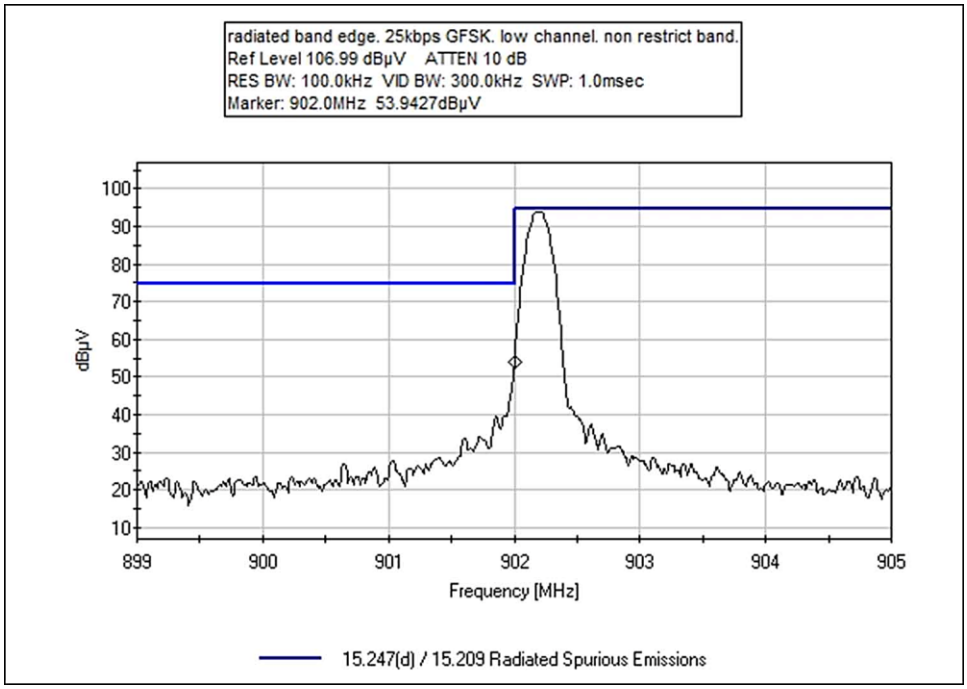
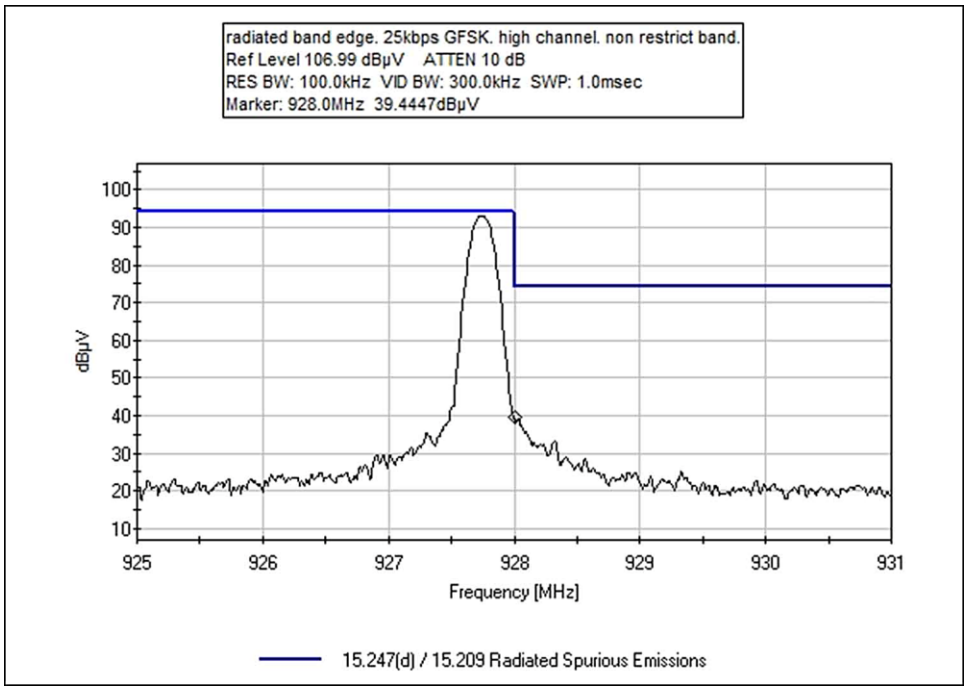
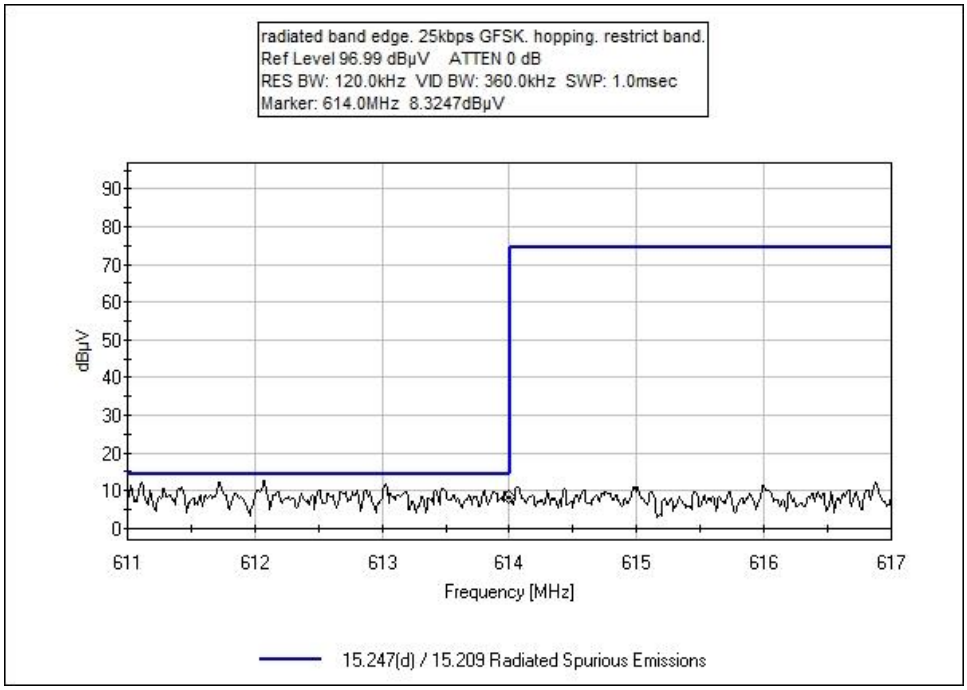
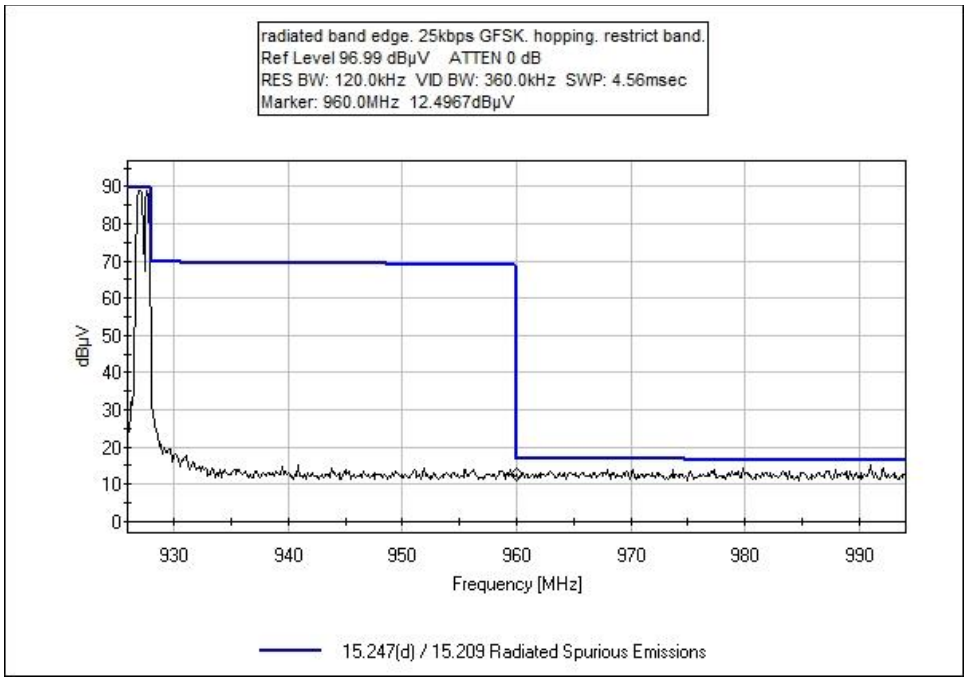
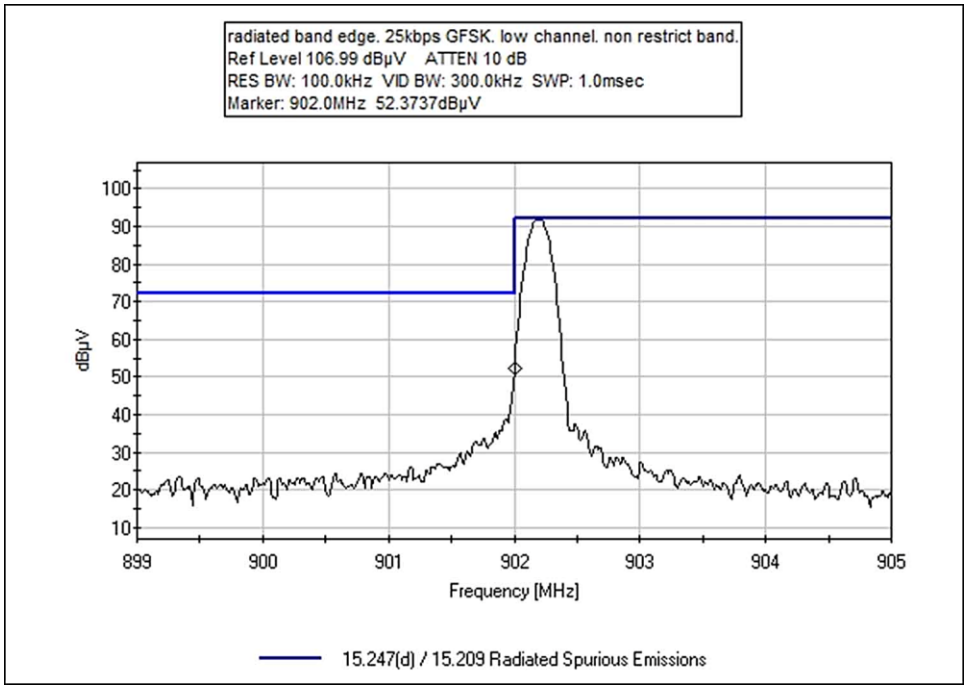
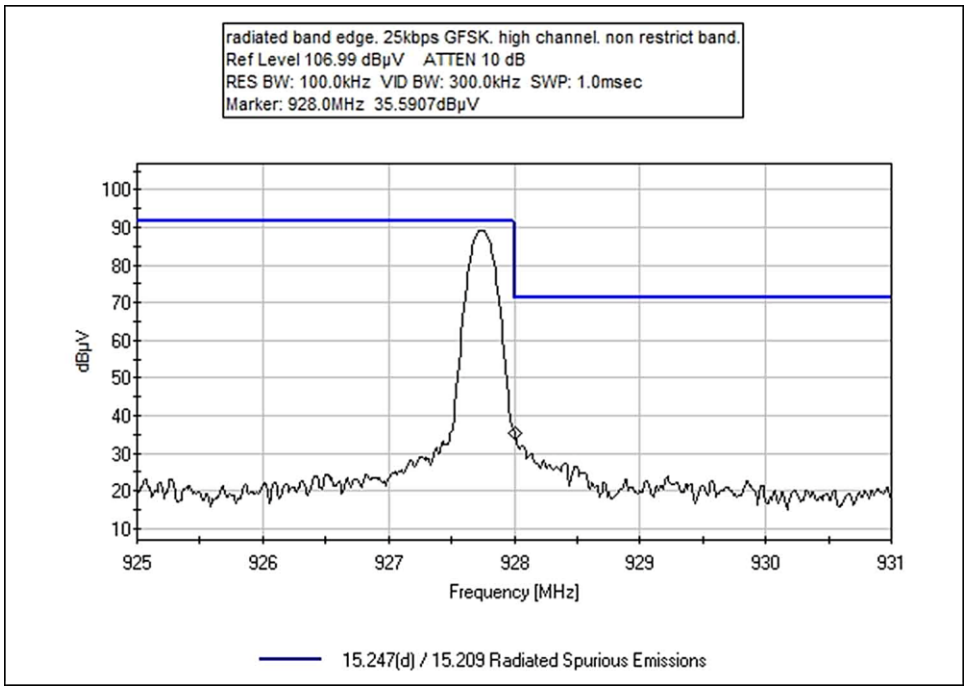

