

Itron, Inc.

ADDENDUM TO TEST REPORT 92785-9

AMR Transceiver Device for Endpoint Installation Model: 900 BCR

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.249
(Partial Testing, Radiated Emissions only)

Report No.: 92785-9A

Date of issue: August 22, 2013



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.

TABLE OF CONTENTS

Administrative Information	3
Test Report Information	3
Report Authorization	3
Test Facility Information	4
Software Versions	4
Site Registration & Accreditation Information	4
Summary of Results	5
Conditions During Testing.....	5
Equipment Under Test.....	6
Peripheral Devices	6
FCC Part 15 Subpart C.....	7
15.249(d) Radiated Spurious Emissions.....	7
Supplemental Information	24
Measurement Uncertainty	24
Emissions Test Details.....	24

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Itron, Inc.
2111 N. Molter Road
Liberty Lake, WA 99019

REPORT PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

REPRESENTATIVE: Jay Holcomb
Customer Reference Number: 52031

Project Number: 92785

DATE OF EQUIPMENT RECEIPT:

June 4, 2013

DATE(S) OF TESTING:

June 4, 2013

Revision History

Original: Partial testing of the AMR Transceiver Device for Endpoint Installation, 900 BCR to FCC Part 15 Subpart C Sections 15.249.

Addendum A: The testing conditions were said to be in accordance with DA00-705 when in fact they were in accordance with ANSI C63.4.

Report Authorization

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



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

Test Facility Information



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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

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

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.249

Description	Test Procedure/Method	Results
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d) / ANSI C63.4	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)

EQUIPMENT UNDER TEST

AMR Transceiver Device for Endpoint Installation

Manuf: Itron, Inc.
Model: 900 BCR
Serial: 37400023

3dB Glass Mount Antenna

Manuf: Tessco
Model: MM3-925SMA
Serial: NA

5dB Magnetic Mount

Manuf: PCTel
Model: Z3182
Serial: NA

PERIPHERAL DEVICES

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

BCR Charging/USB Connection Station

Manuf: Itron, Inc.
Model: NA
Serial: NA

Laptop

Manuf: Dell
Model: Latitude E6410
Serial: JBDPWN1

USB 2.0 Kit

Manuf: S.I. Tech
Model: 2172
Serial: NA

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.

15.249(d) Radiated Spurious Emissions

3dB Glass Mount Antenna Test Data Sheet

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

Customer: **Itron, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
 Work Order #: **92785** Date: 6/4/2013
 Test Type: **Maximized Emissions** Time: 15:27:57
 Equipment: **AMR Transceiver Device for Endpoint installation** Sequence#: 1
 Manufacturer: Itron, Inc. Tested By: Rodney MacInnes
 Model: 900 BCR
 S/N: 37400023

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03227	Cable	32026-29080-29080-84	3/29/2013	3/29/2015
T2	ANP05360	Cable	RG214	12/3/2012	12/3/2014
T3	ANP05366	Cable	RG-214	10/14/2011	10/14/2013
T4	AN02872	Spectrum Analyzer	E4440A	7/23/2011	7/23/2013
T5	AN01996	Biconilog Antenna	CBL6111C	3/2/2012	3/2/2014
T6	AN02308	Preamp	8447D	4/3/2012	4/3/2014
T7	AN03209	Preamp	83051A	3/5/2013	3/5/2015
T8	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T9	AN03123	Cable	32026-2-29801-12	10/14/2011	10/14/2013
T10	ANP05965	Cable	Various	8/26/2011	8/26/2013
T11	AN03170	High Pass Filter	HM1155-11SS	9/6/2011	9/6/2013
	AN00052	Loop Antenna	6502	5/16/2012	5/16/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
3dB glass mount antenna	Tessco	MM3-925SMA	NA
AMR transceiver device for endpoint installation*	Itron, Inc.	900 BCR	37400023

Support Devices:

Function	Manufacturer	Model #	S/N
BCR Charging/USB connection Station	Itron, Inc.	NA	NA
Laptop	Dell	Latitude E6410	JBDPWN1

Test Conditions / Notes:

The EUT is placed in the center of the turntable on a Styrofoam table 80cm above the ground plane , EUT is installed in device cradle attached to computer through USB to fiber adaptor.
 Tested Freq: 9kHz - 10GHz
 Fundamental Freq: 908MHz, 915.85MHz, 923.8MHz
 ISM FM Modulation
 Firmware setting = 8, 8, 8
 Emission profile evaluated with Tessco MM3-925SMA 3dB glass mount antenna
 Frequency range of measurement = 9 kHz- 10 GHz.
 9 kH -150 kHz;RBW=200 Hz,VBW=200 Hz;150 kHz-30 MHz;RBW=9 kHz,VBW=9 kHz;30 MHz-1000 MHz;RBW=120 kHz,VBW=120 kHz,1000 MHz-10,000 MHz;RBW=1 MHz,VBW=1 MHz.
 15.31(e) compliance: a freshly charged battery is installed
 Test method in accordance with ANSI C63.4
 Temperature: 22°C
 Pressure: 101.5kPa
 Humidity: 35%
 Software: MC3SuperRaptorTest
 Version: 4.0.1.5

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	Reading listed by margin.				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			T1 dB	T2 dB	T3 dB	T4 dB					
1	1847.500M	52.6	+1.3	+0.0	+0.0	+0.0	+0.0 360	53.9	54.0	-0.1	Vert 157
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
2	1815.904M Ave	56.1	+1.3	+0.0	+0.0	+0.0	+0.0 12	53.9	54.0	-0.1	Vert 112
			+0.0	+0.0	-30.6	+24.8					
			+0.3	+1.6	+0.4						

