



Excellence in Compliance Testing

Certification Test Report

FCC ID: SK9R300S-2

IC: 864G-R300S2

FCC Rule Part: 15.249

IC Radio Standards Specification: RSS-210

ACS Report Number: 08-0462-15C

Manufacturer: Itron Electricity Metering, Inc.

Model: R300S2

Test Begin Date: December 10, 2008

Test End Date: December 22, 2008

Report Issue Date: January 7, 2009



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.

Prepared by: Ken Rivers
Ken Rivers
Wireless Certifications Technician
ACS, Inc.

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

This test report shall not be reproduced except in full. This report may be reproduced in part with prior written consent of ACS, Inc. The results contained in this report are representative of the sample(s) submitted for evaluation.

This report contains 24 pages

Table of Contents

1.0 General	3
1.1 Purpose	3
1.2 Product Description	3
1.2.1 General	3
1.2.2 Intended Use	3
1.3 Test Methodology and Considerations	3
2.0 Test Facilities	4
2.1 Location	4
2.2 Laboratory Accreditations/Recognitions/Certifications	4
2.3 Radiated Emissions Test Site Description	5
2.3.1 Semi-Anechoic Chamber Test Site	5
2.3.2 Open Area Tests Site (OATS)	6
2.4 Conducted Emissions Test Site Description	7
3.0 Applicable Standards and References	7
4.0 List of Test Equipment	8
5.0 Support/Host Equipment	9
6.0 EUT Setup Block Diagrams	9
7.0 Summary of Tests	10
7.1 Antenna Requirement – FCC: Section 15.203	10
7.2 Power Line Conducted Emissions	10
7.2.1 Test Methodology	10
7.2.2 Test Results	10
7.3 Radiated Emissions – Unintentional Radiation	13
7.3.1 Test Methodology	13
7.3.2 Test Results	13
7.4 20dB and 99% Occupied Bandwidth	15
7.4.1 Test Methodology	15
7.4.2 Test Results	15
7.5 Fundamental Field Strength	17
7.5.1 Test Methodology	17
7.5.2 Test Results	17
7.6 <i>Band-Edge Compliance and Spurious Emissions</i>	19
7.6.1 <i>Band-Edge Compliance</i>	19
7.6.1.1 <i>Test Methodology</i>	19
7.6.1.2 <i>Test Results</i>	19
7.6.2 <i>Radiated Spurious Emissions</i>	19
7.6.2.1 <i>Test Methodology</i>	19
7.6.2.2 <i>Duty Cycle Correction</i>	19
7.6.2.3 <i>Test Results</i>	20
7.6.2.4 <i>Sample Calculations</i>	24
8.0 CONCLUSION	24

Additional Exhibits Included In Filing

Internal Photographs

External Photographs

Test Setup Photographs

Label Information

Manual

Theory of Operation

System Block Diagram

Schematics

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 IC standard RSS-210.

1.2 Product Description

1.2.1 General

The Itron, Inc., model R300S2 transmitter module is an RF option for the SENTINEL line of meters. The R300S2 is a frequency hopping spread spectrum radio that operates in the 910 MHz to 918 MHz frequency range.

The R300S2 does not allow for customer programming of the RF parameters of a sealed meter. All RF programming and RF tuning of the product will be done by factory trained personnel during the manufacturing process. At that time the R300S2 is tested, tuned, and programmed in non-volatile memory for operating system parameters and FCC compliance and installed in the SENTINEL meter host.

Itron plans to sell the SENTINEL meter with the R300S2 as a whole, but it may also be offered as an upgrade to existing SENTINEL meters.

Manufacturer Information:

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

Test Sample Serial Number(s):

#1, #2

Test Sample Condition:

The test samples were provided in good working order with no visible defects.

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

1.2.2 Intended Use

The intended use of the R300S2 is to transmit meter data and meter ID numbers to utility data collectors.

1.3 Test Methodology and Considerations

The EUT is a stand-alone module designed for use in multiple electric meter form factors. Because the EUT does not meet all requirements for single modular approval, the limited single modular approval procedures apply therefore radiated and AC powerline conducted emissions testing was performed in all representative hosts (meter forms) including applicable meter to AC mains interfaces. See test setup photographs for additional information.

The representative hosts (meter forms) utilize multiple operating voltages. Data provided in this report represents the worst case operating voltage with respect to the characteristics evaluated.

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:

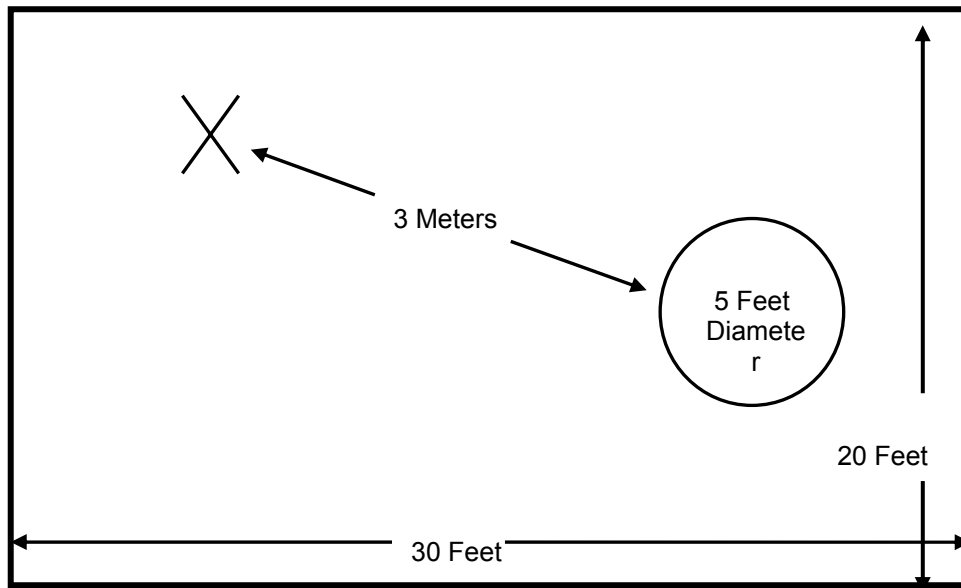


Figure 2.3-1: Semi-Anechoic Chamber Test Site

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:

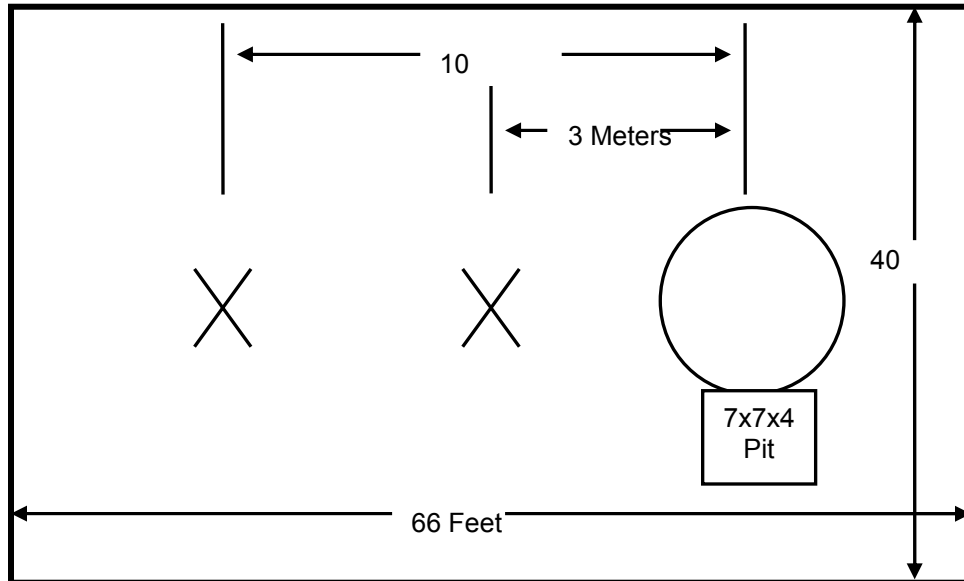


Figure 2.3-2: Open Area Test Site

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:

