

# Ittron, Inc.

## ADDENDUM TEST REPORT TO 92051-8

SRR+WWAN+WIFI+GPS RX (Internal WWAN & GPS Antenna), CCU100B  
SRR+WWAN+WIFI+GPS RX (external WWAN & GPS Antenna), CCU100RB

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.247  
and  
RSS-210 Issue 8

Report No.: 92051-8A

Date of issue: September 14, 2011



This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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## ADMINISTRATIVE INFORMATION

### Test Report Information

**REPORT PREPARED FOR:**

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Liberty Lake, WA 99019

Representative: Jay Holcomb

**REPORT PREPARED BY:**

Joyce Walker  
CKC Laboratories, Inc.  
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Mariposa, CA 95338

Project Number: 92051

**DATE OF EQUIPMENT RECEIPT:**

June 13, 2011

**DATE(S) OF TESTING:**

June 13 –September 12, 2011

### Revision History

**Original:** Testing of the SRR+WWAN+WIFI+GPS RX (Internal WWAN & GPS Antenna), CCU100B and SRR+WWAN+WIFI+GPS RX (external WWAN & GPS Antenna), CCU100RB to FCC Part 15 Subpart C Sections 15.247 and RSS-210 Issue 8.

**Addendum A:** To update the Power Output and Spurious Emissions testing due to a change in test equipment configuration.

### Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

A handwritten signature in black ink that reads "Steve Behm".

**Steve Behm**  
*Director of Quality Assurance & Engineering Services*  
*CKC Laboratories, Inc.*

## Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):  
CKC Laboratories, Inc.  
22116 23rd Drive S.E., Suite A  
Bothell, WA 98021-4413

## Site Registration & Accreditation Information

Location	CB #	Japan	Canada	FCC
Bothell	US0081	R-2296, C-2506, T-1489 & G-284	3082C-1	318736

## SUMMARY OF RESULTS

### Standard / Specification: FCC Part 15 Subpart C 15.247 and RSS-210 Issue 8

Description	Test Procedure/Method	Results
Input Voltage Variations	15.31(e) / ANSI C63.4	Pass
AC Conducted Emissions	FCC Part 15 Subpart C Section 15.207(a) / KDB 558074	Pass
20 dB Bandwidth	FCC Part 15 Subpart C Section 15.215(c) / ANSI C63.4	Pass
6 dB Bandwidth	FCC Part 15 Subpart C Section 15.247(a)(2) / KDB 558074	Pass
Peak Conducted Power	FCC Part 15 Subpart C Section 15.247(b)(3) / KDB 558074	Pass
Spurious Emissions – Antenna Conducted	FCC Part 15 Subpart C Section 15.247(d) / KDB 558074 / ANSI C63.4	Pass
Spurious Emissions - Radiated	FCC Part 15 Subpart C Section 15.247(d) / KDB 558074 / ANSI C63.4	Pass
Power Spectral Density	FCC Part 15 Subpart C Section 15.247(e) / KDB 558074	Pass
99% Bandwidth	RSS-210 Issue 8 / RSS-GEN	Pass

## Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

## EQUIPMENT UNDER TEST (EUT)

CKC Laboratories tested the following devices: CCU100B (SRR+WWAN+WIFI+GPS RX Internal WWAN & GPS Antenna) and CCU100RB (SRR+WWAN+WIFI+GPS RX External WWAN & GPS Antenna)

During testing it was found that the two devices above with a cellular modem had a much worse emissions profile than without a cellular modem in the device. The difference between the repeater versions of these devices and the non-repeater versions is that the repeater versions do not have a cellular modem in them. Therefore, the manufacturer claims that any differences between the following devices without modems in them do not affect their EMC characteristics, and therefore meet the level of testing equivalent to the tested models: CCU100B-Repeater (SRR+WIFI+GPS RX Internal GPS Antenna) and CCU100RB-Repeater (SRR+WIFI+GPS RX External GPS Antenna).

### EQUIPMENT UNDER TEST

#### SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS Antenna)

Manuf: Itron, Inc.  
Model: CCU100B  
Serial: 7404FCC1

#### SRR+WWAN+WIFI+GPS RX (External WWAN & GPS Antenna)

Manuf: Itron, Inc.  
Model: CCU100RB  
Serial: 7404FCC3

### PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

#### Laptop

Manuf: Dell  
Model: E6400  
Serial: H4CSTK1

## FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

### 15.31(e) Voltage Variations

#### Test Conditions / Setup

##### Comments

The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable and 6 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. For this testing, all models (CCU100B, CCU100B-Repeater, CCU100RB, and CCU100RB-Repeater) are identical.

#### Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
02872	Spectrum Analyzer	E4440A	Agilent	08/25/2009	08/25/2011
P05513	Attenuator	BW-S6W2	Mini-Circuits	10/12/2009	10/12/2011
03122	Cable	32026-2-29801-36	Astrolab	12/23/2010	12/23/2012
01314	Programmable power source	345AMXT-UPC3	PPS	05/27/2010	05/27/2012

### Test Data

Test Engineer: A. del Angel

Results Table			
802.11b			
	2412 MHz	2437 MHz	2462 MHz
VAC	dBm	dBm	dBm
102	20.20	20.60	21.00
120	20.20	20.60	21.00
138	20.20	20.60	21.00
204	20.20	20.60	21.00
240	20.20	20.60	21.00
265	20.20	20.60	21.00

Results Table			
802.11g			
	2412 MHz	2437 MHz	2462 MHz
VAC	dBm	dBm	dBm
102	16.30	16.60	17.10
120	16.30	16.60	17.10
138	16.30	16.60	17.10
204	16.30	16.60	17.10
240	16.30	16.60	17.10
265	16.30	16.60	17.10



**Test Setup Photos**



## 15.207 AC Conducted Emissions

Test Conditions / Setup
Comments
15.207 Conducted Emissions Testing: For this requirement, only one model was tested; CCU100B (SRR+WWAN+WIFI+GPS RX Internal WWAN & GPS Antenna). The manufacturer declares that, with regards to this particular test, all models are electrically identical and therefore meet the level of testing equivalent to the tested model.

### Test Data Sheets

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

Customer: **Itron, Inc.**

Specification: **15.207 AC Mains - Average**

Work Order #: **92051**

Date: 6/13/2011

Test Type: **Conducted Emissions**

Time: 12:22:25 PM

Equipment: **SRR+WWAN+WIFI+GPS RX  
(internal WWAN & GPS antenna)**

Sequence#: 8

Manufacturer: Itron, Inc.

Tested By: Armando del Angel

Model: CCU100B

120V 60Hz

S/N: 7404FCC1

### Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080- 29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
T6	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

### Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

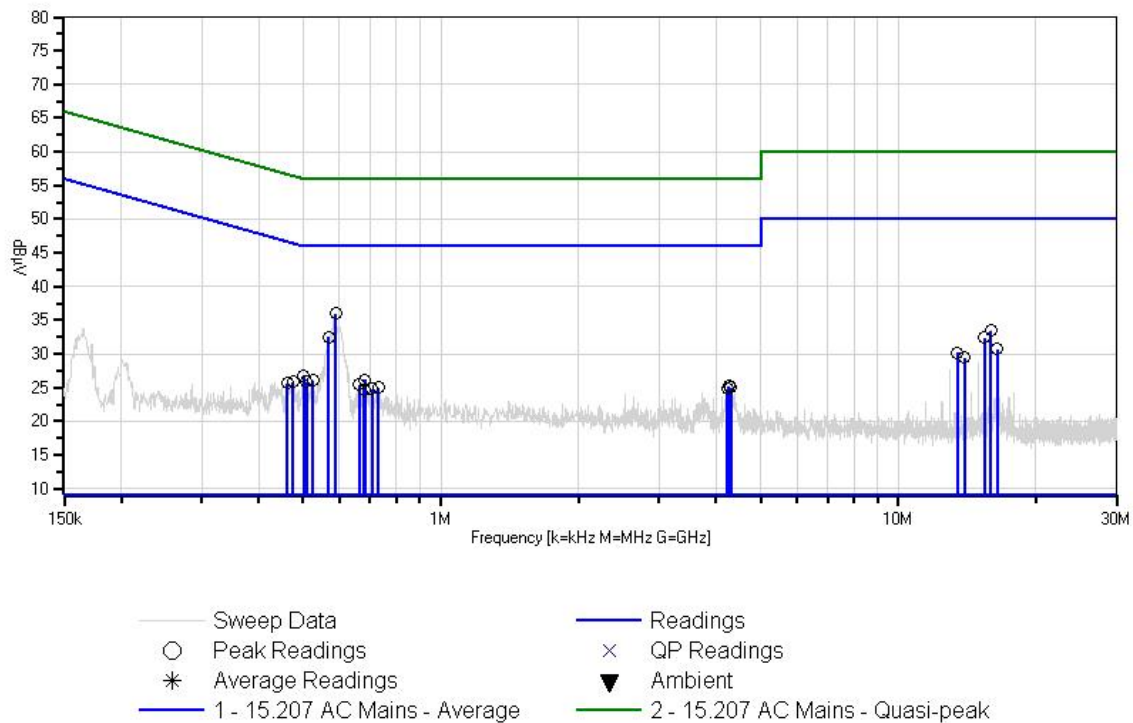
Temp: 23°C
Humidity: 43%
Pressure: 102.0kPa
Frequency: 0.150-30MHz
EUT is located on the test table 80cm above the ground plane.
EUT is connected to a LISN.
All 3 channels have been investigated. Worse case will be tested.
EUT is transmitting at 2.462GHz with 802.11b modulation.

