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# Report On

EMC Evaluation of  
Nextivity Inc.  
Cel-Fi DUO RAINIER Smart Cellular Signal Booster

FCC Part 15 Subpart B  
ICES-003 Issue 6

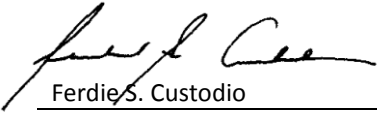

Report No. SD72116210-0416A

May 2016



America

TÜV SÜD America Inc., 10040 Mesa Rim Road, San Diego, CA 92121  
Tel: (858) 678-1400. Website: [www.TUVamerica.com](http://www.TUVamerica.com)

<b>REPORT ON</b>	EMC Evaluation of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster
<b>TEST REPORT NUMBER</b>	SD72116210-0416A
<b>TEST REPORT DATE</b>	May 2016
<b>PREPARED FOR</b>	Nextivity Inc. 12230 World trade Drive, Suite 250 San Diego, CA 92128
<b>CONTACT PERSON</b>	CK Li Sr. Principal Engineer, Regulatory CLi@NextivityInc.com (858) 829-1692
<b>PREPARED BY</b>	 Ferdie S. Custodio <b>Name</b> Authorized Signatory Title: EMC/Senior Wireless Test Engineer
<b>APPROVED BY</b>	 Chip R. Fleury <b>Name</b> Authorized Signatory Title: West Coast EMC Manager
<b>DATED</b>	May 02, 2016



America

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## Revision History

SD72116210-0416A Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
05/02/2016	Initial Release				Chip R.Fleury



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## **SECTION 1**

### **REPORT SUMMARY**

EMC Evaluation of the  
Nextivity Inc.  
Smart Cellular Signal Booster



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster to the requirements of FCC Part 15 Subpart B and Innovation, Science and Economic Development Canada ICES-003.

Objective	To perform EMC Evaluation to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Nextivity Inc.
Model Name	Cel-Fi DUO RAINIER
Model Number(s)	D32-2/12/66
Serial Number(s)	296546000509 (NU) and 297546000285 (CU)
Number of Samples Tested	2
Highest Frequency Generated or Used	5825 MHz
Test Specification/Issue/Date	<ul style="list-style-type: none"><li>• FCC Part 15 Subpart B (October 1, 2015)</li><li>• Spectrum Management and Telecommunications Interference-Causing Equipment Standard ICES-003 Information Technology Equipment (ITE) — Limits and methods of measurement (Issue 6 January 2016).</li></ul>
Start of Test	April 27, 2016
Finish of Test	May 02, 2016
Name of Engineer(s)	Ferdie Custodio
Related Document(s)	None



## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart B with cross-reference to Innovation, Science and Economic Development Canada Interference-Causing Equipment Standard ICES-003 is shown below.

Part 15	ICES-003	Test Description	Result	Comments/Base Standard
§15.107	Clause 6.1	Conducted Limits	Compliant	Class B requirement
§15.109	Clause 6.2	Radiated Emission Limits	Compliant	Class B requirement

### 1.3 PRODUCT INFORMATION

#### 1.3.1 Technical Description

The Equipment Under Test (EUT) is a Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster. The EUT is a WCDMA/LTE Signal Booster to improve voice and data cellular performance for indoor residential, small business and small enterprise environments. RAINIER consists of two separate units: the Network Unit (NU), and the Coverage Unit (CU). The NU transmits and receives Cellular signals from the base station and operates similar to a cellular handset. The CU transmits and receives signals with the cellular handset and operates on frequencies similar to the cellular base station. The NU and CU are connected wirelessly over a full-duplex wireless link in the UNII band using a mixed OFDM and muxed cellular signal over a 30 or 40 MHz channel in each direction. The CU also includes Bluetooth LE connectivity. With the use of smart phone application, it allows user to register the product, update software, and capture/display details metrics of the system. NU does not support Bluetooth LE. This report covers “unintentional radiator” aspect of the EUT, all radios were placed on standby mode during testing (except for 5GHz wireless signal between NU and CU to build connection). Verifications were performed on both NU and CU with representative AC/DC Adapter.



**Equipment Under Test (EUT)**





### **1.3.2 Labelling Requirement for Innovation, Science and Economic Development Canada**

The manufacturer, importer or supplier shall meet the labelling requirements set out in this section and in Notice 2014-DRS1003 for electronic labelling for every unit:

- (i) Prior to marketing in Canada, for ITE manufactured in Canada, and;
- (ii) Prior to importation into Canada, for imported ITE.

Each unit of an ITE model shall bear a label (see below) that represents the manufacturer's or the importer's SDoC with Innovation, Science and Economic Development Canada's ICES-003. This label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the ITE and electronic labelling has not been implemented, the label shall be, upon agreement with Innovation, Science and Economic Development Canada, placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Innovation, Science and Economic Development Canada ICES-003 Compliance Label:

***CAN ICES-3 (B)/NMB-3(B)***

### **1.3.3 Labelling Requirement for Part 15 (Verification) Device**

See FCC Publication Number: 784748 for details:

<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=27980&switch=P>

## 1.4 EUT TEST CONFIGURATION

### 1.4.1 Test Configuration Description

Test Configuration	Description
Default	Bluetooth LE in Rx mode. 5GHz U-NII link is active between NU and CU. The link is integral to both NU and CU and can't be turned off for normal operation. Spurious emissions resulting from 5GHz U-NII link will be ignored (intentional radiator).

### 1.4.2 EUT Exercise Software

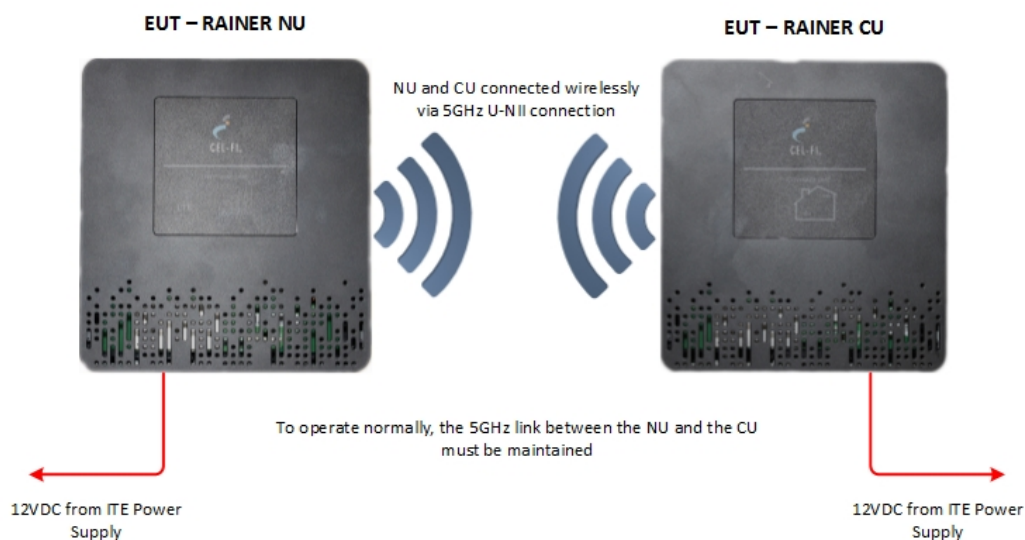
Manufacturer provided a configuration software (ConformanceTest.exe) running from a support laptop where both EUT are connected via USB.

### 1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Hon-Kwang	I.T.E Power Supply (2X)	Model HK-AX-120A167-US S/N: FB0000101 and FB0000075
-	Support USB cable	1.75 meters, shielded Type A to Micro B connector
Nextivity	Support USB cable	Custom 1.0 meter shielded USB Type A to DB9 for the Shielded Test Enclosure
Sony	Support Laptop	M/N PCG-31311L S/N 27545534 3006488
Sony	Support Laptop AC Adapter	M/N PCGA-AC19V9 S/N 147839091 0023259

*EUT configuration only. Removed during actual test/s.*

### 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: 296546000509 (NU) and 297546000285 (CU)		
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 C63.4-2014, 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 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 C63.4-2014. 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)

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.: US1146

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 §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Registration is US1146.



**1.9.2 Innovation, Science and Economic Development 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 Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A.

**1.9.3 BSMI – Laboratory Code: SL2-IN-E-028R (US0102)**

TUV Product Service Inc. (San Diego) is a recognized EMC testing laboratory by the BSMI under the MRA (Mutual Recognition Arrangement) with the United States. Accreditation includes CNS 13438 up to 6GHz.

**1.9.4 VCCI – Registration No. A-0230**

TUV SUD America Inc. (San Diego) is a VCCI registered measurement facility which includes radiated field strength measurement, radiated field strength measurement above 1GHz, mains port interference measurement and telecommunication port interference measurement.



