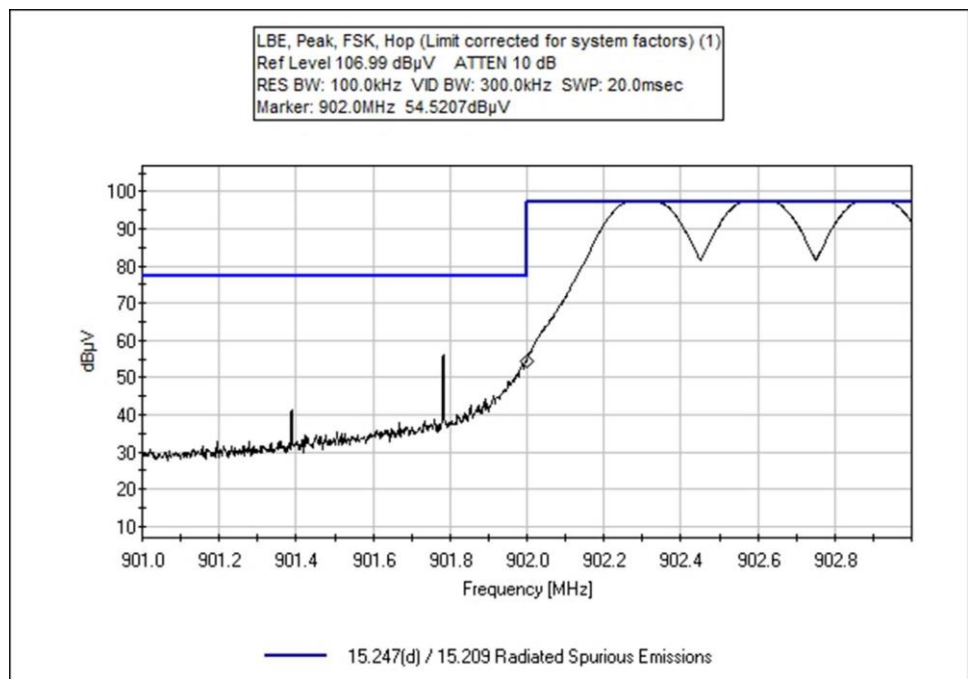
Operating Mode: Hopping

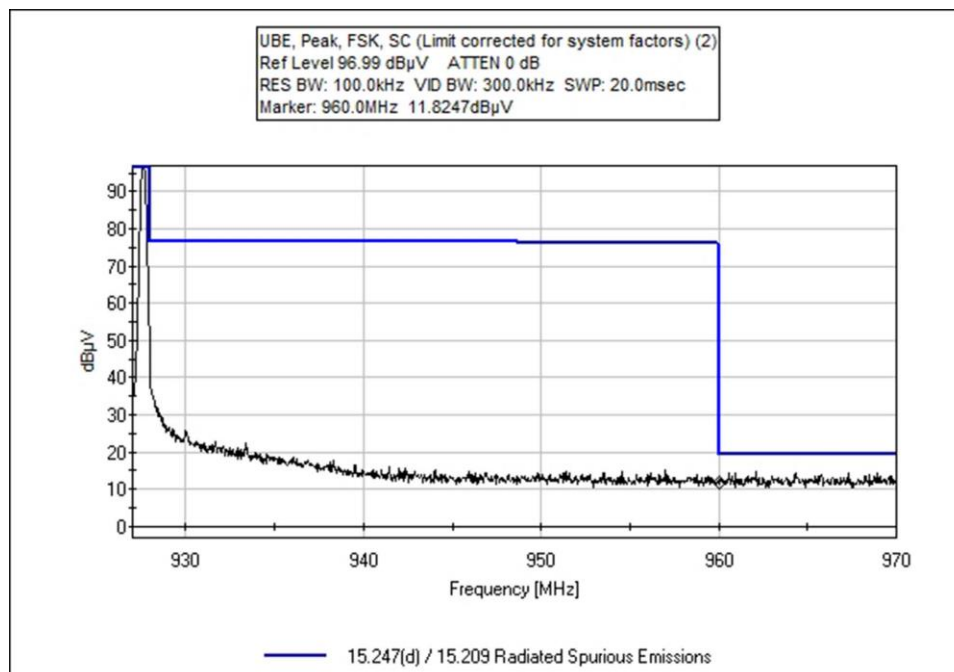
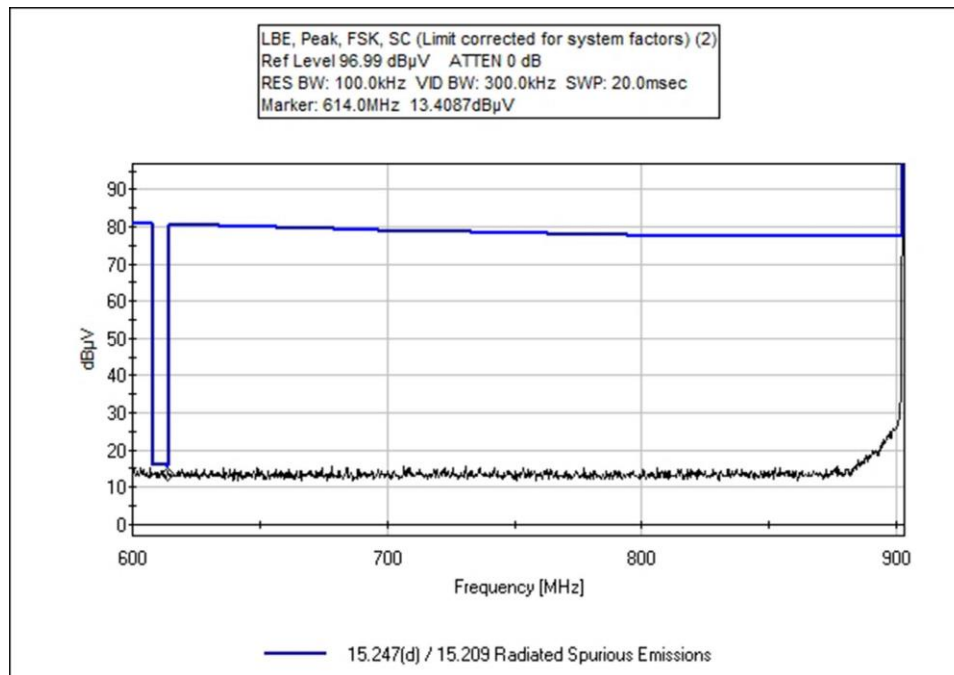
Frequency (MHz)	Modulation	Ant. Type	Field Strength (dBuV/m @3m)	Limit (dBuV/m @3m)	Results
614	FSK	Omnidirectional / 2.6dBi	39.6	<46	Pass
902	FSK	Omnidirectional / 2.6dBi	87.9	< 110.8	Pass
928	FSK	Omnidirectional / 2.6dBi	75.5	< 110.8	Pass
960	FSK	Omnidirectional / 2.6dBi	39.7	<54	Pass
614	GFSK	Omnidirectional / 2.6dBi	44.8	<46	Pass
902	GFSK	Omnidirectional / 2.6dBi	92.1	< 111.4	Pass
928	GFSK	Omnidirectional / 2.6dBi	93.5	< 111.4	Pass
960	GFSK	Omnidirectional / 2.6dBi	47.9	<54	Pass
614	OFDM	Omnidirectional / 2.6dBi	44	<46	Pass
902	OFDM	Omnidirectional / 2.6dBi	89.6	< 107.3	Pass
928	OFDM	Omnidirectional / 2.6dBi	93	< 107.3	Pass
960	OFDM	Omnidirectional / 2.6dBi	48.2	<54	Pass

