Excellence in Compliance Testing

Certification Test Report

FCC ID: SK9M2LG2
IC: 864G-M2LG2

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-247

ACS Report Number: 15-0513.W06.1B

Manufacturer: Itron Electricity Metering, Inc.
Model: M2 Gateway2

Test Begin Date: December 1, 2015
Test End Date: January 29, 2016

Report Issue Date: March 7, 2016

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

FOR THE SCOPE OF ACCREDITATION UNDER Certificate Number: AT-2021

This report must not be used by the client to claim product certification, approval, or endorsement by ANAB, NIST, or any agency of the Federal Government.

Reviewed by:
Kirby Munroe
Director, Wireless Certifications
ACS, Inc.

This report contains 25 pages

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1 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-247 Certification for limited modular approval.

1.2 Product description

The Itron M2 Gateway2 is an electricity metering module which includes a 902.4 MHz to 927.6 MHz transmitter as well as a Zigbee transmitter that operates in the 2405 MHz to 2475 MHz band. The module operates on alternating current voltage which is supplied by a host device.

The M2 Gateway2 is designed to be integrated into 1S, 2S and 12S electric utility meter forms. This report addresses the 900MHz radio only.

Technical Information:

Detail	Description
Frequency Range	902.4 – 927.6 MHz
Number of Channels	64
Modulation Format	FSK
Operating Voltage	120Vac/60Hz
Antenna Type / Gain	¼ Wave Embedded Slot Antenna / 2.2dBi gain

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

EUT Serial Numbers: ACS #4 (Radiated), ACS #3 (RF Conducted)

Test Sample Condition: The test samples were provided in good working order with no visible defects.

1.3 Test Methodology and Considerations

All modes of operation, including all available data rates, were evaluated for each mode. The data presented in this report represents the worst case where applicable.

For radiated emissions the EUT was evaluated in three Electric Utility Meters in an orientation representative of final installation. The worst case electric utility meter was the FM12S.

For AC power line conducted emissions the EUT was evaluated with a typical host.

Radiated inter-modulation testing was performed for all combinations of simultaneous transmission and found to be in compliance.

2 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

ACS is accredited to ISO/IEC 17025 by the ANSI-ASQ National Accreditation Board/ANAB accreditation program, and has been issued certificate number AT-2021 in recognition of this accreditation. Unless otherwise specified, all tests methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

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.

FCC Registration Number: 391271
Industry Canada Lab Code: IC 4175A
VCCI Member Number: 1831

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

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:

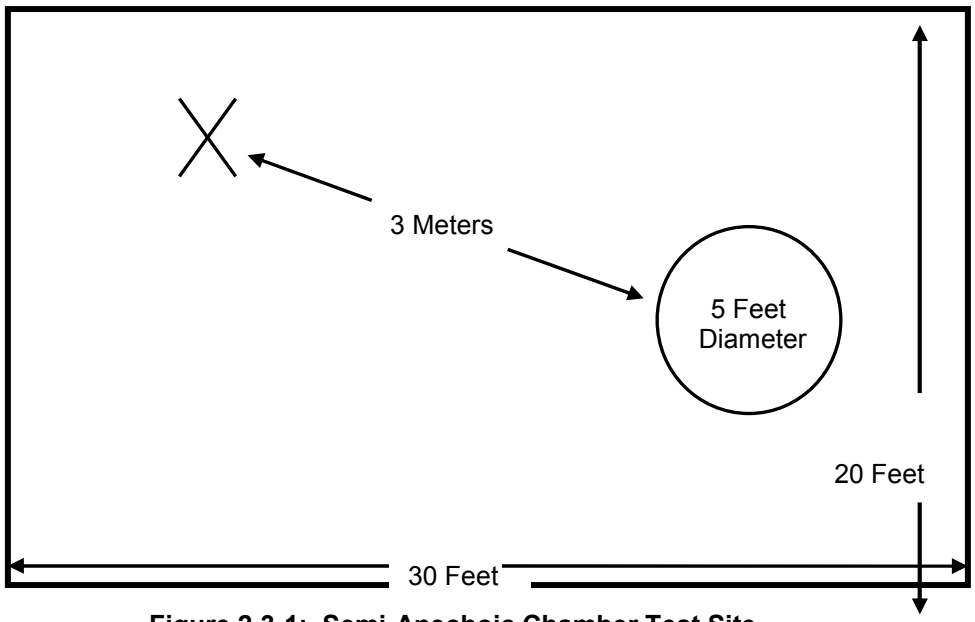

Figure 2.3-1: Semi-Anechoic Chamber Test Site

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:

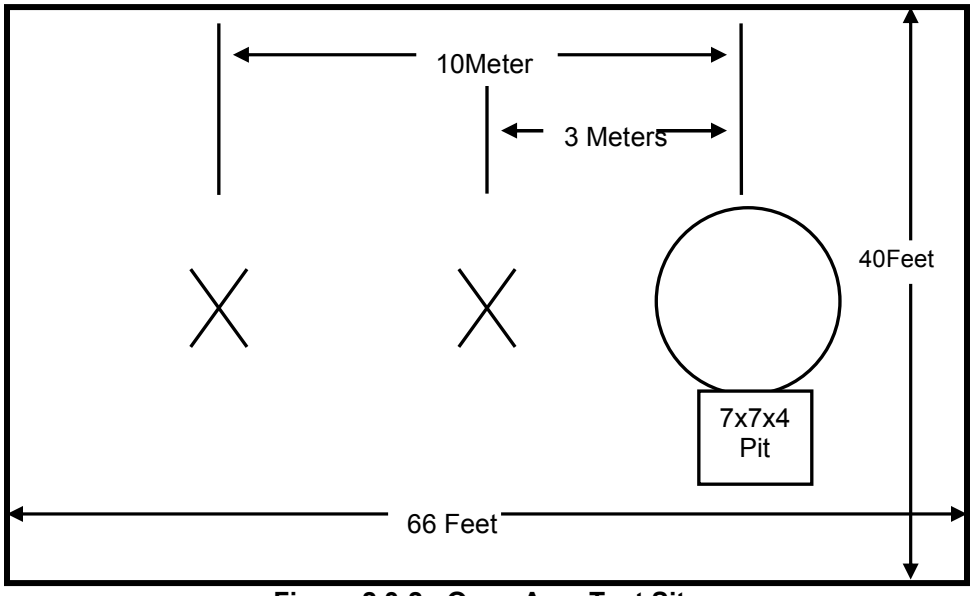

Figure 2.3-2: Open Area Test Site

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 ground 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 2.4-1:

