

Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 15:02:44
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 11
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T3	AN01517	Preamp	8447D	5/21/2010	5/21/2012
T4	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 30 MHz - 1 GHz
 Temp: 25° C
 Humidity: 42%
 Pressure: 102.1 kPa

FHSS radio transmitting on 926.8 - FM.
 Cell radio in RX mode (1880 MHz).
 GPS receiver Active.
 Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

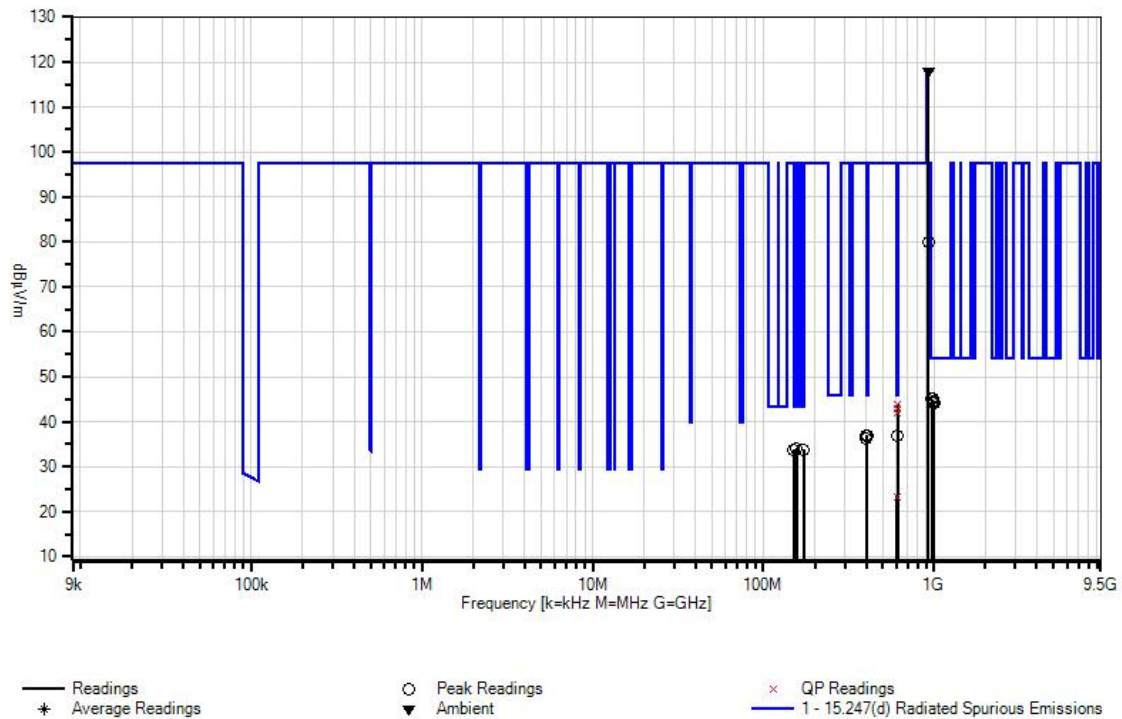
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	926.698M Ambient	118.5	+23.5 +0.8	+2.4	-29.1	+2.0	+0.0	118.1	117.6	+0.5	Verti 130
2	609.496M QP	49.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	44.0	46.0	-2.0	Verti 100
^	609.516M	61.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	56.0	46.0	+10.0	Verti 100
^	609.581M	55.0	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	49.5	46.0	+3.5	Verti 130
5	610.031M QP	49.4	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	43.9	46.0	-2.1	Verti 100
^	609.990M	59.7	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	54.2	46.0	+8.2	Verti 100
^	610.062M	52.9	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	47.4	46.0	+1.4	Verti 130
8	611.019M QP	48.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	43.0	46.0	-3.0	Verti 100
^	611.004M	58.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	53.0	46.0	+7.0	Verti 100
^	611.023M	53.7	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	48.2	46.0	+2.2	Verti 130
11	612.271M QP	47.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	42.0	46.0	-4.0	Verti 100
^	612.266M	56.0	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 180	50.5	46.0	+4.5	Verti 100
^	612.224M	49.2	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	43.7	46.0	-2.3	Verti 130
14	974.768M	45.1	+24.1 +0.8	+2.2	-29.0	+1.8	+0.0	45.0	54.0	-9.0	Verti 130
15	983.909M	44.8	+24.2 +0.8	+2.3	-29.0	+1.9	+0.0	45.0	54.0	-9.0	Verti 130
16	403.215M	45.9	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	36.9	46.0	-9.1	Verti 130
17	402.495M	46.0	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	36.9	46.0	-9.1	Verti 130
18	613.906M	42.3	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	36.8	46.0	-9.2	Verti 130
19	404.416M	45.8	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	36.8	46.0	-9.2	Verti 130
20	156.729M	49.1	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0	34.1	43.5	-9.4	Verti 130
21	993.113M	43.9	+24.3 +0.8	+2.4	-28.9	+2.0	+0.0	44.5	54.0	-9.5	Verti 130
22	173.065M	50.3	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0	33.8	43.5	-9.7	Verti 130
23	150.002M	48.4	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0	33.8	43.5	-9.7	Verti 130

24	994.365M	43.7	+24.3 +0.8	+2.4	-28.9	+2.0	+0.0	44.3	54.0	-9.7	Verti 130
25	984.410M	44.1	+24.2 +0.8	+2.3	-29.0	+1.9	+0.0	44.3	54.0	-9.7	Verti 130
26	990.671M	43.6	+24.3 +0.8	+2.4	-28.9	+2.0	+0.0	44.2	54.0	-9.8	Verti 130
27	401.413M	45.2	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	36.1	46.0	-9.9	Verti 130
28	928.245M	80.2	+23.5 +0.8	+2.4	-29.1	+2.0	+0.0 360	79.8	97.6 Bandedge	-17.8	Verti 100
29	608.008M QP	28.9	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0 360	23.4	46.0	-22.6	Verti 130
^	608.008M	52.5	+20.0 +0.6	+1.8	-29.5	+1.6	+0.0	47.0	46.0	+1.0	Verti 130

CKC Laboratories, Inc. Date: 8/16/2010 Time: 15:02:44 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 11 Ext ATTN: 0 dB



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 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 15:21:11
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 12
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
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T3	AN01517	Preamp	8447D	5/21/2010	5/21/2012
T4	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
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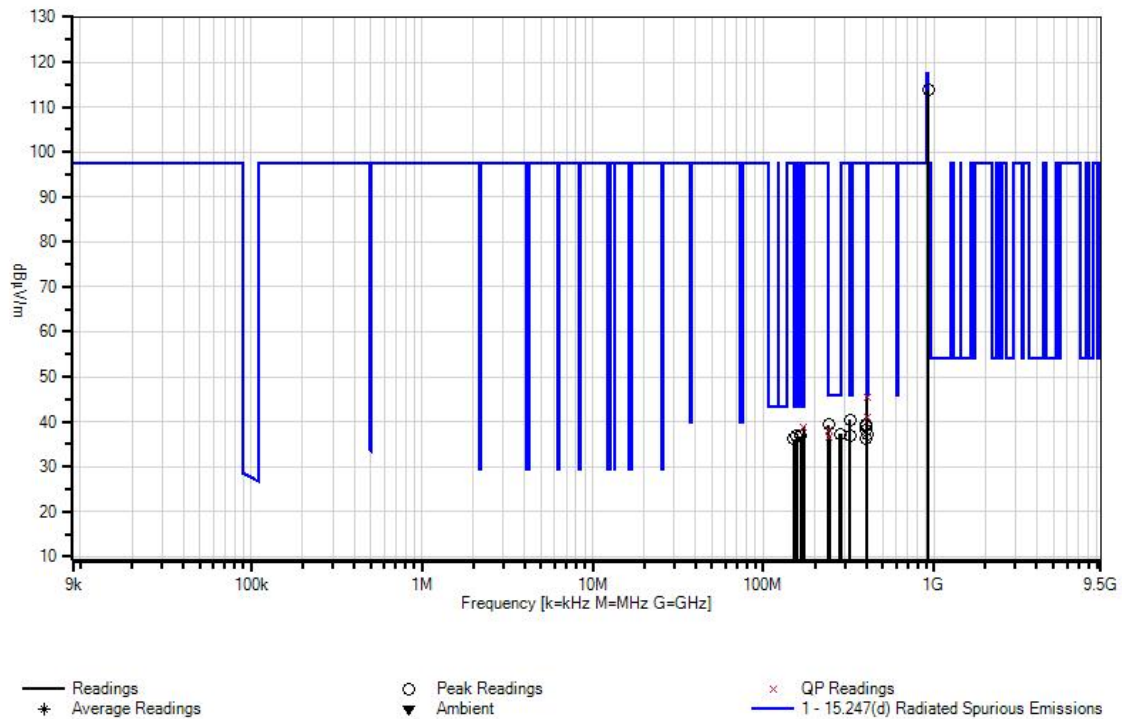
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Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	403.207M QP	54.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 358	45.5	46.0	-0.5	Horiz 100
^	403.179M	61.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 15	52.5	46.0	+6.5	Horiz 100
^	403.215M	50.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	41.5	46.0	-4.5	Horiz 130
4	926.698M	114.1	+23.5 +0.8	+2.4	-29.1	+2.0	+0.0	113.7	117.6	-3.9	Horiz 130
5	172.846M QP	55.3	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 284	38.8	43.5	-4.7	Horiz 175
^	172.864M	58.7	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 284	42.2	43.5	-1.3	Horiz 175
^	172.945M	56.9	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0	40.4	43.5	-3.1	Horiz 130
8	403.964M QP	50.1	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 358	41.1	46.0	-4.9	Horiz 100
^	404.027M	59.7	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 358	50.7	46.0	+4.7	Horiz 100
^	404.056M	50.3	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	41.3	46.0	-4.7	Horiz 130
11	322.975M	51.6	+14.2 +0.4	+1.3	-28.3	+1.3	+0.0	40.5	46.0	-5.5	Horiz 130
12	401.293M	48.5	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	39.4	46.0	-6.6	Horiz 130
13	166.219M	52.7	+10.7 +0.3	+0.9	-28.6	+0.8	+0.0	36.8	43.5	-6.7	Horiz 130
14	240.933M	52.8	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	39.3	46.0	-6.7	Horiz 130
15	156.729M	51.8	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0	36.8	43.5	-6.7	Horiz 130
16	401.894M	48.3	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	39.2	46.0	-6.8	Horiz 130
17	401.654M	48.3	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	39.2	46.0	-6.8	Horiz 130
18	150.002M	50.8	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0	36.2	43.5	-7.3	Horiz 130
19	241.922M QP	51.6	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	38.1	46.0	-7.9	Horiz 120
^	241.894M	59.4	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	45.9	46.0	-0.1	Horiz 120
^	241.894M	55.4	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	41.9	46.0	-4.1	Horiz 130
22	402.855M	47.0	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	38.0	46.0	-8.0	Horiz 130
23	283.576M	49.7	+13.3 +0.4	+1.1	-28.2	+1.0	+0.0	37.3	46.0	-8.7	Horiz 130

24	281.774M	49.8	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0	37.3	46.0	-8.7	Horiz 130
25	403.576M	46.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	37.2	46.0	-8.8	Horiz 130
26	322.495M	48.0	+14.2 +0.4	+1.3	-28.3	+1.2	+0.0	36.8	46.0	-9.2	Horiz 130
27	242.422M QP	50.2	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	36.7	46.0	-9.3	Horiz 120
^	242.438M	58.4	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	44.9	46.0	-1.1	Horiz 120
^	242.495M	55.5	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	42.0	46.0	-4.0	Horiz 130
30	401.053M	45.2	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	36.1	46.0	-9.9	Horiz 130

CKC Laboratories, Inc. Date: 8/16/2010 Time: 15:21:11 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 12 Ext ATTN: 0 dB



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 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 15:37:17
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 13
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
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T3	AN01517	Preamp	8447D	5/21/2010	5/21/2012
T4	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
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External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

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FHSS radio transmitting on 915 - AM.
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Measurement Data:

