Report On

Application for Grant of Equipment Authorization of the NantWorks
HBox Access Point for Medical Devices

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

Report No. SC1311091A January 2014

REPORT ON	Radio Testing of the NantWorks Access Point for Medical Devices
TEST REPORT NUMBER	SC1311091A
PREPARED FOR	NantWorks 9920 Jefferson Blvd. Culver City, CA 90232
CONTACT PERSON	David Lu Principal Engineer (858) 735-6852 dlu@nantworks.com
PREPARED BY	Ferdinand S. Custodio **Name** Authorized Signatory Title: EMC/Wireless Test Engineer
APPROVED BY	Chip R. Fleury **Name** Authorized Signatory
DATED	January 10, 2014

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

Revision History

SC1311091A NantWorks HBox Access Point for Medical Devices					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
01/10/2014	Initial Release				Chip R. Fleury

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SECTION 1

REPORT SUMMARY

Radio Testing of the
NantWorks
Access Point for Medical Devices

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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the NantWorks HBox Access Point for Medical Devices to the requirements of FCC Part 15 Subpart C §15.247 and IC RSS-210 Issue 8 December 2010.

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	NantWorks
Model Number(s)	200-HBX-PDL
FCC ID Number	IFU1001008
IC Number	N/A (Manufacturer not seeking IC Certification at the time of verification)
Serial Number(s)	N/A (Sample #1) Conducted antenna service port testing sample, serial number not available due to temporary addition of an antenna port for testing / 34008112 (Radiated testing - Sample #2) 34008096 (Radiated testing - Sample #3)
Number of Samples Tested	3
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.247 (October 1, 2013). • RSS-210 - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment (Issue 8, December 2010). • RSS-Gen - General Requirements and Information for the Certification of Radio Apparatus (Issue 3, December 2010). • 558074 D01 DTS Meas Guidance v03r01,(April 09,2013) Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247. • 662911 D01 Multiple Transmitter Output v02r01 (October 31, 2013) Emissions Testing of Transmitters with Multiple Outputs in the Same Band
Start of Test	November 26, 2013
Finish of Test	December 24, 2013
Name of Engineer(s)	Ferdinand Custodio
Related Document(s)	None. Supporting documents for EUT certification are separate exhibits.

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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	§15.247(b)(3)	RSS-210 A8.4 (4)	Peak Output Power	Compliant	
2.2	§15.207(a)	RSS-Gen 7.2.4	Conducted Emissions	Compliant	
2.3		RSS-Gen 4.6.1	99% Emission Bandwidth	Compliant	
2.4	§15.247(a)(2)	RSS-210 A8.2(a)	Minimum 6 dB RF Bandwidth	Compliant	
2.5	§15.247(d)	RSS-210 A8.5	Out-of-Band Emissions - Conducted	Compliant	
2.6	§15.247(d)	RSS-210 A8.5	Band-edge Compliance of RF Conducted Emissions	Compliant	
2.7	§15.247(d)	RSS-210 A8.5	Spurious Radiated Emissions	Compliant	
2.7		RSS-Gen 4.10	Receiver Spurious Emissions	Compliant	
2.8	§15.247(d)	RSS-210 A8.5	Radiated Band Edge Measurements	Compliant	
2.9	§15.247(e)	RSS-210 A8.2(b)	Power Spectral Density for Digitally Modulated Device	Compliant	

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a NantWorks HBox Access Point for Medical Devices. The EUT can connect to a network through Ethernet port or Wi-Fi. In normal operation, the EUT collects user data via USB, Bluetooth or Wi-Fi and upload the information back to a data server. The NFC function is for quick Bluetooth pairing by obtaining the device info when within NFC range of the EUT. Only the 802.11 a, b, g, n and Bluetooth LE functions verified in this test report.

1.3.2 EUT General Description

EUT Description	Access Point for Medical Devices
Model Name	HBox
Model Number(s)	200-HBX-PDL
Rated Voltage	Internal 3.7VDC Li-Ion Battery (Gold Peak Industries 130801-00), AC adapter/charger is Hon-Kwang Switching Power Supply Model: HK-AB-050A400-US, output is 5.0VDC 4.0A
Mode Verified	802.11 a/b/g/n and BT LE
Capability	802.11 a/b/g/n WLAN (DTS/U-NII), Bluetooth 2.0 + EDR, Bluetooth 4.0 and NFC
Primary Unit (EUT)	☒ Production ☐ Pre-Production ☐ Engineering
Antenna Type	Integral PIFA type (Ant #1 and 2)
MIMO Signal Type	Completely uncorrelated (Manufacturer declared)
Antenna Gain Ant #1 (Main, WiFi +BT)	2400MHz = 2.9dBi 5000MHz = 2.3dBi
Antenna Gain Ant #2 (MIMO 802.11 n ht20 2.4 GHz only)	2400MHz = 5.5dBi

1.3.3 Maximum Conducted Output Power

Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
802.11a	5745-5825	10.18	10.42
802.11b	2412-2462	14.85	30.55
802.11g	2412-2462	13.09	20.37
802.11 n (ht20)	2412-2462	13.13	20.56
802.11 n (ht40)	2422-2452	12.54	17.95
802.11 n (ht20)	5745-5825	10.05	10.12
802.11 n (ht40)	5745-5825	6.53	4.45
802.11 n (ht20 MIMO)	2412-2462	15.66	36.82
Bluetooth LE	2402-2480	8.46	7.00

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1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
A	Antenna conducted port test configuration. All measurements were performed on the main antenna (Ant.#1) except when in MIMO configuration where both antenna (Ant #1 and 2) were verified. MIMO function is limited to 802.11 n ht20 2.4GHz only. Antenna #1 is for both Wi-Fi and Bluetooth functions while Antenna #2 is for MIMO function only. The EUT is programmed using a generic JTAG debug board connected via USB. Radio commands are programmed using Tera Term SSH2 (Secure Shell) client software.
B	Radiated emissions test configuration. The EUT is programmed using PuTTY SSH2 (Secure Shell) client software. The EUT is connected to a support broadband router where the support laptop used to program the EUT is also connected. Client provided radio commands to modify modes, channel number and data rates. TX power is set to max power as a default setting.

1.4.2 EUT Exercise Software

HBOX Function Tester. This is built-in within the firmware. Radio commands are executed via Ethernet or USB via a JTAG debug board using Tera Term or Putty from a support PC.

1.4.3 Support Equipment and I/O cables

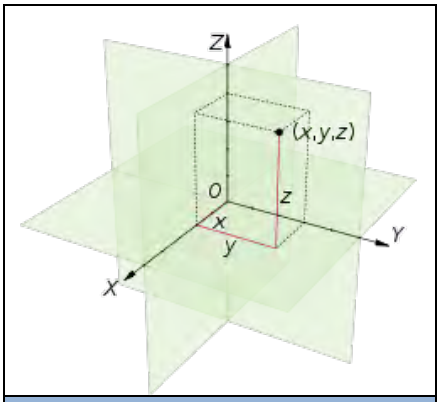
Manufacturer	Equipment/Cable	Description
Sony	Personal Computer (Y Series Laptop)	Model PCG-31311L
Sony	AC Adapter	Model PCGA-AC19V9 S/N:147839091 0023259
Hon-Kwang	I.T.E. Power Supply for EUT	Model HK-AB-050A400-US 5VDC @ 4A
Trendnet	Broadband Router	Model TW100S4W1CA S/N: RA1332S400789
DVE	Switching Adapter for Broadband Router	Model DSA-6PFE-05 FUS 050100 5VDC @ 1A
Lorom	CAT5E Patch Cable (2X)	Unshielded, 1.5 meters Ethernet cables
-	Debug board	Generic JTAG (Joint Test Action Group)/IEEE 1149.1 Standard Test Access Port and
	USB cable	Shielded, 1.7m generic USB cable

1.4.4 Worst Case Configuration

Worst-case configuration used in this test report as per maximum conducted output power measurements:

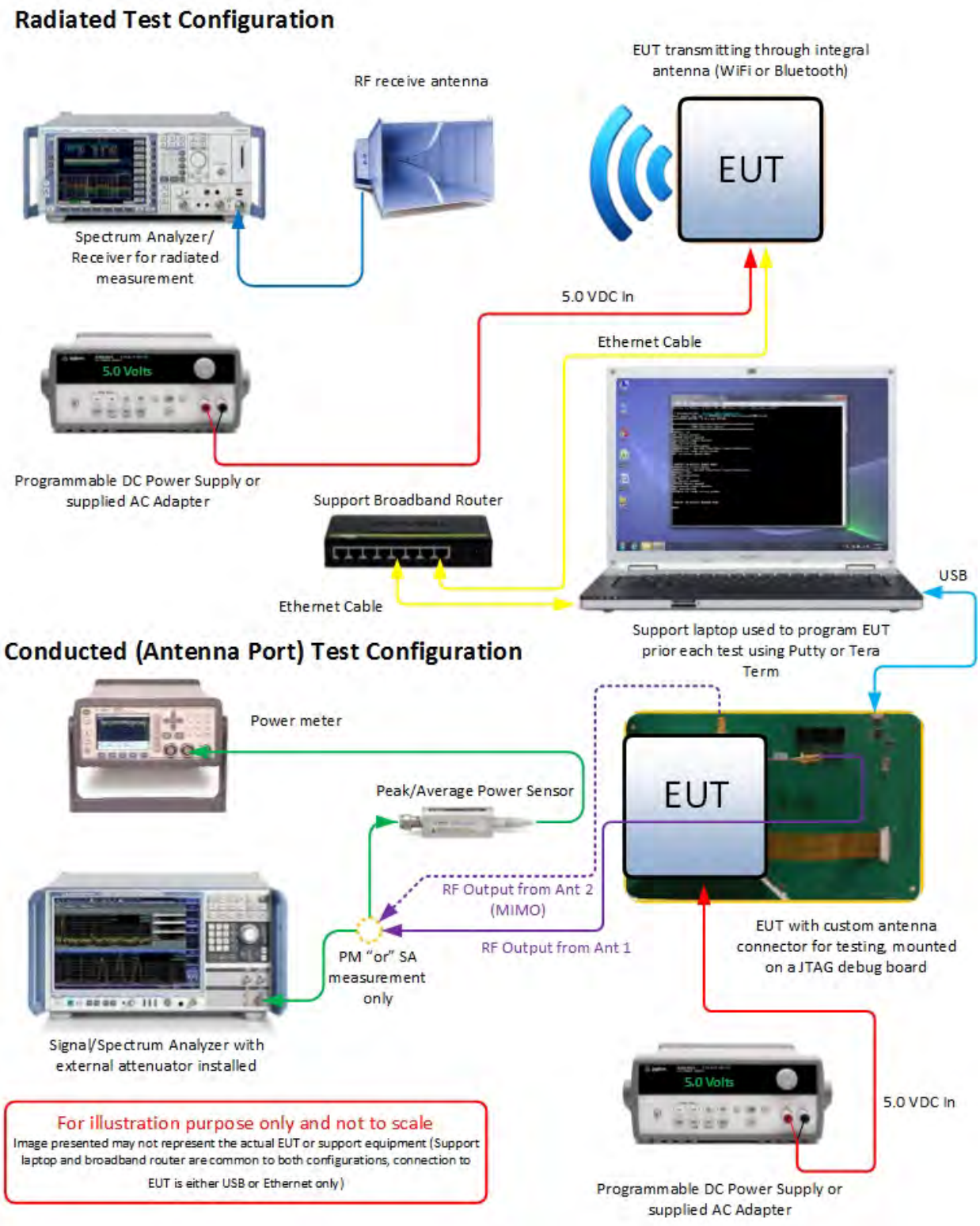
Mode	Channel	Data Rate
802.11a	157 (MidChannel)	6Mbps
802.11b	6 (Mid Channel)	5.5Mbps
802.11g	6 (Mid Channel)	6Mbps
802.11 n (ht20)	6 (Mid Channel)	6.5Mbps (mcs 0)
802.11 n (ht40)	6 (Mid Channel)	13Mbps (mcs 1)
802.11 n (ht20)	165 (High Channel)	6.5Mbps (mcs 0)
802.11 n (ht40)	157 (Mid Channel)	58.5Mbps (mcs 6)
802.11 n (ht20 MIMO)	6 (Mid Channel)	13Mbps (mcs 8)
Bluetooth LE	17 (Mid Channel)	1Mbps

EUT is a mobile device. For radiated measurements X,Y and Z orientations were verified. Worst case position is “X” (wall mounting side of the EUT flat on the test table).



“X, Y and Z” Configuration

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 (Sample #1) Antenna port conducted sample/34008112 (Sample #2)/34008096 (Sample #3)		
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.

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SECTION 2

TEST DETAILS

Radio Testing of the
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Access Point for Medical Devices

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: N/A (Sample #1) / Test Configuration A

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

November 26, 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	24.1°C
Relative Humidity	34.6%
ATM Pressure	99.3 kPa

2.1.7 Additional Observations

- This is a conducted test (Maximum conducted [average] output power) using direct connection to a power meter.
- An offset of 21.25dB was added to compensate for the external attenuator and cable used from the antenna port to the power sensor.
- Test methodology is per Clause 9.2.3.1 of KDB 558074 D01 (DTS Meas Guidance v03r01, April 09, 2013). All conditions under this Clause are satisfied.
- Both Peak and Average measurements were recorded.