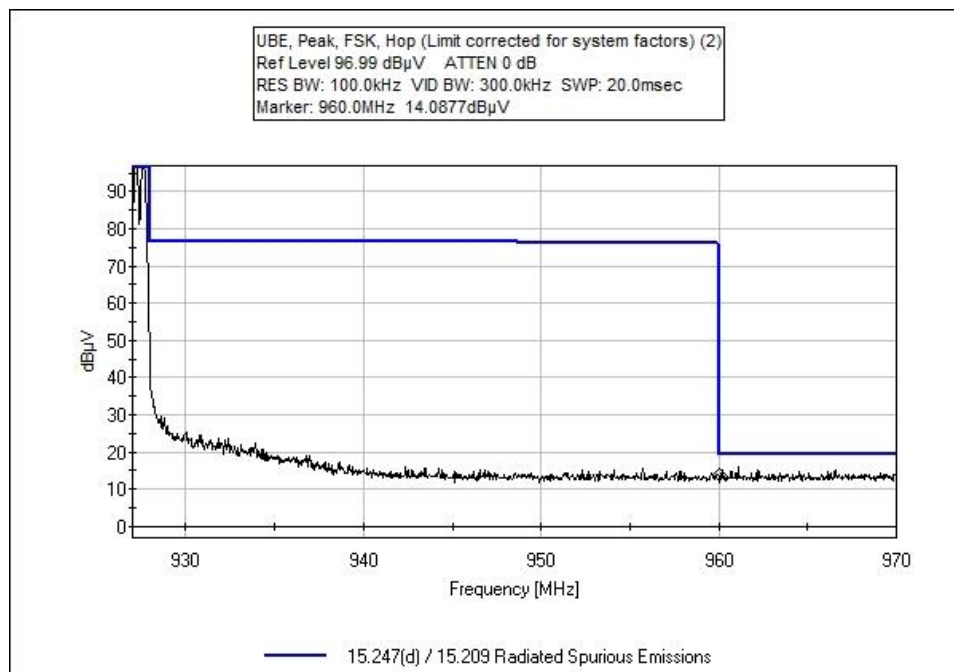
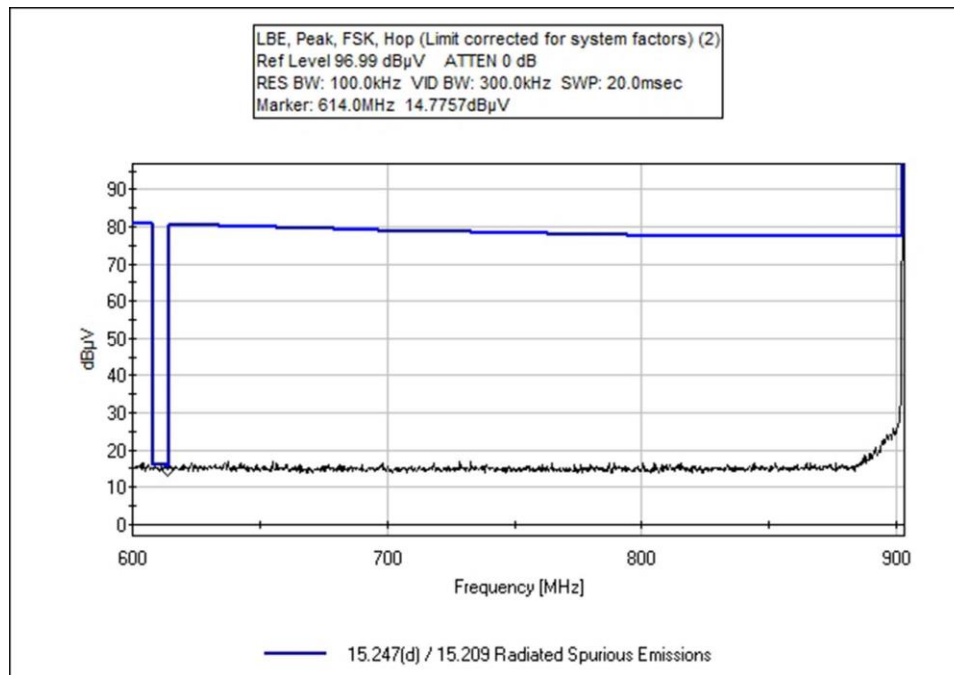
Note: All modulations and baud rates were checked, worst case provided.

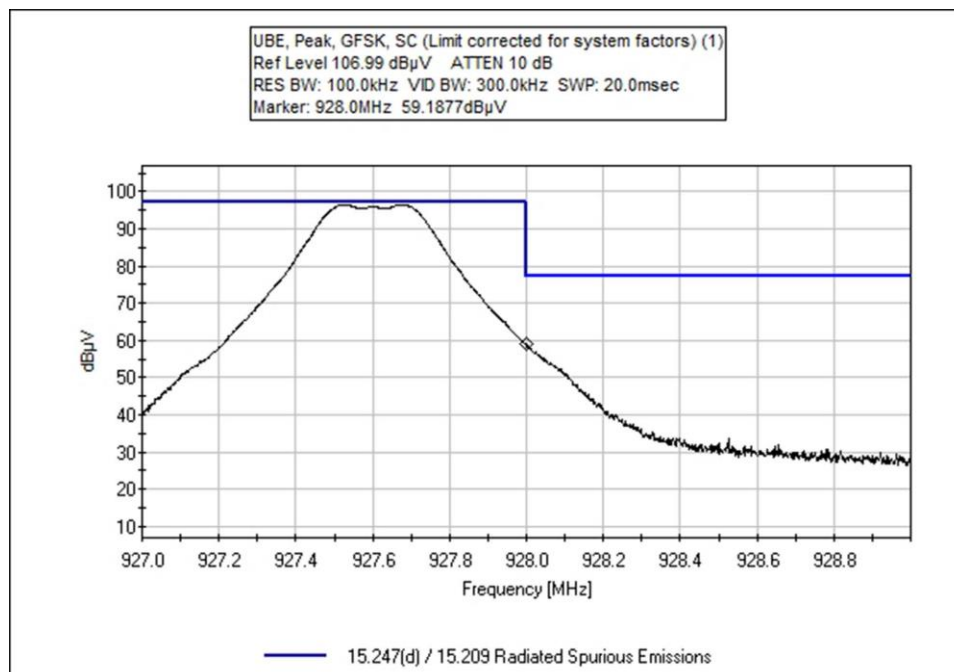
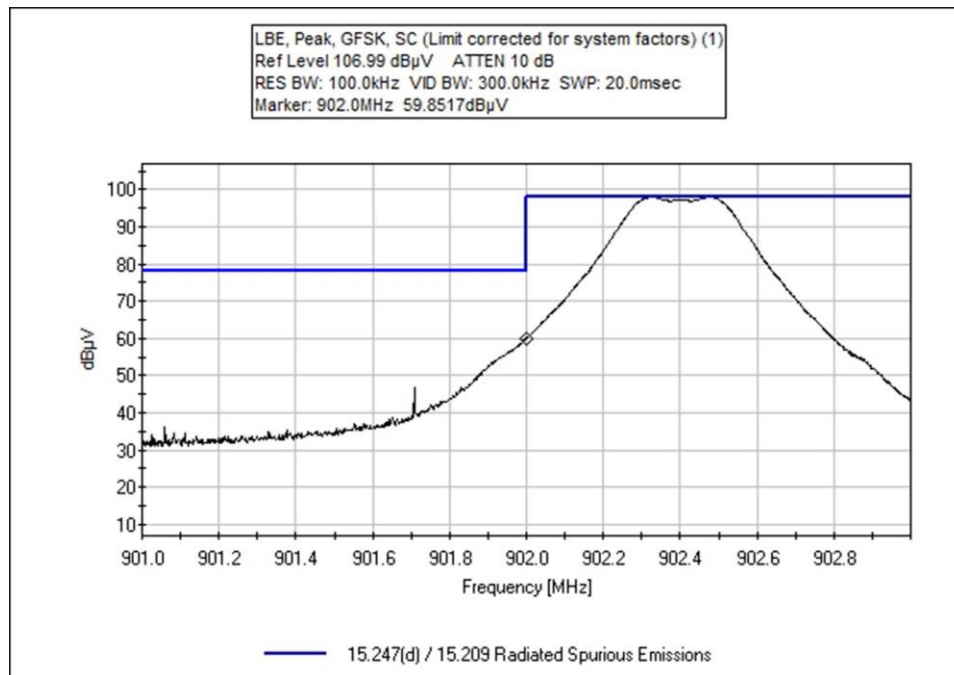
Band Edge Plots