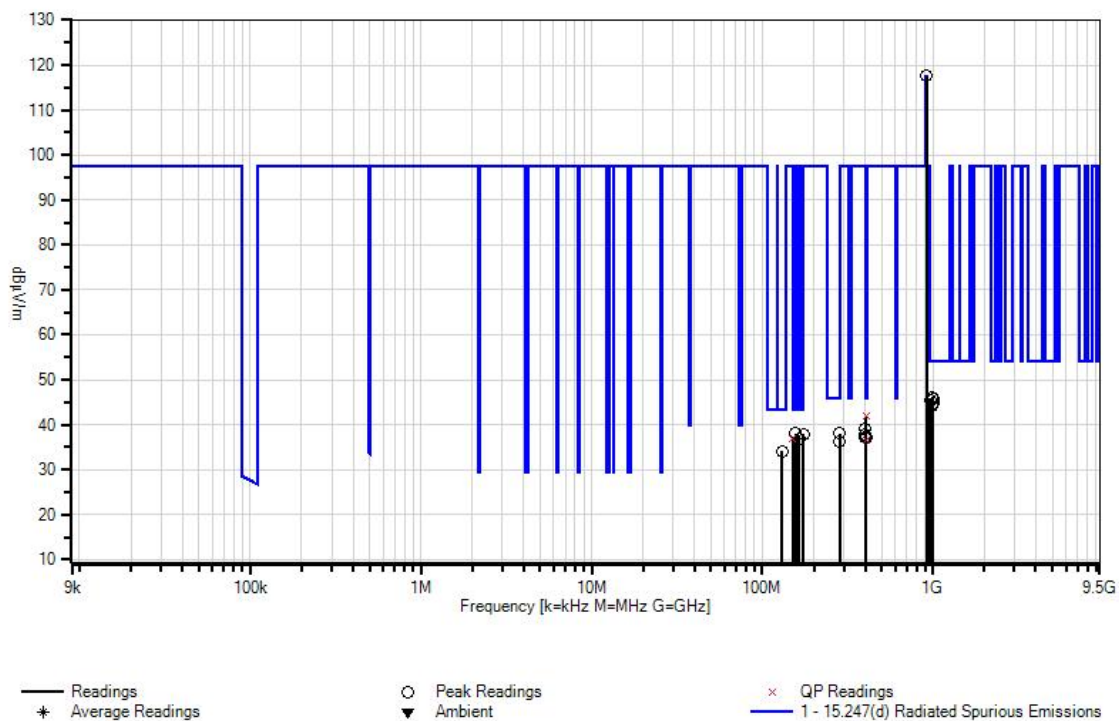
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1	915.047M	118.4	+23.3 +0.8	+2.3	-29.1	+1.9	+0.0 360	117.6	117.6	+0.0	Verti 130
2	403.207M QP	50.8	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 180	41.8	46.0	-4.2	Verti 159
^	403.161M	57.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 180	48.2	46.0	+2.2	Verti 159
^	403.215M	51.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	42.2	46.0	-3.8	Verti 130
5	156.849M	53.1	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0 360	38.1	43.5	-5.4	Verti 130
6	173.185M	54.3	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 360	37.8	43.5	-5.7	Verti 130
7	150.020M QP	51.6	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 360	37.0	43.5	-6.5	Verti 100
^	149.940M	55.6	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 360	41.0	43.5	-2.5	Verti 100
^	150.002M	53.0	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 360	38.4	43.5	-5.1	Verti 130
10	164.777M	52.7	+10.9 +0.3	+0.9	-28.6	+0.8	+0.0 360	37.0	43.5	-6.5	Verti 130
11	402.495M	48.2	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0 360	39.1	46.0	-6.9	Verti 130
12	282.495M	50.6	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	38.1	46.0	-7.9	Verti 130
13	992.988M	45.5	+24.3 +0.8	+2.4	-28.9	+2.0	+0.0 360	46.1	54.0	-7.9	Verti 130
14	401.654M	46.8	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0 360	37.7	46.0	-8.3	Verti 130
15	996.118M	44.7	+24.4 +0.8	+2.5	-28.9	+2.1	+0.0 360	45.6	54.0	-8.4	Verti 130
16	963.185M	45.6	+23.9 +0.8	+2.2	-29.0	+1.8	+0.0 360	45.3	54.0	-8.7	Verti 130
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19	404.897M	46.1	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	37.1	46.0	-8.9	Verti 130
20	999.123M	44.0	+24.4 +0.8	+2.5	-28.9	+2.1	+0.0 360	44.9	54.0	-9.1	Verti 130
21	403.796M QP	45.7	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 185	36.7	46.0	-9.3	Verti 156
^	403.729M	57.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 185	48.2	46.0	+2.2	Verti 156
^	403.816M	52.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	43.5	46.0	-2.5	Verti 130

24	129.942M	48.8	+12.3 +0.3	+0.8	-28.8	+0.7	+0.0 360	34.1	43.5	-9.4	Verti 130
25	989.231M	43.5	+24.3 +0.8	+2.4	-28.9	+2.0	+0.0 360	44.1	54.0	-9.9	Verti 130
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 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 15:56:44
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 14
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
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T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 30 MHz - 1 GHz
 Temp: 25° C
 Humidity: 42%
 Pressure: 102.1 kPa

FHSS radio transmitting on 915 - AM.
 Cell radio in RX mode (1880 MHz).
 GPS receiver Active.
 Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

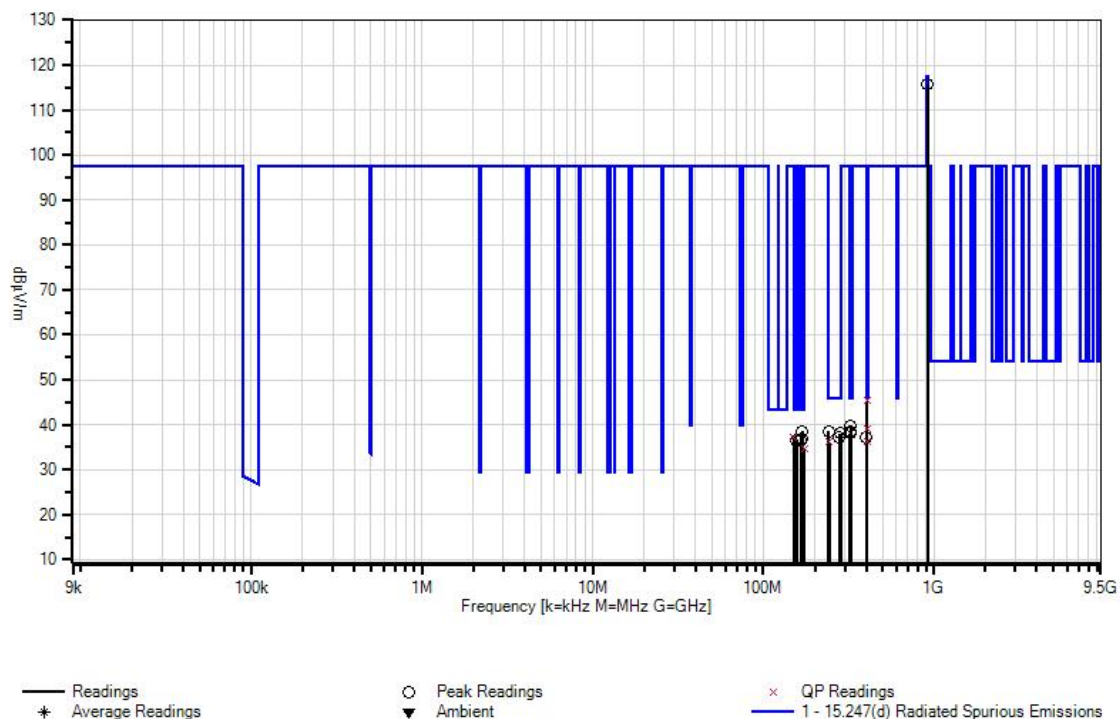
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	403.197M QP	54.4	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	45.4	46.0	-0.6	Horiz 100
^	403.212M	61.4	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	52.4	46.0	+6.4	Horiz 100
^	403.215M	50.9	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	41.9	46.0	-4.1	Horiz 130
4	915.047M	116.4	+23.3 +0.8	+2.3	-29.1	+1.9	+0.0 360	115.6	117.6	-2.0	Horiz 130
5	168.861M	54.7	+10.4 +0.3	+0.9	-28.5	+0.8	+0.0 360	38.6	43.5	-4.9	Horiz 130
6	150.002M QP	51.9	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 340	37.3	43.5	-6.2	Horiz 170
^	149.988M	54.9	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 340	40.3	43.5	-3.2	Horiz 170
^	150.002M	53.4	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0 360	38.8	43.5	-4.7	Horiz 130
9	323.456M	50.7	+14.3 +0.4	+1.3	-28.3	+1.3	+0.0 360	39.7	46.0	-6.3	Horiz 130
10	166.579M	52.8	+10.7 +0.3	+0.9	-28.6	+0.8	+0.0 360	36.9	43.5	-6.6	Horiz 130
11	156.729M	51.7	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0 360	36.7	43.5	-6.8	Horiz 130
12	403.852M QP	48.0	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 225	39.0	46.0	-7.0	Horiz 100
^	403.784M	58.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 225	49.2	46.0	+3.2	Horiz 100
^	403.816M	53.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	44.2	46.0	-1.8	Horiz 130
15	165.498M	52.2	+10.8 +0.3	+0.9	-28.6	+0.8	+0.0 360	36.4	43.5	-7.1	Horiz 130
16	241.173M	52.1	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	38.6	46.0	-7.4	Horiz 130
17	323.816M	49.4	+14.3 +0.4	+1.3	-28.3	+1.3	+0.0 360	38.4	46.0	-7.6	Horiz 130
18	322.855M	49.3	+14.2 +0.4	+1.3	-28.3	+1.2	+0.0 360	38.1	46.0	-7.9	Horiz 130
19	283.456M	50.4	+13.3 +0.4	+1.1	-28.2	+1.0	+0.0 360	38.0	46.0	-8.0	Horiz 130
20	282.254M	50.5	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	38.0	46.0	-8.0	Horiz 130
21	173.085M QP	51.3	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 240	34.8	43.5	-8.7	Horiz 100
^	173.065M	57.2	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 360	40.7	43.5	-2.8	Horiz 130
^	173.124M	55.4	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 240	38.9	43.5	-4.6	Horiz 100

24	279.011M	49.8	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	37.3	46.0	-8.7	Horiz 130
25	400.933M	46.3	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0 360	37.2	46.0	-8.8	Horiz 130
26	278.050M	49.7	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	37.2	46.0	-8.8	Horiz 130
27	242.287M QP	49.7	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	36.2	46.0	-9.8	Horiz 195
^	242.268M	59.2	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 180	45.7	46.0	-0.3	Horiz 195
^	242.254M	55.5	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 360	42.0	46.0	-4.0	Horiz 130
30	404.228M QP	45.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 179	36.2	46.0	-9.8	Horiz 194
^	404.205M	55.6	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 179	46.6	46.0	+0.6	Horiz 194
^	404.296M	51.0	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	42.0	46.0	-4.0	Horiz 130

CKC Laboratories, Inc. Date: 8/16/2010 Time: 15:56:44 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 14 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 3:59:38 PM
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 15
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T3	AN01517	Preamp	8447D	5/21/2010	5/21/2012
T4	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 30 MHz - 1 GHz
 Temp: 25° C
 Humidity: 42%
 Pressure: 102.1 kPa

FHSS radio transmitting on 915 - FM.
 Cell radio in RX mode (1880 MHz).
 GPS receiver Active.
 Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

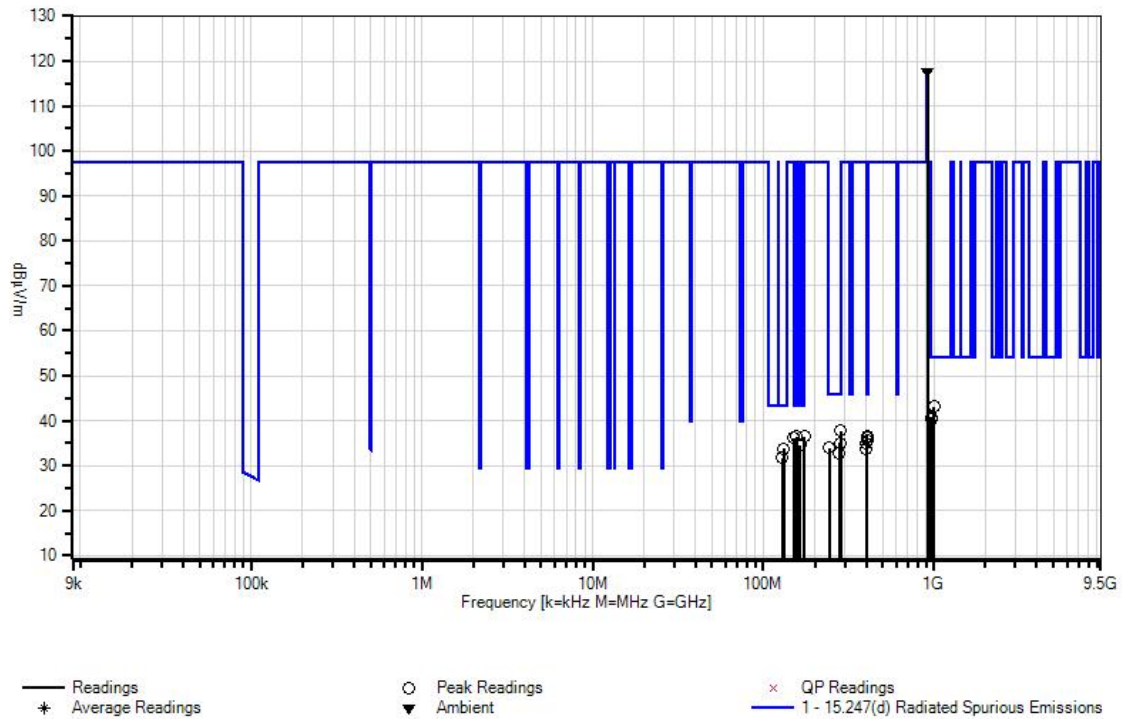
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	914.926M Ambient	118.5	+23.3 +0.8	+2.3	-29.1	+1.9	+0.0	117.7	117.6	+0.1	Verti 130
2	156.729M	51.5	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0	36.5	43.5	-7.0	Verti 130
3	173.185M	53.0	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0	36.5	43.5	-7.0	Verti 130
4	150.002M	50.7	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0	36.1	43.5	-7.4	Verti 130
5	284.537M	50.2	+13.3 +0.4	+1.1	-28.2	+1.0	+0.0	37.8	46.0	-8.2	Verti 130
6	163.576M	50.2	+11.0 +0.3	+0.9	-28.6	+0.8	+0.0	34.6	43.5	-8.9	Verti 130
7	403.696M	45.7	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	36.7	46.0	-9.3	Verti 130
8	132.104M	48.6	+12.2 +0.3	+0.8	-28.8	+0.7	+0.0	33.8	43.5	-9.7	Verti 130
9	403.936M	45.1	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	36.1	46.0	-9.9	Verti 130
10	403.095M	44.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	35.5	46.0	-10.5	Verti 130
11	281.894M	47.6	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0	35.1	46.0	-10.9	Verti 130
12	998.936M	42.2	+24.4 +0.8	+2.5	-28.9	+2.1	+0.0	43.1	54.0	-10.9	Verti 130
13	401.413M	44.0	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	34.9	46.0	-11.1	Verti 130
14	129.582M	46.5	+12.3 +0.3	+0.8	-28.8	+0.7	+0.0	31.8	43.5	-11.7	Verti 130
15	242.375M	47.4	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	33.9	46.0	-12.1	Verti 130
16	402.855M	42.7	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	33.7	46.0	-12.3	Verti 130
17	279.372M	45.3	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0	32.8	46.0	-13.2	Verti 130
18	963.122M	41.0	+23.9 +0.8	+2.2	-29.0	+1.8	+0.0	40.7	54.0	-13.3	Verti 130
19	964.312M	40.6	+24.0 +0.8	+2.2	-29.0	+1.8	+0.0	40.4	54.0	-13.6	Verti 130
20	972.514M	40.5	+24.1 +0.8	+2.2	-29.0	+1.8	+0.0	40.4	54.0	-13.6	Verti 130