radiated band edge. 25kbps GFSK. low channel. non restrict band.
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 902.0MHz 53.9427dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
899
900
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

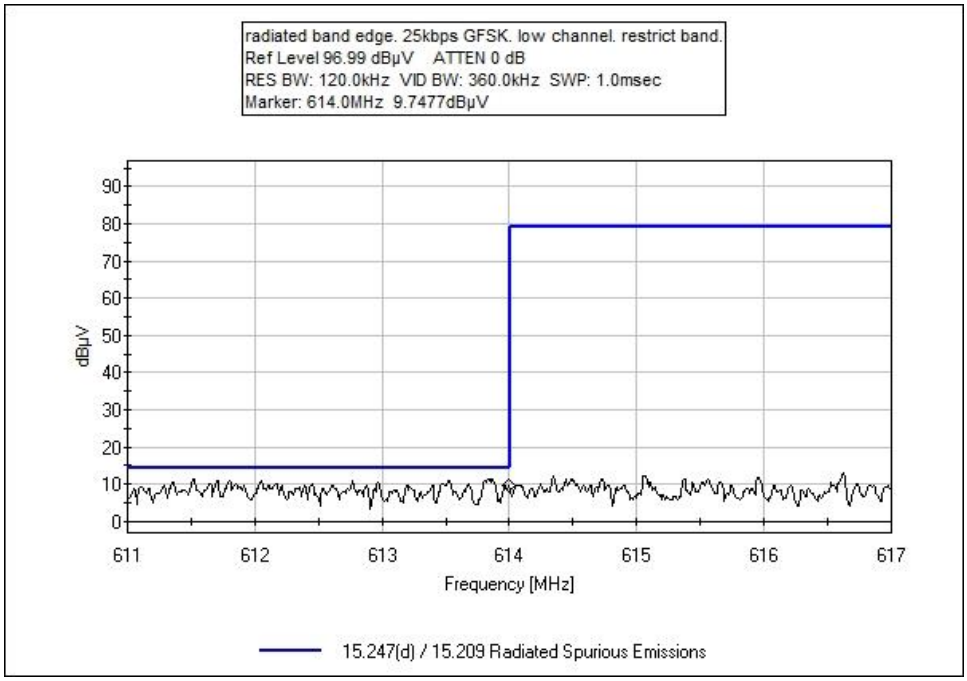

radiated band edge. 25kbps GFSK. high channel. non restrict band.
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 928.0MHz 39.4447dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
925
926
927
928
929
930
931
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

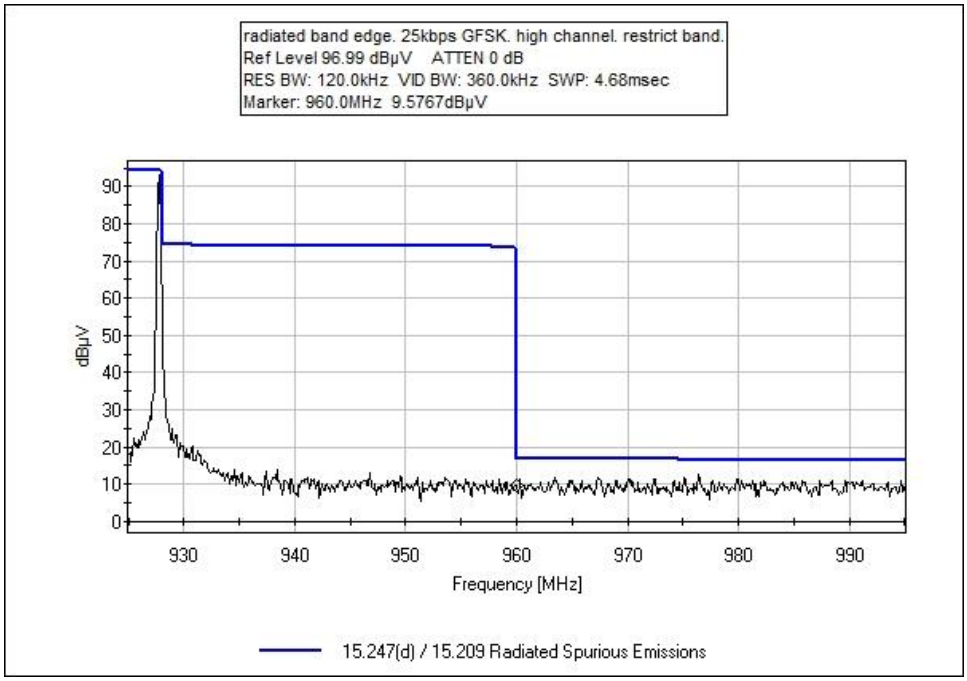

radiated band edge. 25kbps GFSK. hopping. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 8.3247dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
611
612
613
614
615
616
617
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

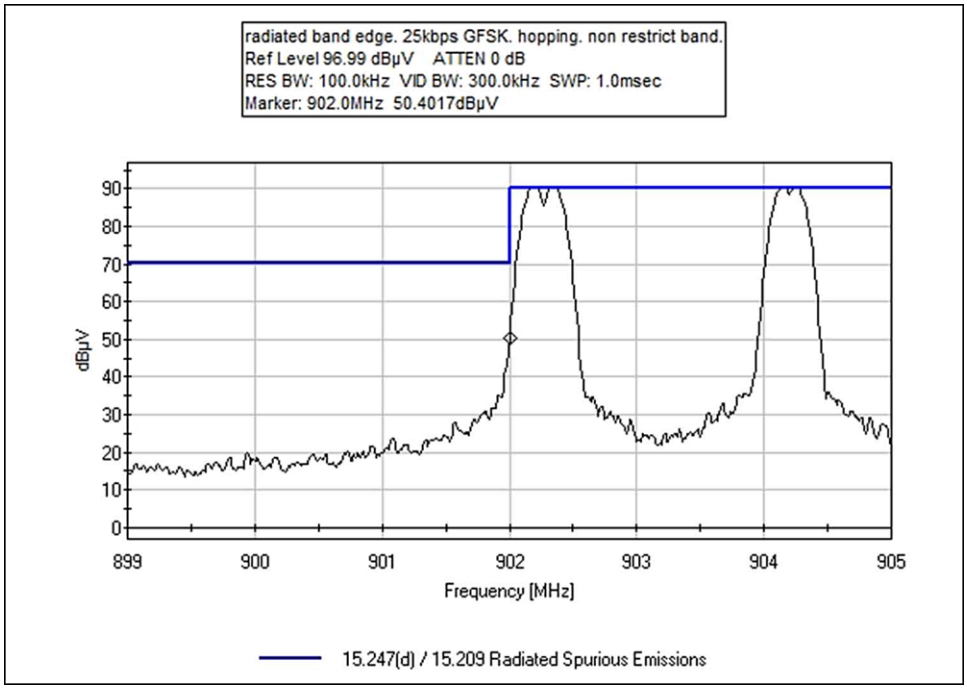

radiated band edge. 25kbps GFSK. hopping. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 4.56msec
Marker: 960.0MHz 12.4967dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
930
940
950
960
970
980
990
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

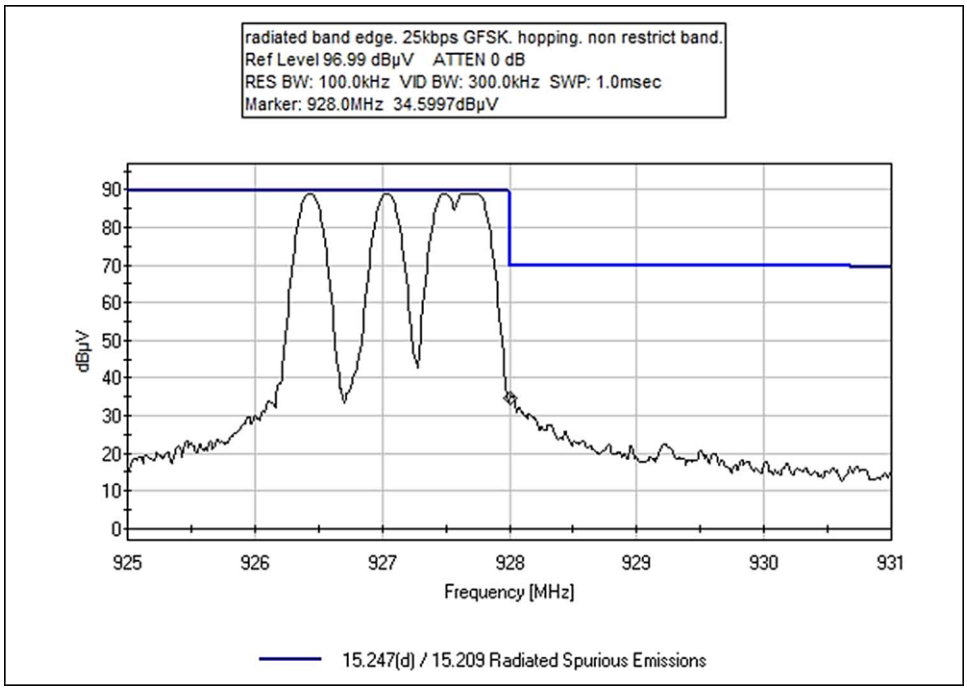

radiated band edge. 25kbps GFSK. low channel. non restrict band.
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 902.0MHz 52.3737dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

