America

Choose certainty.
Add value.

Report On

Application for Grant of Equipment Authorization Class II
Permissive Change/Reassessment of the
On Ramp Wireless
GE KV2C Meter equipped with On-Ramp Wireless TRN-2014
communication module Model TRN-2014

FCC Part 15 Subpart C §15.247
IC RSS-210 Issue 8 December 2010

Report No. SC1300586B **June 27 2013**

America

Choose certainty.
Add value.

Report No. SC1300586B **June 27 2013**

REPORT ON	Class II permissive Change Reassessment of the On Ramp Wireless GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module
TEST REPORT NUMBER	SC1300586B
PREPARED FOR	On Ramp Wireless 10920 Via Frontera #200 San Diego, CA 92127-1729 USA
CONTACT PERSON	Alain Charles Hardware Engineer (858) 592-6008 alain.charles@onrampwireless.com
PREPARED BY	Juan Manuel Gonzalez **Name** Authorized Signatory Title: EMC Engineer
APPROVED BY	Chip R. Fleury **Name** Authorized Signatory
DATED	June 28, 2013

Revision History

SC1300586B On Ramp Wireless TRN-2014 GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
06/28/13	Initial Release				Juan M Gonzalez

CONTENTS

SECTION 1

REPORT SUMMARY

Radio Testing of the
On Ramp Wireless
GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module.

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the On Ramp Wireless GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module to the requirements of FCC Part 15 Subpart C §15.247 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	On Ramp Wireless
Model Number(s)	TRN-2014 (Tested)

Meter Forms included in this test report

Meter Form	Class	Rating
KV2C Form 1S	CL200	120-480 VAC
KV2C Form 2S	CL200, CL320	120-480 VAC
KV2C Form 3S	CL20	120-480 VAC
KV2C Form 4S	CL20	120-480 VAC
KV2C Form 9S	CL20	120-480 VAC
KV2C Form 12S	CL200, CL320	120-480 VAC
KV2C Form 16S	CL200, CL320	120-480 VAC
KV2C Form 36S	CL20	120-480 VAC
KV2C Form 45S	CL20	120-480 VAC

FCC ID Number	XTE-ULPU100
IC Number	8655A-ULPU100
Serial Number(s)	x000022A1 (Conducted Power) & x000022A5(Radiated Measurments)
Number of Samples Tested	2
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.247 (October 1, 2011). • RSS-210 - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment (Issue 8, December 2010). • RSS-Gen - General Requirements and Information for the Certification of Radio Apparatus (Issue 3, December 2010).
Start of Test	June 26, 2013
Finish of Test	June 27, 2013
Name of Engineer(s)	Juan Manuel Gonzalez
Related Document(s)	TUV SUD America Report Number SC1109339 and SC1205155. 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 §15.247 with cross-reference to the corresponding IC RSS standard is shown below.

Section	§15.247 Spec Clause	RSS	Test Description	Result
-	§15.247(b)(3)	RSS-210 A8.4 (4)	Peak Output Power	N/A*
-	§15.207(a)	RSS-Gen 7.2.4	Conducted Emissions	N/A**
-	§15.215(c)	RSS-Gen 4.6.3	20 dB Bandwidth	N/A**
-		RSS-Gen 4.6.1	99% Emission Bandwidth	N/A**
-	§15.247(a)(2)	RSS-210 A8.2(a)	Minimum 6 dB RF Bandwidth	N/A**
-	§15.247(d)	RSS-210 A8.5	Out-of-Band Emissions - Conducted	N/A**
-	§15.247(d)	RSS-210 A8.5	Band-edge Compliance of RF Conducted Emissions	N/A**
2.1	§15.247(d)	RSS-210 A8.5	Spurious Radiated Emissions	Compliant
2.1		RSS-Gen 4.10	Receiver Spurious Emissions	Compliant

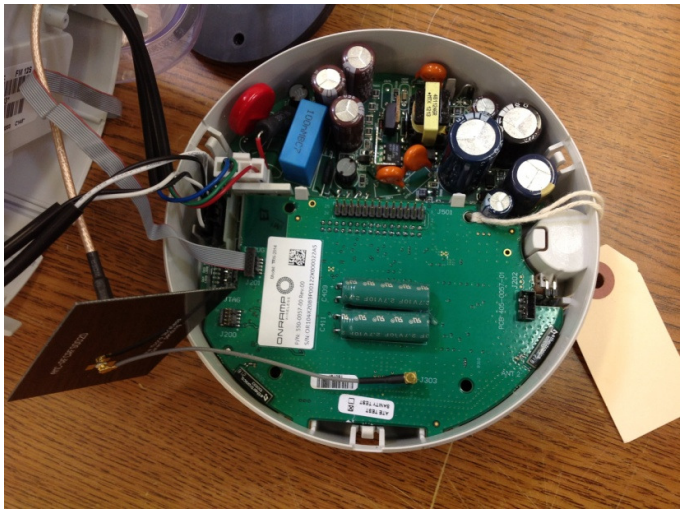
NA* Prior to testing, the output power on the EUT was measured and compared to the original filing. On Ramp Wireless limits the power via their client utility to a level identical that is listed in the original certification.

NA** Not included in this permissive change. The module is already approved and they are only adding an external Antenna with a lower gain and would not change previous test results.

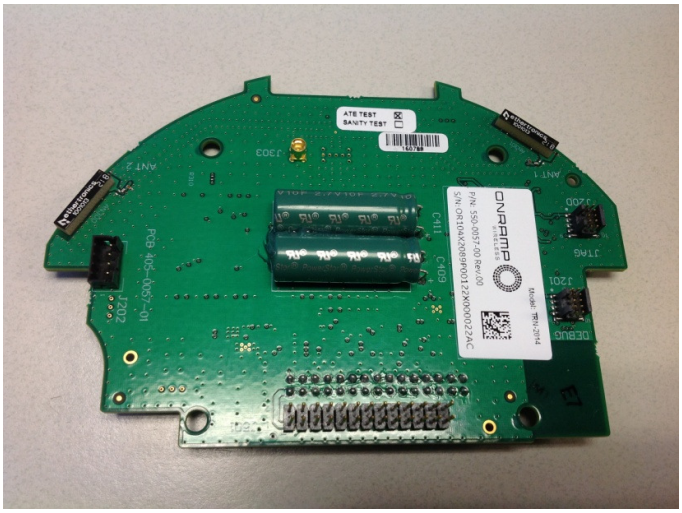
1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module as shown in the photograph below.
The communication module of the EUT is a wireless module primarily used for smart grid and remote monitoring applications. The communication module's transceiver is already approved under FCC ID XTE-ULPU100 and IC 8655A-ULPU100, it is being reassessed due to addition of integration into the GE KV2C electric meter with an external antenna.