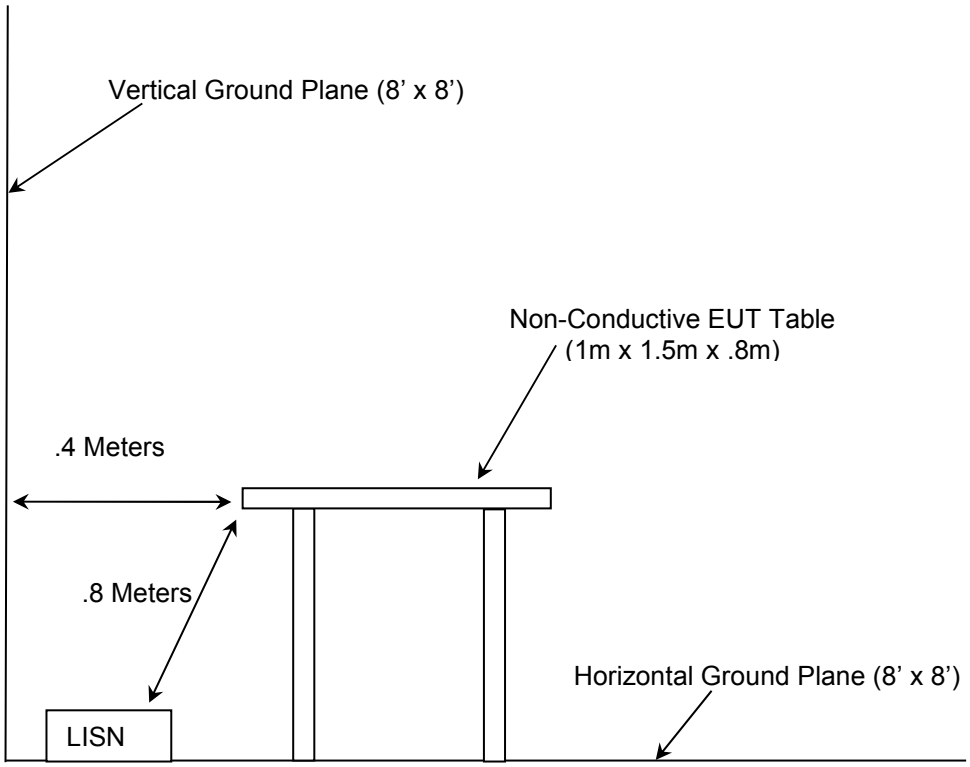

Figure 2.4-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2016
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2016
- Industry Canada Radio Standards Specification: RSS-247 – Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 1, May 2015.
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue 4, Nov 2014.

4 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

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
1	Rohde & Schwarz	ESMI - Display	Spectrum Analyzers	833771/007	7/14/2015	7/14/2016
2	Rohde & Schwarz	ESMI-Receiver	Spectrum Analyzers	839587/003	7/14/2015	7/14/2016
30	Spectrum Technologies	DRH-0118	Antennas	970102	4/30/2015	4/30/2017
40	EMCO	3104	Antennas	3211	2/10/2015	2/10/2017
73	Agilent	8447D	Amplifiers	2727A05624	7/15/2015	7/15/2016
167	ACS	hamber EMI Cable S	Cable Set	167	10/20/2015	10/20/2016
267	Agilent	N1911A	Meters	MY45100129	8/24/2015	8/24/2017
268	Agilent	N1921A	Sensors	MY45240184	8/13/2015	8/13/2017
292	Florida RF Cables	SMR-290AW-480.0-SMR	Cables	None	3/3/2015	3/3/2016
324	ACS	Belden	Cables	8214	5/5/2015	5/5/2016
337	Microwave Circuits	H1G513G1	Filters	282706	5/20/2015	5/20/2016
338	Hewlett Packard	8449B	Amplifiers	3008A01111	8/21/2015	8/21/2017
340	Aeroflex/Weinschel	AS-20	Attenuators	7136	7/13/2015	7/13/2016
412	Electro Metrics	LPA-25	Antennas	1241	7/24/2014	7/24/2016
422	Florida RF	MS-200AW-72.0-SM	Cables	805	10/30/2015	10/30/2016
616	Florida RF Cables	SMRE	Cables	N/A	9/3/2015	9/3/2016
622	Rohde & Schwarz	FSV40	Analyzers	101338	7/15/2015	7/15/2016
3010	Rohde & Schwarz	ENV216	LISN	3010	7/10/2015	7/10/2016
RE112	Rohde & Schwarz	ESIB26	Receiver	836119/012	7/16/2015	7/16/2016

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	Electric Meter	Landis + Gyr	FOCUS AXRe-SD	131 980 110 131 980 032 131 980 122
2	Electric Meter Socket	Milbank	Type 3R Enclosure	N/A