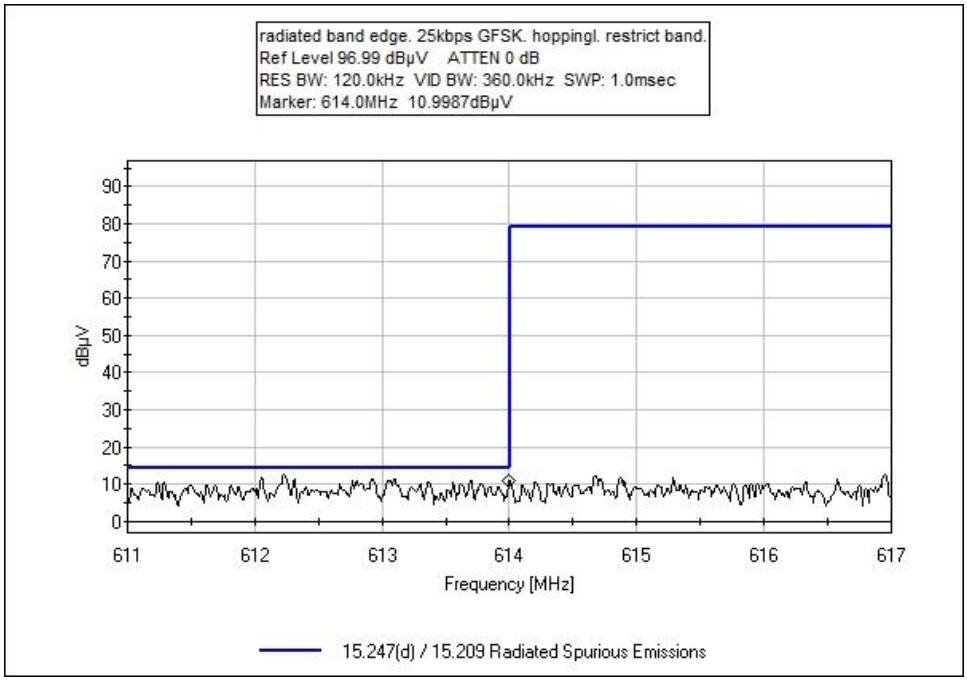

radiated band edge. 25kbps GFSK. high channel. non restrict band.
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 928.0MHz 35.5907dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

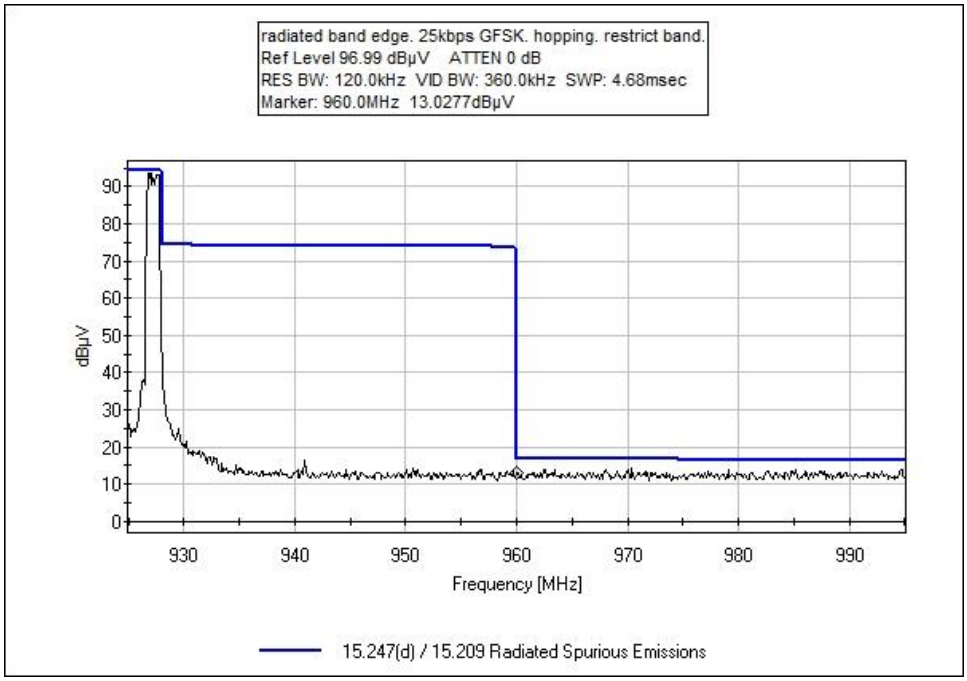

radiated band edge. 25kbps GFSK. low channel. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 9.7477dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
611
612
613
614
615
616
617
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

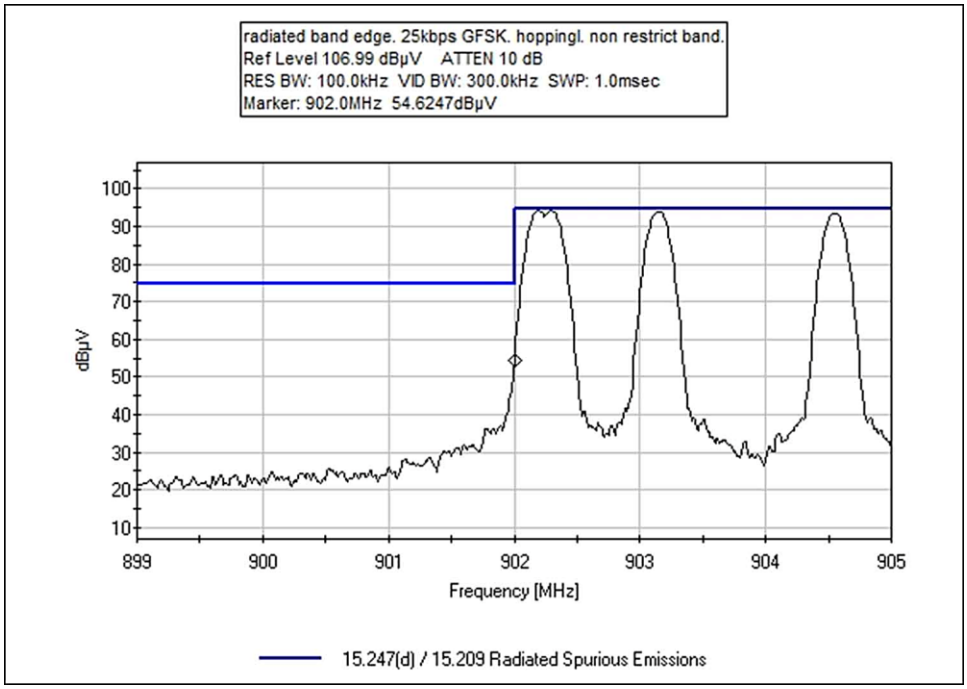

radiated band edge. 25kbps GFSK. high channel. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 4.68msec
Marker: 960.0MHz 9.5767dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
930
940
950
960
970
980
990
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

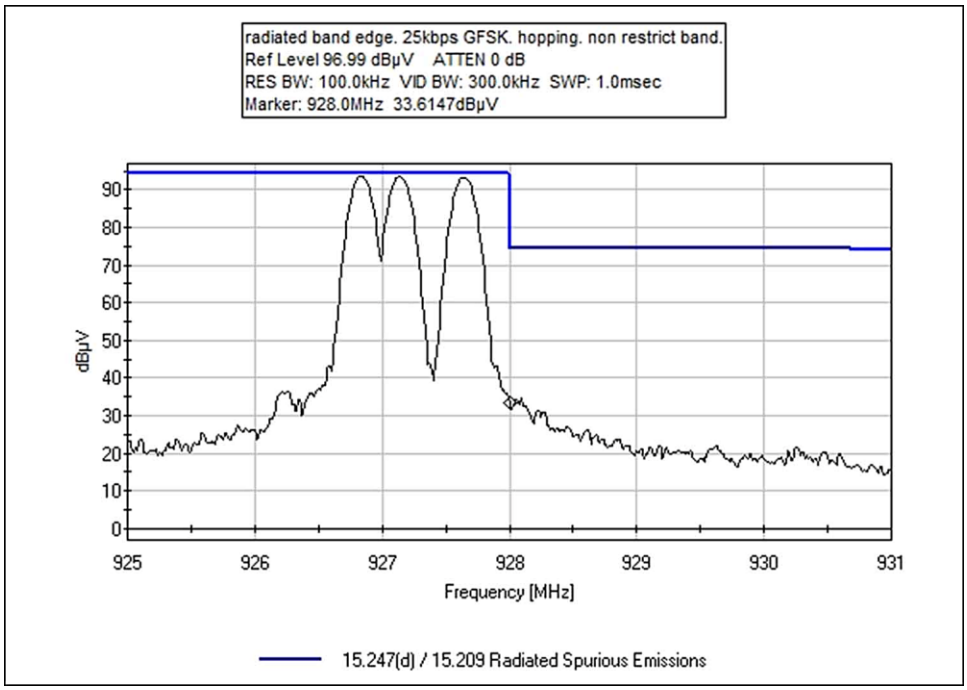

radiated band edge. 25kbps GFSK. hopping. non restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 902.0MHz 50.4017dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

