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Report On

Application for Grant of Equipment Authorization of the
DexCom Inc.
MT22949 Scout Receiver

FCC Part 15 Subpart C §15.247
IC RSS-247 Issue 1 May 2015

Report No. SD72113260-0116B

April 2016



REPORT ON

Radio Testing of the
DexCom Inc.
Scout Receiver

TEST REPORT NUMBER

SD72113260-0116B

PREPARED FOR

DexCom Inc.
6340 Sequence Drive
San Diego, CA 92121
USA

CONTACT PERSON

Jerry Vereen
Principal Engineer
(954) 391-4876
jvereen@dexcom.com

A handwritten signature in black ink, appearing to be 'Nikolay Shtin'.

PREPARED BY

Nikolay Shtin

Name

Authorized Signatory
Title: EMC/Wireless Test Engineer

A handwritten signature in black ink, appearing to be 'Ferdie S. Custodio'.

APPROVED BY

Ferdie S. Custodio

Name

Authorized Signatory
Title: EMC/Senior Wireless Test Engineer

DATED

April 20, 2016



Revision History

SD72113260-0116B DexCom Inc. MT22949 Scout Receiver					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
04/20/2016	Initial Release				Ferdinand Custodio

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SECTION 1

REPORT SUMMARY

Radio Testing of the
DexCom Inc.
MT22949 Scout Receiver

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the DexCom Inc. MT22949 Scout Receiver to the requirements of FCC Part 15 Subpart C §15.247 and IC RSS-247 Issue 1 May 2015.

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	DexCom Inc.
Model Number(s)	MT22949
FCC ID Number	PH29949
IC Number	9290A-22949
Serial Number(s)	DX60399001
Number of Samples Tested	1
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.247 (October 1, 2015). • IC RSS-247 Issue 1 May 2015. Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices. • IC RSS-Gen Issue 4, November 2014 - General Requirements for Compliance of Radio Apparatus. • 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. • 558074 D01 DTS Meas Guidance v03r04, (January 07, 2016) Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.
Start of Test	March 4, 2015
Finish of Test	March 14, 2015
Name of Engineer(s)	Nikolay Shtin
Related Document(s)	PLN-10725 EMC Test Plan for Scout CGM System.docx 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	Comments/ Base Standard
2.1	§15.207(a)	RSS-Gen 8.8	Conducted Emissions	Compliant	
2.2	§15.247(b)(3)	RSS-247 5.4(4)	Peak Output Power	Compliant	
2.3		RSS-Gen 6.6	99% Emission Bandwidth	Compliant	
2.4	§15.247(a)(2)	RSS-247 5.2(1)	Minimum 6 dB RF Bandwidth	Compliant	
2.6	§15.247(d)	RSS-247 5.5	Band-edge Compliance of RF Conducted Emissions	Compliant	
2.7	§15.247(d)	RSS-Gen 8.9 and 8.10	Spurious Radiated Emissions	Compliant	
2.7		RSS-Gen 7.1	Receiver Spurious Emissions	Compliant	
2.8	§15.247(d)	RSS-Gen 8.9 and 8.10	Radiated Band Edge Measurements	Compliant	
2.9	§15.247(e)	RSS-247 5.2(2)	Power Spectral Density for Digitally Modulated Device	Compliant	

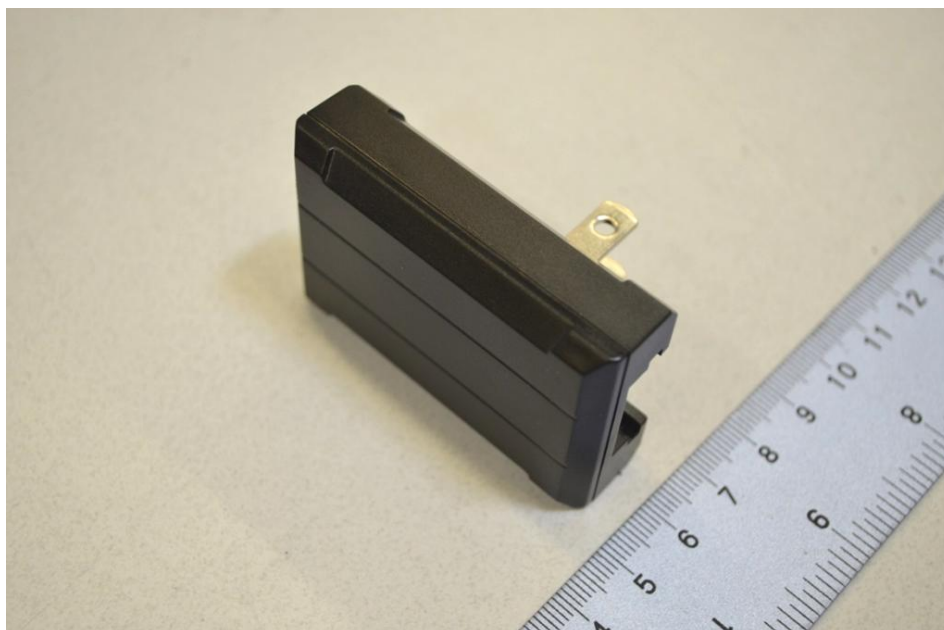
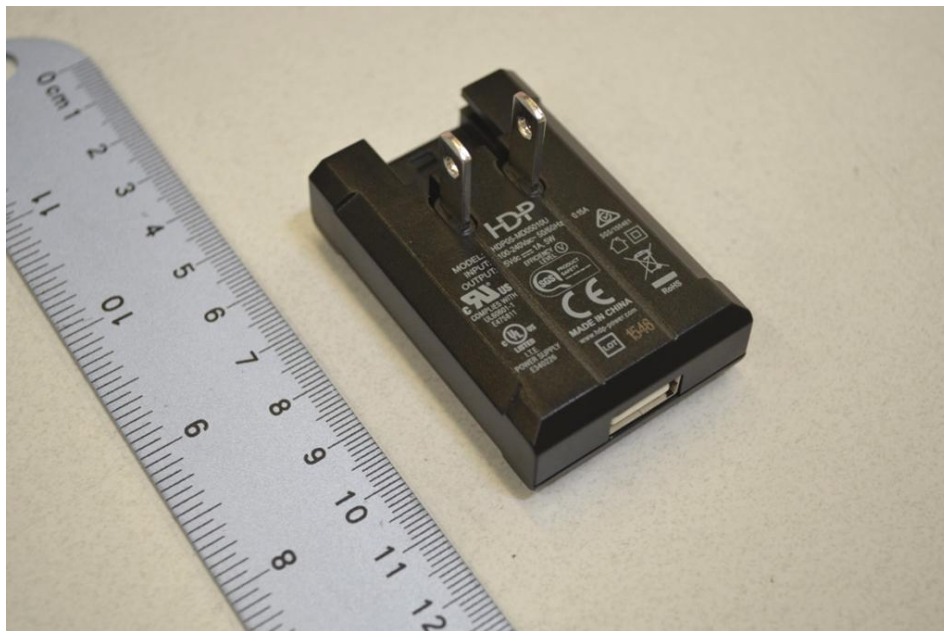
1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a DexCom Inc. Model MT22949 as shown in the photograph below. The EUT is a Scout Receiver and is used for glucose monitoring. The system consists of a sensor, a wireless RF communication, battery powered transmitter that is physically attached/connected to the sensor, a receiver that is powered by a rechargeable Li-ion battery that receives and displays/records the RF packets from the transmitter. The receiver battery can be charged from a wall mount power supply/charger. Application software used for testing runs on the laptop and allows downloading of data, upgrading of firmware, etc of the receiver.



Equipment Under Test



Equipment Under Test External Power Adaptor (Model: HDP05-1DEX03A)

1.3.2 EUT General Description

EUT Description	Receiver for Continuous Glucose Monitoring System
Model Name	Scout Receiver
Model Number(s)	MT22949
Rated Voltage (Battery Type)	Lithium Ion Rechargeable Battery (3.7V)
Mode Verified	BT LE
Capability	Bluetooth LE (Single Mode)
Primary Unit (EUT)	☐ Production ☒ Pre-Production ☐ Engineering
Antenna Type	Ceramic chip antenna
Antenna Gain	0.5 dBi

1.3.3 Maximum Conducted Output Power (Peak)

Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
Bluetooth LE	2402-2480	4.8	3.0

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Default	Radiated emissions test configuration. A EUT sample transmitting at maximum power from the integral antenna on low, mid and high channels.

1.4.2 EUT Exercise Software

None. No special software was used to exercise the EUT during verification

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
	USB Cable	Part No: MT20655
HD Power	AC Power Adapter	Model HDP05-1DEX03A

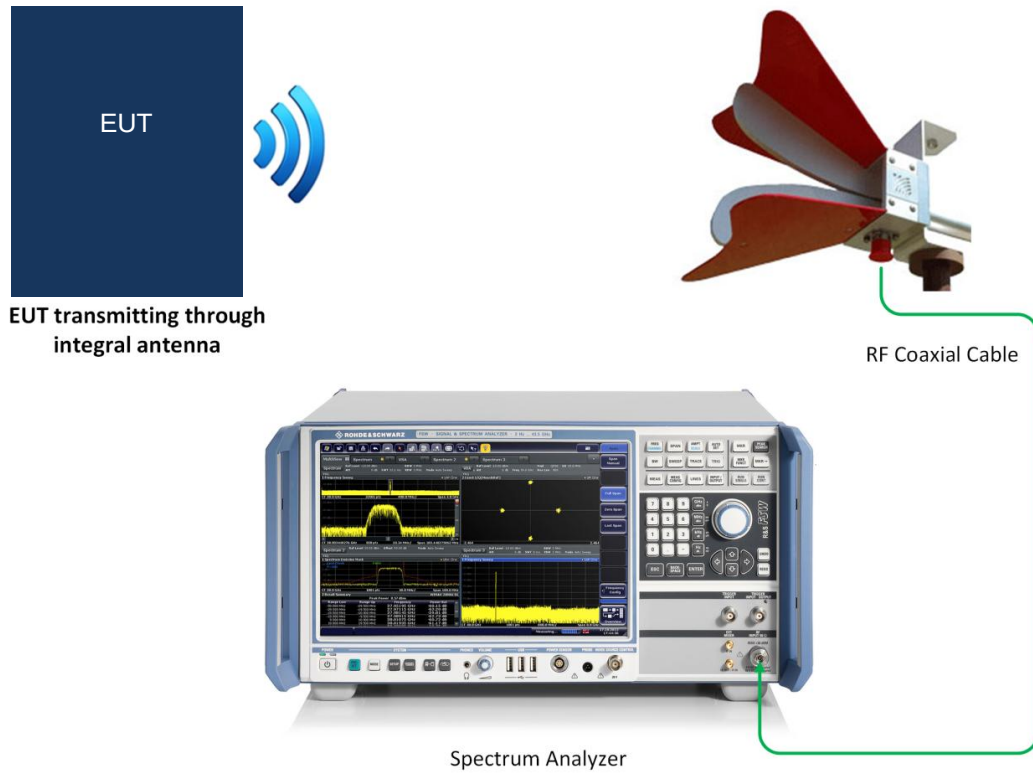
1.4.4 Worst Case Configuration

For radiated measurements X, Y and Z orientations were verified. Verification performed using Z orientation as worst case scenario.

		
"X" Configuration	"Y" Configuration	"Z" Configuration

Worst case channel used is Mid Channel (Channel 2440 MHz). This is based from Output Power test results under Section 2.2 of this test report.

1.4.5 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	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 C63.4-2014, 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 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 C63.4-2014. 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: 858 678 1400 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 Registration No.: 3067A

The 10m Semi-anechoic chamber of TÜV SÜD 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.

SECTION 2

TEST DETAILS

Radio Testing of the
DexCom Inc.
MT22949 Scout Receiver

2.1 CONDUCTED EMISSIONS

2.1.1 Specification Reference

Part 15 Subpart C §15.207(a)

2.1.2 Standard Applicable

An intentional radiator 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 μ H/50 ohms line impedance stabilization network (LISN).

Frequency of emission (MHz)	Conducted limit (dB μ 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: DX60399001 / Default Test Configuration

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

March 14, 2016/NS

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	24.0 °C
Relative Humidity	45.5 %
ATM Pressure	99.3 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.

