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Report On

Radio Testing of the
Linear LLC
GB00Z-1 Wireless Glass Break Detector

FCC Part 15 Subpart C §15.249
IC RSS-210 Issue 8 December 2010

Report No. SC1310877

December 2013



REPORT ON	Radio Testing of the Linear LLC Wireless Glass Break Detector
TEST REPORT NUMBER	SC1310877
PREPARED FOR	Linear LLC 1950 Camino Vida Roble, Suite 150 Carlsbad, CA 92008-6517
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DATED	<u>12 December 2013</u>

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SECTION 1

REPORT SUMMARY

Radio Testing of the
Linear LLC
Wireless Glass Break Detector



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Linear LLC Wireless Glass Break Detector to the requirements of FCC Part 15 Subpart C §15.249 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	Linear LLC
Model Number(s)	GB00Z-1
FCC ID Number	EF4-00115
IC Number	1078A-00115
Serial Number(s)	N/A
Number of Samples Tested	1
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.249 (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	November 06, 2013
Finish of Test	November 07, 2013
Name of Engineer(s)	Alex Chang
Related Document(s)	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 §15.249 with cross-reference to the corresponding IC RSS standard is shown below.

Section	Spec Clause	RSS	Test Description	Result	Comments/Base Standard
-	§15.207(a)	RSS-Gen 7.2.4	Conducted Emissions	N/A*	
2.1	§15.215(c)	RSS-Gen 4.6.3	20 dB Bandwidth	Compliant	
2.2		RSS-Gen 4.6.1	99% Emission Bandwidth	Compliant	
2.3	§15.249(a)	RSS-210 A2.9(a)	Field Strength Limits for Fundamental and Harmonics	Compliant	
2.4	§15.249(d)	RSS-210 A2.9(b)	Spurious Radiated Emissions	Compliant	
-		RSS-Gen 4.10	Receiver Spurious Emissions	N/A **	

* Not applicable. EUT is battery powered.

** Not applicable. EUT does not have a separate receive mode. It covers by the Spurious Radiated Emission. The time from receive to transmit is virtually zero, on the order of milliseconds.

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a Linear LLC Wireless Glass Break Detector as shown in the photograph below. The EUT is a battery powered glass break detector with built-in Z-Wave interoperable two-way RF mesh networking technology. This device is used for perimeter protection.



Equipment Under Test



1.3.2 EUT General Description

EUT Description	Wireless Glass Break Detector
Model Name	GB00Z-1
Model Number(s)	GB00Z-1
Rated Voltage	3.0VDC from 2 (two) lithium batteries (CR123)
Output Power	91.4dBµV/m @ 3 meters (414.1µW EIRP)
Frequency Range	908.42MHz in the 902MHz to 928MHz Band
Number of Operating Frequencies	1
Channels Verified	1 Channel 908.42MHz
Antenna Type (used during evaluation)	Integral
Modulation Used	FSK

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Default	EUT transmitting max power with 1 channel verified. It is a packet transceiver; the receiver and transmitter operate at a nominal frequency of 908.42MHz. The receiver is the Z-Wave device waits for an acknowledgement from the console after each transmission.

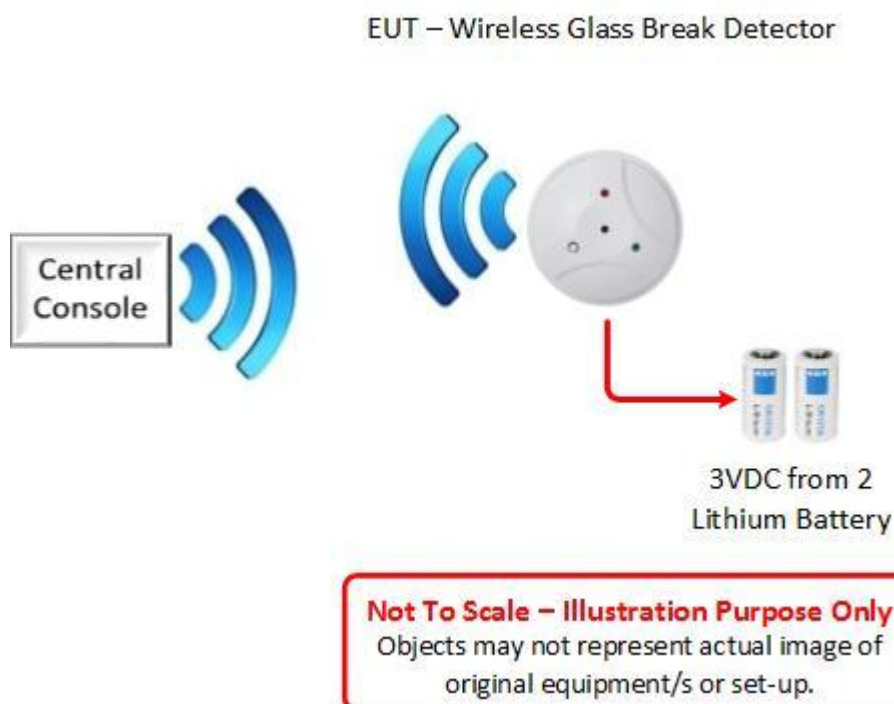
1.4.2 EUT Exercise Software

None. No special software exercise the EUT during the investigation. The EUT was set in the continuous transmission mode simulating breaking glass event.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
N/A	N/A	N/A

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 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

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.



SECTION 2

TEST DETAILS

Radio Testing of the
Linear LLC
Wireless Glass Break Detector



2.1 20 dB BANDWIDTH

2.1.1 Specification Reference

Part 15 Subpart C §15.215(c)

2.1.2 Standard Applicable

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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

November 06, 2013/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

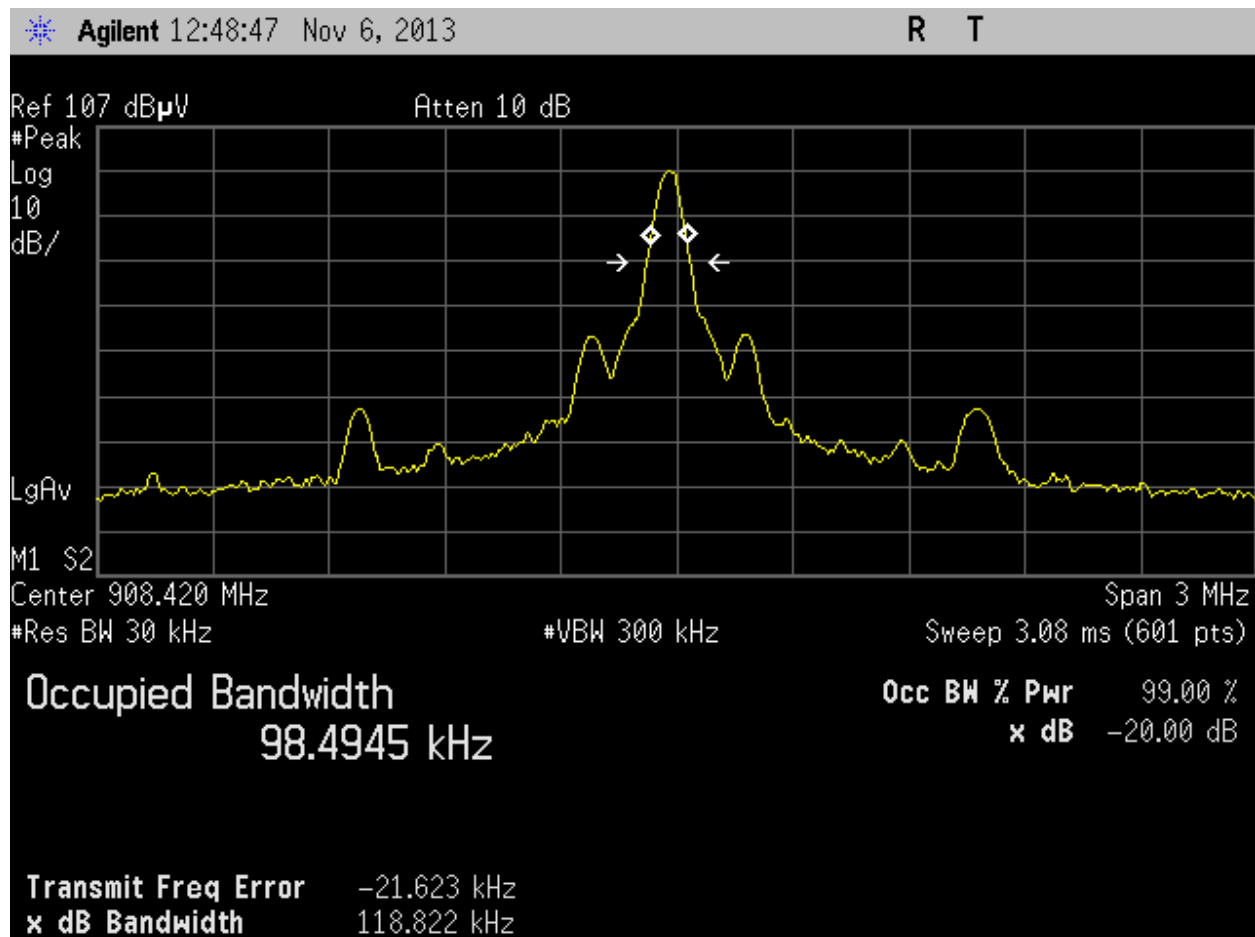
Ambient Temperature	24.6°C
Relative Humidity	19.9%
ATM Pressure	99.1 kPa

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.

