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Report On

Application for Grant of Equipment Authorization of the
OnRamp Wireless
Falcon TRN-2012 and TRN-2113 RF Board

FCC Part 15 Subpart C §15.247



Report No. SC1303244

May 2013



America

TÜV SÜD America Inc., 10040 Mesa Rim Road, San Diego, CA 92121
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REPORT ON	Radio Testing of the OnRamp Wireless RF Board
TEST REPORT NUMBER	SC1303244
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DATED	May 23, 2013



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Revision History

SC1303244 OnRamp Wireless Falcon RF Board					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
05/23/13	Initial Release				Ferdinand Custodio



CONTENTS

Section	Page No
1	REPORT SUMMARY 5
1.1	Introduction 6
1.2	Brief Summary Of Results 7
1.3	Product Information 8
1.4	EUT Test Configuration 11
1.5	Deviations From The Standard 13
1.6	Modification Record 13
1.7	Test Methodology 13
1.8	Test Facility 13
2	TEST DETAILS 14
2.1	Peak Output Power 15
2.2	Conducted Emissions 19
2.3	Minimum 6 dB Rf Bandwidth 23
2.4	Out-Of-Band Emissions - Conducted 26
2.5	Band-Edge Compliance Of RF Conducted Emissions 33
2.6	Spurious Radiated Emissions 35
2.7	Power Spectral Density 50
3	TEST EQUIPMENT USED 53
3.1	Test Equipment Used 54
3.2	Measurement Uncertainty 55
4	DIAGRAM OF TEST SETUP 56
4.1	Test Setup Diagram 57
5	ACCREDITATION, DISCLAIMERS AND COPYRIGHT 60
5.1	Accreditation, Disclaimers and Copyright 61



SECTION 1

REPORT SUMMARY

Radio Testing of the
OnRamp Wireless
RF Board

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the OnRamp Wireless RF Board to the requirements of FCC Part 15 Subpart C §15.247 and IC RSS-Gen and 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	OnRamp Wireless
Model Name	Falcon
Model Number(s)	TRN-2012 and TRN-2113
FCC ID Number (TRN-2012)	XTE-TRN-2012
FCC ID Number (TRN-2113)	XTE-TRN-2113
Serial Number(s)	536161A5 (TRN2012) and 53616106 (TRN-2113)
Number of Samples Tested	2
Test Specification/Issue/Date	FCC Part 15 Subpart C §15.247 (October 1, 2012).
Start of Test	March 28, 2013
Finish of Test	April 01, 2013
Name of Engineer(s)	Ferdinand S. Custodio
Related Document(s)	<ul style="list-style-type: none">FCC KDB Publication Number 558074 D01 DTS Meas Guidance v02 (Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (10/04/2012)).Supporting documents for EUT certification are separate exhibits.

1.2 BRIEF SUMMARY OF RESULTS

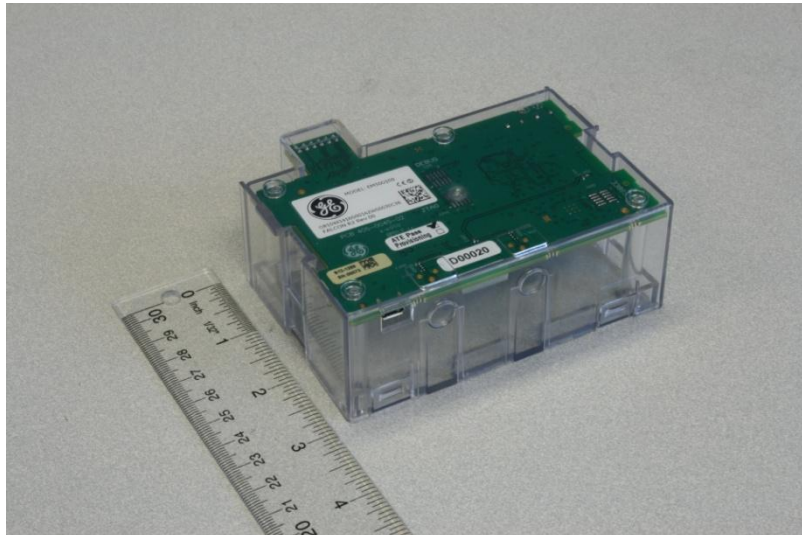
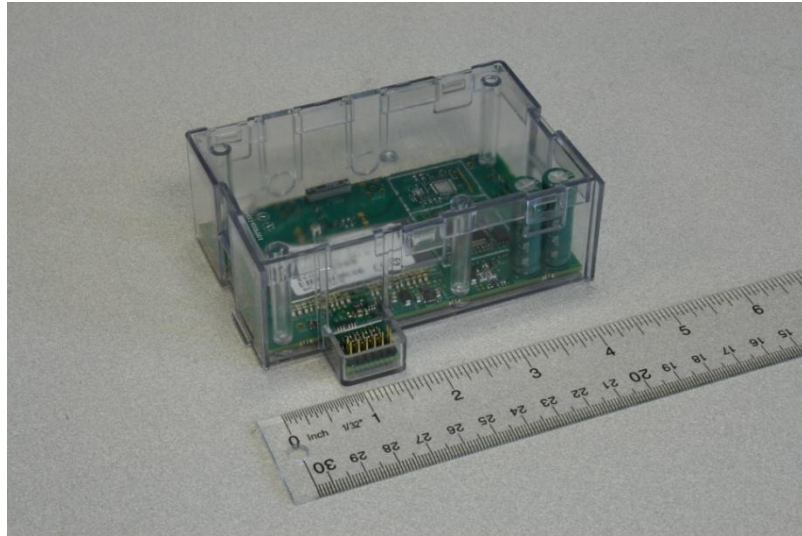
A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.247 is shown below.

Section	§15.247 Spec Clause	Test Description	Result	Comments/ Base Standard
2.1	§15.247(b)(3)	Peak Output Power	Compliant	
2.2	§15.207(a)	Conducted Emissions	Compliant	
2.3	§15.247(a)(2)	Minimum 6 dB RF Bandwidth	Compliant	
2.4	§15.247(d)	Out-of-Band Emissions - Conducted	Compliant	
2.5	§15.247(d)	Band-edge Compliance of RF Conducted Emissions	Compliant	
2.6	§15.247(d)	Spurious Radiated Emissions	Compliant	
2.7	§15.247(e)	Power Spectral Density for Digitally Modulated Device	Compliant	

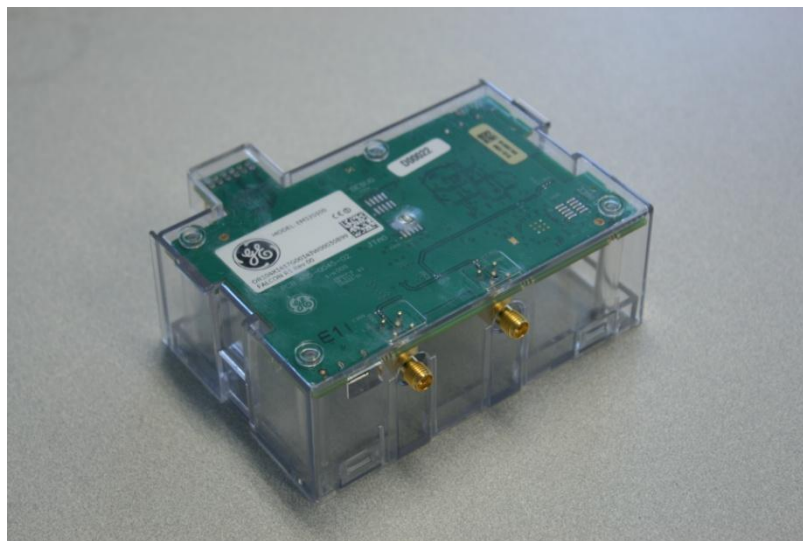
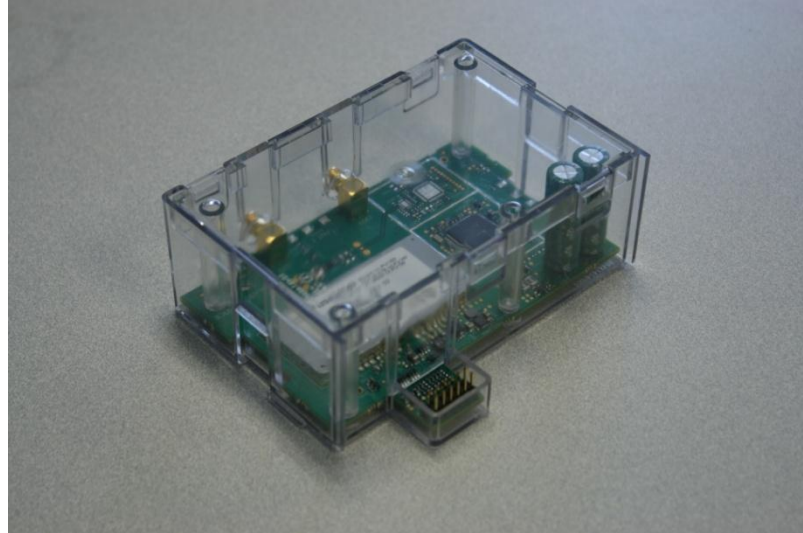
1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was an OnRamp Wireless Falcon RF Board as shown in the photograph below. The EUT contains an OnRamp uNode RF module (XTE-ULPU100) along with a power supply, and a microprocessor. It is used in electric power meters to transmit and receive information from the power meter to an access point. Two models were verified: TRN-2012 uses integral antenna while TRN-2113 uses custom external antennas. The two models are identical except the antenna configuration.



Equipment Under Test (Model TRN-2012)



1.3.2 EUT General Description

EUT Description	RF Board
Model Name	Falcon
Model Number(s)	TRN-2012 and TRN-2113
Rated Voltage	12VDC Nominal voltage.
Output Power	92.47mW (19.66 dBm) conducted 150mW(21.76 dBm) EIRP for Model TRN2012 292mW(24.66 dBm) EIRP for Model TRN2113
Frequency Range	2402 MHz to 2475.63 MHz
Number of Operating Frequencies	38
Channels Verified	Channel 1 (Low Channel 2402 MHz) Channel 20 (Mid Channel 2439.81 MHz) Channel 38 (High Channel 2475.63 MHz)
Modulation Used	DSSS-DBPSK

1.3.3 Antenna Details (TRN2012)

Model	Prestta™ Part No. 1001013
Manufacturer	ethertronics
Antenna Type	Isolated Magnetic Dipole (IMD).
Antenna Gain	2.1 dBi
EUT Antenna Connector	Integral embedded antenna.
Maximum Dimensions	15.0x3.2x3.3mm
Mechanical Mounting	Antenna Assembly is Surface Mounted onto main PCB

1.3.4 Antenna Details (TRN2113)

Model	SP71783 (custom designed for OnRamp Wireless)
Manufacturer	L-Com
Antenna Gain	4.72 dBi
EUT Antenna Connector	RP-SMA Plug
Maximum Dimensions	228.6x25.4x12.7mm

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configurations	Description
A	EUT in transmit/receive mode transmitting through the integral antenna (Model TRN2012) or the external antenna (Model TRN2113).
B	EUT in transmit mode transmitting through the antenna port (Model TRN2113) connected to a spectrum analyzer via a 20dB external attenuator.

1.4.2 EUT Exercise Software

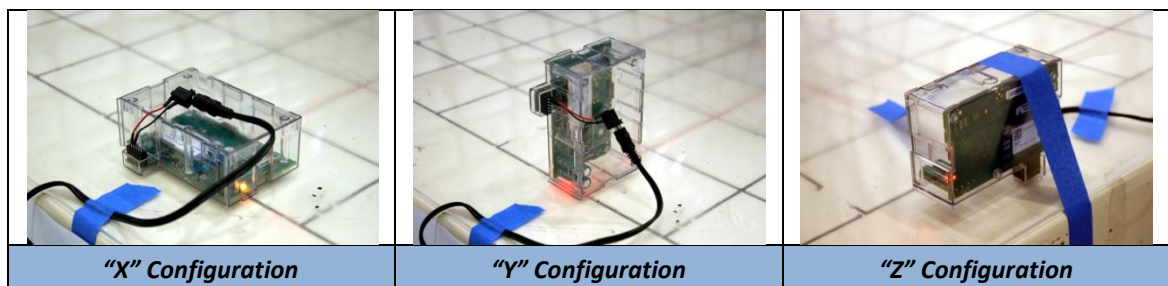
Python based GUI that uses ORW protocol to place the transceiver in TX, RX or Idle mode. For TX mode, Channel and VGA gain are selectable. For RX Channel is selectable and VGA and LNA gains are at maximum. The GUI communicates to the meter communication module over RS232. The version of the GUI used is Beta Version certTools_0.3.

1.4.3 Support Equipment and I/O cables

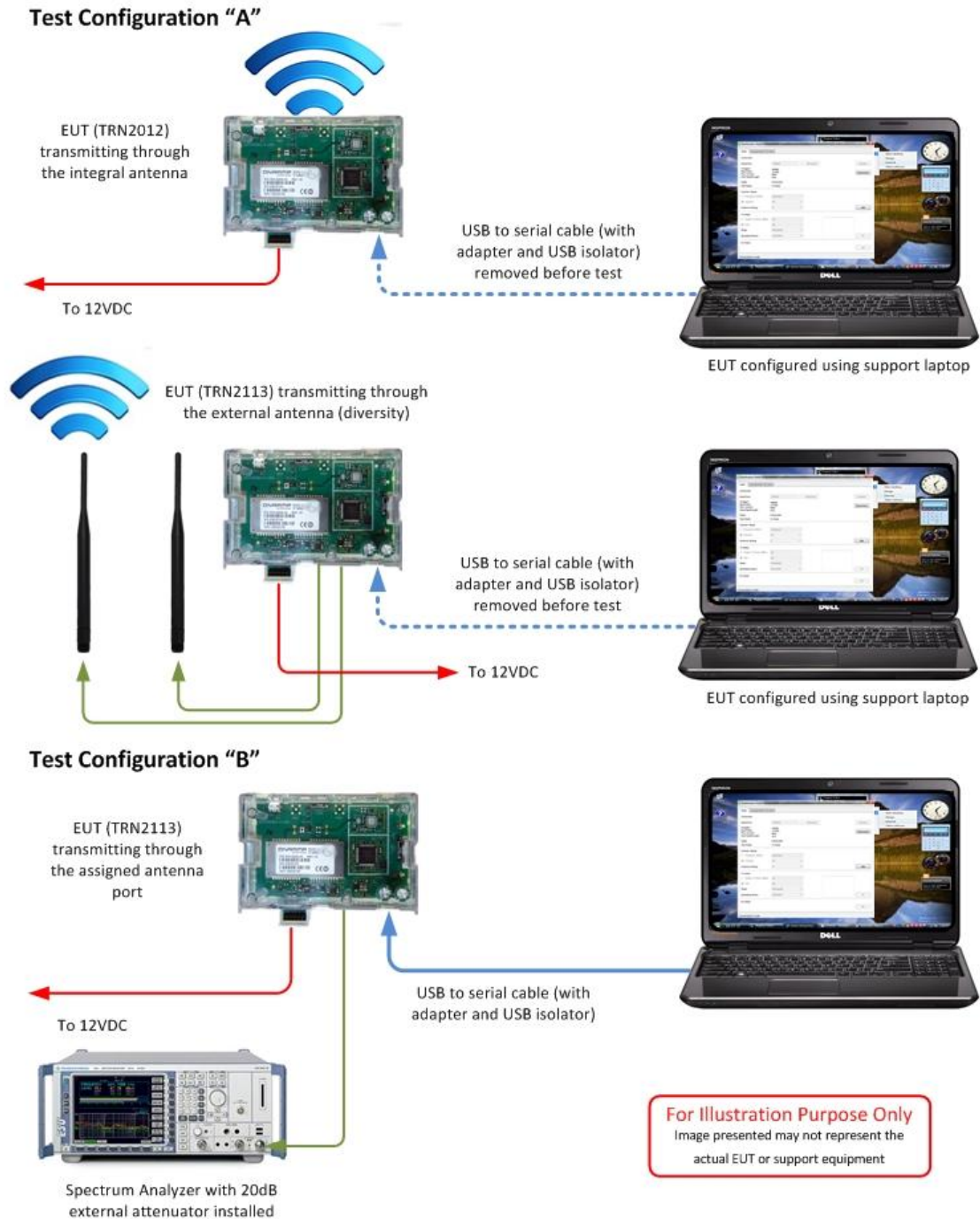
Manufacturer	Equipment/Cable	Description
Dell	Support Laptop	Latitude E6520 SN: FL4N2R1
Dell	Support AC Adapter (Support Laptop)	Model DA130PE1-00 19.5VDC 6.7A
V-Infinity	Support AC Adapter (EUT)	Model 3A-502DN12 12VDC Output 4.16A
ULINX	Support USB to USB Isolator	Model UH401
Generic	Support USB to Serial Adapter	Model TTL-232RG

1.4.4 Worst Case Configuration

Worst-case configuration used in this test report based from Peak Output Power measurements: Low Channel (2402MHz @ 19.66dBm) for Model TRN2113. For radiated measurements X, Y and Z orientations were verified. Worst case position is "Z" which is the typical install position when inside an electric meter.



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 536161A5 and 53616106		
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
OnRamp Wireless
RF Board

2.1 PEAK OUTPUT POWER

2.1.1 Specification Reference

Part 15 Subpart C §15.247(b)(3)

2.1.2 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.

