Band Edge Summary-Configuration 4					
Operating Mode: Single Channel (Low and High)					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	12.5kbps FM	External	42.5	<46	Pass
902	12.5kbps FM	External	49.5	<107.7	Pass
928	12.5kbps FM	External	70.1	<107.7	Pass
960	12.5kbps FM	External	44.2	<54	Pass

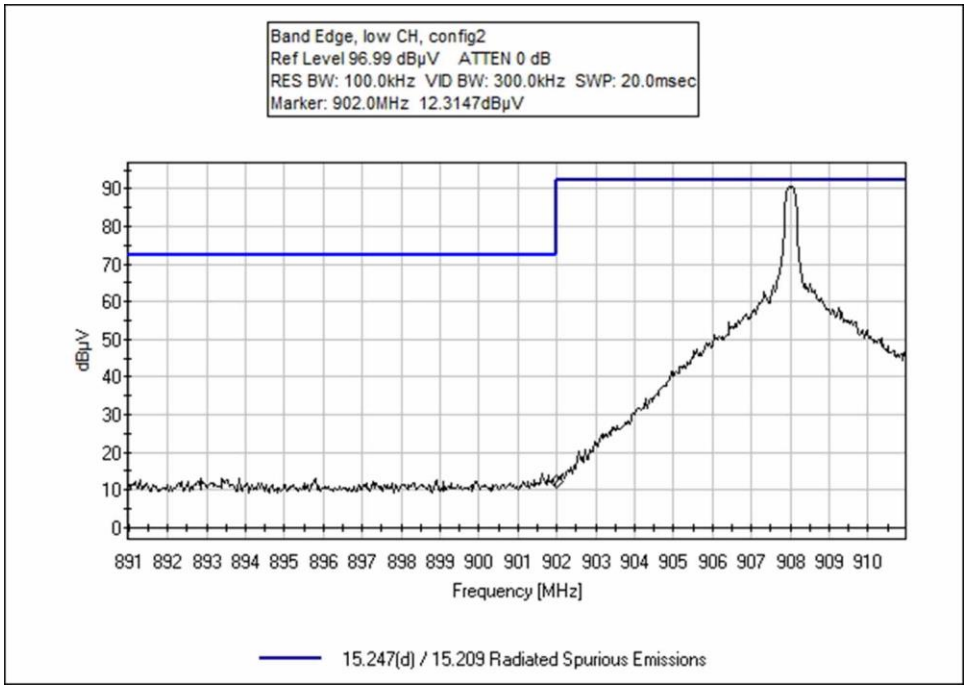
Band Edge Summary-Configuration 4					
Operating Mode: Hopping					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	12.5kbps FM	External	39.7	<46	Pass
902	12.5kbps FM	External	48.9	<107.7	Pass
928	12.5kbps FM	External	67.5	<107.7	Pass
960	12.5kbps FM	External	45.9	<54	Pass

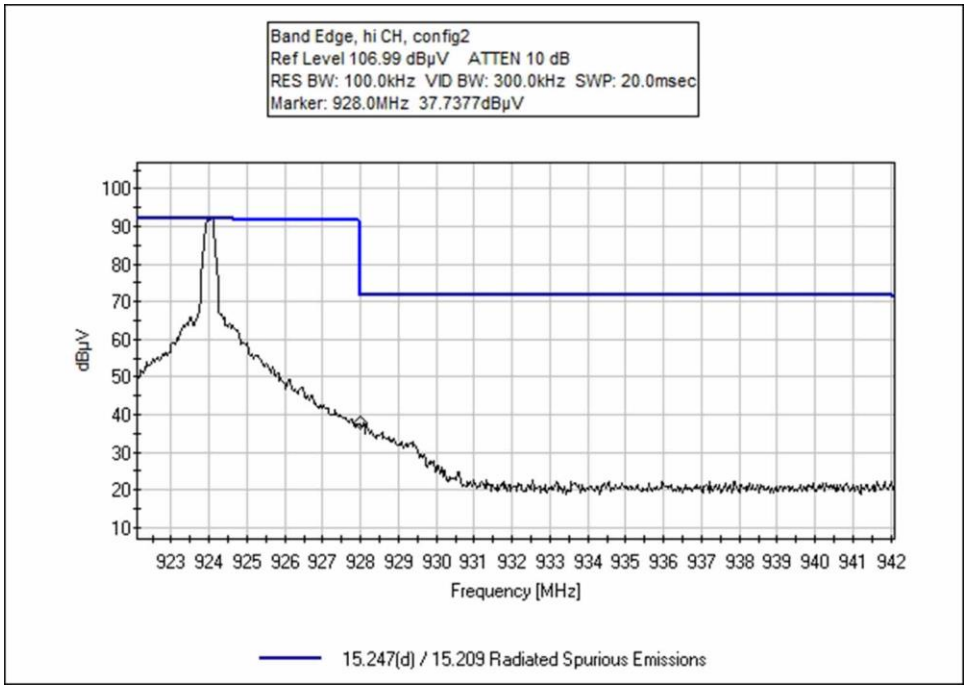
Band Edge Summary-Configuration 5					
Operating Mode: Single Channel (Low and High)					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	12.5kbps FM	External	41.1	<46	Pass
902	12.5kbps FM	External	49.0	<107.7	Pass
928	12.5kbps FM	External	68.3	<107.7	Pass
960	12.5kbps FM	External	47.7	<54	Pass

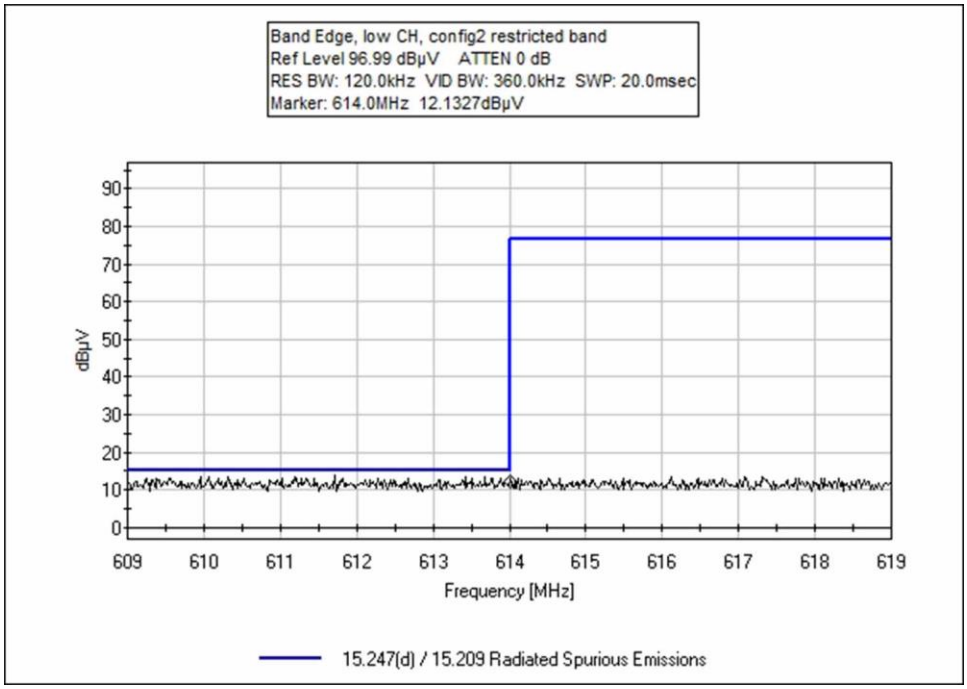
Band Edge Summary-Configuration 5					
Operating Mode: Hopping					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
614	12.5kbps FM	External	40.7	<46	Pass
902	12.5kbps FM	External	46.7	<107.7	Pass
928	12.5kbps FM	External	68.1	<107.7	Pass
960	12.5kbps FM	External	49.5	<54	Pass