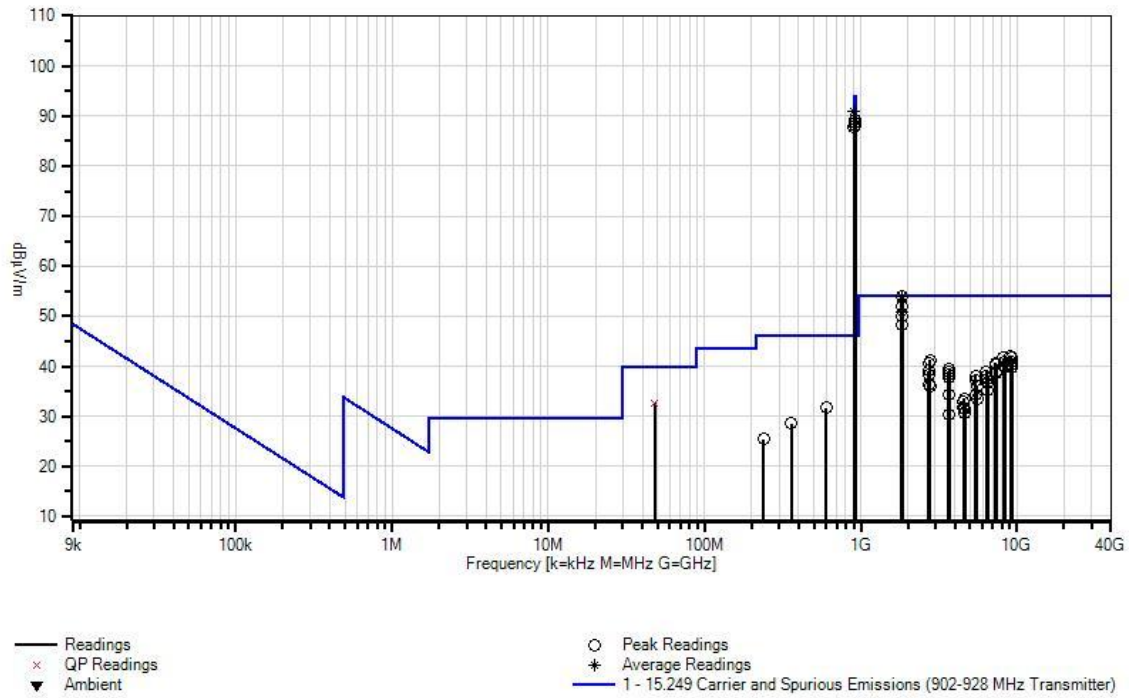
^	1815.904M	56.6	+1.3	+0.0	+0.0	+0.0	+0.0	54.4	54.0	+0.4	Vert 111
			+0.0	+0.0	-30.6	+24.8	360				
			+0.3	+1.6	+0.4						
4	1847.500M	54.0	+1.3	+0.0	+0.0	+0.0	+0.0	52.1	54.0	-1.9	Horiz 185
			+0.0	+0.0	-30.6	+25.1	53				
			+0.3	+1.6	+0.4						
5	908.000M Ave	90.6	+0.9	+2.0	+2.3	+0.0	+0.0	91.0	94.0	-3.0	Vert 114
			+22.6	-27.4	+0.0	+0.0	198				
			+0.0	+0.0	+0.0						
^	908.075M	91.2	+0.9	+2.0	+2.3	+0.0	+0.0	91.6	94.0	-2.4	Vert 114
			+22.6	-27.4	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
7	1815.919M Ave	52.9	+1.3	+0.0	+0.0	+0.0	+0.0	50.7	54.0	-3.3	Horiz 100
			+0.0	+0.0	-30.6	+24.8	58				
			+0.3	+1.6	+0.4						
^	1815.994M	55.2	+1.3	+0.0	+0.0	+0.0	+0.0	53.0	54.0	-1.0	Horiz 100
			+0.0	+0.0	-30.6	+24.8	360				
			+0.3	+1.6	+0.4						
9	1831.908M	52.2	+1.3	+0.0	+0.0	+0.0	+0.0	50.1	54.0	-3.9	Vert 125
			+0.0	+0.0	-30.6	+24.9					
			+0.3	+1.6	+0.4						
10	923.725M Ave	88.8	+0.9	+2.1	+2.3	+0.0	+0.0	89.6	94.0	-4.4	Vert 103
			+22.9	-27.4	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
^	923.725M	90.5	+0.9	+2.1	+2.3	+0.0	+0.0	91.3	94.0	-2.7	Vert 103
			+22.9	-27.4	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
12	915.948M	88.6	+0.9	+2.1	+2.3	+0.0	+0.0	89.2	94.0	-4.8	Vert 189
			+22.7	-27.4	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
13	915.948M	88.0	+0.9	+2.1	+2.3	+0.0	+0.0	88.6	94.0	-5.4	Horiz 131
			+22.7	-27.4	+0.0	+0.0					
			+0.0	+0.0	+0.0						
14	1831.908M	50.5	+1.3	+0.0	+0.0	+0.0	+0.0	48.4	54.0	-5.6	Horiz 128
			+0.0	+0.0	-30.6	+24.9	360				
			+0.3	+1.6	+0.4						
15	923.725M	87.2	+0.9	+2.1	+2.3	+0.0	+0.0	88.0	94.0	-6.0	Horiz 217
			+22.9	-27.4	+0.0	+0.0	96				
			+0.0	+0.0	+0.0						
16	907.942M	87.3	+0.9	+2.0	+2.3	+0.0	+0.0	87.7	94.0	-6.3	Horiz 144
			+22.6	-27.4	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
17	47.840M QP	50.7	+0.2	+0.4	+0.3	+0.0	+0.0	32.7	40.0	-7.3	Vert 144
			+9.1	-28.0	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
^	47.840M	65.9	+0.2	+0.4	+0.3	+0.0	+0.0	47.9	40.0	+7.9	Vert 144
			+9.1	-28.0	+0.0	+0.0	360				
			+0.0	+0.0	+0.0						
19	9079.496M	23.5	+4.6	+0.0	+0.0	+0.0	+0.0	42.1	54.0	-11.9	Horiz 120
			+0.0	+0.0	-27.6	+36.7	360				
			+0.8	+3.9	+0.2						

20	9079.496M	23.5	+4.6	+0.0	+0.0	+0.0	+0.0	42.1	54.0	-11.9	Vert 120
			+0.0	+0.0	-27.6	+36.7	360				
			+0.8	+3.9	+0.2						
21	8171.546M	25.0	+4.0	+0.0	+0.0	+0.0	+0.0	41.6	54.0	-12.4	Horiz 120
			+0.0	+0.0	-28.1	+36.0	360				
			+0.8	+3.7	+0.2						
22	8171.546M	25.0	+4.0	+0.0	+0.0	+0.0	+0.0	41.6	54.0	-12.4	Vert 120
			+0.0	+0.0	-28.1	+36.0	360				
			+0.8	+3.7	+0.2						
23	9159.400M	23.4	+4.6	+0.0	+0.0	+0.0	+0.0	41.6	54.0	-12.4	Horiz 113
			+0.0	+0.0	-27.6	+36.3	360				
			+0.8	+3.9	+0.2						
24	2770.800M	39.5	+1.6	+0.0	+0.0	+0.0	+0.0	41.2	54.0	-12.8	Horiz 122
			+0.0	+0.0	-30.2	+27.4	360				
			+0.5	+2.1	+0.3						
25	8243.460M	24.1	+4.0	+0.0	+0.0	+0.0	+0.0	41.0	54.0	-13.0	Vert 113
			+0.0	+0.0	-28.0	+36.2	360				
			+0.8	+3.7	+0.2						
26	9159.400M	22.6	+4.6	+0.0	+0.0	+0.0	+0.0	40.8	54.0	-13.2	Vert 113
			+0.0	+0.0	-27.6	+36.3	360				
			+0.8	+3.9	+0.2						
27	7263.596M	25.6	+3.2	+0.0	+0.0	+0.0	+0.0	40.7	54.0	-13.3	Vert 120
			+0.0	+0.0	-28.2	+35.7	360				
			+0.5	+3.6	+0.3						
28	2747.848M	39.0	+1.6	+0.0	+0.0	+0.0	+0.0	40.6	54.0	-13.4	Horiz 99
			+0.0	+0.0	-30.2	+27.3					
			+0.5	+2.1	+0.3						
29	9237.495M	22.8	+4.5	+0.0	+0.0	+0.0	+0.0	40.4	54.0	-13.6	Vert 122
			+0.0	+0.0	-27.7	+35.9	360				
			+0.9	+3.9	+0.1						
30	7327.520M	25.1	+3.2	+0.0	+0.0	+0.0	+0.0	40.3	54.0	-13.7	Horiz 113
			+0.0	+0.0	-28.2	+35.9	360				
			+0.5	+3.6	+0.2						
31	8313.745M	22.8	+4.1	+0.0	+0.0	+0.0	+0.0	40.1	54.0	-13.9	Horiz 122
			+0.0	+0.0	-28.0	+36.3	360				
			+0.9	+3.8	+0.2						
32	8243.460M	23.2	+4.0	+0.0	+0.0	+0.0	+0.0	40.1	54.0	-13.9	Horiz 113
			+0.0	+0.0	-28.0	+36.2	360				
			+0.8	+3.7	+0.2						
33	8313.745M	22.8	+4.1	+0.0	+0.0	+0.0	+0.0	40.1	54.0	-13.9	Vert 122
			+0.0	+0.0	-28.0	+36.3	360				
			+0.9	+3.8	+0.2						
34	9237.495M	22.2	+4.5	+0.0	+0.0	+0.0	+0.0	39.8	54.0	-14.2	Horiz 122
			+0.0	+0.0	-27.7	+35.9	360				
			+0.9	+3.9	+0.1						
35	599.800M	36.0	+0.7	+1.6	+1.7	+0.0	+0.0	31.7	46.0	-14.3	Horiz 169
			+20.0	-28.3	+0.0	+0.0					
			+0.0	+0.0	+0.0						
36	3663.784M	36.3	+1.9	+0.0	+0.0	+0.0	+0.0	39.5	54.0	-14.5	Vert 125
			+0.0	+0.0	-30.9	+29.4					
			+0.4	+2.1	+0.3						