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

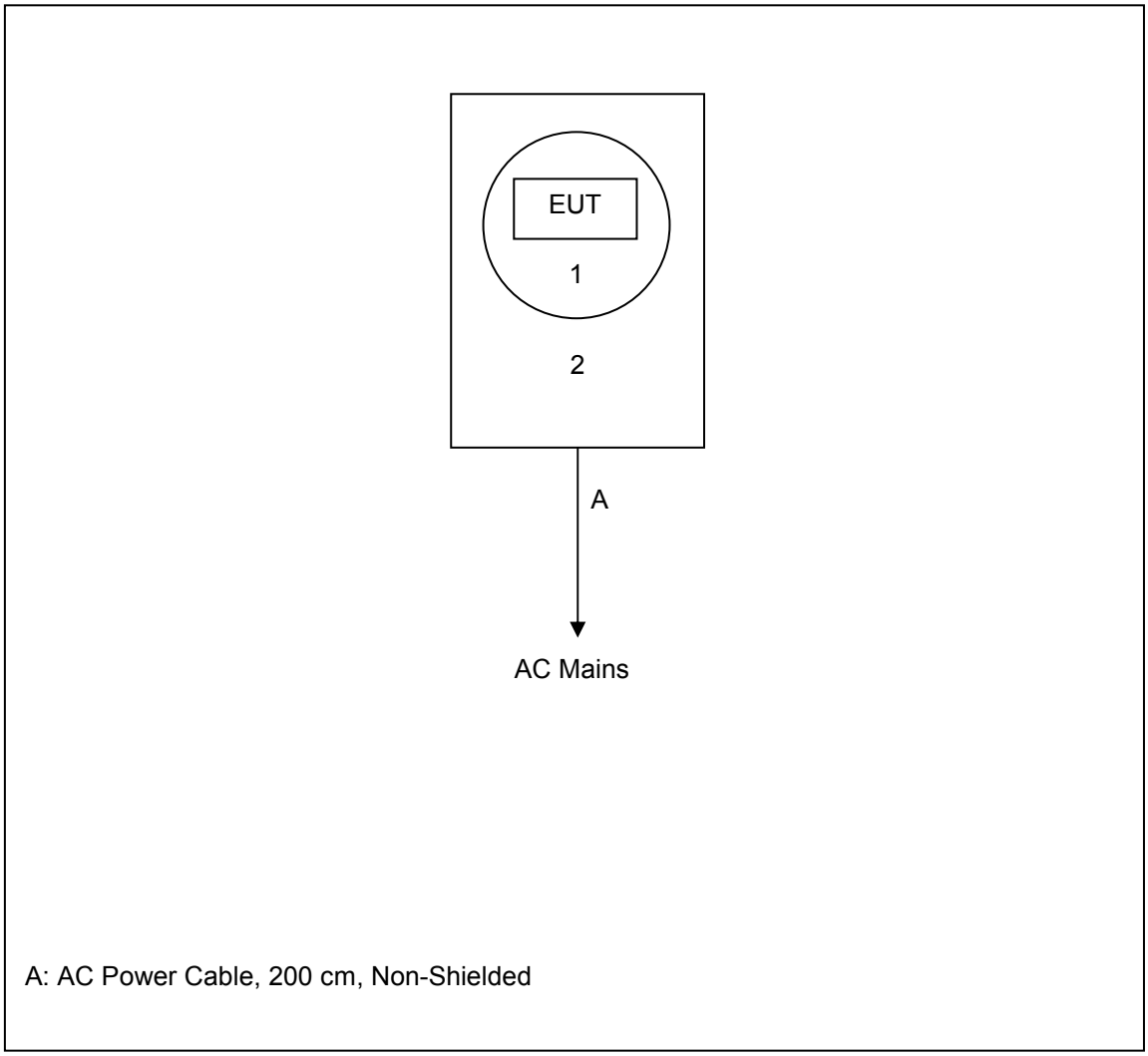

Figure 6-1: Test Setup Block Diagram

7 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 EUT utilizes a ¼ Wave Embedded Slot Antenna with a gain of 2.2dBi therefore satisfying the requirements of Section 15.203.

7.2 Power Line Conducted Emissions – FCC 15.207, IC: RSS-Gen 8.8

7.2.1 Measurement Procedure

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 Measurement Results

Table 7.2.2-1: Conducted EMI Results – 1S Meter Host (120 VAC) – Line 1

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.618036	---	25.57	46.00	20.43	L1	9.7
0.618036	33.18	---	56.00	22.82	L1	9.7
4.567635	---	11.04	46.00	34.96	L1	9.8
4.567635	28.88	---	56.00	27.12	L1	9.8
4.661022	---	7.19	46.00	38.81	L1	9.8
4.661022	27.28	---	56.00	28.72	L1	9.8
4.808317	---	11.27	46.00	34.73	L1	9.8
4.808317	29.02	---	56.00	26.98	L1	9.8
5.818136	---	12.99	50.00	37.01	L1	9.9
5.818136	31.76	---	60.00	28.24	L1	9.9
5.915130	---	11.57	50.00	38.43	L1	9.9
5.915130	29.05	---	60.00	30.95	L1	9.9

Table 7.2.2-2: Conducted EMI Results – 1S Meter Host (120 VAC) – Line 2

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.616333	---	40.03	46.00	5.97	N	9.7
0.616333	45.70	---	56.00	10.30	N	9.7
1.237575	---	31.29	46.00	14.71	N	9.7
1.237575	43.34	---	56.00	12.66	N	9.7
4.151804	---	20.19	46.00	25.81	N	9.8
4.151804	39.96	---	56.00	16.04	N	9.8
4.394890	---	24.70	46.00	21.30	N	9.8
4.394890	41.28	---	56.00	14.72	N	9.8
4.404910	---	23.40	46.00	22.60	N	9.8
4.404910	40.72	---	56.00	15.28	N	9.8
4.533166	---	21.21	46.00	24.79	N	9.8
4.533166	40.20	---	56.00	15.80	N	9.8

