Spirent Communications, Inc.

TEST REPORT FOR

Call Performance and Voice Quality Testing Equipment
Model: Nomad UX

Tested To The Following Standards:

FCC Part 15 Subpart C Section(s)
15.207 & 15.249

Report No.: 96898-11

Date of issue: November 10, 2015

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 EMC 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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Spirent Communications, Inc.
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Frederick, MD 21703

REPRESENTATIVE: Ryan Beach
Customer Reference Number: 19894

REPORT PREPARED BY:

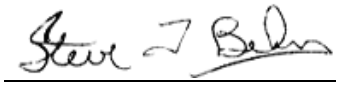
Terri Rayle/Morgan Tramontin
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 96898

DATE OF EQUIPMENT RECEIPT: August 19, 2015
DATE(S) OF TESTING: August 19 – September 1, 2015

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment 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., Suite A
Bothell, WA 98021-4413

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.02.00
EMITest Immunity	5.02.00

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Bothell	US0081	SL2-IN-E-1145R	3082C-1	318736	A-0148

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Test Procedure	Description	Modifications	Results
15.207	AC Conducted Emissions	NA	Pass
15.215(c)	Occupied Bandwidth	NA	Pass
15.249(a)	Field Strength of Fundamental	NA	Pass
15.249(a)&(d)	Field Strength of Spurious Emissions and Band Edge	NA	Pass

NA = Not applicable.

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
Call Performance and Voice Quality testing equipment	Spirent Communications, Inc.	Nomad UX	1000000E

Support Equipment:

Device	Manufacturer	Model #	S/N
Switching Power Supply	Phihong	PSC12R-120	P31704886A1
Computer	Dell	E5430	6FF1NX1
Power Supply	Dell	AA90PM111	CN-0MV2MM-70163-15-02NI-A01
USB2.0 Hub to Fiber Bit-Driver	S.I. Tech	2173	079536
AC Adapter	S.I. Tech	2164	079530
USB2.0 to Fiber Bit-Driver	S.I. Tech	2172	079535
AC Adapter	S.I. Tech	2164	079538
Nomad GPS	Spirent Communications, Inc.	53-004937	NA

Configuration 2

Equipment Tested:

Device	Manufacturer	Model #	S/N
Call Performance and Voice Quality testing equipment	Spirent Communications, Inc.	Nomad UX	1000000E

Support Equipment:

Device	Manufacturer	Model #	S/N
Switching Power Supply	Phihong	PSC12R-120	P31704886A1
Computer	Dell	E5430	6FF1NX1
Nomad GPS	Spirent Communications, Inc.	53-004937	NA

FCC PART 15 SUBPART C

15.207 AC Conducted Emissions

Test Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**96898**	Date:	8/27/2015
Test Type:	**Conducted Emissions**	Time:	15:54:22
Tested By:	Michael Atkinson	Sequence#:	40
Software:	EMITest 5.02.00		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

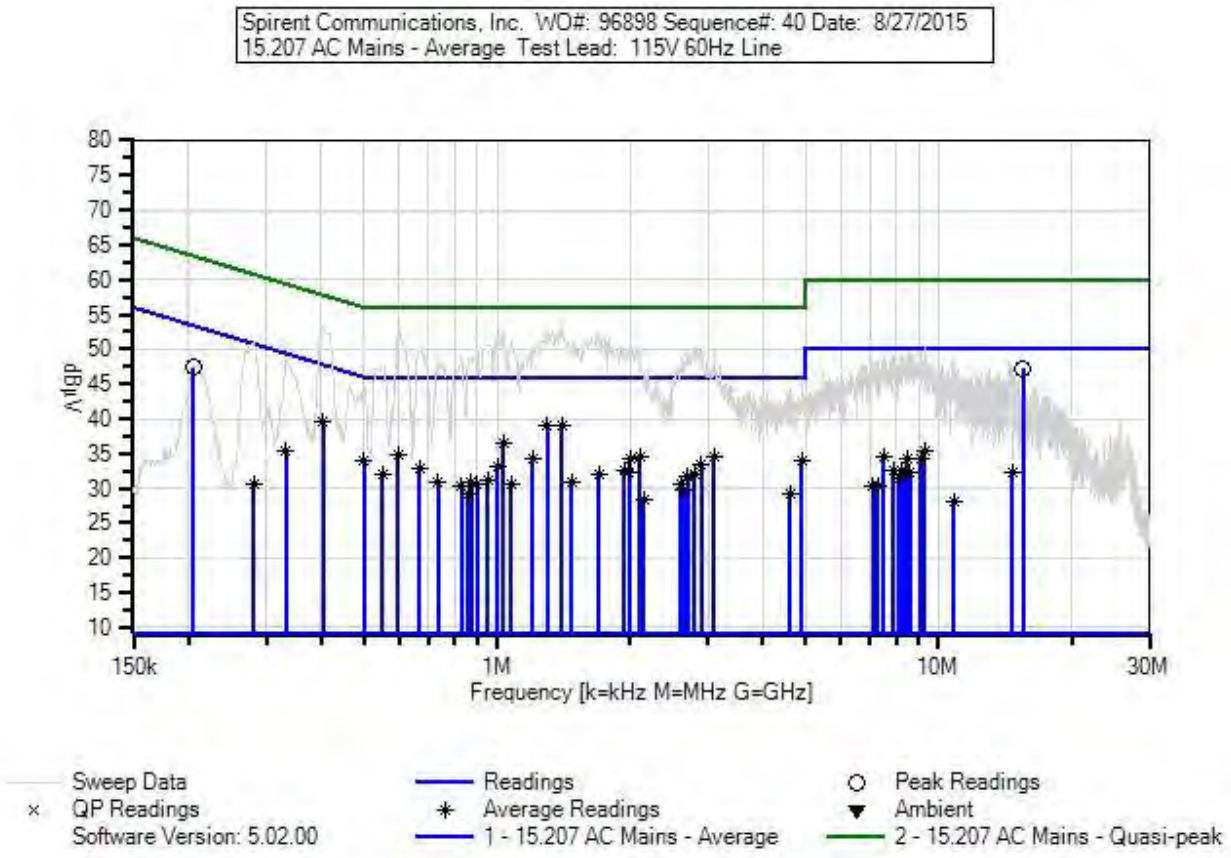
Test Conditions / Notes:

The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on an 80cm table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located inside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on, radio 1 through 6 transmitting.
Investigated only Radio 1 transmitting.
Revision 1.2 board

Temperature: 23º C
Relative Humidity: 35%
Atmospheric Pressure: 102.1kPa

Frequency Range Investigated: 0.15-30MHz
Test Procedure: ANSI C63.10 (2013)


Spirent Communications, Inc. WO#: 96898 Sequence#: 40 Date: 8/27/2015
15.207 AC Mains - Average Test Lead: 115V 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: 5.02.00
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/23/2014	4/23/2016
T2	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016
T3	ANP06540	Cable	Heliax	11/5/2013	11/5/2015
	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015
T4	AN02611	High Pass Filter	HE9615-150K-50-720B	3/26/2014	3/26/2016
	AN01311	50uH LISN-Line1 (N)	3816/2	3/4/2014	3/4/2016
T5	AN01311	50uH LISN-Line2 (L)	3816/2	3/4/2014	3/4/2016

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	15.500M	36.8	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	47.3	50.0	-2.7	Line
2	205.470k	36.8	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	47.4	53.4	-6.0	Line
3	1.400M Ave	28.6	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	39.1	46.0	-6.9	Line
^	1.400M	43.9	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	54.4	46.0	+8.4	Line
5	1.299M Ave	28.4	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	38.9	46.0	-7.1	Line
^	1.299M	44.0	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	54.5	46.0	+8.5	Line
7	403.795k Ave	29.1	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	39.6	47.8	-8.2	Line
^	403.794k	42.7	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	53.2	47.8	+5.4	Line
9	1.033M Ave	26.2	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	36.6	46.0	-9.4	Line
^	1.033M	42.6	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	53.0	46.0	+7.0	Line
^	1.035M	42.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	52.7	46.0	+6.7	Line
12	596.504k Ave	24.2	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	34.8	46.0	-11.2	Line
^	596.504k	42.3	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	52.9	46.0	+6.9	Line
14	3.101M Ave	23.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	34.5	46.0	-11.5	Line
^	3.101M	39.2	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	49.8	46.0	+3.8	Line
16	2.101M Ave	23.9	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	34.4	46.0	-11.6	Line
^	2.101M	40.0	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	50.5	46.0	+4.5	Line

18 Ave	2.003M	23.8	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	34.3	46.0	-11.7	Line
^	2.003M	40.6	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	51.1	46.0	+5.1	Line
20 Ave	1.203M	23.8	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	34.2	46.0	-11.8	Line
^	1.203M	40.8	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	51.2	46.0	+5.2	Line
22 Ave	499.059k	23.4	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	34.0	46.0	-12.0	Line
^	499.058k	34.5	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	45.1	46.0	-0.9	Line
24 Ave	4.900M	23.3	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	33.9	46.0	-12.1	Line
^	4.900M	34.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	45.5	46.0	-0.5	Line
26 Ave	2.902M	22.7	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	33.3	46.0	-12.7	Line
^	2.902M	39.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	50.4	46.0	+4.4	Line
28 Ave	1.001M	22.8	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	33.2	46.0	-12.8	Line
^	1.001M	41.7	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	52.1	46.0	+6.1	Line
30 Ave	667.043k	22.4	+10.2 +0.1	+0.0	+0.0	+0.2	+0.0	32.9	46.0	-13.1	Line
^	667.043k	39.6	+10.2 +0.1	+0.0	+0.0	+0.2	+0.0	50.1	46.0	+4.1	Line
32 Ave	1.938M	22.0	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	32.5	46.0	-13.5	Line
^	1.938M	39.6	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	50.1	46.0	+4.1	Line
34 Ave	1.991M	21.7	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	32.2	46.0	-13.8	Line
^	1.991M	39.7	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	50.2	46.0	+4.2	Line
36 Ave	1.702M	21.5	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	32.0	46.0	-14.0	Line
^	1.702M	41.9	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	52.4	46.0	+6.4	Line
38 Ave	549.963k	21.4	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	32.0	46.0	-14.0	Line
^	549.963k	37.2	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	47.8	46.0	+1.8	Line
40 Ave	333.256k	24.8	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	35.3	49.4	-14.1	Line
^	333.255k	37.8	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	48.3	49.4	-1.1	Line
42 Ave	2.805M	21.3	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	31.9	46.0	-14.1	Line
^	2.805M	39.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	50.4	46.0	+4.4	Line

44 Ave	2.704M	21.1	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	31.7	46.0	-14.3	Line
^	2.704M	39.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	50.4	46.0	+4.4	Line
46 Ave	9.301M	24.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	35.5	50.0	-14.5	Line
^	9.301M	39.7	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	50.3	50.0	+0.3	Line
48 Ave	952.100k	20.8	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	31.2	46.0	-14.8	Line
^	952.100k	40.2	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	50.6	46.0	+4.6	Line
50 Ave	735.401k	20.2	+10.2 +0.1	+0.1	+0.0	+0.2	+0.0	30.8	46.0	-15.2	Line
^	735.400k	37.9	+10.2 +0.1	+0.1	+0.0	+0.2	+0.0	48.5	46.0	+2.5	Line
52 Ave	1.471M	20.4	+10.1 +0.1	+0.1	+0.0	+0.1	+0.0	30.8	46.0	-15.2	Line
^	1.471M	40.1	+10.1 +0.1	+0.1	+0.0	+0.1	+0.0	50.5	46.0	+4.5	Line
54 Ave	875.024k	20.3	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	30.8	46.0	-15.2	Line
^	875.024k	38.3	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	48.8	46.0	+2.8	Line
56 Ave	1.077M	20.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	30.7	46.0	-15.3	Line
^	1.077M	40.7	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	51.1	46.0	+5.1	Line
58 Ave	900.800k	20.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	30.7	46.0	-15.3	Line
^	900.800k	39.6	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	50.0	46.0	+4.0	Line
60 Ave	2.605M	20.0	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	30.6	46.0	-15.4	Line
^	2.605M	38.5	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	49.1	46.0	+3.1	Line
62 Ave	7.499M	23.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	34.5	50.0	-15.5	Line
^	7.499M	38.6	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	49.2	50.0	-0.8	Line
64 Ave	8.499M	23.7	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	34.3	50.0	-15.7	Line
^	8.499M	38.3	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	48.9	50.0	-1.1	Line

66	830.665k	19.7	+10.1	+0.1	+0.0	+0.2	+0.0	30.2	46.0	-15.8	Line
	Ave		+0.1								
^	830.664k	38.1	+10.1	+0.1	+0.0	+0.2	+0.0	48.6	46.0	+2.6	Line
			+0.1								
^	831.300k	37.8	+10.1	+0.1	+0.0	+0.2	+0.0	48.3	46.0	+2.3	Line
			+0.1								
69	9.103M	23.5	+10.3	+0.1	+0.0	+0.1	+0.0	34.2	50.0	-15.8	Line
	Ave		+0.2								
^	9.103M	39.2	+10.3	+0.1	+0.0	+0.1	+0.0	49.9	50.0	-0.1	Line
			+0.2								
71	2.645M	19.3	+10.3	+0.1	+0.0	+0.1	+0.0	29.9	46.0	-16.1	Line
	Ave		+0.1								
^	2.645M	38.6	+10.3	+0.1	+0.0	+0.1	+0.0	49.2	46.0	+3.2	Line
			+0.1								
73	861.900k	18.8	+10.1	+0.1	+0.0	+0.2	+0.0	29.3	46.0	-16.7	Line
	Ave		+0.1								
^	861.900k	37.7	+10.1	+0.1	+0.0	+0.2	+0.0	48.2	46.0	+2.2	Line
			+0.1								
75	4.603M	18.7	+10.3	+0.1	+0.0	+0.1	+0.0	29.3	46.0	-16.7	Line
	Ave		+0.1								
^	4.603M	33.9	+10.3	+0.1	+0.0	+0.1	+0.0	44.5	46.0	-1.5	Line
			+0.1								
77	8.220M	22.1	+10.3	+0.1	+0.0	+0.1	+0.0	32.7	50.0	-17.3	Line
	Ave		+0.1								
^	8.220M	38.4	+10.3	+0.1	+0.0	+0.1	+0.0	49.0	50.0	-1.0	Line
			+0.1								
79	7.887M	22.0	+10.3	+0.1	+0.0	+0.1	+0.0	32.6	50.0	-17.4	Line
	Ave		+0.1								
^	7.887M	38.6	+10.3	+0.1	+0.0	+0.1	+0.0	49.2	50.0	-0.8	Line
			+0.1								
81	8.256M	21.9	+10.3	+0.1	+0.0	+0.1	+0.0	32.5	50.0	-17.5	Line
	Ave		+0.1								
^	8.256M	38.1	+10.3	+0.1	+0.0	+0.1	+0.0	48.7	50.0	-1.3	Line
			+0.1								
83	2.153M	18.0	+10.2	+0.1	+0.0	+0.1	+0.0	28.5	46.0	-17.5	Line
	Ave		+0.1								
^	2.153M	37.7	+10.2	+0.1	+0.0	+0.1	+0.0	48.2	46.0	+2.2	Line
			+0.1								
85	14.700M	21.9	+10.0	+0.2	+0.0	+0.2	+0.0	32.4	50.0	-17.6	Line
	Ave		+0.1								
^	14.700M	38.4	+10.0	+0.2	+0.0	+0.2	+0.0	48.9	50.0	-1.1	Line
			+0.1								
87	8.607M	21.7	+10.3	+0.1	+0.0	+0.1	+0.0	32.3	50.0	-17.7	Line
	Ave		+0.1								
^	8.607M	39.2	+10.3	+0.1	+0.0	+0.1	+0.0	49.8	50.0	-0.2	Line
			+0.1								

89	8.148M Ave	20.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	31.5	50.0	-18.5	Line
^	8.148M	38.6	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	49.2	50.0	-0.8	Line
91	7.094M Ave	19.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	30.4	50.0	-19.6	Line
^	7.094M	37.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	48.4	50.0	-1.6	Line
93	7.283M Ave	19.6	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	30.2	50.0	-19.8	Line
^	7.283M	37.8	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	48.4	50.0	-1.6	Line
95	280.897k Ave	20.1	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	30.7	50.8	-20.1	Line
^	280.897k	40.5	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	51.1	50.8	+0.3	Line
^	276.760k	40.5	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	51.1	50.9	+0.2	Line
98	10.797M Ave	17.7	+10.0 +0.1	+0.1	+0.0	+0.1	+0.0	28.0	50.0	-22.0	Line
^	10.797M	38.3	+10.0 +0.1	+0.1	+0.0	+0.1	+0.0	48.6	50.0	-1.4	Line

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**96898**	Date:	8/27/2015
Test Type:	**Conducted Emissions**	Time:	15:30:23
Tested By:	Michael Atkinson	Sequence#:	39
Software:	EMITest 5.02.00		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

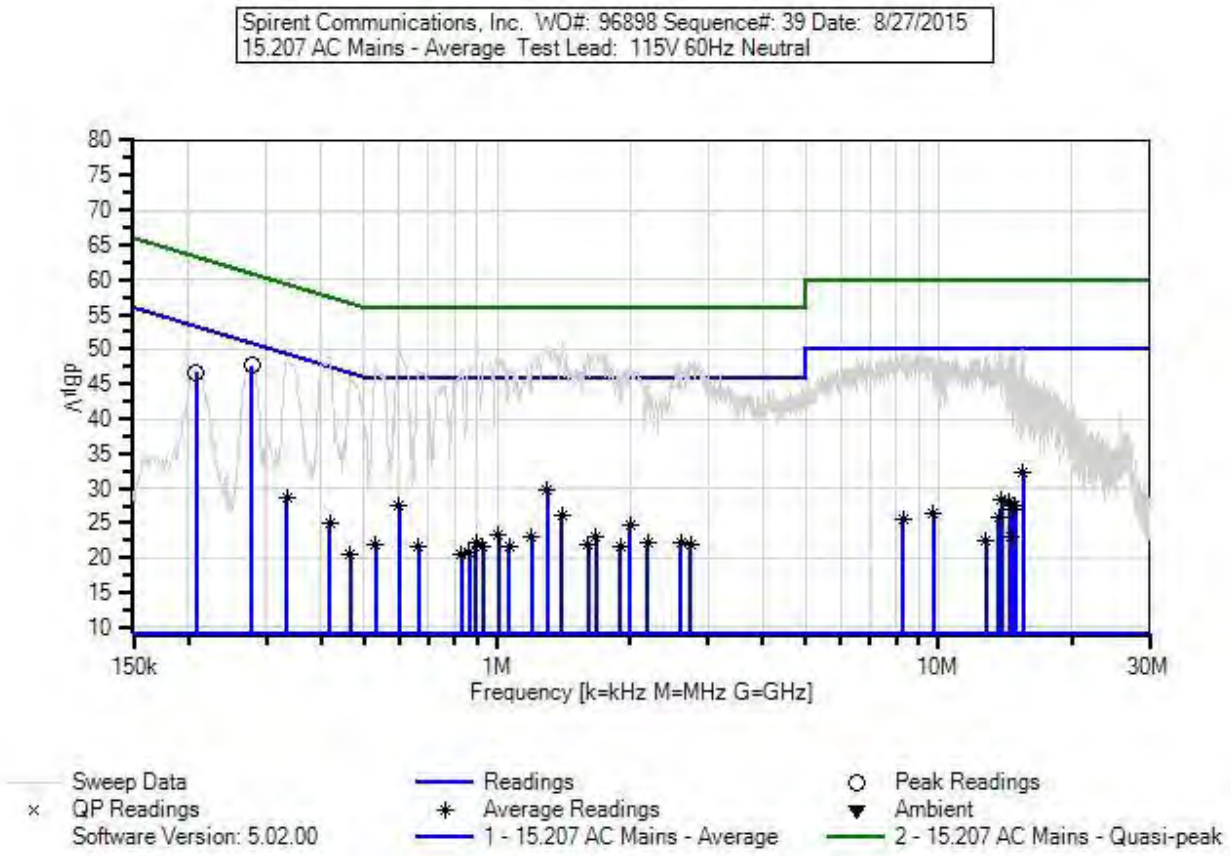
Test Conditions / Notes:

The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on an 80cm table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located inside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on, radio 1 through 6 transmitting.
Investigated only Radio 1 transmitting.
Revision 1.2 board

Temperature: 23º C
Relative Humidity: 35%
Atmospheric Pressure: 102.1kPa

Frequency Range Investigated: 0.15-30MHz
Test Procedure: ANSI C63.10 (2013)


Spirent Communications, Inc. WO#: 96898 Sequence#: 39 Date: 8/27/2015
15.207 AC Mains - Average Test Lead: 115V 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: 5.02.00
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06219	Attenuator	768-10	4/23/2014	4/23/2016
T2	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016
T3	ANP06540	Cable	Heliax	11/5/2013	11/5/2015
	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015
T4	AN02611	High Pass Filter	HE9615-150K-50-720B	3/26/2014	3/26/2016
T5	AN01311	50uH LISN-Line1 (N)	3816/2	3/4/2014	3/4/2016
	AN01311	50uH LISN-Line2 (L)	3816/2	3/4/2014	3/4/2016