Ext Attn: 0 dB

<b>Measurement Data:</b>			Reading listed by margin.					Test Lead: Line			
#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	588.505k	26.2	+9.7 +0.0	+0.0 +0.1	+0.0	+0.0	+0.0	36.0	46.0	-10.0	Line
2	568.143k	22.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	32.5	46.0	-13.5	Line
3	15.959M	23.1	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	33.5	50.0	-16.5	Line
4	15.454M	22.1	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	32.4	50.0	-17.6	Line
5	501.240k	17.0	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	26.8	46.0	-19.2	Line
6	16.454M	20.3	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	30.7	50.0	-19.3	Line
7	681.588k	16.5	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.2	46.0	-19.8	Line
8	13.463M	20.0	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	30.2	50.0	-19.8	Line
9	525.238k	16.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.1	46.0	-19.9	Line
10	508.513k	16.1	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	25.9	46.0	-20.1	Line
11	474.334k	15.9	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	25.8	46.4	-20.6	Line
12	662.680k	15.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.4	46.0	-20.6	Line
13	13.959M	19.3	+9.7 +0.0	+0.1 +0.0	+0.1	+0.2	+0.0	29.4	50.0	-20.6	Line
14	4.267M	15.1	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	25.2	46.0	-20.8	Line
15	730.310k	15.2	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.0	46.0	-21.0	Line
16	4.301M	14.9	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	25.0	46.0	-21.0	Line
17	461.971k	15.7	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	25.6	46.7	-21.1	Line

18	707.767k	15.0	+9.7	+0.0	+0.0	+0.1	+0.0	24.8	46.0	-21.2	Line
			+0.0	+0.0							
19	4.224M	14.7	+9.7	+0.1	+0.1	+0.1	+0.0	24.8	46.0	-21.2	Line
			+0.0	+0.1							
20	678.679k	15.0	+9.7	+0.0	+0.0	+0.0	+0.0	24.7	46.0	-21.3	Line
			+0.0	+0.0							

CKC Laboratories, Inc. Date: 6/13/2011 Time: 12:22:25 PM Itron, Inc. WO#: 92051  
 15.207 AC Mains - Average Test Lead: Line Line Sequence#: 8 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: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 12:19:05 PM  
 Sequence#: 7

Tested By: Armando del Angel  
 120V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080- 29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
T6	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11b modulation.

Ext Attn: 0 dB

**Measurement Data:**

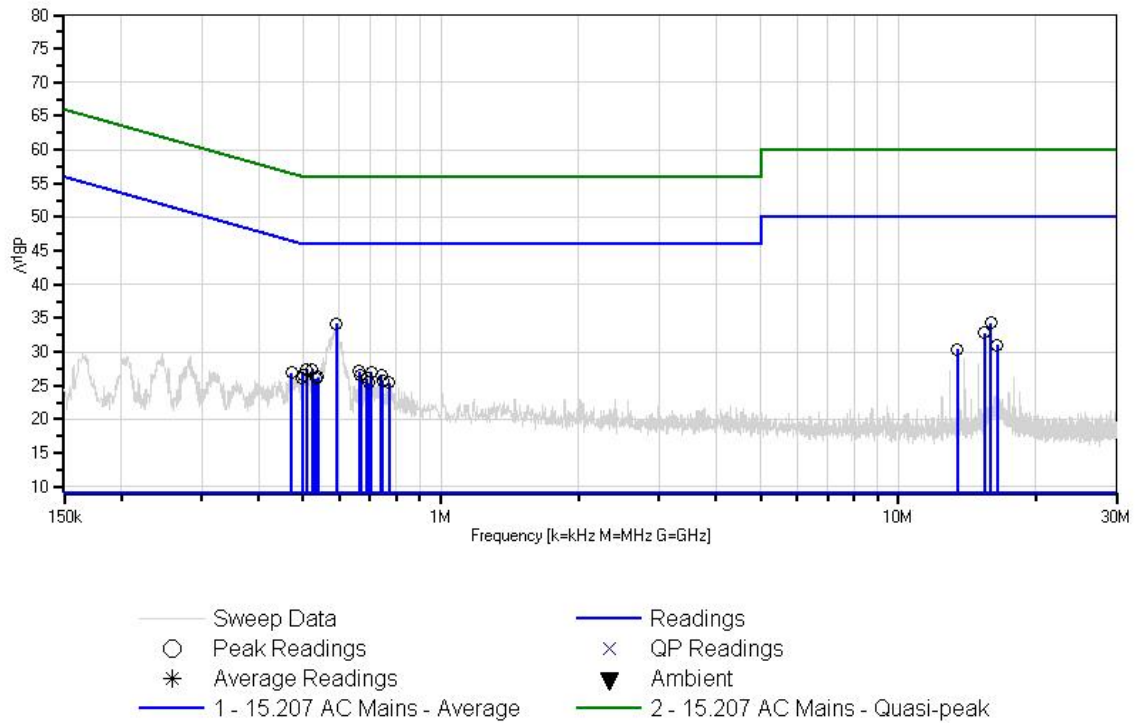
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	591.414k	24.5	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	34.2	46.0	-11.8	Neutr
2	15.959M	23.9	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	34.3	50.0	-15.7	Neutr

3	15.454M	22.5	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	32.8	50.0	-17.2	Neutr
4	509.240k	17.6	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.4	46.0	-18.6	Neutr
5	523.057k	17.6	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.4	46.0	-18.6	Neutr
6	662.680k	17.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.1	46.0	-18.9	Neutr
7	704.131k	17.3	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.0	46.0	-19.0	Neutr
8	16.454M	20.6	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	31.0	50.0	-19.0	Neutr
9	499.059k	16.8	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	26.6	46.0	-19.4	Neutr
10	739.764k	16.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	26.6	46.0	-19.4	Neutr
11	667.043k	16.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.5	46.0	-19.5	Neutr
12	472.152k	17.1	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	26.9	46.5	-19.6	Neutr
13	13.463M	20.2	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	30.4	50.0	-19.6	Neutr
14	537.601k	16.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.3	46.0	-19.7	Neutr
15	496.877k	16.4	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	26.2	46.1	-19.9	Neutr
16	531.783k	16.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.1	46.0	-19.9	Neutr
17	689.587k	16.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.1	46.0	-19.9	Neutr
18	745.582k	15.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.6	46.0	-20.4	Neutr
19	694.677k	15.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.4	46.0	-20.6	Neutr
20	771.761k	15.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.4	46.0	-20.6	Neutr

CKC Laboratories, Inc. Date: 6/13/2011 Time: 12:19:05 PM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Neutral Neutral 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: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 12:13:34 PM  
 Sequence#: 5

Tested By: Armando del Angel  
 240V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080-29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
T6	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11b modulation.

