Itron, Inc.

TEST REPORT FOR

Gas Endpoint
Model: Intelis-Gas

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.247
(FHSS 902-928 MHz)

Report No.: 105334-5

Date of issue: May 6, 2021

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

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Jay Holcomb
Customer Reference Number: 235535

REPORT PREPARED BY:

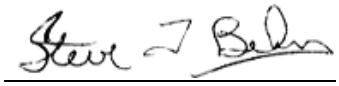
Terri Rayle
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 105334

DATE OF EQUIPMENT RECEIPT: April 8, 2021
DATE(S) OF TESTING: April 8-13 and 22, 2021

Report Authorization

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



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

Test Facility Information

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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.19

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	NP
15.247(a)(1)(i)	Number of Hopping Channels	NA	NP
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	NA1
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted Emissions	NA	NA2

NA = Not Applicable
NA1 = The manufacturer declares the EUT has an integral antenna (temporary antenna port provided for power and OBW measurements only per manufacturer).
NA2 = The manufacturer declares the EUT is battery powered.
NP = CKC Laboratories was not contracted to perform test.

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

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

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

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

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
Gas Endpoint	Itron, Inc.	Intelis-Gas	105334-cond

Support Equipment:

Device	Manufacturer	Model #	S/N
Power Supply	Maxtra	MA-305D	P07354
Laptop	HP	14-dq1033cl	NA
AC Adapter (for Laptop)	HP	L25296-002	NA
USB Hub	Insignia	NS-PCH5420	NA
USB Interface Board	Itron, Inc.	PCB-TEMP-0007 Rev3	NA

Configuration 2

Equipment Tested:

Device	Manufacturer	Model #	S/N
Gas Endpoint	Itron, Inc.	Intelis-Gas	105334-rad

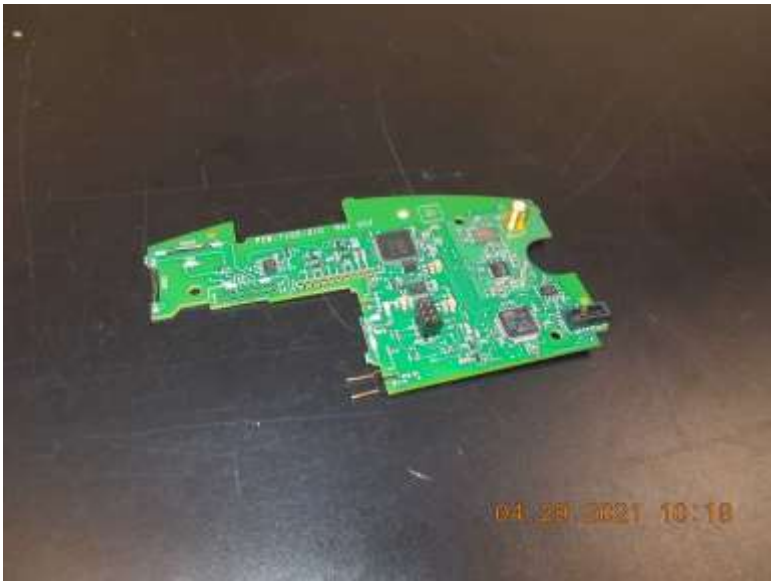
Support Equipment:

Device	Manufacturer	Model #	S/N
None			

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	Proprietary FHSS
Operating Frequency Range:	OOK PL1: 903 to 926.8MHz OOK PL3: 903 to 926.8MHz GFSK 10kbps: 902.2 to 927.75MHz GFSK 150kbps: 902.4 to 927.6MHz FSK 100kbps: 902.3 to 926.9MHz GFSK 300kbps PL3: 902.4 to 927.6MHz GFSK 25kbps: 902.2 to 927.75MHz GFSK 50kbps: 902.2 to 927.8MHz
Number of Hopping Channels:	OOK PL1: 120 OOK PL3: 120 GFSK 10kbps: 512 GFSK 150kbps: 64 FSK 100kbps: 83 GFSK 300kbps PL3: 64 GFSK 25kbps: 512 GFSK 50kbps: 129
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):	OOK, GFSK, FSK
Maximum Duty Cycle:	100% tested as worst case
Number of TX Chains:	2 Note: no simultaneous transmission, there is a different TX chain routing for power level 0/1 compared to 2/3
Antenna Type(s) and Gain:	Internal Trace Power Level 1: 2.6dBi Power Level 2: 3.0dBi Power Level 3: 3.7dBi
Beamforming Type:	NA
Antenna Connection Type:	Integral (External connector provided to facilitate testing)
Nominal Input Voltage:	6.0VDC battery
Firmware / Software used for Test:	CLI Tool (2.0.1.24) App Version 7.0.16.0 CSL Version 8.1.11.0

EUT Photo(s)



Configuration 1

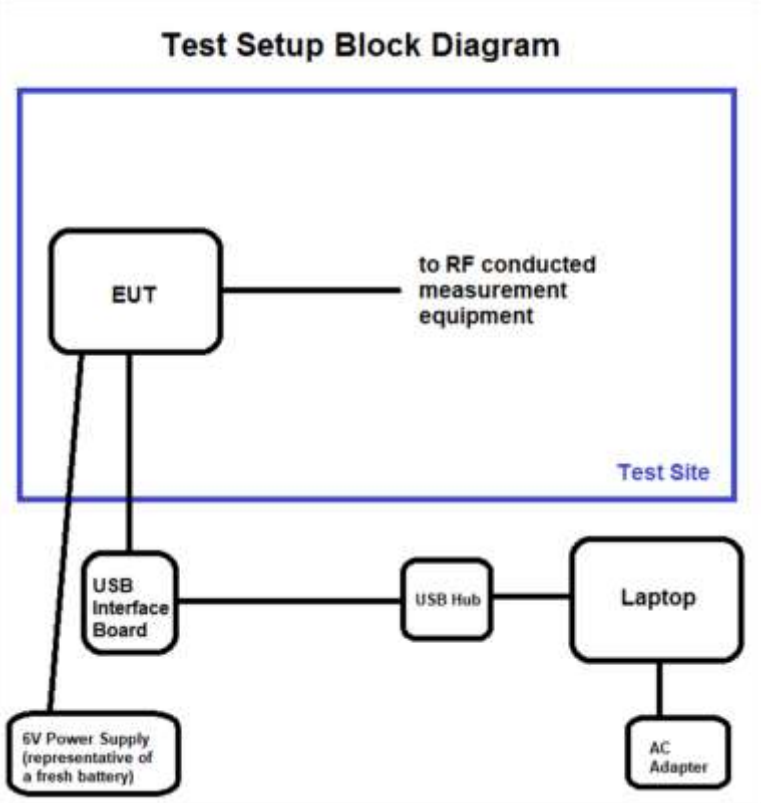
Configuration 2

Support Equipment Photo(s)

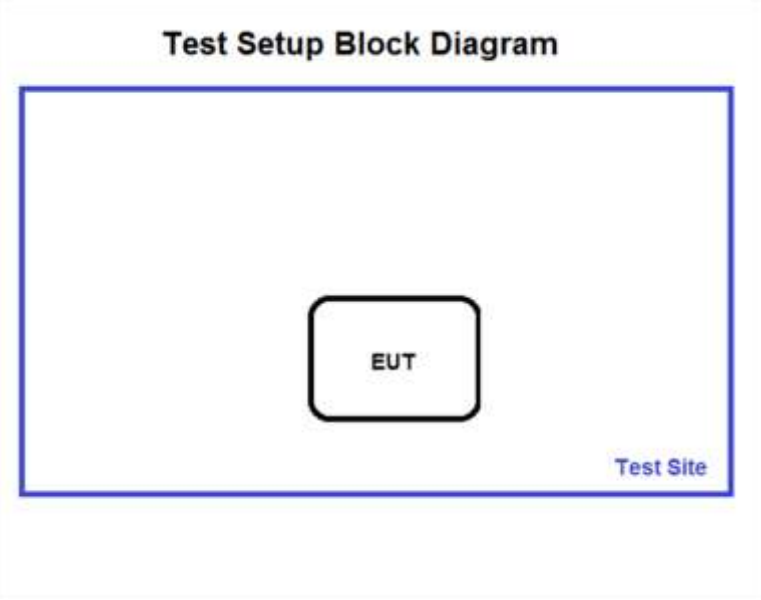
Laptop, Hub and Interface

Power Supply

Block Diagram of Test Setup(s)



Configuration 1



Configuration 2

FCC Part 15 Subpart C

15.247(a) Transmitter Characteristics

Test Setup/Conditions			
Test Location:	Bothell Lab Bench	Test Engineer:	M. Atkinson
Test Method:	ANSI C63.10 (2013)	Test Date(s):	4/8/2021 to 4/13/2021
Configuration:	1		
Test Setup:	EUT has temporary antenna connector attached. EUT directly connected to spectrum analyzer through appropriate cables and attenuators. EUT is continuously transmitting with modulation.		

Environmental Conditions			
Temperature (ºC)	22	Relative Humidity (%):	32

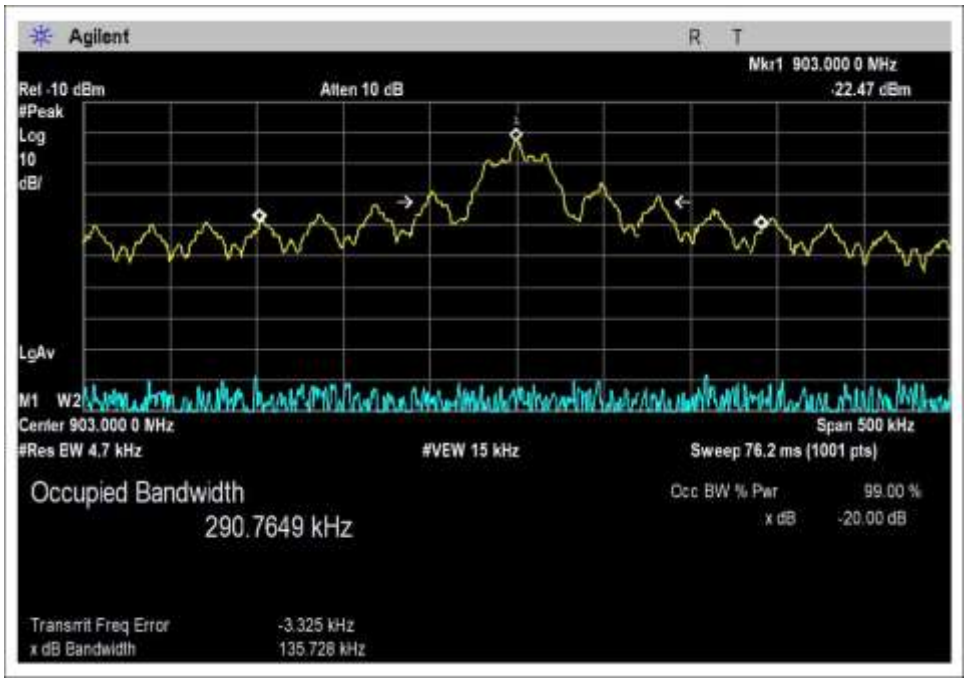
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02871	Spectrum Analyzer	Agilent	E4440A	3/12/2020	3/12/2022
P07227	Attenuator	Pasternack	PE7004-6	10/2/2019	10/2/2021
P05748	Attenuator	Pasternack	PE7004-20	3/4/2020	3/4/2022
P06008	Cable	Andrew	Heliax	2/1/2021	2/1/2023

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

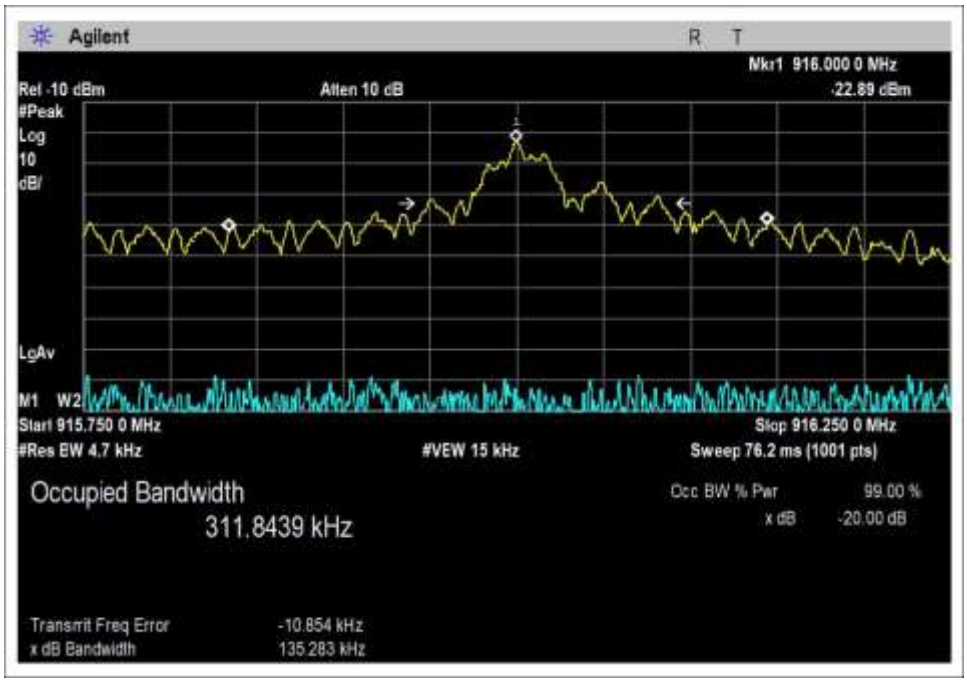
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
903.0	1	OOK PL1	135.728	≤500	Pass
916.0	1	OOK PL1	135.283	≤500	Pass
926.8	1	OOK PL1	132.731	≤500	Pass
903.0	1	OOK PL3	165.639	≤500	Pass
916.0	1	OOK PL3	165.668	≤500	Pass
926.8	1	OOK PL3	165.722	≤500	Pass
902.20	1	GSFK 10kbps	18.144	≤500	Pass
915.25	1	GSFK 10kbps	17.815	≤500	Pass
927.75	1	GSFK 10kbps	18.085	≤500	Pass
902.4	1	GFSK 150kbps	184.076	≤500	Pass
915.6	1	GFSK 150kbps	181.369	≤500	Pass
927.6	1	GFSK 150kbps	181.023	≤500	Pass
902.3	1	FSK 100kbps	130.841	≤500	Pass
915.2	1	FSK 100kbps	130.004	≤500	Pass
926.9	1	FSK 100kbps	127.456	≤500	Pass
902.4	1	GFSFK 300kbps PL3	353.793	≤500	Pass
915.6	1	GFSFK 300kbps PL3	350.045	≤500	Pass
927.6	1	GFSFK 300kbps PL3	352.659	≤500	Pass
902.20	1	GFSK 25kbps	28.968	≤500	Pass
915.25	1	GFSK 25kbps	28.470	≤500	Pass
927.75	1	GFSK 25kbps	29.237	≤500	Pass
902.2	1	GFSK 50kbps	98.135	≤500	Pass
915.2	1	GFSK 50kbps	97.409	≤500	Pass
927.8	1	GFSK 50kbps	96.222	≤500	Pass

Plot(s)

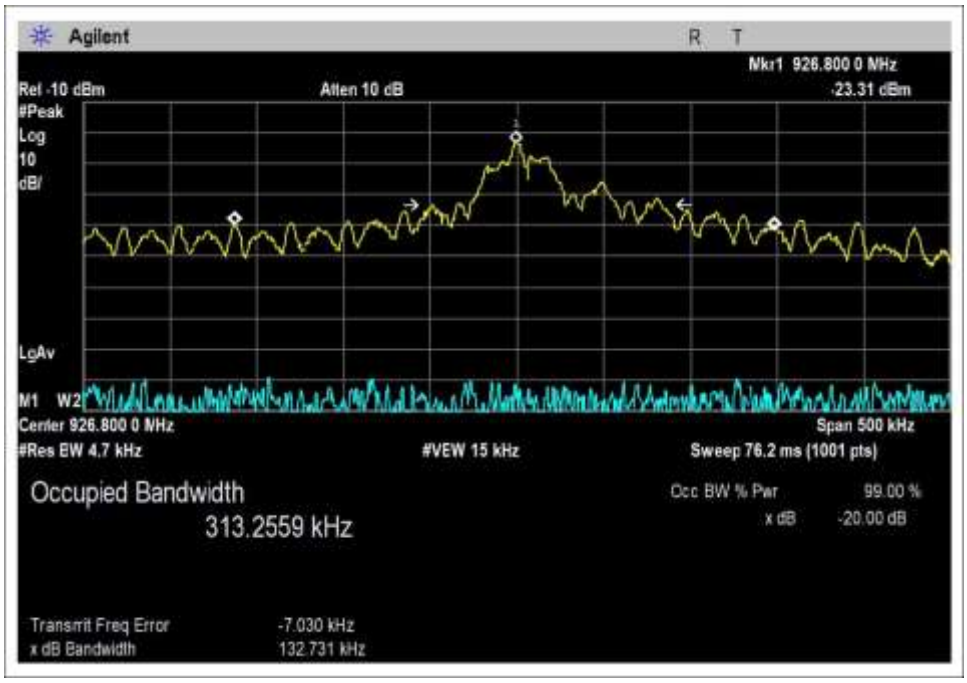
OOK Power Level 1



Low Channel

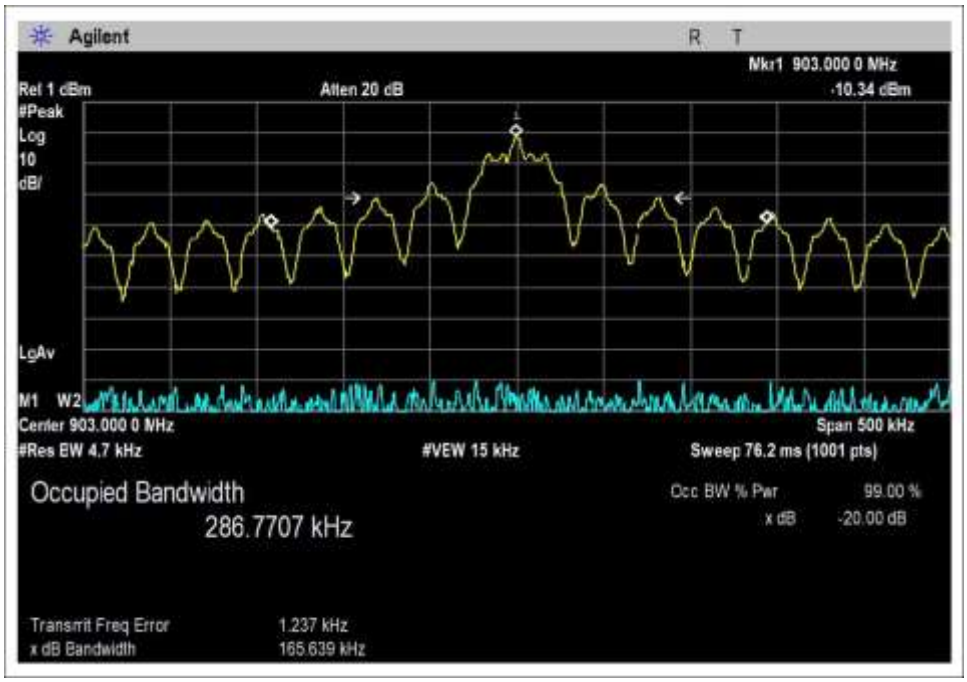


Middle Channel



High Channel

OOK Power Level 3



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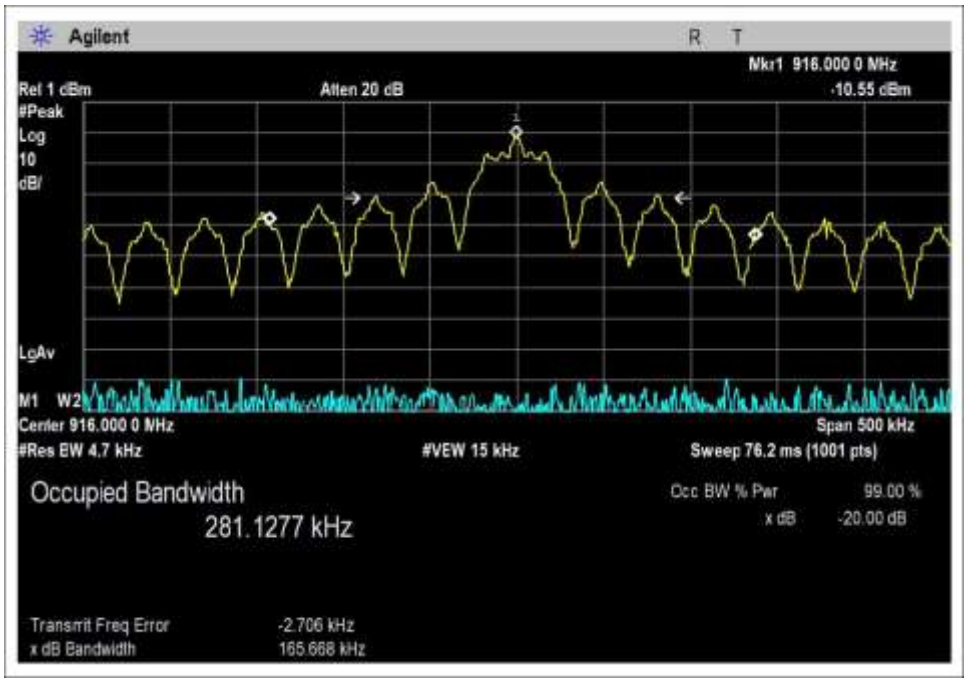

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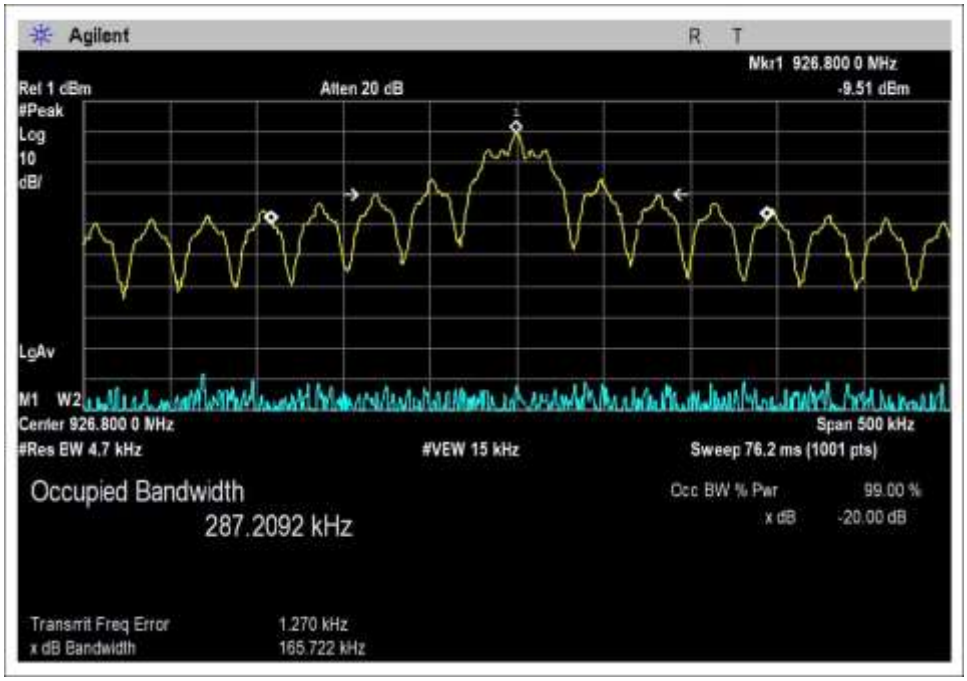
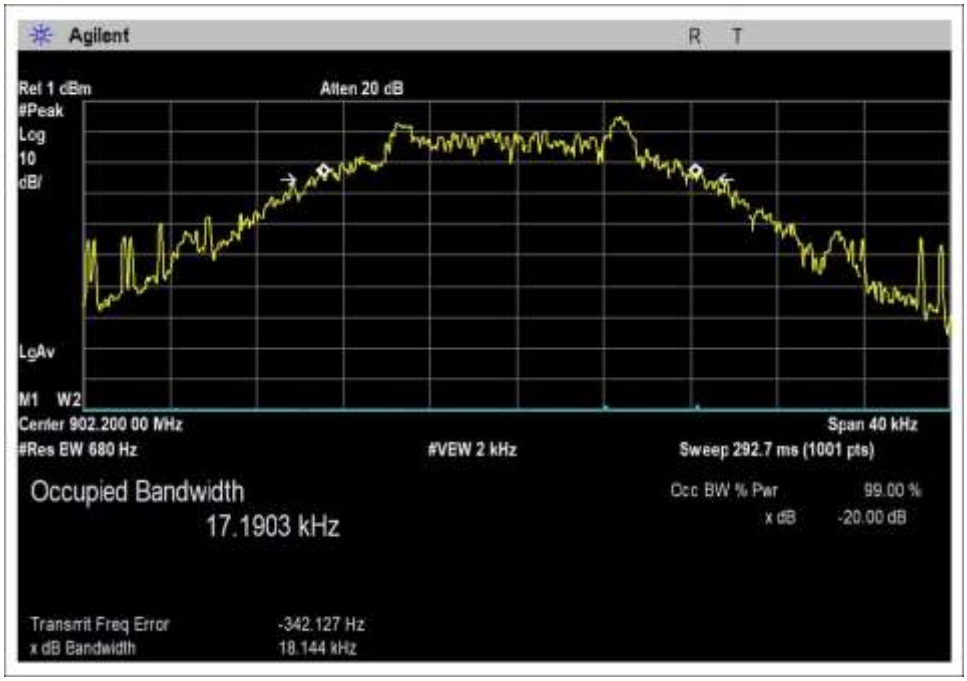


High Channel

GFSK 10kbps



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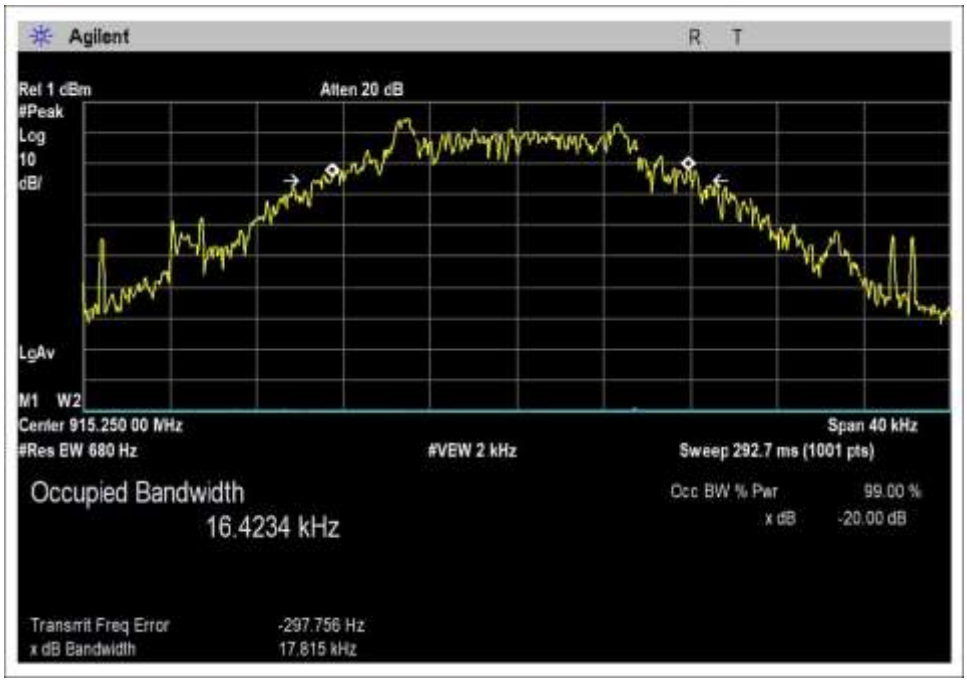
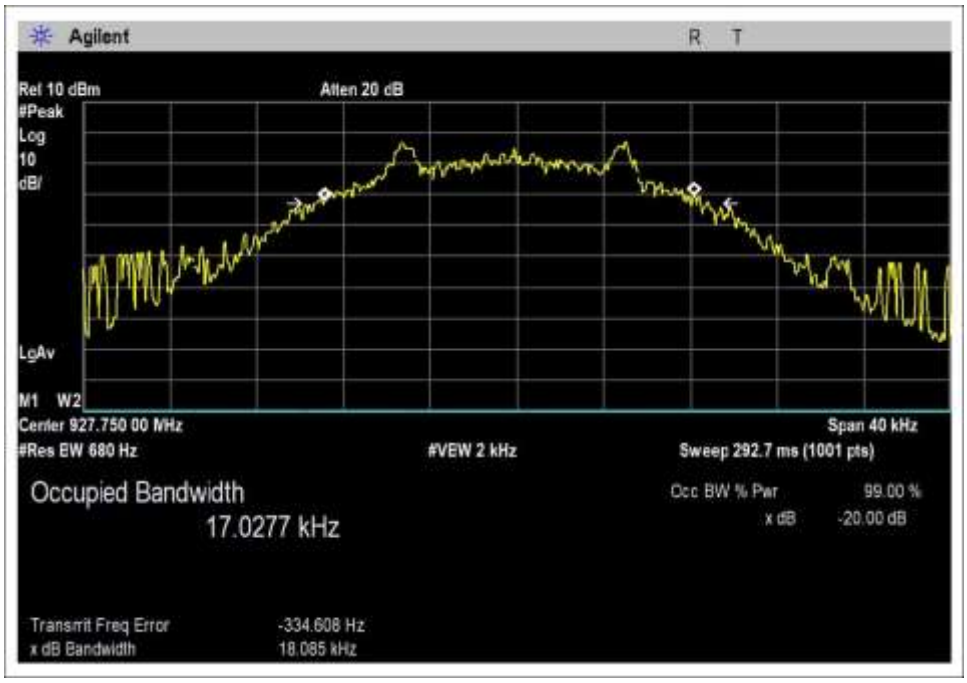
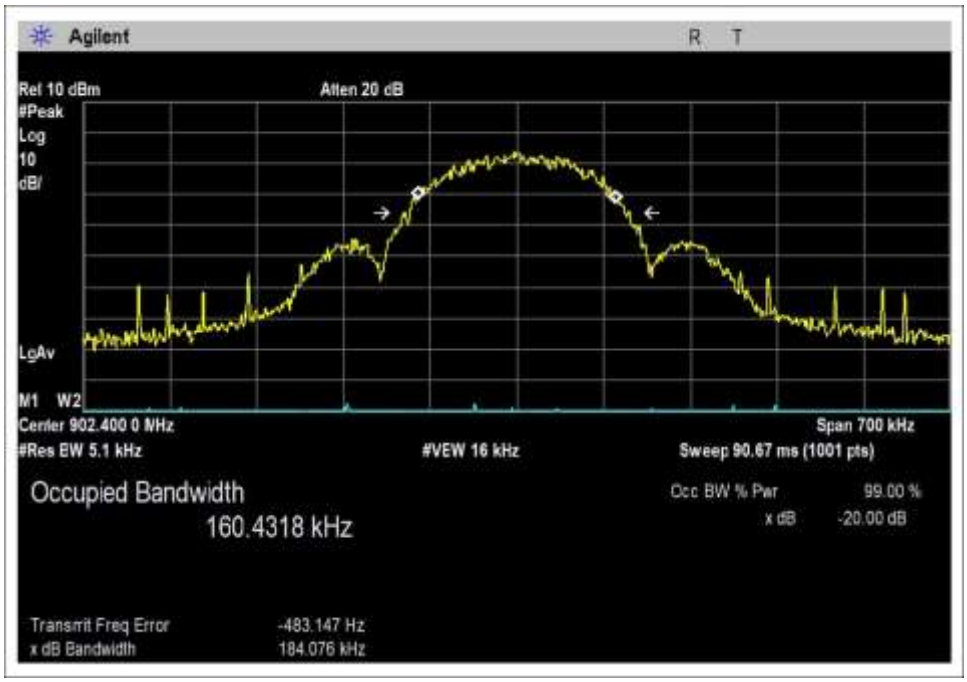


Middle Channel



High Channel

GFSK 150kbps



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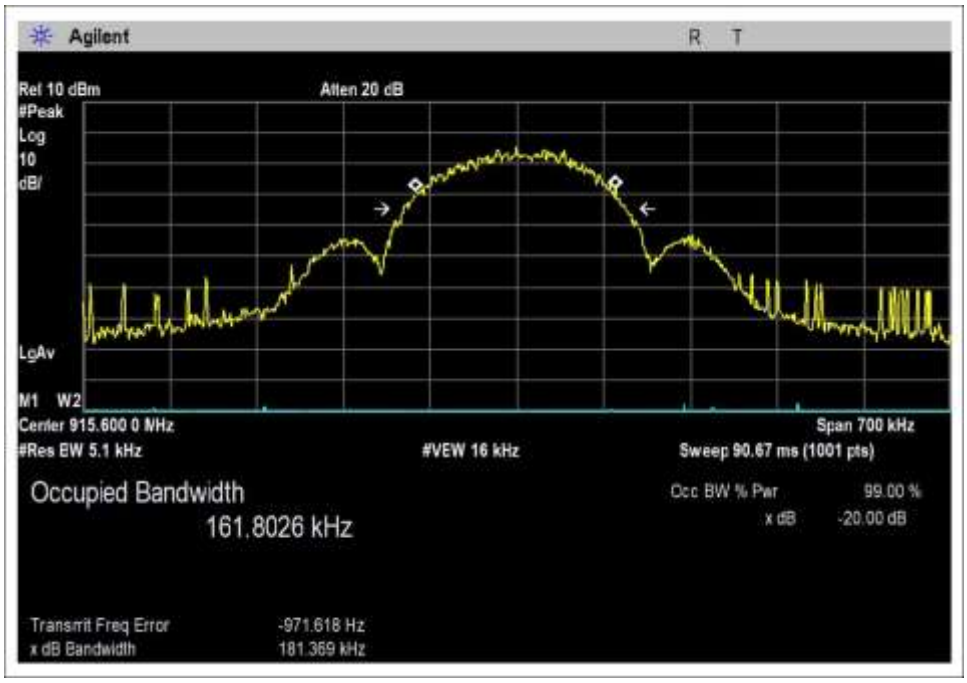

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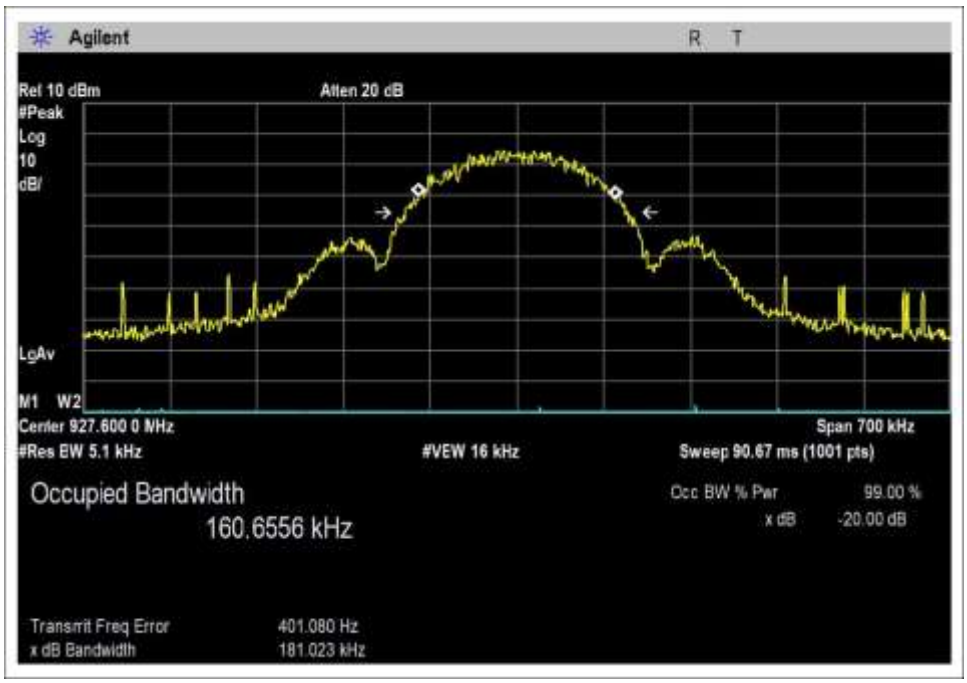
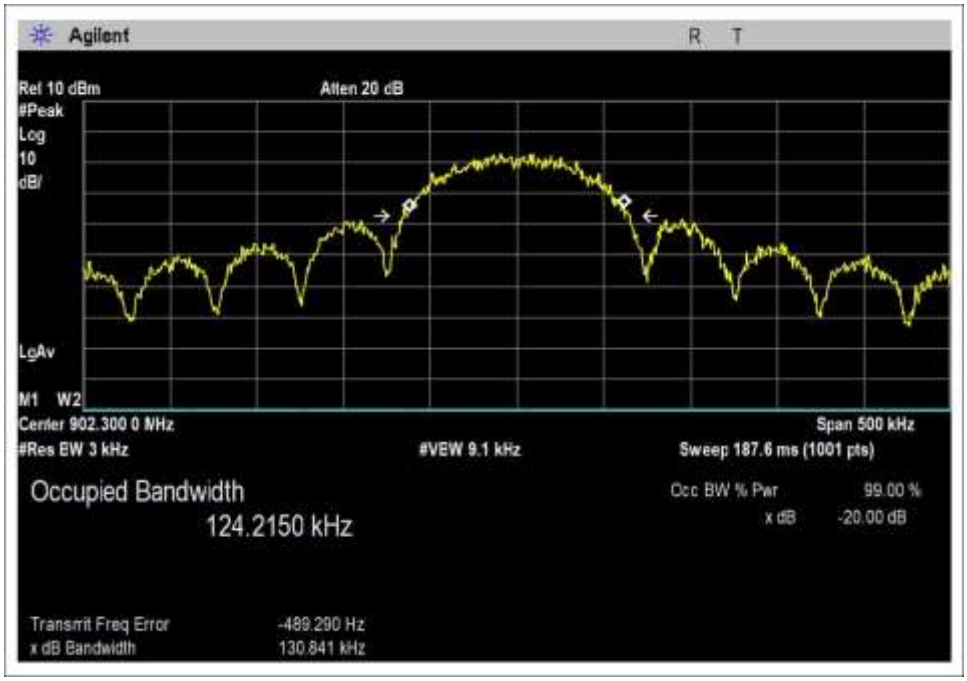
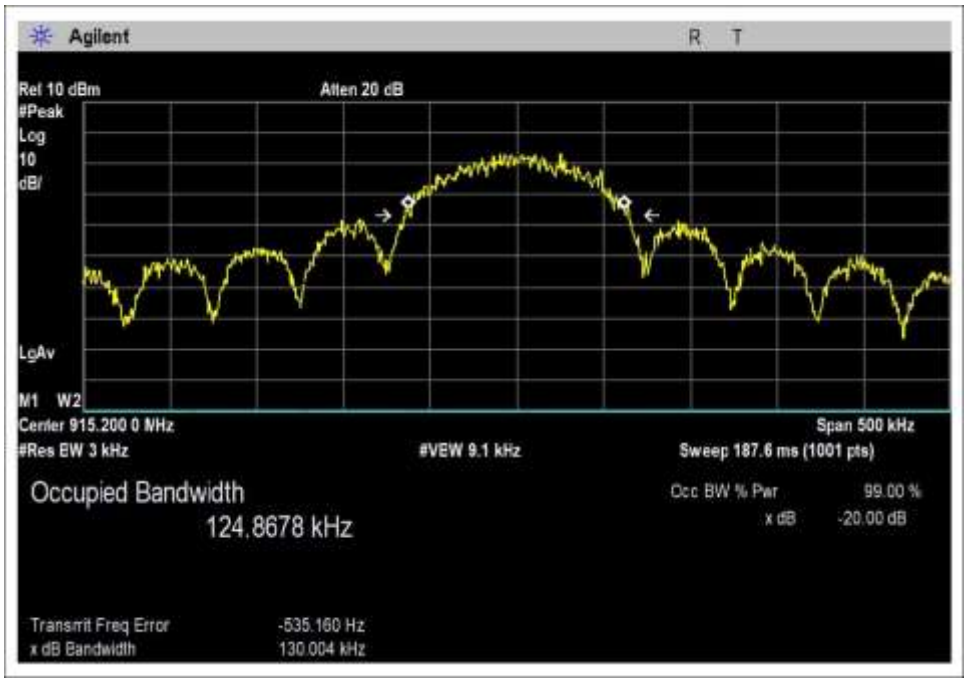