CKC Laboratories, Inc. Date: 8/16/2010 Time: 3:59:38 PM Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Vertical Sequence#: 15 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 16:22:52
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 16
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T3	AN01517	Preamp	8447D	5/21/2010	5/21/2012
T4	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 30 MHz - 1 GHz
 Temp: 25° C
 Humidity: 42%
 Pressure: 102.1 kPa

FHSS radio transmitting on 915 - FM.
 Cell radio in RX mode (1880 MHz).
 GPS receiver Active.
 Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

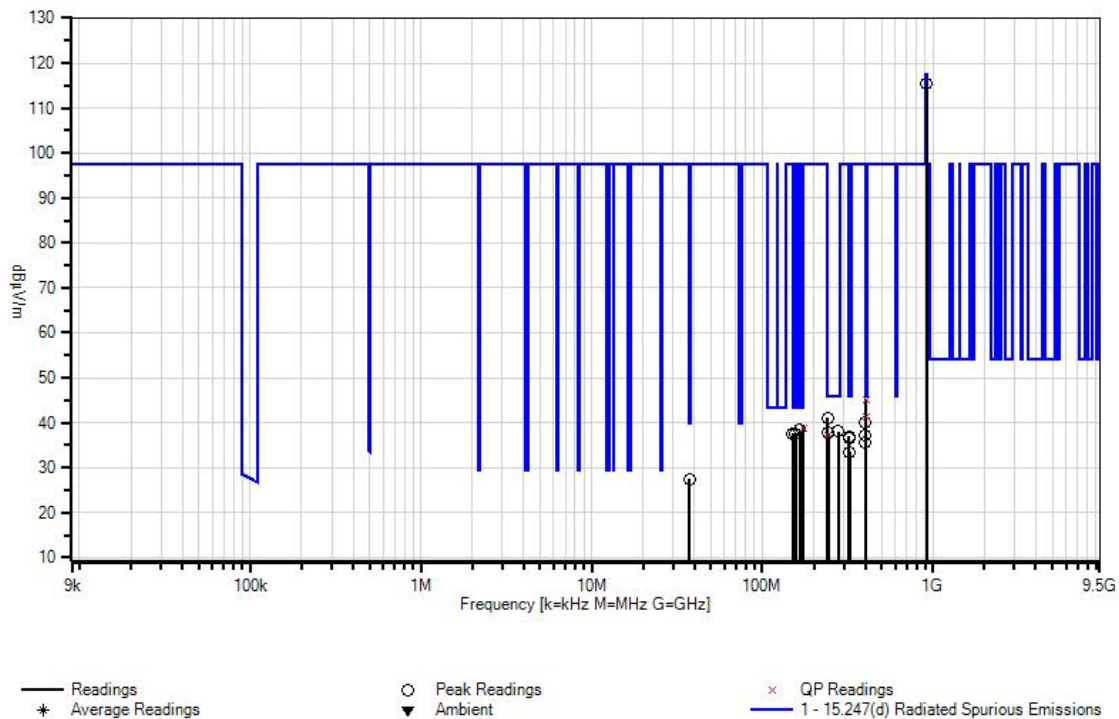
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	403.199M QP	54.2	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 358	45.2	46.0	-0.8	Horiz 100
^	403.161M	60.4	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 358	51.4	46.0	+5.4	Horiz 100
^	403.215M	50.5	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	41.5	46.0	-4.5	Horiz 130
4	915.047M	116.3	+23.3 +0.8	+2.3	-29.1	+1.9	+0.0	115.5	117.6	-2.1	Horiz 130
5	403.794M QP	50.4	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	41.4	46.0	-4.6	Horiz 100
^	403.786M	60.0	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0 360	51.0	46.0	+5.0	Horiz 100
^	403.816M	54.0	+16.5 +0.5	+1.5	-28.8	+1.3	+0.0	45.0	46.0	-1.0	Horiz 130
8	173.196M QP	55.3	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 305	38.8	43.5	-4.7	Horiz 175
^	173.193M	59.1	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0 305	42.6	43.5	-0.9	Horiz 175
^	173.185M	58.1	+10.0 +0.3	+0.9	-28.5	+0.8	+0.0	41.6	43.5	-1.9	Horiz 130
11	241.053M	54.6	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	41.1	46.0	-4.9	Horiz 130
12	166.219M	54.2	+10.7 +0.3	+0.9	-28.6	+0.8	+0.0	38.3	43.5	-5.2	Horiz 130
13	402.254M	49.3	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	40.2	46.0	-5.8	Horiz 130
14	150.002M	52.2	+12.1 +0.3	+0.9	-28.7	+0.8	+0.0	37.6	43.5	-5.9	Horiz 130
15	156.729M	52.4	+11.6 +0.3	+0.9	-28.6	+0.8	+0.0	37.4	43.5	-6.1	Horiz 130
16	279.732M	50.5	+13.2 +0.4	+1.1	-28.2	+1.0	+0.0	38.0	46.0	-8.0	Horiz 130
17	240.813M	51.5	+12.1 +0.4	+1.1	-28.2	+1.0	+0.0	37.9	46.0	-8.1	Horiz 130
18	242.307M QP	50.7	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0 190	37.2	46.0	-8.8	Horiz 120
^	242.375M	55.4	+12.2 +0.4	+1.1	-28.2	+1.0	+0.0	41.9	46.0	-4.1	Horiz 130
20	401.894M	46.2	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	37.1	46.0	-8.9	Horiz 130
21	323.095M	48.1	+14.2 +0.4	+1.3	-28.3	+1.3	+0.0	37.0	46.0	-9.0	Horiz 130
22	322.014M	47.7	+14.2 +0.4	+1.3	-28.3	+1.2	+0.0	36.5	46.0	-9.5	Horiz 130
23	322.615M	47.7	+14.2 +0.4	+1.3	-28.3	+1.2	+0.0	36.5	46.0	-9.5	Horiz 130

24	401.413M	44.8	+16.4 +0.5	+1.5	-28.8	+1.3	+0.0	35.7	46.0	-10.3	Horiz 130
25	323.936M	44.4	+14.3 +0.4	+1.3	-28.3	+1.3	+0.0	33.4	46.0	-12.6	Horiz 130
26	37.520M	42.9	+12.4 +0.1	+0.5	-28.9	+0.4	+0.0	27.4	40.0	-12.6	Horiz 130

CKC Laboratories, Inc. Date: 8/16/2010 Time: 16:22:52 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 16 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 18:12:00
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 22
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9.3 GHz
 Temp: 27° C
 Humidity: 38%
 Pressure: 101.7 kPa
 FHSS radio transmitting on 915
 Cell radio in RX mode (1880 MHz).
 GPS receiver Active.
 Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

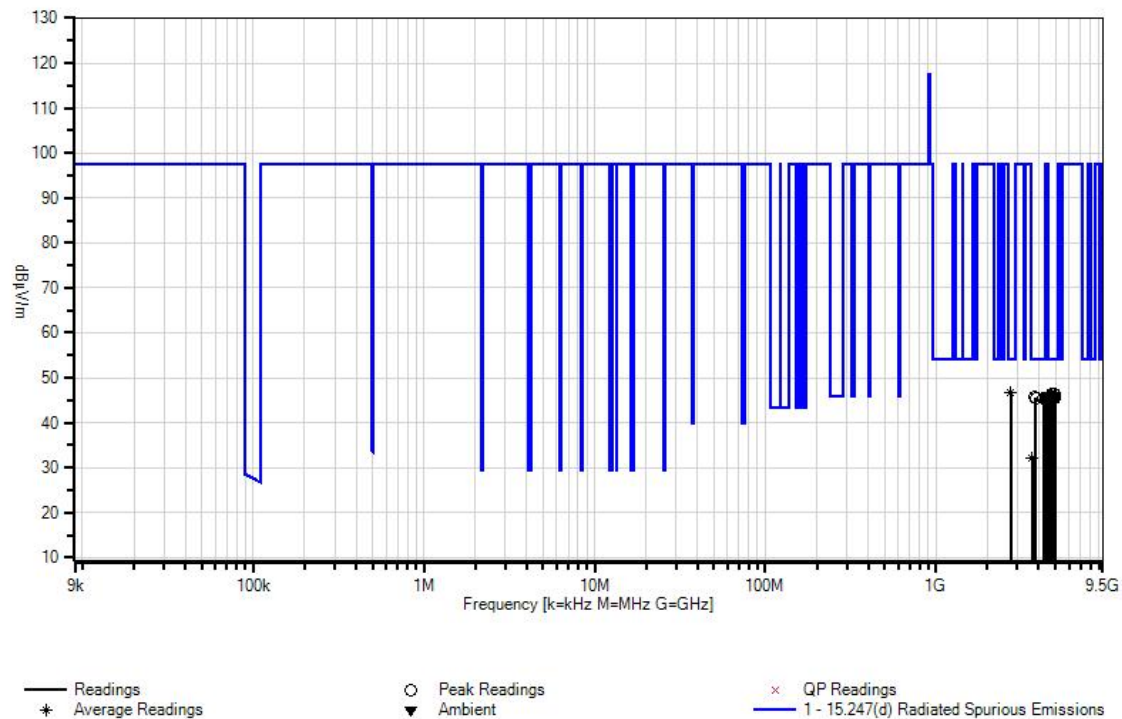
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	2745.013M Ave	47.2	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 -14.0	-6.0 60	46.8	54.0 Duty Cycle Correction applied (-14 dB).	-7.2	Verti 100
^	2745.013M	55.4	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 +0.0	-6.0 60	69.0	54.0	+15.0	Verti 100
^	2745.010M	52.8	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 +0.0	-6.0	66.4	54.0	+12.4	Verti 100
4	4795.065M	26.8	+32.9 -33.8	+0.1 +4.2	+0.4 +2.0	+19.7 +0.0	-6.0	46.3	54.0	-7.7	Verti 100
5	4947.762M	26.1	+33.1 -33.7	+0.2 +4.3	+0.4 +2.0	+19.9 +0.0	-6.0	46.3	54.0	-7.7	Verti 100
6	4916.189M	26.0	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0	45.9	54.0	-8.1	Verti 100
7	3792.056M	27.7	+31.2 -33.7	+0.5 +3.8	+0.3 +1.9	+20.0 +0.0	-6.0	45.7	54.0	-8.3	Verti 100
8	4765.214M	26.1	+32.9 -33.8	+0.1 +4.3	+0.4 +2.0	+19.7 +0.0	-6.0	45.7	54.0	-8.3	Verti 100
9	4600.864M	26.2	+32.7 -33.8	+0.2 +4.1	+0.4 +1.9	+19.9 +0.0	-6.0	45.6	54.0	-8.4	Verti 100
10	4619.883M	26.1	+32.7 -33.8	+0.2 +4.2	+0.4 +1.9	+19.9 +0.0	-6.0	45.6	54.0	-8.4	Verti 100
11	4574.838M	26.3	+32.6 -33.8	+0.2 +4.1	+0.4 +1.9	+19.8 +0.0	-6.0	45.5	54.0	-8.5	Verti 100
12	4915.615M	25.6	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0	45.5	54.0	-8.5	Verti 100
13	4858.210M	25.6	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.8 +0.0	-6.0	45.4	54.0	-8.6	Verti 100
14	3842.106M	27.2	+31.4 -33.6	+0.4 +3.8	+0.3 +1.9	+20.0 +0.0	-6.0	45.4	54.0	-8.6	Verti 100
15	4626.890M	25.9	+32.7 -33.8	+0.2 +4.2	+0.4 +1.9	+19.9 +0.0	-6.0	45.4	54.0	-8.6	Verti 100
16	4268.532M	26.7	+32.2 -33.8	+0.3 +3.9	+0.4 +1.9	+19.7 +0.0	-6.0	45.3	54.0	-8.7	Verti 100
17	3848.112M	27.1	+31.4 -33.6	+0.4 +3.8	+0.3 +1.9	+20.0 +0.0	-6.0	45.3	54.0	-8.7	Verti 100
18	4373.637M	26.5	+32.4 -33.7	+0.2 +4.0	+0.4 +2.0	+19.5 +0.0	-6.0	45.3	54.0	-8.7	Verti 100
19	4907.291M	25.4	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0	45.3	54.0	-8.7	Verti 100
20	4870.265M	25.5	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.8 +0.0	-6.0	45.3	54.0	-8.7	Verti 100
21	4789.037M	25.7	+32.9 -33.8	+0.1 +4.2	+0.4 +2.0	+19.7 +0.0	-6.0	45.2	54.0	-8.8	Verti 100

