REGULATORY Compliance REPORT

TITLE: Test Report For Title 47 Part 15.249 and RSS-210

Passive Re-radiator accessory in a pit under a plastic lid

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REV	CCO	DESCRIPTION OF CHANGE	DATE	APPROVALS	
		INITIAL RELEASE		Engineering	
				Engineering	

REVISION HISTORY

A	n/a	ready for uploading		Engineering	
				Engineering	
				Engineering	

FCC Part 15.249 / IC RSS-210 Sec. 6.2.2(m2);
Field strength of Low Power Transmitters,
(Passive re-radiator)**, 908 MHz**
FCC ID: EWQ100WA - PCII
IC: 864D-100WA - PCII
IC Device Models: 100WA (not the 100WR)
Part Numbers: CFG-0900-001
.Serial Number: see below
OATS Registration Number: FCC 90716, IC 5615

Rule	Description	Spec Limit	Max. Reading	Pass/Fail
15.31(e)	Variation of Supply Voltage	n/a	N/A (battery)	N/A
15.207/RSS-GEN 7.2.2	Powerline conducted emissions	n/a	N/A (battery)	N/A
15.249(d)/RSS-210 sec. 6.6.2(m2)(3)	Out of band non-harmonic radiated emissions	table	No Emissions	Pass
15.249(a)/RSS-210 Sec. 6.2.2 (m2)(1)	Radiated emissions of transmitter fundamental and harmonics	50,000 / 500 uV/m	72.28dbuV/m @908 MHz average 36.1dbuV/m @ 2724MHz	Pass

Rule versions: FCC Part 1; FCC Part 2; FCC Part 15, RSS-102 Issue 4 (03-2010); RSS-210 Issue 8 (12-2010); RSS-Gen Issue 3 (12-2010).
Reference docs: ANSI C63.4-2003; DA 00-705 (03-30-2000); OET65 (08-1997); OET65C (06-2001); IEEE C95.3-2002.

Cognizant Personnel			
Roger Mulcahy	Name	Test Technician	Title
Steve Ivanca	Name	Project Engineer	Title
Jay Holcomb	Name	Regulatory	Title

CONDITIONS DURING TESTING

No Modifications to the EUT were necessary during the testing.

FCC 15.31(m) – IC _n/a_; Number of Channel
This device operates and was tested on one channel.

ANSI C63.4 - Temperature and Humidity During Testing
The temperature during testing was within +10º C and +40º C.
The Relative humidity was between 10% and 90%.
RSS-Gen 4.3: Tests shall be performed at ambient temperature

EQUIPMENT UNDER TEST (EUT) DESCRIPTION
Itron declares that the EUT tested was representative of a production unit.

EQUIPMENT UNDER TEST

EUT Module

Manuf:	Itron, Inc.
Itron Model:	CFG-0900-001
Serial Number(s)	Accessory has no Serial Number, Connected to a ERW-1300-305; SN200075
Power source	Fresh Batteries, Fully charged Batteries or Battery simulator.

Plot Information
In the zero span measurements, the line in the display is the trigger level.

15.31(e)

Variation of Supply Voltage

Vary the supply voltage from 85% to 115% of the nominal voltage. If the power level of the fundamental signal varies with supply voltage, record the voltage level at which the fundamental signal is at its highest and use that voltage level for all further testing.

DEVICE IS BATTERY OPERATED NOT CONNECTED TO THE POWER LINE. BATTERY IS NOT RECHARGABLE. THERFORE THIS TEST IS N/A.

15.207 / RSS-GEN 7.2.2

Power line Conducted Emissions

Measure the AC power line conducted emissions from 150kHz to 30 MHz using a 50□H/50□ line impedance stabilization network (LISN) according to the procedure specified in ANSI C63.4. Verify that no emissions exceed the following limits:

Frequency (MHz)	Quasi-Peak (dB□V)	Average (dB□V)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of frequency

DEVICE IS BATTERY OPERATED NOT CONNECTED TO THE POWER LINE. BATTERY IS NOT RECHARGABLE. THERFORE THIS TEST IS N/A.

15.209 / RSS-210 sec. 6.2(m2)(3)

Out of band non-harmonic emissions

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (microvolts/meter)	in dBuV/m	Measurement Distance (meters)*
0.009-0.490	2440F (kHz)		300
0.490-1.705	2400F (kHz)		30
1.705-30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

FS (dBuV/) = 20 * log (FS(uV/m))

* Adjust when measuring at different distances than specified; 40dB/decade <30MHz and 20dB/decade >=30MHz. (at 30MHz depends on the antenna used)

note: 15.249(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Measure the field strength of all spurious emissions that are not harmonics according to the procedure in Appendix A.

For emissions measurements below 30MHz, rotate the loop antenna about its horizontal and vertical positions to maximize emissions.