High Channel

FSK 100kbps



Low Channel



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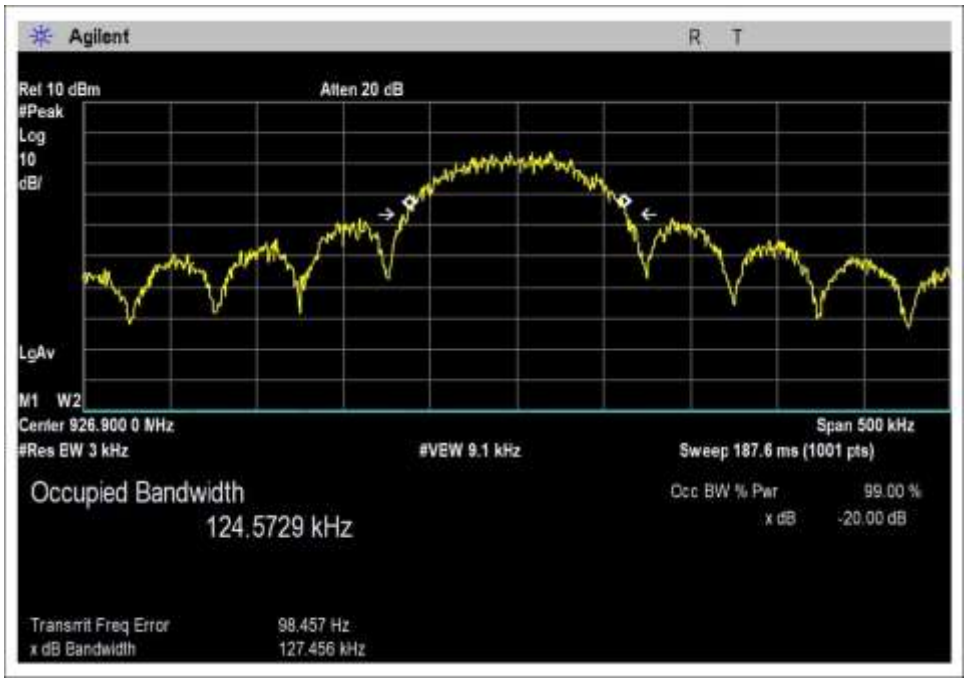
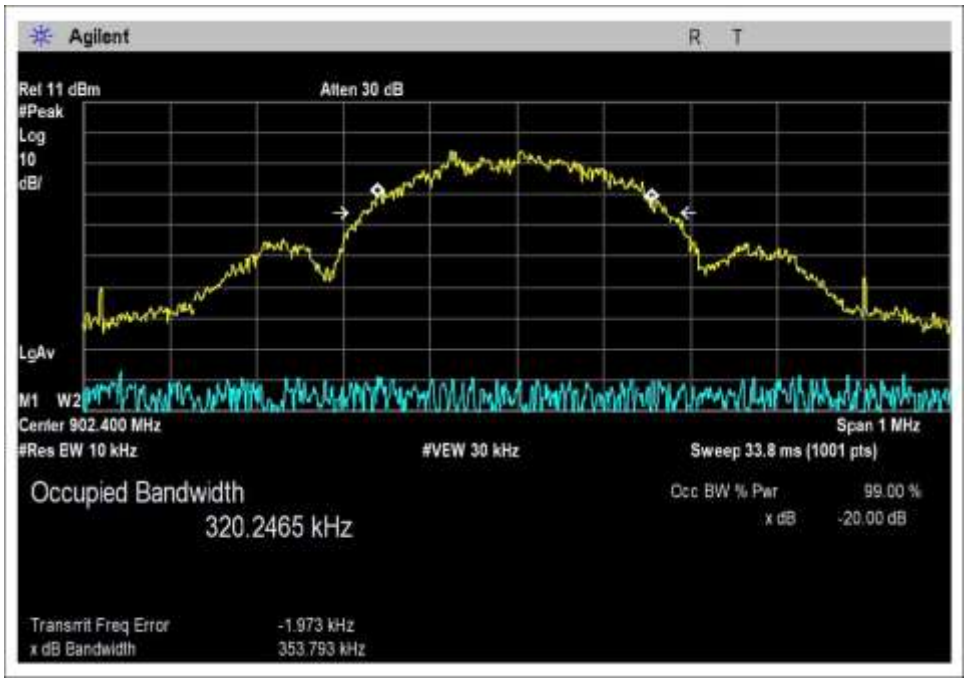
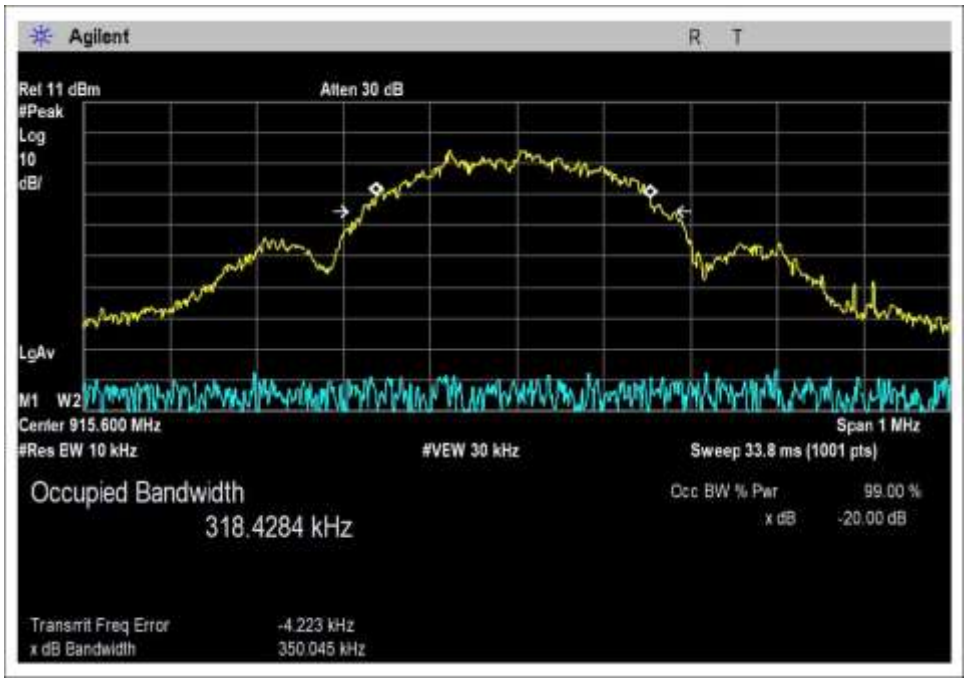


High Channel

GFSK 300kbps Power Level 3



Low Channel



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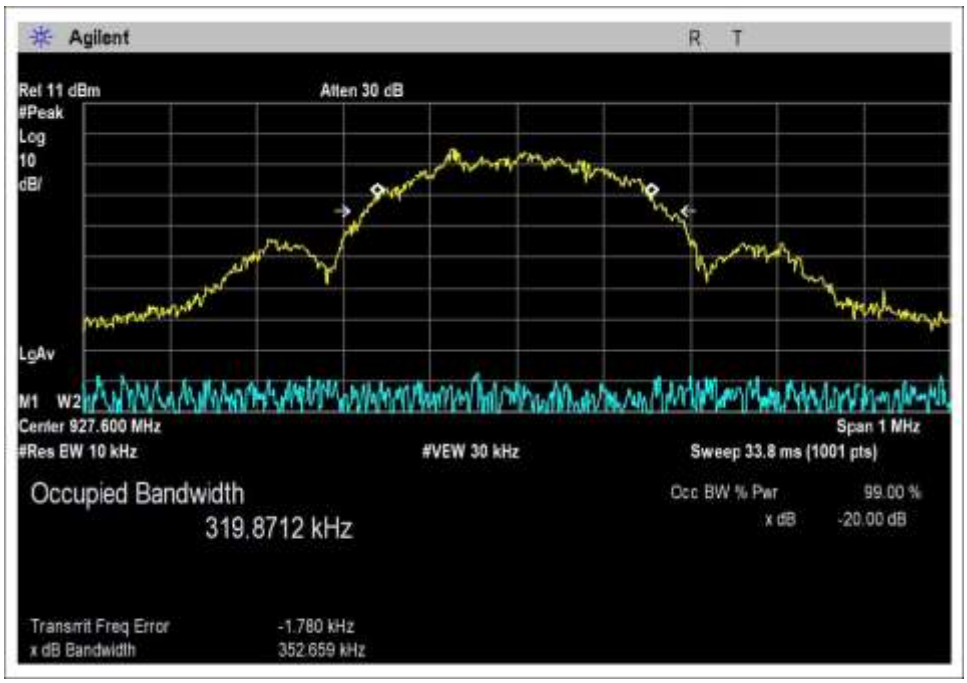
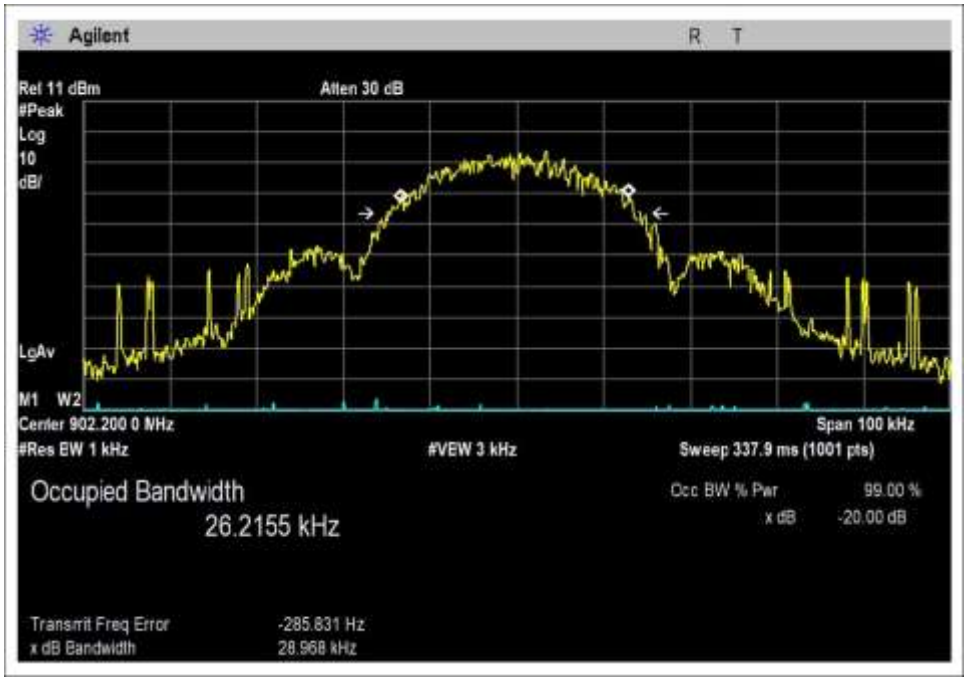
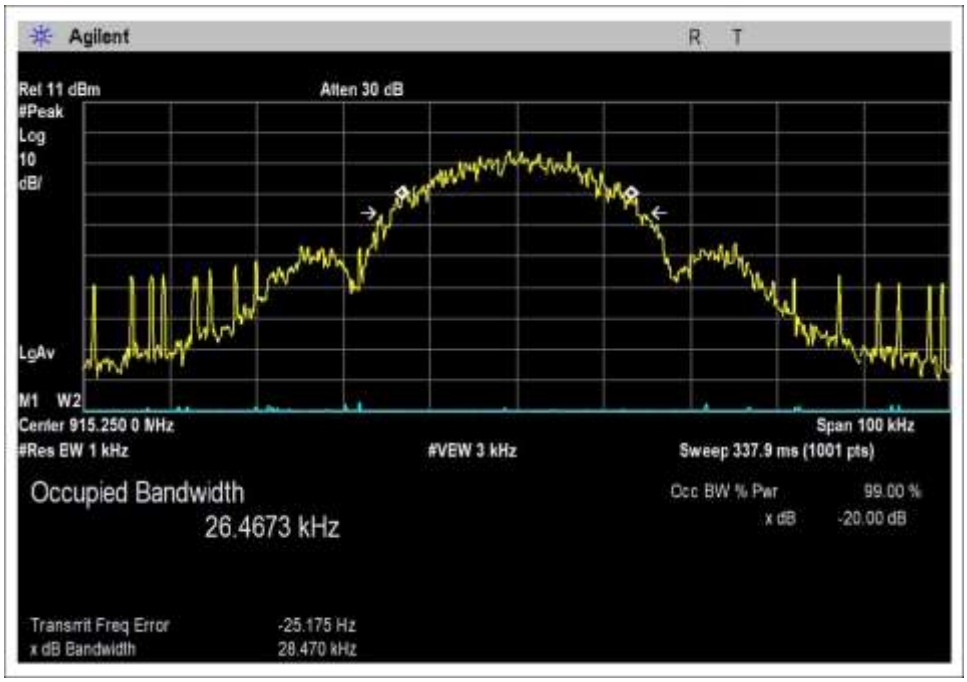


High Channel

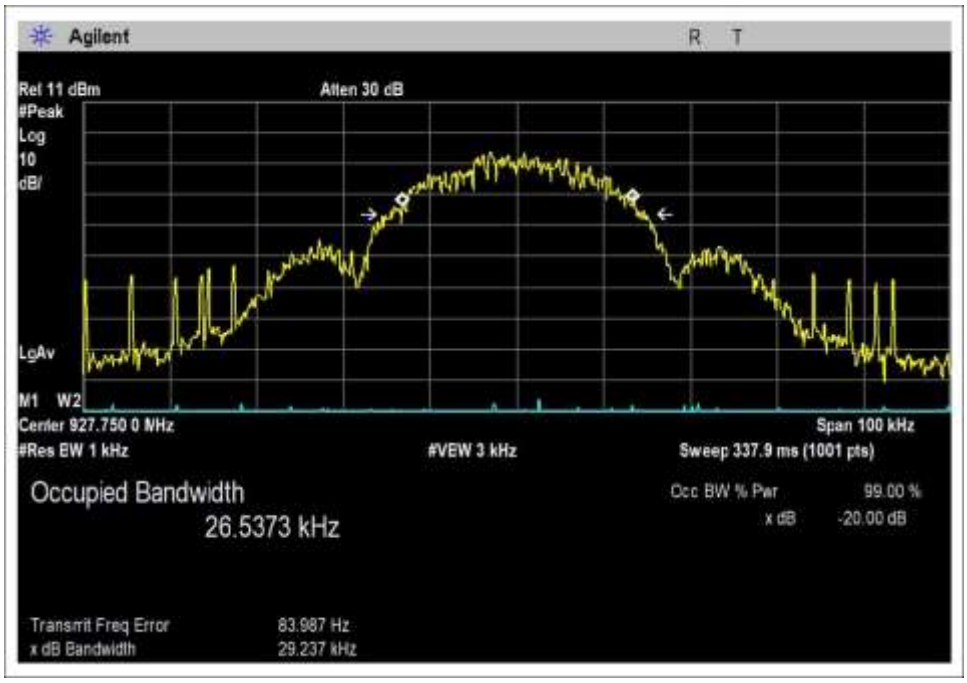
GFSK 25kbps



Low Channel

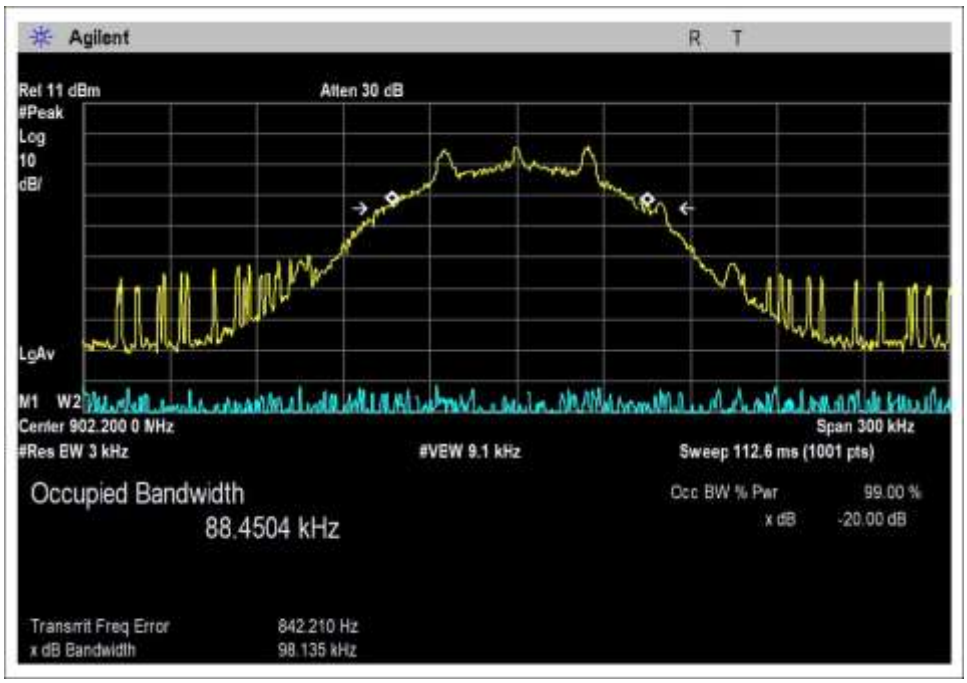


Middle Channel



High Channel

GFSK 50kbps



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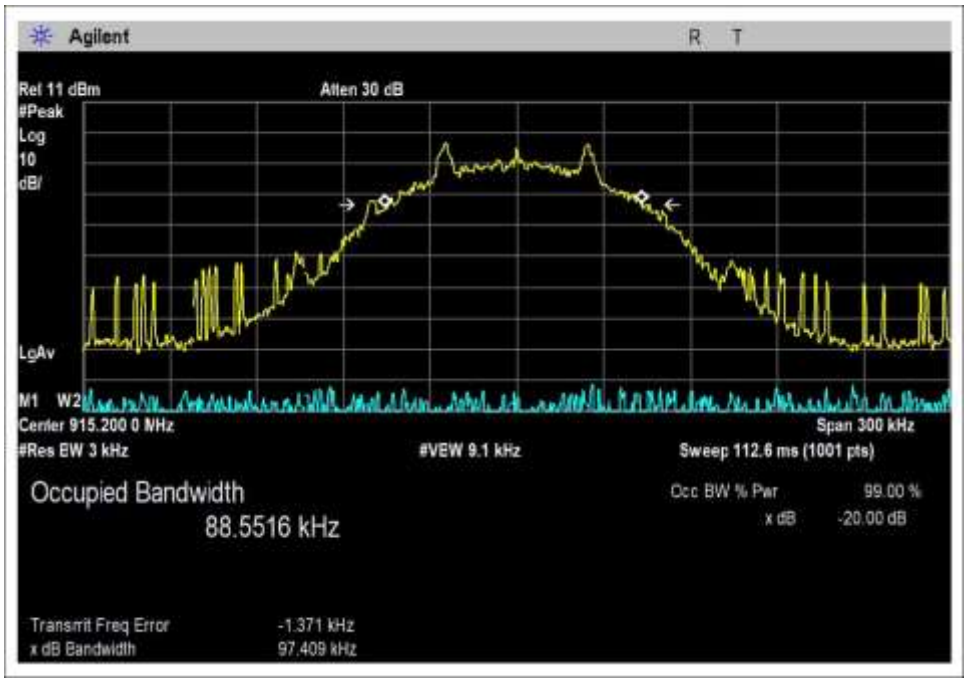

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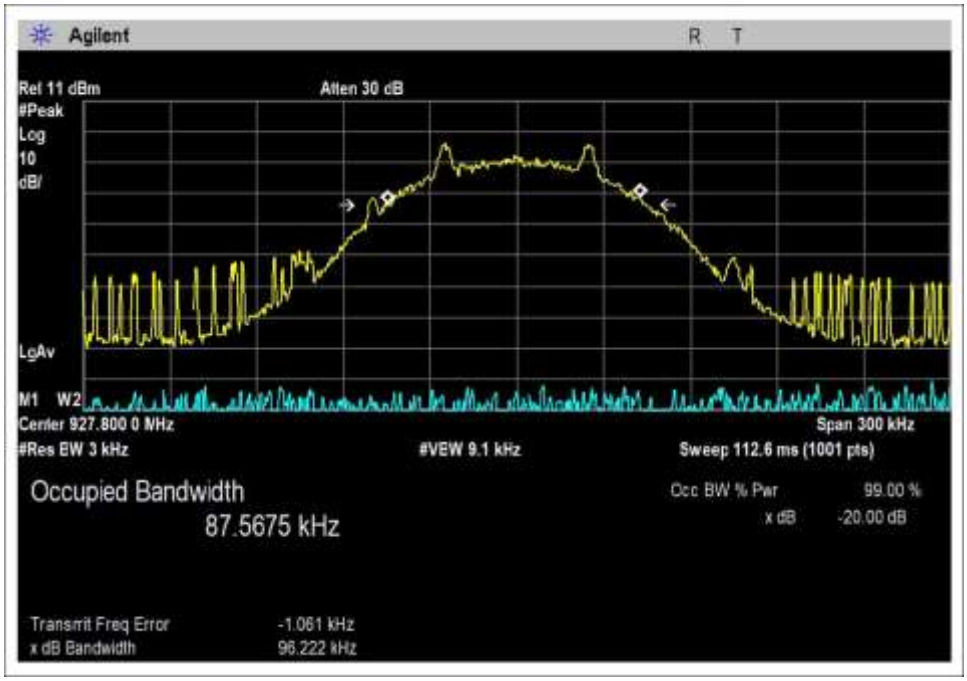


High Channel

Test Setup Photo(s)

15.247(b)(2) Output Power

Test Data Summary - Voltage Variations

This equipment is battery powered. Power output tests were performed at 6VDC with a temporary power supply connection to represent a fresh battery.

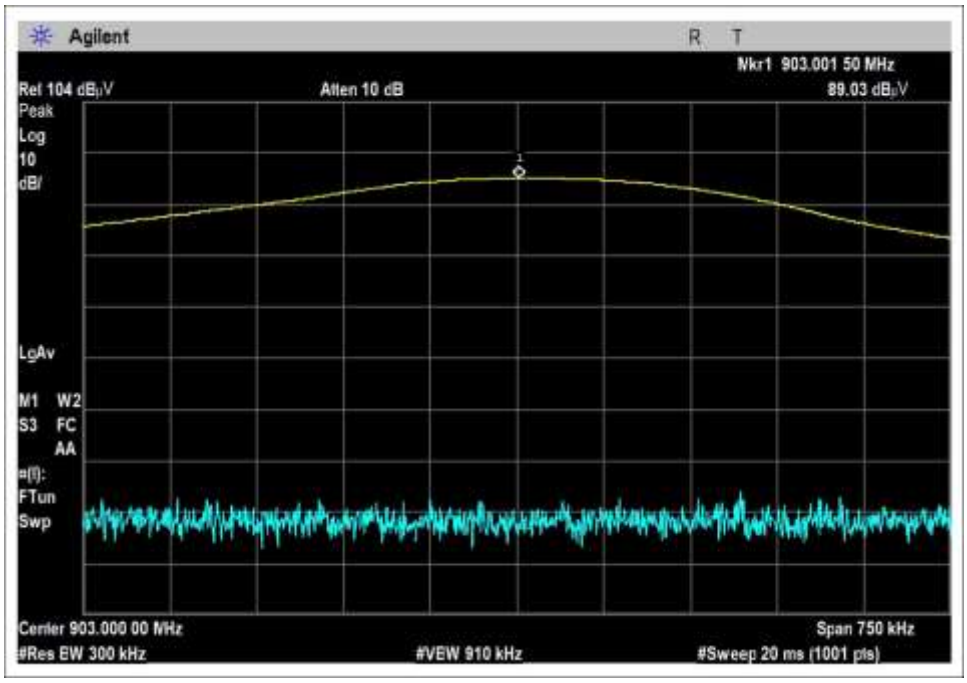
Test Data Summary - RF Conducted Measurement

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

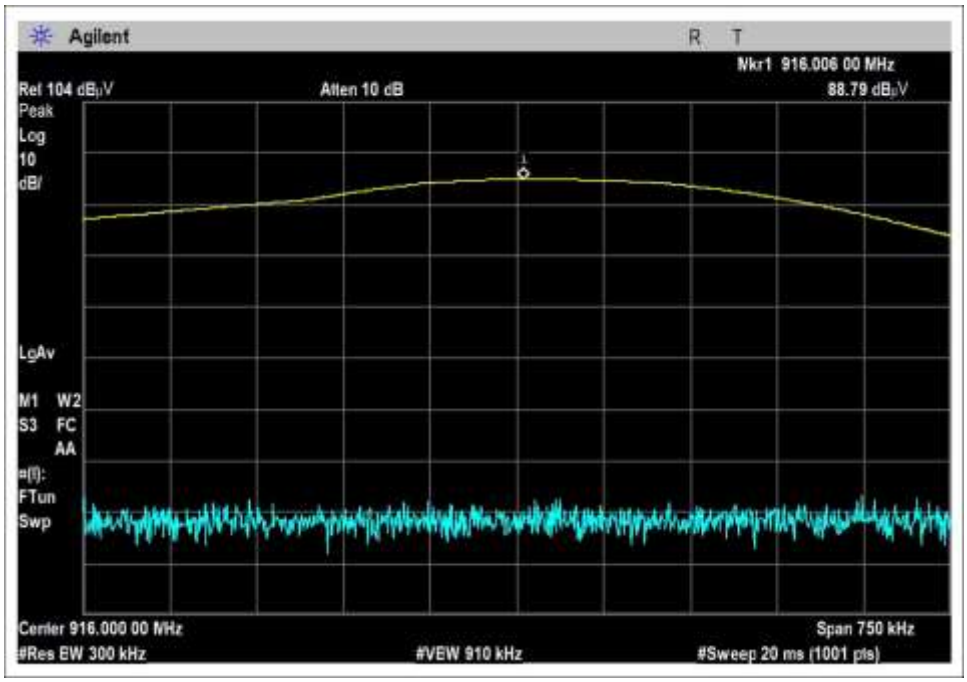
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Measured (dBm)	Limit (dBm)	Results
903.0	OOK PL1	Trace / 2.6dBi	8.5	≤30	Pass
916.0	OOK PL1	Trace / 2.6dBi	8.3	≤30	Pass
926.8	OOK PL1	Trace / 2.6dBi	8.1	≤30	Pass
903.0	OOK PL3	Trace / 3.7dBi	20.6	≤30	Pass
916.0	OOK PL3	Trace / 3.7dBi	21.0	≤30	Pass
926.8	OOK PL3	Trace / 3.7dBi	21.4	≤30	Pass
902.2	GFSK 10kbps	Trace / 3.7dBi	24.8	≤30	Pass
915.25	GFSK 10kbps	Trace / 3.7dBi	25.3	≤30	Pass
927.75	GFSK 10kbps	Trace / 3.7dBi	25.5	≤30	Pass
902.4	GFSK 150kbps	Trace / 3.7dBi	24.8	≤30	Pass
915.6	GFSK 150kbps	Trace / 3.7dBi	25.3	≤30	Pass
927.6	GFSK 150kbps	Trace / 3.7dBi	25.5	≤30	Pass
902.3	FSK 100kbps	Trace / 3.7dBi	24.8	≤30	Pass
915.2	FSK 100kbps	Trace / 3.7dBi	25.3	≤30	Pass
926.9	FSK 100kbps	Trace / 3.7dBi	25.5	≤30	Pass
902.4	GSFK 300kbps PL3	Trace / 3.7dBi	24.8	≤30	Pass
915.6	GSFK 300kbps PL3	Trace / 3.7dBi	25.3	≤30	Pass
927.6	GSFK 300kbps PL3	Trace / 3.7dBi	25.5	≤30	Pass
902.20	GFSK 25kbps	Trace / 3.7dBi	24.9	≤30	Pass
915.25	GFSK 25kbps	Trace / 3.7dBi	25.3	≤30	Pass
927.75	GFSK 25kbps	Trace / 3.7dBi	25.5	≤30	Pass
902.2	GFSK 50kbps	Trace / 3.7dBi	24.8	≤30	Pass
915.2	GFSK 50kbps	Trace / 3.7dBi	25.3	≤30	Pass
927.8	GFSK 50kbps	Trace / 3.7dBi	25.5	≤30	Pass

Plots

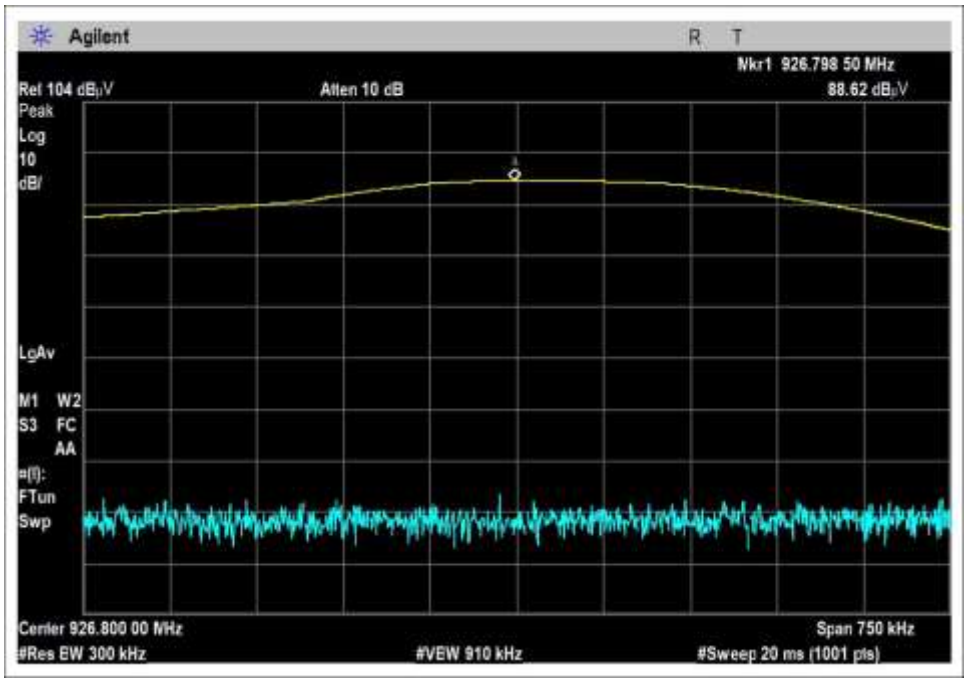
OOK Power Level 1



Low Channel

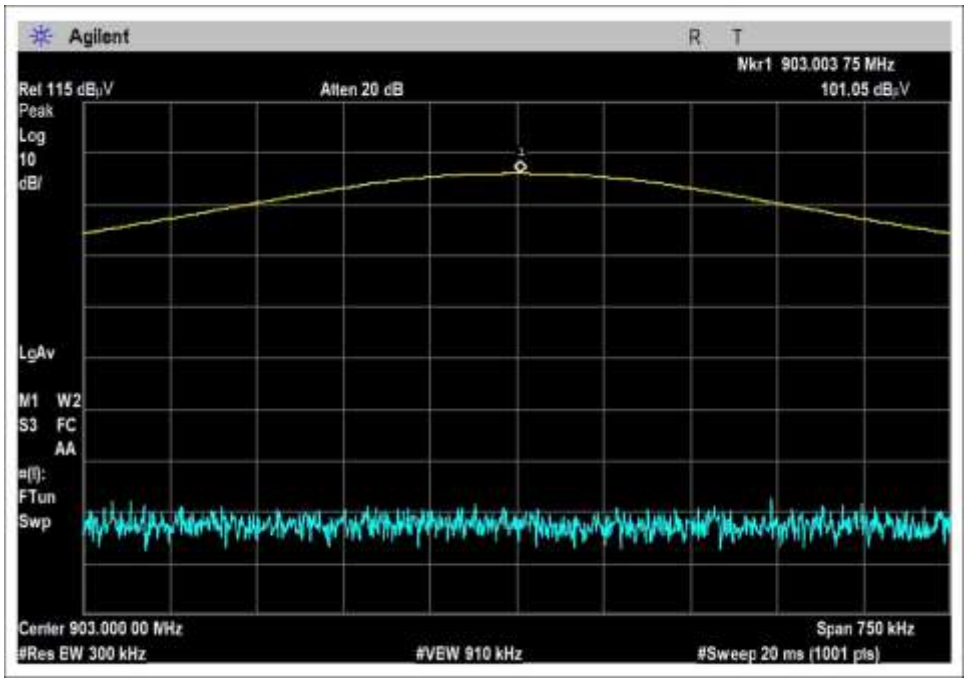


Middle Channel



High Channel

OOK Power Level 3



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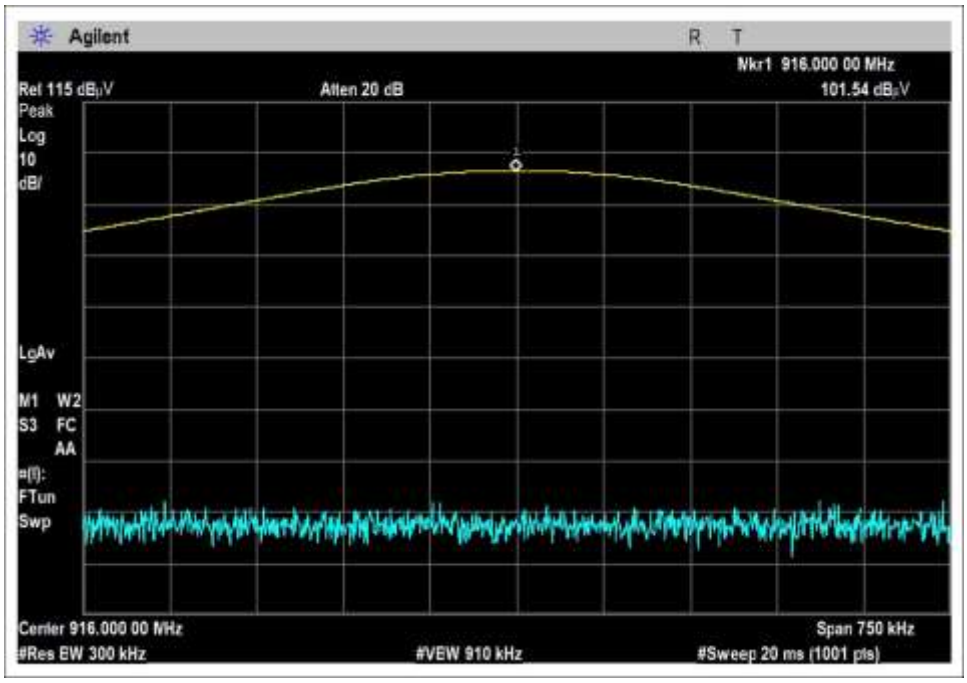
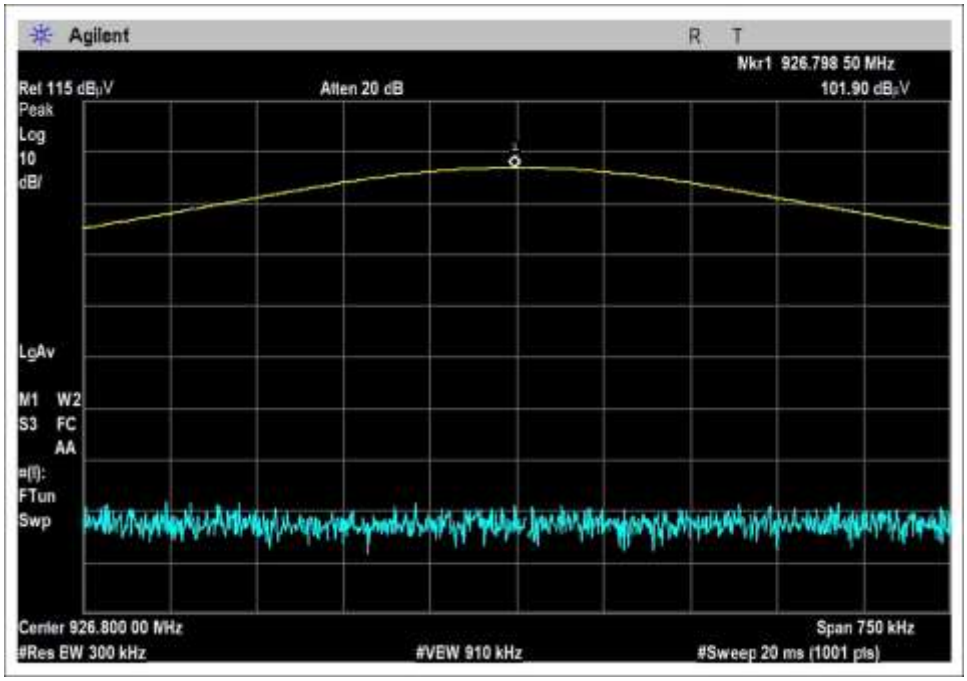
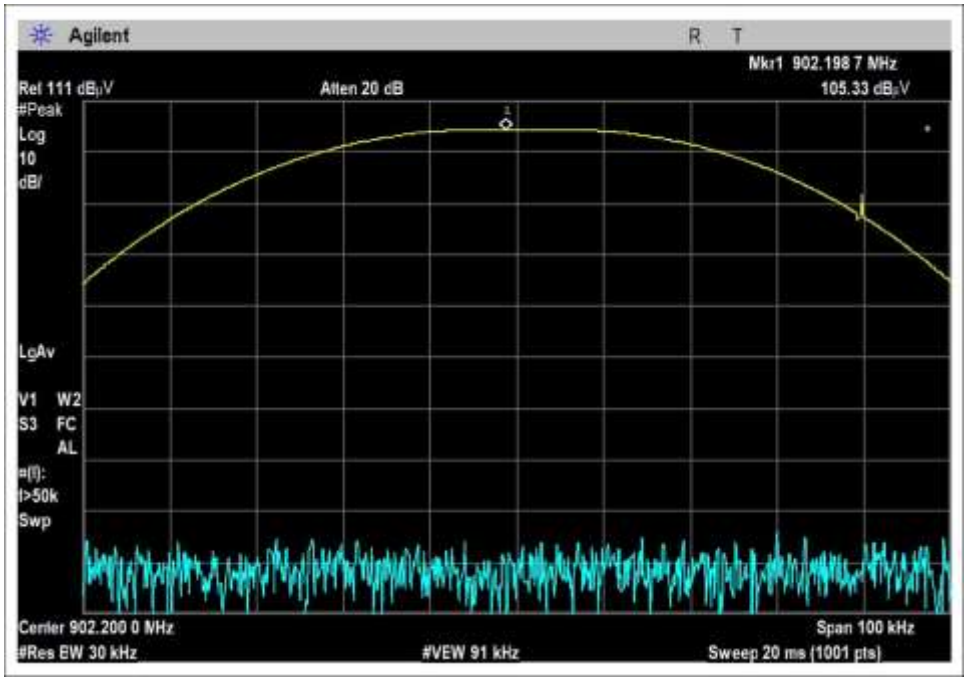