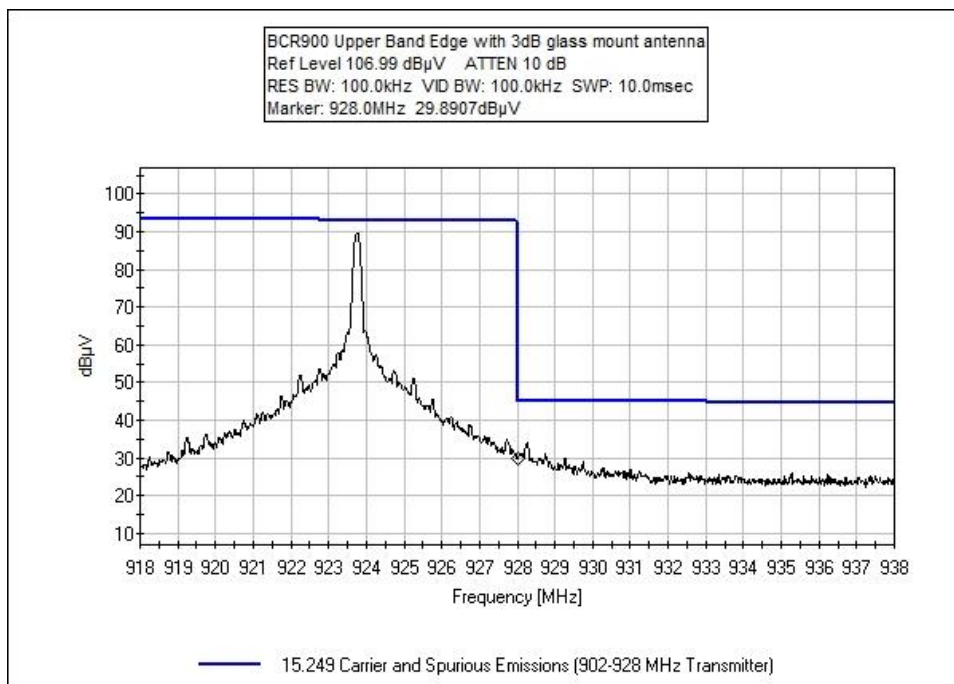
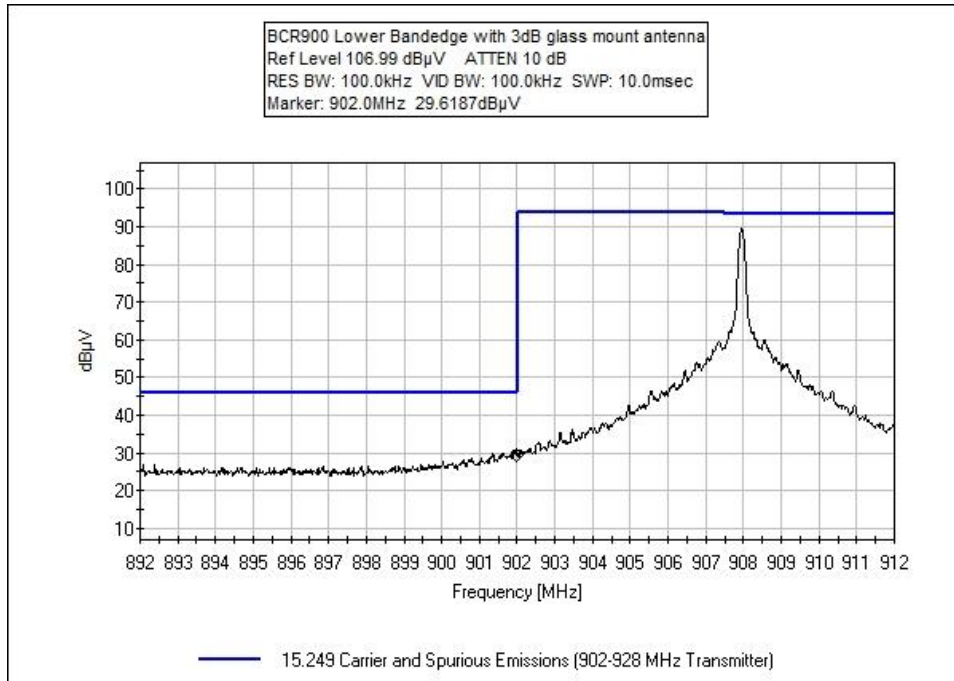
37	2723.854M	37.6	+1.6	+0.0	+0.0	+0.0	+0.0	39.1	54.0	-14.9	Horiz 106
			+0.0	+0.0	-30.2	+27.2	360				
			+0.5	+2.1	+0.3						
38	3631.790M	35.9	+1.9	+0.0	+0.0	+0.0	+0.0	39.0	54.0	-15.0	Vert 120
			+0.0	+0.0	-30.9	+29.3	360				
			+0.4	+2.1	+0.3						
39	7263.596M	23.8	+3.2	+0.0	+0.0	+0.0	+0.0	38.9	54.0	-15.1	Horiz 120
			+0.0	+0.0	-28.2	+35.7	360				
			+0.5	+3.6	+0.3						
40	6355.646M	26.4	+2.8	+0.0	+0.0	+0.0	+0.0	38.9	54.0	-15.1	Horiz 120
			+0.0	+0.0	-29.0	+34.5	360				
			+0.5	+3.3	+0.4						
41	7327.520M	23.6	+3.2	+0.0	+0.0	+0.0	+0.0	38.8	54.0	-15.2	Vert 113
			+0.0	+0.0	-28.2	+35.9	360				
			+0.5	+3.6	+0.2						
42	7389.995M	23.0	+3.3	+0.0	+0.0	+0.0	+0.0	38.5	54.0	-15.5	Vert 122
			+0.0	+0.0	-28.2	+36.0	360				
			+0.6	+3.6	+0.2						
43	7389.995M	23.0	+3.3	+0.0	+0.0	+0.0	+0.0	38.5	54.0	-15.5	Horiz 122
			+0.0	+0.0	-28.2	+36.0	360				
			+0.6	+3.6	+0.2						
44	2747.848M	36.8	+1.6	+0.0	+0.0	+0.0	+0.0	38.4	54.0	-15.6	Vert 157
			+0.0	+0.0	-30.2	+27.3	360				
			+0.5	+2.1	+0.3						
45	3631.794M	35.1	+1.9	+0.0	+0.0	+0.0	+0.0	38.2	54.0	-15.8	Horiz 99
			+0.0	+0.0	-30.9	+29.3					
			+0.4	+2.1	+0.3						
46	5447.696M	29.2	+2.3	+0.0	+0.0	+0.0	+0.0	38.1	54.0	-15.9	Vert 120
			+0.0	+0.0	-30.2	+33.2	360				
			+0.4	+2.9	+0.3						
47	6355.646M	25.5	+2.8	+0.0	+0.0	+0.0	+0.0	38.0	54.0	-16.0	Vert 120
			+0.0	+0.0	-29.0	+34.5	360				
			+0.5	+3.3	+0.4						
48	3663.794M	34.6	+1.9	+0.0	+0.0	+0.0	+0.0	37.8	54.0	-16.2	Horiz 136
			+0.0	+0.0	-30.9	+29.4	360				
			+0.4	+2.1	+0.3						
49	6466.245M	25.0	+2.8	+0.0	+0.0	+0.0	+0.0	37.5	54.0	-16.5	Vert 122
			+0.0	+0.0	-28.9	+34.4	360				
			+0.5	+3.4	+0.3						
50	6466.245M	25.0	+2.8	+0.0	+0.0	+0.0	+0.0	37.5	54.0	-16.5	Horiz 122
			+0.0	+0.0	-28.9	+34.4	360				
			+0.5	+3.4	+0.3						
51	5447.696M	28.2	+2.3	+0.0	+0.0	+0.0	+0.0	37.1	54.0	-16.9	Horiz 120
			+0.0	+0.0	-30.2	+33.2	360				
			+0.4	+2.9	+0.3						
52	6411.580M	24.2	+2.8	+0.0	+0.0	+0.0	+0.0	36.7	54.0	-17.3	Vert 113
			+0.0	+0.0	-28.9	+34.4	360				
			+0.5	+3.3	+0.4						
53	359.700M	37.8	+0.6	+1.2	+1.3	+0.0	+0.0	28.5	46.0	-17.5	Horiz 169
			+15.1	-27.5	+0.0	+0.0					
			+0.0	+0.0	+0.0						