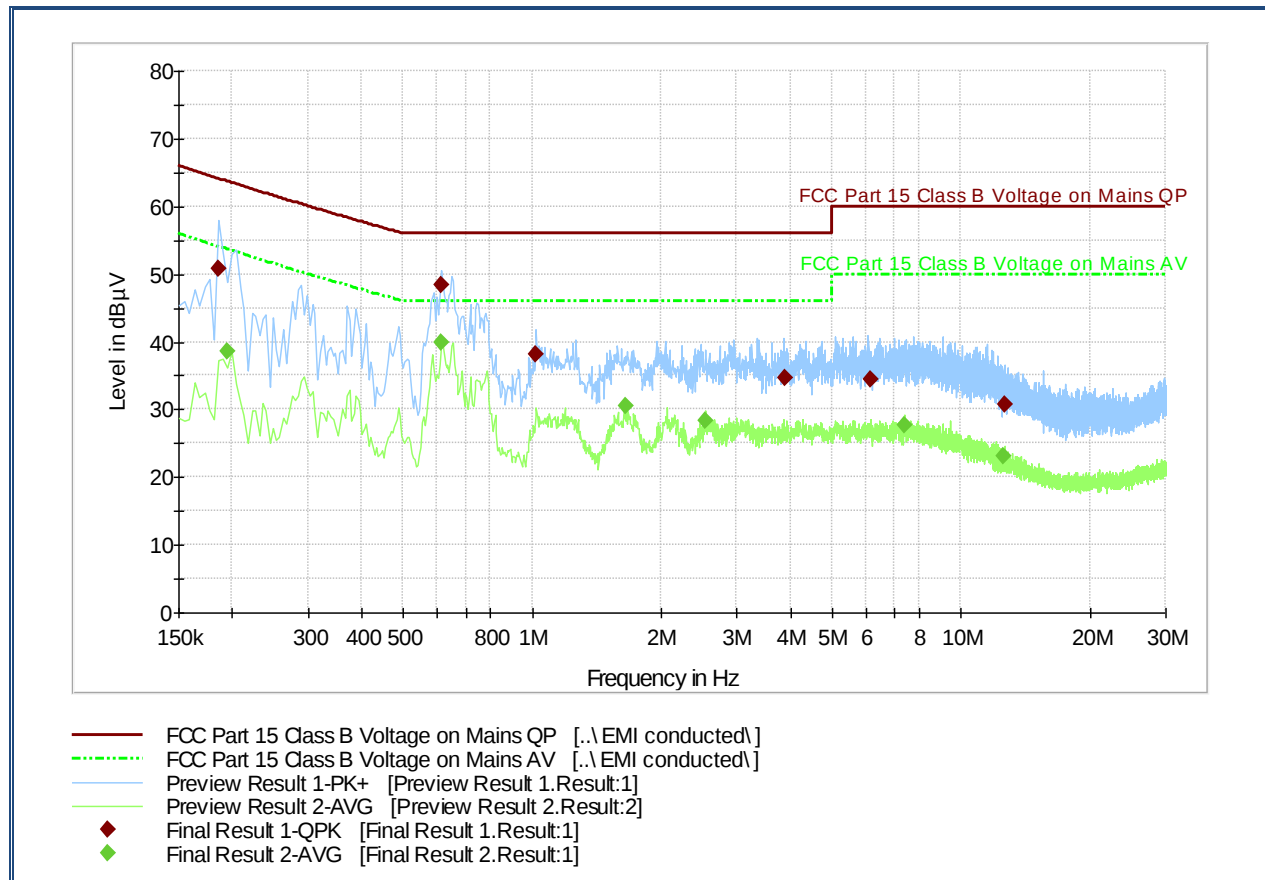
2.1.8 Sample Computation (Conducted Emission – Quasi Peak)

Measuring equipment raw measurement (db μ 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 μ V) @ 150kHz			26.2

2.1.9 Test Results

Compliant. See attached plots and tables.

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



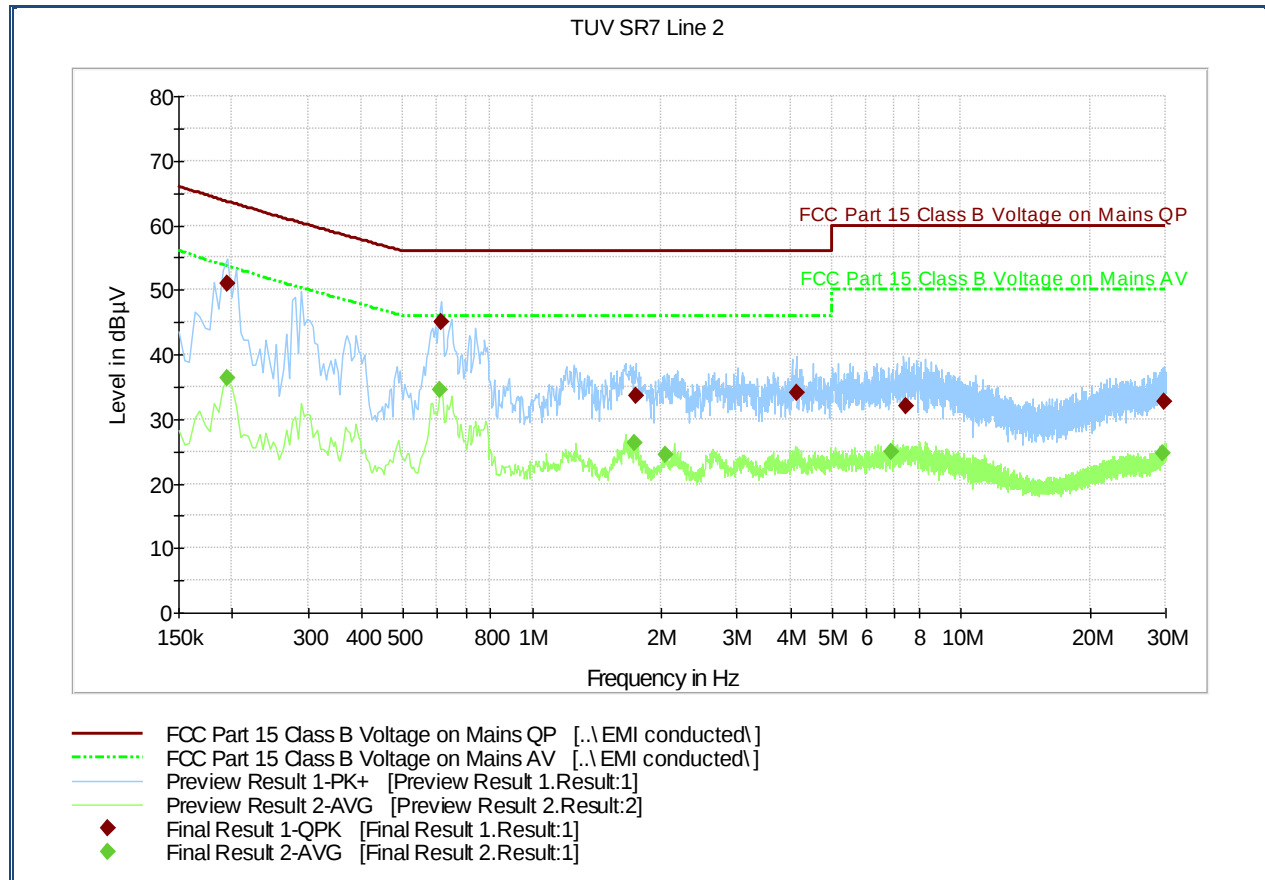
Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV)
0.186000	50.8	1000.0	9.000	Off	L1	20.1	13.3	64.1
0.613500	48.4	1000.0	9.000	Off	L1	20.0	7.6	56.0
1.023000	38.2	1000.0	9.000	Off	L1	20.0	17.8	56.0
3.894000	34.6	1000.0	9.000	Off	L1	20.1	21.4	56.0
6.148500	34.4	1000.0	9.000	Off	L1	20.1	25.6	60.0
12.687000	30.7	1000.0	9.000	Off	L1	20.2	29.3	60.0

Average

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBμV)
0.195000	38.7	1000.0	9.000	Off	L1	20.1	15.0	53.7
0.613500	40.0	1000.0	9.000	Off	L1	20.0	6.0	46.0
1.653000	30.6	1000.0	9.000	Off	L1	20.0	15.4	46.0
2.539500	28.3	1000.0	9.000	Off	L1	20.1	17.7	46.0
7.359000	27.8	1000.0	9.000	Off	L1	20.1	22.2	50.0
12.597000	23.1	1000.0	9.000	Off	L1	20.2	26.9	50.0

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



Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.195000	50.9	1000.0	9.000	Off	N	20.1	12.8	63.7
0.613500	44.9	1000.0	9.000	Off	N	20.0	11.1	56.0
1.747500	33.7	1000.0	9.000	Off	N	20.0	22.3	56.0
4.128000	34.0	1000.0	9.000	Off	N	20.1	22.0	56.0
7.440000	32.1	1000.0	9.000	Off	N	20.1	27.9	60.0
29.647500	32.8	1000.0	9.000	Off	N	20.5	27.2	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.195000	36.3	1000.0	9.000	Off	N	20.1	17.4	53.7
0.609000	34.6	1000.0	9.000	Off	N	20.0	11.5	46.0
1.729500	26.2	1000.0	9.000	Off	N	20.0	19.8	46.0
2.053500	24.5	1000.0	9.000	Off	N	20.0	21.5	46.0
6.868500	24.9	1000.0	9.000	Off	N	20.1	25.1	50.0
29.634000	24.7	1000.0	9.000	Off	N	20.5	25.3	50.0



2.2 PEAK OUTPUT POWER

2.2.1 Specification Reference

Part 15 Subpart C §15.247(b)(3)

2.2.2 Standard Applicable

(3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

2.2.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 9, 2016/NS

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

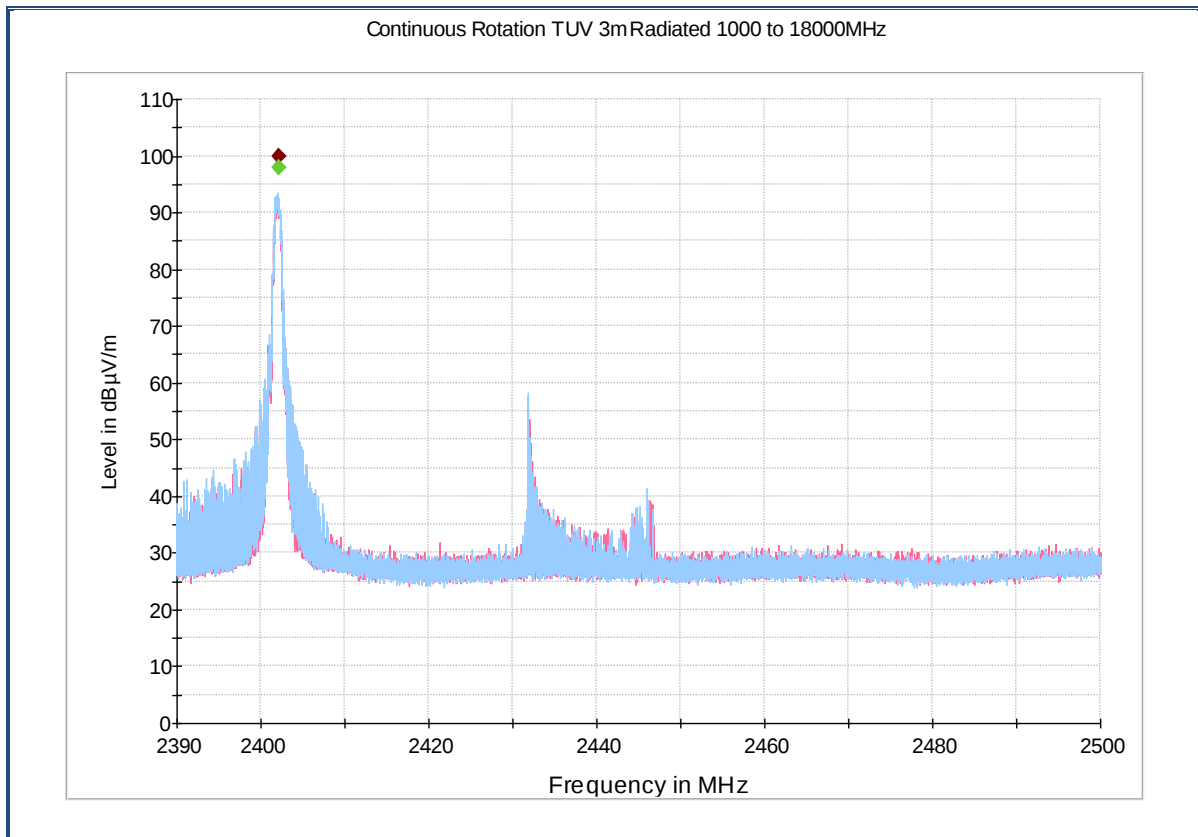
Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.8°C
Relative Humidity	40.5 %
ATM Pressure	99.1 kPa

2.2.7 Additional Observations

- This is a radiated test.
- Measurement was done using EMC32 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 2.6.8 for sample computation.