2.1.8 Test Results

Channel (908.42MHz)
118.822 kHz





2.2 99% EMISSION BANDWIDTH

2.2.1 Specification Reference

RSS-Gen Clause 4.6.1

2.2.2 Standard Applicable

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.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

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

November 06, 2013/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

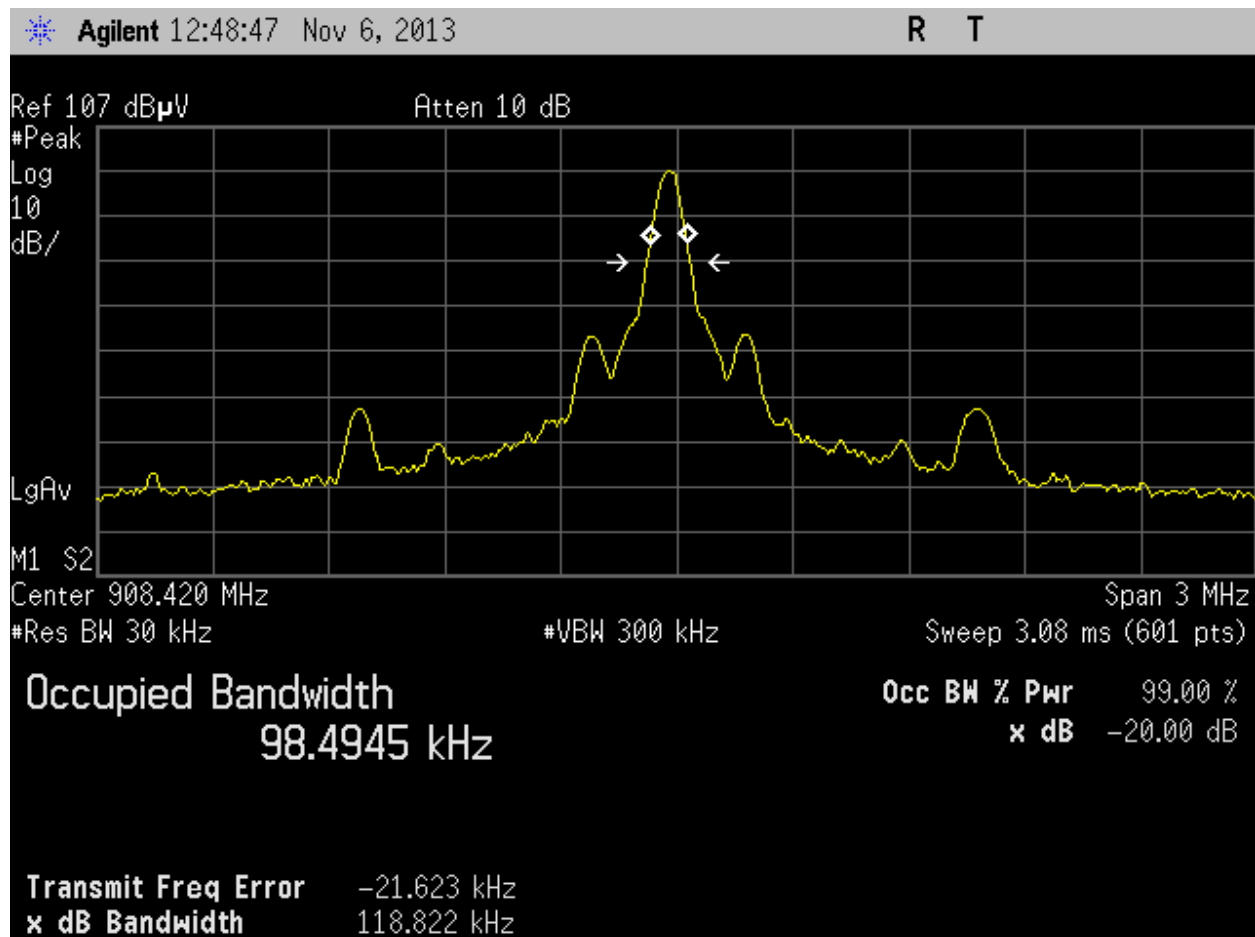
Ambient Temperature	24.6°C
Relative Humidity	19.9%
ATM Pressure	99.1 kPa

2.2.7 Additional Observations

- This is a radiated test.
- 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.
- The % Power Bandwidth setting in the spectrum analyzer was set to 99% (default).
- The Channel Bandwidth measurement function of the spectrum analyzer was used for this test.

2.2.8 Test Results

Channel (908.42MHz)
98.49 kHz





2.3 FIELD STRENGTH LIMITS FOR FUNDAMENTAL AND HARMONICS

2.3.1 Specification Reference

Part 15 Subpart C §15.249(a)

2.3.2 Standard Applicable

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500

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

November 06 and 07, 2013/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

Ambient Temperature	24.7°C
Relative Humidity	19.6%
ATM Pressure	99.2 kPa

2.3.7 Additional Observations

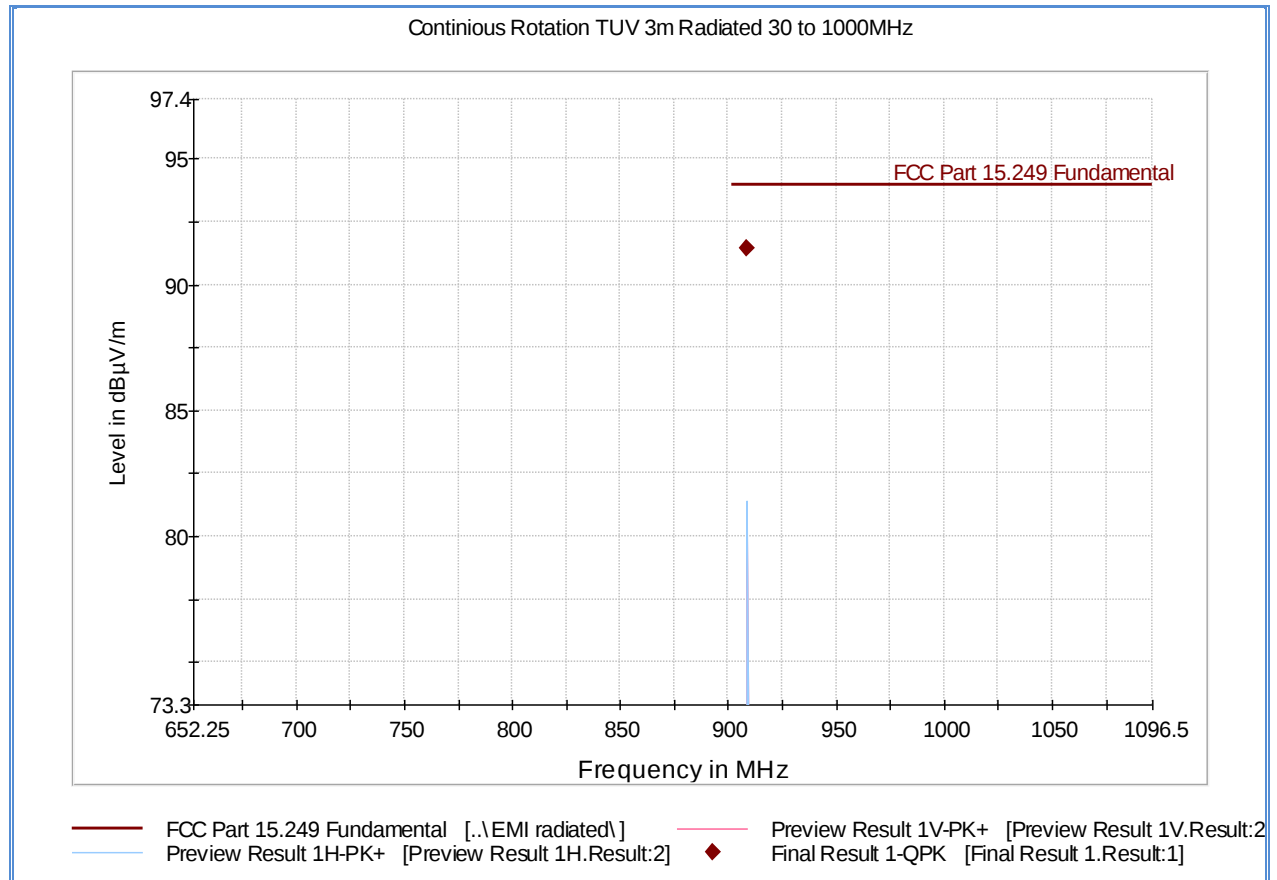
- This is a radiated test. The spectrum was searched from 1GHz to the 10th harmonic (10GHz).
- Fundamental measurements were performed with a preamp.
- Harmonics measurements were performed with a preamp and a notch filter attenuating the fundamental frequencies.
- Measurement was done using EMC32 V8.52 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 2.3.8 for sample computation.