2.1.8 Test Results

WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11a (5745MHz to 5825MHz)	149 (5745 MHz)	6	8.97	15.20
		9	8.42	15.17
		12	8.06	14.98
		18	8.22	15.23
		24	7.16	15.25
		36	7.97	16.43
		48	7.03	16.47
		54	6.93	16.54
	157 (5785 MHz)	**6**	**10.18**	**16.47**
		9	10.00	15.40
		12	9.67	15.61
		18	8.78	15.51
		24	8.09	15.51
		36	8.31	15.98
		48	8.22	16.92
		54	9.08	16.87
	165 (5825 MHz)	6	9.37	15.01
		9	9.31	15.04
		12	9.27	15.17
		18	7.85	14.87
		24	7.10	15.09
		36	7.80	16.69
		48	7.28	16.64
		54	6.94	16.52

WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11b	1 (2412 MHz)	1	12.11	14.24
		2	12.09	14.22
		5.5	12.15	14.36
		11	12.00	14.33
	6 (2437 MHz)	1	14.47	18.89
		2	13.83	18.89
		5.5	**14.85**	**18.84**
		11	13.84	18.36
	11 (2462 MHz)	1	13.26	14.64
		2	12.48	14.65
		5.5	12.40	14.73
		11	12.41	14.75
802.11g	1 (2412 MHz)	6	12.14	19.08
		9	11.54	19.07
		12	11.83	19.06
		18	10.98	19.09
		24	10.60	19.20
		36	10.15	19.19
		48	9.58	19.20
		54	9.18	19.15
	6 (2437 MHz)	**6**	**13.09**	**19.67**
		9	12.81	19.84
		12	12.82	19.93
		18	12.29	19.76
		24	12.35	19.94
		36	12.09	19.87
		48	11.66	19.72

WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11g	**6 (2437 MHz)**	54	11.06	19.80
	11 (2462 MHz)	6	12.15	19.47
		9	12.23	19.51
		12	11.73	19.55
		18	11.76	19.58
		24	10.79	19.42
		36	10.79	19.48
		48	10.08	19.55
		54	10.91	19.61
802.11n (ht20)	1 (2412 MHz)	mcs 0 (6.50 Mbps)	11.99	19.10
		mcs 1(13.0 Mbps)	11.66	19.10
		mcs 2(19.5 Mbps)	11.22	19.00
		mcs 3 (26.0 Mbps)	11.53	19.22
		mcs 4 (39.0 Mbps)	10.56	19.08
		mcs 5 (52.0 Mbps)	9.35	19.26
		mcs 6 (58.5 Mbps)	9.54	19.16
		mcs 7 (65.0 Mbps)	9.57	19.07
	6 (2437 MHz)	**mcs 0 (6.50 Mbps)**	**13.13**	**19.58**
		mcs 1(13.0 Mbps)	12.88	19.86
		mcs 2(19.5 Mbps)	12.31	19.75
		mcs 3 (26.0 Mbps)	11.68	19.84
		mcs 4 (39.0 Mbps)	12.10	19.62
		mcs 5 (52.0 Mbps)	11.40	19.73
		mcs 6 (58.5 Mbps)	10.52	19.74
		mcs 7 (65.0 Mbps)	9.54	19.63

WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11n (ht20)	11 (2462 MHz)	mcs 0 (6.50 Mbps)	12.28	19.55
		mcs 1(13.0 Mbps)	12.05	19.47
		mcs 2(19.5 Mbps)	12.06	19.60
		mcs 3 (26.0 Mbps)	11.30	19.63
		mcs 4 (39.0 Mbps)	10.93	19.56
		mcs 5 (52.0 Mbps)	10.85	19.55
		mcs 6 (58.5 Mbps)	10.13	19.58
		mcs 7 (65.0 Mbps)	8.88	19.56
802.11n (ht40)	3 (2422 MHz)	mcs 0 (6.50 Mbps)	6.20	18.47
		mcs 1(13.0 Mbps)	5.80	18.47
		mcs 2(19.5 Mbps)	5.36	17.94
		mcs 3 (26.0 Mbps)	4.77	18.09
		mcs 4 (39.0 Mbps)	3.71	18.26
		mcs 5 (52.0 Mbps)	3.57	17.71
		mcs 6 (58.5 Mbps)	7.73	19.72
		mcs 7 (65.0 Mbps)	6.92	19.80
	6 (2437 MHz)	mcs 0 (6.50 Mbps)	11.82	18.43
		mcs 1(13.0 Mbps)	**12.54**	**18.46**
		mcs 2(19.5 Mbps)	11.06	18.64
		mcs 3 (26.0 Mbps)	7.11	13.69
		mcs 4 (39.0 Mbps)	10.62	18.46
		mcs 5 (52.0 Mbps)	10.62	18.57
		mcs 6 (58.5 Mbps)	7.19	13.90
		mcs 7 (65.0 Mbps)	10.07	19.84
	9 (2452 MHz)	mcs 0 (6.50 Mbps)	7.92	19.06
		mcs 1(13.0 Mbps)	6.56	18.85

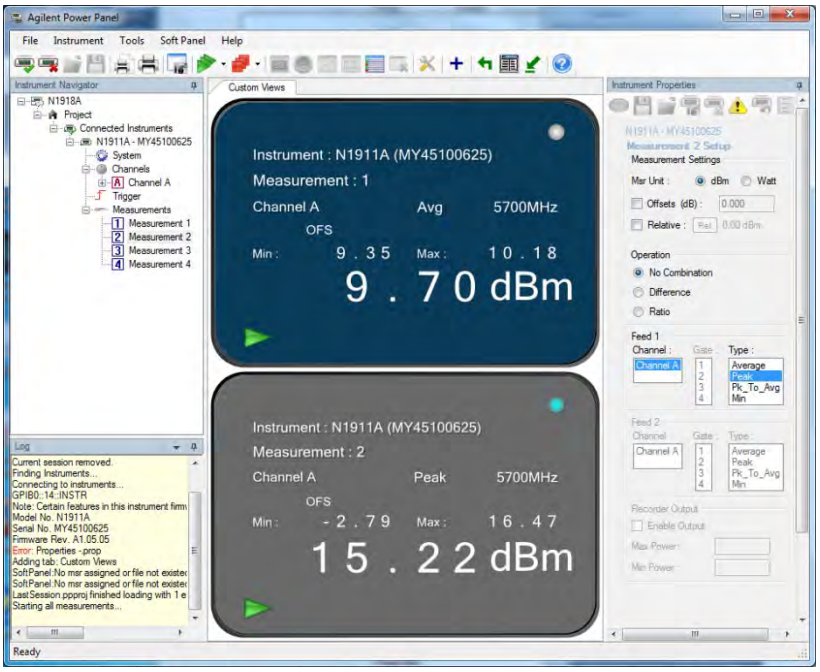
WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11n (ht40)	9 (2452 MHz)	mcs 2(19.5 Mbps)	5.67	18.57
		mcs 3 (26.0 Mbps)	5.64	19.14
		mcs 4 (39.0 Mbps)	4.32	18.70
		mcs 5 (52.0 Mbps)	4.05	19.37
		mcs 6 (58.5 Mbps)	7.62	20.14
		mcs 7 (65.0 Mbps)	7.64	20.12
802.11n (ht20 5745MHz to 5825MHz)	149 (5745 MHz)	mcs 0 (6.50 Mbps)	7.65	14.85
		mcs 1(13.0 Mbps)	8.66	15.23
		mcs 2(19.5 Mbps)	8.39	15.01
		mcs 3 (26.0 Mbps)	8.92	15.54
		mcs 4 (39.0 Mbps)	8.24	14.82
		mcs 5 (52.0 Mbps)	5.52	15.28
		mcs 6 (58.5 Mbps)	7.20	16.38
		mcs 7 (65.0 Mbps)	7.15	16.28
	157 (5785 MHz)	mcs 0 (6.50 Mbps)	9.88	15.42
		mcs 1(13.0 Mbps)	9.71	15.65
		mcs 2(19.5 Mbps)	8.99	15.46
		mcs 3 (26.0 Mbps)	8.87	15.52
		mcs 4 (39.0 Mbps)	7.98	15.44
		mcs 5 (52.0 Mbps)	9.10	16.90
		mcs 6 (58.5 Mbps)	8.38	16.87
		mcs 7 (65.0 Mbps)	8.30	17.02
	165 (5825 MHz)	**mcs 0 (6.50 Mbps)**	**10.05**	**15.19**
		mcs 1(13.0 Mbps)	9.31	15.11
		mcs 2(19.5 Mbps)	8.31	14.75
		mcs 3 (26.0 Mbps)	7.62	14.65

WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11n (ht20 5745MHz to 5825MHz)	**165 (5825 MHz)**	mcs 4 (39.0 Mbps)	7.75	16.50
		mcs 5 (52.0 Mbps)	7.17	16.64
		mcs 6 (58.5 Mbps)	6.85	16.46
		mcs 7 (65.0 Mbps)	7.35	16.47
802.11n (ht40 5745MHz to 5825MHz)	149 (5745 MHz)	mcs 0 (6.50 Mbps)	4.75	14.76
		mcs 1(13.0 Mbps)	4.08	14.70
		mcs 2(19.5 Mbps)	3.43	14.75
		mcs 3 (26.0 Mbps)	2.92	14.61
		mcs 4 (39.0 Mbps)	2.15	14.57
		mcs 5 (52.0 Mbps)	1.96	14.32
		mcs 6 (58.5 Mbps)	4.61	15.39
		mcs 7 (65.0 Mbps)	4.09	15.77
	157 (5785 MHz)	mcs 0 (6.50 Mbps)	3.94	13.95
		mcs 1(13.0 Mbps)	2.54	14.84
		mcs 2(19.5 Mbps)	5.75	15.70
		mcs 3 (26.0 Mbps)	4.09	14.37
		mcs 4 (39.0 Mbps)	1.67	15.10
		mcs 5 (52.0 Mbps)	2.51	15.48
		mcs 6 (58.5 Mbps)	**6.53**	**16.14**
		mcs 7 (65.0 Mbps)	4.99	16.19
	165 (5825 MHz)	mcs 0 (6.50 Mbps)	4.69	14.16
		mcs 1(13.0 Mbps)	3.99	14.91
		mcs 2(19.5 Mbps)	2.67	14.52
		mcs 3 (26.0 Mbps)	4.16	14.50
		mcs 4 (39.0 Mbps)	3.51	13.27
		mcs 5 (52.0 Mbps)	3.76	14.57

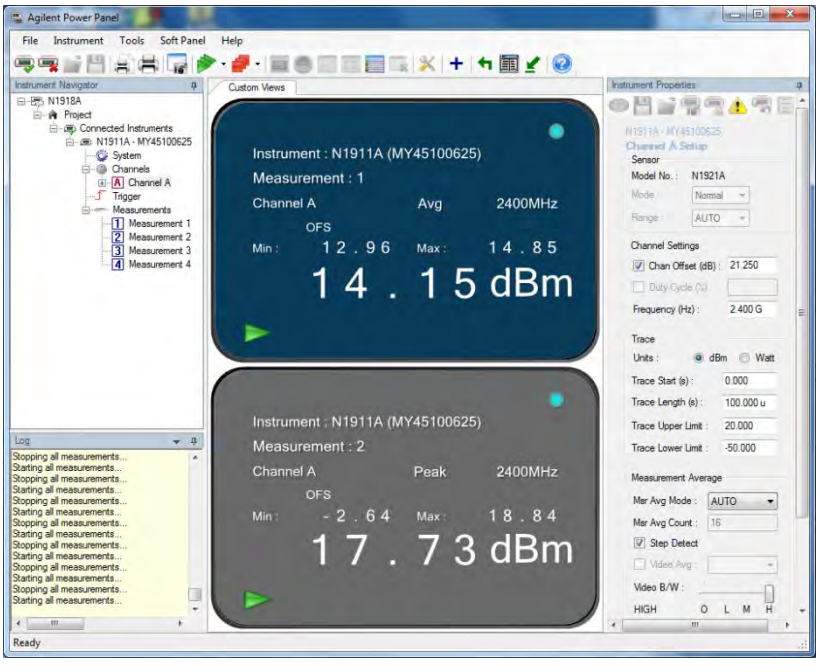
WLAN Mode	Channel	Data Rates (Mbps)	Measured Average Power (dBm)	Measured Peak Power (dBm)
802.11n (ht40 5745MHz to 5825MHz)	165 (5825 MHz)	mcs 6 (58.5 Mbps)	3.98	15.04
		mcs 7 (65.0 Mbps)	6.34	16.65
802.11n (ht20 MIMO on antenna #1)	**6 (2437 MHz)**	mcs 8 (13.00 Mbps)	12.10	19.48
		mcs 9 (26.00 Mbps)	11.82	19.62
		mcs 10 (39.00 Mbps)	11.77	19.59
		mcs 11 (52.00 Mbps)	10.52	19.69
		mcs 12 (78.0 Mbps)	10.99	19.82
		mcs 13 (104.0 Mbps)	10.50	19.86
		mcs 14 (117.0 Mbps)	7.37	19.43
		mcs 15 (130.0 Mbps)	5.45	19.27
802.11n (ht20 MIMO on antenna #2)	**6 (2437 MHz)**	mcs 8 (13.00 Mbps)	13.14	20.62
		mcs 9 (26.00 Mbps)	12.61	20.67
		mcs 10 (39.00 Mbps)	12.66	20.44
		mcs 11 (52.00 Mbps)	12.45	20.49
		mcs 12 (78.0 Mbps)	8.13	18.13
		mcs 13 (104.0 Mbps)	10.77	21.09
		mcs 14 (117.0 Mbps)	8.84	20.61
		mcs 15 (130.0 Mbps)	6.93	20.67

Bluetooth Low Energy (LE)	Channel	Modulation	Measured Average Power (dBm)	Measured Peak Power (dBm)
	37 (2402 MHz)	GFSK @ 1Mbps	7.40	8.02
	17 (2440 MHz)		**8.46**	**8.94**
	39 (2480 MHz)		8.05	8.53