22	3660.025M	28.8	+30.8	+0.6	+0.3	+20.0	-6.0	32.1	54.0	-21.9	Verti
	Ave		-33.8	+3.6	+1.8	-14.0	35				100
^	3660.025M	41.3	+30.8	+0.6	+0.3	+20.0	-6.0	44.6	54.0	-9.4	Verti
			-33.8	+3.6	+1.8	-14.0	35				100
^	3660.025M	32.1	+30.8	+0.6	+0.3	+20.0	-6.0	35.4	54.0	-18.6	Verti
			-33.8	+3.6	+1.8	-14.0					100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 18:12:00 Iron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 22 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 18:20:22
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 23
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 5 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 915

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

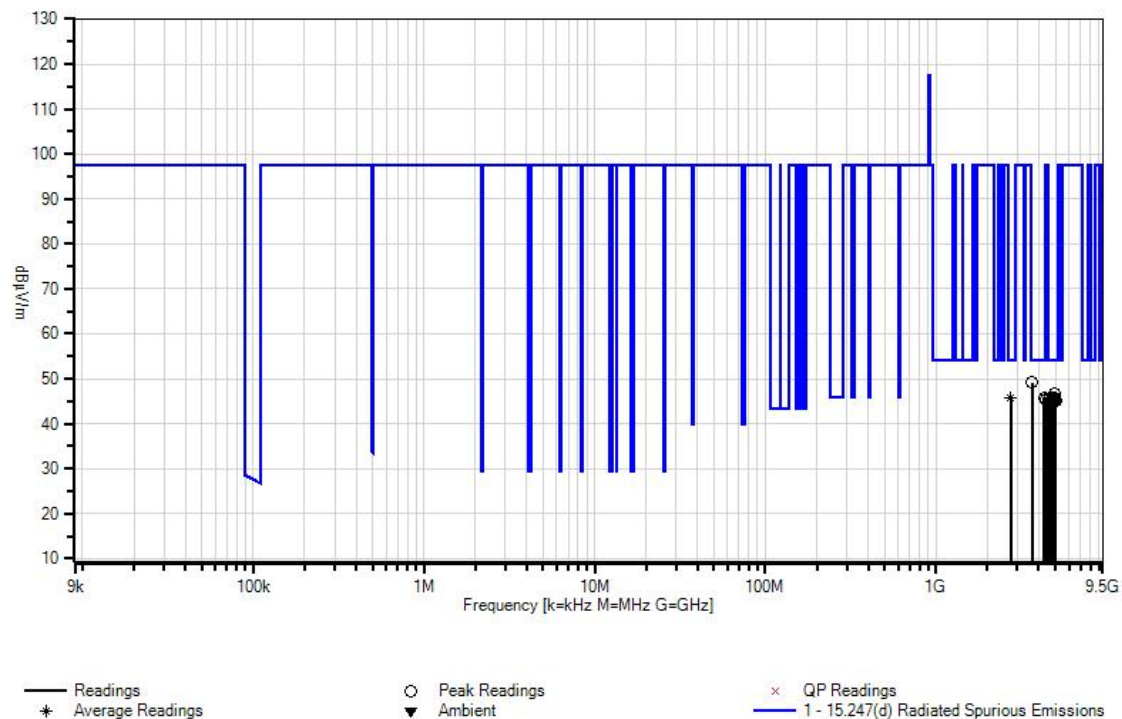
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	3659.924M	31.8	+30.8 -33.8	+0.6 +3.6	+0.3 +1.8	+20.0 +0.0	-6.0 360	49.1	54.0	-4.9	Horiz 100
2	4945.178M	26.4	+33.1 -33.7	+0.2 +4.3	+0.4 +2.0	+19.9 +0.0	-6.0 360	46.6	54.0	-7.4	Horiz 100
3	4821.184M	26.3	+32.9 -33.8	+0.2 +4.2	+0.4 +2.0	+19.7 +0.0	-6.0 360	45.9	54.0	-8.1	Horiz 100
4	4703.967M	26.2	+32.8 -33.8	+0.1 +4.3	+0.4 +2.0	+19.8 +0.0	-6.0 360	45.8	54.0	-8.2	Horiz 100
5	4932.549M	25.7	+33.1 -33.7	+0.1 +4.3	+0.4 +2.0	+19.9 +0.0	-6.0 360	45.8	54.0	-8.2	Horiz 100
6	4669.933M	26.3	+32.8 -33.8	+0.2 +4.2	+0.4 +1.9	+19.8 +0.0	-6.0 360	45.8	54.0	-8.2	Horiz 100
7	4922.504M	25.8	+33.1 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0 360	45.8	54.0	-8.2	Horiz 100
8	4907.004M	25.9	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0 360	45.8	54.0	-8.2	Horiz 100
9	4304.568M	27.1	+32.3 -33.8	+0.3 +3.9	+0.4 +1.9	+19.6 +0.0	-6.0 360	45.7	54.0	-8.3	Horiz 100
10	4969.288M	25.4	+33.1 -33.7	+0.2 +4.3	+0.4 +2.0	+20.0 +0.0	-6.0 360	45.7	54.0	-8.3	Horiz 100
11	2745.016M Ave	46.1	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 -14.0	-6.0 111	45.7	54.0 Duty Cycle Correction applied (-14 dB).	-8.3	Horiz 130
^	2744.992M	53.5	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 +0.0	-6.0 111	67.1	54.0	+13.1	Horiz 130
^	2745.010M	50.4	+28.5 -34.3	+0.4 +3.1	+0.3 +1.5	+20.1 +0.0	-6.0 360	64.0	54.0	+10.0	Horiz 100
14	4920.781M	25.6	+33.1 -33.7	+0.1 +4.2	+0.4 +2.0	+19.9 +0.0	-6.0 360	45.6	54.0	-8.4	Horiz 100
15	4574.838M	26.3	+32.6 -33.8	+0.2 +4.1	+0.4 +1.9	+19.8 +0.0	-6.0 360	45.5	54.0	-8.5	Horiz 100
16	4841.563M	25.6	+33.0 -33.8	+0.2 +4.2	+0.4 +2.0	+19.8 +0.0	-6.0 360	45.4	54.0	-8.6	Horiz 100
17	4732.781M	25.6	+32.8 -33.8	+0.2 +4.3	+0.4 +2.0	+19.8 +0.0	-6.0 360	45.3	54.0	-8.7	Horiz 100

18	4372.636M	26.5	+32.4 -33.7	+0.2 +4.0	+0.4 +2.0	+19.5 +0.0	-6.0 360	45.3	54.0	-8.7	Horiz 100
19	4768.659M	25.6	+32.9 -33.8	+0.1 +4.3	+0.4 +2.0	+19.7 +0.0	-6.0 360	45.2	54.0	-8.8	Horiz 100
20	4796.213M	25.7	+32.9 -33.8	+0.1 +4.2	+0.4 +2.0	+19.7 +0.0	-6.0 360	45.2	54.0	-8.8	Horiz 100
21	4992.824M	25.0	+33.1 -33.7	+0.1 +4.3	+0.4 +2.0	+20.0 +0.0	-6.0 360	45.2	54.0	-8.8	Horiz 100
22	4897.819M	25.4	+33.0 -33.7	+0.1 +4.2	+0.4 +2.0	+19.8 +0.0	-6.0 360	45.2	54.0	-8.8	Horiz 100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 18:20:22 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 23 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 6:22:40 PM
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 24
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 5 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 915

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

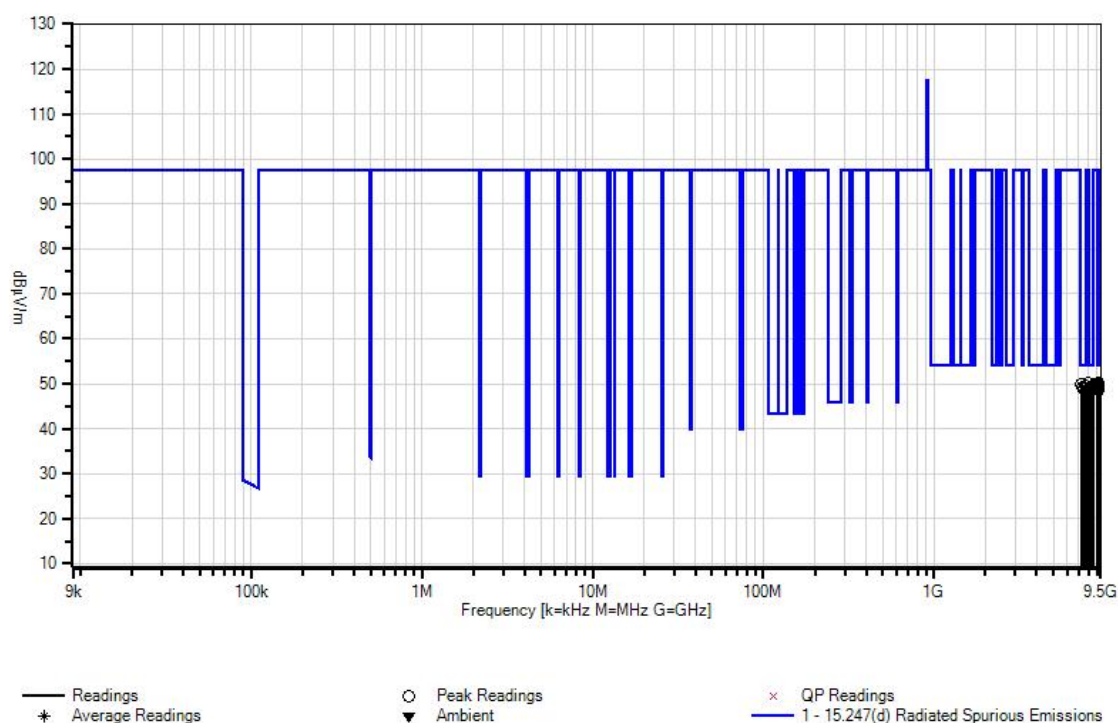
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	8052.049M	25.7	+36.2 -34.7	+0.5 +5.5	+0.4 +2.5	+20.1	-6.0 360	50.2	54.0	-3.8	Horiz 100
2	9144.304M	24.6	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.2	-6.0 360	50.1	54.0	-3.9	Horiz 100
3	7320.318M	26.4	+36.1 -34.6	+0.3 +5.2	+0.5 +2.4	+19.6	-6.0 360	49.9	54.0	-4.1	Horiz 100
4	9183.376M	24.2	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4	-6.0 360	49.9	54.0	-4.1	Horiz 100
5	7712.710M	24.9	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.4	-6.0 360	49.7	54.0	-4.3	Horiz 100
6	8496.493M	24.8	+35.8 -34.6	+0.5 +5.6	+0.4 +2.5	+20.7	-6.0 360	49.7	54.0	-4.3	Horiz 100
7	9088.360M	24.4	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.1	-6.0 360	49.7	54.0	-4.3	Horiz 100
8	9160.288M	24.0	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3	-6.0 360	49.6	54.0	-4.4	Horiz 100
9	8463.460M	24.6	+35.9 -34.6	+0.4 +5.6	+0.4 +2.5	+20.6	-6.0 360	49.4	54.0	-4.6	Horiz 100
10	9098.720M	24.1	+36.5 -34.3	+0.3 +5.7	+0.3 +2.6	+20.1	-6.0 360	49.3	54.0	-4.7	Horiz 100
11	9093.984M	24.0	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.1	-6.0 360	49.3	54.0	-4.7	Horiz 100
12	8369.366M	24.7	+35.9 -34.7	+0.5 +5.6	+0.4 +2.4	+20.4	-6.0 360	49.2	54.0	-4.8	Horiz 100
13	7354.352M	25.8	+36.1 -34.6	+0.3 +5.2	+0.5 +2.3	+19.5	-6.0 360	49.1	54.0	-4.9	Horiz 100
14	9100.496M	23.8	+36.5 -34.3	+0.3 +5.7	+0.3 +2.7	+20.1	-6.0 360	49.1	54.0	-4.9	Horiz 100
15	8302.299M	24.6	+36.0 -34.7	+0.5 +5.5	+0.4 +2.5	+20.2	-6.0 360	49.0	54.0	-5.0	Horiz 100
16	9174.200M	23.3	+36.5 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3	-6.0 360	49.0	54.0	-5.0	Horiz 100

