



Excellence in Compliance Testing

## **Certification Test Report**

### **Test Report**

**FCC ID: P2SNTR900GM  
IC: 4171B-NTR900GM**

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

**ACS Report Number: 07- 0422 - 15C**

Manufacturer: Neptune Technology Group, Inc.  
Model: R900GM

Test Begin Date: October 3, 2007  
Test End Date: May 22, 2008

Report Issue Date: July 1, 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.

Prepared by: \_\_\_\_\_

*Ken Rivers*  
Ken Rivers  
Wireless Certifications Technician  
ACS, Inc.

Reviewed by: \_\_\_\_\_

*J. Kirby Munroe*  
J. 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 23 pages**

# Table of Contents

---

<b>1.0 General</b>	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
<b>2.0 Test Facilities</b>	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
<b>3.0 Applicable Standards and References</b>	7
<b>4.0 List of Test Equipment</b>	8
<b>5.0 Support Equipment</b>	9
<b>6.0 EUT Setup Block Diagram</b>	9
<b>7.0 Summary of Tests</b>	10
7.1 Antenna Requirement	10
7.2 Radiated Emissions - Unintentional Radiation	10
7.2.1 Test Methodology	10
7.2.2 Test Results	10
7.3 Peak Output Power	11
7.3.1 Test Methodology	11
7.3.2 Test Results	11
7.4 Channel Usage	13
7.4.1 Carrier Frequency Separation	13
7.4.1.1 Test Methodology	13
7.4.1.2 Test Results	13
7.4.2 Number of Hopping Channels	13
7.4.3 Channel Dwell Time	14
7.4.3.1 Test Methodology	14
7.4.3.2 Test Results	14
7.4.4 20dB Bandwidth	14
7.4.4.1 Test Methodology	14
7.4.4.2 Test Results	14
7.5 Band-edge Compliance and Spurious Emissions	15
7.5.1 Band-edge Compliance of RF Conducted Emissions	16
7.5.1.1 Test Methodology	16
7.5.1.2 Test Results	16
7.5.2 RF Conducted Spurious Emissions	17
7.5.2.1 Test Methodology	17
7.5.2.2 Test Results	17
7.5.3 Radiated Spurious Emissions – Intentional Radiation (Restricted Bands)	17
7.5.3.1 Test Methodology	17
7.5.3.2 Duty Cycle Correction	17
7.5.3.3 Test Results	17
7.5.3.4 Sample Calculations	23
<b>8.0 CONCLUSION</b>	23

## Additional Exhibits Included In Filing

<b>Internal Photographs</b>	<b>Installation/Users Guide</b>
<b>External Photographs</b>	<b>Theory of Operation</b>
<b>Test Setup Photographs</b>	<b>BOM (Parts List)</b>
<b>Product Labeling</b>	<b>System Block Diagram</b>
<b>RF Exposure – MPE Calculations</b>	<b>Schematics</b>

## 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

The R900GM is a one-way RF module that operates in the unlicensed 902-928MHz bandwidth. The data is transmitted via a high power signal to an enhanced data collection device, boosting range and meter reading success rates, while reducing meter reading time.

The R900GM will attach to new or existing meters, and encodes consumption and tamper information from the meter to a handheld, mobile, or a targeted fixed network reading device.

Manufacturer Information:

Neptune Technology Group, Inc.  
1600 Alabama Highway 229  
Tallassee, AL 36078

Test Sample Serial Numbers: 2000015257, 2000015262, 2000015263, 2000015264, 2000015265,

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 R900GM will be a transmit-only meter module that collects and transmits metering data utilizing the 902 - 928 MHz frequency band for collection by Gas utility companies.

### 1.3 Test Methodology and Considerations

The R900GM was designed a modular device. A single limited modular approach was followed for determining the appropriate test requirements which included testing the R900GM integrated into specific host enclosures. Those host enclosures are meter interface units (MIU's) and include the following Neptune models:

R900G Endpoint for American Meter Co.  
R900G Endpoint for Actaris Meter Co.  
R900G Endpoint for Sensus Meter Co.  
R900G Endpoint for Commercial & Industrial meters