2.1.3 Equipment Under Test and Modification State

Serial No: 53616106 / Test Configuration B

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

April 01, 2013/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

Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

2.1.7 Additional Observations

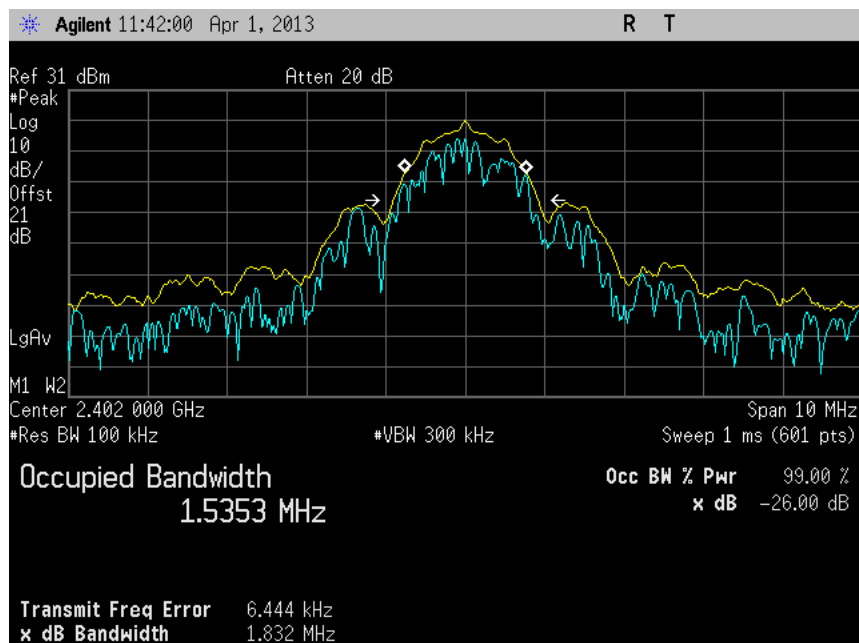
- This is a conducted test using Option 1 under Section 8.2.1 of FCC KDB Publication Number 558074 D01 DTS Meas Guidance v02(Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (10/04/2012)).
- An offset of 21.0dB was added to compensate for the external attenuator and cable used.
- EUT is configured to transmit continuously (100% duty cycle).
- Span was set to encompass the entire emission bandwidth of the signal.
- RBW=1MHz while VBW=>3X RBW.
- Measurement points verified > 2X span/RBW. 8192 points > 6.
- Sweep time = auto couple.

- Detector = power averaging (RMS).
- Trace was averaged 100 times in power averaging mode.
- Power was measured using the spectrum analyzer built-in power measurement function by integrating the spectrum across the 26 dB emission bandwidth of the signal.
- Measured 26 dB emission bandwidth of the EUT is 1.832MHz.

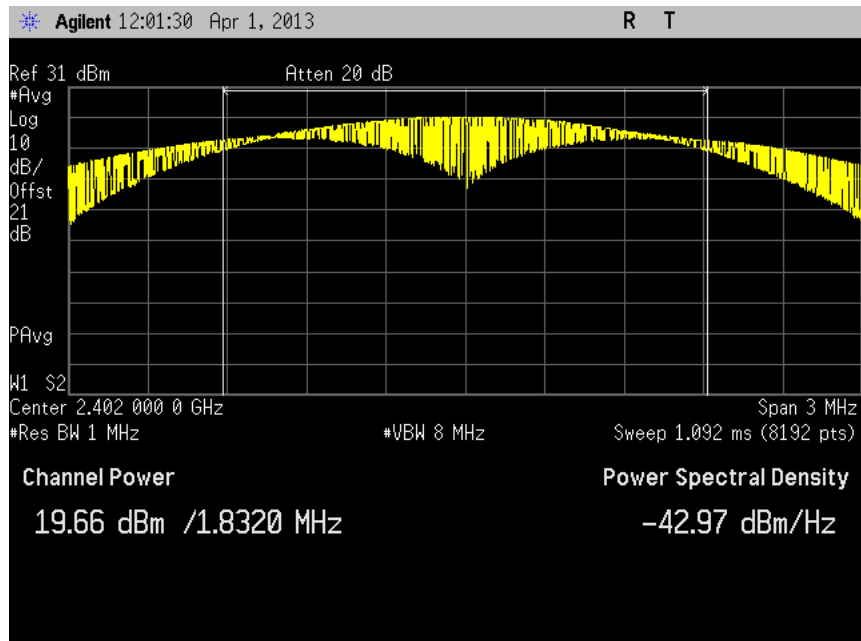
2.1.8 Test Results

See attached table and plots

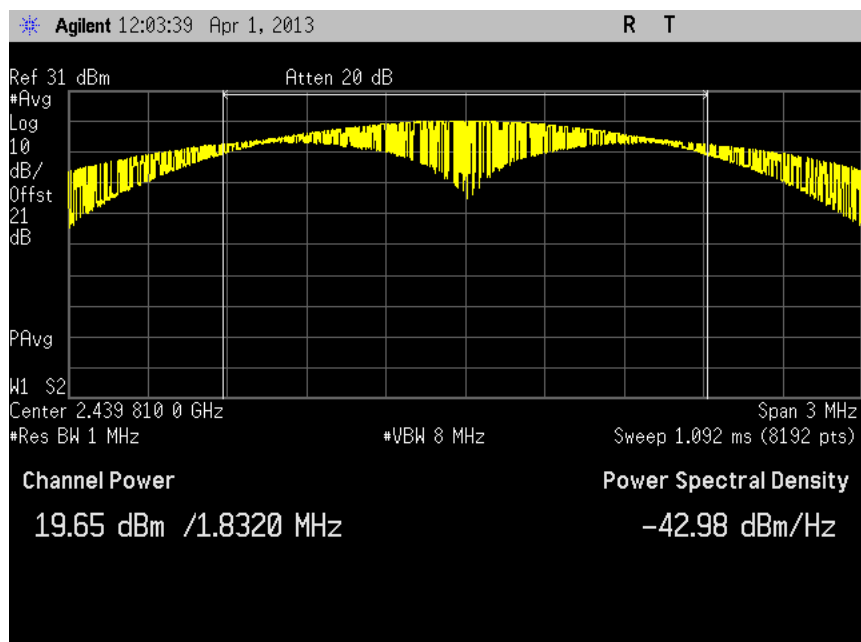
Low Channel (2402 MHz)	Mid Channel (2439.81 MHz)	High Channel (2475.63 MHz)
19.66 dBm	19.65 dBm	19.59 dBm
EUT complies with 30 dBm limit (maximum conducted output power)		



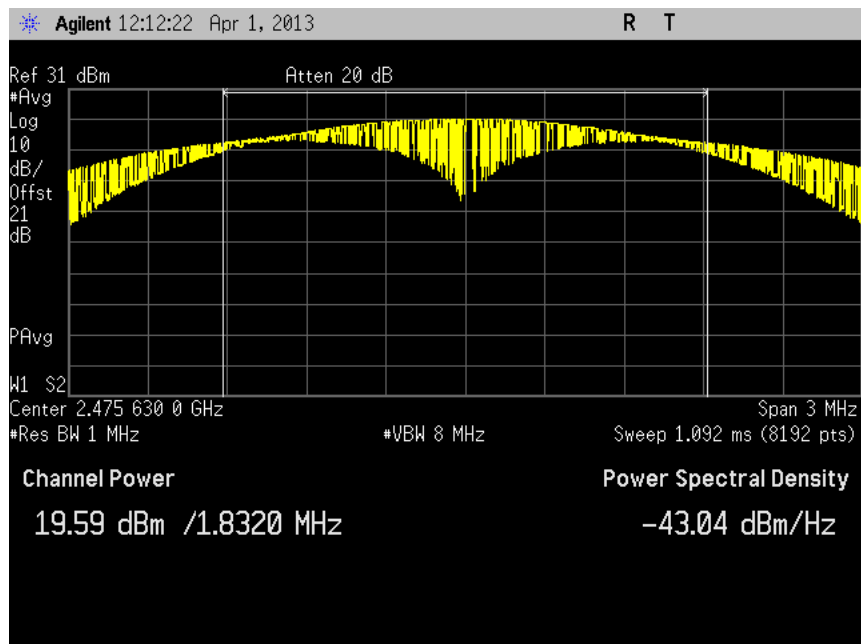
EUT EBW (26 dB BW) = 1.832MHz



Low Channel (2402 MHz)



Mid Channel (2439.81 MHz)



High Channel (2475.63 MHz)

2.2 CONDUCTED EMISSIONS

2.2.1 Specification Reference

Part 15 Subpart C §15.207(a)

2.2.2 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.*

2.2.3 Equipment Under Test and Modification State

Serial No: 53616106/ Test Configuration A

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

April 01, 2013/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

Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

2.2.7 Additional Observations

- The EUT is a RF board and is not AC powered.
- To show general compliance to the present requirement, the EUT was verified with a representative 12VDC power source.
- The EUT was set to transmit mode. Only the worst channel and model presented.



- 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.

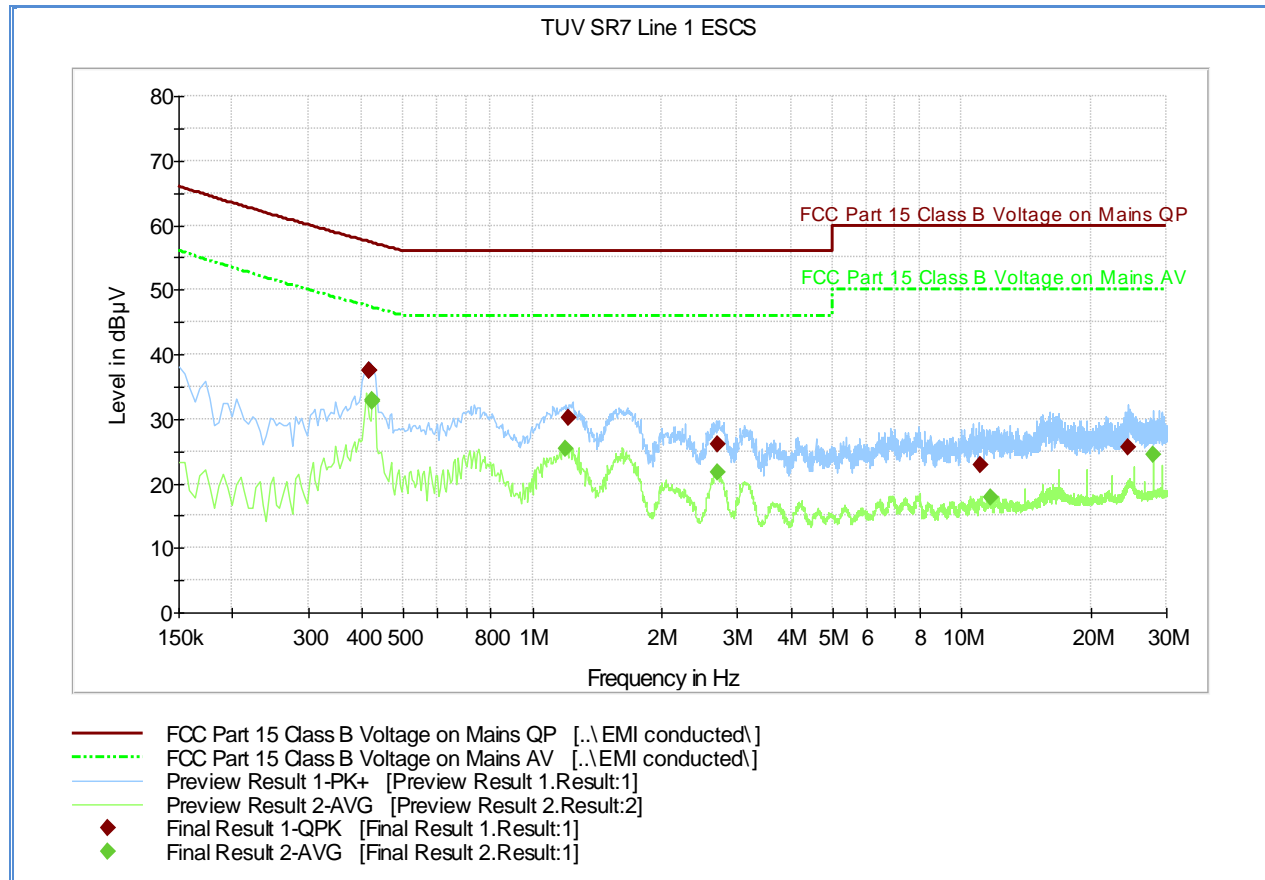
2.2.8 Sample Computation (Conducted Emission – Quasi Peak)

Measuring equipment raw measurement (dbμV) @ 150kHz			5.5
Correction Factor (dB)	Asset# 8607 (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 (dbμV) @ 150kHz			26.2

2.2.9 Test Results

Compliant. See attached plots and tables.

2.2.10 Line 1 (Phase A) SN 53616106 with external antenna



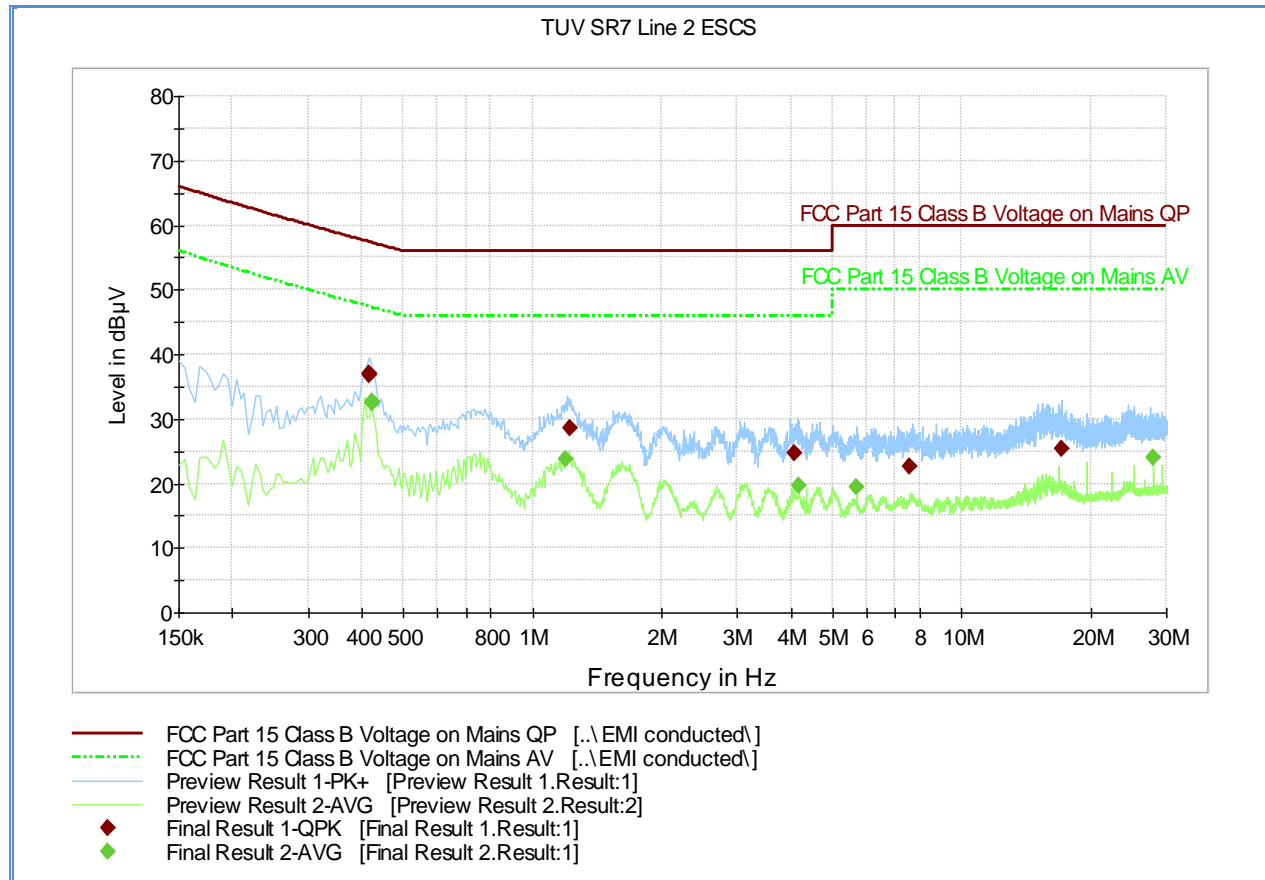
Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.415500	37.4	1000.0	9.000	Off	L1	20.2	20.0	57.4
0.415500	37.6	1000.0	9.000	Off	L1	20.2	19.9	57.4
1.216500	30.1	1000.0	9.000	Off	L1	20.3	25.9	56.0
2.692500	26.1	1000.0	9.000	Off	L1	20.3	29.9	56.0
11.094000	22.8	1000.0	9.000	Off	L1	20.5	37.2	60.0
24.423000	25.5	1000.0	9.000	Off	L1	21.3	34.5	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.424500	32.8	1000.0	9.000	Off	L1	20.2	14.4	47.2
0.424500	32.7	1000.0	9.000	Off	L1	20.2	14.5	47.2
1.194000	25.5	1000.0	9.000	Off	L1	20.3	20.5	46.0
2.706000	21.6	1000.0	9.000	Off	L1	20.3	24.4	46.0
11.661000	17.8	1000.0	9.000	Off	L1	20.5	32.2	50.0
27.973500	24.4	1000.0	9.000	Off	L1	21.5	25.6	50.0

2.2.11 Line 2 (Phase B) SN 53616106 with external antenna



Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.415500	37.0	1000.0	9.000	Off	N	21.1	20.5	57.4
0.415500	36.9	1000.0	9.000	Off	N	21.1	20.5	57.4
1.225500	28.6	1000.0	9.000	Off	N	21.1	27.4	56.0
4.069500	24.6	1000.0	9.000	Off	N	21.2	31.4	56.0
7.588500	22.7	1000.0	9.000	Off	N	21.2	37.3	60.0
17.056500	25.3	1000.0	9.000	Off	N	21.6	34.7	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.424500	32.6	1000.0	9.000	Off	N	21.1	14.7	47.2
0.424500	32.5	1000.0	9.000	Off	N	21.1	14.7	47.2
1.194000	23.9	1000.0	9.000	Off	N	21.1	22.1	46.0
4.168500	19.7	1000.0	9.000	Off	N	21.2	26.3	46.0
5.676000	19.5	1000.0	9.000	Off	N	21.2	30.5	50.0
27.982500	24.0	1000.0	9.000	Off	N	22.2	26.0	50.0



2.3 MINIMUM 6 dB RF BANDWIDTH

2.3.1 Specification Reference

Part 15 Subpart C §15.247(a)(2)

2.3.2 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.