2.2.8 Test Results Peak Output Power (Low Channel)



Peak Data

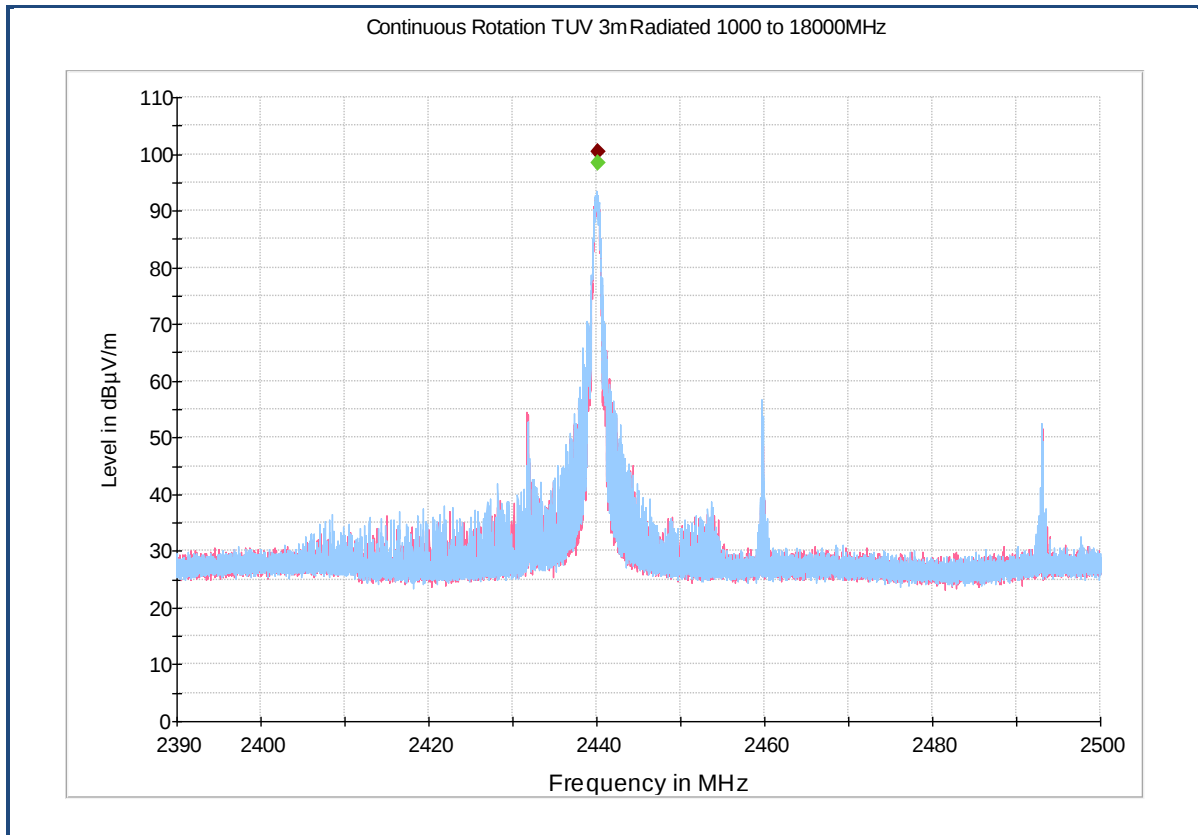
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2402.149667	99.8	1000.0	1000.000	184.6	H	10.0	-1.3		

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2402.149667	99.8	-3.7	9.5	-1.5	4.3	3.8	30	26.2

Test Notes: EUT **Complies.**

2.2.9 Test Results Peak Output Power (Mid Channel)



Peak Data

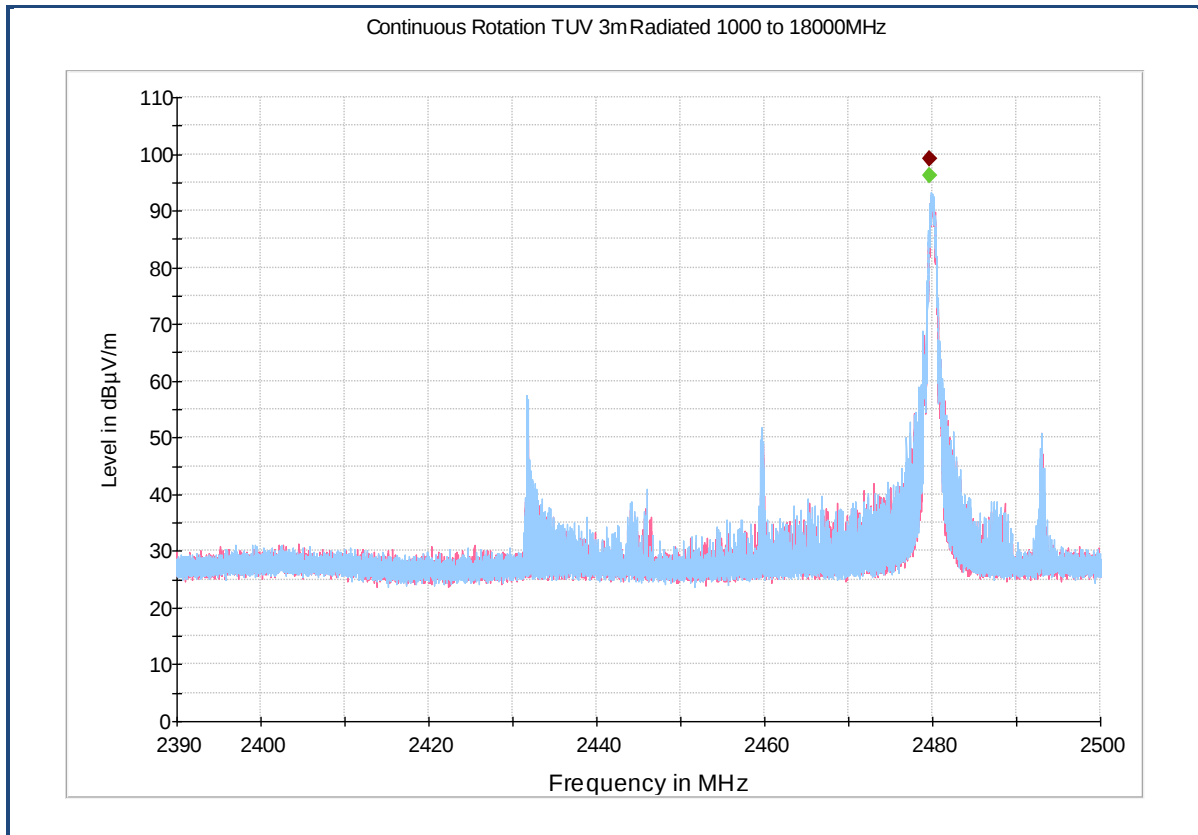
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2440.173000	100.5	1000.0	1000.000	179.5	H	13.0	-1.0		

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2440.173000	100.5	-3.7	9.5	-0.5	5.3	4.8	30	25.2

Test Notes: EUT **Complies.**

2.2.10 Test Results Peak Output Power (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)
2479.699333	99.0	1000.0	1000.000	171.6	H	20.0	-0.9		

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2479.699333	99.0	-3.8	9.5	-2	3.7	3.2	30	26.8

Test Notes: EUT **Complies.**

2.3 99% EMISSION BANDWIDTH

2.3.1 Specification Reference

RSS-Gen Clause 6.6

2.3.2 Standard Applicable

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 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 (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

Note: Video averaging is not permitted.

A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

The trace data points are recovered and are directly summed in linear power level 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 (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

The difference between the two recorded frequencies is the 99% occupied bandwidth.

2.3.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4, 2016/NS

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 performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature 26.4°C
 Relative Humidity 43.8 %
 ATM Pressure 99.4 kPa

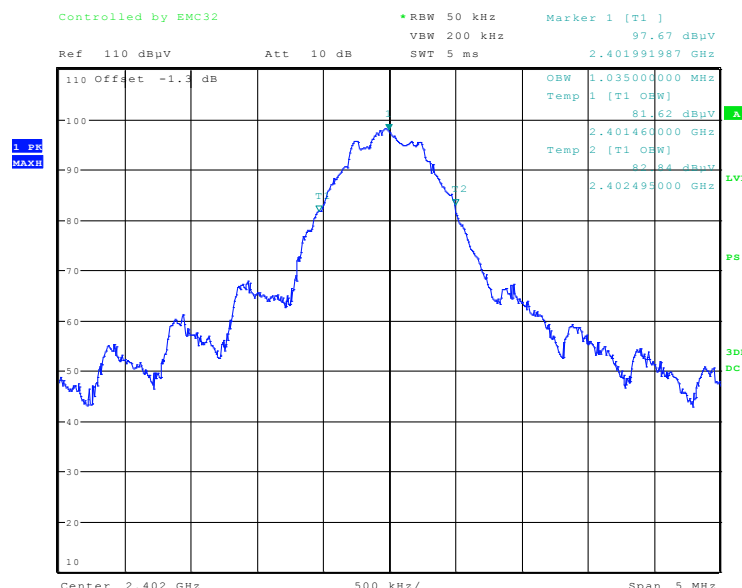
2.3.7 Additional Observations

- This is a radiated test.
- A correction factor (see section 2.2) was used to account for the pre-amplifier, antenna and cable used.
- Span is wide enough to capture the channel transmission.
- RBW is 1% to 5% 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.

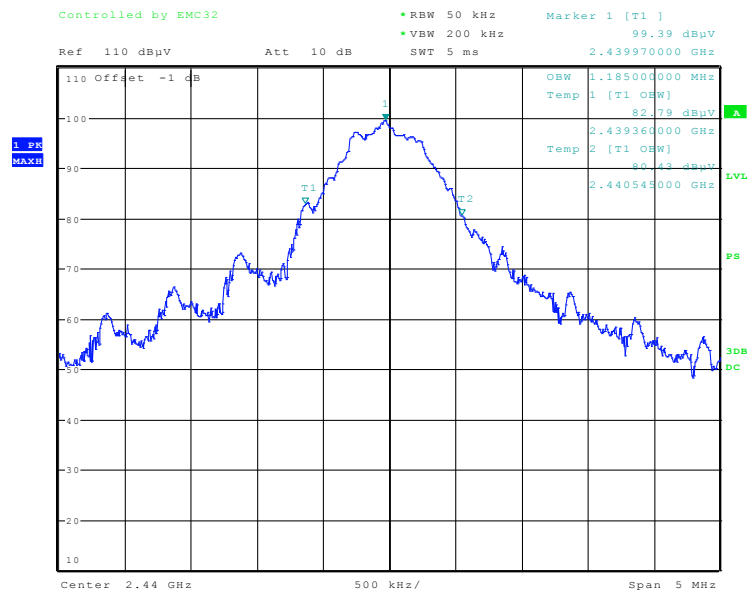
2.3.8 Test Results (For reporting purposes only)

Mode	Channel	Measured 99% Bandwidth (MHz)
Bluetooth LE	37 (2402 MHz)	1.035
	17 (2440 MHz)	1.185
	39 (2480 MHz)	1.070

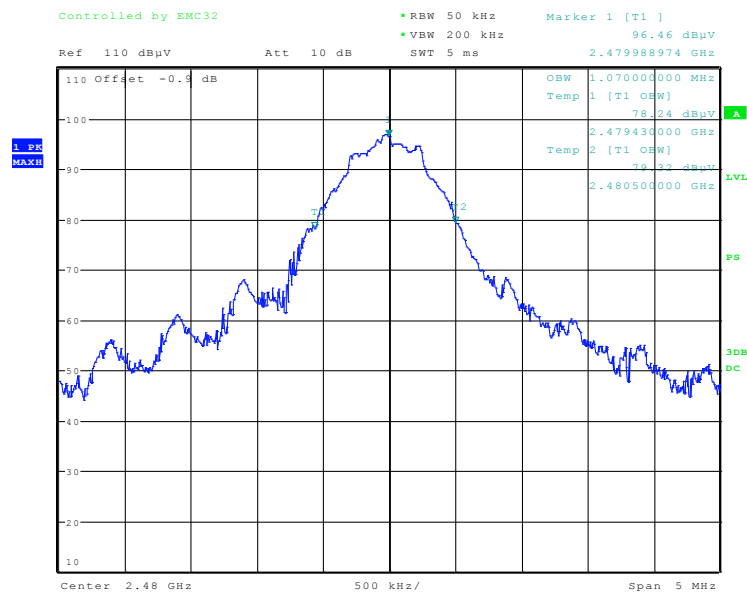
2.3.9 Test Plots



Bluetooth LE. Low Channel



Bluetooth LE. Mid Channel



Date: 4.MAR.2016 18:05:28

Bluetooth LE. High Channel



2.4 MINIMUM 6 DB RF BANDWIDTH

2.4.1 Specification Reference

Part 15 Subpart C §15.247(a)(2)

2.4.2 Standard Applicable

(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

2.4.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4, 2016/NS

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 performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.4°C
Relative Humidity	43.8 %
ATM Pressure	99.4 kPa

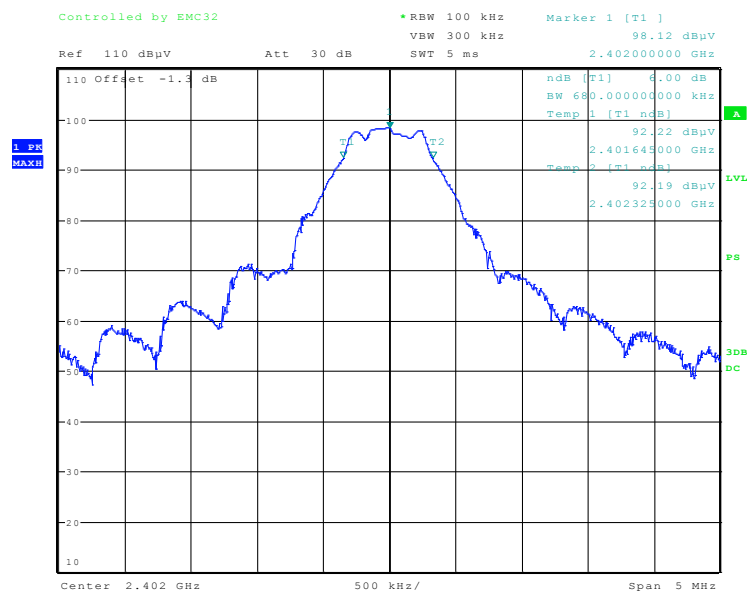
2.4.7 Additional Observations

- This is a radiated test.
- A correction factor (see section 2.2) was used to account for the pre-amplifier, antenna and cable used.
- Span is wide enough to capture the channel transmission.
- RBW is set to 100 kHz.
- VBW is $\geq 3X$ RBW.
- Sweep is auto.
- Detector is peak.
- The “n” dB down marker function of the spectrum analyzer was used for this test.