## 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:

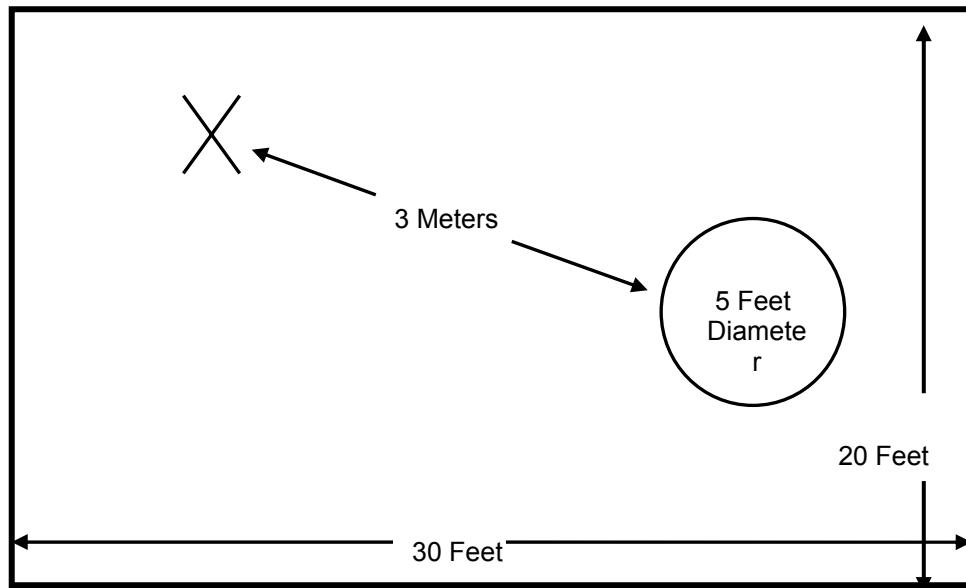


Figure 2.3-1: Semi-Anechoic Chamber Test Site

### 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:

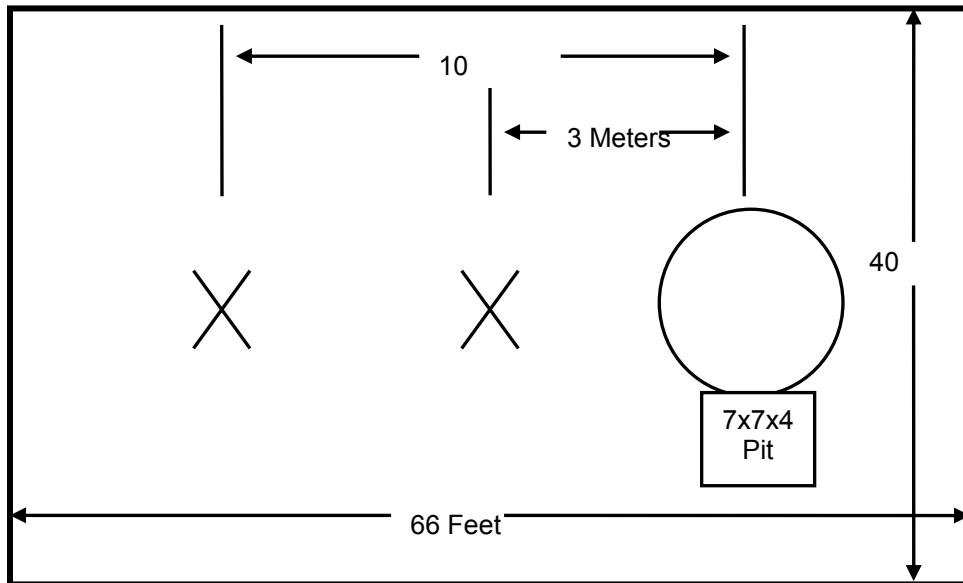


Figure 2.3-2: Open Area Test Site

#### 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:

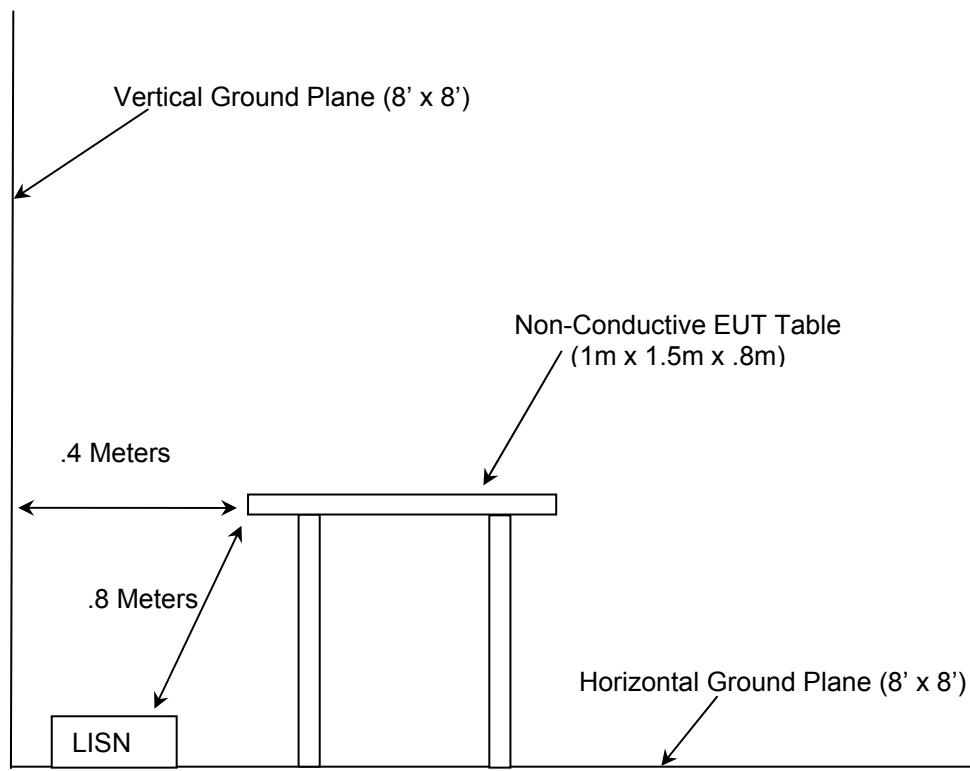


Figure 2.4-1: AC Mains Conducted EMI Site

#### 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, 2007
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2007
- ❖ 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

**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	10-26-2008
2	Rohde & Schwarz	Spectrum Analyzers	ESMI-Receiver	839587/003	10-26-2008
3	Rohde & Schwarz	Spectrum Analyzers	ESMI - Display	839379/011	10-26-2008
4	Rohde & Schwarz	Spectrum Analyzers	ESMI - Receiver	833827/003	10-26-2008
22	Agilent	Amplifiers	8449B	3008A00526	10-25-2008
25	Chase	Antennas	CBL6111	1043	06-06-2008
30	Spectrum Technologies	Antennas	DRH-0118	970102	05-07-2009
73	Agilent	Amplifiers	8447D	2727A05624	12-19-2008
167	ACS	Cable Set	Chamber EMI Cable Set	167	01-04-2009
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	06-18-2008
283	Rohde & Schwarz	Spectrum Analyzers	FSP40	1000033	11-09-2008
291	Florida RF Cables	Cables	SMRE-200W-12.0-SMRE	None	11-21-2008
292	Florida RF Cables	Cables	SMR-290AW-480.0-SMR	None	11-21-2008
321	Hewlett Packard	Amplifiers	HPC 8447D	1937A02809	07-17-2008
331	Microwave Circuits	Filters	H1G513G1	31417	08-27-2008
332	Rohde & Schwarz	Amplifiers	TS-PR40	100021	10-26-2008
337	Microwave Circuits	Filters	H1G513G1	282706	08-28-2008
338	Hewlett Packard	Amplifiers	8449B	3008A01111	10-24-2008
343	Florida RF Cables	Cables	SMRE-200W-12.0-SMRE	N/A	11-21-2008
396	Florida RF Labs	Cables	SMS-290AW-480.0-SMS	N/A	11-29-2008
422	Florida RF	Cables	SMS-200AW-72.0-SMR	805	02-25-2009