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

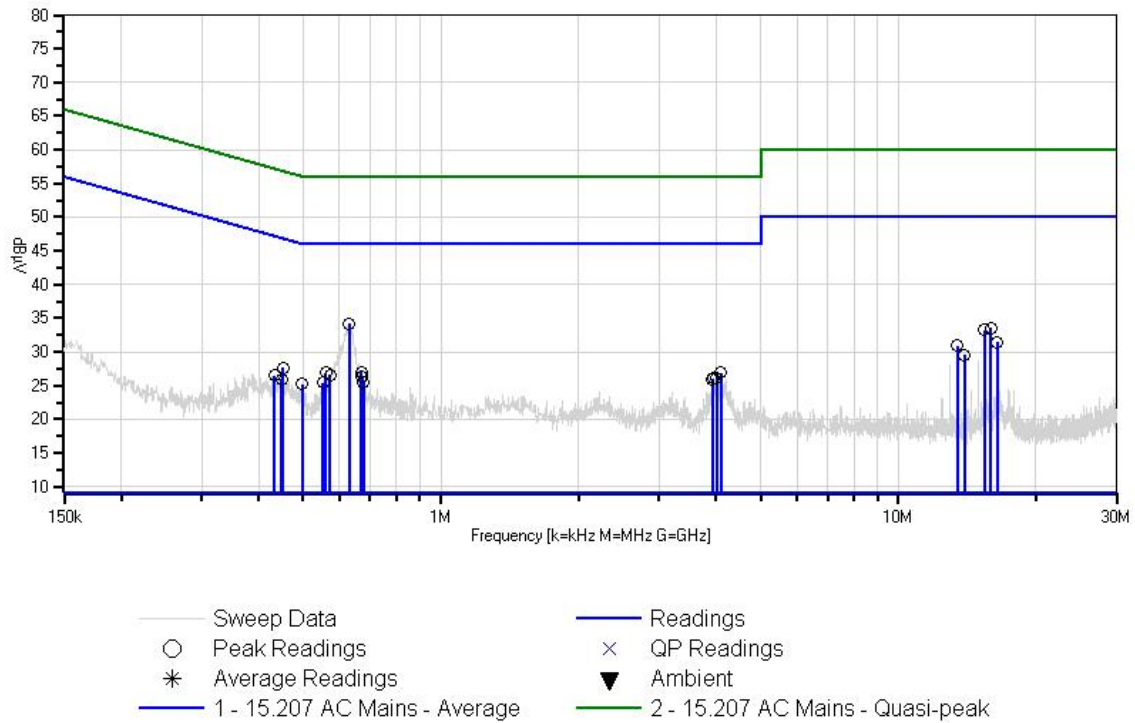
Test Lead: Line

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	629.956k	24.5	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	34.2	46.0	-11.8	Line
2	15.950M	23.2	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	33.6	50.0	-16.4	Line



3	15.454M	22.9	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	33.2	50.0	-16.8	Line
4	16.454M	21.1	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	31.5	50.0	-18.5	Line
5	669.952k	17.3	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.0	46.0	-19.0	Line
6	560.144k	17.2	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.9	46.0	-19.1	Line
7	4.101M	16.8	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	26.9	46.0	-19.1	Line
8	13.463M	20.7	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	30.9	50.0	-19.1	Line
9	451.790k	17.7	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	27.6	46.8	-19.2	Line
10	573.234k	16.9	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.6	46.0	-19.4	Line
11	672.861k	16.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.3	46.0	-19.7	Line
12	4.003M	16.1	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	26.2	46.0	-19.8	Line
13	3.943M	16.1	+9.7 +0.0	+0.0 +0.1	+0.1	+0.1	+0.0	26.1	46.0	-19.9	Line
14	3.918M	15.9	+9.7 +0.0	+0.0 +0.1	+0.1	+0.1	+0.0	25.9	46.0	-20.1	Line
15	677.952k	15.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.5	46.0	-20.5	Line
16	13.968M	19.4	+9.7 +0.0	+0.1 +0.0	+0.1	+0.2	+0.0	29.5	50.0	-20.5	Line
17	552.872k	15.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.4	46.0	-20.6	Line
18	432.883k	16.6	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	26.5	47.2	-20.7	Line
19	448.154k	16.1	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	26.0	46.9	-20.9	Line
20	496.877k	15.4	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	25.2	46.1	-20.9	Line

CKC Laboratories, Inc. Date: 6/13/2011 Time: 12:13:34 PM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Line Line 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: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 12:16:12 PM  
 Sequence#: 6

Tested By: Armando del Angel  
 240V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080- 29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
T6	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11b modulation.

Ext Attn: 0 dB

**Measurement Data:**

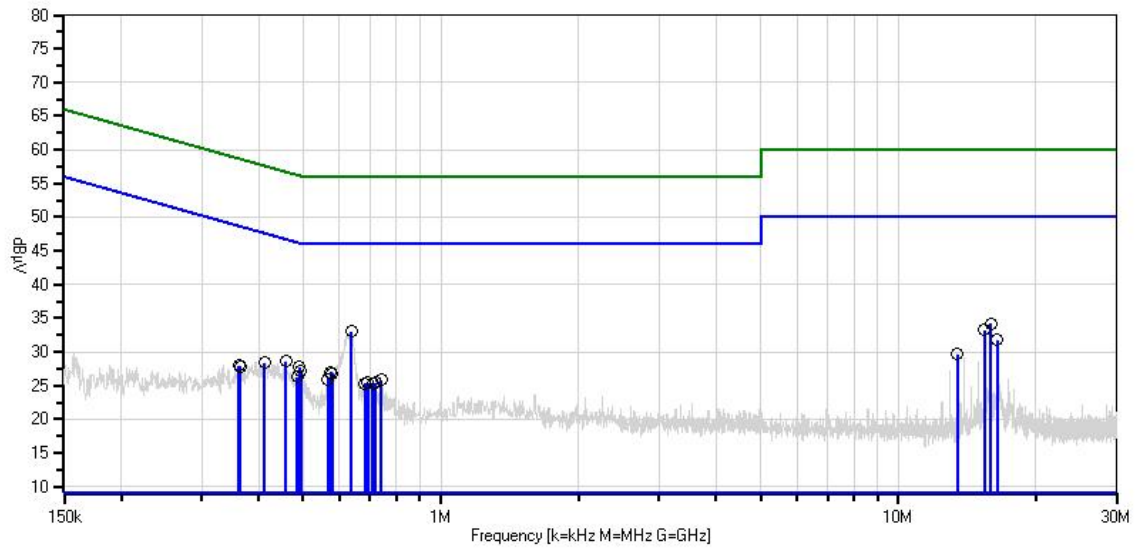
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	636.501k	23.3	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	33.0	46.0	-13.0	Neutr
2	15.950M	23.8	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	34.2	50.0	-15.8	Neutr

3	15.454M	22.9	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	33.2	50.0	-16.8	Neutr
4	458.335k	18.8	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	28.6	46.7	-18.1	Neutr
5	16.454M	21.4	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	31.8	50.0	-18.2	Neutr
6	490.332k	18.0	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.8	46.2	-18.4	Neutr
7	494.696k	17.3	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.1	46.1	-19.0	Neutr
8	574.688k	17.3	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.0	46.0	-19.0	Neutr
9	411.794k	18.5	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.4	47.6	-19.2	Neutr
10	577.597k	17.1	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.8	46.0	-19.2	Neutr
11	485.242k	16.5	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	26.3	46.2	-19.9	Neutr
12	566.689k	16.3	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.0	46.0	-20.0	Neutr
13	740.491k	16.0	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.8	46.0	-20.2	Neutr
14	13.463M	19.5	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	29.7	50.0	-20.3	Neutr
15	691.041k	15.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.4	46.0	-20.6	Neutr
16	720.857k	15.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.4	46.0	-20.6	Neutr
17	364.526k	18.0	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	27.9	48.6	-20.7	Neutr
18	361.617k	18.1	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.0	48.7	-20.7	Neutr
19	709.949k	15.5	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	25.3	46.0	-20.7	Neutr
20	682.315k	15.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.3	46.0	-20.7	Neutr

CKC Laboratories, Inc. Date: 6/13/2011 Time: 12:16:12 PM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Neutral Neutral Sequence#: 6 Ext ATTN: 0 dB



— Sweep Data	— Readings
○ Peak Readings	× QP Readings
* Average Readings	▼ Ambient
— 1 - 15.207 AC Mains - Average	— 2 - 15.207 AC Mains - Quasi-peak

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

Customer: **Itron, Inc.**  
 Specification: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 11:49:15 AM  
 Sequence#: 1

Tested By: Armando del Angel  
 120V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080-29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
T6	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11g modulation.