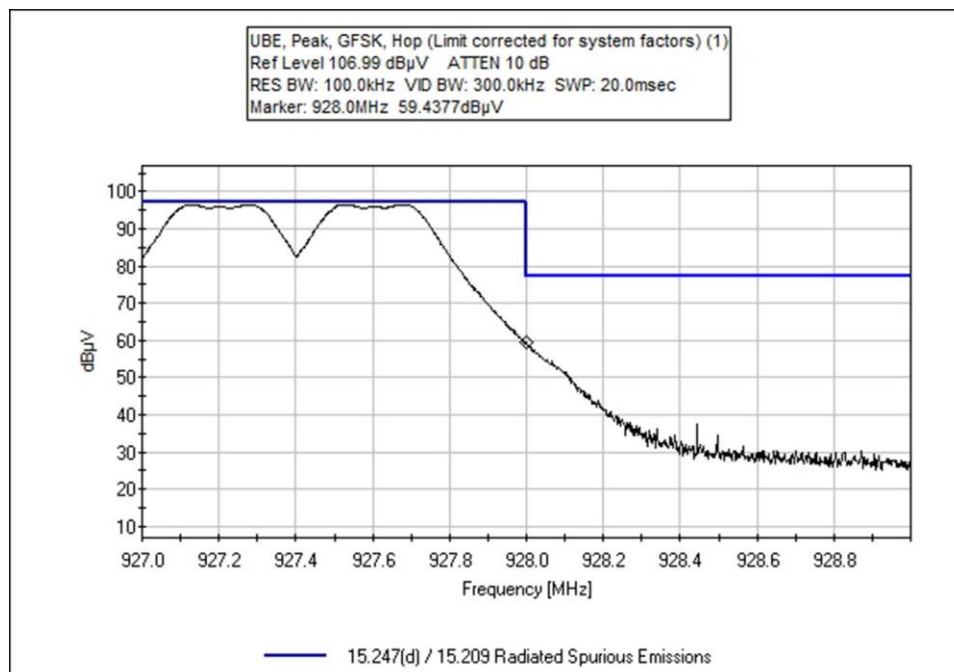
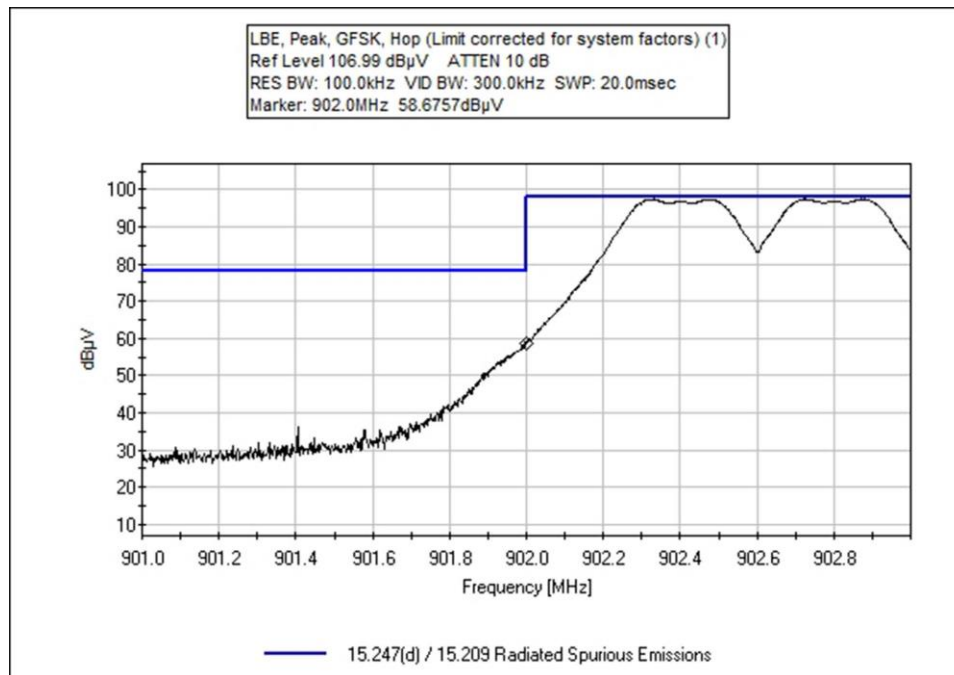


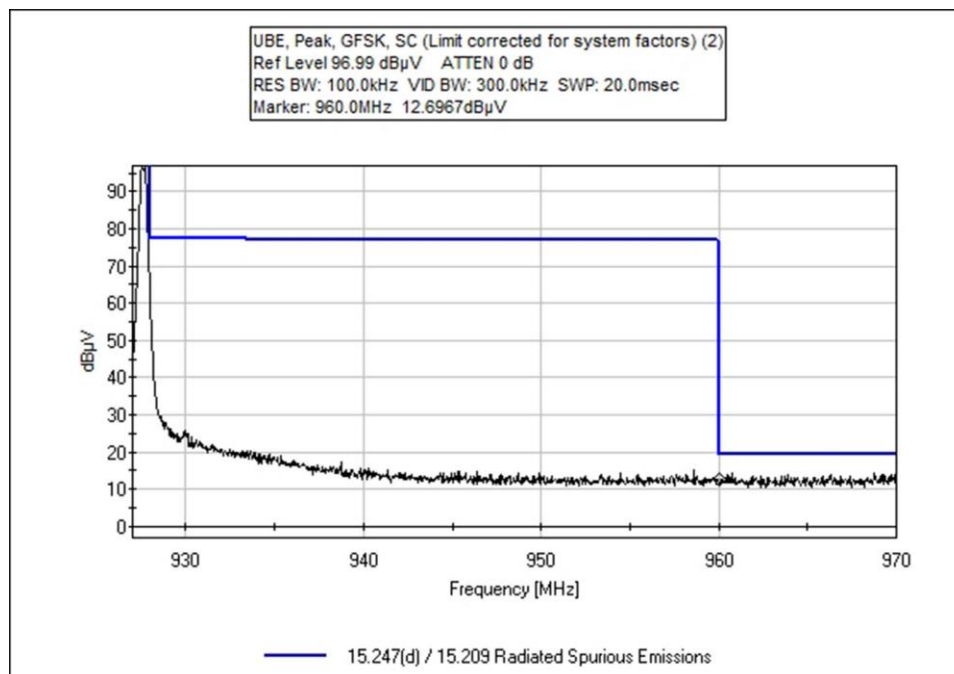
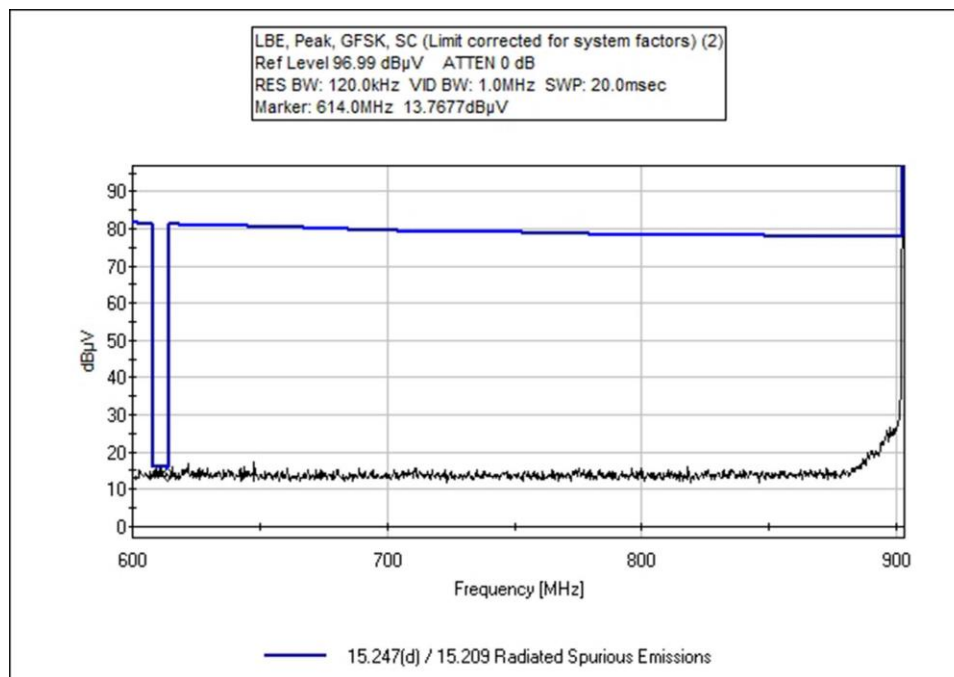