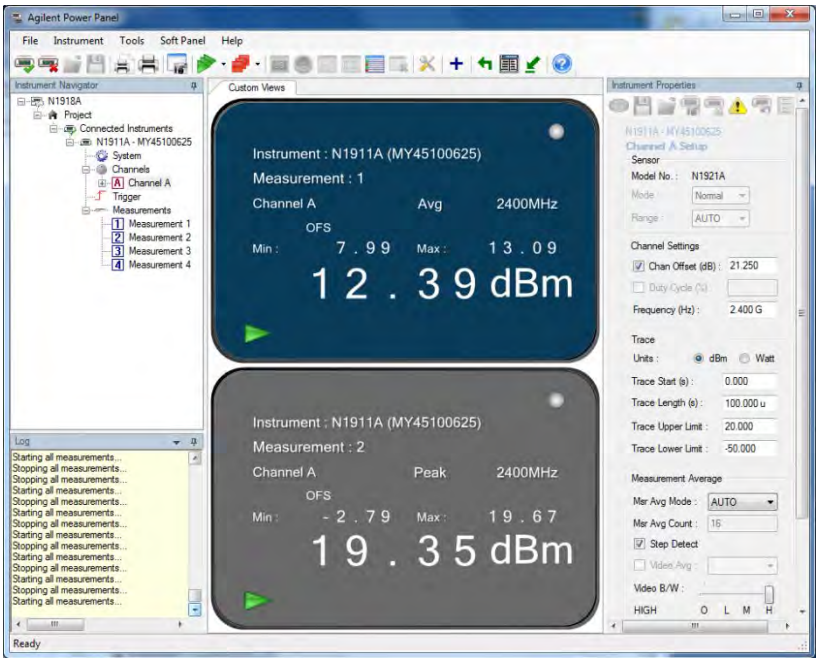
2.1.9 Sample Test Display



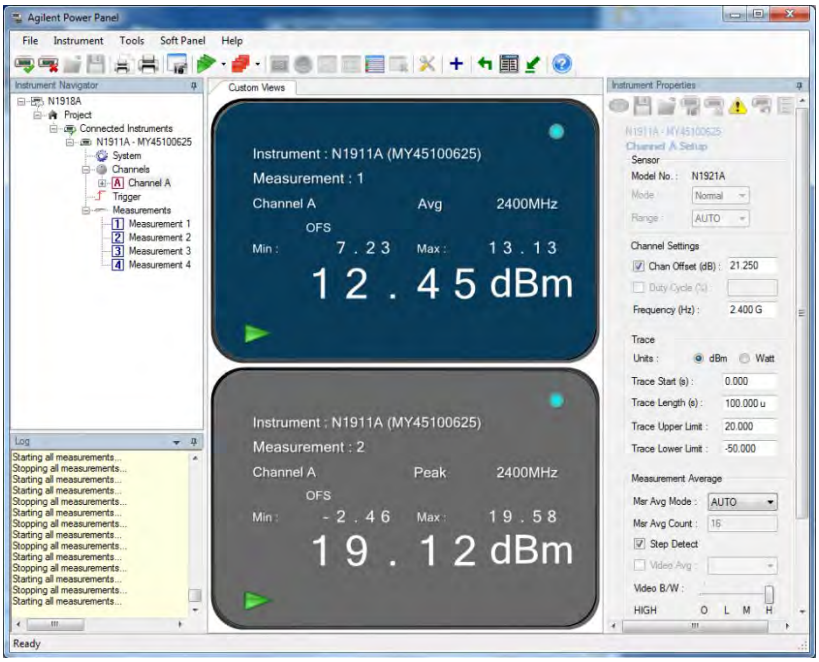
802.11 “a” mode. Mid Channel 6Mbps



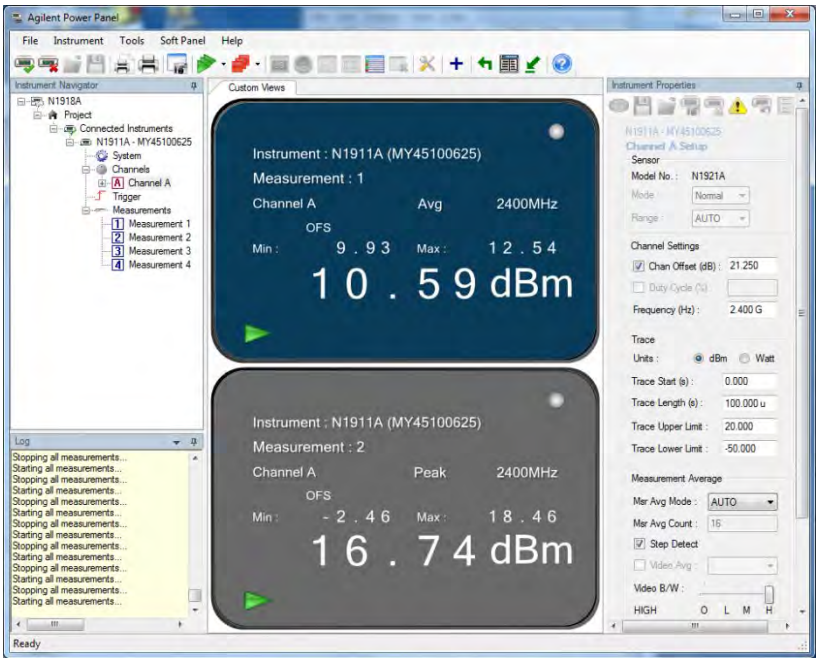
802.11 “b” mode. Mid Channel 5.5Mbps



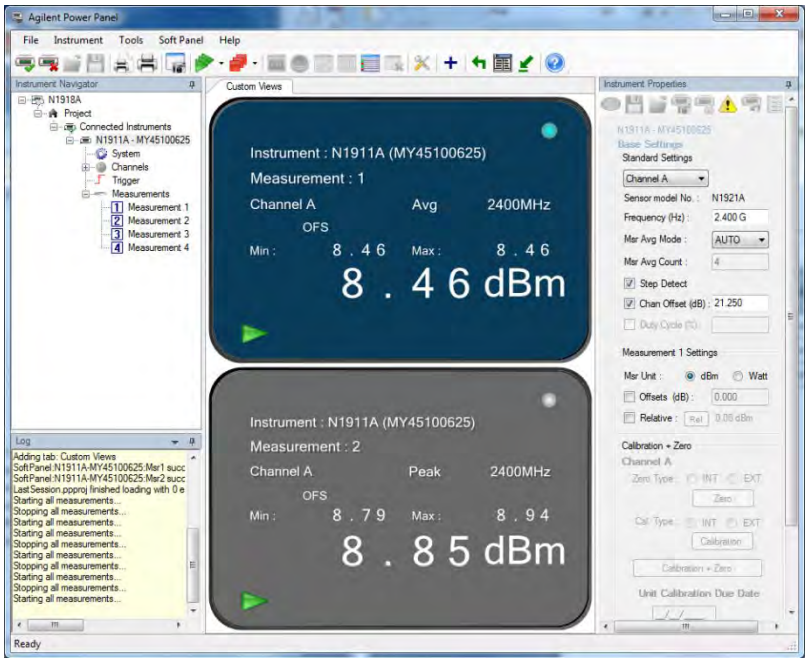
802.11 “g” mode. Mid Channel 6Mbps



802.11 “n” mode ht20. Mid Channel 6.5Mbps



802.11 “n” mode ht40. Mid Channel 13Mbps



Bluetooth LE. Mid Channel 1Mbps

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 µH/50 ohms line impedance stabilization network (LISN).

Frequency of emission (MHz)	Conducted limit (dBµV)	
	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: 34008112 / Test Configuration B

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

December 13, 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	17.9°C
Relative Humidity	30.0.%
ATM Pressure	99.8 kPa

2.2.7 Additional Observations

- The EUT was verified using AC adapter supplied by the manufacturer..
- EUT verified using input voltage of 120VAC 60Hz.
- There are no significant variations in test results between each operating modes. Only the worst case observed configuration is presented (802.11n HT20 MIMO mode).
- Receive mode is also presented for comparison.

- 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 2.2.8 for sample computation.

2.2.8 Sample Computation (Conducted Emission – Quasi Peak)

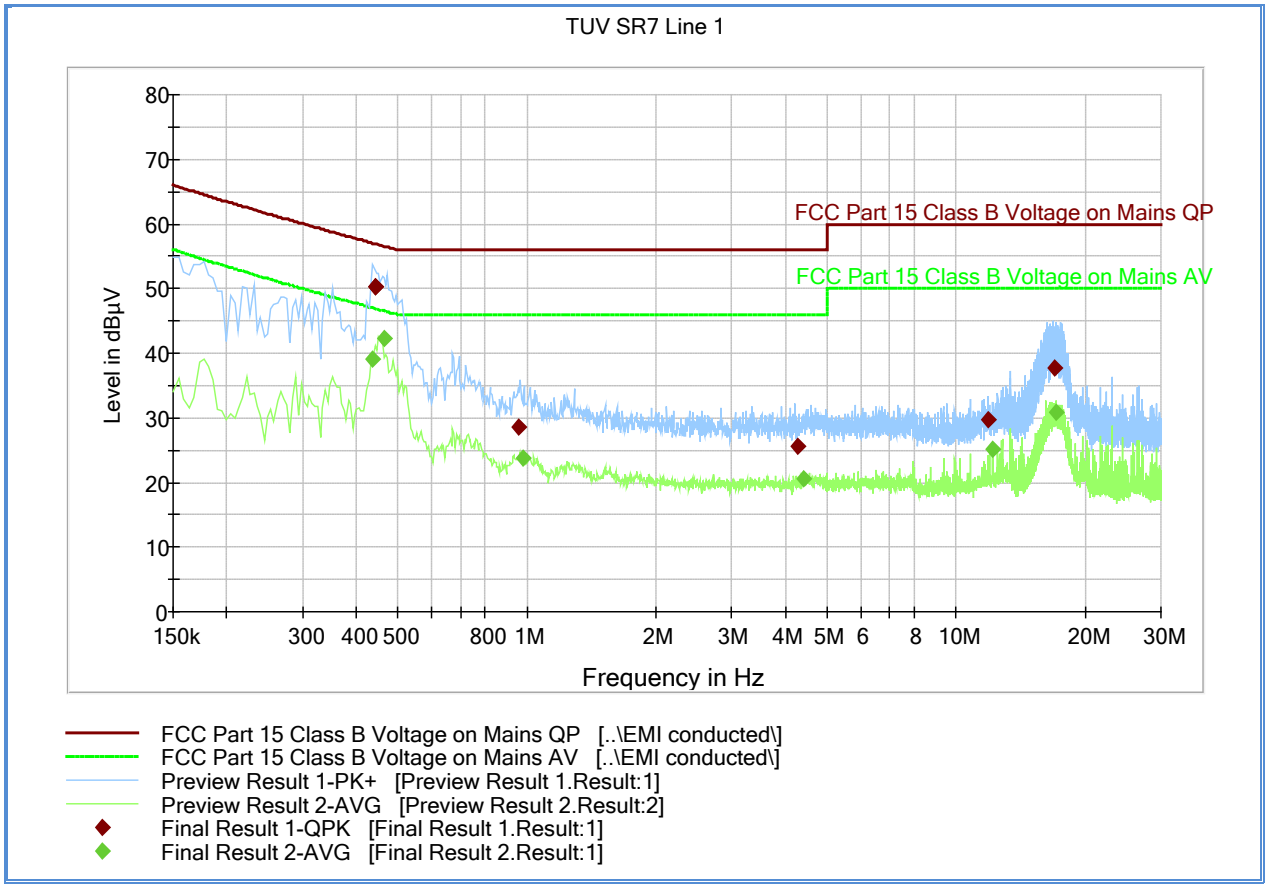
Measuring equipment raw measurement (dbµV) @ 150kHz			5.5
Correction Factor (dB)	Asset# 8607 (20 dB attenuator)	19.9	20.7
	Asset# 1177 (cable)	0.15	
	Asset# 1176 (cable)	0.35	
	Asset# 7567 (LISN)	0.30	
Reported QuasiPeak Final Measurement (dbµV) @ 150kHz			**26.2**

2.2.9 Test Results

Compliant. See attached plots and tables.