17	8195.192M	24.4	+36.1 -34.7	+0.6 +5.5	+0.4 +2.7	+19.9 360	-6.0	48.9	54.0	-5.1	Horiz 100
18	8331.328M	24.4	+36.0 -34.7	+0.5 +5.5	+0.4 +2.5	+20.3 360	-6.0	48.9	54.0	-5.1	Horiz 100
19	7498.496M	24.9	+36.2 -34.6	+0.4 +5.4	+0.4 +2.4	+19.7 360	-6.0	48.8	54.0	-5.2	Horiz 100
20	9175.088M	23.0	+36.5 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 360	-6.0	48.7	54.0	-5.3	Horiz 100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 6:22:40 PM Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 24 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 6:34:09 PM
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 25
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 5 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 915

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

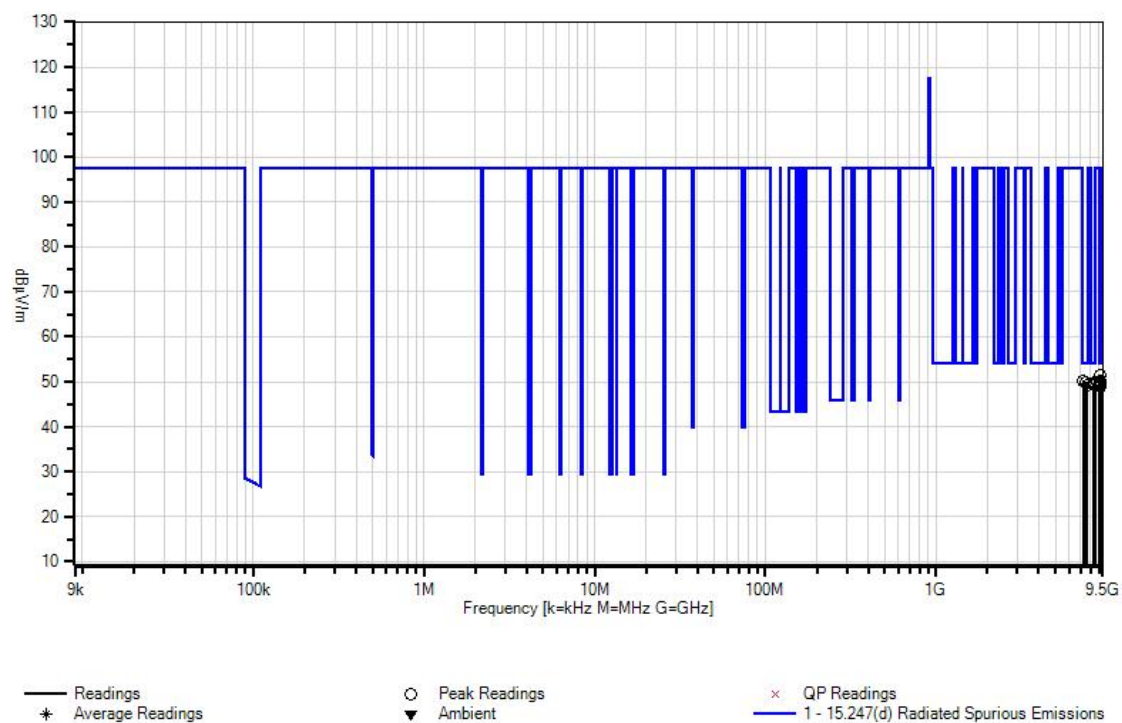
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	9165.912M	25.7	+36.5 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3	-6.0	51.4	54.0	-2.6	Verti 100
2	7320.318M	26.6	+36.1 -34.6	+0.3 +5.2	+0.5 +2.4	+19.6	-6.0	50.1	54.0	-3.9	Verti 100
3	9183.672M	24.4	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4	-6.0	50.1	54.0	-3.9	Verti 100
4	9193.440M	24.3	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4	-6.0	50.0	54.0	-4.0	Verti 100
5	7591.589M	25.8	+36.2 -34.9	+0.4 +5.4	+0.4 +2.6	+20.0	-6.0	49.9	54.0	-4.1	Verti 100
6	8411.408M	25.2	+35.9 -34.7	+0.5 +5.6	+0.4 +2.4	+20.5	-6.0	49.8	54.0	-4.2	Verti 100
7	8337.334M	25.1	+36.0 -34.7	+0.5 +5.5	+0.4 +2.5	+20.3	-6.0	49.6	54.0	-4.4	Verti 100
8	8497.494M	24.7	+35.8 -34.6	+0.5 +5.6	+0.4 +2.5	+20.7	-6.0	49.6	54.0	-4.4	Verti 100
9	9185.744M	23.9	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4	-6.0	49.6	54.0	-4.4	Verti 100
10	9185.152M	23.8	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4	-6.0	49.5	54.0	-4.5	Verti 100
11	9153.480M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3	-6.0	49.5	54.0	-4.5	Verti 100
12	8442.439M	24.8	+35.9 -34.7	+0.4 +5.6	+0.4 +2.4	+20.6	-6.0	49.4	54.0	-4.6	Verti 100
13	9073.560M	24.2	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.0	-6.0	49.4	54.0	-4.6	Verti 100
14	7683.681M	24.5	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.3	-6.0	49.2	54.0	-4.8	Verti 100
15	9091.616M	23.9	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.1	-6.0	49.2	54.0	-4.8	Verti 100
16	8450.447M	24.3	+35.9 -34.6	+0.4 +5.6	+0.4 +2.5	+20.6	-6.0	49.1	54.0	-4.9	Verti 100

17	7667.665M	24.6	+36.2	+0.4	+0.5	+20.2	-6.0	49.1	54.0	-4.9	Verti 100
			-34.7	+5.4	+2.5						
18	9061.720M	23.9	+36.6	+0.3	+0.3	+20.0	-6.0	49.1	54.0	-4.9	Verti 100
			-34.3	+5.7	+2.6						
19	9036.264M	24.1	+36.6	+0.2	+0.3	+19.9	-6.0	49.1	54.0	-4.9	Verti 100
			-34.3	+5.7	+2.6						
20	9066.752M	23.9	+36.5	+0.3	+0.3	+20.0	-6.0	49.0	54.0	-5.0	Verti 100
			-34.3	+5.7	+2.6						

CKC Laboratories, Inc. Date: 8/16/2010 Time: 6:34:09 PM Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 25 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 18:56:02
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 26
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 903

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

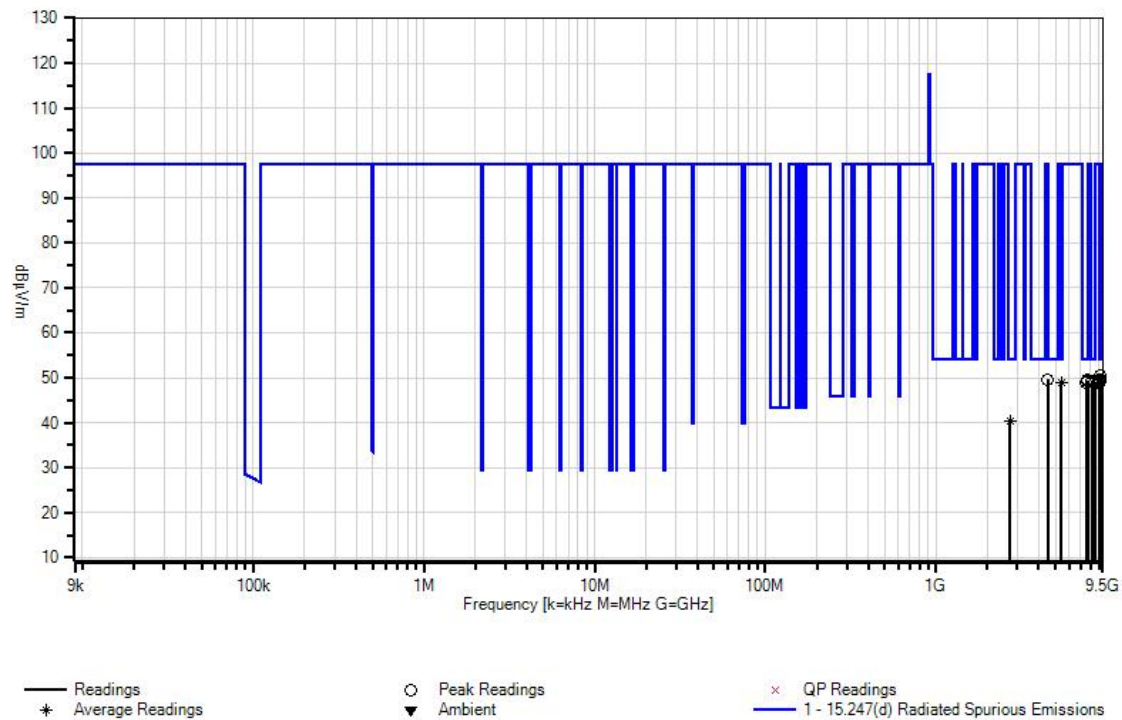
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	9170.060M	24.7	+36.5 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0	50.4	54.0	-3.6	Verti 100
2	4515.512M	30.7	+32.6 -33.9	+0.2 +4.1	+0.4 +1.9	+19.7 +0.0	-6.0	49.7	54.0	-4.3	Verti 100
3	9195.756M	24.0	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0	49.7	54.0	-4.3	Verti 100
4	9052.968M	24.4	+36.6 -34.3	+0.3 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0	49.6	54.0	-4.4	Verti 100
5	7701.695M	24.7	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.4 +0.0	-6.0	49.5	54.0	-4.5	Verti 100
6	9156.336M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0	49.5	54.0	-4.5	Verti 100
7	9161.300M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0	49.5	54.0	-4.5	Verti 100
8	9143.196M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.2 +0.0	-6.0	49.4	54.0	-4.6	Verti 100
9	8186.179M	24.8	+36.1 -34.7	+0.6 +5.5	+0.4 +2.7	+19.9 +0.0	-6.0	49.3	54.0	-4.7	Verti 100
10	7689.683M	24.5	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.3 +0.0	-6.0	49.2	54.0	-4.8	Verti 100
11	7683.677M	24.5	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.3 +0.0	-6.0	49.2	54.0	-4.8	Verti 100
12	9153.124M	23.6	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0	49.2	54.0	-4.8	Verti 100
13	9046.544M	24.2	+36.6 -34.3	+0.2 +5.7	+0.3 +2.6	+19.9 +0.0	-6.0	49.2	54.0	-4.8	Verti 100
14	9087.132M	23.8	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.1 +0.0	-6.0	49.1	54.0	-4.9	Verti 100
15	7571.565M	24.9	+36.2 -34.8	+0.4 +5.4	+0.4 +2.6	+19.9 +0.0	-6.0	49.0	54.0	-5.0	Verti 100
16	9050.048M	23.9	+36.6 -34.3	+0.2 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0	49.0	54.0	-5.0	Verti 100
17	8475.468M	23.9	+35.9 -34.6	+0.5 +5.6	+0.4 +2.5	+20.7 +0.0	-6.0	48.9	54.0	-5.1	Verti 100
18	9031.944M	23.9	+36.6 -34.3	+0.2 +5.7	+0.3 +2.6	+19.9 +0.0	-6.0	48.9	54.0	-5.1	Verti 100

19	5418.018M	27.5	+33.9	+0.1	+0.5	+20.0	-6.0	48.8	54.0	-5.2	Verti
	Ave		-33.9	+4.6	+2.1	+0.0	340				100
^	5418.018M	39.8	+33.9	+0.1	+0.5	+20.0	-6.0	61.1	54.0	+7.1	Verti
			-33.9	+4.6	+2.1	+0.0	340				100
^	5418.018M	30.0	+33.9	+0.1	+0.5	+20.0	-6.0	51.3	54.0	-2.7	Verti
			-33.9	+4.6	+2.1	+0.0					100
22	2709.004M	40.8	+28.4	+0.4	+0.3	+20.1	-6.0	40.2	54.0	-13.8	Verti
	Ave		-34.3	+3.0	+1.5	-14.0	60		Duty Cycle Correction applied (-14 dB).		100
^	2708.948M	49.0	+28.4	+0.4	+0.3	+20.1	-6.0	62.4	54.0	+8.4	Verti
			-34.3	+3.0	+1.5	+0.0	60				100
^	2708.948M	45.3	+28.4	+0.4	+0.3	+20.1	-6.0	58.7	54.0	+4.7	Verti
			-34.3	+3.0	+1.5	+0.0					100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 18:56:02 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 26 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 19:11:39
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 27
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 903