Table 7.2.2-3: Conducted EMI Results – 2S Meter Host (240 VAC) – Line 1

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.207815	---	35.20	53.10	17.90	L1	9.6
0.207815	41.40	---	63.13	21.73	L1	9.6
0.633066	---	26.82	46.00	19.18	L1	9.7
0.633066	36.43	---	56.00	19.57	L1	9.7
0.939479	---	18.49	46.00	27.51	L1	9.7
0.939479	32.69	---	56.00	23.31	L1	9.7
4.440381	---	16.07	46.00	29.93	L1	9.8
4.440381	32.17	---	56.00	23.83	L1	9.8
4.521142	---	11.23	46.00	34.77	L1	9.8
4.521142	31.09	---	56.00	24.91	L1	9.8
5.817334	---	13.66	50.00	36.34	L1	9.9
5.817334	32.51	---	60.00	27.49	L1	9.9

Table 7.2.2-4: Conducted EMI Results – 2S Meter Host (240 VAC) – Line 2

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.525551	---	39.67	46.00	6.33	N	9.7
0.525551	46.46	---	56.00	9.54	N	9.7
0.616734	---	40.31	46.00	5.69	N	9.7
0.616734	48.70	---	56.00	7.30	N	9.7
1.143487	---	35.83	46.00	10.17	N	9.7
1.143487	46.39	---	56.00	9.61	N	9.7
1.975098	---	30.97	46.00	15.03	N	9.7
1.975098	45.00	---	56.00	11.00	N	9.7
4.277655	---	25.29	46.00	20.71	N	9.8
4.277655	44.00	---	56.00	12.00	N	9.8
4.428958	---	28.11	46.00	17.89	N	9.8
4.428958	43.44	---	56.00	12.56	N	9.8

Table 7.2.2-5: Conducted EMI Results – 12S Meter Host (120 VAC) – Line 1

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.494690	---	34.25	46.08	11.83	L1	9.7
0.494690	39.44	---	56.08	16.64	L1	9.7
0.605110	---	27.31	46.00	18.69	L1	9.7
0.605110	37.16	---	56.00	18.84	L1	9.7
4.505711	---	15.47	46.00	30.53	L1	9.8
4.505711	34.96	---	56.00	21.04	L1	9.8
4.817134	---	16.78	46.00	29.22	L1	9.8
4.817134	33.62	---	56.00	22.38	L1	9.8
5.042184	---	12.34	50.00	37.66	L1	9.8
5.042184	32.47	---	60.00	27.53	L1	9.8
5.723347	---	17.30	50.00	32.70	L1	9.9
5.723347	36.55	---	60.00	23.45	L1	9.9

Table 7.2.2-6: Conducted EMI Results – 12S Meter Host (120 VAC) – Line 2

Frequency (MHz)	Corrected Reading		Limit (dBuV)	Margin (dB)	Line	Correction (dB)
	Quasi-Peak (dBuV)	Average (dBuV)				
0.498698	---	43.77	46.02	2.25	N	9.7
0.498698	49.26	---	56.02	6.76	N	9.7
0.615731	---	30.64	46.00	15.36	N	9.7
0.615731	47.84	---	56.00	8.16	N	9.7
3.212725	---	22.84	46.00	23.16	N	9.8
3.212725	43.05	---	56.00	12.95	N	9.8
4.280060	---	24.32	46.00	21.68	N	9.8
4.280060	43.70	---	56.00	12.30	N	9.8
4.548797	---	26.51	46.00	19.49	N	9.8
4.548797	44.12	---	56.00	11.88	N	9.8
4.591884	---	23.91	46.00	22.09	N	9.8
4.591884	43.22	---	56.00	12.78	N	9.8

7.3 Peak Output Power - FCC 15.247(b)(2) IC: RSS-247 5.4(1)

7.3.1 Measurement Procedure (Conducted Method)

The RF output port of the EUT was directly connected to the input of a spectrum analyzer using suitable attenuation. The device employs > 50 channels at any given time, therefore the power is limited to 1 Watt.

7.3.2 Measurement Results

Table 7.3.2-1: Maximum Conducted Peak Output Power

Frequency [MHz]	Level [dBm]
902.4	26.83
915.2	27.17
927.6	27.18

7.4 Channel Usage Requirements

7.4.1 Carrier Frequency Separation – FCC 15.247(a)(1) IC: RSS-247 5.1(2)

7.4.1.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. The span of the spectrum analyzer was set wide enough to capture two adjacent peaks. The RBW was set to approximately 30% of the channel spacing and adjusted as necessary to best identify the center of each channel. The VBW was set > RBW.

