

Ext Attn: 0 dB

Measurement Data:

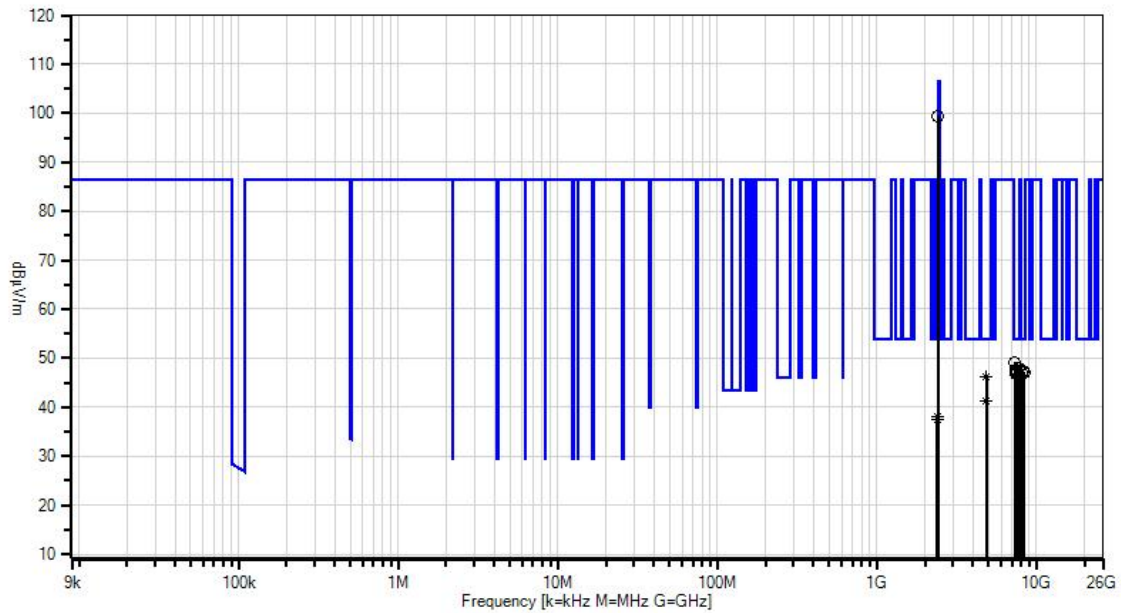
Reading listed by margin.

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	7293.789M	39.5	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	49.1	54.0	-4.9	Horiz 100
2	7712.207M	37.9	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.9	54.0	-6.1	Horiz 100
3	7418.914M	37.9	+36.2 +2.3	+0.5	-34.6	+5.3	+0.0	47.6	54.0	-6.4	Horiz 100
4	8168.663M	37.5	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0	47.5	54.0	-6.5	Horiz 100
5	7558.053M	37.6	+36.2 +2.5	+0.4	-34.8	+5.4	+0.0	47.3	54.0	-6.7	Horiz 100
6	7519.014M	37.4	+36.2 +2.5	+0.4	-34.7	+5.4	+0.0	47.2	54.0	-6.8	Horiz 100
7	7526.021M	37.4	+36.2 +2.5	+0.4	-34.7	+5.4	+0.0	47.2	54.0	-6.8	Horiz 100
8	8357.852M	37.4	+35.9 +2.5	+0.4	-34.7	+5.6	+0.0	47.1	54.0	-6.9	Horiz 100
9	2415.070M	101.8	+27.9 +1.3	+0.3	-34.5	+2.7	+0.0	99.5	106.4	-6.9	Horiz 100
10	7547.042M	37.3	+36.2 +2.5	+0.4	-34.7	+5.4	+0.0	47.1	54.0	-6.9	Horiz 100
11	8040.535M	37.2	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0	47.1	54.0	-6.9	Horiz 100
12	7589.084M	37.3	+36.2 +2.6	+0.4	-34.9	+5.4	+0.0	47.0	54.0	-7.0	Horiz 100
13	7367.863M	37.5	+36.1 +2.3	+0.5	-34.6	+5.2	+0.0	47.0	54.0	-7.0	Horiz 100
14	7615.110M	37.3	+36.2 +2.6	+0.4	-34.9	+5.4	+0.0	47.0	54.0	-7.0	Horiz 100
15	7602.097M	37.3	+36.2 +2.6	+0.4	-34.9	+5.4	+0.0	47.0	54.0	-7.0	Horiz 100
16	7404.900M	37.2	+36.2 +2.3	+0.5	-34.6	+5.3	+0.0	46.9	54.0	-7.1	Horiz 100
17	4823.779M	40.4	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	46.1	54.0	-7.9	Horiz 100
	Ave						135				
^	4823.779M	51.8	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	57.5	54.0	+3.5	Horiz 100
							135				
^	4823.779M	48.0	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	53.7	54.0	-0.3	Horiz 100
20	4827.827M	35.5	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	41.2	54.0	-12.8	Horiz 100
	Ave						135				
^	4827.827M	47.6	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	53.3	54.0	-0.7	Horiz 100
							135				
^	4827.827M	44.7	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	50.4	54.0	-3.6	Horiz 100
23	2386.750M	40.4	+28.0 +1.3	+0.3	-34.5	+2.7	+0.0	38.2	54.0	-15.8	Horiz 100
	Ave						135		Bandedge		

^	2386.750M	53.1	+28.0	+0.3	-34.5	+2.7	+0.0	50.9	54.0	-3.1	Horiz
			+1.3				135		Bandedge		100
^	2386.750M	50.9	+28.0	+0.3	-34.5	+2.7	+0.0	48.7	54.0	-5.3	Horiz
			+1.3						Bandedge		100
26	2387.741M	39.8	+28.0	+0.3	-34.5	+2.7	+0.0	37.6	54.0	-16.4	Horiz
	Ave		+1.3				135		Bandedge		100
^	2387.741M	52.4	+28.0	+0.3	-34.5	+2.7	+0.0	50.2	54.0	-3.8	Horiz
			+1.3				135		Bandedge		100
^	2387.741M	50.4	+28.0	+0.3	-34.5	+2.7	+0.0	48.2	54.0	-5.8	Horiz
			+1.3						Bandedge		100

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



— Readings
 * Average Readings
 ○ Peak Readings
 ▼ Ambient
 × QP Readings
 — 1 - 15.247(d) Radiated Spurious Emissions



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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 2
 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	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.2 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2412 MHz.

Ext Attn: 0 dB

Measurement Data:

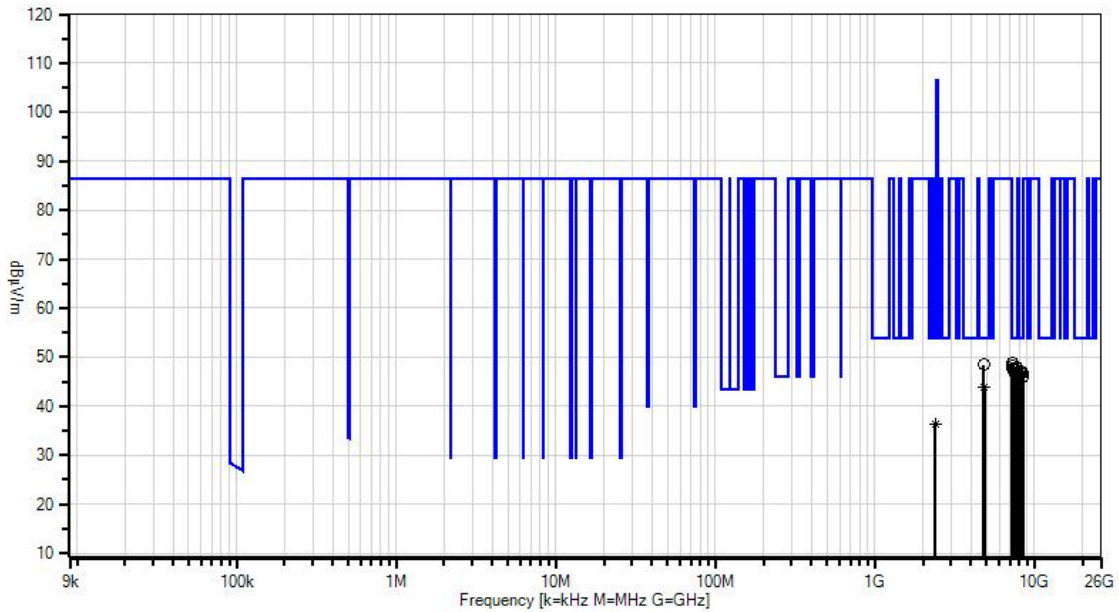
Reading listed by margin.

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	7254.750M	39.2	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	48.8	54.0	-5.2	Verti 100
2	4820.318M	42.7	+32.9 +2.0	+0.4	-33.8	+4.2	+0.0	48.4	54.0	-5.6	Verti 100
3	7299.795M	38.5	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	48.1	54.0	-5.9	Verti 100
4	7696.191M	37.9	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.9	54.0	-6.1	Verti 100
5	7272.768M	38.0	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.6	54.0	-6.4	Verti 100
6	7483.979M	37.8	+36.2 +2.4	+0.4	-34.6	+5.4	+0.0	47.6	54.0	-6.4	Verti 100
7	7676.171M	37.5	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.4	54.0	-6.6	Verti 100
8	7509.004M	37.4	+36.2 +2.5	+0.4	-34.6	+5.4	+0.0	47.3	54.0	-6.7	Verti 100
9	7666.161M	37.4	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.3	54.0	-6.7	Verti 100
10	8077.572M	37.1	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0	47.0	54.0	-7.0	Verti 100
11	8183.678M	37.0	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0	47.0	54.0	-7.0	Verti 100
12	8373.868M	37.3	+35.9 +2.4	+0.4	-34.7	+5.6	+0.0	46.9	54.0	-7.1	Verti 100
13	8458.953M	37.1	+35.9 +2.5	+0.4	-34.6	+5.6	+0.0	46.9	54.0	-7.1	Verti 100
14	7505.000M	36.6	+36.2 +2.5	+0.4	-34.6	+5.4	+0.0	46.5	54.0	-7.5	Verti 100
15	8025.520M	36.5	+36.2 +2.4	+0.4	-34.7	+5.5	+0.0	46.3	54.0	-7.7	Verti 100
16	8136.631M	36.4	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0	46.3	54.0	-7.7	Verti 100
17	8089.584M	36.3	+36.1 +2.5	+0.4	-34.7	+5.5	+0.0	46.1	54.0	-7.9	Verti 100
18	8344.839M	36.2	+36.0 +2.5	+0.4	-34.7	+5.5	+0.0	45.9	54.0	-8.1	Verti 100

19	4823.710M	38.1	+32.9	+0.4	-33.8	+4.2	+0.0	43.8	54.0	-10.2	Verti
	Ave		+2.0								129
^	4823.710M	49.7	+32.9	+0.4	-33.8	+4.2	+0.0	55.4	54.0	+1.4	Verti
			+2.0								129
^	4823.710M	46.4	+32.9	+0.4	-33.8	+4.2	+0.0	52.1	54.0	-1.9	Verti
			+2.0								100
22	2385.567M	38.4	+28.0	+0.3	-34.5	+2.7	+0.0	36.2	54.0	-17.8	Verti
	Ave		+1.3						Bandedge		130
^	2385.567M	52.6	+28.0	+0.3	-34.5	+2.7	+0.0	50.4	54.0	-3.6	Verti
			+1.3						Bandedge		130
^	2385.567M	49.6	+28.0	+0.3	-34.5	+2.7	+0.0	47.4	54.0	-6.6	Verti
			+1.3						Bandedge		100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Vertical Sequence#: 2 Ext ATTN: 0 dB



— Readings
 * Average Readings
 ○ Peak Readings
 ▼ Ambient
 × QP Readings
 — 1 - 15.247(d) Radiated Spurious Emissions



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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 7
 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	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

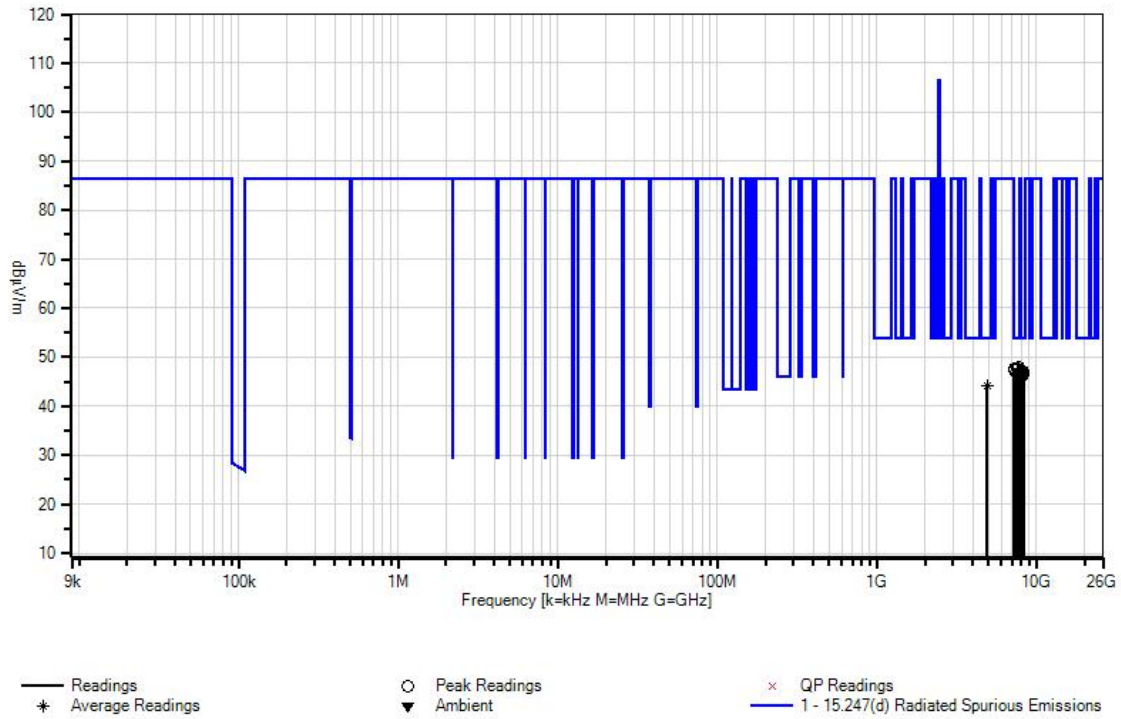
Frequency Range Investigated: 1 - 9 GHz
 Temp: 25° C
 Humidity: 41%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2437 MHz.