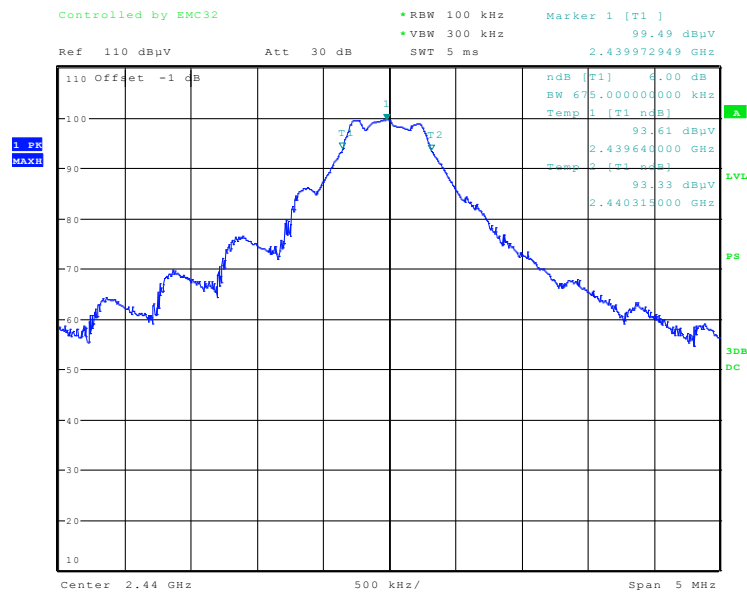
2.4.8 Test Results

Mode	Channel	Measured Bandwidth (MHz)	Minimum Bandwidth (MHz)	Compliance
Bluetooth LE	37 (2402 MHz)	0.680	0.500	Complies
	17 (2440 MHz)	0.675	0.500	Complies
	39 (2480 MHz)	0.655	0.500	Complies

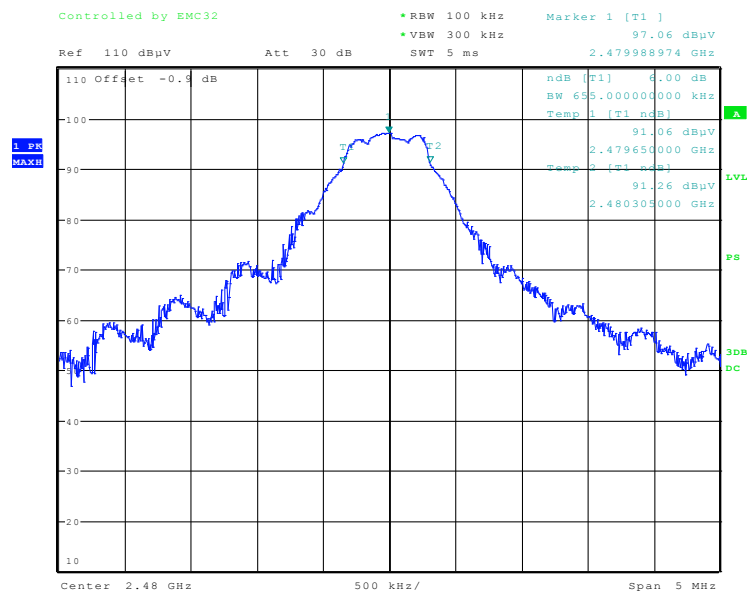
2.4.9 Test Results Plots



Bluetooth LE Low Channel



Bluetooth LE Mid Channel



Bluetooth LE High Channel

2.5 BAND-EDGE COMPLIANCE OF RF EMISSIONS

2.5.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.5.2 Standard Applicable

See previous test.

2.5.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4, 2015/NS

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 performed at TÜV SÜD America Inc. Rancho Bernardo facility

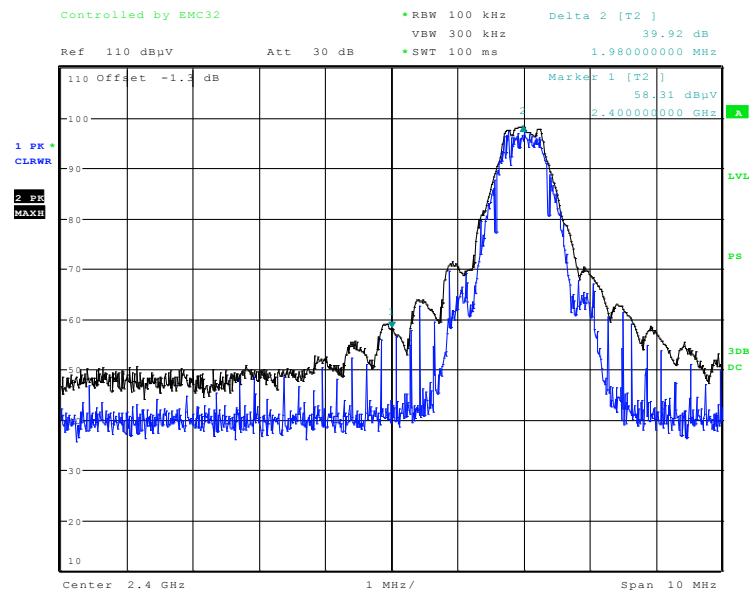
Ambient Temperature	26.4°C
Relative Humidity	43.8 %
ATM Pressure	99.4 kPa

2.5.7 Additional Observations

- This is a radiated test.
- A correction factor (see section 2.2) was used to account for the pre-amplifier, antenna and cable used.
- RBW is 100kHz.VBW is 3X RBW.
- Sweep is auto. Detector is peak. Trace is max hold.
- Trace was centred on the band-edge frequency.
- Span was set to encompass the band-edge frequency and the peak of the emission.
- Using Marker function, peak of the emission was determined and the delta to the band-edge frequency measured.
- Band-edges were verified ≤ 20 dBc.

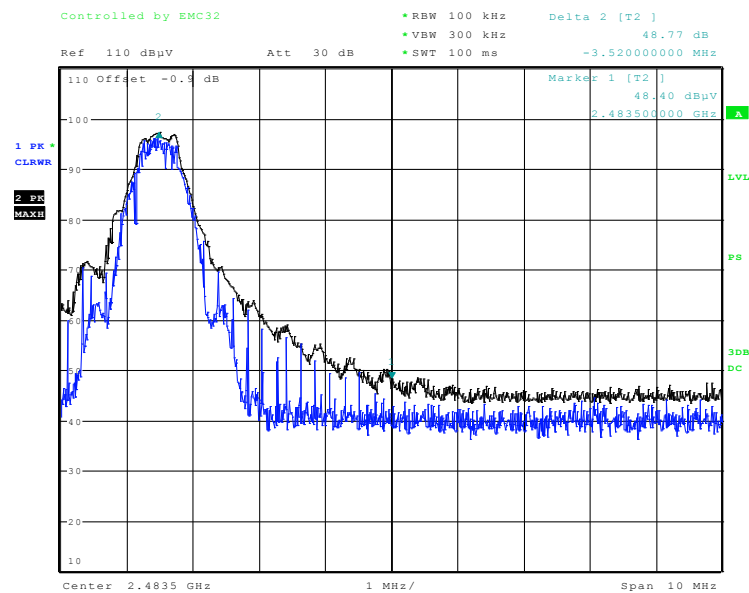
2.5.8 Test Results

EUT Complies. See attached plots.



Date: 4.MAR.2016 17:24:35

Bluetooth LE Low Channel (2402 MHz)



Bluetooth LE High Channel (2480 MHz)

2.6 SPURIOUS RADIATED EMISSIONS

2.6.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.6.2 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)).

2.6.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4 and March 9, 2015/NS

2.6.5 Test Equipment Used

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

2.6.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.8-26.4°C
Relative Humidity	40.5-43.8 %
ATM Pressure	99.1-99.4 kPa

2.6.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic.
- There are no emissions found that do not comply to the limits defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Only noise floor measurements observed above 18GHz.
- Measurement was done using EMC32 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 2.6.8 for sample computation.

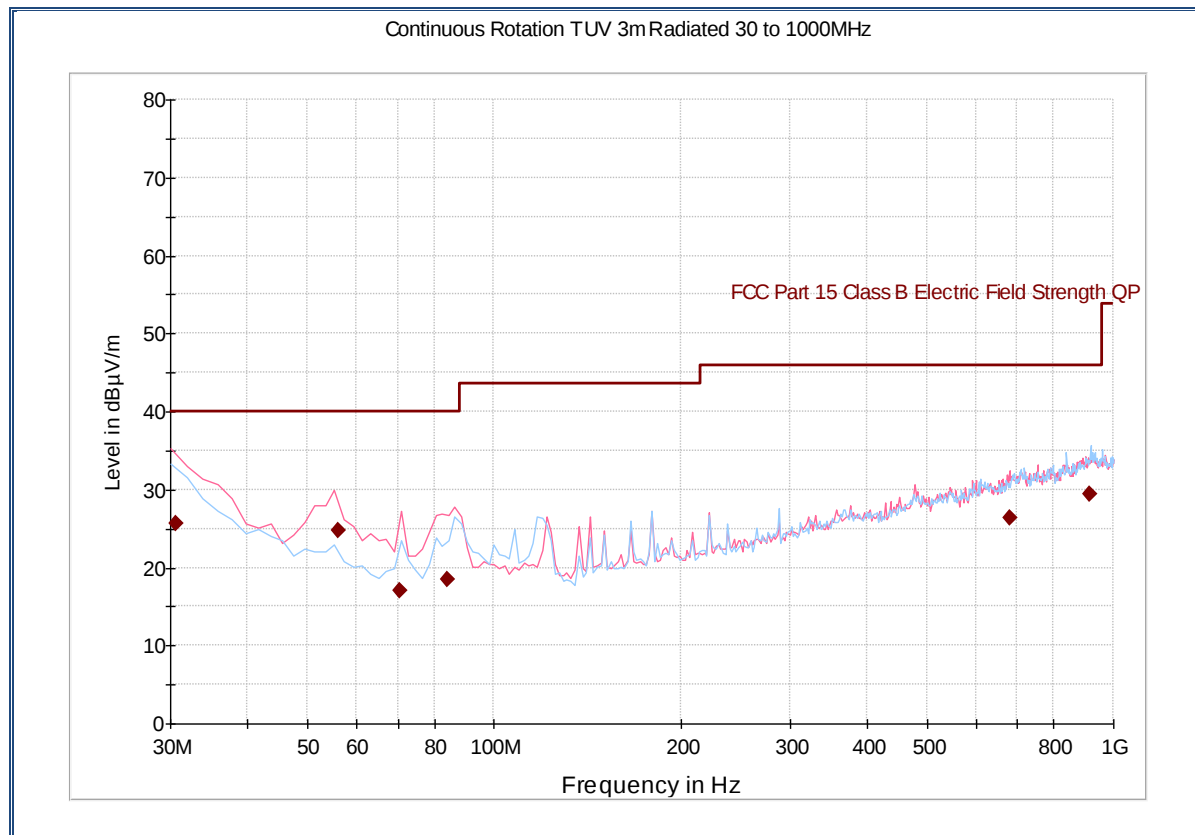
2.6.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (db μ 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 μ V/m) @ 30MHz			11.8

2.6.9 Test Results

See attached plots.

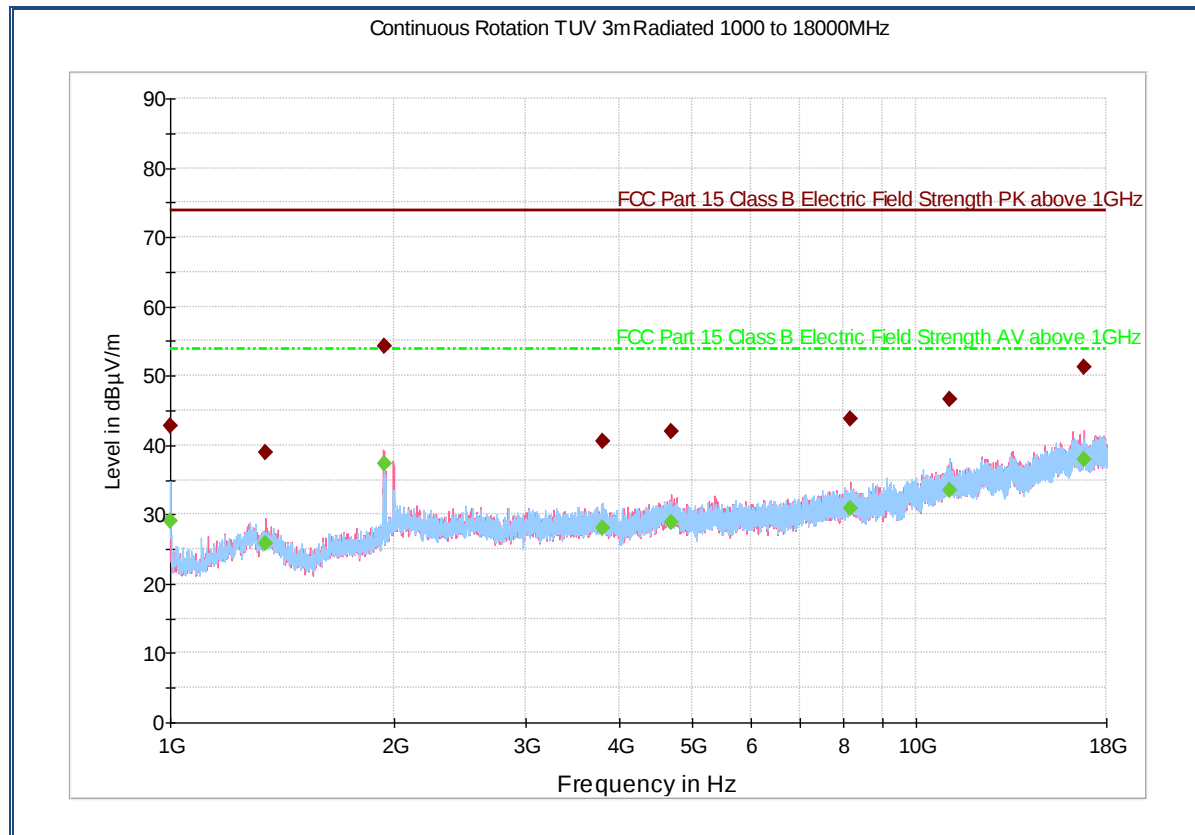
2.6.10 Test Results Below 1GHz (Receive Mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.560000	25.7	1000.0	120.000	259.0	V	-12.0	-5.9	14.3	40.0
56.070541	24.8	1000.0	120.000	100.0	V	95.0	-15.5	15.2	40.0
70.581643	17.0	1000.0	120.000	200.0	V	11.0	-16.8	23.0	40.0
84.012745	18.5	1000.0	120.000	100.0	V	-12.0	-16.0	21.5	40.0
678.778517	26.4	1000.0	120.000	326.0	V	118.0	2.3	19.6	46.0
915.836713	29.4	1000.0	120.000	128.0	H	90.0	6.6	16.6	46.0