54	2723.854M	34.8	+1.6	+0.0	+0.0	+0.0	+0.0	36.3	54.0	-17.7	Vert 159
			+0.0	+0.0	-30.2	+27.2					
			+0.5	+2.1	+0.3						
55	5542.495M	26.7	+2.4	+0.0	+0.0	+0.0	+0.0	36.0	54.0	-18.0	Vert 122
			+0.0	+0.0	-30.1	+33.4	360				
			+0.4	+2.9	+0.3						
56	2771.250M	34.2	+1.6	+0.0	+0.0	+0.0	+0.0	35.9	54.0	-18.1	Vert 155
			+0.0	+0.0	-30.2	+27.4					
			+0.5	+2.1	+0.3						
57	6411.580M	22.7	+2.8	+0.0	+0.0	+0.0	+0.0	35.2	54.0	-18.8	Horiz 113
			+0.0	+0.0	-28.9	+34.4	360				
			+0.5	+3.3	+0.4						
58	3694.995M	31.2	+1.9	+0.0	+0.0	+0.0	+0.0	34.4	54.0	-19.6	Vert 122
			+0.0	+0.0	-31.0	+29.5	360				
			+0.4	+2.1	+0.3						
59	5495.640M	25.2	+2.4	+0.0	+0.0	+0.0	+0.0	34.4	54.0	-19.6	Horiz 113
			+0.0	+0.0	-30.1	+33.3	360				
			+0.4	+2.9	+0.3						
60	5495.640M	25.0	+2.4	+0.0	+0.0	+0.0	+0.0	34.2	54.0	-19.8	Vert 113
			+0.0	+0.0	-30.1	+33.3	360				
			+0.4	+2.9	+0.3						
61	4579.700M	28.1	+2.1	+0.0	+0.0	+0.0	+0.0	33.6	54.0	-20.4	Horiz 136
			+0.0	+0.0	-31.0	+31.4	360				
			+0.1	+2.6	+0.3						
62	4579.700M	28.1	+2.1	+0.0	+0.0	+0.0	+0.0	33.6	54.0	-20.4	Vert 136
			+0.0	+0.0	-31.0	+31.4	360				
			+0.1	+2.6	+0.3						
63	5542.495M	24.2	+2.4	+0.0	+0.0	+0.0	+0.0	33.5	54.0	-20.5	Horiz 122
			+0.0	+0.0	-30.1	+33.4	360				
			+0.4	+2.9	+0.3						
64	239.700M	38.2	+0.5	+1.0	+1.0	+0.0	+0.0	25.4	46.0	-20.6	Horiz 169
			+11.8	-27.1	+0.0	+0.0					
			+0.0	+0.0	+0.0						
65	4539.746M	27.4	+2.1	+0.0	+0.0	+0.0	+0.0	32.9	54.0	-21.1	Horiz 120
			+0.0	+0.0	-31.0	+31.3	360				
			+0.2	+2.6	+0.3						
66	4539.746M	26.3	+2.1	+0.0	+0.0	+0.0	+0.0	31.8	54.0	-22.2	Vert 120
			+0.0	+0.0	-31.0	+31.3	360				
			+0.2	+2.6	+0.3						
67	4618.745M	25.9	+2.1	+0.0	+0.0	+0.0	+0.0	31.5	54.0	-22.5	Horiz 122
			+0.0	+0.0	-31.0	+31.5	360				
			+0.1	+2.6	+0.3						
68	4618.745M	25.0	+2.1	+0.0	+0.0	+0.0	+0.0	30.6	54.0	-23.4	Vert 122
			+0.0	+0.0	-31.0	+31.5	360				
			+0.1	+2.6	+0.3						
69	3694.995M	27.1	+1.9	+0.0	+0.0	+0.0	+0.0	30.3	54.0	-23.7	Horiz 122
			+0.0	+0.0	-31.0	+29.5	360				
			+0.4	+2.1	+0.3						