Equipment Under Test



Equipment Under Test

(On-Ramp Wireless TRN-2014 communication module)

1.3.2 EUT General Description

EUT Description	GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module
Model Number(s)	TRN-2014
EUT Rated Voltage	120VAC-480VAC 50-60HZ
Communication Module rated Voltage	28VDC Nominal
Output Power	138 mW
Frequency Range	2402 MHz to 2475.63 MHz
Number of Operating Frequencies	38
Channels Verified	Channel 1 (Low Channel 2402 MHz) Channel 20 (Mid Channel 2439.81 MHz) Channel 38 (High Channel 2475.63 MHz)
Modulation Used	DSSS-DBPSK

1.3.3 Test Antenna Details (External)

Antenna Type	Monopole Antenna
External Antenna Gain	1 dBi
Model	FZTP35095-SFP-XX-B
Manufacturer	Embedded Antenna Design (EAD)
Antenna Connector	MMCX
General Description	Low profile 2.4 GHz external antenna
Design	Ground plane independent puck antenna
Dimensions	79. 84 x 13.2mm (d x h)

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

1.3.4 Test Antenna Details (Internal)

Antenna Type	Integral Chip Antenna
Internal Antenna Gain	2.1 dBi
Model	1001013
Manufacturer	Ethertronics
Antenna Connector	N/A
General Description	2.4GHz PCB Chip antenna
Design	FR4 Substrate antenna
Dimensions	15.0 mm x 3.2 mm x 3.3 mm (L x W x H)

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
RX Mode	EUT in Idle mode.
Default	EUT transmitting at Max Calibrated power to the external test antenna port. (For radiated Spurious Emissions)
Conducted Port	EUT transmitting at Max Calibrated power to the test connector port. (For Conducted port measurements)

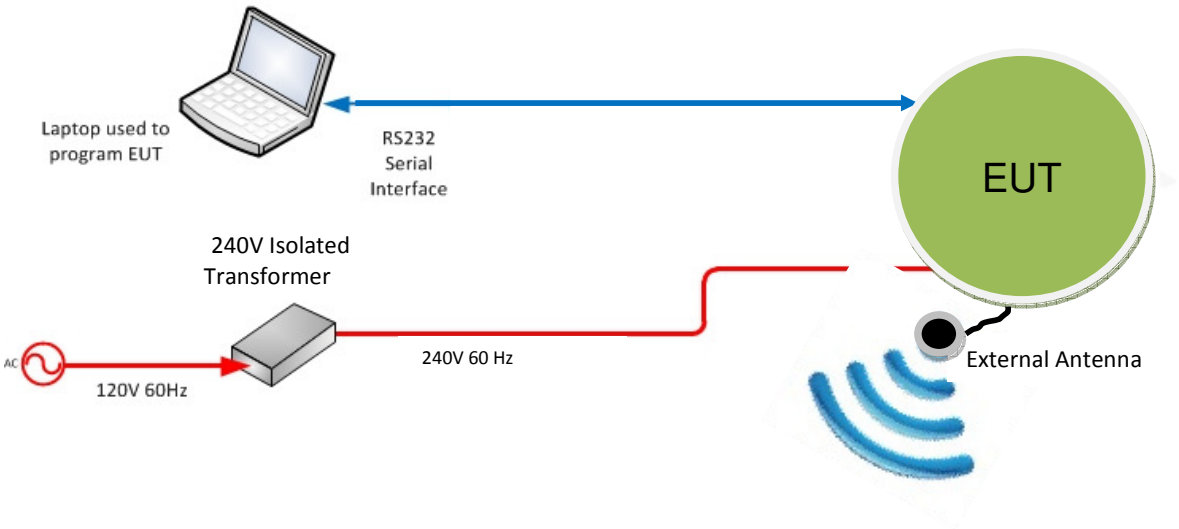
1.4.2 EUT Exercise Software

Client provided "CertTools_0.4.1.exe" was used to configure the EUT communication module. The tool runs on a Windows platform and uses a serial port to communicate with the EUT debug port. Because the EUT ground is isolated and can float at high voltage potential, an USB-to-USB isolator is used between the test Laptop and the EUT.
The tool provide for means of selecting the channel, the transmission gain and selecting Rx, Tx or Idle modes. On Tx mode, the communication module transmits a modulated waveform to the selected antenna. The mode selected is maintained after the tool is disconnected from the EUT.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Dell	Test Laptop	Windows based laptop (Model E6520)
FTDI	USB to Serial cable	USB to serial converter
-	Isolator	USB to USB Isolator
Philmore	240V Isolated Transformer	Model ST-100 (120VAC->240VAC)
ORW	Adapter cable	Ribbon adapter cable
HP	Power Supply	DC Power Supply used to verify the Peak Output Power from the TRN-2014

1.4.4 Simplified Test Configuration Diagram



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 x000022A1 (Conducted Power) & x000022A5(Radiated Measurments)		
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

1.8.1 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.

1.8.2 Industry Canada (IC) Registration No.: 3067A

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

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

SECTION 2

TEST DETAILS

Radio Testing of the
On Ramp Wireless
GE KV2C Meter equipped with On-Ramp Wireless TRN-2014 communication module

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

2.1 SPURIOUS RADIATED EMISSIONS

2.1.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.1.2 Standard Applicable

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

2.1.3 Equipment Under Test and Modification State

Serial No: x000022A5(Radiated Measurements)/ Default Test Configuration

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

June 26 , 2013/JMG

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

Ambient Temperature	23.0°C
Relative Humidity	50.6%
ATM Pressure	99.5 kPa

2.1.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic (25GHz).
- There are no emissions found that do not comply to the restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Measurement was done using EMC32 V8.52 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 2.1.8 for sample computation.