## **SECTION 2**

### **TEST DETAILS**

EMC Evaluation of the  
Nextivity Inc.  
Smart Cellular Signal Booster

## 2.1 CONDUCTED LIMITS

### 2.1.1 Specification Reference

Part 15 Subpart B §15.107(a)

### 2.1.2 Standard Applicable

Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

\*Decreases with the logarithm of the frequency.

### 2.1.3 Equipment Under Test and Modification State

Serial No: 296546000509 (NU) and 297546000285 (CU) /Default Test Configuration

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

April 27, 2016/FSC

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

Ambient Temperature	26.8 °C
Relative Humidity	39.3 %
ATM Pressure	99.2 kPa



### 2.1.7 Additional Observations

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 2.1.8 for sample computation.

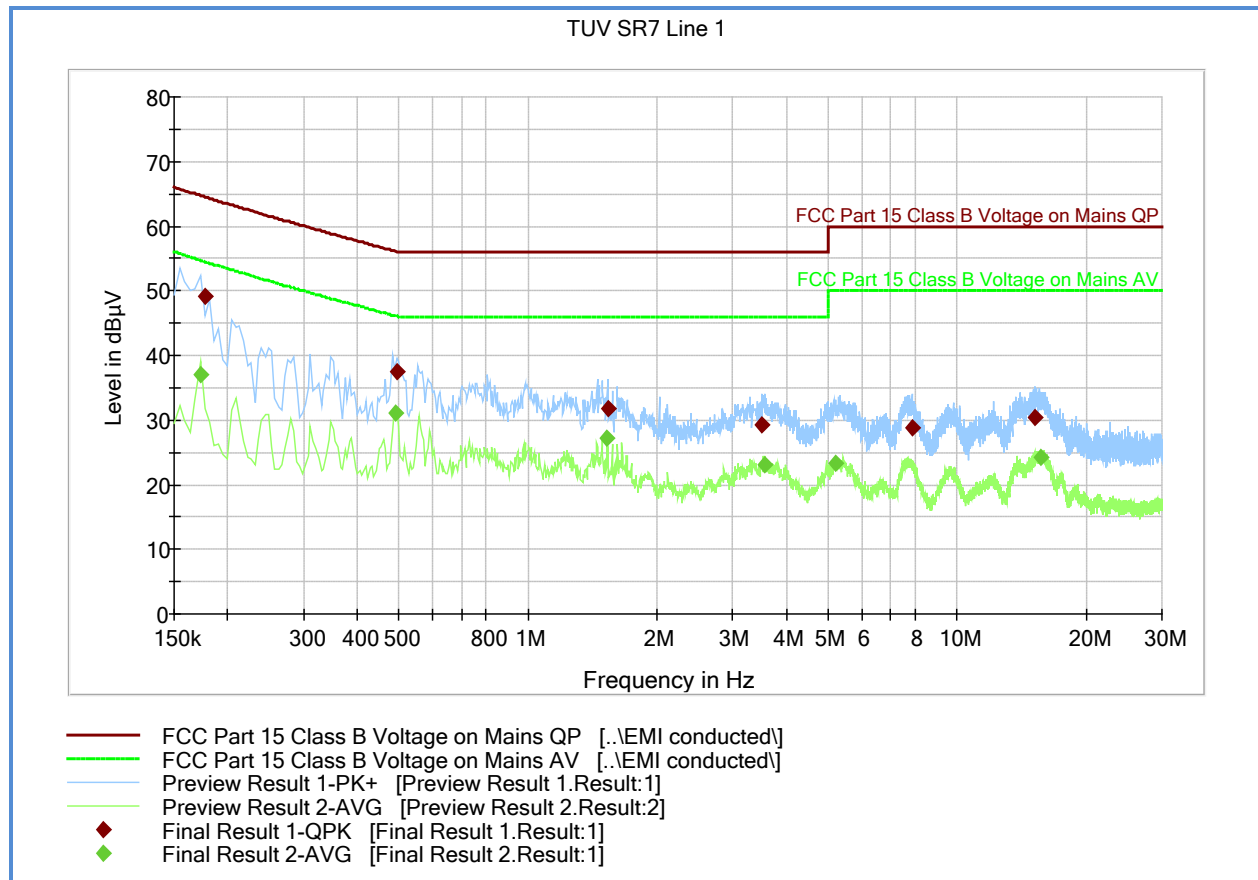
### 2.1.8 Sample Computation (Conducted Emission – Quasi Peak)

Measuring equipment raw measurement (db $\mu$ V) @ 150kHz			5.5
Correction Factor (dB)	Asset# 8822(20 dB attenuator)	19.9	20.7
	Asset# 1177 (cable)	0.15	
	Asset# 1176 (cable)	0.35	
	Asset# 7567(LISN)	0.30	
Reported QuasiPeak Final Measurement (db $\mu$ V) @ 150kHz			26.2

### 2.1.9 Test Results

Compliant. See attached plots and tables.

## 2.1.10 FCC Class B 120V 60Hz (NU Line 1 – Hot)



### Quasi Peak

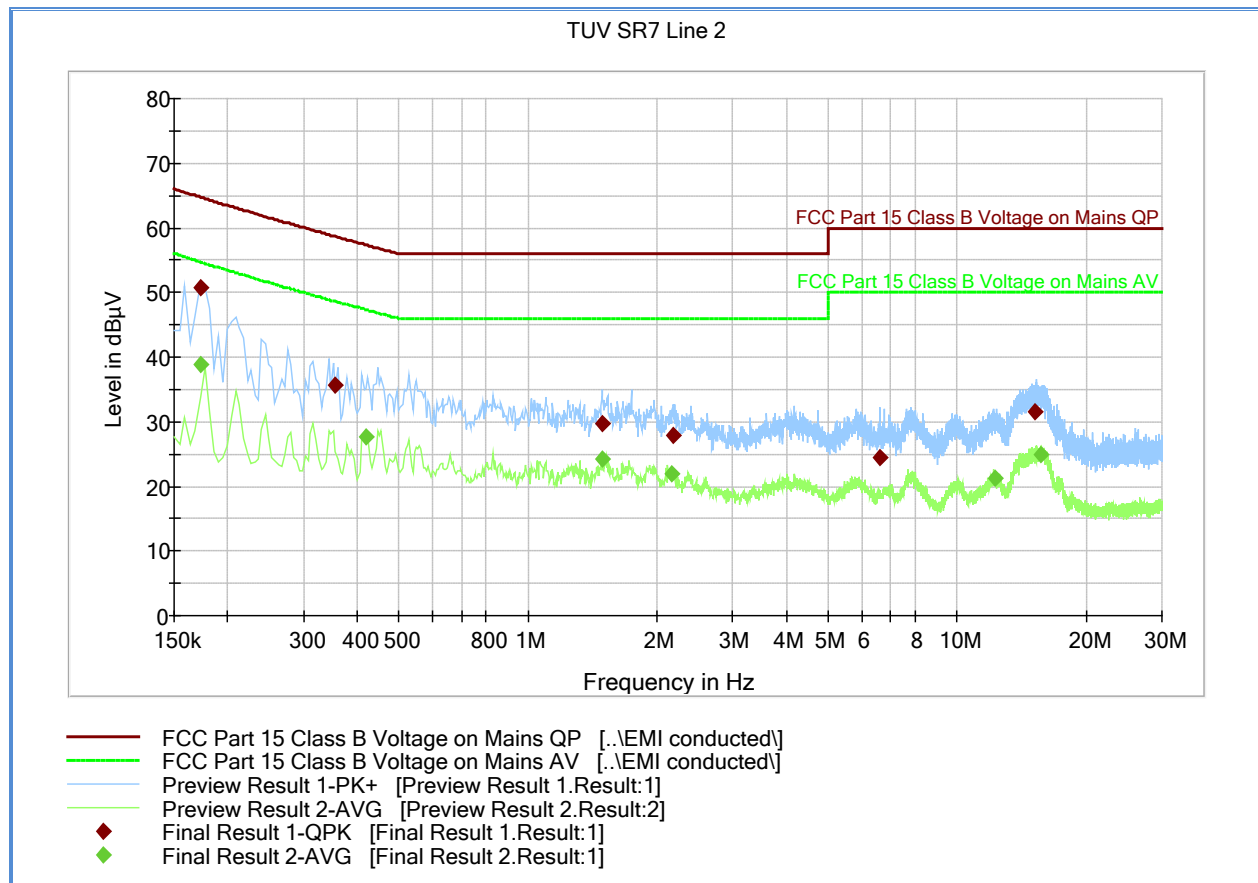
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.177000	49.1	1000.0	9.000	Off	L1	20.1	15.5	64.5
0.496500	37.5	1000.0	9.000	Off	L1	20.0	18.6	56.1
1.536000	31.8	1000.0	9.000	Off	L1	20.0	24.2	56.0
3.498000	29.3	1000.0	9.000	Off	L1	20.1	26.7	56.0
7.854000	28.7	1000.0	9.000	Off	L1	20.1	31.3	60.0
15.130500	30.5	1000.0	9.000	Off	L1	20.3	29.5	60.0

### Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.172500	37.1	1000.0	9.000	Off	L1	20.1	17.7	54.7
0.492000	31.2	1000.0	9.000	Off	L1	20.0	15.0	46.1
1.531500	27.3	1000.0	9.000	Off	L1	20.0	18.7	46.0
3.570000	23.0	1000.0	9.000	Off	L1	20.1	23.0	46.0
5.203500	23.4	1000.0	9.000	Off	L1	20.1	26.6	50.0
15.688500	24.2	1000.0	9.000	Off	L1	20.3	25.8	50.0



## 2.1.11 FCC Class B 120V 60Hz (NU Line 2 – Neutral)



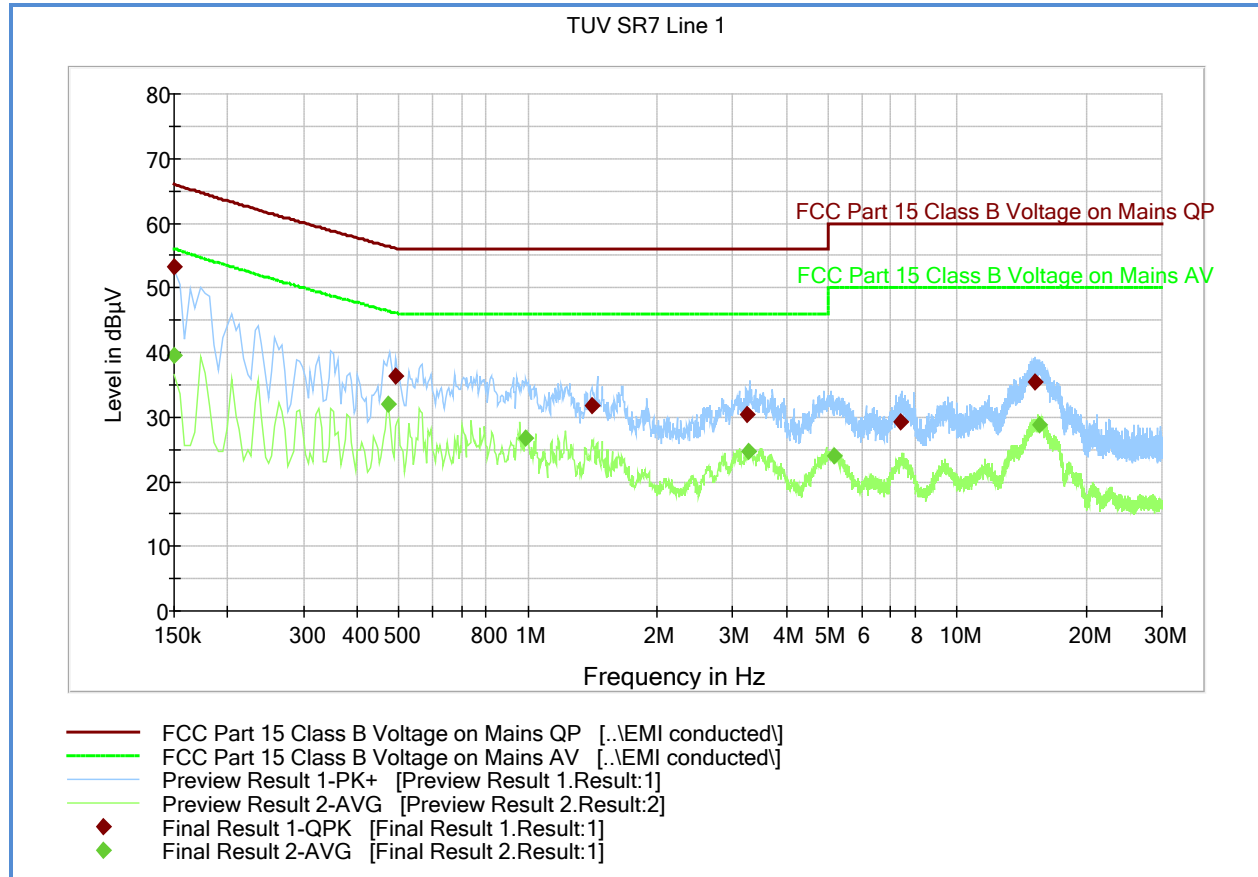
## Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.172500	50.8	1000.0	9.000	Off	N	20.1	13.9	64.8
0.357000	35.6	1000.0	9.000	Off	N	20.0	23.0	58.6
1.486500	29.7	1000.0	9.000	Off	N	20.0	26.3	56.0
2.184000	27.9	1000.0	9.000	Off	N	20.1	28.1	56.0
6.621000	24.5	1000.0	9.000	Off	N	20.1	35.5	60.0
15.229500	31.5	1000.0	9.000	Off	N	20.3	28.5	60.0

## Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.172500	38.8	1000.0	9.000	Off	N	20.1	15.9	54.7
0.420000	27.6	1000.0	9.000	Off	N	20.0	19.7	47.3
1.491000	24.1	1000.0	9.000	Off	N	20.0	21.9	46.0
2.161500	22.0	1000.0	9.000	Off	N	20.1	24.0	46.0
12.214500	21.4	1000.0	9.000	Off	N	20.2	28.6	50.0
15.684000	25.0	1000.0	9.000	Off	N	20.3	25.0	50.0

## 2.1.12 FCC Class B 120V 60Hz (CU Line 1 – Hot)



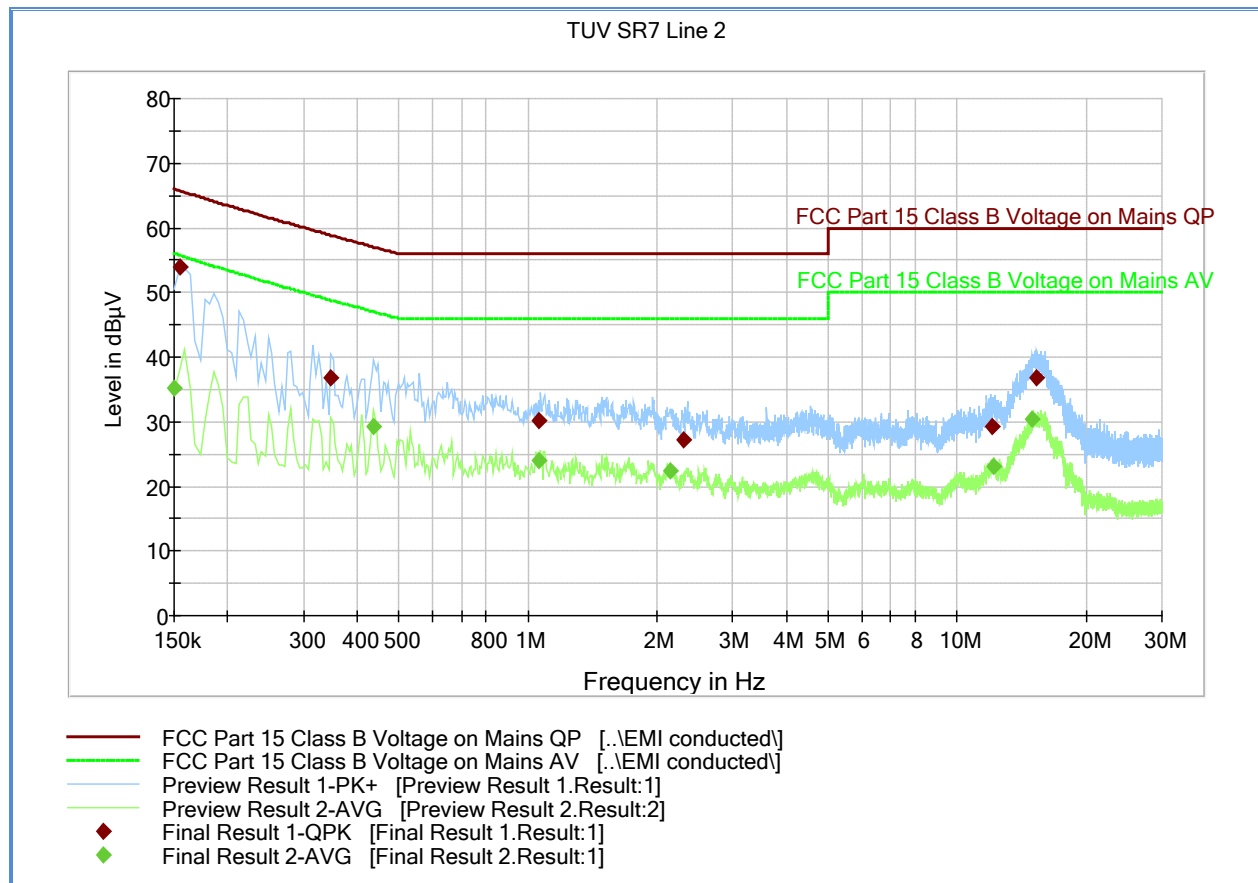
### Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.150000	53.2	1000.0	9.000	Off	L1	20.2	12.8	66.0
0.492000	36.2	1000.0	9.000	Off	L1	20.0	19.9	56.1
1.405500	31.7	1000.0	9.000	Off	L1	20.0	24.3	56.0
3.246000	30.3	1000.0	9.000	Off	L1	20.1	25.7	56.0
7.386000	29.2	1000.0	9.000	Off	L1	20.1	30.8	60.0
15.184500	35.4	1000.0	9.000	Off	L1	20.3	24.6	60.0

### Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.150000	39.6	1000.0	9.000	Off	L1	20.2	16.4	56.0
0.474000	32.0	1000.0	9.000	Off	L1	20.0	14.4	46.4
0.987000	26.8	1000.0	9.000	Off	L1	20.0	19.2	46.0
3.277500	24.8	1000.0	9.000	Off	L1	20.1	21.2	46.0
5.181000	24.1	1000.0	9.000	Off	L1	20.1	25.9	50.0
15.490500	28.9	1000.0	9.000	Off	L1	20.3	21.1	50.0

### 2.1.13 FCC Class B 120V 60Hz (CU Line 2 – Neutral)



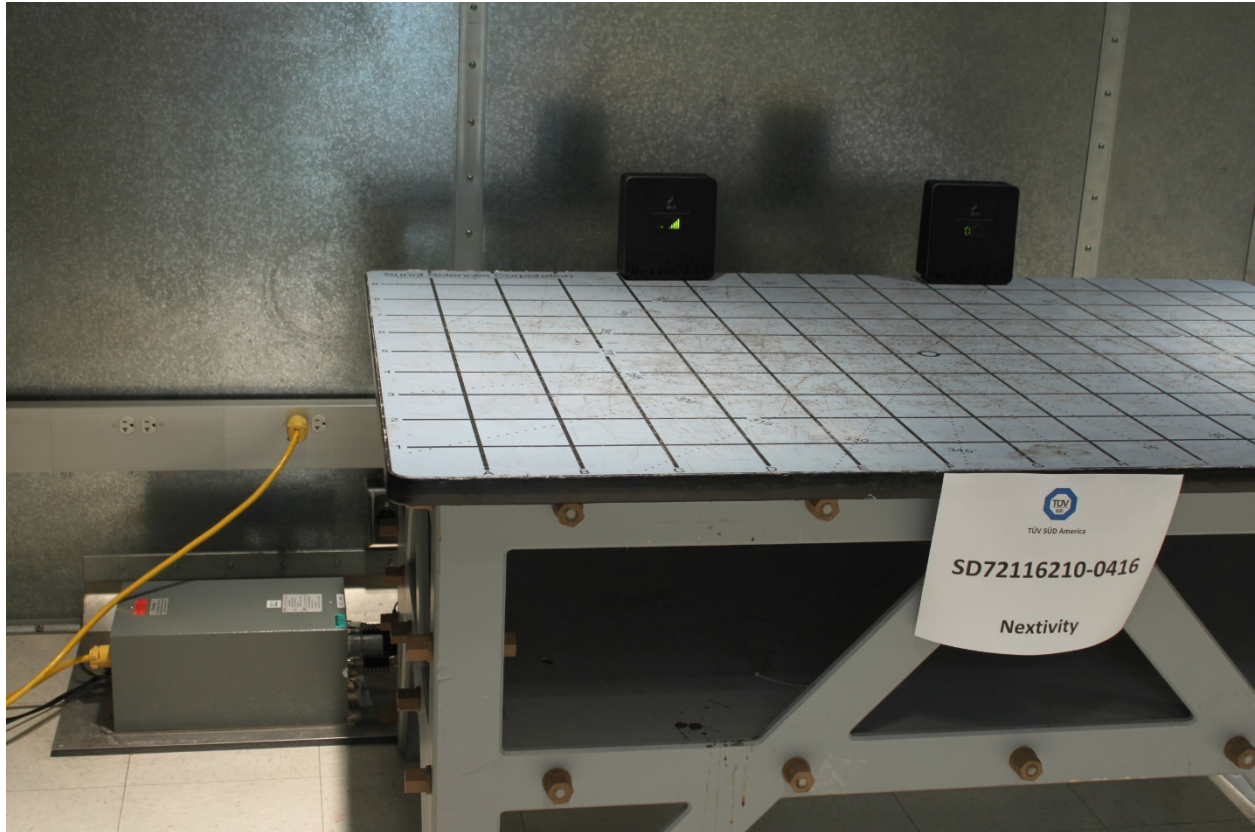
#### Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV)
0.154500	54.0	1000.0	9.000	Off	N	20.2	11.8	65.7
0.348000	36.9	1000.0	9.000	Off	N	20.0	22.0	58.8
1.063500	30.3	1000.0	9.000	Off	N	20.0	25.8	56.0
2.301000	27.3	1000.0	9.000	Off	N	20.1	28.7	56.0
12.034500	29.4	1000.0	9.000	Off	N	20.2	30.6	60.0
15.292500	36.8	1000.0	9.000	Off	N	20.3	23.2	60.0

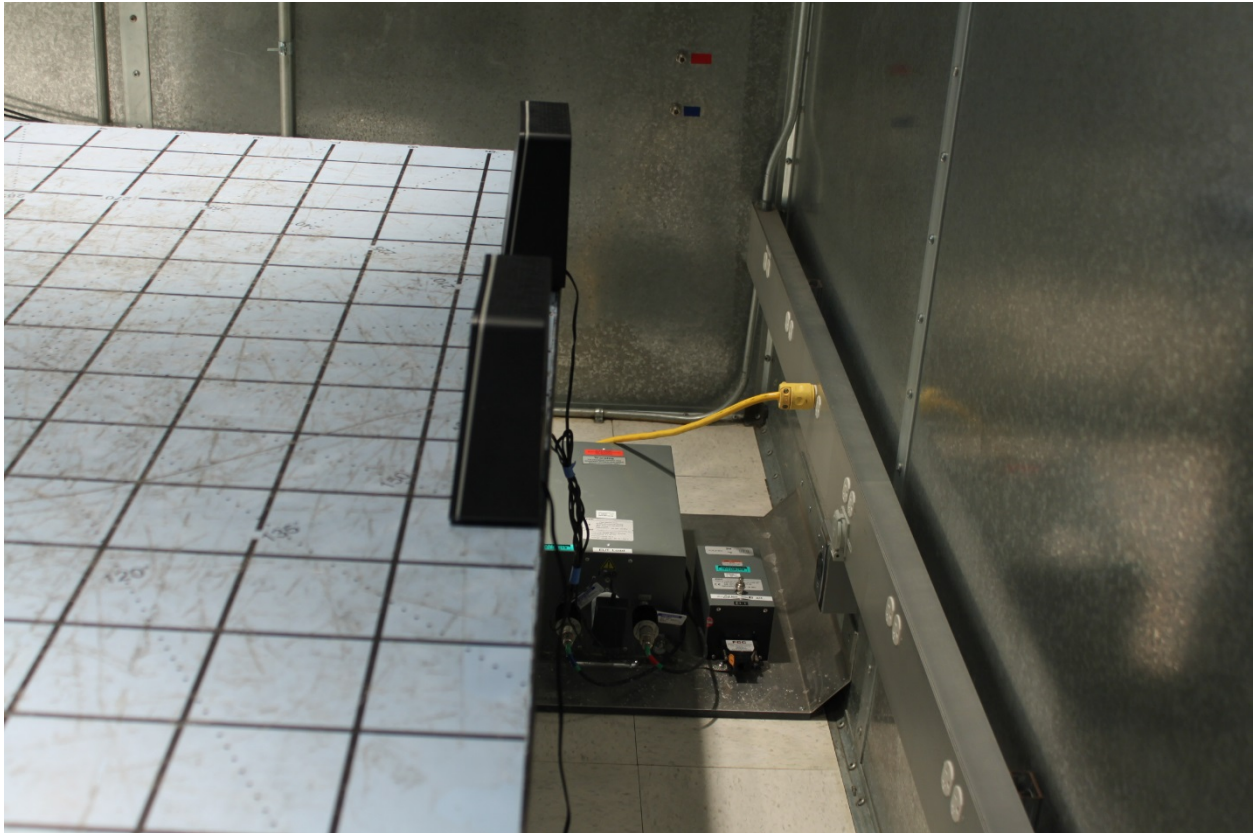
#### Average

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBμV)
0.150000	35.3	1000.0	9.000	Off	N	20.2	20.7	56.0
0.438000	29.3	1000.0	9.000	Off	N	20.0	17.7	47.0
1.059000	23.9	1000.0	9.000	Off	N	20.0	22.1	46.0
2.143500	22.4	1000.0	9.000	Off	N	20.0	23.6	46.0
12.205500	23.2	1000.0	9.000	Off	N	20.2	26.8	50.0
14.995500	30.4	1000.0	9.000	Off	N	20.3	19.6	50.0