Middle Channel

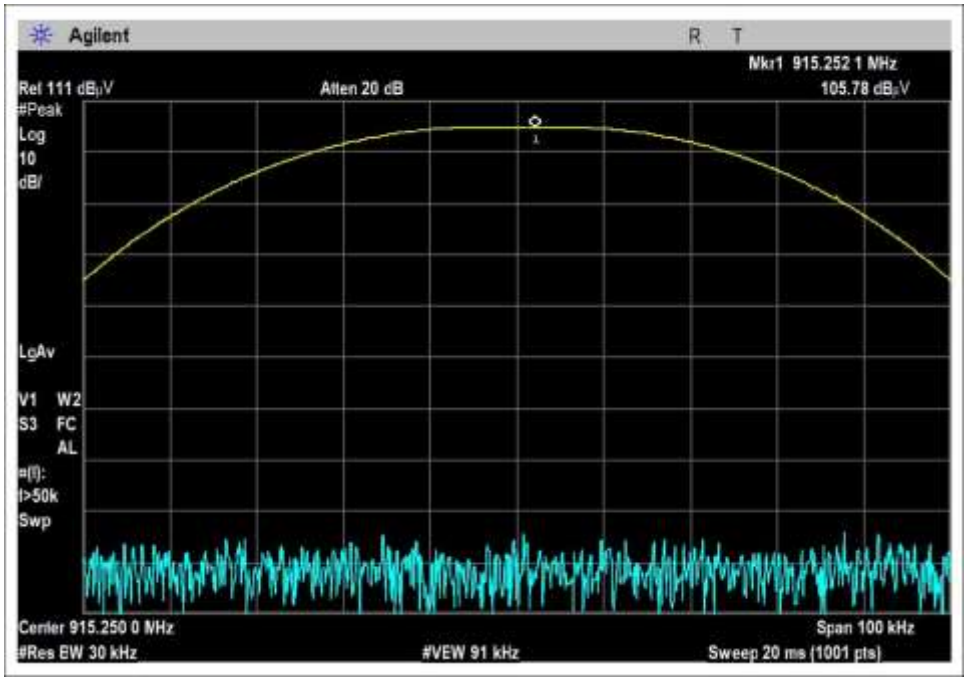


High Channel

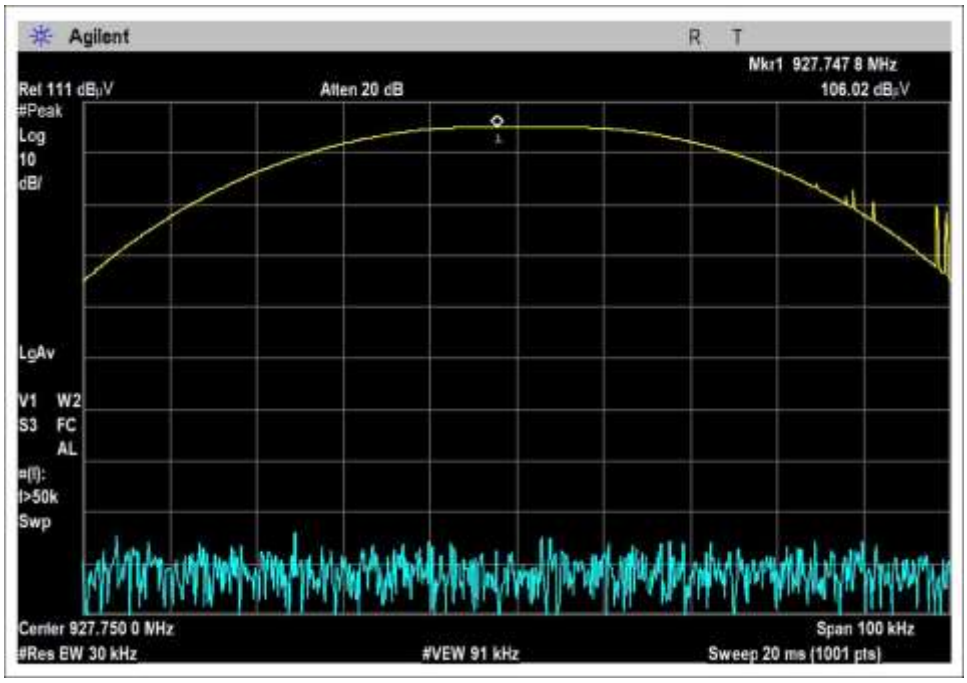
GFSK 10kbps



Low Channel

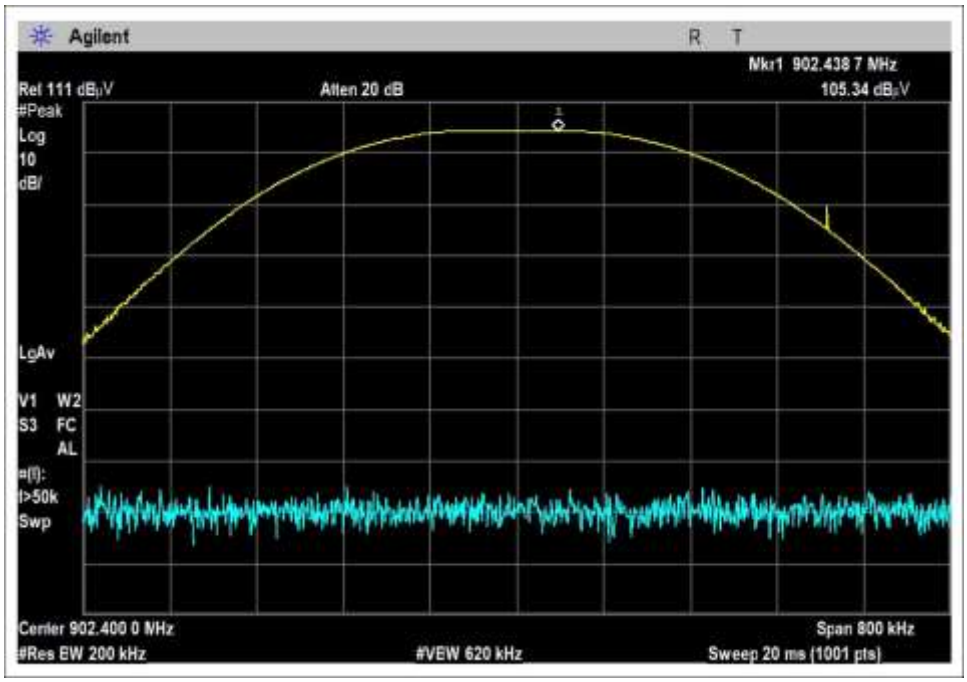


Middle Channel

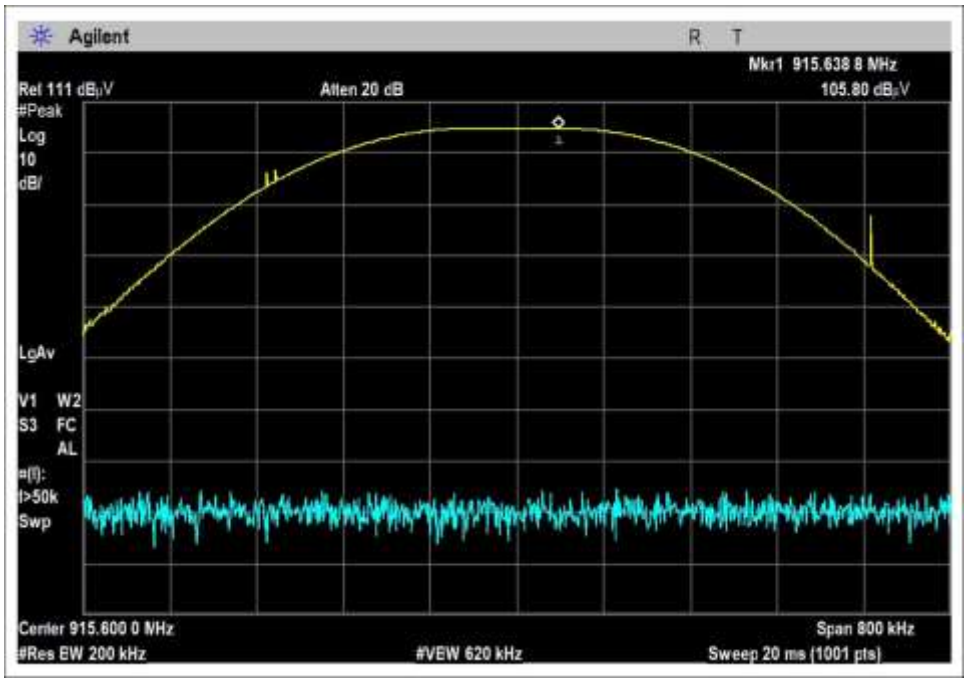


High Channel

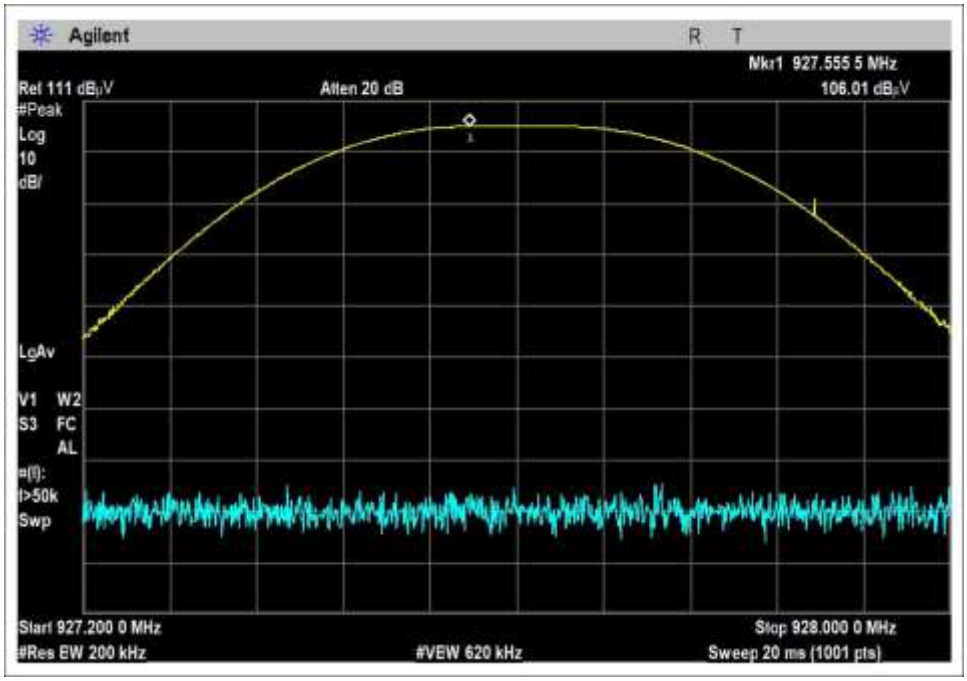
GFSK 150kbps



Low Channel

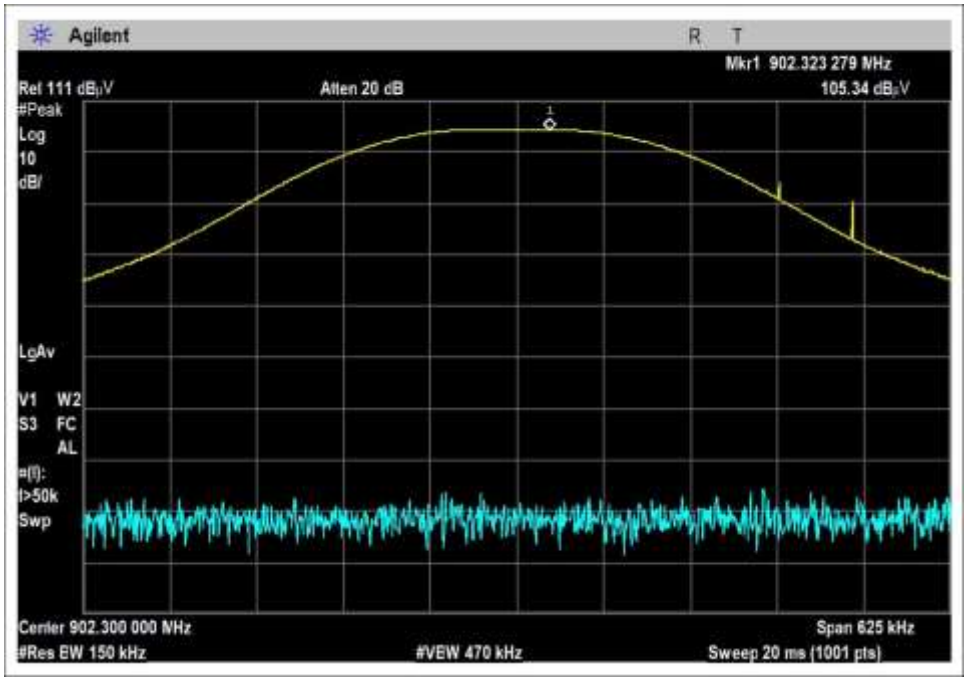


Middle Channel

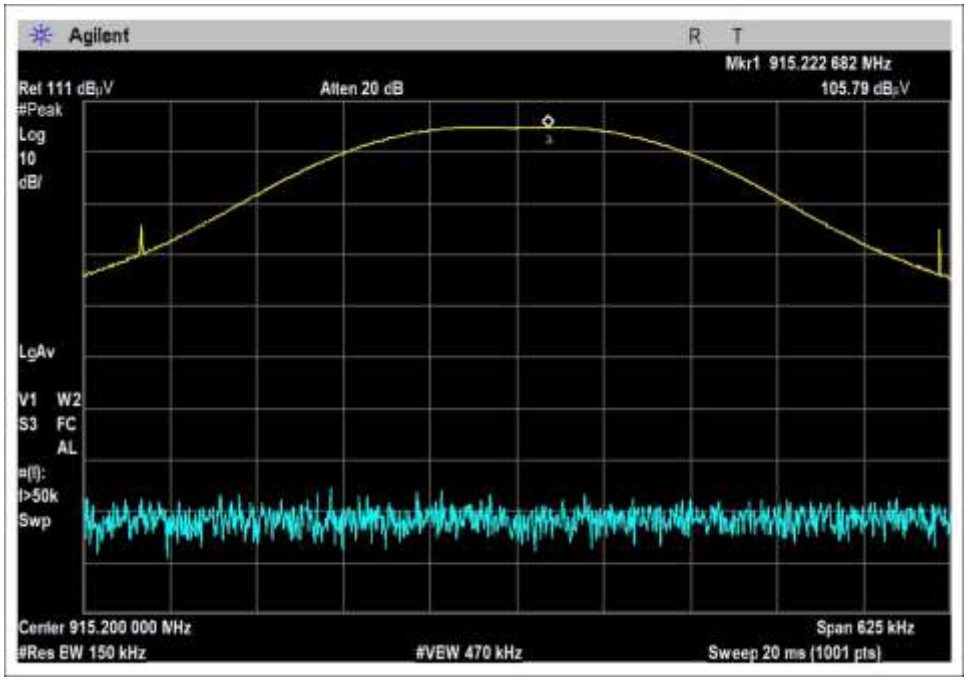


High Channel

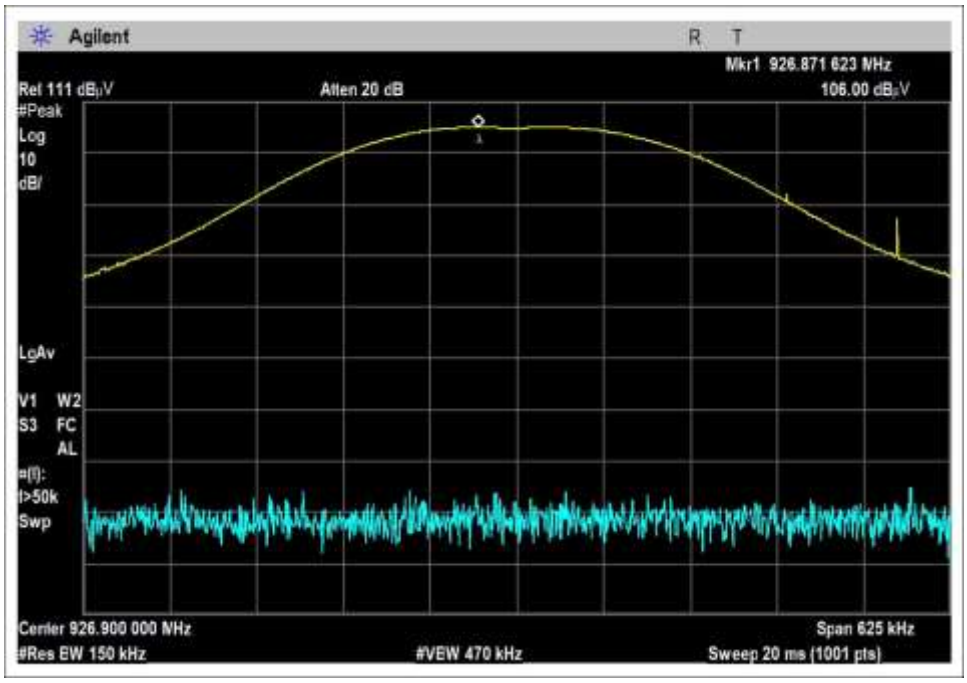
FSK 100kbps



Low Channel

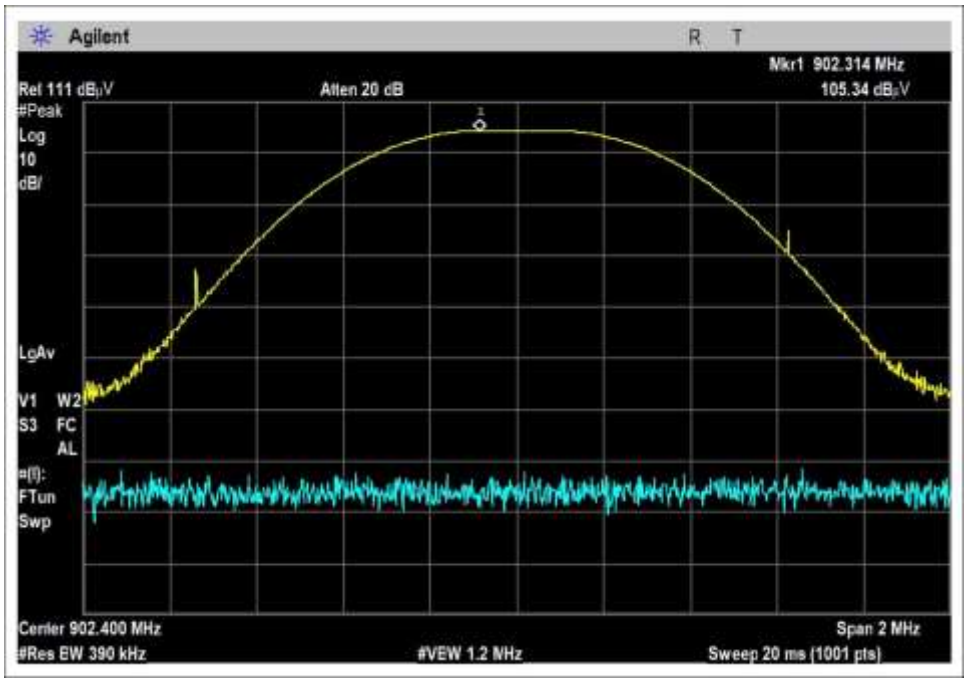


Middle Channel

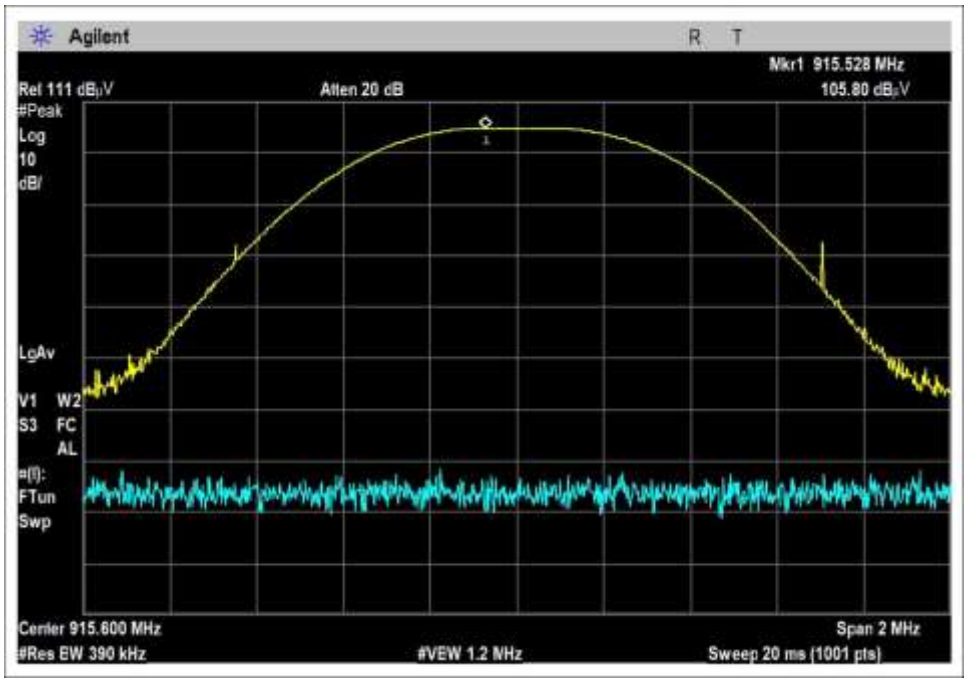


High Channel

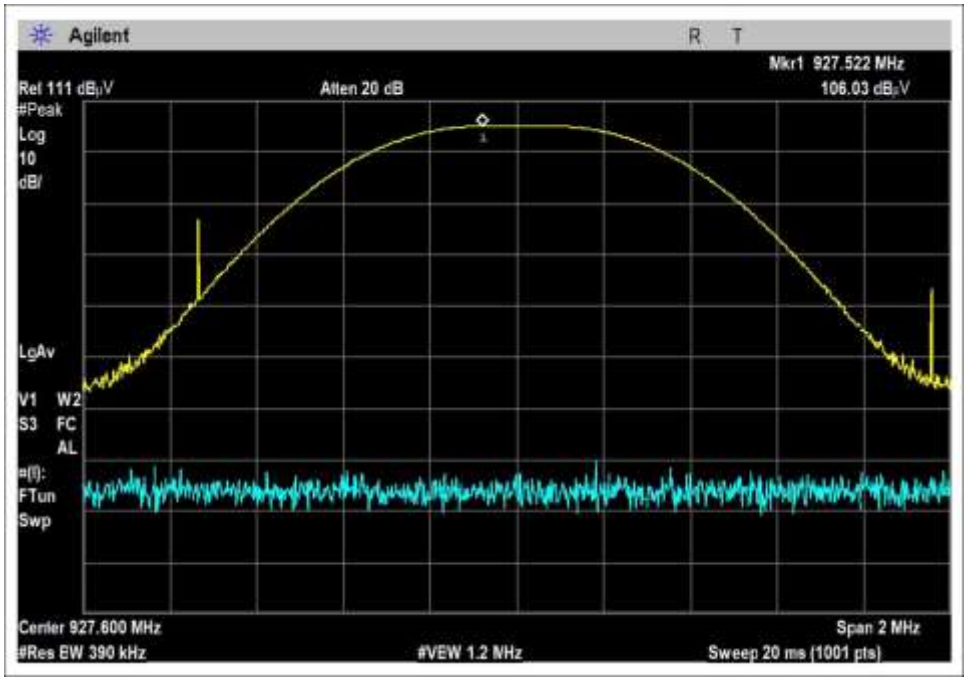
GFSK 300kbps Power Level 3



Low Channel

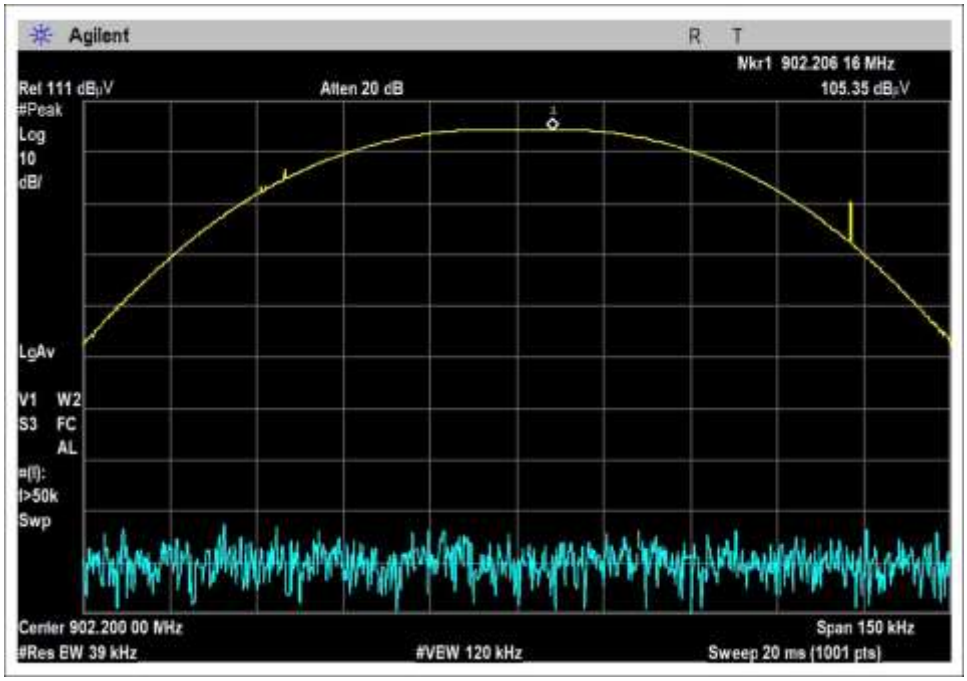


Middle Channel

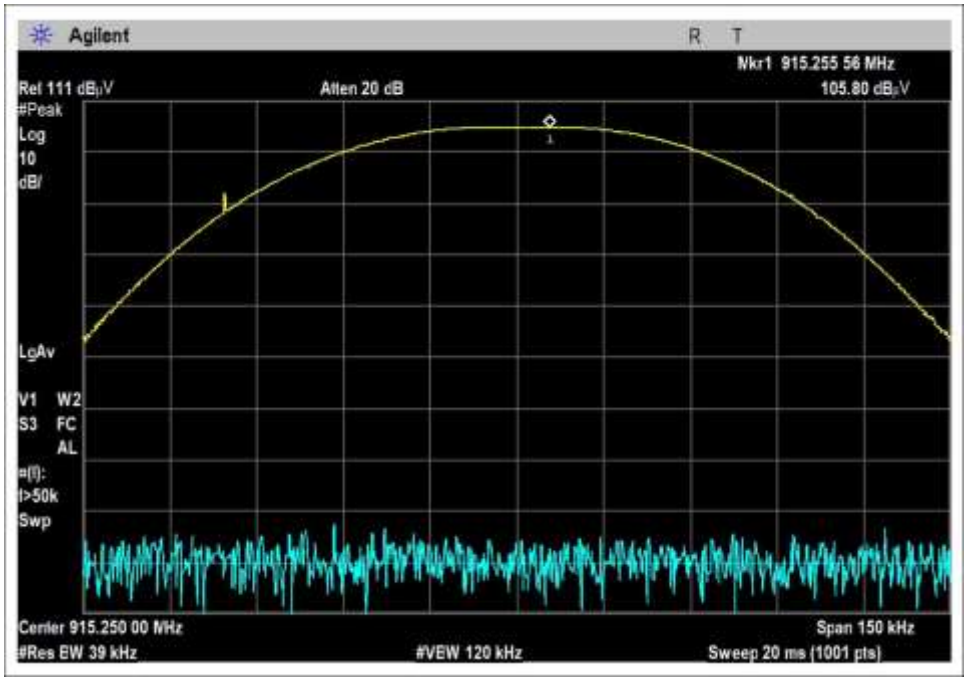


High Channel

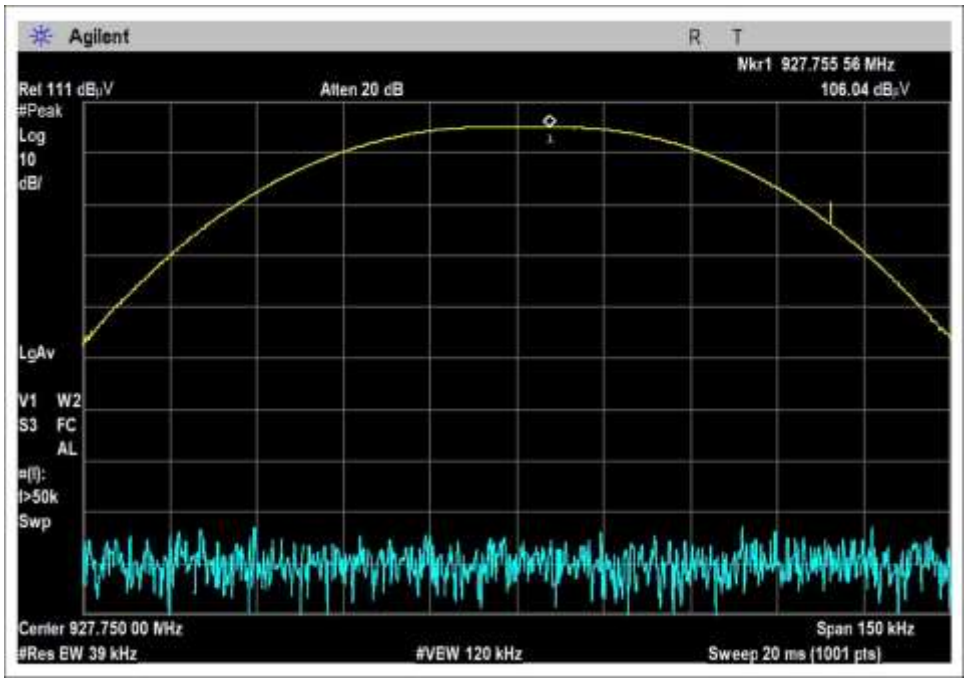
GFSK 25kbps



Low Channel

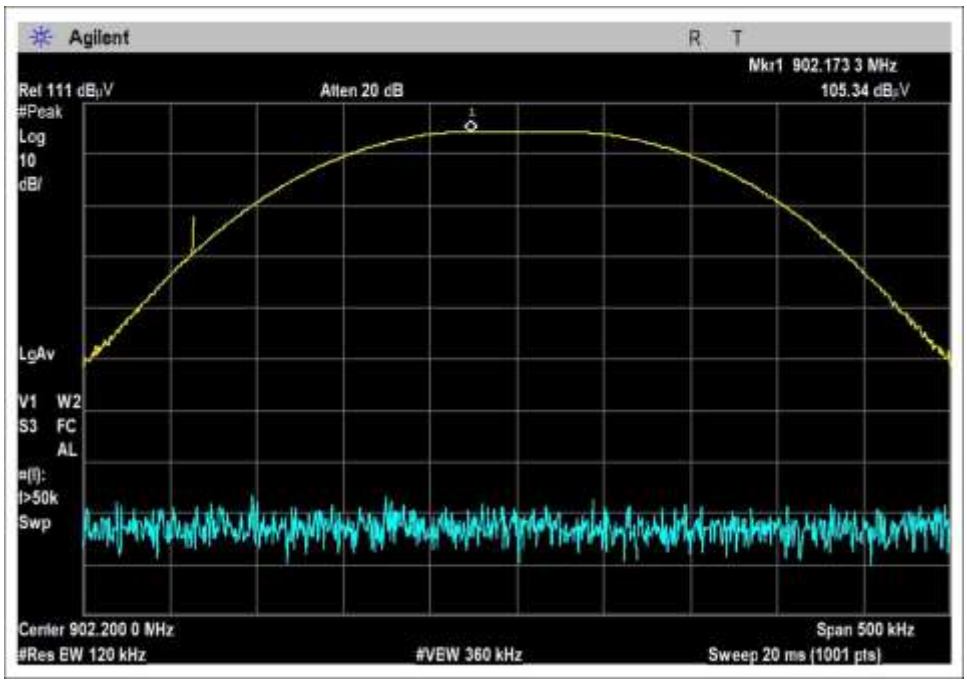


Middle Channel

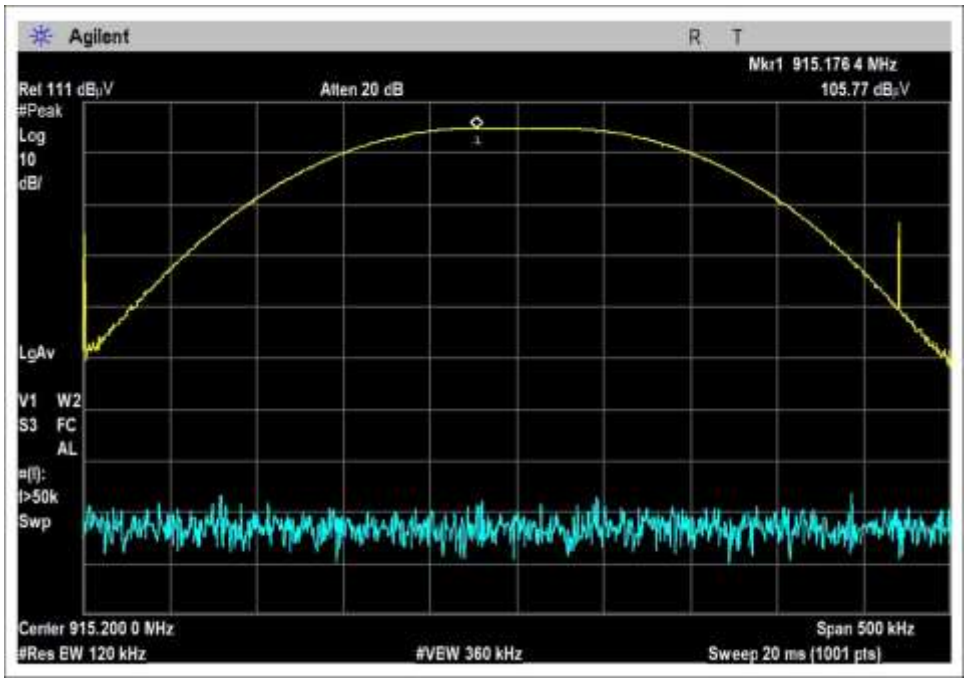


High Channel

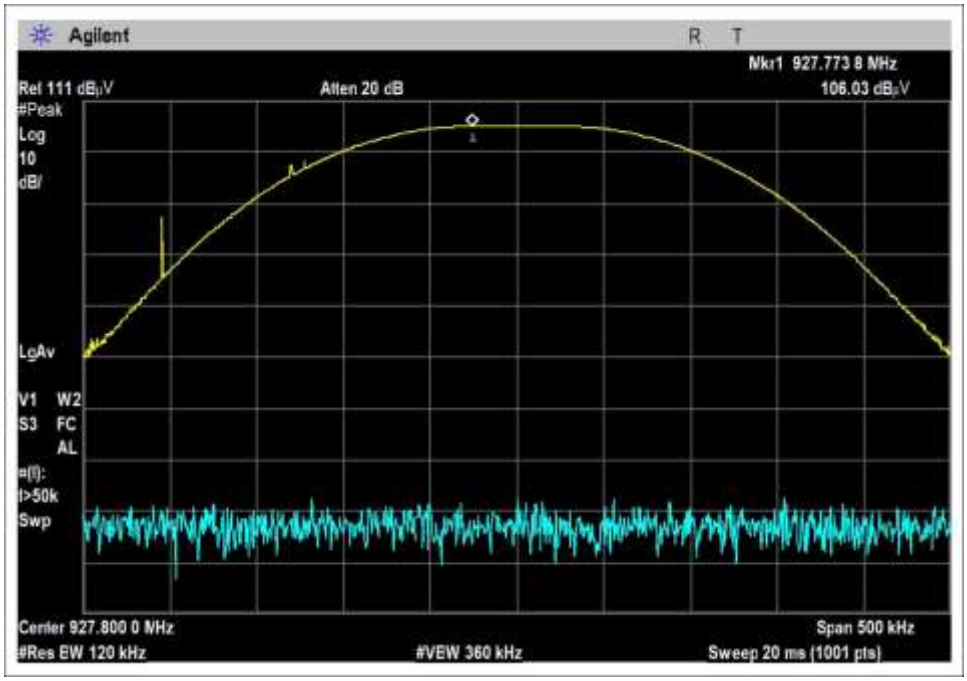
GFSK 50kbps



Low Channel



Middle Channel



High Channel

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(b) Power Output (902-928 MHz FHSS >50 Channels)**		
Work Order #:	**105334**	Date:	4/13/2021
Test Type:	**Conducted Emissions**	Time:	12:06:25
Tested By:	Michael Atkinson	Sequence#:	3
Software:	EMITest 5.03.19		115VAC 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

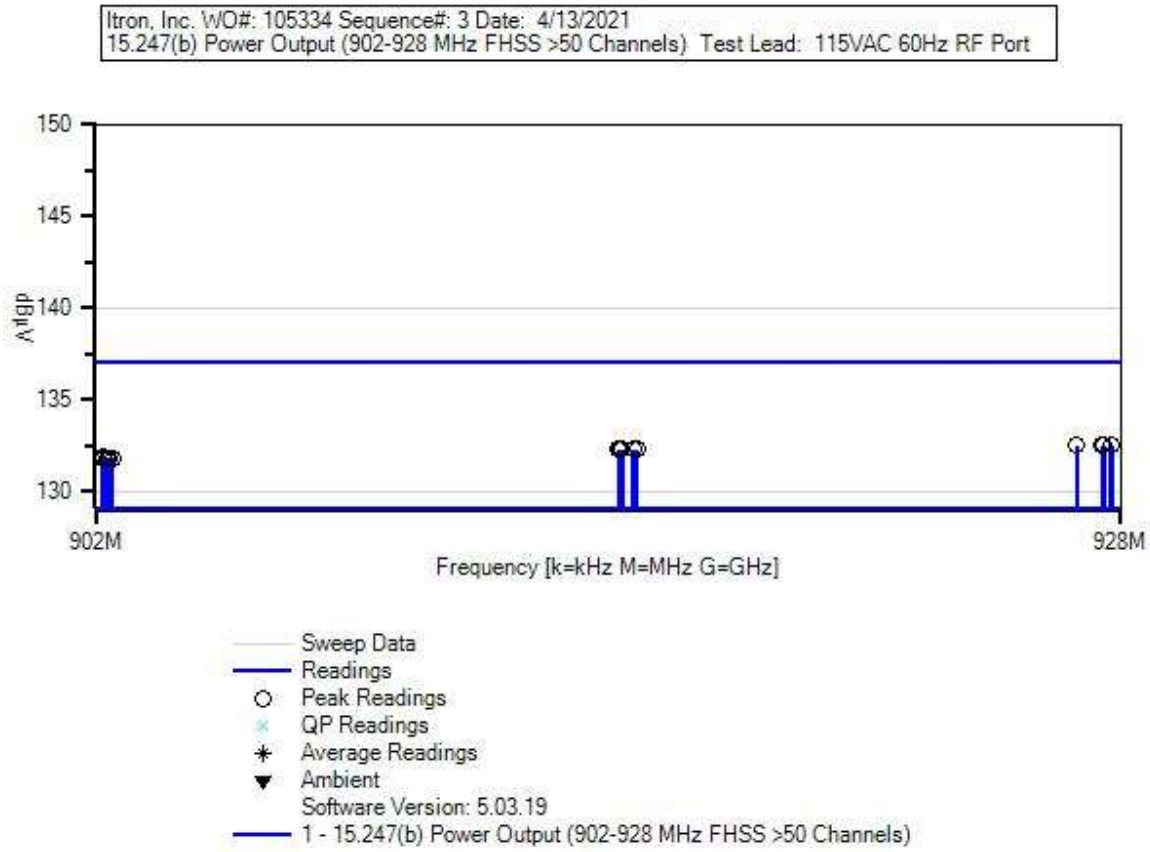
Test Conditions / Notes:

Test Location: Bothell Lab Bench

Test Method: ANSI C63.10 (2013)

Temperature (ºC): 22
Relative Humidity (%): 32

EUT has temporary antenna connector attached.
EUT directly connected to spectrum analyzer through appropriate cables and attenuators.
EUT is continuously transmitting with modulation.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T1	ANP07227	Attenuator	PE7004-6	10/2/2019	10/2/2021
T2	ANP05748	Attenuator	PE7004-20	3/4/2020	3/4/2022
T3	ANP06008	Cable	Heliax	2/1/2021	2/1/2023

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	926.872M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 FSK 100k	-4.5	RF Po
2	927.522M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 GFSK 300kP3	-4.5	RF Po
3	927.748M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 GFSK 10k	-4.5	RF Po
4	927.556M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 GFSK 150k	-4.5	RF Po
5	927.774M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 GSFK 50k	-4.5	RF Po
6	927.756M	106.0	+5.9	+20.0	+0.6		+0.0	132.5	137.0 GFSK 25k	-4.5	RF Po
7	915.223M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 FSK 100k	-4.7	RF Po
8	915.176M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 GSFK 50k	-4.7	RF Po
9	915.639M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 GFSK 150k	-4.7	RF Po
10	915.252M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 GFSK 10k	-4.7	RF Po
11	915.528M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 GFSK 300kP3	-4.7	RF Po
12	915.256M	105.8	+5.9	+20.0	+0.6		+0.0	132.3	137.0 GFSK 25k	-4.7	RF Po
13	902.206M	105.4	+5.9	+20.0	+0.6		+0.0	131.9	137.0 GFSK 25k	-5.1	RF Po
14	902.199M	105.3	+5.9	+20.0	+0.6		+0.0	131.8	137.0 GFSK 10k	-5.2	RF Po
15	902.439M	105.3	+5.9	+20.0	+0.6		+0.0	131.8	137.0 GFSK 150k	-5.2	RF Po
16	902.314M	105.3	+5.9	+20.0	+0.6		+0.0	131.8	137.0 GFSK 300kP3	-5.2	RF Po
17	902.173M	105.3	+5.9	+20.0	+0.6		+0.0	131.8	137.0 GSFK 50k	-5.2	RF Po
18	902.323M	105.3	+5.9	+20.0	+0.6		+0.0	131.8	137.0 FSK 100k	-5.2	RF Po
19	926.799M	101.9	+5.9	+20.0	+0.6		+0.0	128.4	137.0 OOK PL3	-8.6	RF Po
20	916.000M	101.5	+5.9	+20.0	+0.6		+0.0	128.0	137.0 OOK PL3	-9.0	RF Po
21	903.004M	101.1	+5.9	+20.0	+0.6		+0.0	127.6	137.0 OOK PL3	-9.4	RF Po
22	903.002M	89.0	+5.9	+20.0	+0.6		+0.0	115.5	137.0 OOK PL1	-21.5	RF Po
23	916.006M	88.8	+5.9	+20.0	+0.6		+0.0	115.3	137.0 OOK PL1	-21.7	RF Po
24	926.799M	88.6	+5.9	+20.0	+0.6		+0.0	115.1	137.0 OOK PL1	-21.9	RF Po

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 #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	12:10:52
Tested By:	Michael Atkinson	Sequence#:	11
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

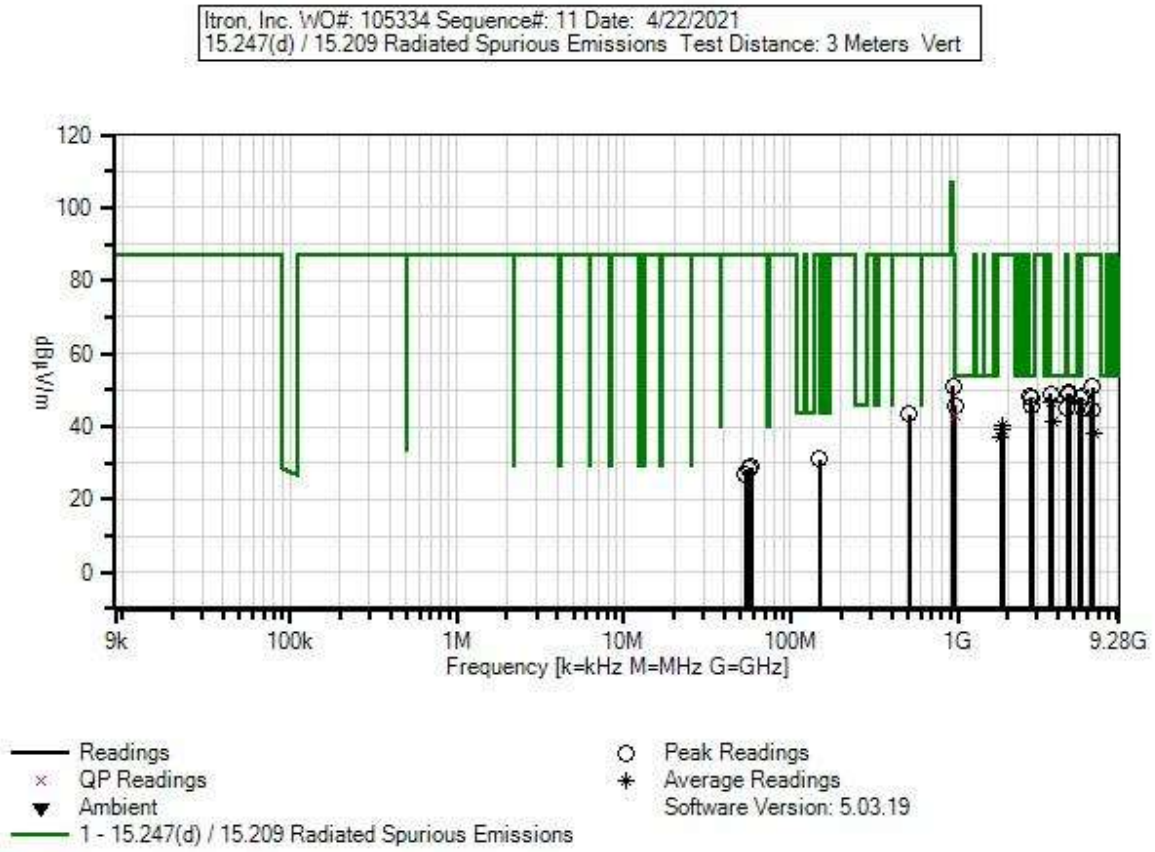
Test Conditions / Notes:

Frequency: 9kHz to 10GHz
OOK PL1

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T5	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T6	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T7	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T9	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T12	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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	4580.030M	45.3	+0.0 +0.6 +0.0	+0.9 -33.7 +0.0	+3.8 +0.3 +0.0	+0.0 +32.0 +0.0	+0.0	49.2	54.0 916	-4.8	Vert
2	3611.910M	47.5	+0.0 +0.5 +0.0	+0.8 -33.8 +0.0	+3.4 +0.3 +0.0	+0.0 +30.3 +0.0	+0.0	49.0	54.0 903	-5.0	Vert
3	4634.100M	44.8	+0.0 +0.6 +0.0	+0.9 -33.6 +0.0	+3.8 +0.3 +0.0	+0.0 +32.1 +0.0	+0.0	48.9	54.0 926.8	-5.1	Vert
4	2708.910M	49.8	+0.0 +0.4 +0.0	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.3 +0.0	+0.0	48.3	54.0 903	-5.7	Vert
5	5418.070M	42.2	+0.0 +0.4 +0.0	+1.0 -33.7 +0.0	+4.3 +0.4 +0.0	+0.0 +33.4 +0.0	+0.0	48.0	54.0 903	-6.0	Vert
6	2748.030M	49.3	+0.0 +0.4 +0.0	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.4 +0.0	+0.0	47.9	54.0 916	-6.1	Vert
7	3664.030M Ave	44.9	+0.0 +0.5 +0.0	+0.9 -33.7 +0.0	+3.4 +0.3 +0.0	+0.0 +30.5 +0.0	+0.0	46.8	54.0 916	-7.2	Vert
^	3664.030M	52.1	+0.0 +0.5 +0.0	+0.9 -33.7 +0.0	+3.4 +0.3 +0.0	+0.0 +30.5 +0.0	+0.0	54.0	54.0 916	+0.0	Vert
9	966.700M	11.3	+0.0 +0.0 +1.5	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0	45.9	54.0	-8.1	Horiz
10	2780.400M	46.7	+0.0 +0.4 +0.0	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.5 +0.0	+0.0	45.4	54.0 926.8	-8.6	Vert
11	4515.070M	41.7	+0.0 +0.6 +0.0	+0.9 -33.7 +0.0	+3.7 +0.3 +0.0	+0.0 +31.8 +0.0	+0.0	45.3	54.0 903	-8.7	Vert
12	966.700M QP	8.1	+0.0 +0.0 +1.5	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0	42.7	54.0	-11.3	Vert
13	966.700M QP	8.1	+0.0 +0.0 +1.5	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0	42.7	54.0	-11.3	Vert
14	3707.300M Ave	39.2	+0.0 +0.5 +0.0	+0.9 -33.7 +0.0	+3.5 +0.3 +0.0	+0.0 +30.6 +0.0	+0.0	41.3	54.0 926.8	-12.7	Vert
^	3707.300M	52.6	+0.0 +0.5 +0.0	+0.9 -33.7 +0.0	+3.5 +0.3 +0.0	+0.0 +30.6 +0.0	+0.0	54.7	54.0 926.8	+0.7	Vert

16	943.800M	16.9	+0.0	+0.4	+0.0	+0.0	+0.0	51.2	87.0	-35.8	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.4					
17	6412.030M	43.1	+0.0	+1.1	+5.3	+0.0	+0.0	50.8	87.0	-36.2	Vert
			+0.5	-34.2	+0.4	+34.6			916		
			+0.0	+0.0	+0.0	+0.0					
18	5560.900M	42.2	+0.0	+1.0	+4.4	+0.0	+0.0	48.3	87.0	-38.7	Vert
			+0.4	-33.7	+0.3	+33.7			926.8		
			+0.0	+0.0	+0.0	+0.0					
19	5496.030M	39.2	+0.0	+1.0	+4.4	+0.0	+0.0	45.1	87.0	-41.9	Vert
			+0.4	-33.7	+0.3	+33.5			916		
			+0.0	+0.0	+0.0	+0.0					
20	6321.070M	37.4	+0.0	+1.0	+5.1	+0.0	+0.0	44.8	87.0	-42.2	Vert
			+0.5	-34.1	+0.3	+34.6			903		
			+0.0	+0.0	+0.0	+0.0					
21	510.200M	15.8	+0.0	+0.3	+0.0	+0.0	+0.0	43.3	87.0	-43.7	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.1	+1.5	+5.8	+18.8					
22	1853.600M	45.0	+0.0	+0.5	+2.4	+0.0	+0.0	40.4	87.0	-46.6	Vert
	Ave		+0.4	-34.7	+0.3	+26.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
^	1853.600M	55.1	+0.0	+0.5	+2.4	+0.0	+0.0	50.5	87.0	-36.5	Vert
			+0.4	-34.7	+0.3	+26.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
24	1832.060M	44.4	+0.0	+0.5	+2.4	+0.0	+0.0	39.5	87.0	-47.5	Vert
	Ave		+0.4	-34.8	+0.3	+26.3			916		
			+0.0	+0.0	+0.0	+0.0					
^	1832.060M	58.6	+0.0	+0.5	+2.4	+0.0	+0.0	53.7	87.0	-33.3	Vert
			+0.4	-34.8	+0.3	+26.3			916		
			+0.0	+0.0	+0.0	+0.0					
26	6487.700M	30.2	+0.0	+1.2	+5.4	+0.0	+0.0	38.1	87.0	-48.9	Vert
	Ave		+0.5	-34.2	+0.5	+34.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
^	6487.700M	42.2	+0.0	+1.2	+5.4	+0.0	+0.0	50.1	87.0	-36.9	Vert
			+0.5	-34.2	+0.5	+34.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
28	1805.982M	42.0	+0.0	+0.5	+2.3	+0.0	+0.0	36.9	87.0	-50.1	Vert
	Ave		+0.5	-34.8	+0.3	+26.1			903		
			+0.0	+0.0	+0.0	+0.0					
^	1805.920M	56.2	+0.0	+0.5	+2.3	+0.0	+0.0	51.1	87.0	-35.9	Vert
			+0.5	-34.8	+0.3	+26.1			903		
			+0.0	+0.0	+0.0	+0.0					
30	148.150M	14.9	+0.0	+0.2	+0.0	+0.0	+0.0	31.1	87.0	-55.9	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.6	+0.7	+5.8	+8.9					
31	58.050M	14.7	+0.0	+0.1	+0.0	+0.0	+0.0	29.0	87.0	-58.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.4	+0.4	+5.8	+7.6					
32	55.656M	14.3	+0.0	+0.1	+0.0	+0.0	+0.0	28.5	87.0	-58.5	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.4	+0.4	+5.8	+7.5					

33	53.841M	12.7	+0.0 +0.0 +0.4	+0.1 +0.0 +0.4	+0.0 +0.0 +5.8	+0.0 +0.0 +7.5	+0.0	26.9	87.0	-60.1	Horiz
34	5.466M	19.1	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+9.3 +0.0 +0.0	-40.0	-11.5	87.0	-98.5	Groun

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 #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	12:26:20
Tested By:	Michael Atkinson	Sequence#:	10
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

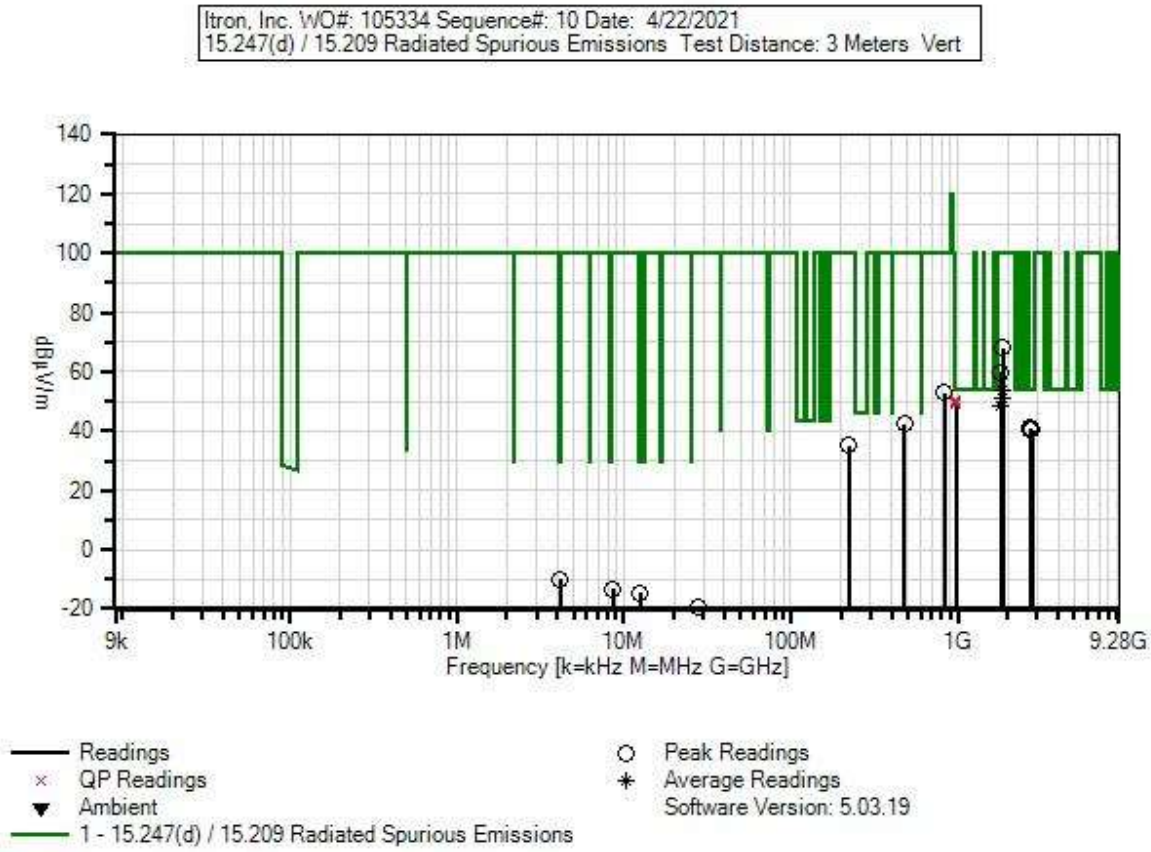
Test Conditions / Notes:

Frequency: 9kHz to 10GHz
OOK PL3

Test Location: Bothell Lab C3

Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T5	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T6	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T7	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T9	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T12	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11	T12					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	970.600M	15.8	+0.0	+0.4	+0.0	+0.0	+0.0	50.5	54.0	-3.5	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.7					
2	970.600M	15.2	+0.0	+0.4	+0.0	+0.0	+0.0	49.9	54.0	-4.1	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.7					
^	970.600M	23.8	+0.0	+0.4	+0.0	+0.0	+0.0	58.5	54.0	+4.5	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.7					
4	970.800M	14.2	+0.0	+0.4	+0.0	+0.0	+0.0	48.9	54.0	-5.1	Horiz
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.7					
^	970.800M	21.1	+0.0	+0.4	+0.0	+0.0	+0.0	55.8	54.0	+1.8	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.7					
6	2708.810M	42.5	+0.0	+0.7	+2.9	+0.0	+0.0	41.0	54.0	-13.0	Vert
			+0.4	-34.1	+0.3	+28.3			903		
			+0.0	+0.0	+0.0	+0.0					
7	2748.120M	42.2	+0.0	+0.7	+2.9	+0.0	+0.0	40.8	54.0	-13.2	Vert
			+0.4	-34.1	+0.3	+28.4			916		
			+0.0	+0.0	+0.0	+0.0					
8	2780.290M	41.8	+0.0	+0.7	+2.9	+0.0	+0.0	40.5	54.0	-13.5	Vert
			+0.4	-34.1	+0.3	+28.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
9	2709.020M	41.8	+0.0	+0.7	+2.9	+0.0	+0.0	40.3	54.0	-13.7	Horiz
			+0.4	-34.1	+0.3	+28.3			903		
			+0.0	+0.0	+0.0	+0.0					
10	1853.720M	72.7	+0.0	+0.5	+2.4	+0.0	+0.0	68.1	100.0	-31.9	Vert
			+0.4	-34.7	+0.3	+26.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
11	1810.000M	64.8	+0.0	+0.5	+2.4	+0.0	+0.0	59.7	100.0	-40.3	Horiz
			+0.4	-34.8	+0.3	+26.1			903		
			+0.0	+0.0	+0.0	+0.0					
12	1853.584M	58.4	+0.0	+0.5	+2.4	+0.0	+0.0	53.8	100.0	-46.2	Vert
	Ave		+0.4	-34.7	+0.3	+26.5			926.8		
			+0.0	+0.0	+0.0	+0.0					
13	831.000M	19.9	+0.0	+0.3	+0.0	+0.0	+0.0	53.0	100.0	-47.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+1.9	+5.8	+23.7					
14	1831.970M	56.3	+0.0	+0.5	+2.4	+0.0	+0.0	51.4	100.0	-48.6	Vert
	Ave		+0.4	-34.8	+0.3	+26.3			916		
			+0.0	+0.0	+0.0	+0.0					
^	1832.040M	71.1	+0.0	+0.5	+2.4	+0.0	+0.0	66.2	100.0	-33.8	Vert
			+0.4	-34.8	+0.3	+26.3			916		
			+0.0	+0.0	+0.0	+0.0					

16	1806.000M	53.3	+0.0	+0.5	+2.3	+0.0	+0.0	48.2	100.0	-51.8	Vert
	Ave		+0.5	-34.8	+0.3	+26.1			903		
			+0.0	+0.0	+0.0	+0.0					
^	1806.010M	68.9	+0.0	+0.5	+2.3	+0.0	+0.0	63.8	100.0	-36.2	Vert
			+0.5	-34.8	+0.3	+26.1			903		
			+0.0	+0.0	+0.0	+0.0					
18	476.000M	15.4	+0.0	+0.3	+0.0	+0.0	+0.0	42.3	100.0	-57.7	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.1	+1.4	+5.8	+18.3					
19	222.800M	16.4	+0.0	+0.2	+0.0	+0.0	+0.0	35.0	100.0	-65.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.7	+0.9	+5.8	+11.0					
20	4.161M	20.6	+0.0	+0.0	+0.1	+9.3	-40.0	-10.0	100.0	-110.0	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
21	8.569M	17.5	+0.0	+0.0	+0.2	+9.2	-40.0	-13.1	100.0	-113.1	Perp
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
22	12.571M	15.9	+0.0	+0.0	+0.2	+9.3	-40.0	-14.6	100.0	-114.6	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
23	27.709M	14.9	+0.0	+0.1	+0.3	+5.2	-40.0	-19.5	100.0	-119.5	Groun
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	13:47:14
Tested By:	Michael Atkinson	Sequence#:	11
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

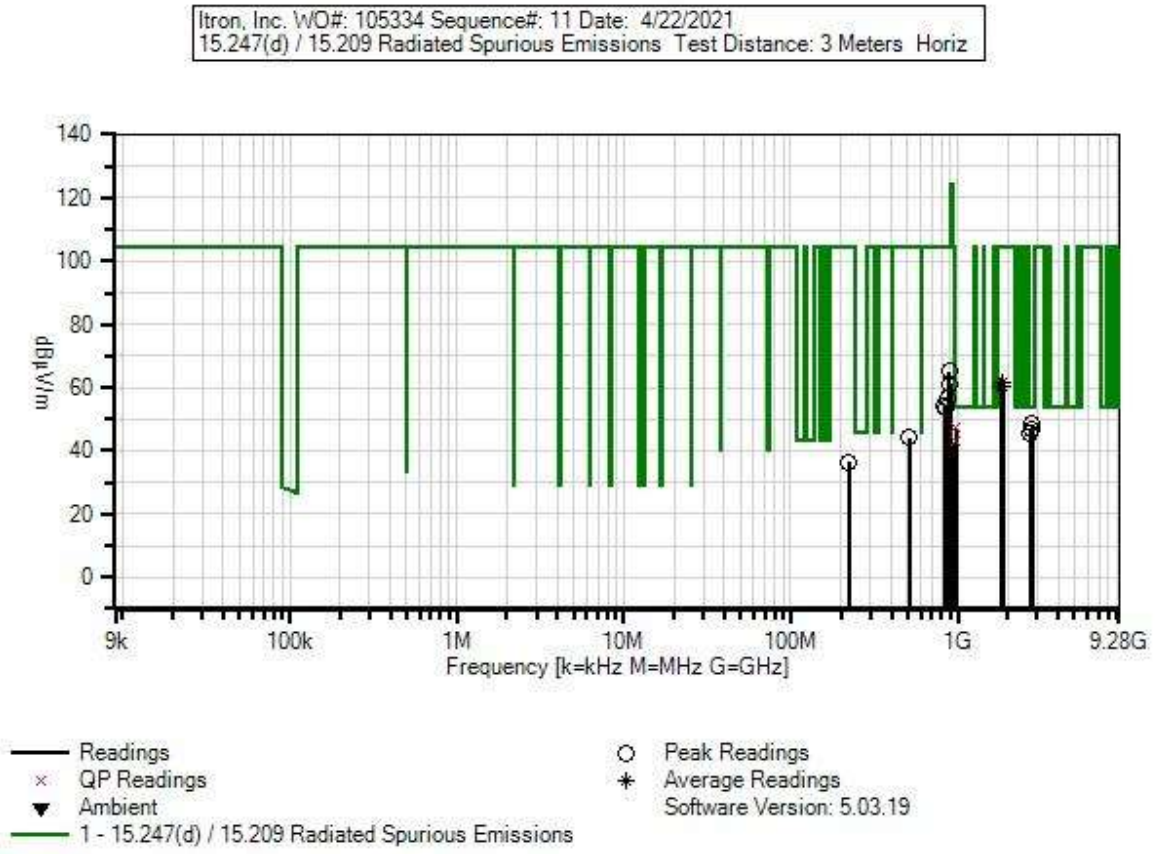
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
GFSK 10kbps

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T5	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T6	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T7	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T9	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T12	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11	T12					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2783.250M	49.7	+0.0	+0.7	+2.9	+0.0	+0.0	48.4	54.0	-5.6	Vert
			+0.4	-34.1	+0.3	+28.5			927.75		
			+0.0	+0.0	+0.0	+0.0					
2	980.200M	12.5	+0.0	+0.4	+0.0	+0.0	+0.0	47.4	54.0	-6.6	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.9					
^	980.200M	17.0	+0.0	+0.4	+0.0	+0.0	+0.0	51.9	54.0	-2.1	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.9					
4	2745.770M	48.3	+0.0	+0.7	+2.9	+0.0	+0.0	46.9	54.0	-7.1	Vert
			+0.4	-34.1	+0.3	+28.4			915.25		
			+0.0	+0.0	+0.0	+0.0					
5	2706.600M	47.1	+0.0	+0.7	+2.9	+0.0	+0.0	45.6	54.0	-8.4	Vert
			+0.4	-34.1	+0.3	+28.3			902.2		
			+0.0	+0.0	+0.0	+0.0					
6	968.400M	8.3	+0.0	+0.4	+0.0	+0.0	+0.0	42.9	54.0	-11.1	Horiz
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
^	968.400M	24.5	+0.0	+0.4	+0.0	+0.0	+0.0	59.1	54.0	+5.1	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
8	965.600M	8.2	+0.0	+0.4	+0.0	+0.0	+0.0	42.8	54.0	-11.2	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
^	965.600M	18.6	+0.0	+0.4	+0.0	+0.0	+0.0	53.2	54.0	-0.8	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
10	890.400M	31.8	+0.0	+0.3	+0.0	+0.0	+0.0	65.2	104.5	-39.3	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.1	+5.8	+23.8					
11	1855.500M	66.1	+0.0	+0.5	+2.4	+0.0	+0.0	61.6	104.5	-42.9	Vert
	Ave		+0.4	-34.7	+0.3	+26.6			927.75		
			+0.0	+0.0	+0.0	+0.0					
^	1855.500M	75.5	+0.0	+0.5	+2.4	+0.0	+0.0	71.0	104.5	-33.5	Vert
			+0.4	-34.7	+0.3	+26.6			927.75		
			+0.0	+0.0	+0.0	+0.0					
13	900.000M	27.7	+0.0	+0.3	+0.0	+0.0	+0.0	61.1	104.5	-43.4	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.1	+5.8	+23.8					
14	1830.476M	65.4	+0.0	+0.5	+2.4	+0.0	+0.0	60.5	104.5	-44.0	Vert
	Ave		+0.4	-34.8	+0.3	+26.3			915.25		
			+0.0	+0.0	+0.0	+0.0					
^	1830.490M	75.1	+0.0	+0.5	+2.4	+0.0	+0.0	70.2	104.5	-34.3	Vert
			+0.4	-34.8	+0.3	+26.3			915.25		
			+0.0	+0.0	+0.0	+0.0					

16	1804.400M	65.5	+0.0	+0.5	+2.3	+0.0	+0.0	60.4	104.5	-44.1	Vert
	Ave		+0.5	-34.8	+0.3	+26.1			902.2		
			+0.0	+0.0	+0.0	+0.0					
^	1804.400M	75.1	+0.0	+0.5	+2.3	+0.0	+0.0	70.0	104.5	-34.5	Vert
			+0.5	-34.8	+0.3	+26.1			902.2		
			+0.0	+0.0	+0.0	+0.0					
18	877.800M	23.0	+0.0	+0.3	+0.0	+0.0	+0.0	56.4	104.5	-48.1	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.1	+5.8	+23.8					
19	828.600M	21.4	+0.0	+0.3	+0.0	+0.0	+0.0	54.5	104.5	-50.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+1.9	+5.8	+23.7					
20	839.200M	20.5	+0.0	+0.3	+0.0	+0.0	+0.0	53.7	104.5	-50.8	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.0	+5.8	+23.7					
21	510.200M	16.7	+0.0	+0.3	+0.0	+0.0	+0.0	44.2	104.5	-60.3	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.1	+1.5	+5.8	+18.8					
22	221.600M	18.0	+0.0	+0.2	+0.0	+0.0	+0.0	36.5	104.5	-68.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.7	+0.9	+5.8	+10.9					
23	11.527M	17.0	+0.0	+0.0	+0.1	+9.2	-40.0	-13.7	104.5	-118.2	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	14:25:03
Tested By:	Michael Atkinson	Sequence#:	12
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

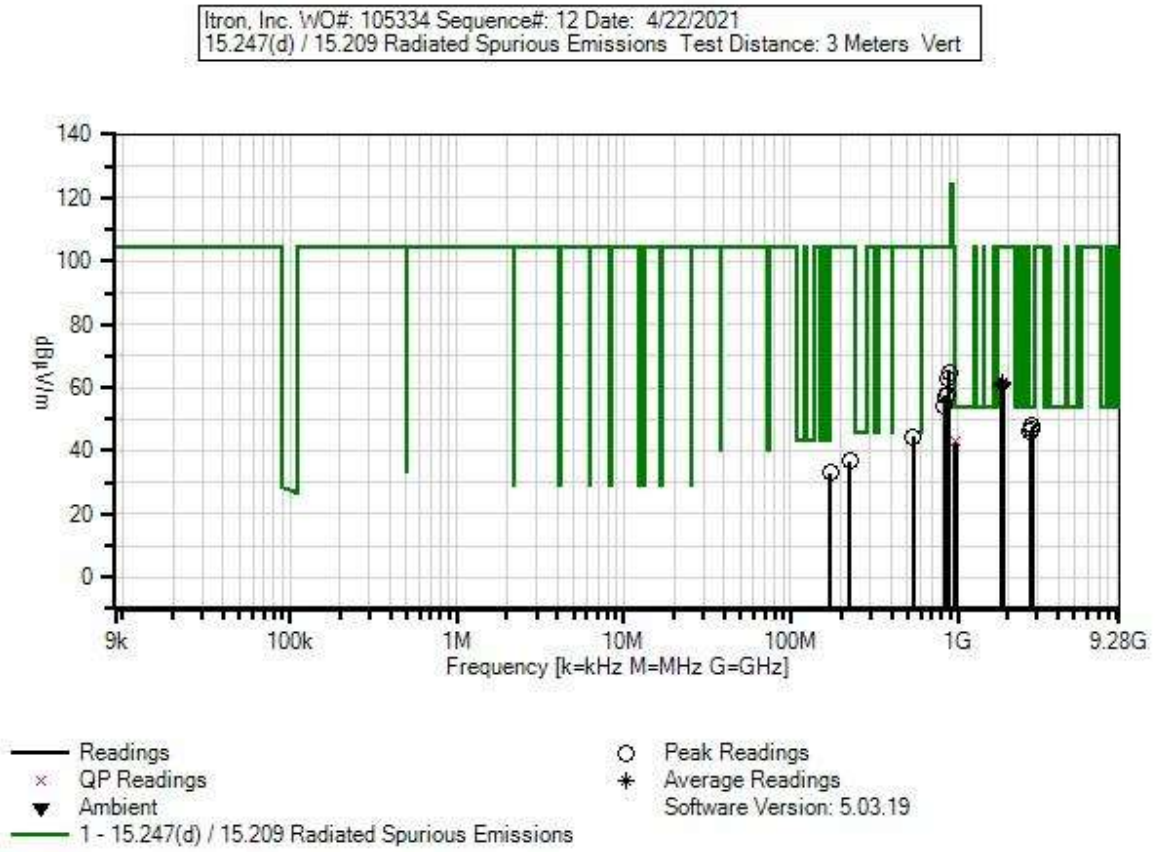
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
GFSK 150kbps

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T3	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T4	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T5	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T6	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T7	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T8	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T9	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T10	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T11	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T12	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11	T12					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2782.910M	49.1	+0.0	+0.7	+2.9	+0.0	+0.0	47.8	54.0	-6.2	Vert
			+0.4	-34.1	+0.3	+28.5			927.6		
			+0.0	+0.0	+0.0	+0.0					
2	2746.870M	48.1	+0.0	+0.7	+2.9	+0.0	+0.0	46.7	54.0	-7.3	Vert
			+0.4	-34.1	+0.3	+28.4			915.6		
			+0.0	+0.0	+0.0	+0.0					
3	2707.260M	47.4	+0.0	+0.7	+2.9	+0.0	+0.0	45.9	54.0	-8.1	Vert
			+0.4	-34.1	+0.3	+28.3			902.4		
			+0.0	+0.0	+0.0	+0.0					
4	172.120M	15.9	+0.0	+0.2	+0.0	+0.0	+0.0	33.2	43.5	-10.3	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.6	+0.8	+5.8	+9.9					
5	975.000M	8.2	+0.0	+0.4	+0.0	+0.0	+0.0	43.0	54.0	-11.0	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.8					
^	975.000M	17.4	+0.0	+0.4	+0.0	+0.0	+0.0	52.2	54.0	-1.8	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.3	+5.8	+24.8					
7	969.400M	8.3	+0.0	+0.4	+0.0	+0.0	+0.0	42.9	54.0	-11.1	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
^	969.400M	20.8	+0.0	+0.4	+0.0	+0.0	+0.0	55.4	54.0	+1.4	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.7					
9	963.000M	8.3	+0.0	+0.4	+0.0	+0.0	+0.0	42.8	54.0	-11.2	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.6					
^	963.000M	22.0	+0.0	+0.4	+0.0	+0.0	+0.0	56.5	54.0	+2.5	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.5	+2.2	+5.8	+24.6					
11	883.400M	31.4	+0.0	+0.3	+0.0	+0.0	+0.0	64.8	104.5	-39.7	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.1	+5.8	+23.8					
12	872.800M	29.5	+0.0	+0.3	+0.0	+0.0	+0.0	62.8	104.5	-41.7	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.0	+5.8	+23.8					
13	1855.140M	66.0	+0.0	+0.5	+2.4	+0.0	+0.0	61.4	104.5	-43.1	Vert
	Ave		+0.4	-34.7	+0.3	+26.5			927.6		
			+0.0	+0.0	+0.0	+0.0					
^	1855.140M	75.5	+0.0	+0.5	+2.4	+0.0	+0.0	70.9	104.5	-33.6	Vert
			+0.4	-34.7	+0.3	+26.5			927.6		
			+0.0	+0.0	+0.0	+0.0					
15	1831.270M	65.7	+0.0	+0.5	+2.4	+0.0	+0.0	60.8	104.5	-43.7	Vert
	Ave		+0.4	-34.8	+0.3	+26.3			915.6		
			+0.0	+0.0	+0.0	+0.0					

^	1831.270M	75.0	+0.0	+0.5	+2.4	+0.0	+0.0	70.1	104.5	-34.4	Vert
			+0.4	-34.8	+0.3	+26.3			915.6		
			+0.0	+0.0	+0.0	+0.0					
17	1804.720M	65.4	+0.0	+0.5	+2.3	+0.0	+0.0	60.3	104.5	-44.2	Vert
	Ave		+0.5	-34.8	+0.3	+26.1			902.4		
			+0.0	+0.0	+0.0	+0.0					
^	1804.720M	74.7	+0.0	+0.5	+2.3	+0.0	+0.0	69.6	104.5	-34.9	Vert
			+0.5	-34.8	+0.3	+26.1			902.4		
			+0.0	+0.0	+0.0	+0.0					
19	877.000M	24.4	+0.0	+0.3	+0.0	+0.0	+0.0	57.7	104.5	-46.8	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.0	+5.8	+23.8					
20	847.000M	24.3	+0.0	+0.3	+0.0	+0.0	+0.0	57.5	104.5	-47.0	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.0	+5.8	+23.7					
21	836.200M	21.0	+0.0	+0.3	+0.0	+0.0	+0.0	54.2	104.5	-50.3	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+1.4	+2.0	+5.8	+23.7					
22	543.200M	16.1	+0.0	+0.3	+0.0	+0.0	+0.0	44.4	104.5	-60.1	Vert
			+0.0	+0.0	+0.0	+0.0					
			+1.1	+1.5	+5.8	+19.6					
23	226.400M	18.1	+0.0	+0.2	+0.0	+0.0	+0.0	36.8	104.5	-67.7	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.7	+0.9	+5.8	+11.1					
24	5.292M	19.9	+0.0	+0.0	+0.1	+9.3	-40.0	-10.7	104.5	-115.2	Para
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	14:54:27
Tested By:	Michael Atkinson	Sequence#:	13
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

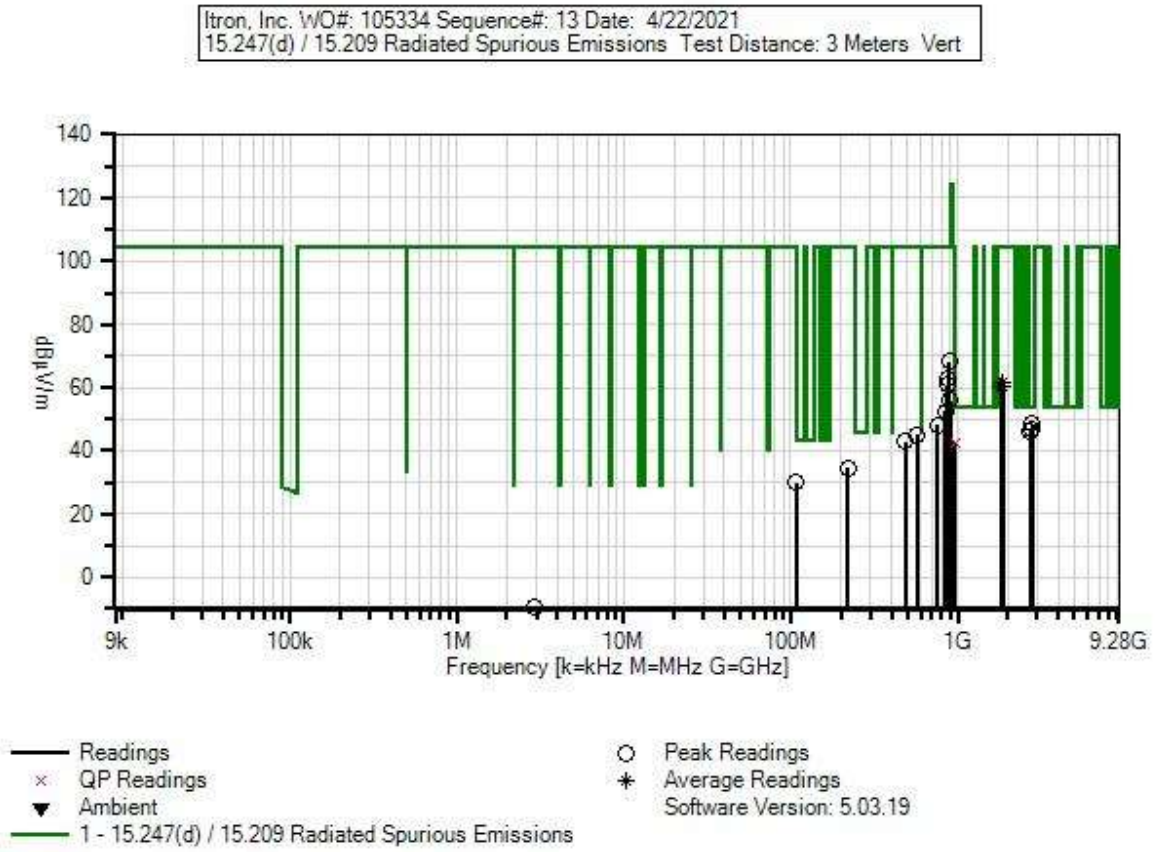
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
FSK 100kbps

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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
	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T1	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T4	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T8	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T9	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T10	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T11	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11						
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2780.960M	49.8	+0.7	+2.9	+0.0	+0.4	+0.0	48.5	54.0	-5.5	Vert
			-34.1	+0.3	+28.5	+0.0			926.9		
			+0.0	+0.0	+0.0						
2	2745.660M	48.3	+0.7	+2.9	+0.0	+0.4	+0.0	46.9	54.0	-7.1	Vert
			-34.1	+0.3	+28.4	+0.0			915.2		
			+0.0	+0.0	+0.0						
3	2706.980M	47.7	+0.7	+2.9	+0.0	+0.4	+0.0	46.2	54.0	-7.8	Vert
			-34.1	+0.3	+28.3	+0.0			902.3		
			+0.0	+0.0	+0.0						
4	962.400M	8.2	+0.4	+0.0	+0.0	+0.0	+0.0	42.7	54.0	-11.3	Horiz
	QP		+0.0	+0.0	+0.0	+1.5					
			+2.2	+5.8	+24.6						
^	962.400M	17.0	+0.4	+0.0	+0.0	+0.0	+0.0	51.5	54.0	-2.5	Horiz
			+0.0	+0.0	+0.0	+1.5					
			+2.2	+5.8	+24.6						
6	963.855M	8.2	+0.4	+0.0	+0.0	+0.0	+0.0	42.7	54.0	-11.3	Vert
	QP		+0.0	+0.0	+0.0	+1.5					
			+2.2	+5.8	+24.6						
^	963.850M	22.0	+0.4	+0.0	+0.0	+0.0	+0.0	56.5	54.0	+2.5	Vert
			+0.0	+0.0	+0.0	+1.5					
			+2.2	+5.8	+24.6						
8	889.200M	34.8	+0.3	+0.0	+0.0	+0.0	+0.0	68.2	104.5	-36.3	Horiz
			+0.0	+0.0	+0.0	+1.4					
			+2.1	+5.8	+23.8						
9	878.200M	29.7	+0.3	+0.0	+0.0	+0.0	+0.0	63.1	104.5	-41.4	Horiz
			+0.0	+0.0	+0.0	+1.4					
			+2.1	+5.8	+23.8						
10	1853.825M	66.0	+0.5	+2.4	+0.0	+0.4	+0.0	61.4	104.5	-43.1	Vert
	Ave		-34.7	+0.3	+26.5	+0.0			926.9		
			+0.0	+0.0	+0.0						
^	1853.880M	75.7	+0.5	+2.4	+0.0	+0.4	+0.0	71.1	104.5	-33.4	Vert
			-34.7	+0.3	+26.5	+0.0			926.9		
			+0.0	+0.0	+0.0						
12	859.960M	27.4	+0.3	+0.0	+0.0	+0.0	+0.0	60.7	104.5	-43.8	Vert
			+0.0	+0.0	+0.0	+1.4					
			+2.0	+5.8	+23.8						
13	1804.630M	65.7	+0.5	+2.3	+0.0	+0.5	+0.0	60.6	104.5	-43.9	Vert
	Ave		-34.8	+0.3	+26.1	+0.0			902.3		
			+0.0	+0.0	+0.0						
^	1804.630M	74.9	+0.5	+2.3	+0.0	+0.5	+0.0	69.8	104.5	-34.7	Vert
			-34.8	+0.3	+26.1	+0.0			902.3		
			+0.0	+0.0	+0.0						

15	1830.450M Ave	65.3	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	60.4	104.5 915.2	-44.1	Vert
^	1830.450M	74.9	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	70.0	104.5 915.2	-34.5	Vert
17	898.300M	22.6	+0.3 +0.0 +2.1	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	56.0	104.5	-48.5	Vert
18	837.600M	19.3	+0.3 +0.0 +2.0	+0.0 +0.0 +5.8	+0.0 +0.0 +23.7	+0.0 +1.4	+0.0	52.5	104.5	-52.0	Horiz
19	752.260M	15.9	+0.3 +0.0 +1.8	+0.0 +0.0 +5.8	+0.0 +0.0 +23.2	+0.0 +1.3	+0.0	48.3	104.5	-56.2	Vert
20	566.690M	16.2	+0.3 +0.0 +1.6	+0.0 +0.0 +5.8	+0.0 +0.0 +20.1	+0.0 +1.1	+0.0	45.1	104.5	-59.4	Vert
21	482.760M	15.9	+0.3 +0.0 +1.4	+0.0 +0.0 +5.8	+0.0 +0.0 +18.3	+0.0 +1.1	+0.0	42.8	104.5	-61.7	Vert
22	218.250M	16.4	+0.2 +0.0 +0.9	+0.0 +0.0 +5.8	+0.0 +0.0 +10.7	+0.0 +0.7	+0.0	34.7	104.5	-69.8	Horiz
23	107.040M	15.0	+0.1 +0.0 +0.6	+0.0 +0.0 +5.8	+0.0 +0.0 +8.1	+0.0 +0.5	+0.0	30.1	104.5	-74.4	Horiz
24	2.943M	21.4	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+9.4 +0.0 +0.0	+0.0 +0.0	-40.0	-9.1	104.5	-113.6	Para

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 #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	16:19:28
Tested By:	Michael Atkinson	Sequence#:	15
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

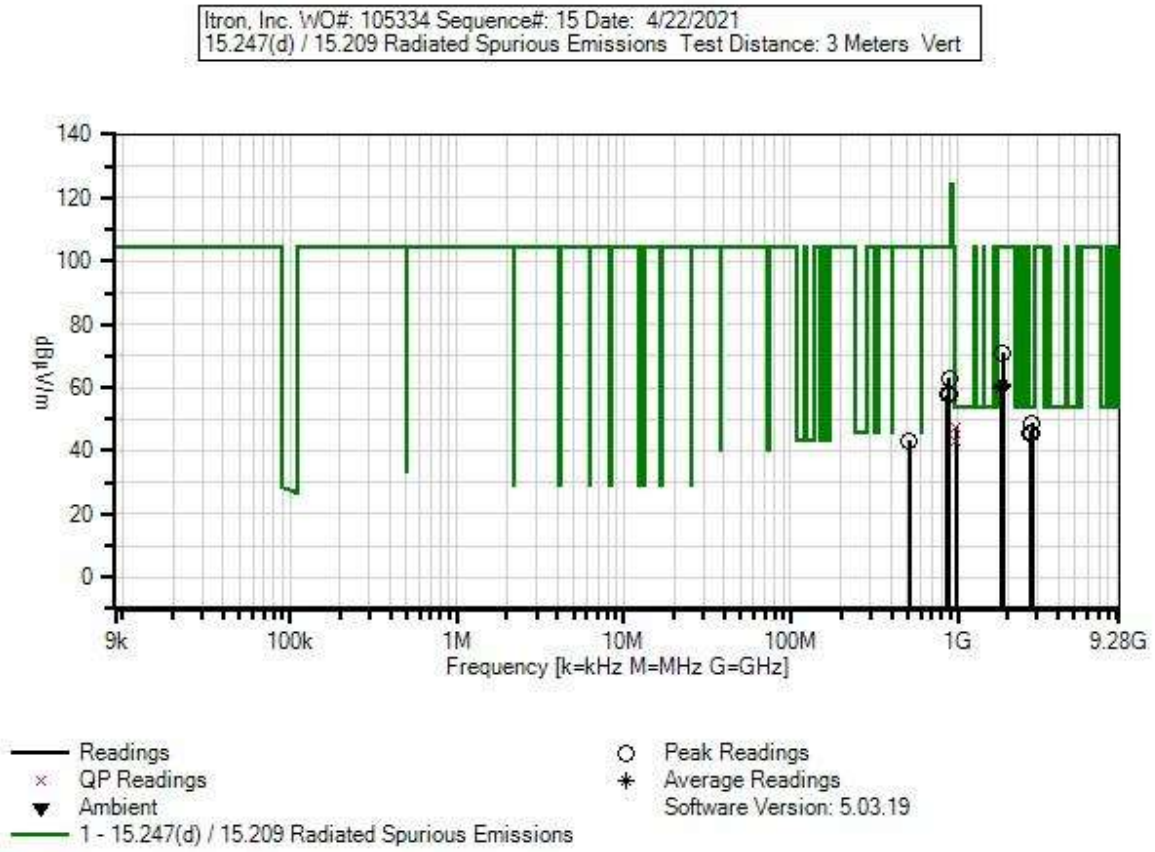
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
GFSK 300kbps PL3