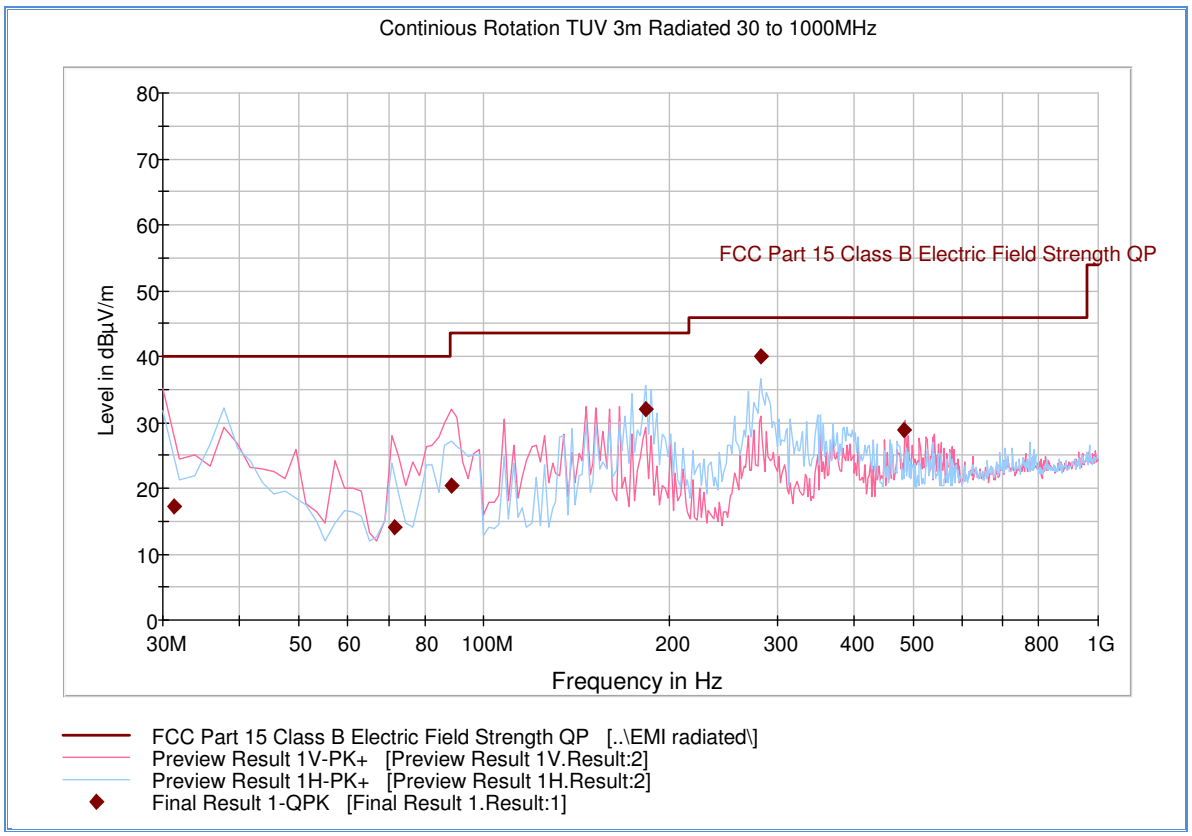
2.1.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 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 (dbµV/m) @ 30MHz			**11.8**

2.1.9 Test Results

See attached plots.

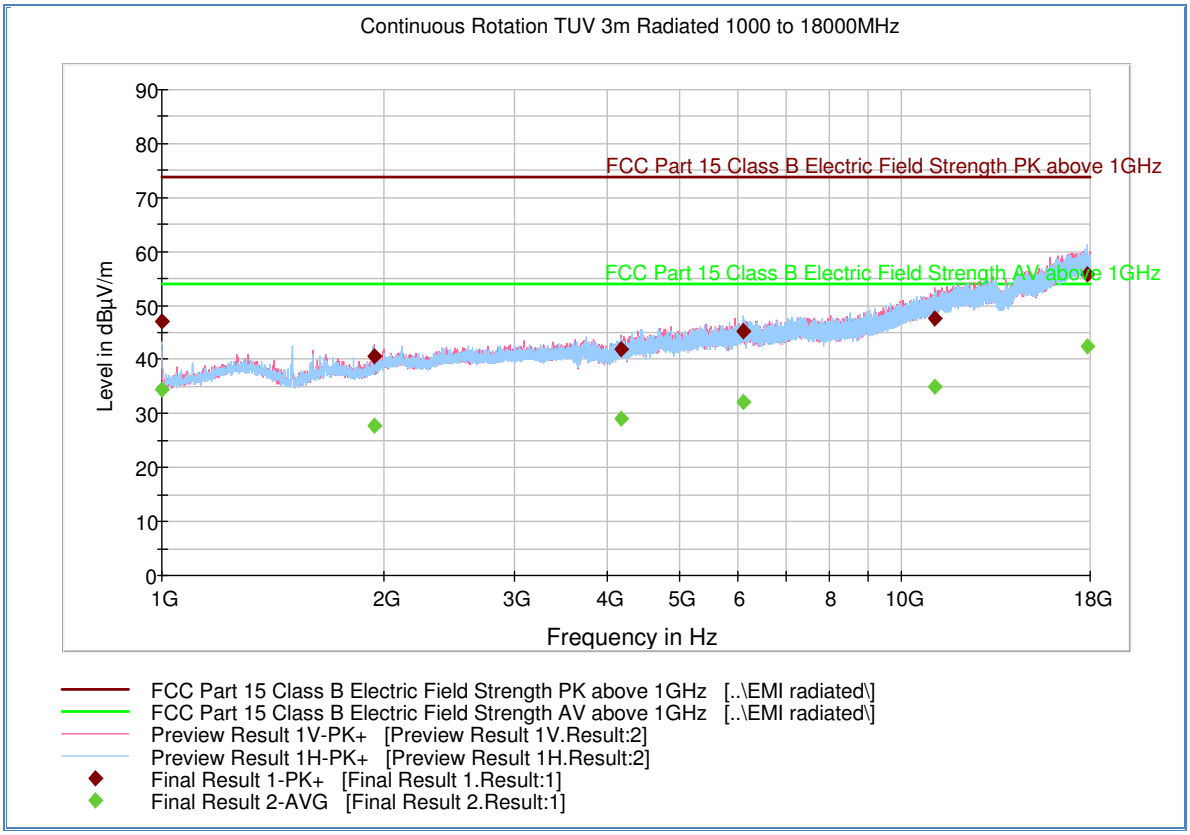
2.1.10 Test Results Below 1GHz (Receive Mode)