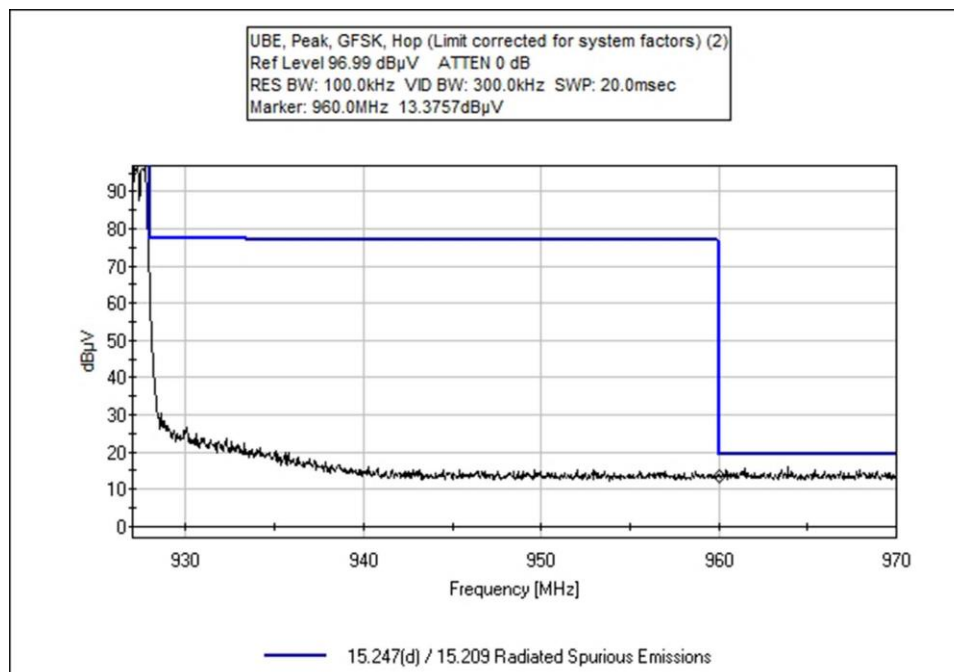
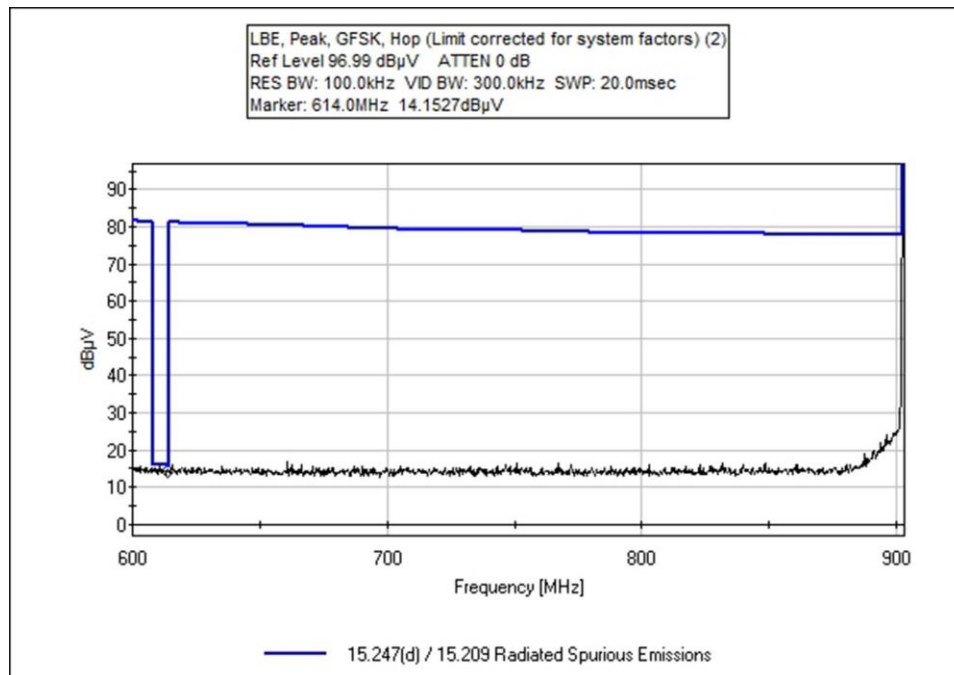


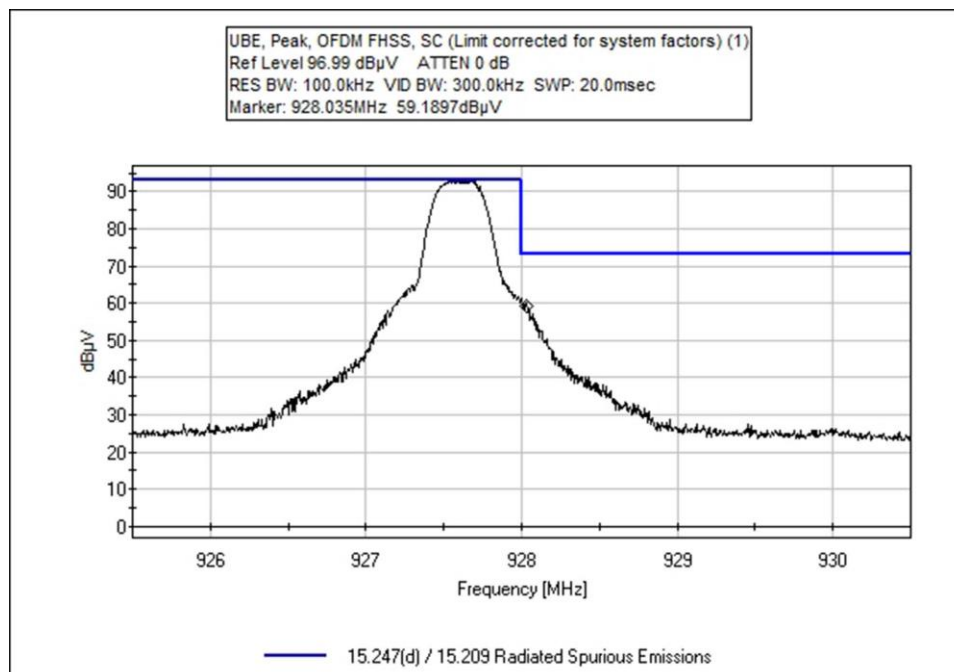
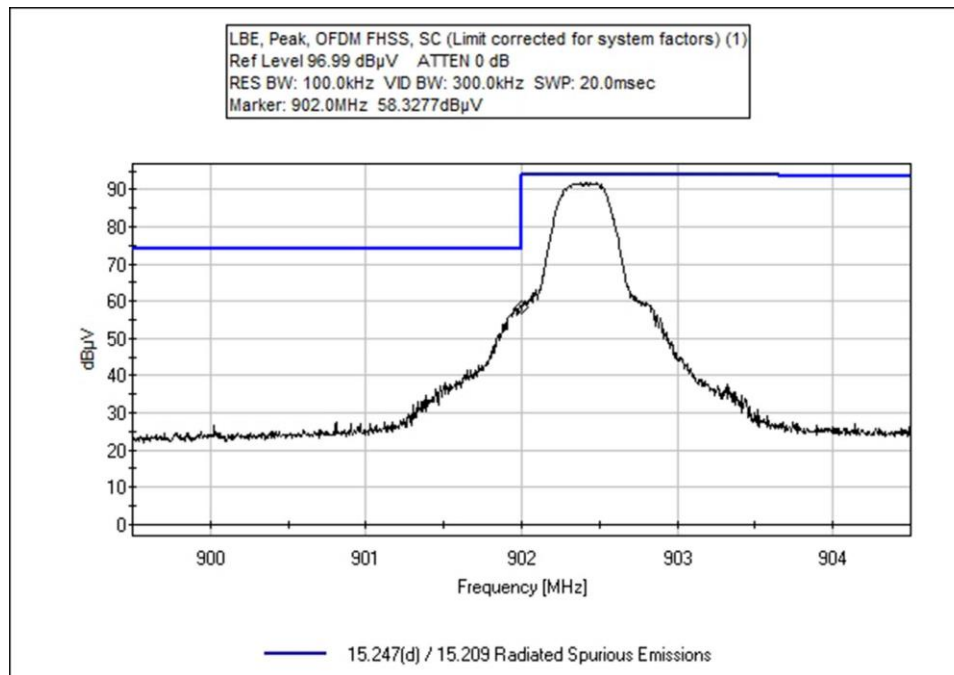