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

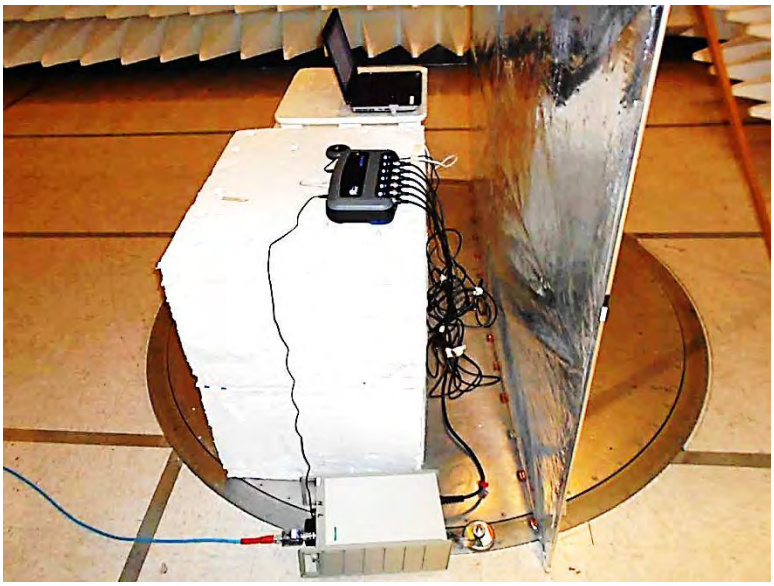
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	278.280k	37.0	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	47.6	50.9	-3.3	Neutr
2	207.860k	36.1	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	46.7	53.3	-6.6	Neutr
3	1.301M Ave	19.3	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	29.8	46.0	-16.2	Neutr
^	1.296M	40.2	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	50.7	46.0	+4.7	Neutr
^	1.307M	39.7	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	50.2	46.0	+4.2	Neutr
6	15.496M Ave	21.7	+10.0 +0.2	+0.2	+0.0	+0.2	+0.0	32.3	50.0	-17.7	Neutr
^	15.496M	41.1	+10.0 +0.2	+0.2	+0.0	+0.2	+0.0	51.7	50.0	+1.7	Neutr
^	15.490M	39.3	+10.0 +0.2	+0.2	+0.0	+0.2	+0.0	49.9	50.0	-0.1	Neutr
9	598.686k Ave	17.0	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	27.6	46.0	-18.4	Neutr
^	598.686k	39.2	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	49.8	46.0	+3.8	Neutr
11	1.405M Ave	15.6	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	26.1	46.0	-19.9	Neutr
^	1.405M	40.6	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	51.1	46.0	+5.1	Neutr
13	334.710k Ave	18.1	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	28.6	49.3	-20.7	Neutr
^	334.710k	38.1	+10.3 +0.1	+0.0	+0.0	+0.1	+0.0	48.6	49.3	-0.7	Neutr

15 Ave	2.004M	14.2	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	24.7	46.0	-21.3	Neutr
^	2.004M	37.3	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	47.8	46.0	+1.8	Neutr
17 Ave	13.905M	18.0	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	28.4	50.0	-21.6	Neutr
^	13.905M	39.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	49.7	50.0	-0.3	Neutr
19 Ave	14.463M	17.6	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	28.1	50.0	-21.9	Neutr
^	14.463M	38.5	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	49.0	50.0	-1.0	Neutr
21 Ave	14.905M	16.9	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	27.4	50.0	-22.6	Neutr
^	14.905M	38.5	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	49.0	50.0	-1.0	Neutr
23 Ave	416.885k	14.3	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	24.9	47.5	-22.6	Neutr
^	416.884k	38.3	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	48.9	47.5	+1.4	Neutr
25 Ave	1.009M	12.8	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	23.2	46.0	-22.8	Neutr
^	1.009M	38.5	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	48.9	46.0	+2.9	Neutr
27 Ave	1.672M	12.6	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	23.1	46.0	-22.9	Neutr
^	1.672M	38.9	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	49.4	46.0	+3.4	Neutr
29 Ave	14.706M	16.5	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	27.0	50.0	-23.0	Neutr
^	14.706M	39.0	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	49.5	50.0	-0.5	Neutr
31 Ave	1.196M	12.6	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	23.0	46.0	-23.0	Neutr
^	1.196M	36.5	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	46.9	46.0	+0.9	Neutr
33 Ave	9.752M	16.0	+10.1 +0.2	+0.1	+0.0	+0.1	+0.0	26.5	50.0	-23.5	Neutr
^	9.752M	38.6	+10.1 +0.2	+0.1	+0.0	+0.1	+0.0	49.1	50.0	-0.9	Neutr
35 Ave	2.604M	11.6	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	22.2	46.0	-23.8	Neutr
^	2.604M	36.6	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	47.2	46.0	+1.2	Neutr
37 Ave	2.196M	11.6	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	22.1	46.0	-23.9	Neutr
^	2.196M	34.5	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	45.0	46.0	-1.0	Neutr
39 Ave	894.216k	11.7	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	22.1	46.0	-23.9	Neutr
^	894.215k	37.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	47.7	46.0	+1.7	Neutr

41 Ave	2.740M	11.3	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	21.9	46.0	-24.1	Neutr
^	2.740M	37.9	+10.3 +0.1	+0.1	+0.0	+0.1	+0.0	48.5	46.0	+2.5	Neutr
43 Ave	1.604M	11.5	+10.1 +0.1	+0.1	+0.0	+0.1	+0.0	21.9	46.0	-24.1	Neutr
^	1.604M	38.7	+10.1 +0.1	+0.1	+0.0	+0.1	+0.0	49.1	46.0	+3.1	Neutr
45 Ave	531.056k	11.2	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	21.8	46.0	-24.2	Neutr
^	531.055k	37.0	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	47.6	46.0	+1.6	Neutr
47 Ave	928.238k	11.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	21.7	46.0	-24.3	Neutr
^	928.237k	38.1	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	48.5	46.0	+2.5	Neutr
49 Ave	1.064M	11.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	21.7	46.0	-24.3	Neutr
^	1.064M	37.0	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	47.4	46.0	+1.4	Neutr
51 Ave	13.706M	15.3	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	25.7	50.0	-24.3	Neutr
^	13.706M	39.1	+10.0 +0.1	+0.1	+0.0	+0.2	+0.0	49.5	50.0	-0.5	Neutr
53 Ave	662.680k	11.1	+10.2 +0.1	+0.0	+0.0	+0.2	+0.0	21.6	46.0	-24.4	Neutr
^	662.680k	36.4	+10.2 +0.1	+0.0	+0.0	+0.2	+0.0	46.9	46.0	+0.9	Neutr
55 Ave	1.898M	11.1	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	21.6	46.0	-24.4	Neutr
^	1.898M	35.9	+10.2 +0.1	+0.1	+0.0	+0.1	+0.0	46.4	46.0	+0.4	Neutr
57 Ave	8.328M	14.8	+10.3 +0.2	+0.1	+0.0	+0.1	+0.0	25.5	50.0	-24.5	Neutr
^	8.328M	38.8	+10.3 +0.2	+0.1	+0.0	+0.1	+0.0	49.5	50.0	-0.5	Neutr
59 Ave	862.662k	10.4	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	20.9	46.0	-25.1	Neutr
^	862.661k	37.0	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	47.5	46.0	+1.5	Neutr

61 Ave	831.392k	10.1	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	20.6	46.0	-25.4	Neutr
^	831.392k	36.6	+10.1 +0.1	+0.1	+0.0	+0.2	+0.0	47.1	46.0	+1.1	Neutr
63 Ave	464.153k	10.0	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	20.6	46.6	-26.0	Neutr
^	464.152k	35.5	+10.3 +0.1	+0.0	+0.0	+0.2	+0.0	46.1	46.6	-0.5	Neutr
65 Ave	14.508M	12.4	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	22.9	50.0	-27.1	Neutr
^	14.508M	38.9	+10.0 +0.1	+0.2	+0.0	+0.2	+0.0	49.4	50.0	-0.6	Neutr
67 Ave	12.797M	12.0	+10.0 +0.2	+0.1	+0.0	+0.1	+0.0	22.4	50.0	-27.6	Neutr
^	12.797M	38.6	+10.0 +0.2	+0.1	+0.0	+0.1	+0.0	49.0	50.0	-1.0	Neutr

Test Setup Photo



15.215(c) Occupied Bandwidth

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	8/19/2015
Test Type:	**Maximized Emissions**	Time:	15:01:55
Tested By:	Randal Clark	Sequence#:	30
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

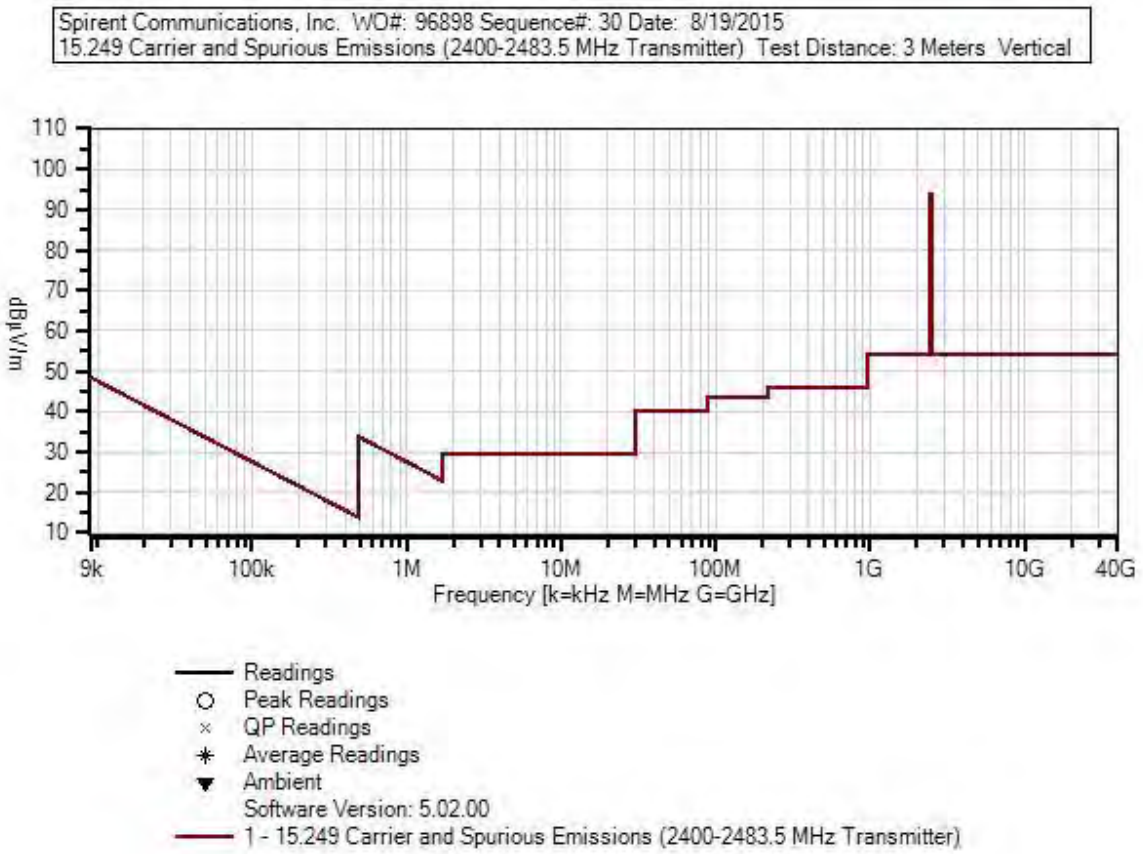
The EUT Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on a 1.5m table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on. Radio 1 transmitting continuously at TX power = 30 with modulation enabled.

Revision 1.2 board

Temperature: 24ºC
Relative Humidity: 40%
Atmospheric Pressure: 101.7 kPa

Frequency Range Investigated: Fundamental
Test Procedure: ANSI C63.10 (2013)

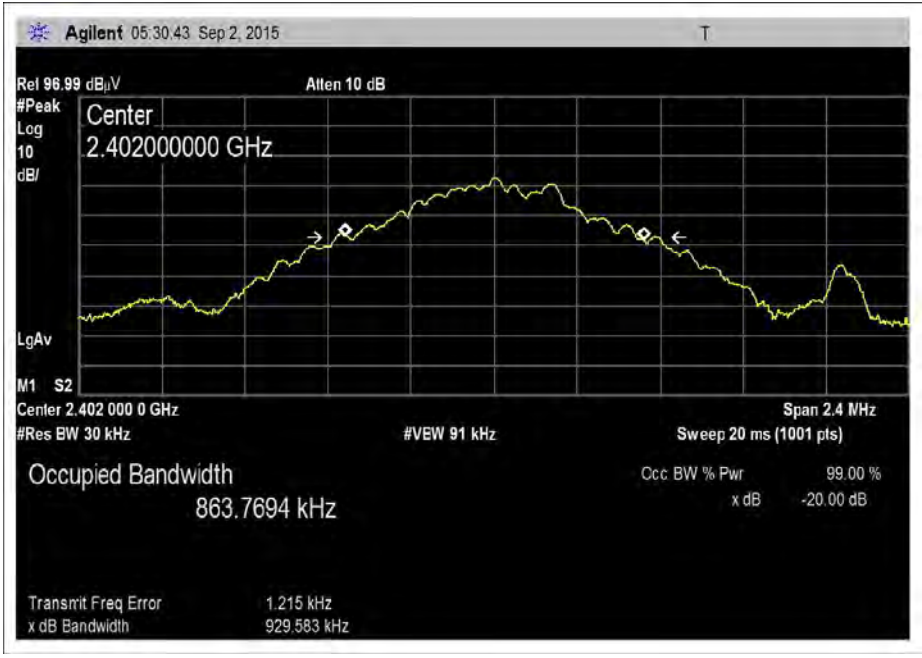

Spirent Communications, Inc. WO#: 96898 Sequence#: 30 Date: 8/19/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
dBµV/m
110
100
90
80
70
60
50
40
30
20
10
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

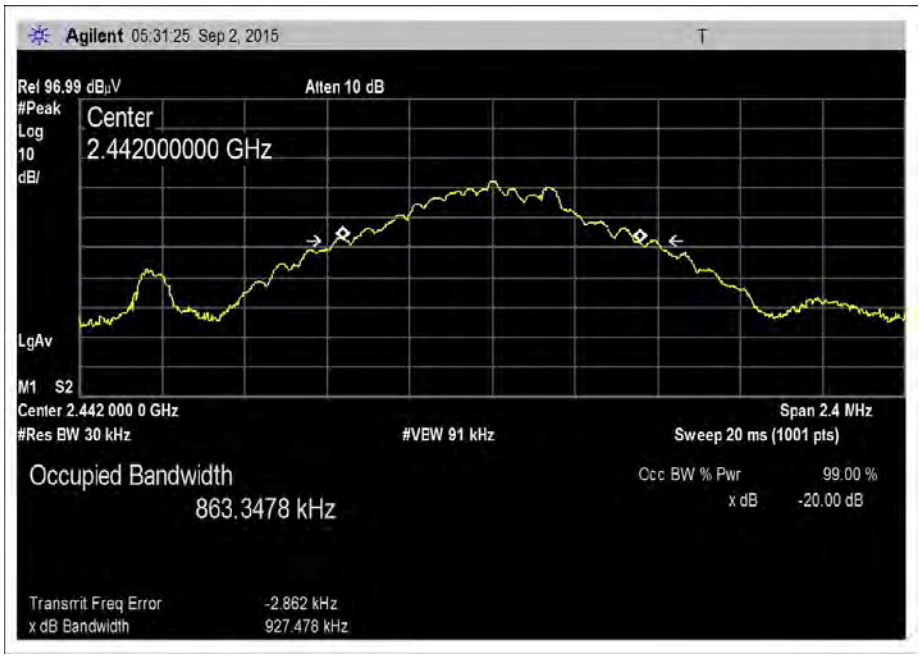
ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015
	AN03209	Preamp	83051A	3/20/2015	3/20/2017
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	9/16/2013	9/16/2015
	AN03227	Cable	32026-29080-29080-84	5/13/2014	5/13/2016
	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016

Test Data Summary			
Frequency (MHz)	**Modulation**	**Antenna Type / Gain**	**Measured 20dB BW (kHz)**
2402	GFSK	Radio 1, Integral	929.6
2402	Pi/4 DQPSK	Radio 1, Integral	1308
2402	8 DPSK	Radio 1, Integral	1309
2442	GFSK	Radio 1, Integral	927.5
2442	Pi/4 DQPSK	Radio 1, Integral	1337
2442	8 DPSK	Radio 1, Integral	1310
2480	GFSK	Radio 1, Integral	930.5
2480	Pi/4 DQPSK	Radio 1, Integral	1304
2480	8 DPSK	Radio 1, Integral	1309