2.3.3 Equipment Under Test and Modification State

Serial No: 53616106 / Test Configuration B

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

April 01, 2013/FSC

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

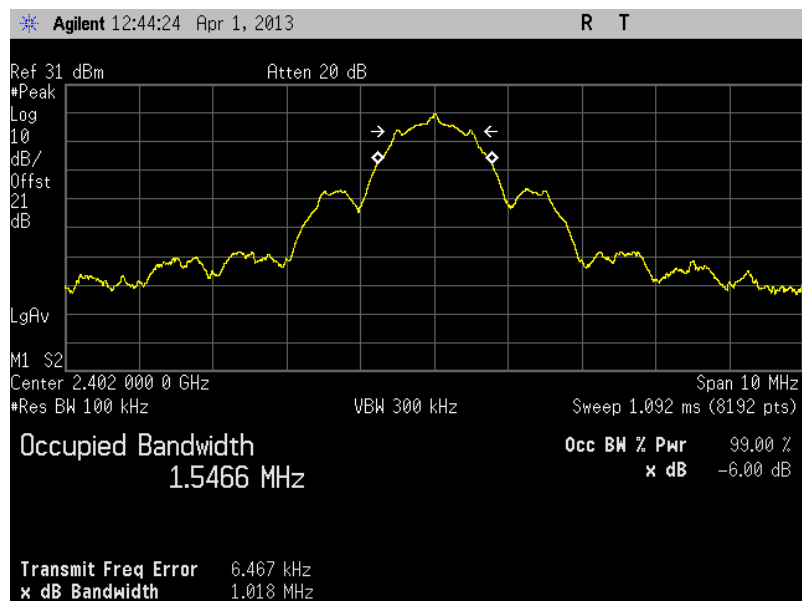
Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

2.3.7 Additional Observations

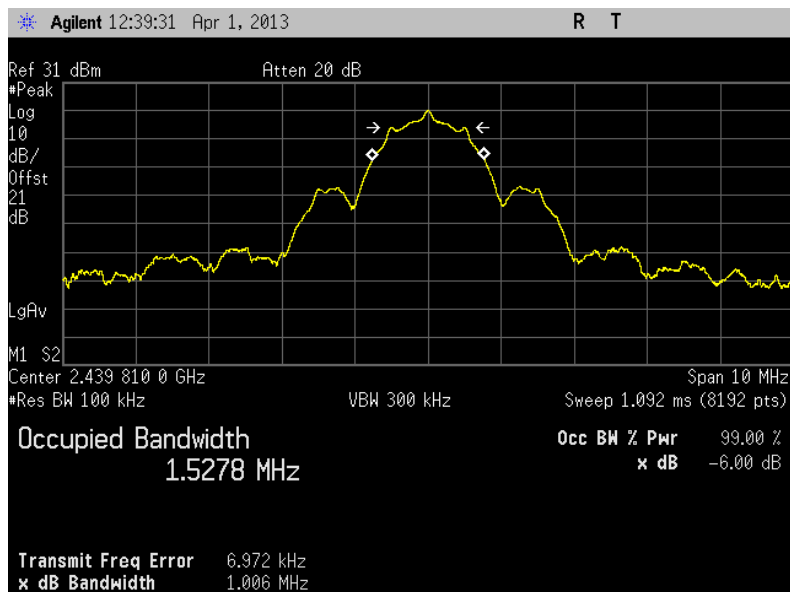
- This is a conducted test.
- An offset of 21.0dB was added to compensate for the external attenuator and cable used.
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the span (not to exceed 100kHz).
- VBW is 3X RBW.
- Sweep is auto.
- Detector is peak.
- Trace is set to max hold.
- Trace was allowed to stabilize.
- The automatic bandwidth measurement capability of a spectrum analyzer was employed using the X dB bandwidth mode with X set to 6 dB.

2.3.8 Test Results

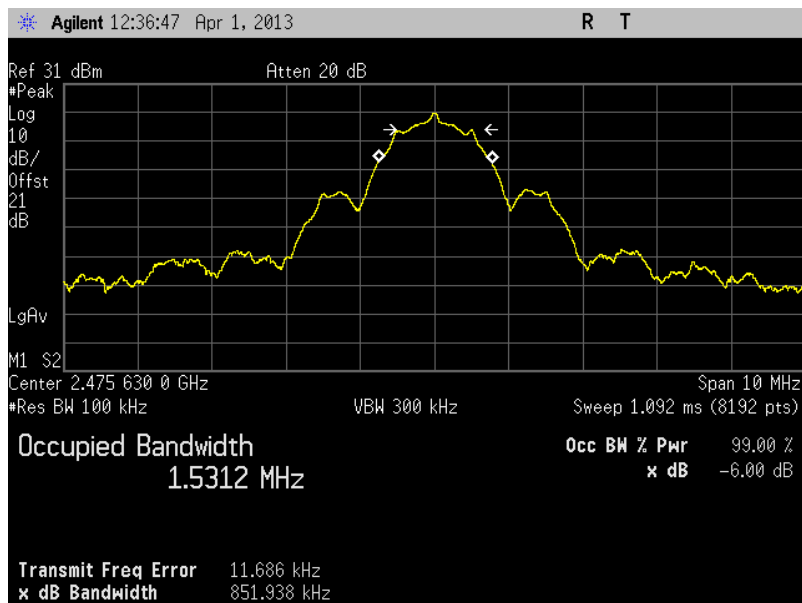
Low Channel (2402 MHz)	Mid Channel (2439.81 MHz)	High Channel (2475.63 MHz)
1.018 MHz	1.006 MHz	0.852 MHz
All measured 6dB bandwidths > 500kHz. EUT complies.		



Low Channel



Mid Channel



High Channel



2.4 OUT-OF-BAND EMISSIONS - CONDUCTED

2.4.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.4.2 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)).

2.4.3 Equipment Under Test and Modification State

Serial No: 53616106 / Test Configuration B

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

April 01, 2013/FSC

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

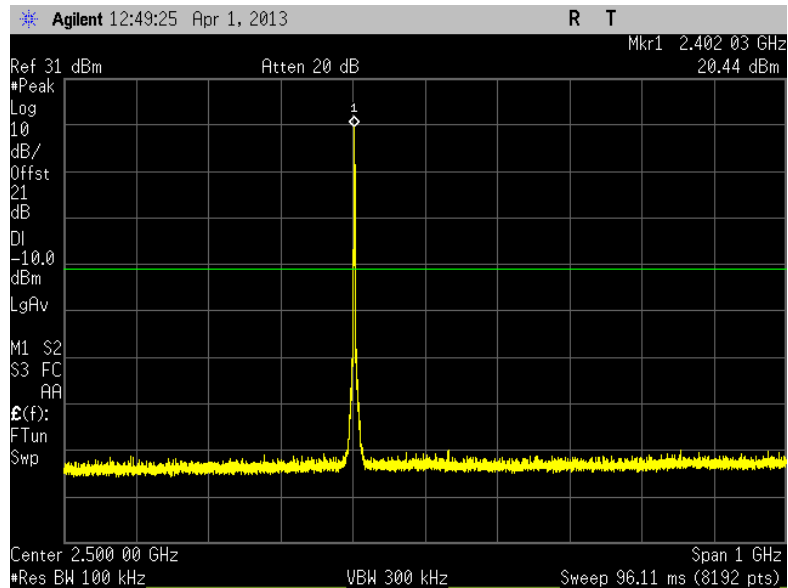
Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

2.4.7 Additional Observations

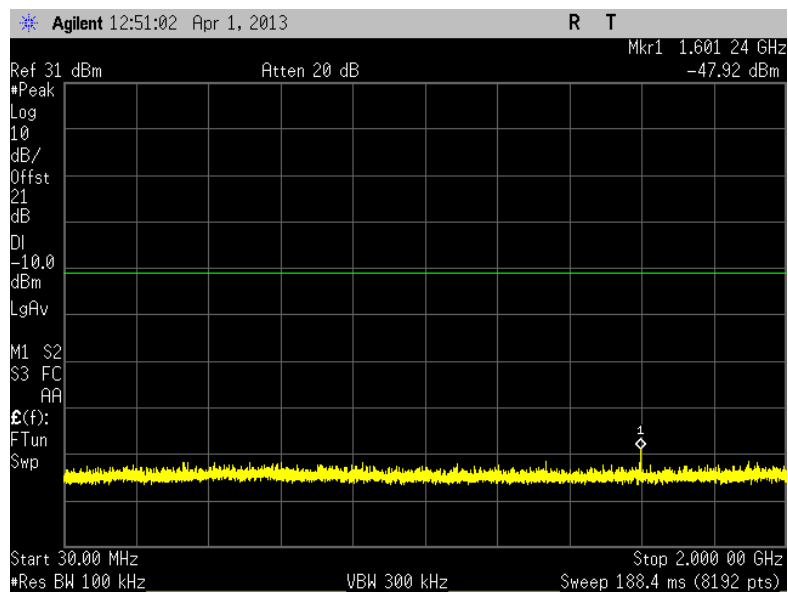
- This is a conducted test.
- An offset of 21.0dB was added to compensate for the external attenuator and cable used.
- RBW is 100kHz.VBW is 3X RBW.
- Sweep is auto. Detector is peak. Trace is max hold.
- Initial scan was performed to determine the highest level of the desired power within the band. Limit (display line) was drawn 30dB below this level.
- Spectrum was searched from 30MHz up to 26.5GHz.

2.4.8 Test Results

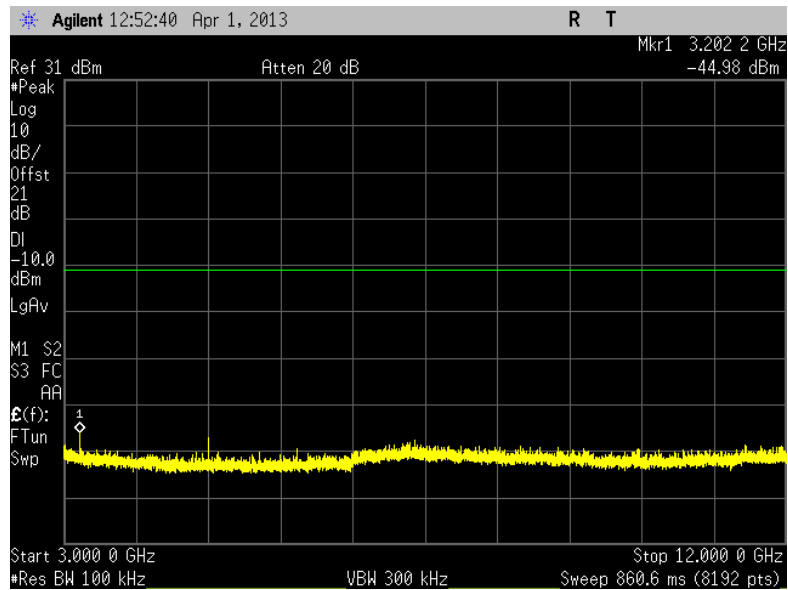
See attached plots.



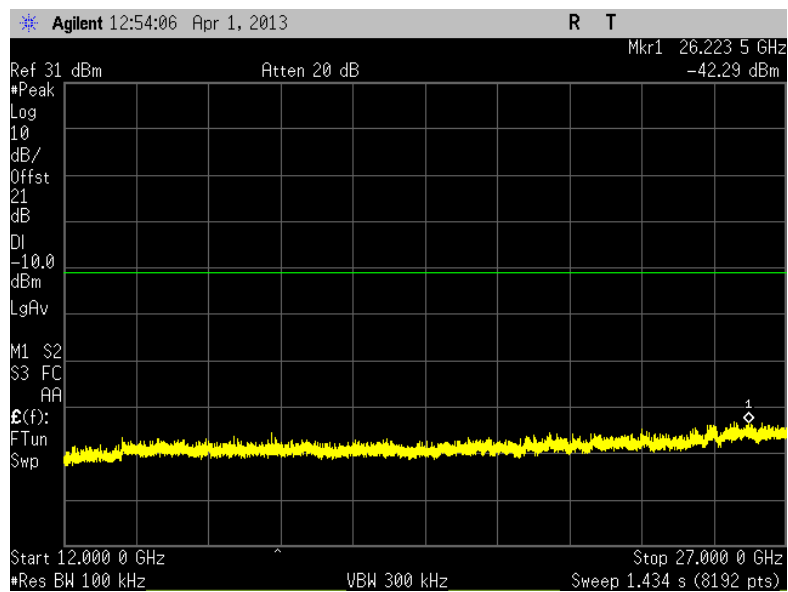
Low Channel (2 to 3GHz)



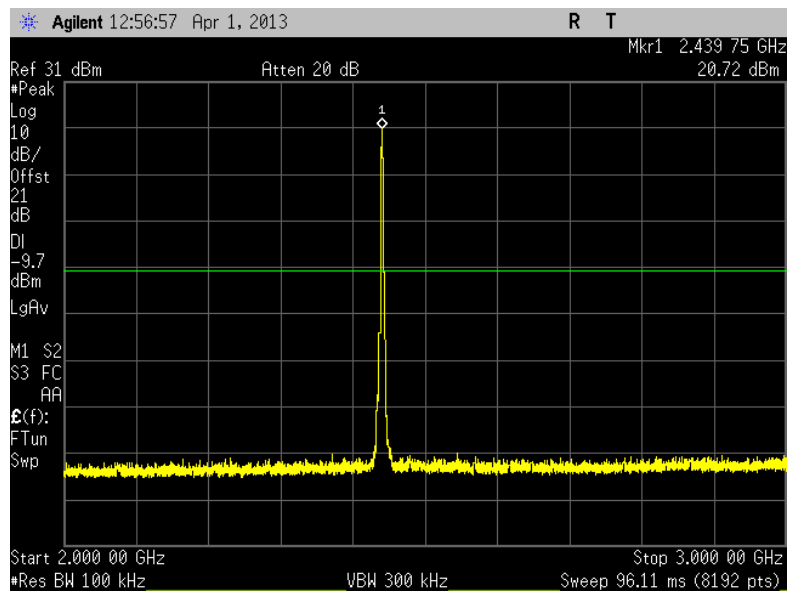
Low Channel (30MHz to 2GHz)



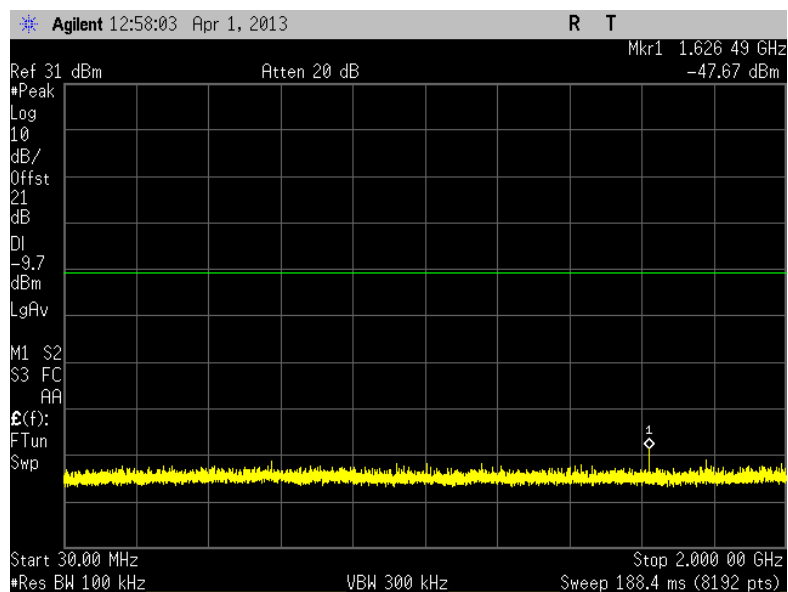
Low Channel (3GHz to 12GHz)