2.6.11 Test Results Above 1GHz (Receive Mode)



Peak Data

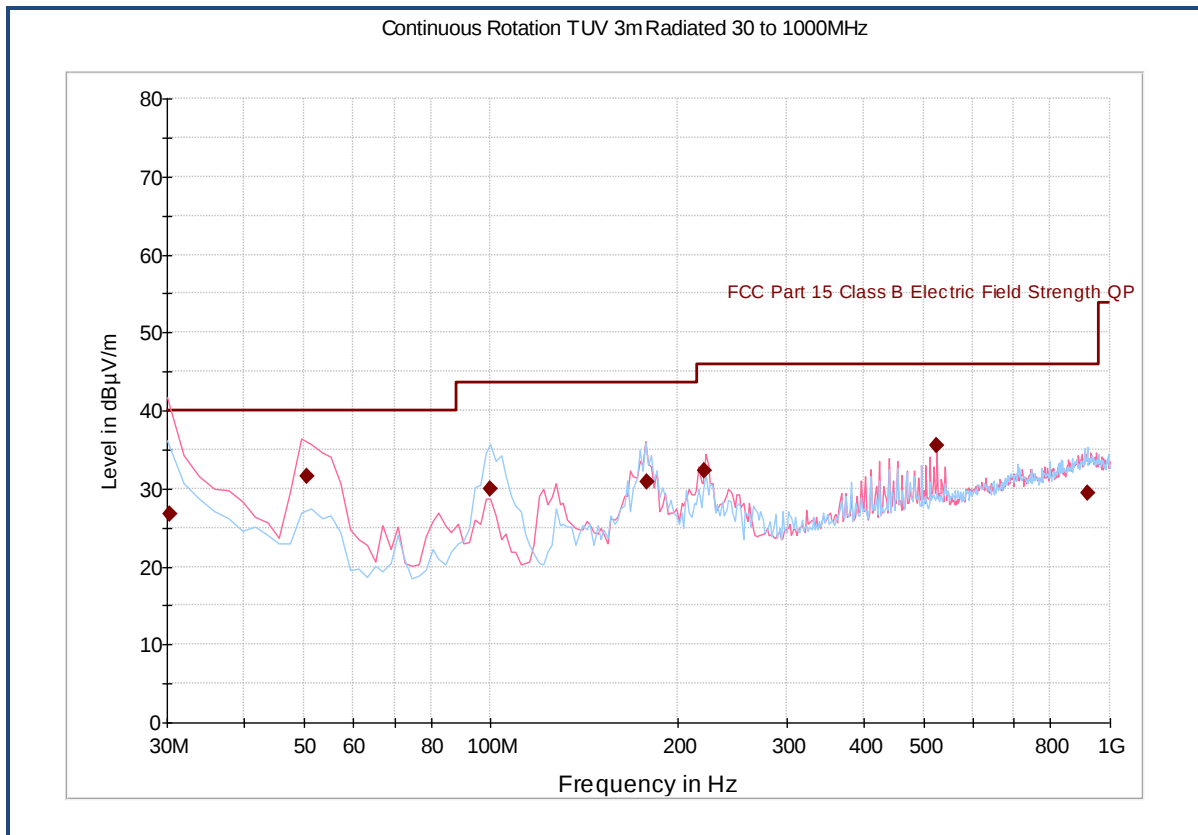
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	42.7	1000.0	1000.000	269.3	H	183.0	-7.9	31.2	73.9
1339.633333	39.0	1000.0	1000.000	179.5	V	153.0	-5.5	34.9	73.9
1932.766667	54.3	1000.0	1000.000	202.5	V	-3.0	-1.6	19.6	73.9
3794.633333	40.6	1000.0	1000.000	202.3	H	304.0	1.4	33.3	73.9
4688.233333	41.9	1000.0	1000.000	208.5	V	184.0	2.8	32.0	73.9
8178.900000	43.9	1000.0	1000.000	103.7	V	63.0	7.3	30.1	73.9
11072.300000	46.6	1000.0	1000.000	202.5	H	168.0	11.6	27.3	73.9
16787.866666	51.3	1000.0	1000.000	155.6	V	294.0	17.4	22.6	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)
1000.400000	29.0	1000.0	1000.000	269.3	H	183.0	-7.9	24.9	53.9
1339.633333	25.7	1000.0	1000.000	179.5	V	153.0	-5.5	28.2	53.9
1932.766667	37.4	1000.0	1000.000	202.5	V	-3.0	-1.6	16.5	53.9
3794.633333	28.1	1000.0	1000.000	202.3	H	304.0	1.4	25.8	53.9
4688.233333	28.9	1000.0	1000.000	208.5	V	184.0	2.8	25.0	53.9
8178.900000	30.8	1000.0	1000.000	103.7	V	63.0	7.3	23.1	53.9
11072.300000	33.5	1000.0	1000.000	202.5	H	168.0	11.6	20.4	53.9
16787.866666	38.0	1000.0	1000.000	155.6	V	294.0	17.4	15.9	53.9

Test Notes: No significant emissions observed above 1GHz.

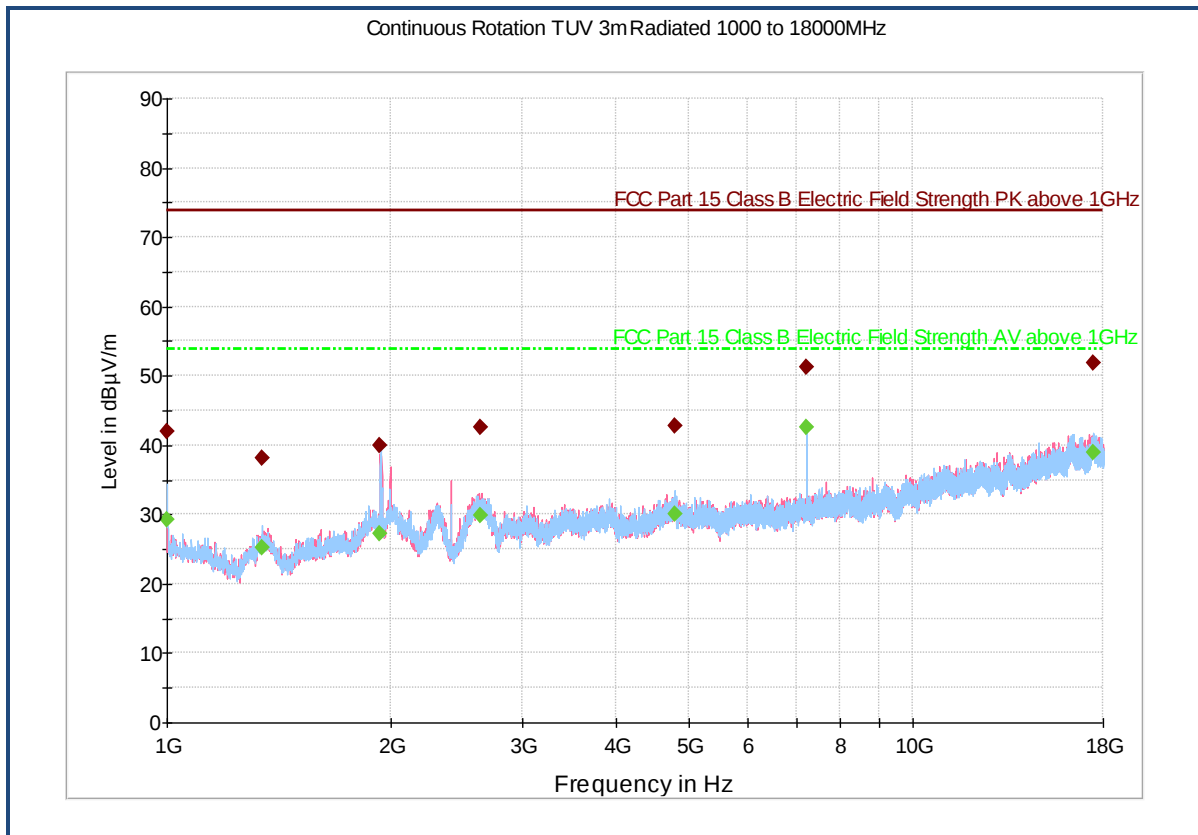
2.6.12 Test Results Below 1GHz (Mid Channel – Worst case channel)



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	26.8	1000.0	120.000	155.0	V	11.0	-5.7	13.2	40.0
50.598878	31.6	1000.0	120.000	100.0	V	100.0	-14.4	8.4	40.0
99.739960	29.9	1000.0	120.000	377.0	H	-8.0	-14.1	13.6	43.5
178.935471	30.9	1000.0	120.000	100.0	V	242.0	-12.3	12.6	43.5
221.564890	32.3	1000.0	120.000	100.0	V	164.0	-10.0	13.7	46.0
525.611383	35.4	1000.0	120.000	105.0	V	109.0	-0.7	10.6	46.0
919.916713	29.4	1000.0	120.000	250.0	H	274.0	6.6	16.6	46.0

2.6.13 Test Results Above 1GHz (Low Channel)



Peak Data

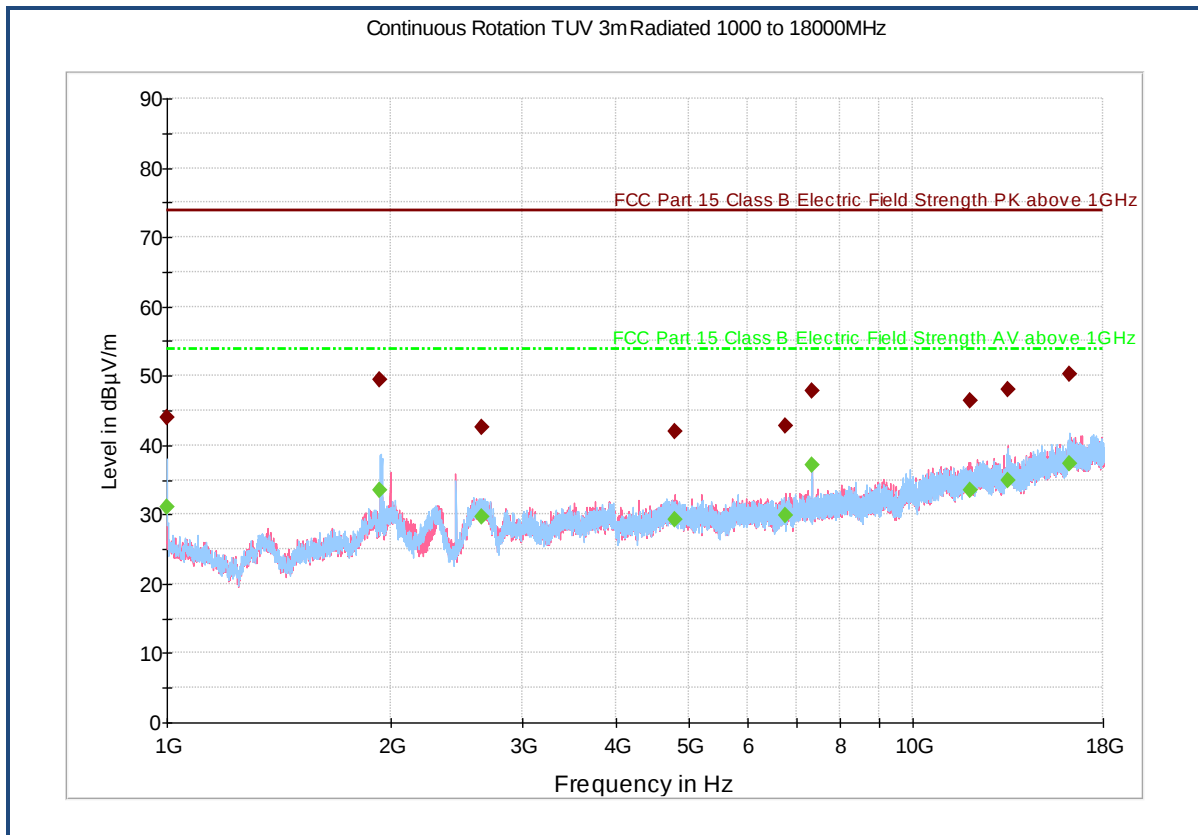
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	41.9	1000.0	1000.000	322.2	H	266.0	-7.9	32.0	73.9
1341.500000	38.2	1000.0	1000.000	404.4	H	284.0	-5.5	35.7	73.9
1932.533333	40.0	1000.0	1000.000	401.7	H	337.0	-1.6	33.9	73.9
2626.933333	42.6	1000.0	1000.000	146.7	V	11.0	-0.8	31.3	73.9
4804.633333	42.9	1000.0	1000.000	131.7	H	295.0	2.9	31.0	73.9
7205.366667	51.3	1000.0	1000.000	102.7	H	147.0	6.4	22.6	73.9
17453.400000	51.8	1000.0	1000.000	404.4	H	244.0	18.1	22.1	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)
1000.000000	29.2	1000.0	1000.000	322.2	H	266.0	-7.9	24.7	53.9
1341.500000	25.3	1000.0	1000.000	404.4	H	284.0	-5.5	28.6	53.9
1932.533333	27.2	1000.0	1000.000	401.7	H	337.0	-1.6	26.7	53.9
2626.933333	29.8	1000.0	1000.000	146.7	V	11.0	-0.8	24.1	53.9
4804.633333	30.1	1000.0	1000.000	131.7	H	295.0	2.9	23.8	53.9
7205.366667	42.6	1000.0	1000.000	102.7	H	147.0	6.4	11.3	53.9
17453.400000	38.9	1000.0	1000.000	404.4	H	244.0	18.1	15.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Only the worst configuration presented (Z axis). No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures.