CKC Laboratories, Inc. Date: 6/4/2013 Time: 15:27:57 Itron, Inc. WO#: 92785
 Test Distance: 3 Meters Sequence#: 1 Horiz
 Itron, Inc. AMR transceiver device for endpoint installation P/N: 900 BCR



3dBi Glass Mount Antenna
Bandedge



5dB Magnetic Mount
Test Data Sheet

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

Customer: **Itron, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
 Work Order #: **92785** Date: 6/4/2013
 Test Type: **Radiated Scan** Time: 15:53:21
 Equipment: **AMR transceiver device for endpoint installation** Sequence#: 4
 Manufacturer: Itron, Inc. Tested By: Rodney MacInnes
 Model: 900 BCR
 S/N: 37400023

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03209	Preamp	83051A	3/5/2013	3/5/2015
T2	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T3	AN03123	Cable	32026-2-29801-12	10/14/2011	10/14/2013
T4	AN03227	Cable	32026-29080-29080-84	3/29/2013	3/29/2015
T5	ANP05965	Cable	Various	8/26/2011	8/26/2013
T6	AN02872	Spectrum Analyzer	E4440A	7/23/2011	7/23/2013
T7	AN03170	High Pass Filter	HM1155-11SS	9/6/2011	9/6/2013
T8	AN02308	Preamp	8447D	4/3/2012	4/3/2014
T9	AN01996	Biconilog Antenna	CBL6111C	3/2/2012	3/2/2014
T10	ANP05360	Cable	RG214	12/3/2012	12/3/2014
T11	ANP05366	Cable	RG-214	10/14/2011	10/14/2013
T12	ANP05435	Attenuator	PE7015-10	10/5/2012	10/5/2014
	AN00052	Loop Antenna	6502	5/16/2012	5/16/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
5dB magnetic mount	PCTel	Z3182	NA
AMR transceiver device for endpoint installation*	Itron, Inc.	900 BCR	37400023

Support Devices:

Function	Manufacturer	Model #	S/N
BCR Charging/USB connection Station	Itron, Inc.	NA	NA
USB 2.0 Kit	S.I. Tech	2172	NA
Laptop	Dell	Latitude E6410	JBDPWN1

Test Conditions / Notes:

The EUT is placed in the center of the turntable on a Styrofoam table 80cm above the ground plane , EUT is installed in device cradle attached to computer through USB to fiber adaptor.
 Freq Tested: 9kHz - 10GHz

Freq: 908MHz, 915.85MHz, 923.8MHz

ISM FM Modulation

Firmware setting = 8, 8, 8

Emission profile evaluated with PCTel Z3182 5dB magnetic mount

Frequency range of measurement = 9 kHz- 10 GHz.
 9 kH -150 kHz;RBW=200 Hz,VBW=200 Hz;150 kHz-30 MHz;RBW=9 kHz,VBW=9 kHz;30 MHz-1000 MHz;RBW=120 kHz,VBW=120 kHz,1000 MHz-10,000 MHz;RBW=1 MHz,VBW=1 MHz.

15.31(e) compliance:a freshly charged battery is installed

Emission profile of the EUT rotated along three orthogonal axis was investigated. Recorded data represent worse case emission.

Test method in accordance with ANSI C63.4

Temperature: 212°C
 Pressure: 101.5kPa
 Humidity: 35%

Software: MC3SuperRaptorTest
 Version: 4.0.1.5

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	Reading listed by margin.				Dist	Corr	Spec	Margin	Polar
			T1	T2	T3	T4					
	MHz	dBµV	T5	T6	T7	T8	Table	dBµV/m	dBµV/m	dB	Ant
1	60.000M QP	52.1	+0.0	+0.0	+0.0	+0.3	+0.0	39.8	40.0	-0.2	Vert 148
			+0.0	+0.0	+0.0	-28.0					
			+5.3	+0.5	+0.4	+9.2					
2	120.060M QP	48.0	+0.0	+0.0	+0.0	+0.4	+0.0	42.8	43.5	-0.7	Horiz 254
			+0.0	+0.0	+0.0	-27.8					
			+11.6	+0.7	+0.6	+9.3					
^	120.060M	53.1	+0.0	+0.0	+0.0	+0.4	+0.0	47.9	43.5	+4.4	Horiz 254
			+0.0	+0.0	+0.0	-27.8					
			+11.6	+0.7	+0.6	+9.3					
4	915.944M	82.7	+0.0	+0.0	+0.0	+1.0	+0.0	93.0	94.0	-1.0	Vert 124
			+0.0	+0.0	+0.0	-27.4					
			+22.7	+2.1	+2.3	+9.6					
5	907.948M	92.5	+0.0	+0.0	+0.0	+1.0	+0.0	93.0	94.0	-1.0	Vert 99
			+0.0	+0.0	+0.0	-27.4					
			+22.6	+2.0	+2.3	+0.0					