2.3.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (db μ V) @ 2400 MHz			58.4
Correction Factor (dB)	Asset# 1153 (cable)	3.3	-4.8
	Asset# 8628 (preamplifier)	-36.4	
	Asset# 6669 (antenna)	28.3	
Reported Peak Final Measurement (db μ V/m) @ 2400 MHz			53.6

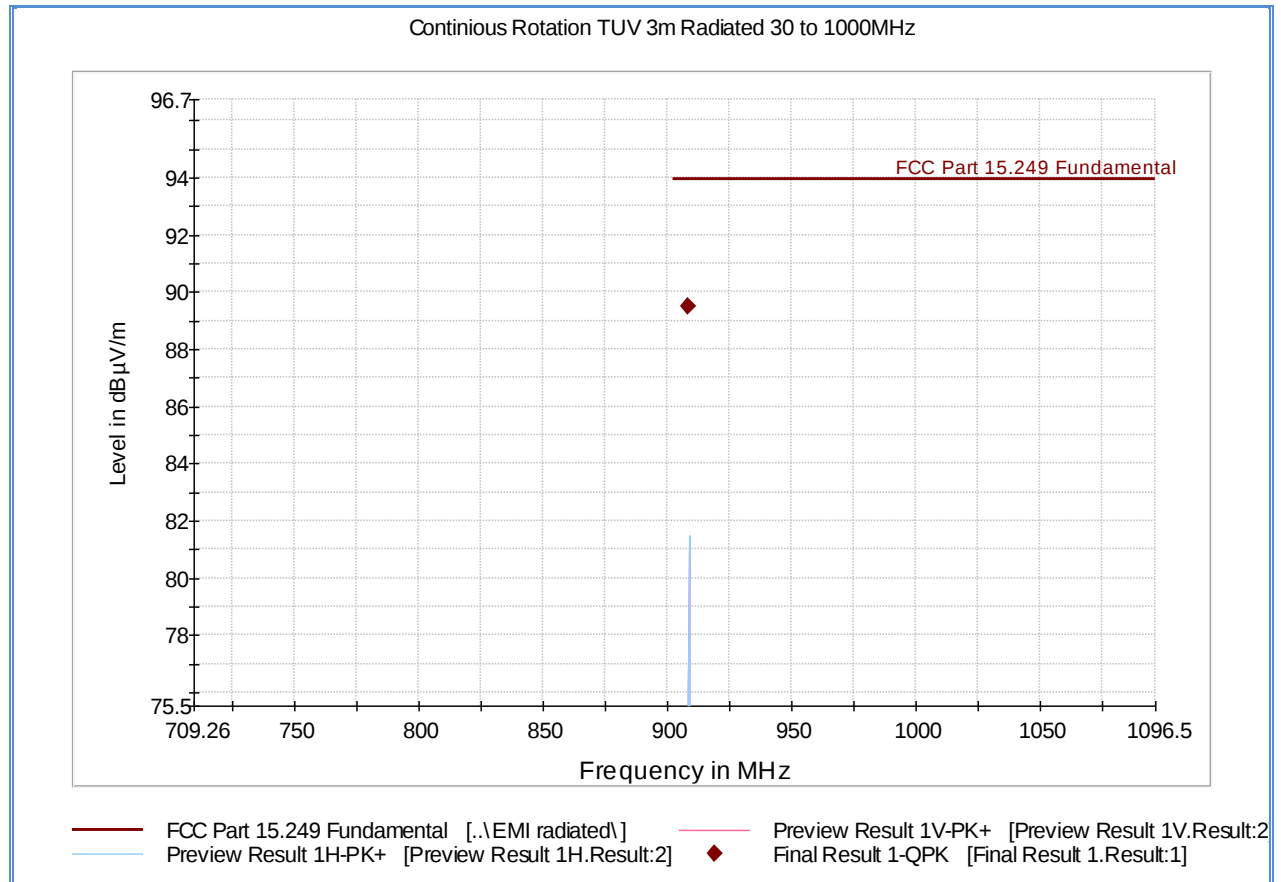
2.3.9 Test Results Fundamental ("X" axis configuration)



Quasi Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
908.397275	91.4	1000.0	120.000	100.0	H	250.0	2.2	2.5	94.0

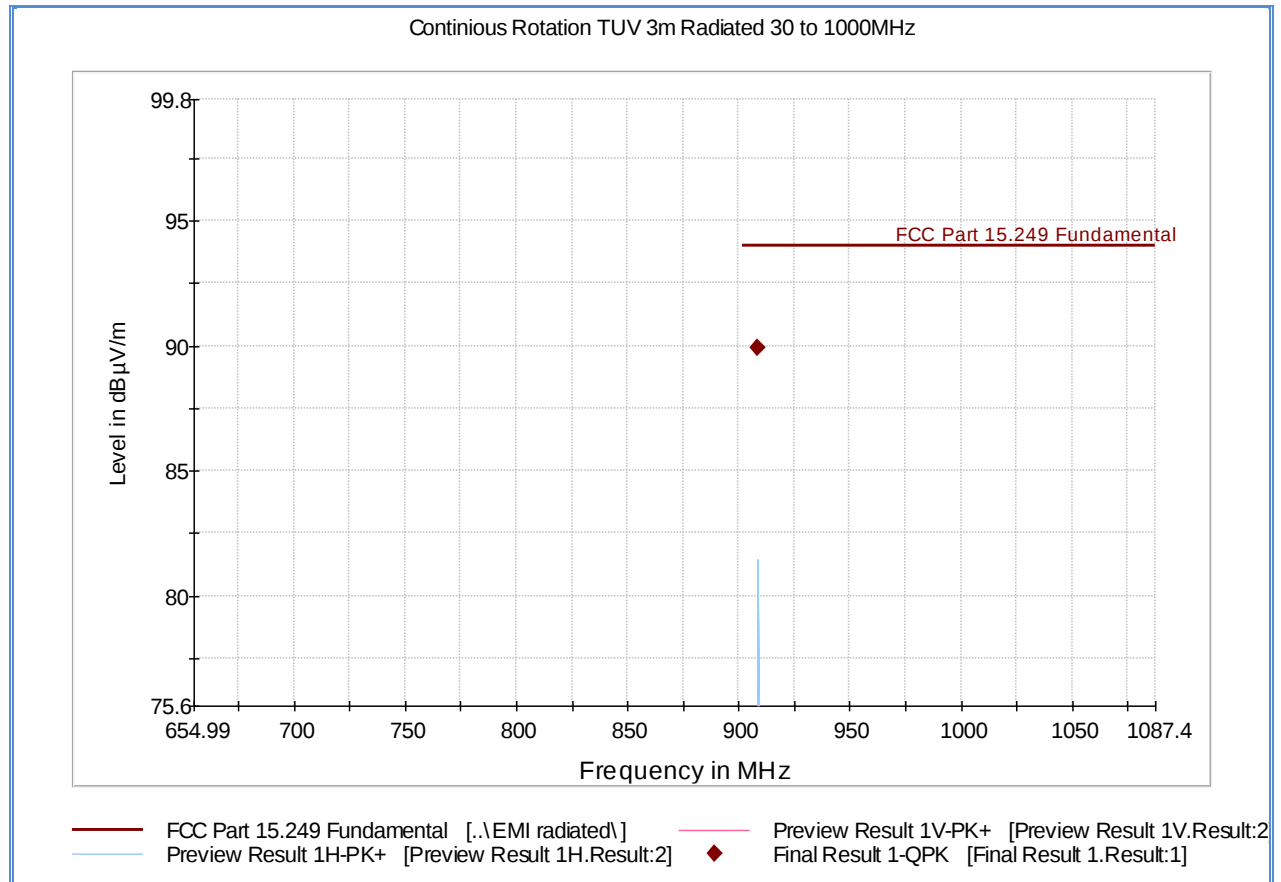
2.3.10 Test Results Fundamental ("Y" axis configuration)