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

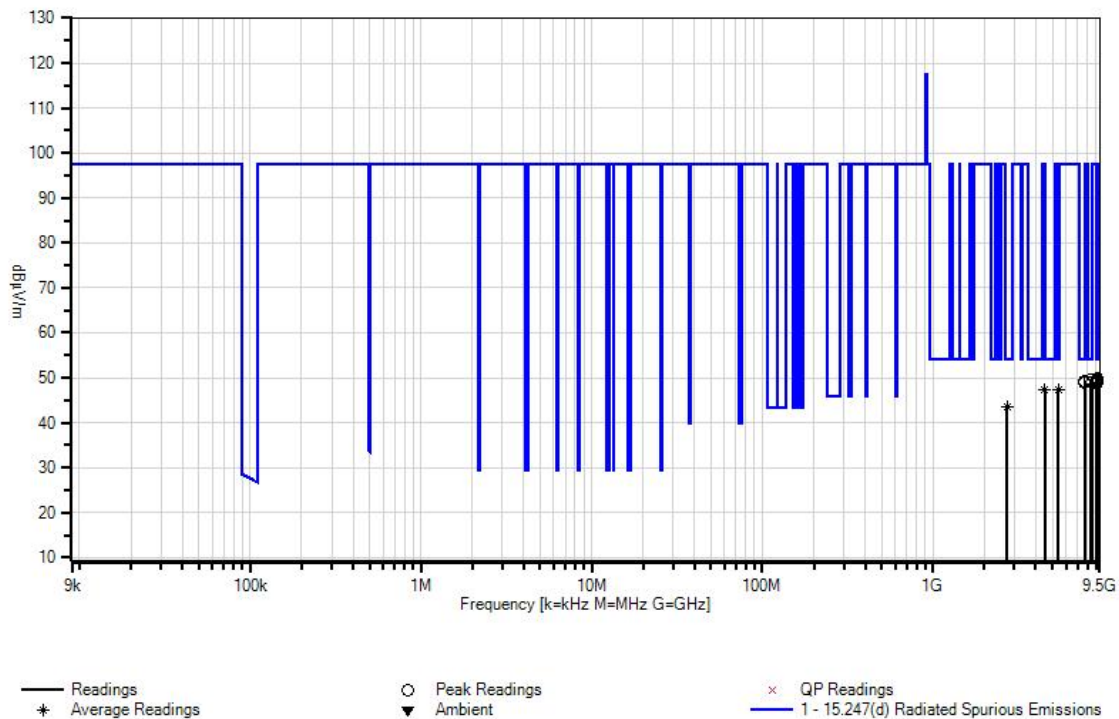
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	9196.340M	24.2	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0	49.9	54.0	-4.1	Horiz 100
2	9105.528M	24.3	+36.5 -34.3	+0.3 +5.7	+0.3 +2.7	+20.1 +0.0	-6.0	49.6	54.0	-4.4	Horiz 100
3	8320.313M	25.0	+36.0 -34.7	+0.5 +5.5	+0.4 +2.5	+20.3 +0.0	-6.0	49.5	54.0	-4.5	Horiz 100
4	9066.400M	24.3	+36.6 -34.3	+0.3 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0	49.5	54.0	-4.5	Horiz 100
5	9146.992M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.2 +0.0	-6.0	49.4	54.0	-4.6	Horiz 100
6	9025.520M	24.1	+36.6 -34.3	+0.3 +5.7	+0.3 +2.6	+19.9 +0.0	-6.0	49.2	54.0	-4.8	Horiz 100
7	7708.702M	24.4	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.4 +0.0	-6.0	49.2	54.0	-4.8	Horiz 100
8	7739.733M	24.3	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.5 +0.0	-6.0	49.2	54.0	-4.8	Horiz 100
9	9137.648M	23.7	+36.5 -34.2	+0.2 +5.7	+0.3 +2.7	+20.2 +0.0	-6.0	49.1	54.0	-4.9	Horiz 100
10	7705.699M	24.3	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.4 +0.0	-6.0	49.1	54.0	-4.9	Horiz 100
11	7741.735M	24.1	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.5 +0.0	-6.0	49.0	54.0	-5.0	Horiz 100
12	7697.691M	24.3	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.3 +0.0	-6.0	49.0	54.0	-5.0	Horiz 100
13	8487.480M	24.1	+35.8 -34.6	+0.5 +5.6	+0.4 +2.5	+20.7 +0.0	-6.0	49.0	54.0	-5.0	Horiz 100
14	9183.784M	23.3	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0	49.0	54.0	-5.0	Horiz 100
15	9173.564M	23.3	+36.5 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0	49.0	54.0	-5.0	Horiz 100
16	9002.995M	23.8	+36.6 -34.3	+0.4 +5.7	+0.3 +2.6	+19.8 +0.0	-6.0	48.9	54.0	-5.1	Horiz 100
17	9081.292M	23.7	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0	48.9	54.0	-5.1	Horiz 100
18	4515.014M Ave	28.3	+32.6 -33.9	+0.2 +4.1	+0.4 +1.9	+19.7 +0.0	-6.0 70	47.3	54.0	-6.7	Horiz 125

^ 4515.031M	39.9	+32.6	+0.2	+0.4	+19.7	-6.0	58.9	54.0	+4.9	Horiz
		-33.9	+4.1	+1.9	+0.0	70				125
^ 4515.031M	31.9	+32.6	+0.2	+0.4	+19.7	-6.0	50.9	54.0	-3.1	Horiz
		-33.9	+4.1	+1.9	+0.0					100
21 5418.020M	26.0	+33.9	+0.1	+0.5	+20.0	-6.0	47.3	54.0	-6.7	Horiz
Ave		-33.9	+4.6	+2.1	+0.0	260				116
^ 5418.000M	38.2	+33.9	+0.1	+0.5	+20.0	-6.0	59.5	54.0	+5.5	Horiz
		-33.9	+4.6	+2.1	+0.0	260				116
^ 5418.000M	29.7	+33.9	+0.1	+0.5	+20.0	-6.0	51.0	54.0	-3.0	Horiz
		-33.9	+4.6	+2.1	+0.0					100
24 2709.005M	44.1	+28.4	+0.4	+0.3	+20.1	-6.0	43.5	54.0	-10.5	Horiz
Ave		-34.3	+3.0	+1.5	-14.0	353		Duty Cycle Correction applied (-14 dB).		116
^ 2708.917M	52.2	+28.4	+0.4	+0.3	+20.1	-6.0	65.6	54.0	+11.6	Horiz
		-34.3	+3.0	+1.5	+0.0	353				116
^ 2708.917M	47.0	+28.4	+0.4	+0.3	+20.1	-6.0	60.4	54.0	+6.4	Horiz
		-34.3	+3.0	+1.5	+0.0					100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 19:11:39 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 27 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 19:31:45
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 28
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 926.8

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

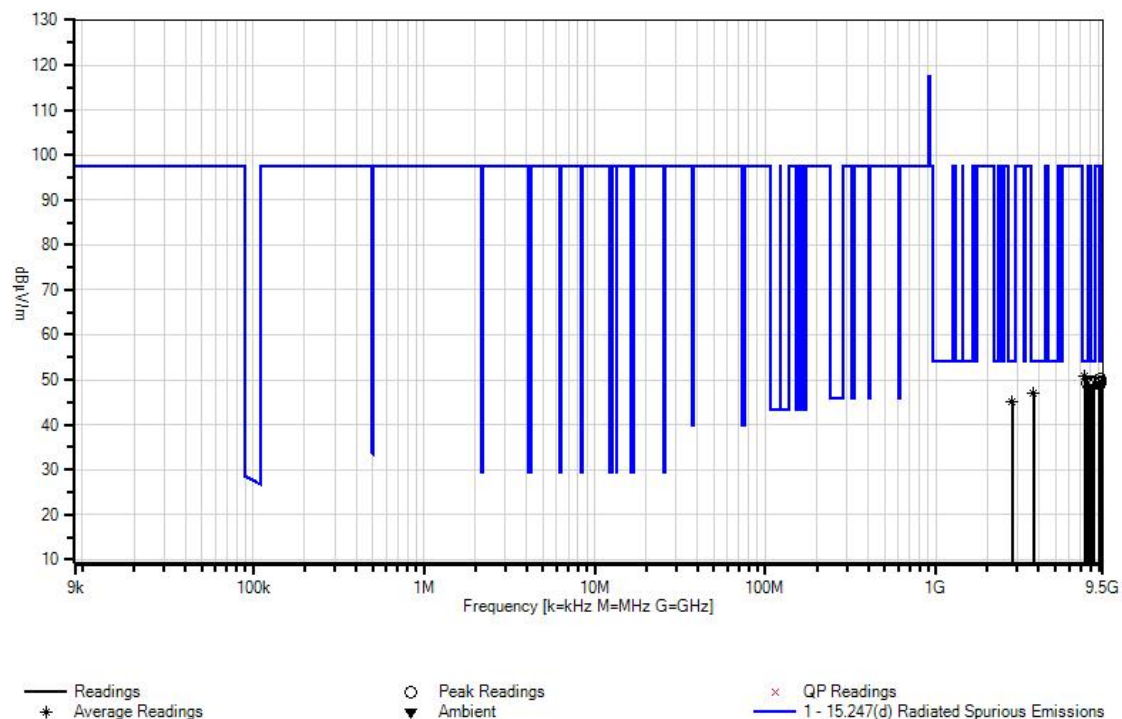
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5	T6	T7	T8	Table	dBμV/m	dBμV/m	dB	Ant
1	7414.416M	27.4	+36.2	+0.4	+0.5	+19.4	-6.0	50.9	54.0	-3.1	Verti
	Ave		-34.6	+5.3	+2.3	+0.0					120
^	7414.408M	39.6	+36.2	+0.4	+0.5	+19.4	-6.0	63.1	54.0	+9.1	Verti
			-34.6	+5.3	+2.3	+0.0					120
^	7414.408M	28.1	+36.2	+0.4	+0.5	+19.4	-6.0	51.6	54.0	-2.4	Verti
			-34.6	+5.3	+2.3	+0.0	360				100
4	9182.908M	24.5	+36.4	+0.4	+0.3	+20.3	-6.0	50.1	54.0	-3.9	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
5	8341.334M	25.0	+36.0	+0.5	+0.4	+20.3	-6.0	49.5	54.0	-4.5	Verti
			-34.7	+5.5	+2.5	+0.0	360				100
6	9146.992M	23.9	+36.5	+0.3	+0.3	+20.2	-6.0	49.4	54.0	-4.6	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
7	9166.264M	23.6	+36.5	+0.4	+0.3	+20.3	-6.0	49.3	54.0	-4.7	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
8	9178.236M	23.6	+36.5	+0.4	+0.3	+20.3	-6.0	49.3	54.0	-4.7	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
9	9198.092M	23.6	+36.4	+0.4	+0.3	+20.4	-6.0	49.3	54.0	-4.7	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
10	9161.884M	23.6	+36.5	+0.3	+0.3	+20.3	-6.0	49.2	54.0	-4.8	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
11	9187.872M	23.5	+36.4	+0.4	+0.3	+20.4	-6.0	49.2	54.0	-4.8	Verti
			-34.2	+5.7	+2.7	+0.0	360				100
12	9035.740M	24.2	+36.6	+0.2	+0.3	+19.9	-6.0	49.2	54.0	-4.8	Verti
			-34.3	+5.7	+2.6	+0.0	360				100
13	9054.720M	24.0	+36.6	+0.3	+0.3	+20.0	-6.0	49.2	54.0	-4.8	Verti
			-34.3	+5.7	+2.6	+0.0	360				100
14	8450.443M	24.3	+35.9	+0.4	+0.4	+20.6	-6.0	49.1	54.0	-4.9	Verti
			-34.6	+5.6	+2.5	+0.0	360				100
15	8072.065M	24.6	+36.2	+0.5	+0.4	+20.1	-6.0	49.1	54.0	-4.9	Verti
			-34.7	+5.5	+2.5	+0.0	360				100
16	7723.717M	24.3	+36.2	+0.4	+0.5	+20.4	-6.0	49.1	54.0	-4.9	Verti
			-34.6	+5.4	+2.5	+0.0	360				100
17	9103.484M	23.8	+36.5	+0.3	+0.3	+20.1	-6.0	49.1	54.0	-4.9	Verti
			-34.3	+5.7	+2.7	+0.0	360				100
18	9197.508M	23.4	+36.4	+0.4	+0.3	+20.4	-6.0	49.1	54.0	-4.9	Verti
			-34.2	+5.7	+2.7	+0.0	360				100

19	9181.740M	23.5	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0 360	49.1	54.0	-4.9	Verti 100
20	9179.404M	23.5	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0 360	49.1	54.0	-4.9	Verti 100
21	3707.232M Ave	29.5	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 30	47.0	54.0	-7.0	Verti 100
^	3707.140M	40.8	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 30	58.3	54.0	+4.3	Verti 100
^	3707.140M	33.0	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 360	50.5	54.0	-3.5	Verti 100
24	2780.408M Ave	45.3	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 -14.0	-6.0 63	45.2	54.0	-8.8	Verti 100
Duty Cycle Correction applied (-14 dB).											
^	2780.408M	54.4	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 +0.0	-6.0 63	68.3	54.0	+14.3	Verti 100
^	2780.408M	53.1	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 +0.0	-6.0 360	67.0	54.0	+13.0	Verti 100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 19:31:45 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 28 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Itron, Inc.**
 Specification: **15.247(d) Radiated Spurious Emissions**
 Work Order #: **90820** Date: 8/16/2010
 Test Type: **Maximized Emissions** Time: 19:50:37
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 29
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100T (model: Tower CCU)
 S/N: 7404FCC6

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	ANP05508	Attenuator	BW-S20W2	10/12/2009	10/12/2011
T5	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
T6	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T7	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T8	ANCOR-WO90893-20100811	Duty Cycle Correction Factor		8/11/2010	8/11/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (always external antennas)*	Itron, Inc.	CCU100T (model: Tower CCU)	7404FCC6
External RF Filter	Delta Microwave	U1993	101
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External GPS Antenna	Trimble	57861-00	213100323
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External ISM Antenna	Laird Technologies	FG9026	40241

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Dell	Latitude D630	9JQRJH1

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9.3 GHz

Temp: 27° C

Humidity: 38%

Pressure: 101.7 kPa

FHSS radio transmitting on 926.8

Cell radio in RX mode (1880 MHz).