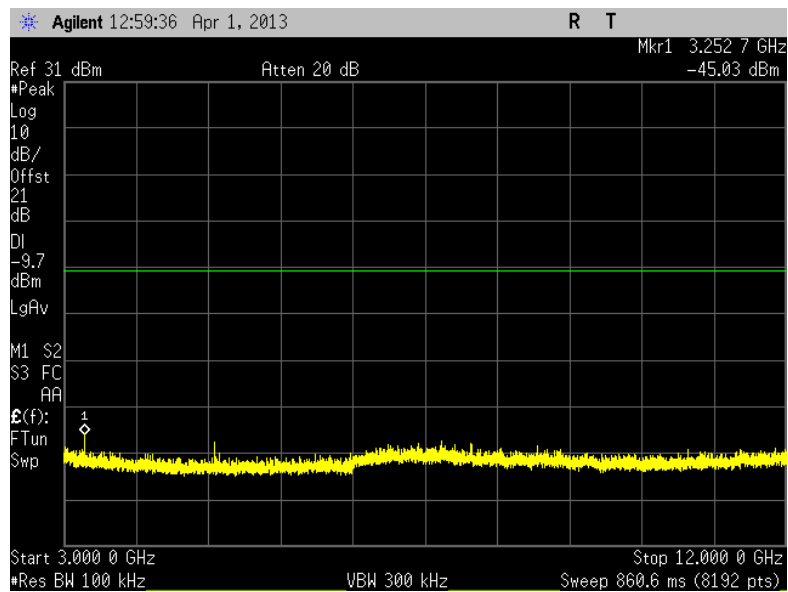
Low Channel (12GHz to 26.5GHz)



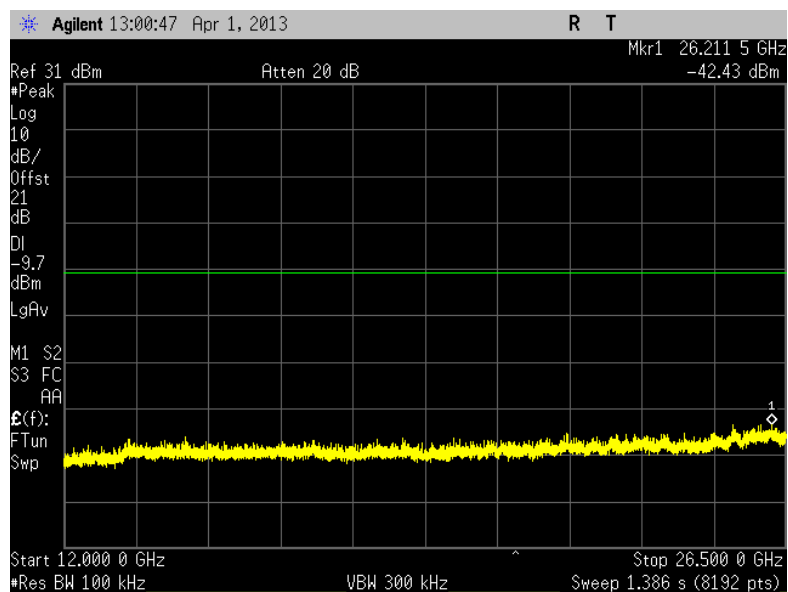
Mid Channel (2GHz to 3GHz)



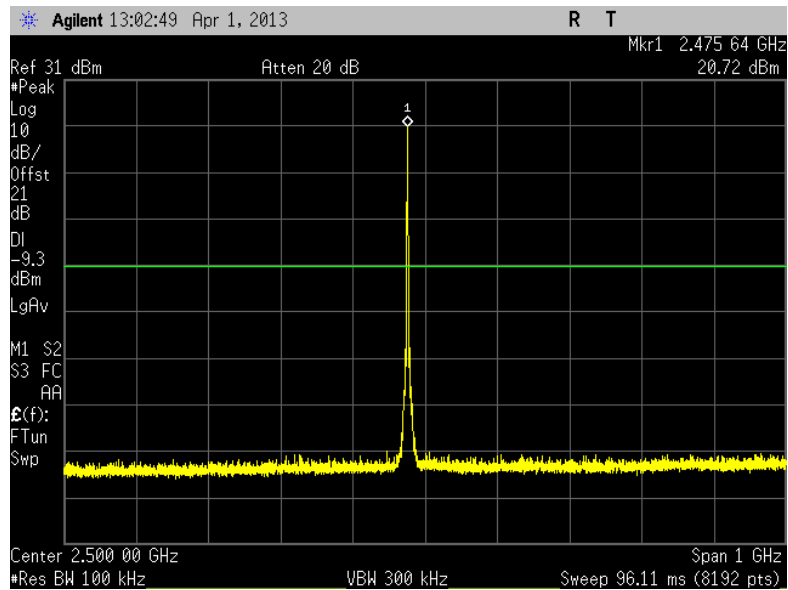
Mid Channel (30MHz to 2GHz)



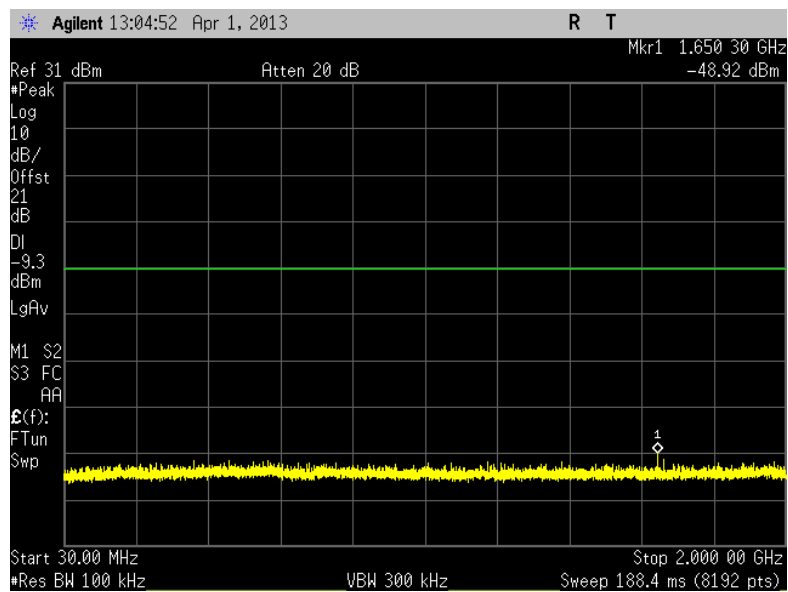
Mid Channel (3GHz to 12GHz)



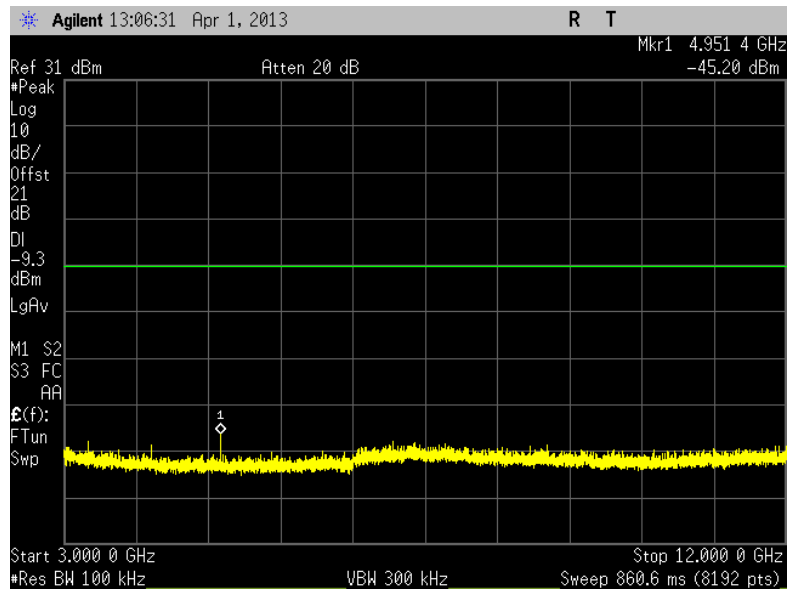
Mid Channel (12GHz to 26.5GHz)



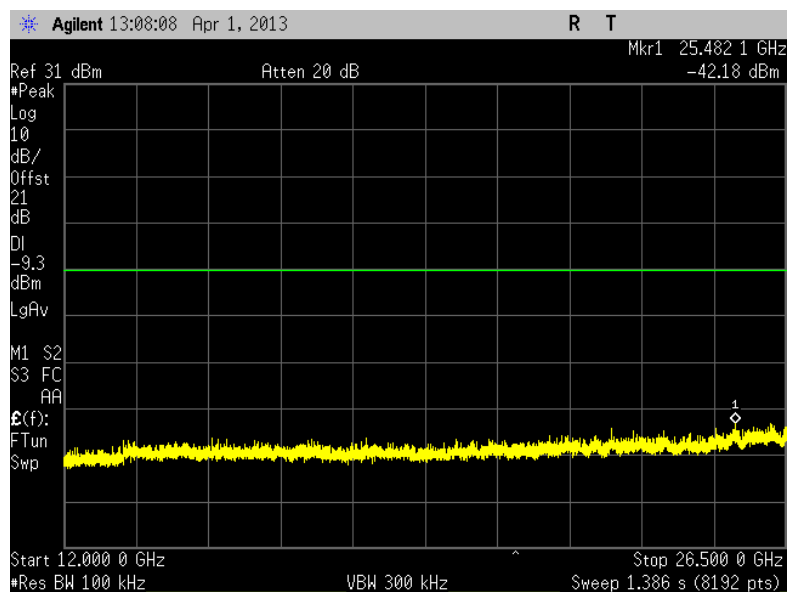
High Channel (2GHz to 3GHz)



High Channel (30MHz to 2GHz)



High Channel (3GHz to 12GHz)



High Channel (12GHz to 26.5GHz)

2.5 BAND-EDGE COMPLIANCE OF RF CONDUCTED 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: 53616106 / Test Configuration B

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

April 01, 2013/FSC

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

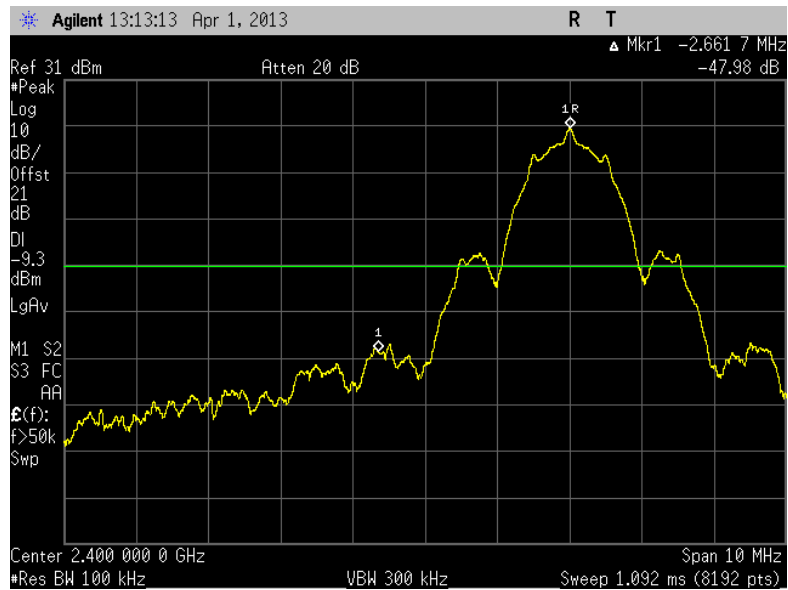
Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

2.5.7 Additional Observations

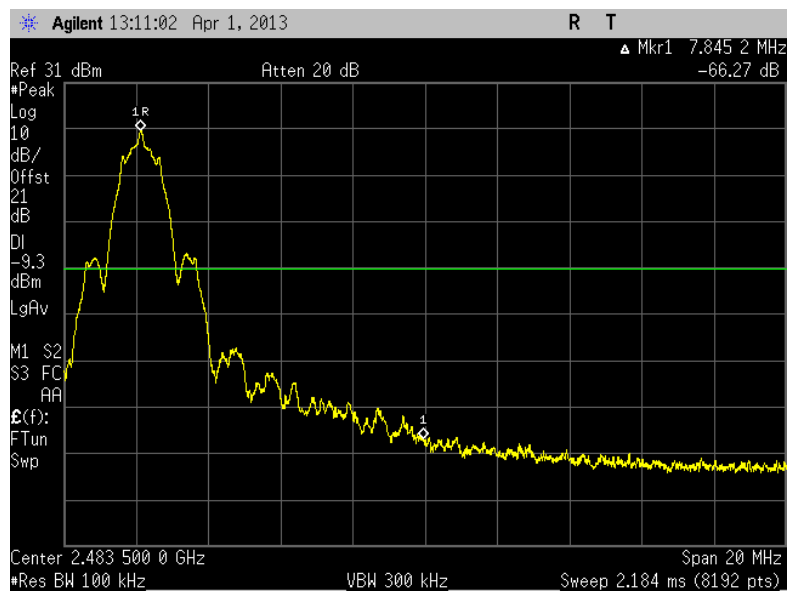
- Setup is identical to “Out-of-Band Emissions – Conducted” test (previous test).
- Band-edge (2400MHz and 2483.5MHz) emissions were verified in this test.
- The spectrum analyzer was centred on the band-edge frequency while setting the EUT to the corresponding transmit channel (i.e. Low Channel for lower band-edge).
- Limit is 30dB below the highest level of the desired power within the band.

2.5.8 Test Results

Complies. See attached plots.



Lower Band-Edge



Higher Band-Edge



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: 536161A5 and 53616106 / Test Configuration A

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

March 28,29 and April 1, 2013/FSC

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

Ambient Temperature	24.3-25.1°C
Relative Humidity	40.2-44.5%
ATM Pressure	99.2-99.7 kPa

2.6.7 Additional Observations

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



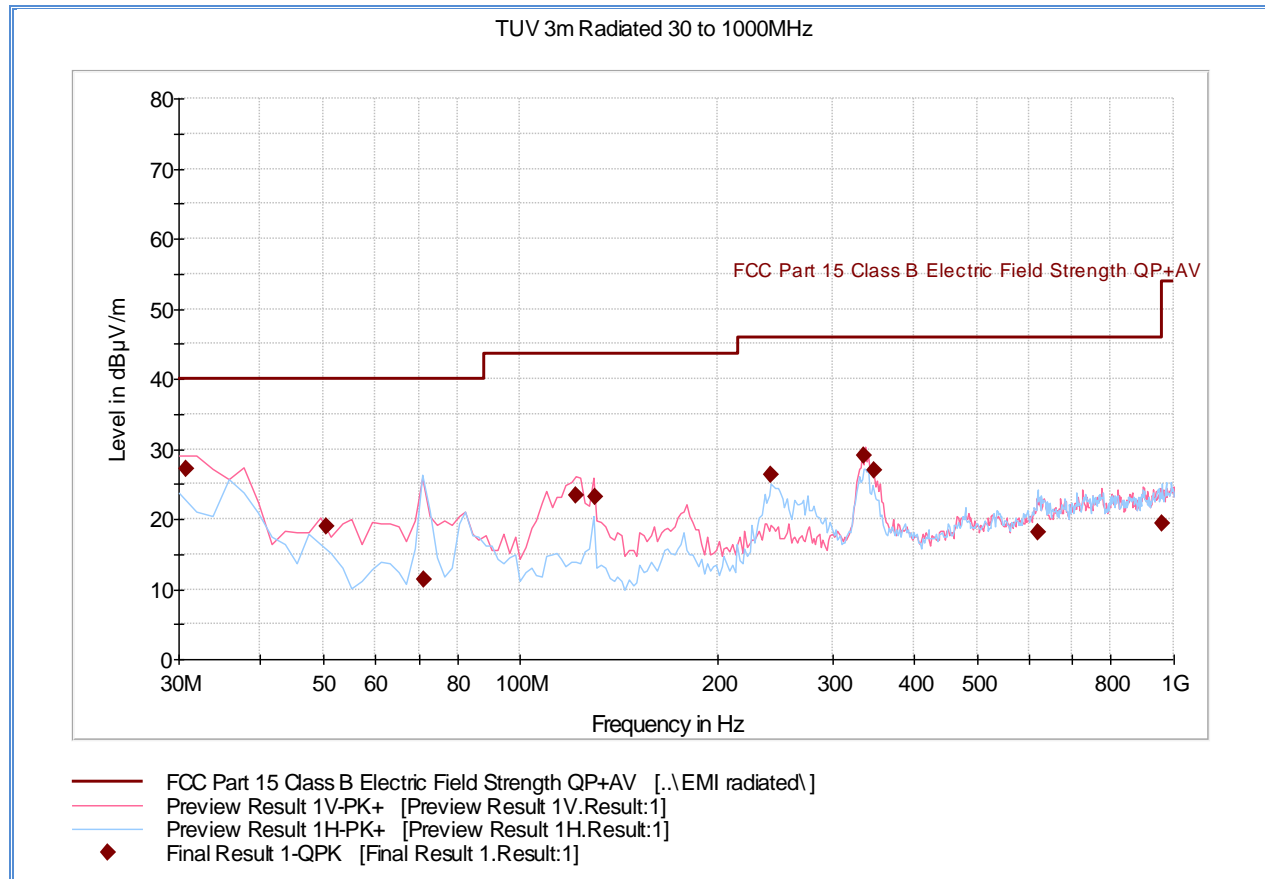
2.6.8 Sample Computation (Radiated Emission)

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 (Low Channel – Worst Case Configuration Transmit Mode)