Ext Attn: 0 dB

**Measurement Data:**

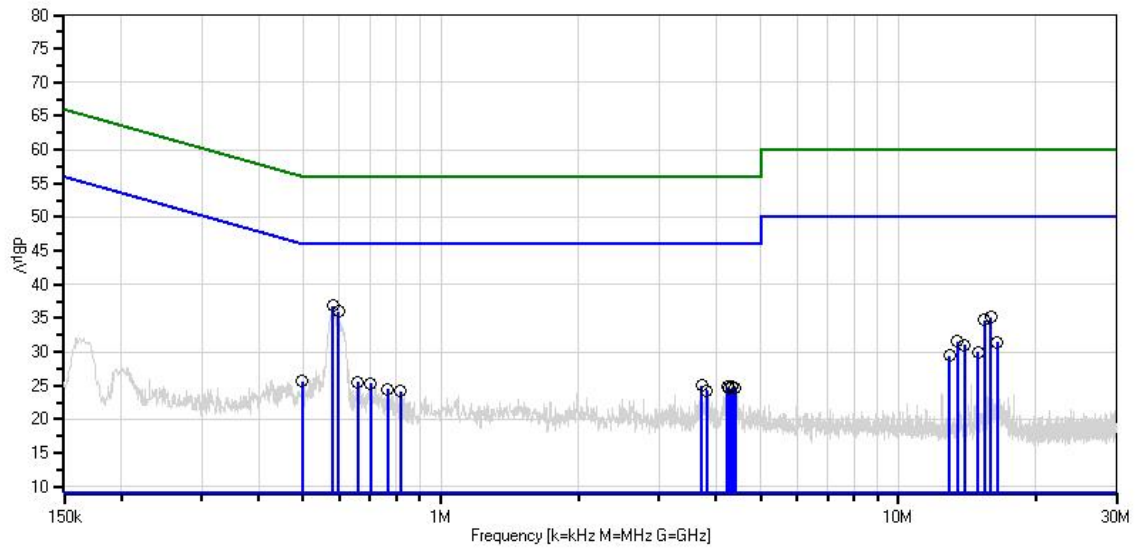
Reading listed by margin.

Test Lead: Line

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5	T6							
			dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	579.779k	27.0	+9.7	+0.0	+0.0	+0.0	+0.0	36.8	46.0	-9.2	Line
			+0.0	+0.1							
2	596.504k	26.2	+9.7	+0.0	+0.0	+0.0	+0.0	36.0	46.0	-10.0	Line
			+0.0	+0.1							

3	15.950M	24.8	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	35.2	50.0	-14.8	Line
4	15.454M	24.4	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	34.7	50.0	-15.3	Line
5	13.454M	21.4	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	31.6	50.0	-18.4	Line
6	16.445M	21.0	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	31.4	50.0	-18.6	Line
7	13.950M	20.9	+9.7 +0.0	+0.1 +0.0	+0.1	+0.2	+0.0	31.0	50.0	-19.0	Line
8	14.950M	19.7	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	30.0	50.0	-20.0	Line
9	498.332k	15.8	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	25.6	46.0	-20.4	Line
10	658.317k	15.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.5	46.0	-20.5	Line
11	12.959M	19.2	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	29.4	50.0	-20.6	Line
12	701.949k	15.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.3	46.0	-20.7	Line
13	3.714M	15.0	+9.7 +0.0	+0.0 +0.1	+0.1	+0.1	+0.0	25.0	46.0	-21.0	Line
14	4.233M	14.7	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	24.8	46.0	-21.2	Line
15	4.330M	14.7	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	24.8	46.0	-21.2	Line
16	4.398M	14.6	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	24.7	46.0	-21.3	Line
17	4.271M	14.5	+9.7 +0.0	+0.1 +0.1	+0.1	+0.1	+0.0	24.6	46.0	-21.4	Line
18	765.216k	14.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	24.5	46.0	-21.5	Line
19	3.812M	14.3	+9.7 +0.0	+0.0 +0.1	+0.1	+0.1	+0.0	24.3	46.0	-21.7	Line
20	814.666k	14.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	24.2	46.0	-21.8	Line

CKC Laboratories, Inc. Date: 6/13/2011 Time: 11:49:15 AM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Line Line Sequence#: 1 Ext ATTN: 0 dB



— Sweep Data	— Readings
○ Peak Readings	× QP Readings
* Average Readings	▼ Ambient
— 1 - 15.207 AC Mains - Average	— 2 - 15.207 AC Mains - Quasi-peak



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

Customer: **Itron, Inc.**  
 Specification: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 11:52:51 AM  
 Sequence#: 2

Tested By: Armando del Angel  
 120V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080-29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
T6	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11g modulation.

Ext Attn: 0 dB

**Measurement Data:**

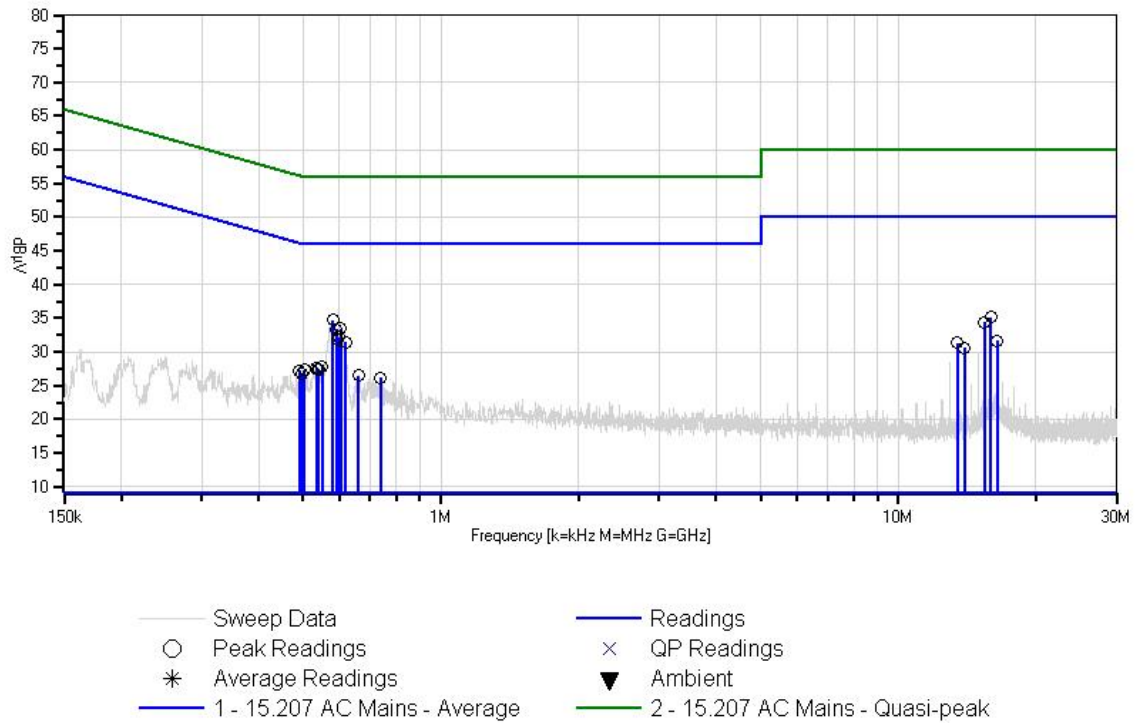
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	579.779k	25.0	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	34.7	46.0	-11.3	Neutr
2	604.504k	23.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	33.5	46.0	-12.5	Neutr

3	589.960k	23.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	33.4	46.0	-12.6	Neutr
4	597.959k	22.5	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	32.2	46.0	-13.8	Neutr
5	595.050k	22.2	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	31.9	46.0	-14.1	Neutr
6	618.321k	21.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	31.4	46.0	-14.6	Neutr
7	15.950M	24.8	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	+0.0	35.2	50.0	-14.8	Neutr
8	15.454M	24.1	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	+0.0	34.4	50.0	-15.6	Neutr
9	550.691k	18.1	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.8	46.0	-18.2	Neutr
10	16.454M	21.3	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	+0.0	31.7	50.0	-18.3	Neutr
11	533.965k	17.9	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.6	46.0	-18.4	Neutr
12	536.874k	17.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.4	46.0	-18.6	Neutr
13	541.237k	17.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.4	46.0	-18.6	Neutr
14	502.695k	17.5	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.3	46.0	-18.7	Neutr
15	13.454M	21.1	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	+0.0	31.3	50.0	-18.7	Neutr
16	490.332k	17.4	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	27.2	46.2	-19.0	Neutr
17	498.332k	17.0	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	26.8	46.0	-19.2	Neutr
18	13.959M	20.4	+9.7 +0.0	+0.1 +0.1	+0.1	+0.2	+0.0	+0.0	30.6	50.0	-19.4	Neutr
19	661.226k	16.8	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	+0.0	26.5	46.0	-19.5	Neutr
20	739.037k	16.4	+9.7 +0.0	+0.0 +0.0	+0.0	+0.1	+0.0	+0.0	26.2	46.0	-19.8	Neutr

CKC Laboratories, Inc. Date: 6/13/2011 Time: 11:52:51 AM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Neutral Neutral Sequence#: 2 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: **15.207 AC Mains - Average**  
Work Order #: **92051**  
Test Type: **Conducted Emissions**  
Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
Manufacturer: Itron, Inc.  
Model: CCU100B  
S/N: 7404FCC1

Date: 6/13/2011  
Time: 12:01:05 PM  
Sequence#: 4

Tested By: Armando del Angel  
240V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080- 29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
T6	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
Humidity: 43%  
Pressure: 102.0kPa  
Frequency: 0.150-30MHz  
EUT is located on the test table 80cm above the ground plane.  
EUT is connected to a LISN.  
All 3 channels have been investigated. Worse case will be tested.  
EUT is transmitting at 2.462GHz with 802.11g modulation.