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	7724.219M	37.9	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0 360	47.9	54.0	-6.1	Horiz 100
2	7333.829M	38.1	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0 360	47.7	54.0	-6.3	Horiz 100
3	7556.051M	38.0	+36.2 +2.5	+0.4	-34.8	+5.4	+0.0 360	47.7	54.0	-6.3	Horiz 100
4	7302.798M	37.9	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0 360	47.5	54.0	-6.5	Horiz 100
5	7250.746M	37.8	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0 360	47.4	54.0	-6.6	Horiz 100
6	8141.636M	37.2	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0 360	47.1	54.0	-6.9	Horiz 100
7	8112.607M	37.1	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0 360	47.0	54.0	-7.0	Horiz 100
8	8235.730M	37.2	+36.0 +2.6	+0.4	-34.7	+5.5	+0.0 360	47.0	54.0	-7.0	Horiz 100
9	8153.648M	37.0	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0 360	46.9	54.0	-7.1	Horiz 100
10	8058.553M	36.8	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0 360	46.7	54.0	-7.3	Horiz 100
11	8043.538M	36.7	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0 360	46.6	54.0	-7.4	Horiz 100
12	8090.585M	36.7	+36.1 +2.5	+0.4	-34.7	+5.5	+0.0 360	46.5	54.0	-7.5	Horiz 100
13	7513.008M	36.6	+36.2 +2.5	+0.4	-34.6	+5.4	+0.0 360	46.5	54.0	-7.5	Horiz 100
14	8191.686M	36.5	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0 360	46.5	54.0	-7.5	Horiz 100
15	8158.653M	36.6	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0 360	46.5	54.0	-7.5	Horiz 100
16	7522.017M	36.6	+36.2 +2.5	+0.4	-34.7	+5.4	+0.0 360	46.4	54.0	-7.6	Horiz 100
17	8026.521M	36.5	+36.2 +2.4	+0.4	-34.7	+5.5	+0.0 360	46.3	54.0	-7.7	Horiz 100
18	8046.541M	36.4	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0 360	46.3	54.0	-7.7	Horiz 100
19	8106.601M	36.3	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0 360	46.2	54.0	-7.8	Horiz 100
20	4873.708M	38.3	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0 135	44.2	54.0	-9.8	Horiz 130
^	4873.708M	49.7	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0 135	55.6	54.0	+1.6	Horiz 130
^	4873.708M	48.5	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0 360	54.4	54.0	+0.4	Horiz 100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 7 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 6
 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	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9 GHz
 Temp: 25° C
 Humidity: 41%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2437 MHz.

Ext Attn: 0 dB

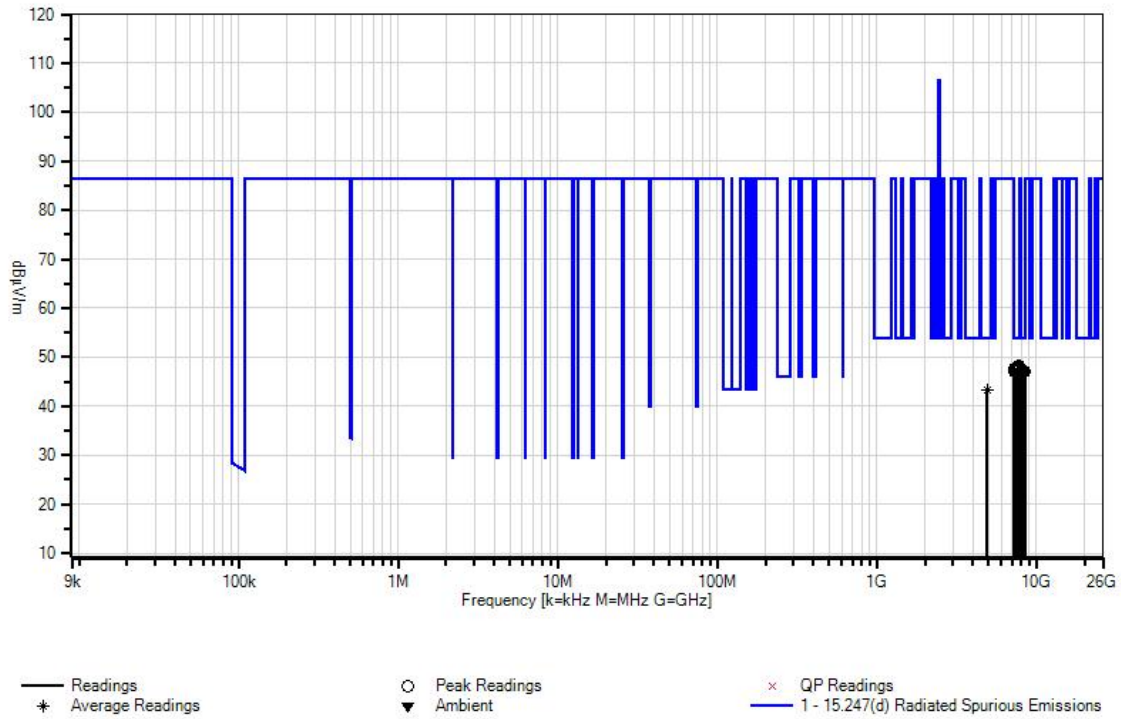
Measurement Data:

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	7739.234M	38.3	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	48.3	54.0	-5.7	Verti 100
2	7682.177M	38.0	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.9	54.0	-6.1	Verti 100
3	7278.774M	38.1	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.7	54.0	-6.3	Verti 100
4	7515.010M	37.8	+36.2 +2.5	+0.4	-34.6	+5.4	+0.0	47.7	54.0	-6.3	Verti 100
5	7688.183M	37.7	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.7	54.0	-6.3	Verti 100
6	7654.149M	37.7	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.6	54.0	-6.4	Verti 100
7	7493.989M	37.5	+36.2 +2.4	+0.4	-34.6	+5.4	+0.0	47.3	54.0	-6.7	Verti 100
8	7507.002M	37.4	+36.2 +2.5	+0.4	-34.6	+5.4	+0.0	47.3	54.0	-6.7	Verti 100
9	7329.825M	37.6	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.2	54.0	-6.8	Verti 100
10	7298.794M	37.6	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.2	54.0	-6.8	Verti 100
11	7250.746M	37.6	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.2	54.0	-6.8	Verti 100
12	7626.121M	37.3	+36.2 +2.6	+0.4	-34.8	+5.4	+0.0	47.1	54.0	-6.9	Verti 100
13	8190.685M	37.1	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0	47.1	54.0	-6.9	Verti 100
14	8407.902M	37.5	+35.9 +2.4	+0.4	-34.7	+5.6	+0.0	47.1	54.0	-6.9	Verti 100
15	7551.046M	37.3	+36.2 +2.5	+0.4	-34.8	+5.4	+0.0	47.0	54.0	-7.0	Verti 100
16	7616.111M	37.3	+36.2 +2.6	+0.4	-34.9	+5.4	+0.0	47.0	54.0	-7.0	Verti 100
17	8057.552M	37.1	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0	47.0	54.0	-7.0	Verti 100
18	7667.162M	37.0	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	46.9	54.0	-7.1	Verti 100
19	8035.530M	37.0	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0	46.9	54.0	-7.1	Verti 100
20	4873.731M	37.4	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0	43.3	54.0	-10.7	Verti 130
^	4873.731M	48.8	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0	54.7	54.0	+0.7	Verti 130
^	4873.731M	45.8	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0	51.7	54.0	-2.3	Verti 100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Vertical Sequence#: 6 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX** Sequence#: 5
(external WWAN & GPS antenna)
 Manufacturer: Itron, Inc. Tested By: Jeff Gilbert
 Model: CCU100R
 S/N: 7404FCC5

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	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.2 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

Measurement Data:

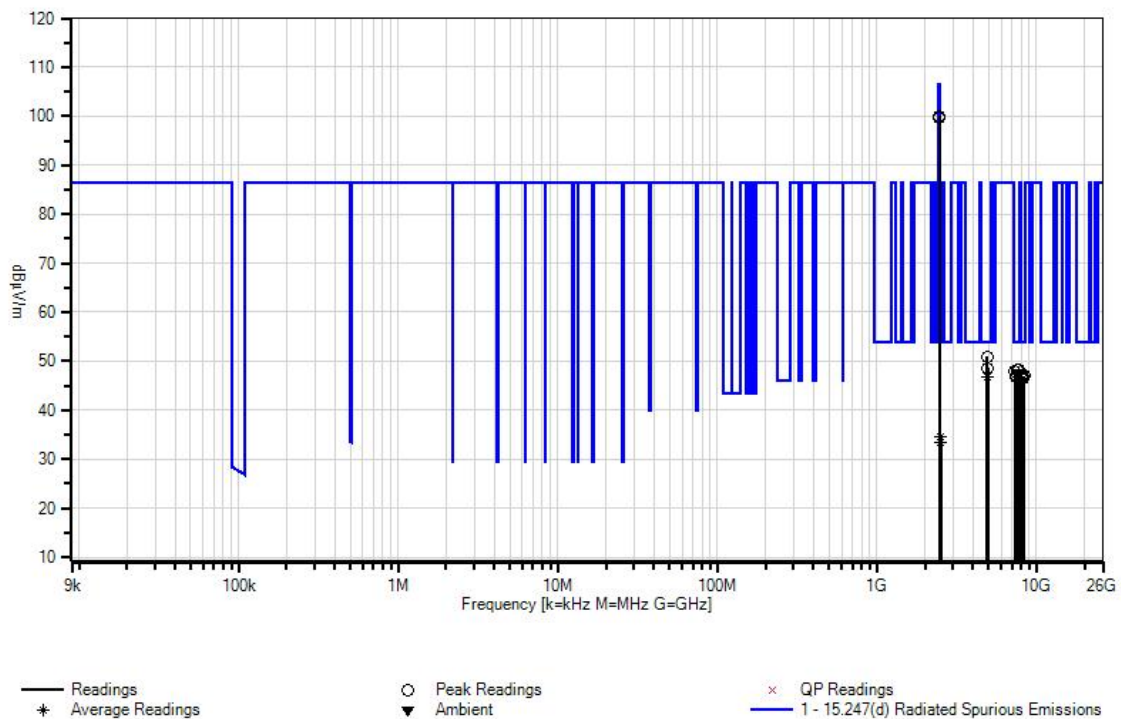
Reading listed by margin.

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	4919.417M	45.0	+33.0 +2.0	+0.4	-33.7	+4.2	+0.0	50.9	54.0	-3.1	Horiz 100
2	4927.425M	42.6	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	48.6	54.0	-5.4	Horiz 100
3	4931.429M	42.4	+33.1 +2.0	+0.4	-33.7	+4.3	+0.0	48.5	54.0	-5.5	Horiz 100
4	7654.149M	38.4	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	48.3	54.0	-5.7	Horiz 100
5	7688.183M	38.3	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	48.3	54.0	-5.7	Horiz 100
6	7675.170M	38.2	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	48.1	54.0	-5.9	Horiz 100
7	7317.813M	38.3	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.9	54.0	-6.1	Horiz 100
8	2464.470M	102.2	+27.9 +1.3	+0.2	-34.4	+2.8	+0.0	100.0	106.4	-6.4	Horiz 100
9	2458.770M	101.8	+27.9 +1.3	+0.2	-34.4	+2.8	+0.0	99.6	106.4	-6.8	Horiz 100
10	8052.547M	37.3	+36.2 +2.5	+0.4	-34.7	+5.5	+0.0	47.2	54.0	-6.8	Horiz 100
11	7432.928M	37.5	+36.2 +2.3	+0.4	-34.6	+5.3	+0.0	47.1	54.0	-6.9	Horiz 100
12	7489.985M	37.2	+36.2 +2.4	+0.4	-34.6	+5.4	+0.0	47.0	54.0	-7.0	Horiz 100
13	8341.836M	37.3	+36.0 +2.5	+0.4	-34.7	+5.5	+0.0	47.0	54.0	-7.0	Horiz 100
14	4923.743M	40.8	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	46.8	54.0	-7.2	Horiz 130
^	4923.743M	51.8	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	57.8	54.0	+3.8	Horiz 130
^	4923.743M	50.5	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	56.5	54.0	+2.5	Horiz 100
17	7415.911M	37.0	+36.2 +2.3	+0.5	-34.6	+5.3	+0.0	46.7	54.0	-7.3	Horiz 100
18	8269.764M	36.9	+36.0 +2.6	+0.4	-34.7	+5.5	+0.0	46.7	54.0	-7.3	Horiz 100
19	8129.624M	36.7	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0	46.6	54.0	-7.4	Horiz 100
20	8174.669M	36.6	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0	46.6	54.0	-7.4	Horiz 100
21	8106.601M	36.6	+36.1 +2.6	+0.4	-34.7	+5.5	+0.0	46.5	54.0	-7.5	Horiz 100
22	8194.689M	36.5	+36.1 +2.7	+0.4	-34.7	+5.5	+0.0	46.5	54.0	-7.5	Horiz 100