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)
31.320000	17.2	1000.0	120.000	150.0	V	309.0	-11.6	22.8	40.0
71.501643	14.1	1000.0	120.000	105.0	V	230.0	-21.7	25.9	40.0
88.492745	20.4	1000.0	120.000	400.0	V	11.0	-20.3	23.1	43.5
183.727134	32.0	1000.0	120.000	150.0	H	15.0	-15.9	11.5	43.5
282.265411	40.0	1000.0	120.000	100.0	H	82.0	-12.3	6.0	46.0
483.869739	28.8	1000.0	120.000	105.0	V	96.0	-5.7	17.2	46.0

2.1.11 Test Results Above 1GHz (Receive Mode)



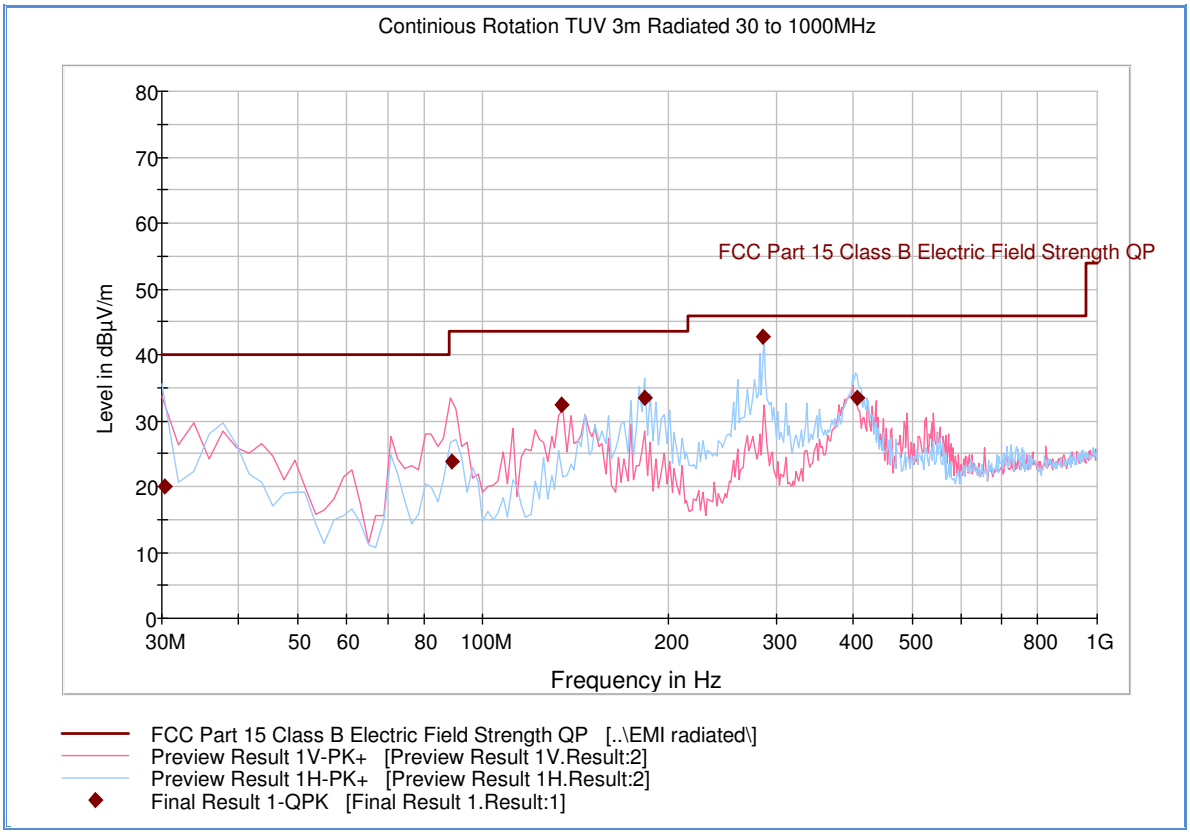
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	47.0	1000.0	1000.000	248.3	H	10.0	-6.3	26.9	73.9
1938.053333	40.7	1000.0	1000.000	333.1	V	212.0	-2.0	33.2	73.9
4187.160000	41.9	1000.0	1000.000	302.6	V	232.0	3.8	32.0	73.9
6118.560000	45.3	1000.0	1000.000	300.6	H	57.0	8.1	28.6	73.9
11091.46000	47.5	1000.0	1000.000	402.6	V	20.0	14.6	26.4	73.9
17880.21333	55.9	1000.0	1000.000	157.5	H	53.0	22.4	18.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	34.5	1000.0	1000.000	248.3	H	10.0	-6.3	19.4	53.9
1938.053333	27.7	1000.0	1000.000	333.1	V	212.0	-2.0	26.2	53.9
4187.160000	29.0	1000.0	1000.000	302.6	V	232.0	3.8	24.9	53.9
6118.560000	32.2	1000.0	1000.000	300.6	H	57.0	8.1	21.7	53.9
11091.46000	35.0	1000.0	1000.000	402.6	V	20.0	14.6	18.9	53.9
17880.21333	42.5	1000.0	1000.000	157.5	H	53.0	22.4	11.4	53.9