2.6.14 Test Results Above 1GHz (Mid Channel)



Peak Data

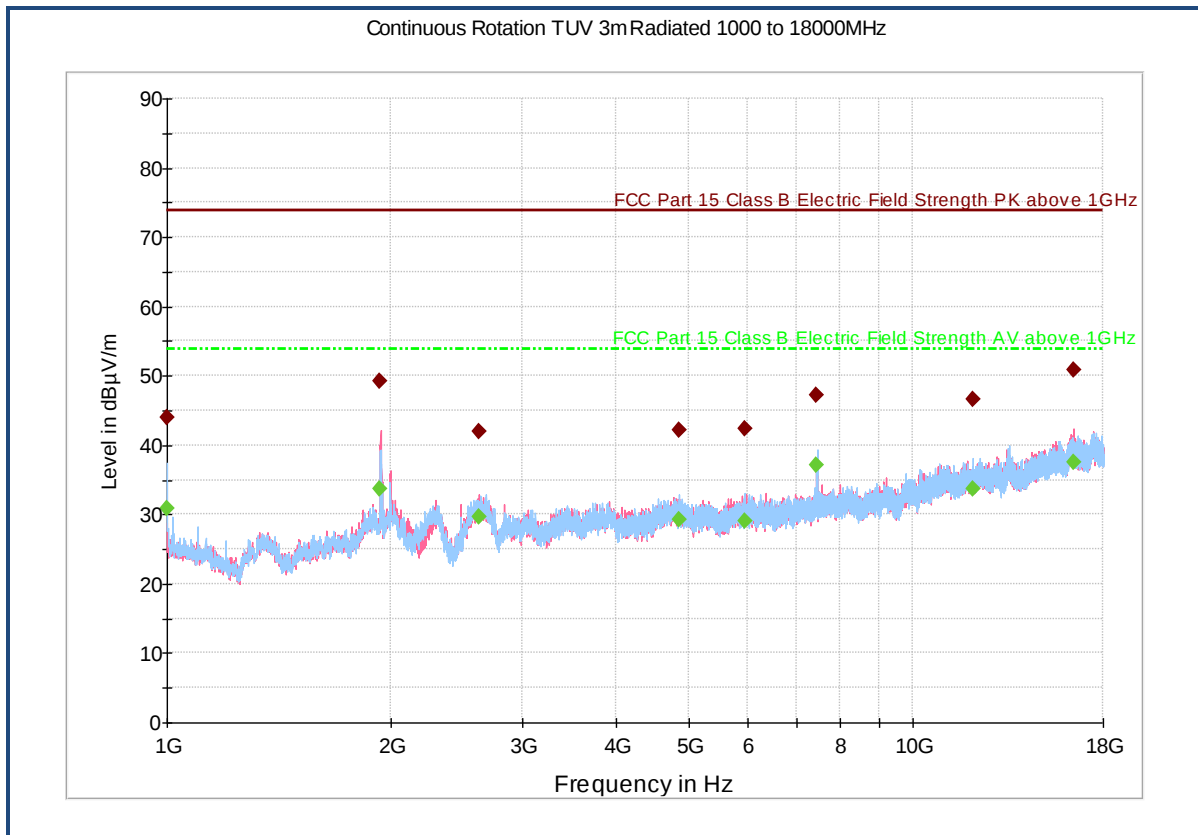
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	43.9	1000.0	1000.000	193.0	H	27.0	-7.9	30.0	73.9
1932.533333	49.4	1000.0	1000.000	400.0	H	223.0	-1.6	24.5	73.9
2648.466667	42.6	1000.0	1000.000	233.0	H	308.0	-1.1	31.3	73.9
4800.833333	42.0	1000.0	1000.000	200.0	V	122.0	2.9	31.9	73.9
6757.133333	42.8	1000.0	1000.000	152.0	V	153.0	5.6	31.1	73.9
7319.300000	47.9	1000.0	1000.000	124.0	V	161.0	6.6	26.0	73.9
11921.033333	46.3	1000.0	1000.000	337.0	V	78.0	12.2	27.6	73.9
13403.600000	48.1	1000.0	1000.000	366.0	V	54.0	13.5	25.8	73.9
16243.866667	50.2	1000.0	1000.000	200.0	H	24.0	17.1	23.7	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)
1000.000000	31.1	1000.0	1000.000	193.0	H	27.0	-7.9	22.8	53.9
1932.533333	33.4	1000.0	1000.000	400.0	H	223.0	-1.6	20.5	53.9
2648.466667	29.7	1000.0	1000.000	233.0	H	308.0	-1.1	24.2	53.9
4800.833333	29.3	1000.0	1000.000	200.0	V	122.0	2.9	24.6	53.9
6757.133333	29.9	1000.0	1000.000	152.0	V	153.0	5.6	24.0	53.9
7319.300000	37.1	1000.0	1000.000	124.0	V	161.0	6.6	16.8	53.9
11921.033333	33.6	1000.0	1000.000	337.0	V	78.0	12.2	20.3	53.9
13403.600000	35.0	1000.0	1000.000	366.0	V	54.0	13.5	18.9	53.9
16243.866667	37.3	1000.0	1000.000	200.0	H	24.0	17.1	16.6	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Only the worst configuration presented (Z axis). No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures.

2.6.15 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	43.9	1000.0	1000.000	200.0	H	119.0	-7.9	30.0	73.9
1932.533333	49.2	1000.0	1000.000	100.0	V	-20.0	-1.6	24.7	73.9
2622.933333	42.1	1000.0	1000.000	124.0	V	306.0	-0.8	31.8	73.9
4857.433333	42.3	1000.0	1000.000	200.0	H	205.0	2.9	31.6	73.9
5966.266667	42.4	1000.0	1000.000	398.0	H	20.0	4.5	31.5	73.9
7439.733333	47.3	1000.0	1000.000	192.0	H	161.0	6.8	26.6	73.9
12023.733333	46.6	1000.0	1000.000	152.0	H	39.0	12.1	27.3	73.9
16406.733333	50.8	1000.0	1000.000	400.0	V	206.0	17.3	23.1	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)
1000.000000	30.9	1000.0	1000.000	200.0	H	119.0	-7.9	23.0	53.9
1932.533333	33.8	1000.0	1000.000	100.0	V	-20.0	-1.6	20.1	53.9
2622.933333	29.6	1000.0	1000.000	124.0	V	306.0	-0.8	24.3	53.9
4857.433333	29.2	1000.0	1000.000	200.0	H	205.0	2.9	24.7	53.9
5966.266667	29.1	1000.0	1000.000	398.0	H	20.0	4.5	24.8	53.9
7439.733333	37.2	1000.0	1000.000	192.0	H	161.0	6.8	16.7	53.9
12023.733333	33.8	1000.0	1000.000	152.0	H	39.0	12.1	20.1	53.9
16406.733333	37.5	1000.0	1000.000	400.0	V	206.0	17.3	16.4	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Only the worst configuration presented (Z axis). No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures.



2.7 RADIATED BAND-EDGE MEASUREMENTS AND IMMEDIATE RESTRICTED BANDS

2.7.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.7.2 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)).

2.7.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4, 2016/NS

2.7.5 Test Equipment Used

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

2.7.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.4°C
Relative Humidity	43.8 %
ATM Pressure	99.4 kPa

2.7.7 Additional Observations

- This is a radiated test. The spectrum was searched from 2310MHz to 2390MHz for lower immediate restricted band and 2483.5MHz to 2500MHz for the upper immediate restricted band.
- There are no emissions found that do not comply with the restricted bands defined in FCC Part 15 Subpart C, 15.205.



- Measurement was done using EMC32 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 2.7.8 for sample computation.

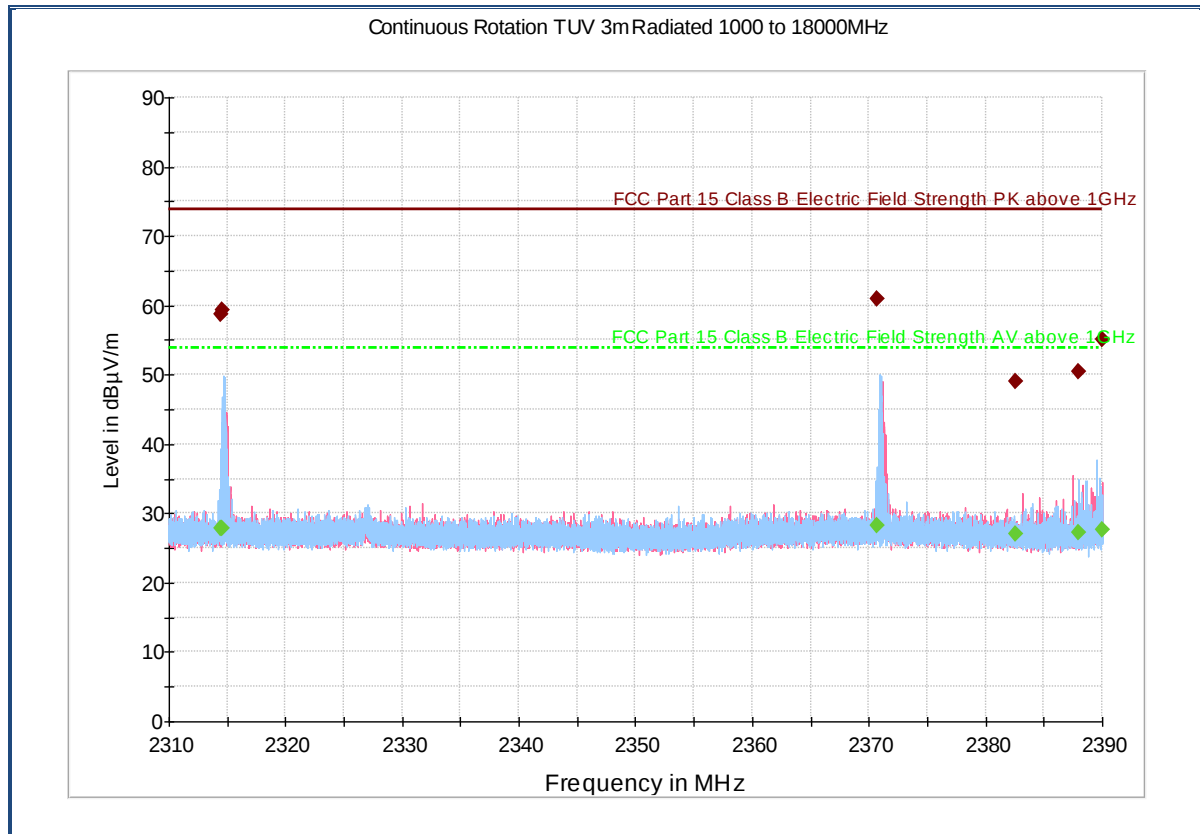
2.7.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbμV) @ 2400 MHz			53.9
Correction Factor (dB)	Asset# 1153 (cable)	3.4	-0.4
	Asset# 8628(preamplifier)	-36.5	
	Asset#7575 (antenna)	32.7	
Reported Max Peak Final Measurement (dbμV/m) @ 2400 MHz			53.5

2.7.9 Test Results

See attached plots.