23	2499.953M	36.6	+27.9	+0.2	-34.4	+2.8	+0.0	34.5	54.0	-19.5	Horiz
	Ave		+1.4				130		Bandedge		150
^	2499.919M	47.9	+27.9	+0.2	-34.4	+2.8	+0.0	45.8	54.0	-8.2	Horiz
			+1.4				130		Bandedge		150
25	2488.066M	35.6	+27.9	+0.2	-34.4	+2.8	+0.0	33.4	54.0	-20.6	Horiz
	Ave		+1.3				130		Bandedge		150
^	2488.066M	50.0	+27.9	+0.2	-34.4	+2.8	+0.0	47.8	54.0	-6.2	Horiz
			+1.3				130		Bandedge		150

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Horizontal Sequence#: 5 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 4
 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	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 1 - 9 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.2 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

Measurement Data:

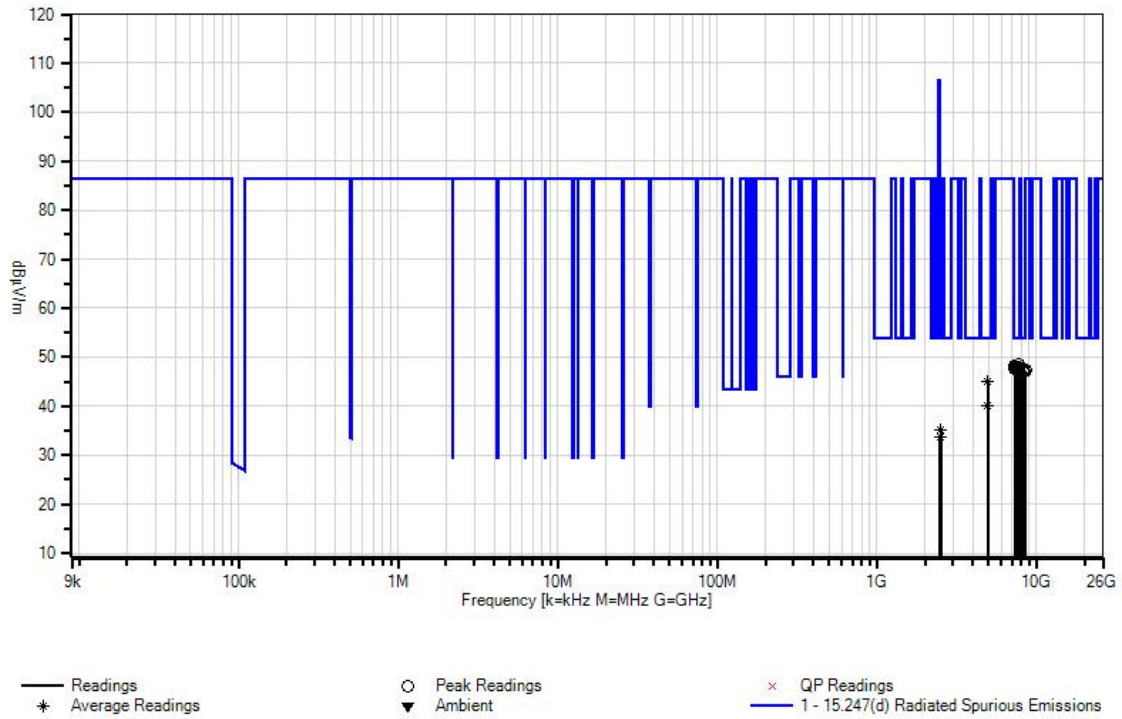
Reading listed by margin.

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	7685.180M	38.6	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	48.6	54.0	-5.4	Verti 100
2	7295.791M	38.5	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	48.1	54.0	-5.9	Verti 100
3	7297.793M	38.4	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	48.0	54.0	-6.0	Verti 100
4	7611.106M	38.2	+36.2 +2.6	+0.4	-34.9	+5.4	+0.0	47.9	54.0	-6.1	Verti 100
5	7723.218M	37.9	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.9	54.0	-6.1	Verti 100
6	7273.769M	38.1	+36.1 +2.4	+0.5	-34.6	+5.2	+0.0	47.7	54.0	-6.3	Verti 100
7	7478.974M	37.9	+36.2 +2.4	+0.4	-34.6	+5.3	+0.0	47.6	54.0	-6.4	Verti 100
8	7535.030M	37.8	+36.2 +2.5	+0.4	-34.7	+5.4	+0.0	47.6	54.0	-6.4	Verti 100
9	7648.143M	37.7	+36.2 +2.6	+0.5	-34.8	+5.4	+0.0	47.6	54.0	-6.4	Verti 100
10	7621.116M	37.7	+36.2 +2.6	+0.4	-34.8	+5.4	+0.0	47.5	54.0	-6.5	Verti 100
11	7656.151M	37.6	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.5	54.0	-6.5	Verti 100
12	7663.158M	37.6	+36.2 +2.5	+0.5	-34.7	+5.4	+0.0	47.5	54.0	-6.5	Verti 100
13	8216.711M	37.5	+36.0 +2.7	+0.4	-34.7	+5.5	+0.0	47.4	54.0	-6.6	Verti 100
14	7706.201M	37.4	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.4	54.0	-6.6	Verti 100
15	7744.239M	37.3	+36.2 +2.5	+0.5	-34.6	+5.4	+0.0	47.3	54.0	-6.7	Verti 100
16	8494.989M	37.6	+35.8 +2.5	+0.4	-34.6	+5.6	+0.0	47.3	54.0	-6.7	Verti 100
17	8297.792M	37.4	+36.0 +2.6	+0.4	-34.7	+5.5	+0.0	47.2	54.0	-6.8	Verti 100
18	8438.933M	37.6	+35.9 +2.4	+0.4	-34.7	+5.6	+0.0	47.2	54.0	-6.8	Verti 100
19	4923.750M	39.1	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	45.1	54.0	-8.9	Verti 124
^	4923.750M	50.7	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	56.7	54.0	+2.7	Verti 124
^	4923.750M	48.5	+33.1 +2.0	+0.4	-33.7	+4.2	+0.0	54.5	54.0	+0.5	Verti 100

22	4927.798M	34.2	+33.1	+0.4	-33.7	+4.2	+0.0	40.2	54.0	-13.8	Verti
	Ave		+2.0				360				125
^	4927.798M	46.7	+33.1	+0.4	-33.7	+4.2	+0.0	52.7	54.0	-1.3	Verti
			+2.0				360				125
^	4927.798M	43.0	+33.1	+0.4	-33.7	+4.2	+0.0	49.0	54.0	-5.0	Verti
			+2.0								100
25	2499.934M	37.3	+27.9	+0.2	-34.4	+2.8	+0.0	35.2	54.0	-18.8	Verti
	Ave		+1.4						Bandedge		125
^	2499.868M	56.3	+27.9	+0.2	-34.4	+2.8	+0.0	54.2	54.0	+0.2	Verti
			+1.4				360		Bandedge - peak -		124
									802.11G		
^	2499.880M	49.2	+27.9	+0.2	-34.4	+2.8	+0.0	47.1	54.0	-6.9	Verti
			+1.4						Bandedge		125
^	2499.880M	47.4	+27.9	+0.2	-34.4	+2.8	+0.0	45.3	54.0	-8.7	Verti
			+1.4				360		Bandedge		100
^	2499.868M	32.1	+27.9	+0.2	-34.4	+2.8	+0.0	30.0	54.0	-24.0	Verti
			+1.4				360		Bandedge - AVG -		124
									802.11G		
30	2487.464M	35.8	+27.9	+0.2	-34.4	+2.8	+0.0	33.6	54.0	-20.4	Verti
	Ave		+1.3						Bandedge		123
^	2487.464M	48.5	+27.9	+0.2	-34.4	+2.8	+0.0	46.3	54.0	-7.7	Verti
			+1.3						Bandedge		123
^	2487.464M	46.8	+27.9	+0.2	-34.4	+2.8	+0.0	44.6	54.0	-9.4	Verti
			+1.3				360		Bandedge		100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 3 Meters Vertical Sequence#: 4 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 10
 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	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
Temp: 25° C
Humidity: 40%
Pressure: 101.9 kPa
FHSS transceiver and cell modem are in receive only mode
Wi-Fi transmitter is on 2412 MHz.

Ext Attn: 0 dB

Measurement Data:

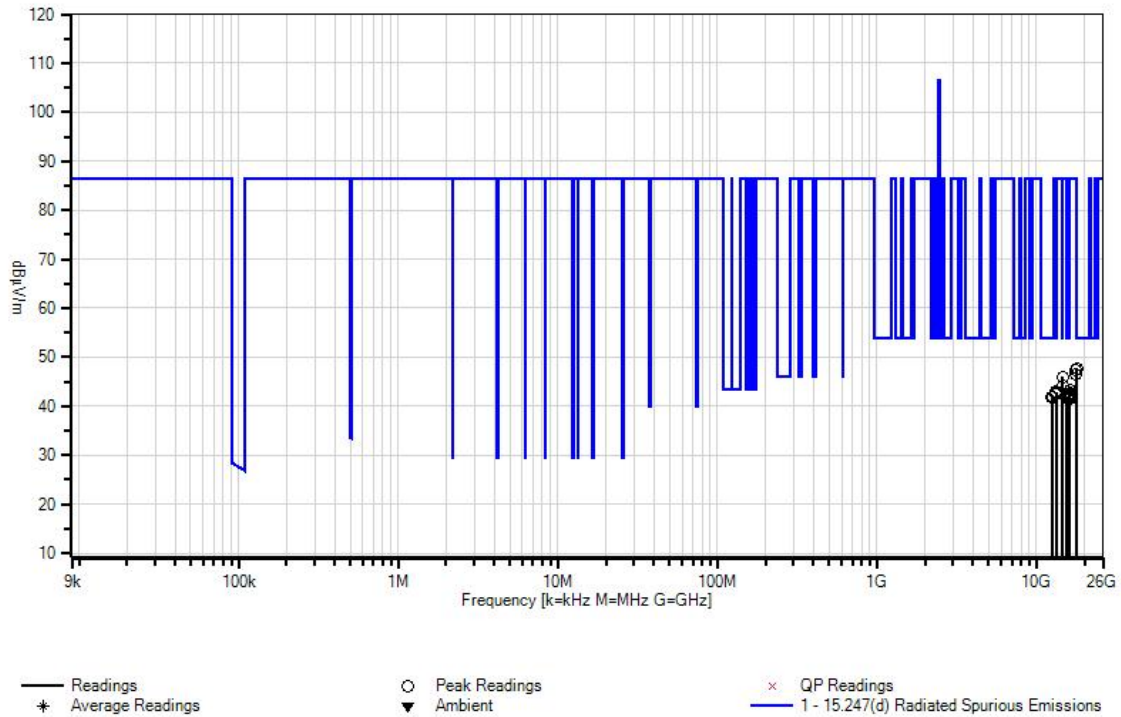
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17921.632 M	31.2	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	47.7	54.0	-6.3	Horiz 100
2	17702.400 M	31.0	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	47.3	54.0	-6.7	Horiz 100
3	17717.280 M	30.3	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.6	54.0	-7.4	Horiz 100
4	14487.482 M	33.9	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	46.0	54.0	-8.0	Horiz 100
5	14476.471 M	32.3	+39.7 +7.0	+2.1 +3.5	+0.5	-34.8	-6.0	44.3	54.0	-9.7	Horiz 100
6	16195.188 M	32.5	+38.7 +7.8	+0.5 +4.0	+0.6	-34.8	-6.0	43.3	54.0	-10.7	Horiz 100
7	13313.309 M	32.2	+40.1 +7.0	+0.3 +3.5	+0.8	-35.0	-6.0	42.9	54.0	-11.1	Horiz 100
8	13259.255 M	32.1	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.7	54.0	-11.3	Horiz 100
9	16182.175 M	32.1	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.7	54.0	-11.3	Horiz 100
10	16135.128 M	32.0	+38.5 +7.8	+0.5 +3.9	+0.6	-34.9	-6.0	42.4	54.0	-11.6	Horiz 100
11	13321.317 M	31.7	+40.1 +7.0	+0.3 +3.5	+0.8	-35.0	-6.0	42.4	54.0	-11.6	Horiz 100
12	16172.165 M	31.6	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.2	54.0	-11.8	Horiz 100
13	16100.093 M	31.8	+38.4 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	42.0	54.0	-12.0	Horiz 100
14	12490.487 M	33.0	+38.9 +6.9	+0.2 +3.2	+0.6	-35.0	-6.0	41.8	54.0	-12.2	Horiz 100
15	16069.062 M	31.7	+38.3 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.8	54.0	-12.2	Horiz 100

16	12645.642 M	32.4	+39.2 +7.0	+0.2 +3.2	+0.7	-35.0	-6.0	41.7	54.0	-12.3	Horiz
							360				100
17	15751.745 M	32.2	+38.1 +7.6	+0.5 +3.6	+0.5	-34.8	-6.0	41.7	54.0	-12.3	Horiz
							360				100
18	15490.484 M	32.2	+38.1 +7.5	+0.5 +3.8	+0.5	-35.0	-6.0	41.6	54.0	-12.4	Horiz
							360				100
19	15897.891 M	31.9	+38.0 +7.7	+0.5 +3.8	+0.6	-34.9	-6.0	41.6	54.0	-12.4	Horiz
							360				100
20	16088.081 M	31.5	+38.3 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.6	54.0	-12.4	Horiz
							360				100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 10 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 9
 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	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
Temp: 25° C
Humidity: 40%
Pressure: 101.9 kPa
FHSS transceiver and cell modem are in receive only mode
Wi-Fi transmitter is on 2412 MHz.