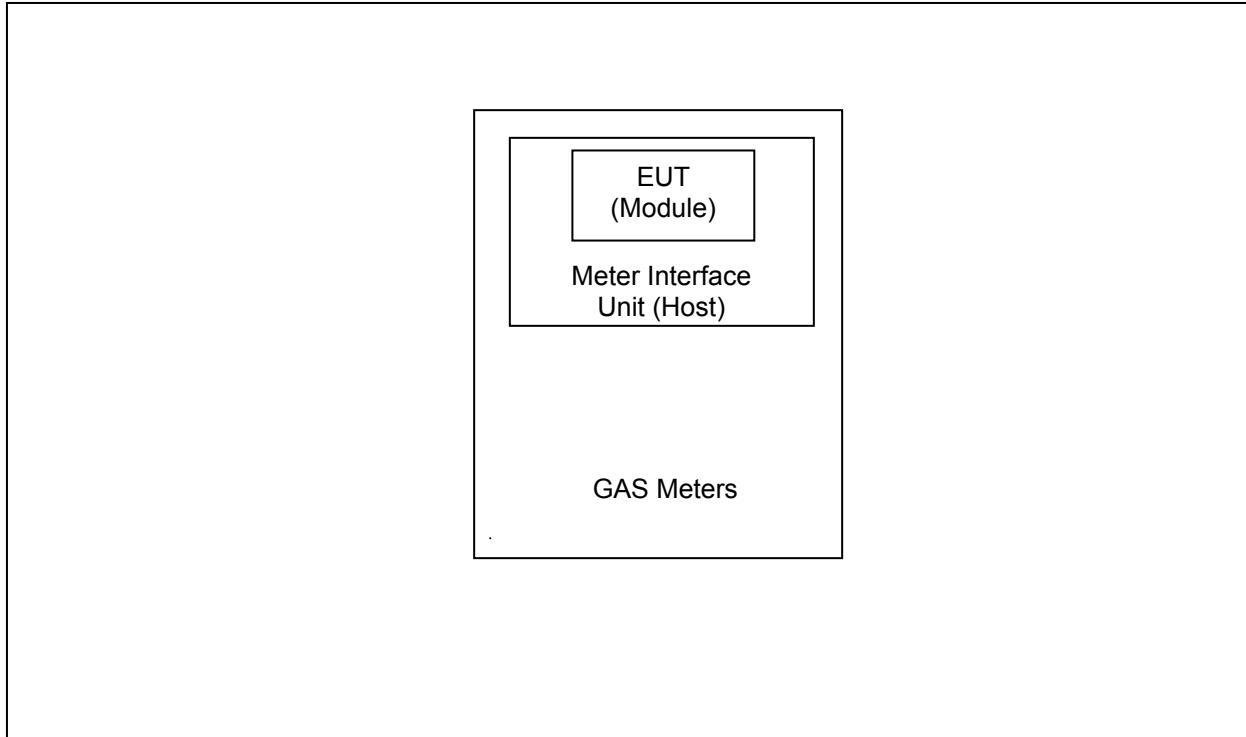
## 5.0 SUPPORT EQUIPMENT

**Table 5-1: Support Equipment**

Manufacturer	Equipment Type	Model Number	Serial Number
Neptune Technology Group, Inc.	Meter Interface Unit	R900G Endpoint for American Meter Co.	NA
Neptune Technology Group, Inc.	Meter Interface Unit	R900G Endpoint for Actaris Meter Co.	NA
Neptune Technology Group, Inc.	Meter Interface Unit	R900G Endpoint for Sensus Meter Co.	NA
Neptune Technology Group, Inc.	Meter Interface Unit	R900G Endpoint for Commercial & Industrial meters	NA
American Meter Company	Gas Meter	AC-250	05F5000846
Actaris	Gas Meter	Metris	T43391133
Sensus Metering Systems	Gas Meter	R-275	137250340
Actaris	Gas Meter	675A	T4391136

The support equipment listed above includes all host devices tested with the R900GM module.

## 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

The EUT employs a 0 dBi integrated PCB Mounted Helix antenna that cannot be modified without damaging the device.

### 7.2 Radiated Emissions - Unintentional Radiation

#### 7.2.1 Test Methodology

Radiated emissions tests were performed over the frequency range of 30MHz to 1GHz. 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. Radiated measurements above 30MHz and below 1GHz were made with the Spectrum Analyzer's resolution bandwidth set to 120 KHz using a Quasi-peak detector.

#### 7.2.2 Test Results

Results of the test are given in Table 7.2-1 below:

**Table 7.2-1: Radiated Emissions Tabulated Data**

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
30	-----	21.23	V	-8.30	-----	12.93	-----	40.0	-----	27.07
44	-----	20.92	V	-15.00	-----	5.92	-----	40.0	-----	34.08
97	-----	25.57	V	-14.74	-----	10.83	-----	43.5	-----	32.67
131	-----	21.31	V	-12.34	-----	8.97	-----	43.5	-----	34.53
204.6	-----	21.33	V	-14.08	-----	7.25	-----	43.5	-----	36.25
323	-----	22.04	V	-10.58	-----	11.46	-----	46.0	-----	34.54
494.5	-----	23.01	V	-5.52	-----	17.49	-----	46.0	-----	28.51
591.22	-----	30.12	V	-3.39	-----	26.73	-----	46.0	-----	19.27
840.5	-----	21.86	V	0.99	-----	22.85	-----	46.0	-----	23.16
929.5	-----	25.06	V	2.08	-----	27.14	-----	46.0	-----	18.86

\* Note: All emissions above 929.5 MHz were attenuated below the permissible limit.

### 7.3 Peak Output Power

#### 7.3.1 Test Methodology

Antenna conducted measurements could not be performed on this device, therefore radiated tests were performed to show compliance with the peak output power limit according to the alternative test methods in the FCC publication DA 00-705.

The procedures set forth in ANSI C63.4 were followed with respect to maximizing the peak emission. The resolution bandwidth of the spectrum analyzer was set to 1 MHz which was greater the 20 dB bandwidth measured in section 7.5.4. The video bandwidth was set to 3 MHz and a peak detector using the Max Hold function was utilized.

The power was calculated using the following equation:

$$P = \frac{(E * d)^2}{30 * G}$$

Where: G = Numeric Gain of the transmitting antenna with reference to an isotropic radiator

d = The distance in meters from which the field strength was measured

E = The measured maximum fundamental field strength in V/m

#### 7.3.2 Test Results

Results are shown below in Tables 7.3.2-1 to 7.3.2.8 for the channel with the maximum fundamental field strength reading. The maximum calculated conducted power for all configurations is 26.19 dBm (416mW).

**Table 7.3.2-1: Fundamental Field Strength – R900G Endpoint for American Meter Co.**

Frequency (MHz)	Uncorrected Level (dBuV)	Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)
911.0815	113.15	H	5.61	118.76
915.9311	114.03	H	5.64	119.67
919.0769	112.16	H	5.69	117.85

**Table 7.3.2-2: Peak Output Power – R900G Endpoint for American Meter Co.**

Frequency (MHz)	Measurement Distance (m)	Antenna Gain (dBi)	Field Strength (V/m)	Antenna Gain (Num)	Power (mW)	Power (dBm)
911.0815	3	0	0.87	1.00	225.53	23.53
915.9311	3	0	0.96	1.00	278.02	24.44
919.0769	3	0	0.78	1.00	182.89	22.62

Table 7.3.2-3: Fundamental Field Strength – R900G Endpoint for Actaris Meter Co.

Frequency (MHz)	Uncorrected Level (dBuV)	Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)
911.0815	81.70	H	28.92	110.62
915.9311	82.38	H	29.02	111.40
919.0769	85.55	H	29.08	114.63

Table 7.3.2-4: Peak Output Power – R900G Endpoint for Actaris Meter Co.

Frequency (MHz)	Measurement Distance (m)	Antenna Gain (dBi)	Field Strength (V/m)	Antenna Gain (Num)	Power (mW)	Power (dBm)
911.0815	3	0	0.34	1.00	34.62	15.39
915.9311	3	0	0.37	1.00	41.40	16.17
919.0769	3	0	0.54	1.00	87.15	19.40

Table 7.3.2-5: Fundamental Field Strength – R900G Endpoint for Sensus Meter Co.

Frequency (MHz)	Uncorrected Level (dBuV)	Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)
911.0815	77.85	H	28.92	106.77
915.9311	89.24	H	29.02	118.26
919.0769	87.89	H	29.08	116.97

Table 7.3.2-6: Peak Output Power – R900G Endpoint for Sensus Meter Co.

Frequency (MHz)	Measurement Distance (m)	Antenna Gain (dBi)	Field Strength (V/m)	Antenna Gain (Num)	Power (mW)	Power (dBm)
911.0815	3	0	0.22	1.00	14.27	11.54
915.9311	3	0	0.82	1.00	200.90	23.03
919.0769	3	0	0.71	1.00	149.37	21.74

Table 7.3.2-7: Fundamental Field Strength - R900G Endpoint for Commercial &amp; Industrial meters

Frequency (MHz)	Uncorrected Level (dBuV)	Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)
911.0815	92.50	H	28.92	121.42
915.9311	92.11	H	29.02	121.13
919.0769	92.93	V	28.39	121.32

Table 7.3.2-8: Peak Output Power – R900G Endpoint for Commercial &amp; Industrial meters

Frequency (MHz)	Measurement Distance (m)	Antenna Gain (dBi)	Field Strength (V/m)	Antenna Gain (Num)	Power (mW)	Power (dBm)
911.0815	3	0	1.18	1.00	416.19	26.19
915.9311	3	0	1.14	1.00	389.03	25.90
919.0769	3	0	1.16	1.00	406.62	26.09

## 7.4 Channel Usage Requirements

### 7.4.1 Carrier Frequency Separation

#### 7.4.1.1 Test Methodology

The span of the spectrum analyzer was set wide enough to capture two adjacent peaks and the RBW and VBW were set to  $\geq 1\%$  of the span.

