Excellence in Compliance Testing

Certification Test Report

FCC ID: SK9PMCR1
IC: 864G-PMCR1

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Report Number 08-0399-15C-900-DSS

Manufacturer: Itron, Inc.
Model(s): Cell Relay Pole, Ethernet

Test Begin Date: October 6, 2008
Test End Date: October 7, 2008

Report Issue Date: October 20, 2008

FOR THE SCOPE OF ACCREDITATION UNDER LAB Code 200612-0

This report is not be used to claim certification, approval, or endorsement by NVLAP, NIST or any government agency.

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This report contains 24 pages

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1.0 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-210.

1.2 Product Description

1.2.1 General

This product is a pole mountable version of Itron's OpenWay Cell Relay product with an Ethernet only backhaul. The Cell Relay is an ANSI C12.22 relay that routes meter data traffic from a proprietary 900 MHz RFLAN mesh network to a Collection Engine server via a wide area network IP backhaul. The Cell Relay performs C12.22 aptitle and routing translations on the data it is routing. The Cell Relay contains two short range Zigbee radios that are used for wireless device configuration.

Manufacturer Information:
Itron, Inc.
313 North Highway 11
West Union SC 29696

Test Sample Serial Number(s):
PMCRFCC16754939

Test Sample Condition:
Test sample was in good working condition with no defects.

Detailed photographs of the EUT are filed separately with this filing.

1.2.2 Intended Use

The Cell Relay is an ANSI C12.22 relay that routes meter data traffic from a proprietary 900 MHz RFLAN mesh network to a Collection Engine server via a wide area network IP backhaul. The Cell Relay contains two short range Zigbee radios that are used for wireless device configuration.

1.3 Test Methodology and Considerations

The EUT was tested in a configuration typical of normal use.

This device is considered a composite device by definition. The 900 MHz LAN and the 2.4 GHz Zigbee radios on the register board operate under CFR 47 Part 15.247 and IC RSS-210. The 2.4 GHz Zigbee radio located on the Cell Relay Core board operates under CFR 47 Part 15.249 and IC RSS-210. This report addresses Part 15.247 and RSS 210 for the 900 MHz LAN radio located on the register board only. Separate reports will be issued for the register board 2.4 GHz Zigbee radio and Cell Relay Core board 2.4GHz Zigbee radio.

See test setup photographs for additional information.

2.0 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions
5015 B.U. Bowman Drive
Buford, GA 30518
Phone: (770) 831-8048
Fax: (770) 831-8598

2.2 Laboratory Accreditations/Recognitions/Certifications

The Semi-Anechoic Chamber Test Site, Open Area Test Site (OATS) and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC, Industry Canada and the Japanese Voluntary Control Council for Interference by information technology equipment. In addition, ACS is compliant to ISO 17025 as certified by the National Institute of Standards and Technology under their National Voluntary Laboratory Accreditation Program. The following certification numbers have been issued in recognition of these accreditations and certifications:

FCC Registration Number: 894540
Industry Canada Lab Code: IC 4175
VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

NVLAP Lab Code: 200612-0

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 150cm in diameter and is located 160cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chases from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

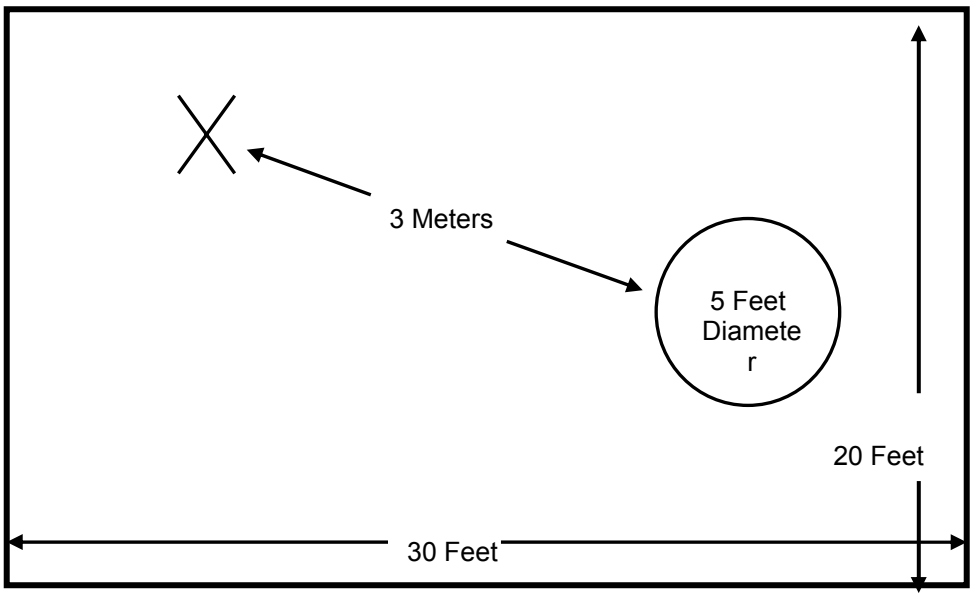

Figure 2.3-1: Semi-Anechoic Chamber Test Site

2.3.2 Open Area Tests Site (OATS)

The open area test site consists of a 40' x 66' concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8" holes that are staggered every 3/16". The individual sheets are placed to overlap each other by 1/4" and are riveted together to provide a continuous seam. Rivets are spaced every 3" in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12' beyond the turntable edge and 16' beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8' copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10' flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Adjacent to the turntable is a 7' x 7' square and 4' deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4" PVC chases from the pit to the control room that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit. The pit is covered with 2 sheets of 1/4" diamond style re-enforced steel sheets. The sheets are painted to match the perforated steel ground plane; however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 2.3-2 below:

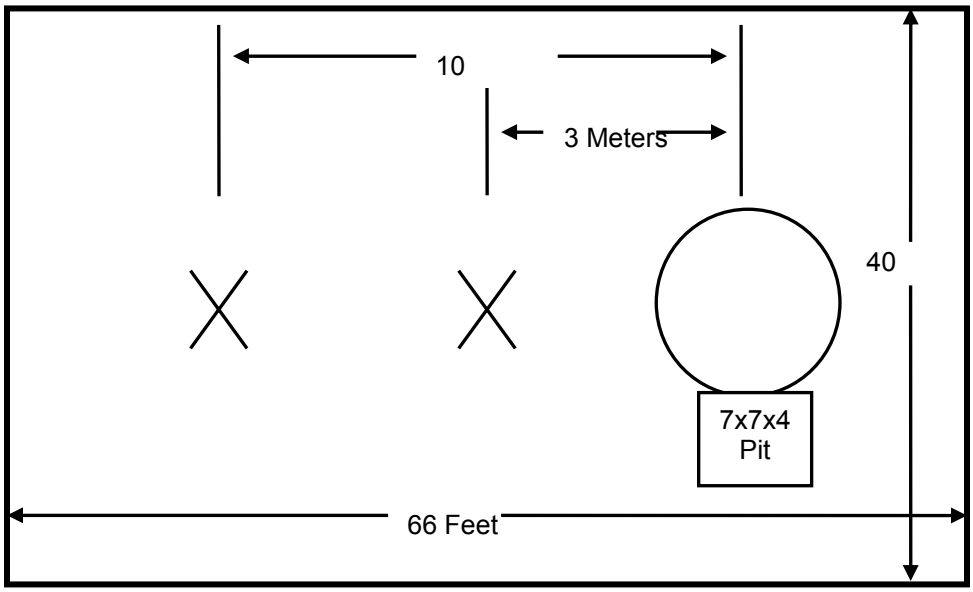

Figure 2.3-2: Open Area Test Site

2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is located in the main EMC lab. It consists of an 8' x 8' solid aluminum horizontal group reference plane (GRP) bonded every 3" to an 8' X 8' vertical ground plane.