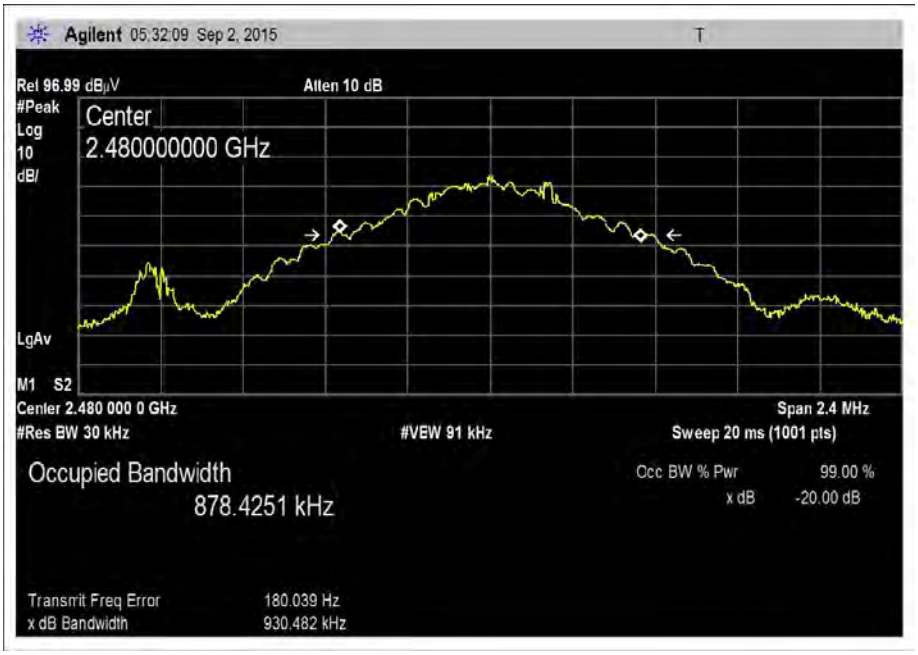
Plots



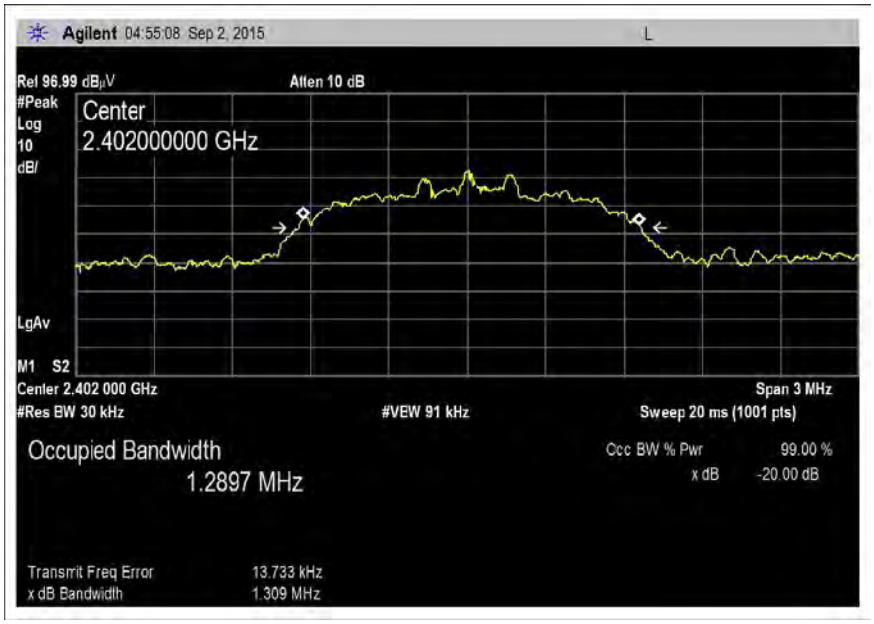
Low Channel, GFSK



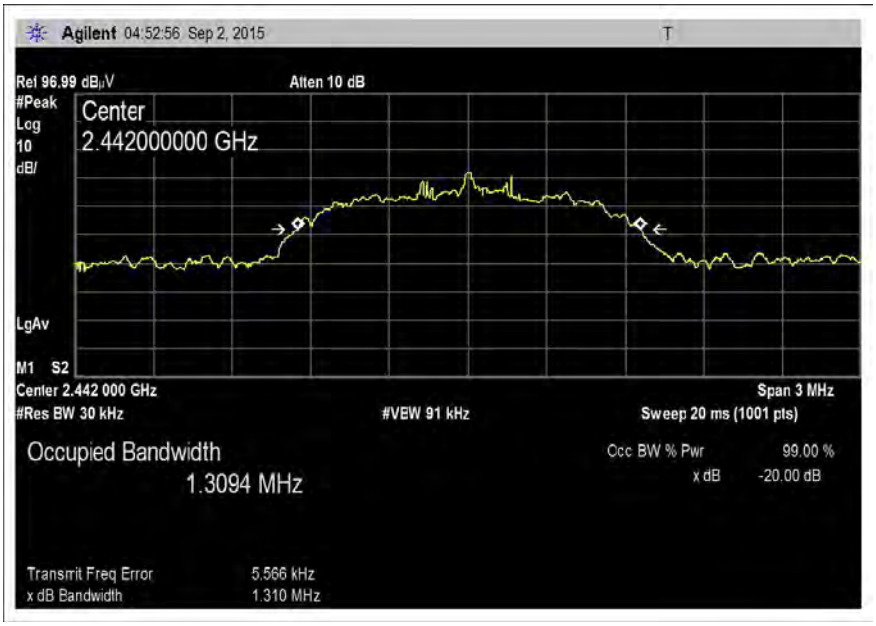
Middle Channel, GFSK



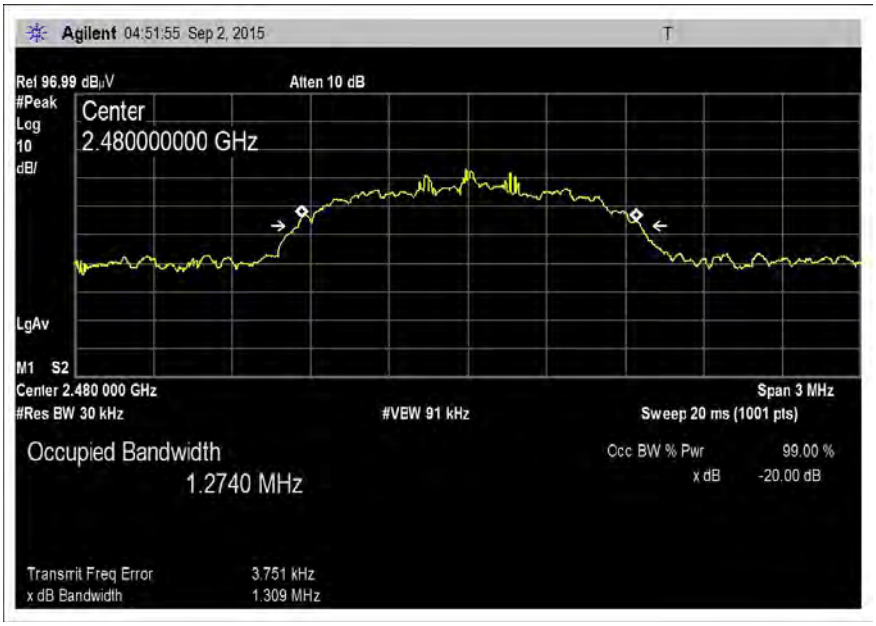
High Channel, GFSK



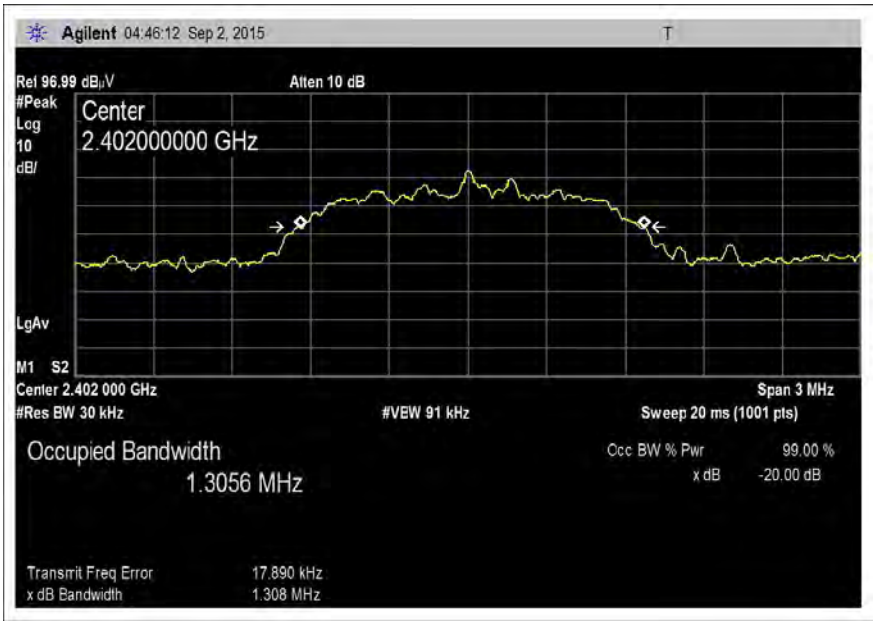
Low Channel, 8DPSK



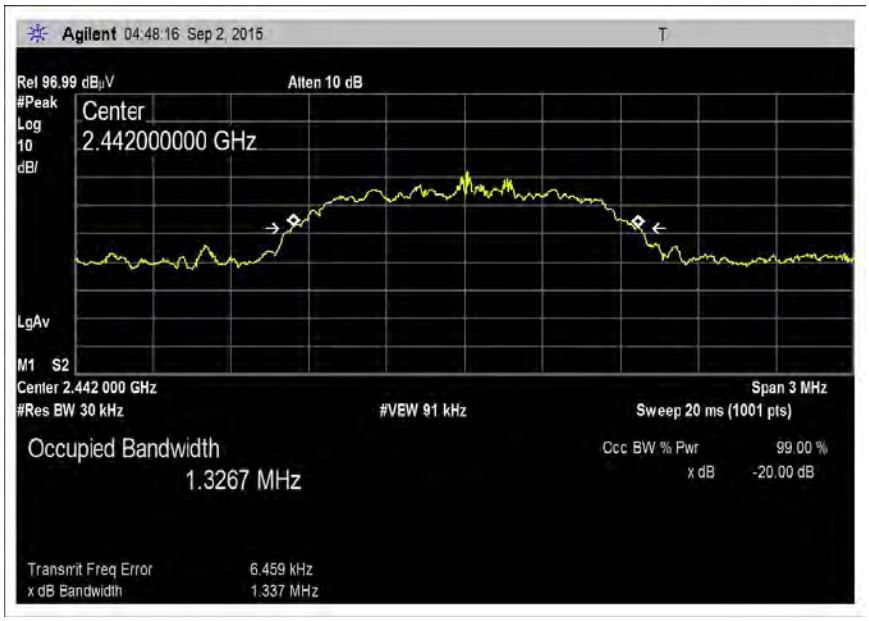
Middle Channel, 8DPSK



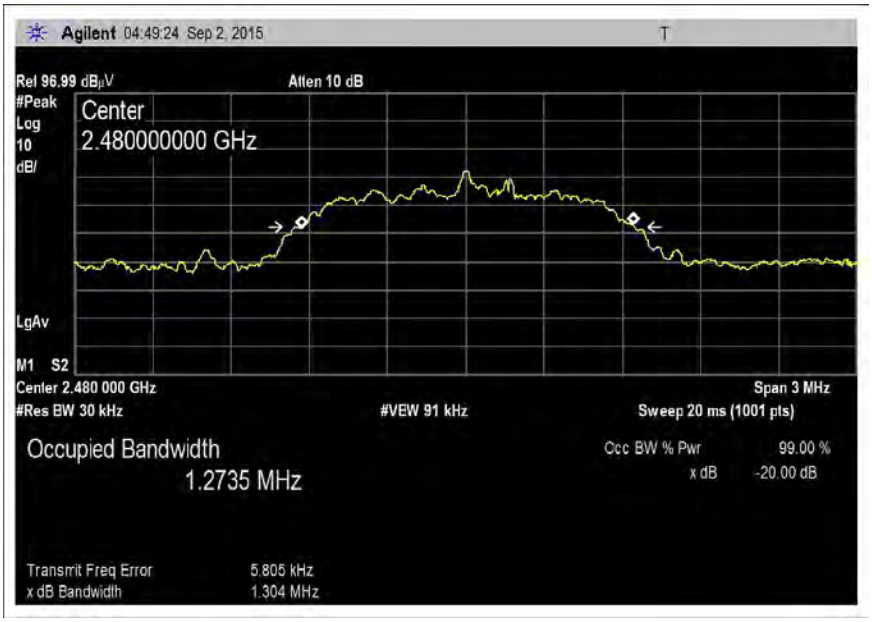
High Channel, 8DPSK



Low Channel, Pi4DQPSK



Middle Channel, Pi4DQPSK



High Channel, Pi4DQPSK

Test Setup Photo

1 -18GHz

15.249(a) Field Strength of Fundamental

Test Conditions / Setup

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	8/26/2015
Test Type:	**Maximized Emissions**	Time:	11:14:26
Tested By:	Randal Clark	Sequence#:	32
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

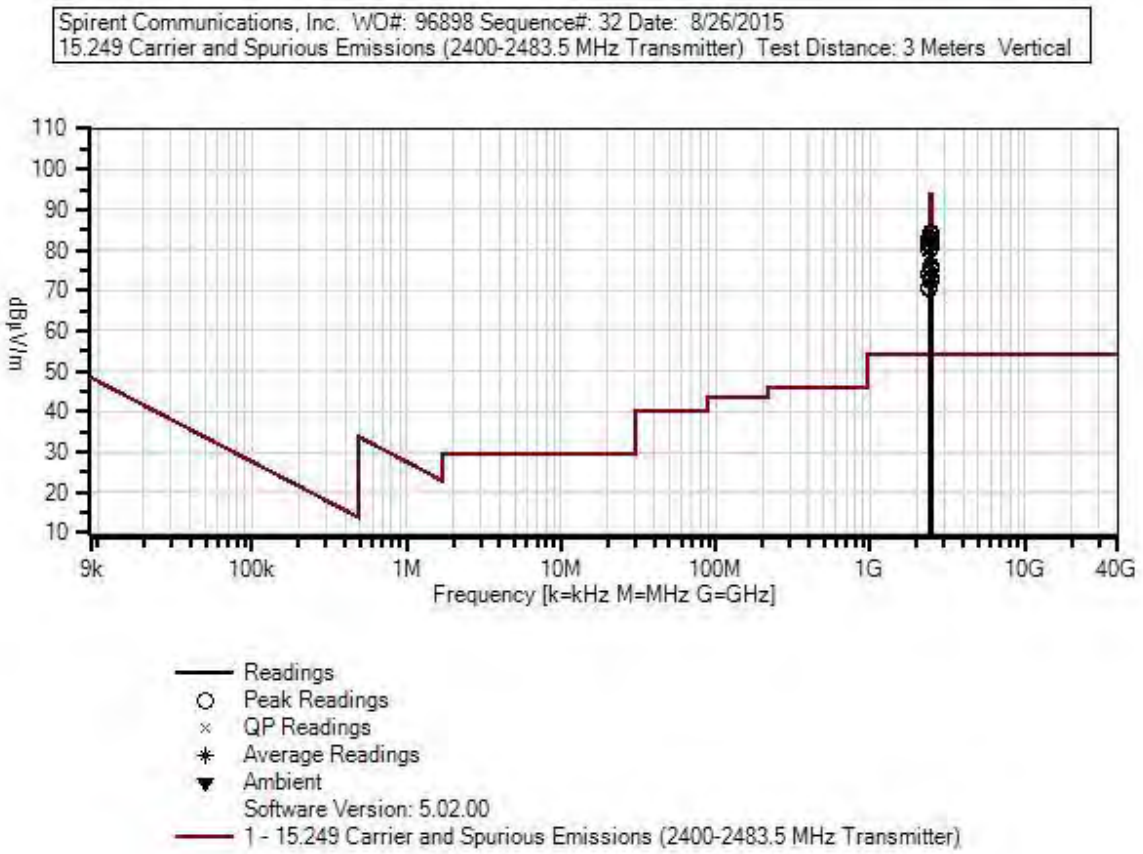
The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on a 1.5m table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on. Radio 1 transmitting continuously at TX power = 30 with modulation enabled.

Revision 1.2 board

Temperature: 24ºC
Relative Humidity: 40%
Atmospheric Pressure: 101.7 kPa

Frequency Range Investigated: Fundamental
Test Procedure: ANSI C63.10 (2013)


Spirent Communications, Inc. WO#: 96898 Sequence#: 32 Date: 8/26/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
110
100
90
80
70
60
50
40
30
20
10
dBµV/m
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	AN02870	Spectrum Analyzer	E4440A	1/6/2014	1/6/2016
T2	AN03209	Preamp	83051A	3/20/2015	3/20/2017
T3	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	9/16/2013	9/16/2015
T4	AN03227	Cable	32026-29080-29080-84	5/13/2014	5/13/2016
T5	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016
T6	ANP06540	Cable	Heliax	11/5/2013	11/5/2015

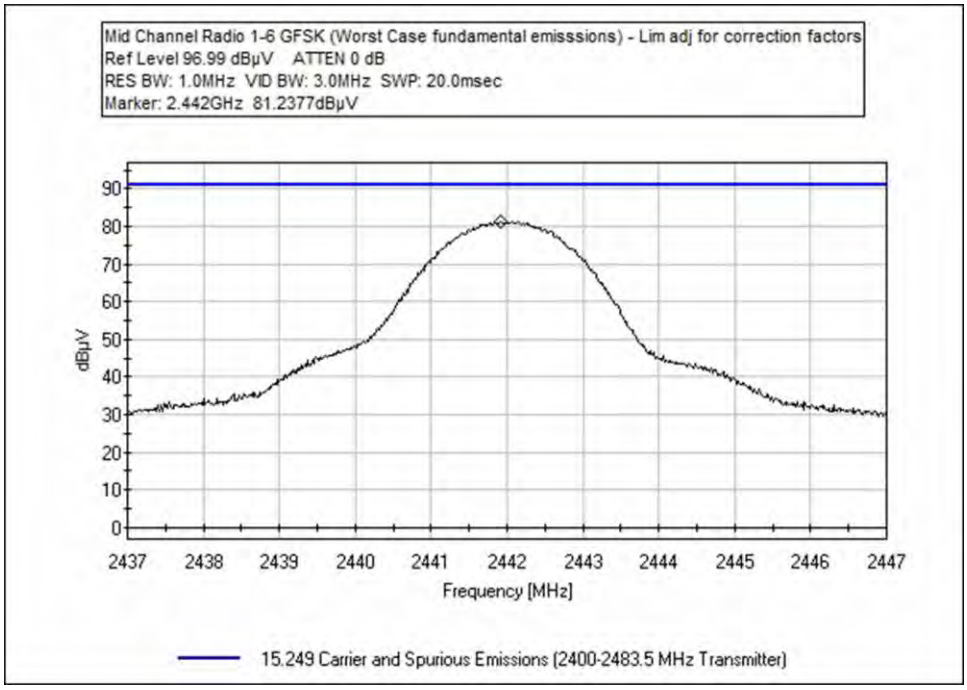
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	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	2441.850M	81.4	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 247	84.4	94.0 Mid Channel Radio 1 thru 6 GFSK	-9.6	Horiz 160
2	2479.950M	81.0	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 360	83.9	94.0 High Channel Radio 1 thru 6 GFSK	-10.1	Verti 150
3	2480.050M	80.9	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 95	83.8	94.0 High Channel Radio 1 thru 6 GFSK	-10.2	Horiz 167
4	2441.667M	80.1	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 359	83.1	94.0 Mid Channel Radio 1 thru 6 8DPSK	-10.9	Verti 145
5	2442.200M	80.0	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 360	83.0	94.0 Mid Channel Radio 1 thru 6 Pi/4DQPSK	-11.0	Horiz 141
6	2401.800M	80.0	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0	83.0	94.0 Low Channel Radio 1 thru 6 GFSK	-11.0	Horiz 153
7	2479.950M	80.0	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 317	82.9	94.0 High Channel Radio 1 thru 6 Pi/4DQPSK	-11.1	Horiz 145
8	2441.800M	79.8	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 316	82.8	94.0 Mid Channel Radio 1 thru 6 8DPSK	-11.2	Horiz 175
9	2479.933M	79.5	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 145	82.4	94.0 High Channel Radio 1 thru 6 8DPSK	-11.6	Horiz 143

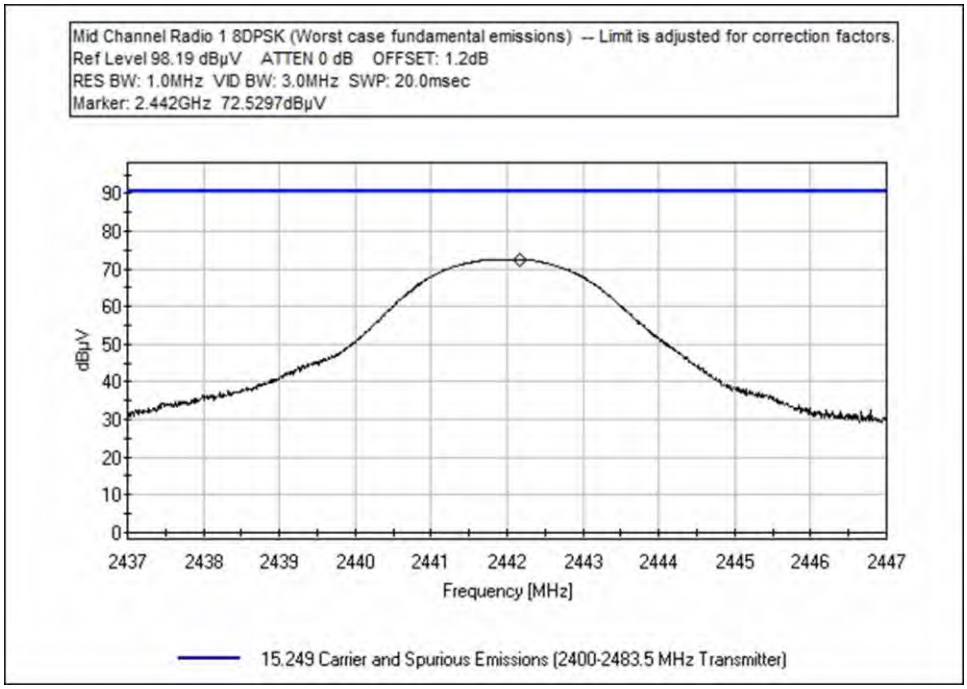
10	2401.983M	79.0	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 138	82.0	94.0	-12.0	Low Channel Radio 1 thru 6 8DPSK	Horiz 162
11	2480.000M	78.8	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 5	81.7	94.0	-12.3	High Channel Radio 1 thru 6 8DPSK	Verti 164
12	2402.117M	78.7	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0	81.7	94.0	-12.3	Low Channel Radio 1 thru 6 Pi/4DQPSK	Horiz 147
13	2441.800M	78.6	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 344	81.6	94.0	-12.4	Mid Channel Radio 1 thru 6 GFSK	Verti 128
14	2441.917M	78.5	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0	81.5	94.0	-12.5	Mid Channel Radio 1 thru 6 Pi/4DQPSK	Verti 151
15	2480.000M	77.7	+0.0 +2.7	-28.2 +0.5	+27.9	+0.0	+0.0 360	80.6	94.0	-13.4	High Channel Radio 1 thru 6 Pi/4DQPSK	Verti 129
16	2402.183M	77.1	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 1	80.1	94.0	-13.9	Low Channel Radio 1 thru 6 8DPSK	Verti 171
17	2401.933M	77.0	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 360	80.0	94.0	-14.0	Low Channel Radio 1 thru 6 GFSK	Verti 171
18	2402.050M	76.9	+0.0 +2.7	-28.2 +0.5	+28.0	+0.0	+0.0 360	79.9	94.0	-14.1	Low Channel Radio 1 thru 6 Pi/4DQPSK	Verti 139
19	2442.035M	72.5	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 171	76.4	94.0	-17.6	Mid Channel Radio 1 8DPSK	Horiz 132
20	2442.130M	72.0	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 168	75.9	94.0	-18.1	Mid Channel Radio 1 Pi/4DQPSK	Horiz 150
21	2480.020M	71.7	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 151	75.6	94.0	-18.4	High Channel Radio 1 8DPSK	Horiz 154
22	2479.840M	71.6	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 151	75.5	94.0	-18.5	High Channel Radio 1 Pi/4DQPSK	Horiz 160
23	2479.830M	71.6	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 152	75.5	94.0	-18.5	High Channel Radio 1 GFSK	Horiz 155
24	2441.820M	71.5	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 171	75.4	94.0	-18.6	Mid Channel Radio 1 GFSK	Horiz 135

25	2402.210M	70.3	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 172	74.2	94.0	-19.8	Horiz 139	Low Channel Radio 1 Pi/4DQPSK
26	2402.205M	70.1	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 171	74.0	94.0	-20.0	Horiz 138	Low Channel Radio 1 GFSK
27	2401.995M	69.8	+0.0 +2.7	-28.2 +0.0	+28.0	+0.0	+0.0 171	73.7	94.0	-20.3	Horiz 138	Low Channel Radio 1 8DPSK
28	2480.020M	69.6	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 172	73.5	94.0	-20.5	Verti 181	High Channel Radio 1 8DPSK
29	2479.825M	69.5	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 172	73.4	94.0	-20.6	Verti 179	High Channel Radio 1 GFSK
30	2479.865M	69.4	+0.0 +2.7	-28.2 +0.0	+27.9	+1.5	+0.0 175	73.3	94.0	-20.7	Verti 182	High Channel Radio 1 Pi/4DQPSK
31	2442.140M	68.8	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 176	72.7	94.0	-21.3	Verti 183	Mid Channel Radio 1 Pi/4DQPSK
32	2442.085M	68.7	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 174	72.6	94.0	-21.4	Verti 181	Mid Channel Radio 1 GFSK
33	2441.920M	68.6	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 176	72.5	94.0	-21.5	Verti 196	Mid Channel Radio 1 8DPSK
34	2401.995M	66.8	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 175	70.7	94.0	-23.3	Verti 196	Low Channel Radio 1 8DPSK
35	2402.200M	66.7	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 175	70.6	94.0	-23.4	Verti 196	Low Channel Radio 1 Pi/4DQPSK
36	2402.165M	66.4	+0.0 +2.7	-28.2 +0.0	+28.0	+1.4	+0.0 180	70.3	94.0	-23.7	Verti 196	Low Channel Radio 1 GFSK

Test Data



Middle Channel, GFSK



Middle Channel, 8DPSK

Test Equipment – Voltage Variations					
Asset #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
2872	Spectrum Analyzer	Agilent	E4440A	11/13/2013	11/13/2015
3209	Preamp	Agilent	83051A	3/20/2015	3/20/2017
3227	Cable	Astrolab	32026-29080-29080-84	5/13/2014	5/13/2016
P06540	Cable	Andrews	Heliax	11/5/2013	11/5/2015
1467	Horn Antenna	EMCO	3115	9/16/2013	9/16/2015
P06655	DC Power Supply	Maxtra	MA-305D	4/17/2014	4/17/2016
3514	Multimeter	Fluke	87	11/25/2014	11/25/2016

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation**	**$V_{Minimum}$ (dBuV/m @3m)**	**$V_{Nominal}$ (dBuV/m @3m)**	**$V_{Maximum}$ (dBuV/m @3m)**	**Max Deviation from $V_{Nominal}$ (dB)**
Single Transmitter					
2402	GFSK	74.0	74.0	73.9	0.1
2402	Pi/4 DQPSK	74.2	74.2	74.3	0.1
2402	8 DPSK	73.7	73.7	73.7	0
2442	GFSK	75.2	75.4	75.2	0.2
2442	Pi/4 DQPSK	75.8	75.9	75.8	0.1
2442	8 DPSK	76.6	76.4	76.4	0.2
2480	GFSK	75.6	75.5	75.5	0.1
2480	Pi/4 DQPSK	75.7	75.5	75.8	0.3
2480	8 DPSK	75.7	75.6	75.5	0.1
Multi-Transmitter					
2402	GFSK	79.7	80.0	80.0	0.3
2402	Pi/4 DQPSK	81.6	81.7	81.4	0.3
2402	8 DPSK	81.7	82.0	81.8	0.3
2442	GFSK	85.2	84.4	85.1	0.8
2442	Pi/4 DQPSK	82.9	83.0	83.0	0.1
2442	8 DPSK	83.4	83.1	83.3	0.3
2480	GFSK	84.6	83.9	84.5	0.7
2480	Pi/4 DQPSK	82.9	82.9	83.2	0.3
2480	8 DPSK	81.6	82.4	81.7	0.8

Measurements performed at input voltage Vnominal ± 15%.

