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# Report On

Radio Testing of the  
IPS Group Inc.  
MSCM Multiple Space Parking Meter Controller Module

FCC Part 15 Subpart C §15.225  
IC RSS-210 Issue 8 December 2010

**Report No. SC1401258B**

**March 2014**





**REPORT ON** Radio Testing of the  
IPS Group Inc.  
Multiple Space Parking Meter Controller Module

**TEST REPORT NUMBER** SC1401258B

**PREPARED FOR** IPS Group Inc.  
5601 Oberlin Drive  
San Diego, CA 92121

**CONTACT PERSON** Gary Thomas  
RF Engineer  
(858) 768-2401 ext. 211  
gary.thomas@ipsgroupinc.com

**PREPARED BY**   
Alex Chang  
**Name**  
Authorized Signatory  
Title: EMC/Wireless Test Engineer

**APPROVED BY**   
Chip R. Fleury  
**Name**  
Authorized Signatory  
Title: West Coast EMC Manager

**DATED** March 04, 2014

## Revision History

SC1401258B IPS Group Inc. MSCM Multiple Space Parking Meter Controller Module					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
03/04/2014	Initial Release				Chip R. Fleury

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## **SECTION 1**

### **REPORT SUMMARY**

Radio Testing of the  
IPS Group Inc.  
Multiple Space Parking Meter Controller Module

## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the IPS Group Inc. Multiple Space Parking Meter Controller Module to the requirements of FCC Part 15 Subpart C §15.225 and IC RSS-210 Issue 8 December 2010.

**Objective** To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.

**Manufacturer** IPS Group Inc.

**Model Number(s)** M800

**FCC ID Number** SGWIPS2010M800

**FCC Classification** Low Power Communications Device Transmitter (DXX)

**IC Number** 11583A-IPS2010M800

**Serial Number(s)** N/A

**Device Capabilities**

Item	Description
2G Bands	GSM 850, GSM 900, DCS1800, PCS1900
3G Bands	FDD B2, B4, and B5
RFID	13.56 MHz
ISM/SRD Band Transceiver	400 MHz

**Mode Verified** 13.56MHz RFID Mode

**Number of Samples Tested** 1

**Test Specification/Issue/Date**

- FCC Part 15 Subpart C §15.225 (October 1, 2013).
- IC RSS-210 Issue 8 December 2010 - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment.
- RSS-Gen Issue 3 December 2010 - General Requirements and Information for the Certification of Radio Apparatus.

**Start of Test** February 17, 2014

**Finish of Test** February 18, 2014

**Name of Engineer(s)** Alex Chang

**Related Document(s)** None. Supporting documents for EUT certification are separate exhibits.

## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.225 with cross-reference to the corresponding IC RSS standard is shown below.

Section	Spec Clause	RSS	Test Description	Result	Comments/Base Standard
2.1	§2.1049	RSS-Gen 4.61	Occupied Bandwidth	As Reported	
2.2	§15.225(a)(b)(c)	RSS-210 (A2.6)	In-Band Emissions	Compliant	
2.3	§15.225(d)	RSS-210 (A2.6)	Out-of-Band Emissions	Compliant	§15.209
2.4	§15.225(e)	RSS-210 (A2.6)	Frequency Tolerance	Compliant	
—	§15.207	RSS-Gen 7.2.4	AC Conducted Emissions	N/A *)	
2.5		RSS-Gen 6.0	Receiver Spurious Emissions	Compliant	

\*) Not applicable. EUT is battery operated device.

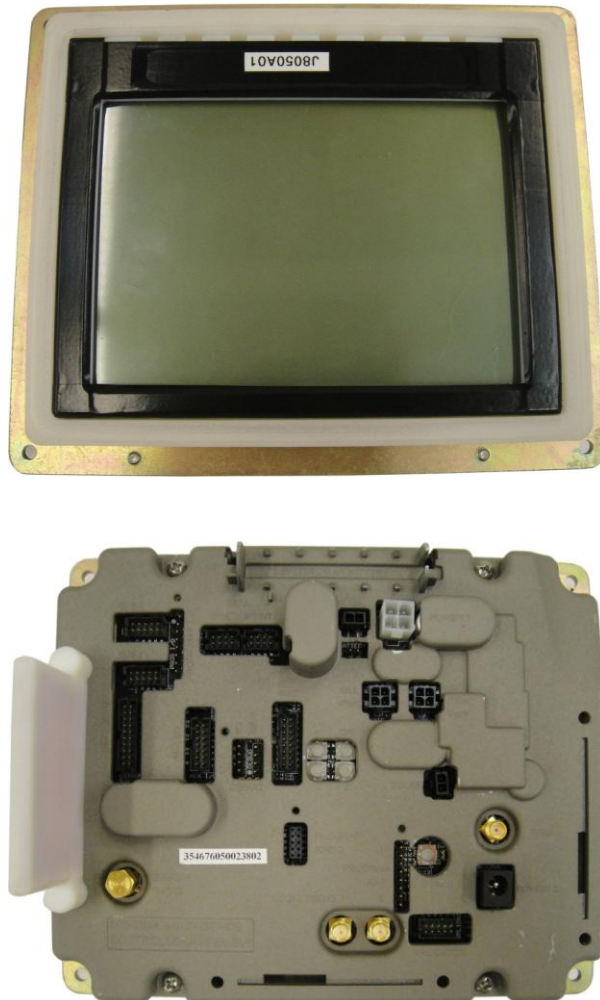
### 1.3 PRODUCT INFORMATION

#### 1.3.1 Technical Description

The Equipment Under Test (EUT) was a IPS Group Inc. MSCM Multiple Space Parking Meter Controller Module as shown in the photograph below. This controller module is intended to be used across a number of IPS Multi Space Parking Meter platforms. These platforms include IPS designed multi space parking terminals as well as a number of existing designs that can be upgraded and retrofitted with this IPS technology. Parking terminals equipped with the MSCM may be configured as Pay and Display, Pay by Space, Pay by Plate and other configurations.

The MSCM consist of a large LCD display and a controller section enclosed in a protective mechanical housing. The controller PCBA supports a number of integrated features and interfaces to a number of optional peripheral units.

RFID (Radio-Frequency Identification) 13.56MHz mode was verified in this test report.