#### 2.1.14 Test Setup Photo (Front)



**2.1.15 Test Setup Photo (Back)**



## 2.2 RADIATED EMISSION LIMITS

### 2.2.1 Specification Reference

Part 15 Subpart B §15.109(a)

### 2.2.2 Standard Applicable

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field Strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

### 2.2.3 Equipment Under Test and Modification State

Serial No: 296546000509 (NU) and 297546000285 (CU) /Default Test Configuration

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

April 27 and May 02, 2016/FSC

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

Ambient Temperature	26.8 °C
Relative Humidity	39.3 %
ATM Pressure	99.2 kPa

### 2.2.7 Additional Observations

- The spectrum was searched from 30MHz to 18GHz.
- Verification was performed at 3 meters.
- NU and CU verified as a system (next to each other).
- 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 2.2.8 for sample computation.



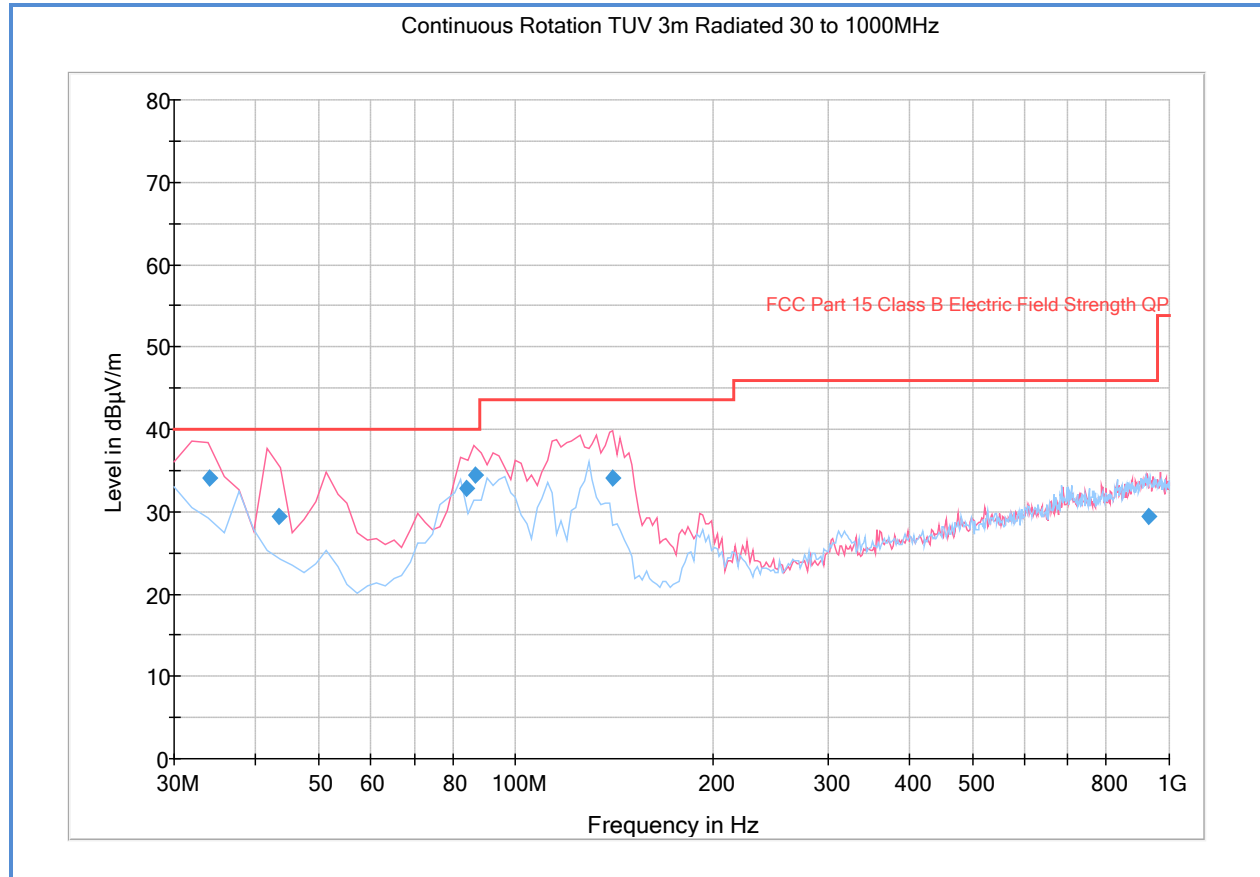
### 2.2.8 Sample Computation (Radiated Emission)

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# 1033 (antenna)	17.2	
Reported QuasiPeak Final Measurement (db $\mu$ V/m) @ 30MHz			11.8

### 2.2.9 Test Results

See attached plots.

### 2.2.9.1 Below 1GHz Radiated Emission Test



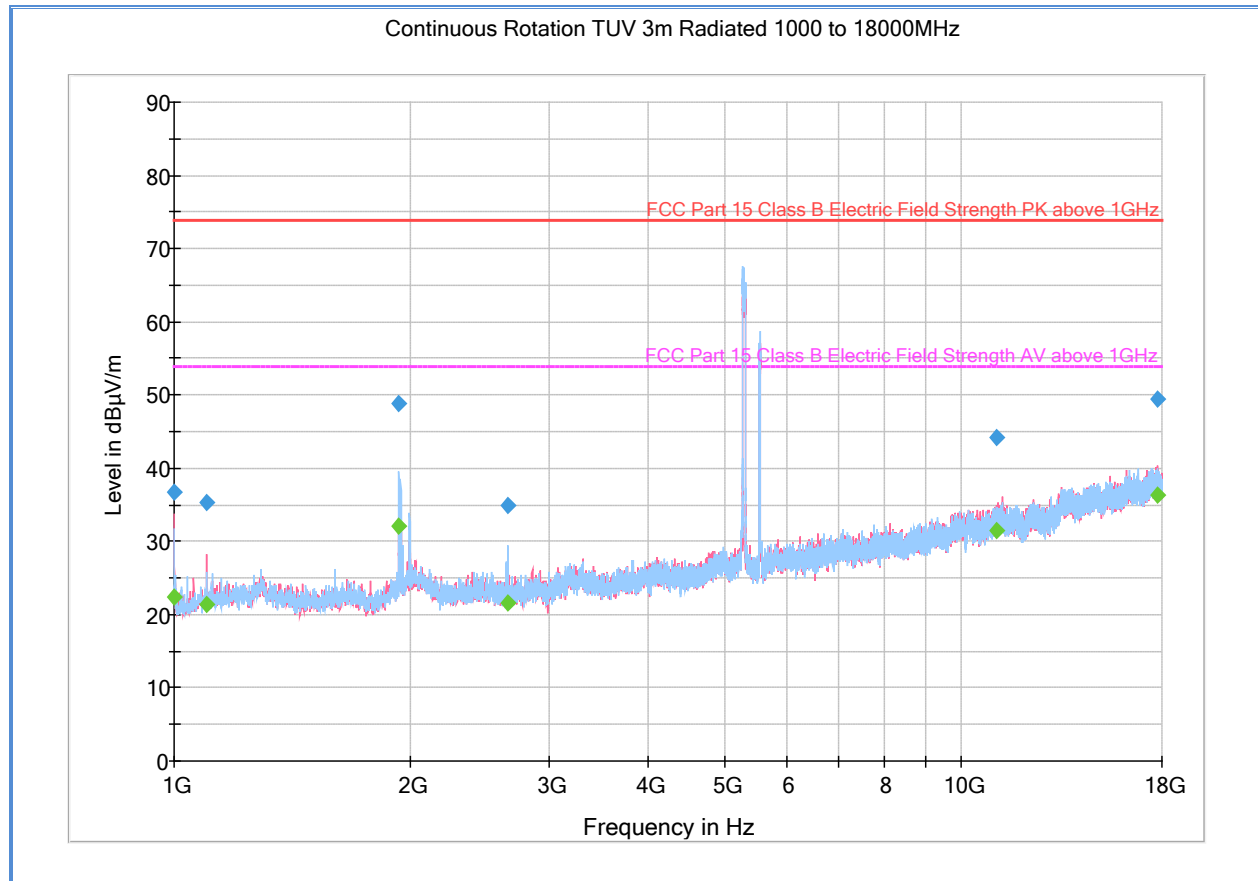
#### Quasi-Peak Data

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
34.000000	34.0	1000.0	120.000	100.0	V	334.0	-8.0	6.0	40.0
43.327214	29.4	1000.0	120.000	116.0	V	56.0	-12.4	10.6	40.0
84.084970	32.8	1000.0	120.000	100.0	V	236.0	-16.2	7.2	40.0
86.732745	34.4	1000.0	120.000	100.0	V	-13.0	-15.9	5.6	40.0
140.801603	34.2	1000.0	120.000	100.0	V	244.0	-14.4	9.3	43.5
927.732265	29.3	1000.0	120.000	383.0	V	-8.0	6.3	16.7	46.0