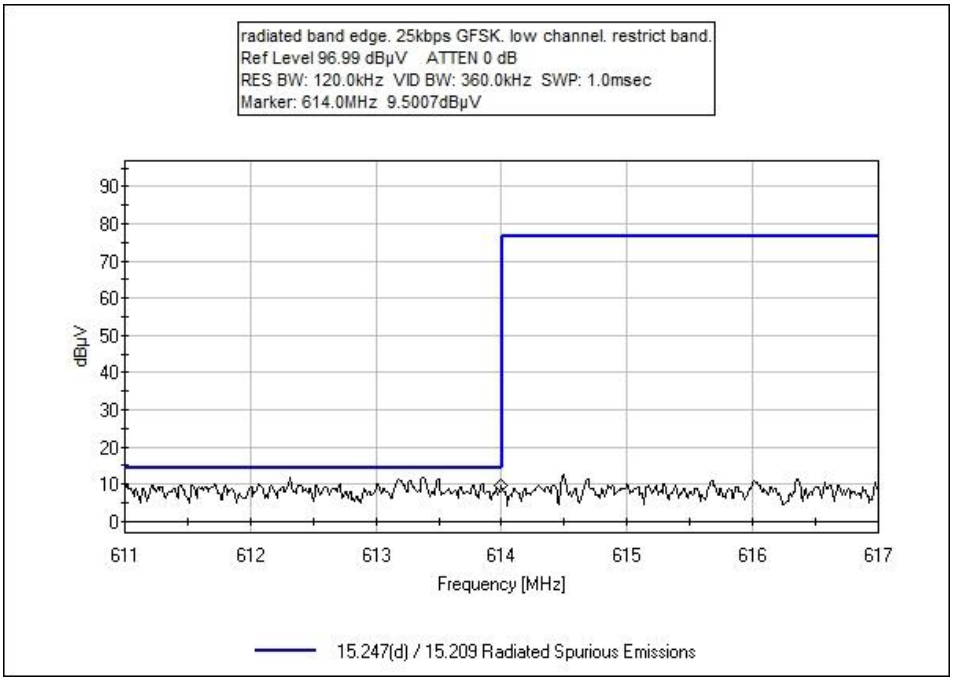

radiated band edge. 25kbps GFSK. hopping. non restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 928.0MHz 34.5997dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

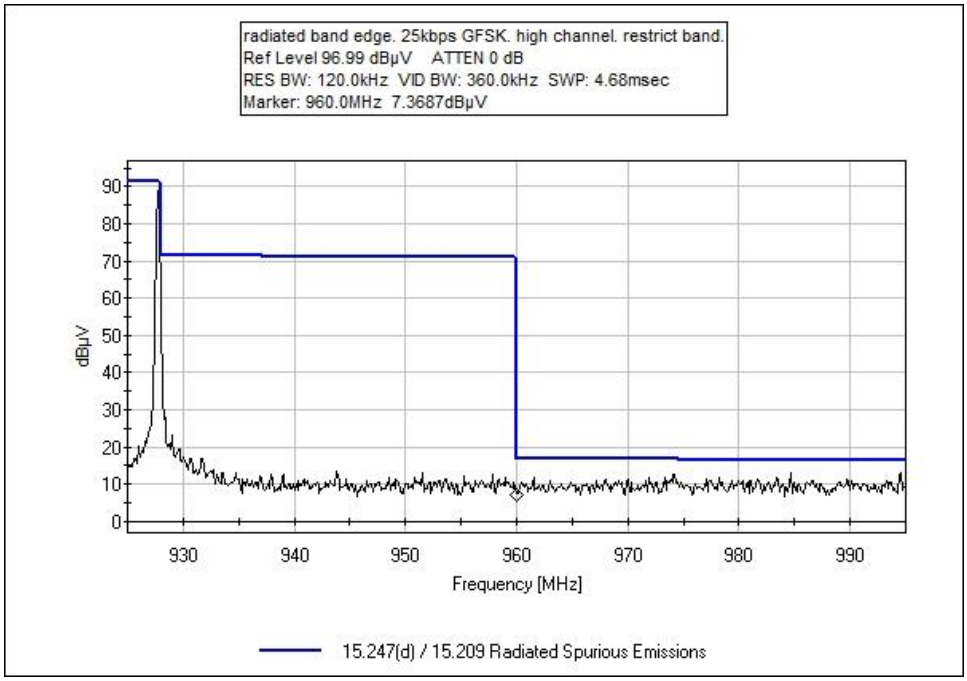

radiated band edge. 25kbps GFSK. hoppingl. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 10.9987dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
611
612
613
614
615
616
617
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

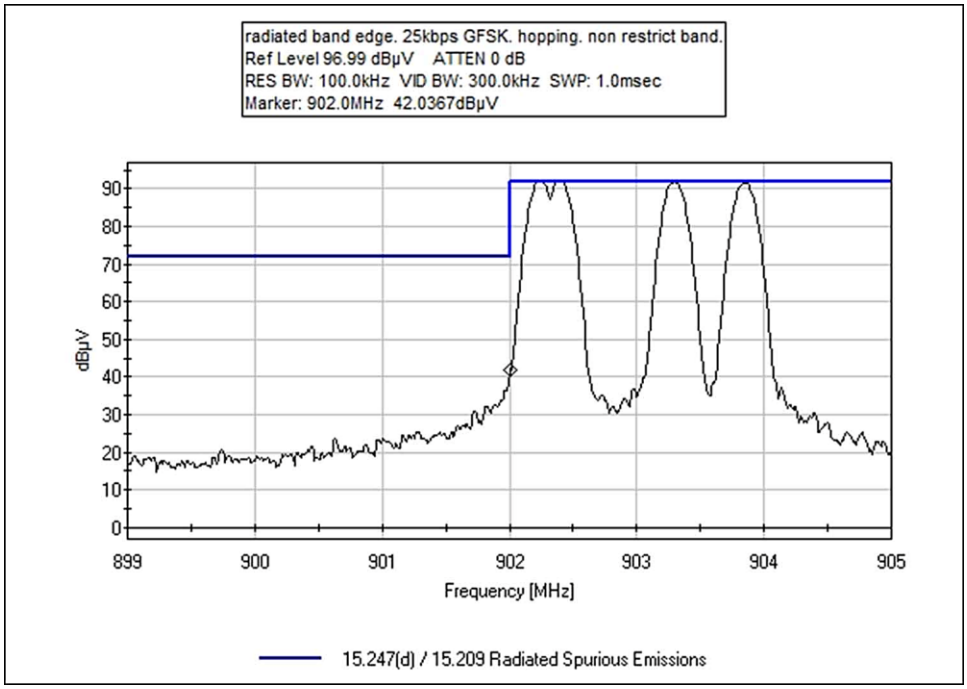

radiated band edge. 25kbps GFSK. hopping. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 4.68msec
Marker: 960.0MHz 13.0277dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
930
940
950
960
970
980
990
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

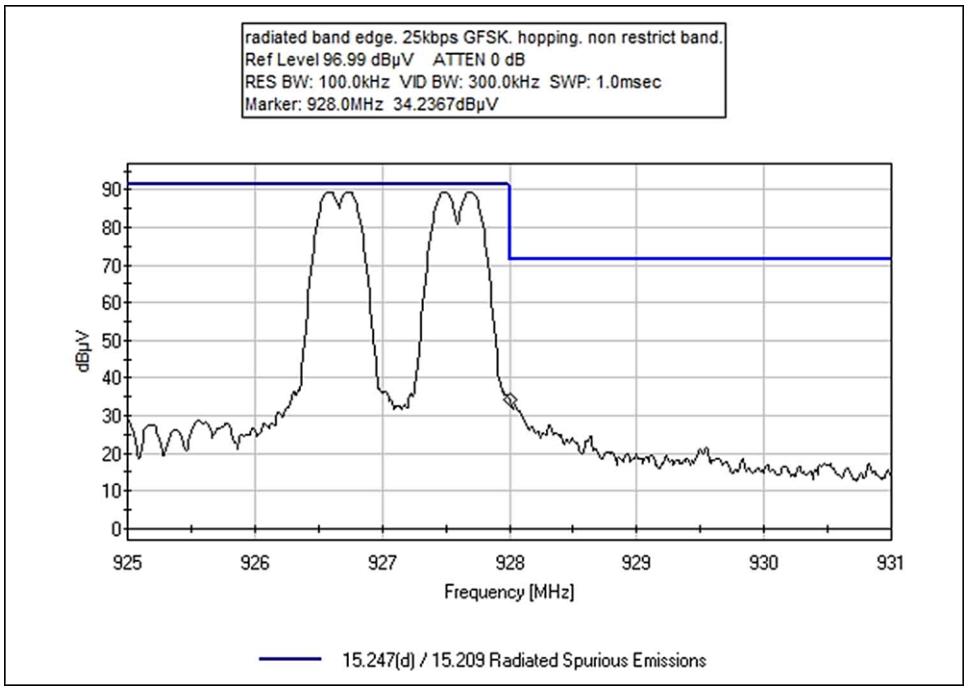

radiated band edge. 25kbps GFSK. hoppingl. non restrict band.
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 902.0MHz 54.6247dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

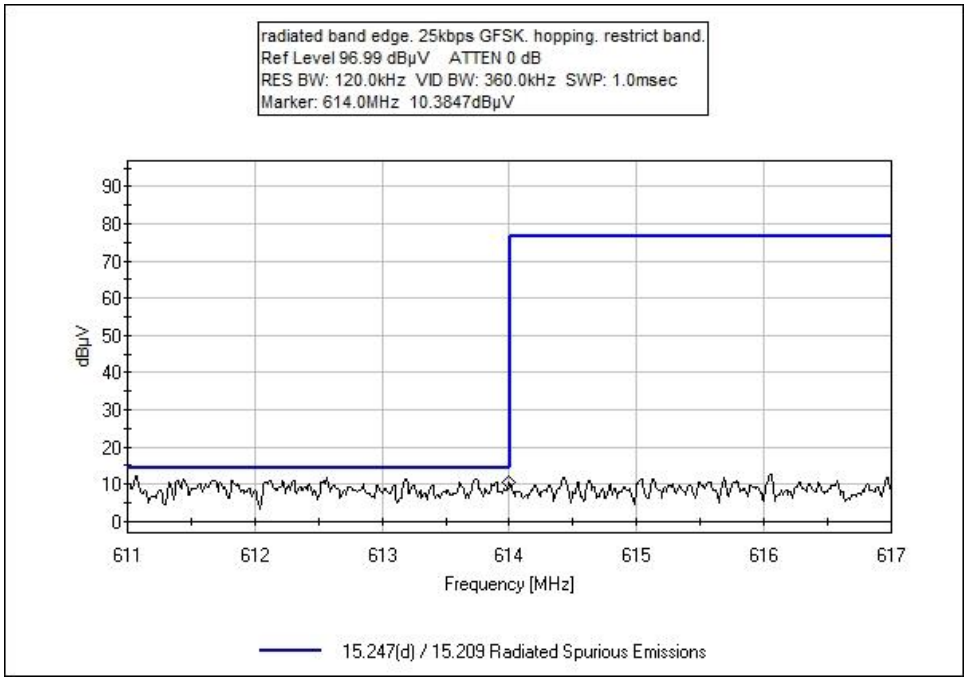

radiated band edge. 25kbps GFSK. hopping. non restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 928.0MHz 33.6147dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