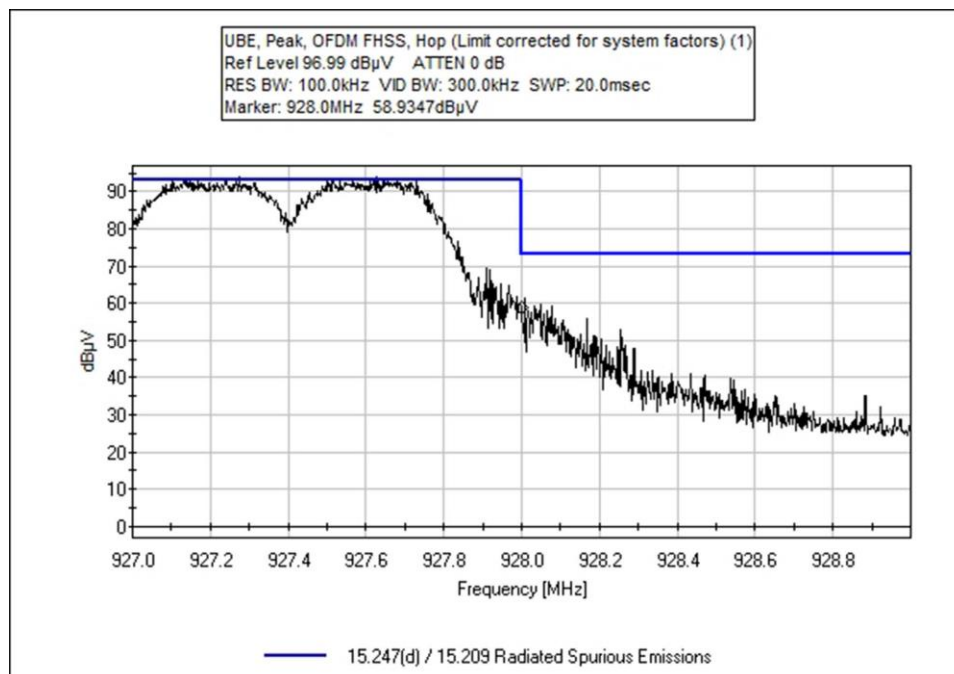
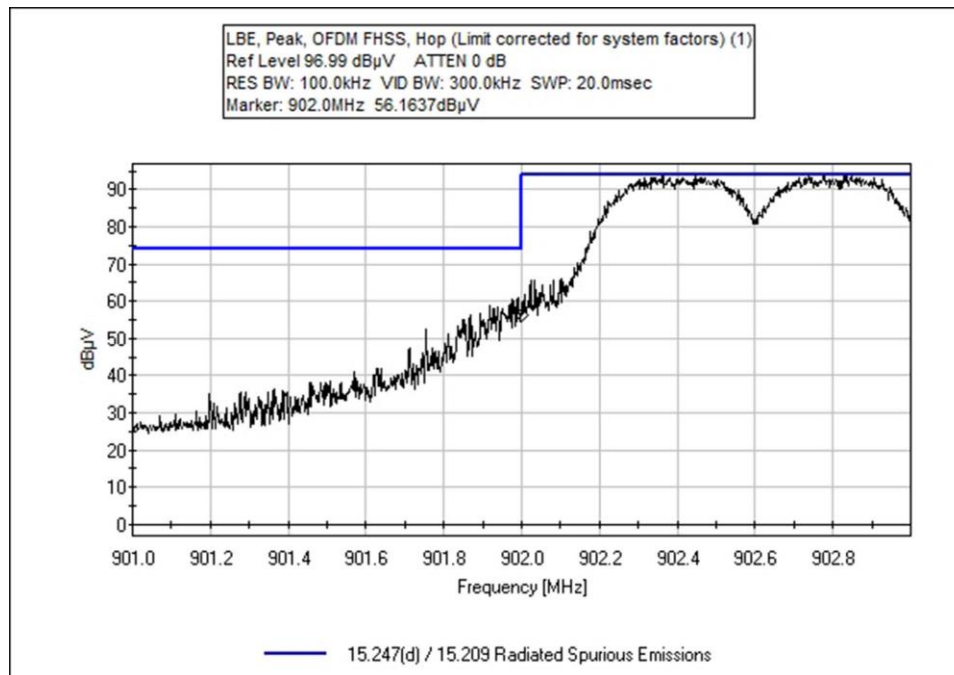


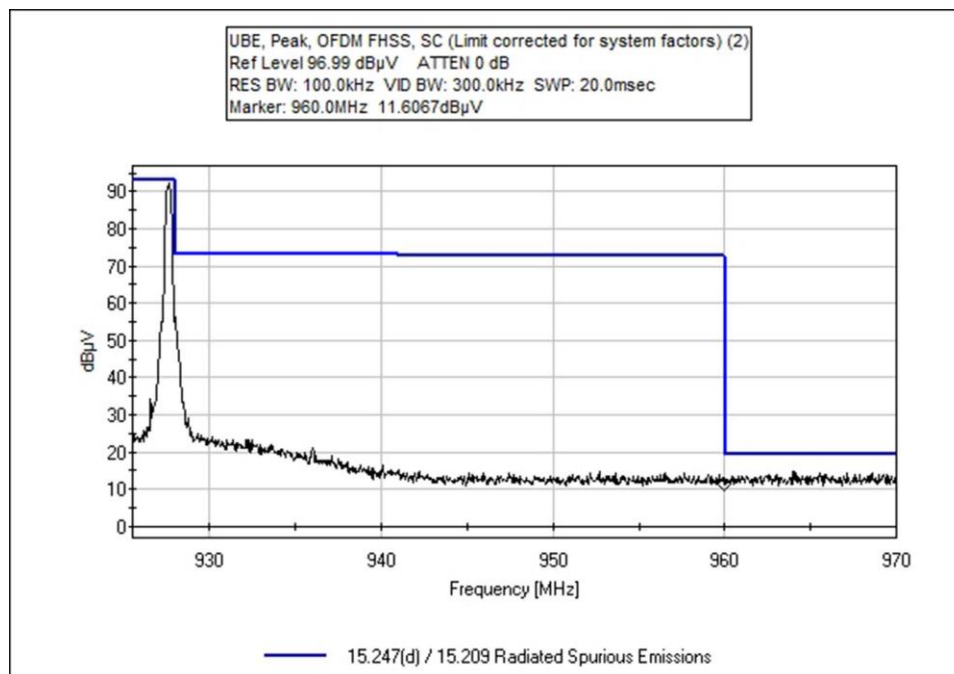
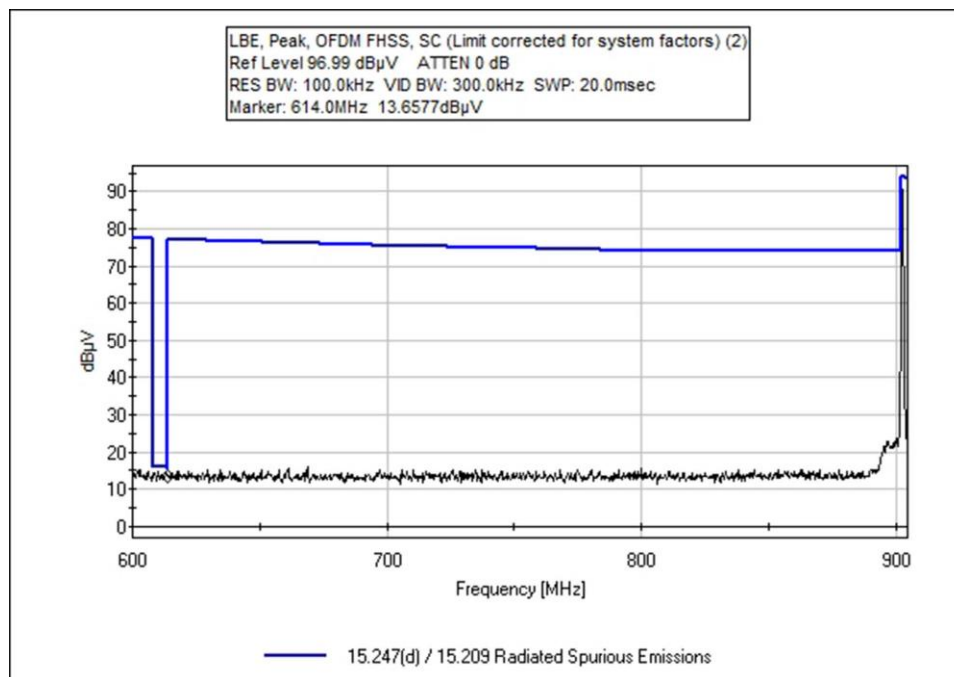