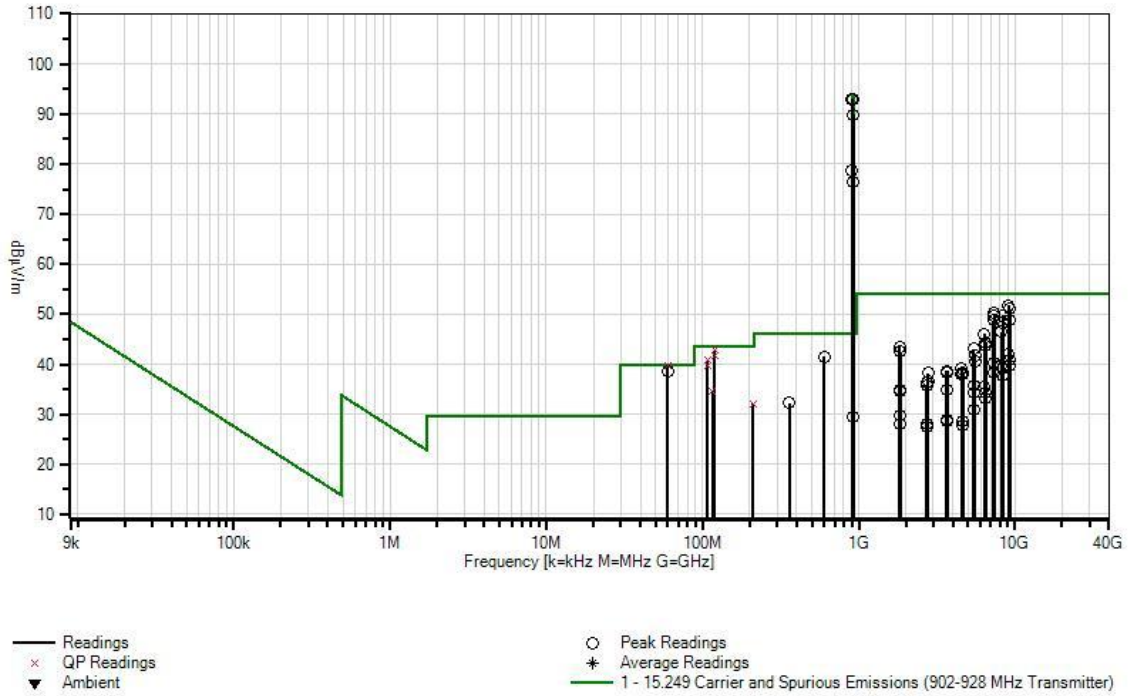
6	60.000M	50.9	+0.0	+0.0	+0.0	+0.3	+0.0	38.6	40.0	-1.4	Horiz
			+0.0	+0.0	+0.0	-28.0	360				169
			+5.3	+0.5	+0.4	+9.2					
7	120.035M	47.0	+0.0	+0.0	+0.0	+0.4	+0.0	41.8	43.5	-1.7	Vert
	QP		+0.0	+0.0	+0.0	-27.8	161				148
			+11.6	+0.7	+0.6	+9.3					
^	120.035M	53.2	+0.0	+0.0	+0.0	+0.4	+0.0	48.0	43.5	+4.5	Vert
			+0.0	+0.0	+0.0	-27.8	161				148
			+11.6	+0.7	+0.6	+9.3					
9	9080.000M	34.3	-27.6	+36.7	+0.8	+3.5	+0.0	51.8	54.0	-2.2	Horiz
			+3.9	+0.0	+0.2	+0.0					130
			+0.0	+0.0	+0.0	+0.0					
10	108.000M	47.4	+0.0	+0.0	+0.0	+0.3	+0.0	40.8	43.5	-2.7	Vert
	QP		+0.0	+0.0	+0.0	-27.9					120
			+10.5	+0.6	+0.6	+9.3					
11	9238.000M	34.5	-27.7	+35.9	+0.9	+3.4	+0.0	51.0	54.0	-3.0	Horiz
			+3.9	+0.0	+0.1	+0.0					114
			+0.0	+0.0	+0.0	+0.0					
12	7390.400M	34.9	-28.2	+36.0	+0.6	+3.1	+0.0	50.2	54.0	-3.8	Vert
			+3.6	+0.0	+0.2	+0.0	109				114
			+0.0	+0.0	+0.0	+0.0					
13	108.000M	46.3	+0.0	+0.0	+0.0	+0.3	+0.0	39.7	43.5	-3.8	Horiz
	QP		+0.0	+0.0	+0.0	-27.9	360				169
			+10.5	+0.6	+0.6	+9.3					
14	923.748M	79.4	+0.0	+0.0	+0.0	+1.0	+0.0	89.9	94.0	-4.1	Vert
			+0.0	+0.0	+0.0	-27.4	360				120
			+22.9	+2.1	+2.3	+9.6					
15	7390.400M	34.5	-28.2	+36.0	+0.6	+3.1	+0.0	49.8	54.0	-4.2	Horiz
			+3.6	+0.0	+0.2	+0.0					114
			+0.0	+0.0	+0.0	+0.0					
16	8314.200M	33.1	-28.0	+36.3	+0.9	+3.5	+0.0	49.8	54.0	-4.2	Vert
			+3.8	+0.0	+0.2	+0.0	22				114
			+0.0	+0.0	+0.0	+0.0					
17	599.800M	36.0	+0.0	+0.0	+0.0	+0.8	+0.0	41.5	46.0	-4.5	Horiz
			+0.0	+0.0	+0.0	-28.3	46				169
			+20.0	+1.6	+1.7	+9.7					
18	9238.000M	32.3	-27.7	+35.9	+0.9	+3.4	+0.0	48.8	54.0	-5.2	Vert
			+3.9	+0.0	+0.1	+0.0					114
			+0.0	+0.0	+0.0	+0.0					
19	7264.000M	33.7	-28.2	+35.7	+0.5	+3.1	+0.0	48.7	54.0	-5.3	Horiz
			+3.6	+0.0	+0.3	+0.0					130
			+0.0	+0.0	+0.0	+0.0					
20	8314.200M	31.5	-28.0	+36.3	+0.9	+3.5	+0.0	48.2	54.0	-5.8	Horiz
			+3.8	+0.0	+0.2	+0.0					114
			+0.0	+0.0	+0.0	+0.0					
21	8172.000M	30.4	-28.1	+36.1	+0.8	+3.4	+0.0	46.5	54.0	-7.5	Horiz
			+3.7	+0.0	+0.2	+0.0					130
			+0.0	+0.0	+0.0	+0.0					
22	6356.000M	33.4	-29.0	+34.5	+0.5	+3.0	+0.0	46.1	54.0	-7.9	Horiz
			+3.3	+0.0	+0.4	+0.0					130
			+0.0	+0.0	+0.0	+0.0					

23	116.120M QP	40.1	+0.0 +0.0 +11.3	+0.0 +0.0 +0.7	+0.0 +0.0 +0.6	+0.4 -27.8 +9.3	+0.0 360	34.6	43.5	-8.9	Horiz 169
24	6466.600M	31.6	-28.9 +3.4 +0.0	+34.4 +0.0 +0.0	+0.5 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0 266	44.3	54.0	-9.7	Vert 114
25	6466.600M	30.9	-28.9 +3.4 +0.0	+34.4 +0.0 +0.0	+0.5 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0	43.6	54.0	-10.4	Horiz 114
26	1815.950M	45.6	-30.6 +1.6 +0.0	+24.8 +0.0 +0.0	+0.3 +0.4 +0.0	+1.4 +0.0 +0.0	+0.0	43.5	54.0	-10.5	Horiz 114
27	5448.000M	33.3	-30.2 +2.9 +0.0	+33.2 +0.0 +0.0	+0.4 +0.3 +0.0	+3.1 +0.0 +0.0	+0.0	43.0	54.0	-11.0	Horiz 130
28	210.100M QP	37.7	+0.0 +0.0 +9.8	+0.0 +0.0 +0.9	+0.0 +0.0 +0.9	+0.5 -27.3 +9.6	+0.0 360	32.1	43.5	-11.4	Horiz 169
^	210.100M	46.3	+0.0 +0.0 +9.8	+0.0 +0.0 +0.9	+0.0 +0.0 +0.9	+0.5 -27.3 +9.6	+0.0 360	40.7	43.5	-2.8	Horiz 169
30	1847.600M	44.2	-30.6 +1.6 +0.0	+25.1 +0.0 +0.0	+0.3 +0.4 +0.0	+1.5 +0.0 +0.0	+0.0 360	42.5	54.0	-11.5	Horiz 110
31	9079.475M	24.6	-27.6 +3.9 +0.0	+36.7 +0.0 +0.0	+0.8 +0.2 +0.0	+3.5 +0.0 +0.0	+0.0 360	42.1	54.0	-11.9	Vert 104
32	5542.800M	31.7	-30.1 +2.9 +0.0	+33.4 +0.0 +0.0	+0.4 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0 93	41.6	54.0	-12.4	Horiz 114
33	9159.585M	23.9	-27.7 +3.9 +0.0	+36.3 +0.0 +0.0	+0.8 +0.2 +0.0	+3.4 +0.0 +0.0	+0.0	40.8	54.0	-13.2	Horiz 99
34	5542.800M	30.8	-30.1 +2.9 +0.0	+33.4 +0.0 +0.0	+0.4 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0 360	40.7	54.0	-13.3	Vert 114
35	7327.665M	25.3	-28.2 +3.6 +0.0	+35.9 +0.0 +0.0	+0.5 +0.2 +0.0	+3.1 +0.0 +0.0	+0.0	40.4	54.0	-13.6	Vert 99
36	7327.665M	25.1	-28.2 +3.6 +0.0	+35.9 +0.0 +0.0	+0.5 +0.2 +0.0	+3.1 +0.0 +0.0	+0.0	40.2	54.0	-13.8	Horiz 99
37	359.700M	31.8	+0.0 +0.0 +15.1	+0.0 +0.0 +1.2	+0.0 +0.0 +1.3	+0.6 -27.5 +9.7	+0.0 360	32.2	46.0	-13.8	Horiz 169
38	9159.585M	22.9	-27.7 +3.9 +0.0	+36.3 +0.0 +0.0	+0.8 +0.2 +0.0	+3.4 +0.0 +0.0	+0.0	39.8	54.0	-14.2	Vert 99
39	8171.540M	23.6	-28.1 +3.7 +0.0	+36.0 +0.0 +0.0	+0.8 +0.2 +0.0	+3.4 +0.0 +0.0	+0.0	39.6	54.0	-14.4	Vert 104