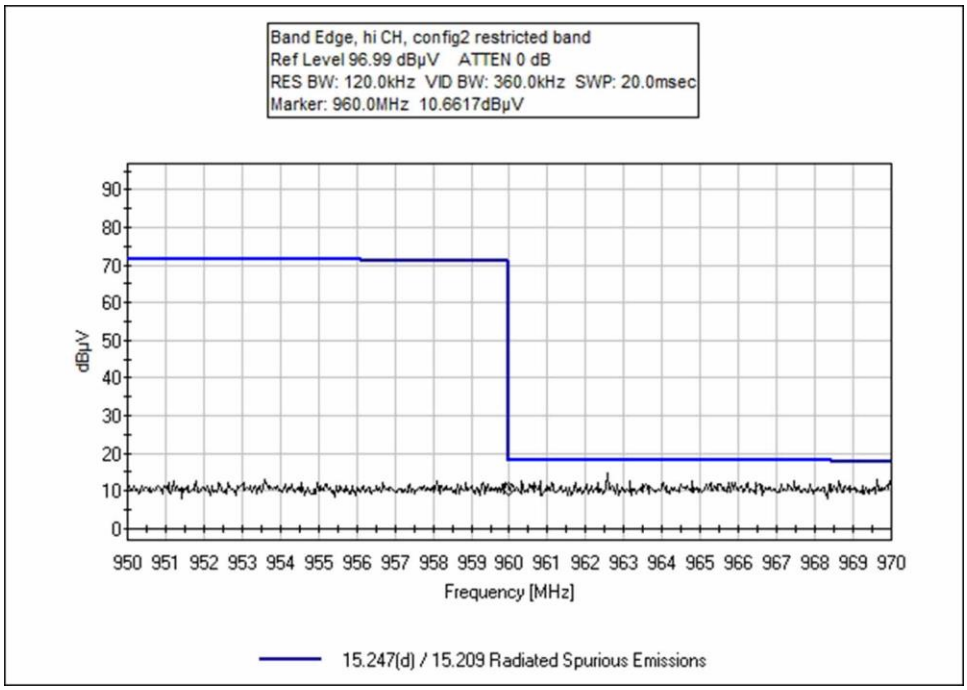
Band Edge Plots

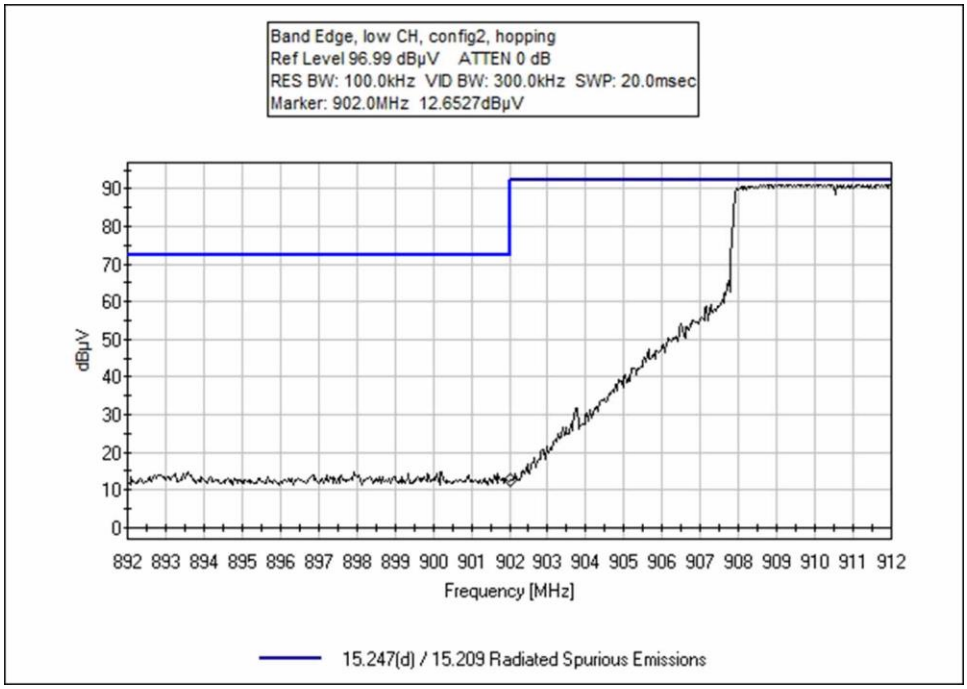
Configuration 2

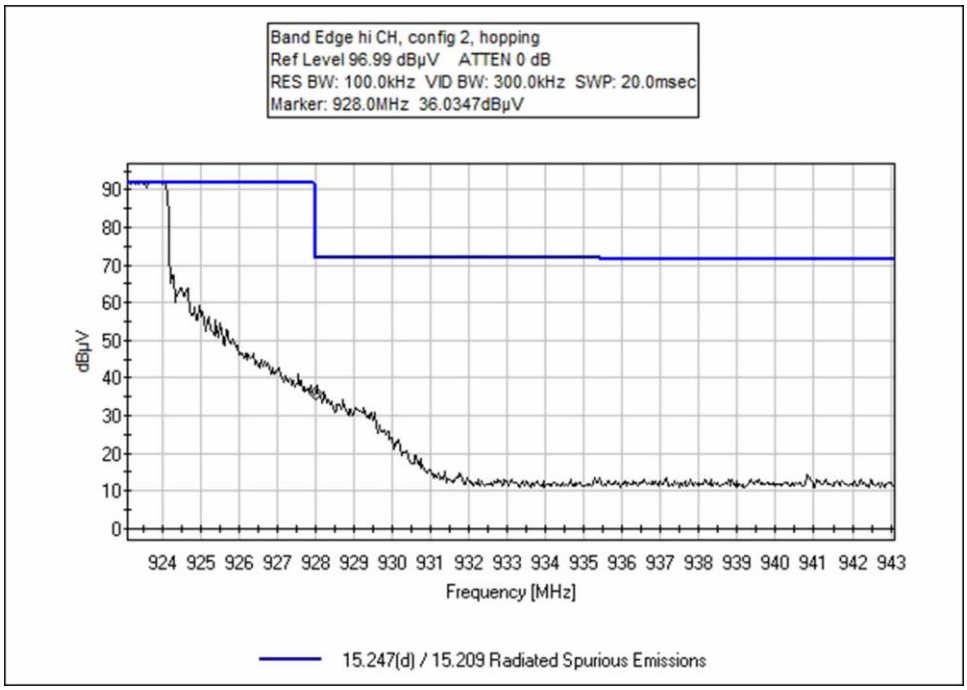


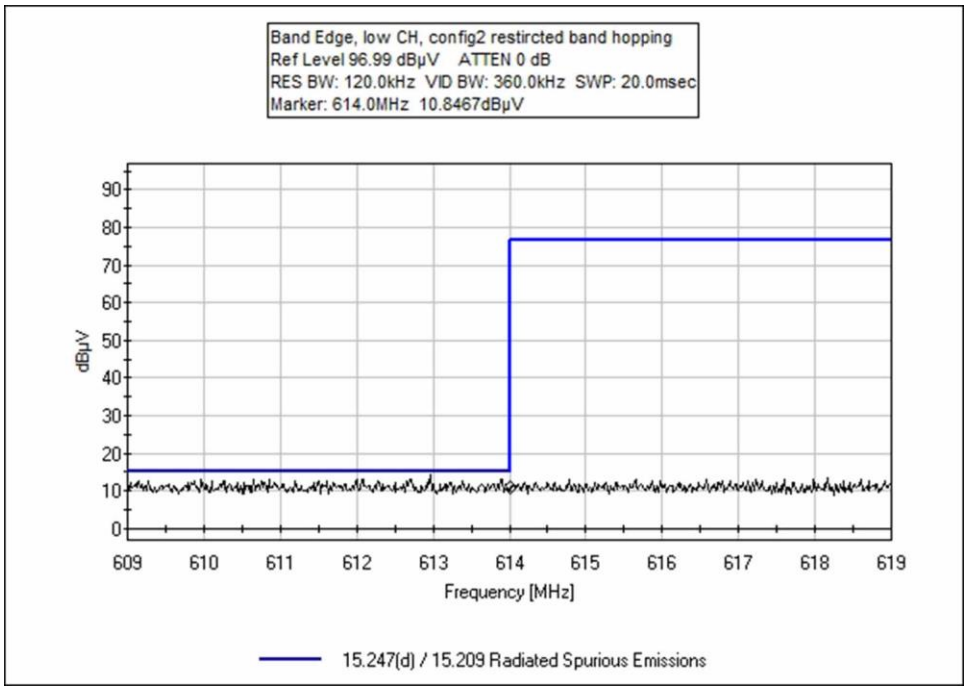


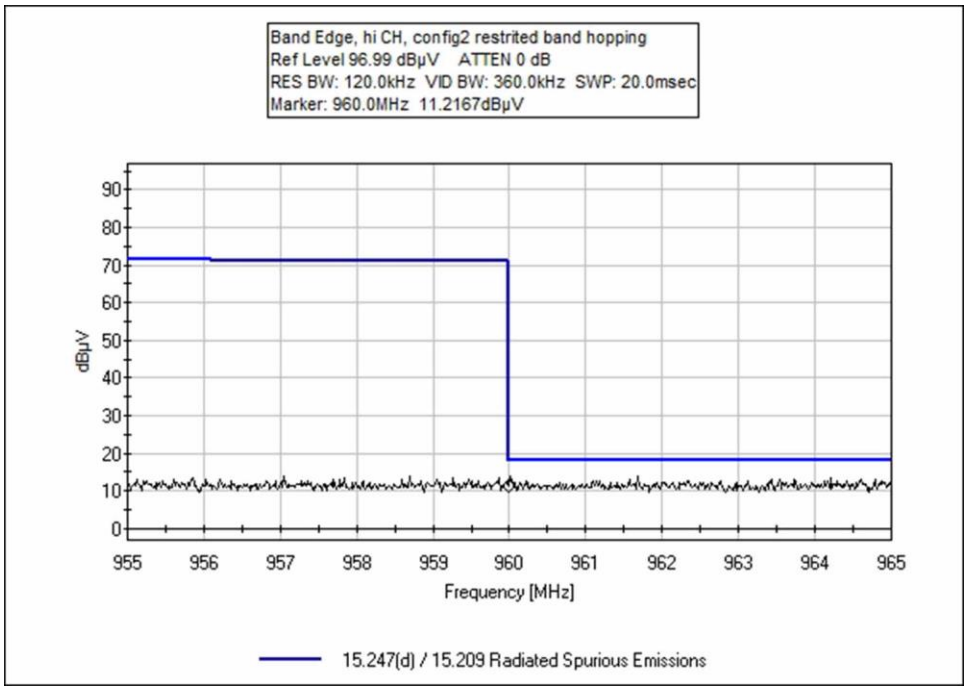

Band Edge, low CH, config2 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 614.0MHz 12.1327dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config2 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 960.0MHz 10.6617dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

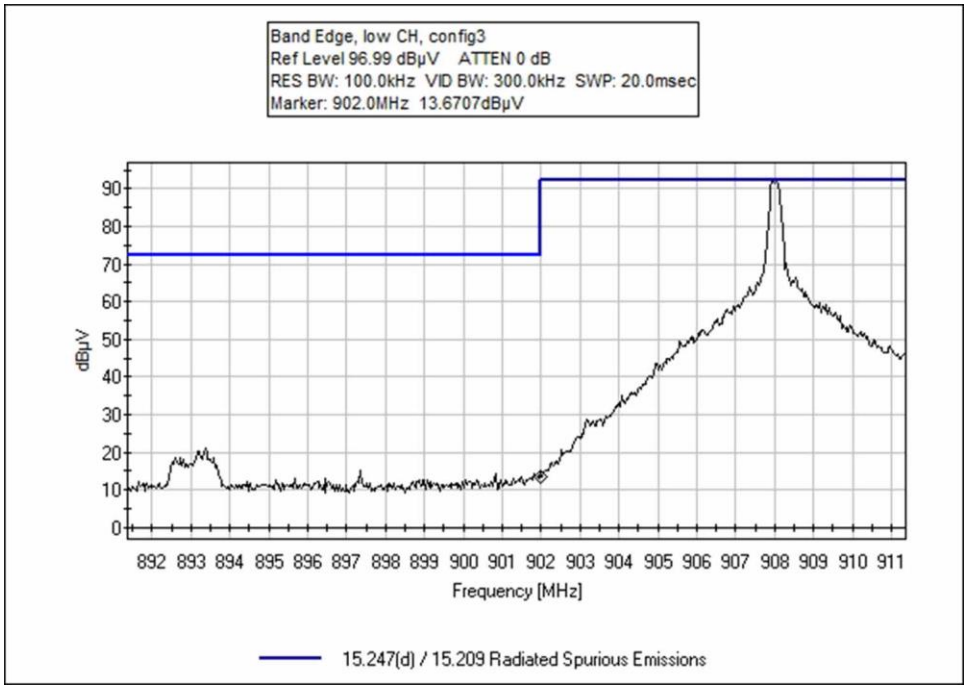

Band Edge, low CH, config2, hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 12.6527dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

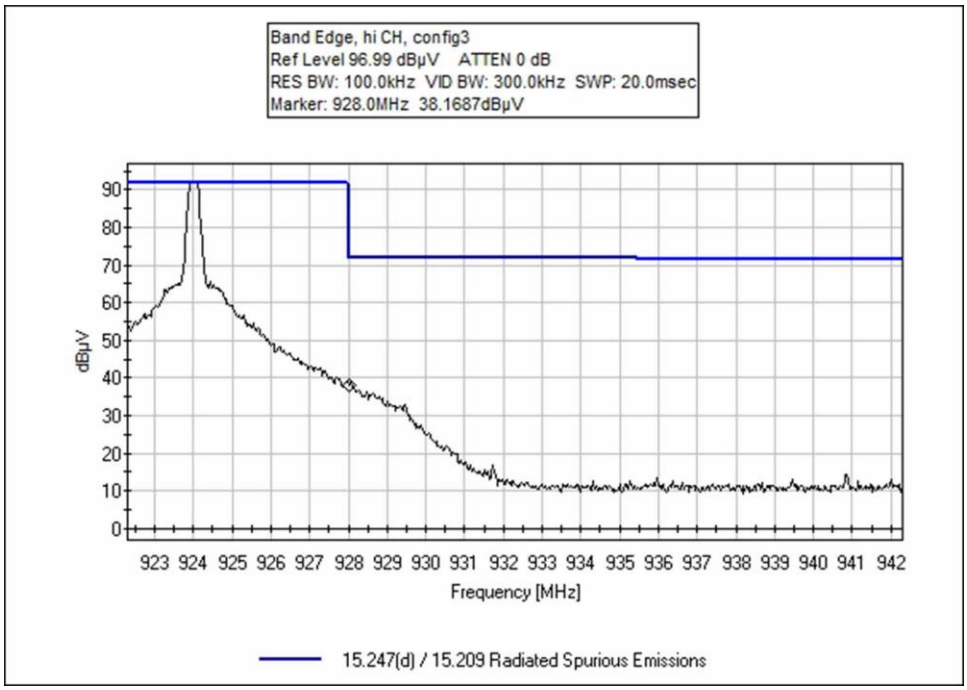

Band Edge hi CH, config 2, hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 36.0347dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