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

2.2.10 FCC Conducted Emissions Line 1 – Hot (Worst Case Transmit Mode)



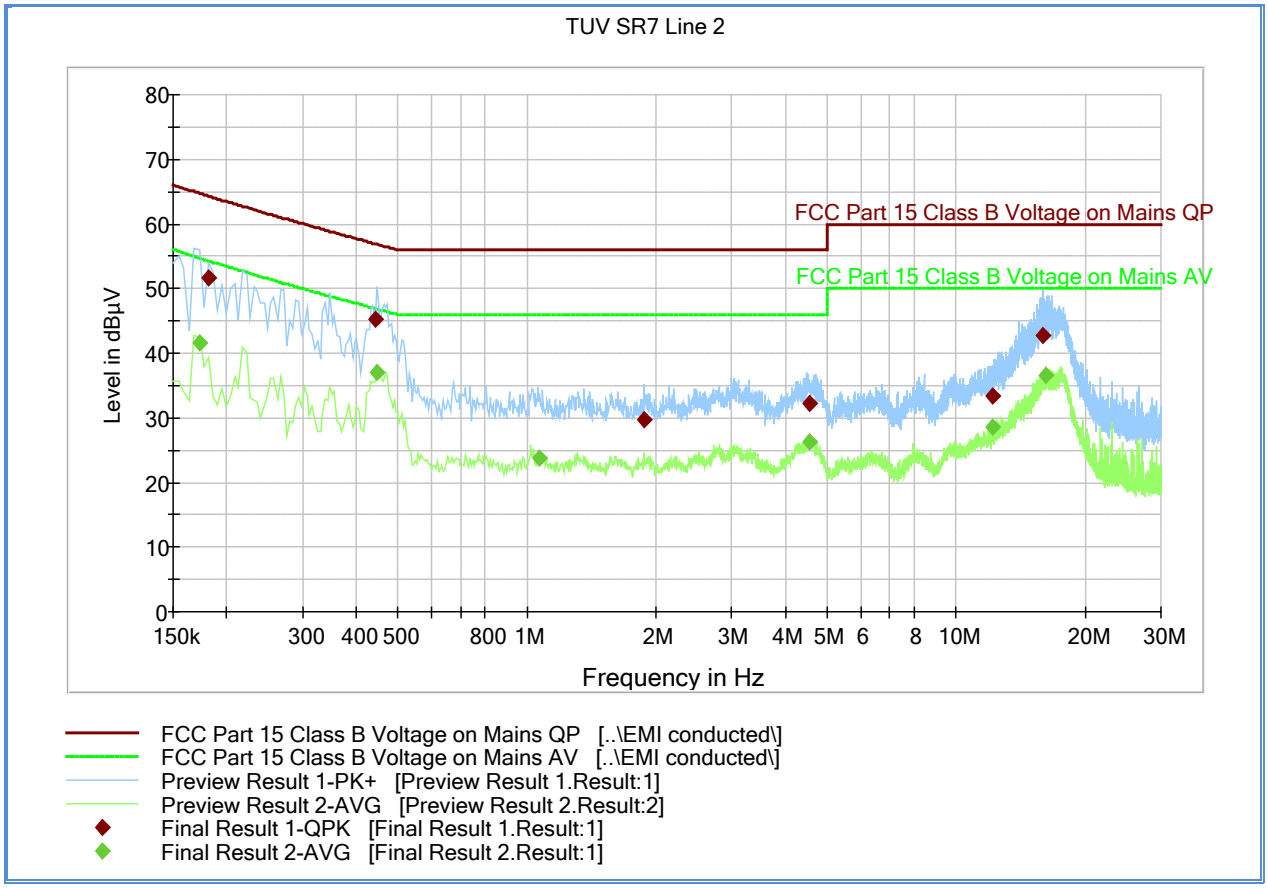
Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.442500	50.3	1000.0	9.000	Off	L1	20.2	6.6	56.9
0.442500	50.3	1000.0	9.000	Off	L1	20.2	6.6	56.9
0.960000	28.6	1000.0	9.000	Off	L1	20.2	27.4	56.0
4.281000	25.6	1000.0	9.000	Off	L1	20.4	30.4	56.0
11.890500	29.8	1000.0	9.000	Off	L1	20.5	30.2	60.0
16.908000	37.7	1000.0	9.000	Off	L1	20.8	22.3	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.438000	39.1	1000.0	9.000	Off	L1	20.2	7.9	47.0
0.465000	42.4	1000.0	9.000	Off	L1	20.2	4.2	46.5
0.978000	23.7	1000.0	9.000	Off	L1	20.2	22.3	46.0
4.411500	20.6	1000.0	9.000	Off	L1	20.4	25.4	46.0
12.196500	25.2	1000.0	9.000	Off	L1	20.5	24.8	50.0
17.083500	30.8	1000.0	9.000	Off	L1	20.8	19.2	50.0

2.2.1 FCC Conducted Emissions Line 2 – Neutral (Worst Case Transmit Mode)



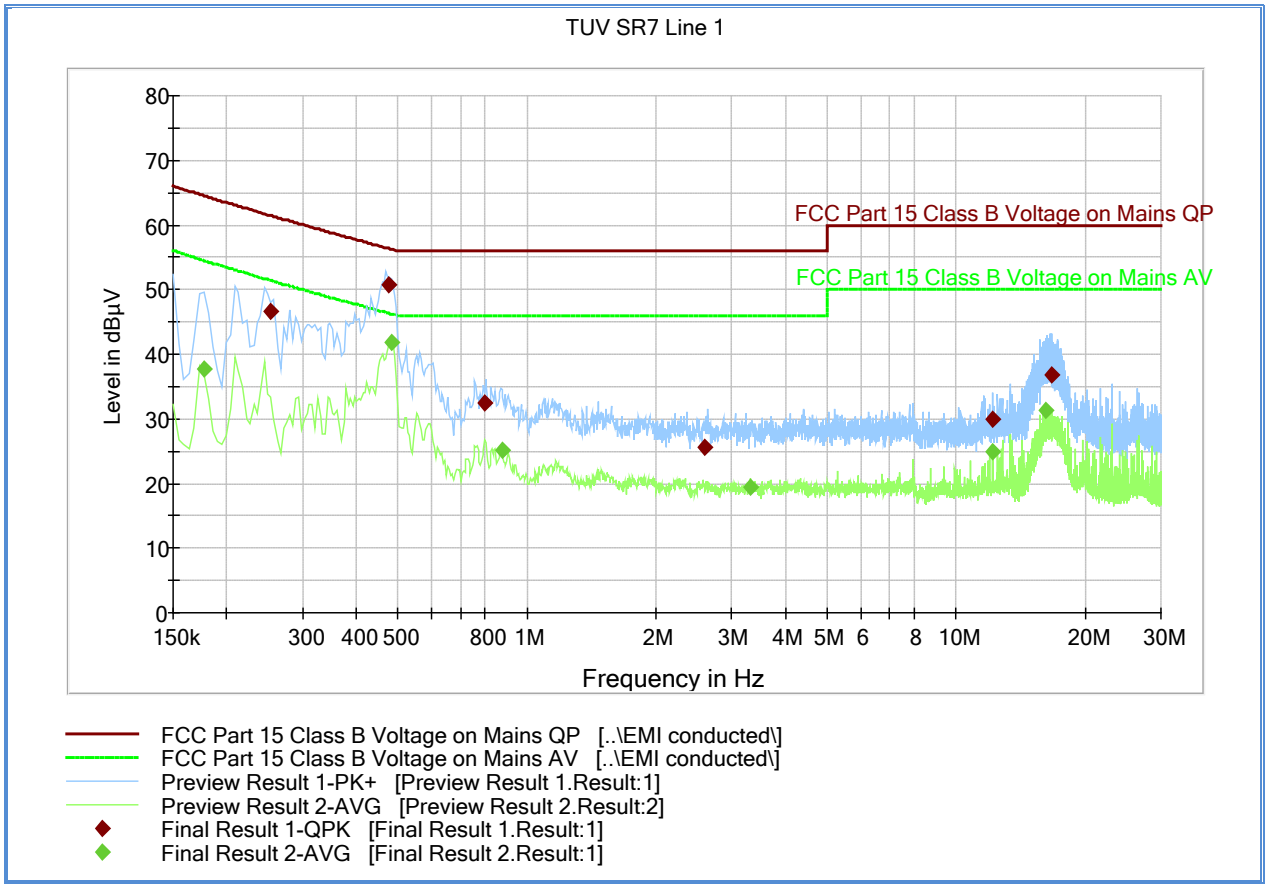
Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.181500	51.6	1000.0	9.000	Off	N	21.2	12.7	64.3
0.442500	45.2	1000.0	9.000	Off	N	21.1	11.7	56.9
1.873500	29.8	1000.0	9.000	Off	N	21.1	26.2	56.0
4.542000	32.3	1000.0	9.000	Off	N	21.2	23.7	56.0
12.142500	33.3	1000.0	9.000	Off	N	21.3	26.7	60.0
15.859500	42.6	1000.0	9.000	Off	N	21.5	17.4	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.172500	41.7	1000.0	9.000	Off	N	21.2	13.0	54.7
0.447000	37.1	1000.0	9.000	Off	N	21.1	9.7	46.8
1.072500	23.8	1000.0	9.000	Off	N	21.1	22.2	46.0
4.555500	26.2	1000.0	9.000	Off	N	21.2	19.8	46.0
12.196500	28.5	1000.0	9.000	Off	N	21.3	21.5	50.0
16.228500	36.7	1000.0	9.000	Off	N	21.5	13.3	50.0

2.2.2 FCC Conducted Emissions Line 1 – Hot (Receive Mode)



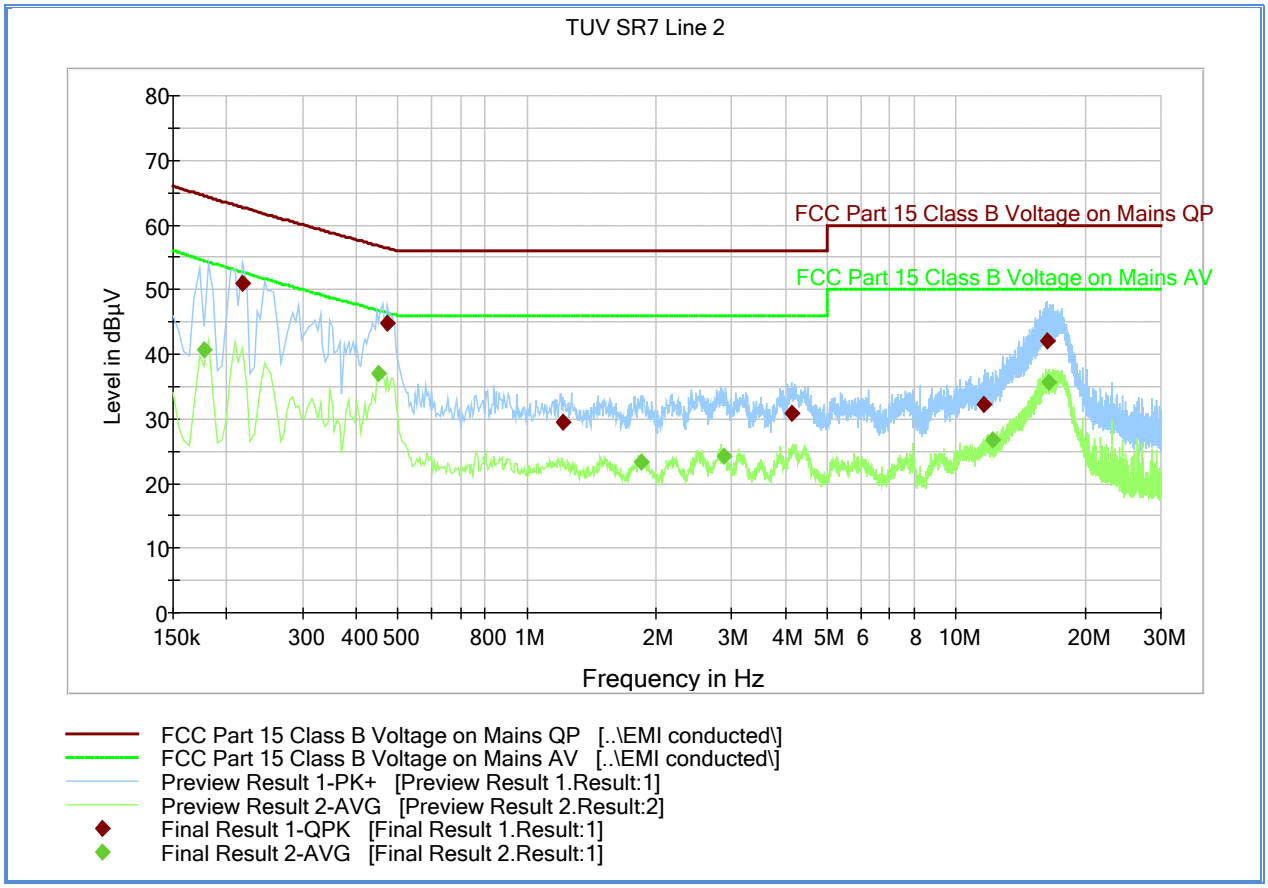
Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.253500	46.7	1000.0	9.000	Off	L1	20.3	14.7	61.4
0.478500	50.7	1000.0	9.000	Off	L1	20.2	5.6	56.3
0.798000	32.5	1000.0	9.000	Off	L1	20.2	23.5	56.0
2.598000	25.7	1000.0	9.000	Off	L1	20.3	30.3	56.0
12.138000	30.0	1000.0	9.000	Off	L1	20.5	30.0	60.0
16.746000	36.9	1000.0	9.000	Off	L1	20.8	23.1	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.177000	37.6	1000.0	9.000	Off	L1	20.4	16.9	54.5
0.483000	41.9	1000.0	9.000	Off	L1	20.2	4.4	46.3
0.874500	25.2	1000.0	9.000	Off	L1	20.2	20.8	46.0
3.318000	19.5	1000.0	9.000	Off	L1	20.3	26.5	46.0
12.196500	25.0	1000.0	9.000	Off	L1	20.5	25.0	50.0
16.228500	31.4	1000.0	9.000	Off	L1	20.8	18.6	50.0

2.2.3 FCC Conducted Emissions Line 2 – Neutral (Receive Mode)



Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.217500	50.9	1000.0	9.000	Off	N	21.1	11.9	62.7
0.474000	44.8	1000.0	9.000	Off	N	21.1	11.6	56.4
1.216500	29.5	1000.0	9.000	Off	N	21.1	26.5	56.0
4.137000	30.8	1000.0	9.000	Off	N	21.2	25.2	56.0
11.589000	32.3	1000.0	9.000	Off	N	21.3	27.7	60.0
16.309500	42.0	1000.0	9.000	Off	N	21.6	18.0	60.0

Average

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.177000	40.8	1000.0	9.000	Off	N	21.2	13.8	54.5
0.451500	37.1	1000.0	9.000	Off	N	21.1	9.7	46.8
1.851000	23.3	1000.0	9.000	Off	N	21.1	22.7	46.0
2.868000	24.3	1000.0	9.000	Off	N	21.1	21.7	46.0
12.196500	26.7	1000.0	9.000	Off	N	21.3	23.3	50.0
16.467000	35.6	1000.0	9.000	Off	N	21.6	14.4	50.0

2.3 99% EMISSION BANDWIDTH

2.3.1 Specification Reference

RSS-Gen Clause 4.6.1

2.3.2 Standard Applicable

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.
The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

2.3.3 Equipment Under Test and Modification State

Serial No: N/A (Sample #1) / Test Configuration A

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

December 11, 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	19.4°C
Relative Humidity	19.3%
ATM Pressure	99.6 kPa

2.3.7 Additional Observations

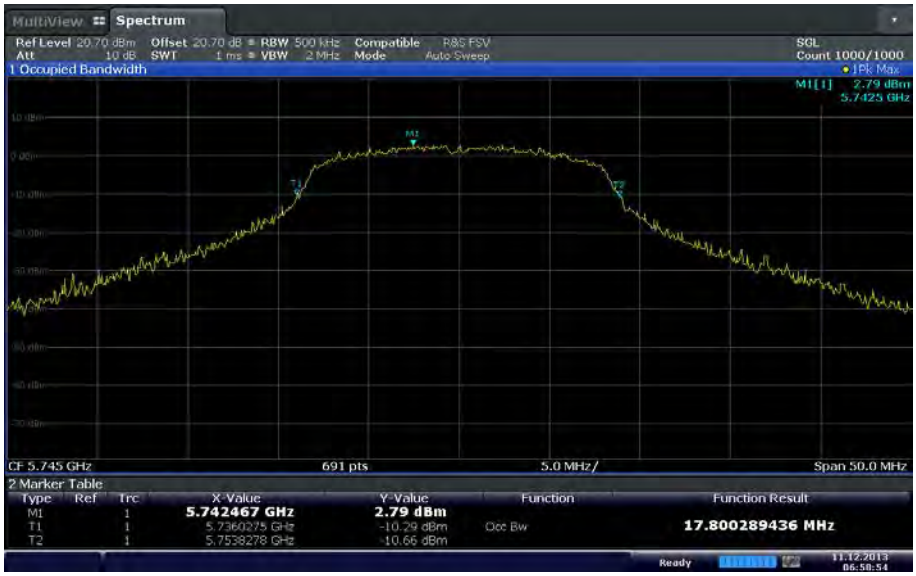
- This is a conducted test.
- An offset of 20.7dB was added to compensate for the external attenuator and cable used.
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the span.
- VBW is 3X RBW.
- Sweep is auto.