2.1.12 Test Results Below 1GHz (High Channel – Worst Case Configuration)

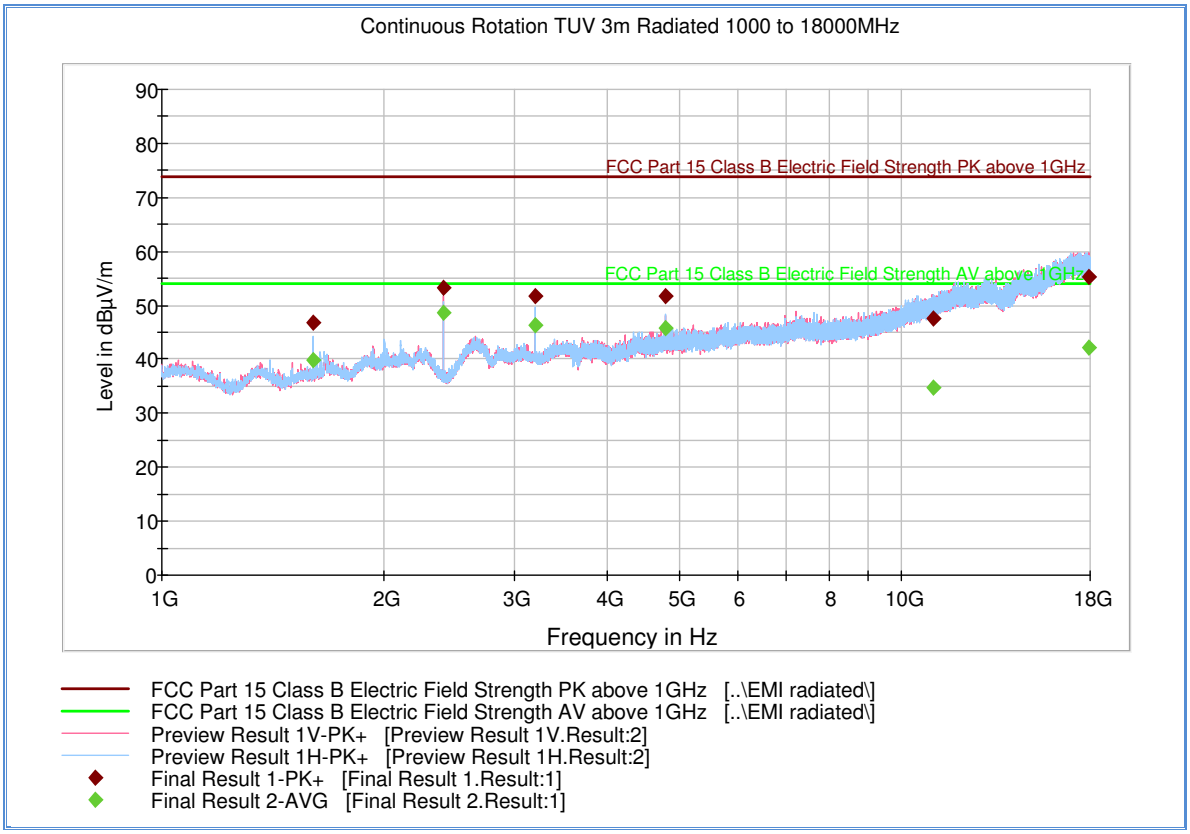


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.240000	19.9	1000.0	120.000	159.0	H	0.0	-10.9	20.1	40.0
89.076633	23.7	1000.0	120.000	350.0	V	342.0	-20.2	19.8	43.5
134.409940	32.3	1000.0	120.000	100.0	V	24.0	-19.8	11.2	43.5
183.727134	33.4	1000.0	120.000	150.0	H	154.0	-15.9	10.1	43.5
285.993186	42.8	1000.0	120.000	100.0	H	201.0	-12.2	3.2	46.0
406.130341	33.5	1000.0	120.000	182.0	H	195.0	-8.3	12.5	46.0

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.1.13 Test Results Above 1GHz (Low Channel including Band Edges)



Peak Data

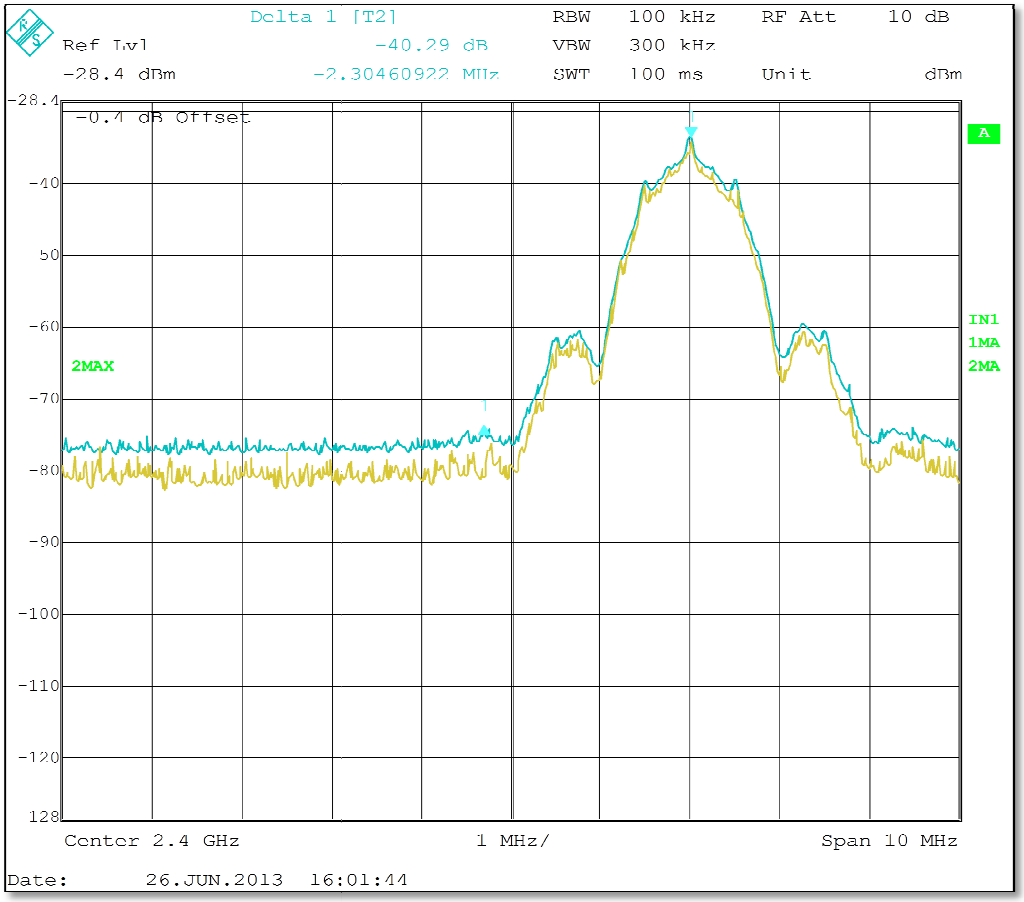
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1601.333333	46.7	1000.0	1000.000	140.6	H	133.0	-4.3	27.2	73.9
2401.993333	53.3	1000.0	1000.000	99.6	V	338.0	-0.4	20.6	73.9
3202.693333	51.6	1000.0	1000.000	149.5	H	294.0	1.4	22.3	73.9
4804.013333	51.6	1000.0	1000.000	188.5	H	65.0	5.4	22.3	73.9
11070.373333	47.7	1000.0	1000.000	157.5	V	75.0	14.6	26.2	73.9
17929.680000	55.2	1000.0	1000.000	188.5	V	356.0	22.5	18.7	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1601.333333	39.8	1000.0	1000.000	140.6	H	133.0	-4.3	14.1	53.9
2401.993333	48.6	1000.0	1000.000	99.6	V	338.0	-0.4	5.3	53.9
3202.693333	46.2	1000.0	1000.000	149.5	H	294.0	1.4	7.7	53.9
4804.013333	45.9	1000.0	1000.000	188.5	H	65.0	5.4	8.0	53.9
11070.373333	34.8	1000.0	1000.000	157.5	V	75.0	14.6	19.1	53.9
17929.680000	42.2	1000.0	1000.000	188.5	V	356.0	22.5	11.7	53.9