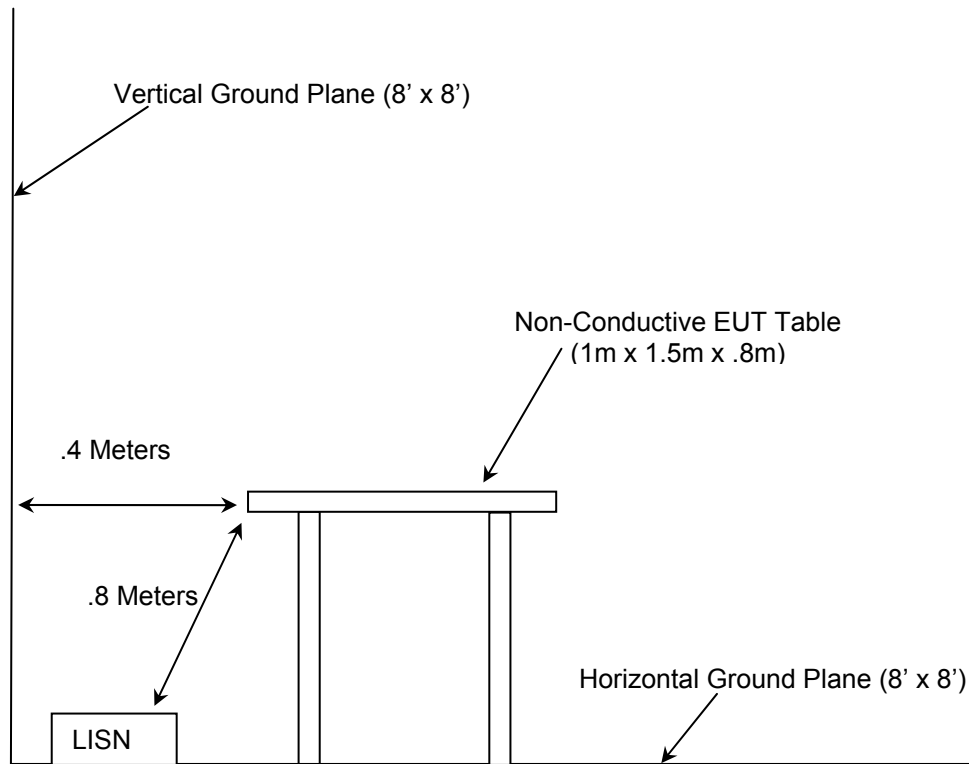


Figure 2.4-1: AC Mains Conducted EMI Site

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
- 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

All test equipment used for regulatory testing is calibrated yearly or according to manufacturer's specifications.

Table 4-1: Test Equipment

Equipment Calibration Information					
ACS#	Mfg.	Eq. type	Model	S/N	Cal. Due
1	Rohde & Schwarz	Spectrum Analyzers	ESMI - Display	833771/007	09-19-2009
2	Rohde & Schwarz	Spectrum Analyzers	ESMI-Receiver	839587/003	09-19-2009
22	Agilent	Amplifiers	8449B	3008A00526	10-22-2009
25	Chase	Antennas	CBL6111	1043	08-22-2009
30	Spectrum Technologies	Antennas	DRH-0118	970102	05-07-2009
152	EMCO	LISN	Feb-25	9111-1905	03-26-2009
167	ACS	Cable Set	Chamber EMI Cable Set	167	01-04-2009
168	Hewlett Packard	Attenuators	11947A	44829	02-18-2009
193	ACS	Cable Set	OATS cable Set	193	01-04-2009
213	TEC	Amplifiers	PA 102	44927	12-19-2008
277	Emco	Antennas	93146	9904-5199	09-09-2009
283	Rohde & Schwarz	Spectrum Analyzers	FSP40	1000033	09-19-2009
291	Florida RF Cables	Cables	SMRE-200W-12.0-SMRE	None	11-24-2009
292	Florida RF Cables	Cables	SMR-290AW-480.0-SMR	None	11-24-2009
321	Hewlett Packard	Amplifiers	HPC 8447D	1937A02809	10-08-2009
324	ACS	Cables	Belden	8214	07-28-2009
331	Microwave Circuits	Filters	H1G513G1	31417	07-28-2009
338	Hewlett Packard	Amplifiers	8449B	3008A01111	10-22-2009
343	Florida RF Cables	Cables	SMRE-200W-12.0-SMRE	N/A	11-24-2009
422	Florida RF	Cables	SMS-200AW-72.0-SMR	805	02-25-2009
430	RF Cables	Cables	SMS-290AW-480-SMS	N/A	06-09-2009

5.0 SUPPORT/HOST EQUIPMENT

The host devices evaluated using the integrated R300S2 module are as follows:

- 1. Serial Number: 58 219 867, Meter Type: , Meter Form: 2S, Date Mfg:
- 2. Serial Number: 40 361 839, Meter Type: , Meter Form: 3S, Date Mfg:
- 3. Serial Number: 58 277 962, Meter Type: , Meter Form: 9S, Date Mfg:
- 4. Serial Number: 58 220 028, Meter Type: , Meter Form: 16A, Date Mfg:
- 5. Serial Number: 58 277 968, Meter Type: SS4S1T, Meter Form: 16S, Date Mfg:
- 6. Serial Number: 58 219 869, Meter Type: , Meter Form: 45A, Date Mfg: 10/08
Metrology Etch and Drill #: 443550-003 Assembly #: 443551-001
Register Etch and Drill #: 443497-001 Assembly #: 443498-001
- 7. Serial Number: 58 220 027, Meter Type: , Meter Form: 45S, Date Mfg:
- 8. Serial Number: 58 219 870, Meter Type: , Meter Form: 46A, Date Mfg:

6.0 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAMS

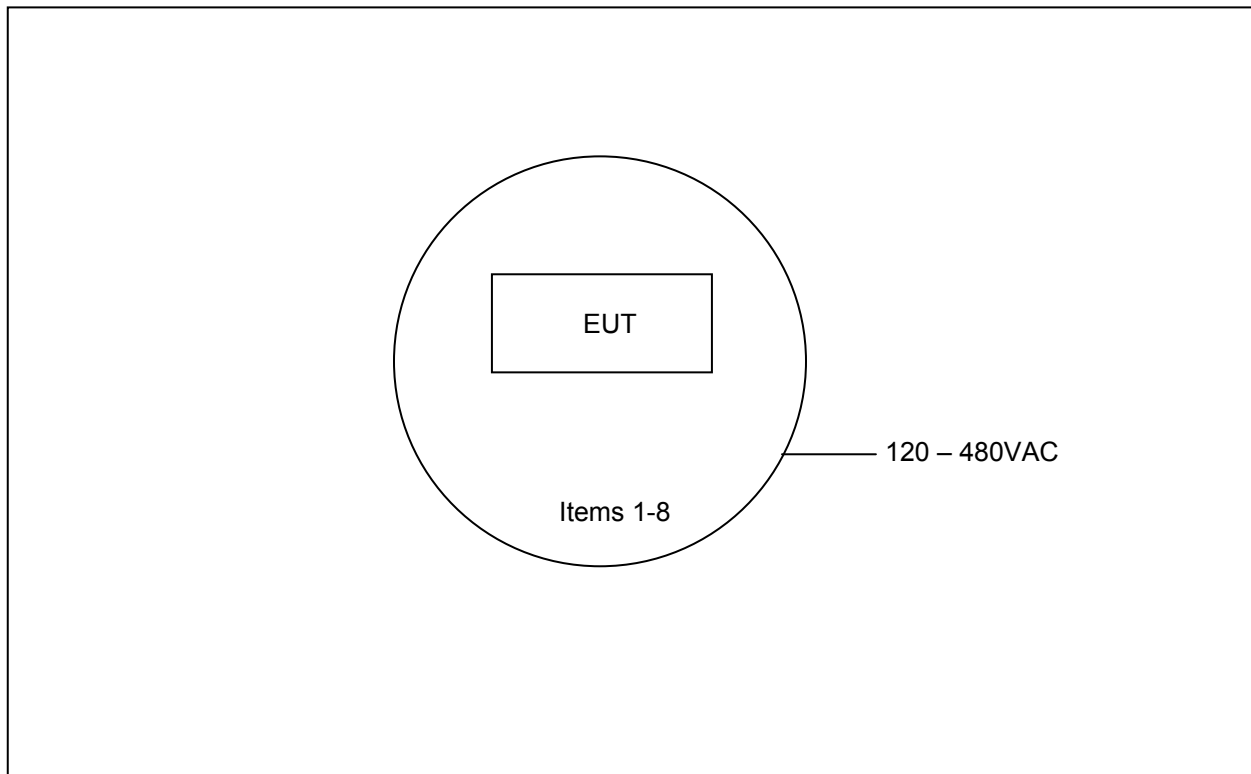


Figure 6-1: EUT Test Setup

All meter types were tested using the appropriate AC mains interface. See test setup and internal 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

R300S2 transmitter module incorporates an internal stripline antenna integrated into the circuit board. This antenna has a gain of 0 dB.