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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
	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T1	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T4	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T8	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T9	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T10	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T11	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11						
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2782.800M	50.0	+0.7	+2.9	+0.0	+0.4	+0.0	48.7	54.0	-5.3	Vert
			-34.1	+0.3	+28.5	+0.0			927.6		
			+0.0	+0.0	+0.0						
2	980.400M	12.6	+0.4	+0.0	+0.0	+0.0	+0.0	47.5	54.0	-6.5	Vert
	QP		+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.9						
^	980.400M	16.3	+0.4	+0.0	+0.0	+0.0	+0.0	51.2	54.0	-2.8	Vert
			+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.9						
4	2746.830M	47.2	+0.7	+2.9	+0.0	+0.4	+0.0	45.8	54.0	-8.2	Vert
			-34.1	+0.3	+28.4	+0.0			915.6		
			+0.0	+0.0	+0.0						
5	2707.220M	46.8	+0.7	+2.9	+0.0	+0.4	+0.0	45.3	54.0	-8.7	Vert
			-34.1	+0.3	+28.3	+0.0			902.4		
			+0.0	+0.0	+0.0						
6	977.400M	8.3	+0.4	+0.0	+0.0	+0.0	+0.0	43.1	54.0	-10.9	Horiz
	QP		+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.8						
^	977.400M	21.2	+0.4	+0.0	+0.0	+0.0	+0.0	56.0	54.0	+2.0	Horiz
			+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.8						
8	971.000M	8.3	+0.4	+0.0	+0.0	+0.0	+0.0	43.0	54.0	-11.0	Vert
	QP		+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.7						
^	971.000M	27.1	+0.4	+0.0	+0.0	+0.0	+0.0	61.8	54.0	+7.8	Vert
			+0.0	+0.0	+0.0	+1.5					
			+2.3	+5.8	+24.7						
10	1855.330M	75.6	+0.5	+2.4	+0.0	+0.4	+0.0	71.1	104.5	-33.4	Vert
			-34.7	+0.3	+26.6	+0.0			927.6		
			+0.0	+0.0	+0.0						
11	890.400M	29.6	+0.3	+0.0	+0.0	+0.0	+0.0	63.0	104.5	-41.5	Horiz
			+0.0	+0.0	+0.0	+1.4					
			+2.1	+5.8	+23.8						
12	1855.203M	65.8	+0.5	+2.4	+0.0	+0.4	+0.0	61.2	104.5	-43.3	Vert
	Ave		-34.7	+0.3	+26.5	+0.0			927.6		
			+0.0	+0.0	+0.0						
13	1831.242M	65.1	+0.5	+2.4	+0.0	+0.4	+0.0	60.2	104.5	-44.3	Vert
	Ave		-34.8	+0.3	+26.3	+0.0			915.6		
			+0.0	+0.0	+0.0						
^	1831.330M	75.3	+0.5	+2.4	+0.0	+0.4	+0.0	70.4	104.5	-34.1	Vert
			-34.8	+0.3	+26.3	+0.0			915.6		
			+0.0	+0.0	+0.0						

15	1804.705M Ave	64.9	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	59.8	104.5 902.4	-44.7	Vert
^	1804.630M	75.0	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	69.9	104.5 902.4	-34.6	Vert
17	885.800M	24.3	+0.3 +0.0 +2.1	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	57.7	104.5	-46.8	Vert
18	865.000M	24.3	+0.3 +0.0 +2.0	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	57.6	104.5	-46.9	Vert
19	509.710M	15.6	+0.3 +0.0 +1.5	+0.0 +0.0 +5.8	+0.0 +0.0 +18.8	+0.0 +1.1	+0.0	43.1	104.5	-61.4	Vert
20	4.683M	20.3	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+9.3 +0.0 +0.0	+0.0 +0.0	-40.0	-10.3	104.5	-114.8	Para

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 #:	**105334**	Date:	4/23/2021
Test Type:	**Radiated Scan**	Time:	09:35:46
Tested By:	Michael Atkinson	Sequence#:	17
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

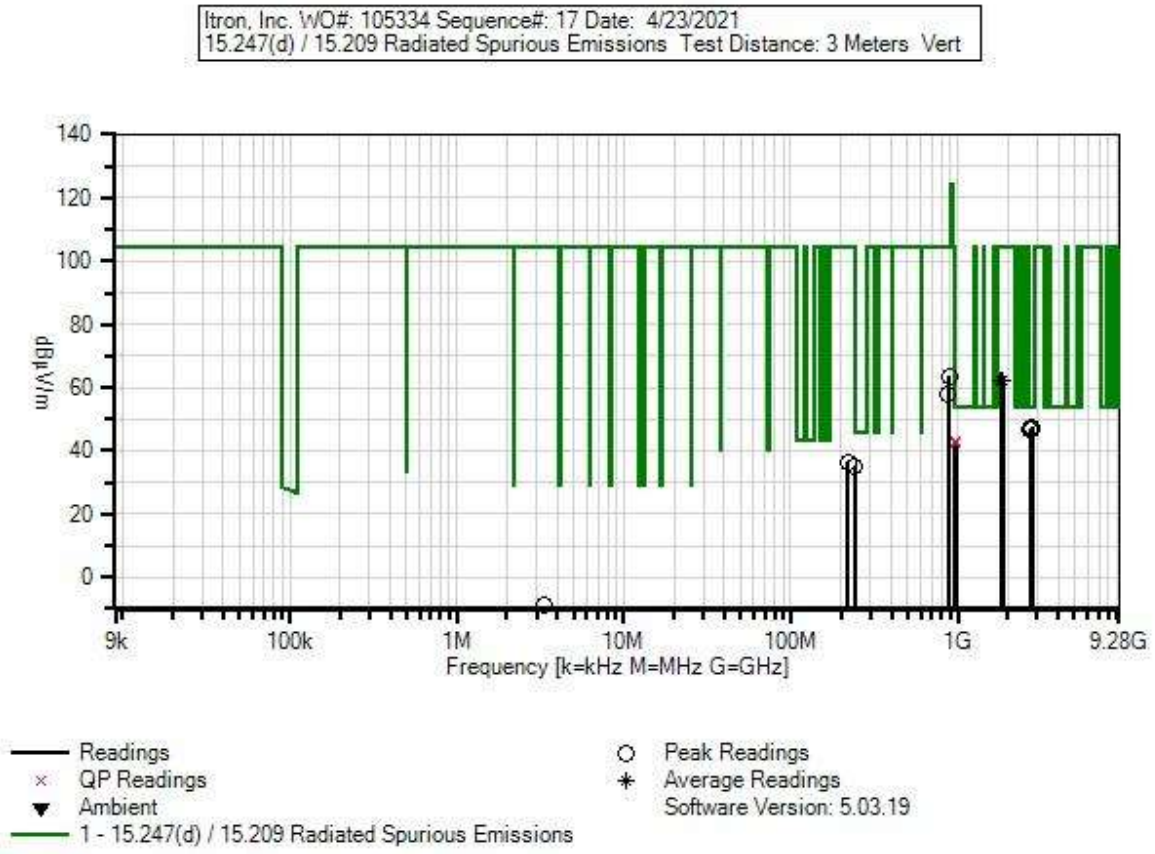
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
GFSK 25kbps

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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
	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T1	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T4	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T8	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T9	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T10	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T11	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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	2783.320M	48.7	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.5 +0.0	+0.4 +0.0	+0.0	47.4	54.0 927.75	-6.6	Vert
2	2706.583M	48.4	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.3 +0.0	+0.4 +0.0	+0.0	46.9	54.0 902.2	-7.1	Vert
3	2745.770M	48.3	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.4 +0.0	+0.4 +0.0	+0.0	46.9	54.0 915.25	-7.1	Vert
4	242.100M	15.5	+0.2 +0.0 +0.9	+0.0 +0.0 +5.8	+0.0 +0.0 +11.9	+0.0 +0.8	+0.0	35.1	46.0	-10.9	Vert
5	974.400M QP	8.1	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	42.9	54.0	-11.1	Vert
^	974.400M	19.7	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	54.5	54.0	+0.5	Vert
7	973.000M QP	8.0	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	42.8	54.0	-11.2	Vert
^	973.000M	16.8	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	51.6	54.0	-2.4	Vert
9	969.400M QP	8.0	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	42.6	54.0	-11.4	Horiz
^	969.400M	22.2	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	56.8	54.0	+2.8	Horiz
11	885.400M	30.1	+0.3 +0.0 +2.1	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	63.5	104.5	-41.0	Vert
12	1855.500M Ave	66.9	+0.5 -34.7 +0.0	+2.4 +0.3 +0.0	+0.0 +26.6 +0.0	+0.4 +0.0	+0.0	62.4	104.5 927.75	-42.1	Vert
^	1855.500M	76.7	+0.5 -34.7 +0.0	+2.4 +0.3 +0.0	+0.0 +26.6 +0.0	+0.4 +0.0	+0.0	72.2	104.5 927.75	-32.3	Vert
14	1830.520M Ave	66.9	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	62.0	104.5 915.25	-42.5	Vert
^	1830.520M	76.1	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	71.2	104.5 915.25	-33.3	Vert

16	1804.383M Ave	67.1	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	62.0	104.5 902.2	-42.5	Vert
^	1804.383M	76.1	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	71.0	104.5 902.2	-33.5	Vert
18	878.600M	24.5	+0.3 +0.0 +2.1	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	57.9	104.5	-46.6	Horiz
19	219.800M	18.0	+0.2 +0.0 +0.9	+0.0 +0.0 +5.8	+0.0 +0.0 +10.8	+0.0 +0.7	+0.0	36.4	104.5	-68.1	Horiz
20	3.320M	21.6	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+9.4 +0.0 +0.0	+0.0 +0.0	-40.0	-8.9	104.5	-113.4	Para

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 #:	**105334**	Date:	4/23/2021
Test Type:	**Radiated Scan**	Time:	10:30:49
Tested By:	Michael Atkinson	Sequence#:	16
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

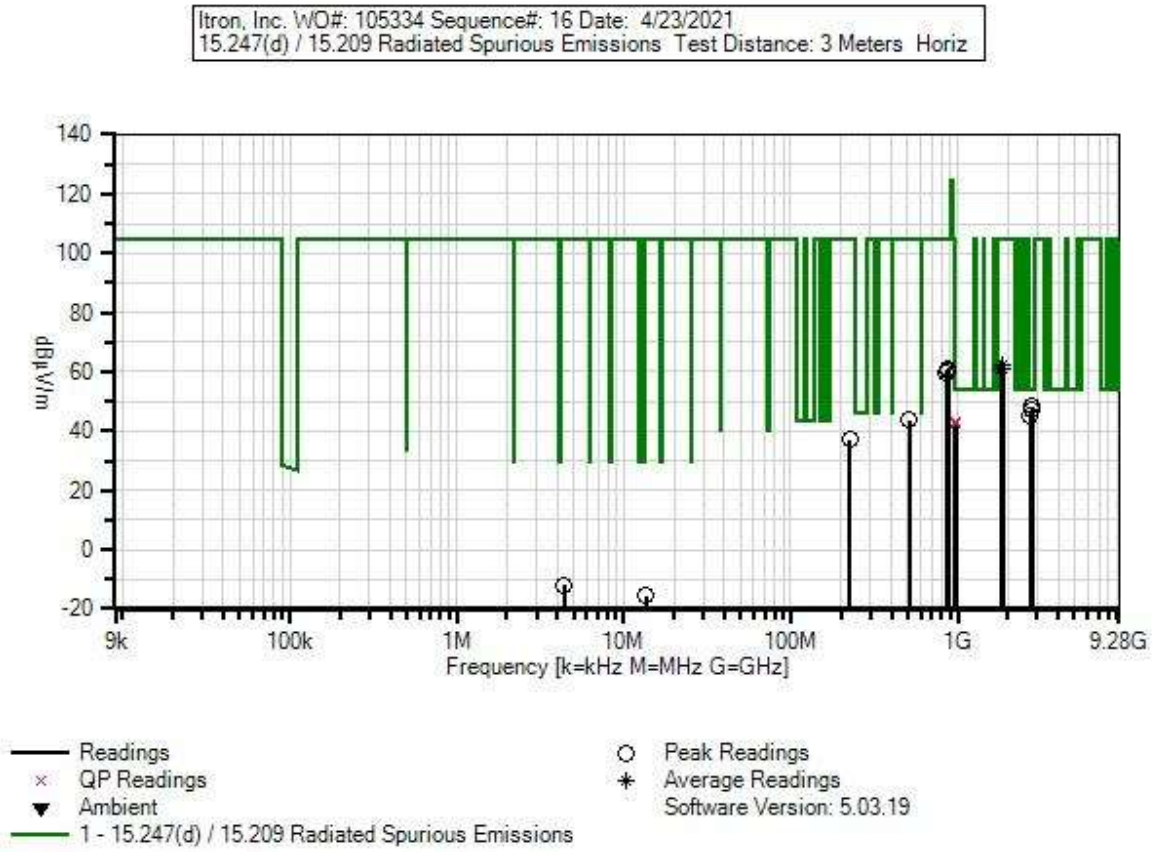
Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency: 9kHz to 10GHz
GFSK 50kbps

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Setup: EUT is continuously transmitting with modulation on lab selected channel.
EUT is battery powered with a fresh battery installed.
Horizontal and Vertical 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
	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T1	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T2	ANP06515	Cable	Heliax	7/1/2020	7/1/2022
T3	AN00052	Loop Antenna	6502	5/4/2020	5/4/2022
T4	AN03170	High Pass Filter	HM1155-11SS	10/23/2019	10/23/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07505	Cable	CLU40-KMKM-02.00F	1/26/2021	1/26/2023
T7	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T8	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T9	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T10	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T11	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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	2783.440M	49.6	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.5 +0.0	+0.4 +0.0	+0.0	48.3	54.0 927.8	-5.7	Vert
2	2745.540M	48.5	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.4 +0.0	+0.4 +0.0	+0.0	47.1	54.0 915.2	-6.9	Vert
3	2706.550M	47.0	+0.7 -34.1 +0.0	+2.9 +0.3 +0.0	+0.0 +28.3 +0.0	+0.4 +0.0	+0.0	45.5	54.0 902.2	-8.5	Vert
4	973.200M QP	8.1	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	42.9	54.0	-11.1	Horiz
^	973.200M	20.1	+0.4 +0.0 +2.3	+0.0 +0.0 +5.8	+0.0 +0.0 +24.8	+0.0 +1.5	+0.0	54.9	54.0	+0.9	Horiz
6	967.200M QP	8.2	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	42.8	54.0	-11.2	Vert
^	967.200M	23.9	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	58.5	54.0	+4.5	Vert
8	969.200M QP	8.1	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	42.7	54.0	-11.3	Horiz
^	969.200M	16.2	+0.4 +0.0 +2.2	+0.0 +0.0 +5.8	+0.0 +0.0 +24.7	+0.0 +1.5	+0.0	50.8	54.0	-3.2	Horiz
10	1855.550M Ave	66.7	+0.5 -34.7 +0.0	+2.4 +0.3 +0.0	+0.0 +26.6 +0.0	+0.4 +0.0	+0.0	62.2	104.5 927.8	-42.3	Vert
^	1855.550M	76.0	+0.5 -34.7 +0.0	+2.4 +0.3 +0.0	+0.0 +26.6 +0.0	+0.4 +0.0	+0.0	71.5	104.5 927.8	-33.0	Vert
12	1830.370M Ave	66.2	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	61.3	104.5 915.2	-43.2	Vert
^	1830.370M	75.3	+0.5 -34.8 +0.0	+2.4 +0.3 +0.0	+0.0 +26.3 +0.0	+0.4 +0.0	+0.0	70.4	104.5 915.2	-34.1	Vert
14	1804.410M Ave	66.4	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	61.3	104.5 902.2	-43.2	Vert
^	1804.410M	75.3	+0.5 -34.8 +0.0	+2.3 +0.3 +0.0	+0.0 +26.1 +0.0	+0.5 +0.0	+0.0	70.2	104.5 902.2	-34.3	Vert

16	878.600M	27.6	+0.3 +0.0 +2.1	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	61.0	104.5	-43.5	Vert
17	862.800M	27.1	+0.3 +0.0 +2.0	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	60.4	104.5	-44.1	Vert
18	857.400M	26.6	+0.3 +0.0 +2.0	+0.0 +0.0 +5.8	+0.0 +0.0 +23.8	+0.0 +1.4	+0.0	59.9	104.5	-44.6	Horiz
19	509.710M	16.1	+0.3 +0.0 +1.5	+0.0 +0.0 +5.8	+0.0 +0.0 +18.8	+0.0 +1.1	+0.0	43.6	104.5	-60.9	Vert
20	226.350M	18.4	+0.2 +0.0 +0.9	+0.0 +0.0 +5.8	+0.0 +0.0 +11.1	+0.0 +0.7	+0.0	37.1	104.5	-67.4	Horiz
21	4.393M	18.8	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+9.3 +0.0 +0.0	+0.0 +0.0	-40.0	-11.8	104.5	-116.3	Para
22	13.499M	14.9	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+9.3 +0.0 +0.0	+0.0 +0.0	-40.0	-15.6	104.5	-120.1	Para

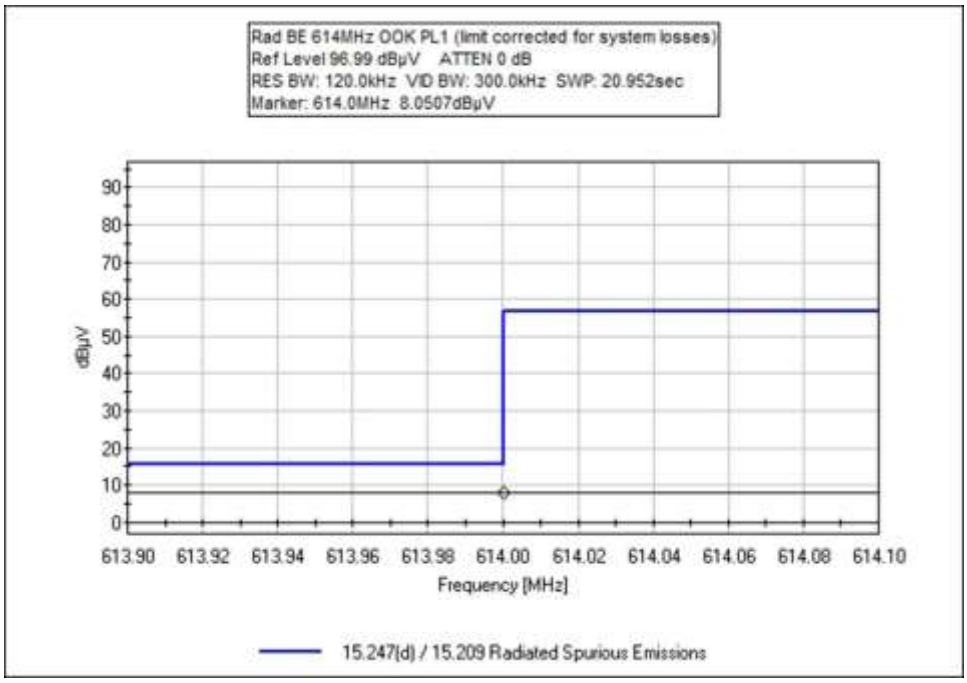
Band Edge

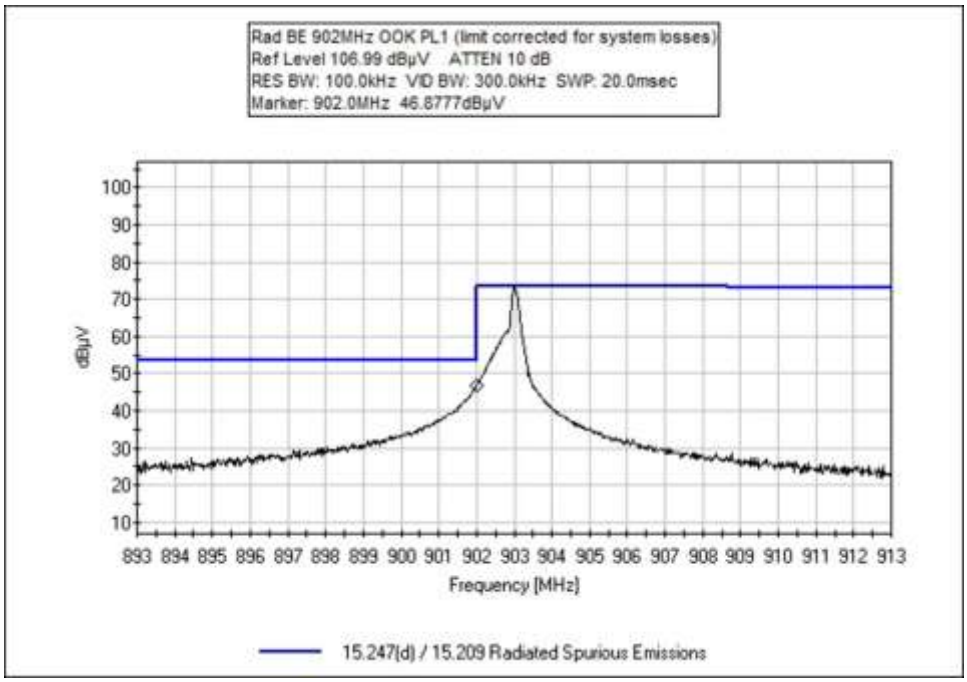
Band Edge Summary					
Operating Mode: Single Channel (Low and High)					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614 (QP)	OOK PL1	Trace	38.3	<46	Pass
902	OOK PL1	Trace	80.3	<87	Pass
928	OOK PL1	Trace	71.0	< 87	Pass
960	OOK PL1	Trace	45.5	<54	Pass
614 (QP)	OOK PL3	Trace	38.1	<46	Pass
902	OOK PL3	Trace	86.0	<100	Pass
928	OOK PL3	Trace	85.6	< 100	Pass
960 (QP)	OOK PL3	Trace	51.4	<54	Pass
614 (QP)	GSFK 10kbps	Trace	38.2	<46	Pass
902	GSFK 10kbps	Trace	75.6	<104.5	Pass
928	GSFK 10kbps	Trace	75.7	<104.5	Pass
960 (QP)	GSFK 10kbps	Trace	42.6	<54	Pass
614 (QP)	GSFK 150kbps	Trace	38.2	<46	Pass
902	GSFK 150kbps	Trace	68.2	<104.5	Pass
928	GSFK 150kbps	Trace	66.5	<104.5	Pass
960 (QP)	GSFK 150kbps	Trace	42.6	<54	Pass
614 (QP)	FSK 100kbps	Trace	38.3	<46	Pass
902	FSK 100kbps	Trace	87.3	<104.5	Pass
928	FSK 100kbps	Trace	57.6	<104.5	Pass
960 (QP)	FSK 100kbps	Trace	42.8	<54	Pass
614 (QP)	GSFK 300 PL3	Trace	38.2	<46	Pass
902	GSFK 300 PL3	Trace	85.4	<104.5	Pass
928	GSFK 300 PL3	Trace	85.6	<104.5	Pass
960 (QP)	GSFK 300 PL3	Trace	42.7	<54	Pass
614 (QP)	GSFK 25kbps	Trace	38.3	<46	Pass
902	GSFK 25kbps	Trace	77.1	<104.5	Pass
928	GSFK 25kbps	Trace	74.5	<104.5	Pass
960 (QP)	GSFK 25kbps	Trace	42.7	<54	Pass
614 (QP)	GSFK 50kbps	Trace	38.1	<46	Pass
902	GSFK 50kbps	Trace	85.0	<104.5	Pass
928	GSFK 50kbps	Trace	84.6	<104.5	Pass
960 (QP)	GSFK 50kbps	Trace	42.7	<54	Pass

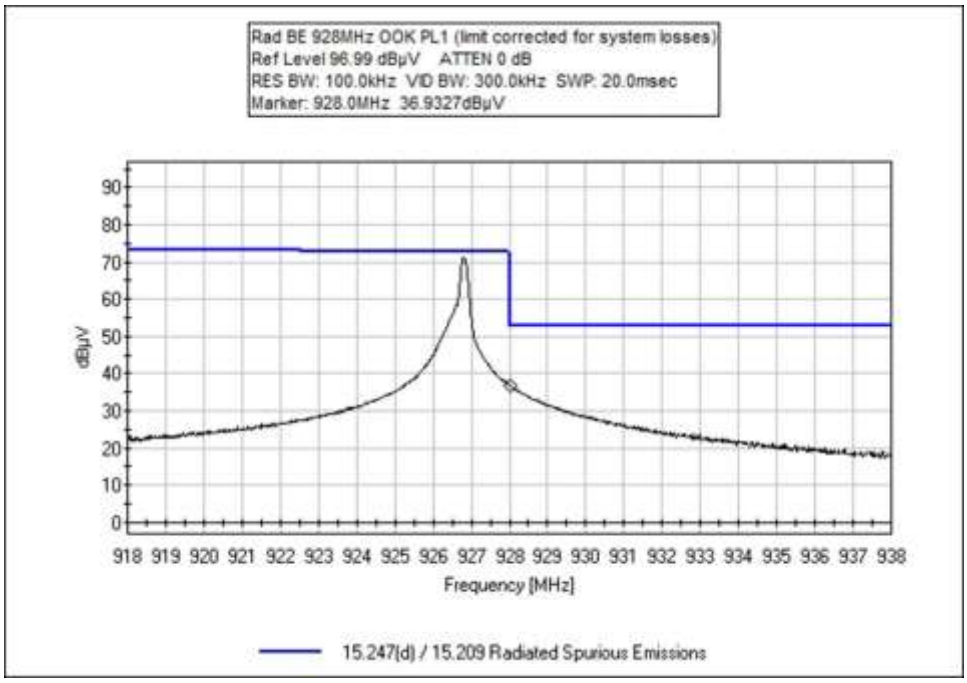
Band Edge Summary					
Operating Mode: Hopping					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614 (QP)	OOK PL1	Trace	38.2	<46	Pass
902	OOK PL1	Trace	79.6	<87	Pass
928	OOK PL1	Trace	71.3	< 87	Pass
960	OOK PL1	Trace	45.9	<54	Pass
614 (QP)	OOK PL3	Trace	38.2	<46	Pass
902	OOK PL3	Trace	85.8	<100	Pass
928	OOK PL3	Trace	84.2	< 100	Pass
960 (QP)	OOK PL3	Trace	49.6	<54	Pass
614 (QP)	GSFK 10kbps	Trace	38.2	<46	Pass
902	GSFK 10kbps	Trace	75.0	<104.5	Pass
928	GSFK 10kbps	Trace	71.2	<104.5	Pass
960 (QP)	GSFK 10kbps	Trace	42.7	<54	Pass
614 (QP)	GSFK 150kbps	Trace	38.2	<46	Pass
902	GSFK 150kbps	Trace	65.3	<104.5	Pass
928	GSFK 150kbps	Trace	72.1	<104.5	Pass
960 (QP)	GSFK 150kbps	Trace	42.6	<54	Pass
614 (QP)	FSK 100kbps	Trace	38.3	<46	Pass
902	FSK 100kbps	Trace	87.4	<104.5	Pass
928	FSK 100kbps	Trace	56.0	<104.5	Pass
960 (QP)	FSK 100kbps	Trace	42.3	<54	Pass
614 (QP)	GSFK 300 PL3	Trace	38.3	<46	Pass
902	GSFK 300 PL3	Trace	85.7	<104.5	Pass
928	GSFK 300 PL3	Trace	85.0	<104.5	Pass
960 (QP)	GSFK 300 PL3	Trace	42.7	<54	Pass
614 (QP)	GSFK 25kbps	Trace	38.2	<46	Pass
902	GSFK 25kbps	Trace	74.0	<104.5	Pass
928	GSFK 25kbps	Trace	75.2	<104.5	Pass
960 (QP)	GSFK 25kbps	Trace	42.6	<54	Pass
614 (QP)	GSFK 50kbps	Trace	38.1	<46	Pass
902	GSFK 50kbps	Trace	84.7	<104.5	Pass
928	GSFK 50kbps	Trace	83.7	<104.5	Pass
960 (QP)	GSFK 50kbps	Trace	42.5	<54	Pass

Band Edge Plots

OOK Power Level 1



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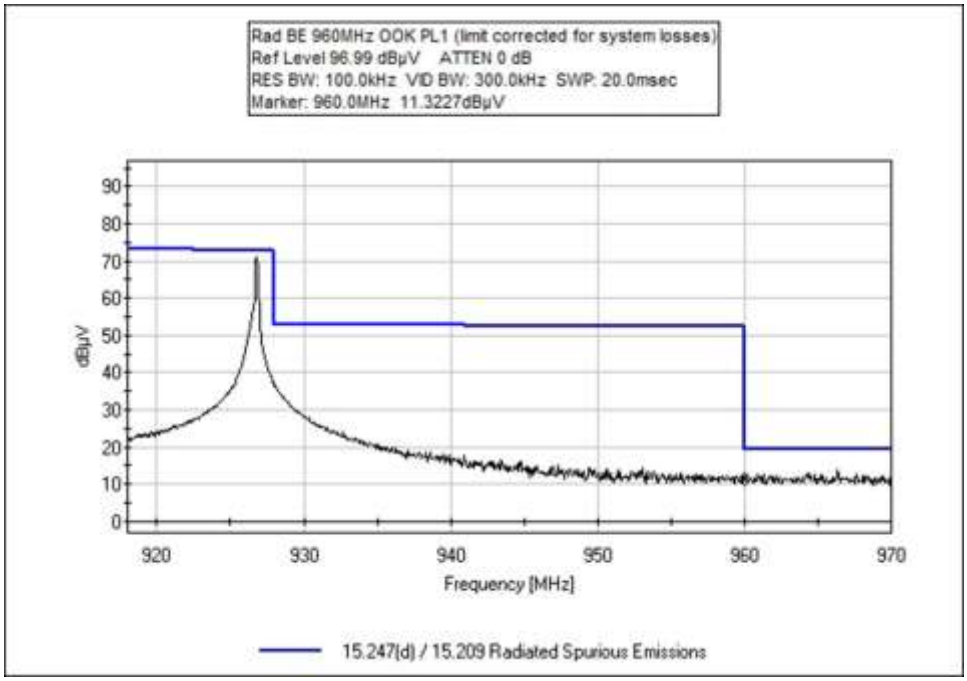
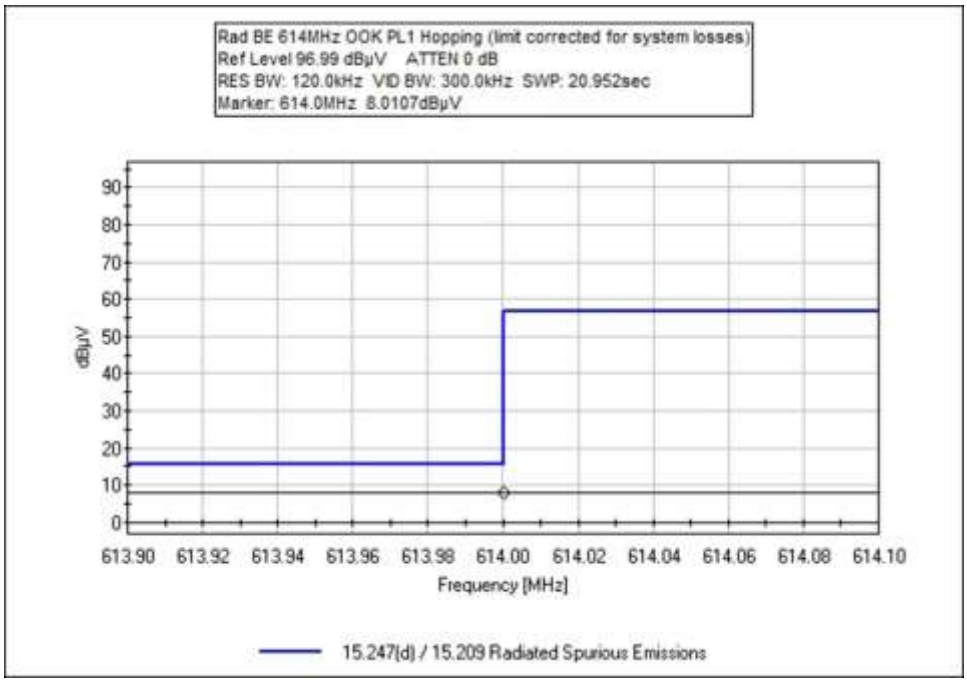
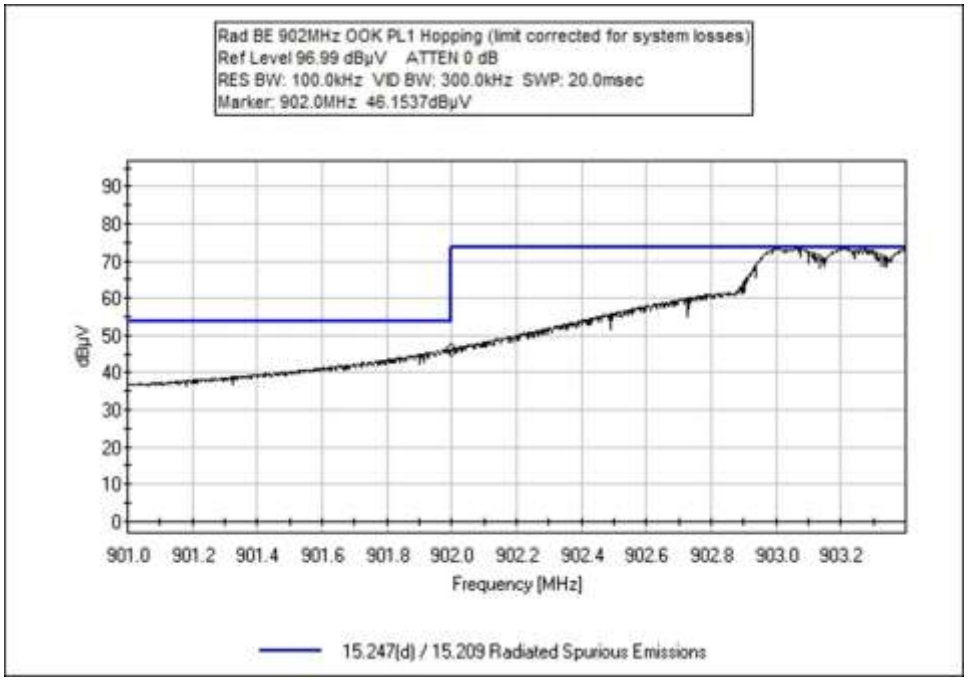
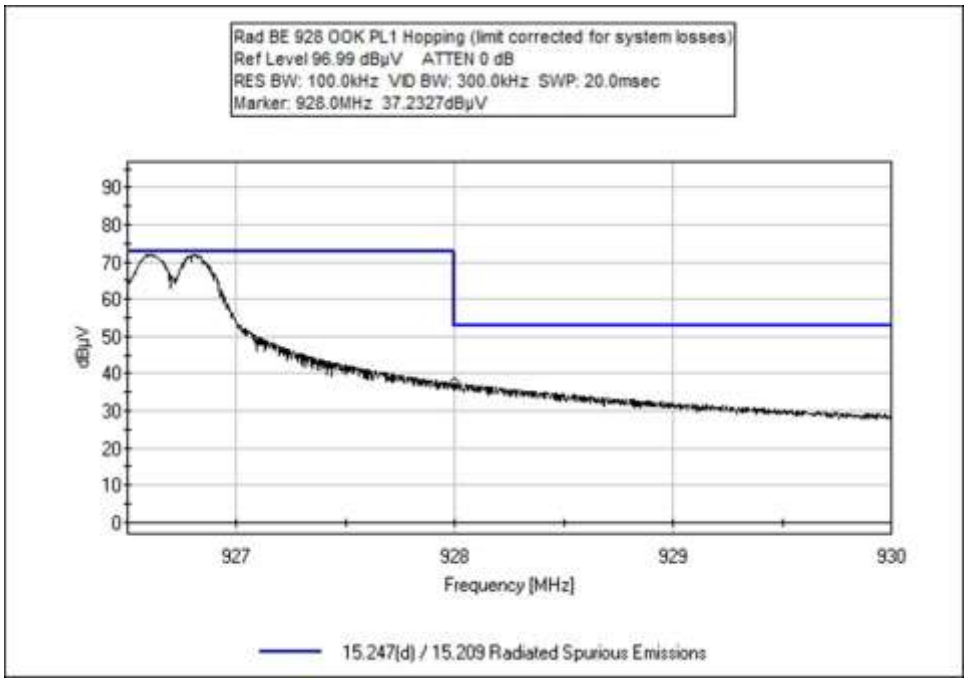
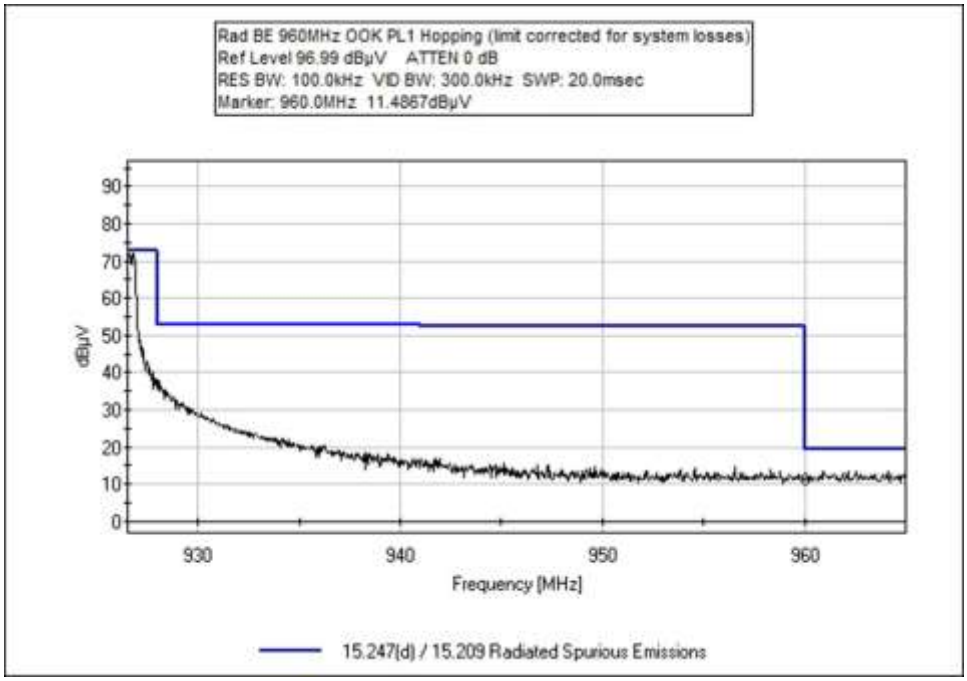
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 36.9327dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz OOK PL1 (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 960.0MHz 11.3227dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

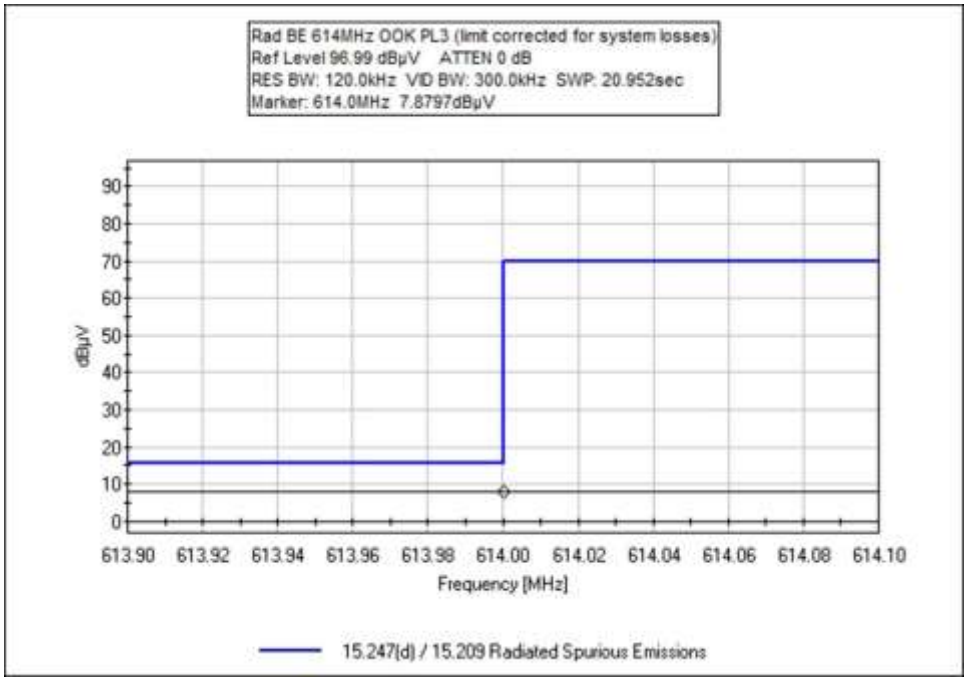

Rad BE 614MHz OOK PL1 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 20.952sec
Marker: 614.0MHz 8.0107dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

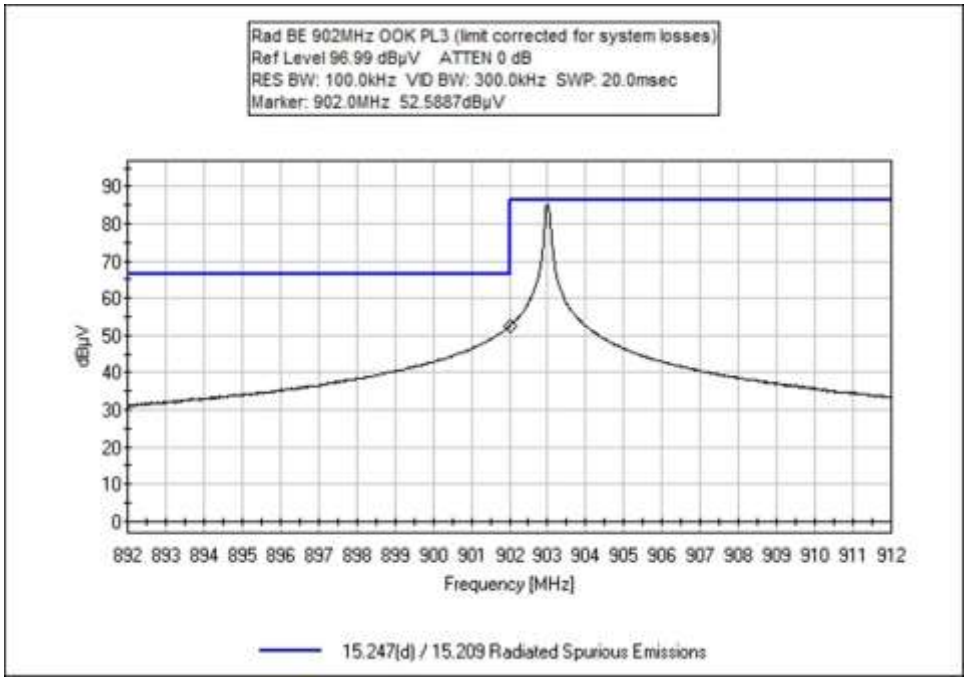

Rad BE 902MHz OOK PL1 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 46.1537dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
901.0 901.2 901.4 901.6 901.8 902.0 902.2 902.4 902.6 902.8 903.0 903.2
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