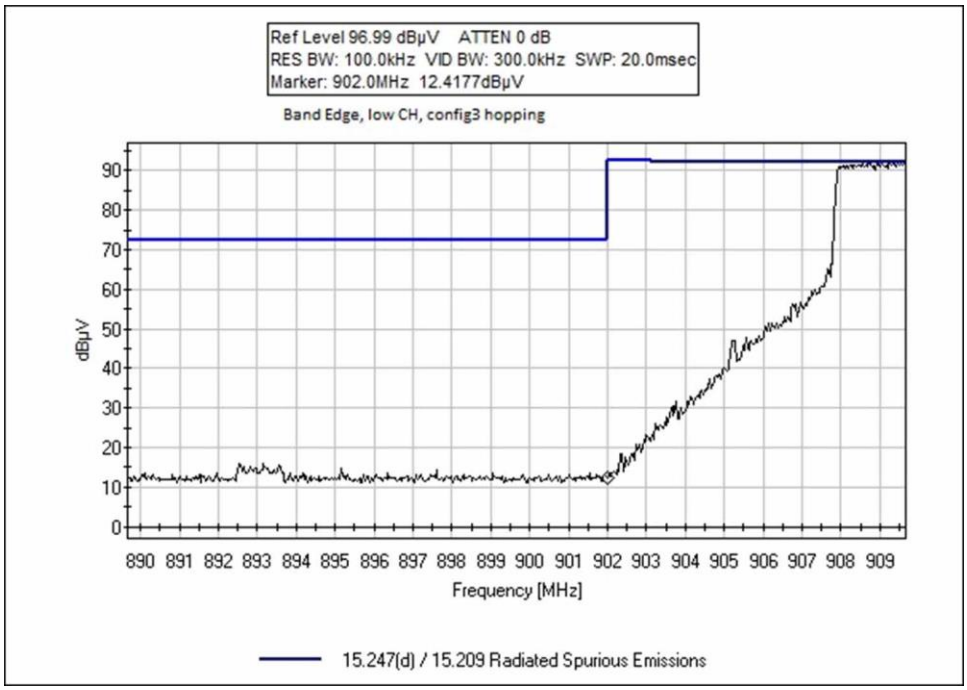

Band Edge, low CH, config2 restircted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 614.0MHz 10.8467dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609
610
611
612
613
614
615
616
617
618
619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

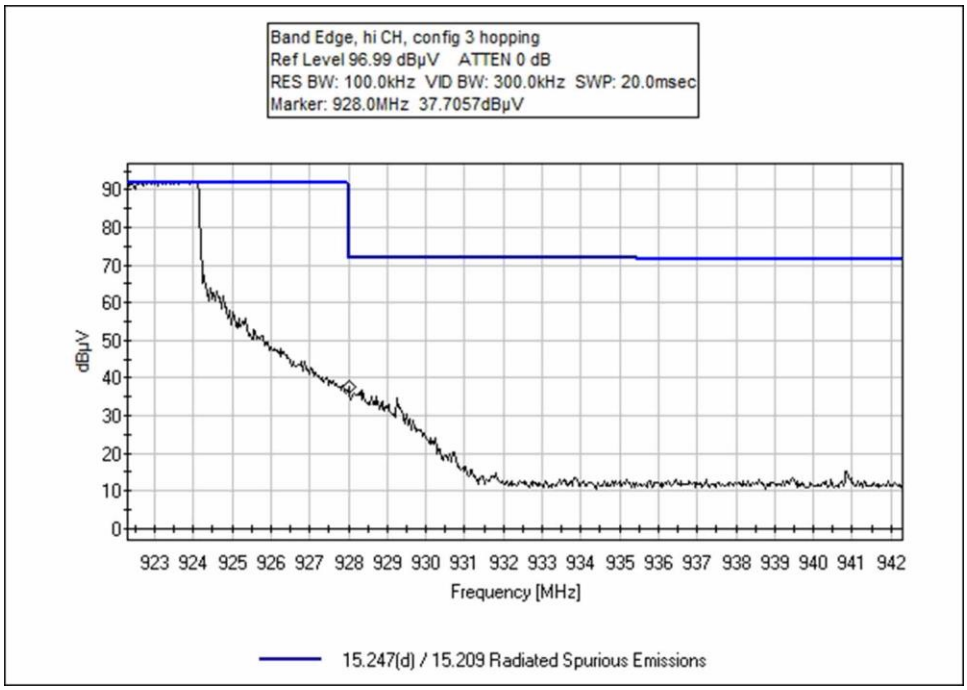

Band Edge, hi CH, config2 restrited band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 960.0MHz 11.2167dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
955
956
957
958
959
960
961
962
963
964
965
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