Ext Attn: 0 dB

Measurement Data:

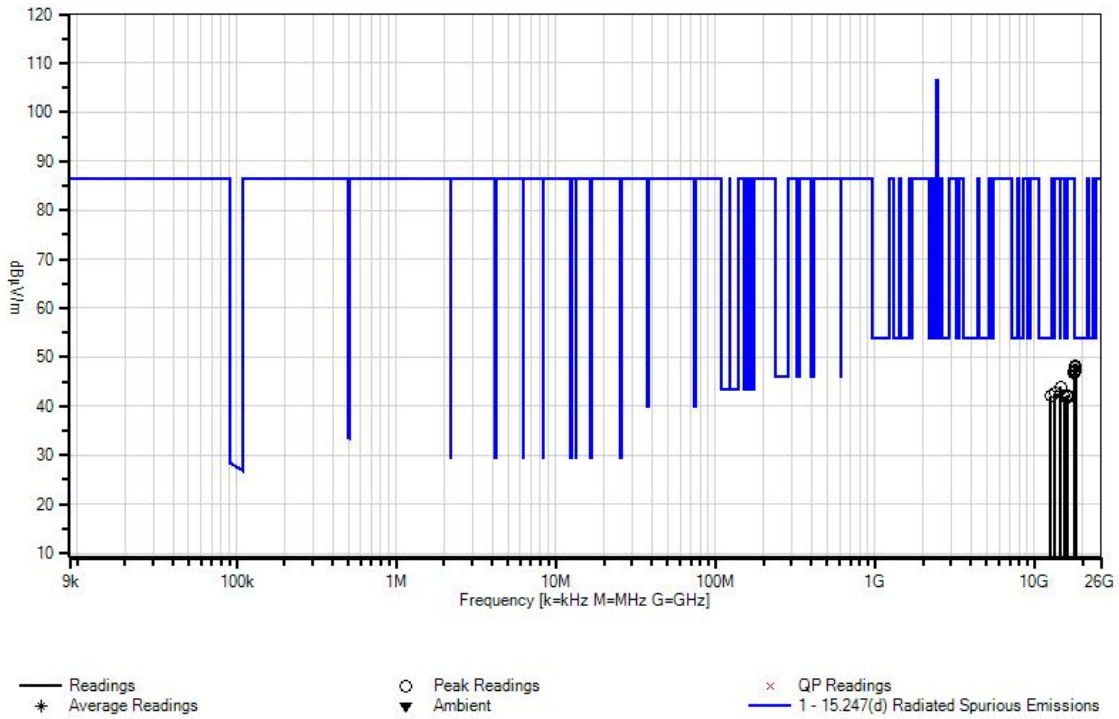
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17898.816 M	31.8	+42.4 +8.5	+1.1 +4.4	+0.9	-34.8	-6.0	48.3	54.0	-5.7	Verti 100
2	17966.272 M	31.1	+42.3 +8.5	+1.2 +4.5	+0.9	-34.7	-6.0	47.8	54.0	-6.2	Verti 100
3	17988.096 M	30.6	+42.2 +8.5	+1.2 +4.6	+0.9	-34.7	-6.0	47.3	54.0	-6.7	Verti 100
4	17729.184 M	30.8	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	47.1	54.0	-6.9	Verti 100
5	17703.392 M	30.8	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	47.1	54.0	-6.9	Verti 100
6	17886.912 M	30.6	+42.4 +8.5	+1.1 +4.4	+0.9	-34.8	-6.0	47.1	54.0	-6.9	Verti 100
7	17805.568 M	30.8	+42.5 +8.5	+1.0 +4.3	+0.9	-34.9	-6.0	47.1	54.0	-6.9	Verti 100
8	17833.344 M	30.6	+42.4 +8.5	+1.0 +4.4	+0.9	-34.8	-6.0	47.0	54.0	-7.0	Verti 100
9	17984.128 M	30.3	+42.2 +8.5	+1.2 +4.6	+0.9	-34.7	-6.0	47.0	54.0	-7.0	Verti 100
10	17700.416 M	30.6	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.9	54.0	-7.1	Verti 100
11	17743.072 M	30.4	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.7	54.0	-7.3	Verti 100
12	14496.491 M	31.8	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	43.9	54.0	-10.1	Verti 100
13	13346.342 M	32.0	+40.1 +7.0	+0.3 +3.5	+0.7	-35.0	-6.0	42.6	54.0	-11.4	Verti 100
14	16162.155 M	31.6	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.2	54.0	-11.8	Verti 100
15	16167.160 M	31.6	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.2	54.0	-11.8	Verti 100

16	12659.656 M	32.5	+39.2 +7.0	+0.3 +3.3	+0.7	-35.0	-6.0	42.0	54.0	-12.0	Verti 100
17	12647.644 M	32.7	+39.2 +7.0	+0.2 +3.2	+0.7	-35.0	-6.0	42.0	54.0	-12.0	Verti 100
18	15870.864 M	32.5	+38.0 +7.6	+0.5 +3.8	+0.5	-34.9	-6.0	42.0	54.0	-12.0	Verti 100
19	15365.359 M	32.9	+38.2 +7.4	+0.4 +3.5	+0.6	-35.0	-6.0	42.0	54.0	-12.0	Verti 100
20	16154.147 M	31.4	+38.5 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	41.9	54.0	-12.1	Verti 100

CKC Laboratories, Inc. Date: 8/12/2010 Iron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 9 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 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	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
 Temp: 25° C
 Humidity: 40%
 Pressure: 101.9 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2437 MHz.

Ext Attn: 0 dB

Measurement Data:

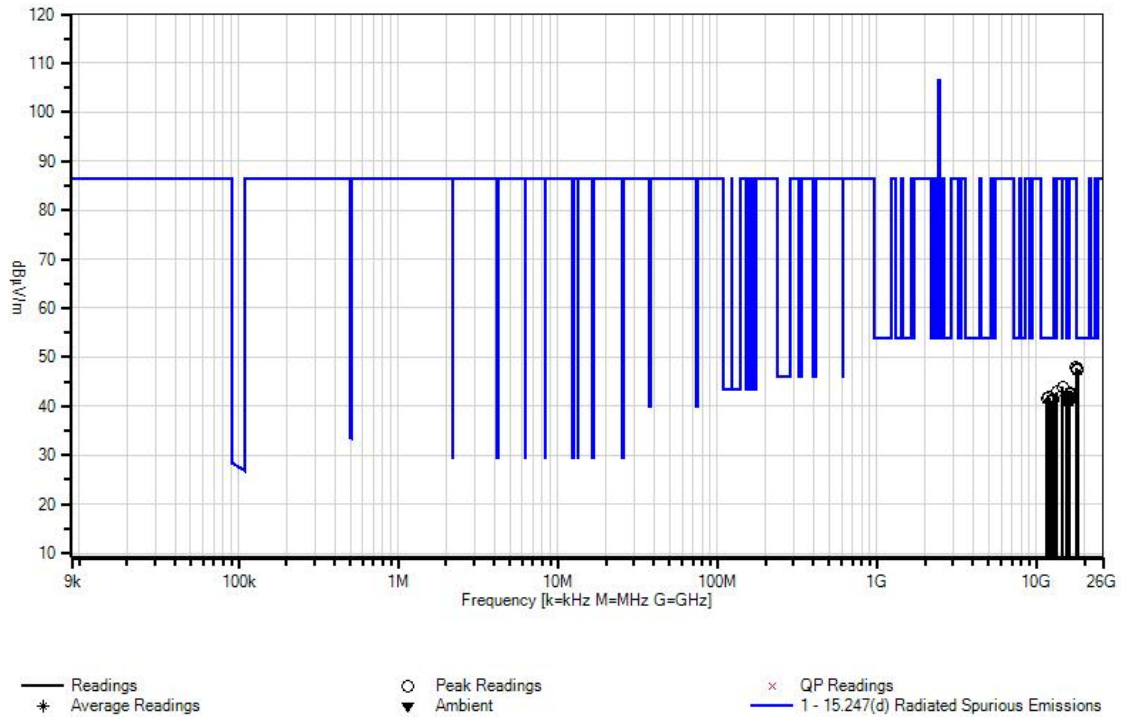
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17740.096 M	31.6	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	47.9	54.0	-6.1	Horiz 100
2	17831.360 M	31.4	+42.4 +8.5	+1.0 +4.3	+0.9	-34.8	-6.0	47.7	54.0	-6.3	Horiz 100
3	17839.296 M	31.1	+42.4 +8.5	+1.0 +4.4	+0.9	-34.8	-6.0	47.5	54.0	-6.5	Horiz 100
4	17968.256 M	30.7	+42.3 +8.5	+1.2 +4.6	+0.9	-34.7	-6.0	47.5	54.0	-6.5	Horiz 100
5	14489.484 M	31.9	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	44.0	54.0	-10.0	Horiz 100
6	14483.478 M	31.7	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	43.8	54.0	-10.2	Horiz 100
7	13375.371 M	32.1	+40.2 +7.0	+0.3 +3.6	+0.7	-35.0	-6.0	42.9	54.0	-11.1	Horiz 100
8	16137.130 M	32.2	+38.5 +7.8	+0.5 +3.9	+0.6	-34.9	-6.0	42.6	54.0	-11.4	Horiz 100
9	16062.055 M	32.3	+38.2 +7.8	+0.5 +3.9	+0.6	-35.0	-6.0	42.3	54.0	-11.7	Horiz 100
10	16094.087 M	31.6	+38.3 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.7	54.0	-12.3	Horiz 100
11	11972.970 M	33.1	+38.7 +6.7	+0.5 +3.1	+0.6	-35.0	-6.0	41.7	54.0	-12.3	Horiz 100
12	11632.630 M	32.9	+38.6 +6.6	+0.4 +3.5	+0.5	-35.0	-6.0	41.5	54.0	-12.5	Horiz 100
13	16086.079 M	31.4	+38.3 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.5	54.0	-12.5	Horiz 100
14	15654.648 M	32.0	+38.1 +7.5	+0.4 +3.8	+0.5	-34.9	-6.0	41.4	54.0	-12.6	Horiz 100
15	15901.895 M	31.7	+38.0 +7.7	+0.5 +3.8	+0.6	-34.9	-6.0	41.4	54.0	-12.6	Horiz 100

16	12680.677 M	31.7	+39.3 +7.0	+0.3 +3.3	+0.7	-35.0	-6.0	41.3	54.0	-12.7	Horiz
							360				100
17	15817.811 M	31.6	+38.1 +7.6	+0.6 +3.8	+0.5	-34.9	-6.0	41.3	54.0	-12.7	Horiz
							360				100
18	12421.418 M	32.5	+38.8 +6.9	+0.1 +3.3	+0.6	-35.0	-6.0	41.2	54.0	-12.8	Horiz
							360				100
19	15461.455 M	31.7	+38.1 +7.5	+0.5 +3.8	+0.5	-35.0	-6.0	41.1	54.0	-12.9	Horiz
							360				100
20	15854.848 M	31.6	+38.0 +7.6	+0.6 +3.7	+0.5	-34.9	-6.0	41.1	54.0	-12.9	Horiz
							360				100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Horizontal Sequence#: 12 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 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	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
Temp: 25° C
Humidity: 40%
Pressure: 101.9 kPa
FHSS transceiver and cell modem are in receive only mode
Wi-Fi transmitter is on 2437 MHz.