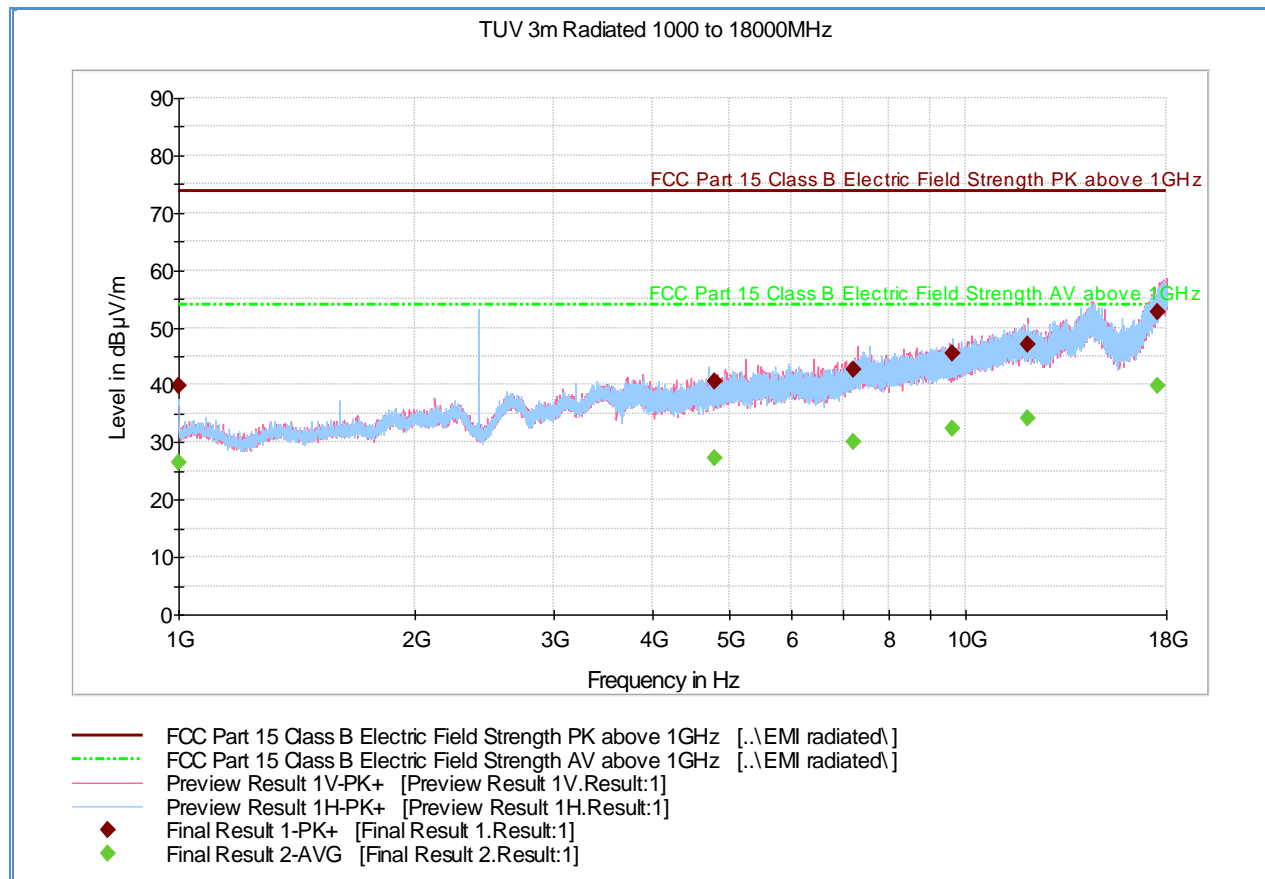


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.800000	27.1	1000.0	120.000	103.0	V	222.0	-12.4	12.9	40.0
50.358878	18.9	1000.0	120.000	100.0	V	82.0	-20.2	21.1	40.0
71.261643	11.4	1000.0	120.000	106.0	H	56.0	-21.9	28.6	40.0
121.722725	23.3	1000.0	120.000	100.0	V	138.0	-20.6	20.2	43.5
130.018277	23.1	1000.0	120.000	103.0	V	262.0	-20.7	20.4	43.5
241.323768	26.3	1000.0	120.000	114.0	H	276.0	-14.2	19.7	46.0
335.494269	29.0	1000.0	120.000	143.0	V	174.0	-11.6	17.0	46.0
347.381483	27.0	1000.0	120.000	123.0	V	174.0	-10.2	19.0	46.0
618.077996	18.1	1000.0	120.000	205.0	H	200.0	-3.4	27.9	46.0
957.778357	19.3	1000.0	120.000	138.0	H	67.0	0.4	26.7	46.0

Test Notes: Only worst case channel presented for spurious emissions below 1GHz. See Section 1.4.14 for worst case configuration.

2.6.11 Test Results Above 1GHz (Transmit Mode Low Channel Model TRN2012)



Peak Data

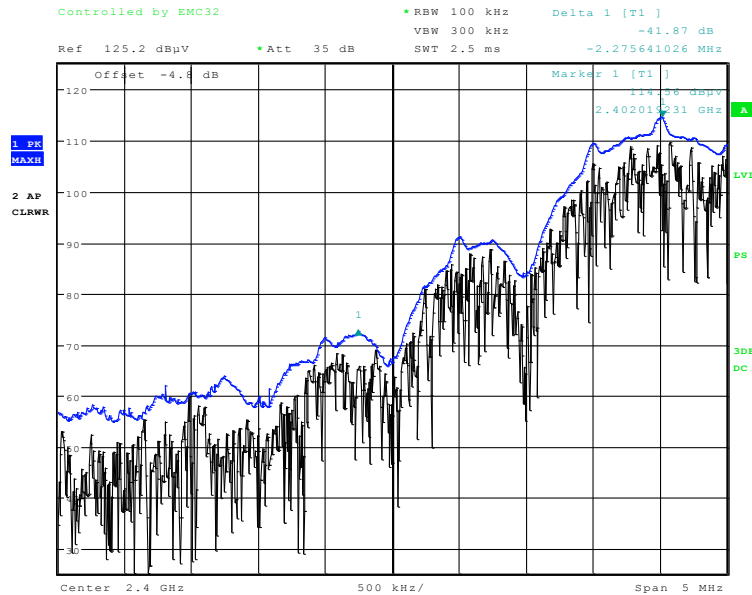
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	40.0	1000.0	1000.000	100.0	H	352.0	-11.4	33.9	73.9
4804.020000	40.6	1000.0	1000.000	249.0	H	63.0	1.9	33.3	73.9
7206.000000	42.8	1000.0	1000.000	185.0	V	253.0	6.8	31.1	73.9
9607.893333	45.5	1000.0	1000.000	213.0	H	359.0	9.2	28.4	73.9
12009.866667	47.0	1000.0	1000.000	210.0	V	44.0	12.7	26.9	73.9
17531.140000	52.7	1000.0	1000.000	334.0	V	95.0	19.6	21.2	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	26.5	1000.0	1000.000	100.0	H	352.0	-11.4	27.4	53.9
4804.020000	27.3	1000.0	1000.000	249.0	H	63.0	1.9	26.6	53.9
7206.000000	30.1	1000.0	1000.000	185.0	V	253.0	6.8	23.8	53.9
9607.893333	32.3	1000.0	1000.000	213.0	H	359.0	9.2	21.6	53.9
12009.866667	34.1	1000.0	1000.000	210.0	V	44.0	12.7	19.8	53.9
17531.140000	39.8	1000.0	1000.000	334.0	V	95.0	19.6	14.1	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Band edge measurement was performed with the notch filter removed. Lower band edge was verified manually using 100 kHz RBW (see attached plot Section 2.7.14).

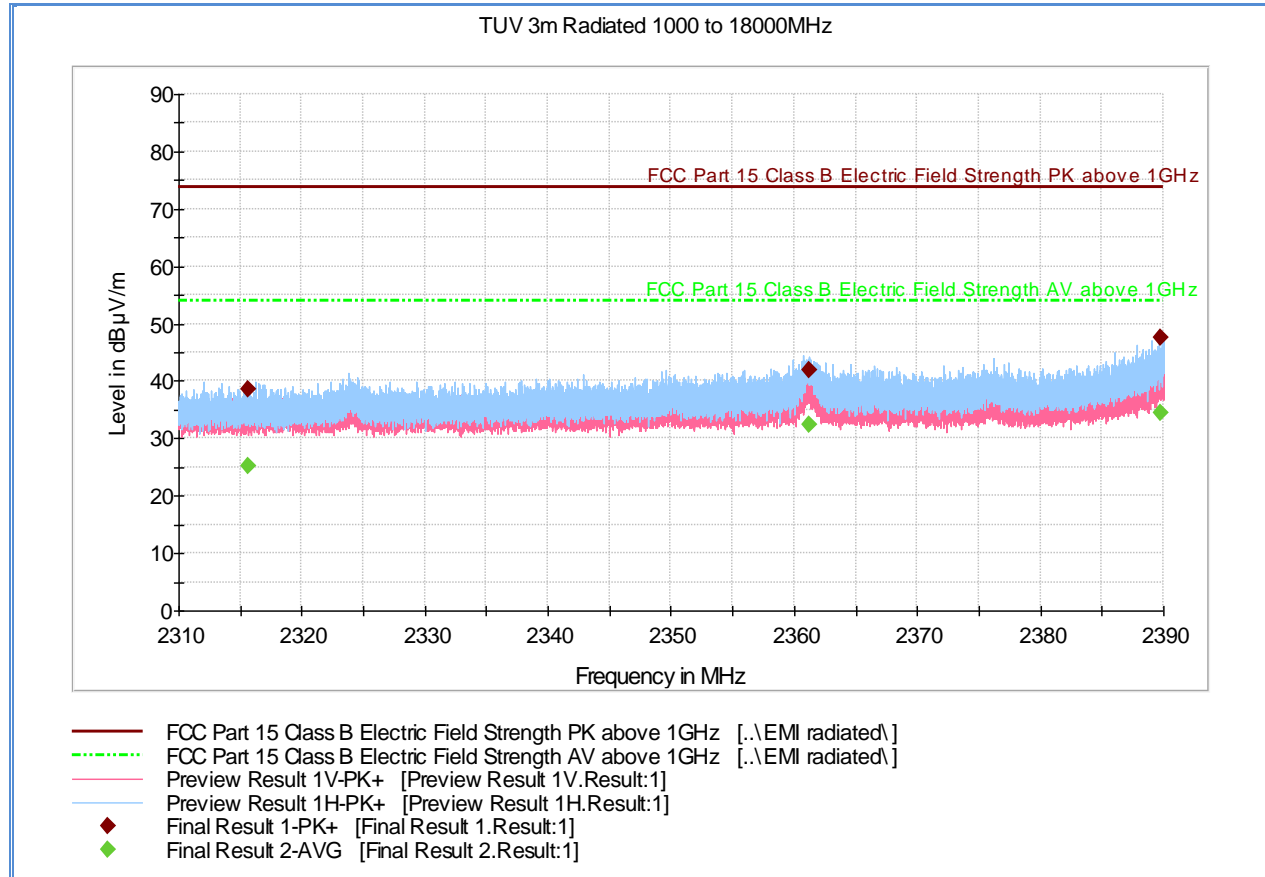
2.6.12 Test Results Lower Band Edge (Radiated - Low Channel using 100 kHz RBW)



Date: 28.MAR.2013 13:19:40

Test Notes: Carrier frequency (Low Channel) was maximized for this test. Correction factor of -4.8dB is from the cable, antenna and preamp used. The EUT complies with the conducted power limits based on the use of RMS averaging over a time interval therefore the limit for this test is -30dBc. The highest measured emission close to the lower band edge is -41.87 dBc. EUT complies.

2.6.13 Test Results Above 1GHz (Low Channel Transmit Mode - Restricted Band from 2310 MHz to 2390 MHz Model TRN2012)



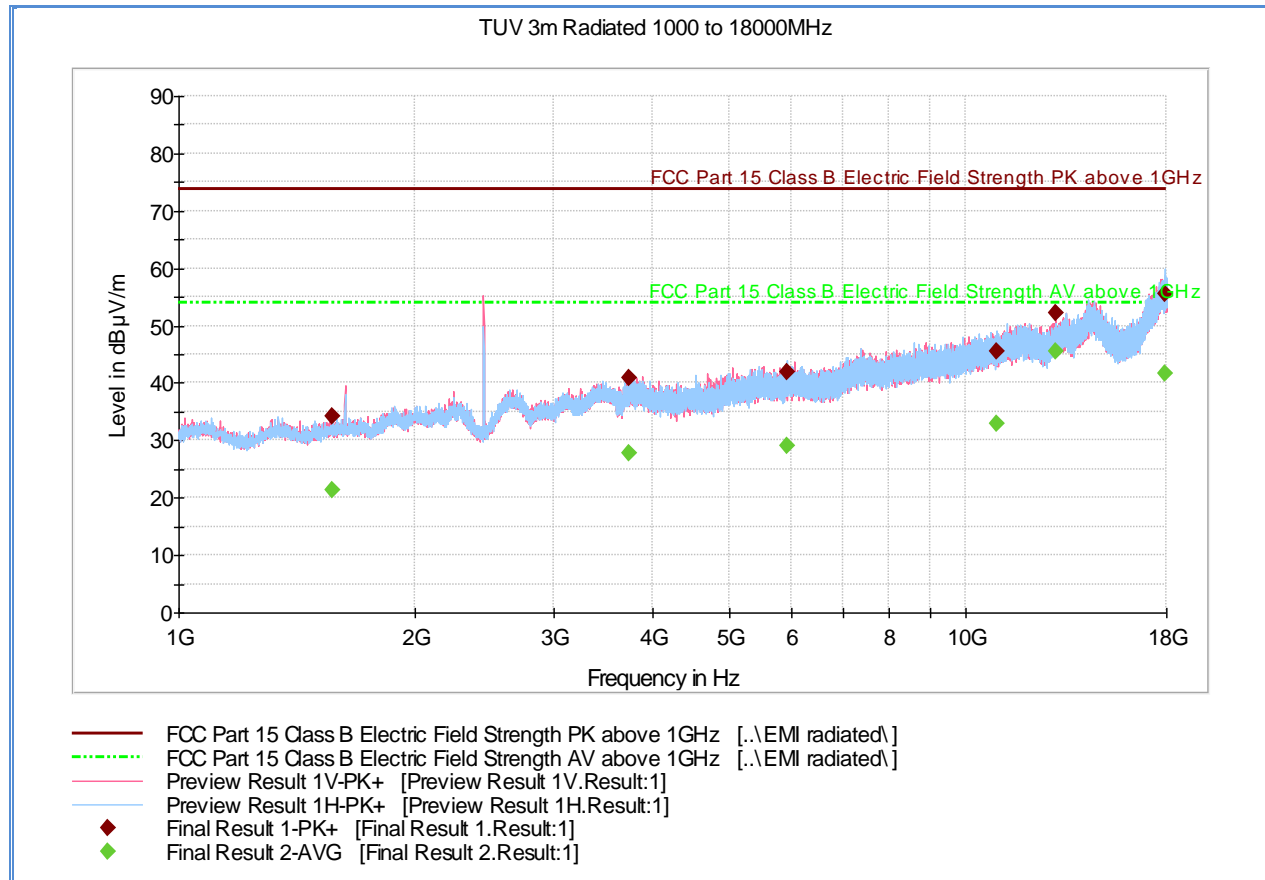
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2315.654667	38.6	1000.0	1000.000	223.0	H	45.0	-5.5	35.3	73.9
2361.214667	41.9	1000.0	1000.000	171.0	H	321.0	-5.1	32.0	73.9
2389.750667	47.6	1000.0	1000.000	147.0	H	328.0	-4.9	26.3	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)
2315.654667	25.1	1000.0	1000.000	223.0	H	45.0	-5.5	28.8	53.9
2361.214667	32.4	1000.0	1000.000	171.0	H	321.0	-5.1	21.5	53.9
2389.750667	34.4	1000.0	1000.000	147.0	H	328.0	-4.9	19.5	53.9