Quasi Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
908.397275	89.5	1000.0	120.000	100.0	H	154.0	2.2	4.5	94.0

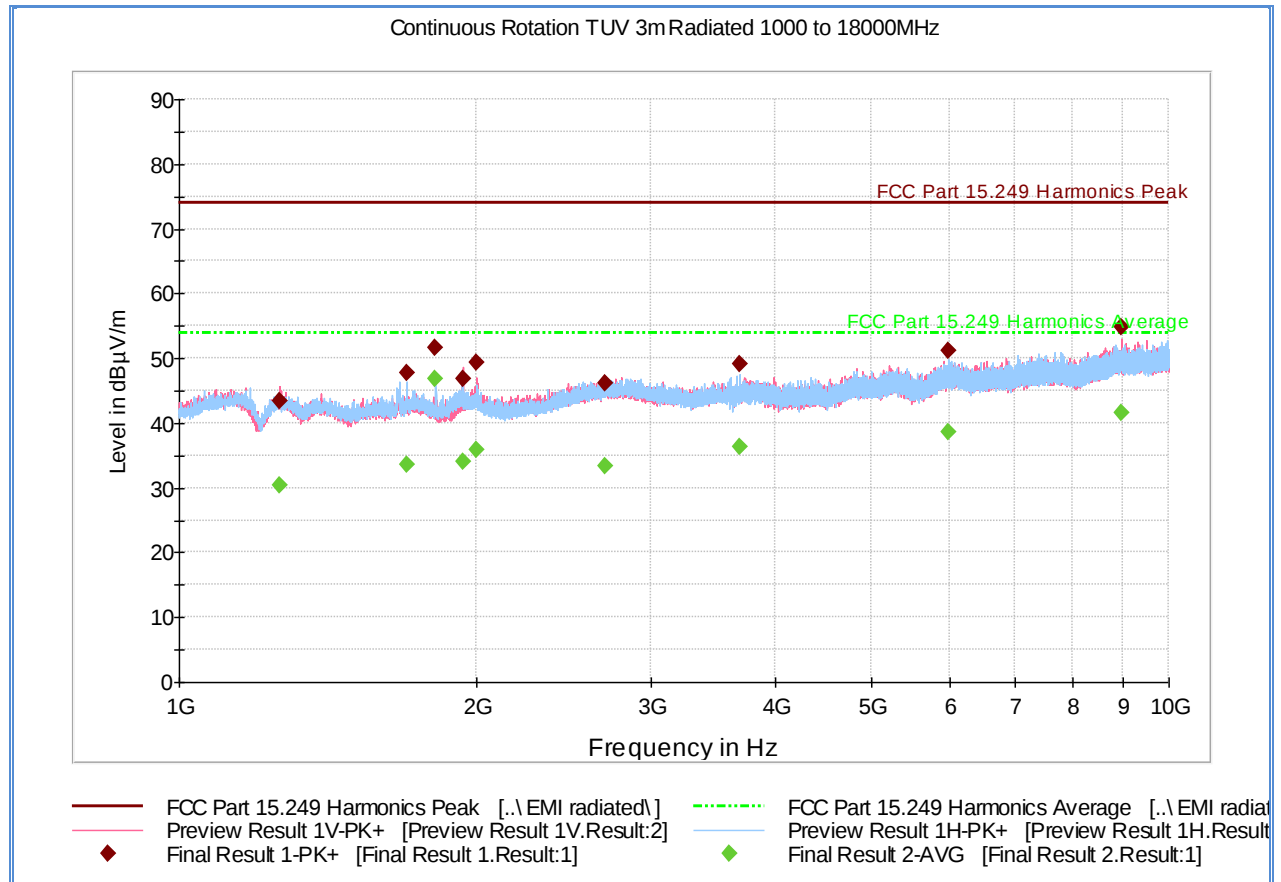
2.3.11 Test Results Fundamental ("Z" axis configuration)



Quasi Peak Data

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
908.397275	89.9	1000.0	120.000	144.0	H	171.0	2.2	4.1	94.0

2.3.12 Test Results Harmonics ("X" axis configuration)



Peak Data

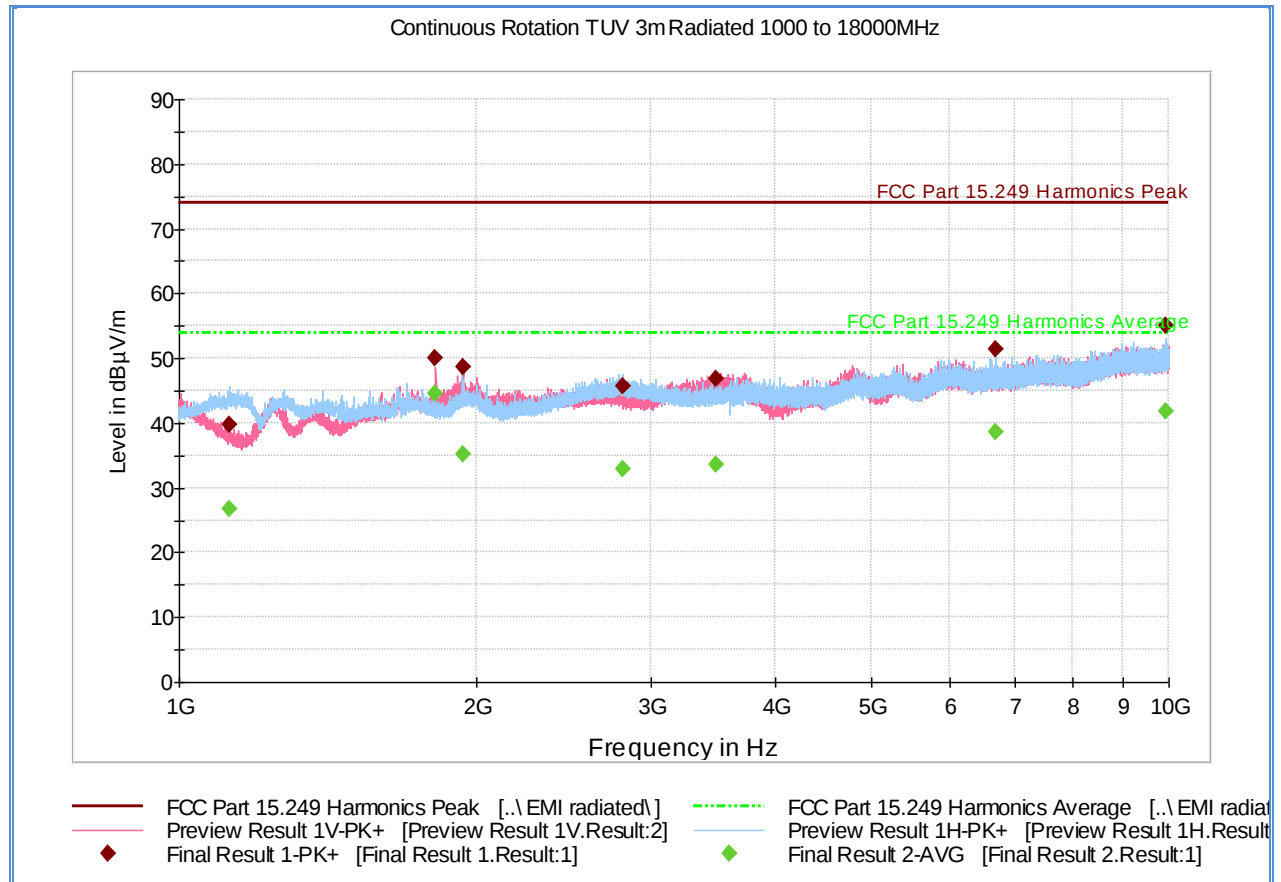
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1265.200000	43.3	1000.0	1000.000	150.5	V	236.0	-1.7	30.6	73.9
1699.700000	47.7	1000.0	1000.000	300.6	H	186.0	0.1	26.2	73.9
1816.800000	51.5	1000.0	1000.000	123.6	H	72.0	1.2	22.4	73.9
1938.200000	46.7	1000.0	1000.000	294.1	V	306.0	1.8	27.2	73.9
1999.500000	49.3	1000.0	1000.000	189.4	V	223.0	2.1	24.6	73.9
2695.000000	46.2	1000.0	1000.000	403.0	V	227.0	2.9	27.7	73.9
3690.800000	49.2	1000.0	1000.000	300.6	H	-3.0	5.8	24.7	73.9
5979.400000	51.1	1000.0	1000.000	328.1	H	30.0	9.8	22.8	73.9
8956.800000	54.8	1000.0	1000.000	160.5	V	278.0	13.5	19.1	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)
1265.200000	30.4	1000.0	1000.000	150.5	V	236.0	-1.7	23.6	54.0
1699.700000	33.7	1000.0	1000.000	300.6	H	186.0	0.1	20.3	54.0
1816.800000	46.9	1000.0	1000.000	123.6	H	72.0	1.2	7.1	54.0
1938.200000	34.0	1000.0	1000.000	294.1	V	306.0	1.8	20.0	54.0
1999.500000	35.8	1000.0	1000.000	189.4	V	223.0	2.1	18.1	54.0
2695.000000	33.3	1000.0	1000.000	403.0	V	227.0	2.9	20.7	54.0
3690.800000	36.3	1000.0	1000.000	300.6	H	-3.0	5.8	17.7	54.0
5979.400000	38.5	1000.0	1000.000	328.1	H	30.0	9.8	15.4	54.0
8956.800000	41.5	1000.0	1000.000	160.5	V	278.0	13.5	12.5	54.0