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 Tables 7.2-1 to 7.2-8.

Table 7.2-1: Conducted EMI Results – 2S Meter Form 480VAC

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										
0.15	48.5	11.5	9.81	58.31	21.31	66.00	56.00	7.7	34.7	GND
0.18	39.4	25.2	9.82	49.22	35.02	64.49	54.49	15.3	19.5	GND
0.25	24.1	4.2	9.81	33.91	14.01	61.76	51.76	27.8	37.7	GND
0.31	28.5	20.5	9.80	38.30	30.30	59.97	49.97	21.7	19.7	GND
2.18	18.7	10.2	9.90	28.60	20.10	56.00	46.00	27.4	25.9	GND
2.81	6.9	1.8	9.90	16.80	11.70	56.00	46.00	39.2	34.3	GND
Line 2										
0.15	48	11.5	9.81	57.81	21.31	66.00	56.00	8.2	34.7	GND
0.18	41.6	25.7	9.82	51.42	35.52	64.49	54.49	13.1	19.0	GND
0.21	36.3	13.6	9.80	46.10	23.40	63.21	53.21	17.1	29.8	GND
0.27	31.5	23.7	9.81	41.31	33.51	61.12	51.12	19.8	17.6	GND
0.41	29.5	21.7	9.90	39.40	31.60	57.65	47.65	18.2	16.0	GND
2.1	15.8	8	9.90	25.70	17.90	56.00	46.00	30.3	28.1	GND
5.44	15.6	10.9	9.91	25.51	20.81	60.00	50.00	34.5	29.2	GND

Table 7.2-2: Conducted EMI Results – 3S Meter Form 480VAC

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										
0.15	53.9	17.8	9.81	63.71	27.61	66.00	56.00	2.3	28.4	GND
0.17	50.3	12.6	9.81	60.11	22.41	64.96	54.96	4.8	32.5	GND
0.27	30.7	21.8	9.81	40.51	31.61	61.12	51.12	20.6	19.5	GND
0.36	28	19.3	9.81	37.81	29.11	58.73	48.73	20.9	19.6	GND
2.12	19.2	10.2	9.90	29.10	20.10	56.00	46.00	26.9	25.9	GND
5.2	10.7	4.4	9.90	20.60	14.30	60.00	50.00	39.4	35.7	GND
Line 2										
0.15	52.4	12.5	9.81	62.21	22.31	66.00	56.00	3.8	33.7	GND
0.17	49.3	12.6	9.81	59.11	22.41	64.96	54.96	5.8	32.5	GND
0.18	49.3	30	9.82	59.12	39.82	64.49	54.49	5.4	14.7	GND
0.22	36.6	9.5	9.80	46.40	19.30	62.82	52.82	16.4	33.5	GND
0.24	36	8.5	9.81	45.81	18.31	62.10	52.10	16.3	33.8	GND
0.32	29.1	20.9	9.80	38.90	30.70	59.71	49.71	20.8	19.0	GND
0.41	27.8	19.6	9.90	37.70	29.50	57.65	47.65	19.9	18.1	GND
2.2	15.6	7.2	9.90	25.50	17.10	56.00	46.00	30.5	28.9	GND
2.82	9.9	3.3	9.90	19.80	13.20	56.00	46.00	36.2	32.8	GND

Table 7.2-3: Conducted EMI Results – 9S Meter Form 480VAC

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										
0.15	51.5	10.9	9.81	61.31	20.71	66.00	56.00	4.7	35.3	GND
0.17	46.5	25.1	9.81	56.31	34.91	64.96	54.96	8.6	20.0	GND
0.21	37.9	11	9.80	47.70	20.80	63.21	53.21	15.5	32.4	GND
0.26	33	23.4	9.81	42.81	33.21	61.43	51.43	18.6	18.2	GND
0.35	28.9	20.8	9.81	38.71	30.61	58.96	48.96	20.3	18.4	GND
2.14	18.7	11.1	9.90	28.60	21.00	56.00	46.00	27.4	25.0	GND
5.32	21.1	16.9	9.91	31.01	26.81	60.00	50.00	29.0	23.2	GND
Line 2										
0.15	52	11	9.81	61.81	20.81	66.00	56.00	4.2	35.2	GND
0.17	47.2	25.2	9.81	57.01	35.01	64.96	54.96	7.9	19.9	GND
0.26	33.1	24	9.81	42.91	33.81	61.43	51.43	18.5	17.6	GND
0.35	29.1	21.4	9.81	38.91	31.21	58.96	48.96	20.1	17.8	GND
2.78	6.7	1.2	9.90	16.60	11.10	56.00	46.00	39.4	34.9	GND
5.34	16.5	12.1	9.91	26.41	22.01	60.00	50.00	33.6	28.0	GND

Table 7.2-4: Conducted EMI Results – 16A Meter Form 277VAC

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										
0.17	38.5	24.6	9.81	48.31	34.41	64.96	54.96	16.6	20.5	GND
0.22	38.3	24.9	9.80	48.10	34.70	62.82	52.82	14.7	18.1	GND
0.27	34.6	21	9.81	44.41	30.81	61.12	51.12	16.7	20.3	GND
0.53	29.3	15.9	9.90	39.20	25.80	56.00	46.00	16.8	20.2	GND
0.57	29.2	15.9	9.90	39.10	25.80	56.00	46.00	16.9	20.2	GND
0.62	28.6	15.1	9.90	38.50	25.00	56.00	46.00	17.5	21.0	GND
1	14.7	4.2	9.90	24.60	14.10	56.00	46.00	31.4	31.9	GND
4.6	16.7	6.2	9.90	26.60	16.10	56.00	46.00	29.4	29.9	GND
Line 2										
0.18	38.8	24.7	9.82	48.62	34.52	64.49	54.49	15.9	20.0	GND
0.22	38.3	25	9.80	48.10	34.80	62.82	52.82	14.7	18.0	GND
0.27	34.5	21	9.81	44.31	30.81	61.12	51.12	16.8	20.3	GND
0.33	30.7	17.5	9.81	40.51	27.31	59.45	49.45	18.9	22.1	GND
0.49	29.1	15.9	9.90	39.00	25.80	56.17	46.17	17.2	20.4	GND
0.53	30.1	16.7	9.90	40.00	26.60	56.00	46.00	16.0	19.4	GND
0.58	29.5	16.3	9.90	39.40	26.20	56.00	46.00	16.6	19.8	GND

Table 7.2-5: Conducted EMI Results – 16S Meter Form 480VAC

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										
0.16	37.2	8.6	9.81	47.01	18.41	65.46	55.46	18.5	37.1	GND
0.18	34.3	21.2	9.82	44.12	31.02	64.49	54.49	20.4	23.5	GND
0.22	19.9	5.3	9.80	29.70	15.10	62.82	52.82	33.1	37.7	GND
0.36	25.4	19.8	9.81	35.21	29.61	58.73	48.73	23.5	19.1	GND
0.45	24.8	19.7	9.90	34.70	29.60	56.88	46.88	22.2	17.3	GND
2.11	24.8	19.9	9.90	34.70	29.80	56.00	46.00	21.3	16.2	GND
5.26	23.4	19.1	9.91	33.31	29.01	60.00	50.00	26.7	21.0	GND
Line 2										
0.18	33.6	21.4	9.82	43.42	31.22	64.49	54.49	21.1	23.3	GND
0.21	20.8	12.1	9.80	30.60	21.90	63.21	53.21	32.6	31.3	GND
0.27	26.7	20.2	9.81	36.51	30.01	61.12	51.12	24.6	21.1	GND
0.36	25.5	19.6	9.81	35.31	29.41	58.73	48.73	23.4	19.3	GND
0.4	25.5	19.9	9.90	35.40	29.80	57.85	47.85	22.5	18.1	GND
2.15	21.7	15	9.90	31.60	24.90	56.00	46.00	24.4	21.1	GND
5.36	22.6	18.4	9.91	32.51	28.31	60.00	50.00	27.5	21.7	GND