#### Test Notes:



### 2.2.9.2 Above 1GHz Radiated Emission Test



#### Peak Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.500000	36.7	1000.0	1000.000	204.3	V	236.0	-11.2	37.2	73.9
1099.133333	35.4	1000.0	1000.000	196.5	V	23.0	-10.4	38.5	73.9
1931.966667	48.8	1000.0	1000.000	268.3	H	23.0	-6.5	25.1	73.9
2653.200000	35.0	1000.0	1000.000	397.6	H	117.0	-6.5	38.9	73.9
11087.833333	44.3	1000.0	1000.000	397.6	V	289.0	9.4	29.6	73.9
17783.766667	49.4	1000.0	1000.000	99.7	V	0.0	16.6	24.5	73.9

#### Average Data

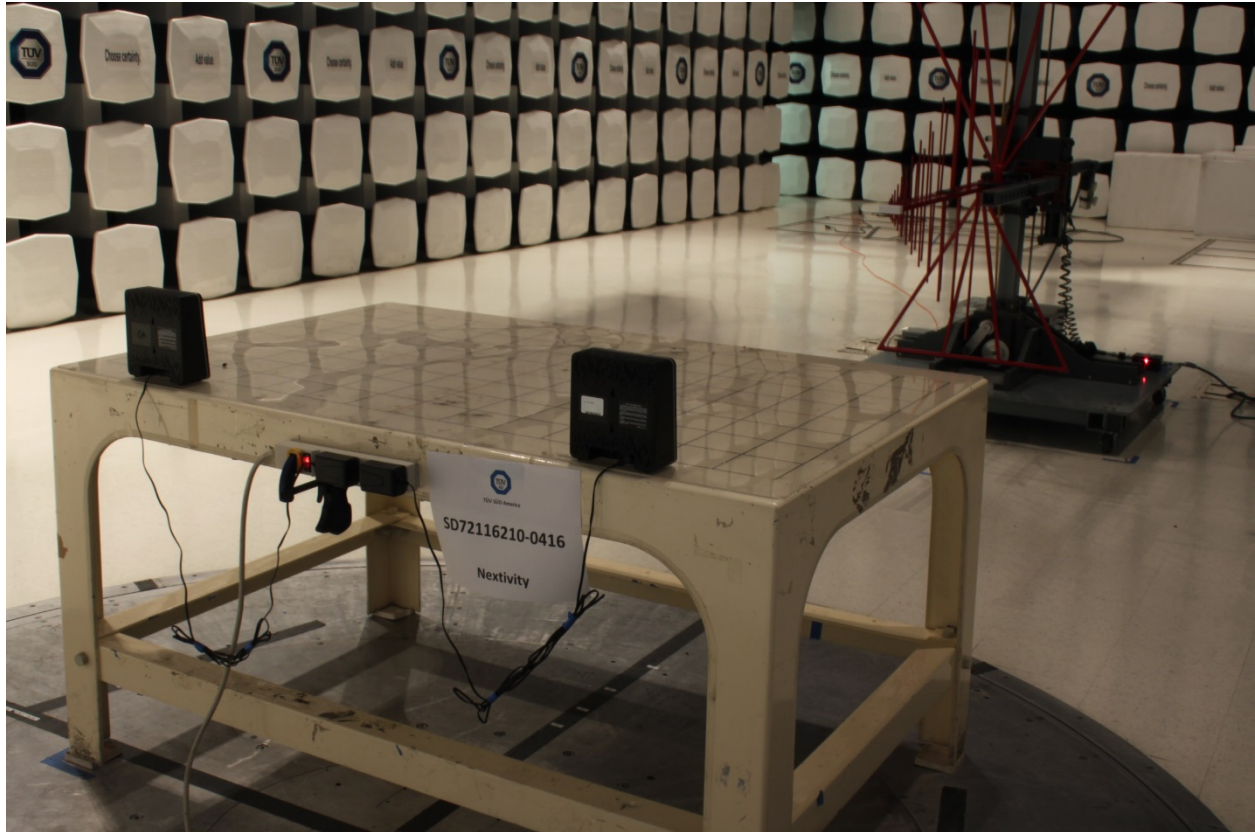
Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.500000	22.5	1000.0	1000.000	204.3	V	236.0	-11.2	31.4	53.9
1099.133333	21.4	1000.0	1000.000	196.5	V	23.0	-10.4	32.5	53.9
1931.966667	32.1	1000.0	1000.000	268.3	H	23.0	-6.5	21.8	53.9
2653.200000	21.6	1000.0	1000.000	397.6	H	117.0	-6.5	32.3	53.9
11087.833333	31.5	1000.0	1000.000	397.6	V	289.0	9.4	22.4	53.9
17783.766667	36.4	1000.0	1000.000	99.7	V	0.0	16.6	17.5	53.9

**Test Notes:** 5GHz U-NII link ignored during final measurement phase.

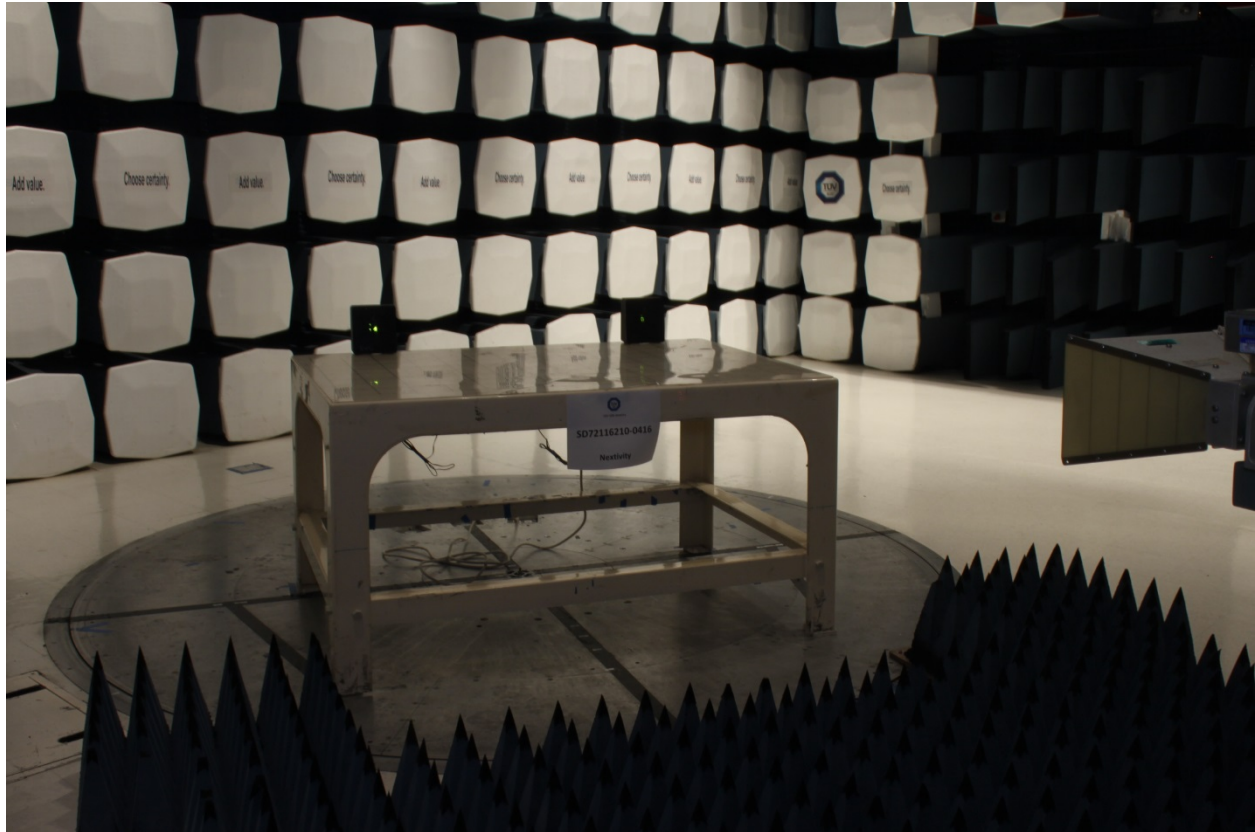
### 2.2.10 Test Setup Photo (Below 1GHz Front)