#### 7.4.1.2 Test Results

The maximum 20dB bandwidth of the hopping channel was measured to be 117.6kHz (See figure 7.4.4-1 to 7.4.4-3 below). The adjacent channel separation was measured to be 130.35kHz. Results are shown in figure 7.4.1-1 below:

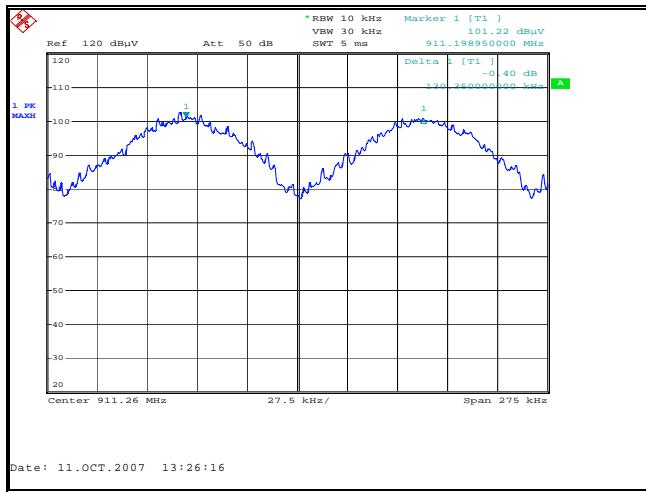


Figure 7.4.1-1: Carrier Frequency Separation

### 7.4.2 Number of Hopping Channels

The 20dB bandwidth of the device is less than 250 kHz. The device employs 50 hopping channels as required. Results are shown in Figure 7.4.2-1 below:

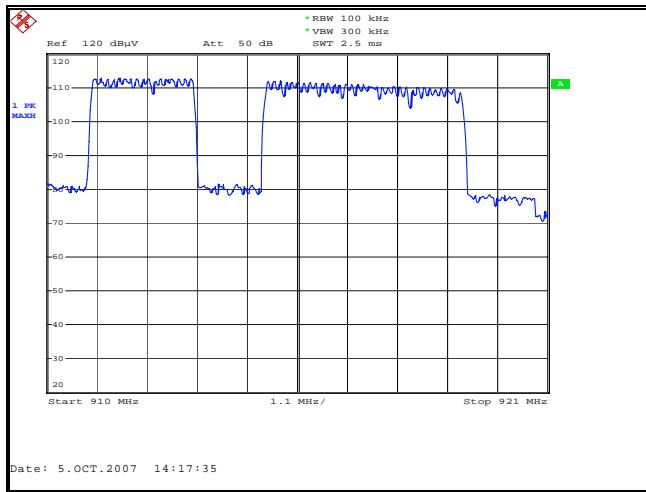


Figure 7.4.2-1: Number of Hopping Channels

### 7.4.3 Channel Dwell Time

#### 7.4.3.1 Test Methodology

The emission measured centered on the analyzer and the span set to 0 Hz. Sweep time was set to 15 ms to capture the burst duration of the emission. The marker -delta function of the analyzer was employed to measure the burst duration.

#### 7.4.3.2 Test Results

The duration of the RF transmission is 7 ms. There is a minimum 10 second rest period in which the device hops to another channel according to the pseudorandom frequency table before transmitting another 7ms burst. Therefore the average time of occupancy on any channel in a 20 second period is 7ms. A single transmission is shown in figure 7.4.3-1 below:

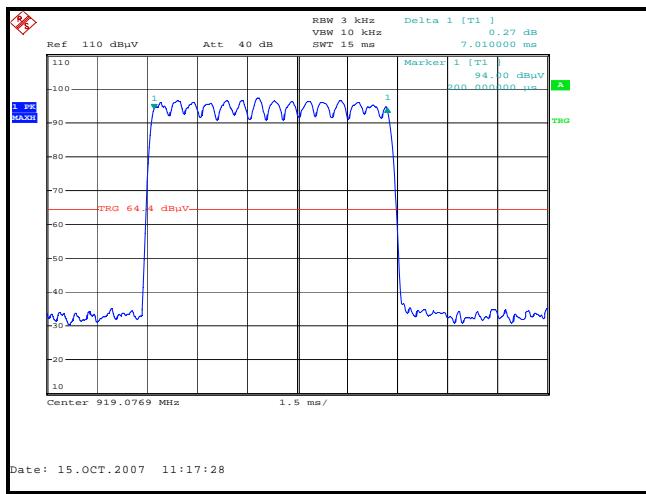


Figure 7.4.3-1: Channel Dwell Time

### 7.4.4 20dB Bandwidth

#### 7.4.4.1 Test Methodology

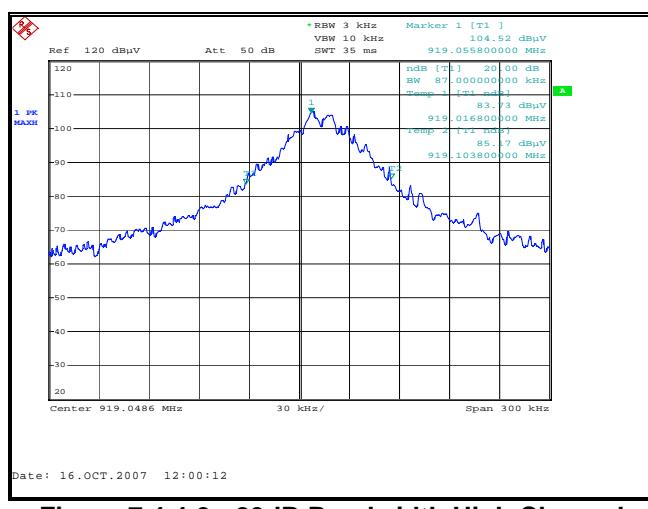
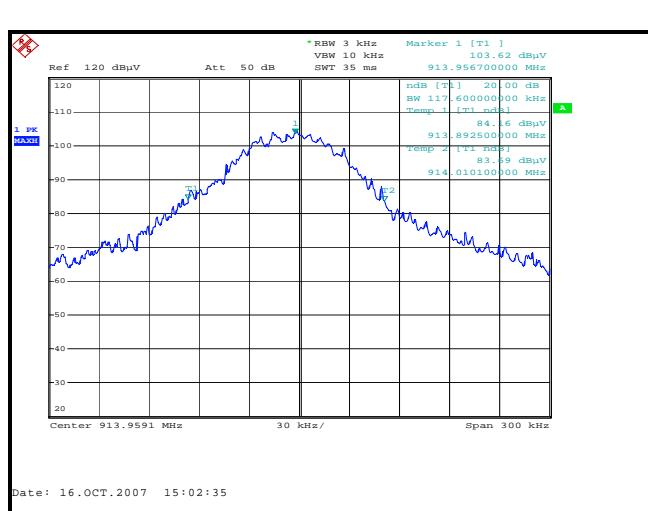
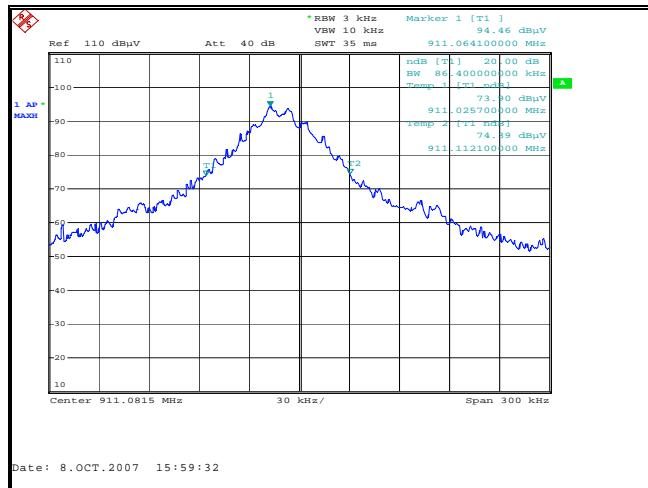
The spectrum analyzer span was set to 2 to 3 times the estimated 20 dB bandwidth of the emission. The RBW was to  $\geq 1\%$  of the estimated 20 dB bandwidth. The trace was set to max hold with a peak detector active. The Delta function of the analyzer was utilized to determine the 20 dB bandwidth of 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  $\geq 1\%$  of the 20 dB bandwidth for the RBW.