$V_{Nominal}$:	12 VDC
$V_{Minimum}$:	10.2
$V_{Maximum}$:	13.8

Test Setup Photo

1 -18GHz

15.249(a)&(d) Radiated Spurious Emissions / Band Edge

Test Conditions / Setup / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	8/28/2015
Test Type:	**Maximized Emissions**	Time:	11:30:02
Tested By:	Michael Atkinson	Sequence#:	47
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

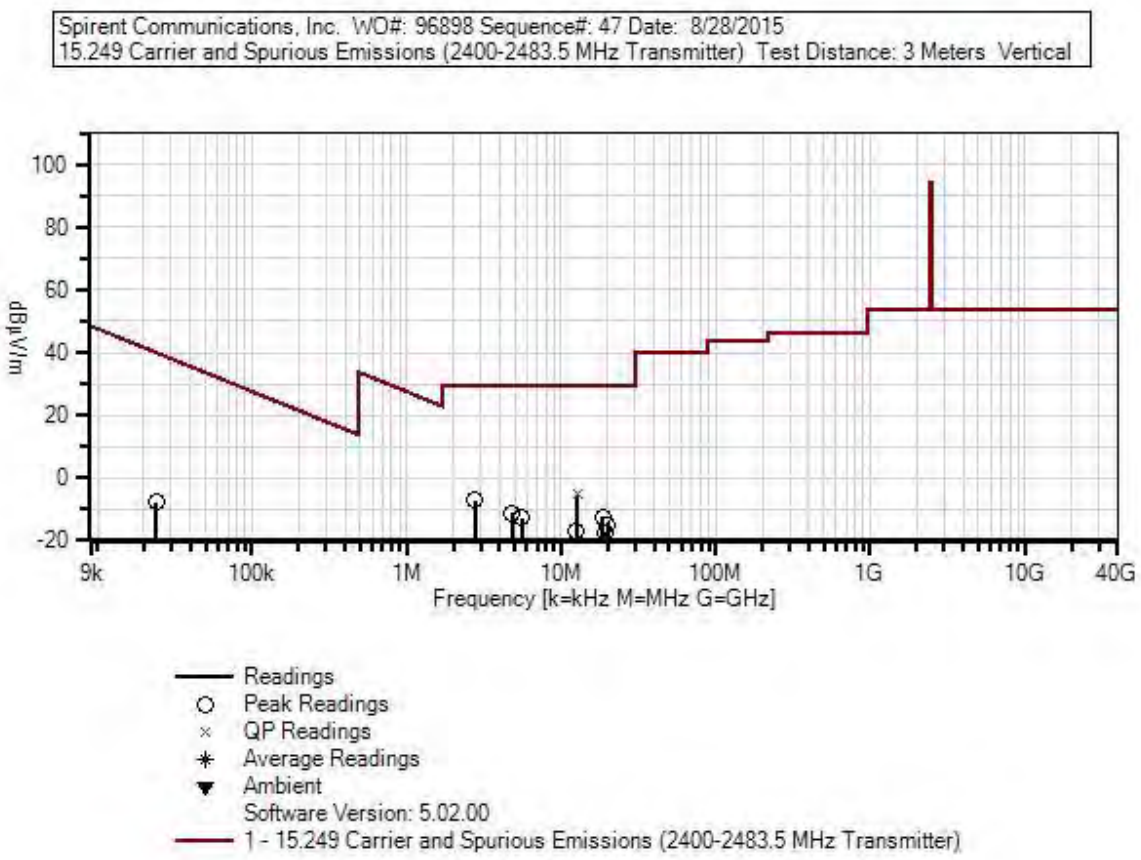
The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on an 80cm table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on. Radio 1 transmitting continuously at TX power = 30 with modulation enabled.
Investigated Radio 1-6 transmitting.

Revision 1.2 board

Temperature: 24ºC
Relative Humidity: 36%
Atmospheric Pressure: 102.1kPa

Frequency Range Investigated: 9kHz - 30MHz
Test Procedure: ANSI C63.10 (2013)
No emissions observed within 20dB of the limit.


Spirent Communications, Inc. WO#: 96898 Sequence#: 47 Date: 8/28/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
100
80
60
40
20
0
-20
dBµV/m
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	AN00052	Loop Antenna	6502	5/20/2014	5/20/2016
T2	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016
T3	ANP06540	Cable	Heliax	11/5/2013	11/5/2015
	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	12.702M QP	26.1	+8.7	+0.1	+0.0		-40.0	-5.1	29.5	-34.6	Vert 99
2	12.702M QP	26.1	+8.7	+0.1	+0.0		-40.0 359	-5.1	29.5	-34.6	Vert 99
^	12.700M	28.2	+8.7	+0.1	+0.0		-40.0	-3.0	29.5	-32.5	Vert 99
4	2.784M	23.4	+9.5	+0.1	+0.0		-40.0	-7.0	29.5	-36.5	Vert 99
5	4.790M	19.3	+9.5	+0.1	+0.0		-40.0	-11.1	29.5	-40.6	Vert 99
6	303.000k	47.1	+9.5	+0.0	+0.0		-80.0 4	-23.4	18.0	-41.4	Vert 99
7	18.600M	19.4	+7.9	+0.2	+0.0		-40.0	-12.5	29.5	-42.0	Vert 99
8	5.525M	17.8	+9.5	+0.1	+0.0		-40.0 358	-12.6	29.5	-42.1	Vert 99
9	20.100M	17.4	+7.6	+0.2	+0.0		-40.0	-14.8	29.5	-44.3	Vert 99
10	12.600M	14.1	+8.7	+0.1	+0.0		-40.0 360	-17.1	29.5	-46.6	Vert 99
11	19.475M	14.5	+7.8	+0.2	+0.0		-40.0 360	-17.5	29.5	-47.0	Vert 99
12	24.000k	59.8	+12.5	+0.0	+0.0		-80.0 68	-7.7	40.0	-47.7	Vert 99

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	8/24/2015
Test Type:	**Maximized Emissions**	Time:	15:35:17
Tested By:	Michael Atkinson	Sequence#:	34
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

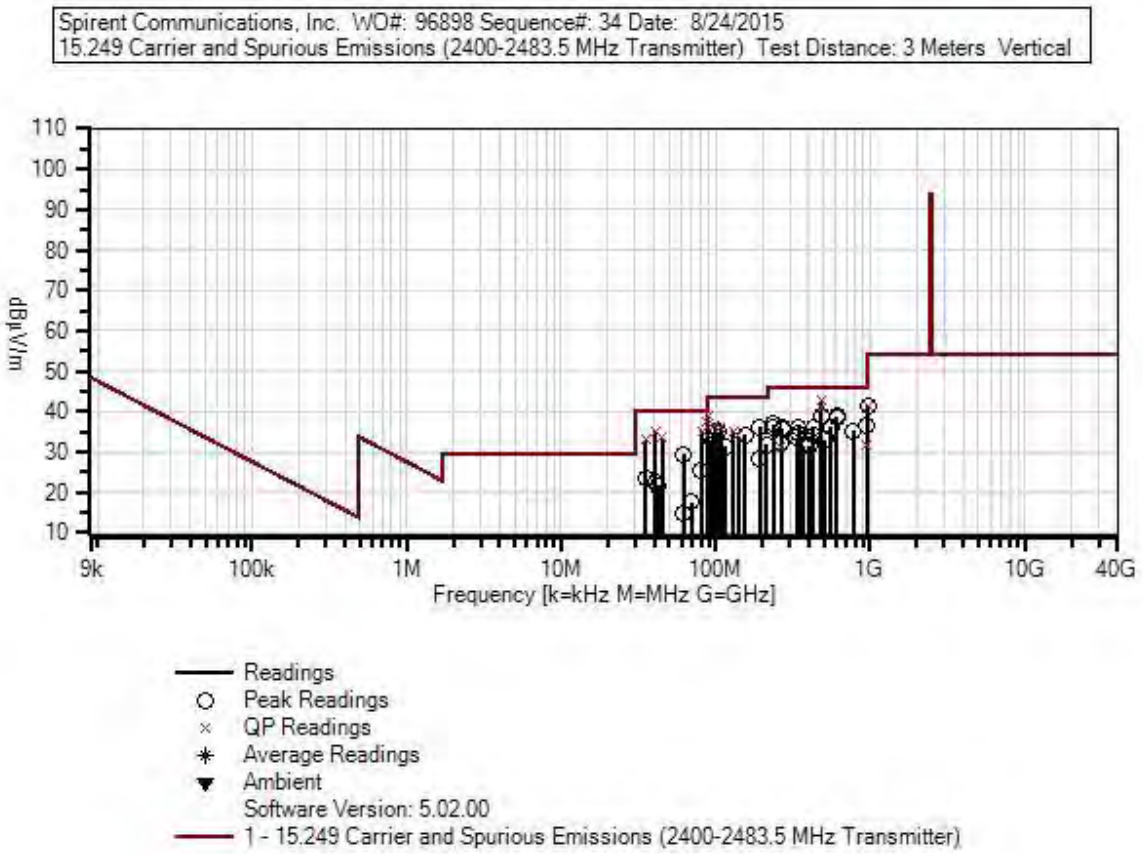
The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on an 80cm table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on. Radio 1 transmitting continuously at TX power = 30 with modulation enabled.
Investigated Radio 1-6 transmitting continuously at TX power = 30.

Revision 1.2 board

Temperature: 24ºC
Relative Humidity: 36%
Atmospheric Pressure: 102.1kPa

Frequency Range Investigated: 30-1000MHz
Test Procedure: ANSI C63.10 (2013)


Spirent Communications, Inc. WO#: 96898 Sequence#: 34 Date: 8/24/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
dBµV/m
110
100
90
80
70
60
50
40
30
20
10
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	AN02307	Preamp	8447D	3/14/2014	3/14/2016
T2	AN01996	Biconilog Antenna	CBL6111C	7/16/2014	7/16/2016
T3	AN03227	Cable	32026-29080-29080-84	5/13/2014	5/13/2016
T4	ANP05360	Cable	RG214	12/1/2014	12/1/2016
T5	ANP05963	Cable	RG-214	2/21/2014	2/21/2016
T6	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015

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	87.931M	55.1	-27.8	+8.8	+0.4	+0.5	+0.0	37.4	40.0	-2.6	Vert
	QP		+0.4	+0.0			15				99
^	87.931M	52.8	-27.8	+8.8	+0.4	+0.5	+0.0	35.1	40.0	-4.9	Vert
			+0.4	+0.0			360				175
3	479.941M	49.7	-28.0	+17.9	+0.6	+1.4	+0.0	42.7	46.0	-3.3	Vert
	QP		+1.1	+0.0			351				100
^	479.940M	57.0	-28.0	+17.9	+0.6	+1.4	+0.0	50.0	46.0	+4.0	Vert
			+1.1	+0.0			77				200
5	89.675M	56.5	-27.8	+9.1	+0.4	+0.5	+0.0	39.1	43.5	-4.4	Vert
	QP		+0.4	+0.0			355				99
^	89.675M	60.2	-27.8	+9.1	+0.4	+0.5	+0.0	42.8	43.5	-0.7	Vert
			+0.4	+0.0			227				99
7	40.859M	48.9	-28.0	+13.5	+0.3	+0.3	+0.0	35.3	40.0	-4.7	Vert
	QP		+0.3	+0.0							101
^	40.836M	53.1	-28.0	+13.5	+0.3	+0.3	+0.0	39.5	40.0	-0.5	Vert
			+0.3	+0.0			359				99
9	81.094M	54.0	-27.9	+7.9	+0.3	+0.5	+0.0	35.2	40.0	-4.8	Vert
	QP		+0.4	+0.0							99
^	81.090M	56.8	-27.9	+7.9	+0.3	+0.5	+0.0	38.0	40.0	-2.0	Vert
			+0.4	+0.0							99
11	479.971M	47.9	-28.0	+17.9	+0.6	+1.4	+0.0	40.9	46.0	-5.1	Horiz
	QP		+1.1	+0.0			122				159
^	479.971M	65.7	-28.0	+17.9	+0.6	+1.4	+0.0	58.7	46.0	+12.7	Horiz
			+1.1	+0.0			267				150
13	45.129M	49.4	-28.0	+11.2	+0.3	+0.3	+0.0	33.5	40.0	-6.5	Vert
	QP		+0.3	+0.0							99
^	45.129M	53.5	-28.0	+11.2	+0.3	+0.3	+0.0	37.6	40.0	-2.4	Vert
			+0.3	+0.0			359				99
15	98.316M	53.2	-27.8	+9.9	+0.4	+0.6	+0.0	36.7	43.5	-6.8	Vert
	QP		+0.4	+0.0			55				99
^	98.361M	54.8	-27.8	+9.9	+0.4	+0.6	+0.0	38.3	43.5	-5.2	Vert
			+0.4	+0.0							99

17	479.656M	46.1	-28.0	+17.9	+0.6	+1.4	+0.0	39.1	46.0	-6.9	Vert
			+1.1	+0.0			19				99
18	35.418M	43.7	-28.0	+16.5	+0.3	+0.3	+0.0	33.1	40.0	-6.9	Vert
	QP		+0.3	+0.0			359				99
^	35.418M	47.8	-28.0	+16.5	+0.3	+0.3	+0.0	37.2	40.0	-2.8	Vert
			+0.3	+0.0			359				99
20	602.300M	43.3	-28.3	+20.3	+0.7	+1.6	+0.0	38.8	46.0	-7.2	Horiz
			+1.2	+0.0			198				144
21	191.950M	52.3	-27.4	+9.3	+0.5	+0.8	+0.0	36.1	43.5	-7.4	Vert
			+0.6	+0.0			360				175
22	107.715M	51.6	-27.8	+10.8	+0.4	+0.6	+0.0	36.1	43.5	-7.4	Vert
	QP		+0.5	+0.0			335				99
^	107.754M	53.2	-27.8	+10.8	+0.4	+0.6	+0.0	37.7	43.5	-5.8	Vert
			+0.5	+0.0							99
24	602.296M	43.0	-28.3	+20.3	+0.7	+1.6	+0.0	38.5	46.0	-7.5	Vert
			+1.2	+0.0			255				200
25	130.277M	49.6	-27.7	+11.9	+0.4	+0.6	+0.0	35.3	43.5	-8.2	Vert
	QP		+0.5	+0.0			360				99
^	130.277M	53.4	-27.7	+11.9	+0.4	+0.6	+0.0	39.1	43.5	-4.4	Vert
			+0.5	+0.0							99
27	98.260M	51.5	-27.8	+9.9	+0.4	+0.6	+0.0	35.0	43.5	-8.5	Horiz
			+0.4	+0.0			3				201
28	103.714M	51.0	-27.8	+10.4	+0.4	+0.6	+0.0	35.0	43.5	-8.5	Vert
			+0.4	+0.0							99
29	236.180M	50.1	-27.2	+11.8	+0.5	+0.9	+0.0	36.8	46.0	-9.2	Horiz
			+0.7	+0.0			183				124
30	154.618M	48.8	-27.5	+11.2	+0.4	+0.7	+0.0	34.2	43.5	-9.3	Vert
			+0.6	+0.0							99
31	140.380M	48.3	-27.6	+11.8	+0.4	+0.7	+0.0	34.1	43.5	-9.4	Horiz
	QP		+0.5	+0.0			39				259
^	140.380M	52.2	-27.6	+11.8	+0.4	+0.7	+0.0	38.0	43.5	-5.5	Horiz
			+0.5	+0.0			77				201
33	946.300M	35.6	-27.3	+23.8	+0.9	+2.1	+0.0	36.6	46.0	-9.4	Horiz
			+1.5	+0.0			359				144
34	430.016M	44.1	-27.8	+17.1	+0.6	+1.3	+0.0	36.3	46.0	-9.7	Vert
			+1.0	+0.0			359				150
35	554.992M	41.6	-28.3	+19.4	+0.7	+1.5	+0.0	36.1	46.0	-9.9	Vert
			+1.2	+0.0			169				200
36	344.070M	45.7	-27.2	+15.0	+0.6	+1.1	+0.0	36.1	46.0	-9.9	Horiz
			+0.9	+0.0			359				124
37	235.210M	49.3	-27.2	+11.8	+0.5	+0.9	+0.0	36.0	46.0	-10.0	Vert
			+0.7	+0.0			360				175
38	270.440M	47.7	-27.1	+13.1	+0.5	+1.0	+0.0	35.9	46.0	-10.1	Horiz
			+0.7	+0.0			80				124

39	267.790M	47.4	-27.1 +0.7	+13.1 +0.0	+0.5	+1.0	+0.0	35.6	46.0	-10.4	Horiz 103
40	61.542M	49.8	-27.9 +0.3	+6.6 +0.0	+0.3	+0.4	+0.0 359	29.5	40.0	-10.5	Vert 99
41	94.020M	49.8	-27.8 +0.4	+9.5 +0.0	+0.4	+0.6	+0.0	32.9	43.5	-10.6	Horiz 201
42	774.000M	36.8	-27.7 +1.4	+22.1 +0.0	+0.8	+1.8	+0.0 343	35.2	46.0	-10.8	Horiz 144
43	344.070M	44.1	-27.2 +0.9	+15.0 +0.0	+0.6	+1.1	+0.0 360	34.5	46.0	-11.5	Vert 175
44	214.310M	46.7	-27.2 +0.6	+10.4 +0.0	+0.5	+0.9	+0.0 360	31.9	43.5	-11.6	Vert 175
45	430.000M	42.1	-27.8 +1.0	+17.1 +0.0	+0.6	+1.3	+0.0 261	34.3	46.0	-11.7	Horiz 144
46	116.339M	46.2	-27.7 +0.5	+11.4 +0.0	+0.4	+0.6	+0.0	31.4	43.5	-12.1	Vert 99
47	331.920M	43.4	-27.1 +0.9	+14.7 +0.0	+0.6	+1.1	+0.0 360	33.6	46.0	-12.4	Vert 175
48	960.001M QP	40.2	-27.3 +1.6	+23.9 +0.0	+0.9	+2.1	+0.0 229	41.4	54.0	-12.6	Horiz 130
^	960.001M	50.7	-27.3 +1.6	+23.9 +0.0	+0.9	+2.1	+0.0 142	51.9	54.0	-2.1	Horiz 152
50	960.288M	40.1	-27.3 +1.6	+23.9 +0.0	+0.9	+2.1	+0.0 360	41.3	54.0	-12.7	Vert 200
51	510.024M	39.6	-28.1 +1.1	+18.4 +0.0	+0.7	+1.4	+0.0 137	33.1	46.0	-12.9	Vert 200
52	265.100M	44.3	-27.1 +0.7	+13.0 +0.0	+0.5	+1.0	+0.0 360	32.4	46.0	-13.6	Vert 175
53	945.035M QP	30.8	-27.3 +1.5	+23.8 +0.0	+0.9	+2.1	+0.0 360	31.8	46.0	-14.2	Vert 150
^	945.104M	44.3	-27.3 +1.5	+23.8 +0.0	+0.9	+2.1	+0.0 327	45.3	46.0	-0.7	Vert 200
55	368.620M	40.5	-27.4 +0.9	+15.7 +0.0	+0.6	+1.2	+0.0 360	31.5	46.0	-14.5	Vert 175
56	404.820M	39.7	-27.6 +1.0	+16.6 +0.0	+0.6	+1.2	+0.0 360	31.5	46.0	-14.5	Vert 175