2.6.14 Test Results Above 1GHz (Transmit Mode Mid Channel Model TRN2012)



Peak Data

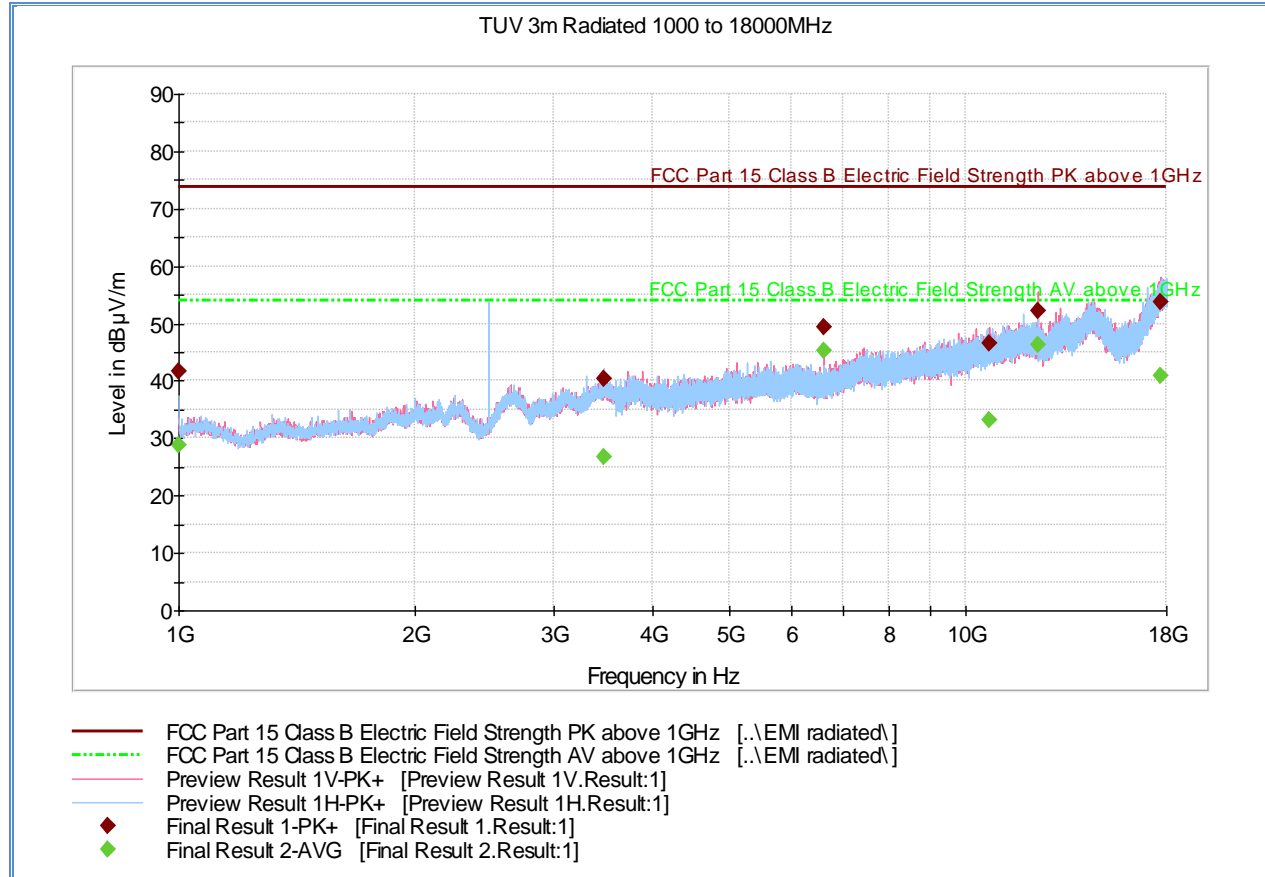
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1564.913333	34.2	1000.	1000.000	155.0	H	331.0	-8.9	39.7	73.9
3728.320000	41.0	1000.	1000.000	360.0	H	331.0	0.5	32.9	73.9
5922.926667	42.0	1000.	1000.000	258.0	H	268.0	4.4	31.9	73.9
10962.380000	45.6	1000.	1000.000	400.0	H	186.0	11.5	28.3	73.9
13012.340000	52.1	1000.	1000.000	109.0	V	26.0	12.9	21.8	73.9
17907.286667	55.6	1000.	1000.000	204.0	H	349.0	21.4	18.3	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)
1564.913333	21.3	1000.	1000.000	155.0	H	331.0	-8.9	32.6	53.9
3728.320000	27.7	1000.	1000.000	360.0	H	331.0	0.5	26.2	53.9
5922.926667	29.0	1000.	1000.000	258.0	H	268.0	4.4	24.9	53.9
10962.380000	32.8	1000.	1000.000	400.0	H	186.0	11.5	21.1	53.9
13012.340000	45.6	1000.	1000.000	109.0	V	26.0	12.9	8.3	53.9
17907.286667	41.7	1000.	1000.000	204.0	H	349.0	21.4	12.2	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter.

2.6.15 Test Results Above 1GHz (Transmit Mode High Channel Model TRN2012)



Peak Data

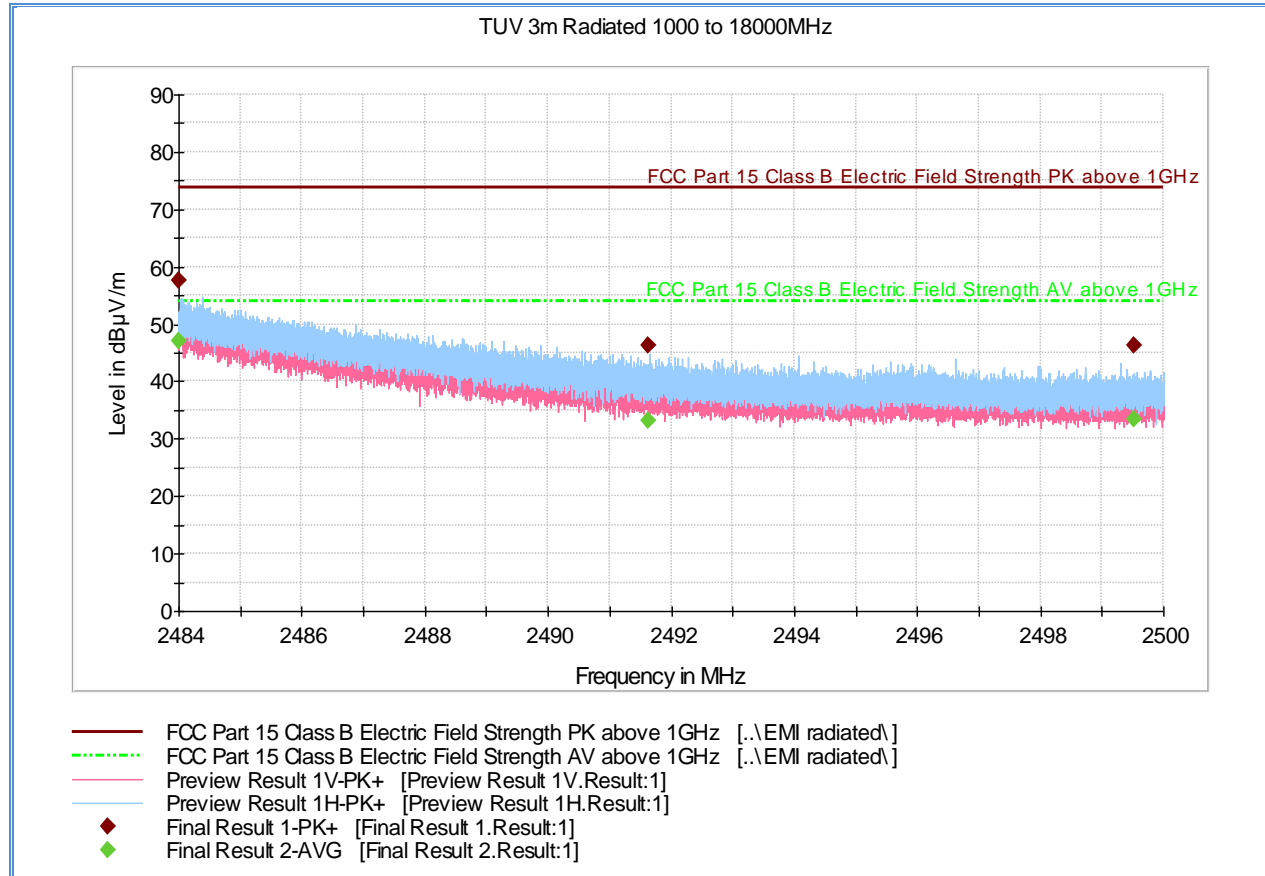
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	41.6	1000.0	1000.000	100.0	H	15.0	-11.4	32.3	73.9
3466.226667	40.3	1000.0	1000.000	351.0	H	285.0	-0.7	33.6	73.9
6601.680000	49.3	1000.0	1000.000	110.0	V	19.0	4.2	24.6	73.9
10736.933333	46.6	1000.0	1000.000	288.0	V	123.0	11.1	27.3	73.9
12378.160000	52.2	1000.0	1000.000	184.0	V	25.0	11.8	21.8	73.9
17674.073333	53.7	1000.0	1000.000	360.0	V	82.0	20.5	20.2	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	28.9	1000.0	1000.000	100.0	H	15.0	-11.4	25.0	53.9
3466.226667	26.8	1000.0	1000.000	351.0	H	285.0	-0.7	27.1	53.9
6601.680000	45.4	1000.0	1000.000	110.0	V	19.0	4.2	8.5	53.9
10736.933333	33.3	1000.0	1000.000	288.0	V	123.0	11.1	20.6	53.9
12378.160000	46.4	1000.0	1000.000	184.0	V	25.0	11.8	7.5	53.9
17674.073333	41.0	1000.0	1000.000	360.0	V	82.0	20.5	12.9	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter.

2.6.16 Test Results Above 1GHz (High Channel Transmit Mode - Restricted Band from 2483.5 MHz to 2500 MHz including upper bandedge Model TRN2012)



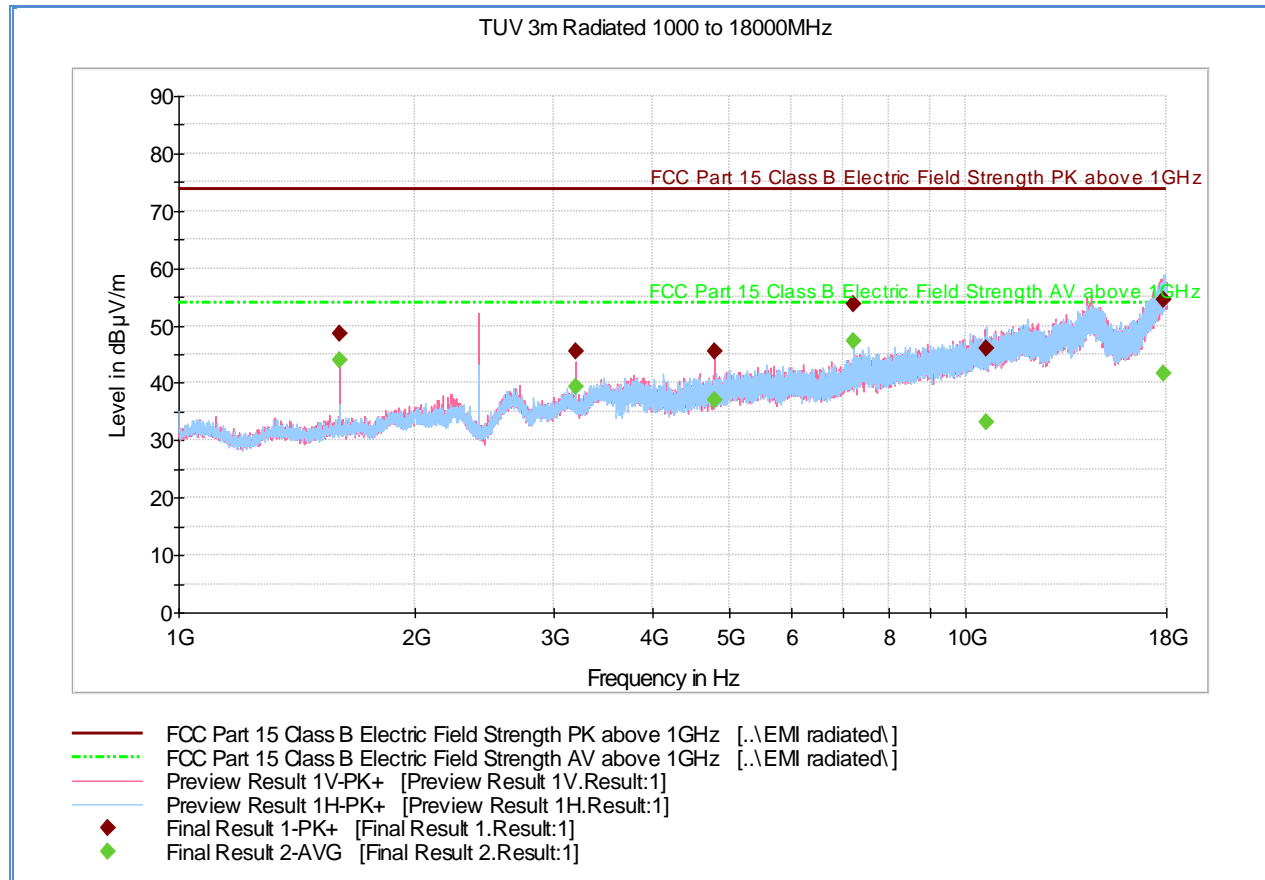
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2483.500000	57.6	1000.0	1000.000	231.0	H	326.0	-4.7	16.3	73.9
2491.626933	46.3	1000.0	1000.000	132.0	H	322.0	-4.7	27.6	73.9
2499.522933	46.4	1000.0	1000.000	100.0	H	321.0	-4.7	27.5	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)
2483.500000	47.0	1000.0	1000.000	231.0	H	326.0	-4.7	6.9	53.9
2491.626933	33.1	1000.0	1000.000	132.0	H	322.0	-4.7	20.8	53.9
2499.522933	33.4	1000.0	1000.000	100.0	H	321.0	-4.7	20.5	53.9

2.6.17 Test Results Above 1GHz (Transmit Mode Low Channel Model TRN2113)



Peak Data

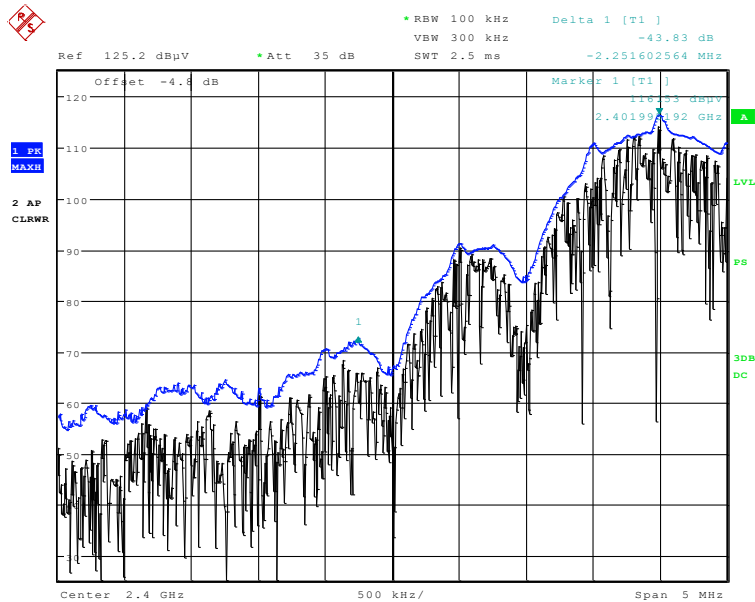
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1601.333333	48.7	1000.0	1000.000	137.0	V	202.0	-8.9	25.2	73.9
3202.646667	45.6	1000.0	1000.000	174.0	V	333.0	-1.5	28.4	73.9
4804.013333	45.4	1000.0	1000.000	146.0	V	178.0	1.9	28.5	73.9
7205.986667	53.9	1000.0	1000.000	129.0	V	236.0	6.8	20.0	73.9
10640.040000	46.0	1000.0	1000.000	324.0	H	126.0	11.0	27.9	73.9
17838.633333	54.6	1000.0	1000.000	203.0	H	332.0	21.2	19.3	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1601.333333	44.0	1000.0	1000.000	137.0	V	202.0	-8.9	9.9	53.9
3202.646667	39.3	1000.0	1000.000	174.0	V	333.0	-1.5	14.6	53.9
4804.013333	37.0	1000.0	1000.000	146.0	V	178.0	1.9	16.9	53.9
7205.986667	47.4	1000.0	1000.000	129.0	V	236.0	6.8	6.5	53.9
10640.040000	33.2	1000.0	1000.000	324.0	H	126.0	11.0	20.7	53.9
17838.633333	41.6	1000.0	1000.000	203.0	H	332.0	21.2	12.3	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. Band edge measurement was performed with the notch filter removed. Lower band edge was verified manually using 100 kHz RBW (see attached plot Section 2.7.20).

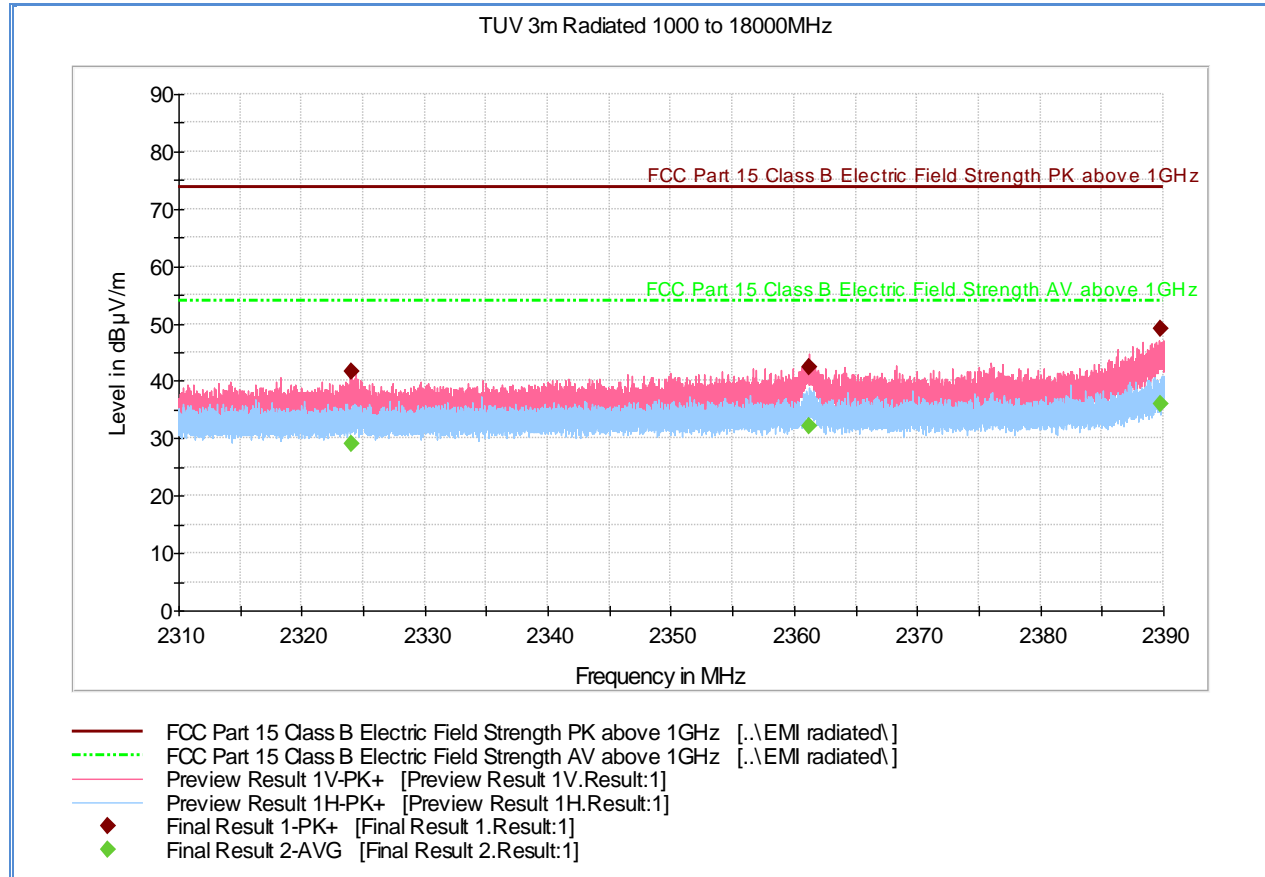
2.6.18 Test Results Lower Band Edge (Radiated - Low Channel using 100 kHz RBW)



Date: 1.APR.2013 15:46:04

Test Notes: Carrier frequency (Low Channel) was maximized for this test. Correction factor of -4.8dB is from the cable, antenna and preamp used. The EUT complies with the conducted power limits based on the use of RMS averaging over a time interval therefore the limit for this test is -30dBc. The highest measured emission close to the lower band edge is -43.83 dBc. EUT complies.