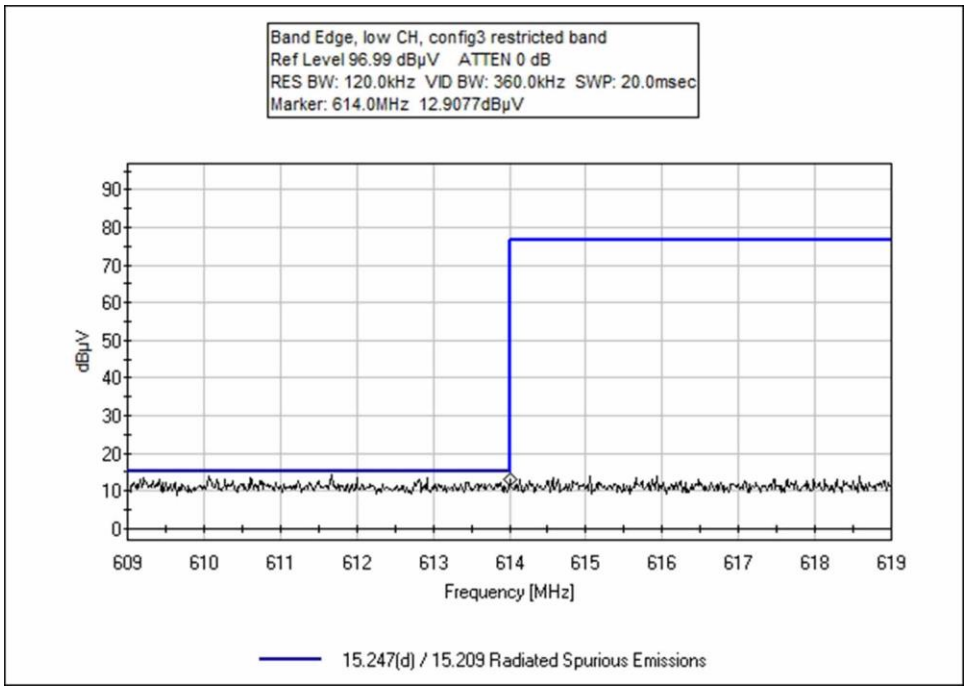
Configuration 3

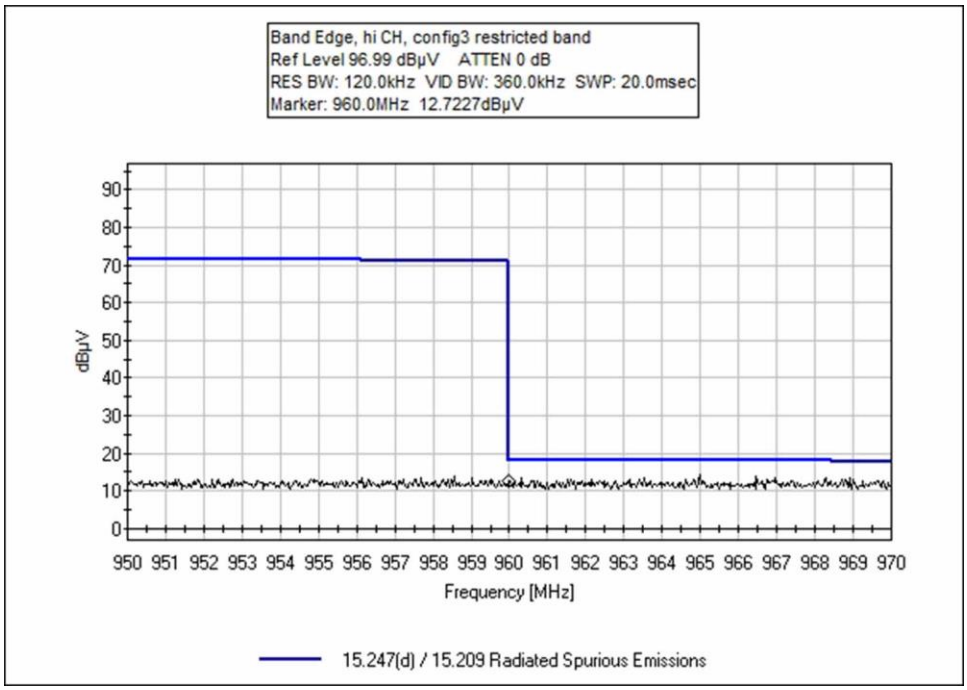


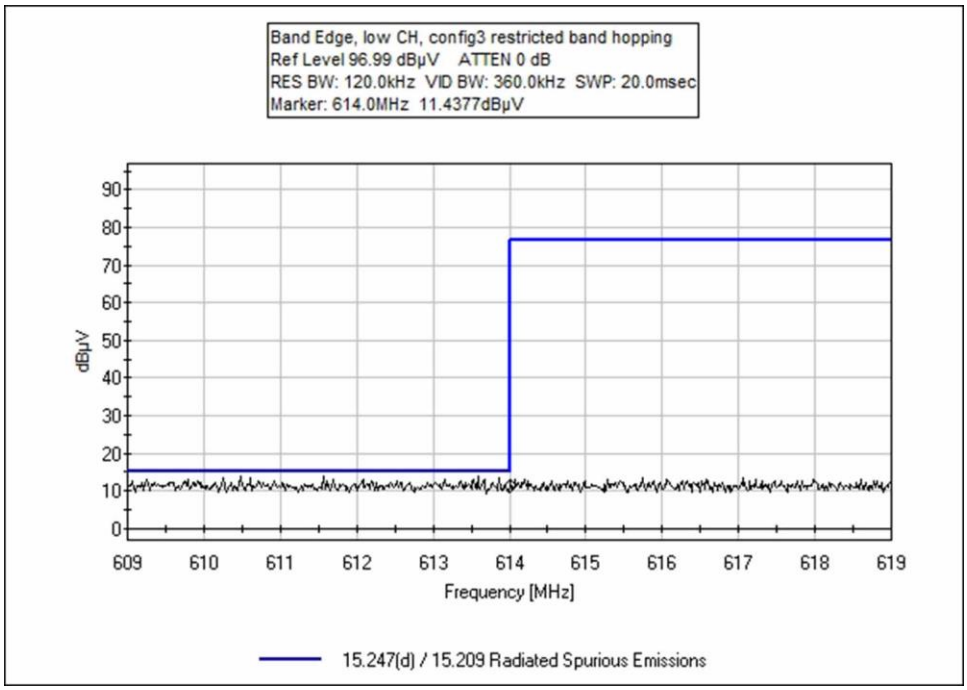


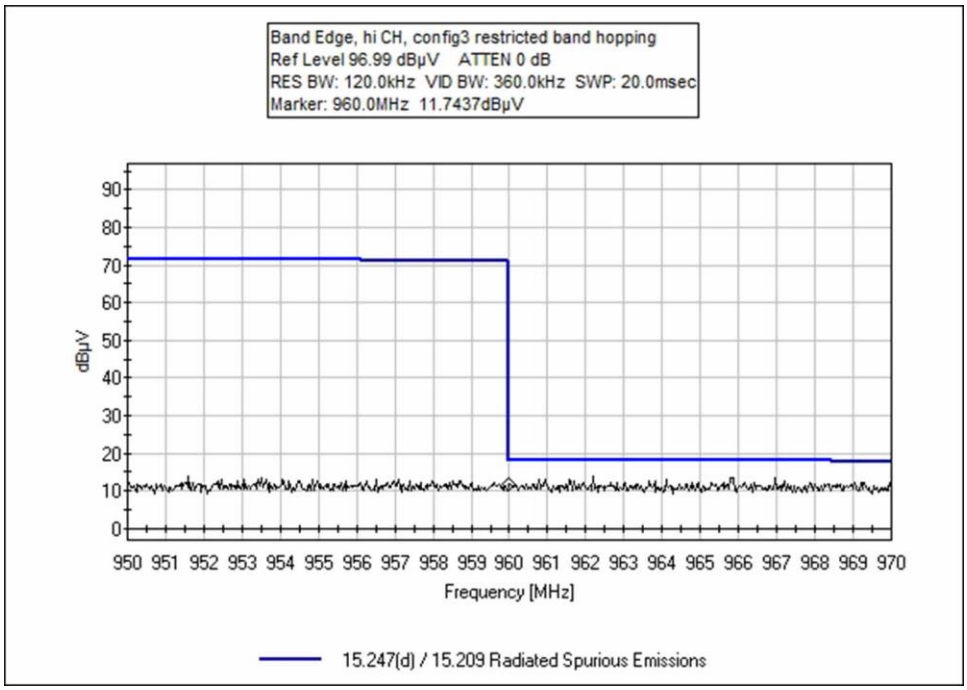

Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 902.0MHz 12.4177dBµV
Band Edge, low CH, config3 hopping
dBµV
90
80
70
60
50
40
30
20
10
0
890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config 3 hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 37.7057dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

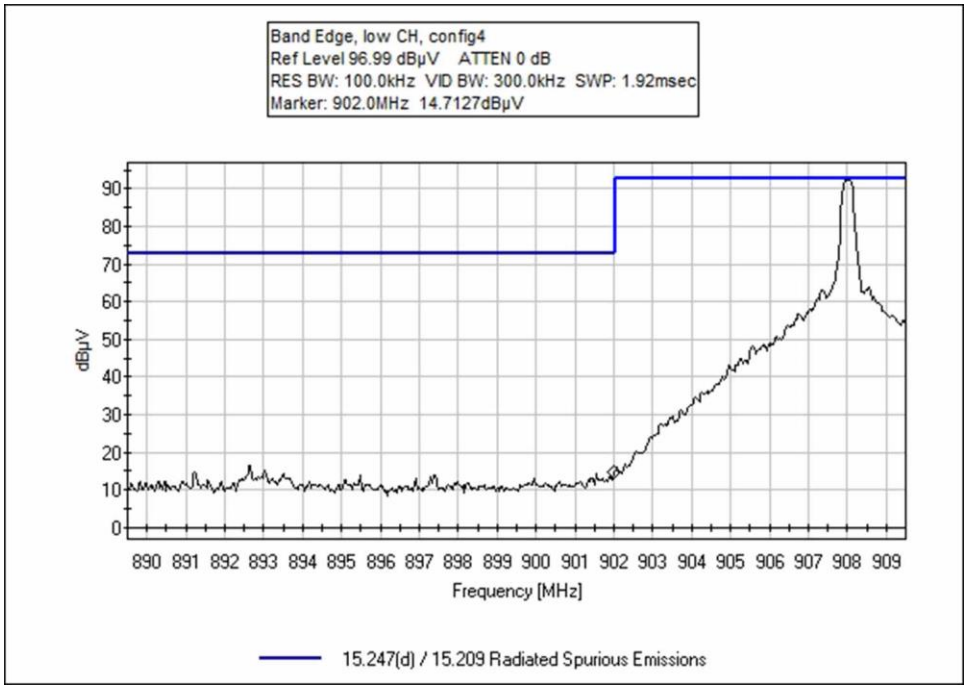

Band Edge, low CH, config3 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 614.0MHz 12.9077dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

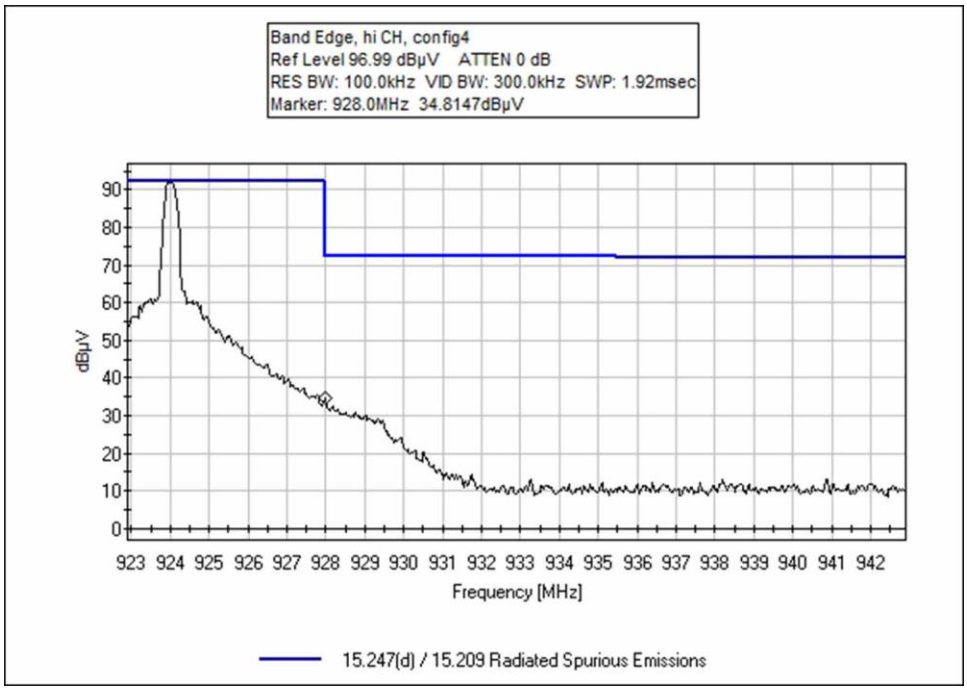

Band Edge, hi CH, config3 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 960.0MHz 12.7227dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

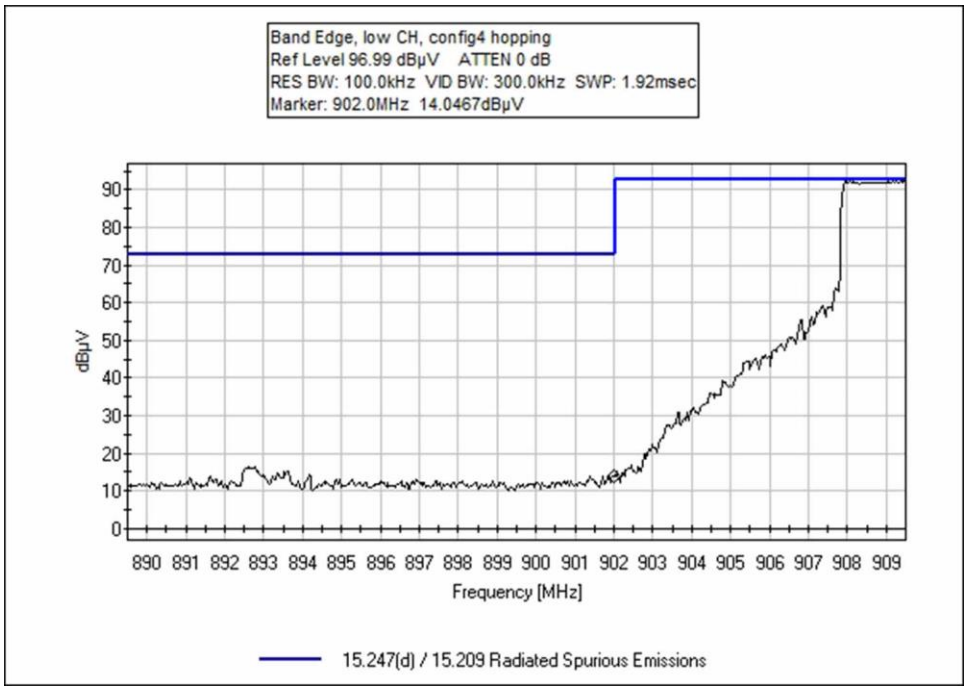

Band Edge, low CH, config3 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 614.0MHz 11.4377dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

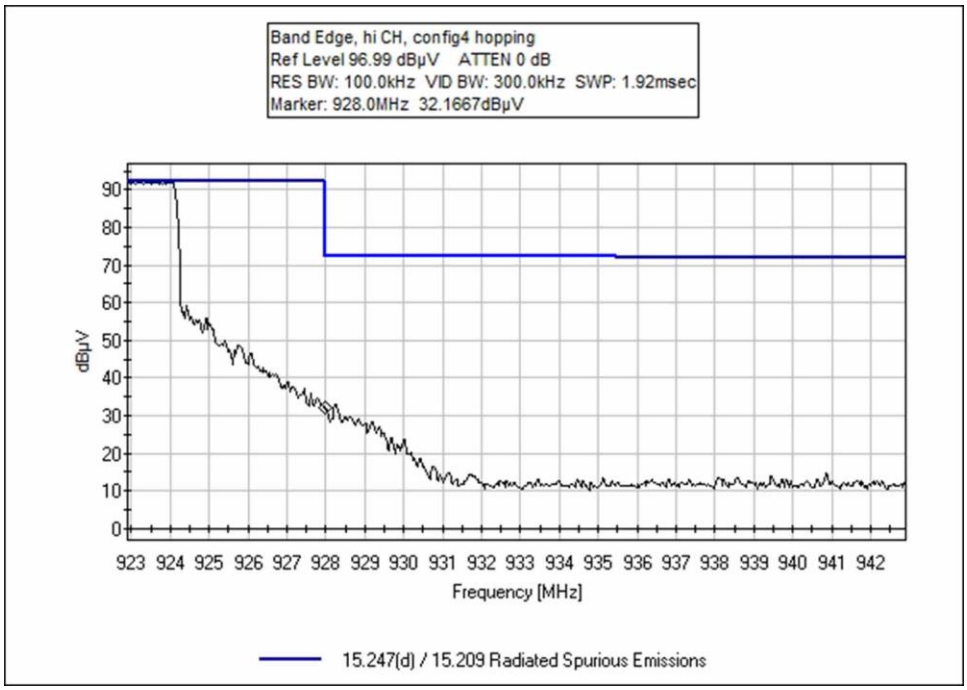

Band Edge, hi CH, config3 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 20.0msec
Marker: 960.0MHz 11.7437dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