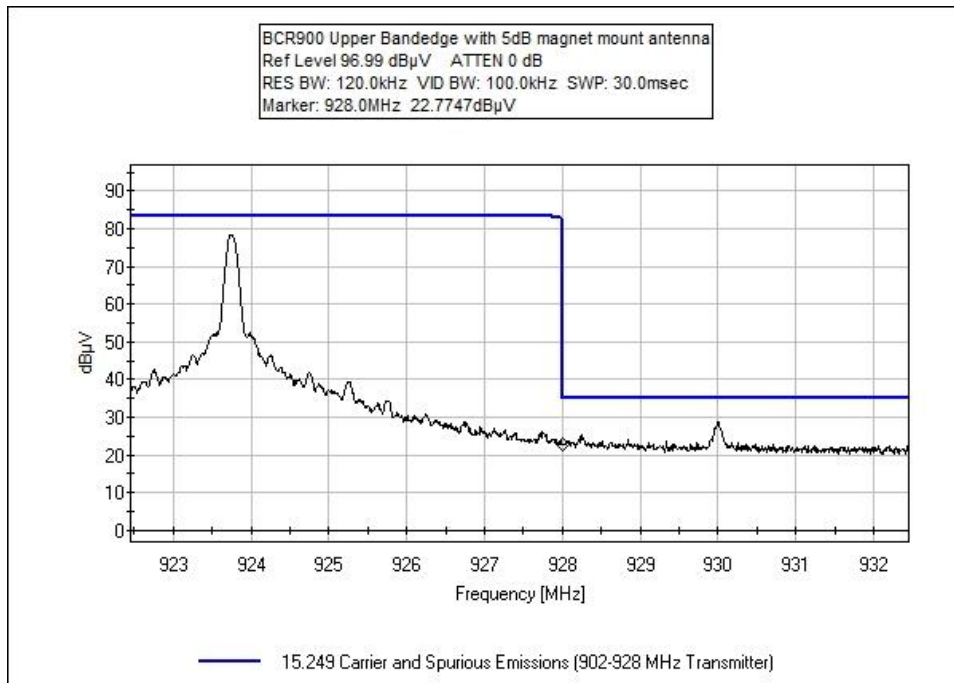
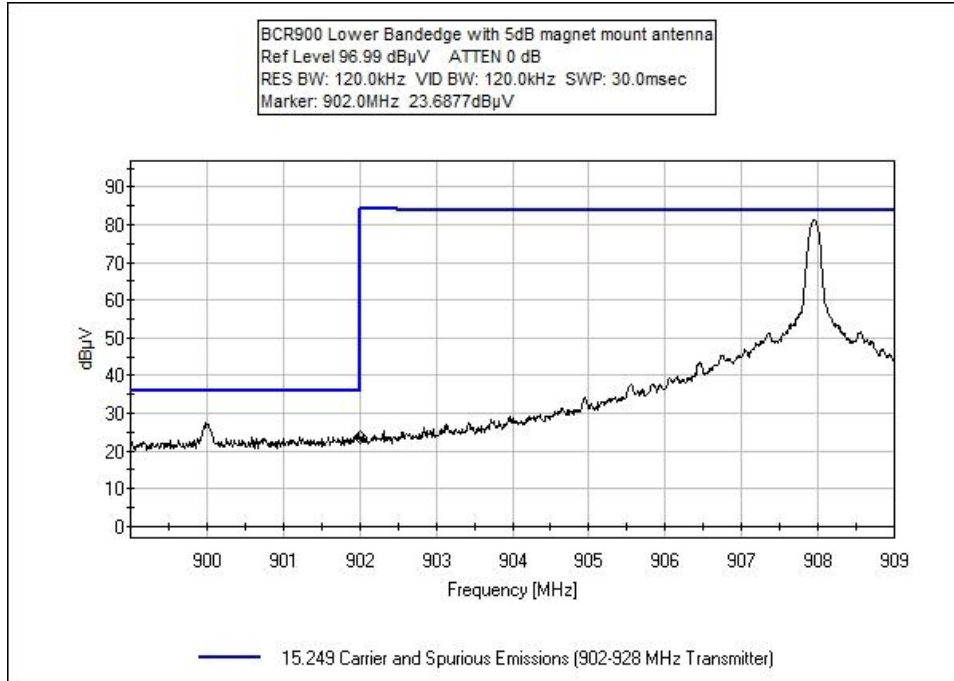
40	8243.625M	22.9	-28.0 +3.7 +0.0	+36.2 +0.0 +0.0	+0.8 +0.2 +0.0	+3.4 +0.0 +0.0	+0.0	39.2	54.0	-14.8	Horiz 99
41	4540.000M	33.0	-31.0 +2.6 +0.0	+31.3 +0.0 +0.0	+0.2 +0.3 +0.0	+2.7 +0.0 +0.0	+0.0 82	39.1	54.0	-14.9	Horiz 130
42	3631.900M	35.1	-30.9 +2.1 +0.0	+29.3 +0.0 +0.0	+0.4 +0.3 +0.0	+2.3 +0.0 +0.0	+0.0 324	38.6	54.0	-15.4	Horiz 130
43	907.948M	78.1	+0.0 +0.0 +22.6	+0.0 +0.0 +2.0	+0.0 +0.0 +2.3	+1.0 -27.4 +0.0	+0.0	78.6	94.0	-15.4	Horiz 175
44	3695.200M	34.8	-31.0 +2.1 +0.0	+29.6 +0.0 +0.0	+0.4 +0.3 +0.0	+2.4 +0.0 +0.0	+0.0 357	38.6	54.0	-15.4	Horiz 114
45	4619.000M	32.1	-31.0 +2.6 +0.0	+31.5 +0.0 +0.0	+0.1 +0.3 +0.0	+2.8 +0.0 +0.0	+0.0 210	38.4	54.0	-15.6	Horiz 114
46	2771.400M	36.3	-30.2 +2.1 +0.0	+27.4 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0	38.3	54.0	-15.7	Horiz 175
47	7263.605M	23.3	-28.2 +3.6 +0.0	+35.7 +0.0 +0.0	+0.5 +0.3 +0.0	+3.1 +0.0 +0.0	+0.0 360	38.3	54.0	-15.7	Vert 104
48	3695.200M	34.4	-31.0 +2.1 +0.0	+29.6 +0.0 +0.0	+0.4 +0.3 +0.0	+2.4 +0.0 +0.0	+0.0 154	38.2	54.0	-15.8	Vert 114
49	4619.000M	31.7	-31.0 +2.6 +0.0	+31.5 +0.0 +0.0	+0.1 +0.3 +0.0	+2.8 +0.0 +0.0	+0.0 360	38.0	54.0	-16.0	Vert 114
50	4540.000M	31.9	-31.0 +2.6 +0.0	+31.3 +0.0 +0.0	+0.2 +0.3 +0.0	+2.7 +0.0 +0.0	+0.0 360	38.0	54.0	-16.0	Vert 130
51	8243.625M	21.3	-28.0 +3.7 +0.0	+36.2 +0.0 +0.0	+0.8 +0.2 +0.0	+3.4 +0.0 +0.0	+0.0	37.6	54.0	-16.4	Vert 99
52	2771.400M	34.6	-30.2 +2.1 +0.0	+27.4 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0 41	36.6	54.0	-17.4	Vert 104
53	915.944M	66.0	+0.0 +0.0 +22.7	+0.0 +0.0 +2.1	+0.0 +0.0 +2.3	+1.0 -27.4 +9.6	+0.0	76.3	94.0	-17.7	Horiz 203
54	2747.840M	34.3	-30.2 +2.1 +0.0	+27.3 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0	36.2	54.0	-17.8	Horiz 132
55	5447.735M	26.1	-30.2 +2.9 +0.0	+33.2 +0.0 +0.0	+0.4 +0.3 +0.0	+3.1 +0.0 +0.0	+0.0 250	35.8	54.0	-18.2	Vert 111
56	2723.335M	33.9	-30.2 +2.1 +0.0	+27.2 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0 360	35.7	54.0	-18.3	Horiz 130