- 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.

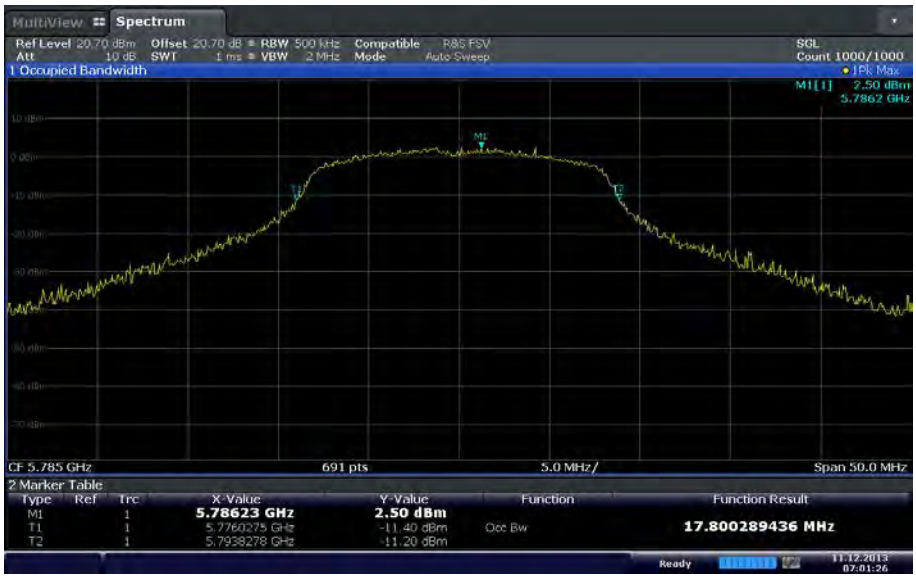
2.3.8 Test Results (For reporting purposes only)

Mode	Channel	Measured 99% Bandwidth (MHz)
802.11a	149 (5745 MHz)	17.800
	157 (5785 MHz)	18.740
	165 (5825 MHz)	17.728
802.11b	1 (2412 MHz)	14.689
	6 (2437 MHz)	14.689
	11 (2462 MHz)	14.616
802.11g	1 (2412 MHz)	18.162
	6 (2437 MHz)	18.017
	11 (2462 MHz)	17.945
802.11n HT20	1 (2412 MHz)	19.247
	6 (2437 MHz)	19.103
	11 (2462 MHz)	18.958
802.11n HT20	149 (5745 MHz)	18.886
	157 (5785 MHz)	19.030
	165 (5825 MHz)	18.958
802.11n HT40	3 (2422 MHz)	35.962
	6 (2437 MHz)	35.962
	9 (2452 MHz)	35.856
802.11n HT40	149 (5745 MHz)	36.190
	157 (5785 MHz)	36.273
	165 (5825 MHz)	36.273
Bluetooth LE	37 (2402 MHz)	1.042
	17 (2440 MHz)	1.042
	39 (2480 MHz)	1.042