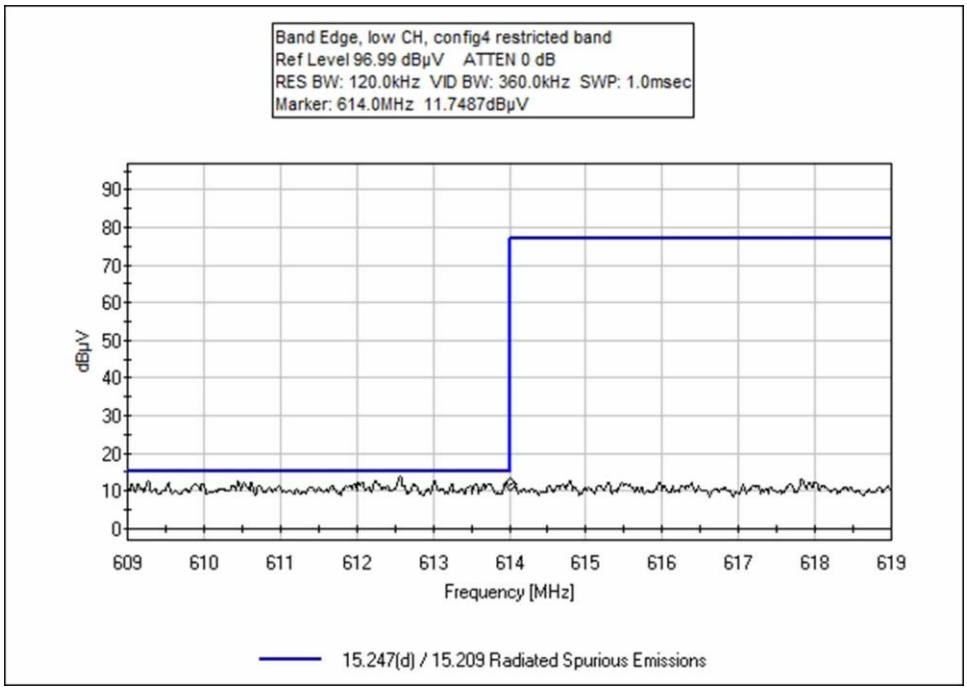
Configuration 4

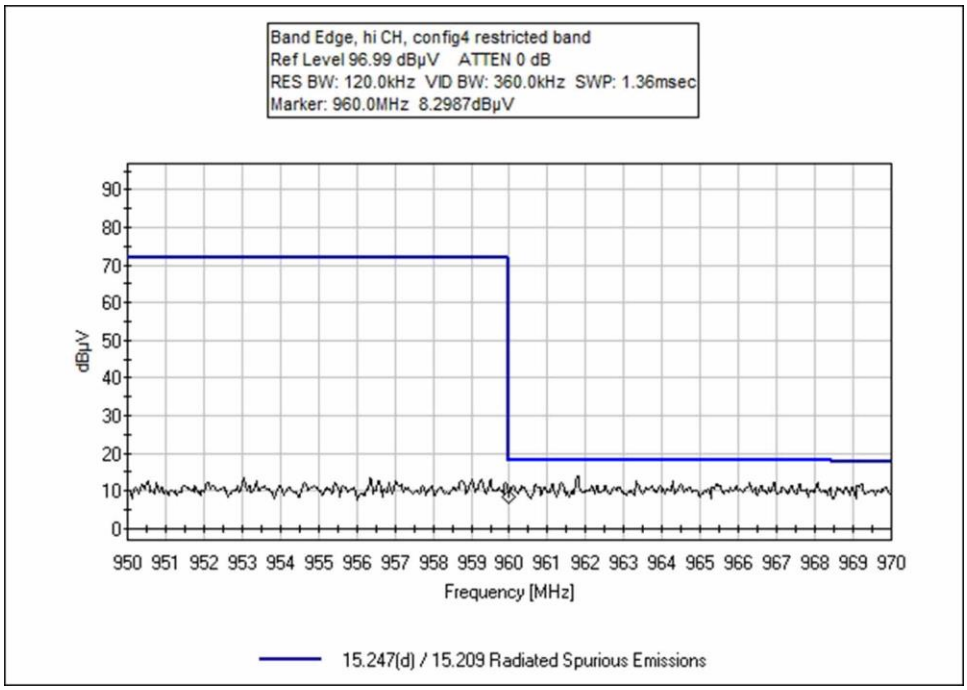


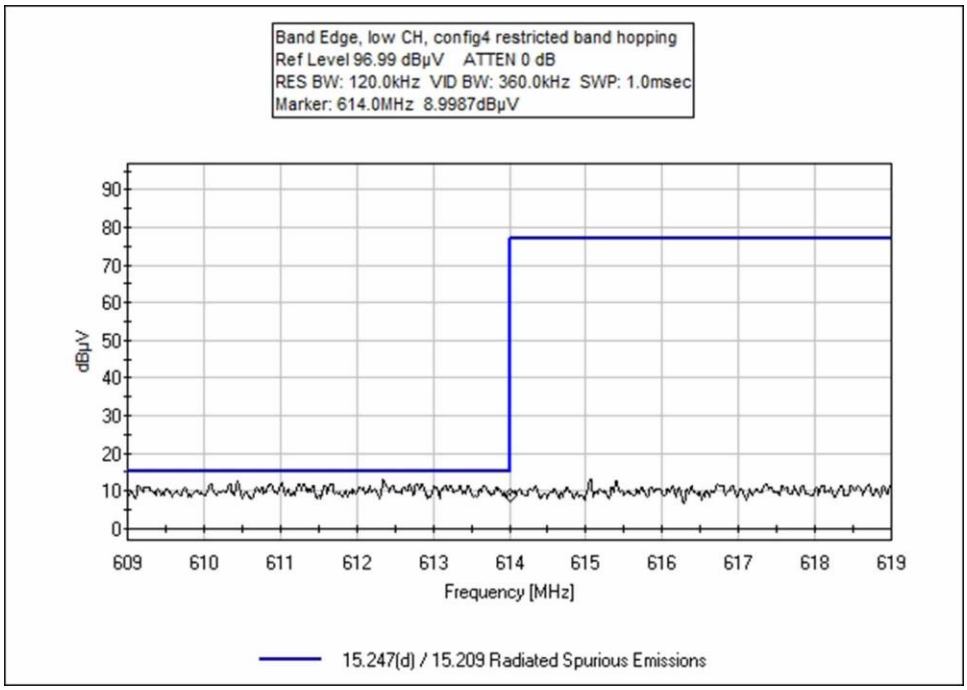


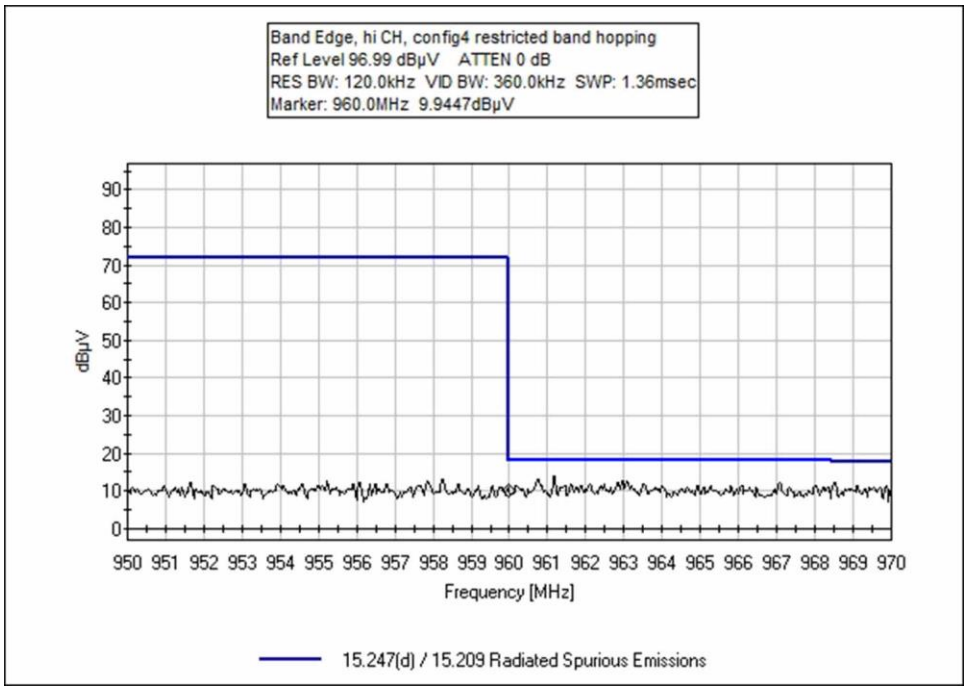

Band Edge, low CH, config4 hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.92msec
Marker: 902.0MHz 14.0467dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config4 hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.92msec
Marker: 928.0MHz 32.1667dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

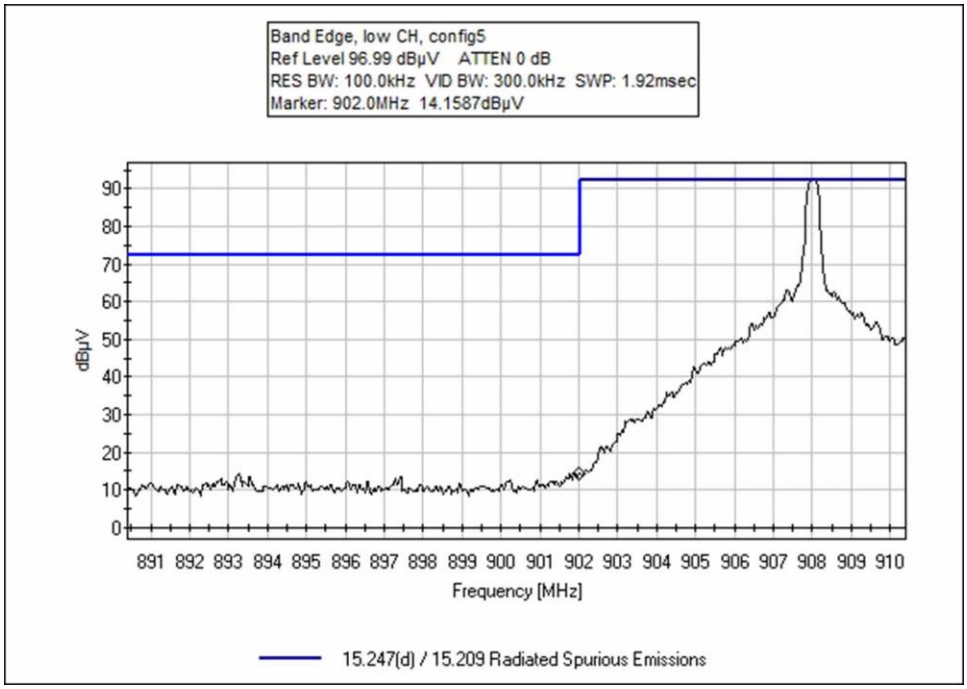

Band Edge, low CH, config4 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 11.7487dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