57	6355.670M	22.9	-29.0 +3.3 +0.0	+34.5 +0.0 +0.0	+0.5 +0.4 +0.0	+3.0 +0.0 +0.0	+0.0	35.6	54.0	-18.4	Vert 104
58	1847.600M	36.7	-30.6 +1.6 +0.0	+25.1 +0.0 +0.0	+0.3 +0.4 +0.0	+1.5 +0.0 +0.0	+0.0 359	35.0	54.0	-19.0	Vert 119
59	3663.800M	31.2	-30.9 +2.1 +0.0	+29.4 +0.0 +0.0	+0.4 +0.3 +0.0	+2.4 +0.0 +0.0	+0.0 174	34.9	54.0	-19.1	Horiz 112
60	1815.900M	36.8	-30.6 +1.6 +0.0	+24.8 +0.0 +0.0	+0.3 +0.4 +0.0	+1.4 +0.0 +0.0	+0.0	34.7	54.0	-19.3	Vert 120
61	6411.705M	21.6	-28.9 +3.3 +0.0	+34.4 +0.0 +0.0	+0.5 +0.4 +0.0	+3.0 +0.0 +0.0	+0.0 360	34.3	54.0	-19.7	Vert 99
62	5495.645M	24.4	-30.1 +2.9 +0.0	+33.3 +0.0 +0.0	+0.4 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0 273	34.2	54.0	-19.8	Horiz 128
63	6411.605M	20.4	-28.9 +3.3 +0.0	+34.4 +0.0 +0.0	+0.5 +0.4 +0.0	+3.0 +0.0 +0.0	+0.0 80	33.1	54.0	-20.9	Horiz 99
64	5495.745M	21.2	-30.1 +2.9 +0.0	+33.3 +0.0 +0.0	+0.4 +0.3 +0.0	+3.0 +0.0 +0.0	+0.0 360	31.0	54.0	-23.0	Vert 99
65	1831.905M	31.7	-30.6 +1.6 +0.0	+24.9 +0.0 +0.0	+0.3 +0.4 +0.0	+1.5 +0.0 +0.0	+0.0	29.8	54.0	-24.2	Vert 126
66	3663.825M	25.3	-30.9 +2.1 +0.0	+29.4 +0.0 +0.0	+0.4 +0.3 +0.0	+2.4 +0.0 +0.0	+0.0	29.0	54.0	-25.0	Vert 119
67	3631.770M	25.0	-30.9 +2.1 +0.0	+29.3 +0.0 +0.0	+0.4 +0.3 +0.0	+2.3 +0.0 +0.0	+0.0 360	28.5	54.0	-25.5	Vert 122
68	4579.785M	22.3	-31.0 +2.6 +0.0	+31.4 +0.0 +0.0	+0.1 +0.3 +0.0	+2.8 +0.0 +0.0	+0.0 360	28.5	54.0	-25.5	Vert 99
69	2723.835M	26.4	-30.2 +2.1 +0.0	+27.2 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0	28.2	54.0	-25.8	Vert 144
70	1831.880M	30.1	-30.6 +1.6 +0.0	+24.9 +0.0 +0.0	+0.3 +0.4 +0.0	+1.5 +0.0 +0.0	+0.0 360	28.2	54.0	-25.8	Horiz 147
71	4579.685M	21.6	-31.0 +2.6 +0.0	+31.4 +0.0 +0.0	+0.1 +0.3 +0.0	+2.8 +0.0 +0.0	+0.0 165	27.8	54.0	-26.2	Horiz 128
72	2747.865M	25.6	-30.2 +2.1 +0.0	+27.3 +0.0 +0.0	+0.5 +0.3 +0.0	+1.9 +0.0 +0.0	+0.0 360	27.5	54.0	-26.5	Vert 99
73	923.479M	19.0	+0.0 +0.0 +22.9	+0.0 +0.0 +2.1	+0.0 +0.0 +2.3	+1.0 -27.4 +9.6	+0.0	29.5	94.0	-64.5	Horiz 203

CKC Laboratories, Inc. Date: 6/4/2013 Time: 15:53:21 Itron, Inc. WO#: 92785
 Test Distance: 3 Meters Sequence#: 4 Vert
 Itron, Inc. AMR transceiver device for endpoint installation P/N: 900 BCR



**5dB Magnetic Mount
Bandedge**



Test Setup Photos



3dBi Glass Mount Antenna, Test Setup



5dB Magnetic Mount, Test Setup

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

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

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

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

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBμV/m, the spectrum analyzer reading in dBμV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(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. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.