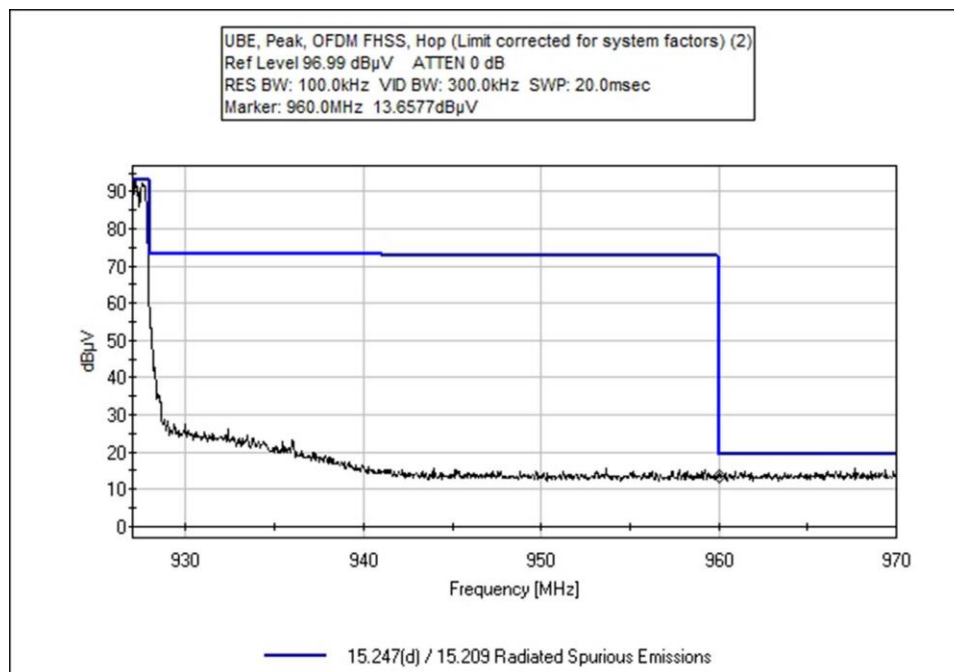
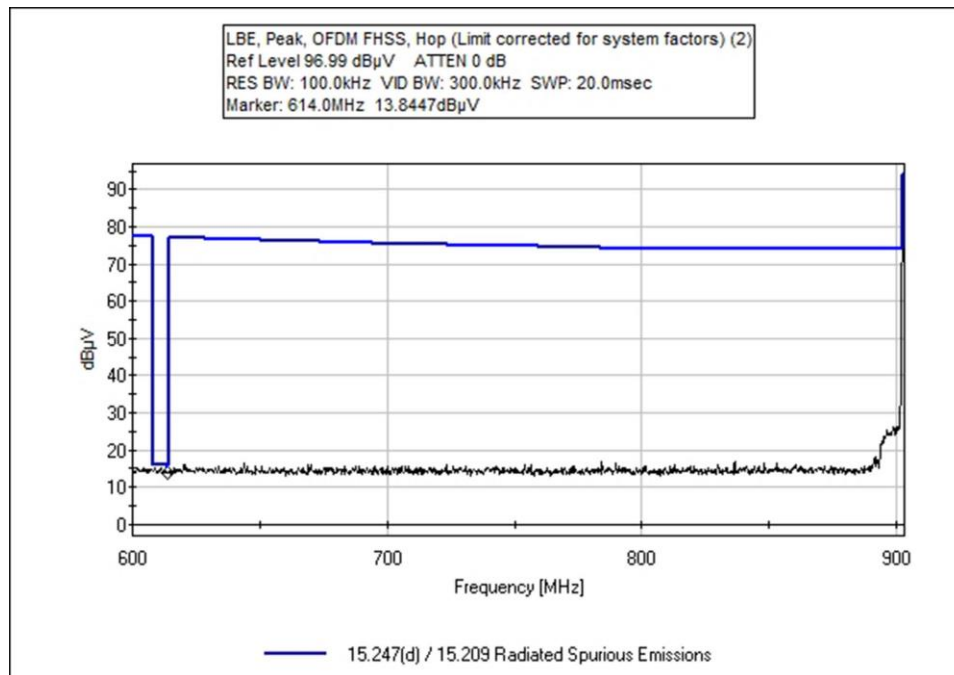












Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 11:53:59
 Tested By: Matt Harrison Sequence#: 6
 Software: EMITest 5.03.19

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: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 600-970MHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.
--

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T2	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T3	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist.	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	927.685M	93.2	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	127.3	127.3 HopSC	+0.0	Vert/
2	960.000M	13.7	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	48.2	54.0 Hop	-5.8	Vert/
3	614.000M QP	9.4	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	39.6	46.0 Hop	-6.4	Vert/
4	614.000M QP	9.3	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	39.5	46.0 SC	-6.5	Vert/
^	614.000M	13.8	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	44.0	46.0 Hop	-2.0	Vert/
^	614.000M	13.7	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	43.9	46.0 SC	-2.1	Vert/
7	960.000M	11.6	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	46.1	54.0 SC	-7.9	Vert/
8	928.000M	61.3	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	95.4	107.3 SC	-11.9	Vert/
9	928.000M	58.9	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	93.0	107.3 Hop	-14.3	Vert/
10	902.000M	58.3	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	91.7	107.3 SC	-15.6	Vert/
11	902.000M	56.2	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	89.6	107.3 Hop	-17.7	Vert/

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 09:44:28
 Tested By: Matt Harrison Sequence#: 14
 Software: EMITest 5.03.19

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: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 600-970MHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.
--

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T2	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T3	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist.	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	902.326M	98.0	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	131.4	131.4	+0.0	Vert/
2	960.000M	13.4	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	47.9	54.0 Hop	-6.1	Vert/
3	614.000M QP	9.4	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	39.6	46.0 SC	-6.4	Vert/
^	614.000M	14.6	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	44.8	46.0 Hop	-1.2	Vert/
^	614.000M	13.8	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	44.0	46.0 SC	-2.0	Vert/
6	960.000M	12.7	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	47.2	54.0 SC	-6.8	Vert/
7	928.000M	59.4	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	93.5	111.4 Hop	-17.9	Vert/
8	902.000M	59.9	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	93.3	111.4 SC	-18.1	Vert/
9	928.000M	59.2	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	93.3	111.4 SC	-18.1	Vert/
10	902.000M	58.7	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	92.1	111.4 Hop	-19.3	Vert/

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Radiated Scan** Time: 11:16:07
 Tested By: Matt Harrison Sequence#: 15
 Software: EMITest 5.03.19

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: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 600-970MHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.
--

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T2	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T3	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T6	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist.	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	902.274M	97.4	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	130.8	130.8	+0.0	Vert/
2	960.000M	14.1	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	48.6	54.0 Hop	-5.4	Vert/
3	614.000M QP	9.4	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	39.6	46.0 Hop	-6.4	Vert/
^	614.000M	14.8	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	45.0	46.0 Hop	-1.0	Vert/
^	614.000M	13.4	+21.2 +0.3	+5.8 +0.0	+1.2	+1.7	+0.0	43.6	46.0 SC	-2.4	Vert/
6	960.000M	11.8	+24.6 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	46.3	54.0 SC	-7.7	Vert/
7	902.000M	55.5	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	88.9	110.8 SC	-21.9	Vert/
8	902.000M	54.5	+23.8 +0.3	+5.8 +0.0	+1.4	+2.1	+0.0	87.9	110.8 Hop	-22.9	Vert/
9	928.000M	41.4	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	75.5	110.8 Hop	-35.3	Vert/
10	928.000M	41.1	+24.2 +0.4	+5.8 +0.0	+1.5	+2.2	+0.0	75.2	110.8 SC	-35.6	Vert/

Test Setup Photo(s)