### 2.2.11 Test Setup Photo (Below 1GHz Back)

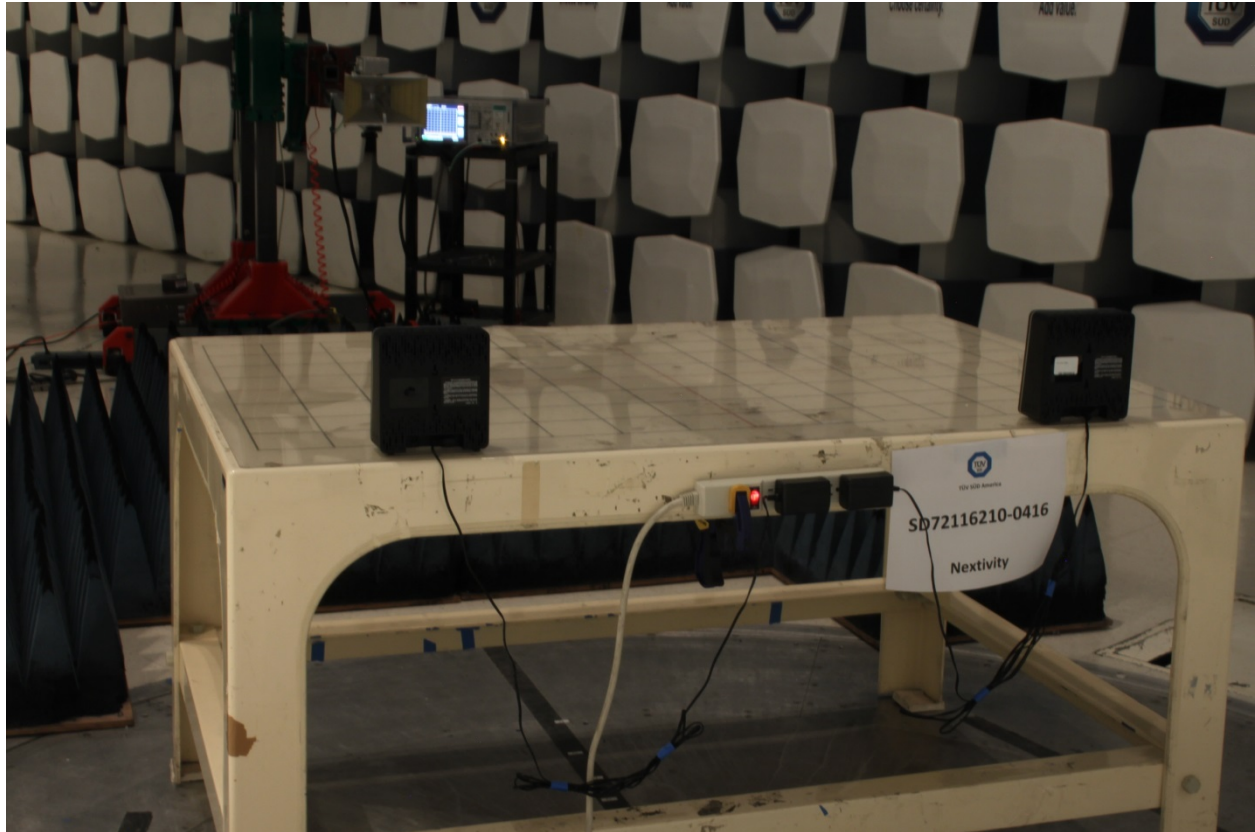


## 2.2.12 Test Setup Photo (Above 1GHz Front)





### 2.2.13 Test Setup Photo (Above 1GHz Back)





### **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
Conducted Emissions						
7620	EMI Test Receiver	ESU40	100399	Rhode & Schwarz	09/03/15	09/03/16
7567	LISN	FCC-LISN-50-25-2-10	120304	Fischer Custom Comm.	07/14/15	07/14/16
7568	LISN	FCC-LISN-50-25-2-10	120305	Fischer Custom Comm.	10/28/15	10/28/16
8822	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/29/16	02/28/17
8824	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/29/16	02/28/17
Radiated Emissions						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	11/06/15	11/06/17
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	09/29/15	09/29/16
1016	Pre-amplifier	PAM-0202	187	PAM	12/15/15	12/15/16
1051	Double-ridged waveguide horn antenna	3115	9408-4329	EMCO	03/21/16	03/21/17
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/17/16	03/17/17
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	01/11/16	01/11/17
Miscellaneous						
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/14/15	08/14/16
7560	Barometer/Temperature /Humidity Transmitter	iBTHX-W	1240476	Omega	10/19/15	10/19/16
	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 Conducted Measurements

Contribution		Probability Distribution Type	Probability Distribution $x_i$	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.36	0.21	0.04
2	Cables	Rectangular	0.50	0.29	0.08
3	LISN	Rectangular	0.66	0.38	0.15
4	Attenuator	Rectangular	0.30	0.17	0.03
5	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty ( $u_c$ ):					0.80
Coverage Factor (k):					2
Expanded Uncertainty:					1.59

#### 3.2.2 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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty ( $u_c$ ):					1.78
Coverage Factor (k):					2
Expanded Uncertainty:					3.57

#### 3.2.3 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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty ( $u_c$ ):					1.78
Coverage Factor (k):					2
Expanded Uncertainty:					3.56