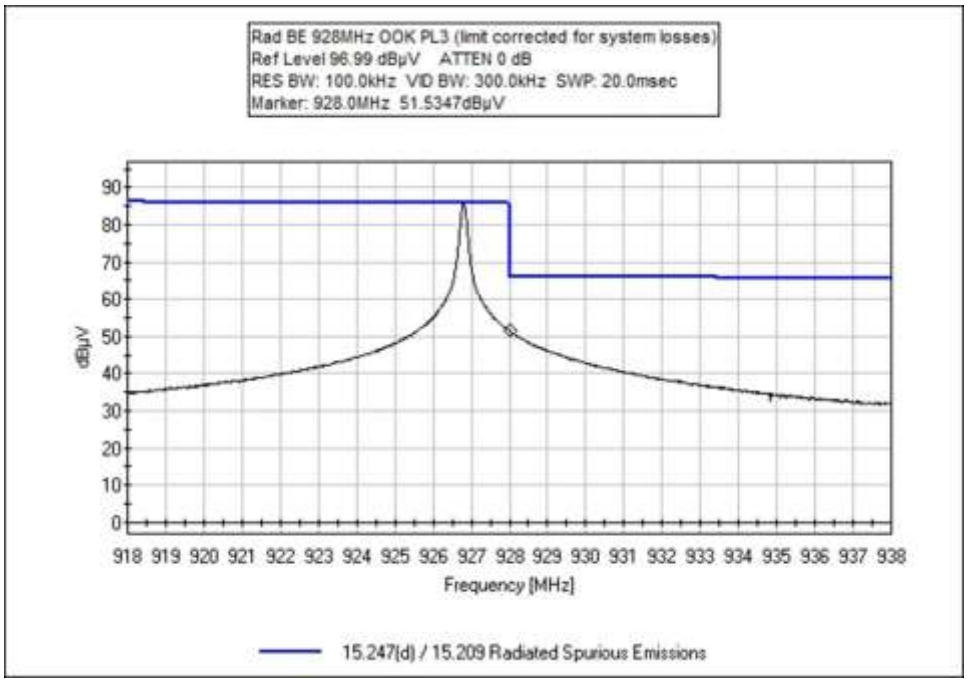

Rad BE 928 OOK PL1 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 37.2327dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

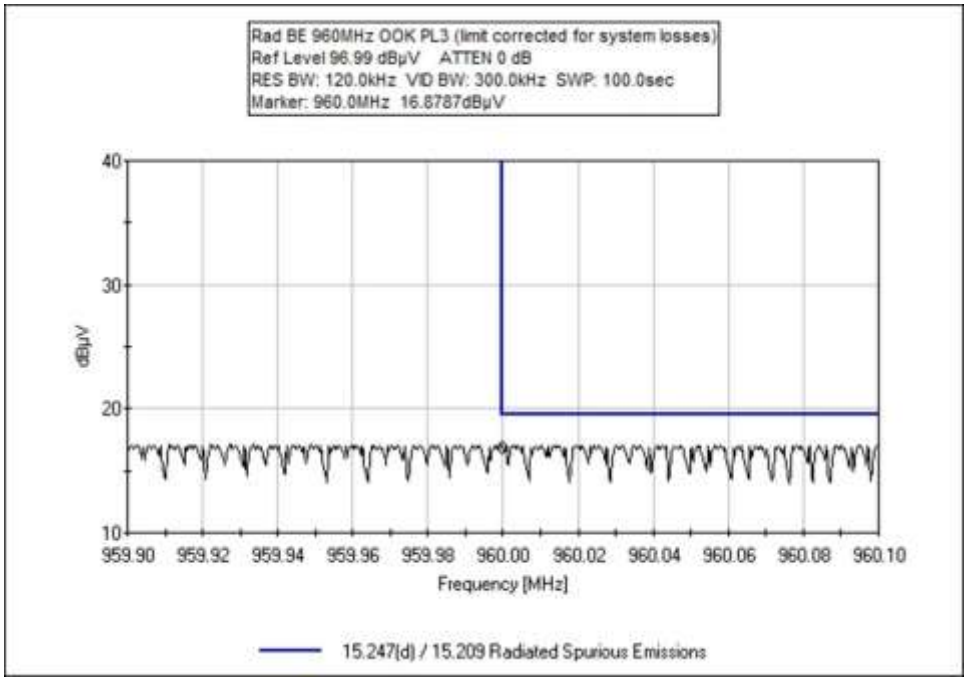

Rad BE 960MHz OOK PL1 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 960.0MHz 11.4867dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

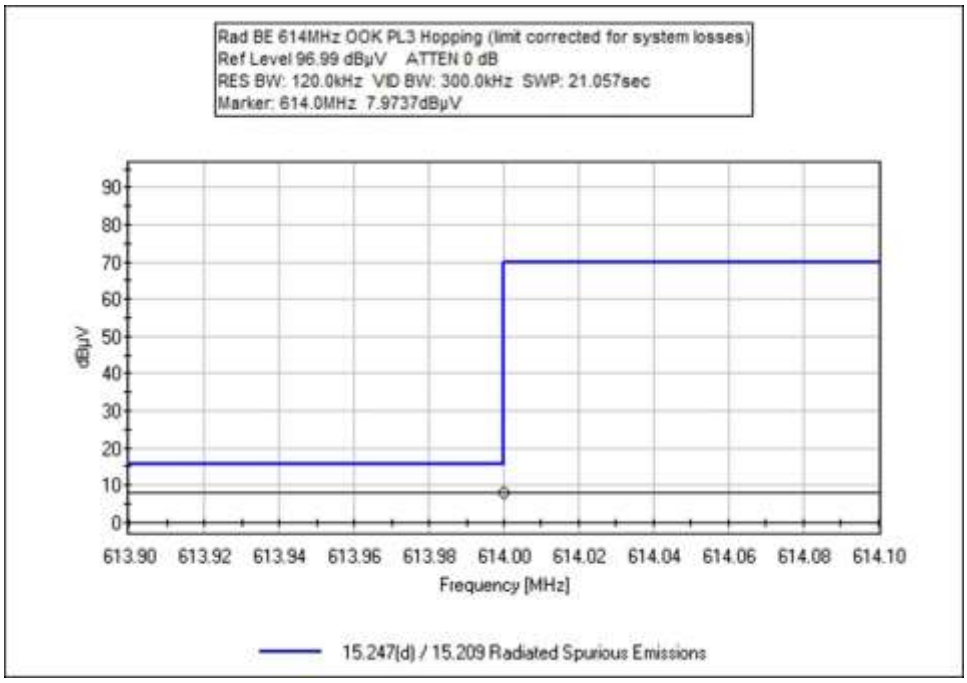
OOK Power Level 3

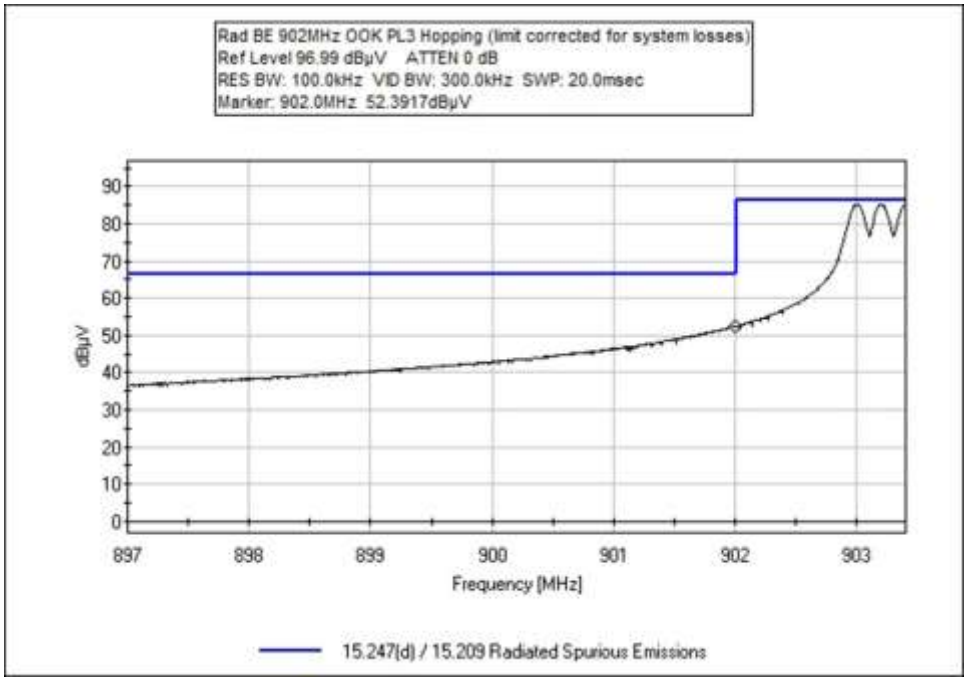


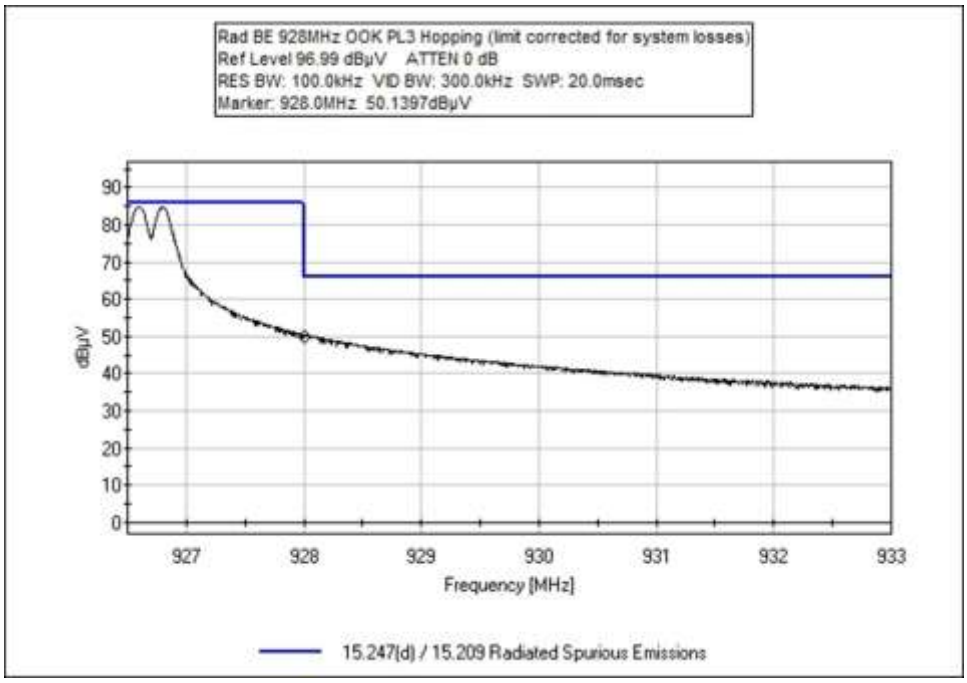


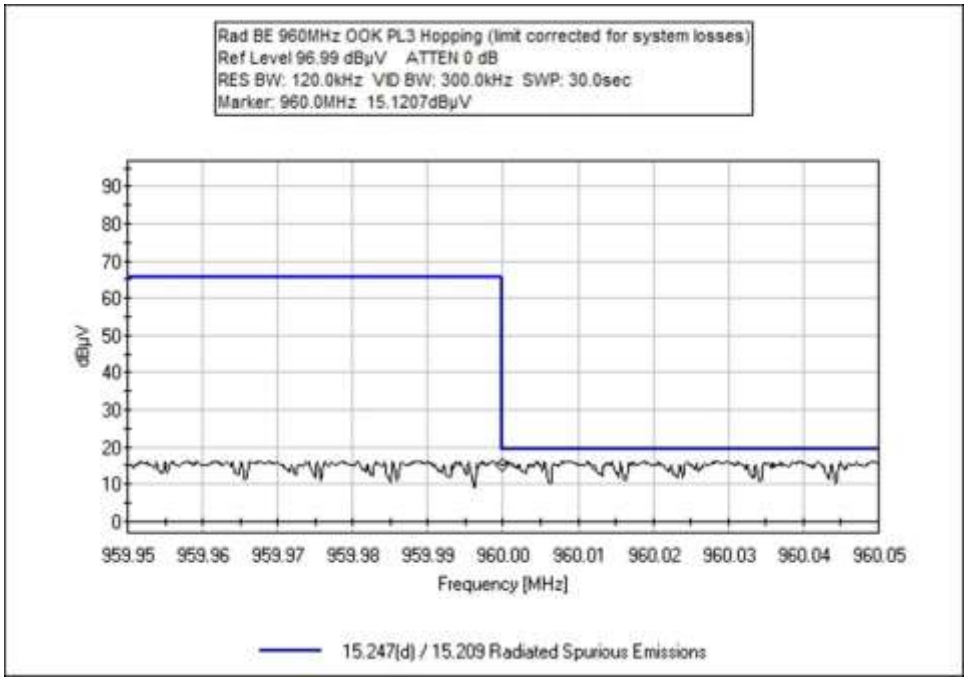

Rad BE 928MHz OOK PL3 (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 51.5347dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz OOK PL3 (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 100.0sec
Marker: 960.0MHz 16.8787dBµV
dBµV
40
30
20
10
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

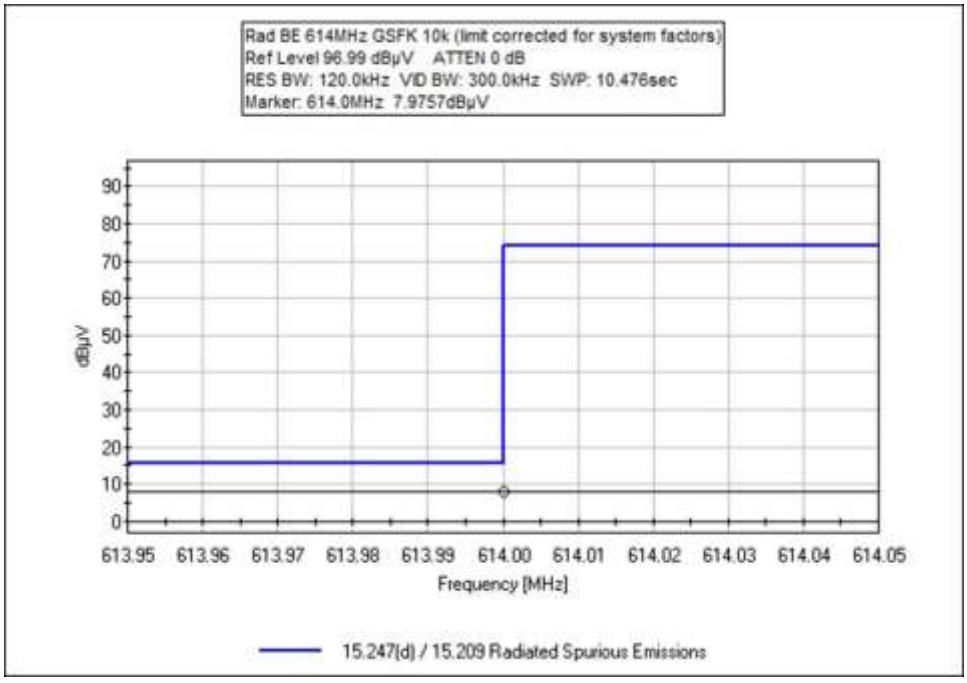

Rad BE 614MHz OOK PL3 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 21.057sec
Marker: 614.0MHz 7.9737dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.90 613.92 613.94 613.96 613.98 614.00 614.02 614.04 614.06 614.08 614.10
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

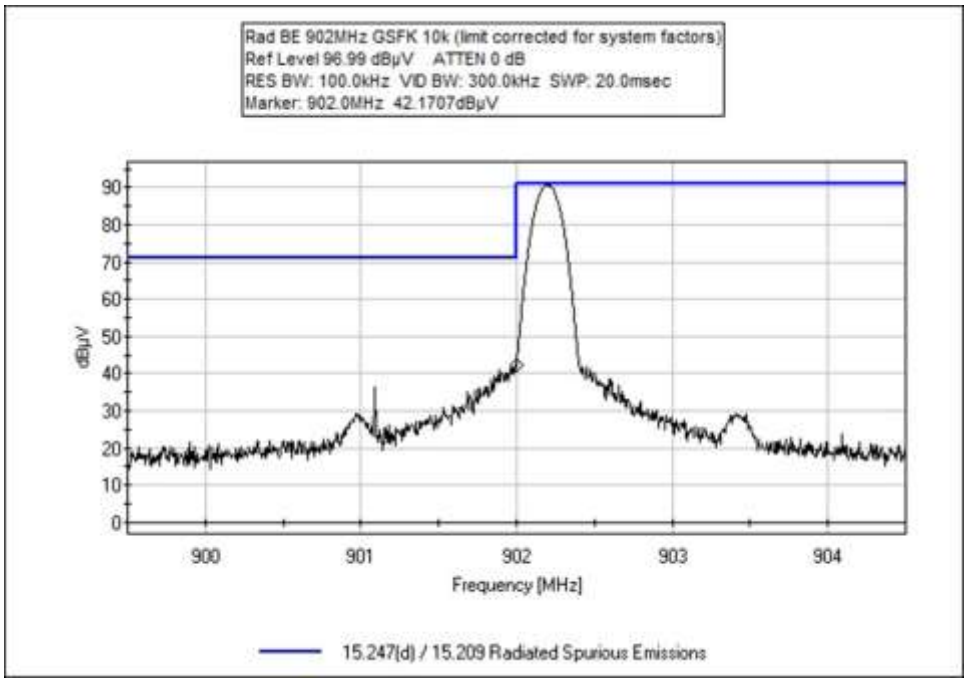

Rad BE 902MHz OOK PL3 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 52.3917dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
897 898 899 900 901 902 903
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

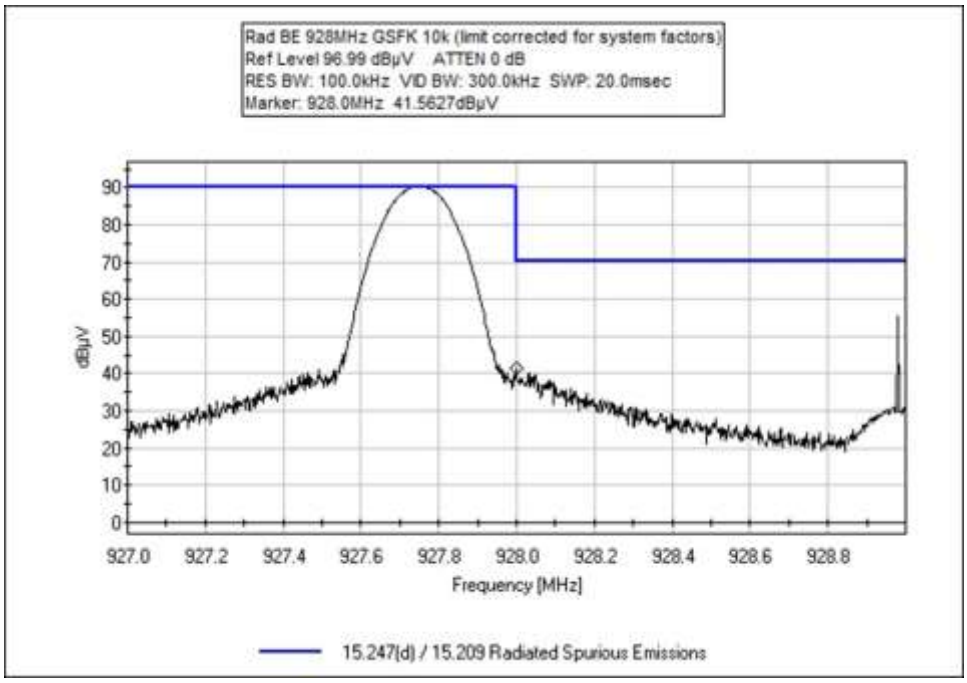

Rad BE 928MHz OOK PL3 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 50.1397dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
927
928
929
930
931
932
933
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

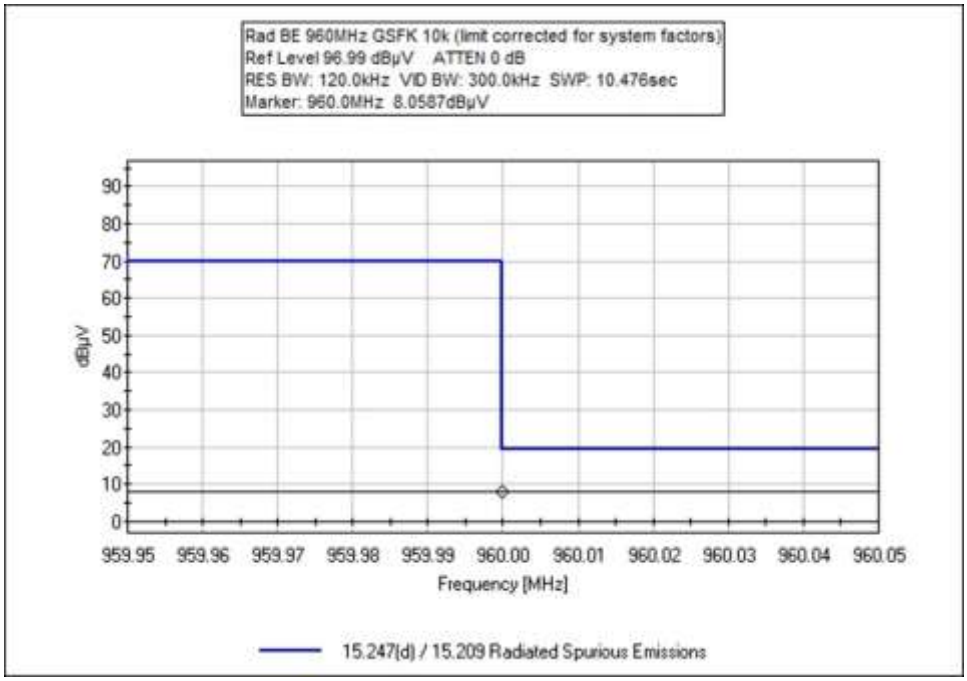

Rad BE 960MHz OOK PL3 Hopping (limit corrected for system losses)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 30.0sec
Marker: 960.0MHz 15.1207dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

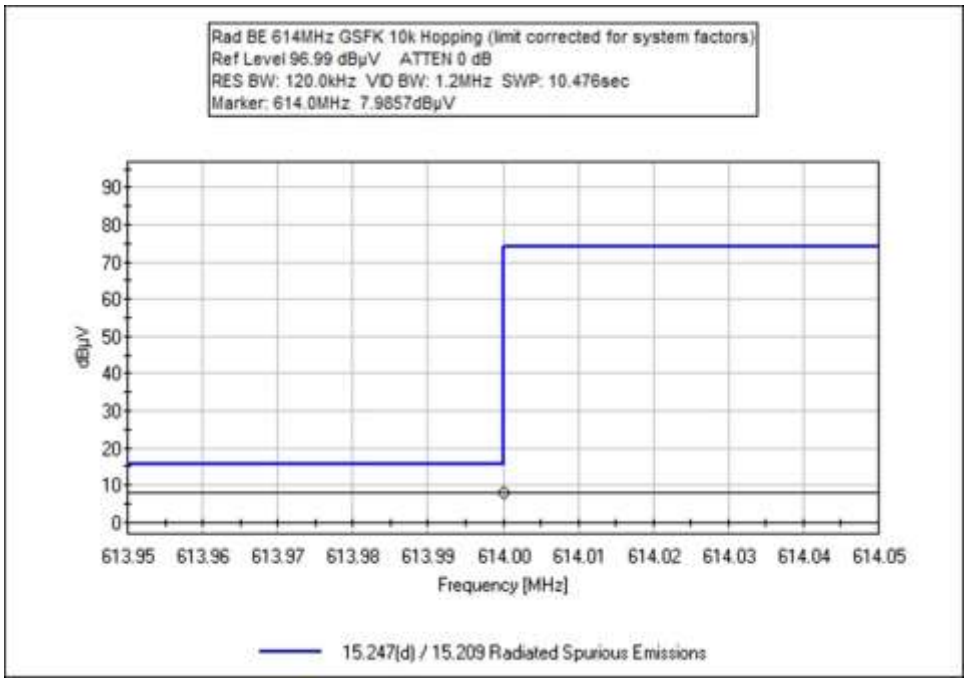
GFSK 10kbps

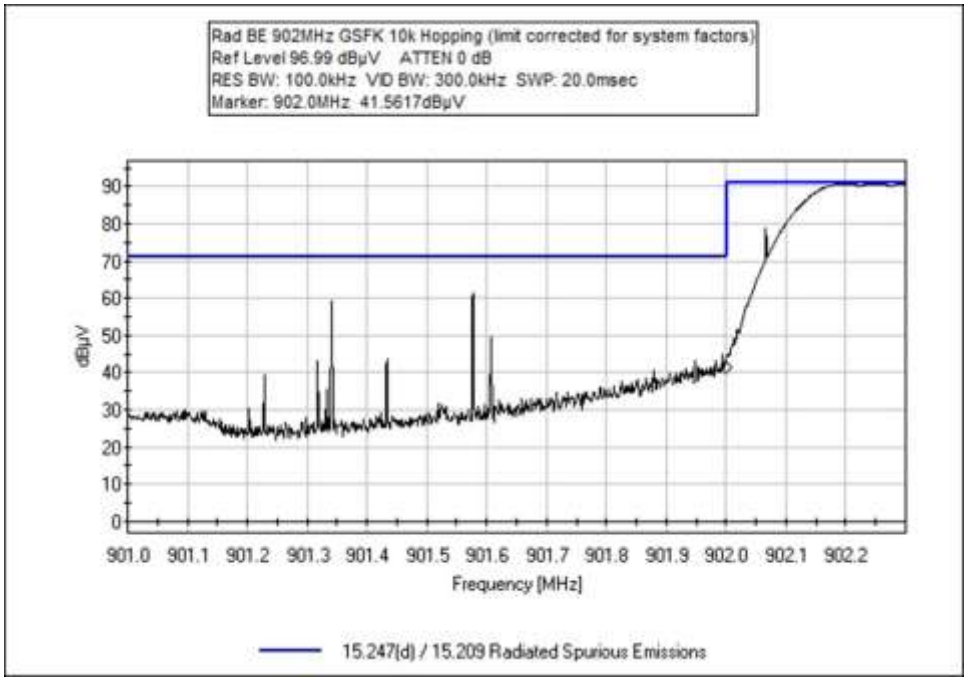

Rad BE 614MHz GSFK 10k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 7.9757dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

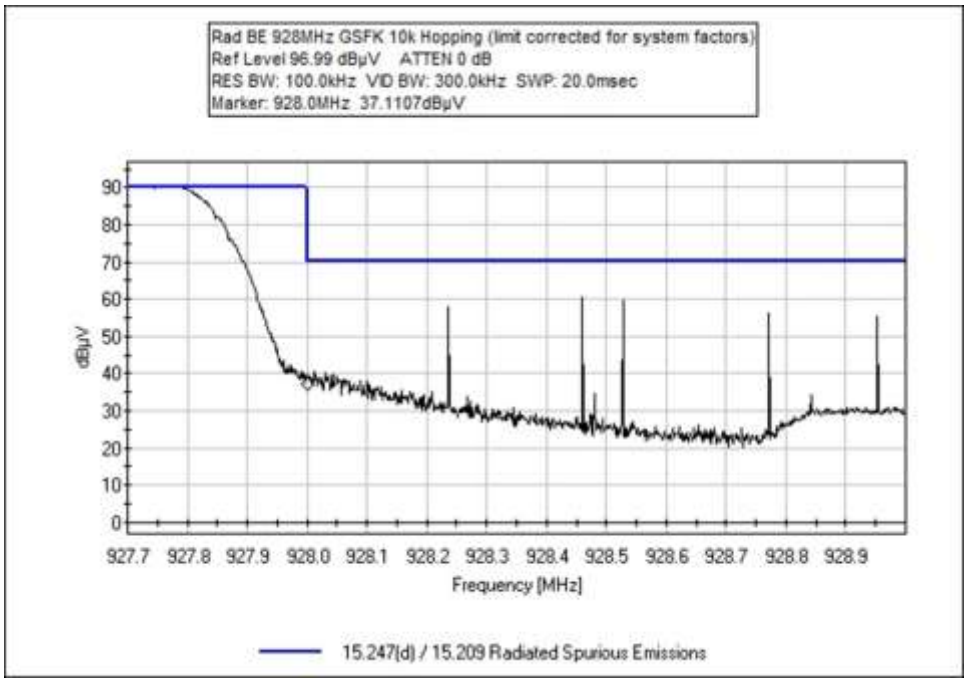

Rad BE 902MHz GSFK 10k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 42.1707dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903 904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

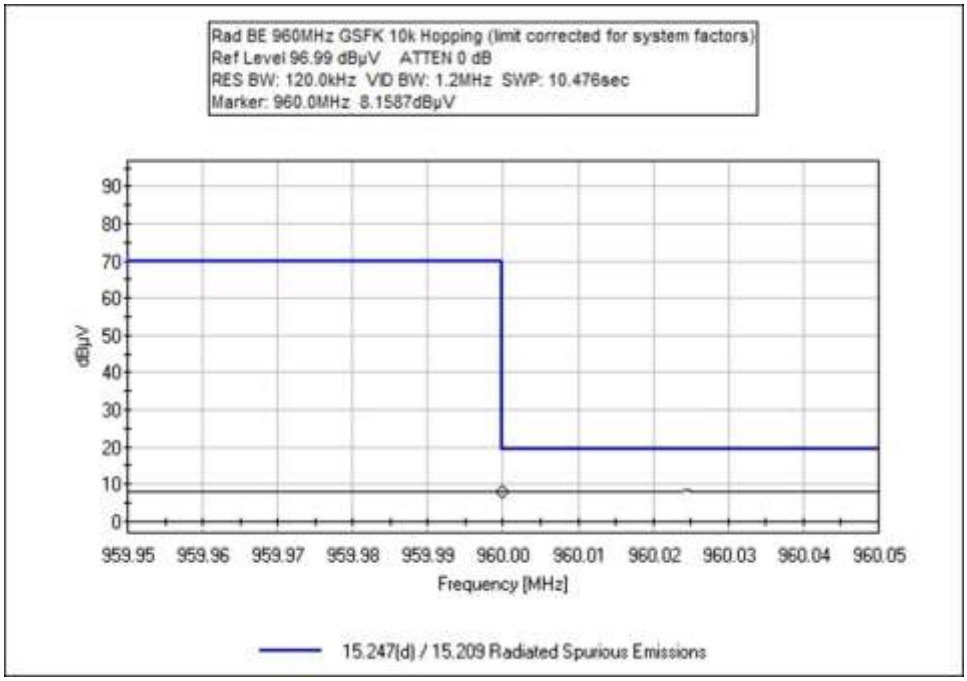

Rad BE 928MHz GSFK 10k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 41.5627dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
927.0 927.2 927.4 927.6 927.8 928.0 928.2 928.4 928.6 928.8
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 10k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.0587dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95 959.96 959.97 959.98 959.99 960.00 960.01 960.02 960.03 960.04 960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

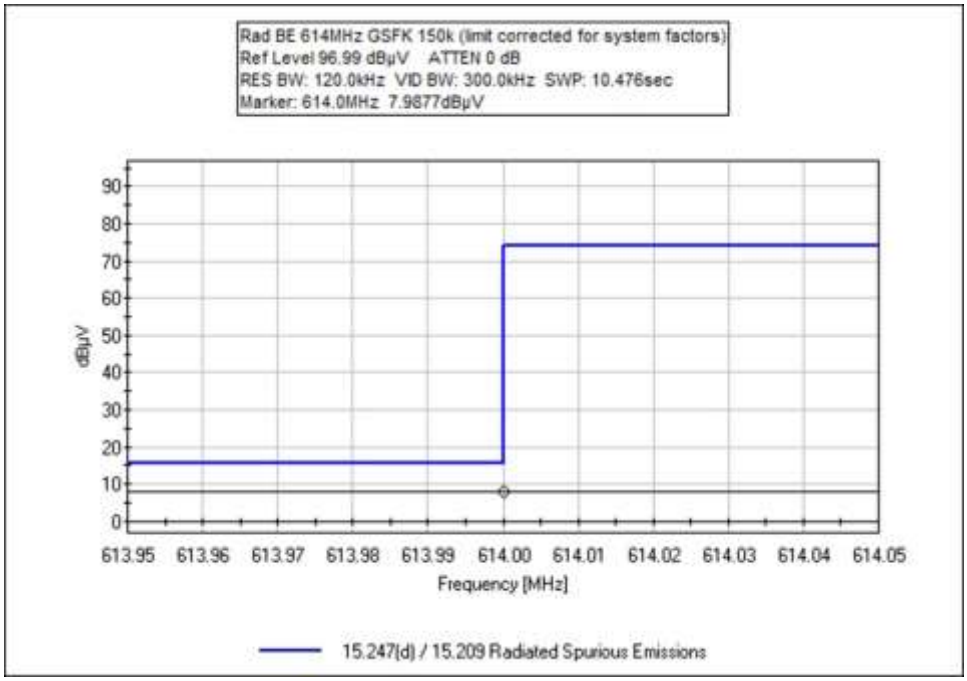

Rad BE 614MHz GSFK 10k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.2MHz SWP: 10.476sec
Marker: 614.0MHz 7.9857dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

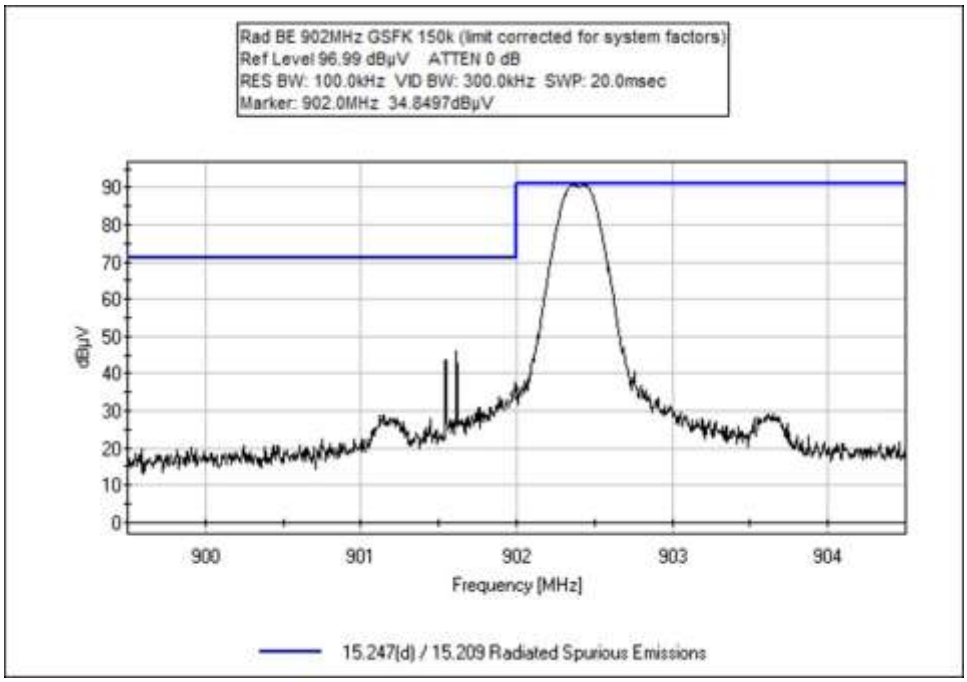

Rad BE 902MHz GSFK 10k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 41.5617dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
901.0 901.1 901.2 901.3 901.4 901.5 901.6 901.7 901.8 901.9 902.0 902.1 902.2
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

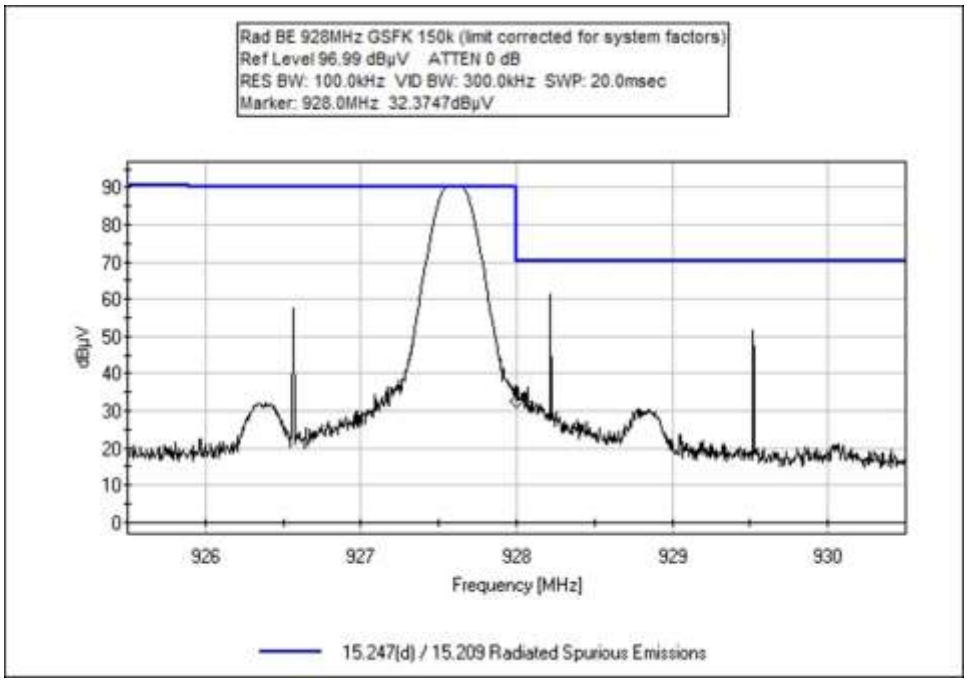

Rad BE 928MHz GSFK 10k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 37.1107dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

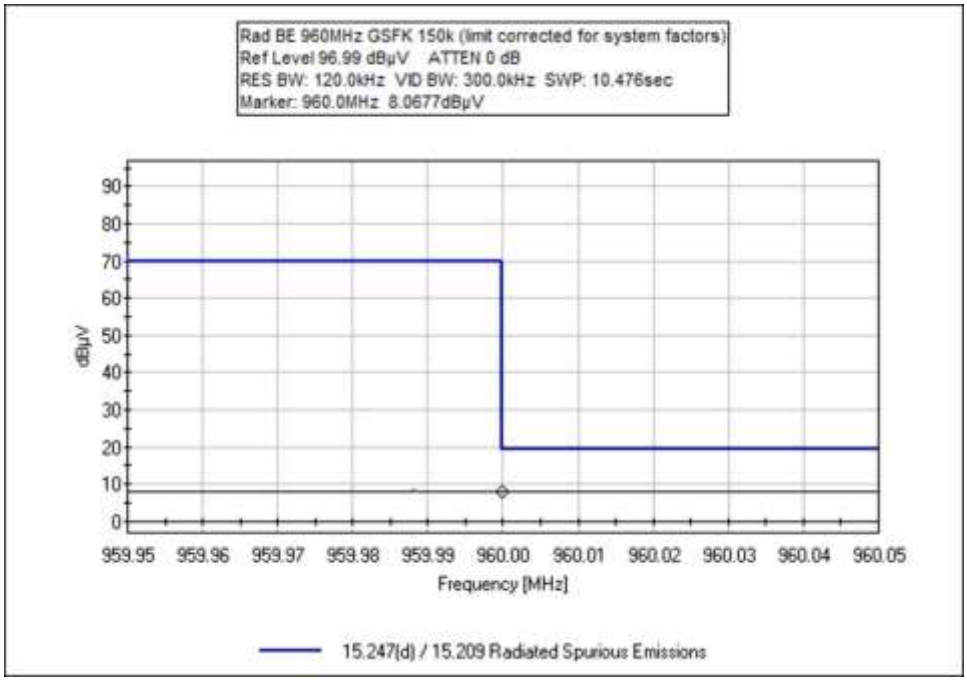

Rad BE 960MHz GSFK 10k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.2MHz SWP: 10.476sec
Marker: 960.0MHz 8.1587dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