Table 7.2-6: Conducted EMI Results – 45A Meter Form 240VAC

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	34.1	26.8	9.82	43.92	36.62	64.49	54.49	20.6	17.9	GND
0.22	29.1	21.1	9.80	38.90	30.90	62.82	52.82	23.9	21.9	GND
0.31	28.6	19.8	9.80	38.40	29.60	59.97	49.97	21.6	20.4	GND
0.45	27	18.3	9.90	36.90	28.20	56.88	46.88	20.0	18.7	GND
0.63	24.4	15.4	9.90	34.30	25.30	56.00	46.00	21.7	20.7	GND
2.11	18.9	9.8	9.90	28.80	19.70	56.00	46.00	27.2	26.3	GND
Line 2										
0.18	34.3	26	9.82	44.12	35.82	64.49	54.49	20.4	18.7	GND
0.22	29.2	20.8	9.80	39.00	30.60	62.82	52.82	23.8	22.2	GND
0.27	29.7	20.5	9.81	39.51	30.31	61.12	51.12	21.6	20.8	GND
0.49	26.8	17.6	9.90	36.70	27.50	56.17	46.17	19.5	18.7	GND
0.58	25	15.7	9.90	34.90	25.60	56.00	46.00	21.1	20.4	GND
2.11	18.2	9.5	9.90	28.10	19.40	56.00	46.00	27.9	26.6	GND

Table 7.2-7: Conducted EMI Results – 45S Meter Form 480VAC

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										
0.15	46.1	12.5	9.81	55.91	22.31	66.00	56.00	10.1	33.7	GND
0.16	41.5	13.2	9.81	51.31	23.01	65.46	55.46	14.2	32.5	GND
0.26	30.7	23.8	9.81	40.51	33.61	61.43	51.43	20.9	17.8	GND
0.3	29.1	22.4	9.80	38.90	32.20	60.24	50.24	21.3	18.0	GND
2.1	18.4	9.6	9.90	28.30	19.50	56.00	46.00	27.7	26.5	GND
2.8	5.5	2.8	9.90	15.40	12.70	56.00	46.00	40.6	33.3	GND
17.62	1.9	-1.2	10.21	12.11	9.01	60.00	50.00	47.9	41.0	GND
Line 2										
0.15	43.5	12.9	9.81	53.31	22.71	66.00	56.00	12.7	33.3	GND
0.18	37.3	23.6	9.82	47.12	33.42	64.49	54.49	17.4	21.1	GND
0.19	35.8	22.4	9.82	45.62	32.22	64.04	54.04	18.4	21.8	GND
0.27	31.1	24.1	9.81	40.91	33.91	61.12	51.12	20.2	17.2	GND
0.39	28	21.5	9.82	37.82	31.32	58.06	48.06	20.2	16.7	GND
2.13	18.8	10.2	9.90	28.70	20.10	56.00	46.00	27.3	25.9	GND
5.36	13.3	9.9	9.91	23.21	19.81	60.00	50.00	36.8	30.2	GND

Table 7.2-8: Conducted EMI Results – 46A Meter Form 277VAC

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	41.8	36.9	9.82	51.62	46.72	64.49	54.49	12.9	7.8	GND
0.22	29.4	26.1	9.80	39.20	35.90	62.82	52.82	23.6	16.9	GND
0.26	30.2	25.3	9.81	40.01	35.11	61.43	51.43	21.4	16.3	GND
0.44	24.6	19.8	9.90	34.50	29.70	57.06	47.06	22.6	17.4	GND
0.52	6.4	1.7	9.90	16.30	11.60	56.00	46.00	39.7	34.4	GND
0.88	19.3	15.1	9.90	29.20	25.00	56.00	46.00	26.8	21.0	GND
Line 2										
0.17	42.2	37	9.81	52.01	46.81	64.96	54.96	12.9	8.1	GND
0.22	28.6	26.1	9.80	38.40	35.90	62.82	52.82	24.4	16.9	GND
0.26	30.4	25.3	9.81	40.21	35.11	61.43	51.43	21.2	16.3	GND
0.44	25.1	20.1	9.90	35.00	30.00	57.06	47.06	22.1	17.1	GND
0.53	25	20	9.90	34.90	29.90	56.00	46.00	21.1	16.1	GND
0.84	20.1	15.5	9.90	30.00	25.40	56.00	46.00	26.0	20.6	GND

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

7.3.1 Test Methodology

Radiated emissions tests were performed over the frequency range of 30MHz to 5GHz. 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, peak and average measurements were made using an RBW of 1 MHz and a VBW of 3 MHz.

7.3.2 Test Results

Results of the test are given in Tables 7.3-1 to 7.3-8 below:

Table 7.3-1 – Radiated Emissions – 2S Meter Form 480VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
194.993	-----	42.95	V	-15.00	-----	27.95	-----	43.5	-----	15.55
213.003	-----	37.11	H	-14.57	-----	22.54	-----	43.5	-----	20.96
262.979	-----	43.28	H	-11.32	-----	31.96	-----	46.0	-----	14.04
341.992	-----	34.63	H	-9.50	-----	25.13	-----	46.0	-----	20.87
400.006	-----	39.63	H	-7.50	-----	32.13	-----	46.0	-----	13.87
571.982	-----	28.81	V	-4.10	-----	24.71	-----	46.0	-----	21.29

Table 7.3-2 – Radiated Emissions – 3S Meter Form 480VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
186.003	-----	40.88	H	-15.66	-----	25.22	-----	43.5	-----	18.28
203.983	-----	41.56	H	-14.48	-----	27.08	-----	43.5	-----	16.42
259.984	-----	44.71	H	-11.20	-----	33.51	-----	46.0	-----	12.49
399.995	-----	36.15	H	-7.50	-----	28.65	-----	46.0	-----	17.35
684.005	-----	26.83	H	-1.92	-----	24.91	-----	46.0	-----	21.09
956.338	-----	20.84	V	3.59	-----	24.43	-----	46.0	-----	21.57

Table 7.3-3 – Radiated Emissions – 9S Meter Form 480VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
194.995	-----	48.72	H	-15.20	-----	33.52	-----	43.5	-----	9.98
209.991	-----	40.24	H	-14.60	-----	25.64	-----	43.5	-----	17.86
267.995	-----	43.06	H	-11.52	-----	31.54	-----	46.0	-----	14.46
341.993	-----	41.89	H	-9.50	-----	32.39	-----	46.0	-----	13.61
391.995	-----	42.65	V	-8.54	-----	34.11	-----	46.0	-----	11.89
838.33	-----	21.99	V	0.88	-----	22.87	-----	46.0	-----	23.13

Table 7.3-4 – Radiated Emissions – 16A Meter Form 277VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
260.007	-----	42.87	H	-11.20	-----	31.67	-----	46.0	-----	14.33
414.01	-----	37.99	V	-7.78	-----	30.21	-----	46.0	-----	15.79
580.013	-----	18.13	V	-4.10	-----	14.03	-----	46.0	-----	31.97
592.016	-----	17.52	H	-3.86	-----	13.66	-----	46.0	-----	32.34
632.014	-----	25.37	H	-2.88	-----	22.49	-----	46.0	-----	23.51
838.686	-----	8.81	V	0.89	-----	9.70	-----	46.0	-----	36.30

Table 7.3-5 – Radiated Emissions – 16S Meter Form 480VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
205.004	-----	43.57	H	-14.50	-----	29.07	-----	43.5	-----	14.43
260.006	-----	47.33	H	-11.20	-----	36.13	-----	46.0	-----	9.87
278.008	-----	44.23	H	-11.52	-----	32.71	-----	46.0	-----	13.29
414.008	-----	40.40	H	-7.36	-----	33.04	-----	46.0	-----	12.96
458.012	-----	31.44	V	-6.82	-----	24.62	-----	46.0	-----	21.38
952.388	-----	8.38	V	3.47	-----	11.85	-----	46.0	-----	34.15