**Equipment Under Test**





### 1.3.2 EUT General Description

EUT Description	Multiple Space Parking Meter Controller Module
Model Name	MSCM
Model Number(s)	M800
Rated Voltage	External Battery Pack 3.7 VDC (Nominal).
Output Power	15.9 dBμV/m @ 3 meters
Frequency Range	13.56 MHz in the 13.110 to 14.010 MHz band
Number of Operating Frequencies	1
Channel/s Verified	13.56 MHz
Antenna Type (used during evaluation)	Integral antenna (Complies with Part 15.203 requirements)
Modulation Used	ASK

## 1.4 EUT TEST CONFIGURATION

### 1.4.1 Test Configuration Description

Test Configuration	Description
A	Radiated emission test configuration. Measurement were performed while EUT configured/simulated RFID card read in a continuously mode.

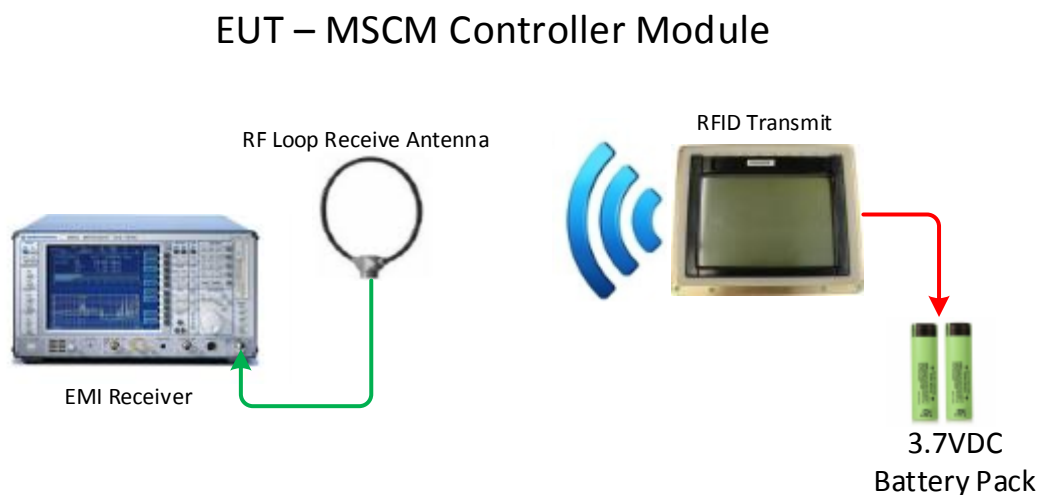
### 1.4.2 EUT Exercise Software

None. No special software was used to exercise the EUT. The EUT with built-in firmware revision 42.60.7 used during the investigation.

### 1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
—	—	—

### 1.4.4 Simplified Test Configuration Diagram



**Not To Scale – Illustration Purpose Only**  
 Objects may not represent actual image of  
 original equipment/s or set-up.

## 1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

## 1.6 MODIFICATION RECORD

Description of Modification	Modification Fitted By	Date Modification Fitted
Serial Number: N/A		
N/A		

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

## 1.7 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

For conducted and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.4-2009. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

## 1.8 TEST FACILITY LOCATION

### 1.8.1 TÜV SÜD America Inc. (Mira Mesa)

10040 Mesa Rim Road, San Diego, CA 92121-2912 (32.901268,-117.177681). Phone: 858 678 1400 Fax: 858 546 0364.

### 1.8.2 TÜV SÜD America Inc. (Rancho Bernardo)

Sony Electronics Inc., Building #8, 16530 Via Esprillo, San Diego, CA 92127-1708 (33.018644,-117.092409). Phone: 858 942 5542 Fax: 858 546 0364.

## 1.9 TEST FACILITY REGISTRATION

### 1.9.1 FCC – Registration No.: US5296

TUV SUD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.498 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Registration is US5296.



**1.9.2 Industry Canada (IC) Registration No.: 3067A**

The 10m Semi-anechoic chamber of TÜV SÜD America Inc. (San Diego) has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No. 3067A.



## **SECTION 2**

### **TEST DETAILS**

Radio Testing of the  
IPS Group Inc.  
Multiple Space Parking Meter Controller Module



## **2.1 OCCUPIED BANDWIDTH**

### **2.1.1 Specification Reference**

Part 15 Subpart J §15.1049 and RSS-Gen 4.61

### **2.1.2 Standard Applicable**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

### **2.1.3 Equipment Under Test and Modification State**

Serial No: N/A / Default Test Configuration

### **2.1.4 Date of Test/Initial of test personnel who performed the test**

February 18, 2014/AC

### **2.1.5 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.6 Environmental Conditions/Test Location**

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

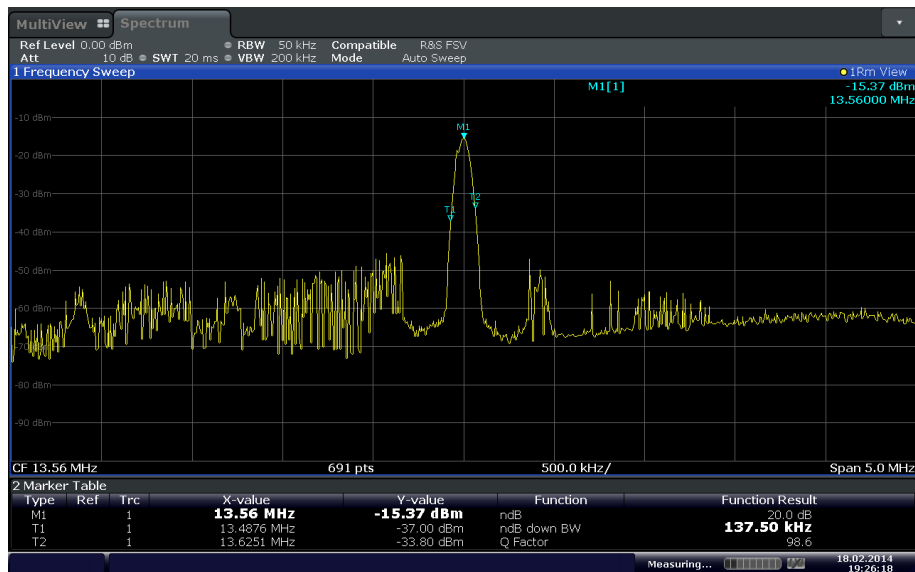
Ambient Temperature	24.7°C
Relative Humidity	39.7%
ATM Pressure	99.1 kPa

### **2.1.7 Additional Observations**

- This is a radiated test.
- A peak output reading was taken. A display line was drawn 20dB below the peak level.
- 20dB bandwidth verified using delta-marker measurements from the line drawn.
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the span.
- VBW is 3X RBW.
- Sweep is auto.
- Detector is peak.
- Trace is max hold.
- For 99% bandwidth, the OBW measurement function of the spectrum analyzer was used.