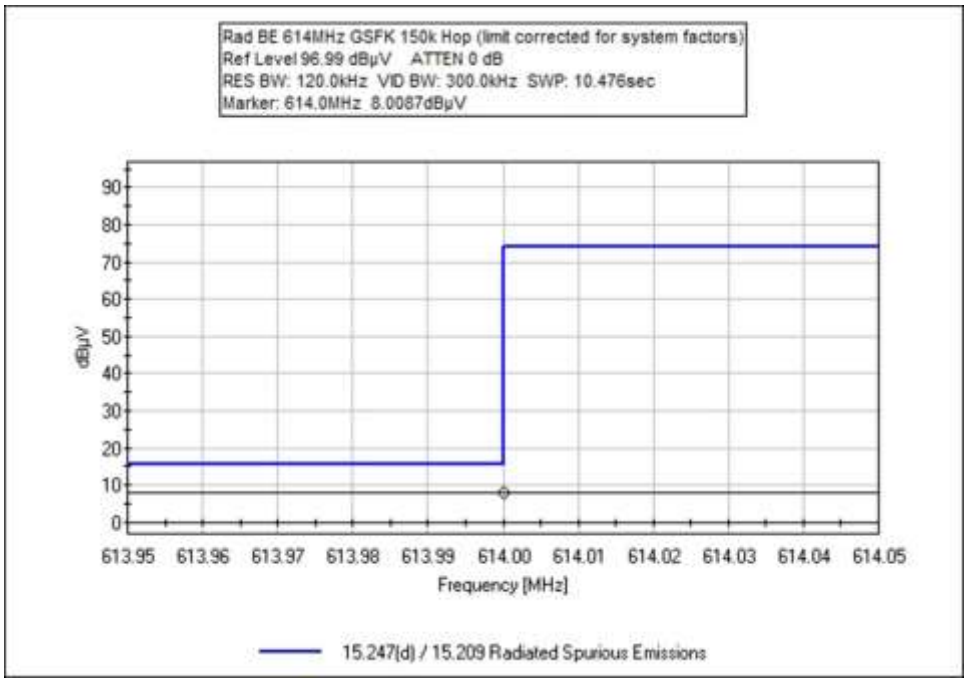
GFSK 150kbps

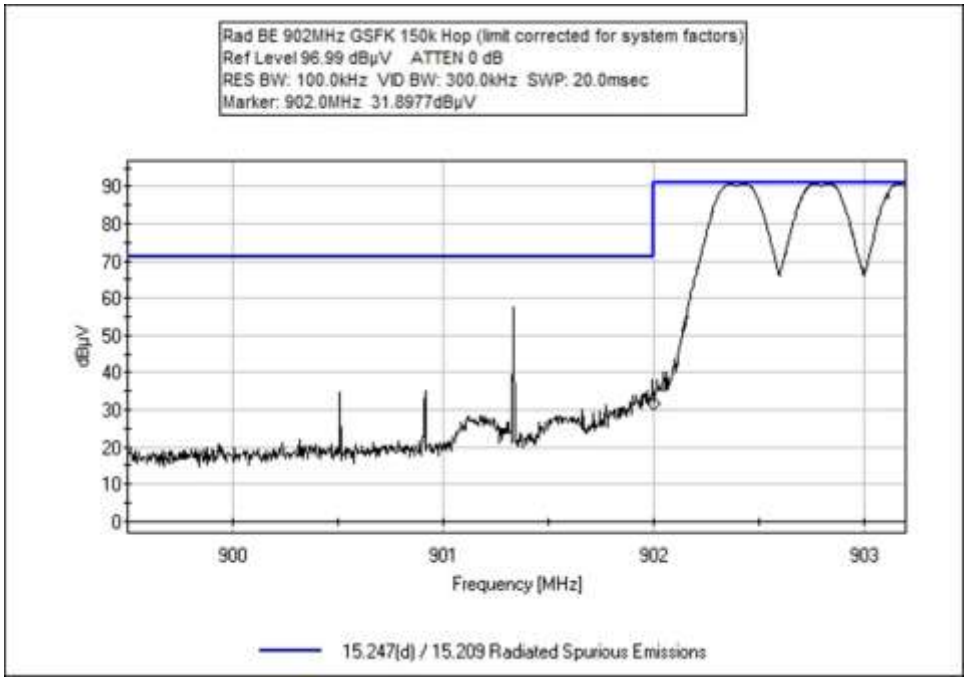


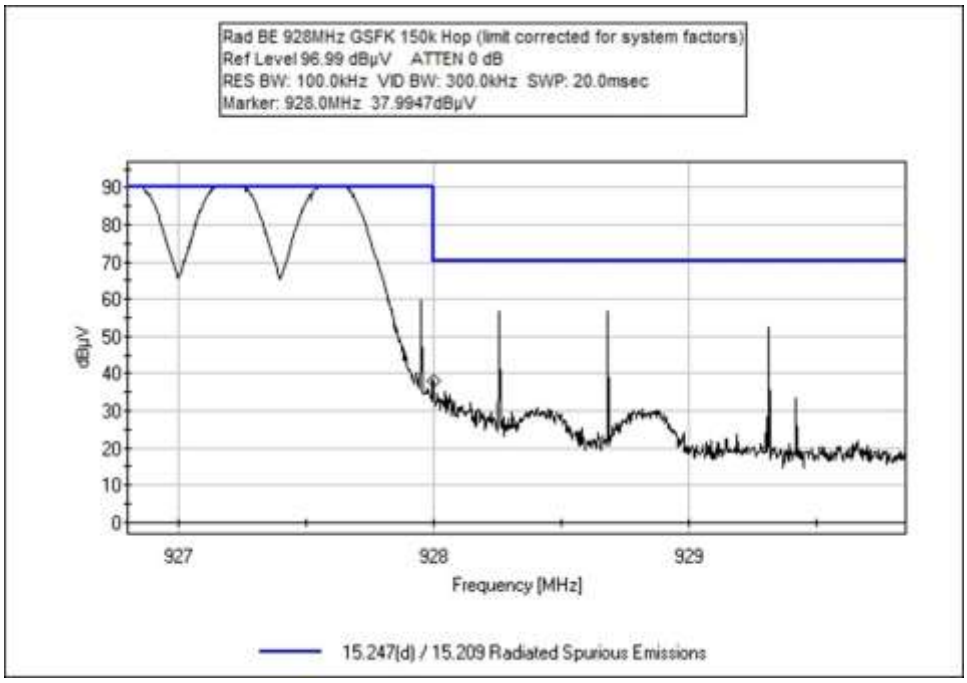


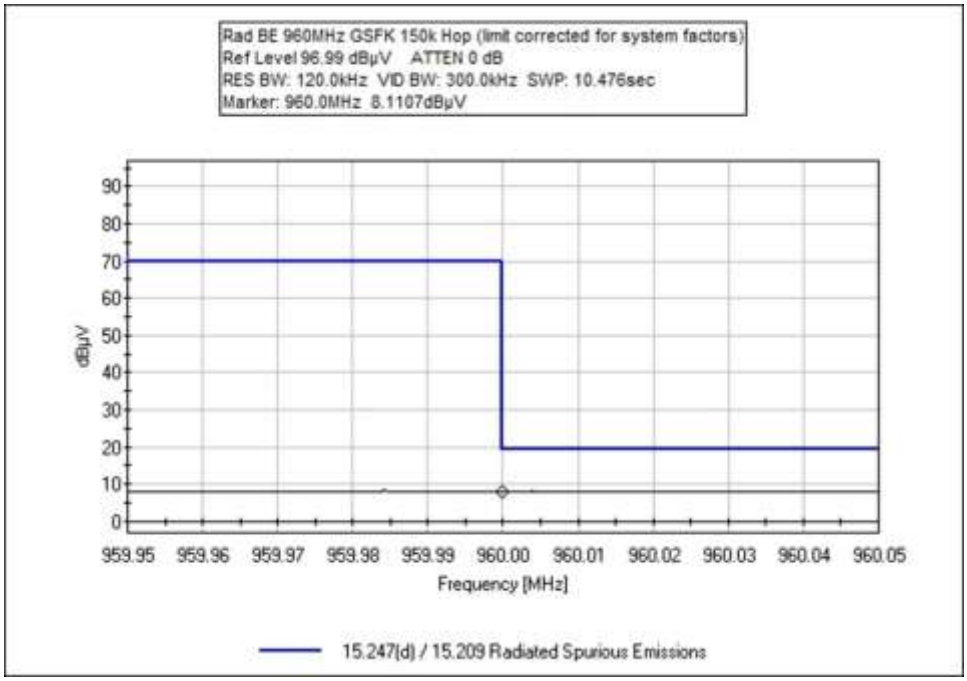

Rad BE 928MHz GSFK 150k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 32.3747dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 150k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.0677dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

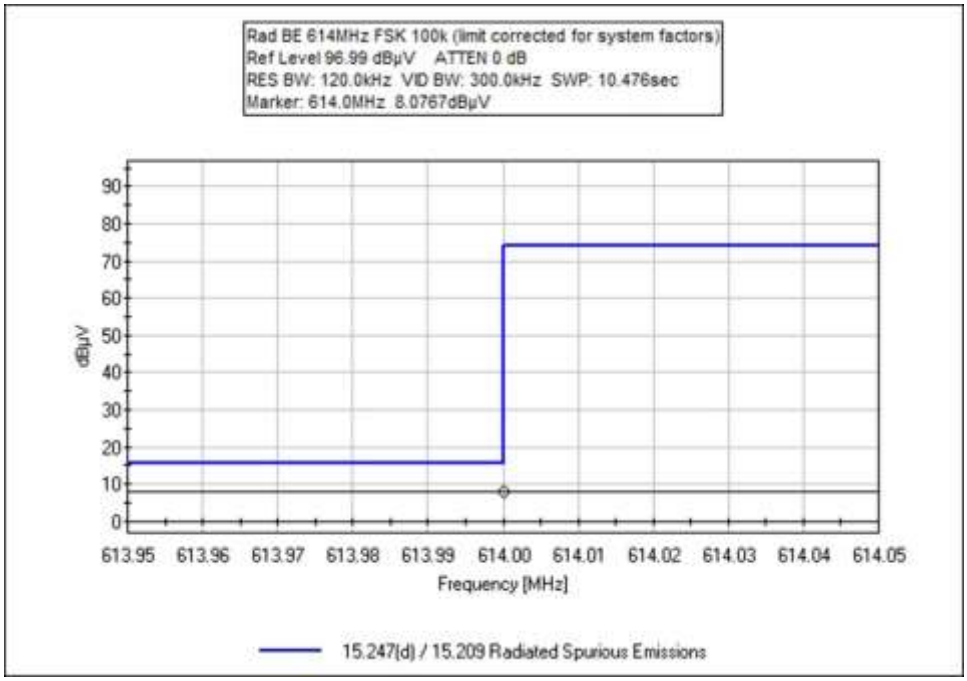

Rad BE 614MHz GSFK 150k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.0087dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

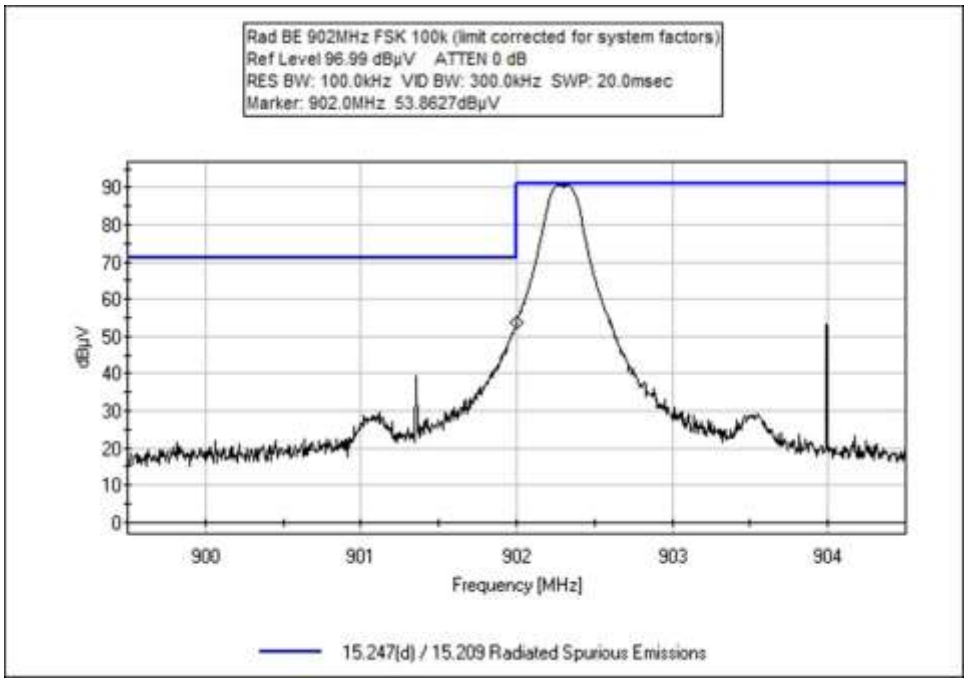

Rad BE 902MHz GSFK 150k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 31.8977dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

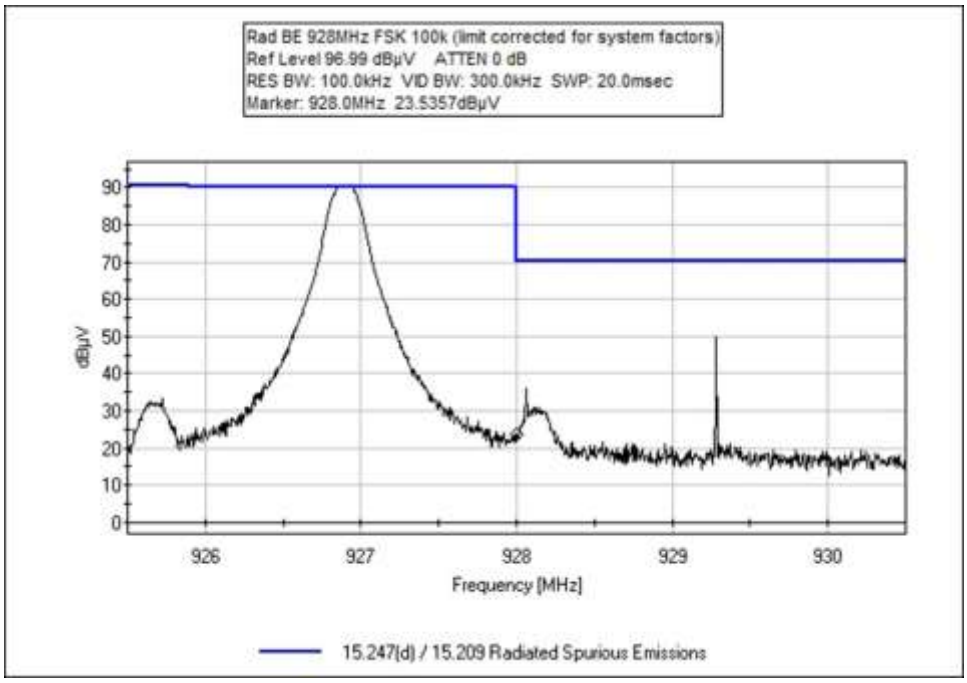

Rad BE 928MHz GSFK 150k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 37.9947dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
927
928
929
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

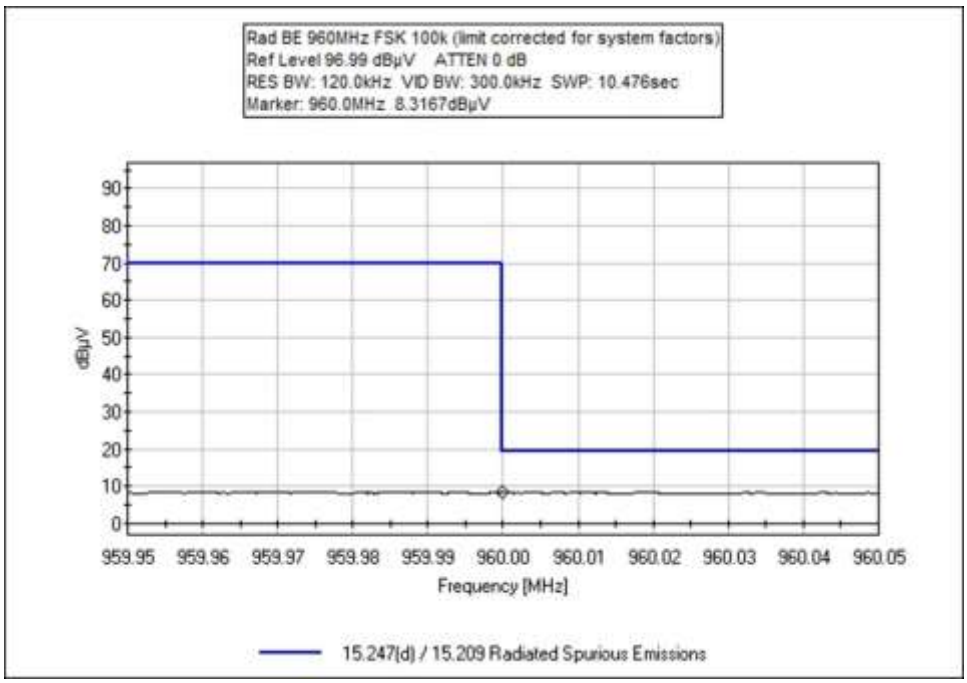

Rad BE 960MHz GSFK 150k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.1107dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

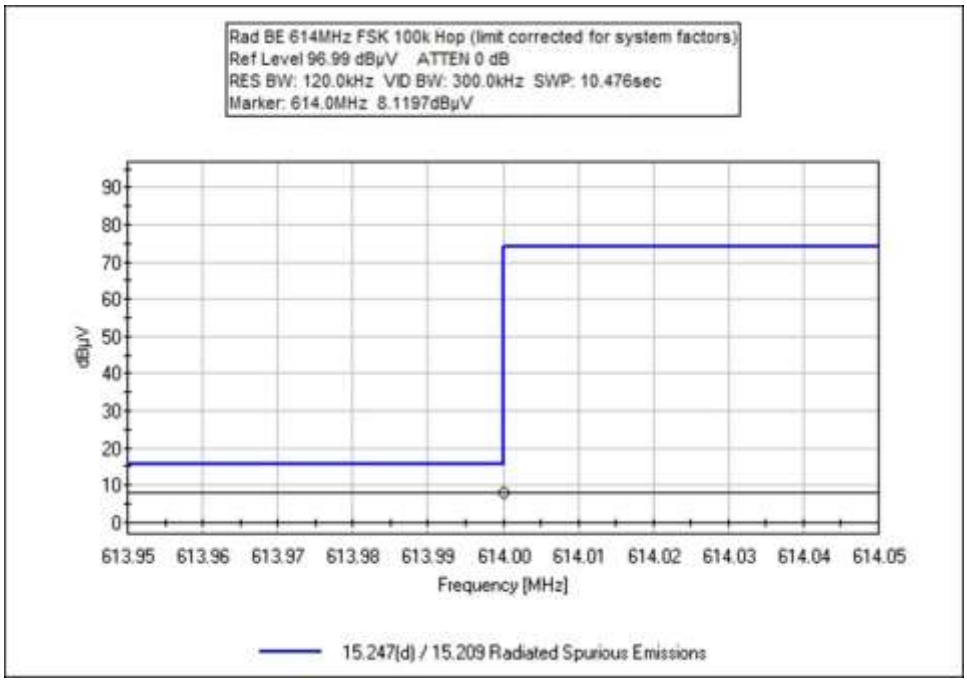
FSK 100kbps

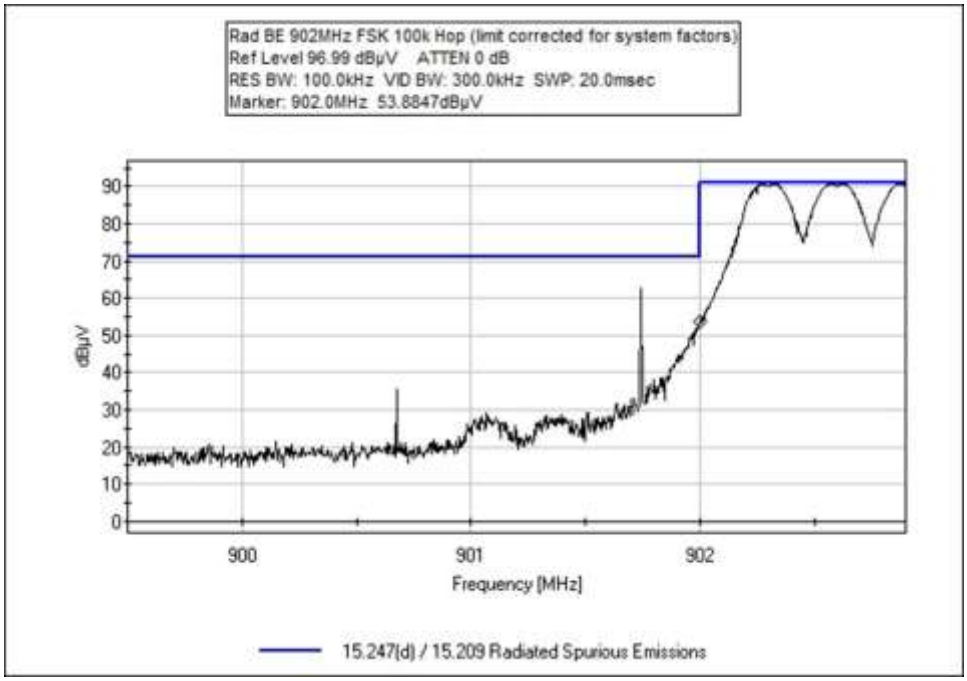

Rad BE 614MHz FSK 100k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.0767dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

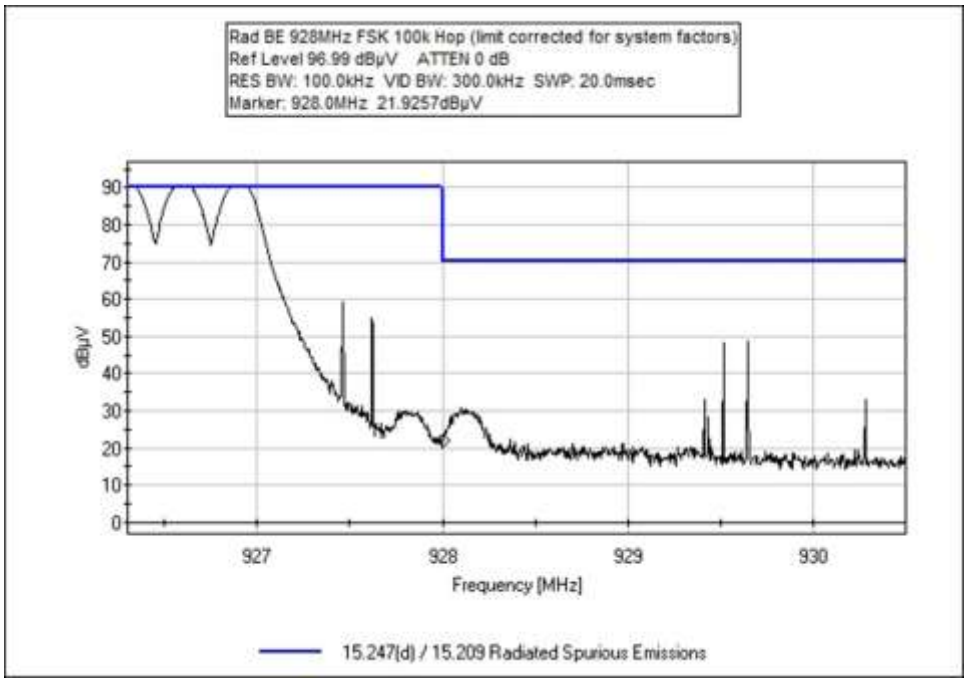

Rad BE 902MHz FSK 100k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 53.8627dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903 904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

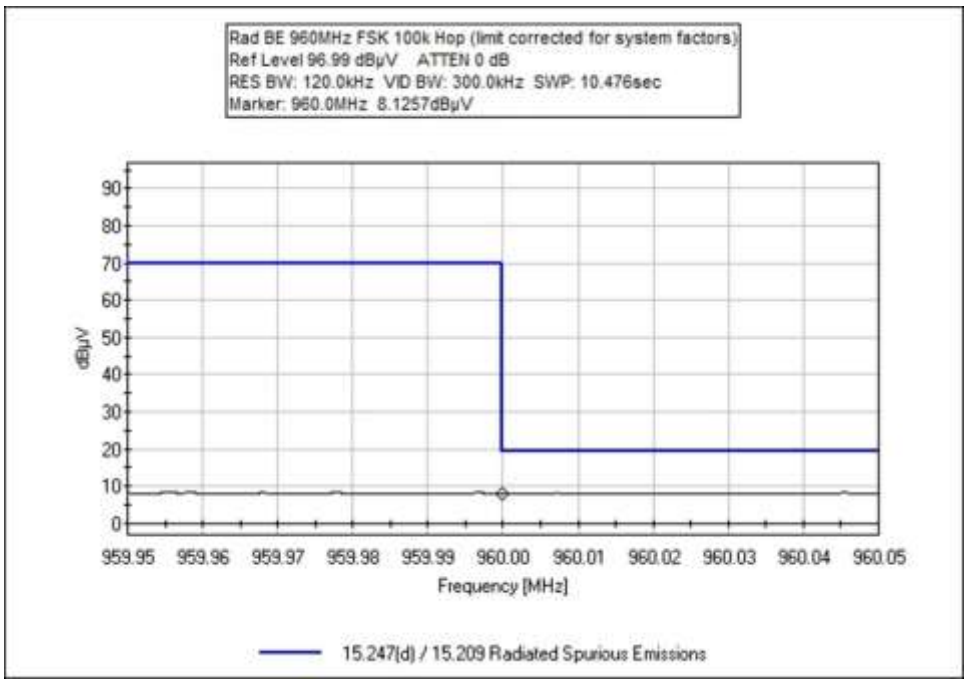

Rad BE 928MHz FSK 100k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 23.5357dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz FSK 100k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.3167dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

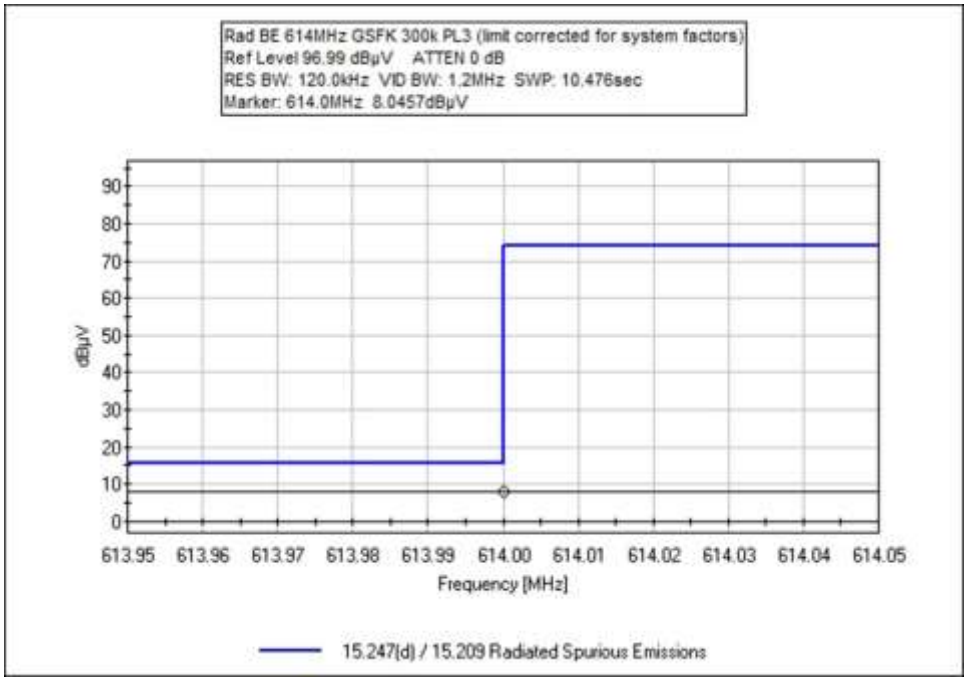

Rad BE 614MHz FSK 100k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.1197dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

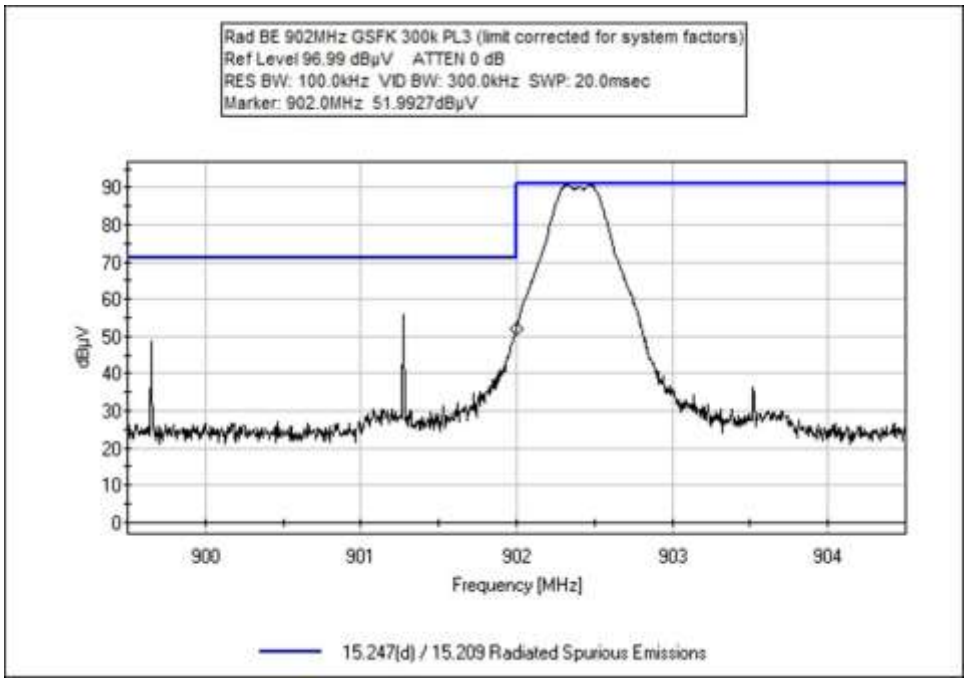

Rad BE 902MHz FSK 100k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 53.8847dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900
901
902
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

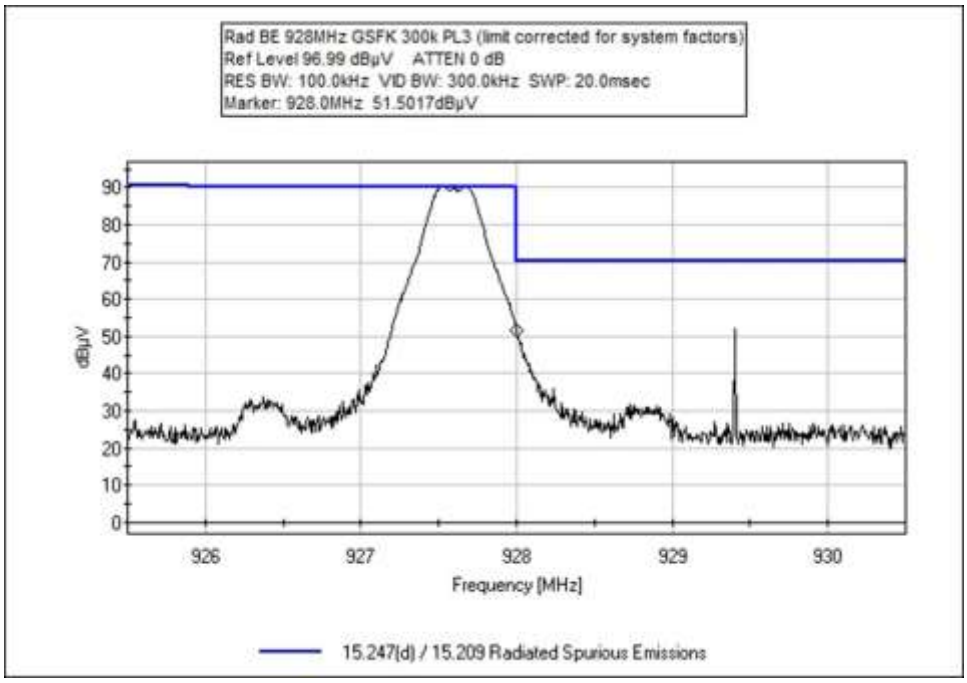

Rad BE 928MHz FSK 100k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 21.9257dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

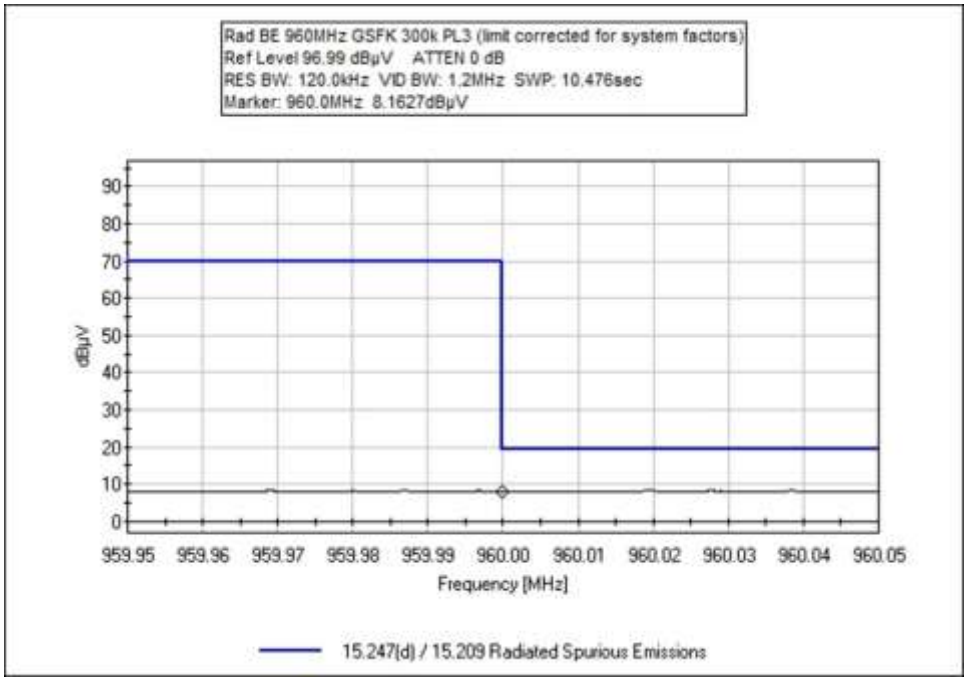

Rad BE 960MHz FSK 100k Hop (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.1257dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

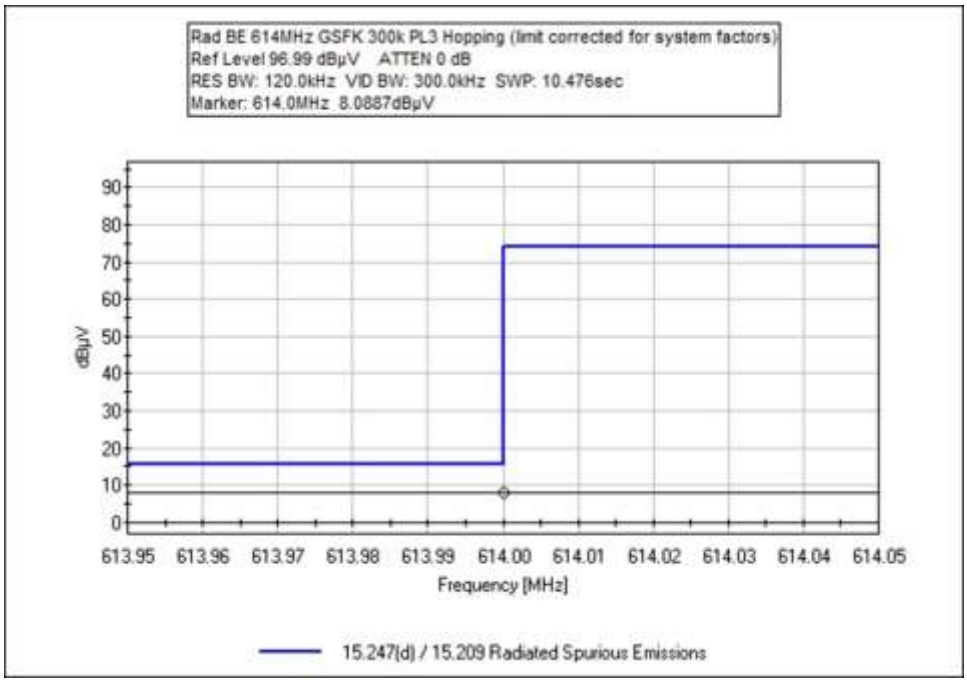
GFSK 300kbps Power Level 3

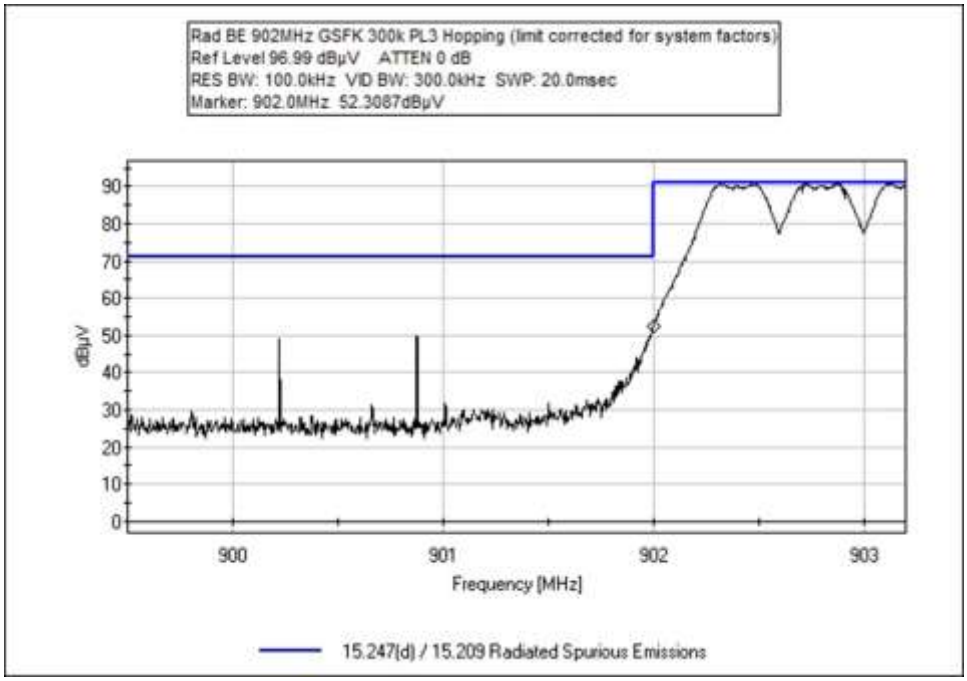


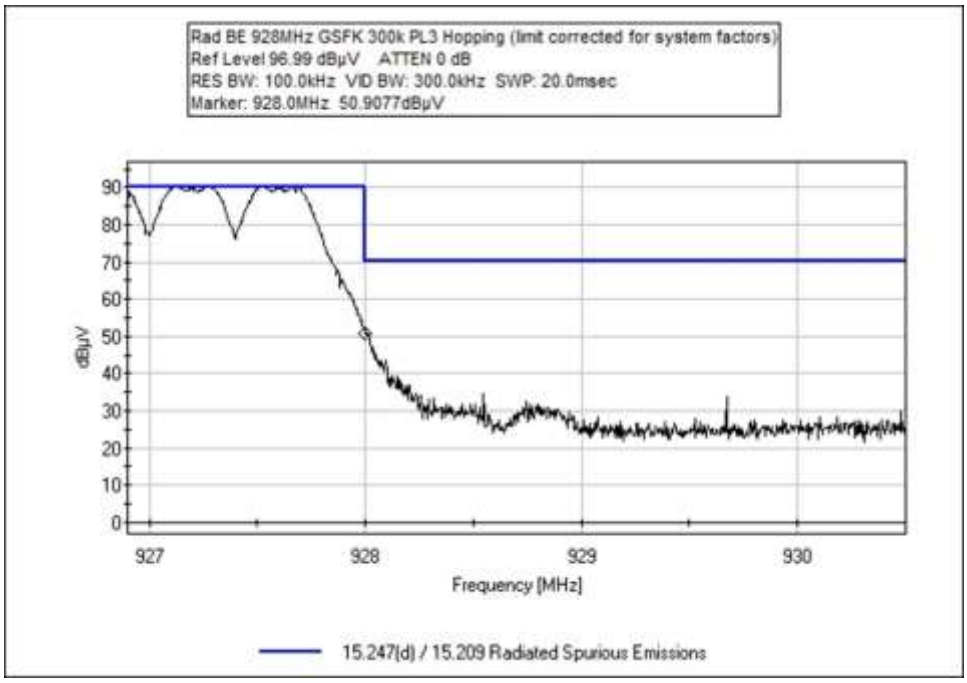


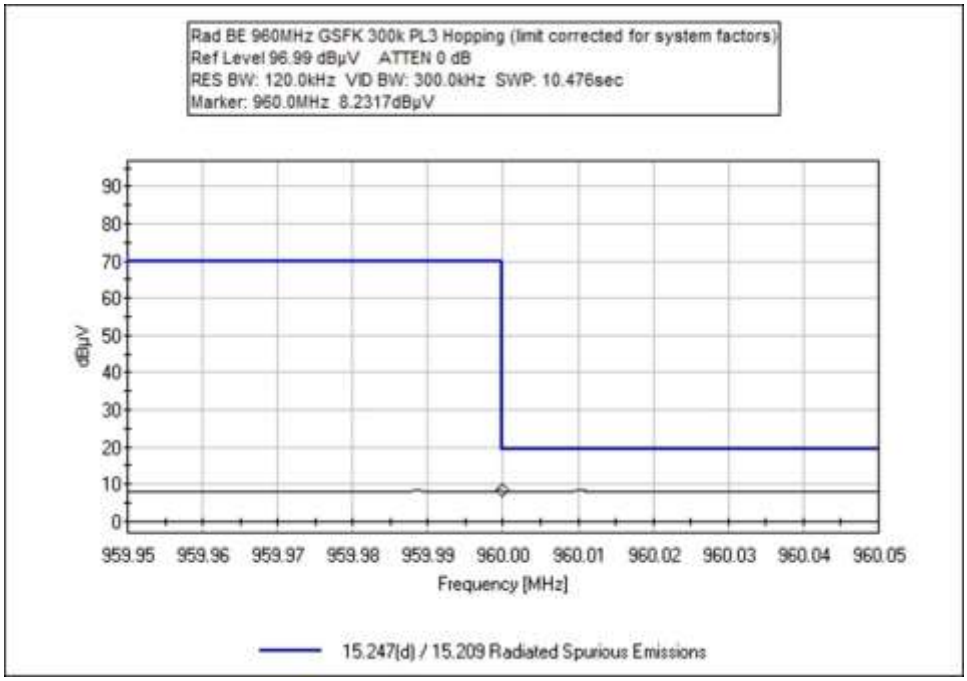

Rad BE 928MHz GSFK 300k PL3 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 51.5017dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 300k PL3 (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 1.2MHz SWP: 10.476sec
Marker: 960.0MHz 8.1627dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