The site is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.4.

A diagram of the room is shown below in figure 4.1.3-1:

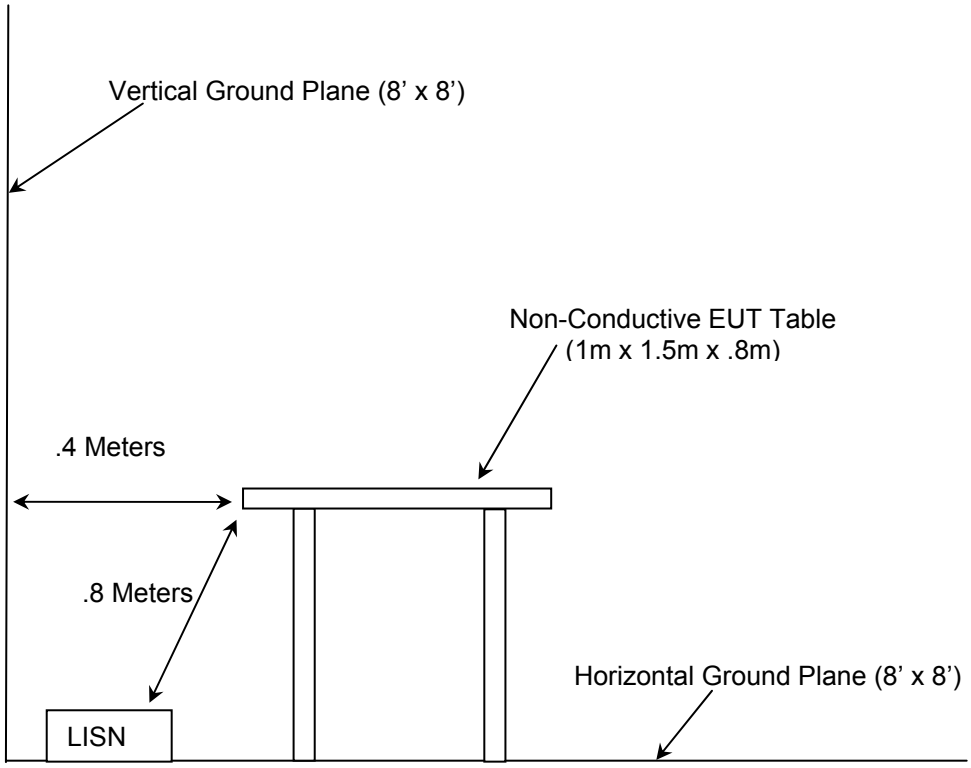

Figure 2.4-1: AC Mains Conducted EMI Site

3.0 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2008
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2008
- FCC OET Bulletin 65 Appendix C - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, 2001
- FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems, March 30, 2000
- Industry Canada Radio Standards Specification: RSS-210 - Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, Issue 7 June 2007
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue2, June 2007.

4.0 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

Equipment Calibration Information					
ACS#	**Mfg.**	**Eq. type**	**Model**	**S/N**	**Cal. Due**
3	Rohde & Schwarz	ESMI-Display	839379/011	Spectrum Analyzer	10/26/08
4	Rohde & Schwarz	ESMI-Receiver	833827/003	Spectrum Analyzer	10/26/08
22	Aglient	8449B	3008A00526	Pre-Amplifier	10/25/08
30	Spectrum Technologies	DRH-0118	970102	Antenna	05/07/09
291	Florida RF Cables	SMRE-200W-12.0-SMRE	NA	Cables	11/21/08 (See Note1)
292	Florida RF Cables	SMR-290AW-480.0-SMR	NA	Cables	11/21/08 (See Note1)
422	Florida RF Cables	SMS-200AW-72.0-SMR	NA	Cables	02/25/09 (See Note1)
331	Microwave Circuits	H1G513G1	31417	Filter	07/28/09 (See Note1)
73	TEC	PA 102	44927	Pre-Amplifier	12/19/08
338	Hewlett Packard	8449B	3008A01111	Amplifier	10/24/08
25	Chase	Antennas	CBL6111	1043	08/22/09
431	Solar Electronics	9408-50-R-25-N-Lisn	084701	LISN	06/19/09
324	ACS	Belden	8214	Cables	07/28/09
168	Hewlett Packard	Attenuators	11947A	44829	02/18/09 (See Note2)
283	Rohde & Schwarz	FSP40	1000033	Spectrum Analyzer	11/09/08

Note1: Items characterized on an annual cycle. The date shown indicates the next characterization due date.
Note2: Items verified on an annual cycle. The date shown indicates the next verification due date.

5.0 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number	FCC ID
1	EUT	Itron	Cell Relay Pole, Ethernet	PMCRFCC16754939	SK9PMCR1

6.0 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

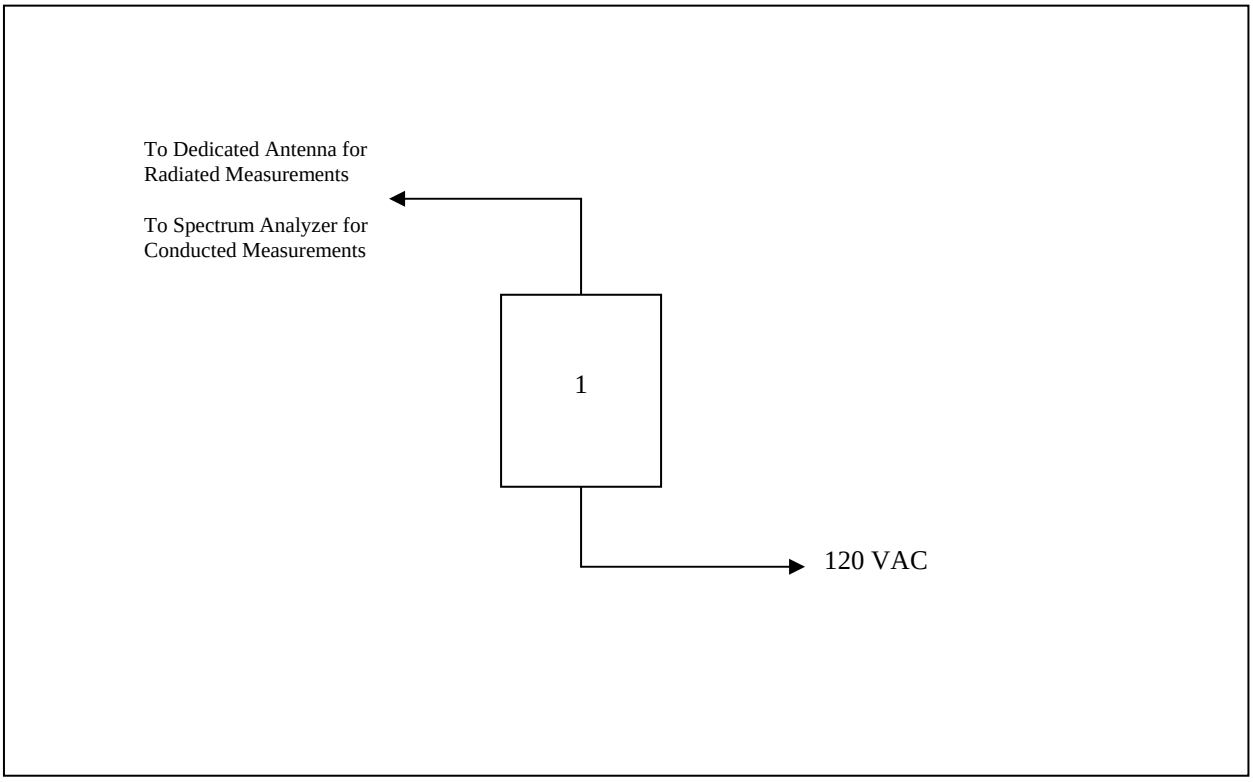

Figure 6-1: EUT Test Setup

*See Test Setup photographs for additional detail.