Ext Attn: 0 dB

**Measurement Data:**

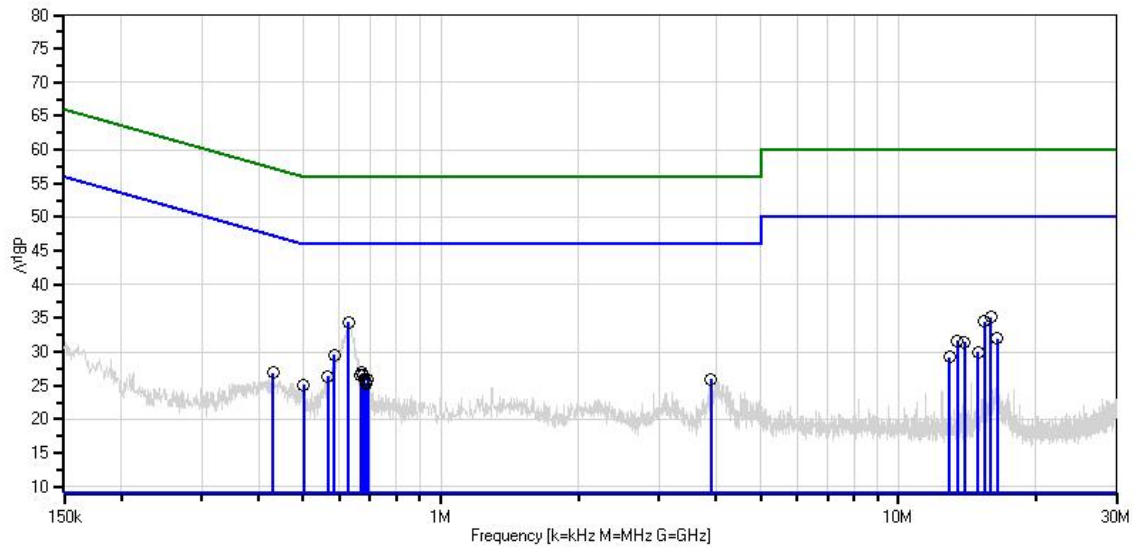
Reading listed by margin.

Test Lead: Line

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	629.229k	24.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	34.4	46.0	-11.6	Line
2	15.950M	24.8	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	35.2	50.0	-14.8	Line

3	15.454M	24.2	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	34.5	50.0	-15.5	Line
4	584.142k	19.7	+9.7 +0.0	+0.0 +0.1	+0.0	+0.0	+0.0	29.5	46.0	-16.5	Line
5	16.445M	21.6	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	32.0	50.0	-18.0	Line
6	13.463M	21.5	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	31.7	50.0	-18.3	Line
7	13.959M	21.4	+9.7 +0.0	+0.1 +0.0	+0.1	+0.2	+0.0	31.5	50.0	-18.5	Line
8	672.134k	17.2	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.9	46.0	-19.1	Line
9	667.043k	16.9	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.6	46.0	-19.4	Line
10	675.770k	16.9	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.6	46.0	-19.4	Line
11	565.962k	16.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.4	46.0	-19.6	Line
12	3.897M	16.0	+9.7 +0.0	+0.0 +0.1	+0.1	+0.1	+0.0	26.0	46.0	-20.0	Line
13	14.950M	19.7	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	30.0	50.0	-20.0	Line
14	691.768k	16.2	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.9	46.0	-20.1	Line
15	679.406k	16.1	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.8	46.0	-20.2	Line
16	429.247k	17.0	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	26.9	47.3	-20.4	Line
17	683.769k	15.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.4	46.0	-20.6	Line
18	687.405k	15.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	25.3	46.0	-20.7	Line
19	12.959M	19.0	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	29.2	50.0	-20.8	Line
20	501.240k	15.3	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	25.1	46.0	-20.9	Line

CKC Laboratories, Inc. Date: 6/13/2011 Time: 12:01:05 PM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Line Line Sequence#: 4 Ext ATTN: 0 dB



— Sweep Data  
○ Peak Readings  
\* Average Readings  
— 1 - 15.207 AC Mains - Average

— Readings  
× QP Readings  
▼ Ambient  
— 2 - 15.207 AC Mains - Quasi-peak

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

Customer: **Itron, Inc.**  
 Specification: **15.207 AC Mains - Average**  
 Work Order #: **92051**  
 Test Type: **Conducted Emissions**  
 Equipment: **SRR+WWAN+WIFI+GPS RX**  
**(internal WWAN & GPS antenna)**  
 Manufacturer: Itron, Inc.  
 Model: CCU100B  
 S/N: 7404FCC1

Date: 6/13/2011  
 Time: 11:57:15 AM  
 Sequence#: 3

Tested By: Armando del Angel  
 240V 60Hz

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05435	Attenuator	PE7015-10	9/8/2010	9/8/2012
T2	AN03227	Cable	32026-29080- 29080-84	5/2/2011	5/2/2013
T3	ANP05360	Cable	RG214	11/8/2010	11/8/2012
T4	ANP05547	Cable	Heliac	5/18/2010	5/18/2012
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01717	High Pass Filter	F3440-P005	5/27/2010	5/27/2012
	AN00494	50uH LISN-Loss L1 (L) Black (dB)	3816/NM	3/29/2011	3/29/2013
T6	AN00494	50uH LISN-Loss L2 (N) White (dB)	3816/NM	3/29/2011	3/29/2013

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
SRR+WWAN+WIFI+GPS RX (internal WWAN & GPS antenna)*	Itron, Inc.	CCU100B	7404FCC1

**Support Devices:**

Function	Manufacturer	Model #	S/N
Laptop	Dell	E6400	H4CSTK1

**Test Conditions / Notes:**

Temp: 23°C  
 Humidity: 43%  
 Pressure: 102.0kPa  
 Frequency: 0.150-30MHz  
 EUT is located on the test table 80cm above the ground plane.  
 EUT is connected to a LISN.  
 All 3 channels have been investigated. Worse case will be tested.  
 EUT is transmitting at 2.462GHz with 802.11g modulation.

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

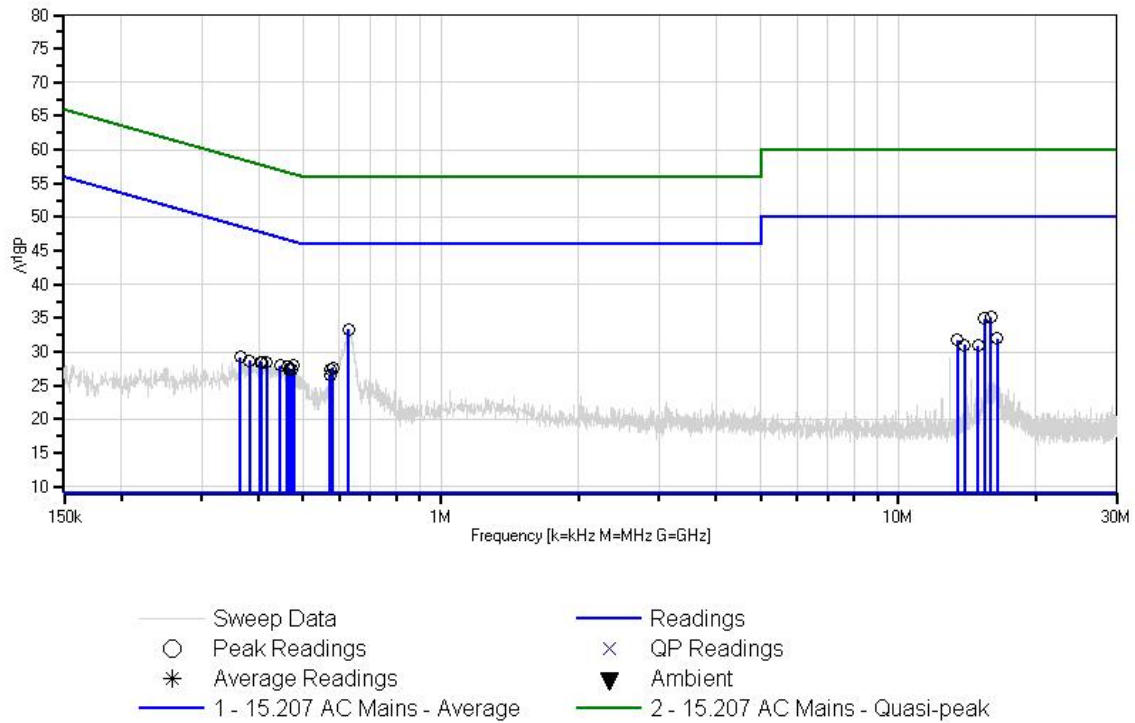
Test Lead: Neutral

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5 dB	T6 dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	629.229k	23.7	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	33.4	46.0	-12.6	Neutr
2	15.950M	24.8	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	35.2	50.0	-14.8	Neutr