7.4.1.2 Measurement Results

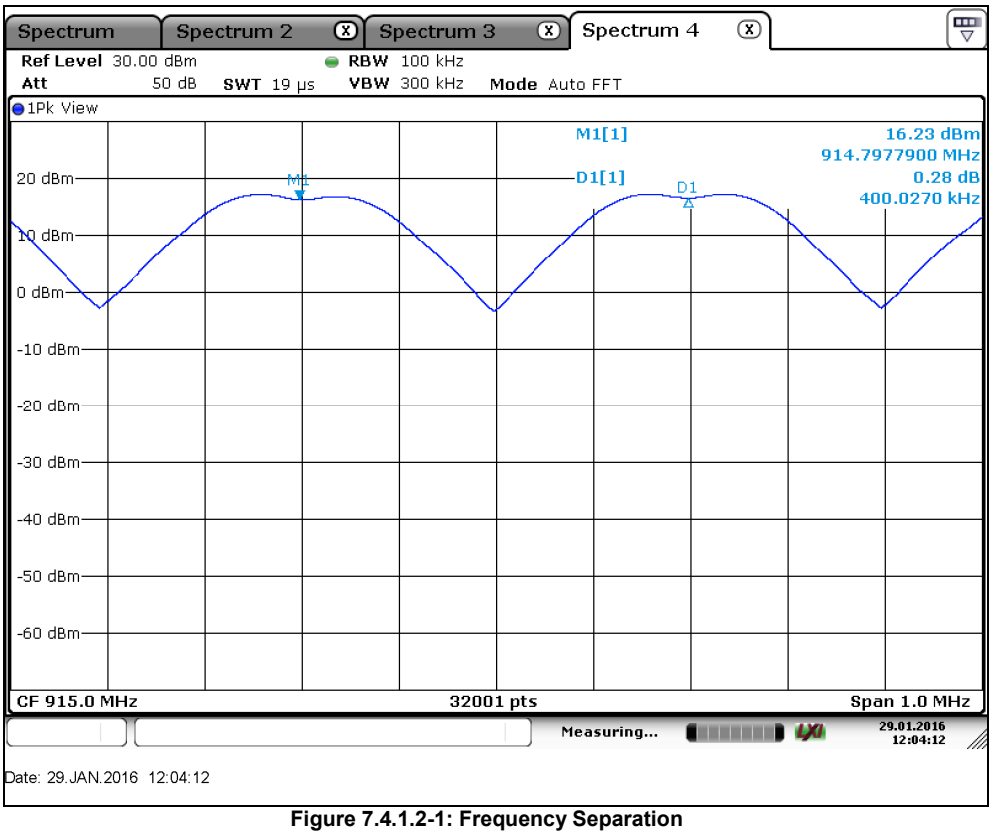

Figure 7.4.1.2-1: Frequency Separation

7.4.2 Number of Hopping Channels – FCC 15.247(a)(1)(i) IC: RSS-247 5.1(3)

7.4.2.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. The span of the spectrum analyzer was set wide enough to capture the frequency band of operation. The RBW was set to < 30% of the channel spacing and VBW set to ≥ RBW.

7.4.2.2 Measurement Results

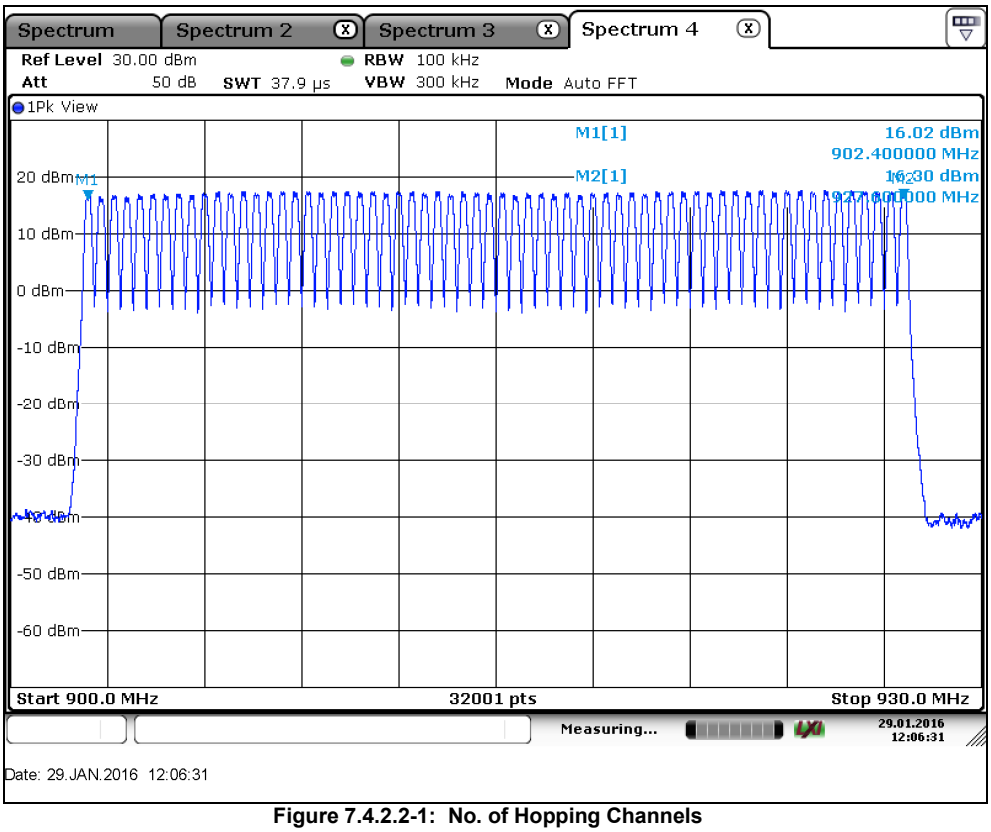

Figure 7.4.2.2-1: No. of Hopping Channels

7.4.3 Channel Dwell Time – FCC 15.247(a)(1)(i) IC: RSS-247 5.1(3)

7.4.3.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. The span of the spectrum analyzer display was set 0 Hz centered on a hopping channel. The RBW of the spectrum analyzer was set to ≤ the EUT channel spacing and VBW set to ≥ RBW. The Marker Delta function of the analyzer was utilized to determine the dwell time.