#### 7.4.4.2 Test Results

The maximum 20dB bandwidth was found to be approximately 117.6kHz. Results are shown below in Table 7.4.4-1 and Figures 7.4.4-1 through 7.4.4-3.

Table 7.4.4-1

Frequency (MHz)	20dB Bandwidth (kHz)
911.0815	86.4
913.9591	117.6
919.0769	87.0



## 7.5 Band-Edge Compliance and Spurious Emissions

### 7.5.1 Band-Edge Compliance of RF Emissions

#### 7.5.1.1 Test Methodology

The EUT was investigated at the lowest and highest channel available to determine band-edge compliance.

The procedures set forth in ANSI C63.4 were followed with respect to maximizing the peak fundamental emission. For each measurement the spectrum analyzer's RBW was set to 100 kHz, which is  $\geq 1\%$  of the span, and the VBW was set to 300 kHz. A peak detector using the Max Hold function was utilized.

#### 7.5.1.2 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 7.5.1-1 and 7.5.2-2

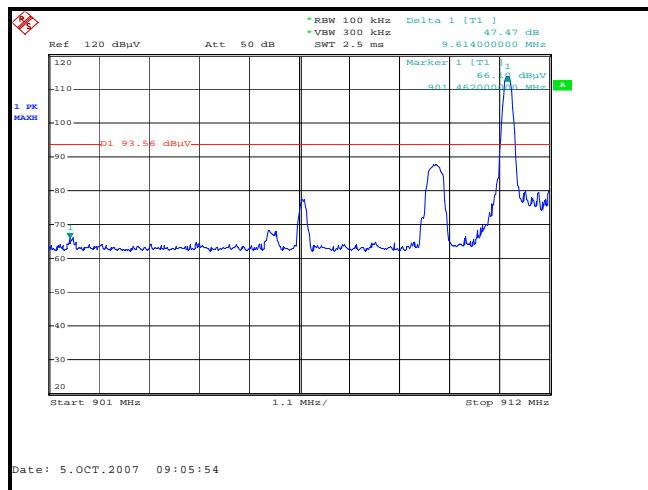


Figure 7.5.1-1: Lower Band-edge

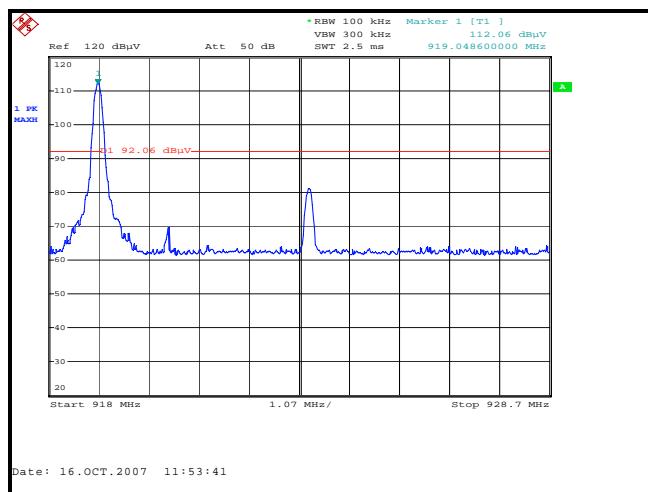


Figure 7.5.1-2: Upper Band-edge

## 7.5.2 RF Conducted Spurious Emissions

### 7.5.2.1 Test Methodology

Antenna conducted measurements could not be performed on this device, therefore radiated tests were performed to show compliance with the spurious RF conducted limit according to FCC publication DA 00-705.

For each measurement, the spectrum analyzer's RBW was set to 100 kHz and the VBW was set to 300 kHz. The peak detector and Max Hold function of the analyzer were utilized. The field strength of both the fundamental emission and all spurious emissions outside of the restricted bands were measured with these settings. Procedures in ANSI C63.4 with respect to maximizing the emissions were followed.

### 7.5.2.2 Test Results

The magnitudes of all emissions are reported in section 7.5.3 with the appropriate limit as referenced to 20 dB below the fundamental frequency field strength.

## 7.5.3 Radiated Spurious Emissions – Intentional Radiation

### 7.5.3.1 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 measurements were made using an RBW of 1 MHz and a VBW of 3 MHz. Average measurements could not be made therefore peak emissions were compared to the average emission limits.

For those frequencies that fell outside the restricted bands, the alternative test methods in the FCC publication DA 00-705 was followed using a RBW of 100kHz and VBW of 300kHz and peak detector.

### 7.5.3.2 Duty Cycle Correction

For average radiated measurements in restricted bands, the peak measured level was reduced by a factor 23.1dB to account for the duty cycle of the EUT. The EUT transmits for 7ms on a channel followed by a minimum 10 second rest period before hopping to the next channel. The EUT does not return to the same channel for over 500 seconds. Therefore the duty cycle is 7%. The duty cycle correction factor is determined using the formula:  $20\log(0.07) = 23.1\text{dB}$ .

### 7.5.3.3 Test Results

Radiated spurious emissions found in the band of 30MHz to 10GHz are reported in Tables 7.5.3-1 to 7.5.3-12. Each emission found to be in a restricted band, was compared to the radiated emission limits. Those spurious emissions outside the restricted bands were compared to the limits of 20 dB below the fundamental frequency field strength.