Table 7.3-6 – Radiated Emissions – 45A Meter Form 240VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
205.008	-----	38.80	V	-14.35	-----	24.45	-----	43.5	-----	19.05
213.008	-----	41.42	H	-14.57	-----	26.85	-----	43.5	-----	16.65
255.009	-----	49.31	H	-11.65	-----	37.66	-----	46.0	-----	8.34
400.015	-----	34.64	V	-8.30	-----	26.34	-----	46.0	-----	19.66
584.022	-----	27.20	V	-4.06	-----	23.14	-----	46.0	-----	22.86
952.004	-----	8.63	V	3.46	-----	12.09	-----	46.0	-----	33.91

Table 7.3-7 – Radiated Emissions – 45S Meter Form 480VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
188.997		40.89	H	-15.54	-----	25.35	-----	43.5	-----	18.15
204.988		40.39	H	-14.50	-----	25.89	-----	43.5	-----	17.61
260.984		35.16	H	-11.24	-----	23.92	-----	46.0	-----	22.08
304.008		43.82	H	-10.96	-----	32.86	-----	46.0	-----	13.14
411.986		32.44	V	-7.74	-----	24.70	-----	46.0	-----	21.30
948.268		20.05	H	2.90	-----	22.95	-----	46.0	-----	23.05

Table 7.3-8 – Radiated Emissions – 46A Meter Form 277VAC

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
189.006		45.89	H	-15.54	-----	30.35	-----	43.5	-----	13.15
205.005		42.87	H	-14.50	-----	28.37	-----	43.5	-----	15.13
213.007		38.75	H	-14.57	-----	24.18	-----	43.5	-----	19.32
260.008		42.03	H	-11.20	-----	30.83	-----	46.0	-----	15.17
270.01		41.57	H	-11.60	-----	29.97	-----	46.0	-----	16.03
331.011		32.51	H	-9.96	-----	22.55	-----	46.0	-----	23.45
400.014		30.53	H	-7.50	-----	23.03	-----	46.0	-----	22.97

7.4 20dB and 99% Occupied Bandwidth – FCC: Section 15.215 IC: RSS-GEN 4.6.1

7.4.1 Test Methodology

The spectrum analyzer span was set to 2 to 3 times the estimated bandwidth of the emission. The RBW was to $\geq 1\%$ of the estimated emission bandwidth. Bandwidth is determined at the points 20 dB down from the modulated carrier for FCC compliance and the 99% bandwidth (OBW) for IC compliance.

7.4.2 Test Results

The maximum 20dB bandwidth was determined to be 179.4 kHz. The frequency band designated under Part 15.249 is 902 - 928MHz, therefore the 20dB bandwidth is contained within the frequency band designated under this rule part. For Industry Canada, the 99% OBW was determined to be 151.8 kHz. Results are shown below in Table 7.4-1 and Figures 7.4-1 to 7.4-4.

Table 7.4-1 20dB and 99% Occupied Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
909.3	114.6	94.8
917.3	179.4	151.8

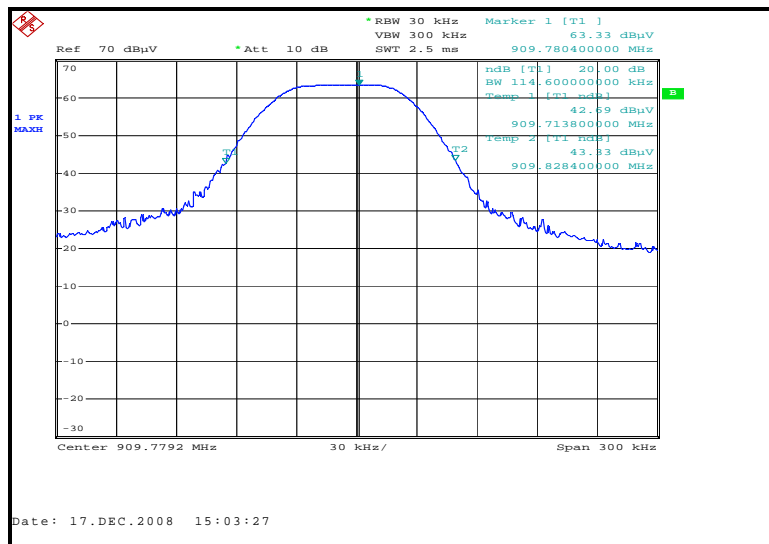


Figure 7.4-1: 20dB Bandwidth Low Channel

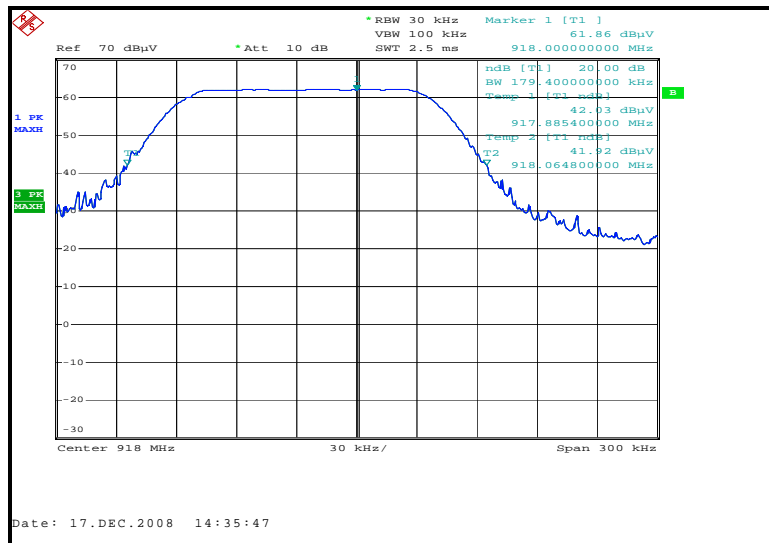


Figure 7.4-2: 20dB Bandwidth High Channel

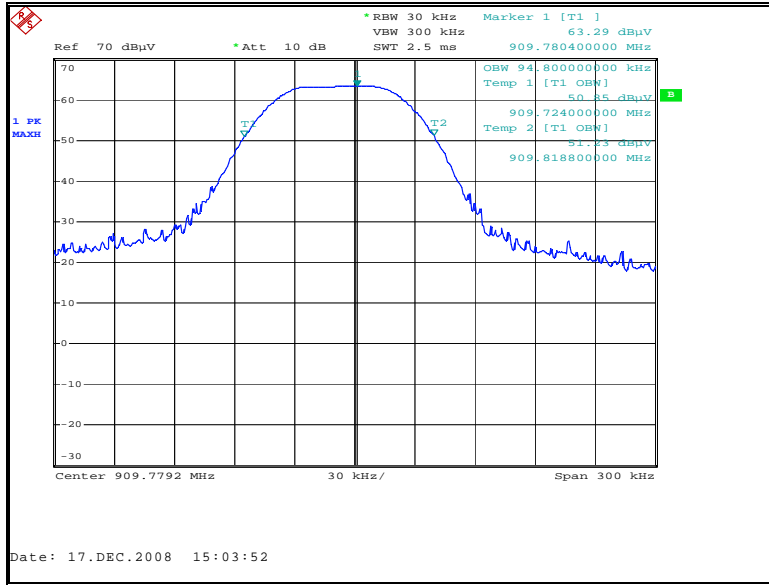


Figure 7.4-3: 99%OBW Low Channel

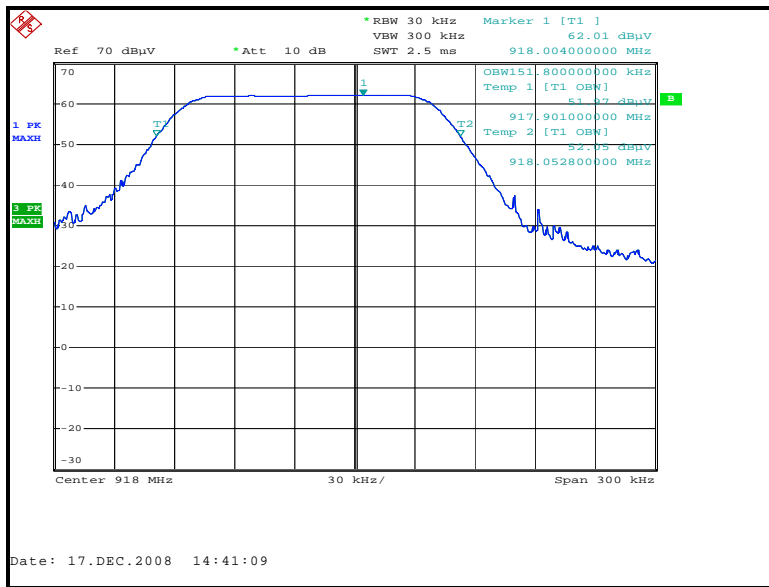


Figure 7.4-4: 99%OBW High Channel

7.5 Fundamental Field Strength – FCC: Section 15.249(a) IC: RSS-210 A2.9(a)

7.5.1 Test Methodology

Radiated emissions tests were made on the low and high channels in the 909MHz to 918MHz frequency range, the low channel being 909 MHz and the high channel being 918 MHz.