7.0 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The Cell Relay Pole, Ethernet utilizes a Phantom Antenna for the 900MHz portion of the radio. The antenna utilizes a bulkhead stud mount and hardware for secure permanent installation thus satisfying 15.203.

7.2 Power Line Conducted Emissions – FCC: Section 15.207 IC: RSS-Gen 7.2.2

7.2.1 Test Methodology

ANSI C63.4 sections 6 and 7 were the guiding documents for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

7.2.2 Test Results

Results of the test are shown below in and Table 7.2-1.

Table 7.2-1: Conducted EMI Results

Frequency (MHz)	Uncorrected Reading (dBuV)		Total Correction Factor (dB)	Corrected Level (dBuV)		Limit (dBuV)		Margin (dB)		Line
	Quasi-Peak	Average		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	
Line 1										
0.18	30.7	29.5	9.82	40.52	39.32	64.49	54.49	24.0	15.2	GND
0.24	27.1	23.3	9.81	36.91	33.11	62.10	52.10	25.2	19.0	GND
0.44	31.8	22.7	9.90	41.70	32.60	57.06	47.06	15.4	14.5	GND
0.56	30.5	21.9	9.90	40.40	31.80	56.00	46.00	15.6	14.2	GND
1.46	25.7	21.9	9.90	35.60	31.80	56.00	46.00	20.4	14.2	GND
2.13	17.5	9.2	9.90	27.40	19.10	56.00	46.00	28.6	26.9	GND
Line 2										
0.18	37.5	29.3	9.82	47.32	39.12	64.49	54.49	17.2	15.4	GND
0.24	26.7	23.1	9.81	36.51	32.91	62.10	52.10	25.6	19.2	GND
0.44	31.5	22.8	9.90	41.40	32.70	57.06	47.06	15.7	14.4	GND
0.54	29.3	20.7	9.90	39.20	30.60	56.00	46.00	16.8	15.4	GND
0.67	27.4	20.2	9.90	37.30	30.10	56.00	46.00	18.7	15.9	GND
1.46	25	21.5	9.90	34.90	31.40	56.00	46.00	21.1	14.6	GND

7.3 Radiated Emissions – FCC: Section 15.109(Unintentional Radiation) IC: RSS-210 2.6

7.3.1 Test Methodology

Radiated emissions tests were performed over the frequency range of 30MHz to 10 GHz. Measurements of the radiated field strength were made at a distance of 3m from the boundary of the equipment under test (EUT) and the receiving antenna. The antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz a Quasi-peak detector was enabled and measurements were taken with the Spectrum Analyzer's resolution bandwidth set to 120 KHz. For frequencies above 1000MHz, average measurements were made using an average detector and peak detector with RBW of 1 MHz.

7.3.2 Test Results

Results of the test are given in Table 7.3-1 below:

Table 7.3-1: Radiated Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
30	---------	25.37	V	-8.20	---------	17.17	--------	40.0	---------	22.83
77.42	---------	35.19	V	-19.06	---------	16.13	--------	40.0	---------	23.87
117.3	---------	33.26	V	-12.56	---------	20.70	--------	43.5	---------	22.80
164.72	---------	37.25	V	-14.38	---------	22.87	--------	43.5	---------	20.63
232.62	---------	37.63	H	-14.36	---------	23.27	--------	46.0	---------	22.73
243.4	---------	36.69	H	-13.39	---------	23.30	--------	46.0	---------	22.70
249.86	---------	36.24	H	-12.81	---------	23.43	--------	46.0	---------	22.57
591.52	---------	28.80	H	-4.48	---------	24.32	--------	46.0	---------	21.68
596.91	---------	23.64	V	-3.27	---------	20.37	--------	46.0	---------	25.63
931.02	---------	20.57	H	1.54	---------	22.11	--------	46.0	---------	23.89

*Note: All emissions above 931.02MHz were not detected above the noise floor of the measurement equipment and therefore attenuated below the permissible limit.

7.4 Peak Output Power - FCC Section 15.247(b)(2) IC: RSS-210 A8.4(1)

7.4.1 Test Methodology (Conducted Method)

The 20dB bandwidth of the EUT was within the resolution bandwidth of spectrum analyzer, therefore the power measurement was made using the spectrum analyzer method. The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The resolution and video bandwidth were set to >>> 20 dB bandwidth of the emission measured. The device employs >50 channels therefore the power is limited to 1 Watt which is equivalent to 30 dBm.

7.4.2 Test Results

Results are shown below in table 7.4-1 and the worst case was plotted and shown in figure 7.4-1 to 7.4-3 below:

Table 7.4-1: RF Output Power

Frequency [MHz]	Level [dBm]
902.25	17.96
914.75	18.84
927.75	18.99

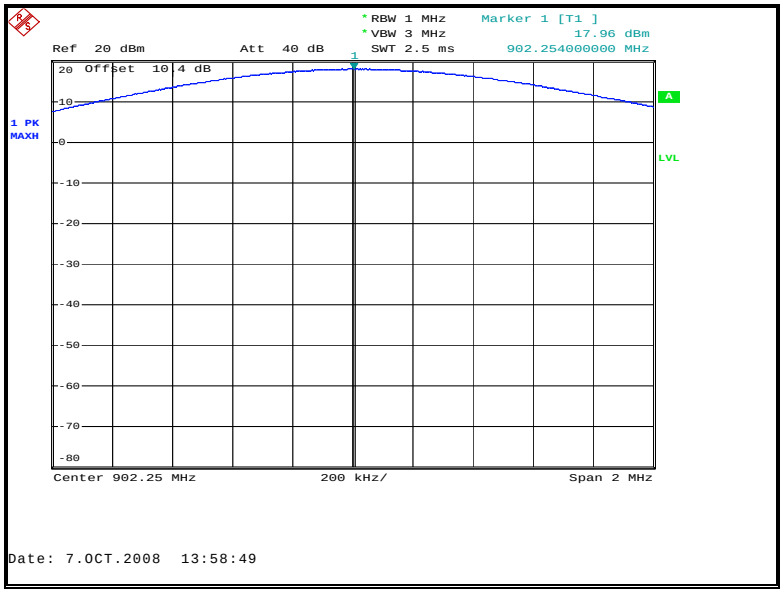

Figure 7.4-1: Output power – Low Channel

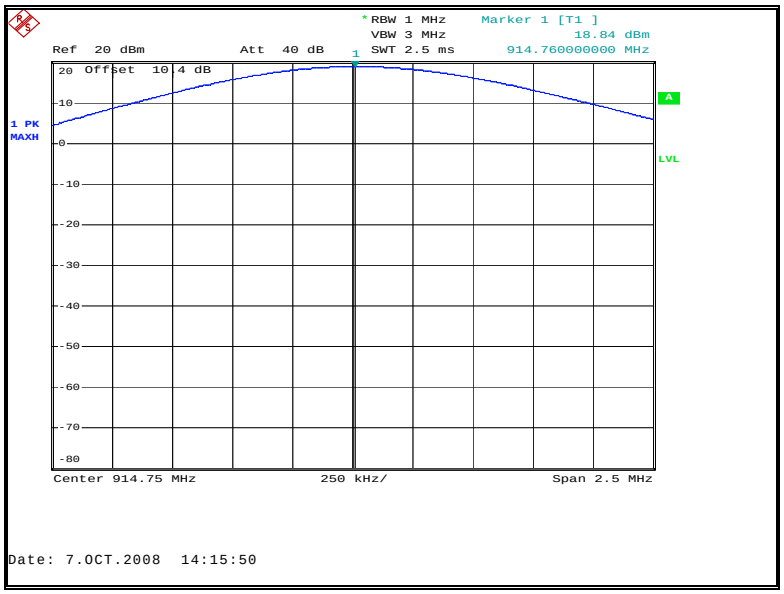

Figure 7.4-2: Output power – Mid Channel

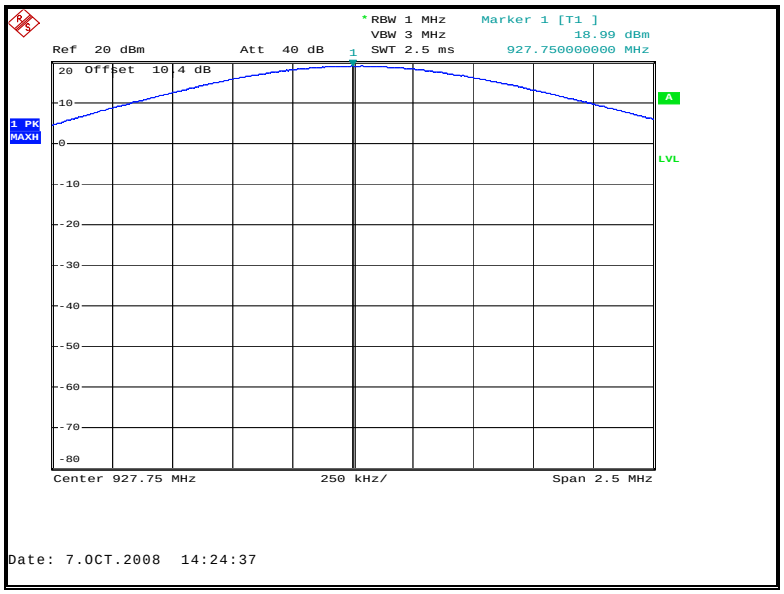

Figure 7.4-3: Output power – High Channel

7.5 Channel Usage Requirements

7.5.1 Carrier Frequency Separation – FCC: Section 15.247(a)(1) IC: RSS-210 A8.1(b)

7.5.1.1 Test Methodology

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The span of the spectrum analyzer was set wide enough to capture two adjacent peaks and the RBW and VBW were set to ≥ 1% of the span.

7.5.1.2 Test Results

The maximum 20dB bandwidth of the hopping channel was measured to be 150.6kHz (See figure 7.5.4-1 to 7.5.4-3 below). The adjacent channel separation was measured to be 500kHz. Results are shown in figure 7.5.1-1 below:

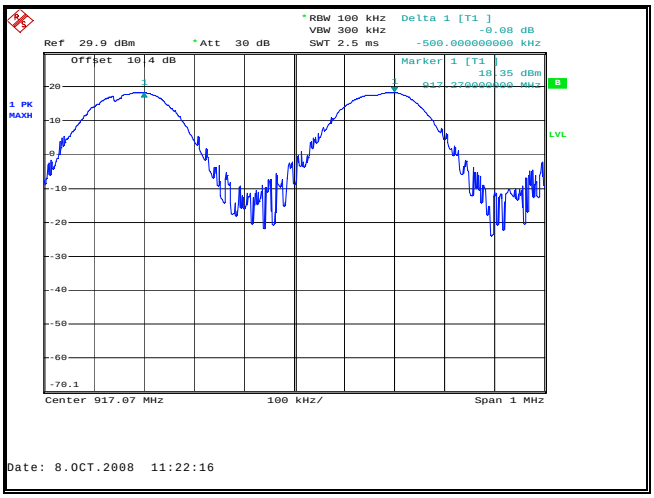

Figure 7.5.1-1: Carrier Frequency Separation

7.5.2 Number of Hopping Channels – FCC: Section 15.247(a)(1)(i) IC: RSS-210 A8.1(c)

The 20dB bandwidth of the device is less than 250 kHz. The device employs more than 50 hopping channels as required. Results are shown in Figure 7.5.2-1 below:

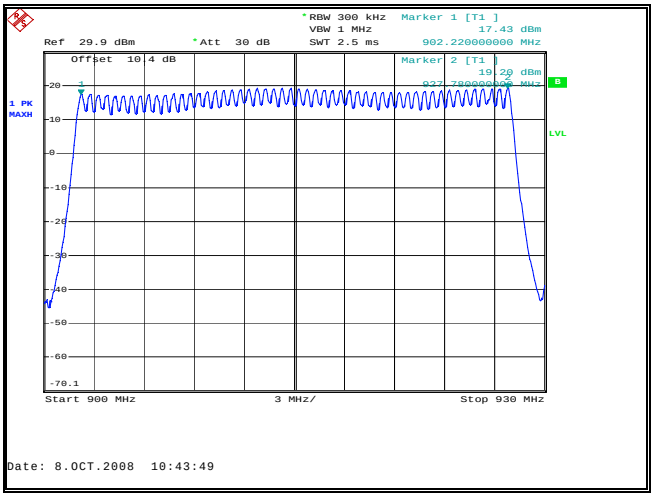

Figure 7.5.2-1: Number of Hopping Channels

7.5.3 Channel Dwell Time – FCC: Section 15.247(a)(1)(i) IC: RSS-210 A8.1(c)

7.5.3.1 Test Methodology

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The hopping channel is centered on the analyzer and the span set to 0 Hz. The RBW was set to 1 MHz and the VBW to 3 MHz. Sweep time was set to 200 ms to capture the burst duration of the emission. The marker – delta function of the analyzer was employed to measure the burst duration.

7.5.3.2 Test Results

The duration of the RF transmission is 123.2 ms. There is a minimum 7.8 second rest period in which the device hops to another channel according to the pseudorandom frequency table before transmitting another 123.2ms burst. Therefore the average time of occupancy on any channel in a 20 second period is 369.6ms. A single transmission is shown in figure 7.5.3-1 below:

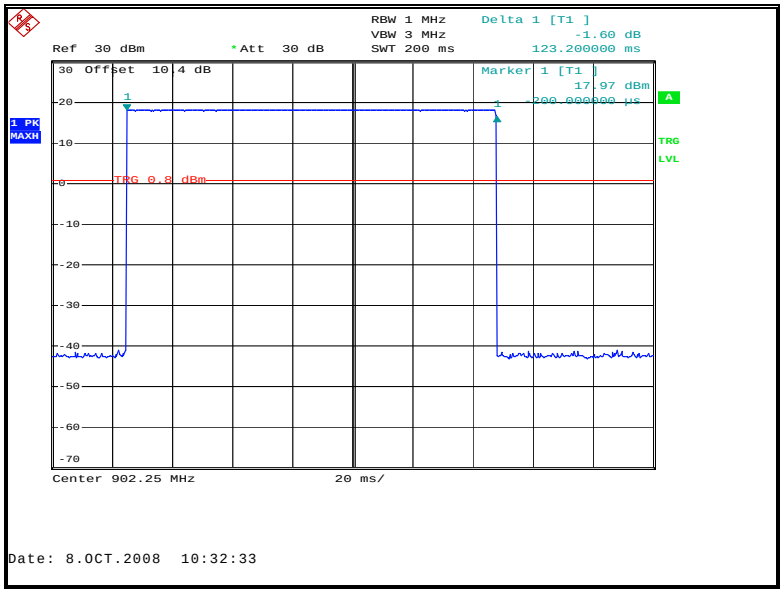

Figure 7.5.3-1: Channel Dwell Time

7.5.4 20dB Bandwidth - FCC: Section 15.247(a)(1)(i) IC: RSS-210 A8.1(c)