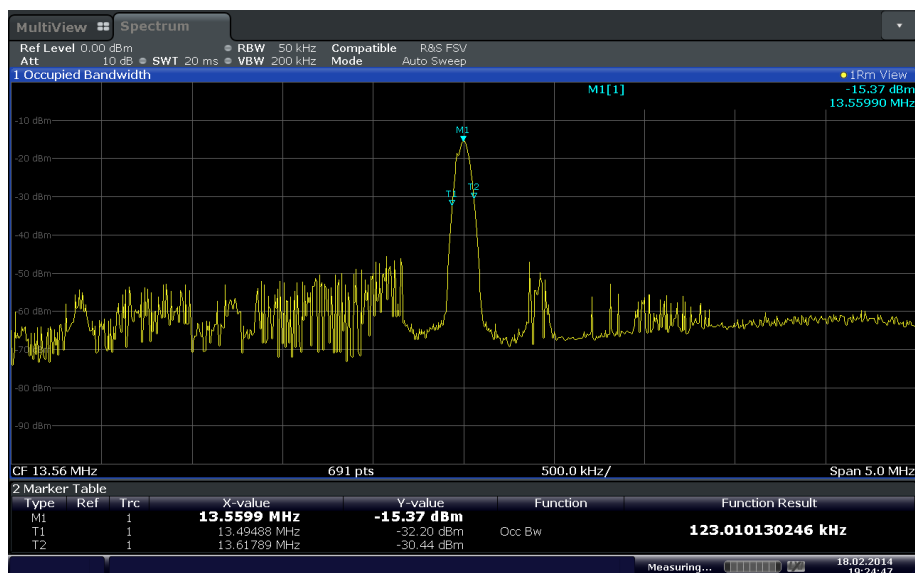
## 2.1.8 Test Results

Frequency	20 dB Bandwidth	99% Bandwidth
13.56 MHz	137.50 kHz	123.01 kHz



Date: 18.FEB.2014 19:26:18

20 dB BW



Date: 18.FEB.2014 19:24:47

99% OBW

## 2.2 IN BAND EMISSIONS

### 2.2.1 Specification Reference

Part 15 Subpart C §15.225(a)(b)(c)

### 2.2.2 Standard Applicable

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

### 2.2.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

### 2.2.4 Date of Test/Initial of test personnel who performed the test

February 17, 2014/AC

### 2.2.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

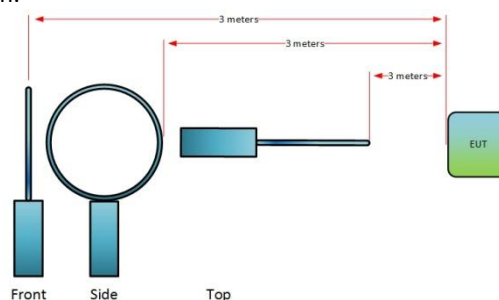
### 2.2.6 Environmental Conditions/Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

Ambient Temperature	24.4°C
Relative Humidity	42.1%
ATM Pressure	99.2 kPa

### 2.2.7 Additional Observations

- This is a radiated test. The spectrum was searched from 9 kHz to 1GHz.
- Below 30MHz, prescans were performed to determine best antenna position with the highest recorded emissions. No significant results difference noted. Verification performed using "Front" position.







- Measurement was done at 3 meter. Limits below 30MHz were corrected using extrapolation factor of 40 dB/decade. See sample computation below:

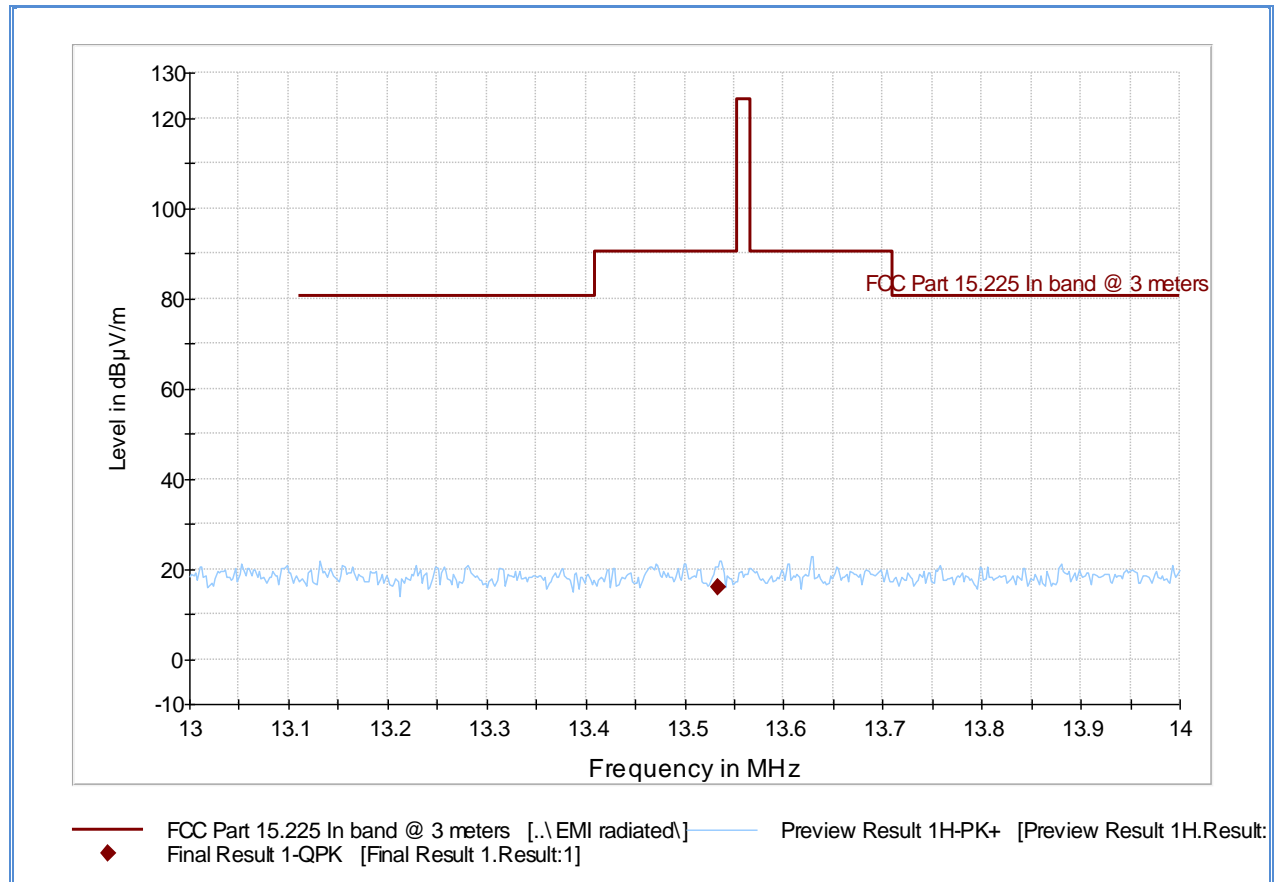
$$\begin{aligned}
 \text{Limit @ 9kHz} &= 2400/F(\text{kHz}) \mu\text{V/m} \\
 &= 20 \log (2400/9) \text{ dB}\mu\text{V/m} \\
 &= 48.52 \text{ dB}\mu\text{V/m @ 300 meters} \\
 &= 48.52 \text{ dB}\mu\text{V/m} + (40 \log 300/3) \text{ @ 3 meters} \\
 &= 128.52 \text{ dB}\mu\text{V/m @ 3 meters}
 \end{aligned}$$