Test Notes 1: Measurement was performed with a 800MHz to 1GHz notch filter.

2.3.13 Test Results Harmonics ("Y" axis configuration)



Peak Data

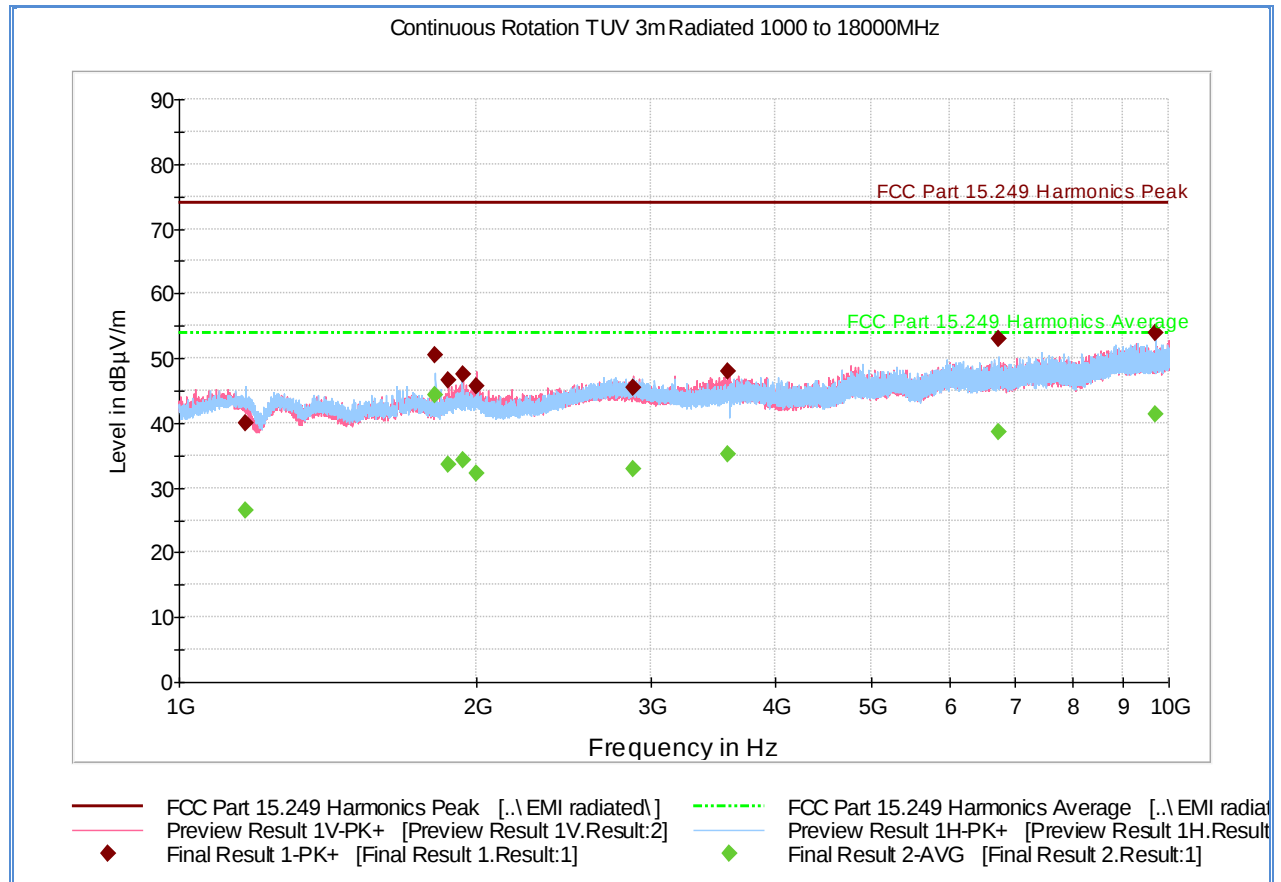
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1123.600000	39.7	1000.0	1000.000	200.4	H	226.0	-1.7	34.2	73.9
1816.700000	50.1	1000.0	1000.000	100.6	V	69.0	1.1	23.8	73.9
1937.800000	48.7	1000.0	1000.000	101.6	V	188.0	1.8	25.2	73.9
2812.800000	45.7	1000.0	1000.000	345.1	H	69.0	3.1	28.2	73.9
3492.200000	46.9	1000.0	1000.000	124.6	V	81.0	5.0	27.0	73.9
6690.000000	51.4	1000.0	1000.000	406.0	H	27.0	10.5	22.5	73.9
9925.100000	55.0	1000.0	1000.000	125.5	H	343.0	13.9	18.9	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)
1123.600000	26.8	1000.0	1000.000	200.4	H	226.0	-1.7	27.2	54.0
1816.700000	44.6	1000.0	1000.000	100.6	V	69.0	1.1	9.4	54.0
1937.800000	35.1	1000.0	1000.000	101.6	V	188.0	1.8	18.9	54.0
2812.800000	33.0	1000.0	1000.000	345.1	H	69.0	3.1	21.0	54.0
3492.200000	33.5	1000.0	1000.000	124.6	V	81.0	5.0	20.4	54.0
6690.000000	38.7	1000.0	1000.000	406.0	H	27.0	10.5	15.3	54.0
9925.100000	41.7	1000.0	1000.000	125.5	H	343.0	13.9	12.2	54.0

Test Notes 1: Measurement was performed with a 800MHz to 1GHz notch filter.