7.5.4.1 Test Methodology

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The spectrum analyzer span was set to 2 to 3 times the estimated 20 dB bandwidth of the emission. The RBW was to ≥ 1% of the estimated 20 dB bandwidth. The trace was set to max hold with a peak detector active. The Delta function of the analyzer was utilized to determine the 20 dB bandwidth of the emission. The span and RBW were examined and re-adjusted if necessary to meet the requirements of 2 to 3 times the 20 bandwidth for the span and ≥ 1% of the 20 dB bandwidth for the RBW.

7.5.4.2 Test Results

The maximum 20dB bandwidth was found to be approximately 150.6kHz. Results are shown below in Table 7.5.4-1 and Figures 7.5.4-1 through 7.5.4-3.

Table 7.5.4-1

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]
902.25	150.6	136.2
914.75	150.6	135.0
927.75	149.4	135.6

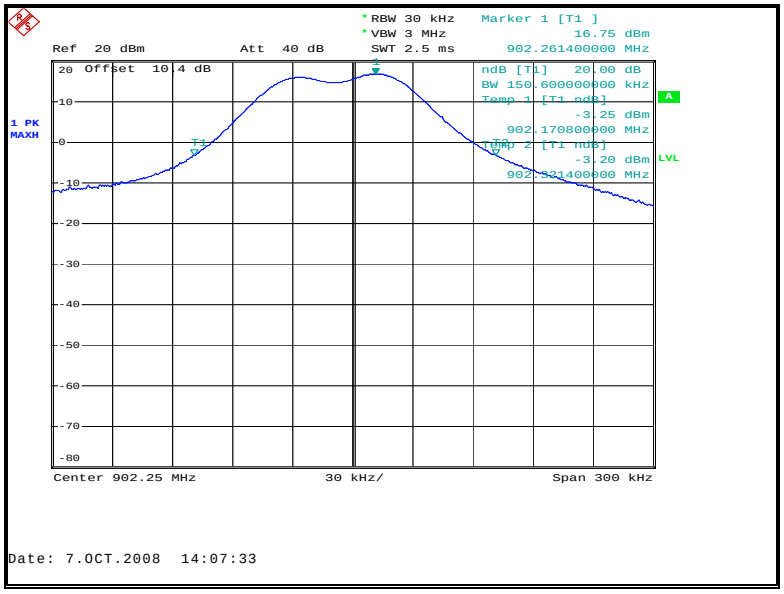

Figure 7.5.4-1: 20dB Bandwidth Low Channel

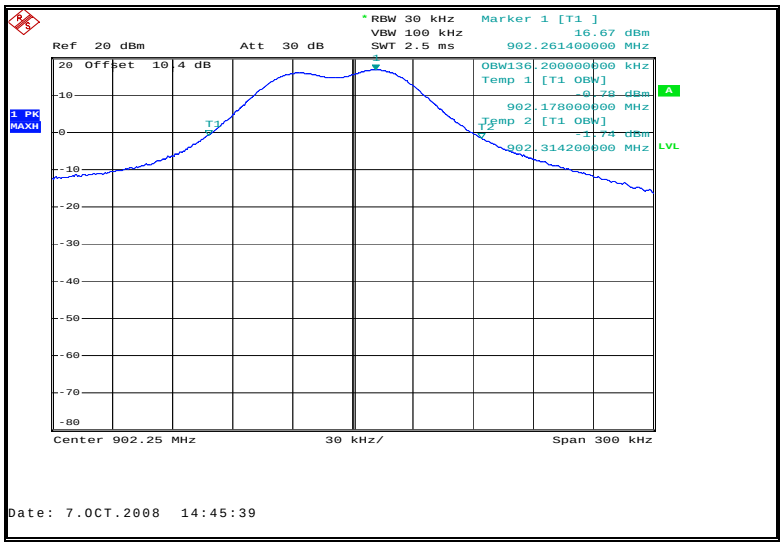

Figure 7.5.4-2: 99% Bandwidth Low Channel

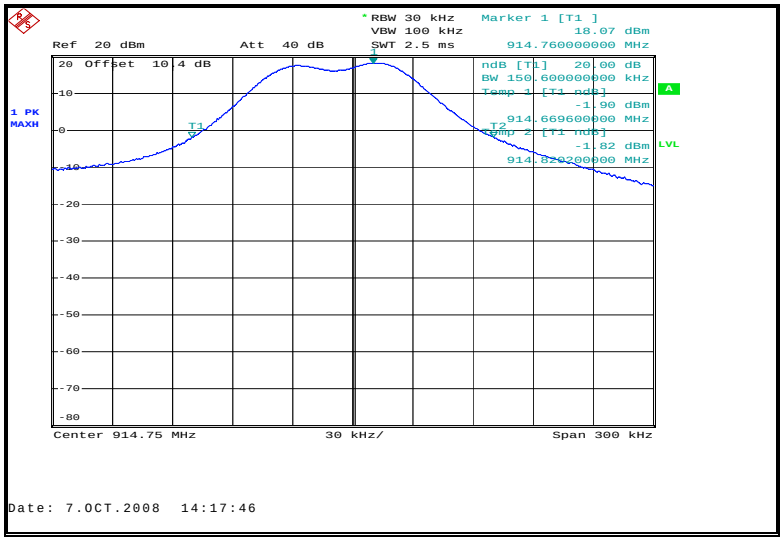

Figure 7.5.4-3: 20dB Bandwidth Mid Channel

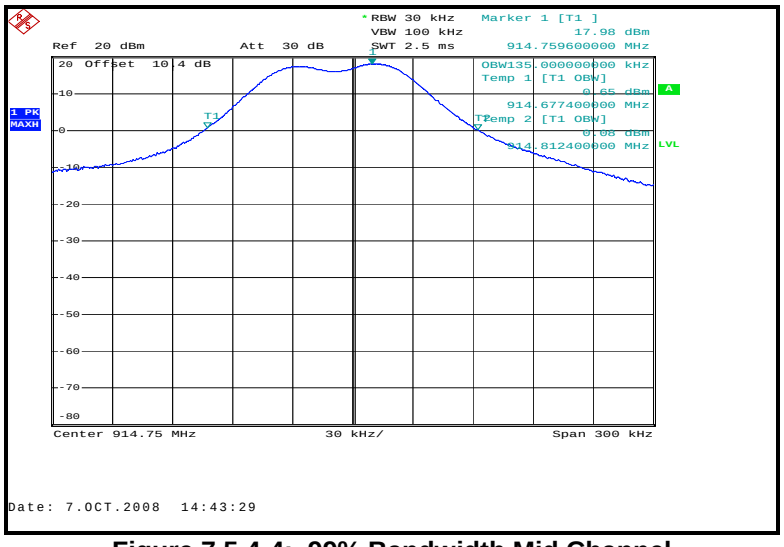

Figure 7.5.4-4: 99% Bandwidth Mid Channel

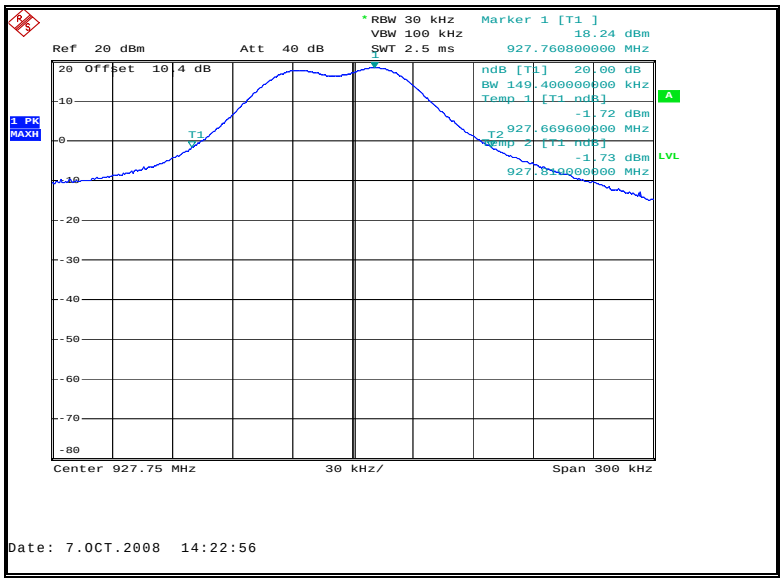

Figure 7.5.4-5: 20dB Bandwidth High Channel

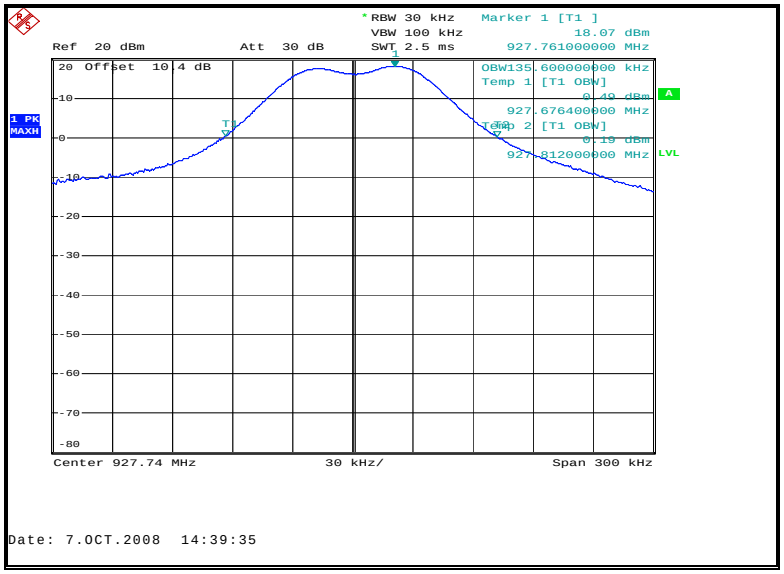

Figure 7.5.4-6: 99% Bandwidth High Channel

7.6 Band-Edge Compliance and Spurious Emissions - FCC Section 15.247(d) IC: RSS-210 2.6, A8.5

7.6.1 Band-Edge Compliance of RF Conducted Emissions

7.6.1.1 Test Methodology

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The EUT was investigated at the lowest and highest channel available to determine band-edge compliance. For each measurement the spectrum analyzer's RBW was set to 100 kHz, which is ≥ 1% of the span, and the VBW was set to 300kHz.

7.6.1.2 Test Results

In a 100 kHz bandwidth at the lower and upper band-edge, the radio frequency power that was produced by the EUT is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. Band-edge compliance is displayed in Figures 7.6.1-1 and 7.6.2-2