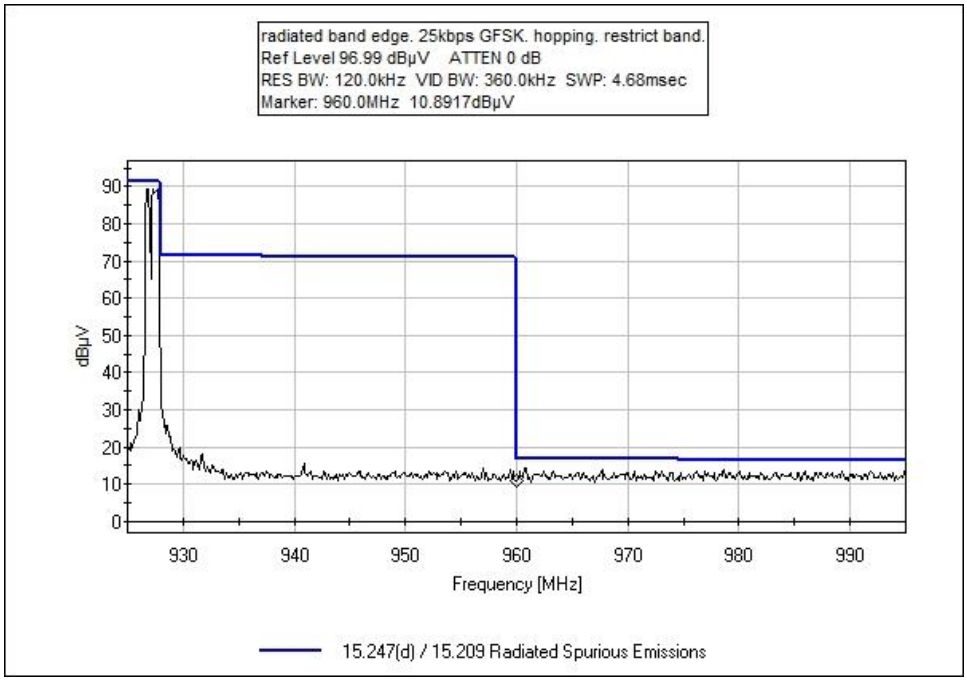

radiated band edge. 25kbps GFSK. low channel. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 9.5007dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
611
612
613
614
615
616
617
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


radiated band edge. 25kbps GFSK. high channel. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 4.68msec
Marker: 960.0MHz 7.3687dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
930
940
950
960
970
980
990
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


radiated band edge. 25kbps GFSK. hopping. non restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 902.0MHz 42.0367dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
899
900
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


radiated band edge. 25kbps GFSK. hopping. non restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0msec
Marker: 928.0MHz 34.2367dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
925
926
927
928
929
930
931
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


radiated band edge. 25kbps GFSK. hopping. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 1.0msec
Marker: 614.0MHz 10.3847dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
611
612
613
614
615
616
617
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


radiated band edge. 25kbps GFSK. hopping. restrict band.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 120.0kHz VID BW: 360.0kHz SWP: 4.68msec
Marker: 960.0MHz 10.8917dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
930
940
950
960
970
980
990
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 #:	**103006**	Date:	8/21/2019
Test Type:	**Radiated Scan**	Time:	14:59:47
Tested By:	S. Yamamoto	Sequence#:	7
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 equipment under test (EUT) is stand alone on the Styrofoam table. The EUT is set to continuously transmit when set to its low (902.2MHz) and high (927.75MHz) channel for this test. Additionally, The EUT is set to continuously frequency hop for this test. Measurement of band edge compliance.

Temperature: 25°C, Humidity: 51%, Pressure:100kPa.
Site D. Test method ANSI C63.10 2013

Frequency Range: 611MHz to 996MHz
RBW=100kHz VBW=300kHz non restrict band
RBW=120kHz VBW=360kHz restrict band
Frequency tested: Low (902.2MHz) and High (927.75MHz). Frequency Hopping
Firmware power setting: 60 (max)
Firmware: 5.1.10.0
Test Software: CAM3 FCC Test Help V29.3

Modulation Types:
25kbps FSK

Antenna type: External Colinear Omnidirectional (antenna attached to chassis)
Antenna Gain: 2.8dBi
Duty Cycle: Tested at 100%

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP04382	Cable	LDF-50	6/2/2018	6/2/2020
T2	ANP05569	Cable-Amplitude +15C to +45C (dB)	RG-214/U	12/24/2018	12/24/2020
T3	ANP05283	Attenuator	ATT-0218-06-NNN-02	4/5/2018	4/5/2020
T4	AN01994	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
	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	12.5	+3.4	+3.8	+5.9	+24.1	+0.0	49.7	54.0	-4.3	Vert
2	614.000M	8.9	+2.6	+2.9	+5.8	+20.4	+0.0	40.6	46.0	-5.4	Vert
3	614.000M	8.3	+2.6	+2.9	+5.8	+20.4	+0.0	40.0	46.0	-6.0	Vert
4	960.000M	8.7	+3.4	+3.8	+5.9	+24.1	+0.0	45.9	54.0	-8.1	Vert
5	902.000M	52.4	+3.2	+3.6	+5.9	+23.4	+0.0	88.5	106.3	-17.8	Vert
6	902.000M	50.4	+3.2	+3.6	+5.9	+23.4	+0.0	86.5	106.3	-19.8	Vert
7	928.000M	37.2	+3.3	+3.7	+5.9	+23.7	+0.0	73.8	106.3	-32.5	Vert
8	928.000M	34.6	+3.3	+3.7	+5.9	+23.7	+0.0	71.2	106.3	-35.1	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 #:	**103006**	Date:	8/21/2019
Test Type:	**Radiated Scan**	Time:	16:45:42
Tested By:	S. Yamamoto	Sequence#:	8
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 equipment under test (EUT) is stand alone on the Styrofoam table. The EUT is set to continuously transmit when set to its low (902.2MHz) and high (927.75MHz) channel for this test. Additionally, The EUT is set to continuously frequency hop for this test. Measurement of band edge compliance.

Temperature: 26°C, Humidity: 43%, Pressure:100kPa.
Site D. Test method ANSI C63.10 2013

Frequency Range: 611MHz to 996MHz
RBW=100kHz VBW=300kHz non restrict band
RBW=120kHz VBW=360kHz restrict band
Frequency tested: Low (902.2MHz) and High (927.75MHz). Frequency Hopping
Firmware power setting: 60 (max)
Firmware: 5.1.10.0
Test Software: CAM3 FCC Test Help V29.3

Modulation Types:
25kbps FSK

Antenna type: External Omnidirectional (antenna remote from chassis)
Antenna Gain: 5.5dBi
Duty Cycle: Tested at 100%

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP04382	Cable	LDF-50	6/2/2018	6/2/2020
T2	ANP05569	Cable-Amplitude +15C to +45C (dB)	RG-214/U	12/24/2018	12/24/2020
T3	ANP05283	Attenuator	ATT-0218-06-NNN-02	4/5/2018	4/5/2020
T4	AN01994	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
	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	11.0	+2.6	+2.9	+5.8	+20.4	+0.0	42.7	46.0	-3.3	Vert
2	960.000M	13.0	+3.4	+3.8	+5.9	+24.1	+0.0	50.2	54.0	-3.8	Vert
3	614.000M	9.7	+2.6	+2.9	+5.8	+20.4	+0.0	41.4	46.0	-4.6	Vert
4	960.000M	9.6	+3.4	+3.8	+5.9	+24.1	+0.0	46.8	54.0	-7.2	Vert
5	902.000M	54.6	+3.2	+3.6	+5.9	+23.4	+0.0	90.7	111.0	-20.3	Vert
6	902.000M	53.9	+3.2	+3.6	+5.9	+23.4	+0.0	90.0	111.0	-21.0	Vert
7	928.000M	39.4	+3.3	+3.7	+5.9	+23.7	+0.0	76.0	111.0	-35.0	Vert
8	928.000M	33.6	+3.3	+3.7	+5.9	+23.7	+0.0	70.2	111.0	-40.8	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 #:	**103006**	Date:	8/21/2019
Test Type:	**Radiated Scan**	Time:	17:49:52
Tested By:	S. Yamamoto	Sequence#:	9
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 equipment under test (EUT) is stand alone on the Styrofoam table. The EUT is set to continuously transmit when set to its low (902.2MHz) and high (927.75MHz) channel for this test. Additionally, The EUT is set to continuously frequency hop for this test. Measurement of band edge compliance.

Temperature: 26°C, Humidity: 43%, Pressure:100kPa.
Site D. Test method ANSI C63.10 2013

Frequency Range: 611MHz to 996MHz
RBW=100kHz VBW=300kHz non restrict band
RBW=120kHz VBW=360kHz restrict band
Frequency tested: Low (902.2MHz) and High (927.75MHz). Frequency Hopping
Firmware power setting: 60 (max)
Firmware: 5.1.10.0
Test Software: CAM3 FCC Test Help V29.3

Modulation Types:
25kbps FSK

Antenna type: External Omnidirectional (antenna remote from chassis)
Antenna Gain: 8.15dBi
With 2dB attenuator and 0.2dB coaxial cable
Duty Cycle: Tested at 100%

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP04382	Cable	LDF-50	6/2/2018	6/2/2020
T2	ANP05569	Cable-Amplitude +15C to +45C (dB)	RG-214/U	12/24/2018	12/24/2020
T3	ANP05283	Attenuator	ATT-0218-06-NNN-02	4/5/2018	4/5/2020
T4	AN01994	Biconilog Antenna	CBL6111C	4/23/2018	4/23/2020
	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	10.4	+2.6	+2.9	+5.8	+20.4	+0.0	42.1	46.0	-3.9	Vert
2	614.000M	9.5	+2.6	+2.9	+5.8	+20.4	+0.0	41.2	46.0	-4.8	Vert
3	960.000M	10.9	+3.4	+3.8	+5.9	+24.1	+0.0	48.1	54.0	-5.9	Vert
4	960.000M	7.4	+3.4	+3.8	+5.9	+24.1	+0.0	44.6	54.0	-9.4	Vert
5	902.000M	52.4	+3.2	+3.6	+5.9	+23.4	+0.0	88.5	108.2	-19.7	Vert
6	902.000M	36.3	+3.2	+3.6	+5.9	+23.4	+0.0	72.4	108.2	-35.8	Vert
7	928.000M	35.6	+3.3	+3.7	+5.9	+23.7	+0.0	72.2	108.2	-36.0	Vert
8	928.000M	34.2	+3.3	+3.7	+5.9	+23.7	+0.0	70.8	108.2	-37.4	Vert

Test Setup Photo(s)

Below 1GHz, 2.8dBi

Below 1GHz, 2.8dBi

Above 1GHz, 2.8dBi

Below 1GHz, 5.5dBi

Below 1GHz, 5.5dBi

Above 1GHz, 5.5dBi

Below 1GHz, 8.15dBi

Below 1GHz, 8.15dBi

Above 1GHz, 8.15dBi

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc • 110 N Olinda Pl • Brea CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**103006**	Date:	8/20/2019
Test Type:	**Conducted Emissions**	Time:	17:05:24
Tested By:	S. Yamamoto	Sequence#:	5
Software:	EMITest 5.03.12		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