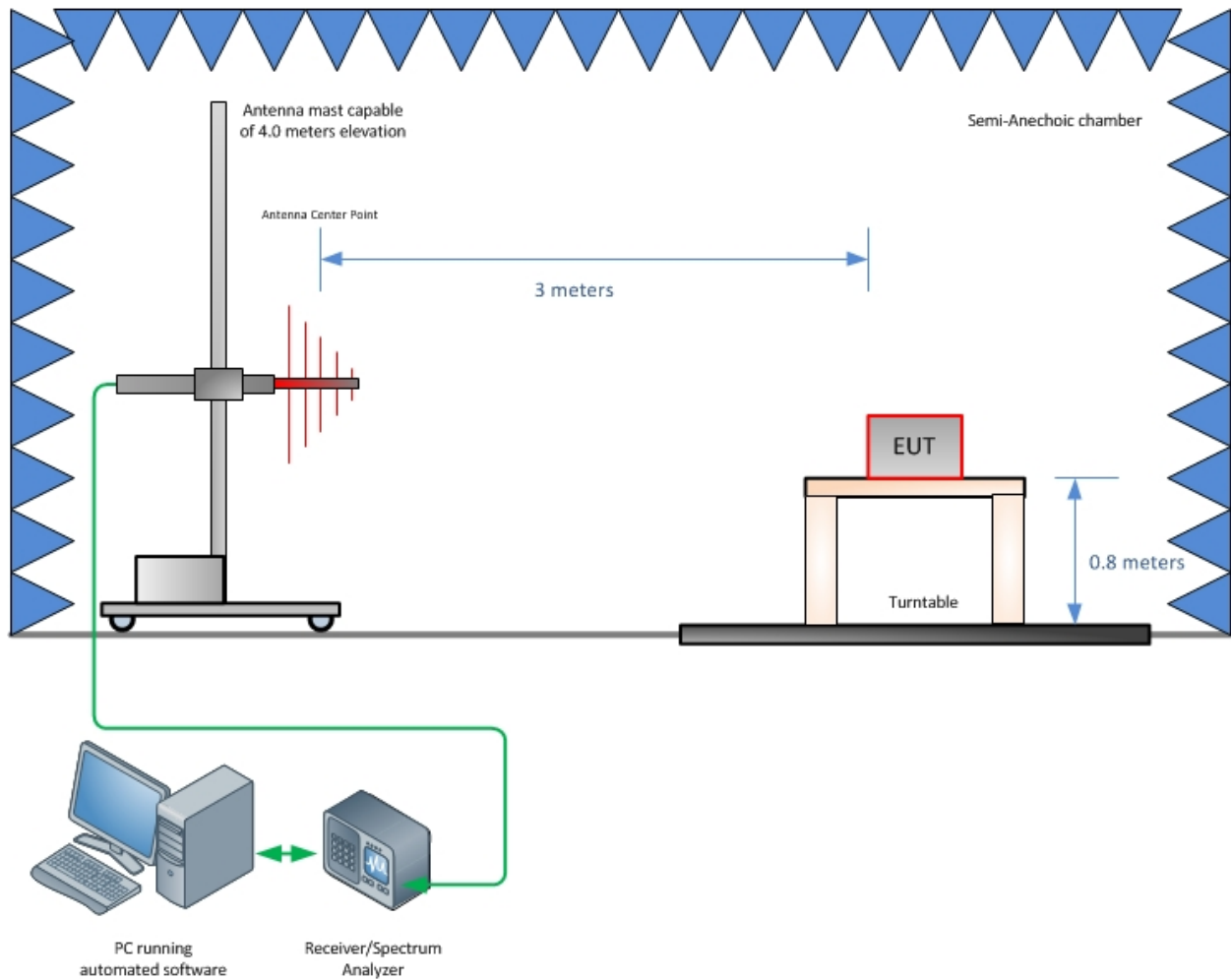




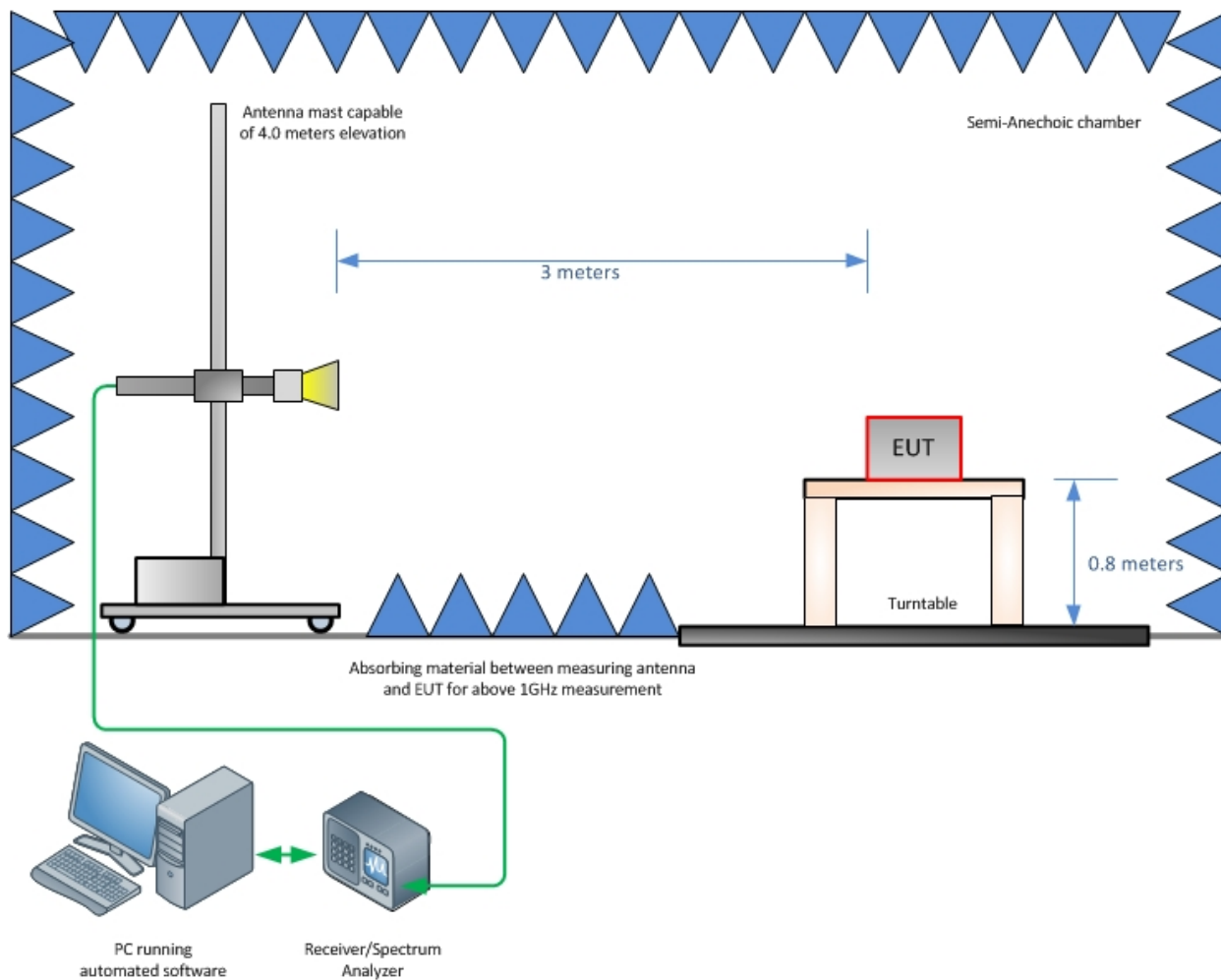
## **SECTION 4**

### **DIAGRAM OF TEST SETUP**

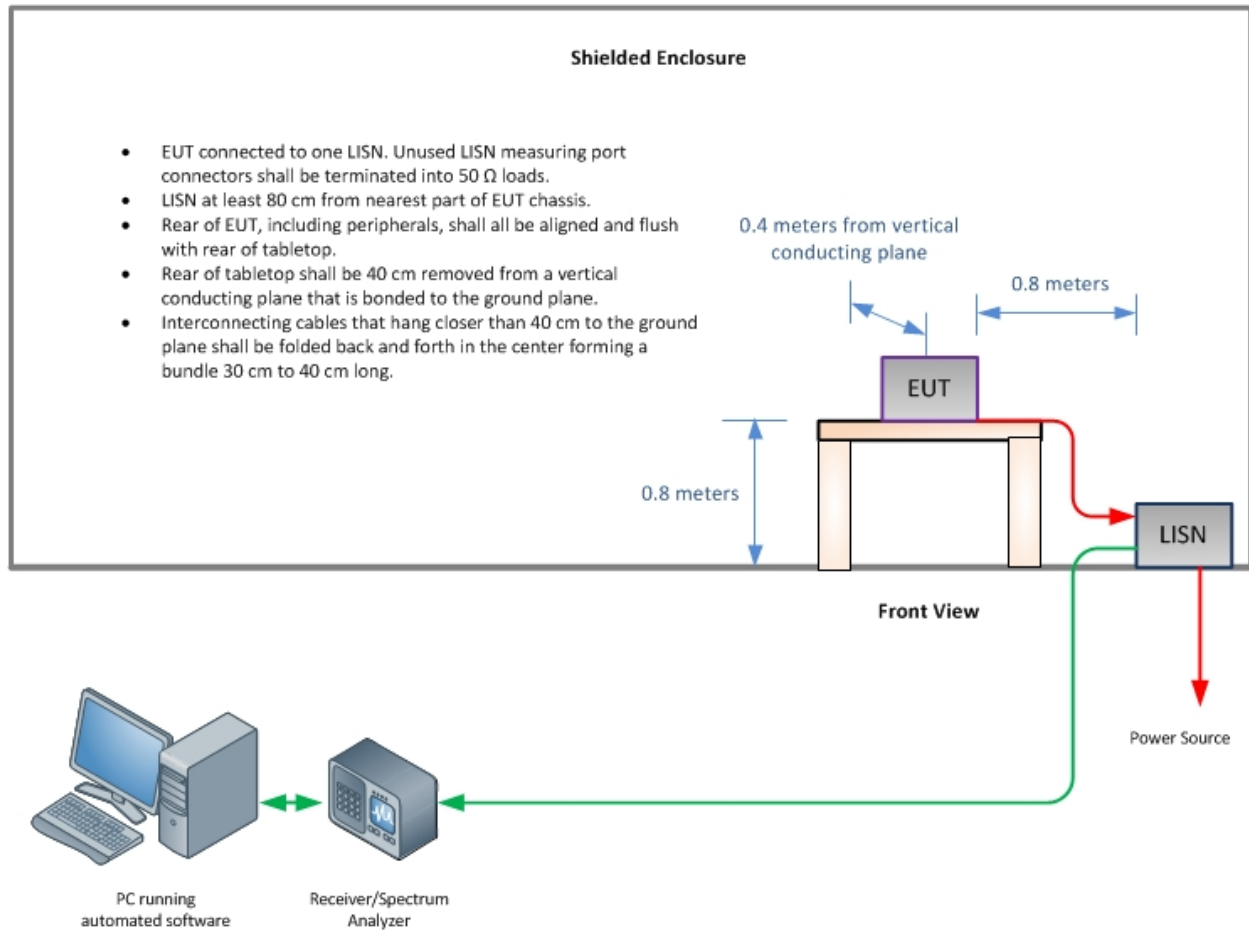
#### 4.1 TEST SETUP DIAGRAM



**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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