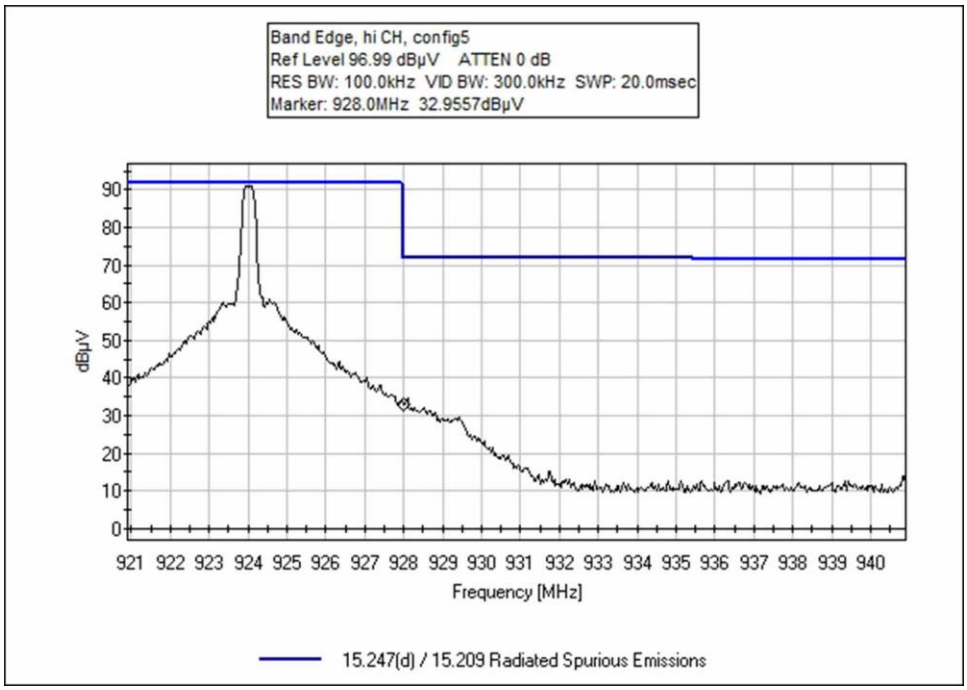

Band Edge, hi CH, config4 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.36msec
Marker: 960.0MHz 8.2987dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

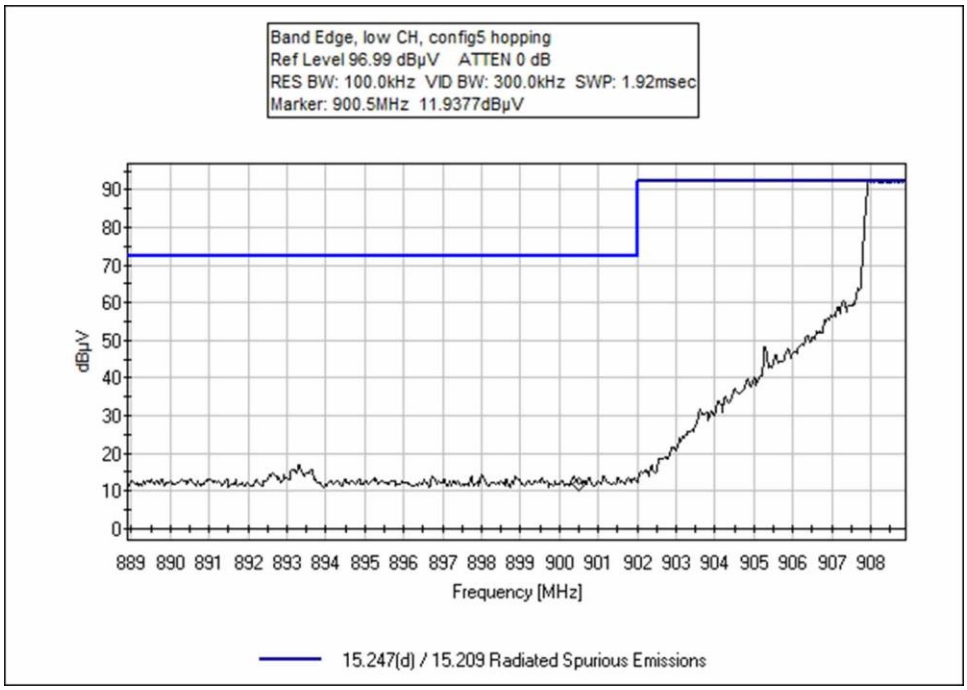

Band Edge, low CH, config4 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 8.9987dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

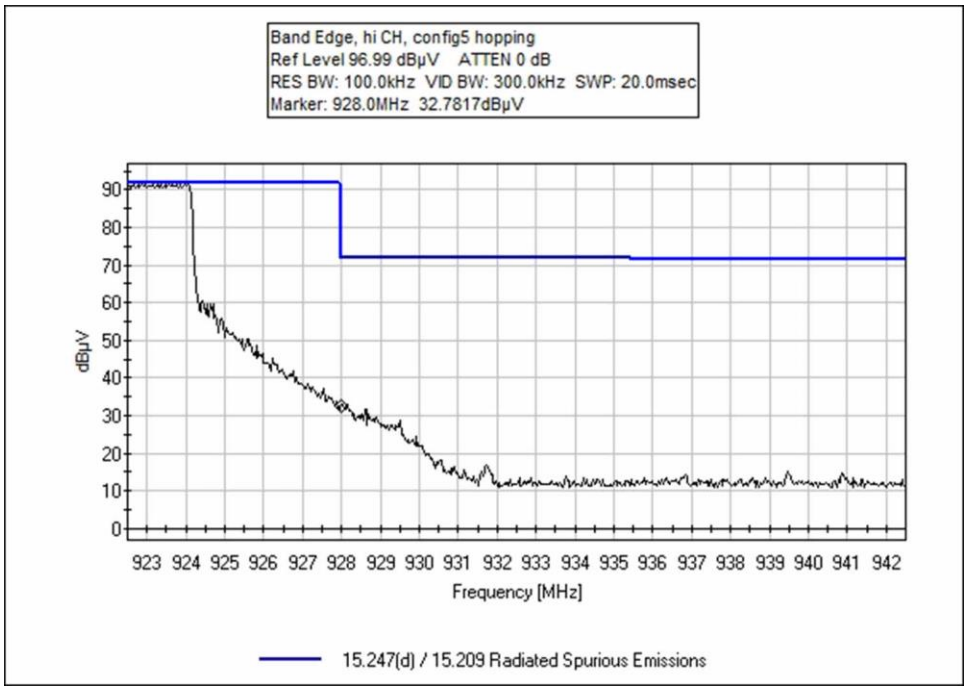

Band Edge, hi CH, config4 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.36msec
Marker: 960.0MHz 9.9447dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