Ext Attn: 0 dB

Measurement Data:

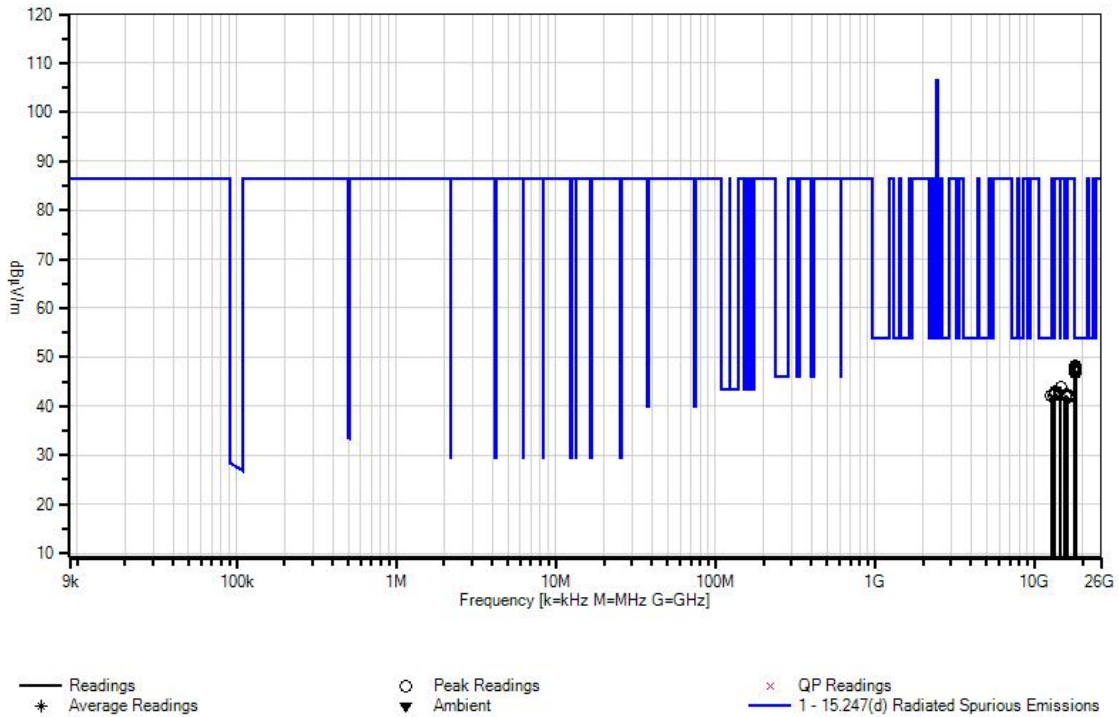
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17837.312 M	31.8	+42.4 +8.5	+1.0 +4.4	+0.9	-34.8	-6.0	48.2	54.0	-5.8	Verti 100
2	17827.392 M	31.5	+42.5 +8.5	+1.0 +4.3	+0.9	-34.8	-6.0	47.9	54.0	-6.1	Verti 100
3	17864.096 M	31.3	+42.4 +8.5	+1.0 +4.4	+0.9	-34.8	-6.0	47.7	54.0	-6.3	Verti 100
4	17965.280 M	30.6	+42.3 +8.5	+1.2 +4.5	+0.9	-34.7	-6.0	47.3	54.0	-6.7	Verti 100
5	17996.032 M	30.4	+42.2 +8.5	+1.2 +4.6	+0.9	-34.7	-6.0	47.1	54.0	-6.9	Verti 100
6	17925.600 M	30.5	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	47.0	54.0	-7.0	Verti 100
7	17929.568 M	30.5	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	47.0	54.0	-7.0	Verti 100
8	17944.448 M	30.1	+42.3 +8.5	+1.1 +4.5	+0.9	-34.7	-6.0	46.7	54.0	-7.3	Verti 100
9	14484.479 M	31.8	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	43.9	54.0	-10.1	Verti 100
10	13383.379 M	32.3	+40.2 +7.0	+0.3 +3.6	+0.7	-35.0	-6.0	43.1	54.0	-10.9	Verti 100
11	13361.357 M	32.0	+40.2 +7.0	+0.3 +3.5	+0.7	-35.0	-6.0	42.7	54.0	-11.3	Verti 100
12	13339.335 M	31.9	+40.1 +7.0	+0.3 +3.5	+0.7	-35.0	-6.0	42.5	54.0	-11.5	Verti 100
13	13351.347 M	31.9	+40.1 +7.0	+0.3 +3.5	+0.7	-35.0	-6.0	42.5	54.0	-11.5	Verti 100
14	15839.833 M	33.0	+38.0 +7.6	+0.6 +3.6	+0.5	-34.9	-6.0	42.4	54.0	-11.6	Verti 100
15	12669.666 M	32.7	+39.2 +7.0	+0.3 +3.3	+0.7	-35.0	-6.0	42.2	54.0	-11.8	Verti 100

16	13259.255 M	31.6	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.2	54.0	-11.8	Verti 100
17	15472.466 M	32.6	+38.1 +7.5	+0.5 +3.8	+0.5	-35.0	-6.0	42.0	54.0	-12.0	Verti 100
18	16185.178 M	31.4	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.0	54.0	-12.0	Verti 100
19	16199.192 M	31.2	+38.7 +7.8	+0.5 +4.0	+0.6	-34.8	-6.0	42.0	54.0	-12.0	Verti 100
20	16123.116 M	31.5	+38.4 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.7	54.0	-12.3	Verti 100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 11 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 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
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
 Temp: 25° C
 Humidity: 40%
 Pressure: 101.9 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

Measurement Data:

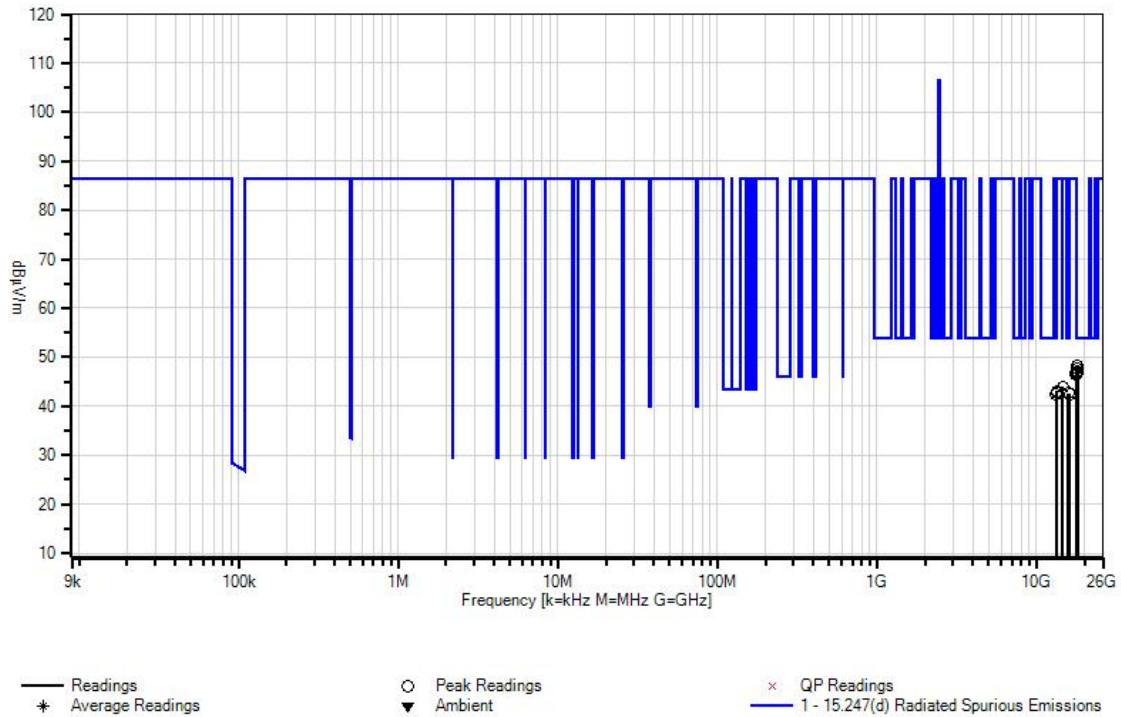
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17781.760 M	32.0	+42.5 +8.4	+1.0 +4.3	+0.9	-34.9	-6.0	48.2	54.0	-5.8	Horiz 100
2	17820.448 M	31.2	+42.5 +8.5	+1.0 +4.3	+0.9	-34.8	-6.0	47.6	54.0	-6.4	Horiz 100
3	17888.896 M	31.1	+42.4 +8.5	+1.1 +4.4	+0.9	-34.8	-6.0	47.6	54.0	-6.4	Horiz 100
4	17912.704 M	31.1	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	47.6	54.0	-6.4	Horiz 100
5	17977.184 M	30.5	+42.2 +8.5	+1.2 +4.6	+0.9	-34.7	-6.0	47.2	54.0	-6.8	Horiz 100
6	17756.960 M	30.6	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.9	54.0	-7.1	Horiz 100
7	17942.464 M	30.3	+42.3 +8.5	+1.1 +4.5	+0.9	-34.7	-6.0	46.9	54.0	-7.1	Horiz 100
8	17924.608 M	30.3	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	46.8	54.0	-7.2	Horiz 100
9	17931.552 M	30.3	+42.3 +8.5	+1.1 +4.5	+0.9	-34.8	-6.0	46.8	54.0	-7.2	Horiz 100
10	17734.144 M	30.3	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.6	54.0	-7.4	Horiz 100
11	14488.483 M	31.8	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	43.9	54.0	-10.1	Horiz 100
12	13367.363 M	32.3	+40.2 +7.0	+0.3 +3.6	+0.7	-35.0	-6.0	43.1	54.0	-10.9	Horiz 100
13	13382.378 M	31.9	+40.2 +7.0	+0.3 +3.6	+0.7	-35.0	-6.0	42.7	54.0	-11.3	Horiz 100
14	15816.810 M	33.0	+38.1 +7.6	+0.6 +3.8	+0.5	-34.9	-6.0	42.7	54.0	-11.3	Horiz 100
15	13260.256 M	31.9	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.5	54.0	-11.5	Horiz 100

16	13267.263 M	31.9	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.5	54.0	-11.5	Horiz
17	16150.143 M	32.0	+38.5 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.5	54.0	-11.5	Horiz
18	13290.286 M	31.8	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.4	54.0	-11.6	Horiz
19	13302.298 M	31.7	+40.1 +7.0	+0.3 +3.5	+0.8	-35.0	-6.0	42.4	54.0	-11.6	Horiz
20	16172.165 M	31.8	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.4	54.0	-11.6	Horiz

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 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: 8/12/2010
 Test Type: **Maximized Emissions** Time:
 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
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	5/7/2010	5/7/2012
T2	AN03116	High Pass Filter	11SH10-00313	12/2/2008	12/2/2010
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T6	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 9 - 18 GHz
 Temp: 25° C
 Humidity: 40%
 Pressure: 101.9 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

Measurement Data:

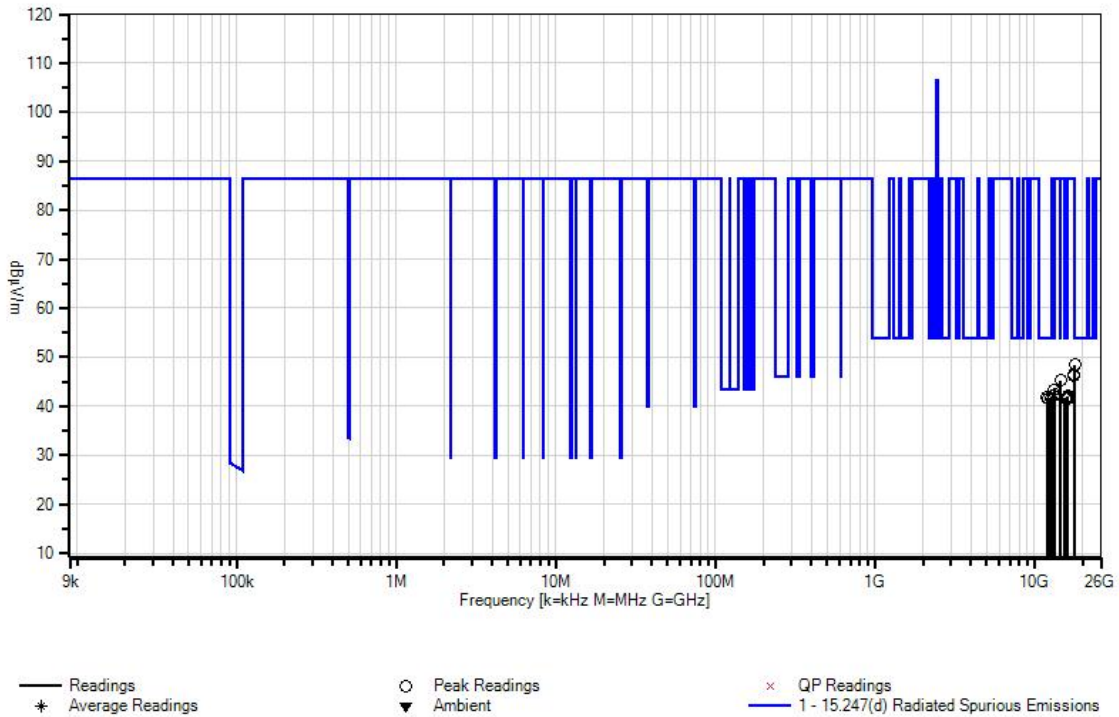
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17853.184 M	32.1	+42.4 +8.5	+1.0 +4.4	+0.9	-34.8	-6.0	48.5	54.0	-5.5	Verti 100
2	17706.368 M	30.3	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.6	54.0	-7.4	Verti 100
3	17700.416 M	30.0	+42.6 +8.4	+0.9 +4.4	+0.9	-34.9	-6.0	46.3	54.0	-7.7	Verti 100
4	14490.485 M	33.2	+39.7 +7.0	+2.2 +3.5	+0.5	-34.8	-6.0	45.3	54.0	-8.7	Verti 100
5	13259.255 M	32.7	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	43.3	54.0	-10.7	Verti 100
6	13363.359 M	31.7	+40.2 +7.0	+0.3 +3.5	+0.7	-35.0	-6.0	42.4	54.0	-11.6	Verti 100
7	16195.188 M	31.3	+38.7 +7.8	+0.5 +4.0	+0.6	-34.8	-6.0	42.1	54.0	-11.9	Verti 100
8	13271.267 M	31.4	+40.1 +7.0	+0.3 +3.4	+0.8	-35.0	-6.0	42.0	54.0	-12.0	Verti 100
9	16184.177 M	31.4	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	42.0	54.0	-12.0	Verti 100
10	16168.161 M	31.3	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	41.9	54.0	-12.1	Verti 100
11	11927.925 M	33.1	+38.7 +6.7	+0.5 +3.2	+0.6	-35.0	-6.0	41.8	54.0	-12.2	Verti 100
12	16050.043 M	31.7	+38.2 +7.8	+0.5 +3.9	+0.6	-35.0	-6.0	41.7	54.0	-12.3	Verti 100
13	15525.519 M	32.2	+38.1 +7.5	+0.5 +3.8	+0.5	-35.0	-6.0	41.6	54.0	-12.4	Verti 100
14	12220.217 M	32.4	+38.8 +6.8	+0.3 +3.7	+0.6	-35.0	-6.0	41.6	54.0	-12.4	Verti 100
15	16174.167 M	31.0	+38.6 +7.8	+0.5 +4.0	+0.6	-34.9	-6.0	41.6	54.0	-12.4	Verti 100