- There are no other emissions observed “in-band” other than the fundamental (13.56 MHz).
- Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.3.8 for sample computations.

### 2.2.8 Test Results Summary Table

Frequency	Antenna Position	QuasiPeak (dBμV/m)
13.56 MHz	Front	15.9

## 2.2.9 Test Results (Worst-Case Antenna Position present)



### Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
13.533070	15.9	1000.0	9.000	100.0	H	350.0	21.1	74.6	90.5



## **2.3 OUT OF BAND EMISSIONS**

### **2.3.1 Specification Reference**

Part 15 Subpart C §15.225(a)(b)(c)(d)

### **2.3.2 Standard Applicable**

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

### **2.3.3 Equipment Under Test and Modification State**

Serial No: N/A / Default Test Configuration

### **2.3.4 Date of Test/Initial of test personnel who performed the test**

February 17, 2014/AC

### **2.3.5 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.3.6 Environmental Conditions/Test Location**

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

Ambient Temperature	24.4°C
Relative Humidity	42.1%
ATM Pressure	99.2 kPa

### **2.3.7 Additional Observations**

- This is a radiated test. The spectrum was searched from 9 kHz to 1GHz.
- Below 30MHz, prescans were performed to determine best antenna position with the highest recorded emissions. No significant difference noted on the results. Verification performed using "Front" position.
- The EUT was verified with three (3) antenna positions. Only the worst case configuration presented ("Front").
- Measurement was done at 3 meter. Limits below 30MHz were corrected using extrapolation factor of 40 dB/decade. See sample computation below:

Limit @ 9kHz =  $2400/F(\text{kHz}) \mu\text{V/m}$   
=  $20 \log (2400/9) \text{ dB}\mu\text{V/m}$   
=  $48.52 \text{ dB}\mu\text{V/m @ 300 meters}$   
=  $48.52 \text{ dB}\mu\text{V/m} + (40 \log 300/3) \text{ @ 3 meters}$   
=  $128.52 \text{ dB}\mu\text{V/m @ 3 meters}$

- Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.3.8 and 2.3.9 for sample computations.

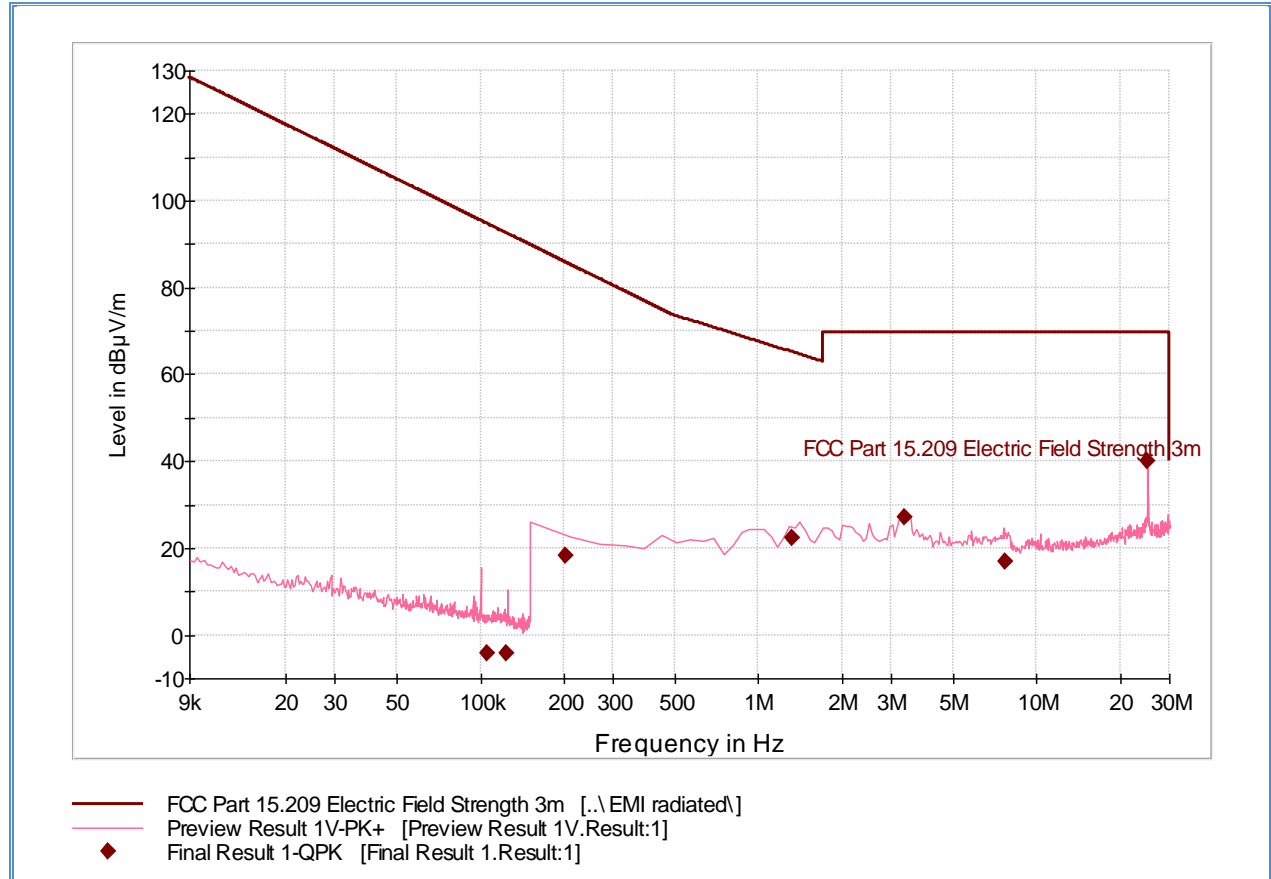
### 2.3.8 Sample Computation (Radiated Emission 9kHz to 30MHz)