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 fundamentals below 1GHz, quasi-peak measurements were made using a resolution bandwidth (RBW) of 120 kHz and a video bandwidth (VBW) of 300 kHz. For fundamentals above 1GHz, peak and average measurements were made using a resolution bandwidth (RBW) of 1 MHz and a video bandwidth (VBW) of 3 MHz.

All representative hosts (meter forms) were evaluated and data presented in section 7.5.2.

7.5.2 Test Results

Results are shown below in table 7.5-1 to 7.5-8 below:

Table 7.5-1: Fundamental Field Strength – 2S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.7	-----	57.94	H	28.89	-----	86.83	-----	94.0	-----	7.15
909.7	-----	52.51	V	27.90	-----	80.41	-----	94.0	-----	13.57
<i>High Channel</i>										
917.65	-----	57.16	H	28.90	-----	86.06	-----	94.0	-----	7.92
917.65	-----	51.06	V	27.98	-----	79.04	-----	94.0	-----	14.94

Table 7.5-2: Fundamental Field Strength – 3S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.75	-----	60.86	H	28.89	-----	89.75	-----	94.0	-----	4.23
909.75	-----	53.32	V	27.90	-----	81.22	-----	94.0	-----	12.76
<i>High Channel</i>										
918.14	-----	59.00	H	28.90	-----	87.90	-----	94.0	-----	6.08
918.14	-----	52.93	V	27.98	-----	80.91	-----	94.0	-----	13.07

Table 7.5-3: Fundamental Field Strength – 9S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.81	-----	63.02	H	28.89	-----	91.91	-----	94.0	-----	2.07
909.81	-----	57.20	V	27.90	-----	85.10	-----	94.0	-----	8.88
<i>High Channel</i>										
918	-----	61.58	H	28.90	-----	90.48	-----	94.0	-----	3.50
918	-----	54.84	V	27.98	-----	82.82	-----	94.0	-----	11.16

Table 7.5-4: Fundamental Field Strength – 16A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.65	-----	58.79	H	28.89	-----	87.68	-----	94.0	-----	6.30
909.65	-----	55.56	V	27.90	-----	83.46	-----	94.0	-----	10.52
<i>High Channel</i>										
918	-----	59.38	H	28.90	-----	88.28	-----	94.0	-----	5.70
918	-----	53.49	V	27.98	-----	81.47	-----	94.0	-----	12.51

Table 7.5-5: Fundamental Field Strength – 16S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.68	-----	57.89	H	28.89	-----	86.78	-----	94.0	-----	7.20
909.68	-----	53.88	V	27.90	-----	81.78	-----	94.0	-----	12.20
<i>High Channel</i>										
917.8	-----	55.67	H	28.90	-----	84.57	-----	94.0	-----	9.41
917.8	-----	53.46	V	27.98	-----	81.44	-----	94.0	-----	12.54

Table 7.5-6: Fundamental Field Strength – 45A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
910	-----	58.29	H	28.90	-----	87.19	-----	94.0	-----	6.79
910	-----	55.33	V	27.90	-----	83.23	-----	94.0	-----	10.75
<i>High Channel</i>										
918.42	-----	56.10	H	28.90	-----	85.00	-----	94.0	-----	8.98
918.42	-----	54.72	V	27.98	-----	82.70	-----	94.0	-----	11.28

Table 7.5-7: Fundamental Field Strength – 45S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.31	-----	59.41	H	28.87	-----	88.28	-----	94.0	-----	5.70
909.31	-----	54.94	V	27.89	-----	82.83	-----	94.0	-----	11.15
<i>High Channel</i>										
917.26	-----	59.71	H	28.90	-----	88.61	-----	94.0	-----	5.37
917.26	-----	54.18	V	27.97	-----	82.15	-----	94.0	-----	11.83

Table 7.5-8: Fundamental Field Strength – 46A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
909.27	-----	57.65	H	28.87	-----	86.52	-----	94.0	-----	7.46
909.27	-----	51.51	V	27.89	-----	79.40	-----	94.0	-----	14.58
<i>High Channel</i>										
917.3	-----	58.60	H	28.90	-----	87.50	-----	94.0	-----	6.48
917.3	-----	52.39	V	27.97	-----	80.36	-----	94.0	-----	13.62

7.6 Band-Edge Compliance and Spurious Emissions – FCC: Section 15.249 IC: RSS-210 A2.9

7.6.1 Band-Edge Compliance – FCC: Section 15.249(d) IC: RSS-210 A2.9(b)

7.6.1.1 Test Methodology

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

The EUT was investigated at the low and high channels of operation to determine band-edge compliance. Band-edge compliance for the lower and upper band-edge was determined using the radiated mark-delta method as outlined in FCC DA 00-705. The radiated field strength of the fundamental emission was first determined and then the mark-delta method was used to determine the field strength of the band-edge emissions as compared to the emission limits of 15.209.

7.6.1.2 Test Results

Emission levels at the band-edges of the 902-928MHz frequency band were determined to be below the noise floor of the measurement system.

7.6.2 Radiated Spurious Emissions – FCC: Section 15.249(a), (c) IC:RSS-210 A2.9(a)

7.6.2.1 Test Methodology

Radiated emissions tests were made over the frequency range of 30MHz to 10 GHz, 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 using an RBW of 1 MHz and a VBW of 3 MHz. The average emissions were further corrected by applying the duty cycle correction of the EUT to the average measurements for comparison to the average limit.

All representative hosts (meter forms) were evaluated and data presented in section 7.6.2.3.

7.6.2.2 Duty Cycle Correction

For average radiated measurements, the measured level was reduced by a factor 24.44dB to account for the duty cycle of the EUT. The duty cycle was determined to be 6% or 6ms with a 100ms period. The duty cycle correction factor is determined using the formula: $20\log(0.06) = 24.44\text{dB}$. The duty cycle is shown below in Figure 7.6.2-1.

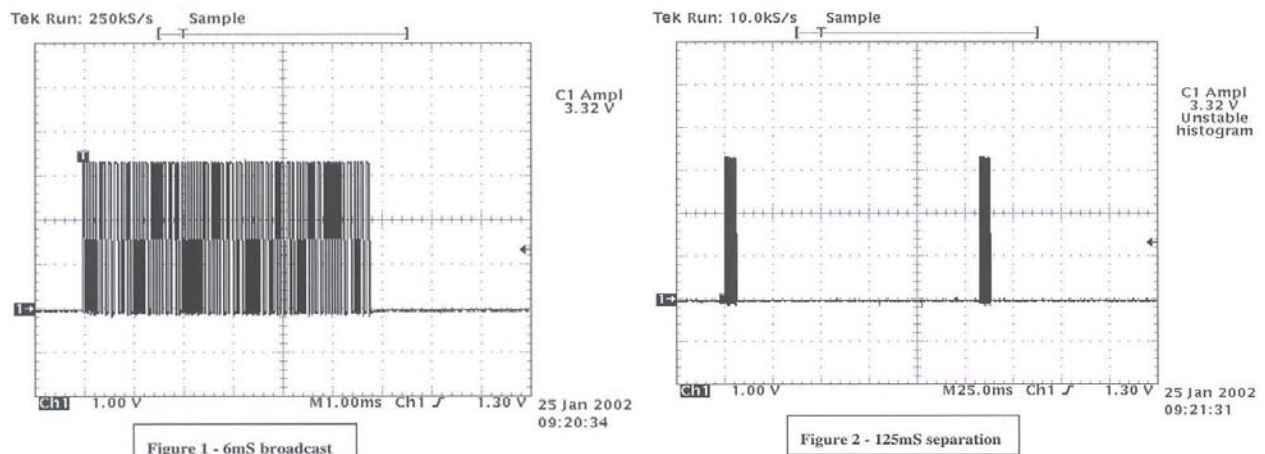


Figure 7.6.2-1 Duty Cycle

7.6.2.3 Test Results

Radiated spurious emissions found in the band of 30MHz to 10GHz are reported in Tables 7.6.2-1 to 7.6.2-8.