**Table 7.5.3-1: Radiated Spurious Emissions – R900G Endpoint for American Meter Co.**  
**Low Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
911.08	112.46	-----	H	5.61	118.07	-----	-----	-----	-----	-----
911.08	109.97	-----	V	5.08	115.05	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1822.16	76.47	-----	H	-9.06	67.41	-----	98.07	-----	30.66	-----
1822.16	74.35	-----	V	-9.06	65.29	-----	98.07	-----	32.78	-----
2733.24	73.23	73.23	H	-5.39	67.84	44.74	74	54	6.16	9.26
2733.24	67.81	67.81	V	-5.64	62.17	39.07	74	54	11.83	14.93
3644.32	72.88	72.88	H	-2.42	70.46	47.36	74	54	3.54	6.64
3644.32	66.18	66.18	V	-2.39	63.79	40.69	74	54	10.21	13.31
4555.4	59.99	59.99	H	-0.83	59.16	36.06	74	54	14.84	17.94
4555.4	62.55	62.55	V	-0.91	61.64	38.55	74	54	12.36	15.45
5466.48	53.49	-----	H	1.27	54.76	-----	98.07	-----	43.31	-----
5466.48	53.78	-----	V	1.46	55.24	-----	98.07	-----	42.83	-----
6377.56	72.63	-----	H	2.99	75.62	-----	98.07	-----	22.45	-----
6377.56	77.40	-----	V	2.91	80.31	-----	98.07	-----	17.76	-----
8199.7335	56.43	56.43	V	6.12	62.55	39.45	74	54	11.45	14.55

**Table 7.5.3-2: Radiated Spurious Emissions – R900G Endpoint for American Meter Co.**  
**Mid Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
913.9591	113.93	-----	H	5.64	119.57	-----	-----	-----	-----	-----
913.9591	110.72	-----	V	5.02	115.74	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1827.9182	67.57	-----	H	-8.81	58.76	-----	99.57	-----	40.81	-----
1827.9182	59.32	-----	V	-8.81	50.51	-----	99.57	-----	49.06	-----
2741.8773	59.09	59.09	H	-5.15	53.94	30.84	74	54	20.06	23.16
2741.8773	53.38	53.38	V	-5.40	47.98	24.88	74	54	26.02	29.12
3655.8364	58.90	58.90	H	-2.17	56.73	33.63	74	54	17.27	20.37
3655.8364	54.59	54.59	V	-2.14	52.45	29.35	74	54	21.55	24.65
4569.7955	52.91	52.91	H	-0.51	52.40	29.31	74	54	21.60	24.69
4569.7955	52.64	52.64	V	-0.58	52.06	28.96	74	54	21.94	25.04
5483.7546	45.65	-----	H	1.35	47.00	-----	99.57	-----	52.57	-----
5483.7546	46.96	-----	V	1.54	48.50	-----	99.57	-----	51.07	-----
6397.7137	52.40	-----	H	3.20	55.60	-----	99.57	-----	43.97	-----
6397.7137	55.41	-----	V	3.12	58.53	-----	99.57	-----	41.04	-----

**Table 7.5.3-3: Radiated Spurious Emissions – R900G Endpoint for American Meter Co.**  
**High channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
919.07	112.03	-----	H	5.69	117.72	-----	-----	-----	-----	-----
919.07	110.36	-----	V	4.92	115.28	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1838.14	77.07	-----	H	-8.76	68.31	-----	97.72	-----	29.41	-----
1838.14	75.18	-----	V	-8.76	66.42	-----	97.72	-----	31.30	-----
2757.21	68.02	68.02	H	-5.12	62.90	39.81	74	54	11.10	14.19
2757.21	65.04	65.04	V	-5.36	59.68	36.58	74	54	14.32	17.42
3676.28	64.86	64.86	H	-2.08	62.78	39.68	74	54	11.22	14.32
3676.28	62.88	62.88	V	-2.05	60.83	37.73	74	54	13.17	16.27
4595.35	56.14	56.14	H	-0.46	55.68	32.58	74	54	18.32	21.42
4595.35	54.57	54.57	V	-0.52	54.05	30.95	74	54	19.95	23.05
5514.42	49.83	-----	H	1.41	51.24	-----	97.72	-----	46.48	-----
5514.42	52.41	-----	V	1.60	54.01	-----	97.72	-----	43.71	-----
6433.5383	55.17	-----	H	3.30	58.47	-----	97.72	-----	39.25	-----
6433.5383	63.00	-----	V	3.21	66.21	-----	97.72	-----	31.51	-----
7352.6152	52.63	52.63	H	5.29	57.92	34.82	74	54	16.08	19.18
7352.6152	52.82	52.82	V	5.36	58.18	35.08	74	54	15.82	18.92

**Table 7.5.3-4: Radiated Spurious Emissions – R900G Endpoint for Actaris Meter Co.**  
**Low Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
911.083	81.51	-----	H	28.92	110.43	-----	-----	-----	-----	-----
911.083	77.58	-----	V	28.31	105.89	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1822.166	68.51	-----	H	-3.56	64.95	-----	90.4	-----	25.48	-----
1822.166	62.32	-----	V	-3.59	58.73	-----	90.4	-----	31.70	-----
2733.249	63.25	63.25	H	-0.52	62.73	39.63	74.0	54.0	11.27	14.37
2733.249	58.43	58.43	V	-0.72	57.71	34.61	74.0	54.0	16.29	19.39
3644.332	66.83	66.83	H	2.25	69.08	45.98	74.0	54.0	4.92	8.02
3644.332	57.81	57.81	V	2.28	60.09	36.99	74.0	54.0	13.91	17.01
4555.415	59.85	59.85	H	4.50	64.35	41.25	74.0	54.0	9.65	12.75
4555.415	55.07	55.07	V	4.60	59.67	36.57	74.0	54.0	14.33	17.43
5466.498	51.59	-----	H	6.39	57.98	-----	90.4	-----	32.45	-----
5466.498	54.85	-----	V	6.39	61.24	-----	90.4	-----	29.19	-----
6377.581	53.16	-----	H	7.82	60.98	-----	90.4	-----	29.45	-----
6377.581	57.07	-----	V	7.87	64.94	-----	90.4	-----	25.50	-----
7288.664	52.10	52.10	H	9.52	61.62	38.52	74.0	54.0	12.38	15.48
7288.664	59.23	59.23	V	9.57	68.80	45.71	74.0	54.0	5.20	8.29
8199.747	52.48	52.48	H	10.31	62.79	39.69	74.0	54.0	11.21	14.31
8199.747	55.29	55.29	V	10.31	65.60	42.50	74.0	54.0	8.40	11.50

**Table 7.5.3-5: Radiated Spurious Emissions – R900G Endpoint for Actaris Meter Co.**  
**Mid Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
915.93	82.02	-----	H	29.02	111.04	-----	-----	-----	-----	-----
915.93	77.33	-----	V	28.36	105.69	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1831.86	65.38	-----	H	-3.53	61.85	-----	91.0	-----	29.18	-----
1831.86	63.10	-----	V	-3.56	59.54	-----	91.0	-----	31.50	-----
2747.79	62.97	62.97	H	-0.50	62.47	39.37	74.0	54.0	11.53	14.63
2747.79	54.79	54.79	V	-0.70	54.09	30.99	74.0	54.0	19.91	23.01
3663.72	70.76	70.76	H	2.33	73.09	49.99	74.0	54.0	0.91	4.01
3663.72	60.17	60.17	V	2.36	62.53	39.43	74.0	54.0	11.47	14.57
4579.65	61.69	61.69	H	4.51	66.20	43.10	74.0	54.0	7.80	10.90
4579.65	53.87	53.87	V	4.61	58.48	35.38	74.0	54.0	15.52	18.62
5495.58	50.77	-----	H	6.49	57.26	-----	91.0	-----	33.77	-----
5495.58	53.22	-----	V	6.49	59.71	-----	91.0	-----	31.32	-----
6411.51	51.55	-----	H	7.89	59.44	-----	91.0	-----	31.60	-----
6411.51	54.24	-----	V	7.93	62.17	-----	91.0	-----	28.87	-----
7327.44	52.81	52.81	H	9.53	62.34	39.24	74.0	54.0	11.66	14.76
7327.44	59.56	59.56	V	9.59	69.15	46.05	74.0	54.0	4.85	7.95
8243.37	51.66	51.66	H	10.35	62.01	38.91	74.0	54.0	11.99	15.09
8243.37	55.70	55.70	V	10.35	66.05	42.95	74.0	54.0	7.95	11.05