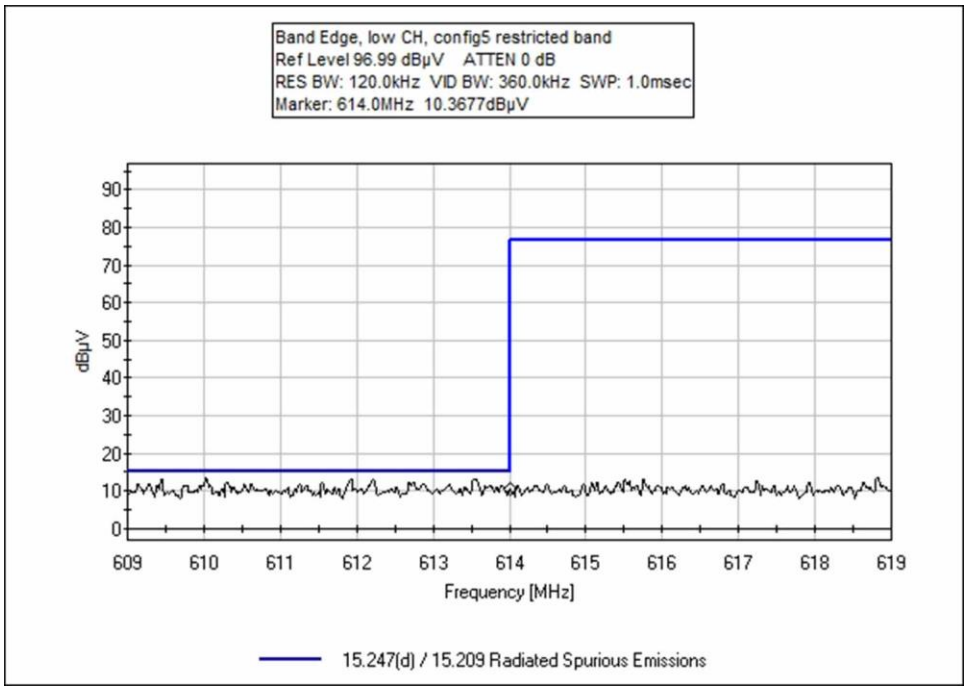
Configuration 5

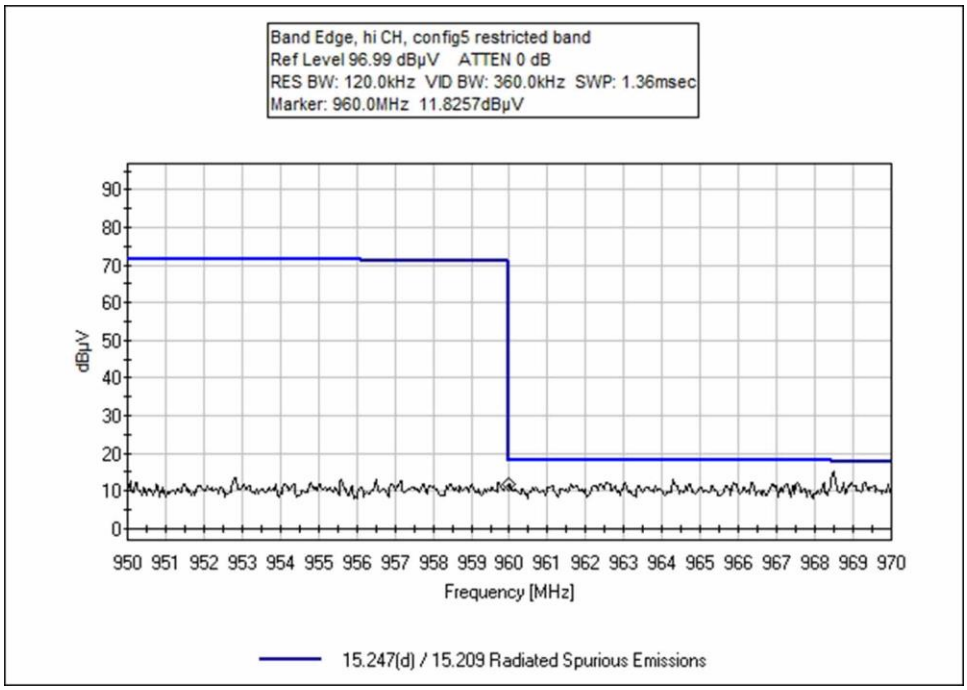


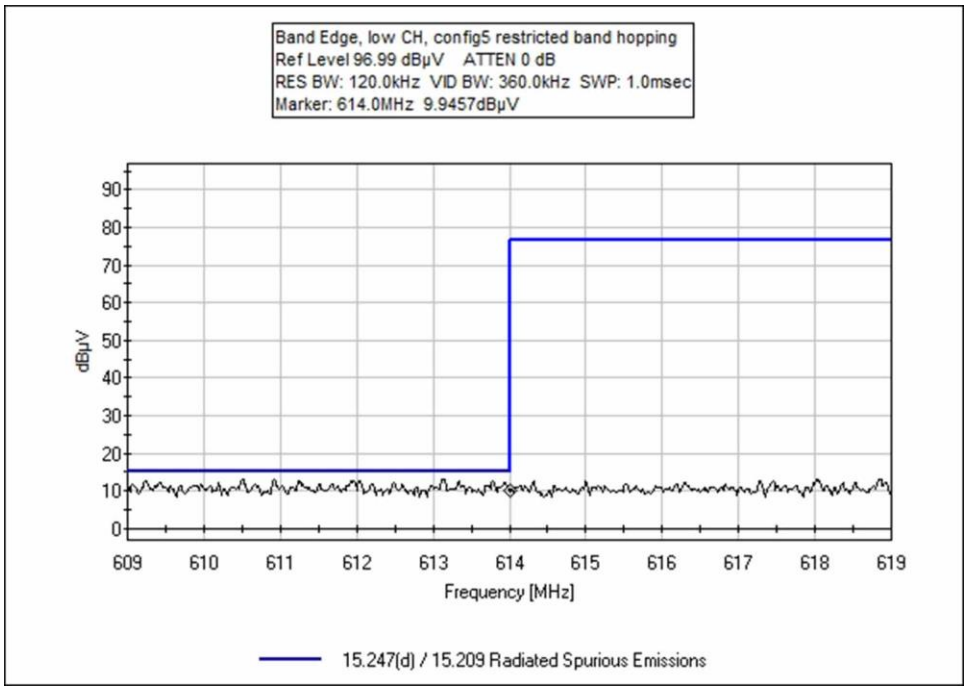


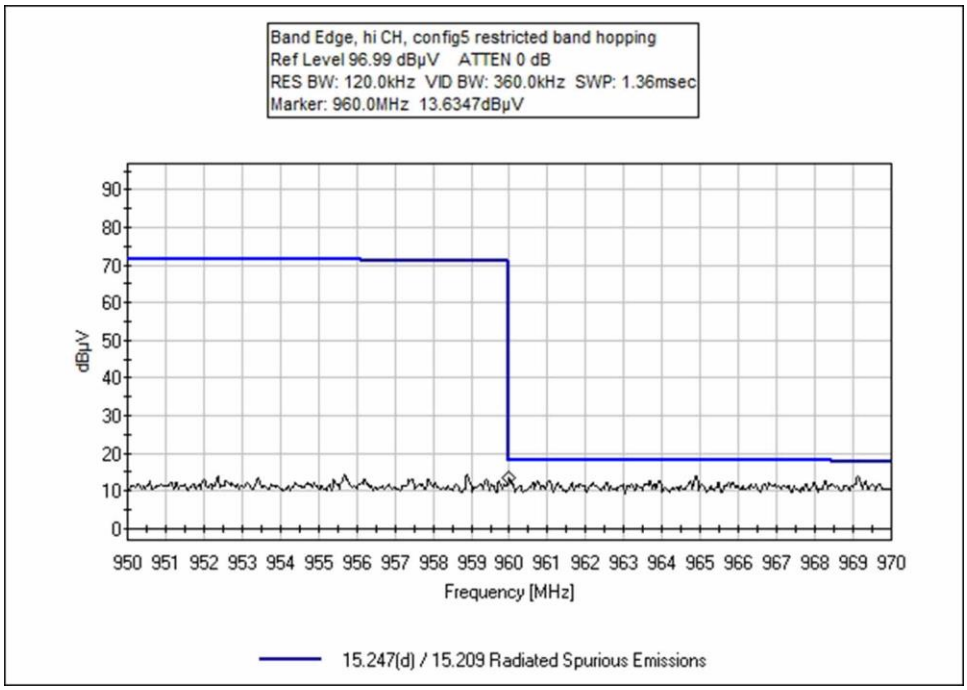

Band Edge, low CH, config5 hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.92msec
Marker: 900.5MHz 11.9377dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config5 hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 20.0msec
Marker: 928.0MHz 32.7817dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, low CH, config5 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 10.3677dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config5 restricted band
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.36msec
Marker: 960.0MHz 11.8257dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, low CH, config5 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 9.9457dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
609 610 611 612 613 614 615 616 617 618 619
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, config5 restricted band hopping
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.36msec
Marker: 960.0MHz 13.6347dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103557**	Date:	2/18/2020
Test Type:	**Maximized Emissions**	Time:	10:37:11
Tested By:	Don Nguyen	Sequence#:	0
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

The EUT is placed on turn table. Input voltage is 13.8Vdc from external power supply. GPS and main antenna ports are connected to an external antenna. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5. The EUT is set into transmitter mode. The EUT is rotated in three orthogonal orientations. Data represents the worst case orientation.
The antenna of the EUT is mounted to a 52" diameter aluminum plate to represent a vehicle roof. The aluminum plate is supported by foam blocks. The EUT is directly below the plate, on the test table.

Operating frequency: 908-924MHz
Frequency of measurement: 614-960MHz
RBW=100kHz, VBW=300kHz
RBW=120kHz, VBW=360kHz (restricted band)

Temperature 20.3°C, Relative Humidity 56%
Test Method: ANSI C63.10 (2013)
Site A

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01995	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
T2	ANP05275	Attenuator	1W	4/5/2018	4/5/2020
T3	ANP05198	Cable-Amplitude +15C to +45C (dB)	8268	12/4/2018	12/4/2020
T4	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M	12.1	+20.0	+6.0	+4.7	+0.0	+0.0	42.8	46.0	-3.2	Vert
2	614.000M	10.9	+20.0	+6.0	+4.7	+0.0	+0.0	41.6	46.0 hopping	-4.4	Vert
3	960.000M	11.2	+23.7	+6.1	+6.1	+0.0	+0.0	47.1	54.0 hopping	-6.9	Vert
4	960.000M	10.7	+23.7	+6.1	+6.1	+0.0	+0.0	46.6	54.0	-7.4	Vert
5	928.000M	37.7	+23.2	+6.1	+6.0	+0.0	+0.0	73.0	107.2	-34.2	Vert
6	928.000M	36.0	+23.2	+6.1	+6.0	+0.0	+0.0	71.3	107.2 hopping	-35.9	Vert
7	902.000M	12.7	+22.8	+6.1	+5.9	+0.0	+0.0	47.5	107.2 hopping	-59.7	Vert
8	902.000M	12.3	+22.8	+6.1	+5.9	+0.0	+0.0	47.1	107.2	-60.1	Vert

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103557**	Date:	2/18/2020
Test Type:	**Maximized Emissions**	Time:	10:43:42
Tested By:	Don Nguyen	Sequence#:	1
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 3			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 3			

Test Conditions / Notes:

The EUT is placed on turn table. Input voltage is 13.8Vdc from external power supply. GPS and main antenna ports are connected to an external antenna. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5. The EUT is set into transmitter mode. The EUT is rotated in three orthogonal orientations. Data represents the worst case orientation.
The antenna of the EUT is mounted to a 52" diameter aluminum plate to represent a vehicle roof. The aluminum plate is supported by foam blocks. The EUT is directly below the plate, on the test table.

Operating frequency: 908-924MHz
Frequency of measurement: 614-960MHz
RBW=100kHz, VBW=300kHz
RBW=120kHz, VBW=360kHz (restricted band)

Temperature 20.3°C, Relative Humidity 56%
Test Method: ANSI C63.10 (2013)
Site A

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01995	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
T2	ANP05275	Attenuator	1W	4/5/2018	4/5/2020
T3	ANP05198	Cable-Amplitude +15C to +45C (dB)	8268	12/4/2018	12/4/2020
T4	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M	12.9	+20.0	+6.0	+4.7	+0.0	+0.0	43.6	46.0	-2.4	Vert
2	614.000M	11.4	+20.0	+6.0	+4.7	+0.0	+0.0	42.1	46.0 hopping	-3.9	Vert
3	960.000M	12.7	+23.7	+6.1	+6.1	+0.0	+0.0	48.6	54.0	-5.4	Vert
4	960.000M	11.7	+23.7	+6.1	+6.1	+0.0	+0.0	47.6	54.0 hopping	-6.4	Vert
5	928.000M	38.2	+23.2	+6.1	+6.0	+0.0	+0.0	73.5	107.2	-33.7	Vert
6	928.000M	37.7	+23.2	+6.1	+6.0	+0.0	+0.0	73.0	107.2 hopping	-34.2	Vert
7	902.000M	13.7	+22.8	+6.1	+5.9	+0.0	+0.0	48.5	107.2	-58.7	Vert
8	902.000M	12.4	+22.8	+6.1	+5.9	+0.0	+0.0	47.2	107.2 hopping	-60.0	Vert

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103557**	Date:	2/19/2020
Test Type:	**Maximized Emissions**	Time:	09:30:18
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

The EUT is placed on turn table. Input voltage is 13.8Vdc from external power supply. GPS and main antenna ports are connected to an external antenna. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5. The EUT is set into transmitter mode. The EUT is rotated in three orthogonal orientations. Data represents the worst case orientation.
The antenna of the EUT is mounted to a 52" diameter aluminum plate to represent a vehicle roof. The aluminum plate is supported by foam blocks. The EUT is directly below the plate, on the test table.

Operating frequency: 908-924MHz
Frequency of measurement: 614-960MHz
RBW=100kHz, VBW=300kHz
RBW=120kHz, VBW=360kHz (restricted band)

Temperature 20.3°C, Relative Humidity 56%
Test Method: ANSI C63.10 (2013)
Site A

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01995	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
T2	ANP05275	Attenuator	1W	4/5/2018	4/5/2020
T3	ANP05198	Cable-Amplitude +15C to +45C (dB)	8268	12/4/2018	12/4/2020
T4	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M	11.8	+20.0	+6.0	+4.7	+0.0	+0.0	42.5	46.0	-3.5	Vert
2	614.000M	9.0	+20.0	+6.0	+4.7	+0.0	+0.0	39.7	46.0 hopping	-6.3	Vert
3	960.000M	10.0	+23.7	+6.1	+6.1	+0.0	+0.0	45.9	54.0 hopping	-8.1	Vert
4	960.000M	8.3	+23.7	+6.1	+6.1	+0.0	+0.0	44.2	54.0	-9.8	Vert
5	928.000M	34.8	+23.2	+6.1	+6.0	+0.0	+0.0	70.1	107.7	-37.6	Vert
6	928.000M	32.2	+23.2	+6.1	+6.0	+0.0	+0.0	67.5	107.7 hopping	-40.2	Vert
7	902.000M	14.7	+22.8	+6.1	+5.9	+0.0	+0.0	49.5	107.7	-58.2	Vert
8	902.000M	14.1	+22.8	+6.1	+5.9	+0.0	+0.0	48.9	107.7 hopping	-58.8	Vert

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Pl. • Brea, CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**103557**	Date:	2/19/2020
Test Type:	**Maximized Emissions**	Time:	09:26:50
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 5			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 5			

Test Conditions / Notes:

The EUT is placed on turn table. Input voltage is 13.8Vdc from external power supply. GPS and main antenna ports are connected to an external antenna. USB port is connected to a touchscreen computer. The computer is sending command to the EUT using software MC3 SuperRaptor Test ver.4.0.3.5. The EUT is set into transmitter mode. The EUT is rotated in three orthogonal orientations. Data represents the worst case orientation.
The antenna of the EUT is mounted to a 52" diameter aluminum plate to represent a vehicle roof. The aluminum plate is supported by foam blocks. The EUT is directly below the plate, on the test table.