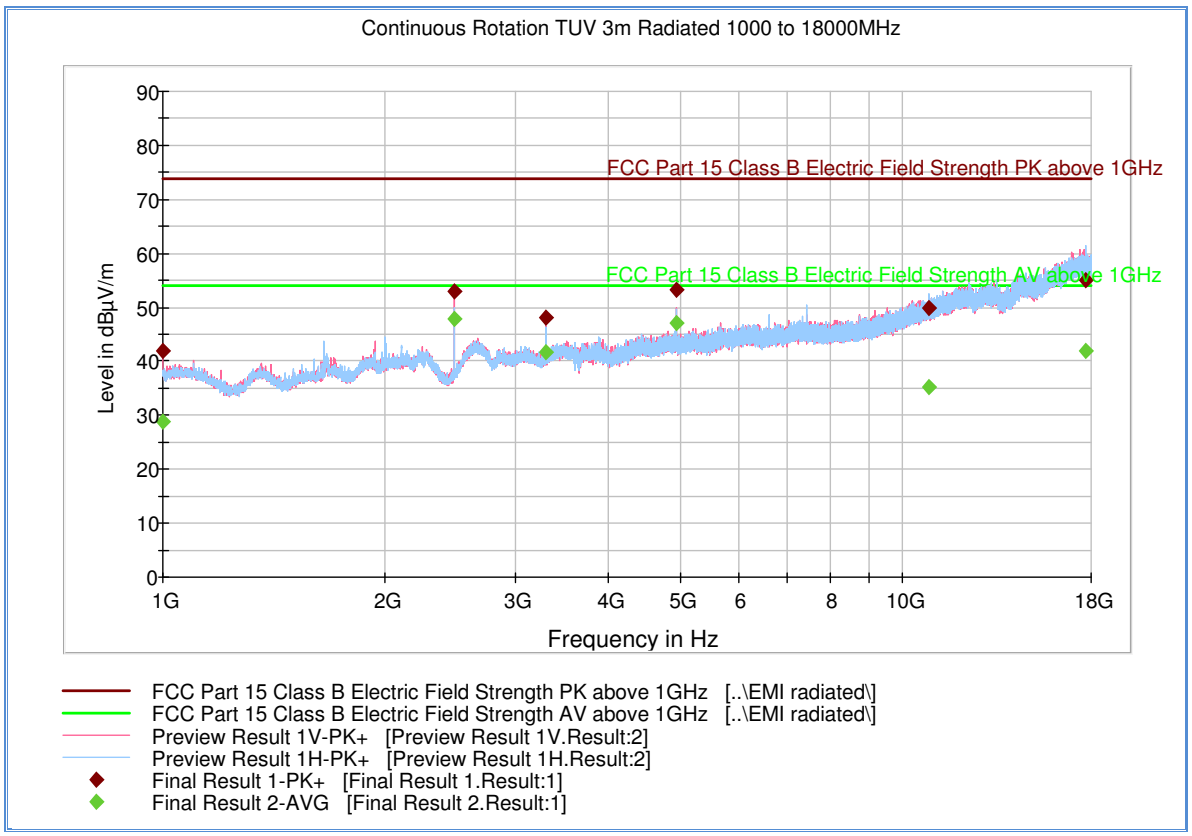
Test Notes: Measurement was performed with a 2.4GHz notch filter. Band edge measurements were performed with the notch filter removed. Lower band edge was verified manually using 100kHz RBW (see attached plot Section 2.1.14).

2.1.14 Test Results Lower Band Edge (Radiated - Low Channel using 100 kHz RBW)



Test Notes: Carrier frequency (Low Channel) was maximized for this test. Correction factor of -0.4dB is from the cable, antenna and preamp used. The EUT complies with the conducted power limits based on the use of RMS averaging over a time interval therefore the limit for this test is -30dBc. The highest measured emission close to the lower band edge is -40.29dBc. EUT complies.

