Itron, Inc.

TEST REPORT FOR

AMR Transceiver Device for Endpoint Installation
Model: 900 BCR

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.247
(Partial Testing - Radiated Spurious Emissions Only)

Report No.: 92785-13

Date of issue: June 11, 2013

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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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Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Itron, Inc.
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Liberty, Lake WA 99019

Representative: Jay Holcomb
Customer Reference Number: 52031

REPORT PREPARED BY:

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CKC Laboratories, Inc.
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Mariposa, CA 95338

Project Number: 92785

DATE OF EQUIPMENT RECEIPT: May 31, 2013
DATE(S) OF TESTING: May 31, 2013

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 15.247

Description	Test Procedure/Method	Results
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.247(d) / 15.209	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

8" 1/2 Wave Dipole Antenna
Manuf: PCTel
Model: MEXE902RPSM
Serial: None

PERIPHERAL DEVICES

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

BCR Charging/USB Connection Station
Manuf: Itron, Inc.
Model: None
Serial: None

USB 2.0 Kit
Manuf: S.I. Tech
Model: 2172
Serial: None

Laptop
Manuf: Dell
Model: Latitude E6410
Serial: JBDPWN1

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.

15.247(d) Radiated Spurious Emissions

Test Data Sheets

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

Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**92785**	Date:	5/31/2013
Test Type:	**Maximized Emissions**	Time:	14:14:16
Equipment:	**AMR transceiver device for endpoint installation**	Sequence#:	5
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
	AN02872	Spectrum Analyzer	E4440A	7/23/2011	7/23/2013
T2	AN03209	Preamp	83051A	3/5/2013	3/5/2015
T3	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T4	AN03123	Cable	32026-2-29801-12	10/14/2011	10/14/2013
T5	ANP05965	Cable	Various	8/26/2011	8/26/2013
T6	AN03170	High Pass Filter	HM1155-11SS	9/6/2011	9/6/2013

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

Function	Manufacturer	Model #	S/N
8" 1/2 wave dipole antenna	PCTel	MEXE902RPSM	
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.	None	None
USB 2.0 Kit	S.I. Tech	2172	
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.

Trans Freq: 923.8MHz
Bluetooth: 2.4GHz

Freq Tested: 1-6GHz

Temperature: 22°C
Pressure: 101.5kPa
Humidity: 35%

Software: MC3SuperRaptorTest
Version: 4.0.1.5

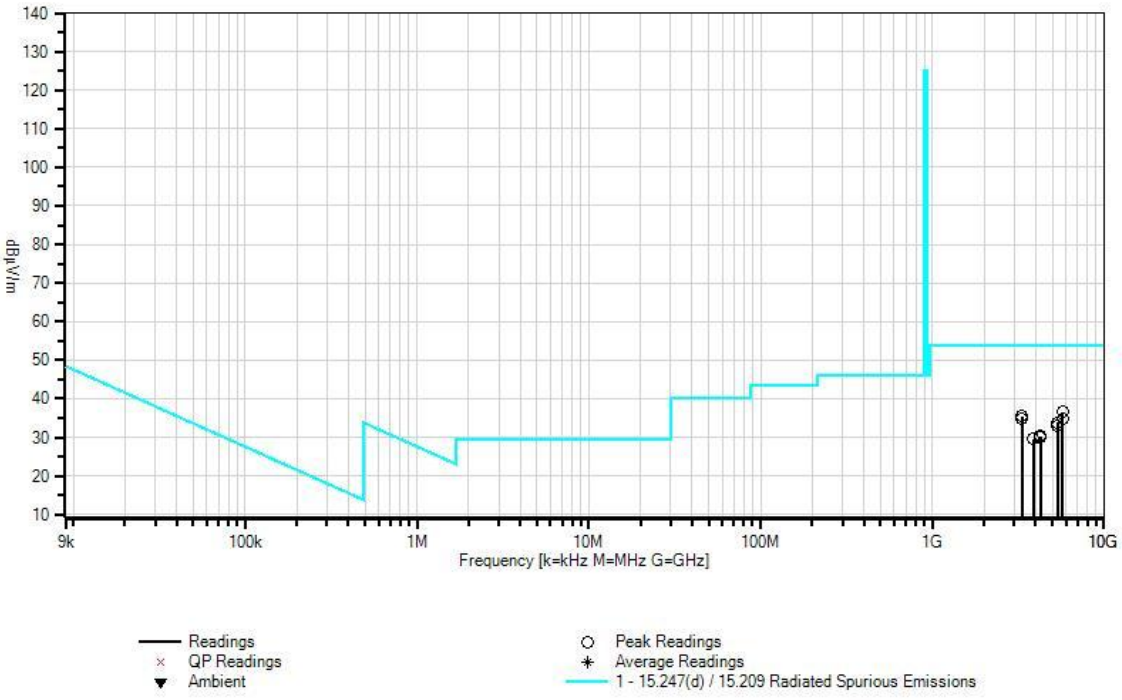
Note: Collocation Data Only

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5727.800M	25.6	+3.0 +3.0	-29.8 +0.3	+33.9	+0.5	+0.0 342	36.5	54.0 Third order IMOD	-17.5	Vert 111
2	3325.800M	32.6	+2.1 +2.1	-30.5 +0.3	+28.6	+0.2	+0.0	35.4	54.0 Second order IMOD	-18.6	Horiz 105
3	3325.800M	32.2	+2.1 +2.1	-30.5 +0.3	+28.6	+0.2	+0.0	35.0	54.0 Second order IMOD	-19.0	Vert 105
4	5727.800M	23.9	+3.0 +3.0	-29.8 +0.3	+33.9	+0.5	+0.0 129	34.8	54.0 Third order IMOD	-19.2	Horiz 111
5	5358.151M	24.3	+3.1 +2.8	-30.3 +0.3	+33.1	+0.6	+0.0 286	33.9	54.0 Fifth order IMOD	-20.1	Horiz 111
6	5358.151M	23.3	+3.1 +2.8	-30.3 +0.3	+33.1	+0.6	+0.0 19	32.9	54.0 Fifth order IMOD	-21.1	Vert 111
7	4249.600M	25.1	+2.4 +2.5	-31.2 +0.3	+30.9	+0.4	+0.0 5	30.4	54.0 Third order IMOD	-23.6	Vert 111
8	4249.600M	24.7	+2.4 +2.5	-31.2 +0.3	+30.9	+0.4	+0.0 304	30.0	54.0 Third order IMOD	-24.0	Horiz 111
9	3880.200M	24.7	+2.7 +2.2	-31.2 +0.7	+30.1	+0.3	+0.0 255	29.5	54.0 Third order IMOD	-24.5	Horiz 111
10	3880.200M	24.7	+2.7 +2.2	-31.2 +0.7	+30.1	+0.3	+0.0 101	29.5	54.0 Third order IMOD	-24.5	Vert 111

CKC Laboratories, Inc. Date: 5/31/2013 Time: 14:14:16 Itron, Inc. WO#: 92785
Test Distance: 3 Meters Sequence#: 5 Horiz
Itron, Inc. AMR transceiver device for endpoint installation P/N: 900 BCR



Test Setup Photos

Overall 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	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

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

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

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

Peak

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

Quasi-Peak

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

Average

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