2.7.10 Test Results Restricted Band 2310MHz to 2390MHz (Low Channel)



Peak Data

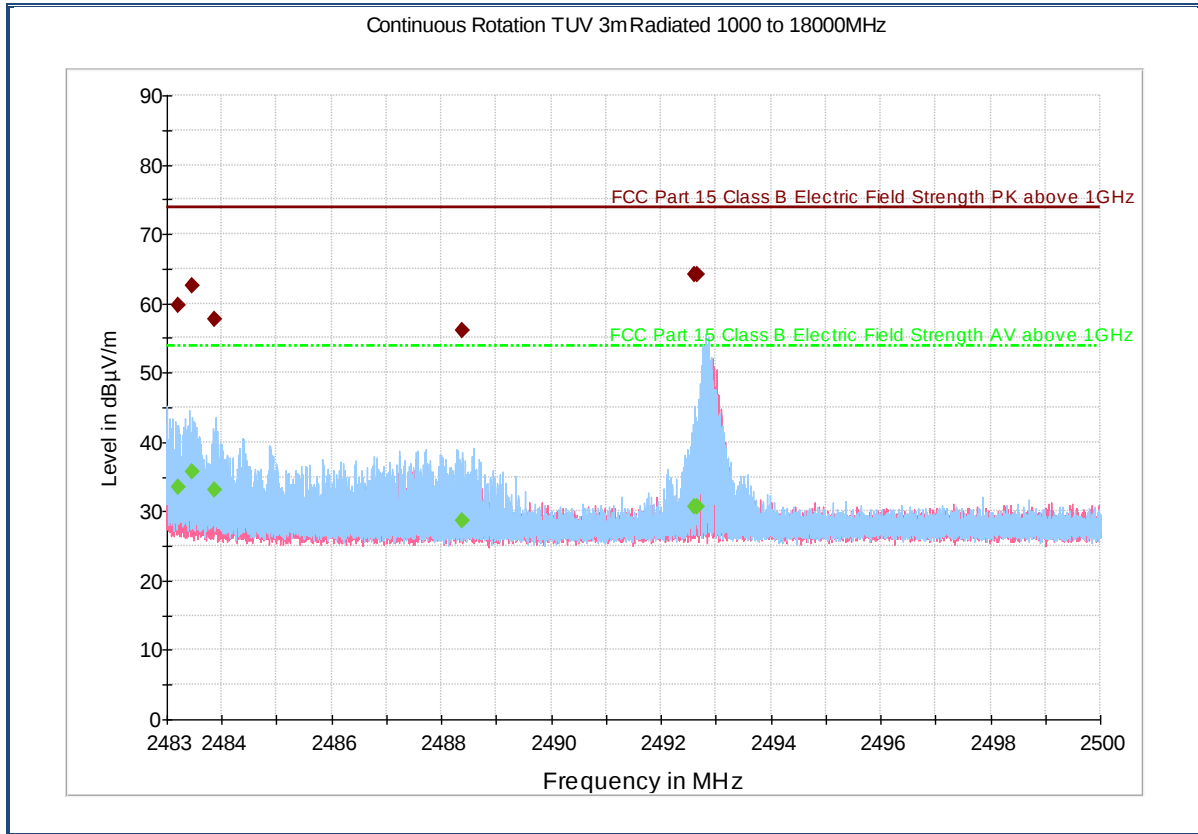
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2314.437333	58.8	1000.0	1000.000	155.6	H	1.0	-1.3	15.1	73.9
2314.538667	59.2	1000.0	1000.000	154.6	H	11.0	-1.3	14.7	73.9
2370.690667	61.0	1000.0	1000.000	191.5	H	0.0	-1.4	12.9	73.9
2382.586667	49.1	1000.0	1000.000	198.5	V	43.0	-1.4	24.8	73.9
2387.906667	50.4	1000.0	1000.000	198.5	V	43.0	-1.3	23.5	73.9
2390.000000	55.2	1000.0	1000.000	229.4	H	21.0	-1.3	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)
2314.437333	27.8	1000.0	1000.000	155.6	H	1.0	-1.3	26.1	53.9
2314.538667	27.9	1000.0	1000.000	154.6	H	11.0	-1.3	26.0	53.9
2370.690667	28.2	1000.0	1000.000	191.5	H	0.0	-1.4	25.7	53.9
2382.586667	27.1	1000.0	1000.000	198.5	V	43.0	-1.4	26.8	53.9
2387.906667	27.2	1000.0	1000.000	198.5	V	43.0	-1.3	26.7	53.9
2390.000000	27.7	1000.0	1000.000	229.4	H	21.0	-1.3	26.2	53.9

Test Notes:

2.7.11 Test Results Restricted Band 2483.5MHz to 2500MHz (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)
2483.200000	59.8	1000.0	1000.000	184.5	H	12.0	-0.9	14.1	73.9
2483.466233	62.6	1000.0	1000.000	173.6	H	20.0	-0.9	11.3	73.9
2483.866233	57.8	1000.0	1000.000	182.6	H	20.0	-0.9	16.1	73.9
2488.388467	56.1	1000.0	1000.000	259.3	H	179.0	-0.8	17.8	73.9
2492.612967	64.1	1000.0	1000.000	173.6	H	20.0	-0.8	9.8	73.9
2492.657733	64.2	1000.0	1000.000	174.6	H	20.0	-0.8	9.7	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)
2483.200000	33.5	1000.0	1000.000	184.5	H	12.0	-0.9	20.4	53.9
2483.466233	35.7	1000.0	1000.000	173.6	H	20.0	-0.9	18.2	53.9
2483.866233	33.1	1000.0	1000.000	182.6	H	20.0	-0.9	20.8	53.9
2488.388467	28.6	1000.0	1000.000	259.3	H	179.0	-0.8	25.3	53.9
2492.612967	30.7	1000.0	1000.000	173.6	H	20.0	-0.8	23.2	53.9
2492.657733	30.7	1000.0	1000.000	174.6	H	20.0	-0.8	23.2	53.9

Test Notes:

2.8 POWER SPECTRAL DENSITY

2.8.1 Specification Reference

Part 15 Subpart C §15.247(e)

2.8.2 Standard Applicable

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

2.8.3 Equipment Under Test and Modification State

Serial No: DX60399001 / Default Test Configuration

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

March 4, 2016/NS

2.8.5 Test Equipment Used

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

2.8.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.4°C
Relative Humidity	43.8 %
ATM Pressure	99.4 kPa

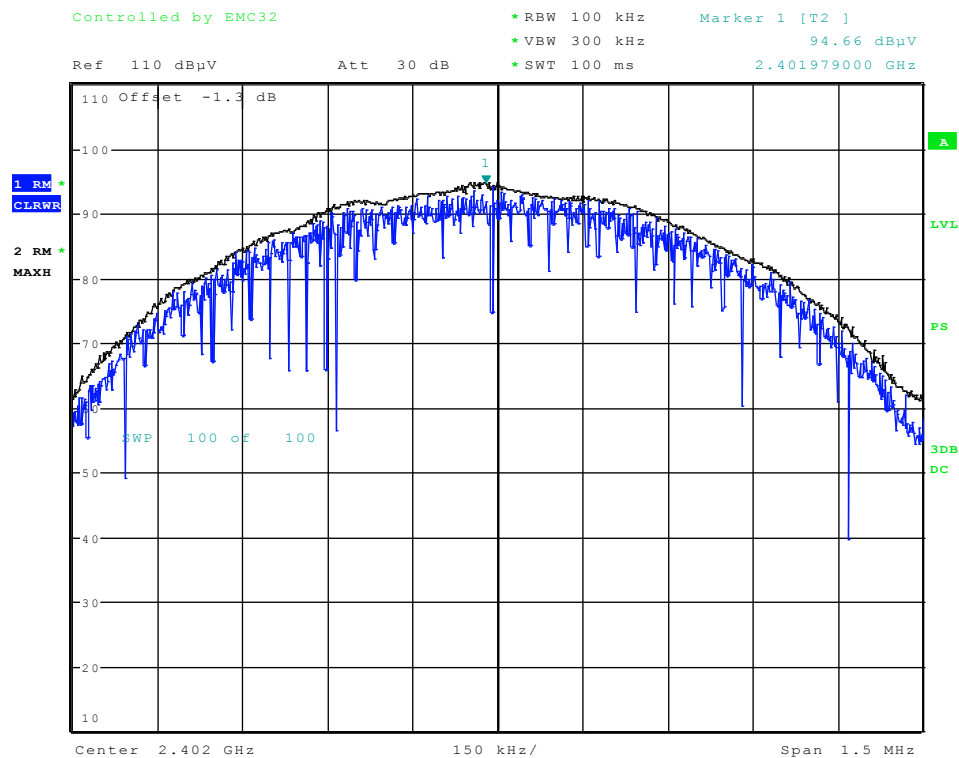
2.8.7 Additional Observations

- This is a radiated test.
- A correction factor (see section 2.2) was used to account for the pre-amplifier, antenna and cable used.
- Detector is Peak.
- Trace Mode is Max hold.
- Sweep time is Auto Couple.
- EUT complies with 100 kHz RBW.

2.8.8 Test Results Summary (PKPSD Method)

Mode	Channel	Marker Reading using 100 kHz RBW (dBm)	PSD Limit (dBm)	Compliance
Bluetooth LE	37 (2402 MHz)	-1.3	8	Complies
	17 (2440 MHz)	-0.3	8	Complies
	39 (2480 MHz)	-1.8	8	Complies

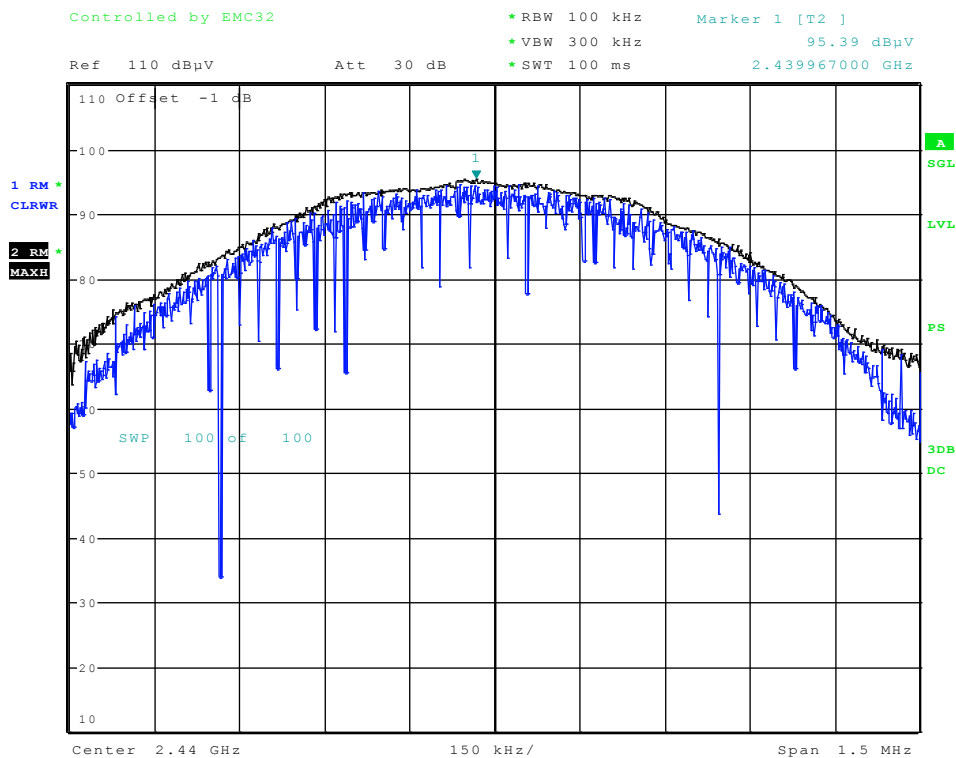
2.8.9 Test Results Plots



Bluetooth LE Low Channel

Substitution Data

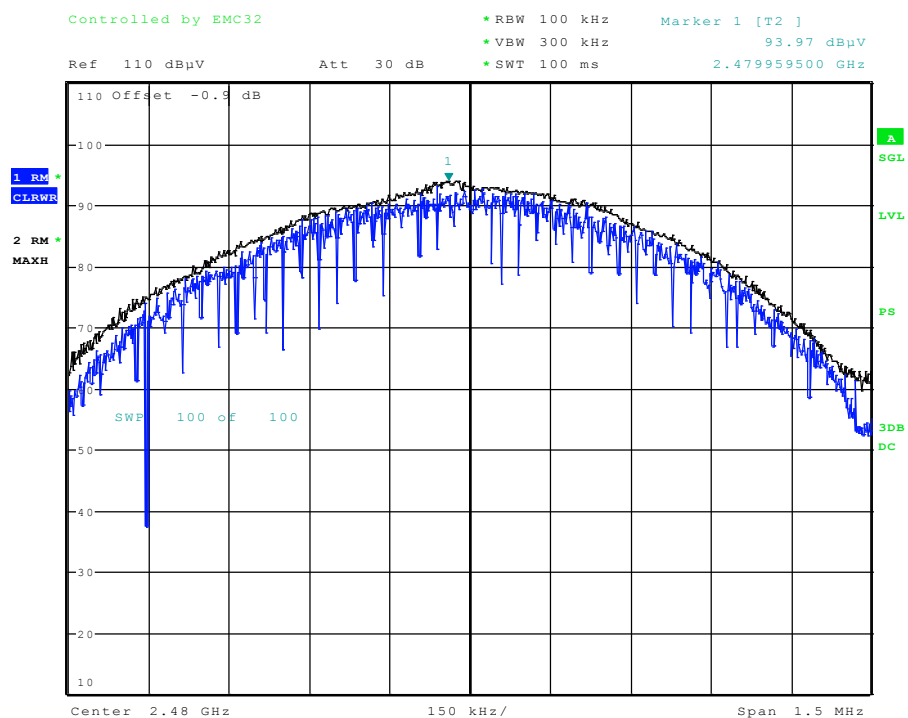
Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2401.979	94.66	-3.7	9.5	-6.6	-0.8	-1.3	8	9.3