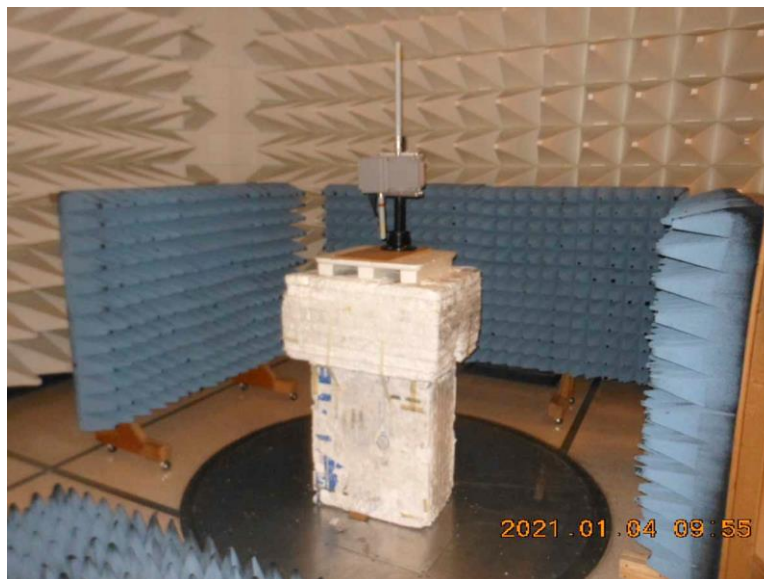
Below 1GHz



Below 1GHz



Above 1GHz



Above 1GHz

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Conducted Emissions** Time: 15:32:38
 Tested By: Matt Harrison Sequence#: 16
 Software: EMITest 5.03.19 120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

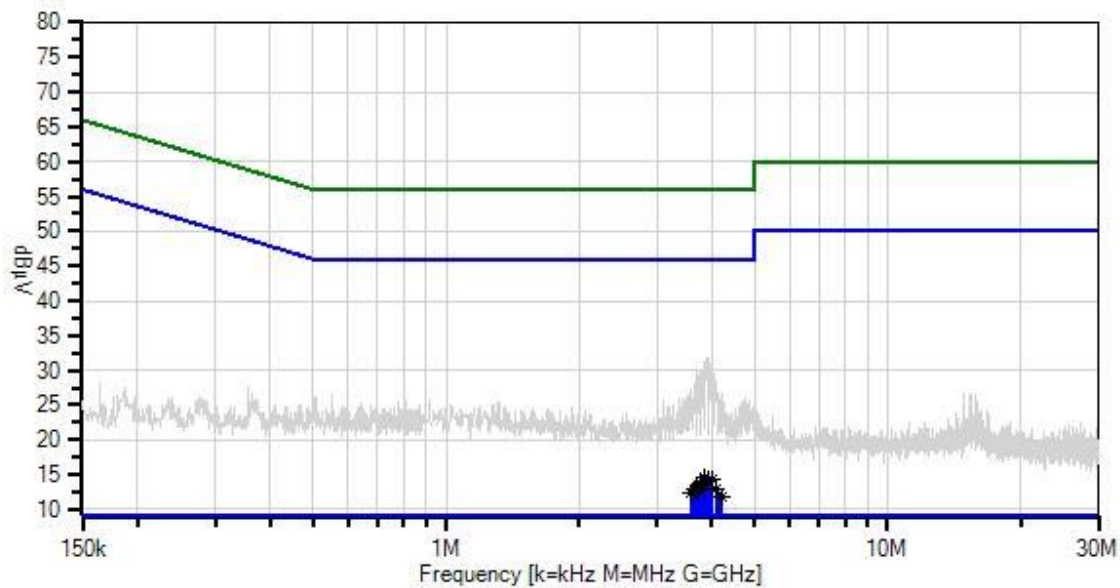
Test Environment Conditions:
 Temperature: 23°C
 Relative Humidity: 41%
 Atmospheric Pressure: 101.6kPa

 Test Method: ANSI C63.10 (2013)

 Frequency Range: 600-970MHz

 Test Setup:
 The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.

Itron, Inc. WO#: 104631 Sequence#: 16 Date: 1/7/2021
15.207 AC Mains - Average Test Lead: 120V 60Hz Line



— Sweep Data
× QP Readings
Software Version: 5.03.19
— Readings
* Average Readings
— 1 - 15.207 AC Mains - Average
○ Peak Readings
▼ Ambient
— 2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T2	ANP06515	Cable	Heliac	7/1/2020	7/1/2022
T3	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
T4	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022

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	3.837M	5.5	+9.1	+0.1	+0.0	-0.3	+0.0	14.5	46.0	-31.5	Line
Ave			+0.1								
^	3.837M	22.0	+9.1	+0.1	+0.0	-0.3	+0.0	31.0	46.0	-15.0	Line
			+0.1								
3	3.943M	5.4	+9.1	+0.1	+0.0	-0.3	+0.0	14.4	46.0	-31.6	Line
Ave			+0.1								
^	3.943M	22.0	+9.1	+0.1	+0.0	-0.3	+0.0	31.0	46.0	-15.0	Line
			+0.1								
5	3.999M	5.4	+9.1	+0.1	+0.0	-0.3	+0.0	14.4	46.0	-31.6	Line
Ave			+0.1								
^	3.999M	21.7	+9.1	+0.1	+0.0	-0.3	+0.0	30.7	46.0	-15.3	Line
			+0.1								
7	3.905M	5.3	+9.1	+0.1	+0.0	-0.3	+0.0	14.3	46.0	-31.7	Line
Ave			+0.1								
^	3.905M	22.9	+9.1	+0.1	+0.0	-0.3	+0.0	31.9	46.0	-14.1	Line
			+0.1								
9	3.922M	5.0	+9.1	+0.1	+0.0	-0.3	+0.0	14.0	46.0	-32.0	Line
Ave			+0.1								
^	3.922M	20.0	+9.1	+0.1	+0.0	-0.3	+0.0	29.0	46.0	-17.0	Line
			+0.1								
11	3.786M	4.9	+9.1	+0.1	+0.0	-0.3	+0.0	13.9	46.0	-32.1	Line
Ave			+0.1								
^	3.786M	20.9	+9.1	+0.1	+0.0	-0.3	+0.0	29.9	46.0	-16.1	Line
			+0.1								
13	3.761M	4.5	+9.1	+0.1	+0.0	-0.3	+0.0	13.5	46.0	-32.5	Line
Ave			+0.1								
^	3.761M	21.0	+9.1	+0.1	+0.0	-0.3	+0.0	30.0	46.0	-16.0	Line
			+0.1								
15	3.731M	4.0	+9.1	+0.1	+0.0	-0.3	+0.0	13.0	46.0	-33.0	Line
Ave			+0.1								
^	3.731M	20.2	+9.1	+0.1	+0.0	-0.3	+0.0	29.2	46.0	-16.8	Line
			+0.1								
17	4.092M	4.0	+9.1	+0.1	+0.0	-0.4	+0.0	12.9	46.0	-33.1	Line
Ave			+0.1								
^	4.092M	19.6	+9.1	+0.1	+0.0	-0.4	+0.0	28.5	46.0	-17.5	Line
			+0.1								
19	3.710M	3.8	+9.1	+0.1	+0.0	-0.3	+0.0	12.8	46.0	-33.2	Line
Ave			+0.1								
^	3.710M	18.6	+9.1	+0.1	+0.0	-0.3	+0.0	27.6	46.0	-18.4	Line
			+0.1								
21	3.650M	3.8	+9.1	+0.1	+0.0	-0.3	+0.0	12.8	46.0	-33.2	Line
Ave			+0.1								
^	3.650M	19.0	+9.1	+0.1	+0.0	-0.3	+0.0	28.0	46.0	-18.0	Line
			+0.1								
23	3.680M	3.7	+9.1	+0.1	+0.0	-0.3	+0.0	12.7	46.0	-33.3	Line
Ave			+0.1								
^	3.680M	19.5	+9.1	+0.1	+0.0	-0.3	+0.0	28.5	46.0	-17.5	Line
			+0.1								

25	3.693M	3.6	+9.1	+0.1	+0.0	-0.3	+0.0	12.6	46.0	-33.4	Line
Ave			+0.1								
^	3.693M	20.8	+9.1	+0.1	+0.0	-0.3	+0.0	29.8	46.0	-16.2	Line
			+0.1								
27	3.590M	3.4	+9.1	+0.1	+0.0	-0.3	+0.0	12.4	46.0	-33.6	Line
Ave			+0.1								
^	3.590M	18.2	+9.1	+0.1	+0.0	-0.3	+0.0	27.2	46.0	-18.8	Line
			+0.1								
29	4.211M	2.9	+9.1	+0.1	+0.0	-0.3	+0.0	11.9	46.0	-34.1	Line
Ave			+0.1								
^	4.211M	17.8	+9.1	+0.1	+0.0	-0.3	+0.0	26.8	46.0	-19.2	Line
			+0.1								