2.3.14 Test Results Harmonics ("Z" axis configuration)



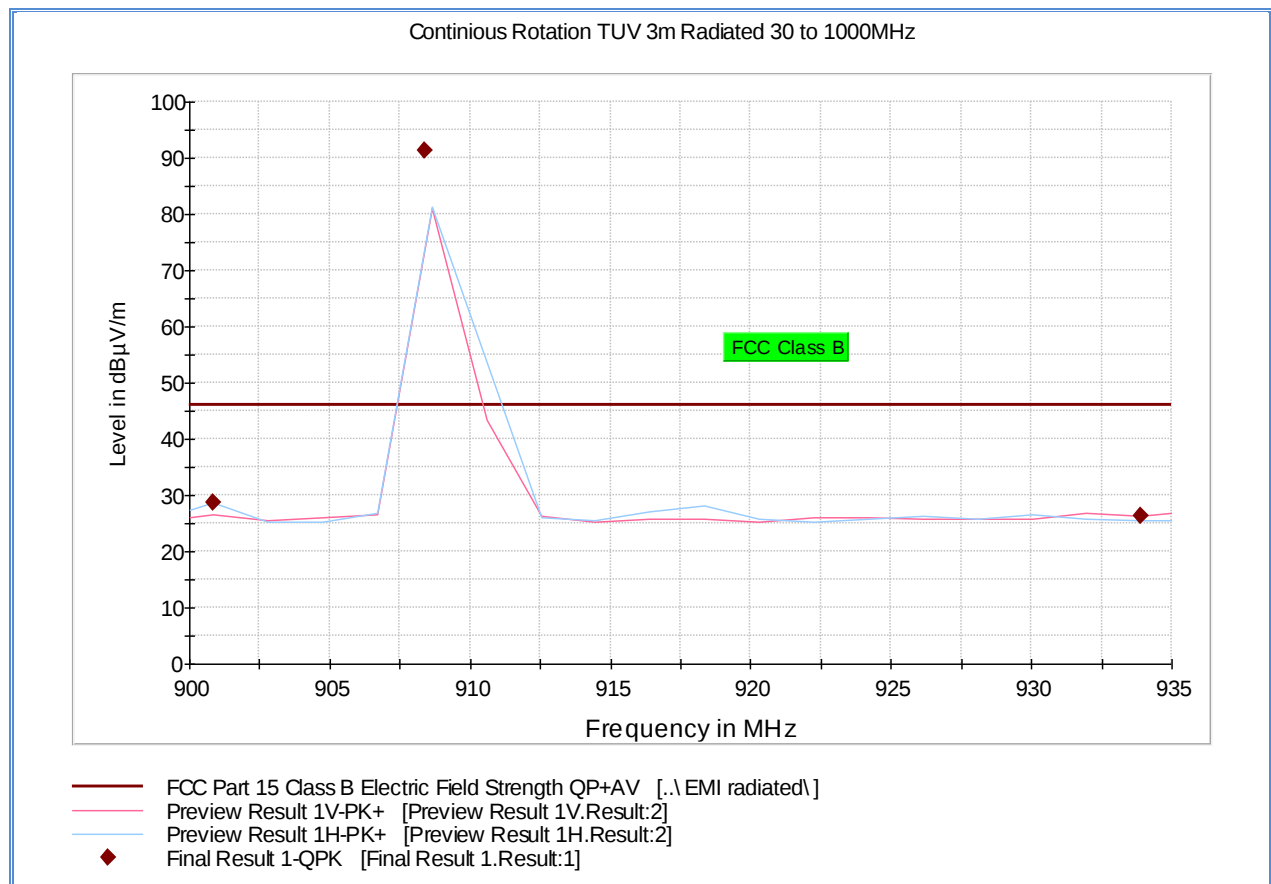
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1167.800000	39.9	1000.0	1000.000	270.2	H	277.0	-1.7	34.0	73.9
1816.600000	50.5	1000.0	1000.000	159.5	H	151.0	1.1	23.4	73.9
1873.200000	46.5	1000.0	1000.000	131.6	V	307.0	1.5	27.4	73.9
1937.600000	47.5	1000.0	1000.000	403.0	V	313.0	1.8	26.4	73.9
1998.900000	45.7	1000.0	1000.000	200.4	V	170.0	2.1	28.2	73.9
2881.100000	45.5	1000.0	1000.000	247.3	V	20.0	3.3	28.4	73.9
3585.500000	48.0	1000.0	1000.000	104.6	V	154.0	5.4	25.9	73.9
6733.800000	52.9	1000.0	1000.000	313.2	H	2.0	10.5	21.0	73.9
9702.700000	53.9	1000.0	1000.000	300.6	H	85.0	13.4	20.0	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)
1167.800000	26.6	1000.0	1000.000	270.2	H	277.0	-1.7	27.4	54.0
1816.600000	44.4	1000.0	1000.000	159.5	H	151.0	1.1	9.5	54.0
1873.200000	33.6	1000.0	1000.000	131.6	V	307.0	1.5	20.4	54.0
1937.600000	34.2	1000.0	1000.000	403.0	V	313.0	1.8	19.8	54.0
1998.900000	32.3	1000.0	1000.000	200.4	V	170.0	2.1	21.7	54.0
2881.100000	32.8	1000.0	1000.000	247.3	V	20.0	3.3	21.2	54.0
3585.500000	35.2	1000.0	1000.000	104.6	V	154.0	5.4	18.8	54.0
6733.800000	38.7	1000.0	1000.000	313.2	H	2.0	10.5	15.3	54.0
9702.700000	41.4	1000.0	1000.000	300.6	H	85.0	13.4	12.6	54.0

Test Notes 1: Measurement was performed with a 800MHz to 1GHz notch filter.



Quasi Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
908.397275	91.4	1000.0	120.000	100.0	H	250.0	2.2	—	—
900.861723	28.8	1000.0	120.000	100.0	H	314.0	2.0	17.2	46.0
933.900000	26.2	1000.0	120.000	200.0	V	306.0	2.4	19.8	46.0

This is the frequency band edge measurement represented for the range of 902MHz to 928MHz compliance.



2.4 SPURIOUS RADIATED EMISSIONS

2.4.1 Specification Reference

Part 15 Subpart C §15.249(d)

2.4.2 Standard Applicable

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

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

November 07, 2013/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

Ambient Temperature	24.7°C
Relative Humidity	19.5%
ATM Pressure	99.2 kPa

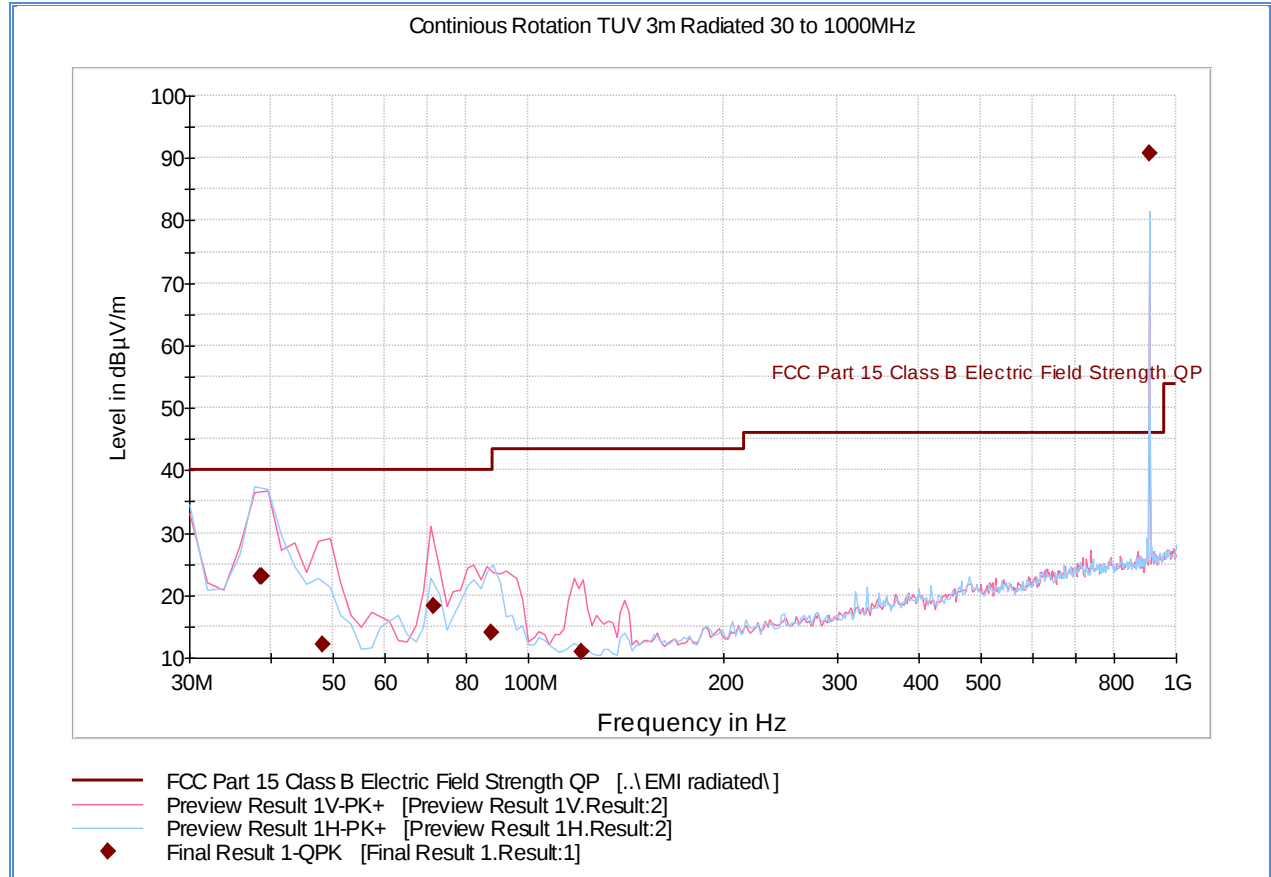
2.4.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic (10GHz).
- Data presented is from worst configuration based from fundamental/harmonics verification ("X" axis configuration).
- Above 1GHz measurement results are identical to test results presented under Section 2.3.14 up to Section 2.3.16 of this test report. No other spurious emissions observed other than harmonics of the fundamental frequency.
- 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 2.4.8 for sample computation.