Operating frequency: 908-924MHz
Frequency of measurement: 614-960MHz
RBW=100kHz, VBW=300kHz
RBW=120kHz, VBW=360kHz (restricted band)

Temperature 20.3°C, Relative Humidity 56%
Test Method: ANSI C63.10 (2013)
Site A

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01995	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
T2	ANP05275	Attenuator	1W	4/5/2018	4/5/2020
T3	ANP05198	Cable-Amplitude +15C to +45C (dB)	8268	12/4/2018	12/4/2020
T4	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

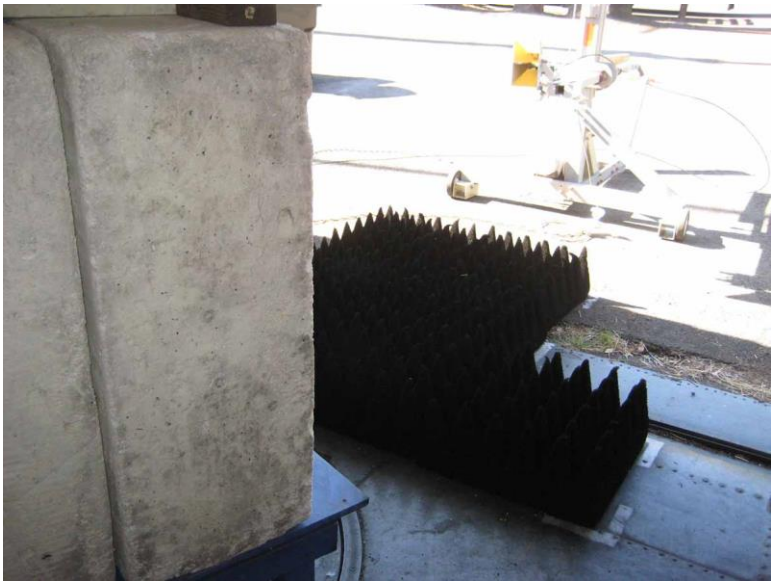
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	960.000M	13.6	+23.7	+6.1	+6.1	+0.0	+0.0	49.5	54.0 hopping	-4.5	Vert
2	614.000M	10.4	+20.0	+6.0	+4.7	+0.0	+0.0	41.1	46.0	-4.9	Vert
3	614.000M	10.0	+20.0	+6.0	+4.7	+0.0	+0.0	40.7	46.0 hopping	-5.3	Vert
4	960.000M	11.8	+23.7	+6.1	+6.1	+0.0	+0.0	47.7	54.0	-6.3	Vert
5	928.000M	33.0	+23.2	+6.1	+6.0	+0.0	+0.0	68.3	107.7	-39.4	Vert
6	928.000M	32.8	+23.2	+6.1	+6.0	+0.0	+0.0	68.1	107.7 hopping	-39.6	Vert
7	902.000M	14.2	+22.8	+6.1	+5.9	+0.0	+0.0	49.0	107.7	-58.7	Vert
8	902.000M	11.9	+22.8	+6.1	+5.9	+0.0	+0.0	46.7	107.7 hopping	-61.0	Vert

Test Setup Photo(s)

Configuration 2 - Below 1GHz

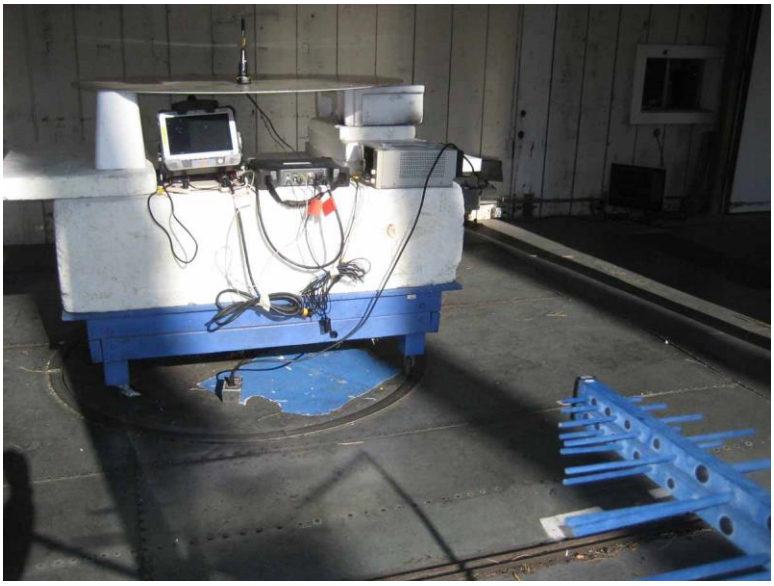
Configuration 2 - Below 1GHz



Configuration 2 - Above 1GHz

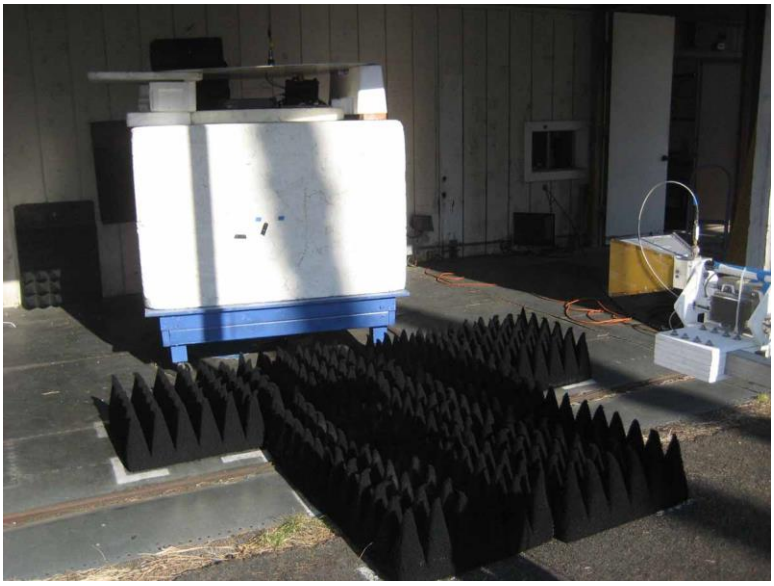
Configuration 2 - Above 1GHz

Configuration 3 - Below 1GHz

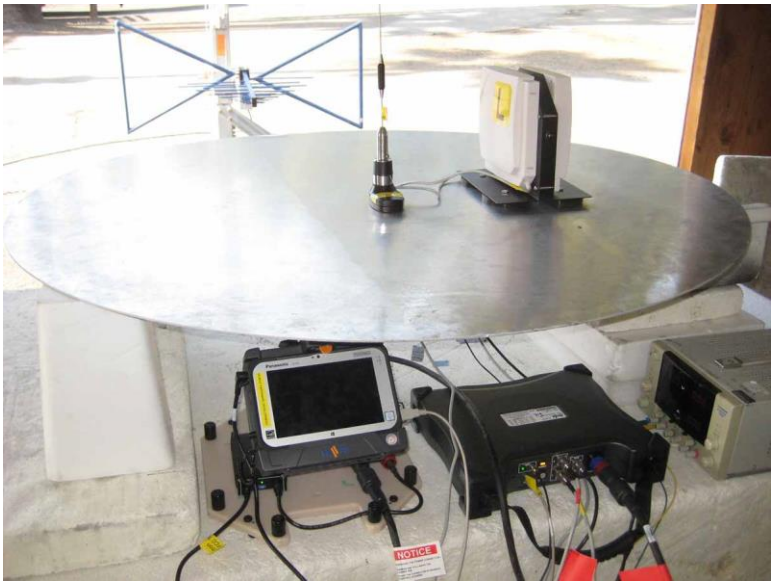


Configuration 3 - Below 1GHz

Configuration 3 - Above 1GHz



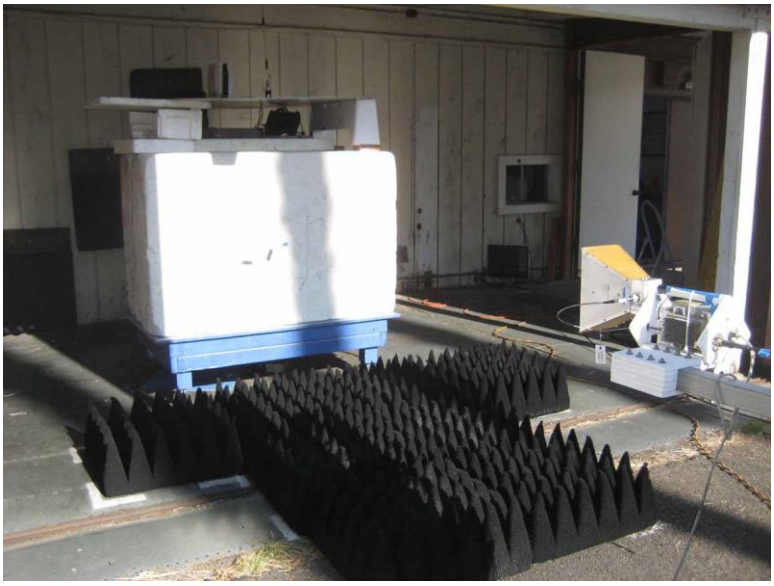
Configuration 3 - Above 1GHz



Configuration 4 - Below 1GHz

Configuration 4 - Below 1GHz

Configuration 4 - Above 1GHz

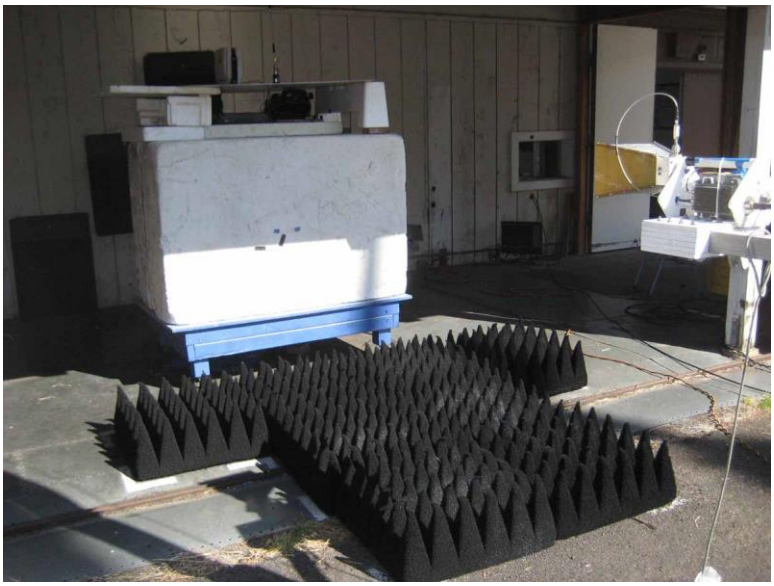


Configuration 4 - Above 1GHz

Configuration 5 - Below 1GHz

Configuration 5 - Below 1GHz

Configuration 5 - Above 1GHz



Configuration 5 - Above 1GHz

MC3 - X-Axis

MC3 - Y-Axis

MC3 - Z-Axis

MC3-w/o optional receivers - X-Axis

MC3-w/o optional receivers - Y-Axis

MC3-w/o optional receivers - Z-Axis

15.35(c) Duty Cycle Correction Factor

Test Data Summary			
Antenna Port	**Operational Mode**	**Measured On Time (mS / P_{obs})**	**Calculated DCCF (dB)**
1	Hopping	44.67	-7.0

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

Measured results are calculated as follows:

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

Measured Values:

Parameter	**Value**
Observation Period (P_{obs}):	100ms
Number of RF Bursts / P_{obs}:	1
On time of RF Burst:	44.67ms
Number of Control or other signals / P_{obs}:	0
On time of Control or other Signals:	0
Total Measured On Time:	44.67

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

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

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.