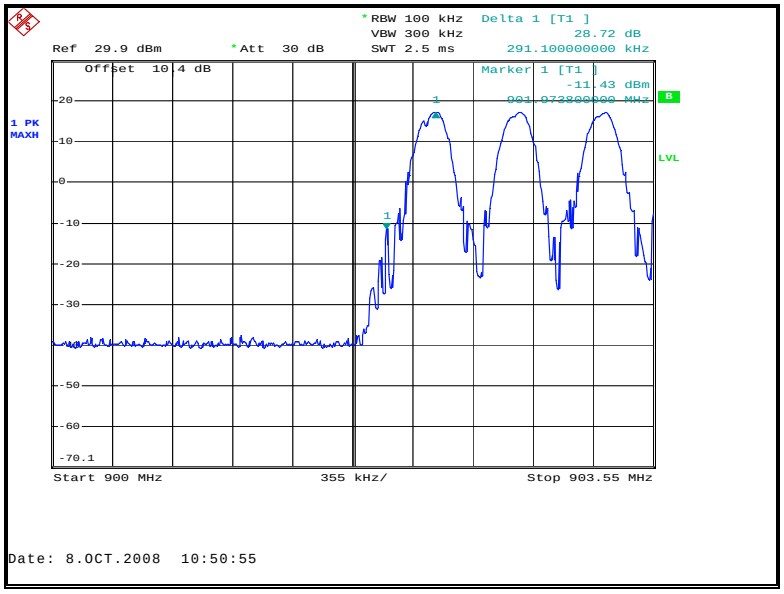

Figure 7.6.1-1: Lower Band-edge – Hopping Enabled

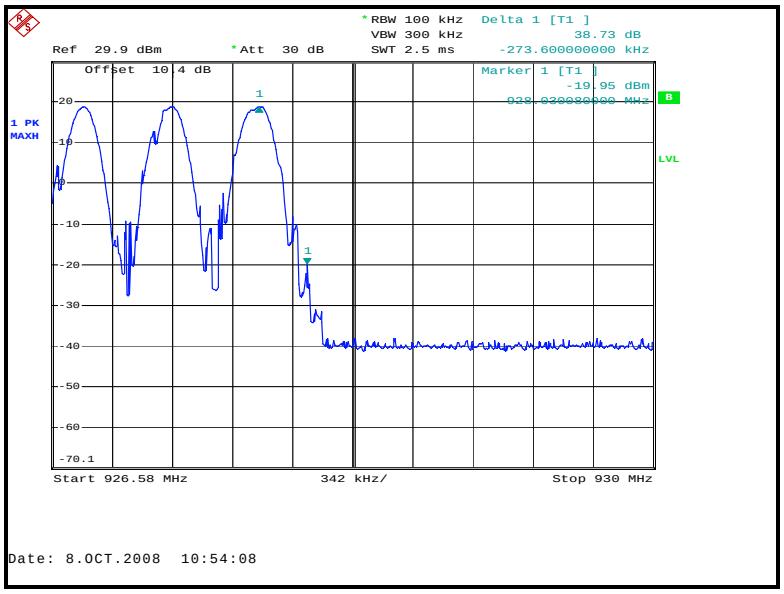

Figure 7.6.1-2: Upper Band-edge - Hopping Enabled

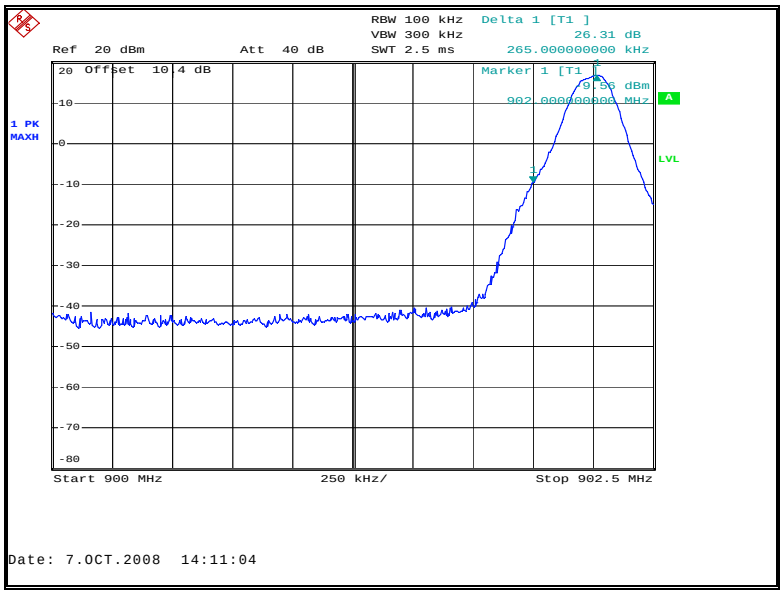

Figure 7.6.1-3: Lower Band-edge – Hopping Disabled

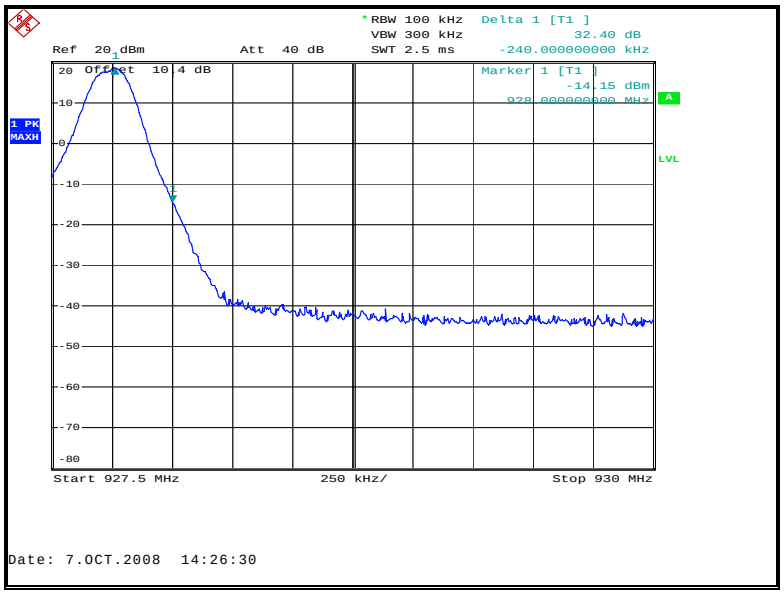

Figure 7.6.1-4: Upper Band-edge - Hopping Disabled

7.6.2 RF Conducted Spurious Emissions

7.6.2.1 Test Methodology

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The EUT was investigated for conducted spurious emissions from 30MHz to 10GHz, 10 times the highest fundamental frequency. Measurements were made at the low, center and high channels of the EUT. For each measurement, the spectrum analyzer's RBW was set to 100kHz. A peak detector function was used with the trace set to max hold.

7.6.2.2 Test Results

All emission found were greater than 20dB down from the fundamental carrier. The RF conducted spurious emissions were measured in the band of 30MHz to 10GHz. Results are shown below in Figure 7.6.2-1 through 7.6.2-6.