16	15989.983 M	31.9	+38.0 +7.7	+0.6 +3.8	+0.6	-35.0	-6.0	41.6	54.0	-12.4	Verti
								360			100
17	12674.671 M	31.9	+39.3 +7.0	+0.3 +3.3	+0.7	-35.0	-6.0	41.5	54.0	-12.5	Verti
								360			100
18	12698.695 M	31.8	+39.3 +7.0	+0.3 +3.4	+0.7	-35.0	-6.0	41.5	54.0	-12.5	Verti
								360			100
19	16107.100 M	31.3	+38.4 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.5	54.0	-12.5	Verti
								360			100
20	16100.093 M	31.2	+38.4 +7.8	+0.4 +3.9	+0.6	-34.9	-6.0	41.4	54.0	-12.6	Verti
								360			100

CKC Laboratories, Inc. Date: 8/12/2010 Itron, Inc. WO#: 90820
 15.247(d) Radiated Spurious Emissions Test Distance: 1.5 Meters Vertical Sequence#: 13 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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 20
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2412 MHz.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23833.828 M	29.2	-14.3	+7.9	+15.0	+9.3	-10.0	37.1	54.0	-16.9	Horiz 100
2	23984.979 M	28.5	-13.9	+7.9	+15.1	+9.3	-10.0	36.9	54.0	-17.1	Horiz 100
3	23893.888 M	28.6	-14.2	+7.9	+15.1	+9.3	-10.0	36.7	54.0	-17.3	Horiz 100
4	23785.780 M	28.7	-14.5	+7.9	+15.0	+9.3	-10.0	36.4	54.0	-17.6	Horiz 100
5	23693.688 M	28.6	-14.7	+7.9	+15.0	+9.4	-10.0	36.2	54.0	-17.8	Horiz 100
6	23701.696 M	28.2	-14.7	+7.9	+15.0	+9.4	-10.0	35.8	54.0	-18.2	Horiz 100
7	23097.092 M	28.4	-16.4	+7.8	+14.7	+9.3	-10.0	33.8	54.0	-20.2	Horiz 100
8	22969.965 M	28.9	-16.8	+7.7	+14.7	+9.2	-10.0	33.7	54.0	-20.3	Horiz 100
9	23039.034 M	28.5	-16.6	+7.8	+14.7	+9.2	-10.0	33.6	54.0	-20.4	Horiz 100
10	23047.042 M	28.5	-16.6	+7.8	+14.7	+9.2	-10.0	33.6	54.0	-20.4	Horiz 100
11	23017.012 M	28.6	-16.7	+7.8	+14.7	+9.2	-10.0	33.6	54.0	-20.4	Horiz 100
12	23064.059 M	28.2	-16.5	+7.8	+14.7	+9.3	-10.0	33.5	54.0	-20.5	Horiz 100
13	20661.659 M	29.3	-14.9	+7.2	+13.7	+8.0	-10.0	33.3	54.0	-20.7	Horiz 100
14	22397.393 M	29.2	-16.9	+7.6	+14.4	+8.7	-10.0	33.0	54.0	-21.0	Horiz 100
15	22408.404 M	29.0	-16.9	+7.6	+14.4	+8.7	-10.0	32.8	54.0	-21.2	Horiz 100
16	22462.458 M	28.9	-16.9	+7.7	+14.4	+8.7	-10.0	32.8	54.0	-21.2	Horiz 100

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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
Temp: 23° C
Humidity: 45%
Pressure: 102.0 kPa
FHSS transceiver and cell modem are in receive only mode
Wi-Fi transmitter is on 2412 MHz.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23988.983 M	29.3	-13.9	+7.9	+15.1	+9.3	-10.0 360	37.7	54.0	-16.3	Verti 100
2	23712.707 M	29.7	-14.6	+7.9	+15.0	+9.4	-10.0 360	37.4	54.0	-16.6	Verti 100
3	23897.892 M	29.1	-14.2	+7.9	+15.1	+9.3	-10.0 360	37.2	54.0	-16.8	Verti 100
4	23947.942 M	28.6	-14.0	+7.9	+15.1	+9.3	-10.0 360	36.9	54.0	-17.1	Verti 100
5	23999.994 M	28.4	-13.9	+7.9	+15.1	+9.3	-10.0 360	36.8	54.0	-17.2	Verti 100
6	23641.636 M	28.6	-14.8	+7.9	+15.0	+9.4	-10.0 360	36.1	54.0	-17.9	Verti 100
7	23674.669 M	28.4	-14.7	+7.9	+15.0	+9.4	-10.0 360	36.0	54.0	-18.0	Verti 100
8	23691.686 M	28.3	-14.7	+7.9	+15.0	+9.4	-10.0 360	35.9	54.0	-18.1	Verti 100
9	23119.114 M	28.8	-16.4	+7.8	+14.7	+9.3	-10.0 360	34.2	54.0	-19.8	Verti 100
10	23051.046 M	29.0	-16.6	+7.8	+14.7	+9.2	-10.0 360	34.1	54.0	-19.9	Verti 100
11	22977.973 M	28.7	-16.8	+7.8	+14.7	+9.2	-10.0 360	33.6	54.0	-20.4	Verti 100
12	23083.078 M	28.3	-16.5	+7.8	+14.7	+9.3	-10.0 360	33.6	54.0	-20.4	Verti 100
13	22965.961 M	28.8	-16.9	+7.7	+14.7	+9.2	-10.0 360	33.5	54.0	-20.5	Verti 100
14	22980.976 M	28.5	-16.8	+7.8	+14.7	+9.2	-10.0 360	33.4	54.0	-20.6	Verti 100
15	22362.358 M	29.6	-16.9	+7.6	+14.4	+8.7	-10.0 360	33.4	54.0	-20.6	Verti 100
16	23038.033 M	28.3	-16.6	+7.8	+14.7	+9.2	-10.0 360	33.4	54.0	-20.6	Verti 100



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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 19
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2437 MHz.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23986.981 M	28.3	-13.9	+7.9	+15.1	+9.3	-10.0 360	36.7	54.0	-17.3	Horiz 100
2	23992.987 M	28.3	-13.9	+7.9	+15.1	+9.3	-10.0 360	36.7	54.0	-17.3	Horiz 100
3	23998.993 M	28.3	-13.9	+7.9	+15.1	+9.3	-10.0 360	36.7	54.0	-17.3	Horiz 100
4	23842.837 M	28.7	-14.3	+7.9	+15.0	+9.3	-10.0 360	36.6	54.0	-17.4	Horiz 100
5	23920.915 M	28.3	-14.1	+7.9	+15.1	+9.3	-10.0 360	36.5	54.0	-17.5	Horiz 100
6	23930.925 M	28.3	-14.1	+7.9	+15.1	+9.3	-10.0 360	36.5	54.0	-17.5	Horiz 100
7	23970.965 M	28.0	-14.0	+7.9	+15.1	+9.3	-10.0 360	36.3	54.0	-17.7	Horiz 100
8	23648.643 M	28.7	-14.8	+7.9	+15.0	+9.4	-10.0 360	36.2	54.0	-17.8	Horiz 100
9	23945.940 M	27.9	-14.0	+7.9	+15.1	+9.3	-10.0 360	36.2	54.0	-17.8	Horiz 100
10	23872.867 M	28.1	-14.2	+7.9	+15.0	+9.3	-10.0 360	36.1	54.0	-17.9	Horiz 100
11	23902.897 M	27.9	-14.2	+7.9	+15.1	+9.3	-10.0 360	36.0	54.0	-18.0	Horiz 100
12	23655.650 M	28.2	-14.8	+7.9	+15.0	+9.4	-10.0 360	35.7	54.0	-18.3	Horiz 100
13	23729.724 M	27.9	-14.6	+7.9	+15.0	+9.4	-10.0 360	35.6	54.0	-18.4	Horiz 100
14	23877.872 M	27.6	-14.2	+7.9	+15.0	+9.3	-10.0 360	35.6	54.0	-18.4	Horiz 100
15	23662.657 M	28.0	-14.8	+7.9	+15.0	+9.4	-10.0 360	35.5	54.0	-18.5	Horiz 100
16	23687.682 M	27.8	-14.7	+7.9	+15.0	+9.4	-10.0 360	35.4	54.0	-18.6	Horiz 100



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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
 Temp: 23° C
 Humidity: 45%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2437 MHz.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23983.978 M	28.8	-13.9	+7.9	+15.1	+9.3	-10.0	37.2	54.0	-16.8	Verti 100
2	23933.928 M	28.9	-14.1	+7.9	+15.1	+9.3	-10.0	37.1	54.0	-16.9	Verti 100
3	23719.714 M	29.1	-14.6	+7.9	+15.0	+9.4	-10.0	36.8	54.0	-17.2	Verti 100
4	23742.737 M	29.0	-14.6	+7.9	+15.0	+9.4	-10.0	36.7	54.0	-17.3	Verti 100
5	23707.702 M	29.0	-14.7	+7.9	+15.0	+9.4	-10.0	36.6	54.0	-17.4	Verti 100
6	23778.773 M	28.7	-14.5	+7.9	+15.0	+9.3	-10.0	36.4	54.0	-17.6	Verti 100
7	23603.598 M	28.7	-14.9	+7.9	+14.9	+9.4	-10.0	36.0	54.0	-18.0	Verti 100
8	23662.657 M	28.4	-14.8	+7.9	+15.0	+9.4	-10.0	35.9	54.0	-18.1	Verti 100
9	23679.674 M	28.3	-14.7	+7.9	+15.0	+9.4	-10.0	35.9	54.0	-18.1	Verti 100
10	23712.707 M	28.2	-14.6	+7.9	+15.0	+9.4	-10.0	35.9	54.0	-18.1	Verti 100
11	23649.644 M	28.4	-14.8	+7.9	+15.0	+9.4	-10.0	35.9	54.0	-18.1	Verti 100
12	23734.729 M	28.1	-14.6	+7.9	+15.0	+9.4	-10.0	35.8	54.0	-18.2	Verti 100
13	23756.751 M	28.1	-14.5	+7.9	+15.0	+9.3	-10.0	35.8	54.0	-18.2	Verti 100
14	23611.606 M	28.4	-14.9	+7.9	+14.9	+9.4	-10.0	35.7	54.0	-18.3	Verti 100
15	23636.631 M	28.1	-14.8	+7.9	+15.0	+9.4	-10.0	35.6	54.0	-18.4	Verti 100
16	23011.006 M	29.6	-16.7	+7.8	+14.7	+9.2	-10.0	34.6	54.0	-19.4	Verti 100



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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 18
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
 Temp: 24° C
 Humidity: 44%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23989.984 M	28.6	-13.9	+7.9	+15.1	+9.3	-10.0	37.0	54.0	-17.0	Horiz 100
2	23964.959 M	28.5	-14.0	+7.9	+15.1	+9.3	-10.0	36.8	54.0	-17.2	Horiz 100
3	23944.939 M	28.2	-14.0	+7.9	+15.1	+9.3	-10.0	36.5	54.0	-17.5	Horiz 100
4	23711.706 M	28.7	-14.6	+7.9	+15.0	+9.4	-10.0	36.4	54.0	-17.6	Horiz 100
5	23909.904 M	28.2	-14.1	+7.9	+15.1	+9.3	-10.0	36.4	54.0	-17.6	Horiz 100
6	23807.802 M	28.5	-14.4	+7.9	+15.0	+9.3	-10.0	36.3	54.0	-17.7	Horiz 100
7	23854.849 M	28.4	-14.3	+7.9	+15.0	+9.3	-10.0	36.3	54.0	-17.7	Horiz 100
8	23924.919 M	28.0	-14.1	+7.9	+15.1	+9.3	-10.0	36.2	54.0	-17.8	Horiz 100
9	23774.769 M	28.4	-14.5	+7.9	+15.0	+9.3	-10.0	36.1	54.0	-17.9	Horiz 100
10	23868.863 M	27.9	-14.2	+7.9	+15.0	+9.3	-10.0	35.9	54.0	-18.1	Horiz 100
11	23690.685 M	28.3	-14.7	+7.9	+15.0	+9.4	-10.0	35.9	54.0	-18.1	Horiz 100
12	23847.842 M	28.0	-14.3	+7.9	+15.0	+9.3	-10.0	35.9	54.0	-18.1	Horiz 100
13	23655.650 M	28.2	-14.8	+7.9	+15.0	+9.4	-10.0	35.7	54.0	-18.3	Horiz 100
14	23890.885 M	27.6	-14.2	+7.9	+15.1	+9.3	-10.0	35.7	54.0	-18.3	Horiz 100
15	23840.835 M	27.7	-14.3	+7.9	+15.0	+9.3	-10.0	35.6	54.0	-18.4	Horiz 100
16	23830.825 M	27.5	-14.3	+7.9	+15.0	+9.3	-10.0	35.4	54.0	-18.6	Horiz 100



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: 8/13/2010
 Test Type: **Maximized Emissions** Time:
 Equipment: **SRR+WWAN+WIFI+GPS RX (always external antennas)** Sequence#: 17
 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	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
	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 ISM Antenna	Laird Technologies	FG9026	40241
External WWAN Antenna	Laird Technologies	FG821/18503	40353
External GPS Antenna	Trimble	57861-00	213100323
External Battery	Excel Battery Company	2EXL7360	S10166003-023
Lighting Surge Arrestor	Polyphaser	DSXL-ME	
External RF Filter	Delta Microwave	U1993	101

Support Devices:

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

Test Conditions / Notes:

Frequency Range Investigated: 18 - 25 GHz
 Temp: 23° C
 Humidity: 45%
 Pressure: 102.0 kPa
 FHSS transceiver and cell modem are in receive only mode
 Wi-Fi transmitter is on 2462 MHz.