2.1.15 Test Results Above 1GHz (High Channel)



Peak Data

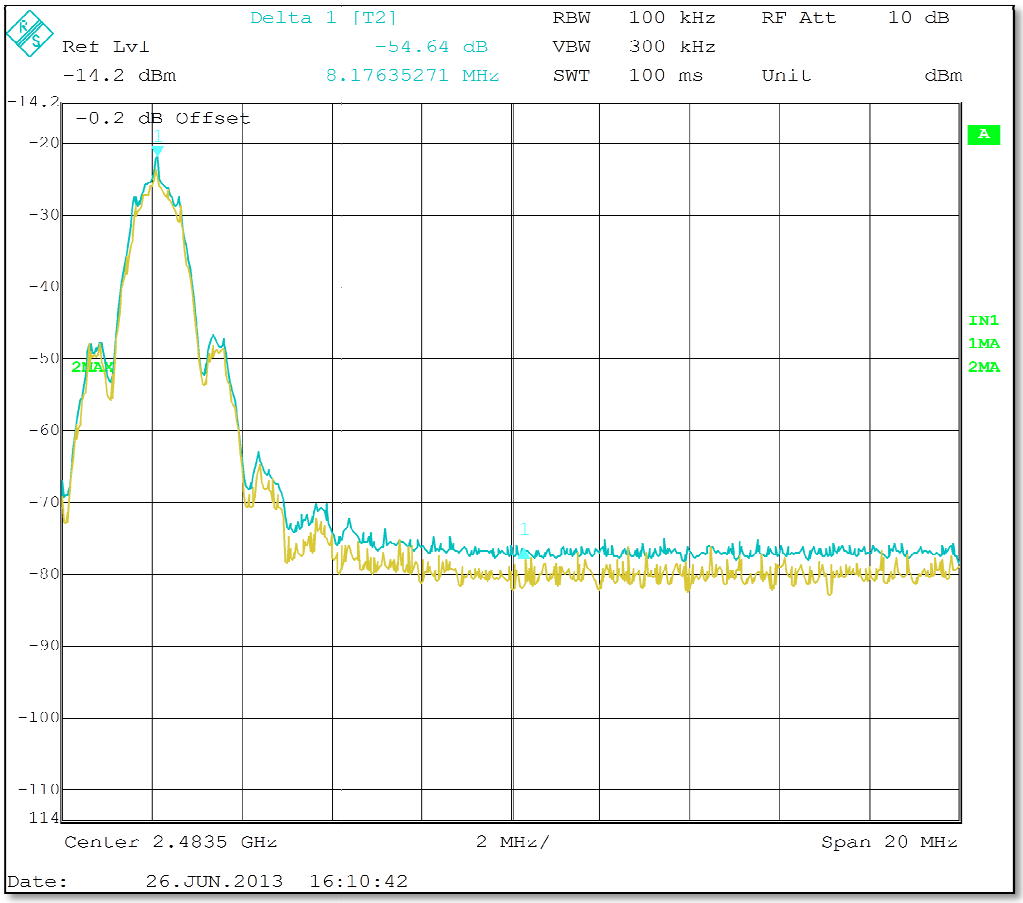
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	42.0	1000.	1000.000	102.6	V	3.0	-6.3	31.9	73.9
2475.620000	52.9	1000.	1000.000	100.6	V	311.0	-0.2	21.0	73.9
3300.846667	48.0	1000.	1000.000	99.6	V	190.0	1.5	25.9	73.9
4951.266667	53.3	1000.	1000.000	101.6	V	298.0	5.2	20.6	73.9
10852.48666	49.8	1000.	1000.000	176.5	H	20.0	14.1	24.1	73.9
17686.97333	54.9	1000.	1000.000	402.6	H	255.0	22.1	19.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	28.7	1000.0	1000.000	102.6	V	3.0	-6.3	25.2	53.9
2475.620000	47.9	1000.0	1000.000	100.6	V	311.0	-0.2	6.0	53.9
3300.846667	41.7	1000.0	1000.000	99.6	V	190.0	1.5	12.2	53.9
4951.266667	47.2	1000.0	1000.000	101.6	V	298.0	5.2	6.7	53.9
10852.486667	35.3	1000.0	1000.000	176.5	H	20.0	14.1	18.6	53.9
17686.973333	41.9	1000.0	1000.000	402.6	H	255.0	22.1	12.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Band edge measurements were performed with the notch filter removed. Lower band edge was verified manually using 100kHz RBW (see attached plot Section 2.1.16).

2.1.16 Test Results Higher Band Edge (Radiated - High Channel using 100 kHz RBW)



Test Notes: Carrier frequency (High Channel) was maximized for this test. Correction factor of -0.2dB is from the cable, antenna and preamp used. The EUT complies with the conducted power limits based on the use of RMS averaging over a time interval therefore the limit for this test is -30dBc. The highest measured emission close to the lower band edge is -54.64dBc. EUT complies.

SECTION 3

TEST EQUIPMENT USED

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

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
Conducted Port Test Setup						
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	06/13/12	07/13/13
8609	20dB Attenuator	CAT-20	N/A	MCL HAT-20	08/21/12	08/21/13
Radiated Test Setup						
1002	Bilog Antenna	3142C	000058717	EMCO	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.	09/21/12	09/21/13
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	09/21/12	09/21/13
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	08/10/12	08/10/13
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	06/13/12	07/13/13
1016	Pre-amplifier	PAM-0202	187	PAM	09/24/12	09/24/13
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 1040	
Miscellaneous						
7560	Barometer/Temperature /Humidity Transmitter	iBTHX-W	1240476	Omega	08/12/12	08/12/13
6452	Multimeter	3478A	2911A52177	Hewlett Packard	07/16/12	07/16/13
	Test Software	EMC32	V8.52	Rhode & Schwarz	N/A	