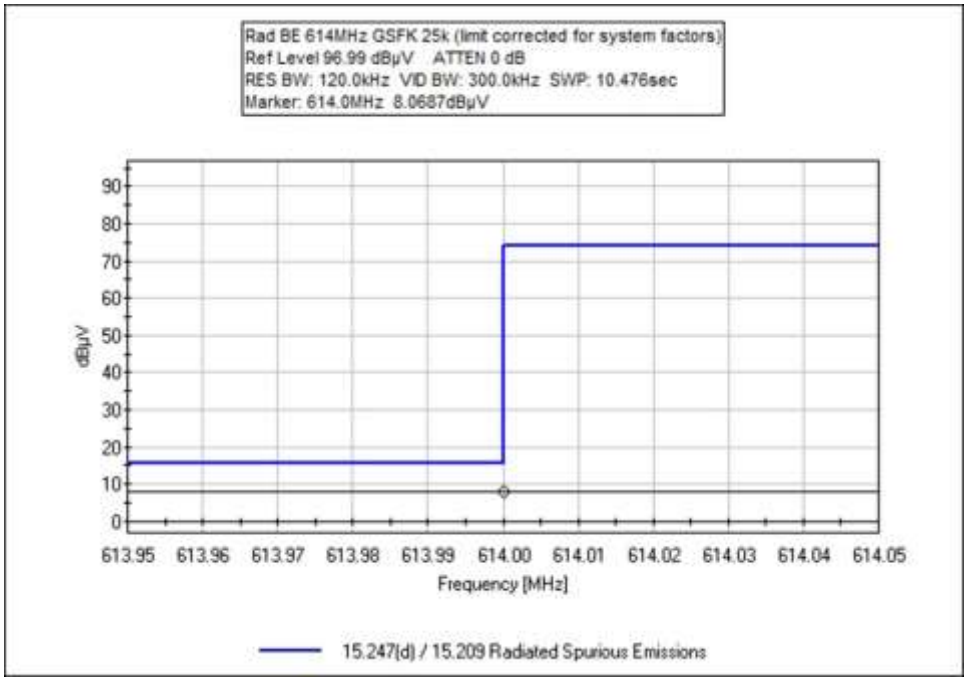

Rad BE 614MHz GSFK 300k PL3 Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.0887dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

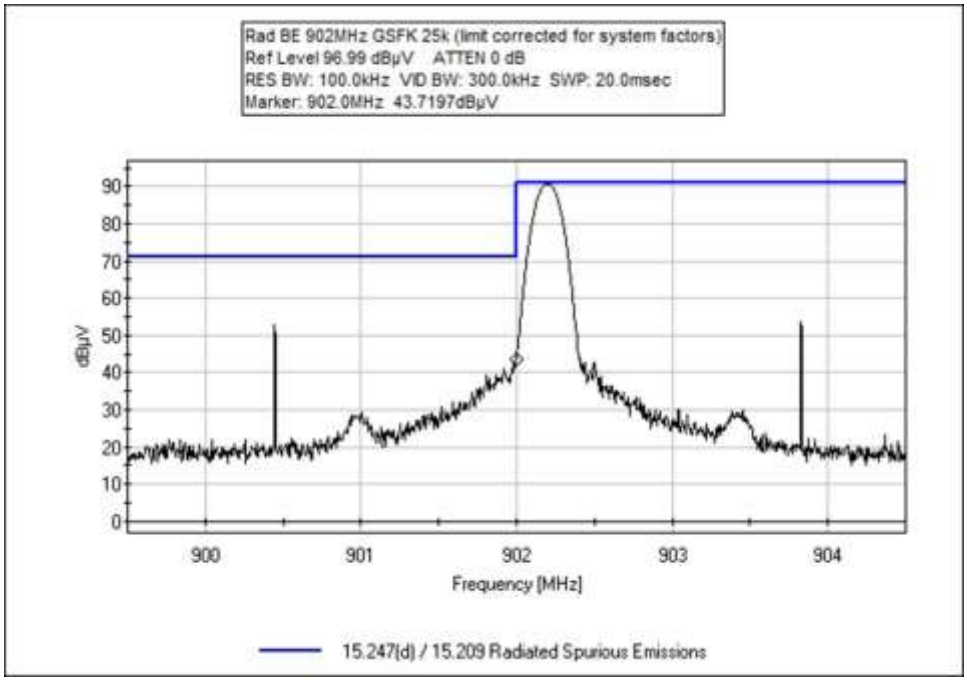

Rad BE 902MHz GSFK 300k PL3 Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 52.3087dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

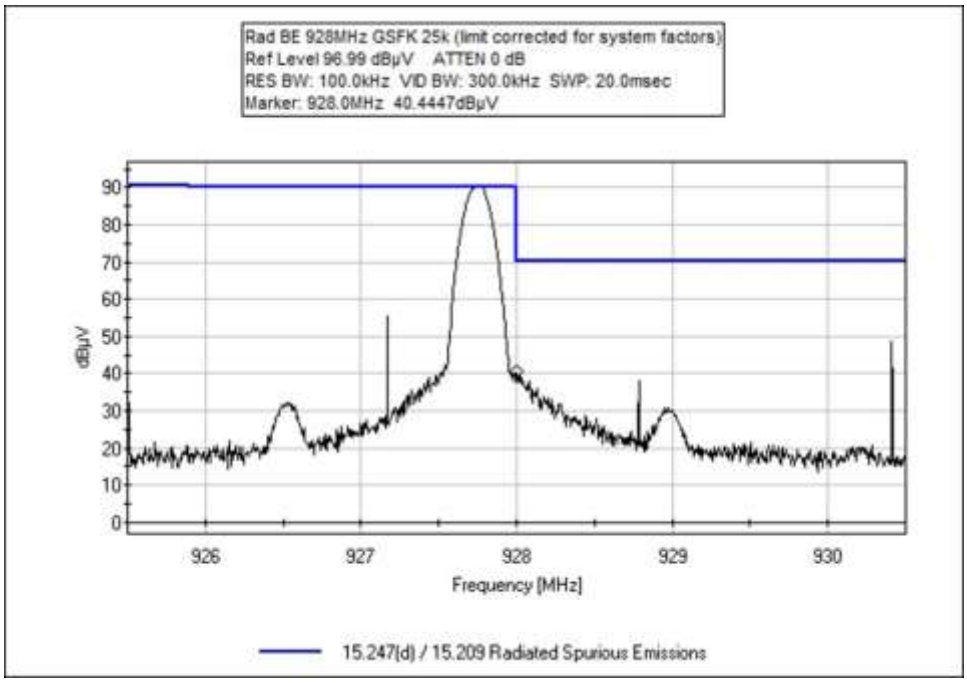

Rad BE 928MHz GSFK 300k PL3 Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 50.9077dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

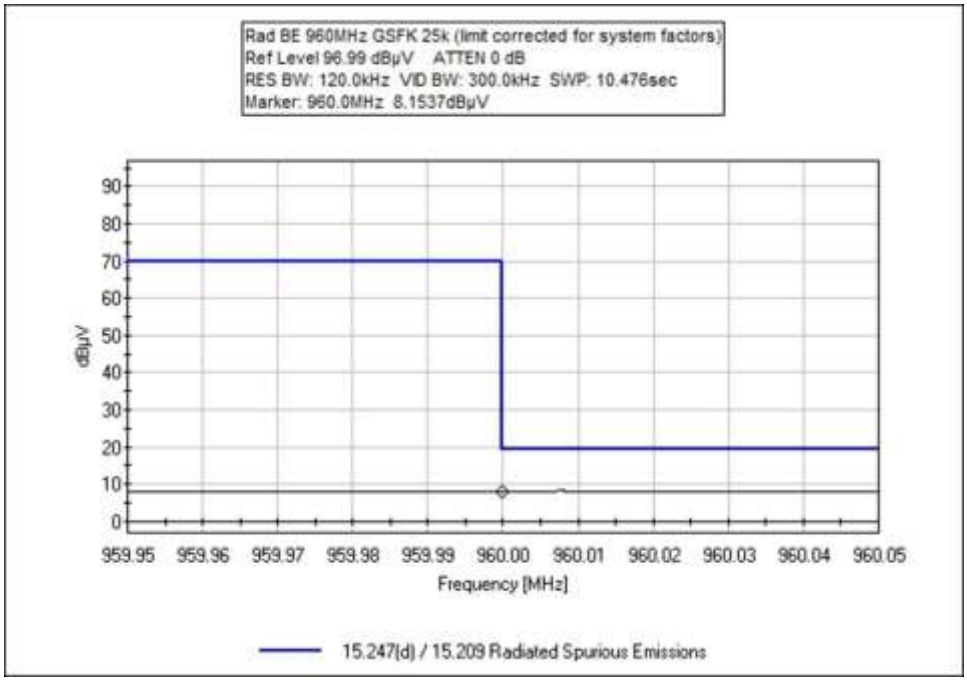

Rad BE 960MHz GSFK 300k PL3 Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.2317dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

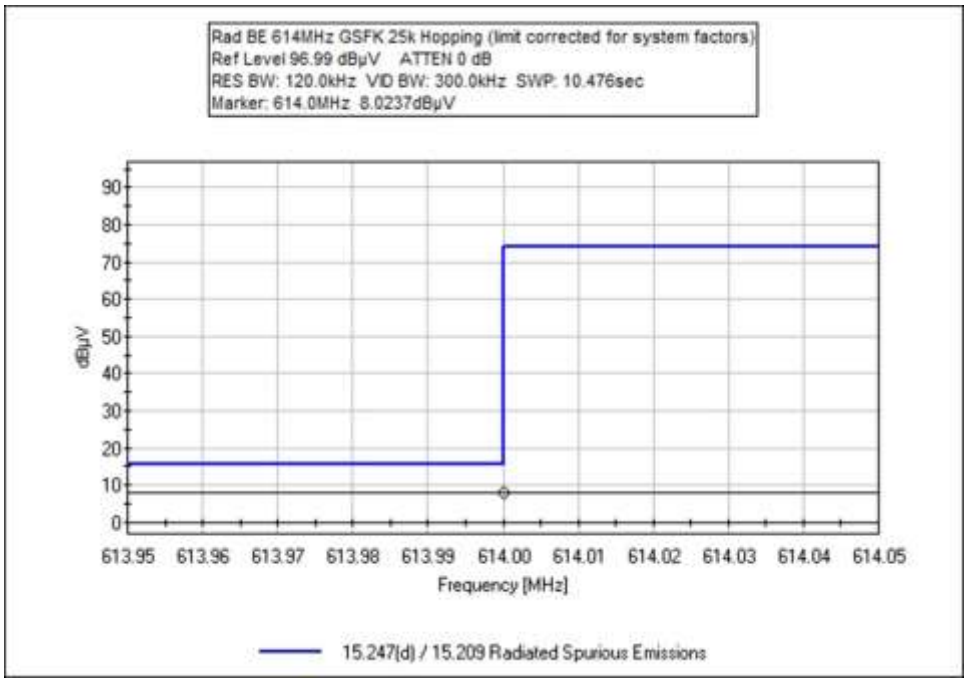
GFSK 25kbps

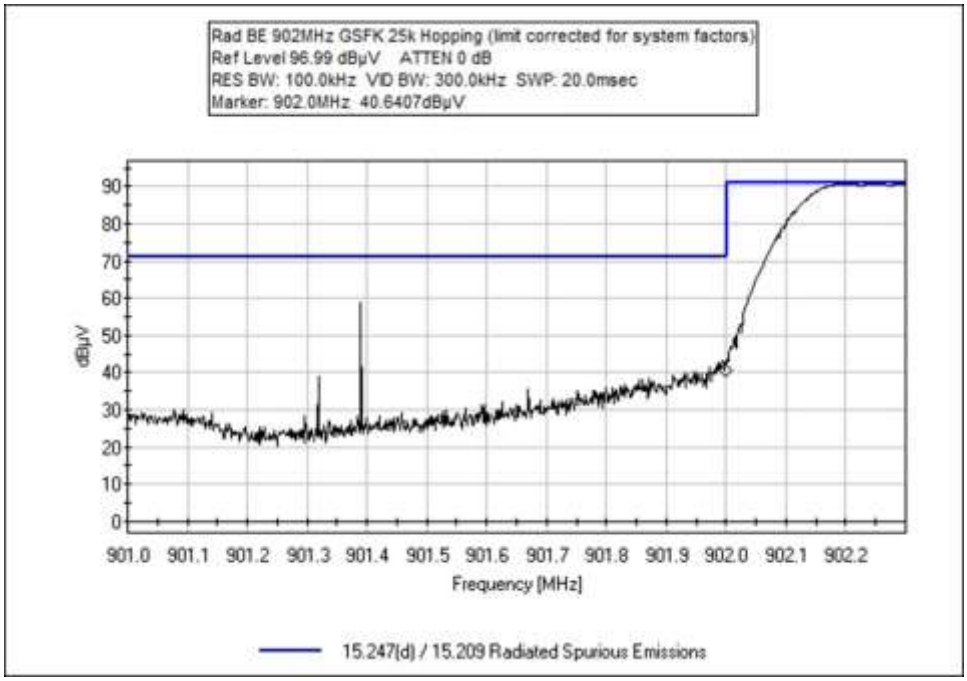

Rad BE 614MHz GSFK 25k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.0687dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

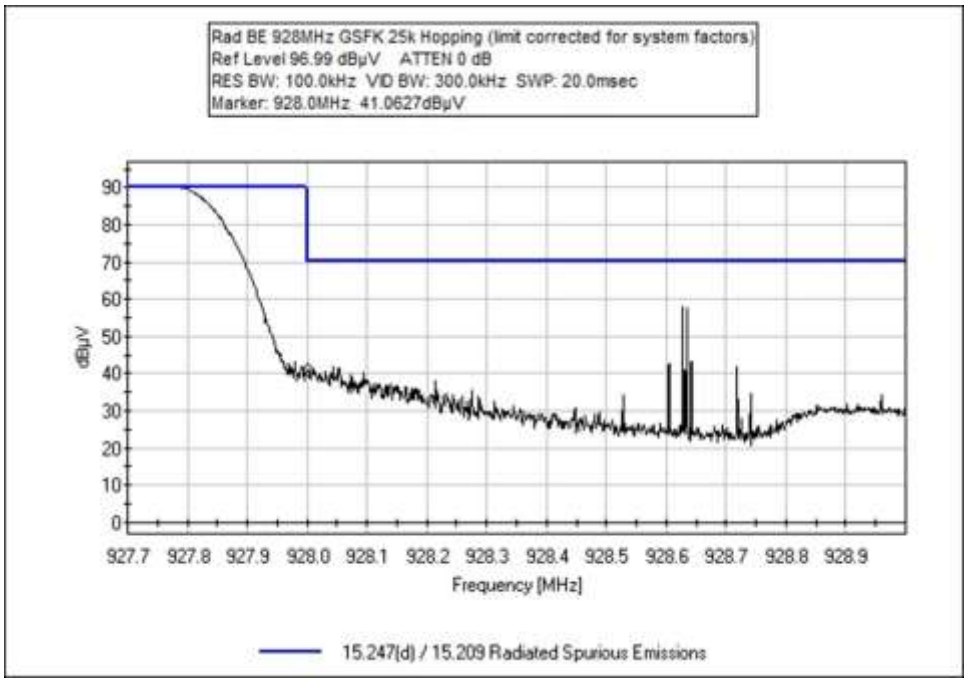

Rad BE 902MHz GSFK 25k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 43.7197dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903 904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

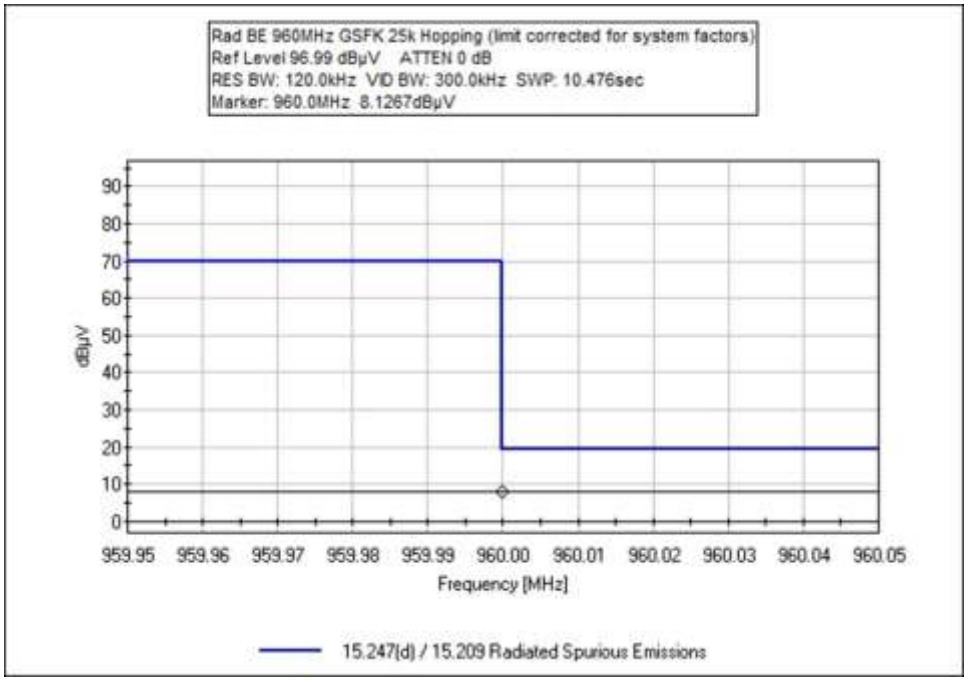

Rad BE 928MHz GSFK 25k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 40.4447dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 25k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.1537dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

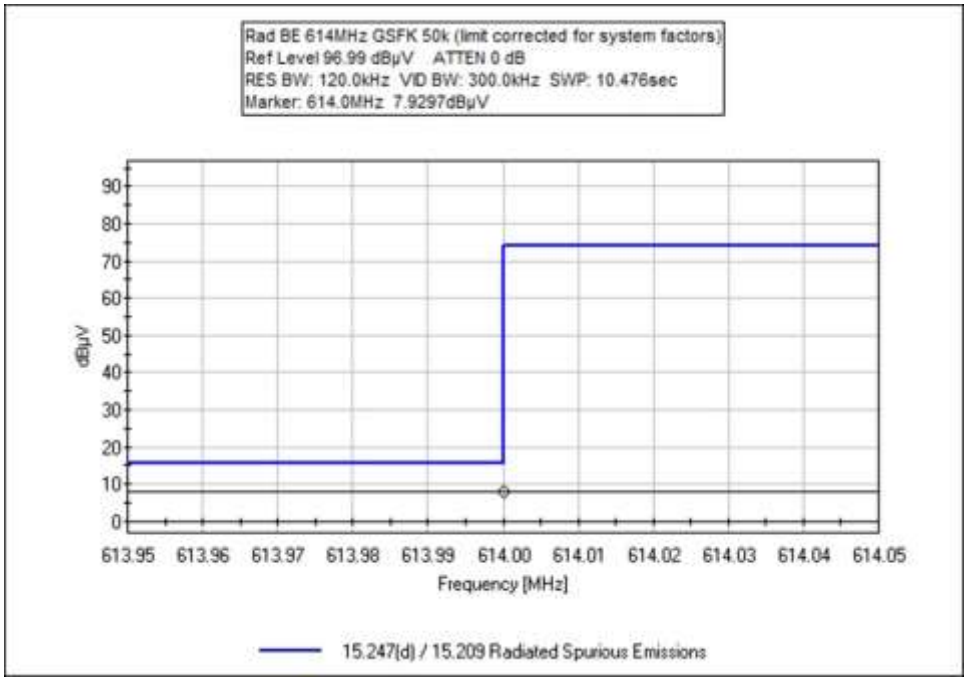

Rad BE 614MHz GSFK 25k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 8.0237dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

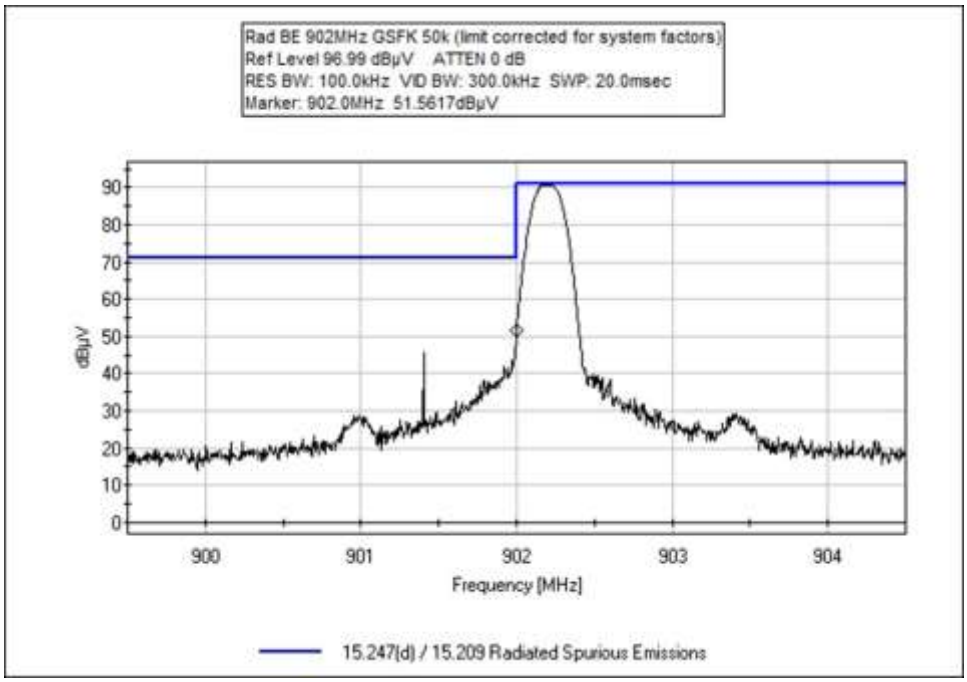

Rad BE 902MHz GSFK 25k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 40.6407dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
901.0 901.1 901.2 901.3 901.4 901.5 901.6 901.7 901.8 901.9 902.0 902.1 902.2
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

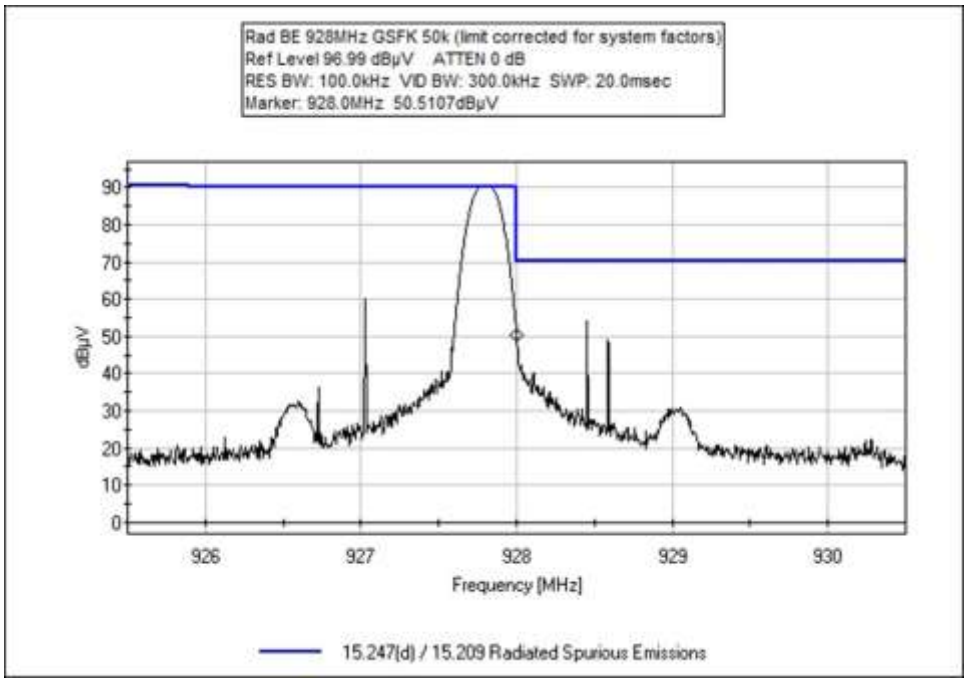

Rad BE 928MHz GSFK 25k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 41.0627dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
927.7 927.8 927.9 928.0 928.1 928.2 928.3 928.4 928.5 928.6 928.7 928.8 928.9
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

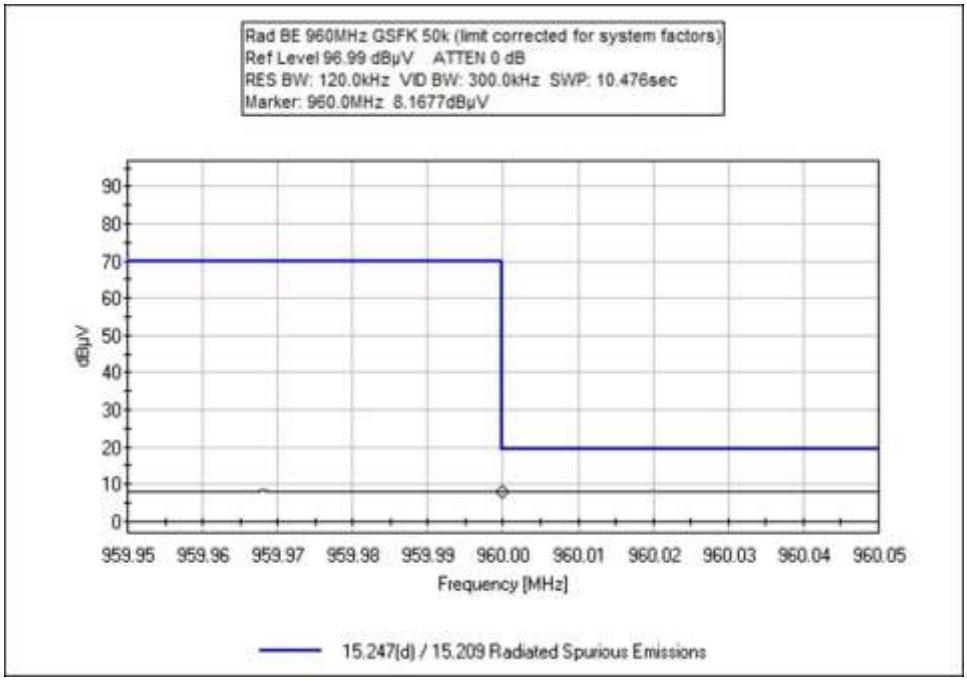

Rad BE 960MHz GSFK 25k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.1267dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95 959.96 959.97 959.98 959.99 960.00 960.01 960.02 960.03 960.04 960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

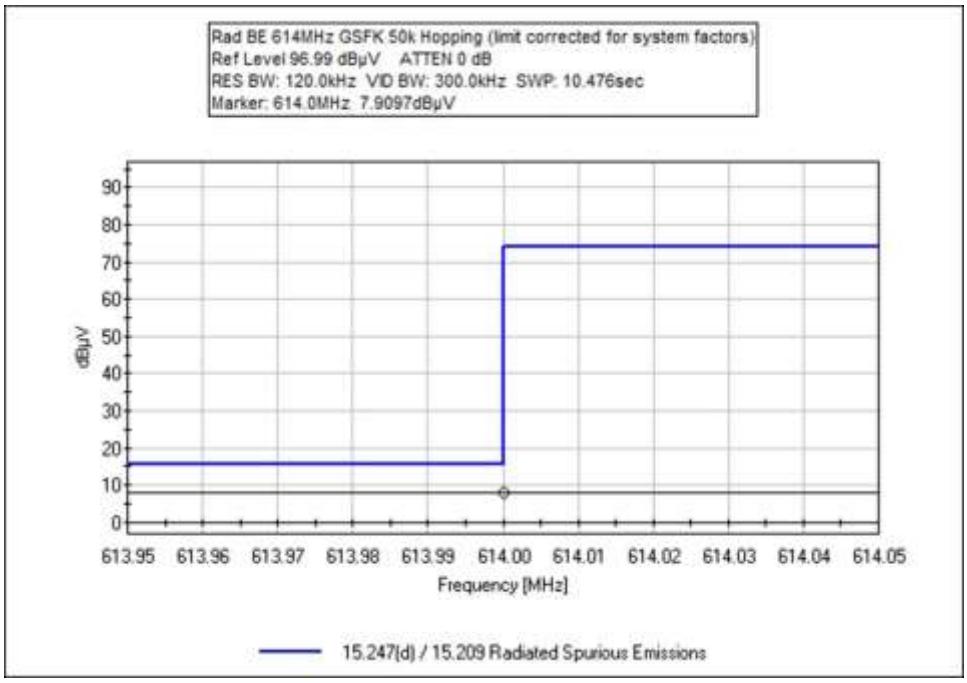
GFSK 50kbps

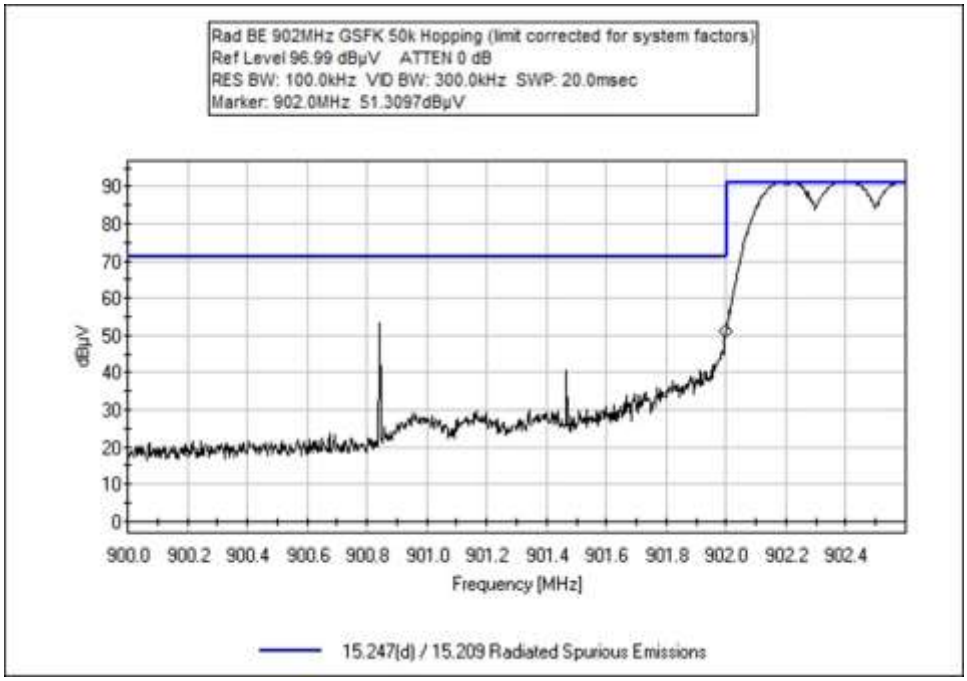

Rad BE 614MHz GSFK 50k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 7.9297dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

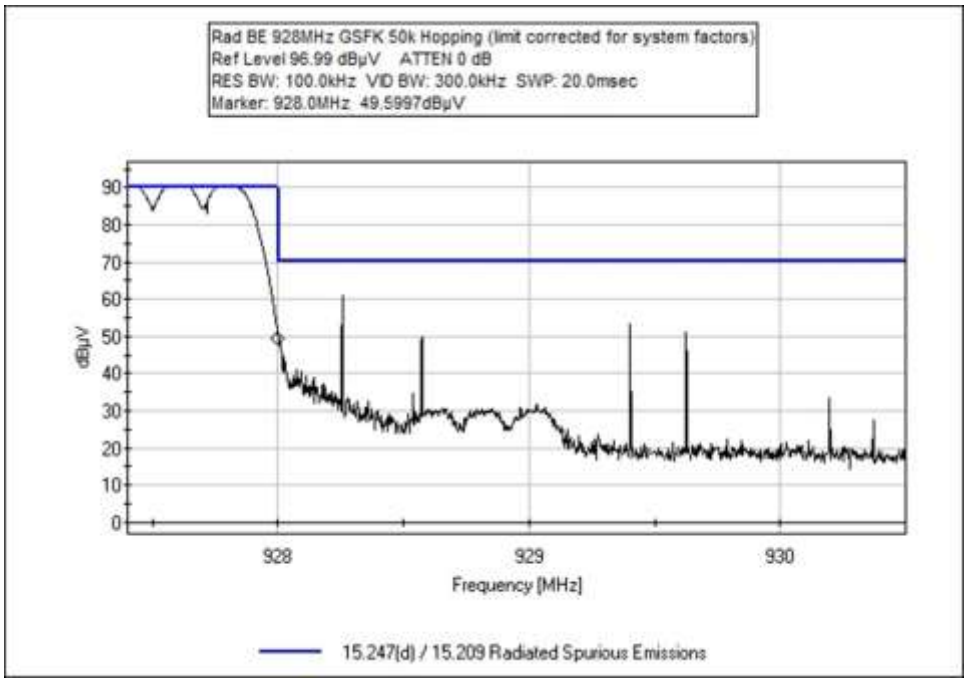

Rad BE 902MHz GSFK 50k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 51.5617dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900 901 902 903 904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

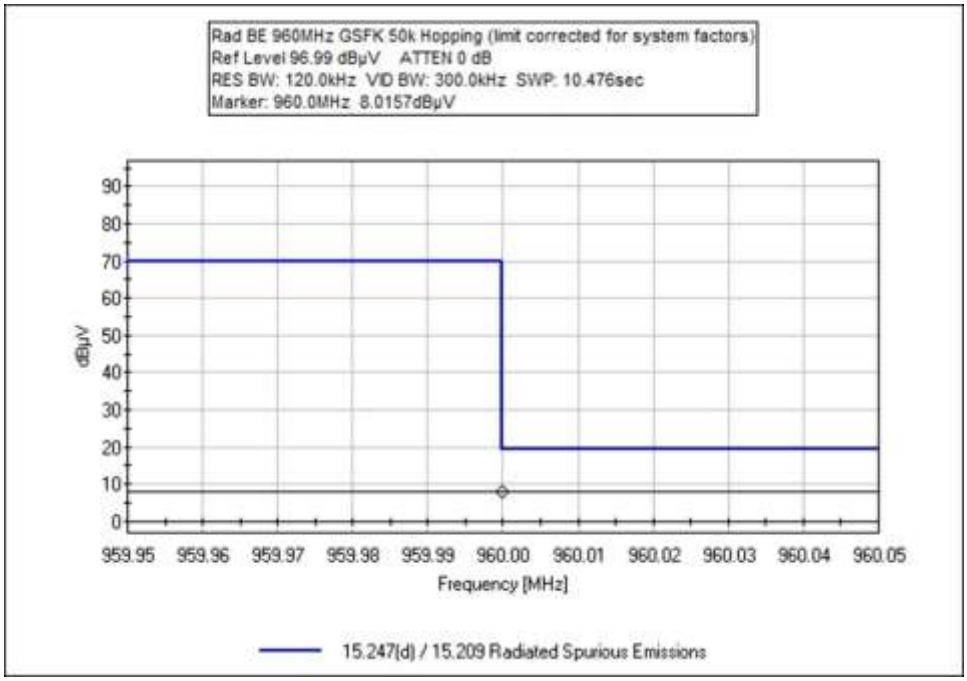

Rad BE 928MHz GSFK 50k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 50.5107dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 50k (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.1677dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
959.95
959.96
959.97
959.98
959.99
960.00
960.01
960.02
960.03
960.04
960.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 614MHz GSFK 50k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 614.0MHz 7.9097dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
613.95 613.96 613.97 613.98 613.99 614.00 614.01 614.02 614.03 614.04 614.05
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 902MHz GSFK 50k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 51.3097dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
900.0 900.2 900.4 900.6 900.8 901.0 901.2 901.4 901.6 901.8 902.0 902.2 902.4
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 928MHz GSFK 50k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 49.5997dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Rad BE 960MHz GSFK 50k Hopping (limit corrected for system factors)
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 300.0kHz SWP: 10.476sec
Marker: 960.0MHz 8.0157dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious 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:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**105334**	Date:	4/22/2021
Test Type:	**Radiated Scan**	Time:	08:41:13
Tested By:	Michael Atkinson	Sequence#:	5
Software:	EMITest 5.03.19		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 20-23
Relative Humidity (%): 30-35

Note:
OOK PL1 has 107dbuV/m @3m fundamental measured with 100kbps
OOK PL3 has 120dbuV/m @3m fundamental measured with 100kbps
All other PL3 have 124.5dbuV/m @3m fundamental measured with 100kbps (GFSK 300kbps PL2 Hybrid is considered with a different report)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02871	Spectrum Analyzer	E4440A	3/12/2020	3/12/2022
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T3	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T4	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T5	ANP06123	Attenuator	18N-6	4/2/2021	4/2/2023
T6	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021

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	960.000M QP	16.9	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	51.4	54.0 OOK PL3	-2.6	Vert
2	960.000M QP	15.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	49.6	54.0 OOK PL3 hop	-4.4	Vert
3	902.000M	46.9	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	80.3	87.0 OOK PL1	-6.7	Vert
4	902.000M	46.2	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	79.6	87.0 OOK PL1 hop	-7.4	Vert
5	614.000M QP	8.1	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.3	46.0 GSFK 25k	-7.7	Vert
6	614.000M QP	8.1	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.3	46.0 OOK PL1	-7.7	Vert
7	614.000M QP	8.1	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.3	46.0 FSK 100k hop	-7.7	Vert
8	614.000M QP	8.1	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.3	46.0 GSFK 300k PL3 hop	-7.7	Vert
9	614.000M QP	8.1	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.3	46.0 FSK 100k	-7.7	Vert
10	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GFSK 10k	-7.8	Vert
11	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GFSK 150k hop	-7.8	Vert
12	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 OOK PL3 hop	-7.8	Vert
13	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GSFK 150k	-7.8	Vert
14	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GSFK 300k PL3	-7.8	Vert
15	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GSFK 25k hop	-7.8	Vert
16	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 GSFK 10k hop	-7.8	Vert
17	614.000M QP	8.0	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.2	46.0 OOK PL1 hop	-7.8	Vert
18	614.000M QP	7.9	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.1	46.0 OOK PL3	-7.9	Vert
19	614.000M QP	7.9	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.1	46.0 GFSK 50k	-7.9	Vert
20	614.000M QP	7.9	+0.0 +5.8	+0.3 +21.2	+1.2	+1.7	+0.0	38.1	46.0 GFSK 50k hop	-7.9	Vert
21	960.000M QP	8.3	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.8	54.0 FSK 100k	-11.2	Vert
22	960.000M QP	8.2	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.7	54.0 GSFK 25k	-11.3	Vert
23	960.000M QP	8.2	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.7	54.0 GSFK 300k PL3 hop	-11.3	Vert

24	960.000M QP	8.2	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.7	54.0	-11.3	Vert GSFK 300k PL3
25	960.000M QP	8.2	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.7	54.0	-11.3	Vert GFSK 50k
26	960.000M QP	8.2	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.7	54.0	-11.3	Vert GSFK 10k hop
27	960.000M QP	8.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.6	54.0	-11.4	Vert GFSK 10k
28	960.000M QP	8.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.6	54.0	-11.4	Vert GSFK 150k
29	960.000M QP	8.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.6	54.0	-11.4	Vert GFSK 150k hop
30	960.000M QP	8.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.6	54.0	-11.4	Vert FSK 100k hop
31	960.000M QP	8.1	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.6	54.0	-11.4	Vert GSFK 25k hop
32	960.000M QP	8.0	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	42.5	54.0	-11.5	Vert GFSK 50k hop
^	960.000M	11.5	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	46.0	54.0	-8.0	Vert OOK PL1 hop
^	960.000M	11.0	+0.0 +5.8	+0.4 +24.6	+1.5	+2.2	+0.0	45.5	54.0	-8.5	Vert OOK PL1
35	902.000M	52.6	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	86.0	100.0	-14.0	Vert OOK PL3
36	902.000M	52.4	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	85.8	100.0	-14.2	Vert OOK PL3 hop
37	928.000M	51.5	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	85.6	100.0	-14.4	Vert OOK PL3
38	928.000M	37.2	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	71.3	87.0	-15.7	Vert OOK PL1 hop
39	928.000M	50.1	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	84.2	100.0	-15.8	Vert OOK PL3 hop
40	928.000M	36.9	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	71.0	87.0	-16.0	Vert OOK PL1
41	902.000M	54.0	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	87.4	104.5	-17.1	Vert FSK 100k hop
42	902.000M	53.9	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	87.3	104.5	-17.2	Vert FSK 100k
43	902.000M	52.3	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	85.7	104.5	-18.8	Vert GSFK 300k PL3 hop
44	928.000M	51.5	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	85.6	104.5	-18.9	Vert GSFK 300k PL3
45	902.000M	52.0	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	85.4	104.5	-19.1	Vert GSFK 300k PL3
46	928.000M	50.9	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	85.0	104.5	-19.5	Vert GSFK 300k PL3 hop
47	902.000M	51.6	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	85.0	104.5	-19.5	Vert GFSK 50k
48	902.000M	51.3	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	84.7	104.5	-19.8	Vert GFSK 50k hop

49	928.000M	50.5	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	84.6	104.5 GFSK 50k	-19.9	Vert
50	928.000M	49.6	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	83.7	104.5 GFSK 50k hop	-20.8	Vert
51	902.000M	43.7	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	77.1	104.5 GSFK 25k	-27.4	Vert
52	928.000M	41.6	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	75.7	104.5 GFSK 10k	-28.8	Vert
53	902.000M	42.2	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	75.6	104.5 GFSK 10k	-28.9	Vert
54	928.000M	41.1	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	75.2	104.5 GSFK 25k hop	-29.3	Vert
55	902.000M	41.6	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	75.0	104.5 GSFK 10k hop	-29.5	Vert
56	928.000M	40.4	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	74.5	104.5 GSFK 25k	-30.0	Vert
57	902.000M	40.6	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	74.0	104.5 GSFK 25k hop	-30.5	Vert
58	928.000M	38.0	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	72.1	104.5 GFSK 150k hop	-32.4	Vert
59	928.000M	37.1	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	71.2	104.5 GSFK 10k hop	-33.3	Vert
60	902.000M	34.8	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	68.2	104.5 GSFK 150k	-36.3	Vert
61	928.000M	32.4	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	66.5	104.5 GFSK 150k	-38.0	Vert
62	902.000M	31.9	+0.0 +5.8	+0.3 +23.8	+1.4	+2.1	+0.0	65.3	104.5 GFSK 150k hop	-39.2	Vert
63	928.000M	23.5	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	57.6	104.5 FSK 100k	-46.9	Vert
64	928.000M	21.9	+0.0 +5.8	+0.4 +24.2	+1.5	+2.2	+0.0	56.0	104.5 FSK 100k hop	-48.5	Vert

Test Setup Photo(s)

Below 1GHz

Above 1GHz

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.