Ext Attn: 0 dB

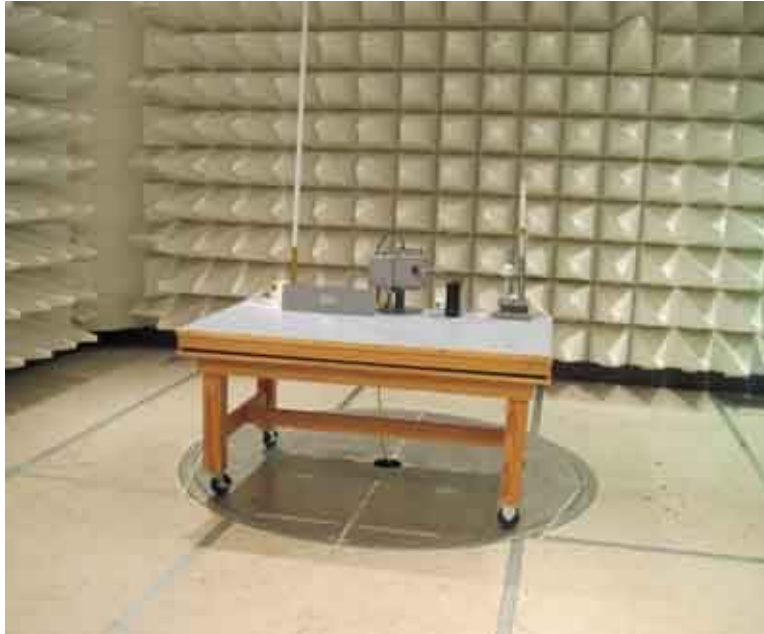
Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	23937.932 M	29.4	-14.1	+7.9	+15.1	+9.3	-10.0 360	37.6	54.0	-16.4	Verti 100
2	23985.980 M	29.2	-13.9	+7.9	+15.1	+9.3	-10.0 360	37.6	54.0	-16.4	Verti 100
3	23989.984 M	28.8	-13.9	+7.9	+15.1	+9.3	-10.0 360	37.2	54.0	-16.8	Verti 100
4	23948.943 M	28.8	-14.0	+7.9	+15.1	+9.3	-10.0 360	37.1	54.0	-16.9	Verti 100
5	23979.974 M	28.8	-14.0	+7.9	+15.1	+9.3	-10.0 360	37.1	54.0	-16.9	Verti 100
6	23900.895 M	28.9	-14.2	+7.9	+15.1	+9.3	-10.0 360	37.0	54.0	-17.0	Verti 100
7	23906.901 M	28.6	-14.1	+7.9	+15.1	+9.3	-10.0 360	36.8	54.0	-17.2	Verti 100
8	23928.923 M	28.6	-14.1	+7.9	+15.1	+9.3	-10.0 360	36.8	54.0	-17.2	Verti 100
9	23884.879 M	28.6	-14.2	+7.9	+15.0	+9.3	-10.0 360	36.6	54.0	-17.4	Verti 100
10	23827.822 M	28.6	-14.3	+7.9	+15.0	+9.3	-10.0 360	36.5	54.0	-17.5	Verti 100
11	23064.059 M	29.6	-16.5	+7.8	+14.7	+9.3	-10.0 360	34.9	54.0	-19.1	Verti 100
12	23110.105 M	29.4	-16.4	+7.8	+14.7	+9.3	-10.0 360	34.8	54.0	-19.2	Verti 100
13	22978.974 M	29.2	-16.8	+7.8	+14.7	+9.2	-10.0 360	34.1	54.0	-19.9	Verti 100
14	20155.153 M	30.2	-14.6	+7.0	+13.4	+7.8	-10.0 360	33.8	54.0	-20.2	Verti 100
15	19623.622 M	30.2	-14.3	+7.0	+13.2	+7.7	-10.0 360	33.8	54.0	-20.2	Verti 100
16	23035.030 M	28.7	-16.6	+7.8	+14.7	+9.2	-10.0 360	33.8	54.0	-20.2	Verti 100

Test Setup Photos



2.247(e) Power Spectral Density

Test Set up

The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable. 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

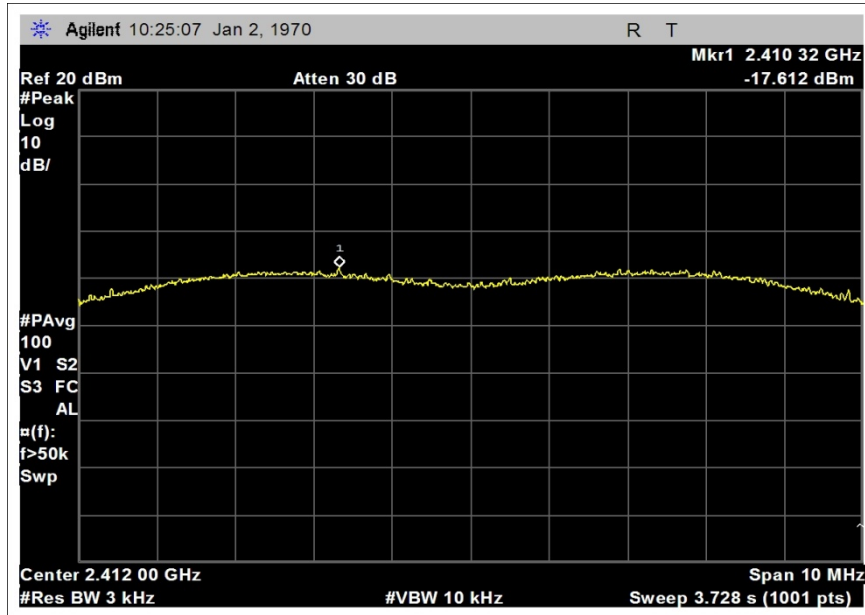
Test Equipment				
Equipment	Serial	Cal Date	Cal Due	Asset
Spectrum Analyzer	MY46186330	8/25/2009	8/25/2011	02872
Cable	NA	12/2/2008	12/2/2010	03122

Test Data

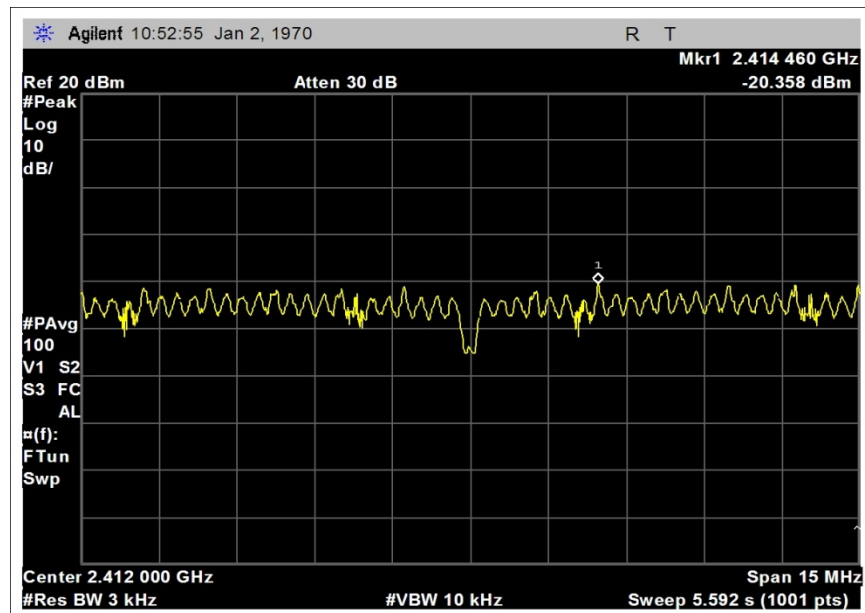
Freq in MHz	Meter dBm	Factors dB	Corr dBm	Spec dBm	Margin dBm	Result	Notes
2410.320	-17.61	1.0	-16.6	8	24.6	PASS	802.11b
2414.460	-20.36	1.0	-19.4	8	27.4	PASS	802.11g
2435.310	-17.73	1.0	-16.7	8	24.7	PASS	802.11b
2439.460	-20.66	1.0	-19.7	8	27.7	PASS	802.11g
2460.320	-18.72	1.0	-17.7	8	25.7	PASS	802.11b
2464.460	-21.30	1.0	-20.3	8	28.3	PASS	802.11g

Requirement: The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

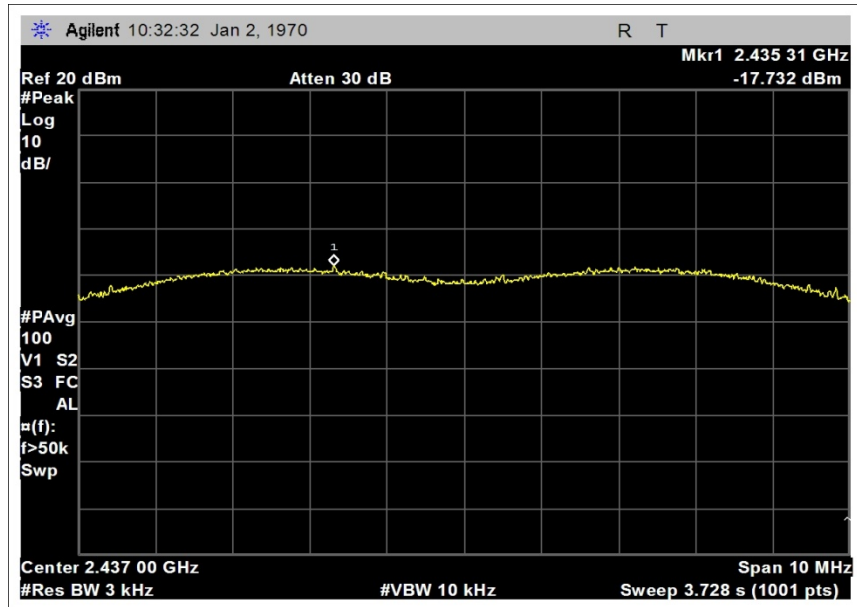
Note: The following plots contain a software default date of Jan 2, 1970 which was not changed at the time of testing. Actual date of testing was August 16, 2010.