3	15.454M	24.6	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	34.9	50.0	-15.1	Neutr
4	16.445M	21.6	+9.7 +0.1	+0.1 +0.1	+0.2	+0.2	+0.0	32.0	50.0	-18.0	Neutr
5	13.454M	21.6	+9.7 +0.1	+0.1 +0.0	+0.1	+0.2	+0.0	31.8	50.0	-18.2	Neutr
6	475.788k	18.3	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	28.1	46.4	-18.3	Neutr
7	581.233k	18.0	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.7	46.0	-18.3	Neutr
8	574.688k	17.6	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	27.3	46.0	-18.7	Neutr
9	445.973k	18.2	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	28.0	46.9	-18.9	Neutr
10	461.244k	18.0	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.8	46.7	-18.9	Neutr
11	415.430k	18.6	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.5	47.5	-19.0	Neutr
12	13.959M	20.8	+9.7 +0.0	+0.1 +0.1	+0.1	+0.2	+0.0	31.0	50.0	-19.0	Neutr
13	473.607k	17.6	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.4	46.5	-19.1	Neutr
14	14.959M	20.6	+9.7 +0.1	+0.1 +0.1	+0.1	+0.2	+0.0	30.9	50.0	-19.1	Neutr
15	405.977k	18.6	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.5	47.7	-19.2	Neutr
16	403.068k	18.6	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.5	47.8	-19.3	Neutr
17	467.062k	17.5	+9.7 +0.1	+0.0 +0.0	+0.0	+0.0	+0.0	27.3	46.6	-19.3	Neutr
18	363.799k	19.3	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	29.2	48.6	-19.4	Neutr
19	573.234k	16.9	+9.7 +0.0	+0.0 +0.0	+0.0	+0.0	+0.0	26.6	46.0	-19.4	Neutr
20	381.252k	18.8	+9.7 +0.1	+0.0 +0.1	+0.0	+0.0	+0.0	28.7	48.3	-19.6	Neutr



CKC Laboratories, Inc. Date: 6/13/2011 Time: 11:57:15 AM Itron, Inc. WO#: 92051  
15.207 AC Mains - Average Test Lead: Neutral Neutral Sequence#: 3 Ext ATTN: 0 dB



**Test Setup Photos**



## 15.215(c) 20dB Bandwidth

### Test Conditions / Setup

#### Comments

The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable and 6 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. For this testing, all models (CCU100B, CCU100B-Repeater, CCU100RB, and CCU100RB-Repeater) are identical.

**Requirement:** The 20 dB bandwidth of the emission must be contained within the band of operation.

### Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
02872	Spectrum Analyzer	E4440A	Agilent	08/25/2009	08/25/2011
P05513	Attenuator	BW-S6W2	Mini-Circuits	10/12/2009	10/12/2011
03122	Cable	32026-2-29801-36	Astrolab	12/23/2010	12/23/2012

Engineer: A. del Angel

### Test Data

#### Results Table

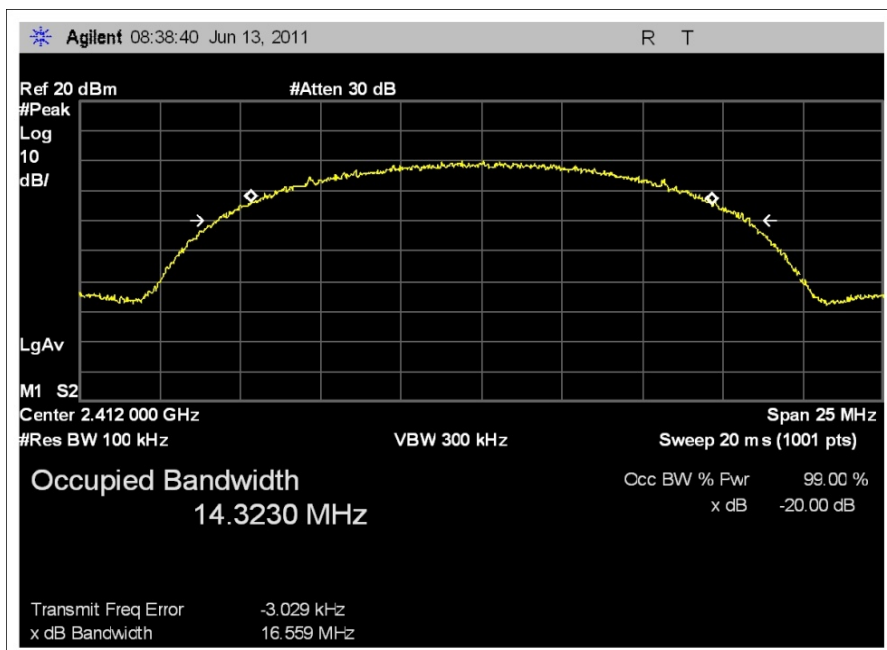
##### 802.11b

2412 MHz	2437 MHz	2462 MHz
16.56MHz	16.52MHz	16.57MHz
+/- 8.28MHz = Pass	+/- 8.26MHz = Pass	+/- 8.28MHz = Pass

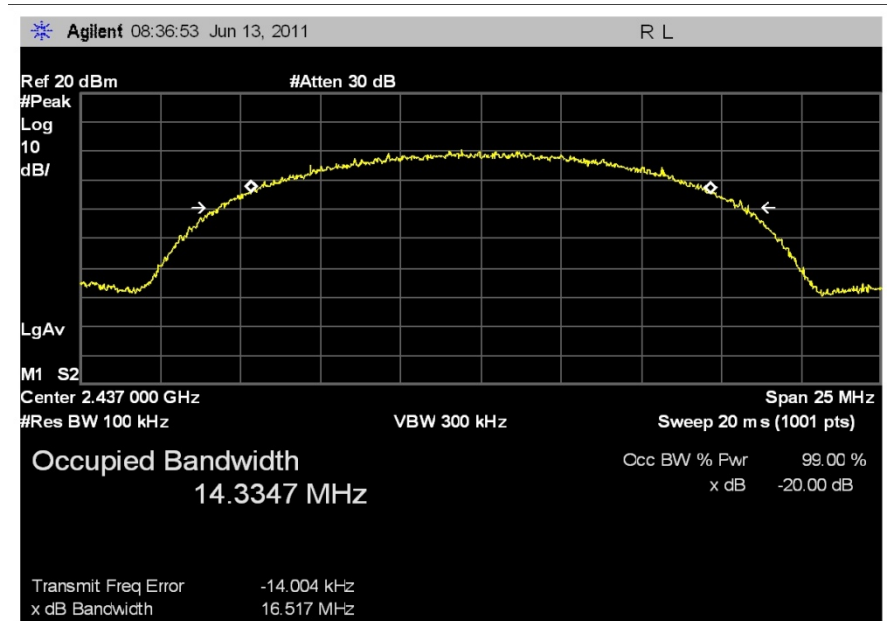
#### Results Table

##### 802.11g

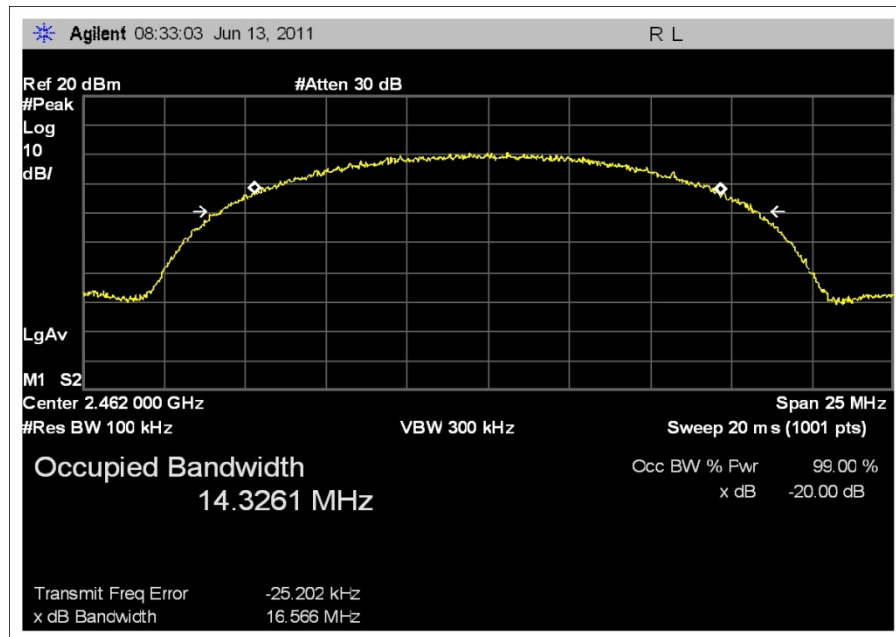
2412 MHz	2437 MHz	2462 MHz
17.61MHz	17.61MHz	17.58MHz
+/-8.81MHz = Pass	+/-8.81MHz = Pass	+/-8.79MHz = Pass