Measuring equipment raw measurement (db $\mu$ V) @ 9 kHz			25.0
Correction Factor (dB)	Asset# 1057 (cable)	0.1	24.8
	Asset# 1172 (cable)	0.3	
	Asset# 6628 (antenna)	24.4	
Reported QuasiPeak Final Measurement (db $\mu$ V/m) @ 9kHz			49.8

### 2.3.9 Sample Computation (Radiated Emission 30MHz to 1GHz)

Measuring equipment raw measurement (db $\mu$ V) @ 30 MHz			24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3	-12.6
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measurement (db $\mu$ V/m) @ 30MHz			11.8

### 2.3.10 Test Results (Worst Case Antenna Position 9kHz to 30MHz)

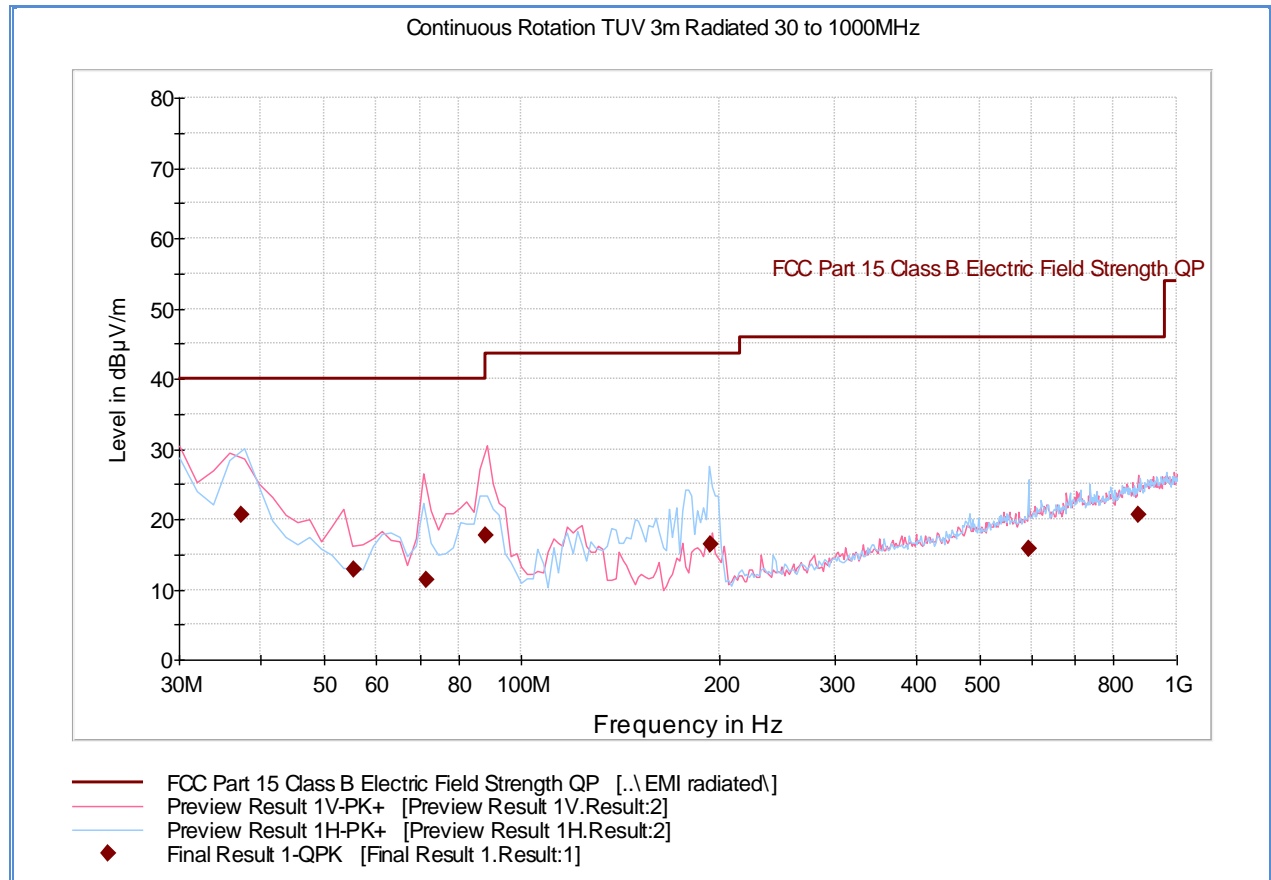


#### Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.106269	-4.1	1000.0	0.200	0.0	Front	-13.0	19.9	98.8	94.7
0.123417	-4.0	1000.0	0.200	0.0	Front	110.0	19.9	96.7	92.7
0.202000	18.3	1000.0	9.000	0.0	Front	66.0	20.0	67.6	85.9
1.316213	22.5	1000.0	9.000	0.0	Front	242.0	20.6	42.7	65.2
3.350261	27.1	1000.0	9.000	0.0	Front	230.0	20.8	42.4	69.5
7.673635	17.1	1000.0	9.000	0.0	Front	132.0	20.7	52.5	69.5
25.056790	40.1	1000.0	9.000	0.0	Front	352.0	23.6	29.4	69.5

**Test Notes:** In-band emissions refer to section 2.2.9 in this test report.

### 2.3.11 Test Results (Worst Case Antenna Position 30MHz to 1GHz)



#### Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
37.375551	20.6	1000.0	120.000	384.0	H	359.0	-14.5	19.4	40.0
55.406653	12.8	1000.0	120.000	100.0	V	72.0	-19.9	27.2	40.0
71.421643	11.5	1000.0	120.000	200.0	V	228.0	-21.4	28.5	40.0
88.236633	17.7	1000.0	120.000	115.0	V	13.0	-20.2	25.8	43.5
194.206573	16.3	1000.0	120.000	150.0	H	256.0	-16.0	27.2	43.5
595.767455	15.8	1000.0	120.000	122.0	H	44.0	-3.2	30.2	46.0
871.463407	20.6	1000.0	120.000	116.0	V	289.0	1.5	25.4	46.0