2.4.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbμV) @ 2400 MHz			58.4
Correction Factor (dB)	Asset# 1153 (cable)	3.3	-4.8
	Asset# 8628 (preamplifier)	-36.4	
	Asset# 6669 (antenna)	28.3	
Reported Peak Final Measurement (dbμV/m) @ 2400 MHz			53.6

2.4.9 Test Results Below 1GHz ("X" Configuration)

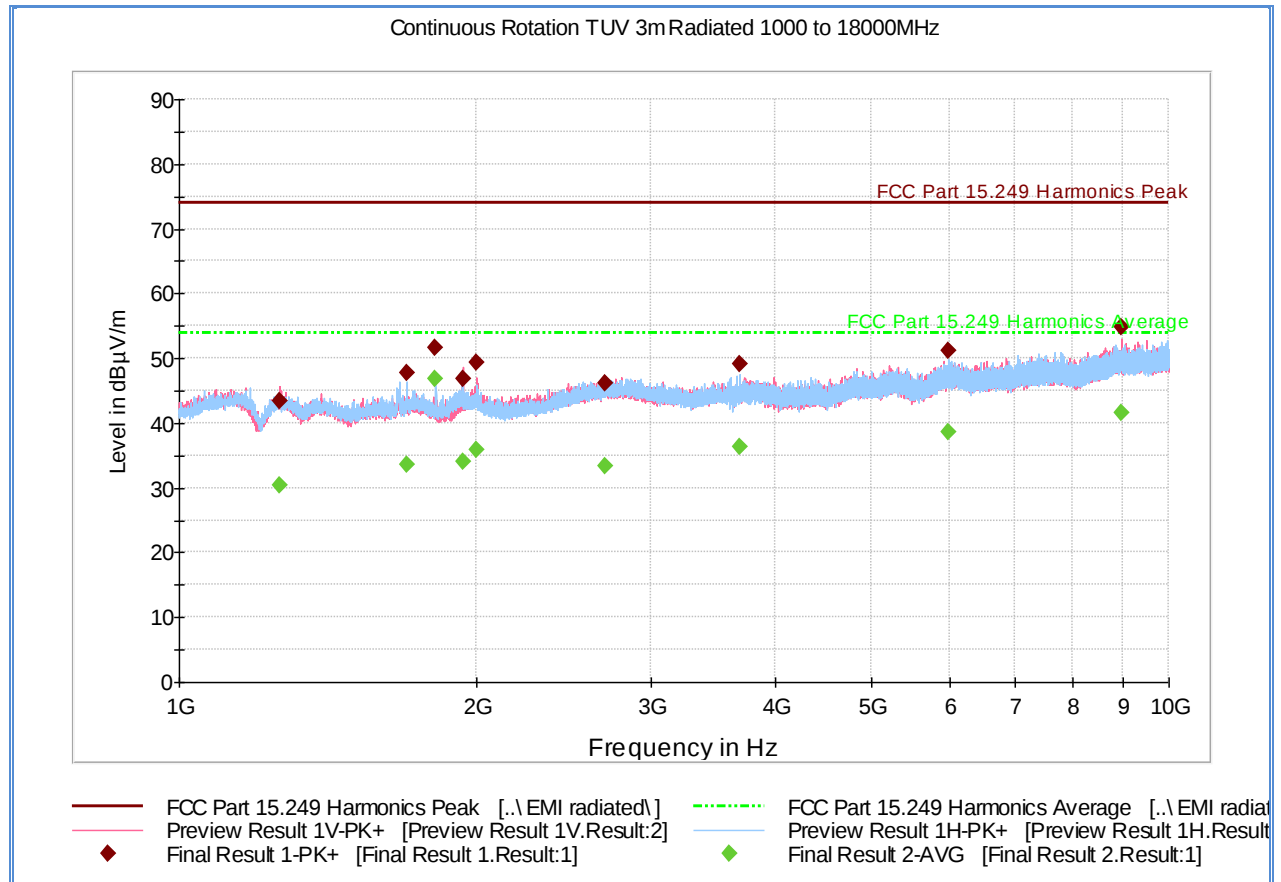


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
38.615551	23.1	1000.0	120.000	392.0	H	15.0	-15.4	16.9	40.0
38.839439	23.1	1000.0	120.000	400.0	H	15.0	-15.5	16.9	40.0
48.238878	12.2	1000.0	120.000	100.0	V	298.0	-18.7	27.8	40.0
71.581643	18.3	1000.0	120.000	200.0	V	209.0	-21.3	21.7	40.0
87.612745	14.1	1000.0	120.000	400.0	V	342.0	-20.2	25.9	40.0
120.602725	11.0	1000.0	120.000	200.0	V	342.0	-19.1	32.5	43.5
*)908.3972	90.9	1000.0	120.000	150.0	H	234.0	2.2	-44.9	46.0

*) This is the fundamental frequency exempted from the spurious emission. Refer to fundamental measurement result.

2.4.10 Test Results Above 1GHz ("X" Configuration)



Peak Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1265.200000	43.3	1000.0	1000.000	150.5	V	236.0	-1.7	30.6	73.9
1699.700000	47.7	1000.0	1000.000	300.6	H	186.0	0.1	26.2	73.9
1816.800000	51.5	1000.0	1000.000	123.6	H	72.0	1.2	22.4	73.9
1938.200000	46.7	1000.0	1000.000	294.1	V	306.0	1.8	27.2	73.9
1999.500000	49.3	1000.0	1000.000	189.4	V	223.0	2.1	24.6	73.9
2695.000000	46.2	1000.0	1000.000	403.0	V	227.0	2.9	27.7	73.9
3690.800000	49.2	1000.0	1000.000	300.6	H	-3.0	5.8	24.7	73.9
5979.400000	51.1	1000.0	1000.000	328.1	H	30.0	9.8	22.8	73.9
8956.800000	54.8	1000.0	1000.000	160.5	V	278.0	13.5	19.1	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)
1265.200000	30.4	1000.0	1000.000	150.5	V	236.0	-1.7	23.6	54.0
1699.700000	33.7	1000.0	1000.000	300.6	H	186.0	0.1	20.3	54.0
1816.800000	46.9	1000.0	1000.000	123.6	H	72.0	1.2	7.1	54.0
1938.200000	34.0	1000.0	1000.000	294.1	V	306.0	1.8	20.0	54.0
1999.500000	35.8	1000.0	1000.000	189.4	V	223.0	2.1	18.1	54.0
2695.000000	33.3	1000.0	1000.000	403.0	V	227.0	2.9	20.7	54.0
3690.800000	36.3	1000.0	1000.000	300.6	H	-3.0	5.8	17.7	54.0
5979.400000	38.5	1000.0	1000.000	328.1	H	30.0	9.8	15.4	54.0
8956.800000	41.5	1000.0	1000.000	160.5	V	278.0	13.5	12.5	54.0

Test Notes 1: Measurement was performed with a 800MHz to 1GHz notch filter.