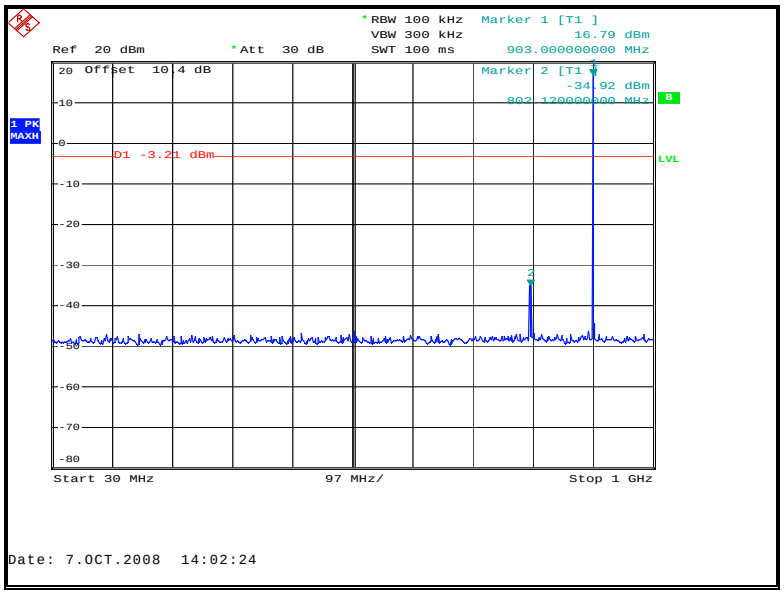

Figure 7.6.2.2-1: 30 MHz – 1 GHz – Low Channel

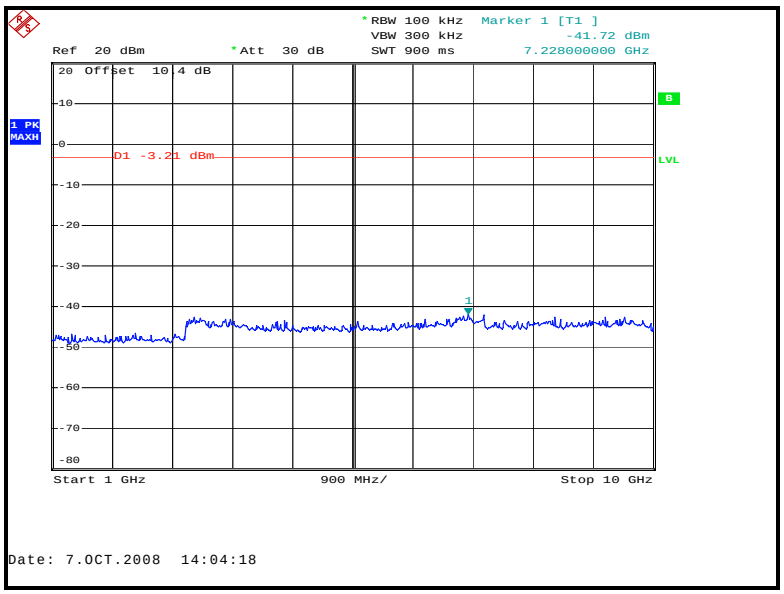

Figure 7.6.2.2-2: 1 GHz – 10 GHz – Low Channel

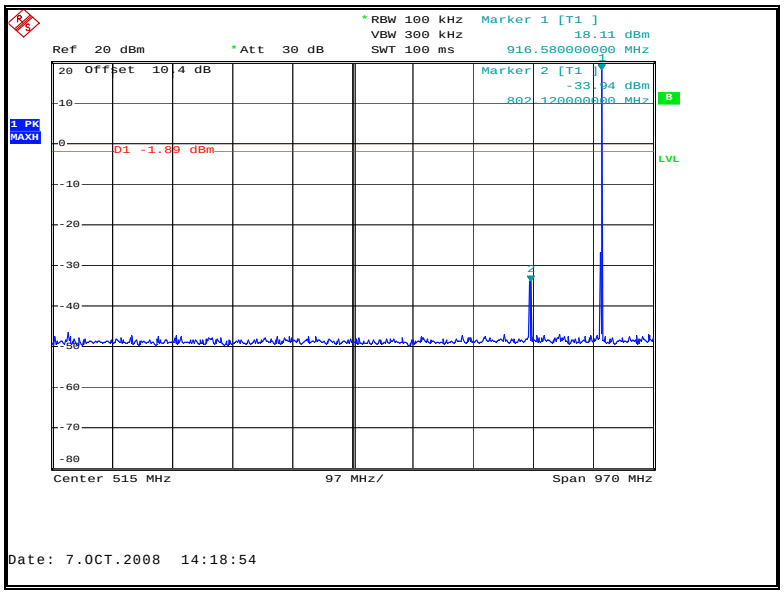

Figure 7.6.2.2-3: 30 MHz – 1 GHz –Mid Channel

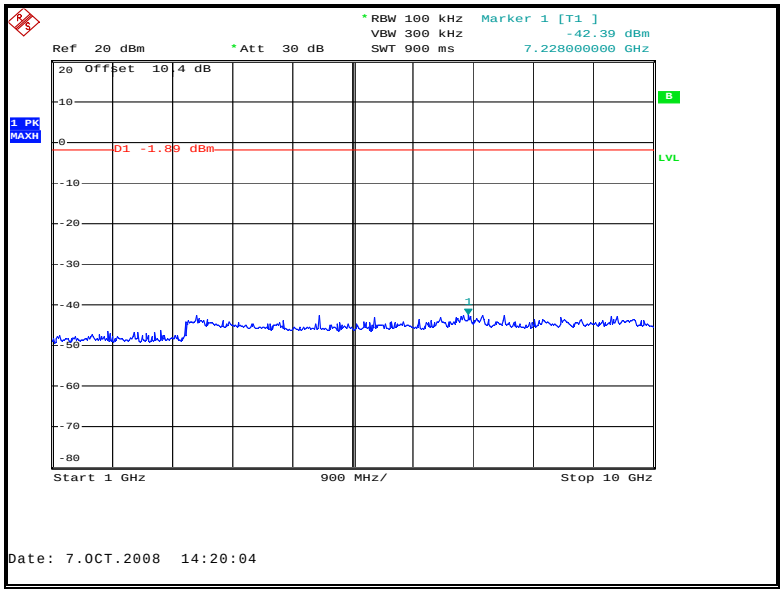

Figure 7.6.2.2-4: 1 GHz – 10 GHz – Mid Channel

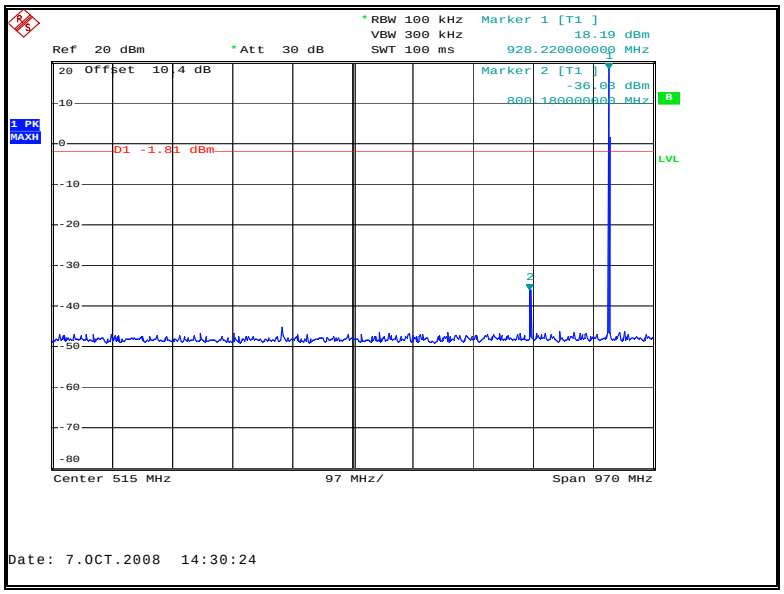

Figure 7.6.2.2-5: 30 MHz – 1 GHz – High Channel

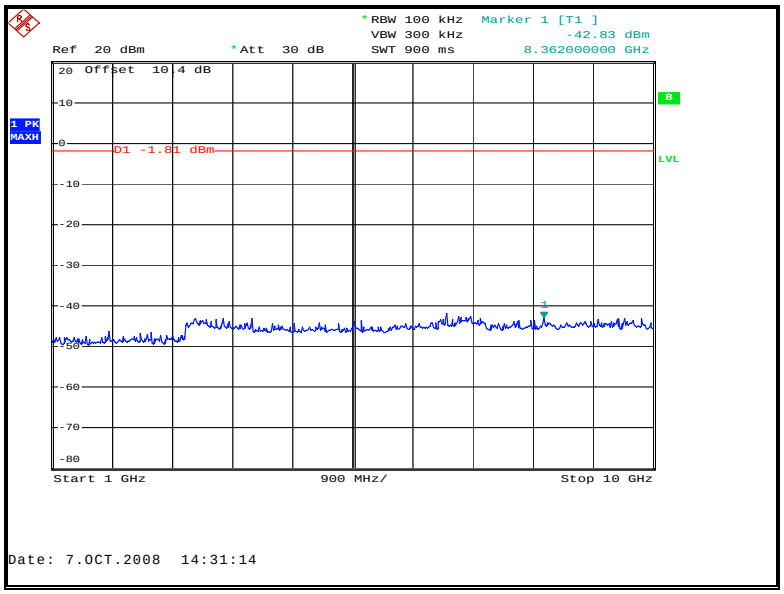

Figure 7.6.2.2-6: 1 GHz – 10 GHz –High Channel

7.6.3 Radiated Spurious Emissions - FCC Section 15.205 IC: RSS-210 2.6

7.6.3.1 Test Methodology

Radiated emissions tests were made over the frequency range of 30MHz to 10GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000MHz, peak and average measurements made with a RBW and VBW of 1 MHz.

The EUT was caused to generate a continuous carrier signal on the hopping channel.

7.6.3.2 Test Results

Radiated spurious emissions found in the band of 30MHz to 10GHz are reported in Table 7.6.3-1.

Table 7.6.3-1: Radiated Spurious Emissions

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2706.75	44.43	35.56	H	0.55	44.98	36.11	74.0	54.0	29.02	17.89