57	80.990M	44.3	-27.9 +0.4	+7.8 +0.0	+0.3	+0.5	+0.0	25.4	40.0	-14.6	Horiz 201
58	266.310M QP	43.0	-27.1 +0.7	+13.0 +0.0	+0.5	+1.0	+0.0	31.1	46.0	-14.9	Horiz 103
^	266.310M	51.7	-27.1 +0.7	+13.0 +0.0	+0.5	+1.0	+0.0 351	39.8	46.0	-6.2	Horiz 124
60	192.930M	44.7	-27.4 +0.6	+9.3 +0.0	+0.5	+0.8	+0.0 274	28.5	43.5	-15.0	Horiz 124
61	35.250M	34.2	-28.0 +0.3	+16.6 +0.0	+0.3	+0.3	+0.0 30	23.7	40.0	-16.3	Horiz 200
62	40.878M	36.1	-28.0 +0.3	+13.5 +0.0	+0.3	+0.3	+0.0 -8	22.5	40.0	-17.5	Horiz 200
63	42.474M	36.1	-28.0 +0.3	+12.6 +0.0	+0.3	+0.3	+0.0 -8	21.6	40.0	-18.4	Horiz 200
64	69.144M	37.8	-27.8 +0.4	+6.4 +0.0	+0.3	+0.4	+0.0 -8	17.5	40.0	-22.5	Horiz 200
65	61.752M	35.3	-27.9 +0.3	+6.6 +0.0	+0.3	+0.4	+0.0 -8	15.0	40.0	-25.0	Horiz 200

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	8/28/2015
Test Type:	**Maximized Emissions**	Time:	14:42:27
Tested By:	Michael Atkinson	Sequence#:	33
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

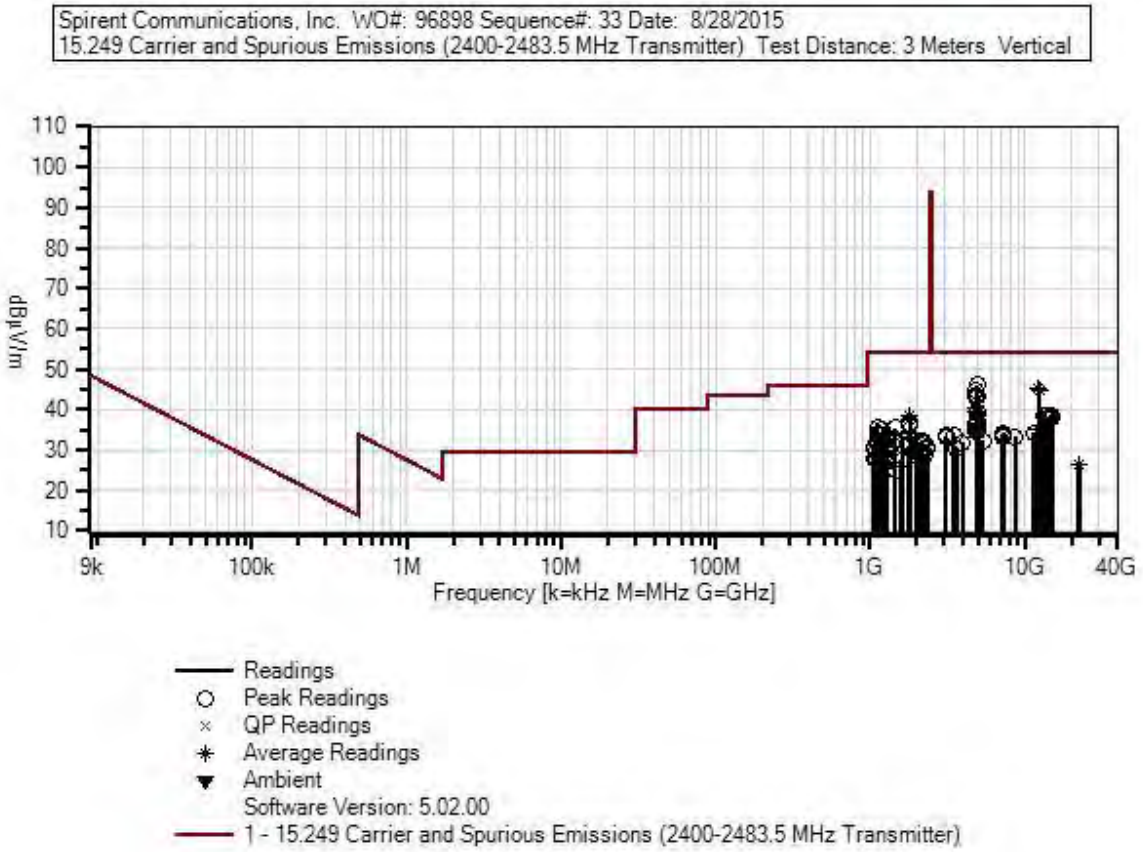
The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on a 1.5m table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on. Radio 1 transmitting continuously at TX power = 30 with modulation enabled.
Investigated Radio 1-6 transmitting continuously at TX power = 30, as well as intermodulation effects between 2 radios near the same frequency.

Revision 1.2 board

Temperature: 24ºC
Relative Humidity: 40%
Atmospheric Pressure: 101.7 kPa

Frequency Range Investigated: 1-26 GHz
Test Procedure: ANSI C63.10 (2013)


Spirent Communications, Inc. WO#: 96898 Sequence#: 33 Date: 8/28/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
110
100
90
80
70
60
50
40
30
20
10
dBµV/m
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015
T2	AN03227	Cable	32026-29080-29080-84	5/13/2014	5/13/2016
T3	AN03209	Preamp	83051A	3/20/2015	3/20/2017
T4	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	9/16/2013	9/16/2015
T5	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016
T6	AN03122	Cable	32026-2-29801-36	5/13/2014	5/13/2016
T7	AN02763-69	Waveguide	Multiple	5/21/2014	5/21/2016
T8	ANP06678	Cable	32026-29801-29801-144	9/18/2014	9/18/2016
T9	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	1/14/2015	1/14/2017

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

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4879.818M	41.7	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0	46.1	54.0 M (rad 1-6)	-7.9	Vert 150
2	12210.000 M Ave	23.7	+0.0 +7.0 +0.0	+3.8 +0.0	-27.6 +0.0	+38.3 +0.0	+0.0	45.2	54.0 Mid Ambient	-8.8	Horiz 170
^	12210.000 M	27.8	+0.0 +7.0 +0.0	+3.8 +0.0	-27.6 +0.0	+38.3 +0.0	+0.0 374	49.3	54.0 Mid Ambient	-4.7	Horiz 170
4	12210.000 M Ave	23.7	+0.0 +7.0 +0.0	+3.8 +0.0	-27.6 +0.0	+38.3 +0.0	+0.0 250	45.2	54.0 Mid Ambient	-8.8	Vert 155
^	12210.000 M	19.1	+0.0 +7.0 +0.0	+3.8 +0.0	-27.6 +0.0	+38.3 +0.0	+0.0	40.6	54.0 Mid Ambient	-13.4	Vert 155
6	12400.000 M Ave	23.6	+0.0 +7.1 +0.0	+3.8 +0.0	-27.8 +0.0	+38.3 +0.0	+0.0 261	45.0	54.0 High Ambient	-9.0	Horiz 151
^	12400.000 M	27.6	+0.0 +7.1 +0.0	+3.8 +0.0	-27.8 +0.0	+38.3 +0.0	+0.0 359	49.0	54.0 High Ambient	-5.0	Horiz 134
8	12400.000 M Ave	23.6	+0.0 +7.1 +0.0	+3.8 +0.0	-27.8 +0.0	+38.3 +0.0	+0.0 42	45.0	54.0 High Ambient	-9.0	Vert 150
^	12400.000 M	28.7	+0.0 +7.1 +0.0	+3.8 +0.0	-27.8 +0.0	+38.3 +0.0	+0.0 265	50.1	54.0 High Ambient	-3.9	Vert 150

10	4804.182M	40.4	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0	44.6	54.0 L (rad 1-6)	-9.4	Vert 150
11	4959.748M	39.1	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 360	43.5	54.0 H rad (1-6)	-10.5	Vert 148
12	4803.790M	39.0	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0 360	43.2	54.0 L (rad 1-6)	-10.8	Horiz 155
13	4804.010M Ave	31.5	+0.0 +3.8 +0.0	+2.2 +0.0	-29.2 +0.0	+32.1 +0.0	+0.0 360	40.4	54.0 Low	-13.6	Vert 179
^	4804.000M	34.2	+0.0 +3.8 +0.0	+2.2 +0.0	-29.2 +0.0	+32.1 +0.0	+0.0 275	43.1	54.0 Low	-10.9	Vert 129
15	4804.000M Ave	30.6	+0.0 +3.8 +0.0	+2.2 +0.0	-29.2 +0.0	+32.1 +0.0	+0.0 120	39.5	54.0 Low	-14.5	Horiz 152
^	4803.990M	33.4	+0.0 +3.8 +0.0	+2.2 +0.0	-29.2 +0.0	+32.1 +0.0	+0.0 128	42.3	54.0 Low	-11.7	Horiz 184
17	4883.820M	30.0	+0.0 +3.9 +0.0	+2.3 +0.0	-29.2 +0.0	+32.3 +0.0	+0.0 300	39.3	54.0 Mid	-14.7	Horiz 194
18	4883.980M Ave	29.9	+0.0 +3.9 +0.0	+2.3 +0.0	-29.2 +0.0	+32.3 +0.0	+0.0 59	39.2	54.0 Mid	-14.8	Vert 169
^	4883.980M	32.3	+0.0 +3.9 +0.0	+2.3 +0.0	-29.2 +0.0	+32.3 +0.0	+0.0 288	41.6	54.0 Mid	-12.4	Vert 178
20	14776.000 M	30.9	+0.0 +0.0 +0.0	+0.0 +1.9	+0.0 +0.0	+0.0 +5.9	+0.0	38.7	54.0 H (rad 1-6)	-15.3	Vert 147
21	4960.000M Ave	29.0	+0.0 +4.0 +0.0	+2.2 +0.0	-29.2 +0.0	+32.5 +0.0	+0.0 57	38.5	54.0 High	-15.5	Vert 154
^	4960.000M	30.4	+0.0 +4.0 +0.0	+2.2 +0.0	-29.2 +0.0	+32.5 +0.0	+0.0 360	39.9	54.0 High	-14.1	Vert 155
^	4960.093M	31.7	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 360	36.1	54.0 imod H	-17.9	Vert 175
24	13256.000 M	31.1	+0.0 +0.0 +0.0	+0.0 +1.8	+0.0 +0.0	+0.0 +5.6	+0.0	38.5	54.0 L (rad 1-6)	-15.5	Horiz 139
25	13616.000 M	30.9	+0.0 +0.0 +0.0	+0.0 +1.9	+0.0 +0.0	+0.0 +5.7	+0.0	38.5	54.0 M (rad 1-6)	-15.5	Vert 136
26	1799.954M Ave	36.7	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0	38.4	54.0 Low	-15.6	Vert 167

27	1800.000M Ave	36.6	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 359	38.3	54.0 High	-15.7	Vert 173
28	13928.000 M	30.6	+0.0 +0.0 +0.0	+0.0 +1.8	+0.0 +0.0	+0.0 +5.7	+0.0 54	38.1	54.0 M (rad 1-6)	-15.9	Horiz 153
29	15072.000 M	30.1	+0.0 +0.0 +0.0	+0.0 +1.9	+0.0 +0.0	+0.0 +6.0	+0.0	38.0	54.0 L (rad 1-6)	-16.0	Horiz 139
30	14440.000 M	30.2	+0.0 +0.0 +0.0	+0.0 +1.9	+0.0 +0.0	+0.0 +5.8	+0.0 359	37.9	54.0 H (rad 1-6)	-16.1	Horiz 147
31	1799.962M Ave	35.6	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0	37.3	54.0 Mid	-16.7	Vert 143
^	1800.000M	35.9	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 360	37.6	54.0 High	-16.4	Vert 137
33	4955.879M	32.8	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 360	37.2	54.0 imod H	-16.8	Vert 175
34	4883.540M	32.7	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 283	37.1	54.0 imod M	-16.9	Vert 188
35	4884.163M	32.3	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 219	36.7	54.0 imod M	-17.3	Horiz 153
36	4807.630M	32.5	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0 189	36.7	54.0 imod L	-17.3	Horiz 141
37	1799.700M	35.0	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 27	36.7	54.0 Mid	-17.3	Vert 178
38	4807.820M	32.3	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0 193	36.5	54.0 imod L	-17.5	Vert 141
39	1800.500M	34.6	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0	36.3	54.0 Low	-17.7	Vert 186
40	4804.230M	31.8	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0 111	36.0	54.0 imod L	-18.0	Horiz 141
41	4883.966M Ave	26.3	+0.0 +3.9 +0.0	+2.3 +0.0	-29.2 +0.0	+32.3 +0.0	+0.0 78	35.6	54.0 Mid	-18.4	Horiz 199
42	4883.966M Ave	26.3	+0.0 +3.9 +0.0	+2.3 +0.0	-29.2 +0.0	+32.3 +0.0	+0.0 78	35.6	54.0 Mid	-18.4	Horiz 242
^	4883.902M	39.6	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0	44.0	54.0 M (rad 1-6)	-10.0	Horiz 129

44	1109.800M	37.2	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	35.5	54.0 Low	-18.5	Vert 186
45	1439.400M	33.1	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.7	+0.0 91	35.4	54.0 L (rad 1-6)	-18.6	Horiz 159
46	4960.000M Ave	25.9	+0.0 +4.0 +0.0	+2.2 +0.0	-29.2 +0.0	+32.5 +0.0	+0.0 7	35.4	54.0 High	-18.6	Horiz 286
^	4960.000M	37.9	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0	42.3	54.0 H (rad 1-6)	-11.7	Horiz 129
^	4960.000M	27.7	+0.0 +4.0 +0.0	+2.2 +0.0	-29.2 +0.0	+32.5 +0.0	+0.0 359	37.2	54.0 High	-16.8	Horiz 133
49	12010.000 M Ave	13.8	+0.0 +6.8 +0.0	+3.8 +0.0	-27.4 +0.0	+38.3 +0.0	+0.0 209	35.3	54.0 Low (ambient)	-18.7	Horiz 155
^	12010.000 M	19.1	+0.0 +6.8 +0.0	+3.8 +0.0	-27.4 +0.0	+38.3 +0.0	+0.0 31	40.6	54.0 Low (ambient)	-13.4	Horiz 158
51	12010.000 M Ave	13.8	+0.0 +6.8 +0.0	+3.8 +0.0	-27.4 +0.0	+38.3 +0.0	+0.0 267	35.3	54.0 Low (ambient)	-18.7	Vert 138
^	12009.960 M	17.9	+0.0 +6.8 +0.0	+3.8 +0.0	-27.4 +0.0	+38.3 +0.0	+0.0 91	39.4	54.0 Low (ambient)	-14.6	Vert 138
53	4955.872M	30.8	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 284	35.2	54.0 imod H	-18.8	Horiz 135
54	4880.138M	30.6	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 174	35.0	54.0 imod M	-19.0	Vert 188
55	1200.500M	36.4	+0.0 +1.9 +0.0	+1.1 +0.0	-28.8 +0.0	+24.4 +0.0	+0.0	35.0	54.0 Low	-19.0	Vert 186
56	4880.089M	30.3	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 116	34.7	54.0 imod M	-19.3	Horiz 153
57	4804.257M	30.4	+0.0 +0.0 +0.0	+0.0 +1.0	+0.0 +0.0	+0.0 +3.2	+0.0 341	34.6	54.0 imod L	-19.4	Vert 141
58	4959.771M	30.0	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.3	+0.0 190	34.4	54.0 imod H	-19.6	Horiz 135
59	7238.000M	29.0	+0.0 +0.0 +0.0	+0.0 +1.3	+0.0 +0.0	+0.0 +4.0	+0.0	34.3	54.0 H (rad 1-6)	-19.7	Horiz 147
60	7290.000M	29.0	+0.0 +0.0 +0.0	+0.0 +1.3	+0.0 +0.0	+0.0 +4.0	+0.0 360	34.3	54.0 M (rad 1-6)	-19.7	Vert 136

61	1109.900M	35.9	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0 342	34.2	54.0 High	-19.8	Vert 137
62	11392.000 M	27.4	+0.0 +0.0 +0.0	+0.0 +1.7	+0.0 +0.0	+0.0 +5.1	+0.0	34.2	54.0 H (rad 1-6)	-19.8	Vert 147
63	1799.990M Ave	32.3	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 359	34.0	54.0 Low	-20.0	Horiz 200
^	1800.000M	33.3	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0	35.0	54.0 Low	-19.0	Horiz 204
65	7133.000M	28.5	+0.0 +0.0 +0.0	+0.0 +1.3	+0.0 +0.0	+0.0 +4.0	+0.0 131	33.8	54.0 L (rad 1-6)	-20.2	Horiz 138
66	1110.000M	35.4	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0 81	33.7	54.0 Low	-20.3	Horiz 204
67	3464.000M	30.0	+0.0 +0.0 +0.0	+0.0 +0.9	+0.0 +0.0	+0.0 +2.8	+0.0	33.7	54.0 L (rad 1-6)	-20.3	Horiz 153
68	1200.300M	35.0	+0.0 +1.9 +0.0	+1.1 +0.0	-28.8 +0.0	+24.4 +0.0	+0.0	33.6	54.0 Mid	-20.4	Vert 178
69	3090.000M	30.1	+0.0 +0.0 +0.0	+0.0 +0.8	+0.0 +0.0	+0.0 +2.6	+0.0 326	33.5	54.0 L (rad 1-6)	-20.5	Vert 154
70	1289.700M	31.1	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.6	+0.0 136	33.3	54.0 L (rad 1-6)	-20.7	Horiz 159
71	8630.000M	27.3	+0.0 +0.0 +0.0	+0.0 +1.4	+0.0 +0.0	+0.0 +4.5	+0.0 360	33.2	54.0 L (rad 1-6)	-20.8	Vert 154
72	7221.000M	27.9	+0.0 +0.0 +0.0	+0.0 +1.3	+0.0 +0.0	+0.0 +4.0	+0.0 209	33.2	54.0 M (rad 1-6)	-20.8	Horiz 153
73	3068.000M	29.6	+0.0 +0.0 +0.0	+0.0 +0.8	+0.0 +0.0	+0.0 +2.6	+0.0	33.0	54.0 H (rad 1-6)	-21.0	Horiz 147
74	1439.900M	30.3	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.7	+0.0 220	32.6	54.0 L (rad 1-6)	-21.4	Vert 176
75	5359.000M	27.8	+0.0 +0.0 +0.0	+0.0 +1.1	+0.0 +0.0	+0.0 +3.5	+0.0 360	32.4	54.0 H (rad 1-6)	-21.6	Vert 147
76	1439.600M	30.1	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.7	+0.0 166	32.4	54.0 H (rad 1-6)	-21.6	Vert 147
77	1109.400M	34.0	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	32.3	54.0 Mid	-21.7	Vert 178