7.4.3.2 Measurement Results

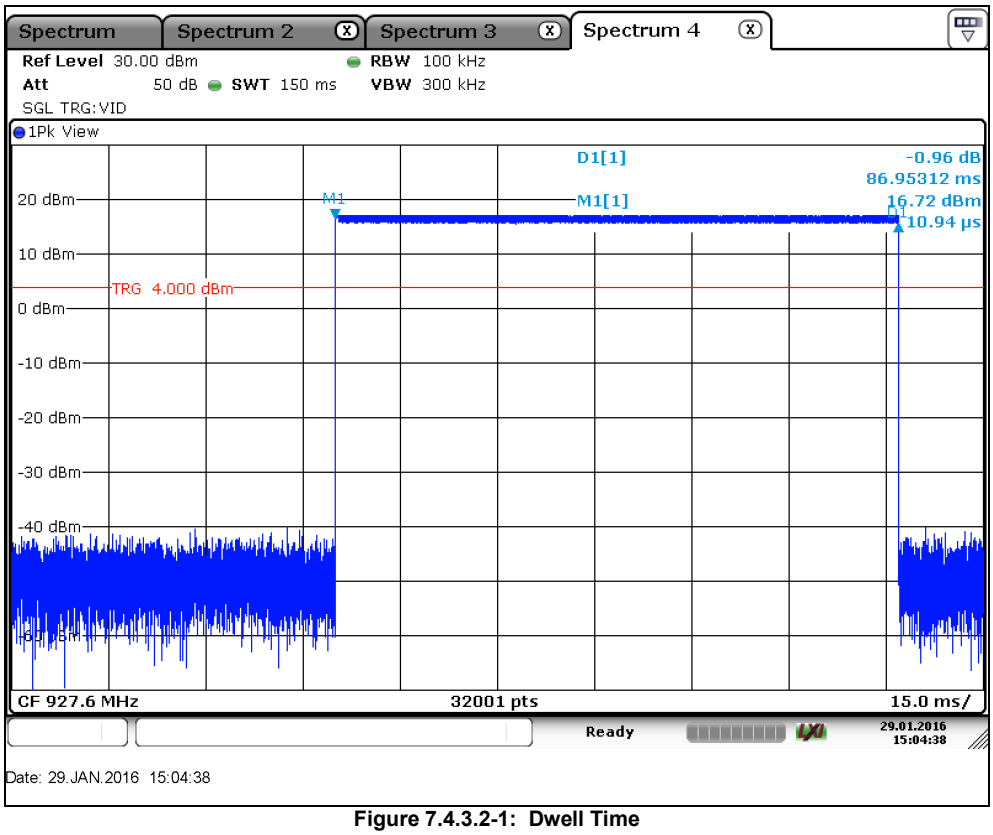

Figure 7.4.3.2-1: Dwell Time

Detailed description of timing provided in theory of operation.

7.4.4 20dB / 99% Bandwidth - FCC 15.247(a)(1)(i) IC: RSS-247 5.1(3)

7.4.4.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. The span of the spectrum analyzer display was set between two times and five times the occupied bandwidth (OBW) of the emission. The RBW of the spectrum analyzer was set to approximately 1 % to 5 % of the OBW. The trace was set to max hold with a peak detector active. The marker delta measurement function of the analyzer was utilized to determine the 20 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set to 1% to 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth. A peak detector was used.

7.4.4.2 Measurement Results

Table 7.4.4.2-1: 20dB / 99% Bandwidth

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]
902.4	228.67	297.40
915.2	156.14	298.12
927.6	229.02	241.68