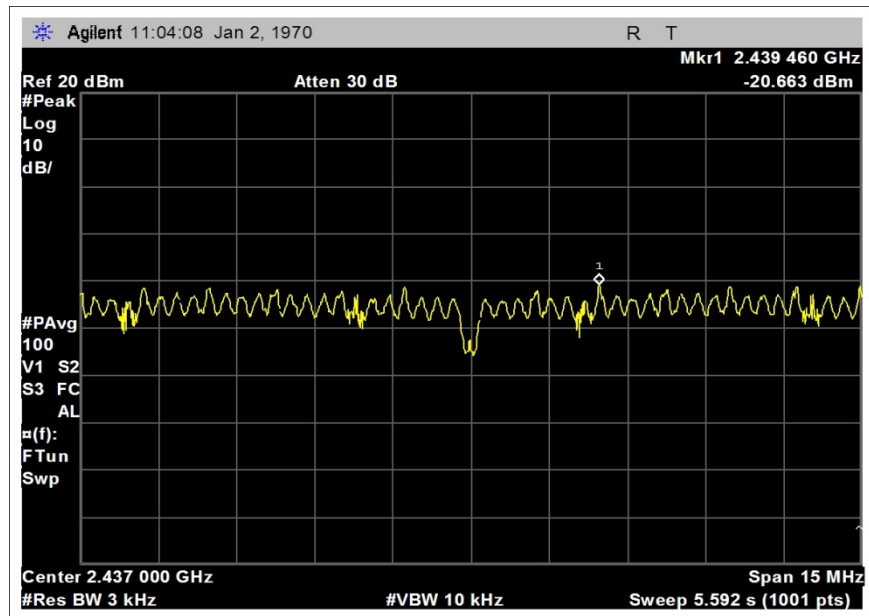
2412-802.11b



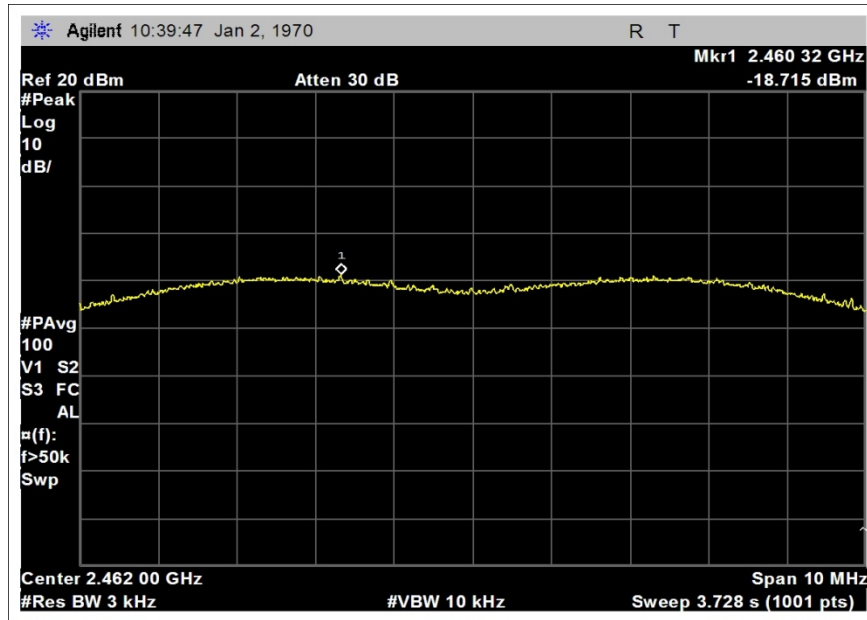
2412-802.11g



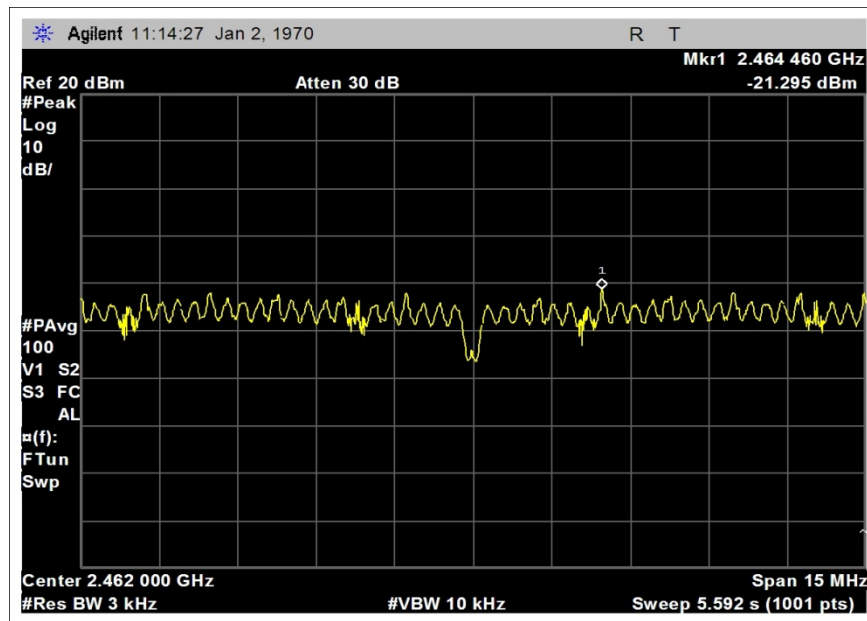
2437-802.11b



2437-802.11g



2462-802.11b



2462-802.11g

Test Setup Photos



POWER SPECTRAL DENSITY

RSS-210

99% Bandwidth

Test Set up

The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable. 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

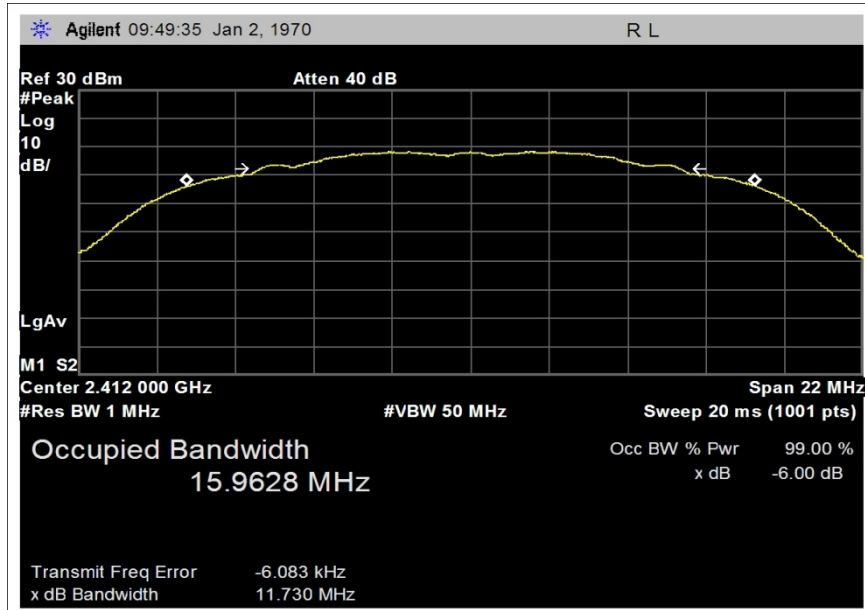
Test Equipment				
Equipment	Serial	Cal Date	Cal Due	Asset
Spectrum Analyzer	MY46186330	8/25/2009	8/25/2011	02872
Cable	NA	12/2/2008	12/2/2010	03122

Test Data

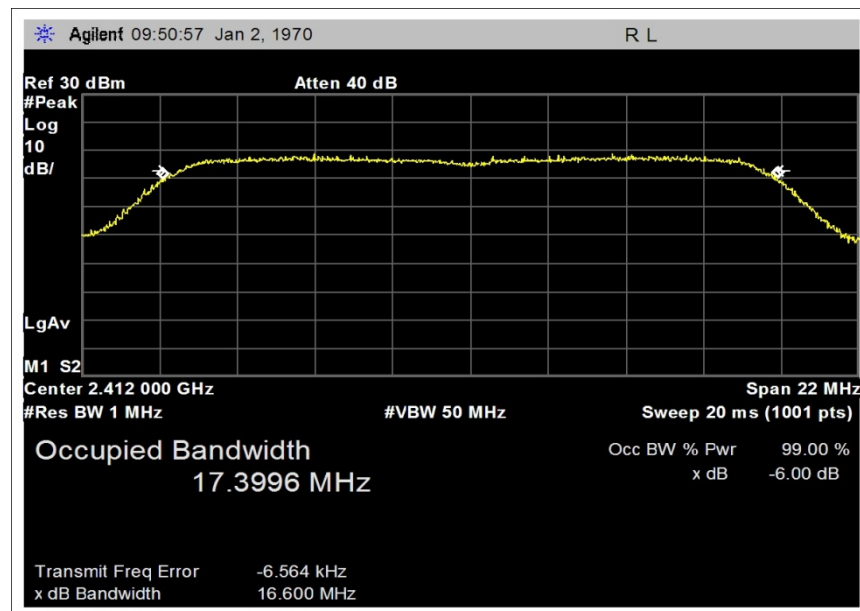
802.11b			99% BW	802.11g		
2412 MHz	2437 MHz	2462 MHz		2412 MHz	2437 MHz	2462 MHz
15.96 MHz	15.95 MHz	15.94 MHz		17.4 MHz	17.41 MHz	17.4 MHz

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

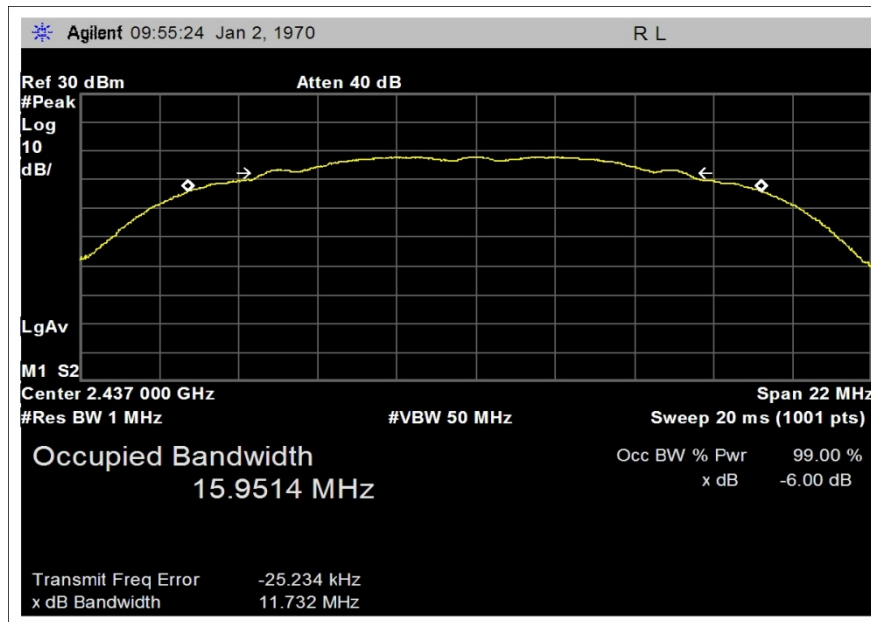
Note: The following plots contain a software default date of Jan 2, 1970 which was not changed at the time of testing. Actual date of testing was August 16, 2010.



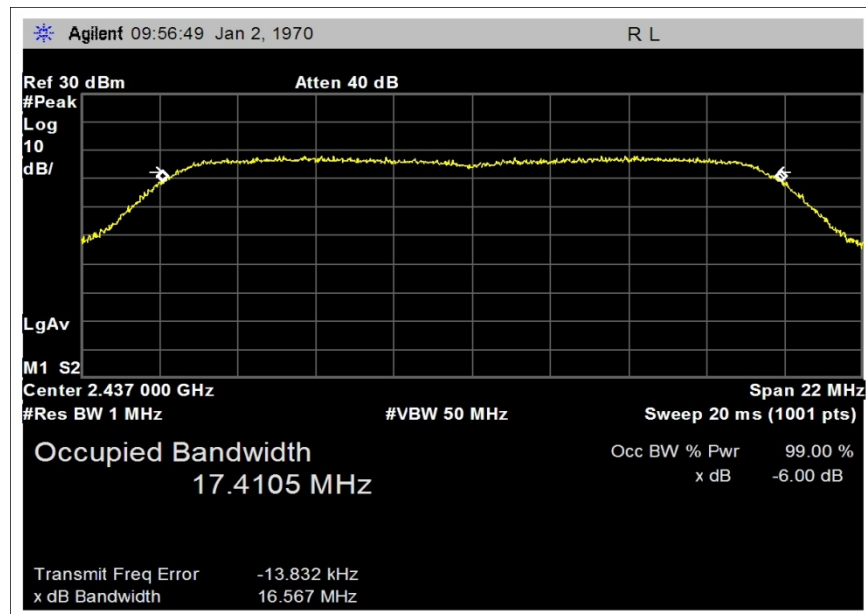
2412-802.11b



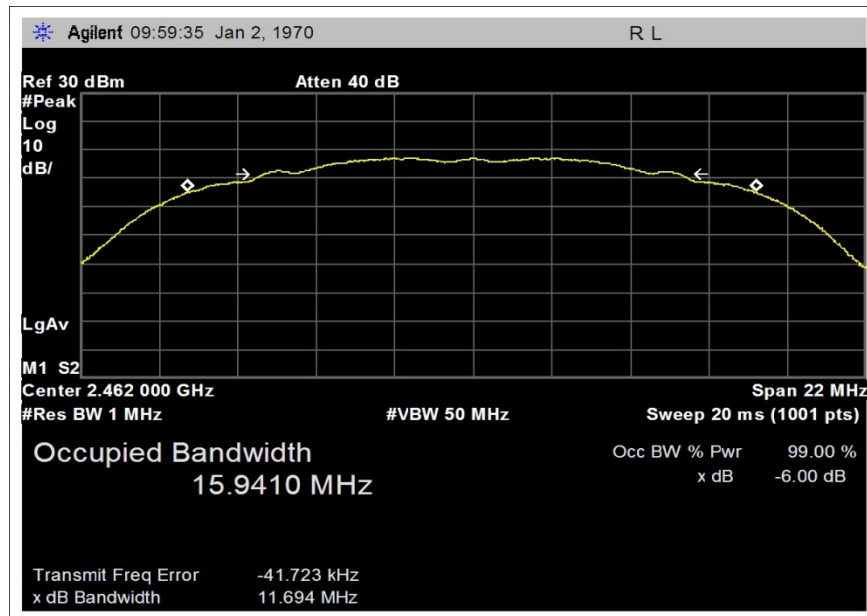
2412-802.11g



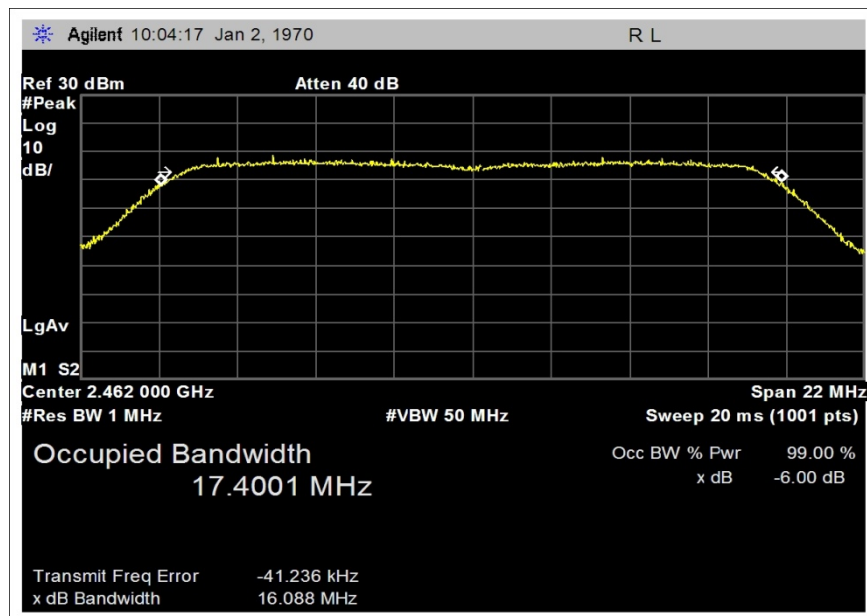
2437-802.11b



2437-802.11g



2462-802.11b



2462-802.11g

Test Setup Photos



99% BANDWIDTH

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 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	(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.

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.