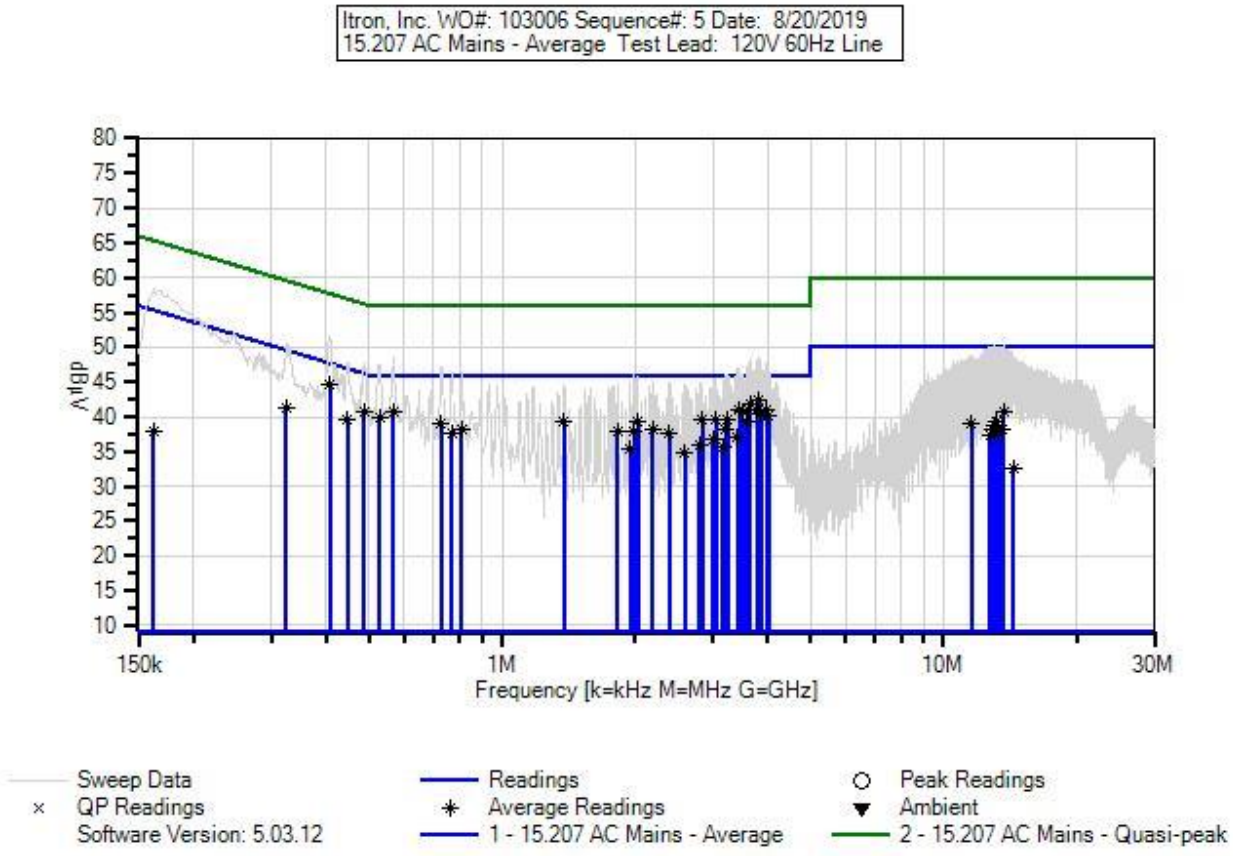
The equipment under test (EUT) and support laptop are on the table. The EUT is set to continuously transmit on the middle channels for this test.

Temperature: 23°C, Humidity: 58%, Pressure:100kPa.
Site D. Test method ANSI C63.10 2013

Frequency Range: 0.15MHz to 30MHz
RBW=9kHz VBW=30kHz
Frequency tested: Middle (915.0MHz)
Firmware power setting: 60 (max)
Firmware: 5.1.10.0
Test Software: CAM3 FCC Test Help V29.3

Modulation Types:
25kbps FSK

Antenna type: External Colinear Omnidirectional
Antenna Gain: 2.8dBi (attached)
Duty Cycle: Tested at 100%


Itron, Inc. WO#: 103006 Sequence#: 5 Date: 8/20/2019
15.207 AC Mains - Average Test Lead: 120V 60Hz Line
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.12
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02343	High Pass Filter	HE9615-150K-50-720B	12/24/2018	12/24/2020
T2	ANP01910	Cable	RG-142	10/25/2017	10/25/2019
T3	ANP06085	Attenuator	SA18N10W-09	11/15/2018	11/15/2020
T4	AN00847.1	50uH LISN-Line 1	3816/2NM	3/11/2019	3/11/2020
	AN00847.1	50uH LISN-Line 2	3816/2NM	3/11/2019	3/11/2020
	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1 Ave	406.704k	38.4	+0.2	+0.1	+5.8	+0.1	+0.0	44.6	47.7	-3.1	Line
^	406.703k	45.5	+0.2	+0.1	+5.8	+0.1	+0.0	51.7	47.7 see average data above	+4.0	Line
3 Ave	3.816M	36.1	+0.2	+0.2	+5.8	+0.1	+0.0	42.4	46.0	-3.6	Line
^	3.816M	42.3	+0.2	+0.2	+5.8	+0.1	+0.0	48.6	46.0 see average data above	+2.6	Line
5 Ave	3.654M	35.6	+0.2	+0.1	+5.8	+0.1	+0.0	41.8	46.0	-4.2	Line
^	3.654M	42.1	+0.2	+0.1	+5.8	+0.1	+0.0	48.3	46.0 see average data above	+2.3	Line
7 Ave	3.612M	34.9	+0.2	+0.1	+5.8	+0.1	+0.0	41.1	46.0	-4.9	Line
^	3.612M	41.6	+0.2	+0.1	+5.8	+0.1	+0.0	47.8	46.0 see average data above	+1.8	Line
9 Ave	3.773M	34.6	+0.2	+0.2	+5.8	+0.1	+0.0	40.9	46.0	-5.1	Line
^	3.773M	41.8	+0.2	+0.2	+5.8	+0.1	+0.0	48.1	46.0 see average data above	+2.1	Line
11 Ave	3.450M	34.7	+0.2	+0.1	+5.8	+0.1	+0.0	40.9	46.0	-5.1	Line
^	3.450M	40.8	+0.2	+0.1	+5.8	+0.1	+0.0	47.0	46.0 see average data above	+1.0	Line
13 Ave	3.977M	34.6	+0.2	+0.2	+5.8	+0.1	+0.0	40.9	46.0	-5.1	Line
^	3.977M	41.5	+0.2	+0.2	+5.8	+0.1	+0.0	47.8	46.0 see average data above	+1.8	Line

15 Ave	3.493M	34.6	+0.2	+0.1	+5.8	+0.1	+0.0	40.8	46.0	-5.2	Line
^	3.493M	40.0	+0.2	+0.1	+5.8	+0.1	+0.0	46.2	46.0 see average data above	+0.2	Line
17 Ave	568.143k	34.4	+0.3	+0.1	+5.8	+0.1	+0.0	40.7	46.0	-5.3	Line
^	568.143k	42.3	+0.3	+0.1	+5.8	+0.1	+0.0	48.6	46.0 see average data above	+2.6	Line
19 Ave	486.696k	34.5	+0.3	+0.1	+5.8	+0.1	+0.0	40.8	46.2	-5.4	Line
^	486.696k	41.5	+0.3	+0.1	+5.8	+0.1	+0.0	47.8	46.2 see average data above	+1.6	Line
21 Ave	3.854M	34.0	+0.2	+0.2	+5.8	+0.1	+0.0	40.3	46.0	-5.7	Line
^	3.854M	42.1	+0.2	+0.2	+5.8	+0.1	+0.0	48.4	46.0 see average data above	+2.4	Line
23 Ave	4.020M	33.8	+0.2	+0.2	+5.8	+0.1	+0.0	40.1	46.0	-5.9	Line
^	4.020M	40.7	+0.2	+0.2	+5.8	+0.1	+0.0	47.0	46.0 see average data above	+1.0	Line
25 Ave	527.420k	33.7	+0.3	+0.1	+5.8	+0.1	+0.0	40.0	46.0	-6.0	Line
^	527.419k	41.3	+0.3	+0.1	+5.8	+0.1	+0.0	47.6	46.0 see average data above	+1.6	Line
27 Ave	2.842M	33.5	+0.2	+0.1	+5.8	+0.1	+0.0	39.7	46.0	-6.3	Line
^	2.842M	38.6	+0.2	+0.1	+5.8	+0.1	+0.0	44.8	46.0 see average data above	-1.2	Line
29 Ave	3.246M	33.4	+0.2	+0.1	+5.8	+0.1	+0.0	39.6	46.0	-6.4	Line
^	3.246M	40.1	+0.2	+0.1	+5.8	+0.1	+0.0	46.3	46.0 see average data above	+0.3	Line
31 Ave	3.046M	33.3	+0.2	+0.1	+5.8	+0.1	+0.0	39.5	46.0	-6.5	Line
^	3.046M	39.2	+0.2	+0.1	+5.8	+0.1	+0.0	45.4	46.0 see average data above	-0.6	Line
33 Ave	2.030M	33.2	+0.2	+0.1	+5.8	+0.1	+0.0	39.4	46.0	-6.6	Line
^	2.030M	39.5	+0.2	+0.1	+5.8	+0.1	+0.0	45.7	46.0 see average data above	-0.3	Line