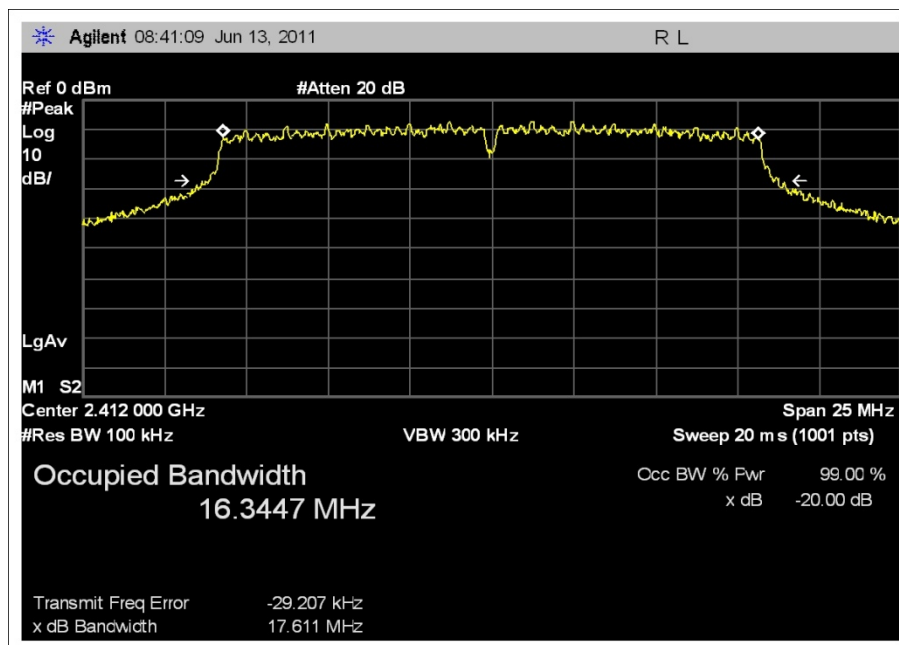
20dB BW Channel 01 802.11b



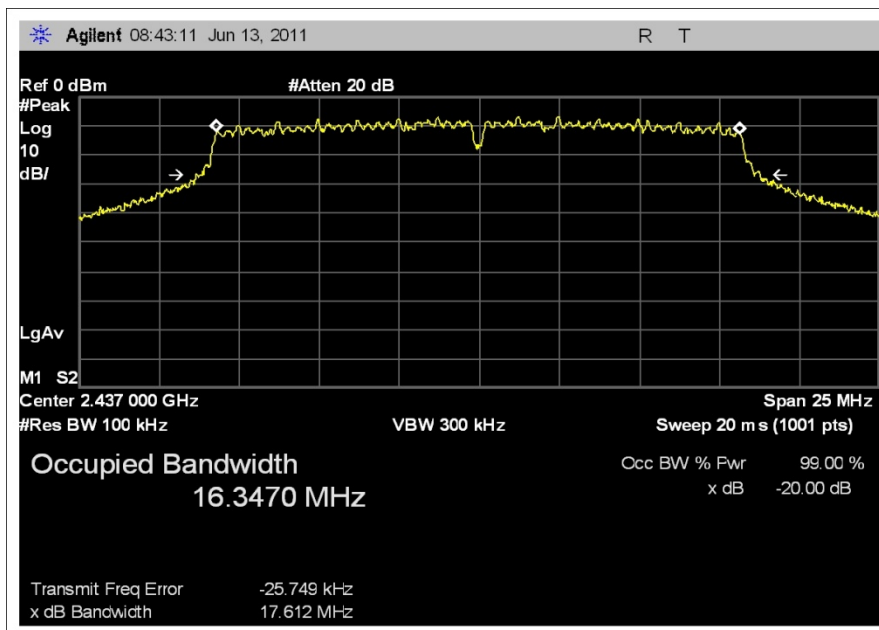
20dB BW Channel 06 802.11b



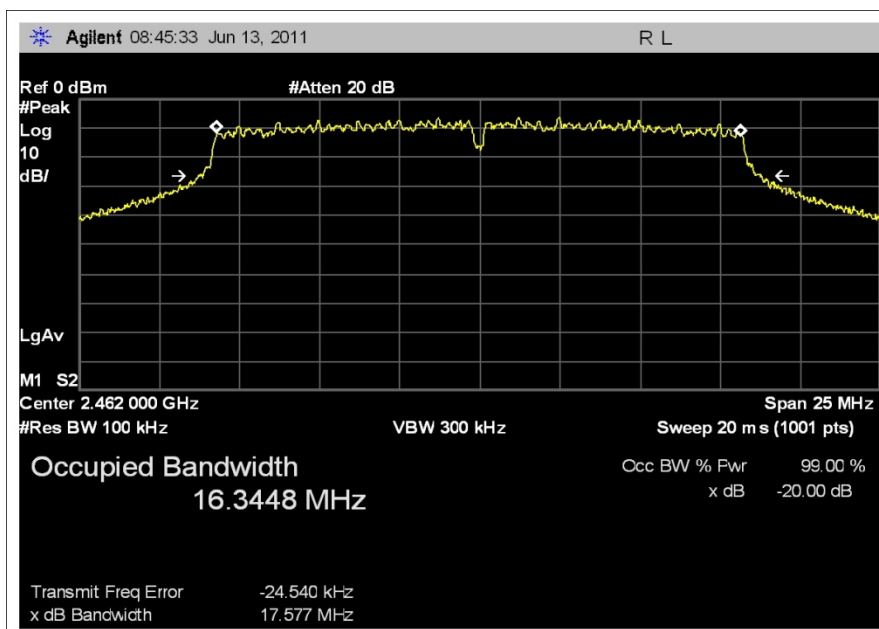
**20dB BW Channel 11 802.11b**



**20dB BW Channel 01 802.11g**



20dB BW Channel 06 802.11g



20dB BW Channel 11 802.11g

**Test Setup Photos**



## 15.247(a)(2) 6 dB Bandwidth

### Test Conditions / Setup

#### Comments

The EUT was setup on the bench and connected to a spectrum analyzer via an RF cable and 6 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. For this testing, all models (CCU100B, CCU100B-Repeater, CCU100RB, and CCU100RB-Repeater) are identical.

**Requirement:** The minimum 6 dB bandwidth shall be at least 500 kHz.

### Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
02872	Spectrum Analyzer	E4440A	Agilent	08/25/2009	08/25/2011
P05513	Attenuator	BW-S6W2	Mini-Circuits	10/12/2009	10/12/2011
03122	Cable	32026-2-29801-36	Astrolab	12/23/2010	12/23/2012