Equipment Used	Serial Number	Cal Date	Cal Due
Micro Coax 40 foot cable	214970001	4/7/2009	4/7/2011
Roberts Dipole 400-1000 Mhz	4106	9/14/2010	9/14/2012
EMCO 3115 double ridge wave guide	9508-4550	3/22/2010	3/22/2012
filter 405735 and Huber&Suhner sucotest cable 1	405735	8/16/2010	8/16/2011
AH systems preamplifer	135	11/17/2010	11/17/2011
EMCO 3146 Log periodic	9203-3358	10/12/2009	10/12/2011
EMCO Biconical antenna	9807-3129	10/2/2009	10/2/2011
EMCO loop antenna model 6502	9509-2970	10/7/2010	10/7/2012
Agilent E7405A Spectrum Analyzer	MY45113415	8/4/2010	8/4/2011

Date	Temp/Humidity ºF / %	Tested by
3/3/2011 and 3/4/2011	62F / 20%	Roger Mulcahy

No Emissions found

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15.249(a)/RSS-210 sec. 6.2(m2)(1)

Transmitter Fundamental and Harmonics

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following: (table below)
(c) Field strength limits are specified at a distance of 3 meters.
(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Measure the field strength of the transmitter fundamental and harmonic emissions at three meters according to the procedure in Appendix A. Record emissions levels with the transmitter near its lowest, middle, and highest frequencies. The maximum field strength of emissions may not exceed:

Fundamental (□V/m)	in (dBuV/m)	Harmonics (□V/m)	in (dBuV/m)
50,000	94	500	54

FS (dBuV/m) = 20 * log (FS(uV/m))

Equipment Used	Serial Number	Cal Date	Cal Due
Micro Coax 40 foot cable	214970001	4/7/2009	4/7/2011
EMCO 3148 Log periodic	9901-1044	9/9/2010	9/9/2012
EMCO 3115 double ridge wave guide	9508-4550	3/22/2010	3/22/2012
filter 405735 and Huber&Suhner sucotest cable 1	405735	8/16/2010	8/16/2011
AH systems preamplifer	135	11/17/2010	11/17/2011

Date	Temp/Humidity ºF / %	Tested by
3/3/2011 and 3/8/2011	62F / 20%	Roger Mulcahy

Frequency (Mhz)	Polarity	Peak Level (dbuV/m)	Average level with Duty Cycle Correction factor - 5.65db* (dbuV/m)	Antenna correction Factor	Coaxial cable and High pass filter loss (db)	Amplifier Gain (db)
908	Vertical	72.28		24.54	2.59	0
908	Horizontal	71.31		24.54	2.59	0
2724	Horizontal	41.75	36.1	28.9	5.28	-36.53
2724	Vertical	40.84	35.19	28.9	5.28	-36.53
1816	Vertcal	36.42	30.77	26.9	4.76	-36.94
1816	Horizontal	32.72	27.07	26.9	4.76	-36.94

*For harmonics, adjust for the proper duty cycle correction in accordance with the results from test 3.

Appendix A

Field Strength Measurement Procedure

This test measures the field strength of radiated emissions using a spectrum analyzer and a receiving antenna in accordance with ANSI C63.4-2003. During the test, the EUT is to be placed on a non-conducting support at 80 cm above the horizontal ground plane of the OATS. The horizontal distance between the antenna and the EUT is to be exactly 3 meters. The bandwidths used shall be per ANSI C63.4-2003; 200 Hz from 9 kHz to 150 kHz, 9 kHz from 150 kHz to 30 MHz, 100 kHz from 30 MHz to 1000 MHz, and 1 MHz from 1 GHz to 40 GHz, with the detector set to peak hold or quasi peak .

1) The antenna correction factor, preamplifier gain (if the preamplifier is installed), and cable loss are stored in tables in the EMC analyzer and the level at the analyzer is the corrected level in dbuV/m.
2) Monitor the frequency range of interest at a fixed antenna height and EUT azimuth.
3) If appropriate, manipulate the system cables to produce the highest amplitude signal relative to the limit. Note the amplitude and frequency of the suspect signal.
4) Rotate the EUT 360° to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, go back to the azimuth and repeat step 3). Otherwise, orient the EUT azimuth to repeat the highest amplitude observation and proceed.
5) Move the antenna over its fully allowed range of travel to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, return to step 3) with the antenna fixed at this height. Otherwise, move the antenna to the height that repeats the highest amplitude observation and proceed.
6) Change the polarity of the antenna and repeat step 3), step 4), and step 5). Compare the resulting suspected highest amplitude signal with that found for the other polarity. Select and note the higher of the two signals.
7) The final maximized level displayed on the EMC analyzer is the field strength.