**Table 7.5.3-6: Radiated Spurious Emissions – R900G Endpoint for Actaris Meter Co.  
High Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
919.07	85.50	-----	H	29.08	-----	-----	-----	-----	-----	-----
919.07	78.95	-----	V	28.39	-----	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1838.14	65.81	-----	H	-3.50	62.31	-----	94.6	-----	32.27	-----
1838.14	62.86	-----	V	-3.54	59.32	-----	94.6	-----	35.26	-----
2757.21	63.71	63.71	H	-0.49	63.22	40.12	74.0	54.0	10.78	13.88
2757.21	58.93	58.93	V	-0.69	58.24	35.14	74.0	54.0	15.76	18.86
3676.28	67.78	67.78	H	2.38	70.16	47.06	74.0	54.0	3.84	6.94
3676.28	59.13	59.13	V	2.42	61.55	38.45	74.0	54.0	12.45	15.55
4595.35	61.10	61.10	H	4.51	65.61	42.52	74.0	54.0	8.39	11.48
4595.35	54.65	54.65	V	4.61	59.26	36.17	74.0	54.0	14.74	17.83
5514.42	50.44	-----	H	6.52	56.96	-----	94.6	-----	37.62	-----
5514.42	53.50	-----	V	6.53	60.03	-----	94.6	-----	34.55	-----
6433.49	52.61	-----	H	7.94	60.55	-----	94.6	-----	34.03	-----
6433.49	52.55	-----	V	7.97	60.52	-----	94.6	-----	34.06	-----
7352.56	52.01	52.01	H	9.53	61.54	38.45	74.0	54.0	12.46	15.55
7352.56	55.98	55.98	V	9.61	65.59	42.49	74.0	54.0	8.41	11.51
8271.63	53.17	53.17	H	10.38	63.55	40.45	74.0	54.0	10.45	13.55
8271.63	54.41	54.41	V	10.38	64.79	41.69	74.0	54.0	9.21	12.31

**Table 7.5.3-7: Radiated Spurious Emissions – R900G Endpoint for Sensus Meter Co.  
Low Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
911.083	77.58	-----	H	28.92	106.50	106.50	-----	-----	-----	-----
911.083	73.91	-----	V	28.31	102.22	102.22	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1822.166	69.81	-----	H	-3.50	66.31	-----	86.5	-----	20.19	-----
1822.166	67.80	-----	V	-3.49	64.31	-----	86.5	-----	22.19	-----
2733.249	65.86	65.86	H	-0.52	65.34	42.24	74.0	54.0	8.66	11.76
2733.249	65.65	65.65	V	-0.77	64.88	41.78	74.0	54.0	9.12	12.22
3644.332	66.26	66.26	H	2.31	68.57	45.47	74.0	54.0	5.43	8.53
3644.332	64.64	64.64	V	2.34	66.98	43.88	74.0	54.0	7.02	10.12
4555.415	58.03	58.03	H	4.66	62.69	39.60	74.0	54.0	11.31	14.40
4555.415	59.54	59.54	V	4.59	64.13	41.03	74.0	54.0	9.87	12.97
5466.498	47.80	-----	H	6.38	54.18	-----	86.5	-----	32.32	-----
5466.498	55.33	-----	V	6.57	61.90	-----	86.5	-----	24.60	-----
6377.581	57.59	-----	H	7.89	65.48	-----	86.5	-----	21.02	-----
6377.581	55.71	-----	V	7.82	63.53	-----	86.5	-----	22.97	-----
7288.664	52.38	52.38	H	9.82	62.20	39.10	74.0	54.0	11.80	14.90
7288.664	51.28	51.28	V	9.87	61.15	38.06	74.0	54.0	12.85	15.94
8199.747	51.47	51.47	H	10.45	61.92	38.82	74.0	54.0	12.08	15.18
8199.747	49.33	49.33	V	10.51	59.84	36.74	74.0	54.0	14.16	17.26

**Table 7.5.3-8: Radiated Spurious Emissions – R900G Endpoint for Sensus Meter Co.**  
**Mid Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
915.93	89.13	-----	H	29.02	118.15	118.15	-----	-----	-----	-----
915.93	83.21	-----	V	28.36	111.57	111.57	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1831.86	76.18	-----	H	-3.46	72.72	-----	98.1	-----	25.43	-----
1831.86	71.16	-----	V	-3.46	67.70	-----	98.1	-----	30.45	-----
2747.79	65.26	65.26	H	-0.50	64.76	41.66	74.0	54.0	9.24	12.34
2747.79	61.37	61.37	V	-0.76	60.61	37.52	74.0	54.0	13.39	16.48
3663.72	67.70	67.70	H	2.40	70.10	47.00	74.0	54.0	3.90	7.00
3663.72	65.42	65.42	V	2.43	67.85	44.75	74.0	54.0	6.15	9.25
4579.65	56.72	56.72	H	4.66	61.38	38.28	74.0	54.0	12.62	15.72
4579.65	59.30	59.30	V	4.59	63.89	40.79	74.0	54.0	10.11	13.21
5495.58	47.78	-----	H	6.49	54.27	-----	98.1	-----	43.88	-----
5495.58	52.89	-----	V	6.69	59.58	-----	98.1	-----	38.57	-----
6411.51	53.10	-----	H	7.98	61.08	-----	98.1	-----	37.07	-----
6411.51	56.53	-----	V	7.89	64.42	-----	98.1	-----	33.73	-----
7327.44	49.65	49.65	H	9.83	59.48	36.38	74.0	54.0	14.52	17.62
7327.44	52.92	52.92	V	9.89	62.81	39.71	74.0	54.0	11.19	14.29
8243.37	51.36	51.36	H	10.50	61.86	38.76	74.0	54.0	12.14	15.24
8243.37	51.90	51.90	V	10.55	62.45	39.35	74.0	54.0	11.55	14.65

**Table 7.5.3-9: Radiated Spurious Emissions – R900G Endpoint for Sensus Meter Co.**  
**High Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
919.07	87.05	-----	H	29.08	116.13	-----	-----	-----	-----	-----
919.07	83.75	-----	V	28.39	112.14	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1838.14	65.57	-----	H	-3.43	62.14	-----	96.1	-----	34.00	-----
1838.14	61.91	-----	V	-3.44	58.47	-----	96.1	-----	37.66	-----
2757.21	60.42	60.42	H	-0.49	59.93	36.83	74.0	54.0	14.07	17.17
2757.21	54.91	54.91	V	-0.74	54.17	31.07	74.0	54.0	19.83	22.93
3676.28	64.32	64.32	H	2.45	66.77	43.67	74.0	54.0	7.23	10.33
3676.28	59.17	59.17	V	2.49	61.66	38.56	74.0	54.0	12.34	15.44
4595.35	60.05	60.05	H	4.66	64.71	41.61	74.0	54.0	9.29	12.39
4595.35	59.10	59.10	V	4.60	63.70	40.60	74.0	54.0	10.30	13.40
5514.42	51.07	-----	H	6.52	57.59	-----	96.1	-----	38.54	-----
5514.42	51.25	-----	V	6.72	57.97	-----	96.1	-----	38.16	-----
6433.49	52.79	-----	H	8.03	60.82	-----	96.1	-----	35.31	-----
6433.49	55.83	-----	V	7.94	63.77	-----	96.1	-----	32.36	-----
7352.56	54.32	54.32	H	9.83	64.15	41.06	74.0	54.0	9.85	12.94
7352.56	54.51	54.51	V	9.91	64.42	41.32	74.0	54.0	9.58	12.68
8271.63	53.42	53.42	H	10.53	63.95	40.85	74.0	54.0	10.05	13.15
8271.63	52.14	52.14	V	10.58	62.72	39.62	74.0	54.0	11.28	14.38