2.6.19 Test Results Above 1GHz (Low Channel Transmit Mode - Restricted Band from 2310 MHz to 2390 MHz Model TRN2113)



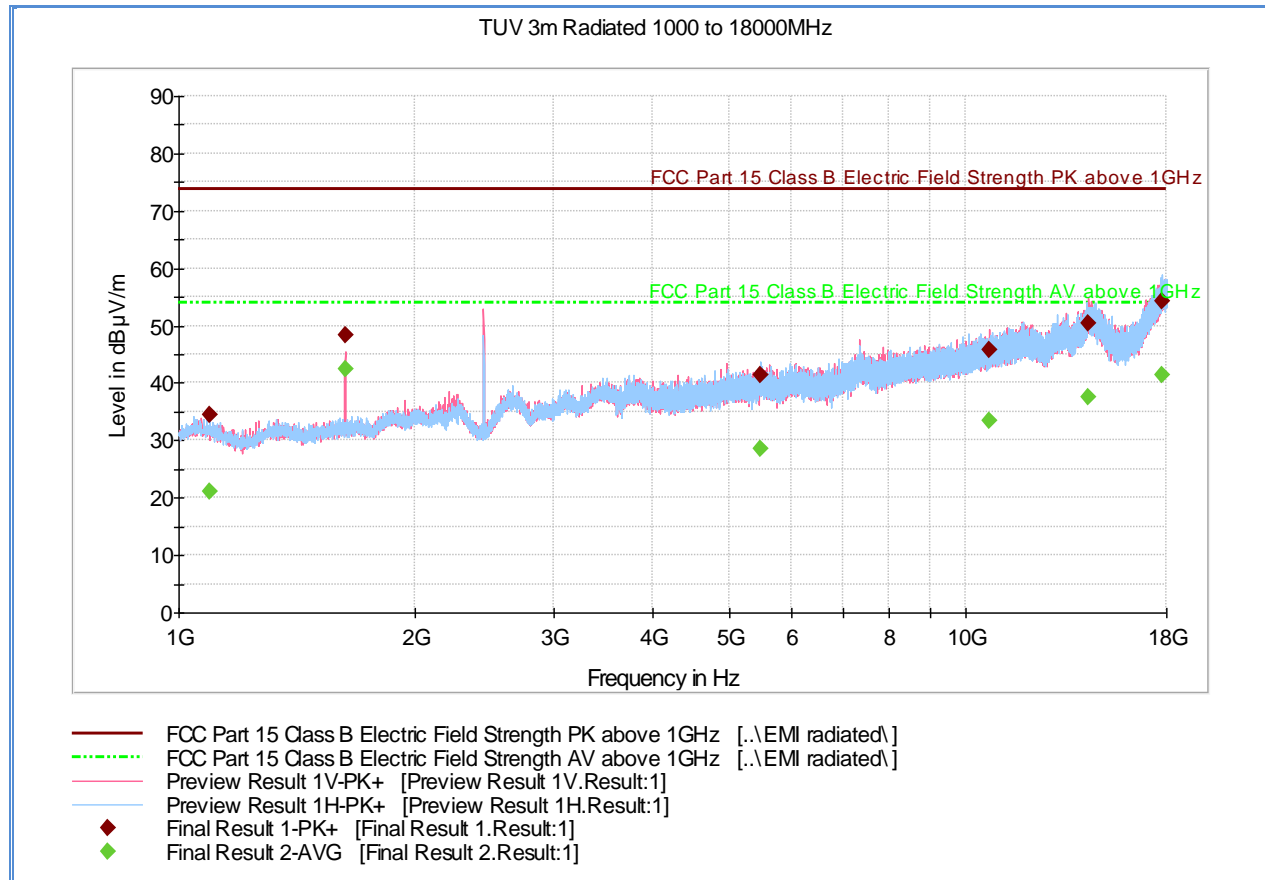
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2324.020000	41.5	1000.0	1000.000	122.0	V	215.0	-5.4	32.4	73.9
2361.217333	42.3	1000.0	1000.000	110.0	V	147.0	-5.1	31.6	73.9
2389.732000	49.2	1000.0	1000.000	100.0	V	132.0	-4.9	24.7	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)
2324.020000	29.0	1000.0	1000.000	122.0	V	215.0	-5.4	25.0	53.9
2361.217333	32.2	1000.0	1000.000	110.0	V	147.0	-5.1	21.7	53.9
2389.732000	36.0	1000.0	1000.000	100.0	V	132.0	-4.9	17.9	53.9

2.6.20 Test Results Above 1GHz (Transmit Mode Mid Channel Model TRN2113)



Peak Data

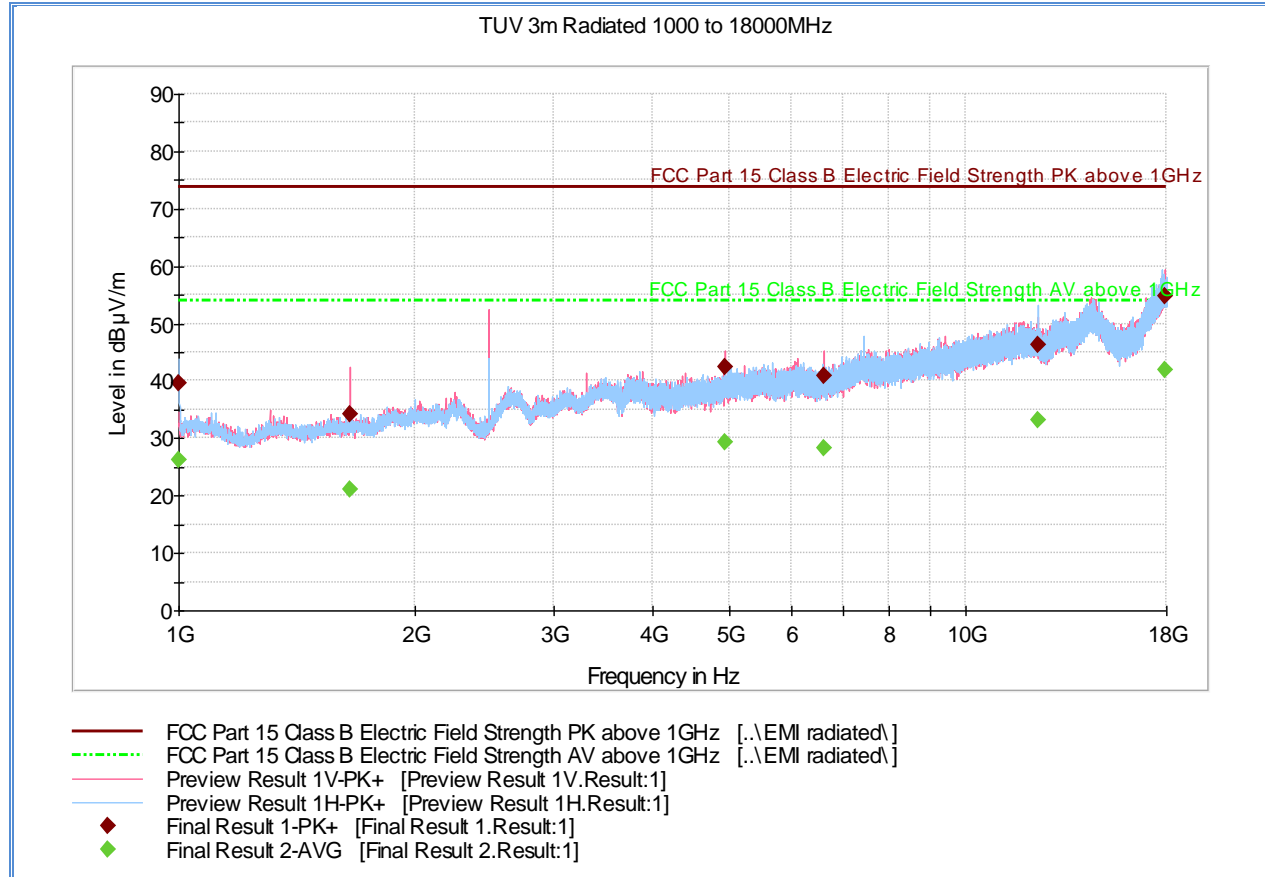
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1094.686667	34.5	1000.	1000.000	378.0	H	192.0	-10.4	39.4	73.9
1626.546667	48.4	1000.	1000.000	100.0	V	265.0	-8.7	25.5	73.9
5482.880000	41.3	1000.	1000.000	351.0	H	217.0	4.1	32.6	73.9
10735.513333	45.9	1000.	1000.000	333.0	V	319.0	11.1	28.0	73.9
14334.420000	50.3	1000.	1000.000	100.0	V	110.0	16.8	23.6	73.9
17798.693333	54.2	1000.	1000.000	332.0	H	98.0	21.1	19.7	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)
1094.686667	21.0	1000.	1000.000	378.0	H	192.0	-10.4	32.9	53.9
1626.546667	42.5	1000.	1000.000	100.0	V	265.0	-8.7	11.4	53.9
5482.880000	28.4	1000.	1000.000	351.0	H	217.0	4.1	25.5	53.9
10735.513333	33.3	1000.	1000.000	333.0	V	319.0	11.1	20.6	53.9
14334.420000	37.6	1000.	1000.000	100.0	V	110.0	16.8	16.3	53.9
17798.693333	41.4	1000.	1000.000	332.0	H	98.0	21.1	12.5	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter.

2.6.21 Test Results Above 1GHz (Transmit Mode High Channel Model TRN2113)



Peak Data

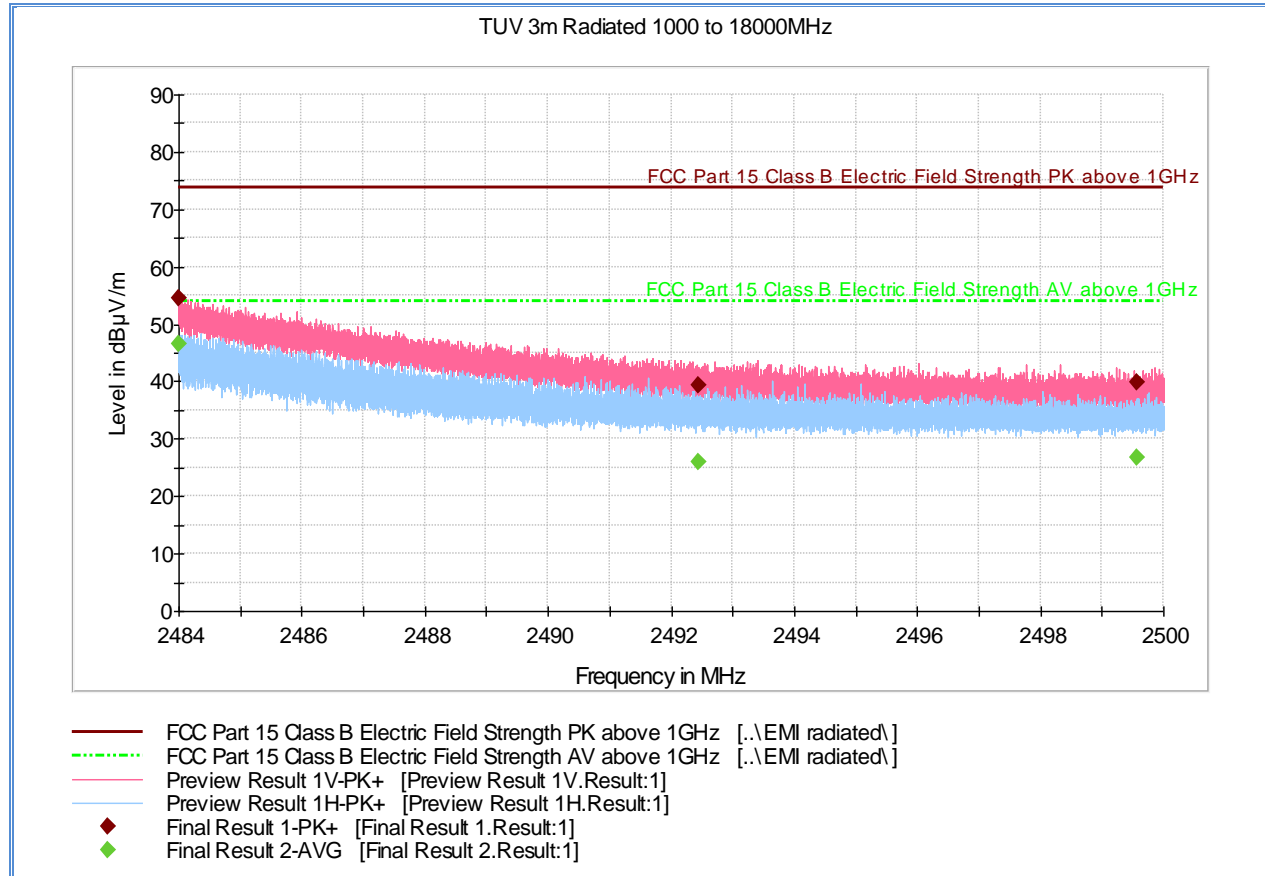
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	39.6	1000.0	1000.000	100.0	H	349.0	-11.4	34.3	73.9
1649.946667	34.2	1000.0	1000.000	175.0	V	221.0	-8.5	39.7	73.9
4950.740000	42.5	1000.0	1000.000	345.0	V	331.0	2.0	31.4	73.9
6601.400000	40.9	1000.0	1000.000	100.0	V	309.0	4.2	33.0	73.9
12377.920000	46.2	1000.0	1000.000	137.0	H	223.0	11.8	27.7	73.9
17952.380000	54.8	1000.0	1000.000	323.0	V	152.0	21.6	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)
1000.000000	26.2	1000.0	1000.000	100.0	H	349.0	-11.4	27.7	53.9
1649.946667	21.2	1000.0	1000.000	175.0	V	221.0	-8.5	32.7	53.9
4950.740000	29.2	1000.0	1000.000	345.0	V	331.0	2.0	24.7	53.9
6601.400000	28.3	1000.0	1000.000	100.0	V	309.0	4.2	25.6	53.9
12377.920000	33.2	1000.0	1000.000	137.0	H	223.0	11.8	20.7	53.9
17952.380000	41.9	1000.0	1000.000	323.0	V	152.0	21.6	12.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter.

2.6.22 Test Results Above 1GHz (High Channel Transmit Mode - Restricted Band from 2483.5 MHz to 2500 MHz including upper bandedge Model TRN2113)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2483.500000	54.5	1000.0	1000.000	134.0	V	293.0	-4.7	19.4	73.9
2492.433333	39.3	1000.0	1000.000	109.0	V	270.0	-4.7	34.6	73.9
2499.559733	39.8	1000.0	1000.000	137.0	V	248.0	-4.7	34.1	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)
2483.500000	46.7	1000.0	1000.000	134.0	V	293.0	-4.7	7.2	53.9
2492.433333	26.1	1000.0	1000.000	109.0	V	270.0	-4.7	27.8	53.9
2499.559733	26.6	1000.0	1000.000	137.0	V	248.0	-4.7	27.3	53.9



2.7 POWER SPECTRAL DENSITY

2.7.1 Specification Reference

Part 15 Subpart C §15.247(e)

2.7.2 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.