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
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	07/31/13	07/31/14
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	07/24/13	07/24/14
1016	Pre-amplifier	PAM-0202	187	PAM	10/08/13	10/08/14
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/21/13	01/21/14
6814	PSA Series Spectrum Analyzer	E4440A	MY42510441	Agilent	11/07/12	11/07/13
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	09/03/13	09/03/14
6669	Double-ridged waveguide horn antenna	3115	94124364	EMCO	01/31/13	01/31/14
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	03/25/13	03/25/14
	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

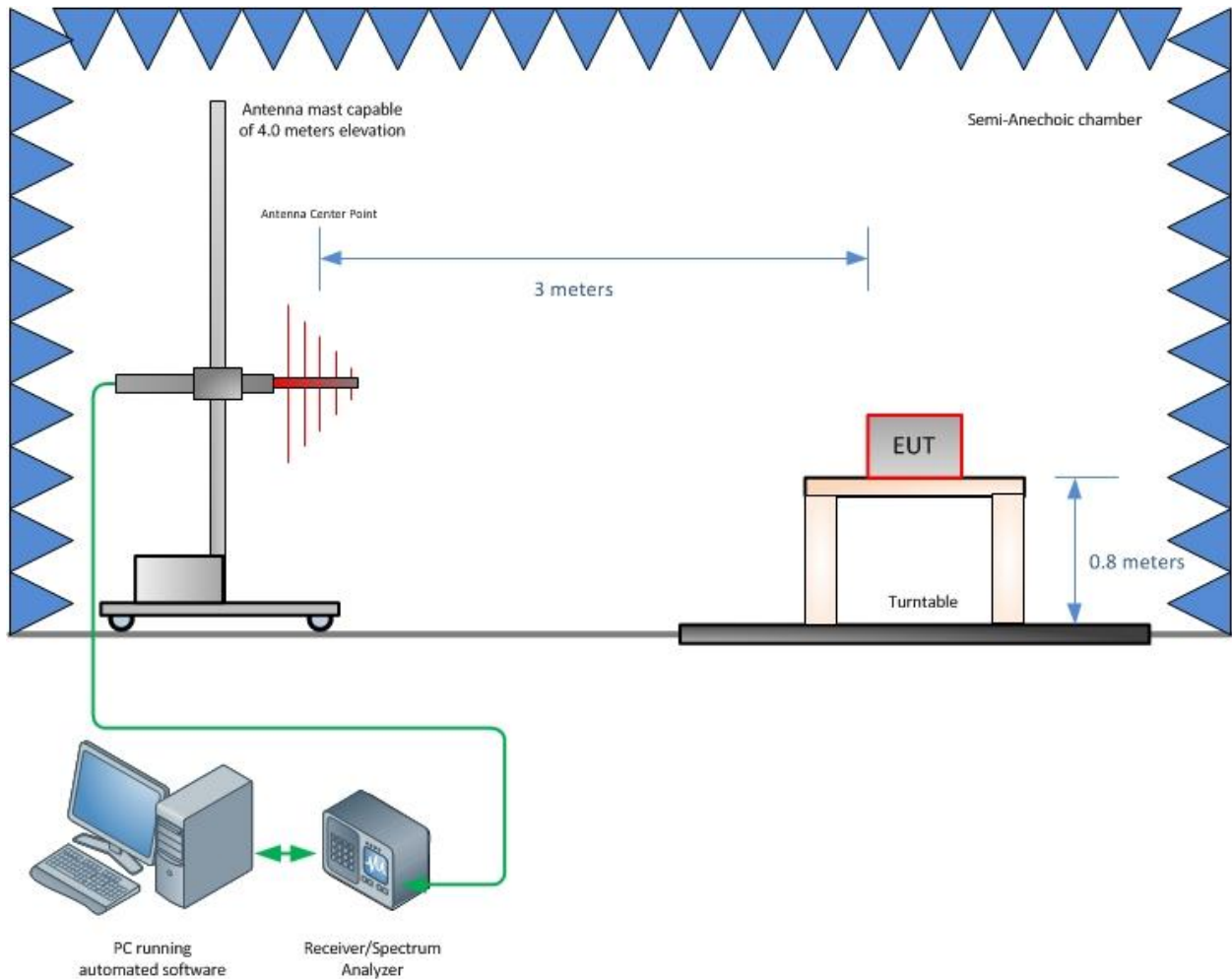
Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.70	0.40	0.16
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.37	0.21	0.05
5	Site	Rectangular	3.89	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



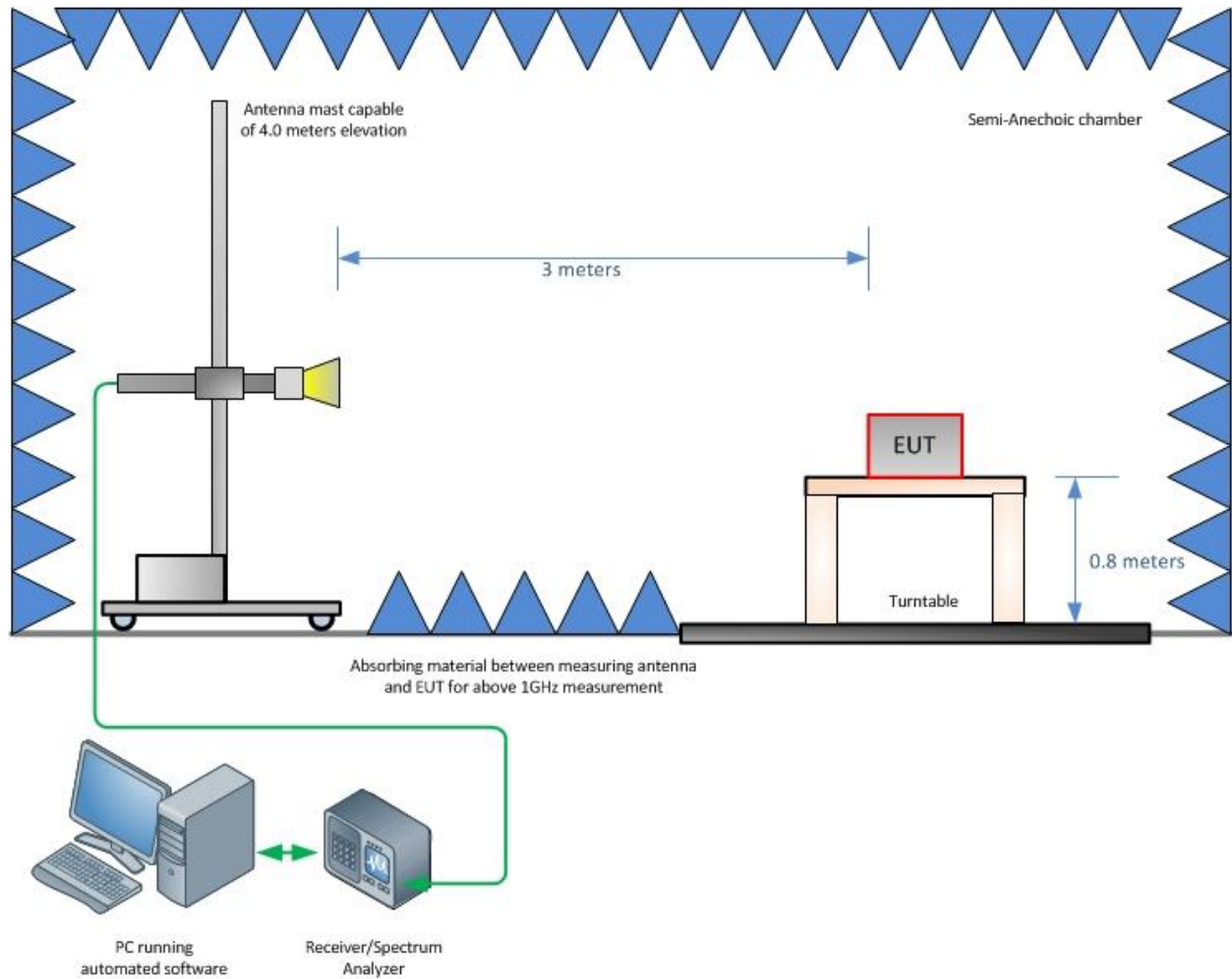
SECTION 4

DIAGRAM OF TEST SETUP

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

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