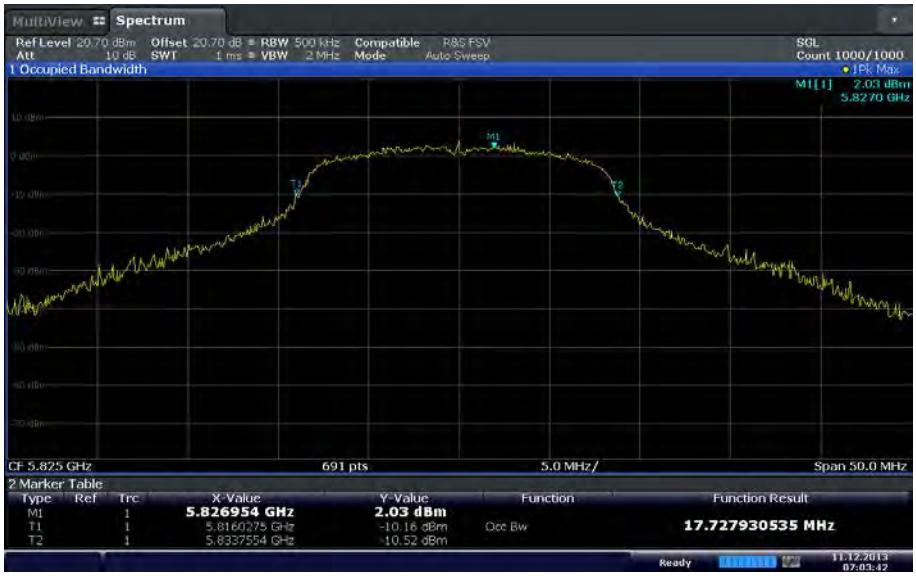
2.3.9 Test Results Plots



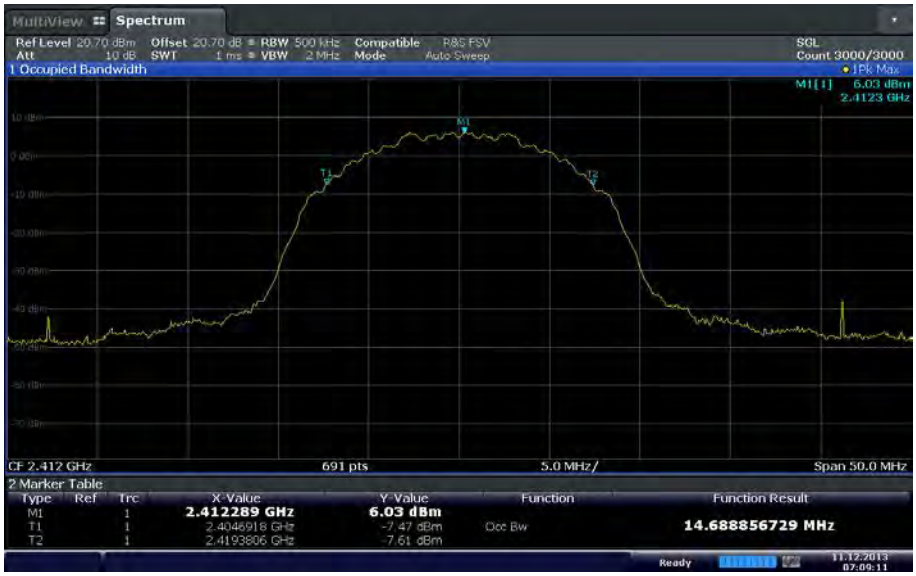
802.11a Low Channel



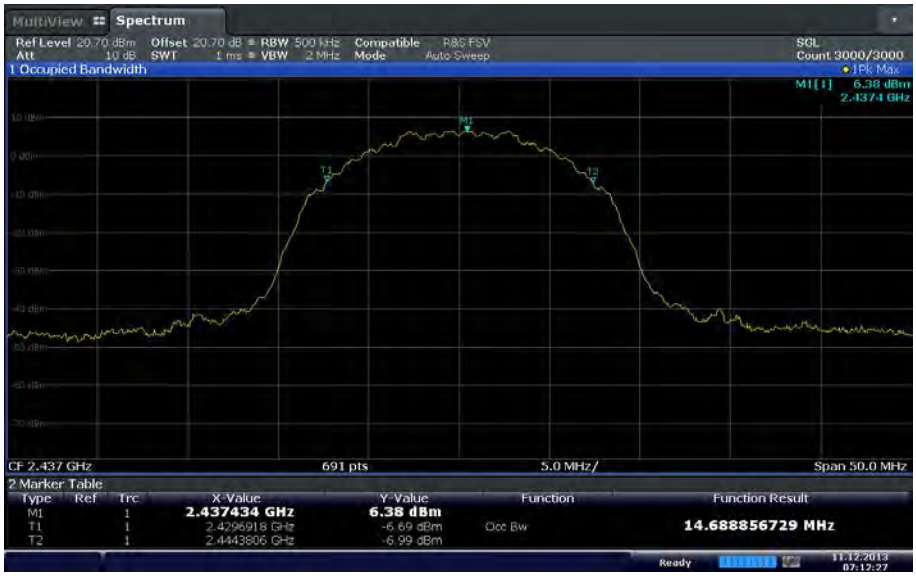
802.11a Mid Channel



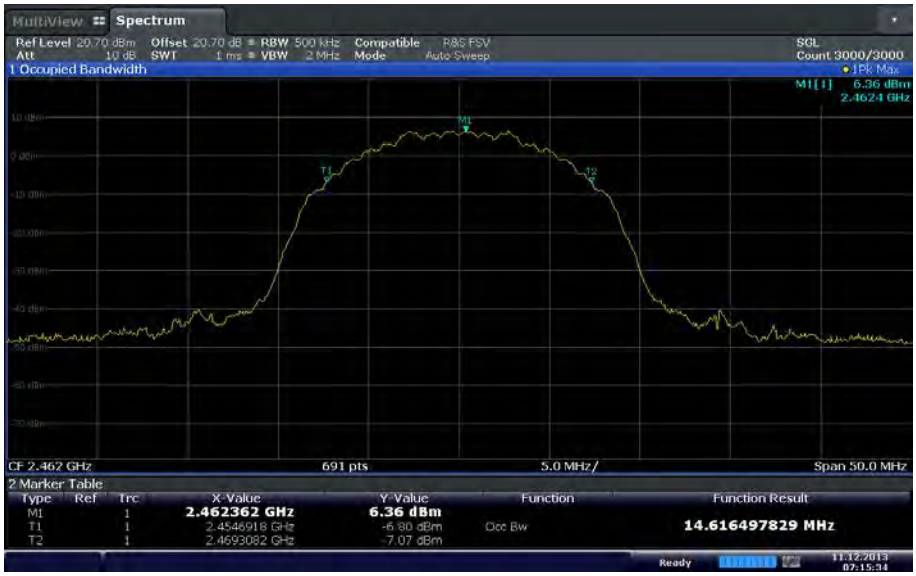
802.11a High Channel



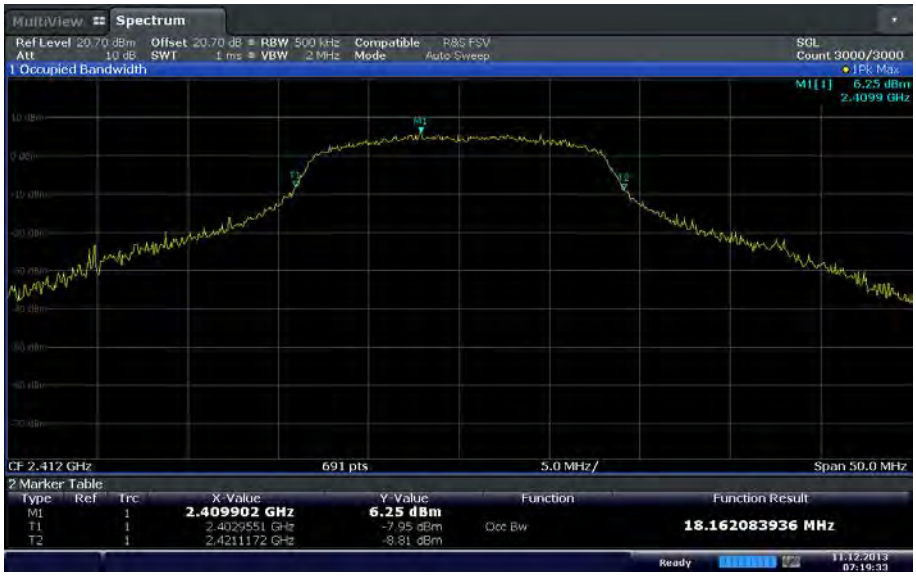
802.11b Low Channel



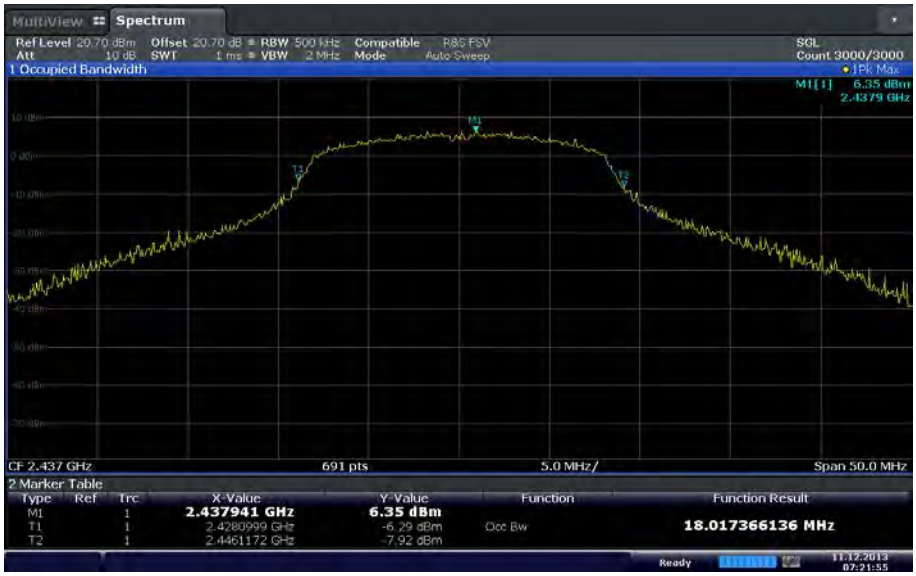
802.11b Mid Channel



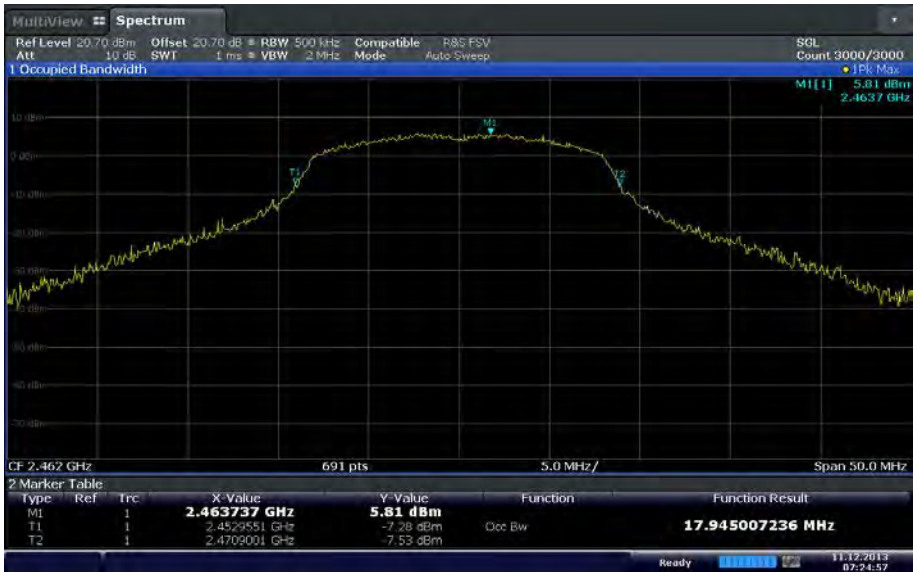
802.11b High Channel



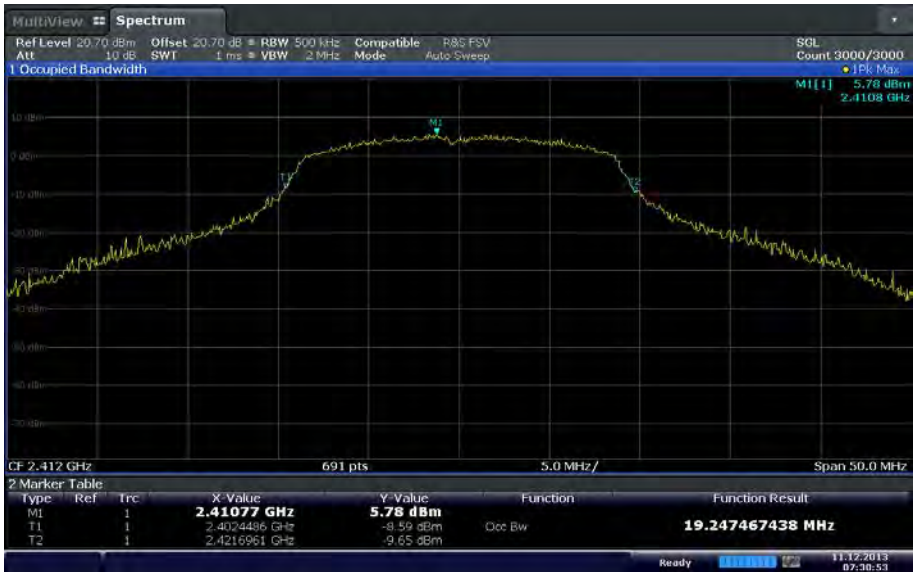
802.11g Low Channel



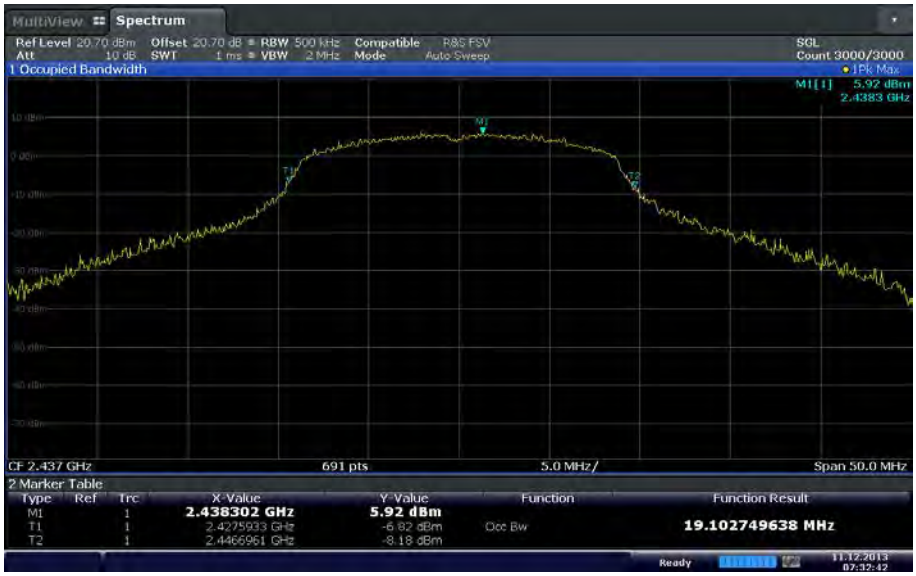
802.11g Mid Channel



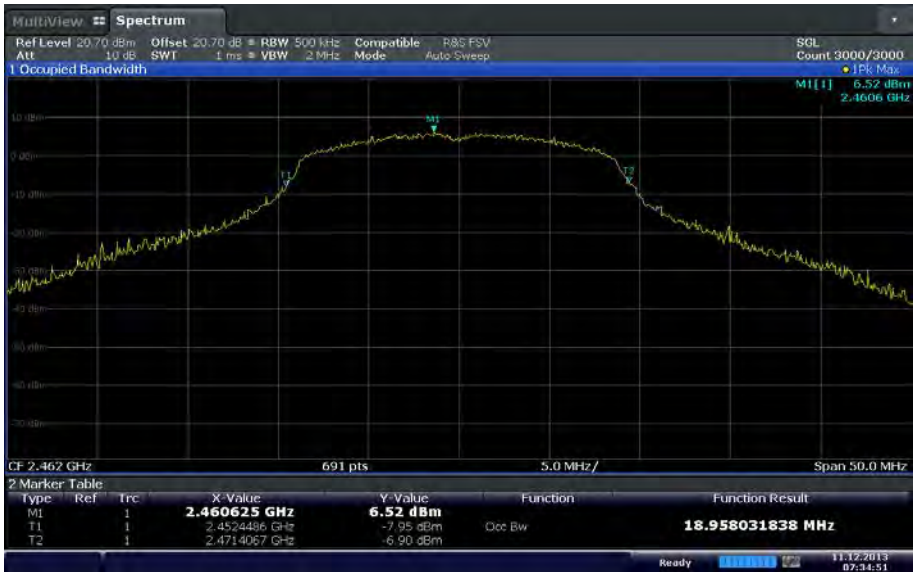
802.11g High Channel



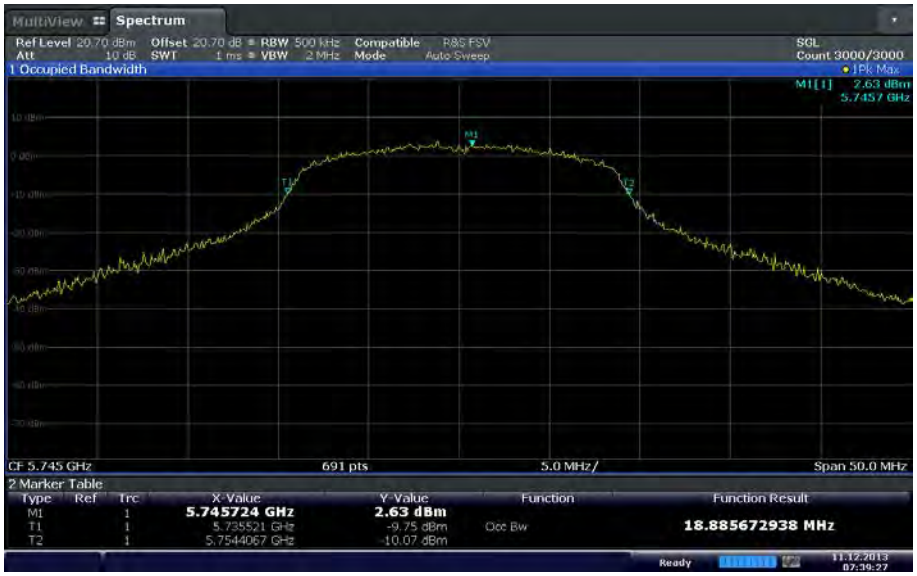
802.11n HT20 Low Channel



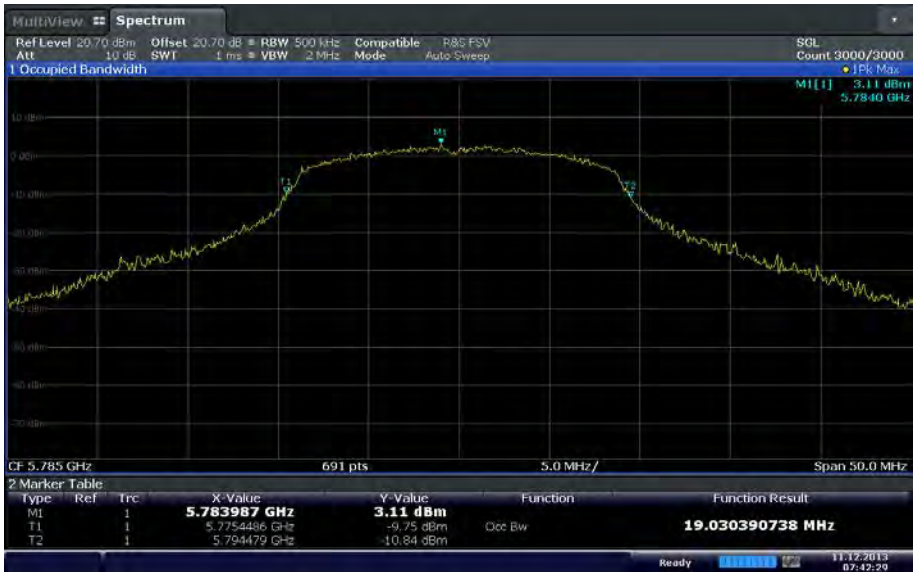
802.11n HT20 Mid Channel



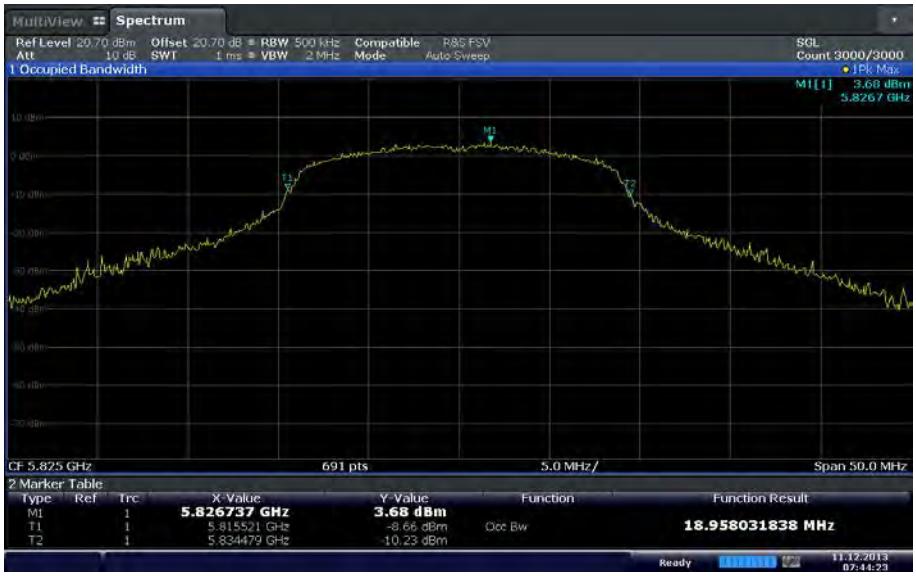
802.11n HT20 High Channel



802.11n HT20 Low Channel



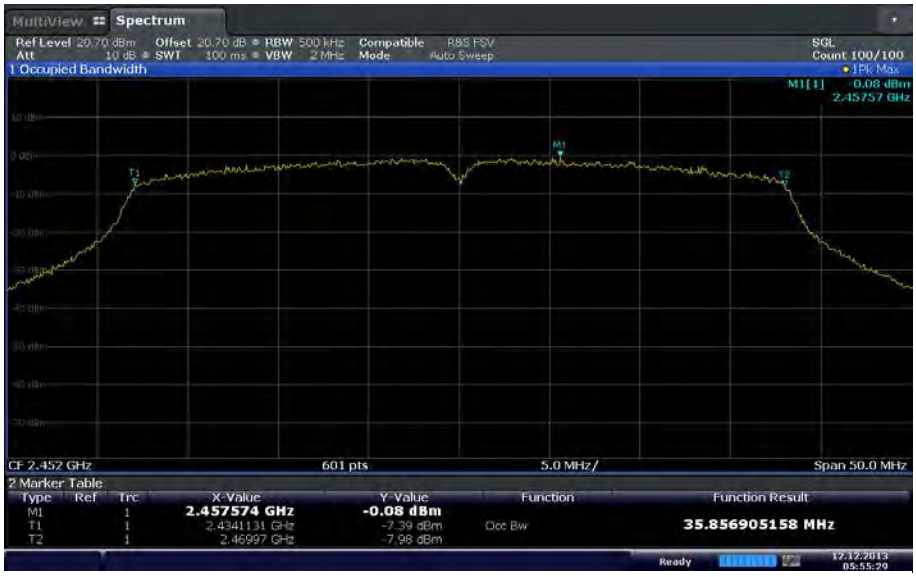
802.11n HT20 Mid Channel



802.11n HT20 High Channel

802.11n HT40 Low Channel

802.11n HT40 Mid Channel

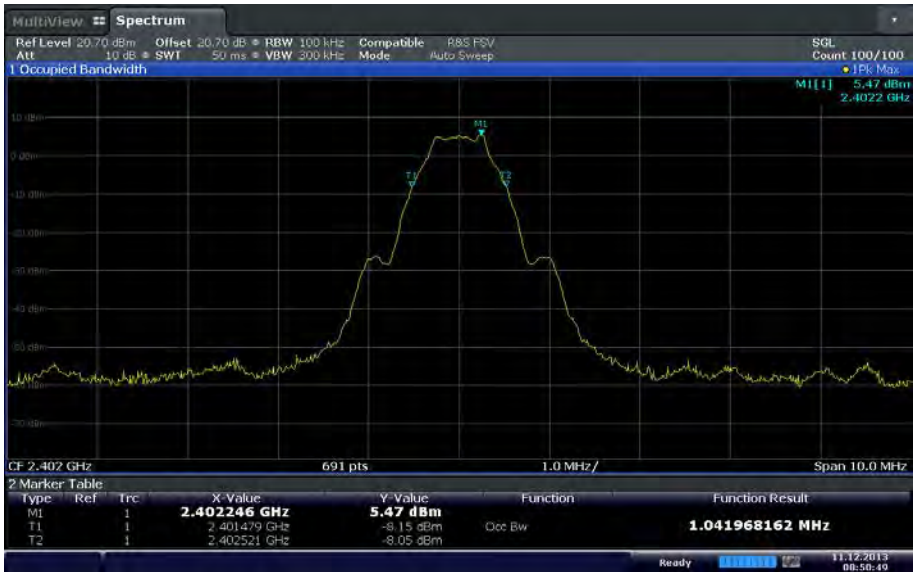


802.11n HT40 High Channel

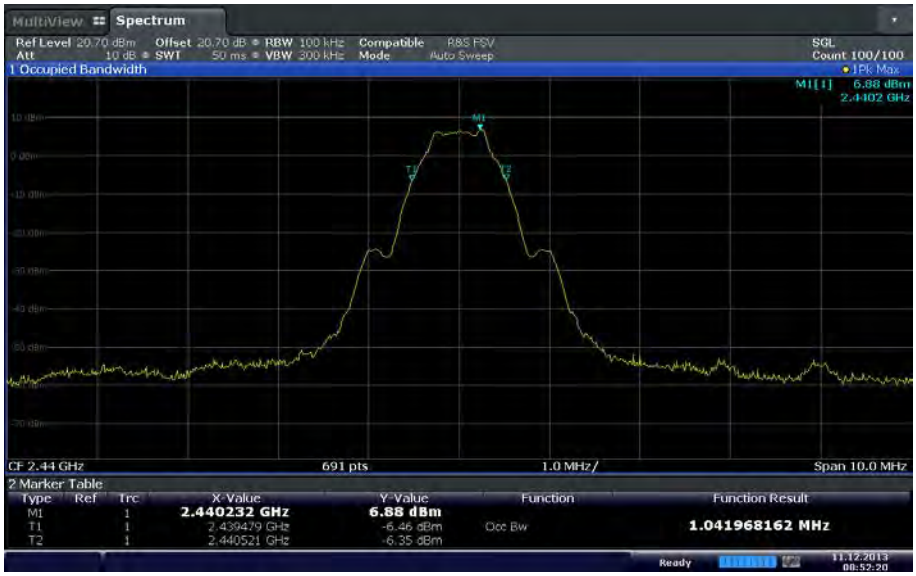
802.11n HT40 Low Channel

802.11n HT40 Mid Channel

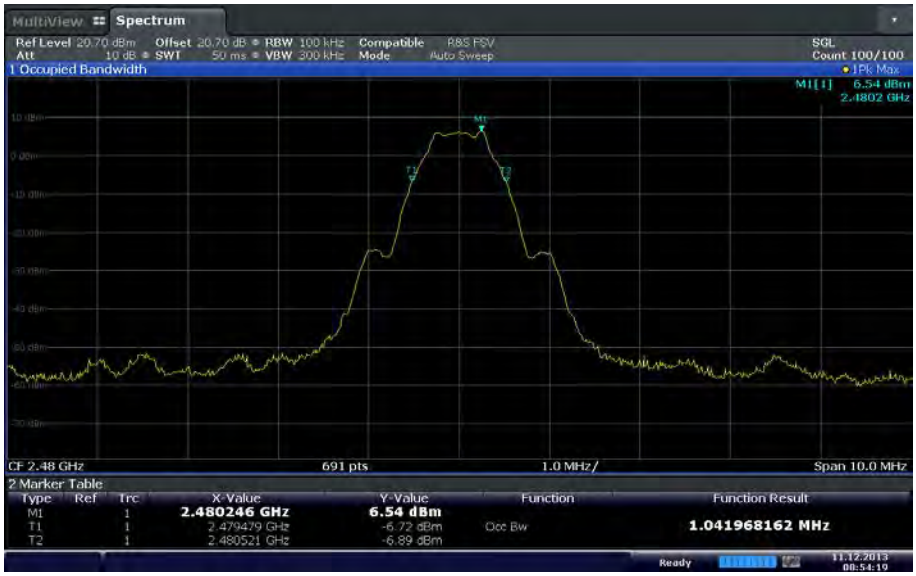
802.11n HT40 High Channel



Bluetooth LE Low Channel



Bluetooth LE Mid Channel



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: N/A (Sample #1) / Test Configuration A

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

December 11, 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	19.4°C
Relative Humidity	19.3%
ATM Pressure	99.6 kPa

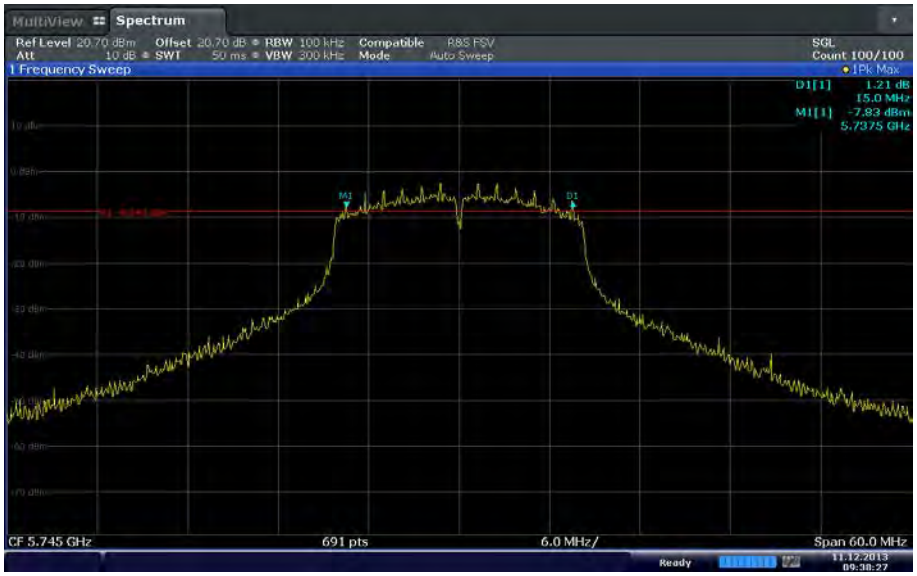
2.4.7 Additional Observations

- This is a conducted test.