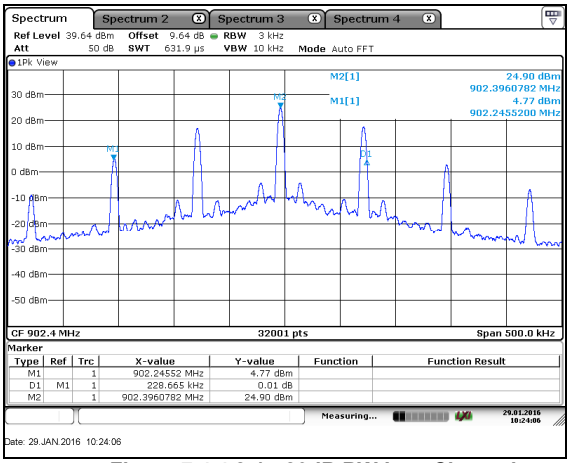

Figure 7.4.4.2-1: 20dB BW Low Channel

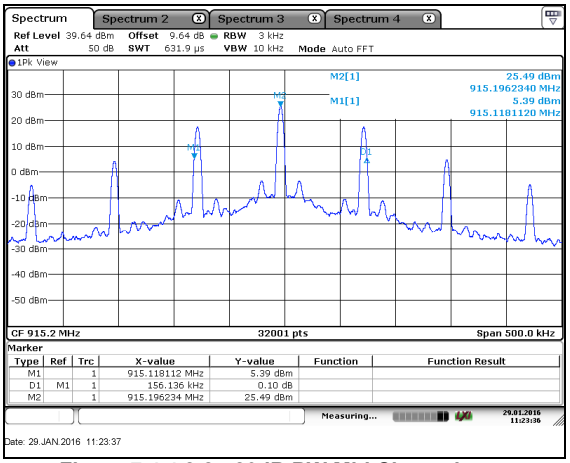

Figure 7.4.4.2-2: 20dB BW Mid Channel

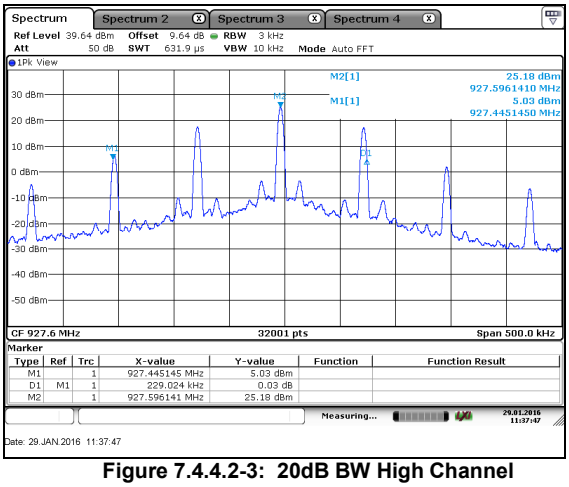

Figure 7.4.4.2-3: 20dB BW High Channel

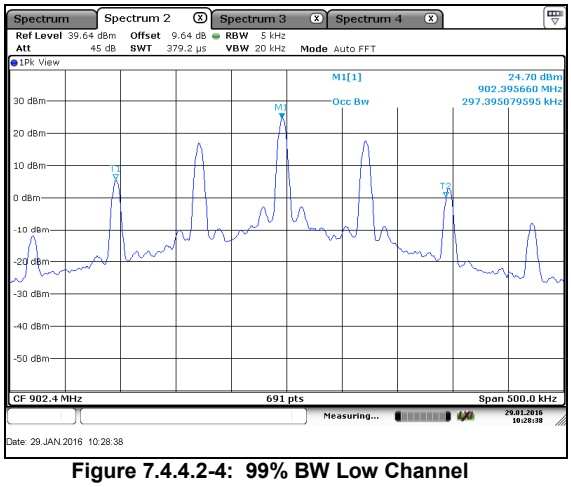

Figure 7.4.4.2-4: 99% BW Low Channel

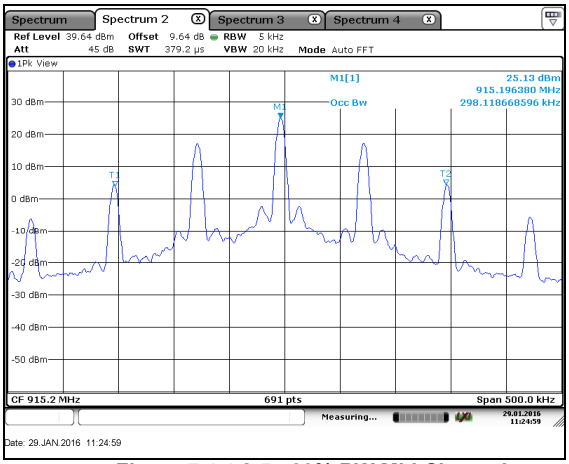

Figure 7.4.4.2-5: 99% BW Mid Channel

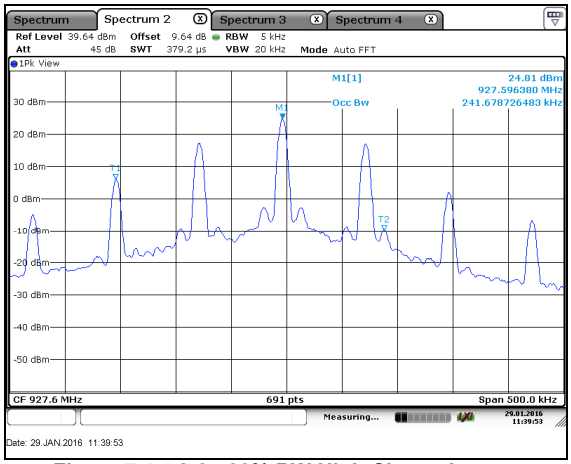

Figure 7.4.4.2-6: 99% BW High Channel

7.5 Band-Edge Compliance and Spurious Emissions

7.5.1 Band-Edge Compliance of RF Conducted Emissions - FCC 15.247(d); IC RSS-247 5.5

7.5.1.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. 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, and the VBW was set to 300 kHz.

7.5.1.2 Measurement Results

NON-HOPPING MODE:

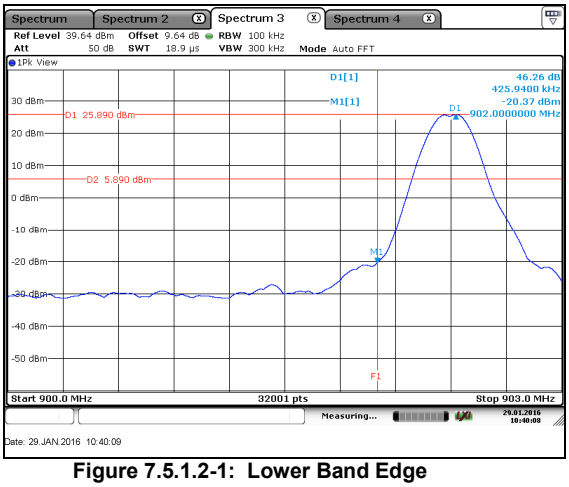

Figure 7.5.1.2-1: Lower Band Edge

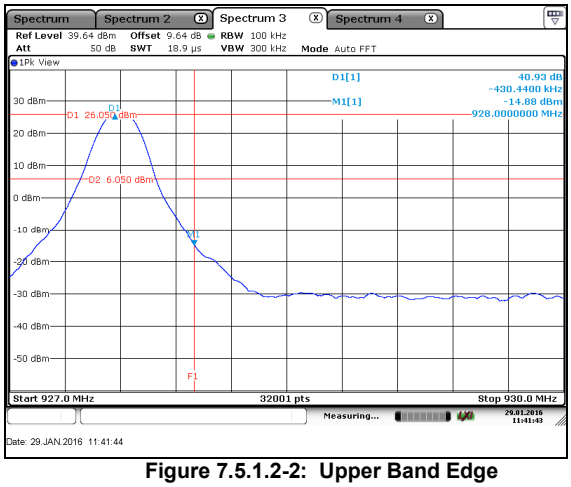

Figure 7.5.1.2-2: Upper Band Edge

HOPPING MODE:

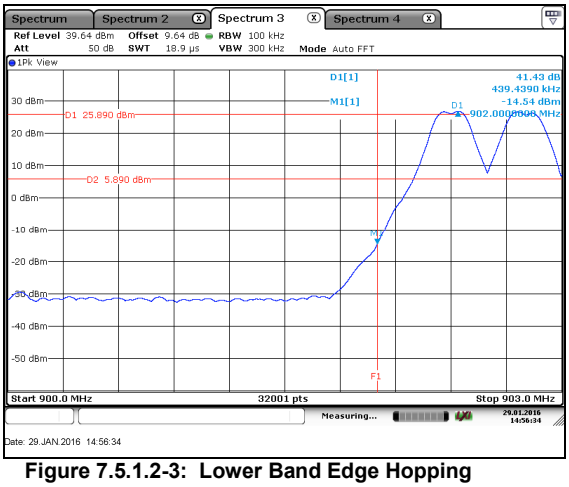

Figure 7.5.1.2-3: Lower Band Edge Hopping

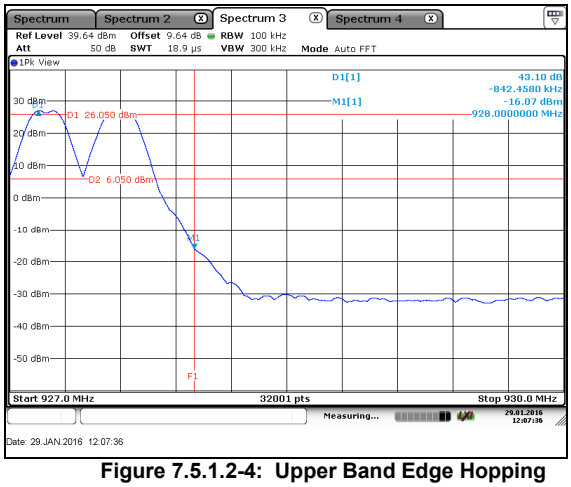

Figure 7.5.1.2-4: Upper Band Edge Hopping

7.5.2 RF Conducted Spurious Emissions - FCC 15.247(d); IC RSS-247 5.5

7.5.2.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer using suitable attenuation. 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.