35 Ave	3.573M	33.2	+0.2	+0.1	+5.8	+0.1	+0.0	39.4	46.0	-6.6	Line
^	3.573M	41.0	+0.2	+0.1	+5.8	+0.1	+0.0	47.2	46.0 see average data above	+1.2	Line
37 Ave	1.379M	33.1	+0.2	+0.1	+5.8	+0.1	+0.0	39.3	46.0	-6.7	Line
^	1.379M	38.5	+0.2	+0.1	+5.8	+0.1	+0.0	44.7	46.0 see average data above	-1.3	Line
39 Ave	728.129k	32.8	+0.3	+0.1	+5.8	+0.1	+0.0	39.1	46.0	-6.9	Line
^	728.128k	40.9	+0.3	+0.1	+5.8	+0.1	+0.0	47.2	46.0 see average data above	+1.2	Line
41 Ave	447.427k	33.2	+0.3	+0.1	+5.8	+0.1	+0.0	39.5	46.9	-7.4	Line
^	447.427k	41.5	+0.3	+0.1	+5.8	+0.1	+0.0	47.8	46.9 see average data above	+0.9	Line
43 Ave	810.303k	32.0	+0.3	+0.1	+5.8	+0.1	+0.0	38.3	46.0	-7.7	Line
^	810.303k	39.9	+0.3	+0.1	+5.8	+0.1	+0.0	46.2	46.0 see average data above	+0.2	Line
45 Ave	3.208M	32.0	+0.2	+0.1	+5.8	+0.1	+0.0	38.2	46.0	-7.8	Line
^	3.208M	39.8	+0.2	+0.1	+5.8	+0.1	+0.0	46.0	46.0 see average data above	+0.0	Line
47 Ave	2.191M	31.9	+0.2	+0.1	+5.8	+0.1	+0.0	38.1	46.0	-7.9	Line
^	2.191M	38.7	+0.2	+0.1	+5.8	+0.1	+0.0	44.9	46.0 see average data above	-1.1	Line
49 Ave	1.830M	31.8	+0.2	+0.1	+5.8	+0.1	+0.0	38.0	46.0	-8.0	Line
^	1.830M	38.5	+0.2	+0.1	+5.8	+0.1	+0.0	44.7	46.0 see average data above	-1.3	Line
51 Ave	1.987M	31.6	+0.2	+0.1	+5.8	+0.1	+0.0	37.8	46.0	-8.2	Line
^	1.987M	39.9	+0.2	+0.1	+5.8	+0.1	+0.0	46.1	46.0 see average data above	+0.1	Line
53 Ave	324.529k	35.1	+0.1	+0.1	+5.8	+0.1	+0.0	41.2	49.6	-8.4	Line
^	324.529k	44.3	+0.1	+0.1	+5.8	+0.1	+0.0	50.4	49.6 see average data above	+0.8	Line

55	2.395M Ave	31.3	+0.2	+0.1	+5.8	+0.1	+0.0	37.5	46.0	-8.5	Line
^	2.395M	38.8	+0.2	+0.1	+5.8	+0.1	+0.0	45.0	46.0 see average data above	-1.0	Line
57	768.852k Ave	31.2	+0.3	+0.1	+5.8	+0.1	+0.0	37.5	46.0	-8.5	Line
^	768.852k	40.0	+0.3	+0.1	+5.8	+0.1	+0.0	46.3	46.0 see average data above	+0.3	Line
59	3.408M Ave	31.0	+0.2	+0.1	+5.8	+0.1	+0.0	37.2	46.0	-8.8	Line
^	3.408M	40.8	+0.2	+0.1	+5.8	+0.1	+0.0	47.0	46.0 see average data above	+1.0	Line
61	3.004M Ave	30.5	+0.2	+0.1	+5.8	+0.1	+0.0	36.7	46.0	-9.3	Line
^	3.004M	38.8	+0.2	+0.1	+5.8	+0.1	+0.0	45.0	46.0 see average data above	-1.0	Line
63	13.679M Ave	34.1	+0.2	+0.3	+5.8	+0.2	+0.0	40.6	50.0	-9.4	Line
^	13.679M	43.7	+0.2	+0.3	+5.8	+0.2	+0.0	50.2	50.0 see average data above	+0.2	Line
65	2.799M Ave	29.7	+0.2	+0.1	+5.8	+0.1	+0.0	35.9	46.0	-10.1	Line
^	2.799M	38.7	+0.2	+0.1	+5.8	+0.1	+0.0	44.9	46.0 see average data above	-1.1	Line
67	3.165M Ave	29.6	+0.2	+0.1	+5.8	+0.1	+0.0	35.8	46.0	-10.2	Line
^	3.165M	39.0	+0.2	+0.1	+5.8	+0.1	+0.0	45.2	46.0 see average data above	-0.8	Line
69	1.949M Ave	29.2	+0.2	+0.1	+5.8	+0.1	+0.0	35.4	46.0	-10.6	Line
^	1.949M	38.9	+0.2	+0.1	+5.8	+0.1	+0.0	45.1	46.0 see average data above	-0.9	Line
71	13.193M Ave	32.7	+0.2	+0.3	+5.8	+0.2	+0.0	39.2	50.0	-10.8	Line
^	13.193M	43.6	+0.2	+0.3	+5.8	+0.2	+0.0	50.1	50.0 see average data above	+0.1	Line
73	11.571M Ave	32.4	+0.2	+0.3	+5.8	+0.2	+0.0	38.9	50.0	-11.1	Line
^	11.571M	42.5	+0.2	+0.3	+5.8	+0.2	+0.0	49.0	50.0 see average data above	-1.0	Line
75	13.067M Ave	32.2	+0.2	+0.3	+5.8	+0.2	+0.0	38.7	50.0	-11.3	Line

^	13.067M	43.8	+0.2	+0.3	+5.8	+0.2	+0.0	50.3	50.0 see average data above	+0.3	Line
77	2.595M Ave	28.5	+0.2	+0.1	+5.8	+0.1	+0.0	34.7	46.0	-11.3	Line
^	2.595M	38.7	+0.2	+0.1	+5.8	+0.1	+0.0	44.9	46.0 see average data above	-1.1	Line
79	12.950M Ave	31.8	+0.2	+0.3	+5.8	+0.2	+0.0	38.3	50.0	-11.7	Line
^	12.950M	43.7	+0.2	+0.3	+5.8	+0.2	+0.0	50.2	50.0 see average data above	+0.2	Line
81	13.517M Ave	31.7	+0.2	+0.3	+5.8	+0.2	+0.0	38.2	50.0	-11.8	Line
^	13.517M	43.6	+0.2	+0.3	+5.8	+0.2	+0.0	50.1	50.0 see average data above	+0.1	Line
83	13.310M Ave	31.2	+0.2	+0.3	+5.8	+0.2	+0.0	37.7	50.0	-12.3	Line
^	13.310M	43.6	+0.2	+0.3	+5.8	+0.2	+0.0	50.1	50.0 see average data above	+0.1	Line
85	12.706M Ave	30.8	+0.2	+0.3	+5.8	+0.2	+0.0	37.3	50.0	-12.7	Line
^	12.706M	43.6	+0.2	+0.3	+5.8	+0.2	+0.0	50.1	50.0 see average data above	+0.1	Line
87	14.400M Ave	26.2	+0.2	+0.3	+5.8	+0.2	+0.0	32.7	50.0	-17.3	Line
^	14.400M	41.4	+0.2	+0.3	+5.8	+0.2	+0.0	47.9	50.0 see average data above	-2.1	Line
89	162.363k Ave	31.6	+0.4	+0.1	+5.8	+0.1	+0.0	38.0	55.3	-17.3	Line
^	162.362k	51.9	+0.4	+0.1	+5.8	+0.1	+0.0	58.3	55.3 see average data above	+3.0	Line

Test Location:	CKC Laboratories Inc • 110 N Olinda Pl • Brea CA 92823 • 714-993-6112		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**103006**	Date:	8/20/2019
Test Type:	**Conducted Emissions**	Time:	17:25:47
Tested By:	S. Yamamoto	Sequence#:	6
Software:	EMITest 5.03.12		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

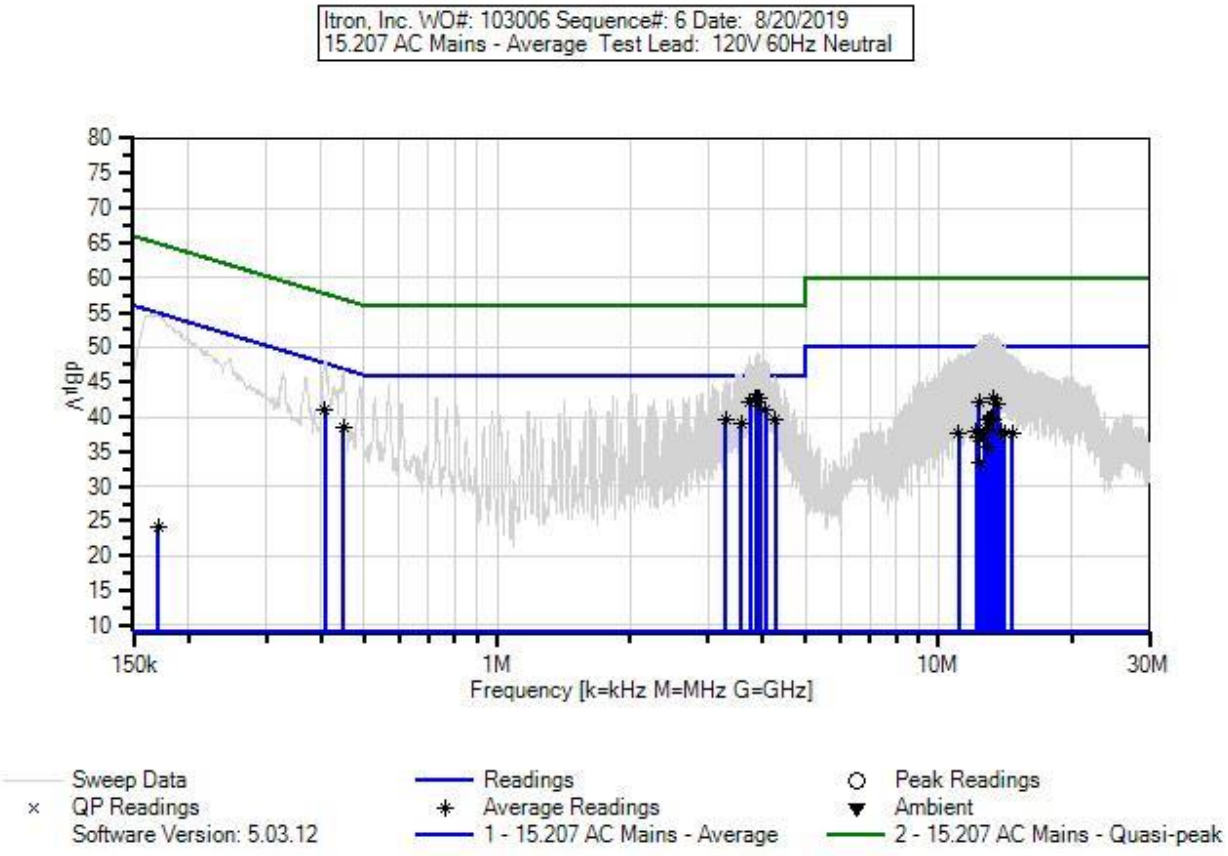
The equipment under test (EUT) and support laptop are on the table. The EUT is set to continuously transmit on the middle channels for this test.