GPS receiver Active.

Cannot put Wi-Fi radio into RX only mode.

Ext Attn: 0 dB

Measurement Data:

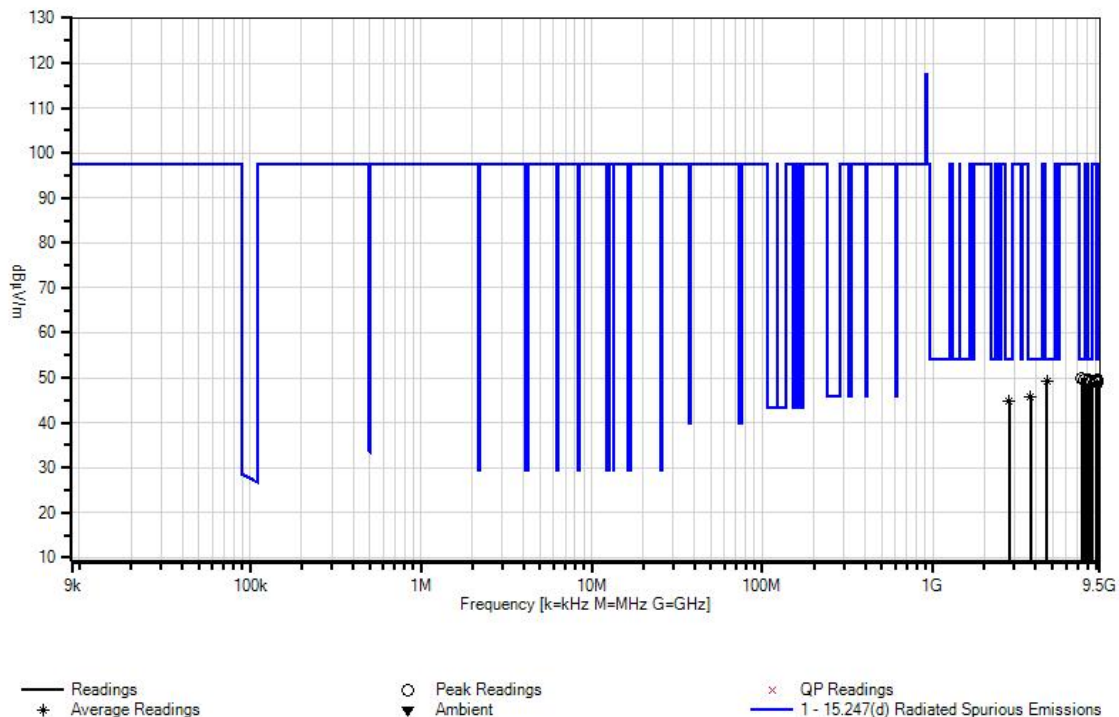
Reading listed by margin.

Test Distance: 1.5 Meters

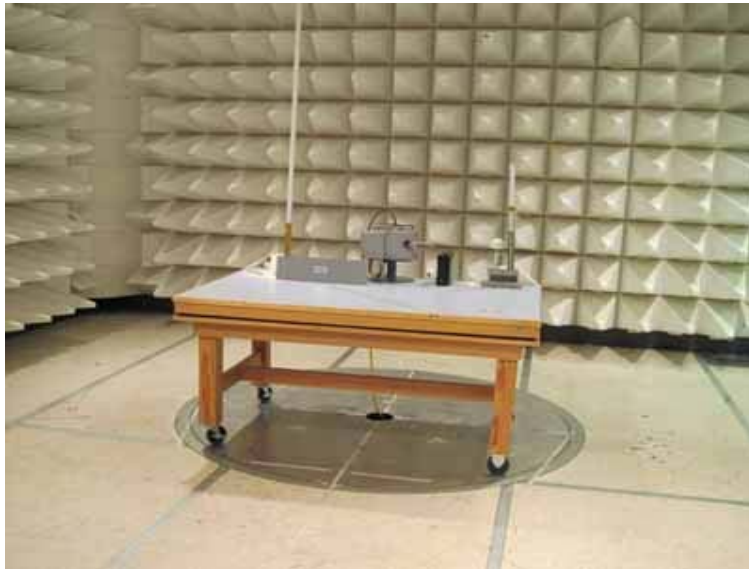
#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	7414.408M	26.4	+36.2 -34.6	+0.4 +5.3	+0.5 +2.3	+19.4 +0.0	-6.0 360	49.9	54.0	-4.1	Horiz 100
2	8220.213M	24.9	+36.0 -34.7	+0.7 +5.5	+0.4 +2.7	+20.0 +0.0	-6.0 360	49.5	54.0	-4.5	Horiz 100
3	7740.734M	24.6	+36.2 -34.6	+0.4 +5.4	+0.5 +2.5	+20.5 +0.0	-6.0 360	49.5	54.0	-4.5	Horiz 100
4	9180.572M	23.9	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0 360	49.5	54.0	-4.5	Horiz 100
5	9152.248M	23.9	+36.5 -34.2	+0.3 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0 360	49.5	54.0	-4.5	Horiz 100
6	9090.636M	24.1	+36.5 -34.3	+0.4 +5.7	+0.3 +2.6	+20.1 +0.0	-6.0 360	49.4	54.0	-4.6	Horiz 100
7	9192.836M	23.7	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0 360	49.4	54.0	-4.6	Horiz 100
8	9197.508M	23.6	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0 360	49.3	54.0	-4.7	Horiz 100
9	9194.588M	23.6	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0 360	49.3	54.0	-4.7	Horiz 100
10	9031.068M	24.3	+36.6 -34.3	+0.2 +5.7	+0.3 +2.6	+19.9 +0.0	-6.0 360	49.3	54.0	-4.7	Horiz 100
11	9056.472M	24.0	+36.6 -34.3	+0.3 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0 360	49.2	54.0	-4.8	Horiz 100
12	8466.459M	24.3	+35.9 -34.6	+0.4 +5.6	+0.4 +2.5	+20.6 +0.0	-6.0 360	49.1	54.0	-4.9	Horiz 100
13	4634.010M Ave	29.6	+32.7 -33.8	+0.2 +4.2	+0.4 +1.9	+19.9 +0.0	-6.0 135	49.1	54.0	-4.9	Horiz 196
^	4634.010M	40.8	+32.7 -33.8	+0.2 +4.2	+0.4 +1.9	+19.9 +0.0	-6.0 135	60.3	54.0	+6.3	Horiz 196
^	4634.010M	30.8	+32.7 -33.8	+0.2 +4.2	+0.4 +1.9	+19.9 +0.0	-6.0 360	50.3	54.0	-3.7	Horiz 100
16	9066.108M	23.9	+36.6 -34.3	+0.3 +5.7	+0.3 +2.6	+20.0 +0.0	-6.0 360	49.1	54.0	-4.9	Horiz 100
17	8498.491M	24.2	+35.8 -34.6	+0.5 +5.6	+0.4 +2.5	+20.7 +0.0	-6.0 360	49.1	54.0	-4.9	Horiz 100
18	9182.032M	23.4	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.3 +0.0	-6.0 360	49.0	54.0	-5.0	Horiz 100

19	8078.071M	24.4	+36.2 -34.7	+0.5 +5.5	+0.4 +2.5	+20.1 +0.0	-6.0 360	48.9	54.0	-5.1	Horiz 100
20	9183.200M	23.2	+36.4 -34.2	+0.4 +5.7	+0.3 +2.7	+20.4 +0.0	-6.0 360	48.9	54.0	-5.1	Horiz 100
21	3707.200M Ave	28.4	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 15	45.9	54.0	-8.1	Horiz 100
^	3707.200M	40.5	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 15	58.0	54.0	+4.0	Horiz 100
^	3707.200M	32.6	+30.9 -33.8	+0.6 +3.7	+0.3 +1.8	+20.0 +0.0	-6.0 360	50.1	54.0	-3.9	Horiz 100
24	2780.429M Ave	45.1	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 -14.0	-6.0 260	45.0	54.0	-9.0	Horiz 123
Duty Cycle Correction applied (-14 dB).											
^	2780.429M	53.8	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 +0.0	-6.0 260	67.7	54.0	+13.7	Horiz 123
^	2780.429M	48.5	+28.6 -34.3	+0.5 +3.1	+0.3 +1.6	+20.1 +0.0	-6.0 360	62.4	54.0	+8.4	Horiz 100

CKC Laboratories, Inc. Date: 8/16/2010 Time: 19:50:37 Iron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 29 Ext ATTN: 0 dB



Test Setup Photos



RSS-210 VERSION 7

99% Bandwidth

Test Set up

This is all conducted RF testing. The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable and 10 dB attenuator. The EUT was cycled through the different channels and modes by test software on a support laptop, connected to the EUT by an Ethernet cable.

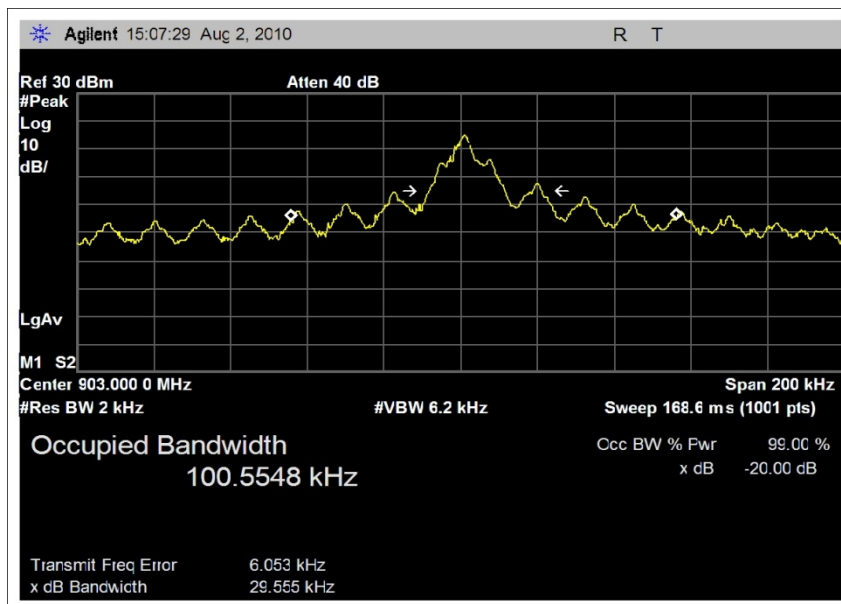
Engineer Name: J. Gilbert

Test Equipment				
Equipment	Serial	Cal Date	Cal Due	Asset
Spectrum Analyzer	MY46186330	08/25/2009	08/25/2011	02872
Cable 10k-18G	NA	10/23/2009	10/23/2011	03121

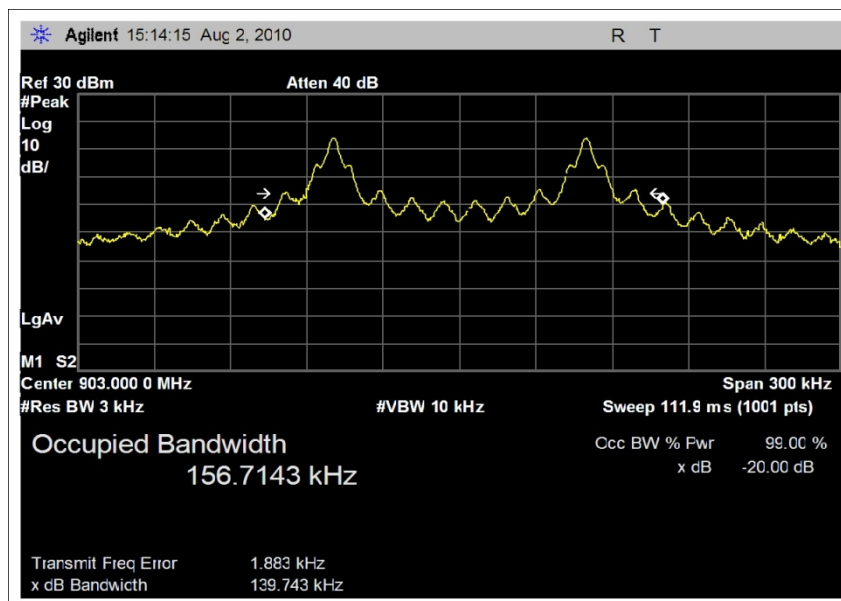
Test Data

903 MHz	AM	FM-12.5 kBaud	FM-37.5 kBaud
	100.55 kHz	156.71 kHz	65.17 kHz
915 MHz	AM	FM-12.5 kBaud	FM-37.5 kBaud
	103.16 kHz	161.42 kHz	68.18 kHz
926.8 MHz	AM	FM-12.5 kBaud	FM-37.5 kBaud
	118.43 kHz	156.13 kHz	60.21 kHz

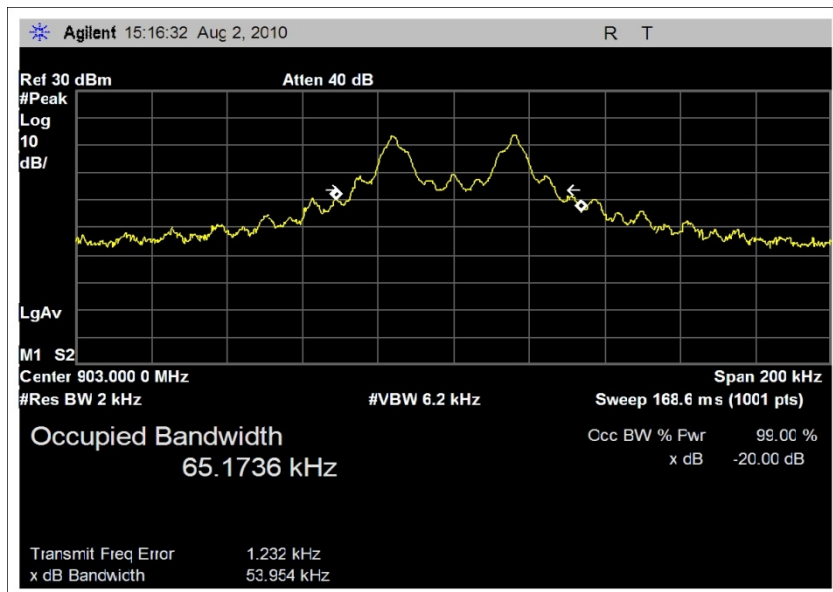
Requirement: The transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.