Engineer Name: J. Gilbert

### Test Data

#### Results Table

6 dB BW Spec 802.11b

2412 MHz	2437 MHz	2462 MHz
10.307MHz	10.183MHz	10.212MHz

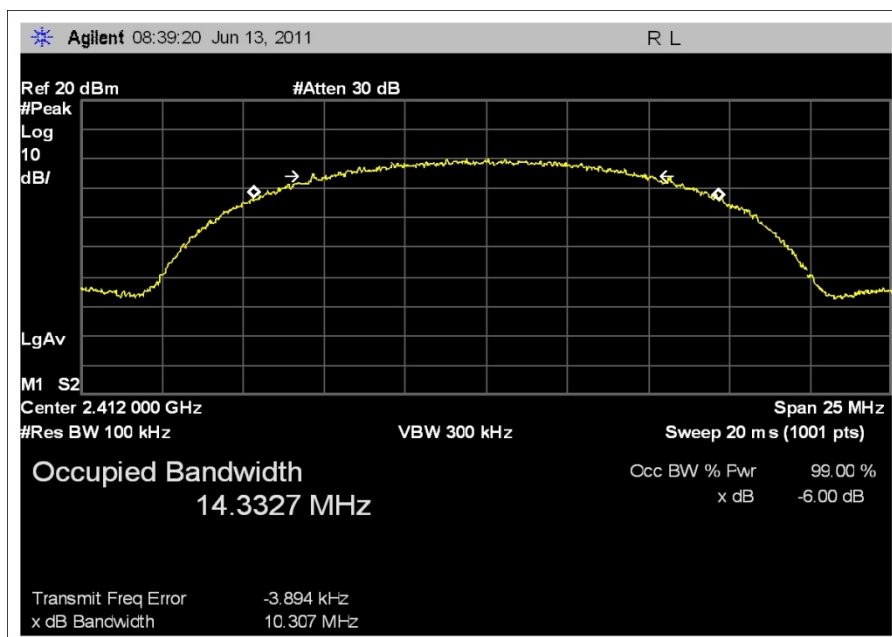
#### Results Table

6 dB BW Spec 802.11g

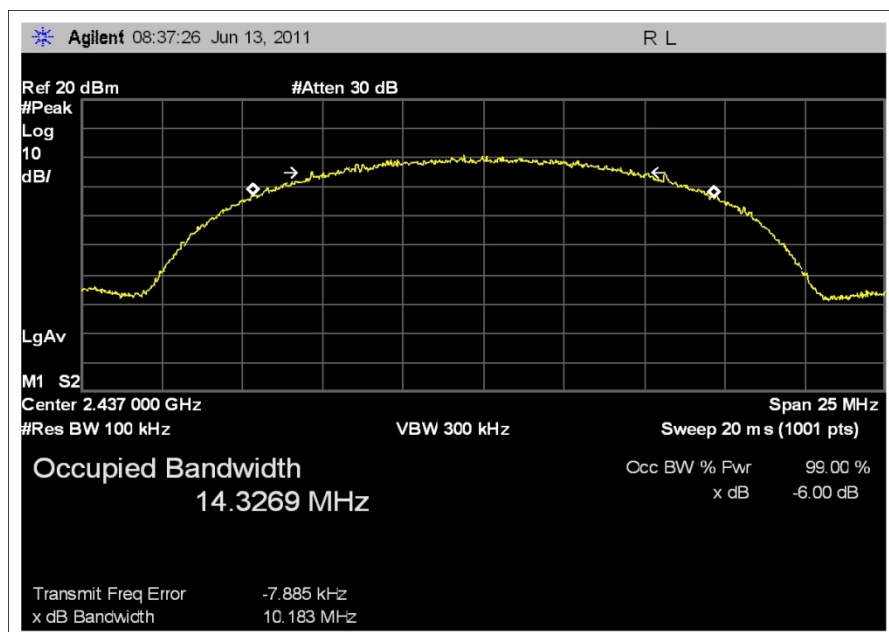
2412 MHz	2437 MHz	2462 MHz
16.406MHz	16.418MHz	16.406MHz



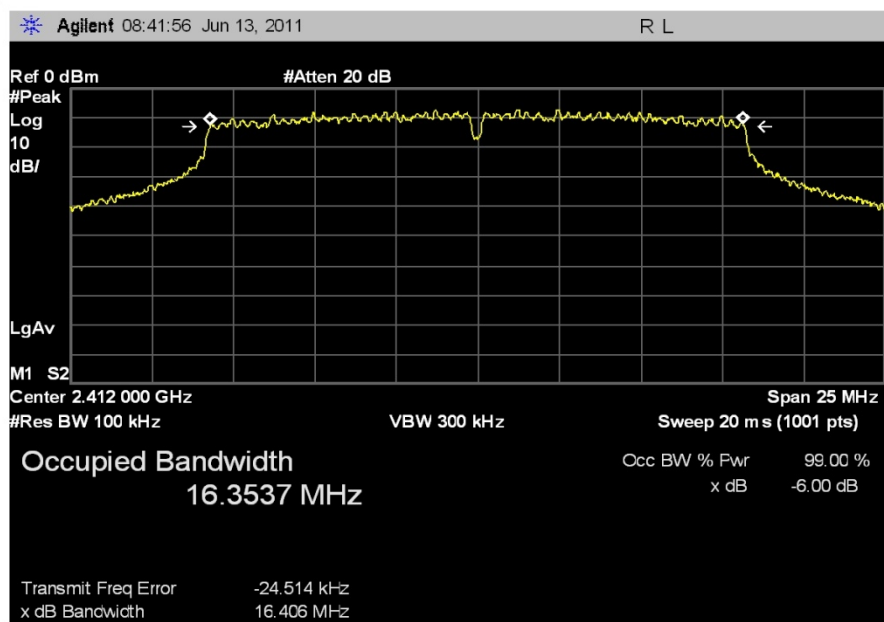
### Test Data



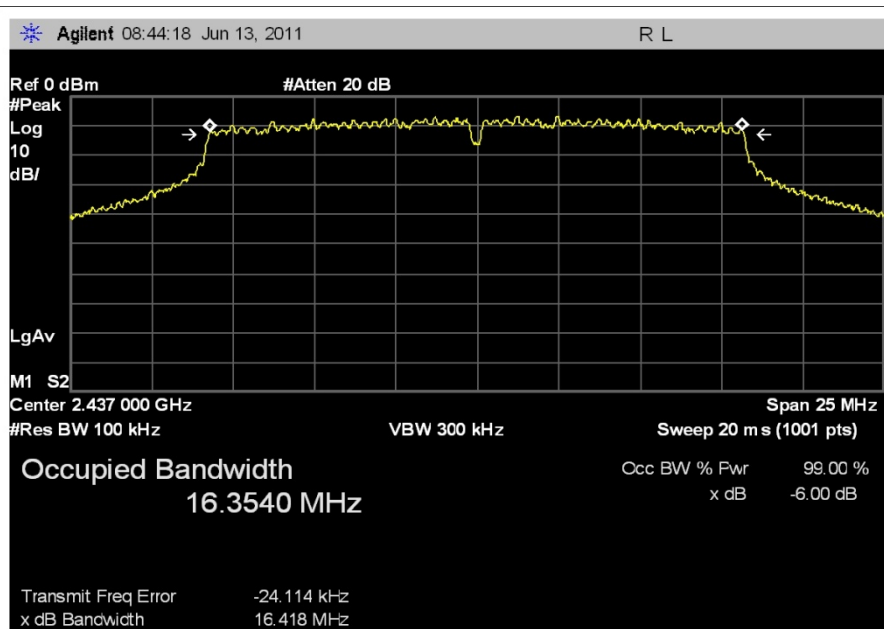
**6dB BW Channel 01 802.11b**



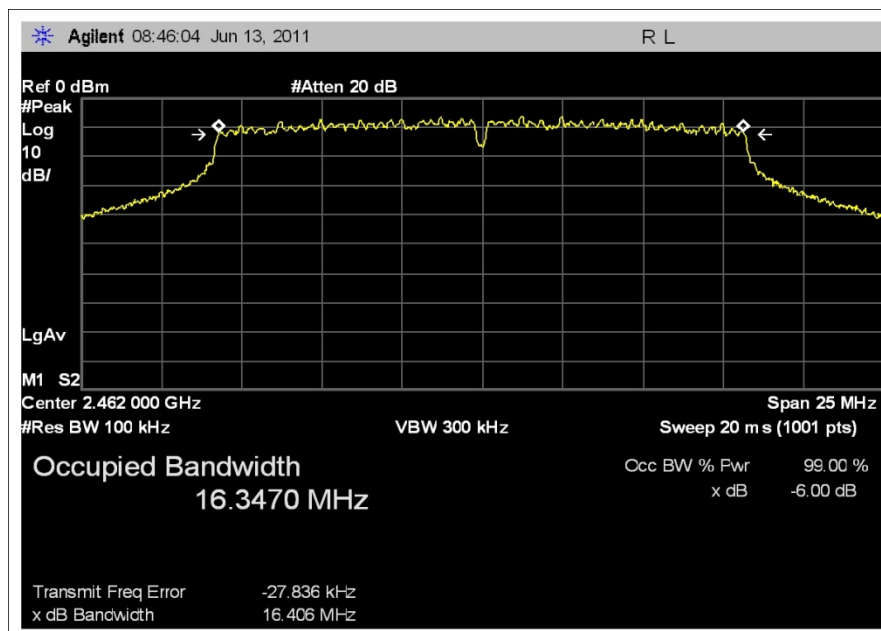
**6dB BW Channel 11 802.11b**



**6dB BW Channel 01 802.11g**



**6dB BW Channel 06 802.11g**



**6dB BW Channel 11 802.11g**

**Test Setup Photos**