## **2.4 FREQUENCY TOLERANCE**

### **2.4.1 Specification Reference**

Part 15 Subpart C §15.225(e)

### **2.4.2 Standard Applicable**

(e) The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### **2.4.3 Equipment Under Test and Modification State**

Serial No: N/A / Default Test Configuration

### **2.4.4 Date of Test/Initial of test personnel who performed the test**

February 18, 2014/AC

### **2.4.5 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.4.6 Environmental Conditions/Test Location**

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

Ambient Temperature	24.7°C
Relative Humidity	39.7%
ATM Pressure	99.1 kPa

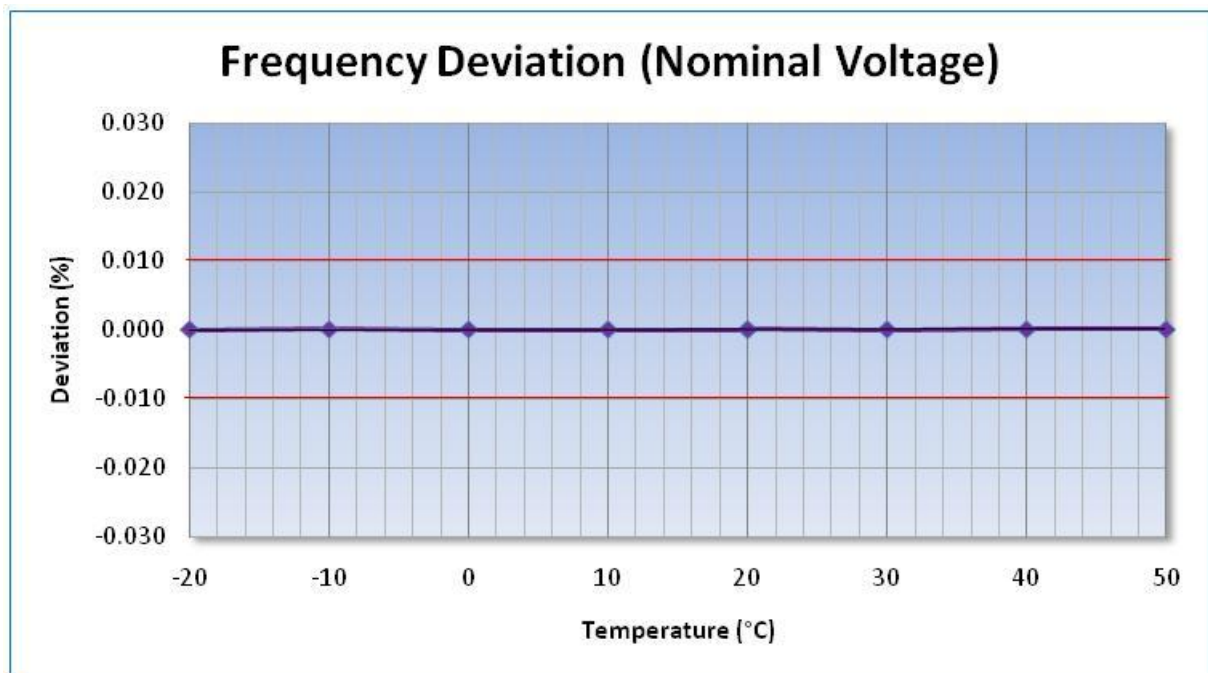
### **2.4.7 Additional Observations**

- This is a radiated test.
- Span is wide enough to capture the channel transmission.
- Signal count function of the Spectrum Analyzer used for this test.
- RBW set to 1kHz (below 1.356kHz [ $\pm 0.01\%$  tolerance limit] for better resolution)
- A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level was allowed prior to each frequency measurement.

#### 2.4.8 Test Results

Voltage (%)	EUT Voltage (VDC)	Temp (°C)	Frequency (Hz)	Frequency Deviation (Hz)	Deviation (%)
100	3.7	-20	13,560,228.65	31.11	0.0000022942
100	3.7	-10	13,559,861.79	335.75	0.0000247606
100	3.7	0	13,560,201.88	4.34	0.0000003201
100	3.7	+10	13,560,225.76	28.22	0.0000020811
100	3.14	+20	13,560,007.24	190.30	0.0000140339
100	3.7	+20	13,560,197.54	0	0.0000000000
100	4.25	+20	13,559,908.83	288.71	0.0000212914
100	3.7	+30	13,560,024.60	172.94	0.0000127537
100	3.7	+40	13,559,888.57	308.97	0.0000227856
100	3.7	+50	13,559,825.62	371.92	0.0000274281

#### 2.4.9 Results Graph





## 2.5 RECEIVER SPURIOUS EMISSIONS

### 2.5.1 Specification Reference

RSS-Gen 6.0

### 2.5.2 Standard Applicable

Receivers shall comply with the limits of spurious emissions set out in this section, measured over the frequency range determined in accordance with Section 4.10 of RSS-Gen Issue 3 December 2010.

**Table 2: Radiated Limits of Receiver Spurious Emissions**

Frequency (MHz)	Field Strength (microvolts/m at 3 metres)*
30-88	100
88-216	150
216-960	200
Above 960	500

\*Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7 of RSS-Gen.

### 2.5.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

### 2.5.4 Date of Test/Initial of test personnel who performed the test

February 18, 2014/AC

### 2.5.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.5.6 Environmental Conditions/Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

Ambient Temperature	24.7°C
Relative Humidity	39.7%
ATM Pressure	99.1 kPa

### 2.5.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to 1GHz performed.
- EUT in Rx (Receive) mode configuration.