2.7.3 Equipment Under Test and Modification State

Serial No: 53616106 / Test Configuration B

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

April 01, 2013/FSC

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

Ambient Temperature	25.2°C
Relative Humidity	40.2%
ATM Pressure	99.7 kPa

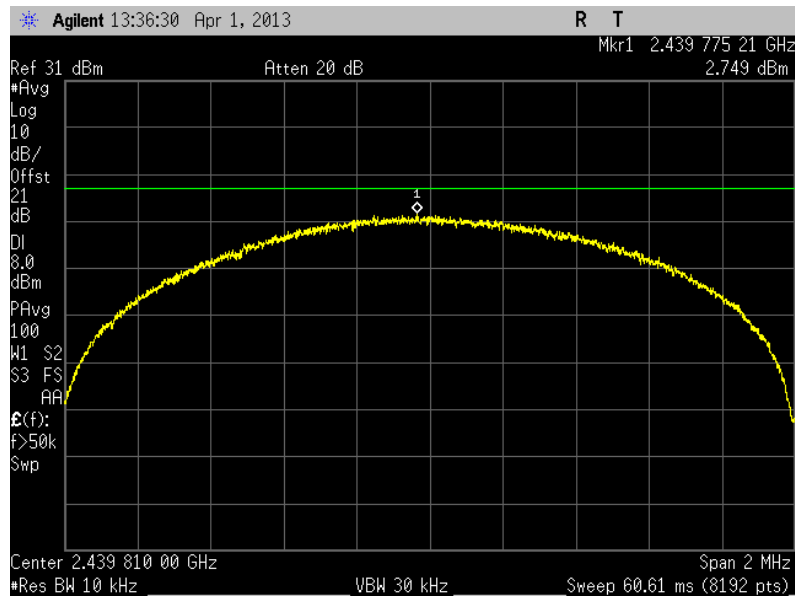
2.7.7 Additional Observations

- This is a conducted test using Option 2 under Section 9.2 of FCC KDB Publication Number 558074 D01 DTS Meas Guidance v02(Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (10/04/2012)).
- An offset of 21.0dB was added to compensate for the external attenuator and cable used.
- Span set to >1.5 times the DTS (6dB BW) channel bandwidth.
- RBW \geq 3kHz.
- VBW \geq 3X RBW.
- Detector = power averaging (RMS).
- The number of measurement points in the sweep was verified $\geq 2 \times \text{span/RBW}$. 8192 points > 400.
- Sweep time = auto couple.
- Trace was averaged 100 times in "Power Averaging Mode".

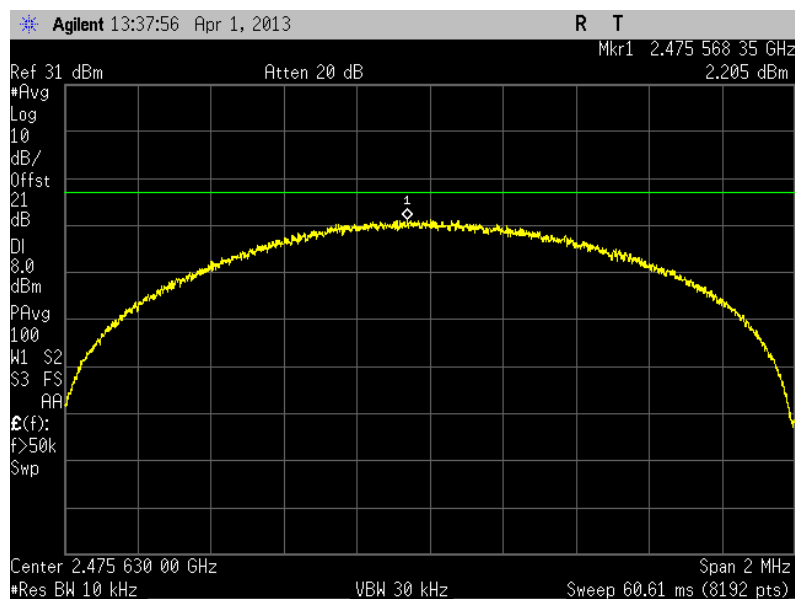
- ### 2.7.8 Test Results

Channel Frequency (MHz)	RF Power Spectral Density (dBm)	Limit (dBm)	Pass/Fail
2402.00	2.076 @ 10kHz RBW	8	Pass
2439.81	2.749 @ 10kHz RBW	8	Pass
2475.63	2.205 @ 10kHz RBW	8	Pass

Page 51 of 61



Mid Channel



High Channel



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 Port Setup						
6814	PSA Series Spectrum Analyzer	E4440A	MY42510441	Agilent	11/07/12	11/07/13
8772	10dB Attenuator	606-10-1F4/DR	N/A	Meca	01/18/13	01/18/14
8773	10dB Attenuator	606-10-1F4/DR	N/A	Meca	01/18/13	01/18/14
Conducted Emissions Test Setup						
1024	EMI Test Receiver	ESCS 30	847793/001	Rhode & Schwarz	03/11/13	03/11/14
7568	LISN	FCC-LISN-50-25-2-10	120305	Fischer Custom Comm.	05/24/12	05/24/13
8607	20dB Attenuator	CAT-20	N/A	MCL HAT-20	08/21/12	08/21/13
8609	20dB Attenuator	CAT-20	N/A	MCL HAT-20	08/21/12	08/21/13
Radiated Test Setup						
1033	Bilog Antenna	3142C	00044556	EMCO	05/23/12	05/23/13
1051	Double-ridged waveguide horn antenna	3115	9408-4329	EMCO	05/24/12	05/24/13
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	09/21/12	09/21/13
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	09/21/12	09/21/13
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	08/10/12	08/10/13
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	06/13/12	06/13/13
1016	Pre-amplifier	PAM-0202	187	PAM	09/24/12	09/24/13
6815	2.4GHz Band Notch	Filter	BRM50702 008	Micro-Tronics	Verified by 1040	
1003	Signal Generator	SMR-40	1104.0002.4 0	Rhode & Schwarz	11/12/12	11/12/13
1150	Horn antenna	RA42-K-F-4B-C	012054-004	CMT	Verified by 1003 and 1049	
1151	Pre-amplifier	TS-PR26	100026	Rhode & Schwarz	Verified by 1003 and 1049	
Miscellaneous						
1003	Signal Generator	SMR-40	1104.0002.4 0	Rhode & Schwarz	11/12/12	11/12/13
7560	Barometer/Temperature /Humidity Transmitter	iBTHX-W	1240476	Omega	11/19/12	11/19/13
	Test Software	EMC32	V8.52	Rhode & Schwarz	N/A	

3.2 MEASUREMENT UNCERTAINTY

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

3.2.1 Radiated Emission Measurements (Below 1GHz)

Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.55	2.05	4.20
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					2.23
Coverage Factor (k):					2
Expanded Uncertainty:					4.45

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	3.55	2.05	4.20
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					2.22
Coverage Factor (k):					2
Expanded Uncertainty:					4.44

3.2.3 Conducted Antenna Port Measurement

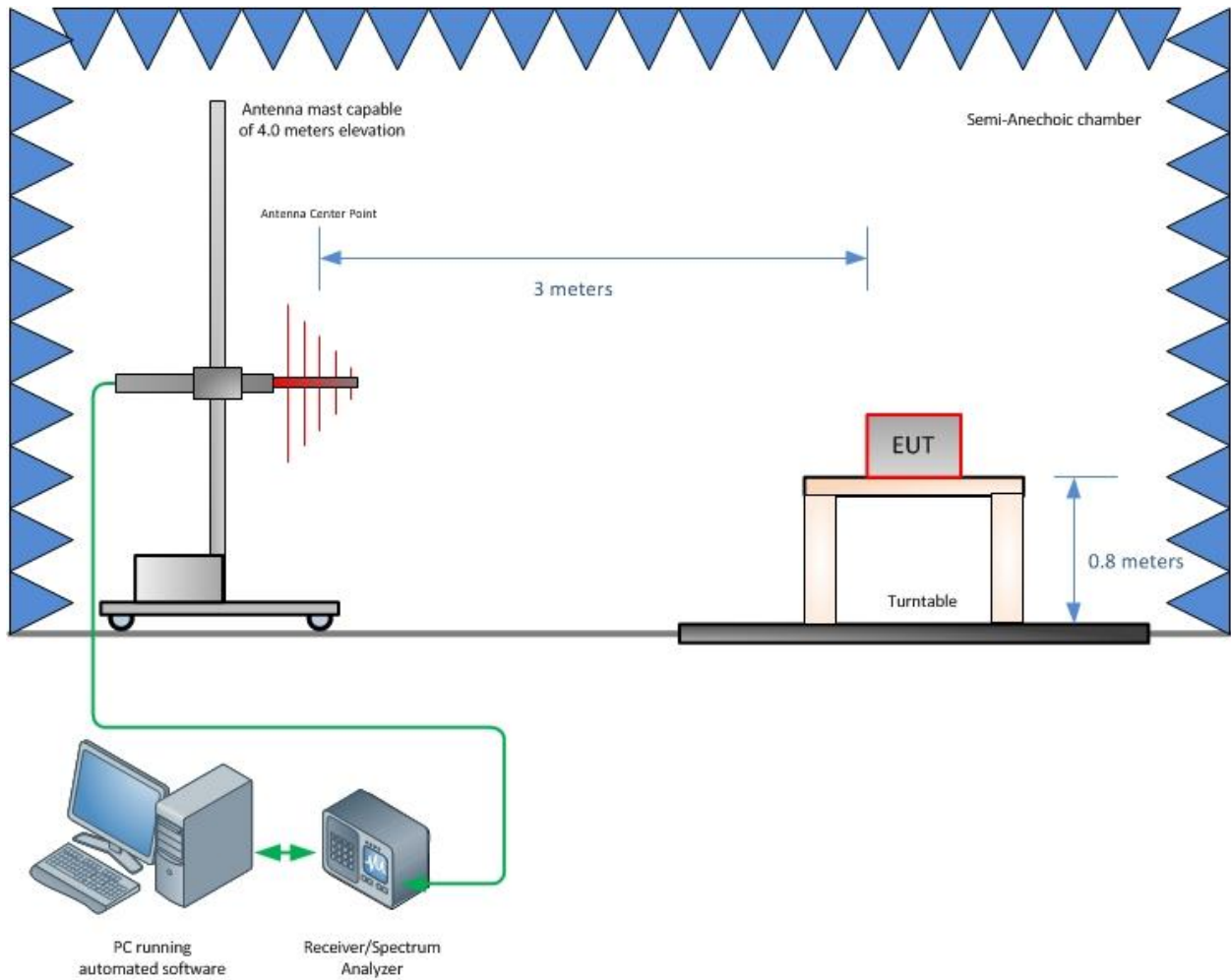
Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.50	0.29	0.08
3	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					0.72
Coverage Factor (k):					2
Expanded Uncertainty:					1.45



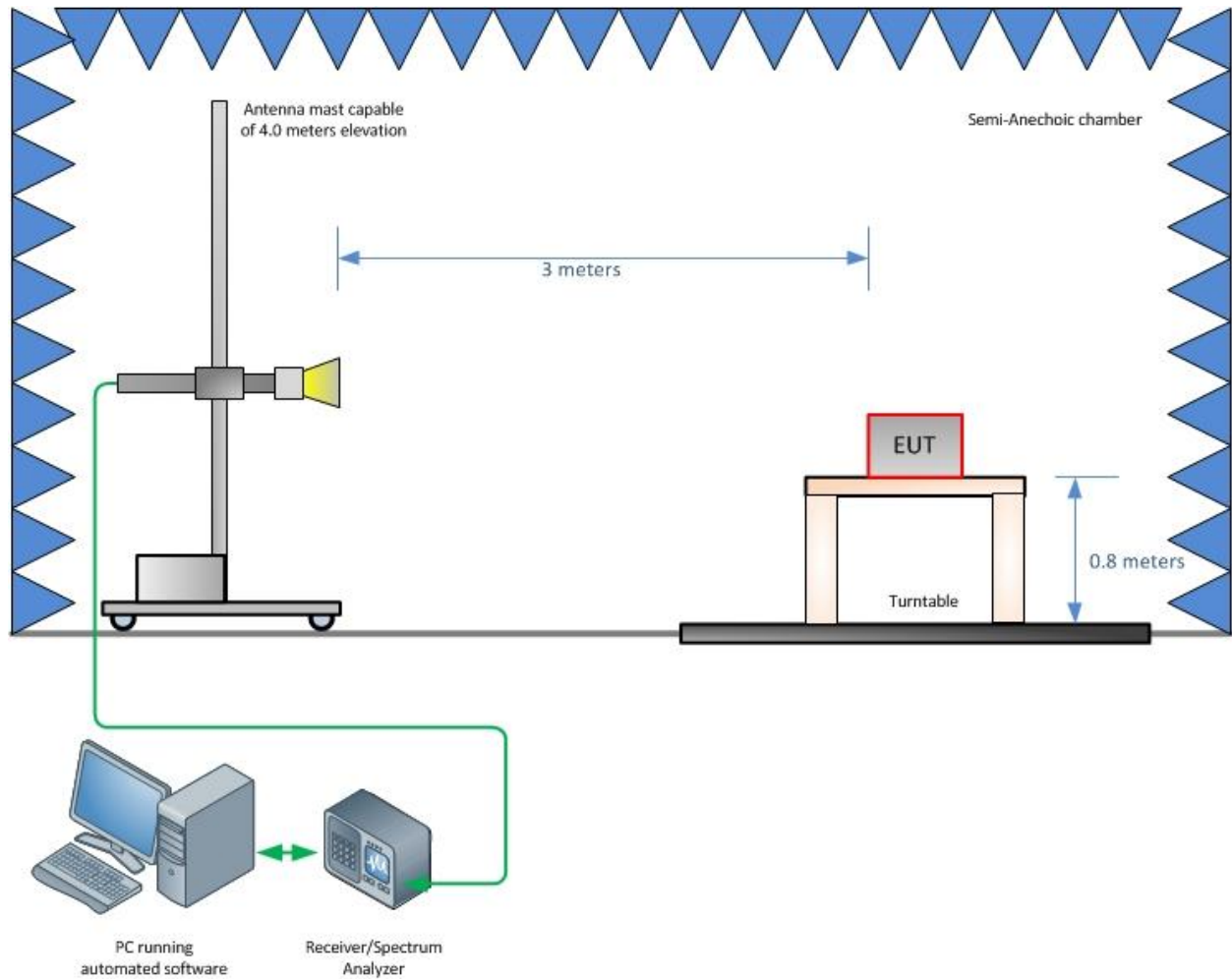
SECTION 4

DIAGRAM OF TEST SETUP

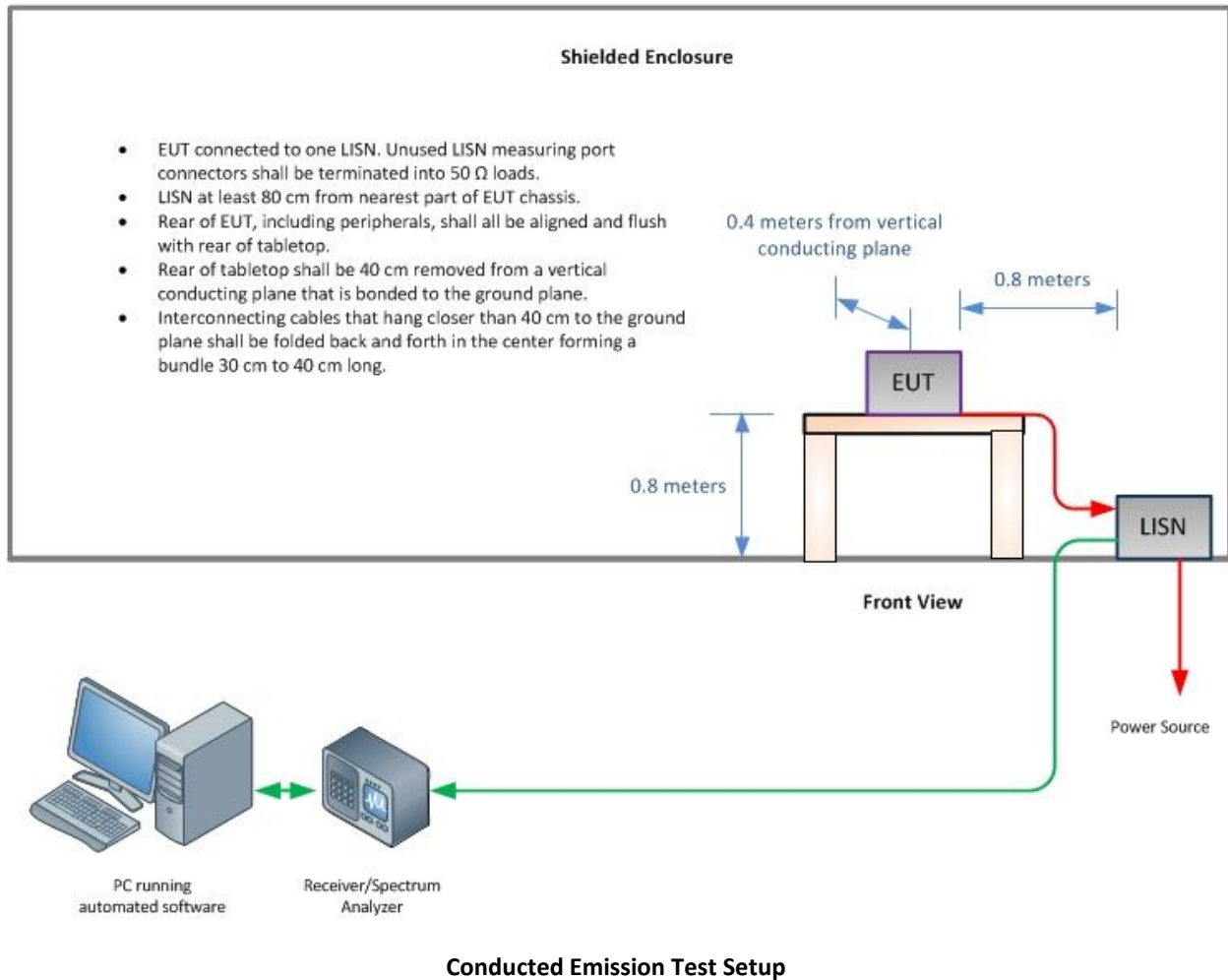
4.1 TEST SETUP DIAGRAM



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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