**Table 7.5.3-10: Radiated Spurious Emissions – R900G Endpoint for Commercial & Industrial meters  
Low Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
911.083	92.24	-----	H	28.92	121.16	-----	-----	-----	-----	-----
911.083	89.54	-----	V	28.31	117.85	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1822.166	64.83	-----	H	-3.56	61.27	-----	101.2	-----	39.89	-----
1822.166	68.39	-----	V	-3.59	64.80	-----	101.2	-----	36.36	-----
2733.249	67.30	67.30	H	-0.52	66.78	43.68	74.0	54.0	7.22	10.32
2733.249	58.95	58.95	V	-0.72	58.23	35.13	74.0	54.0	15.77	18.87
3644.332	70.92	70.92	H	2.25	73.17	50.07	74.0	54.0	0.83	3.93
3644.332	64.55	64.55	V	2.28	66.83	43.73	74.0	54.0	7.17	10.27
4555.415	54.78	54.78	H	4.50	59.28	36.18	74.0	54.0	14.72	17.82
4555.415	50.08	50.08	V	4.60	54.68	31.58	74.0	54.0	19.32	22.42
5466.498	53.52	-----	H	6.39	59.91	-----	101.2	-----	41.25	-----
5466.498	49.65	-----	V	6.39	56.04	-----	101.2	-----	45.12	-----
6377.581	58.51	-----	H	7.82	66.33	-----	101.2	-----	34.83	-----
6377.581	62.84	-----	V	7.87	70.71	-----	101.2	-----	30.46	-----
7288.664	52.60	52.60	H	9.52	62.12	39.02	74.0	54.0	11.88	14.98
7288.664	54.31	54.31	V	9.57	63.88	40.79	74.0	54.0	10.12	13.21
8199.747	52.53	52.53	H	10.31	62.84	39.74	74.0	54.0	11.16	14.26
8199.747	52.20	52.20	V	10.31	62.51	39.41	74.0	54.0	11.49	14.59

**Table 7.5.3-11: Radiated Spurious Emissions – R900G Endpoint for Commercial & Industrial meters  
Mid Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
915.9311	91.99	-----	H	29.02	121.01	121.01	-----	-----	-----	-----
915.9311	91.69	-----	V	28.36	120.05	120.05	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1831.8622	66.48	-----	H	-3.53	62.95	-----	101.0	-----	38.05	-----
1831.8622	69.85	-----	V	-3.56	66.29	-----	101.0	-----	34.72	-----
2747.7933	65.95	65.95	H	-0.50	65.45	42.35	74.0	54.0	8.55	11.65
2747.7933	60.12	60.12	V	-0.70	59.42	36.32	74.0	54.0	14.58	17.68
3663.7244	66.58	66.58	H	2.33	68.91	45.81	74.0	54.0	5.09	8.19
3663.7244	64.31	64.31	V	2.36	66.67	43.57	74.0	54.0	7.33	10.43
4579.6555	61.91	61.91	H	4.51	66.42	43.32	74.0	54.0	7.58	10.68
4579.6555	51.06	51.06	V	4.61	55.67	32.57	74.0	54.0	18.33	21.43
5495.5866	48.77	-----	H	6.49	55.26	-----	101.0	-----	45.74	-----
5495.5866	48.43	-----	V	6.49	54.92	-----	101.0	-----	46.08	-----
6411.5177	55.08	-----	H	7.89	62.97	-----	101.0	-----	38.04	-----
6411.5177	61.22	-----	V	7.93	69.15	-----	101.0	-----	31.86	-----
7327.4488	48.72	48.72	H	9.53	58.25	35.15	74.0	54.0	15.75	18.85
7327.4488	56.87	56.87	V	9.59	66.46	43.36	74.0	54.0	7.54	10.64
8243.3799	53.16	53.16	H	10.35	63.51	40.41	74.0	54.0	10.49	13.59
8243.3799	54.51	54.51	V	10.35	64.86	41.76	74.0	54.0	9.14	12.24
9159.311	48.62	48.62	H	11.04	59.66	36.57	74.0	54.0	14.34	17.43

**Table 7.5.3-12: Radiated Spurious Emissions – R900G Endpoint for Commercial & Industrial meters  
High Channel**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	avg			pk	avg	pk	avg	pk	avg
<b>Fundamental Frequency</b>										
919.07	91.79	-----	H	29.08	120.87	-----	-----	-----	-----	-----
919.07	92.52	-----	V	28.39	120.91	-----	-----	-----	-----	-----
<b>Spurious Emissions</b>										
1838.14	66.39	-----	H	-3.50	62.89	-----	100.9	-----	38.02	-----
1838.14	68.42	-----	V	-3.54	64.88	-----	100.9	-----	36.03	-----
2757.21	67.03	67.03	H	-0.49	66.54	43.44	74.0	54.0	7.46	10.56
2757.21	60.89	60.89	V	-0.69	60.20	37.10	74.0	54.0	13.80	16.90
3676.28	64.39	64.39	H	2.38	66.77	43.67	74.0	54.0	7.23	10.33
3676.28	58.61	58.61	V	2.42	61.03	37.93	74.0	54.0	12.97	16.07
4595.35	62.75	62.75	H	4.51	67.26	44.17	74.0	54.0	6.74	9.83
4595.35	59.38	59.38	V	4.61	63.99	40.90	74.0	54.0	10.01	13.10
5514.42	48.25	-----	H	6.52	54.77	-----	100.9	-----	46.14	-----
5514.42	48.92	-----	V	6.53	55.45	-----	100.9	-----	45.46	-----
6433.49	52.80	-----	H	7.94	60.74	-----	100.9	-----	40.17	-----
6433.49	57.53	-----	V	7.97	65.50	-----	100.9	-----	35.41	-----
7352.56	51.13	51.13	H	9.53	60.66	37.57	74.0	54.0	13.34	16.43
7352.56	53.24	53.24	V	9.61	62.85	39.75	74.0	54.0	11.15	14.25
8271.63	52.05	52.05	H	10.38	62.43	39.33	74.0	54.0	11.57	14.67
8271.63	51.46	51.46	V	10.38	61.84	38.74	74.0	54.0	12.16	15.26
9190.7	48.76	48.76	H	11.06	59.82	36.72	74.0	54.0	14.18	17.28

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

#### 7.5.3.4 Sample Calculation:

$$R_C = R_U + CF_T$$

Where:

CF <sub>T</sub>	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R <sub>U</sub>	=	Uncorrected Reading
R <sub>C</sub>	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

#### Example Calculation

PEAK:

Corrected Level: 73.23 - 5.39 = 67.84dBuV

Margin: 74dBuV – 67.84dBuV = 6.16dB

AVERAGE:

Corrected Level: 73.23 - 5.39 - 23.1 = 44.74dBuV

Margin: 54dBuV – 44.74dBuV = 9.26dB

#### 8.0 CONCLUSION

In the opinion of ACS, Inc. the R900GM, manufactured by Neptune Technology Group, Inc. meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210.

## END REPORT