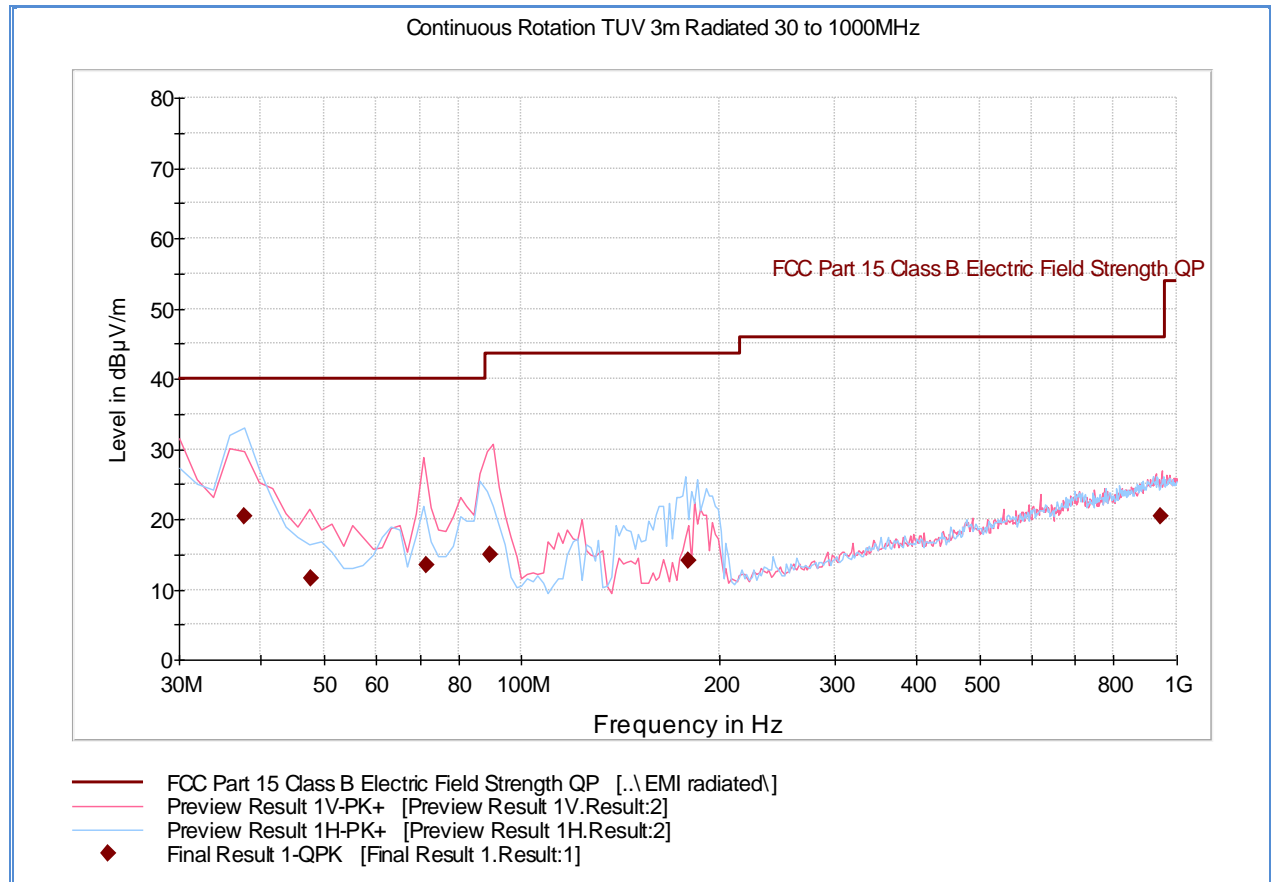


- Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.3.8 and 2.3.9 for sample computations.

## 2.5.8 Sample Computation (Radiated Emission 30MHz to 1GHz)

Measuring equipment raw measurement (db $\mu$ V) @ 30 MHz			24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3	-12.6
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measurement (db $\mu$ V/m) @ 30MHz			11.8

## 2.5.9 Test Results (Receive Mode 30MHz to 1GHz)



### Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
37.655551	20.4	1000.0	120.000	371.0	H	15.0	-14.6	19.6	40.0
47.574990	11.6	1000.0	120.000	100.0	V	287.0	-18.5	28.4	40.0
71.541643	13.5	1000.0	120.000	200.0	V	355.0	-21.4	26.5	40.0
89.380521	15.0	1000.0	120.000	109.0	V	7.0	-20.2	28.5	43.5
179.495471	14.1	1000.0	120.000	133.0	H	56.0	-16.8	29.4	43.5
944.315030	20.3	1000.0	120.000	150.0	V	88.0	3.0	25.7	46.0



### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

ID Number (SDGE/SDRB)	Test Equipment	Type	Serial Number	Manufacturer	Cal Date	Cal Due Date
Antenna Conducted Port Measurement						
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	11/19/13	11/19/14
7579	Temperature Chamber	115	151617	TestQuity	07/16/13	07/16/14
Radiated Emissions						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/21/13	01/21/14
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	03/25/13	03/25/14
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	09/03/13	09/03/14
6628	Loop Antenna	HFH 2 -Z2	880 458/25	Rhode & Schwarz	10/31/13	10/31/15
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	07/31/13	07/31/14
1016	Pre-amplifier	PAM-0202	187	PAM	10/08/13	10/08/14
Miscellaneous						
6452	Multimeter	3478A	2911A52177	Hewlett Packard	08/02/13	08/02/14
7560	Barometer/Temperature /Humidity Transmitter	iBTHX-W	1240476	Omega	01/30/14	01/30/15
1123	DC Power Supply	E3631A	N/A	Hewlett Packard	Verified by 6452	
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	

### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

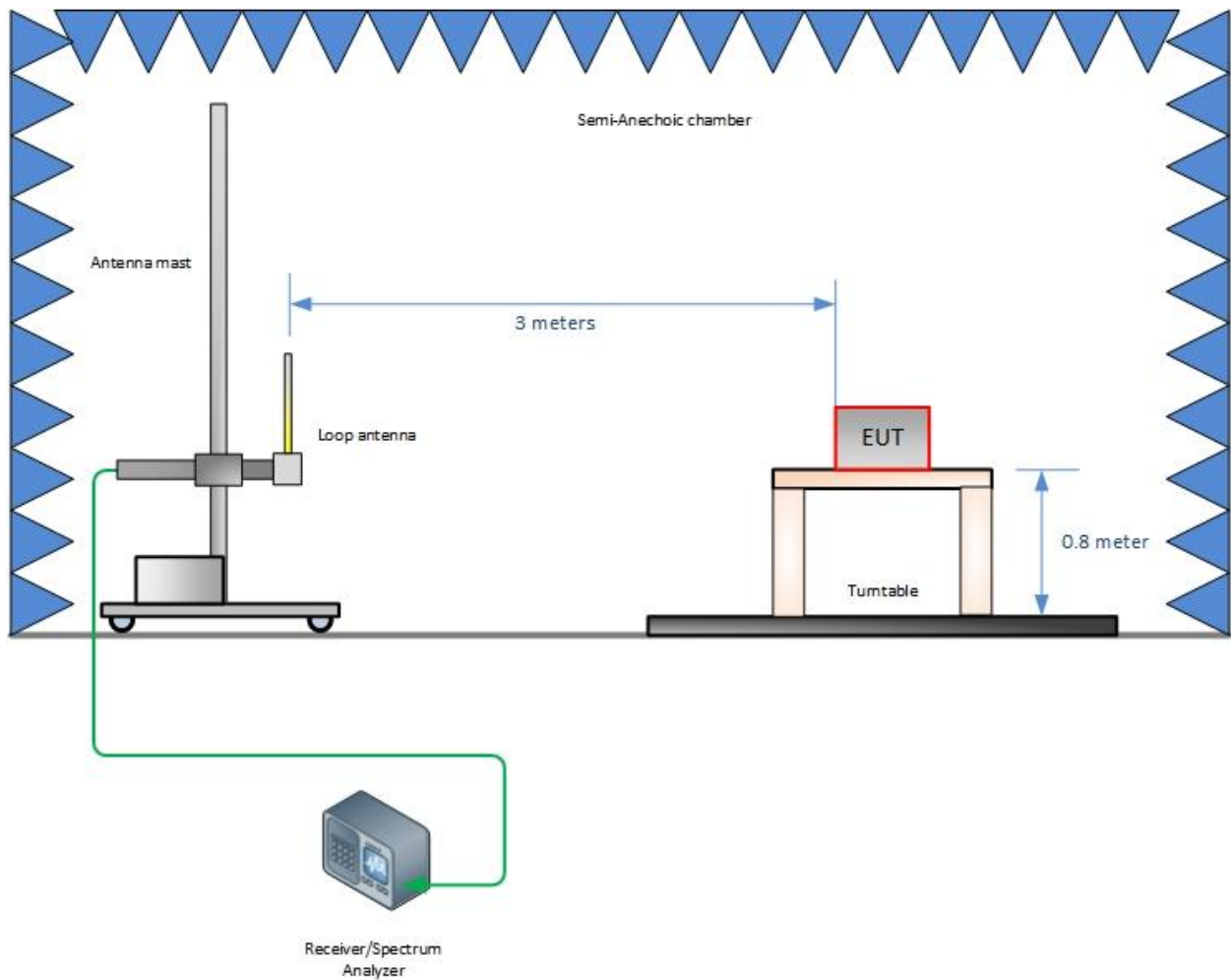
#### 3.2.1 Radiated Measurements (Below 1GHz)

Contribution		Probability Distribution Type	Probability Distribution $x_i$	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty ( $u_c$ ):					2.41
Coverage Factor (k):					2
Expanded Uncertainty:					4.82

## **SECTION 4**

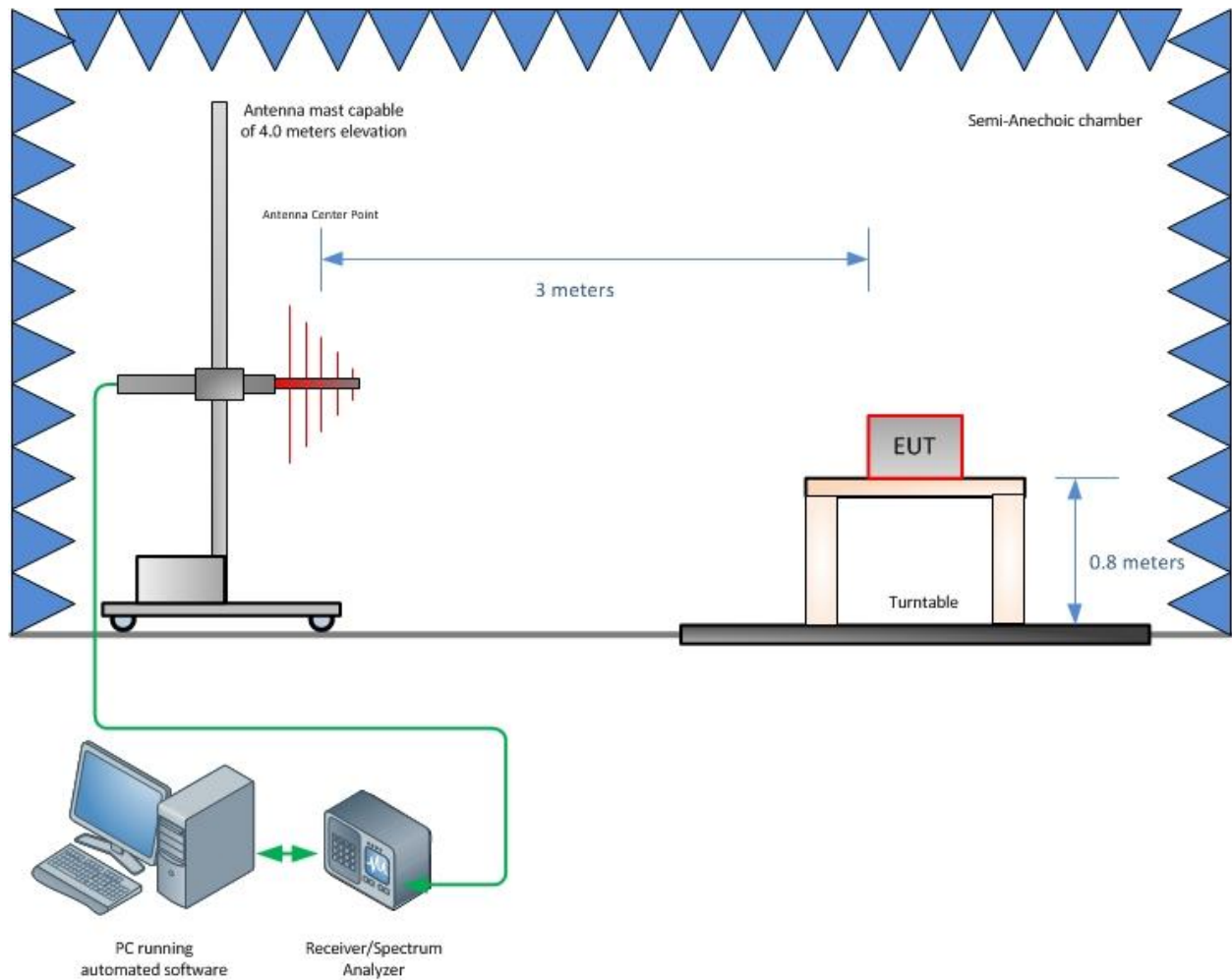
### **DIAGRAM OF TEST SETUP**

#### 4.1 TEST SETUP DIAGRAM



**Radiated Emission Test Setup (Below 30 MHz)**





**Radiated Emission Test Setup (30MHz to 1GHz)**



## **SECTION 5**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



## 5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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