Temperature: 23°C, Humidity: 58%, Pressure:100kPa.
Site D. Test method ANSI C63.10 2013

Frequency Range: 0.15MHz to 30MHz
RBW=9kHz VBW=30kHz
Frequency tested: Middle (915.0MHz)
Firmware power setting: 60 (max)
Firmware: 5.1.10.0
Test Software: CAM3 FCC Test Help V29.3

Modulation Types:
25kbps FSK

Antenna type: External Colinear Omni
Antenna Gain: 2.8dBi (attached)
Duty Cycle: Tested at 100%


Itron, Inc. WO#: 103006 Sequence#: 6 Date: 8/20/2019
15.207 AC Mains - Average Test Lead: 120V 60Hz Neutral
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.12
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02343	High Pass Filter	HE9615-150K-50-720B	12/24/2018	12/24/2020
T2	ANP01910	Cable	RG-142	10/25/2017	10/25/2019
T3	ANP06085	Attenuator	SA18N10W-09	11/15/2018	11/15/2020
	AN00847.1	50uH LISN-Line 1	3816/2NM	3/11/2019	3/11/2020
T4	AN00847.1	50uH LISN-Line 2	3816/2NM	3/11/2019	3/11/2020
	AN02869	Spectrum Analyzer	E4440A	7/25/2019	7/25/2020

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

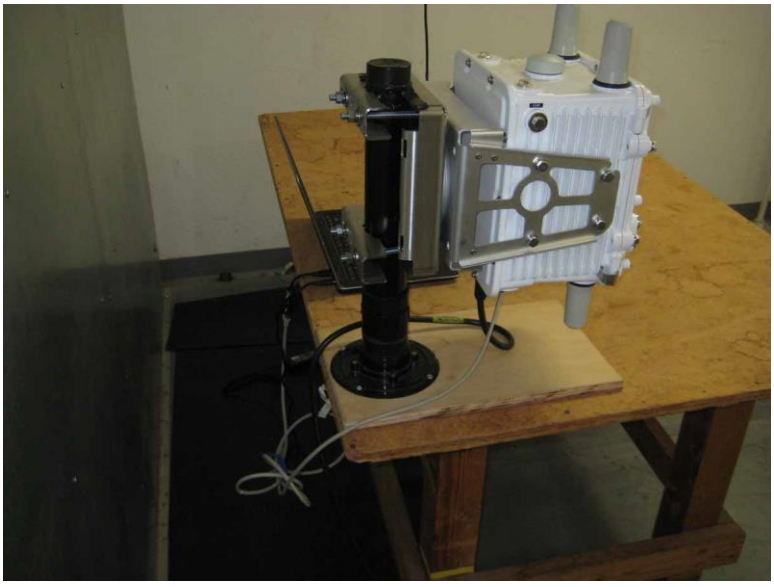
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1 Ave	3.897M	36.4	+0.2	+0.2	+5.8	+0.1	+0.0	42.7	46.0	-3.3	Neutr
^	3.897M	42.8	+0.2	+0.2	+5.8	+0.1	+0.0	49.1	46.0 see average data above	+3.1	Neutr
3 Ave	3.858M	36.3	+0.2	+0.2	+5.8	+0.1	+0.0	42.6	46.0	-3.4	Neutr
^	3.858M	42.4	+0.2	+0.2	+5.8	+0.1	+0.0	48.7	46.0 see average data above	+2.7	Neutr
5 Ave	3.939M	36.3	+0.2	+0.2	+5.8	+0.1	+0.0	42.6	46.0	-3.4	Neutr
^	3.939M	42.8	+0.2	+0.2	+5.8	+0.1	+0.0	49.1	46.0 see average data above	+3.1	Neutr
7 Ave	3.735M	35.8	+0.2	+0.1	+5.8	+0.1	+0.0	42.0	46.0	-4.0	Neutr
^	3.735M	42.3	+0.2	+0.1	+5.8	+0.1	+0.0	48.5	46.0 see average data above	+2.5	Neutr
9 Ave	4.062M	34.6	+0.2	+0.2	+5.8	+0.1	+0.0	40.9	46.0	-5.1	Neutr
^	4.062M	41.8	+0.2	+0.2	+5.8	+0.1	+0.0	48.1	46.0 see average data above	+2.1	Neutr
11 Ave	4.262M	33.4	+0.2	+0.2	+5.8	+0.1	+0.0	39.7	46.0	-6.3	Neutr
^	4.262M	39.5	+0.2	+0.2	+5.8	+0.1	+0.0	45.8	46.0 see average data above	-0.2	Neutr
13 Ave	3.289M	33.4	+0.2	+0.1	+5.8	+0.1	+0.0	39.6	46.0	-6.4	Neutr
^	3.288M	39.2	+0.2	+0.1	+5.8	+0.1	+0.0	45.4	46.0 see average data above	-0.6	Neutr

15 Ave	408.157k	34.8	+0.2	+0.1	+5.8	+0.0	+0.0	40.9	47.7	-6.8	Neutr
^	408.157k	42.0	+0.2	+0.1	+5.8	+0.0	+0.0	48.1	47.7 see average data above	+0.4	Neutr
17 Ave	3.573M	32.8	+0.2	+0.1	+5.8	+0.1	+0.0	39.0	46.0	-7.0	Neutr
^	3.573M	40.1	+0.2	+0.1	+5.8	+0.1	+0.0	46.3	46.0 see average data above	+0.3	Neutr
19 Ave	13.355M	36.2	+0.2	+0.3	+5.8	+0.2	+0.0	42.7	50.0	-7.3	Neutr
^	13.355M	45.7	+0.2	+0.3	+5.8	+0.2	+0.0	52.2	50.0 see average data above	+2.2	Neutr
21 Ave	12.337M	35.7	+0.2	+0.3	+5.8	+0.2	+0.0	42.2	50.0	-7.8	Neutr
^	12.337M	44.2	+0.2	+0.3	+5.8	+0.2	+0.0	50.7	50.0 see average data above	+0.7	Neutr
23 Ave	13.598M	35.4	+0.2	+0.3	+5.8	+0.2	+0.0	41.9	50.0	-8.1	Neutr
^	13.598M	45.0	+0.2	+0.3	+5.8	+0.2	+0.0	51.5	50.0 see average data above	+1.5	Neutr
25 Ave	449.608k	32.3	+0.3	+0.1	+5.8	+0.0	+0.0	38.5	46.9	-8.4	Neutr
^	449.607k	40.3	+0.3	+0.1	+5.8	+0.0	+0.0	46.5	46.9 see average data above	-0.4	Neutr
27 Ave	13.193M	33.4	+0.2	+0.3	+5.8	+0.2	+0.0	39.9	50.0	-10.1	Neutr
^	13.193M	45.3	+0.2	+0.3	+5.8	+0.2	+0.0	51.8	50.0 see average data above	+1.8	Neutr
29 Ave	13.274M	33.2	+0.2	+0.3	+5.8	+0.2	+0.0	39.7	50.0	-10.3	Neutr
^	13.274M	45.2	+0.2	+0.3	+5.8	+0.2	+0.0	51.7	50.0 see average data above	+1.7	Neutr
31 Ave	12.869M	33.2	+0.2	+0.3	+5.8	+0.2	+0.0	39.7	50.0	-10.3	Neutr
^	12.869M	45.1	+0.2	+0.3	+5.8	+0.2	+0.0	51.6	50.0 see average data above	+1.6	Neutr
33 Ave	13.067M	33.0	+0.2	+0.3	+5.8	+0.2	+0.0	39.5	50.0	-10.5	Neutr
^	13.067M	45.5	+0.2	+0.3	+5.8	+0.2	+0.0	52.0	50.0 see average data above	+2.0	Neutr

35	12.752M Ave	31.7	+0.2	+0.3	+5.8	+0.2	+0.0	38.2	50.0	-11.8	Neutr
^	12.752M	45.1	+0.2	+0.3	+5.8	+0.2	+0.0	51.6	50.0 see average data above	+1.6	Neutr
37	13.806M Ave	31.3	+0.2	+0.3	+5.8	+0.2	+0.0	37.8	50.0	-12.2	Neutr
^	13.806M	44.5	+0.2	+0.3	+5.8	+0.2	+0.0	51.0	50.0 see average data above	+1.0	Neutr
39	12.139M Ave	31.3	+0.2	+0.3	+5.8	+0.2	+0.0	37.8	50.0	-12.2	Neutr
^	12.139M	43.5	+0.2	+0.3	+5.8	+0.2	+0.0	50.0	50.0 see average data above	+0.0	Neutr
41	11.076M Ave	31.2	+0.2	+0.3	+5.8	+0.2	+0.0	37.7	50.0	-12.3	Neutr
^	11.076M	42.5	+0.2	+0.3	+5.8	+0.2	+0.0	49.0	50.0 see average data above	-1.0	Neutr
43	14.697M Ave	31.2	+0.2	+0.3	+5.8	+0.2	+0.0	37.7	50.0	-12.3	Neutr
^	14.697M	41.4	+0.2	+0.3	+5.8	+0.2	+0.0	47.9	50.0 see average data above	-2.1	Neutr
45	14.130M Ave	31.1	+0.2	+0.3	+5.8	+0.2	+0.0	37.6	50.0	-12.4	Neutr
^	14.130M	43.9	+0.2	+0.3	+5.8	+0.2	+0.0	50.4	50.0 see average data above	+0.4	Neutr
47	12.220M Ave	30.6	+0.2	+0.3	+5.8	+0.2	+0.0	37.1	50.0	-12.9	Neutr
^	12.220M	44.1	+0.2	+0.3	+5.8	+0.2	+0.0	50.6	50.0 see average data above	+0.6	Neutr
49	12.670M Ave	30.5	+0.2	+0.3	+5.8	+0.2	+0.0	37.0	50.0	-13.0	Neutr
^	12.670M	45.2	+0.2	+0.3	+5.8	+0.2	+0.0	51.7	50.0 see average data above	+1.7	Neutr

51	12.959M Ave	29.2	+0.2	+0.3	+5.8	+0.2	+0.0	35.7	50.0	-14.3	Neutr
^	12.959M	45.1	+0.2	+0.3	+5.8	+0.2	+0.0	51.6	50.0 see average data above	+1.6	Neutr
53	12.427M Ave	26.9	+0.2	+0.3	+5.8	+0.2	+0.0	33.4	50.0	-16.6	Neutr
^	12.427M	44.6	+0.2	+0.3	+5.8	+0.2	+0.0	51.1	50.0 see average data above	+1.1	Neutr
55	170.361k Ave	18.0	+0.3	+0.1	+5.8	+0.0	+0.0	24.2	54.9	-30.7	Neutr
^	170.360k	48.5	+0.3	+0.1	+5.8	+0.0	+0.0	54.7	54.9 see average data above	-0.2	Neutr

Test Setup Photo(s)



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

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

Emissions Test Details

TESTING PARAMETERS

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

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

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

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in 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.