78	1199.300M	33.5	+0.0 +1.9 +0.0	+1.1 +0.0	-28.8 +0.0	+24.4 +0.0	+0.0 360	32.1	54.0 High	-21.9	Vert 137
79	2130.000M	28.3	+0.0 +2.5 +0.0	+1.3 +0.0	-28.4 +0.0	+28.3 +0.0	+0.0 359	32.0	54.0 Low	-22.0	Horiz 99
80	2189.600M	28.1	+0.0 +2.6 +0.0	+1.4 +0.0	-28.3 +0.0	+28.2 +0.0	+0.0 359	32.0	54.0 Low	-22.0	Horiz 99
81	3948.000M	28.1	+0.0 +0.0 +0.0	+0.0 +0.9	+0.0 +0.0	+0.0 +2.9	+0.0 360	31.9	54.0 M (rad 1-6)	-22.1	Vert 136
82	1799.400M	30.1	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 23	31.8	54.0 Mid	-22.2	Horiz 133
83	1109.520M	33.4	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0 359	31.7	54.0 High	-22.3	Horiz 180
84	1800.680M	29.9	+0.0 +2.2 +0.0	+1.3 +0.0	-28.8 +0.0	+27.0 +0.0	+0.0 359	31.6	54.0 High	-22.4	Horiz 180
85	2160.000M	27.8	+0.0 +2.5 +0.0	+1.3 +0.0	-28.3 +0.0	+28.2 +0.0	+0.0 359	31.5	54.0 Low	-22.5	Horiz 99
86	2108.800M	28.6	+0.0 +0.0 +0.0	+0.0 +0.7	+0.0 +0.0	+0.0 +2.1	+0.0 310	31.4	54.0 M (rad 1-6)	-22.6	Horiz 153
87	1614.600M	29.0	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.8	+0.0	31.4	54.0 M (rad 1-6)	-22.6	Vert 136
88	1289.800M	29.1	+0.0 +0.0 +0.0	+0.0 +0.6	+0.0 +0.0	+0.0 +1.6	+0.0 359	31.3	54.0 H (rad 1-6)	-22.7	Horiz 147
89	1740.100M	29.8	+0.0 +2.2 +0.0	+1.4 +0.0	-28.8 +0.0	+26.6 +0.0	+0.0	31.2	54.0 Low	-22.8	Vert 186
90	1200.000M	32.5	+0.0 +1.9 +0.0	+1.1 +0.0	-28.8 +0.0	+24.4 +0.0	+0.0	31.1	54.0 Low	-22.9	Horiz 204
91	1995.400M	28.1	+0.0 +0.0 +0.0	+0.0 +0.7	+0.0 +0.0	+0.0 +2.1	+0.0	30.9	54.0 M (rad 1-6)	-23.1	Vert 136
92	1140.100M	32.5	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	30.8	54.0 Low	-23.2	Vert 186
93	1439.560M	31.8	+0.0 +2.1 +0.0	+1.2 +0.0	-29.0 +0.0	+24.6 +0.0	+0.0 359	30.7	54.0 High	-23.3	Horiz 180
94	1049.700M	32.5	+0.0 +1.7 +0.0	+1.0 +0.0	-28.8 +0.0	+24.2 +0.0	+0.0	30.6	54.0 Mid	-23.4	Vert 178

95	2340.100M	26.8	+0.0 +2.6 +0.0	+1.4 +0.0	-28.2 +0.0	+28.0 +0.0	+0.0	30.6	54.0 Low	-23.4	Vert 186
96	1049.400M	32.0	+0.0 +1.7 +0.0	+1.0 +0.0	-28.8 +0.0	+24.2 +0.0	+0.0	30.1	54.0 Low	-23.9	Vert 186
97	2339.600M	26.3	+0.0 +2.6 +0.0	+1.4 +0.0	-28.2 +0.0	+28.0 +0.0	+0.0 293	30.1	54.0 Low	-23.9	Horiz 99
98	3599.500M	23.9	+0.0 +3.2 +0.0	+1.8 +0.0	-28.5 +0.0	+29.7 +0.0	+0.0	30.1	54.0 Low	-23.9	Vert 125
99	2070.000M	26.4	+0.0 +2.5 +0.0	+1.3 +0.0	-28.5 +0.0	+28.3 +0.0	+0.0 359	30.0	54.0 Low	-24.0	Horiz 99
100	1079.600M	31.4	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	29.7	54.0 Low	-24.3	Vert 186
101	2040.000M	25.8	+0.0 +2.4 +0.0	+1.3 +0.0	-28.5 +0.0	+28.4 +0.0	+0.0 359	29.4	54.0 Low	-24.6	Horiz 99
102	1140.000M	30.8	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	29.1	54.0 Low	-24.9	Horiz 204
103	1290.000M	30.4	+0.0 +1.9 +0.0	+1.2 +0.0	-28.9 +0.0	+24.5 +0.0	+0.0	29.1	54.0 Low	-24.9	Horiz 204
104	2280.000M	25.1	+0.0 +2.6 +0.0	+1.4 +0.0	-28.2 +0.0	+28.1 +0.0	+0.0 357	29.0	54.0 Low	-25.0	Horiz 99
105	1109.967M Ave	30.3	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0 25	28.6	54.0 High	-25.4	Horiz 99
^	1109.900M	33.8	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0 184	32.1	54.0 Mid	-21.9	Horiz 133
107	2010.000M	24.8	+0.0 +2.4 +0.0	+1.3 +0.0	-28.5 +0.0	+28.4 +0.0	+0.0 359	28.4	54.0 Low	-25.6	Horiz 99
108	2100.000M	24.6	+0.0 +2.5 +0.0	+1.3 +0.0	-28.4 +0.0	+28.3 +0.0	+0.0 359	28.3	54.0 Low	-25.7	Horiz 99
109	1080.000M	29.7	+0.0 +1.8 +0.0	+1.0 +0.0	-28.8 +0.0	+24.3 +0.0	+0.0	28.0	54.0 Low	-26.0	Horiz 204
110	1439.400M	29.0	+0.0 +2.1 +0.0	+1.2 +0.0	-29.0 +0.0	+24.6 +0.0	+0.0	27.9	54.0 Low	-26.1	Vert 186
111	1050.000M	29.6	+0.0 +1.7 +0.0	+1.0 +0.0	-28.8 +0.0	+24.2 +0.0	+0.0	27.7	54.0 Low	-26.3	Horiz 204

112	1259.500M	29.1	+0.0 +1.9 +0.0	+1.2 +0.0	-28.9 +0.0	+24.4 +0.0	+0.0	27.7	54.0 Low	-26.3	Vert 186
113	1590.400M	27.6	+0.0 +2.1 +0.0	+1.3 +0.0	-28.9 +0.0	+25.4 +0.0	+0.0	27.5	54.0 Low	-26.5	Vert 186
114	1260.000M	28.4	+0.0 +1.9 +0.0	+1.2 +0.0	-28.9 +0.0	+24.4 +0.0	+0.0	27.0	54.0 Low	-27.0	Horiz 204
115	22496.000 M Ave	30.2	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0 356	26.5	54.0 Mid Ambient	-27.5	Horiz 144
^	22496.000 M	34.2	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0	30.5	54.0 Mid Ambient	-23.5	Horiz 144
117	22584.000 M Ave	30.2	+0.0 +0.0 -16.7	+0.0 +2.5	+0.0 +3.1	+0.0 +7.4	+0.0 36	26.5	54.0 Low Ambient	-27.5	Vert 147
^	22584.000 M	34.2	+0.0 +0.0 -16.7	+0.0 +2.5	+0.0 +3.1	+0.0 +7.4	+0.0 221	30.5	54.0 Low Ambient	-23.5	Vert 147
119	22488.000 M Ave	30.1	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0	26.4	54.0 Mid Ambient	-27.6	Vert 147
^	22488.000 M	34.0	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0 323	30.3	54.0 Mid Ambient	-23.7	Vert 147
121	22504.000 M Ave	30.1	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0 80	26.4	54.0 High Ambient	-27.6	Horiz 144
^	22504.000 M	34.3	+0.0 +0.0 -16.8	+0.0 +2.5	+0.0 +3.2	+0.0 +7.4	+0.0	30.6	54.0 High Ambient	-23.4	Horiz 141
123	22600.000 M Ave	30.1	+0.0 +0.0 -16.7	+0.0 +2.5	+0.0 +3.1	+0.0 +7.4	+0.0 136	26.4	54.0 Low Ambient	-27.6	Horiz 144
^	22600.000 M	33.9	+0.0 +0.0 -16.7	+0.0 +2.5	+0.0 +3.1	+0.0 +7.4	+0.0 359	30.2	54.0 Low Ambient	-23.8	Horiz 144
125	22056.000 M Ave	29.8	+0.0 +0.0 -16.6	+0.0 +2.4	+0.0 +3.2	+0.0 +7.4	+0.0 360	26.2	54.0 High Ambient	-27.8	Vert 147
^	22056.000 M	33.6	+0.0 +0.0 -16.6	+0.0 +2.4	+0.0 +3.2	+0.0 +7.4	+0.0 28	30.0	54.0 High Ambient	-24.0	Vert 147
127	1441.000M	26.1	+0.0 +2.1 +0.0	+1.2 +0.0	-29.0 +0.0	+24.6 +0.0	+0.0	25.0	54.0 Low	-29.0	Horiz 204

Band Edge

Test Location:	CKC Laboratories, Inc. • 22116 23rd Drive, SE Suite A • Bothell, WA 98021 • 800-500-4EMC (4362)		
Customer:	**Spirent Communications, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**		
Work Order #:	**96898**	Date:	9/1/2015
Test Type:	**Maximized Emissions**	Time:	10:53:13
Tested By:	Randal Clark	Sequence#:	31
Software:	EMITest 5.02.00		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N

Test Conditions / Notes:

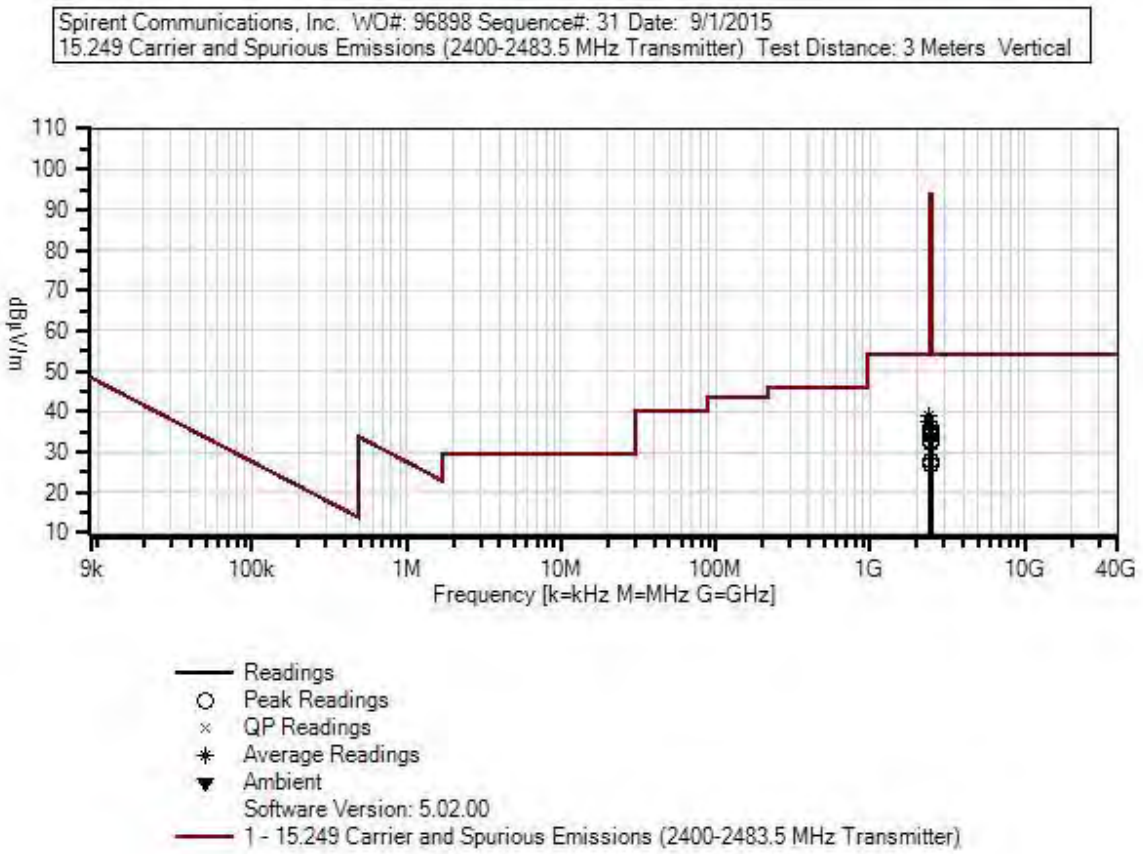
The EUT is Call Performance and Voice Quality testing equipment utilizing 6 independent Bluetooth radios.
The EUT is supported on a 1.5m table with connections to peripheral devices typical for normal installation. Cables are attached to the 6 audio ports with no termination.
Preliminary testing determined the configuration utilized is representative of worst case.
The laptop computer is located outside the testing area and provides software control of the equipment using software: SDK Version 122.

EUT Configuration:
Max DC power.
All Radios powered on.
Radio 1 transmitting continuously at TX power = 30 with modulation enabled.

Revision 1.2 board

Temperature: 24º C
Relative Humidity: 40%
Atmospheric Pressure: 101.7 kPa

Frequency Range Investigated: Band Edge
Test Procedure: ANSI C63.10 (2013)
Worst case polarity recorded.


Spirent Communications, Inc. WO#: 96898 Sequence#: 31 Date: 9/1/2015
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter) Test Distance: 3 Meters Vertical
110
100
90
80
70
60
50
40
30
20
10
dBµV/m
9k
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.02.00
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Equipment:

ID	Asset #/Serial #	Description	Model	Calibration Date	Cal Due Date
T1	AN02872	Spectrum Analyzer	E4440A	11/13/2013	11/13/2015
T2	AN03209	Preamp	83051A	3/20/2015	3/20/2017
T3	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	9/16/2013	9/16/2015
T4	AN03227	Cable	32026-29080-29080-84	5/13/2014	5/13/2016
T5	ANP05305	Cable	ETSI-50T	2/20/2014	2/20/2016

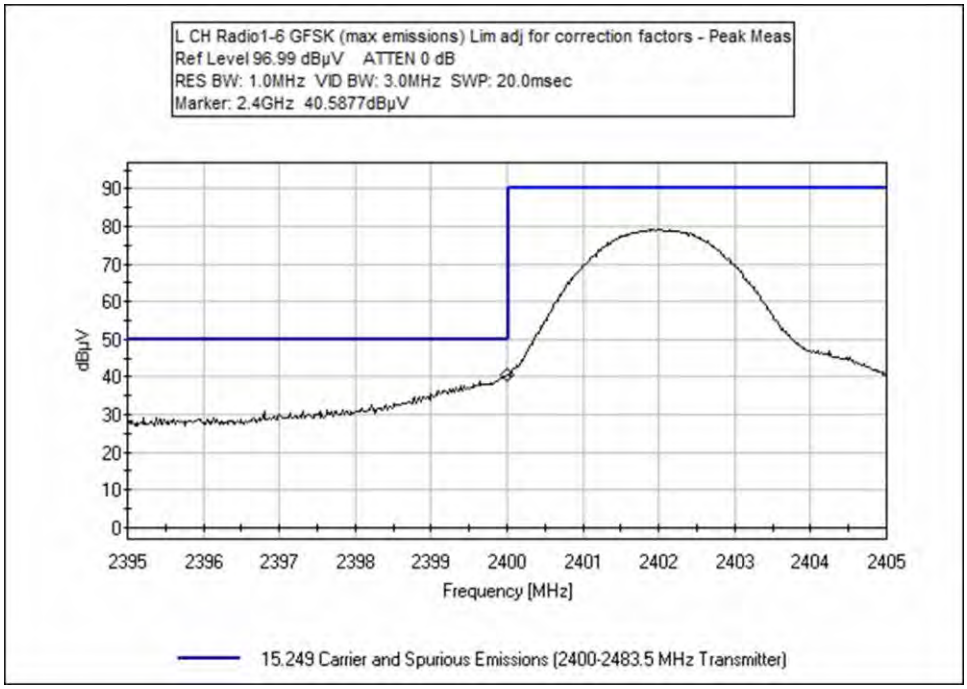
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

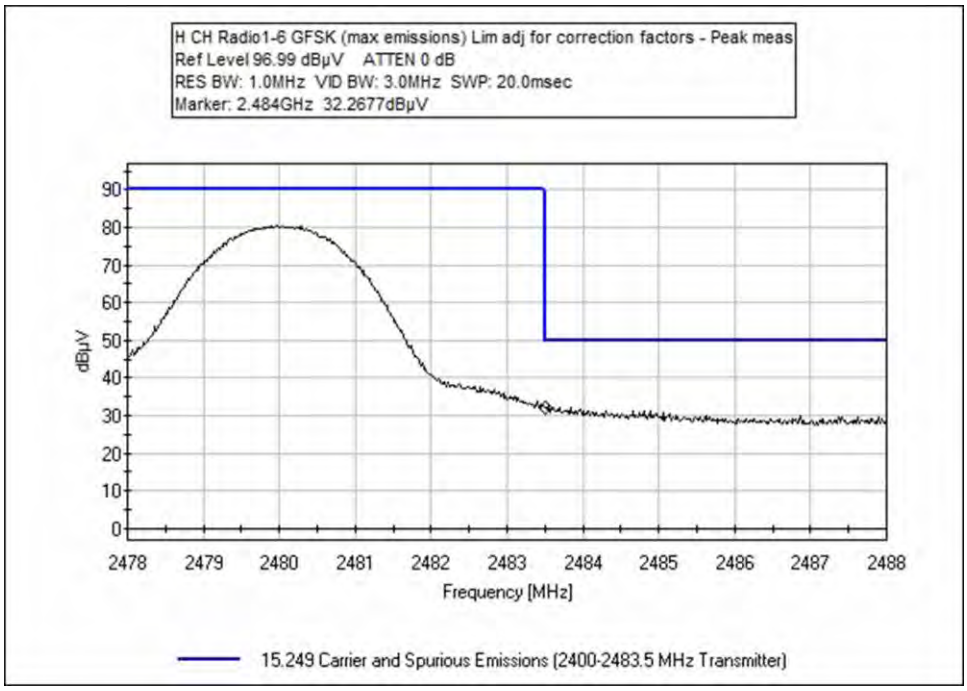
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2400.000M Ave	35.2	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	39.1	54.0	-14.9	Horiz
									Radio 1-6 TX on same channel - 8DSPK		
2	2400.000M Ave	33.7	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	37.6	54.0	-16.4	Horiz
									Radio 1-6 TX on same channel - Pi/4 DQPSK		
^	2400.000M	51.7	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	55.6	54.0	+1.6	Horiz
									Radio 1-6 TX on same channel - 8DPSK		
^	2400.000M	50.7	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	54.6	54.0	+0.6	Horiz
									Radio 1-6 TX on same channel - Pi/4 DQPSK		
^	2400.000M	40.8	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	44.7	54.0	-9.3	Horiz
									Radio 1&2 IMOD 8DPSK		
^	2400.000M	40.6	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	44.5	54.0	-9.5	Horiz
									Radio 1-6 TX on same channel - GFSK		
^	2400.000M	40.6	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	44.5	54.0	-9.5	Horiz
									Radio 1&2 IMOD Pi/4 DQPSK		
^	2400.000M	40.1	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	44.0	54.0	-10.0	Horiz
									Radio 1 8DPSK		
^	2400.000M	39.5	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	43.4	54.0	-10.6	Horiz
									Radio 1 Pi/4 DQPSK		
^	2400.000M	34.8	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	38.7	54.0	-15.3	Horiz
									Radio 1 GFSK		
^	2400.000M	34.4	+0.0 +2.7	-28.2	+28.0	+1.4	+0.0	38.3	54.0	-15.7	Horiz
									Radio 1&2 IMOD GFSK		

12	2483.500M	32.3	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	36.2	54.0	-17.8	Horiz Radio 1-6 TX on same channel - GFSK
13	2483.500M	31.3	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	35.2	54.0	-18.8	Horiz Radio 1-6 TX on same channel - 8DPSK
14	2483.500M	30.9	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	34.8	54.0	-19.2	Horiz Radio 1-6 TX on same channel - Pi/4 DQPSK
15	2483.500M	30.1	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	34.0	54.0	-20.0	Horiz Radio 1 8DPSK
16	2483.500M	28.8	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	32.7	54.0	-21.3	Horiz Radio 1&2 IMOD GFSK
17	2483.500M	28.4	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	32.3	54.0	-21.7	Horiz Radio 1&2 IMOD 8DPSK
18	2483.500M	28.1	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	32.0	54.0	-22.0	Horiz Radio 1&2 Pi/4 DQPSK
19	2483.500M	23.9	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	27.8	54.0	-26.2	Horiz Radio 1 Pi/4 DQPSK
20	2483.500M	22.8	+0.0 +2.7	-28.2	+27.9	+1.5	+0.0	26.7	54.0	-27.3	Horiz Radio 1 GFSK

Plots

GFSK


L CH Radio1-6 GFSK (max emissions) Lim adj for correction factors - Peak Meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 40.5877dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