Test Location: CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)
 Customer: **Itron, Inc.**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **104631** Date: 1/7/2021
 Test Type: **Conducted Emissions** Time: 15:52:17
 Tested By: Matt Harrison Sequence#: 17
 Software: EMITest 5.03.19 120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

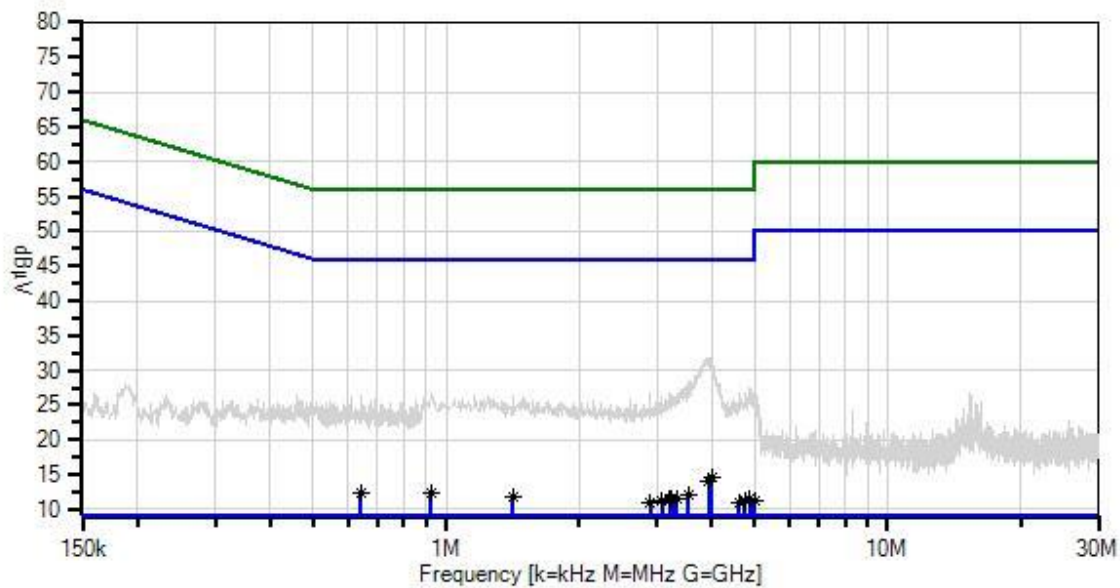
Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Temperature: 23°C Relative Humidity: 41% Atmospheric Pressure: 101.6kPa Test Method: ANSI C63.10 (2013) Frequency Range: 600-970MHz Test Setup: The equipment under test (EUT) is placed on the tabletop. The EUT is transmitting continuous wave at its rated output power. Low, Mid, High channels investigated, worst case reported. Horizontal and Vertical antenna polarities investigated above 30MHz, worst case reported. 3 x orthogonal axes investigated below 30MHz, worst case reported.
--

Itron, Inc. WD#: 104631 Sequence#: 17 Date: 1/7/2021
15.207 AC Mains - Average Test Lead: 120V 60Hz Neutral



— Sweep Data
× QP Readings
Software Version: 5.03.19
— Readings
* Average Readings
— 1 - 15.207 AC Mains - Average
○ Peak Readings
▼ Ambient
— 2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/7/2020	4/7/2022
T2	ANP06515	Cable	Heliac	7/1/2020	7/1/2022
T3	ANP06540	Cable	Heliac	8/23/2019	8/23/2021
	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
T4	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022

Measurement Data:

Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist. Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	3.994M	5.5	+9.1	+0.1	+0.0	-0.3	+0.0	14.5	46.0	-31.5	Neutr
	Ave		+0.1								
^	3.994M	22.8	+9.1	+0.1	+0.0	-0.3	+0.0	31.8	46.0	-14.2	Neutr
			+0.1								
3	3.926M	5.1	+9.1	+0.1	+0.0	-0.3	+0.0	14.1	46.0	-31.9	Neutr
	Ave		+0.1								
^	3.926M	22.9	+9.1	+0.1	+0.0	-0.3	+0.0	31.9	46.0	-14.1	Neutr
			+0.1								
5	641.590k	3.5	+9.1	+0.0	+0.0	-0.4	+0.0	12.5	46.0	-33.5	Neutr
	Ave		+0.3								
^	641.590k	17.3	+9.1	+0.0	+0.0	-0.4	+0.0	26.3	46.0	-19.7	Neutr
			+0.3								
7	923.985k	3.3	+9.1	+0.0	+0.0	-0.3	+0.0	12.3	46.0	-33.7	Neutr
	Ave		+0.2								
^	923.984k	17.8	+9.1	+0.0	+0.0	-0.3	+0.0	26.8	46.0	-19.2	Neutr
			+0.2								
9	3.544M	3.1	+9.1	+0.1	+0.0	-0.3	+0.0	12.1	46.0	-33.9	Neutr
	Ave		+0.1								
^	3.544M	19.5	+9.1	+0.1	+0.0	-0.3	+0.0	28.5	46.0	-17.5	Neutr
			+0.1								
11	1.417M	2.7	+9.1	+0.0	+0.0	-0.3	+0.0	11.7	46.0	-34.3	Neutr
	Ave		+0.2								
^	1.417M	17.4	+9.1	+0.0	+0.0	-0.3	+0.0	26.4	46.0	-19.6	Neutr
			+0.2								
13	3.216M	2.6	+9.1	+0.1	+0.0	-0.3	+0.0	11.6	46.0	-34.4	Neutr
	Ave		+0.1								
^	3.216M	17.7	+9.1	+0.1	+0.0	-0.3	+0.0	26.7	46.0	-19.3	Neutr
			+0.1								
15	3.327M	2.6	+9.1	+0.1	+0.0	-0.3	+0.0	11.6	46.0	-34.4	Neutr
	Ave		+0.1								
^	3.327M	17.7	+9.1	+0.1	+0.0	-0.3	+0.0	26.7	46.0	-19.3	Neutr
			+0.1								
17	3.237M	2.6	+9.1	+0.1	+0.0	-0.3	+0.0	11.6	46.0	-34.4	Neutr
	Ave		+0.1								
^	3.237M	17.4	+9.1	+0.1	+0.0	-0.3	+0.0	26.4	46.0	-19.6	Neutr
			+0.1								
19	4.862M	2.6	+9.1	+0.1	+0.0	-0.4	+0.0	11.5	46.0	-34.5	Neutr
	Ave		+0.1								
^	4.862M	18.6	+9.1	+0.1	+0.0	-0.4	+0.0	27.5	46.0	-18.5	Neutr
			+0.1								
21	3.084M	2.3	+9.1	+0.1	+0.0	-0.3	+0.0	11.3	46.0	-34.7	Neutr
	Ave		+0.1								
^	3.084M	17.3	+9.1	+0.1	+0.0	-0.3	+0.0	26.3	46.0	-19.7	Neutr
			+0.1								
23	4.751M	2.4	+9.1	+0.1	+0.0	-0.4	+0.0	11.3	46.0	-34.7	Neutr
	Ave		+0.1								
^	4.751M	17.9	+9.1	+0.1	+0.0	-0.4	+0.0	26.8	46.0	-19.2	Neutr
			+0.1								

25	4.990M	2.3	+9.1	+0.1	+0.0	-0.4	+0.0	11.2	46.0	-34.8	Neutr
Ave			+0.1								
^	4.990M	18.0	+9.1	+0.1	+0.0	-0.4	+0.0	26.9	46.0	-19.1	Neutr
			+0.1								
27	2.902M	2.1	+9.1	+0.1	+0.0	-0.3	+0.0	11.1	46.0	-34.9	Neutr
Ave			+0.1								
^	2.902M	17.7	+9.1	+0.1	+0.0	-0.3	+0.0	26.7	46.0	-19.3	Neutr
			+0.1								
29	4.607M	2.2	+9.1	+0.1	+0.0	-0.4	+0.0	11.1	46.0	-34.9	Neutr
Ave			+0.1								
^	4.607M	17.8	+9.1	+0.1	+0.0	-0.4	+0.0	26.7	46.0	-19.3	Neutr
			+0.1								

Test Setup Photo(s)



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

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

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

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

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

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

Peak

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

Quasi-Peak

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

Average

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