Table 7.6.2-1: Radiated Spurious Emissions – 2S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
1819.4	71.69	71.22	H	-4.23	67.46	42.55	74.0	54.0	6.54	11.45
1819.4	63.21	62.33	V	-4.26	58.95	33.63	74.0	54.0	15.05	20.37
2729.1	71.36	71.10	H	-0.67	70.69	46.00	74.0	54.0	3.31	8.00
2729.1	71.77	71.40	V	-0.87	70.90	46.10	74.0	54.0	3.10	7.90
3638.8	69.54	68.95	H	2.25	71.79	46.76	74.0	54.0	2.21	7.24
3638.8	69.52	68.82	V	2.28	71.80	46.66	74.0	54.0	2.20	7.34
4548.5	59.79	58.23	H	3.94	63.73	37.73	74.0	54.0	10.27	16.27
4548.5	63.45	62.48	V	4.04	67.49	42.08	74.0	54.0	6.51	11.92
<i>High Channel</i>										
1835.3	70.17	69.86	H	-4.20	65.97	41.22	74.0	54.0	8.03	12.78
1835.3	63.32	62.46	V	-4.24	59.08	33.79	74.0	54.0	14.92	20.21
2752.95	71.54	71.17	H	-0.59	70.95	46.15	74.0	54.0	3.05	7.85
2752.95	72.09	71.80	V	-0.79	71.30	46.58	74.0	54.0	2.70	7.42
3670.6	66.69	66.13	H	2.35	69.04	44.04	74.0	54.0	4.96	9.96
3670.6	69.22	68.58	V	2.38	71.60	46.53	74.0	54.0	2.40	7.47
4588.25	60.61	59.19	H	4.03	64.64	38.79	74.0	54.0	9.36	15.21
4588.25	62.00	61.24	V	4.13	66.13	40.94	74.0	54.0	7.87	13.06

Table 7.6.2-2: Radiated Spurious Emissions – 3S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
1819.5	71.28	70.85	H	-4.23	67.05	42.18	74.0	54.0	6.95	11.82
1819.5	65.25	64.56	V	-4.26	60.99	35.86	74.0	54.0	13.01	18.14
2729.25	72.02	71.78	H	-0.67	71.35	46.68	74.0	54.0	2.65	7.32
2729.25	71.80	71.74	V	-0.87	70.93	46.44	74.0	54.0	3.07	7.56
3639	66.68	65.97	H	2.25	68.93	43.78	74.0	54.0	5.07	10.22
3639	71.13	70.65	V	2.28	73.41	48.49	74.0	54.0	0.59	5.51
4548.75	61.09	60.06	H	3.94	65.03	39.56	74.0	54.0	8.97	14.44
4548.75	62.82	61.77	V	4.04	66.86	41.37	74.0	54.0	7.14	12.63
<i>High Channel</i>										
1836.28	69.93	69.50	H	-4.20	65.73	40.86	74.0	54.0	8.27	13.14
1836.28	63.35	62.45	V	-4.24	59.11	33.78	74.0	54.0	14.89	20.22
2754.42	70.71	70.17	H	-0.58	70.13	45.15	74.0	54.0	3.87	8.85
2754.42	71.53	71.16	V	-0.78	70.75	45.94	74.0	54.0	3.25	8.06
3672.56	67.04	66.00	H	2.35	69.39	43.92	74.0	54.0	4.61	10.08
3672.56	68.30	67.69	V	2.39	70.69	45.64	74.0	54.0	3.31	8.36
4590.7	60.05	58.60	H	4.04	64.09	38.20	74.0	54.0	9.91	15.80
4590.7	64.15	63.12	V	4.14	68.29	42.82	74.0	54.0	5.71	11.18

Table 7.6.2-3: Radiated Spurious Emissions – 9S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1819.62	70.04	69.51	H	-4.23	65.81	40.84	74.0	54.0	8.19	13.16
1819.62	66.90	66.19	V	-4.26	62.64	37.49	74.0	54.0	11.36	16.51
2729.43	72.30	71.91	H	-0.67	71.63	46.81	74.0	54.0	2.37	7.19
2729.43	71.83	71.50	V	-0.87	70.96	46.20	74.0	54.0	3.04	7.80
3639.24	69.52	68.89	H	2.25	71.77	46.70	74.0	54.0	2.23	7.30
3639.24	68.47	67.90	V	2.28	70.75	45.74	74.0	54.0	3.25	8.26
4549.05	61.51	60.47	H	3.94	65.45	39.97	74.0	54.0	8.55	14.03
4549.05	63.56	62.43	V	4.04	67.60	42.03	74.0	54.0	6.40	11.97
High Channel										
1836	66.06	65.28	H	-4.20	61.86	36.64	74.0	54.0	12.14	17.36
1836	65.81	64.82	V	-4.24	61.57	36.15	74.0	54.0	12.43	17.85
2754	71.99	71.58	H	-0.58	71.41	46.56	74.0	54.0	2.59	7.44
2754	71.21	70.82	V	-0.78	70.43	45.60	74.0	54.0	3.57	8.40
3672	65.88	64.93	H	2.35	68.23	42.85	74.0	54.0	5.77	11.15
3672	70.11	69.48	V	2.39	72.50	47.43	74.0	54.0	1.50	6.57
4590	60.96	59.40	H	4.04	65.00	39.00	74.0	54.0	9.00	15.00
4590	63.37	62.27	V	4.14	67.51	41.97	74.0	54.0	6.49	12.03

Table 7.6.2-4: Radiated Spurious Emissions – 16A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1819.3	69.34	68.81	H	-4.24	65.10	40.14	74.0	54.0	8.90	13.86
1819.3	67.23	66.57	V	-4.26	62.97	37.87	74.0	54.0	11.03	16.13
2728.95	67.13	66.52	H	-0.67	66.46	41.42	74.0	54.0	7.54	12.58
2728.95	69.19	68.67	V	-0.87	68.32	43.37	74.0	54.0	5.68	10.63
3638.6	68.92	68.13	H	2.25	71.17	45.94	74.0	54.0	2.83	8.06
3638.6	69.47	68.99	V	2.28	71.75	46.83	74.0	54.0	2.25	7.17
4548.25	59.27	57.28	H	3.93	63.20	36.78	74.0	54.0	10.80	17.22
4548.25	62.16	60.95	V	4.03	66.19	40.55	74.0	54.0	7.81	13.45
High Channel										
1836	66.07	65.24	H	-4.20	61.87	36.60	74.0	54.0	12.13	17.40
1836	64.72	63.91	V	-4.24	60.48	35.24	74.0	54.0	13.52	18.76
2754	68.64	68.13	H	-0.58	68.06	43.11	74.0	54.0	5.94	10.89
2754	70.03	69.56	V	-0.78	69.25	44.34	74.0	54.0	4.75	9.66
3672	69.90	68.99	H	2.35	72.25	46.91	74.0	54.0	1.75	7.09
3672	67.93	67.27	V	2.39	70.32	45.22	74.0	54.0	3.68	8.78
4590	59.74	58.17	H	4.04	63.78	37.77	74.0	54.0	10.22	16.23
4590	60.77	59.59	V	4.14	64.91	39.29	74.0	54.0	9.09	14.71