3.2 MEASUREMENT UNCERTAINTY

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

3.2.1 Radiated Emission 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

3.2.2 Radiated Emission Measurements (Above 1GHz)

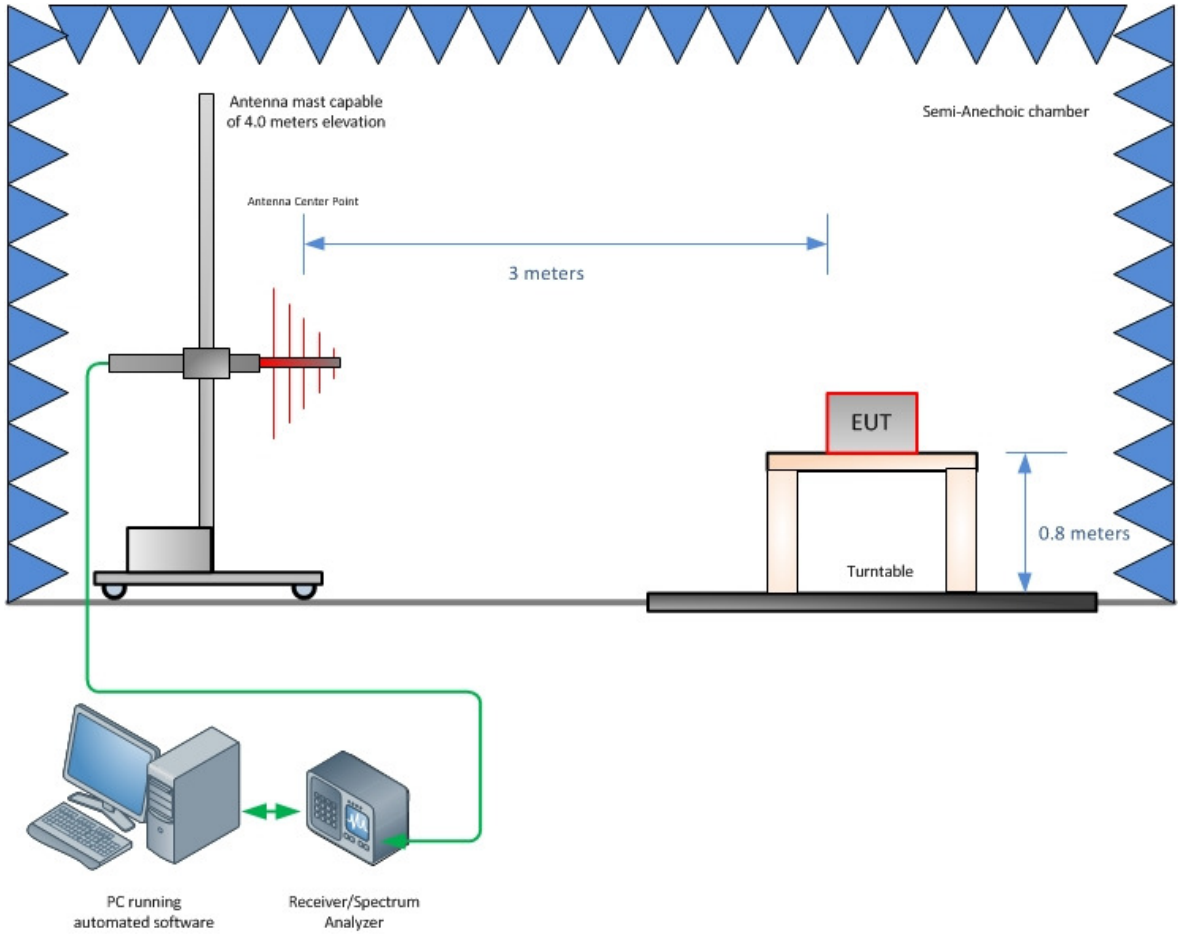
	Contribution	Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.70	0.40	0.16
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.37	0.21	0.05
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	2.40
				Coverage Factor (k):	2
				Expanded Uncertainty:	4.81

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

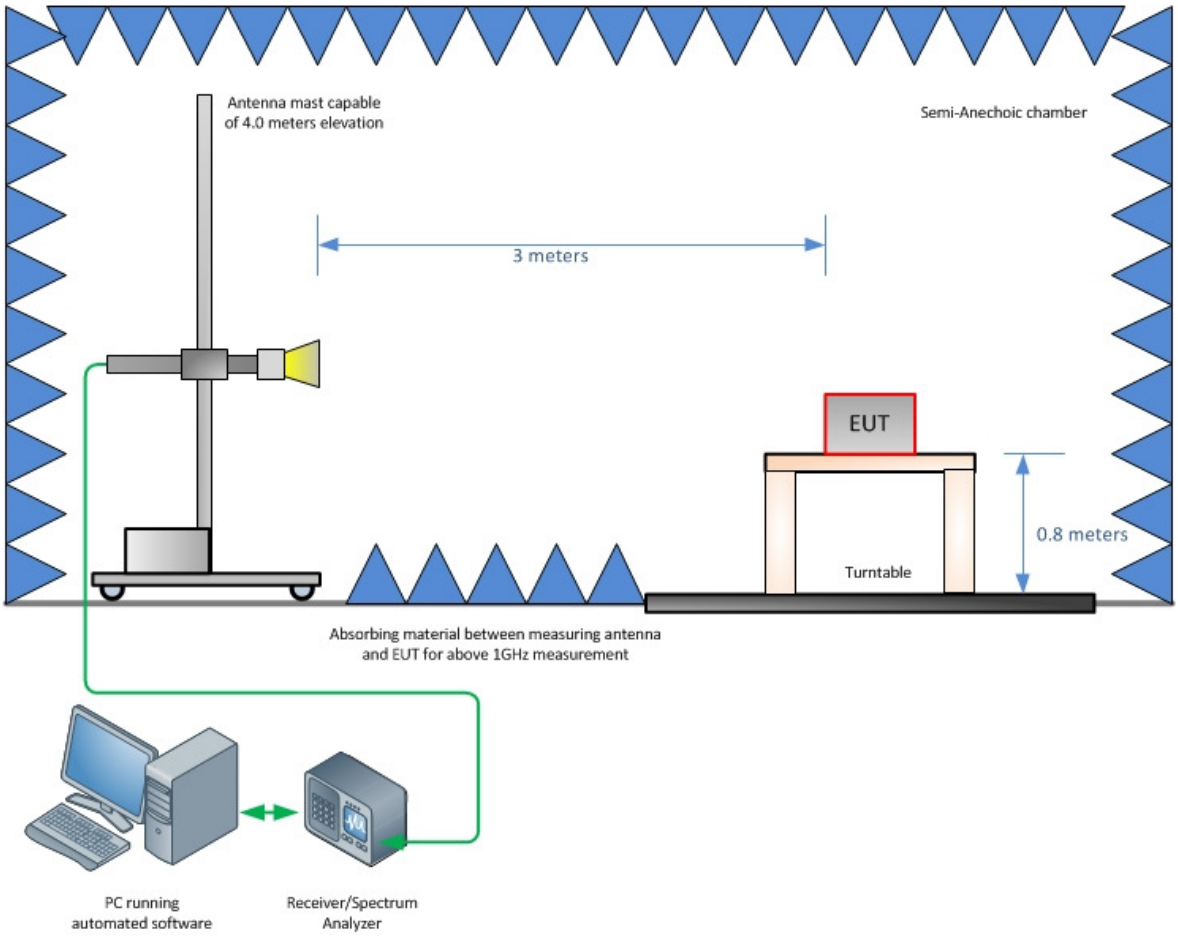
SECTION 4
DIAGRAM OF TEST SETUP

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

TÜV SÜD America Inc.'s reports apply only to the specific sample tested under stated test conditions. It is the manufacturer's responsibility to assure the continued compliance of production units of this model. TÜV SÜD America, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America, Inc.'s issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and TÜV SÜD America, Inc., extracts from the test report shall not be reproduced, except in full without TÜV SÜD America, Inc.'s written approval.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

TÜV SÜD America, Inc. and its professional staff hold government
and professional organization certifications for
AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, NIST and VCCI.

NVLAP Lab Code: 100268-0

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364