7.5.2.2 Measurement Results

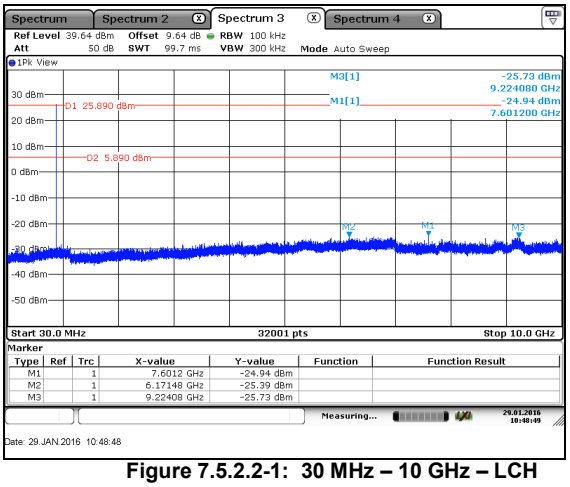

Figure 7.5.2.2-1: 30 MHz – 10 GHz – LCH

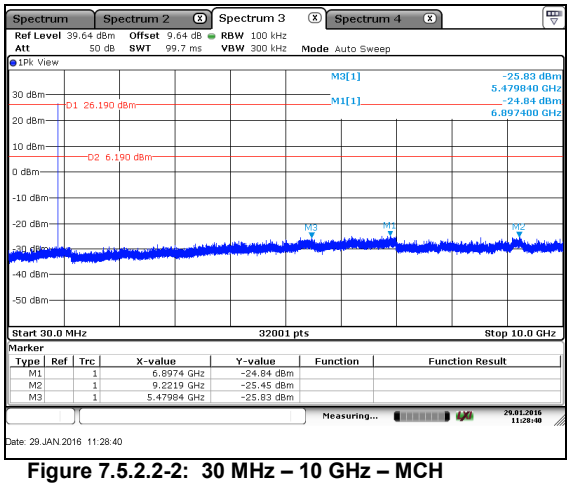

Figure 7.5.2.2-2: 30 MHz – 10 GHz – MCH

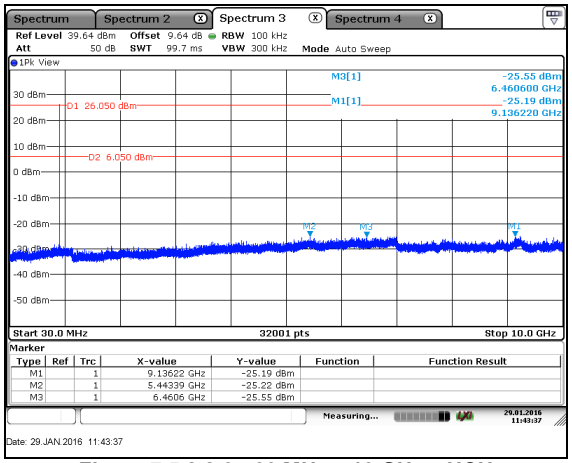

Figure 7.5.2.2-3: 30 MHz – 10 GHz – HCH

7.5.3 Radiated Spurious Emissions - FCC 15.205, 15.209; RSS-Gen 8.9/8.10

7.5.3.1 Measurement Procedure

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 were made with RBW and VBW of 1 MHz and 3MHz respectively.

The EUT was caused to generate a continuous modulated carrier on the hopping channel.
Each emission found to be in a restricted band was compared to the applicable radiated Each emission found to be in a restricted band was compared to the applicable radiated emission limits.

7.5.3.2 Measurement Results

Table 7.5.3.2-1: Radiated Spurious 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
Low Channel										
2702.2	50.04	43.38	H	-3.75	46.29	39.63	74.0	54.0	27.7	14.4
2702.2	47.35	36.99	V	-3.75	43.60	33.24	74.0	54.0	30.4	20.8
Middle Channel										
2745.6	49.10	42.09	H	-3.66	45.44	38.43	74.0	54.0	28.6	15.6
2745.6	48.11	39.80	V	-3.66	44.45	36.14	74.0	54.0	29.5	17.9
4576	47.04	36.35	H	1.05	48.09	37.40	74.0	54.0	25.9	16.6
High Channel										
2782.8	49.77	40.21	H	-3.56	46.21	36.65	74.0	54.0	27.8	17.4
2782.8	49.51	42.83	V	-3.56	45.95	39.27	74.0	54.0	28.1	14.7
4638	47.05	35.69	H	1.23	48.28	36.92	74.0	54.0	25.7	17.1
7420.8	44.18	32.57	H	7.98	52.16	40.55	74.0	54.0	21.8	13.5

7.5.3.3 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: 50.04 - 3.75 = 46.29dBuV/m
Margin: 74dBuV/m – 46.29dBuV/m = 27.7dB

Example Calculation: Average

Corrected Level: 43.38 - 3.75 - 0 = 39.63dBuV
Margin: 54dBuV – 39.63dBuV = 14.4dB

8 CONCLUSION

In the opinion of ACS, Inc. the M2 Gateway2, manufactured by Itron Electricity Metering, Inc. meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-247.

END REPORT