Table 7.6.2-5: Radiated Spurious Emissions – 16S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1819.36	69.61	69.10	H	-4.24	65.37	40.43	74.0	54.0	8.63	13.57
1819.36	70.14	68.96	V	-4.26	65.88	40.26	74.0	54.0	8.12	13.74
2729.04	67.13	66.55	H	-0.67	66.46	41.45	74.0	54.0	7.54	12.55
2729.04	64.44	63.51	V	-0.87	63.57	38.21	74.0	54.0	10.43	15.79
3638.72	67.24	66.27	H	2.25	69.49	44.08	74.0	54.0	4.51	9.92
3638.72	70.41	69.71	V	2.28	72.69	47.55	74.0	54.0	1.31	6.45
4548.4	61.68	59.81	H	3.94	65.62	39.31	74.0	54.0	8.38	14.69
4548.4	64.32	63.22	V	4.04	68.36	42.82	74.0	54.0	5.64	11.18
High Channel										
1835.6	69.05	68.26	H	-4.20	64.85	39.62	74.0	54.0	9.15	14.38
1835.6	65.16	64.47	V	-4.24	60.92	35.80	74.0	54.0	13.08	18.20
2753.4	71.36	70.93	H	-0.59	70.77	45.91	74.0	54.0	3.23	8.09
2753.4	71.96	71.28	V	-0.79	71.17	46.06	74.0	54.0	2.83	7.94
3671.2	66.27	65.17	H	2.35	68.62	43.08	74.0	54.0	5.38	10.92
3671.2	69.98	69.18	V	2.38	72.36	47.13	74.0	54.0	1.64	6.87
4589	61.70	60.28	H	4.03	65.73	39.88	74.0	54.0	8.27	14.12
4589	61.79	60.29	V	4.13	65.92	39.99	74.0	54.0	8.08	14.01
5506.8	50.63	44.15	H	6.51	57.14	26.22	74.0	54.0	16.86	27.78
5506.8	52.04	47.56	V	6.51	58.55	29.63	74.0	54.0	15.45	24.37
6424.6	48.33	38.35	H	8.05	56.38	21.97	74.0	54.0	17.62	32.03
6424.6	50.10	43.57	V	8.08	58.18	27.22	74.0	54.0	15.82	26.78
7342.4	48.81	39.85	H	9.50	58.31	24.92	74.0	54.0	15.69	29.08
7342.4	49.74	40.04	V	9.57	59.31	25.17	74.0	54.0	14.69	28.83

Table 7.6.2-6: Radiated Spurious Emissions – 45A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1820	68.28	67.64	H	-4.23	64.05	38.97	74.0	54.0	9.95	15.03
1820	67.48	66.90	V	-4.26	63.22	38.20	74.0	54.0	10.78	15.80
2730	66.12	65.58	H	-0.66	65.46	40.48	74.0	54.0	8.54	13.52
2730	70.95	70.64	V	-0.86	70.09	45.34	74.0	54.0	3.91	8.66
3640	69.34	68.85	H	2.25	71.59	46.67	74.0	54.0	2.41	7.33
3640	69.86	69.33	V	2.28	72.14	47.17	74.0	54.0	1.86	6.83
4550	61.43	60.35	H	3.94	65.37	39.85	74.0	54.0	8.63	14.15
4550	64.55	63.82	V	4.04	68.59	43.42	74.0	54.0	5.41	10.58
High Channel										
1836.84	68.46	67.99	H	-4.20	64.26	39.35	74.0	54.0	9.74	14.65
1836.84	66.36	65.69	V	-4.23	62.13	37.02	74.0	54.0	11.87	16.98
2755.26	70.95	70.26	H	-0.58	70.37	45.24	74.0	54.0	3.63	8.76
2755.26	71.39	70.84	V	-0.78	70.61	45.62	74.0	54.0	3.39	8.38
3673.68	70.31	69.59	H	2.36	72.67	47.51	74.0	54.0	1.33	6.49
3673.68	68.36	67.62	V	2.39	70.75	45.58	74.0	54.0	3.25	8.42
4592.1	61.78	61.76	H	4.04	65.82	41.37	74.0	54.0	8.18	12.63
4592.1	62.24	61.32	V	4.14	66.38	41.03	74.0	54.0	7.62	12.97

Table 7.6.2-7: Radiated Spurious Emissions – 45S Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
1818.62	67.35	66.40	H	-4.24	63.11	37.73	74.0	54.0	10.89	16.27
1818.62	64.79	63.98	V	-4.26	60.53	35.28	74.0	54.0	13.47	18.72
2727.93	71.84	71.34	H	-0.67	71.17	46.23	74.0	54.0	2.83	7.77
2727.93	70.66	70.06	V	-0.87	69.79	44.75	74.0	54.0	4.21	9.25
3637.24	69.18	68.58	H	2.24	71.42	46.39	74.0	54.0	2.58	7.61
3637.24	63.48	64.08	V	2.27	65.75	41.91	74.0	54.0	8.25	12.09
4546.55	58.20	56.44	H	3.93	62.13	35.93	74.0	54.0	11.87	18.07
4546.55	62.89	61.66	V	4.03	66.92	41.25	74.0	54.0	7.08	12.75
<i>High Channel</i>										
1834.52	64.61	63.63	H	-4.20	60.41	34.99	74.0	54.0	13.59	19.01
1834.52	62.18	61.37	V	-4.24	57.94	32.69	74.0	54.0	16.06	21.31
2751.78	71.35	71.01	H	-0.59	70.76	45.98	74.0	54.0	3.24	8.02
2751.78	69.73	69.08	V	-0.79	68.94	43.85	74.0	54.0	5.06	10.15
3669.04	67.23	66.08	H	2.34	69.57	43.99	74.0	54.0	4.43	10.01
3669.04	68.39	67.76	V	2.38	70.77	45.70	74.0	54.0	3.23	8.30
4586.3	60.07	58.52	H	4.03	64.10	38.11	74.0	54.0	9.90	15.89
4586.3	62.36	61.29	V	4.13	66.49	40.98	74.0	54.0	7.51	13.02

Table 7.6.2-8: Radiated Spurious Emissions – 46A Meter Form

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
<i>Low Channel</i>										
1818.54	65.01	64.20	H	-4.24	60.77	35.53	74.0	54.0	13.23	18.47
1818.54	64.63	63.88	V	-4.26	60.37	35.18	74.0	54.0	13.63	18.82
2727.81	69.01	68.36	H	-0.67	68.34	43.25	74.0	54.0	5.66	10.75
2727.81	69.87	69.29	V	-0.87	69.00	43.98	74.0	54.0	5.00	10.02
3637.08	68.20	67.46	H	2.24	70.44	45.27	74.0	54.0	3.56	8.73
3637.08	68.39	67.72	V	2.27	70.66	45.55	74.0	54.0	3.34	8.45
4546.35	60.66	59.36	H	3.93	64.59	38.85	74.0	54.0	9.41	15.15
4546.35	62.25	61.26	V	4.03	66.28	40.85	74.0	54.0	7.72	13.15
<i>High Channel</i>										
1834.6	64.05	63.46	H	-4.20	59.85	34.82	74.0	54.0	14.15	19.18
1834.6	62.65	61.60	V	-4.24	58.41	32.92	74.0	54.0	15.59	21.08
2751.9	68.13	67.70	H	-0.59	67.54	42.67	74.0	54.0	6.46	11.33
2751.9	69.48	69.07	V	-0.79	68.69	43.84	74.0	54.0	5.31	10.16
3669.2	68.98	68.57	H	2.34	71.32	46.48	74.0	54.0	2.68	7.52
3669.2	68.15	67.52	V	2.38	70.53	45.46	74.0	54.0	3.47	8.54
4586.5	60.78	59.61	H	4.03	64.81	39.20	74.0	54.0	9.19	14.80
4586.5	60.91	59.44	V	4.13	65.04	39.13	74.0	54.0	8.96	14.87

7.6.2.4 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: $65.01 - 4.24 = 60.77\text{dBuV}$

Margin: $74\text{dBuV} - 60.77\text{dBuV} = 13.23\text{dB}$

AVERAGE:

Corrected Level: $64.20 - 4.24 - 24.44 = 35.53\text{dBuV}$

Margin: $54\text{dBuV} - 35.53\text{dBuV} = 18.47\text{dB}$

8.0 CONCLUSION

In the opinion of ACS, Inc. the R300S2 manufactured by Itron Electricity Metering, Inc. meets the requirements of FCC Part 15 subpart C and IC RSS-210.

END REPORT