Bluetooth LE Mid Channel

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2439.9670	95.39	-3.7	9.5	-5.6	0.2	-0.3	8	8.3



Bluetooth LE High Channel

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Peak Output Power (dBm)	Limit (dBm)	Compliance (Margin in dB)
2479.9595	93.97	-3.8	9.5	-7	-1.3	-1.8	8	9.8

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	ESU 40	1302600540	Rhode & Schwarz	08/24/15	08/24/16
8822	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/29/16	03/01/17
8824	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/29/16	03/01/17
7567	LISN	FCC-LISN-50-25-2-10	120304	Fischer Custom Comm.	07/14/15	07/14/16
Radiated Test Setup						
7611	Signal/Spectrum Analyzer	FSW26	102017	Rhode & Schwarz	03/25/15	03/25/16
1003	Signal Generator	SMR-40	1104.0002.40	Rhode & Schwarz	04/29/15	04/29/16
1033	Bilog Antenna	3142C	00058717	ETS-Lindgren	09/25/15	09/25/16
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
7575	Double-ridged waveguide horn antenna	3117	155511	EMCO	04/27/15	04/27/16
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/11/15	03/11/16
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	03/20/15	03/20/16
1150	Horn antenna	3160-09	012054-004	ETS	07/16/15	07/16/17
1151	Pre-amplifier	TS-PR26	100026	Rhode & Schwarz	05/08/15	05/08/16
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	Verified by 1003 and 7611	
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	Verified by 1003 and 7611	
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 1003 and 7611	
Miscellaneous						
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/14/15	08/14/16
11312	Mini Environmental Quality Meter	850027	CF099-56010-340	Sper Scientific	04/09/15	04/09/16
	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 AC Conducted Emissions

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	Preamplifier	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	Preamplifier	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

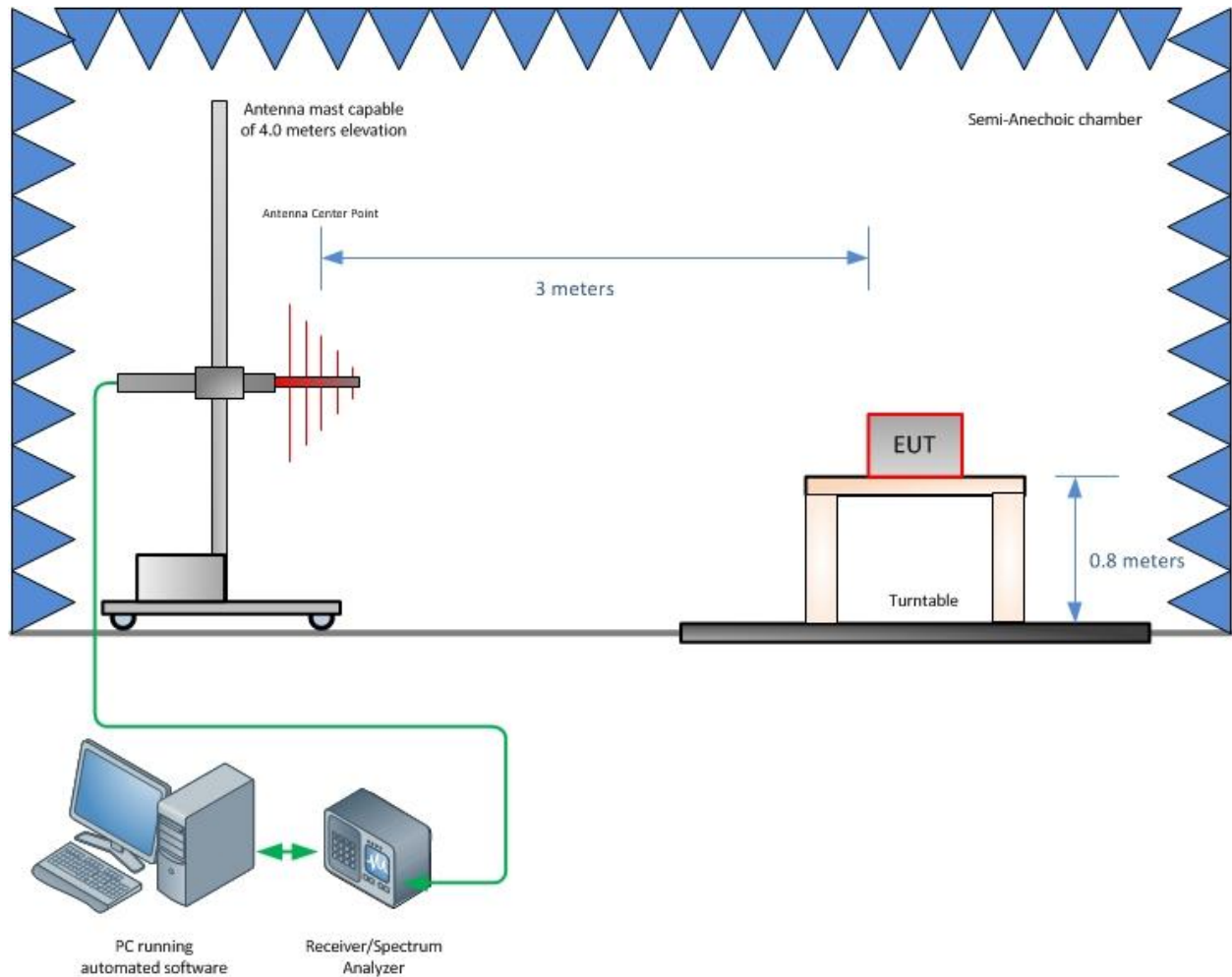
3.2.4 Conducted Antenna Port Measurement

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	0.50	0.29	0.08
3	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					0.72
Coverage Factor (k):					2
Expanded Uncertainty:					1.45

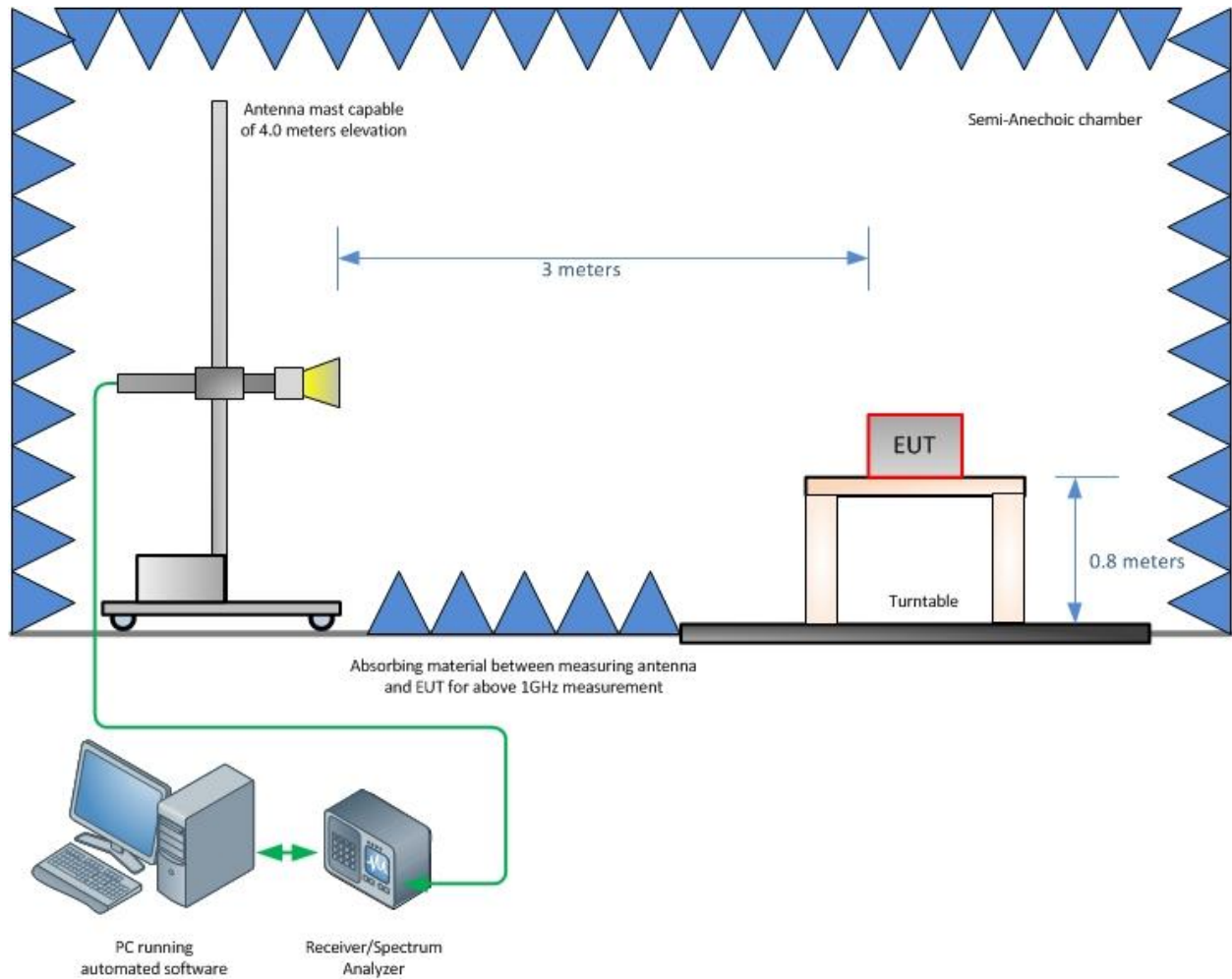
SECTION 4

DIAGRAM OF TEST SETUP

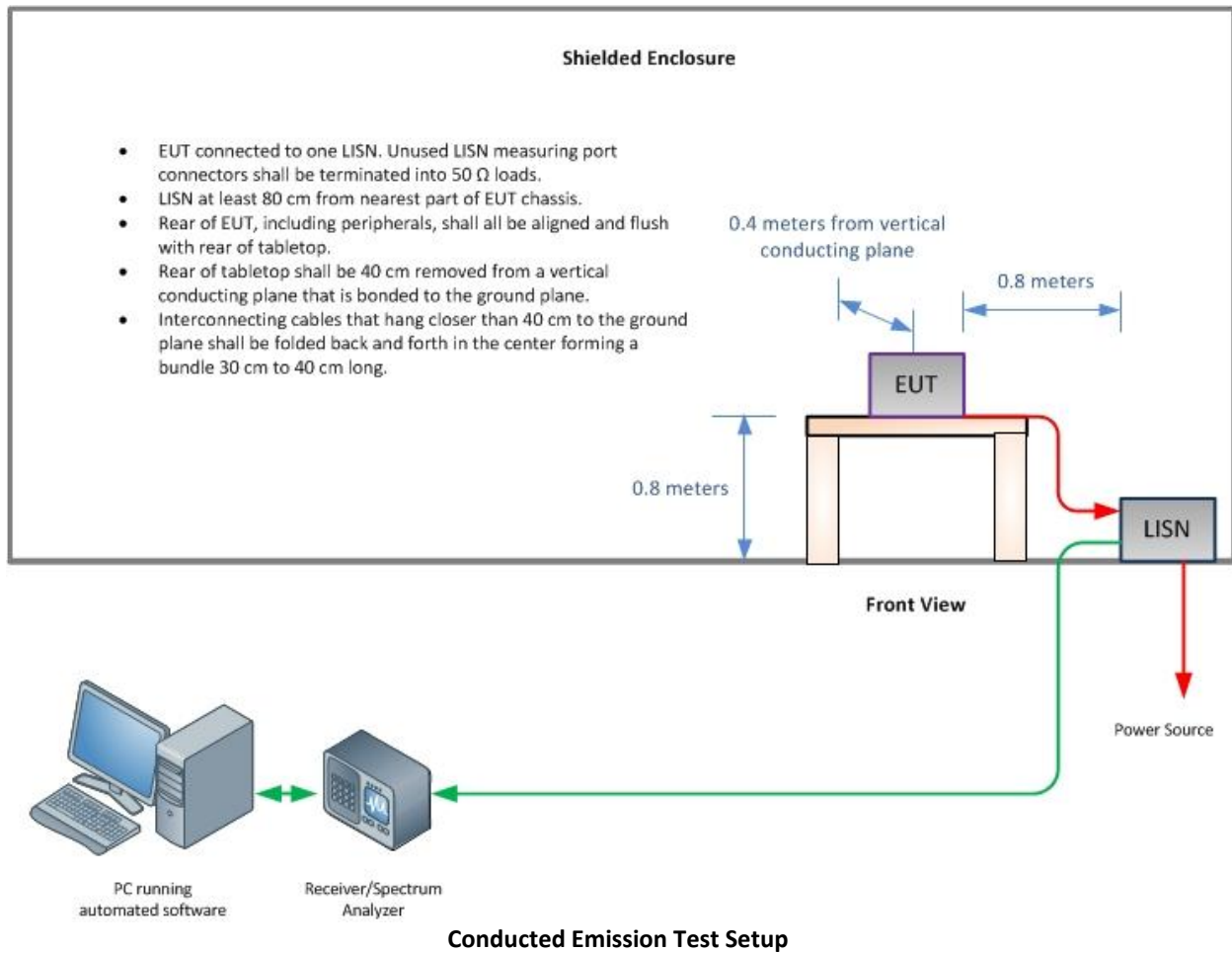
4.1 TEST SETUP DIAGRAM



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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