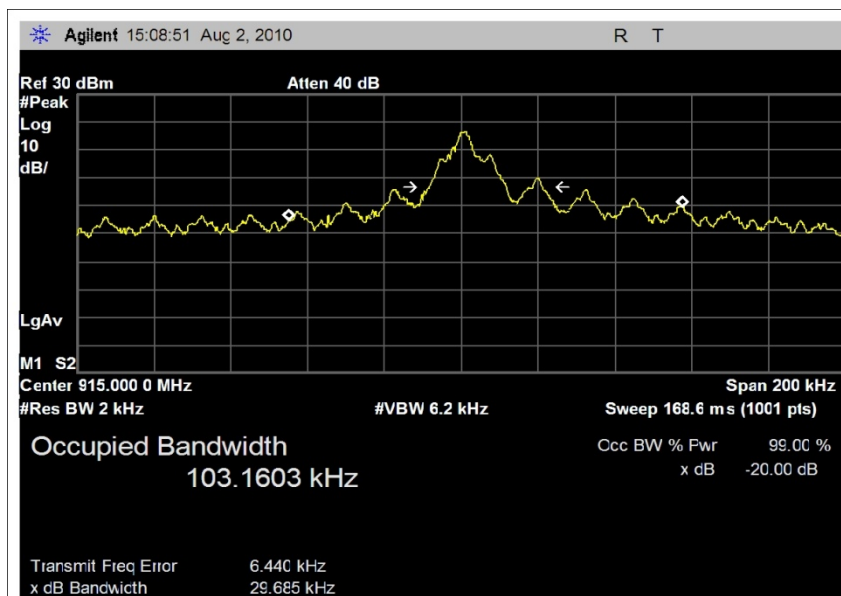
903-AM



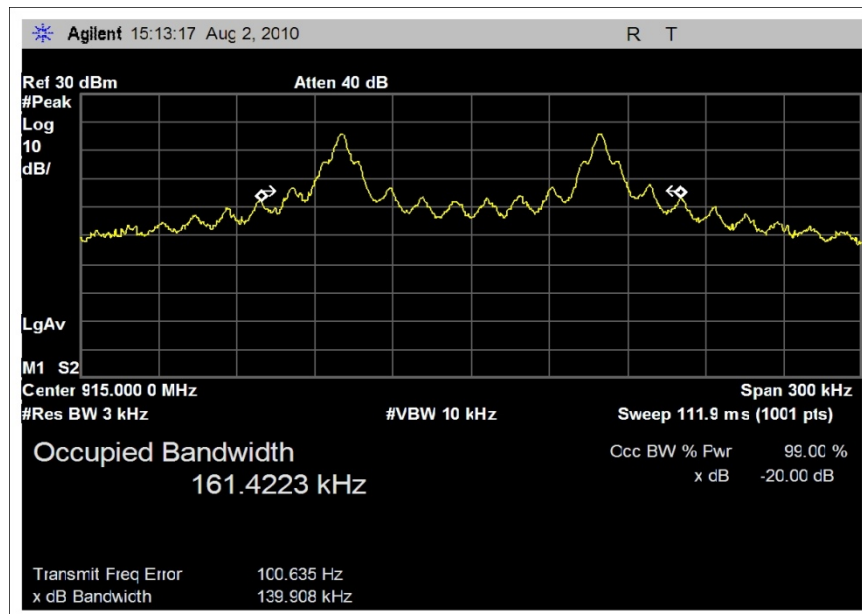
903-FM-12.5



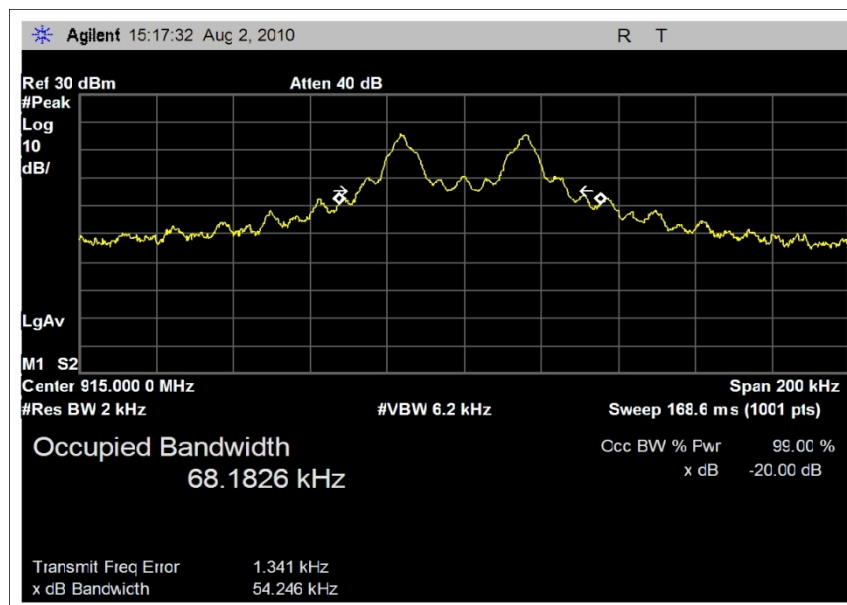
903-FM-37.5



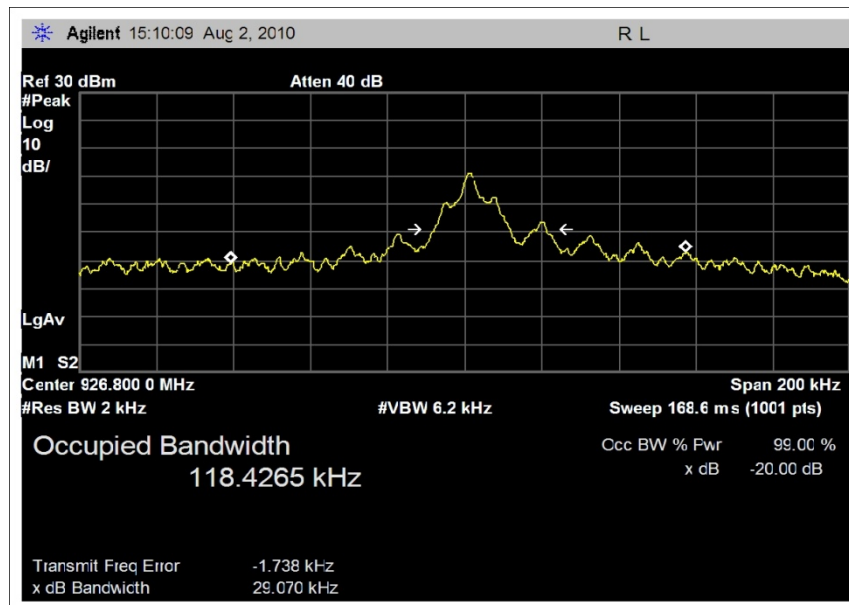
915-FM



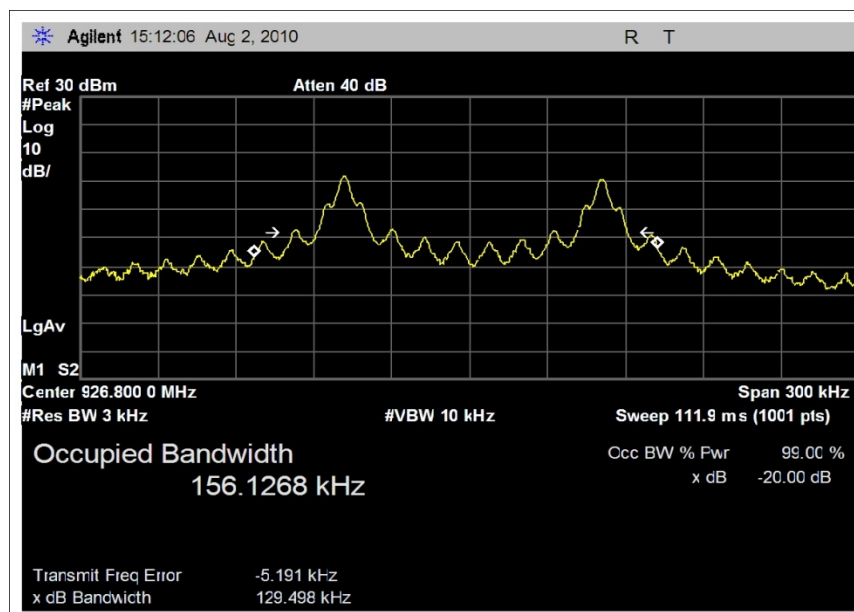
915-FM-12.5



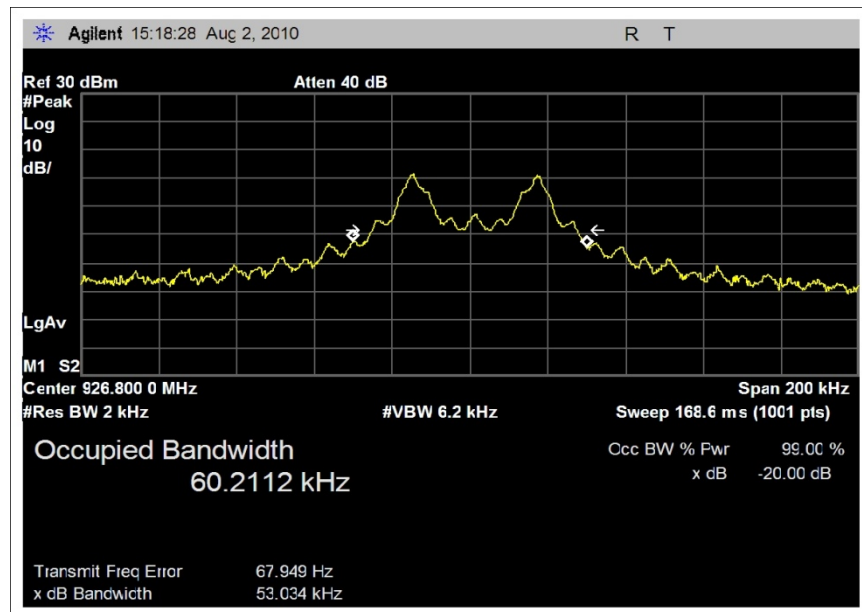
915-FM-37.5



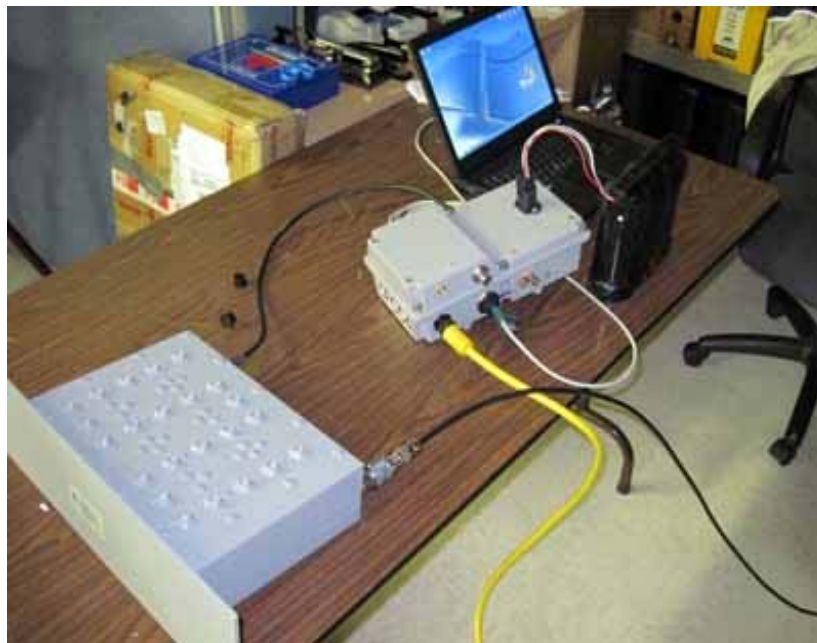
926.8-AM



926.8-FM-12.5



926.8-FM-37.5



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties 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

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 dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/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. 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. A 10 dB attenuator is used, but it is figured in EMITest as a transducer, just like the cables and LISN. 10 dB of external attenuation is not manually inserted into the correction factor section of the PSA.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED 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 "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. 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/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients 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

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. 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.