- An offset of 20.7dB was added to compensate for the external attenuator and cable used.
- Span is wide enough to capture the channel transmission.
- RBW is set to 100 kHz.
- VBW is 3X RBW.
- Sweep is auto.
- Detector is peak.
- The “n” dB down marker function of the spectrum analyzer was used for this test.
- For signal modulation where “n” dB down marker function is not practical, a peak measurement is performed while the trace is in max hold.
- A horizontal line is drawn 6dB below the peak measurement.
- 6dB bandwidth is where the lower and upper edge of the signal intersects the drawn line using delta marker type measurement.

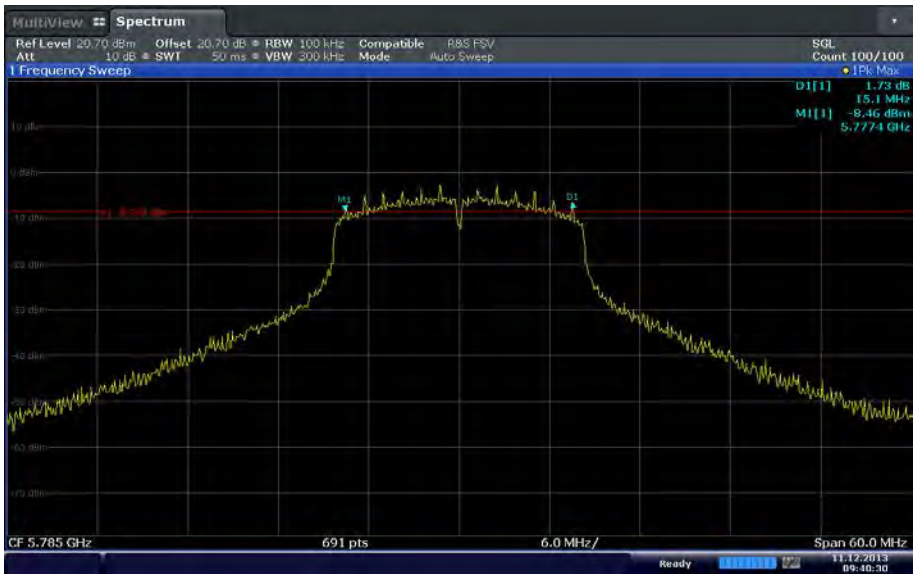
2.4.8 Test Results

Mode	Channel	Measured Bandwidth (MHz)	Minimum Bandwidth (MHz)	Compliance
802.11a	149 (5745 MHz)	15.00	0.500	Complies
	157 (5785 MHz)	15.10	0.500	Complies
	165 (5825 MHz)	15.00	0.500	Complies
802.11b	1 (2412 MHz)	8.94	0.500	Complies
	6 (2437 MHz)	8.94	0.500	Complies
	11 (2462 MHz)	10.16	0.500	Complies
802.11g	1 (2412 MHz)	15.50	0.500	Complies
	6 (2437 MHz)	15.20	0.500	Complies
	11 (2462 MHz)	15.20	0.500	Complies
802.11n HT20	1 (2412 MHz)	15.10	0.500	Complies
	6 (2437 MHz)	15.20	0.500	Complies
	11 (2462 MHz)	15.20	0.500	Complies
802.11n HT20	149 (5745 MHz)	15.10	0.500	Complies
	157 (5785 MHz)	15.10	0.500	Complies
	165 (5825 MHz)	15.10	0.500	Complies
802.11n HT40	3 (2422 MHz)	35.04	0.500	Complies
	6 (2437 MHz)	34.94	0.500	Complies
	9 (2452 MHz)	34.90	0.500	Complies
802.11n HT40	149 (5745 MHz)	35.14	0.500	Complies
	157 (5785 MHz)	35.34	0.500	Complies
	165 (5825 MHz)	35.14	0.500	Complies
Bluetooth LE	37 (2402 MHz)	0.709	0.500	Complies
	17 (2440 MHz)	0.695	0.500	Complies
	39 (2480 MHz)	0.709	0.500	Complies