H CH Radio1-6 GFSK (max emissions) Lim adj for correction factors - Peak meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 32.2677dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2478
2479
2480
2481
2482
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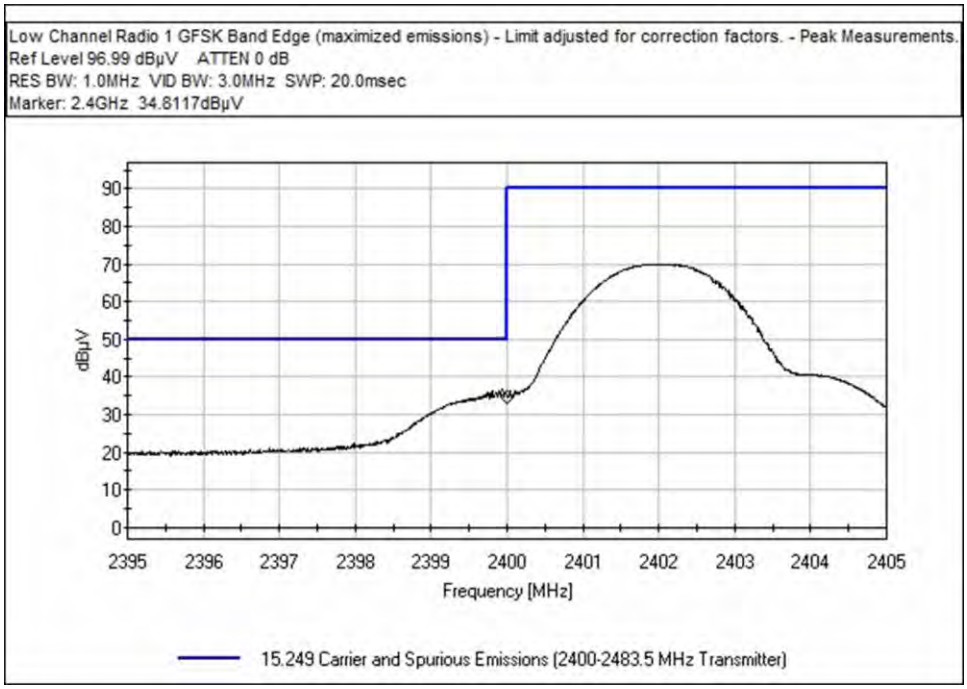
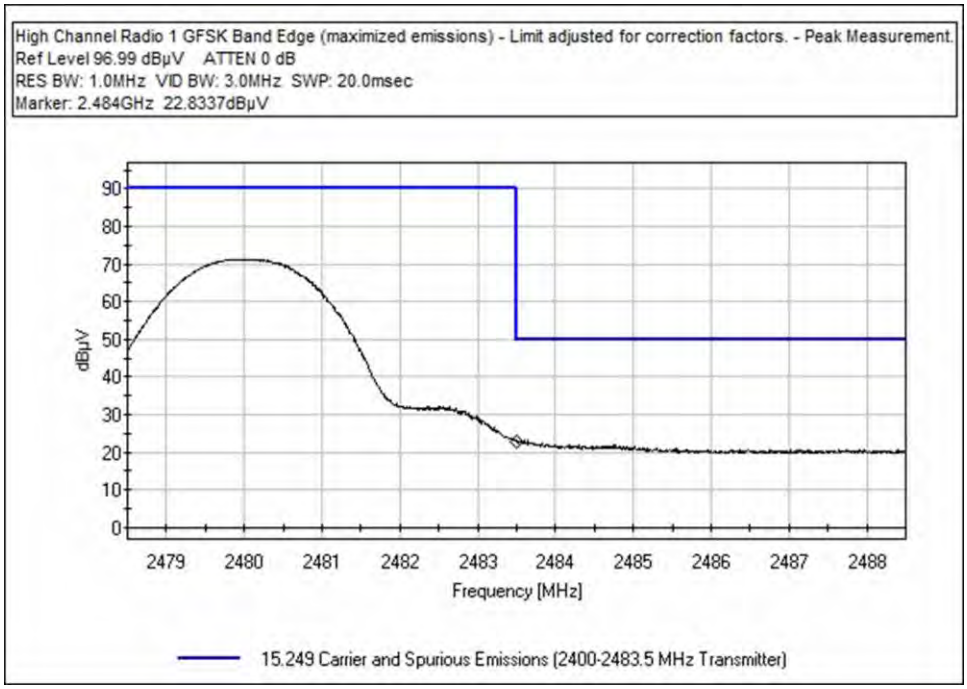
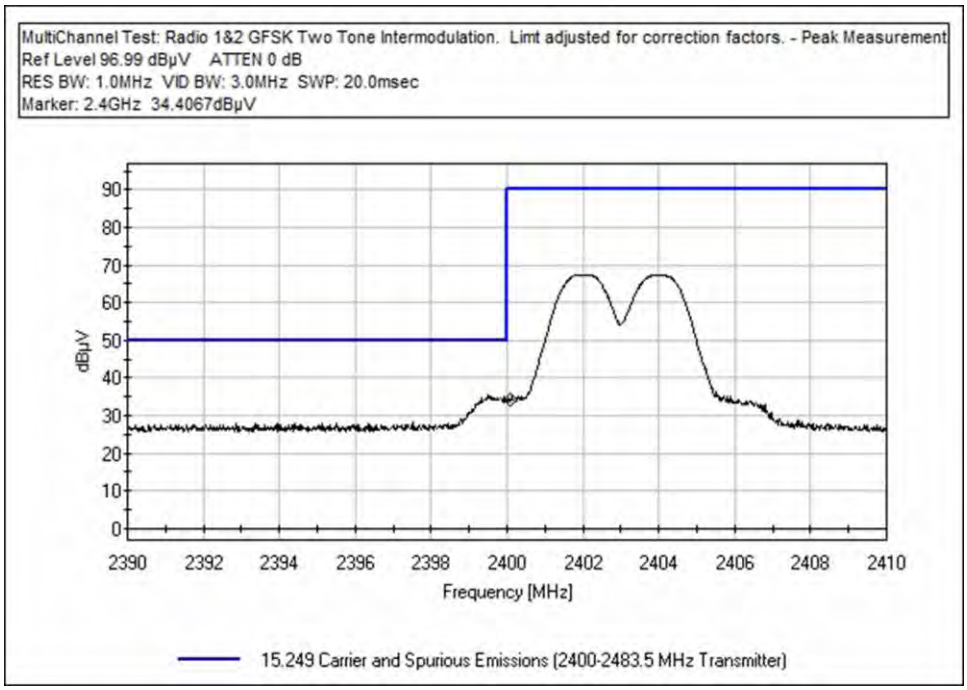
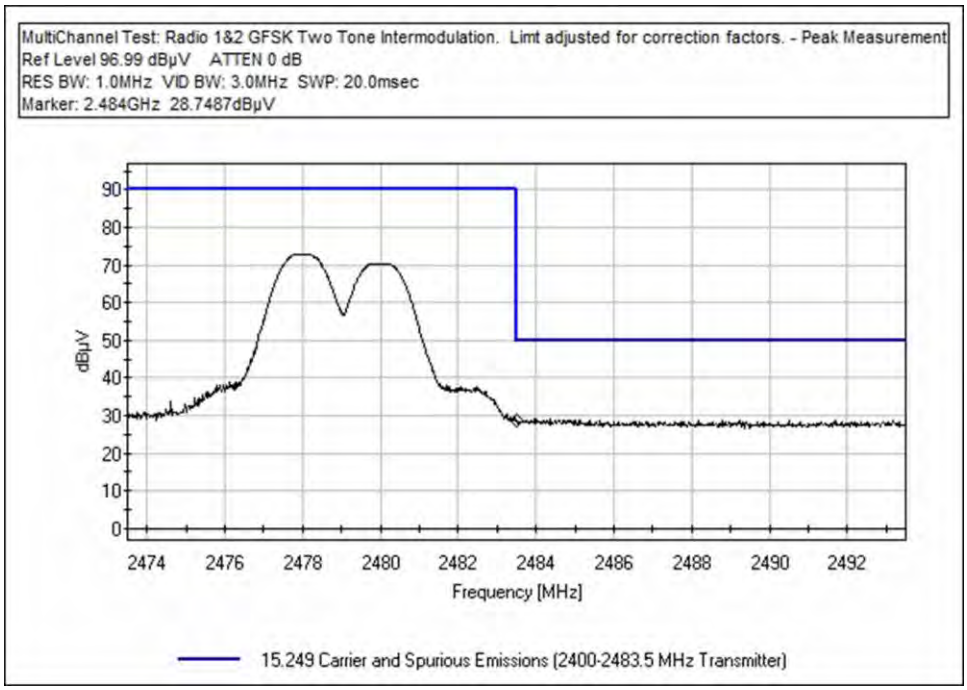
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

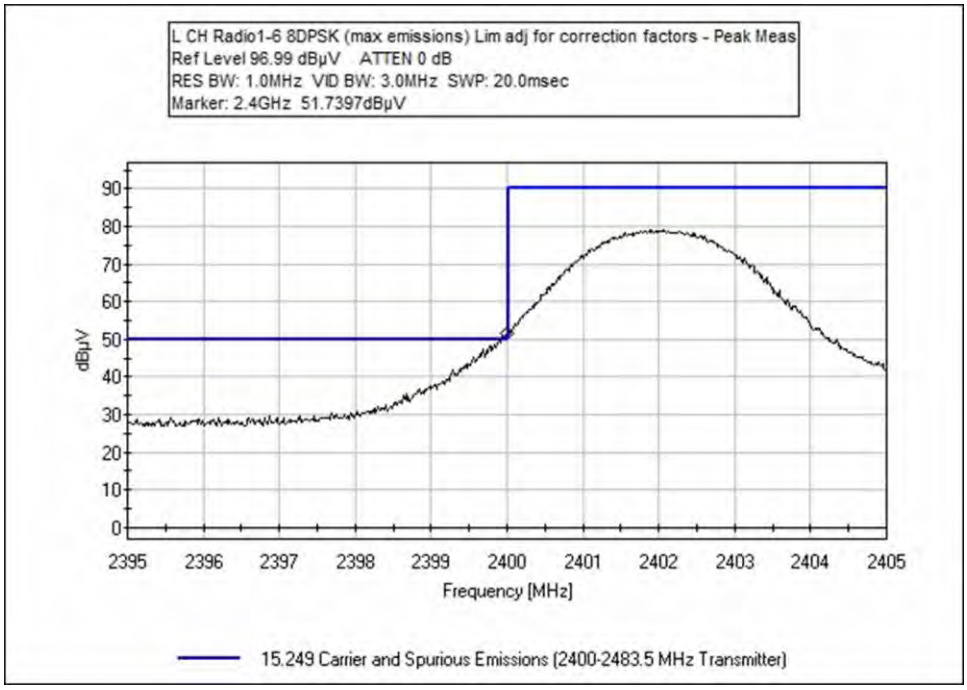

Low Channel Radio 1 GFSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurements.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 34.8117dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

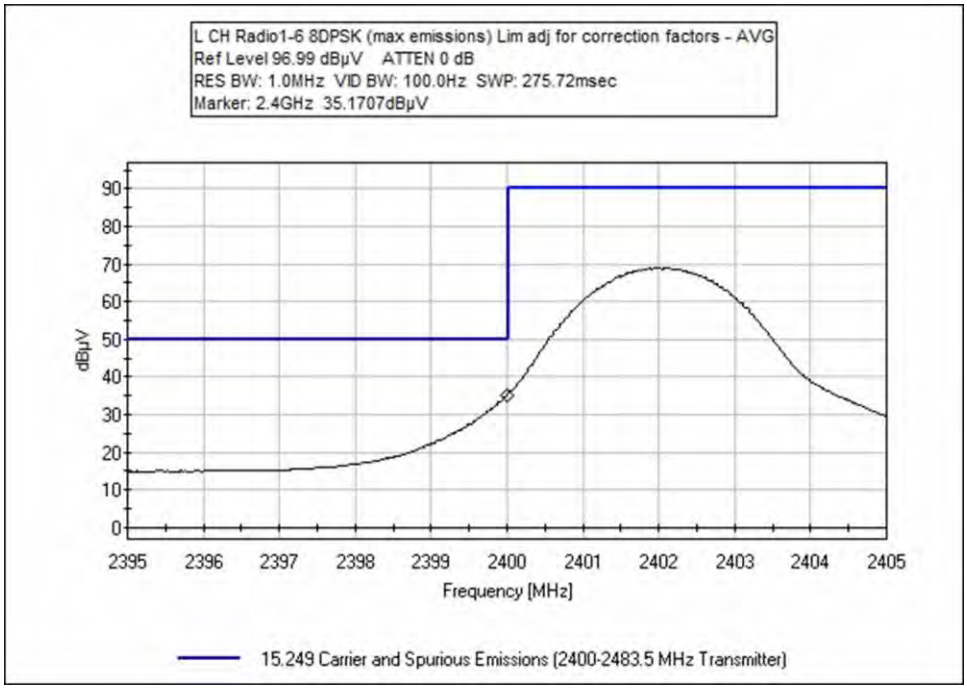

High Channel Radio 1 GFSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurement.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 22.8337dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

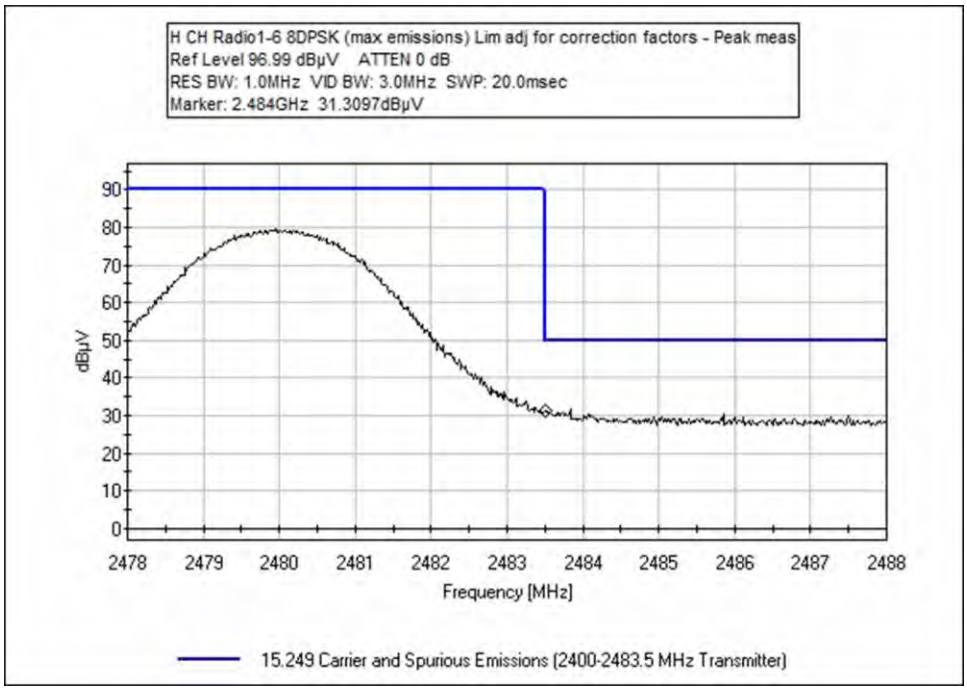

MultiChannel Test: Radio 1&2 GFSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measurement
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 34.4067dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2390
2392
2394
2396
2398
2400
2402
2404
2406
2408
2410
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

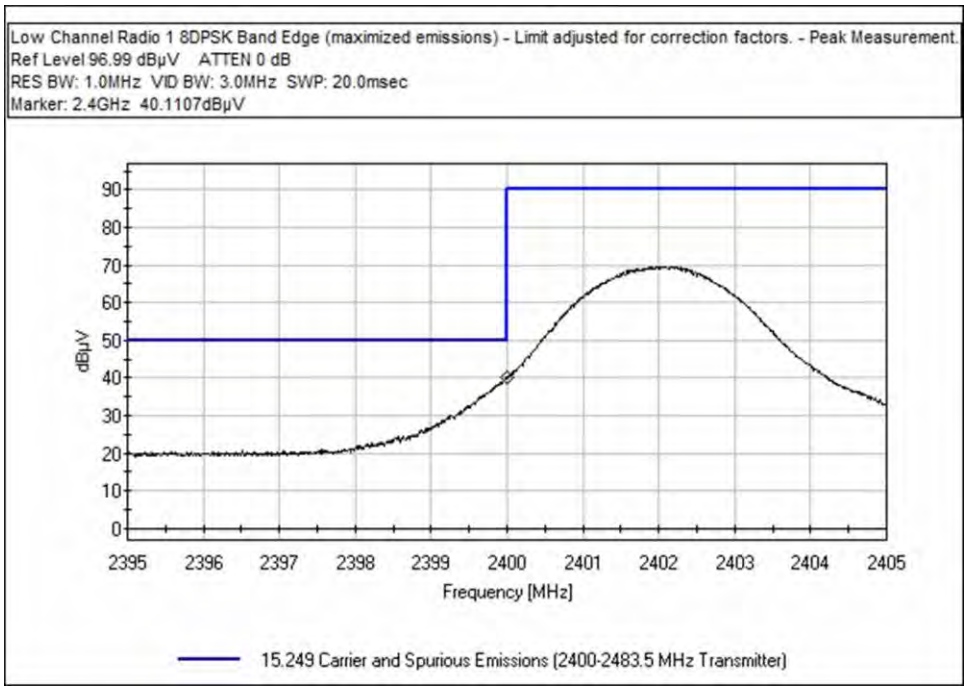

MultiChannel Test: Radio 1&2 GFSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measurement
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 28.7487dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2474
2476
2478
2480
2482
2484
2486
2488
2490
2492
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

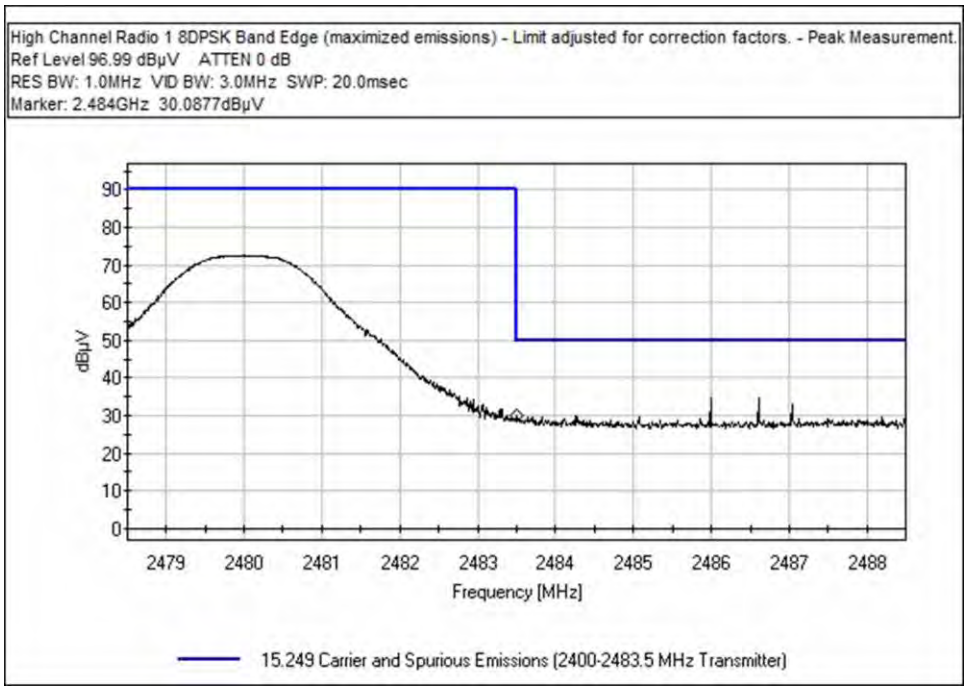
8DPSK

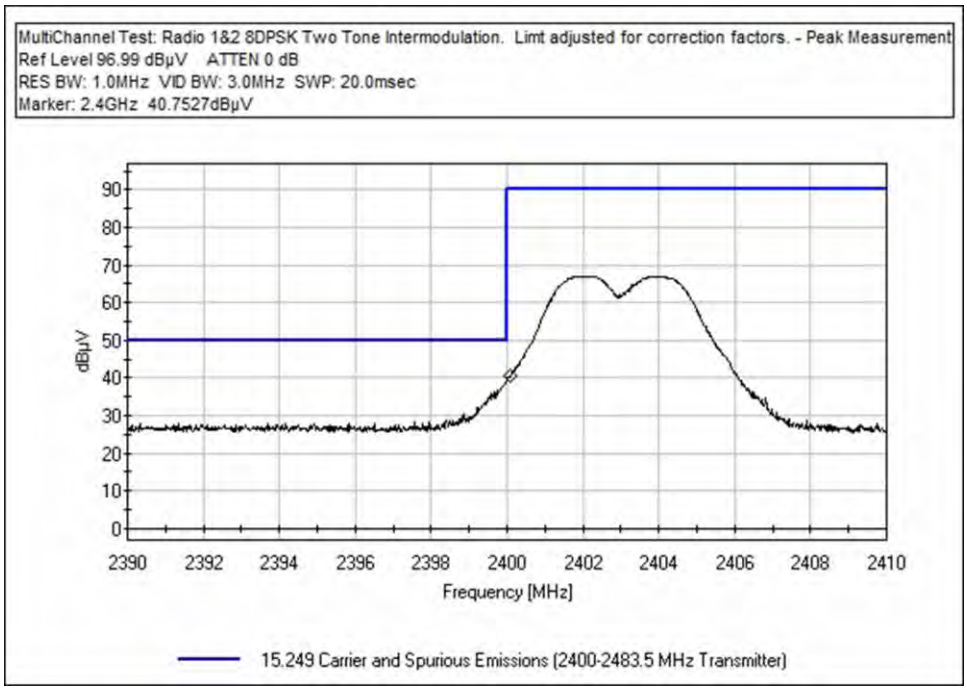

L CH Radio1-6 8DPSK (max emissions) Lim adj for correction factors - Peak Meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 51.7397dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