2706.75	47.50	41.48	V	0.35	47.85	41.83	74.0	54.0	26.15	12.17
Mid Channel										
2744.85	45.73	38.18	H	0.69	46.42	38.87	74.0	54.0	27.58	15.13
2744.85	51.69	47.52	V	0.49	52.18	48.01	74.0	54.0	21.82	5.99
High Channel										
2783.25	46.49	40.16	H	0.83	47.32	40.99	74.0	54.0	26.68	13.01
2783.25	52.38	48.06	V	0.63	53.01	48.69	74.0	54.0	20.99	5.31

* Note: The magnitude of all emissions not reported were below the noise floor of the measurement system.

7.6.3.3 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T = Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U = Uncorrected Reading
R_C = Corrected Level
AF = Antenna Factor
CA = Cable Attenuation
AG = Amplifier Gain
DC = Duty Cycle Correction Factor

Example Calculation: Peak
Corrected Level: 44.43+ 0.55= 44.98dBuV/m
Margin: 74dBuV/m – 44.98dBuV/m = 29.02dB

Example Calculation: Average
Corrected Level: 35.56+ 0.55-0= 36.11dBuV
Margin: 54dBuV – 36.11dBuV = 17.89dB

8.0 CONCLUSION

In the opinion of ACS, Inc. the Cell Relay Pole, Ethernet, manufactured by Itron, Inc.meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210.

END REPORT