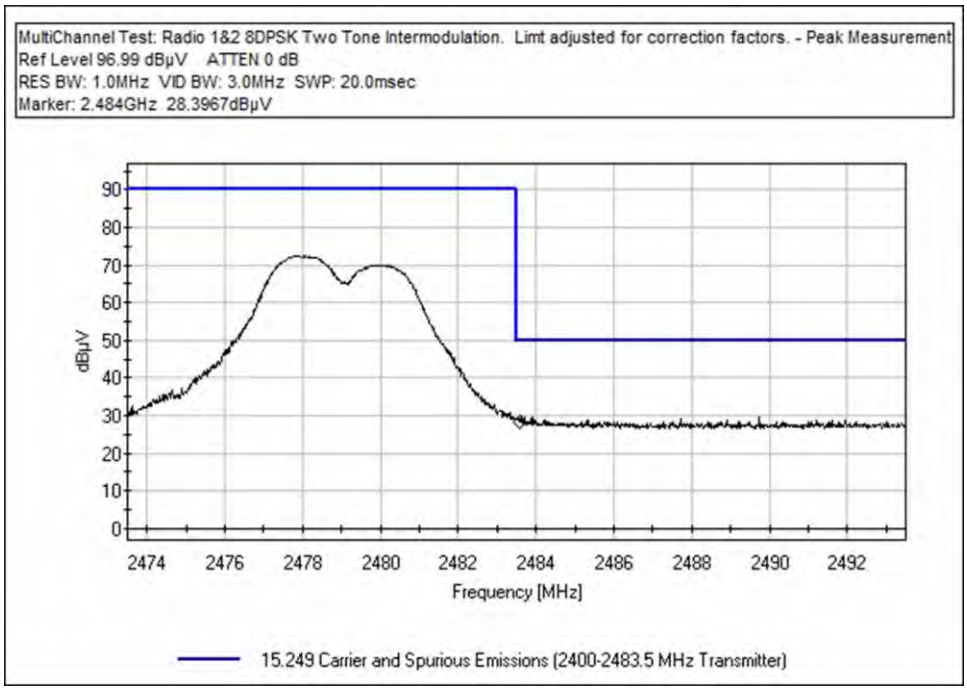

L CH Radio1-6 8DPSK (max emissions) Lim adj for correction factors - AVG
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 275.72msec
Marker: 2.4GHz 35.1707dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


H CH Radio1-6 8DPSK (max emissions) Lim adj for correction factors - Peak meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 31.3097dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2478
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

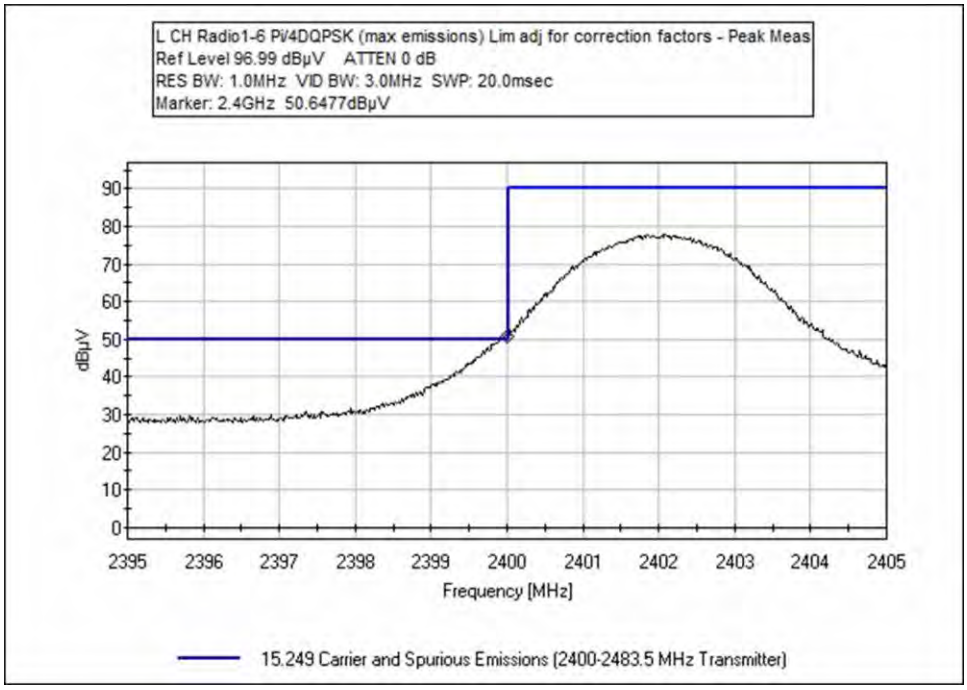

Low Channel Radio 1 8DPSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurement.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 40.1107dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

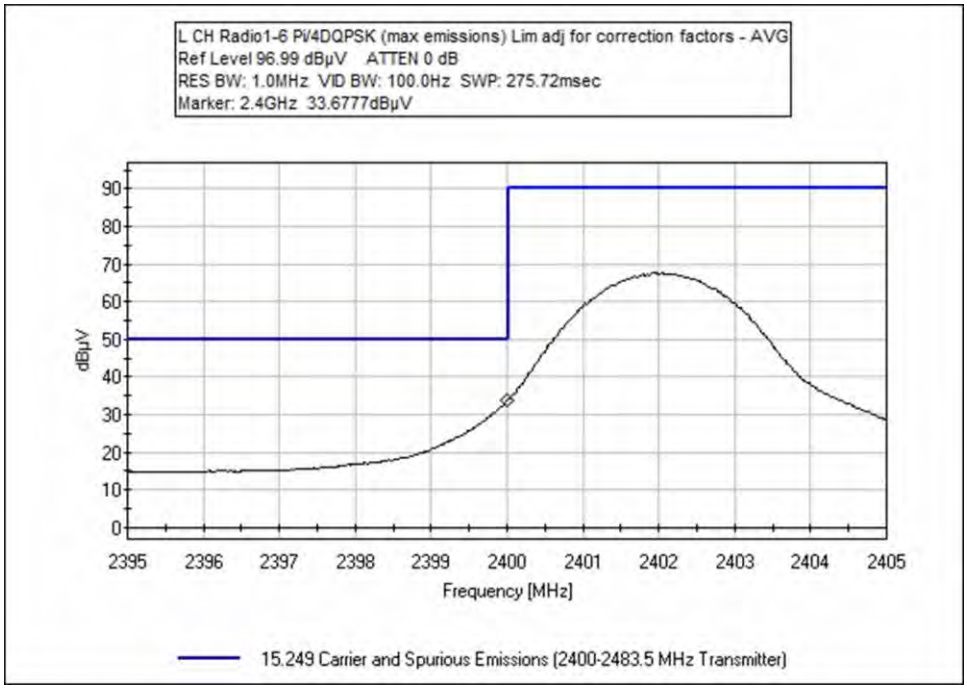

High Channel Radio 1 8DPSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurement.
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 30.0877dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

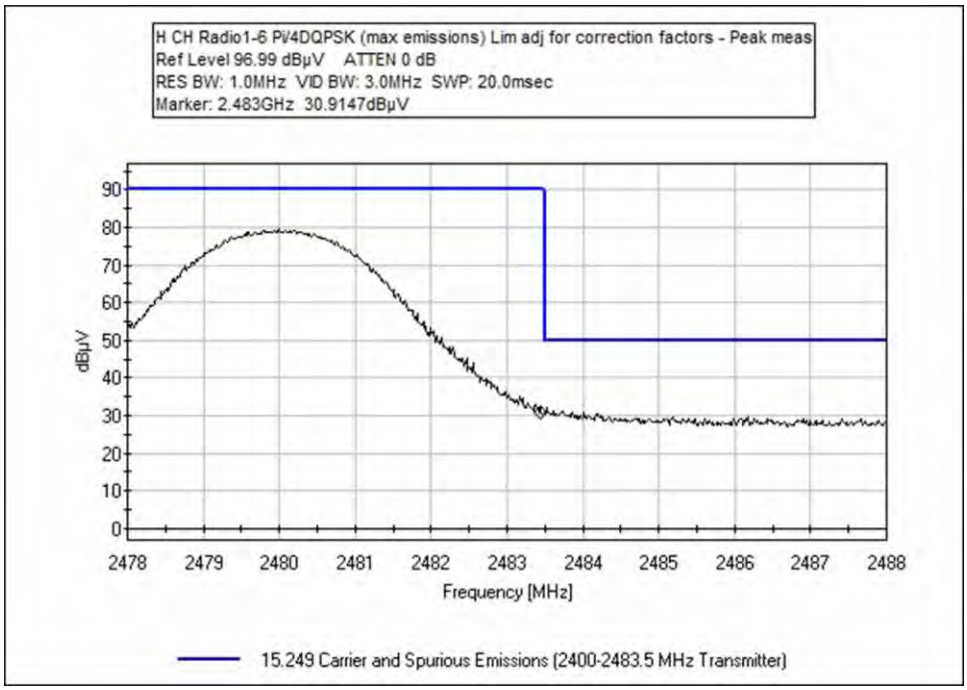

MultiChannel Test: Radio 1&2 8DPSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measurement
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 40.7527dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2390
2392
2394
2396
2398
2400
2402
2404
2406
2408
2410
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

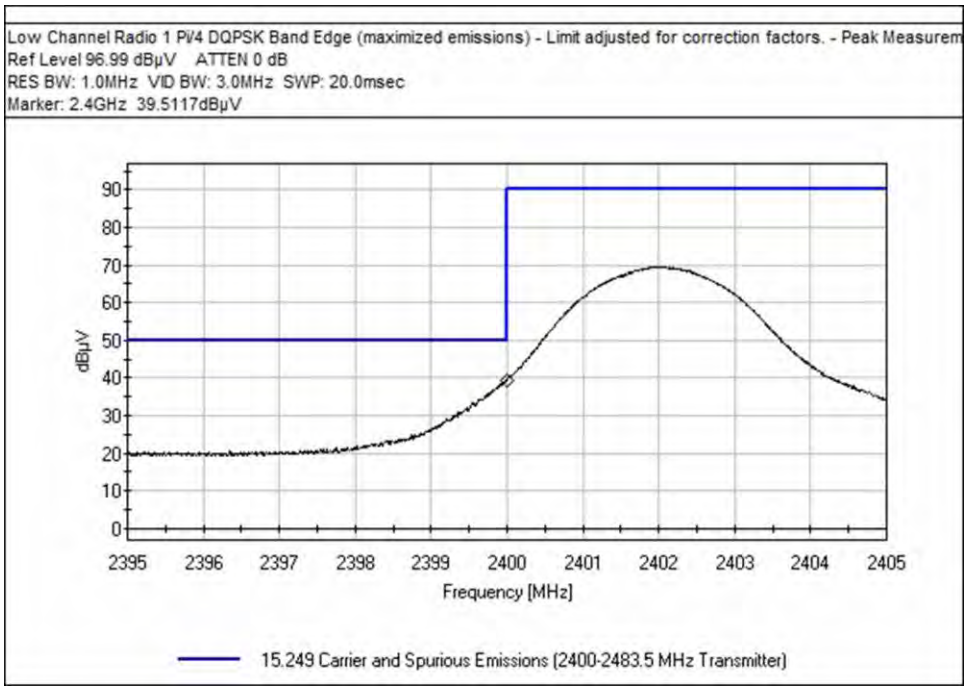

MultiChannel Test: Radio 1&2 8DPSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measurement
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 28.3967dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2474
2476
2478
2480
2482
2484
2486
2488
2490
2492
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

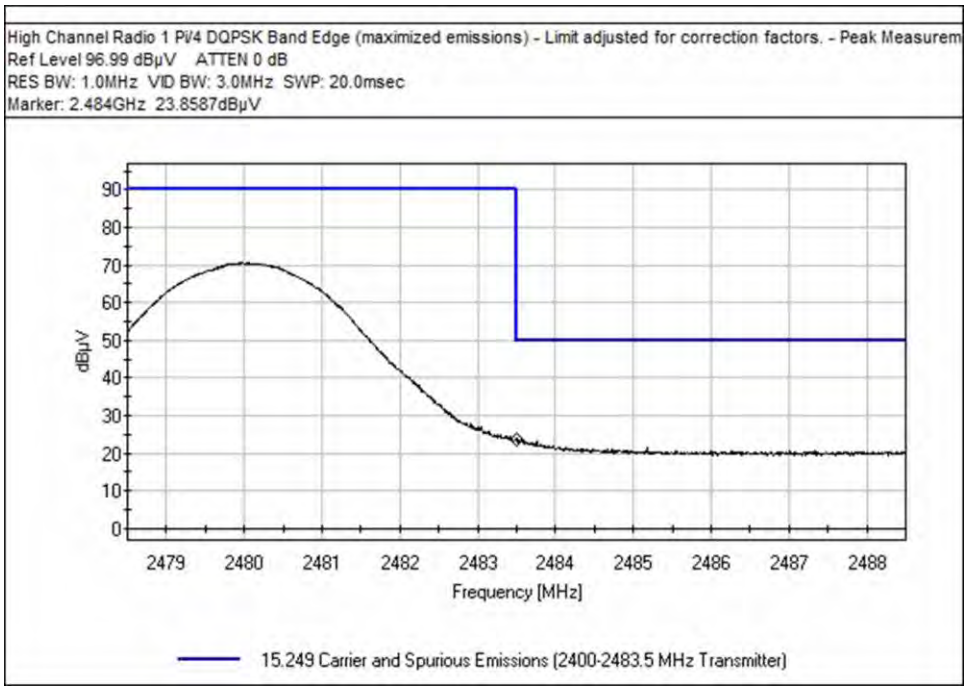
Pi4DQPSK

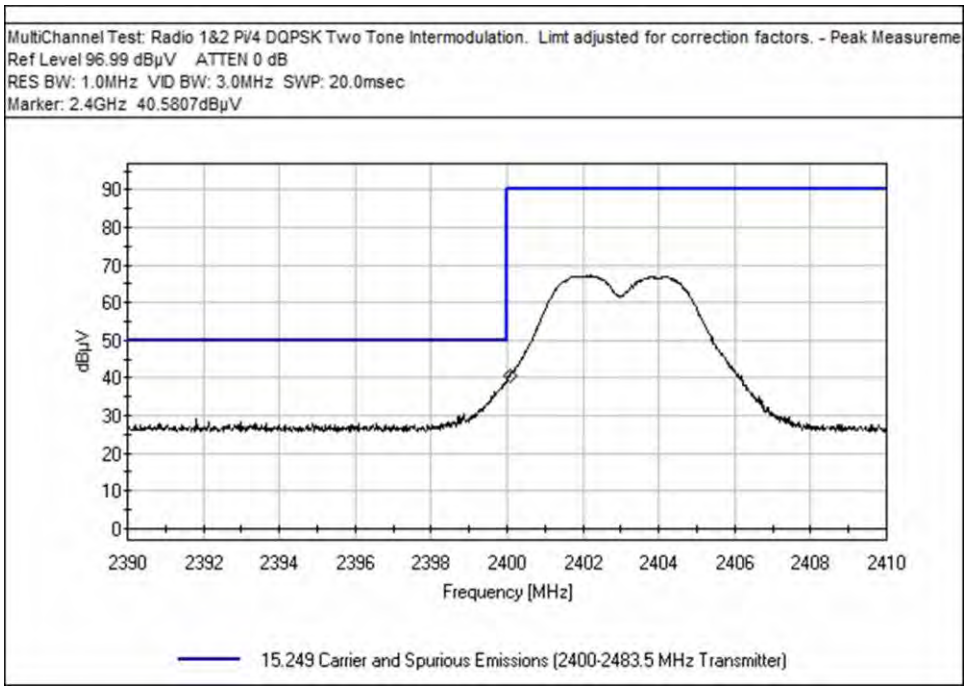

L CH Radio1-6 Pi4DQPSK (max emissions) Lim adj for correction factors - Peak Meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 50.6477dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

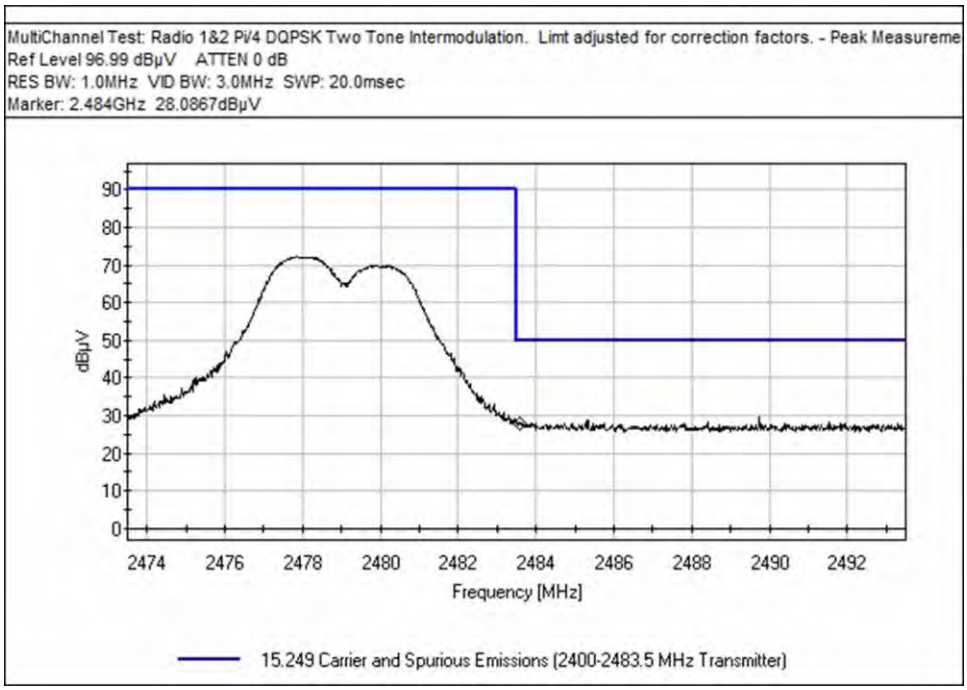

L CH Radio1-6 Pi4DQPSK (max emissions) Lim adj for correction factors - AVG
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 100.0Hz SWP: 275.72msec
Marker: 2.4GHz 33.6777dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


H CH Radio1-6 Pi/4DQPSK (max emissions) Lim adj for correction factors - Peak meas
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.483GHz 30.9147dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2478
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


Low Channel Radio 1 Pi/4 DQPSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurem
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 39.5117dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

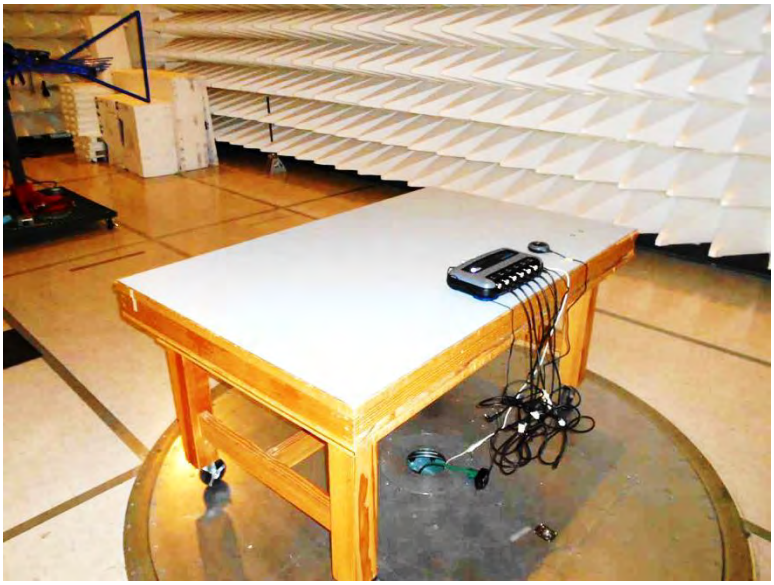

High Channel Radio 1 Pi/4 DQPSK Band Edge (maximized emissions) - Limit adjusted for correction factors. - Peak Measurem
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 23.8587dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


MultiChannel Test: Radio 1&2 Pi/4 DQPSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measureme
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.4GHz 40.5807dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2390
2392
2394
2396
2398
2400
2402
2404
2406
2408
2410
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


MultiChannel Test: Radio 1&2 Pi/4 DQPSK Two Tone Intermodulation. Limt adjusted for correction factors. - Peak Measureme
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 2.484GHz 28.0867dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
2474
2476
2478
2480
2482
2484
2486
2488
2490
2492
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

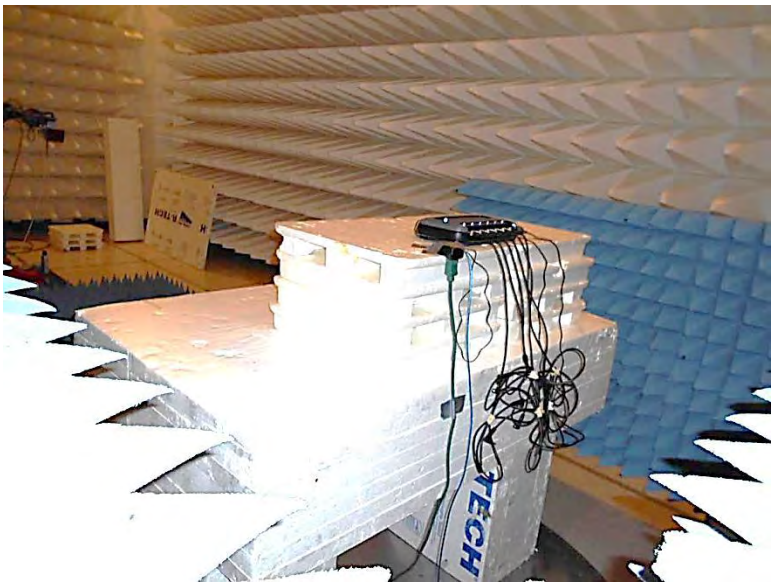
Test Setup Photos

9kHz – 30MHz



30MHz – 1GHz

1 – 18GHz



18 -26GHz

SUPPLEMENTAL INFORMATION

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.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	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 carrot ("^") 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.