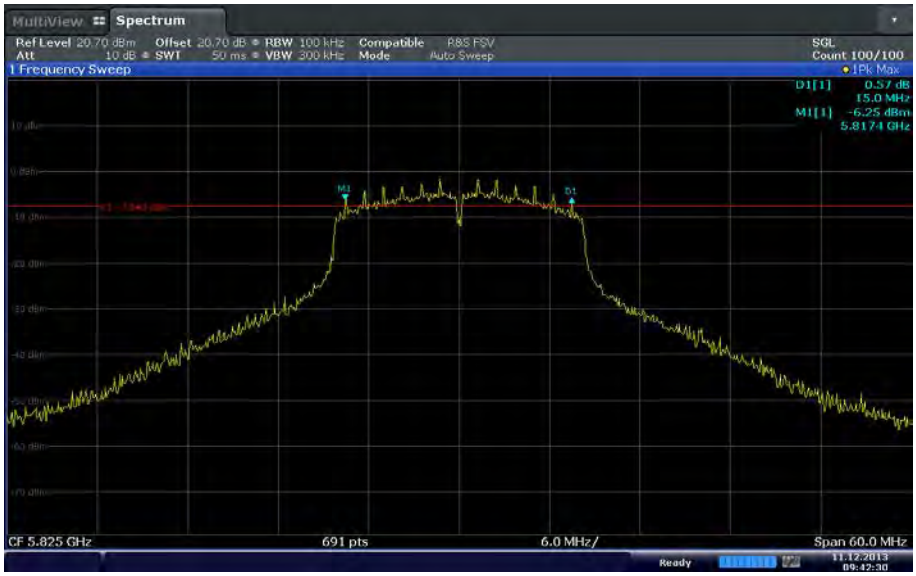
2.4.9 Test Results Plots



802.11a Low Channel

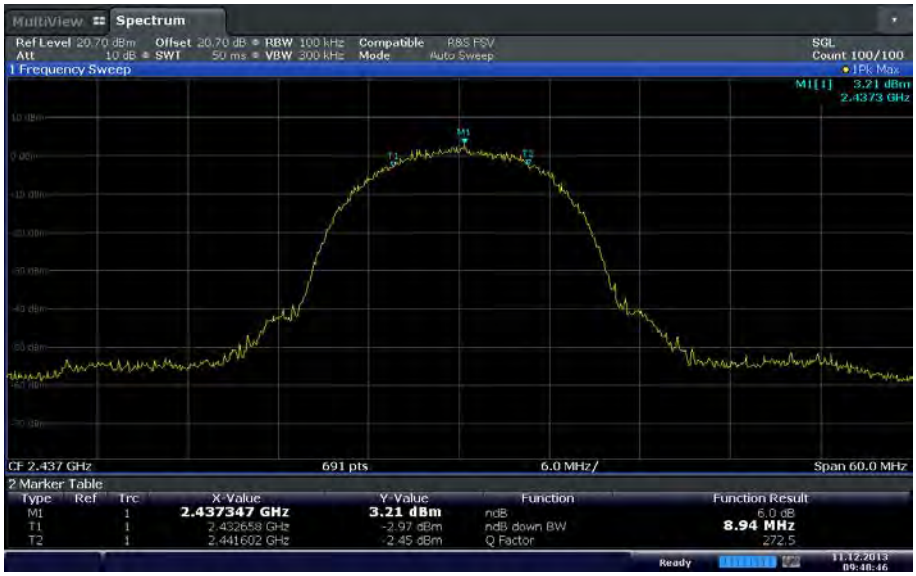


802.11a Mid Channel

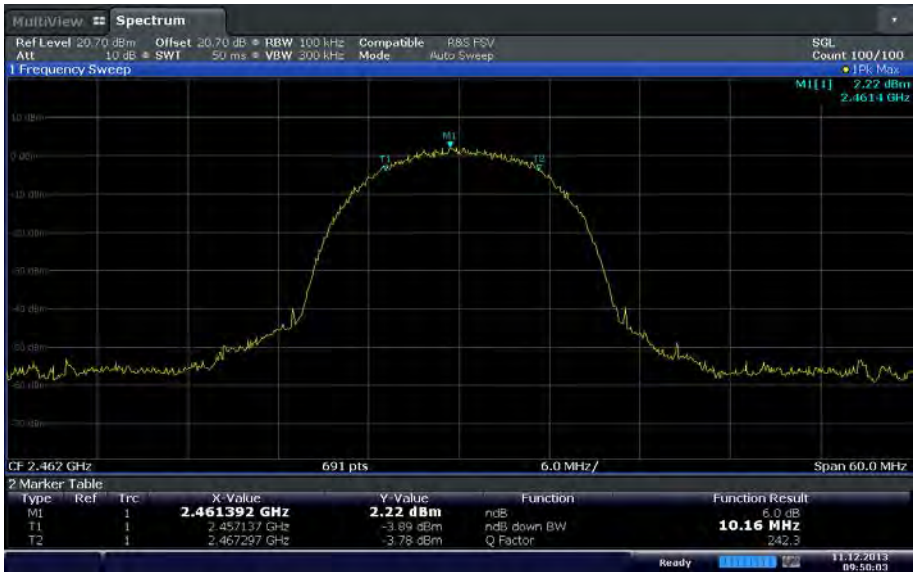


802.11a High Channel

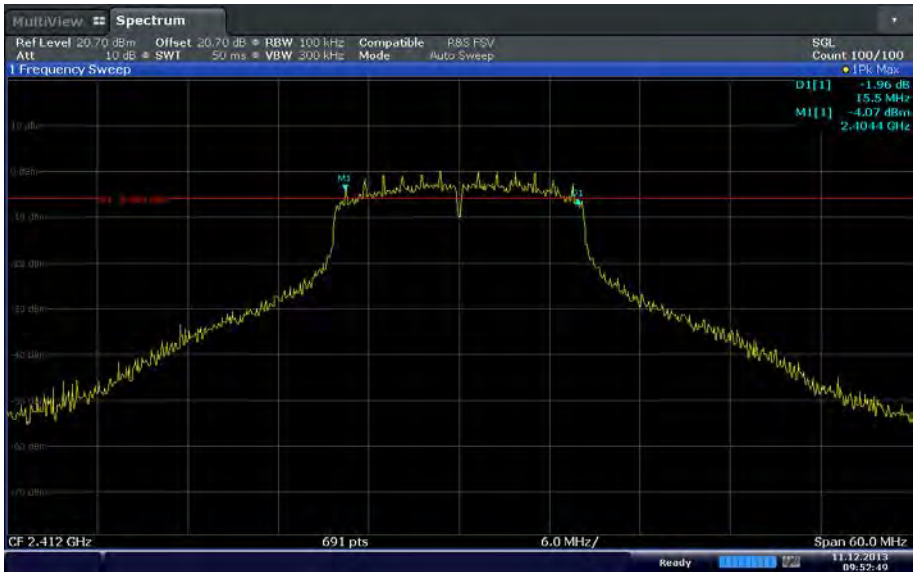
802.11b Low Channel



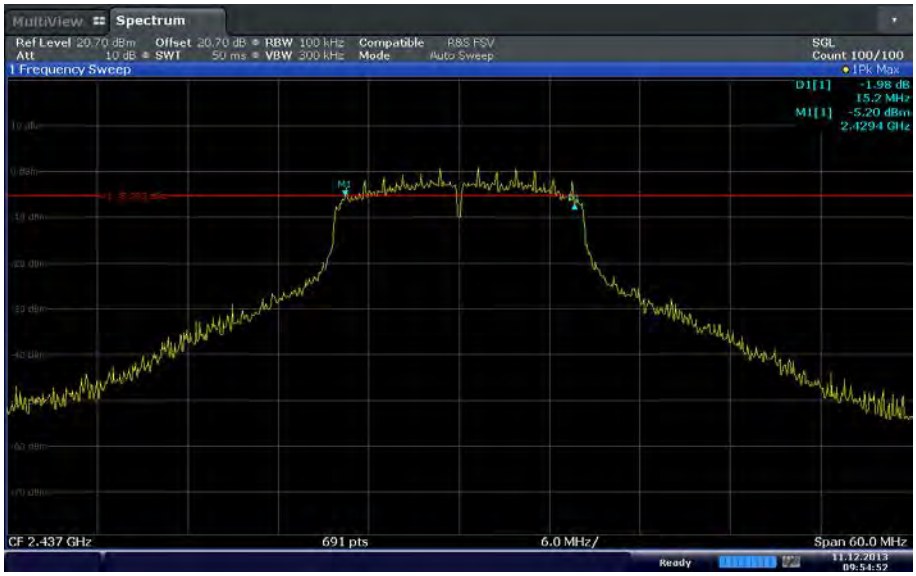
802.11b Mid Channel



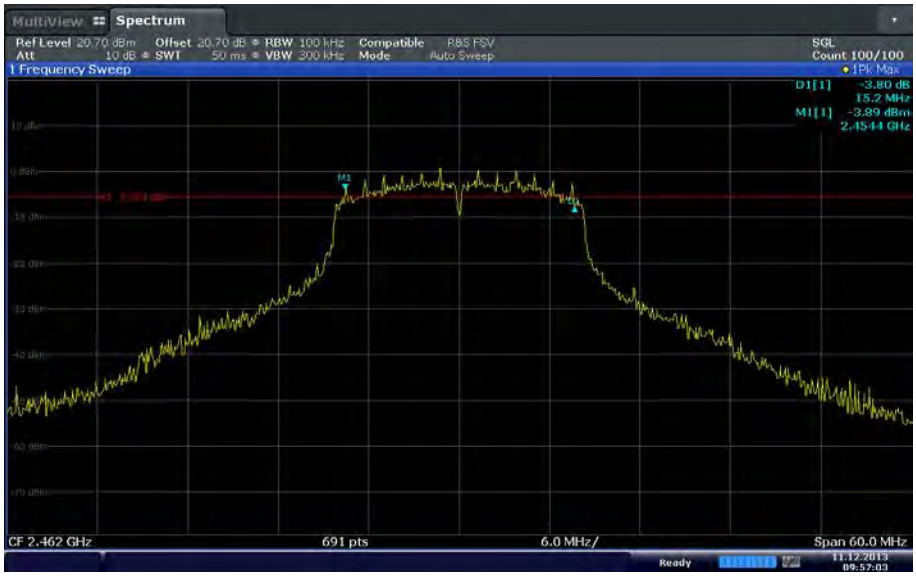
802.11b High Channel



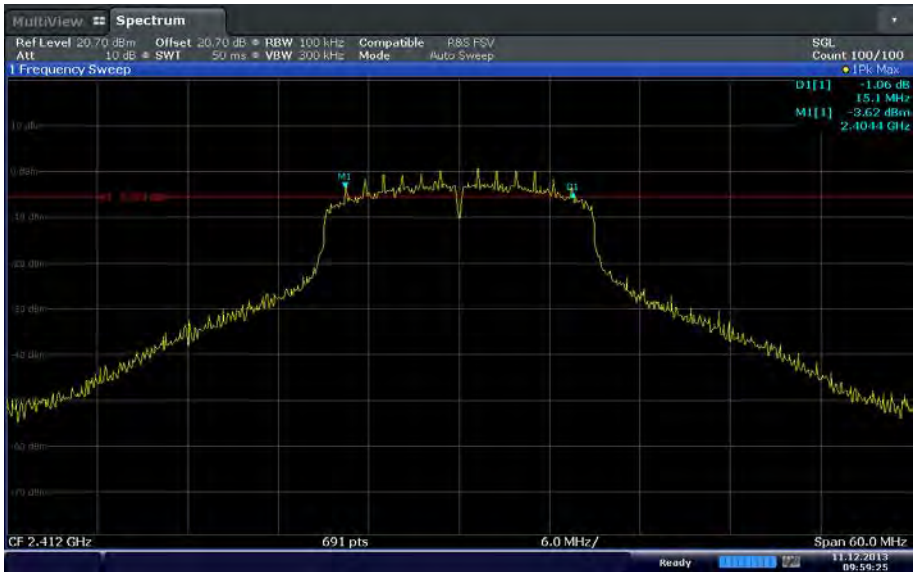
802.11g Low Channel



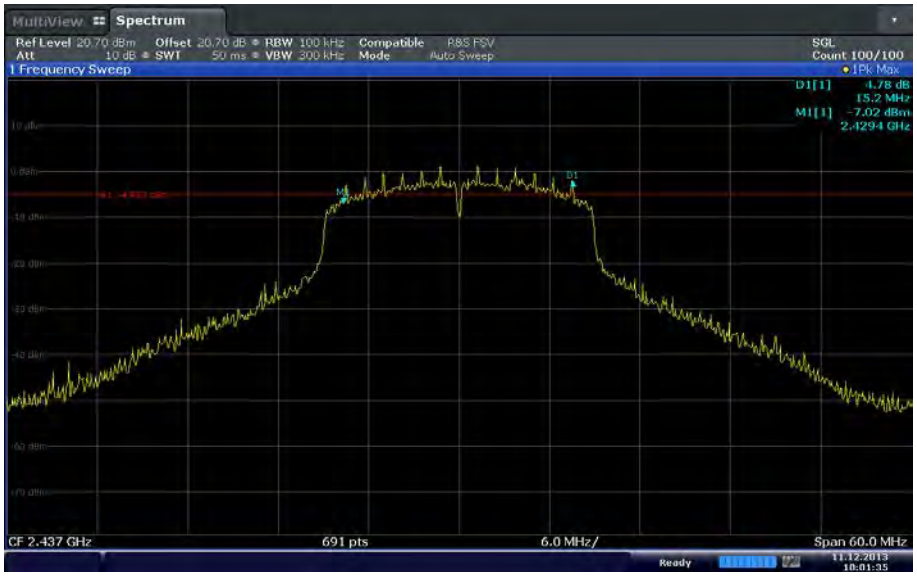
802.11g Mid Channel



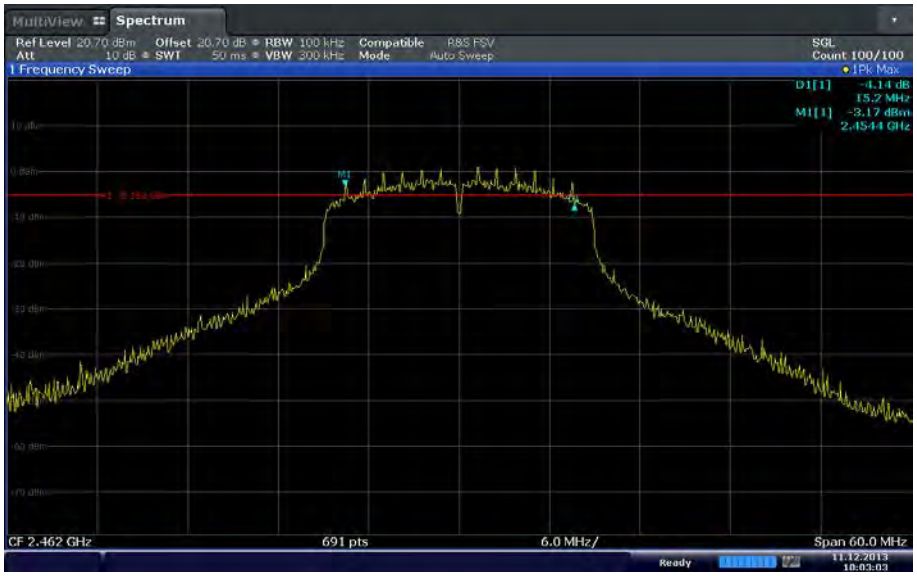
802.11g High Channel



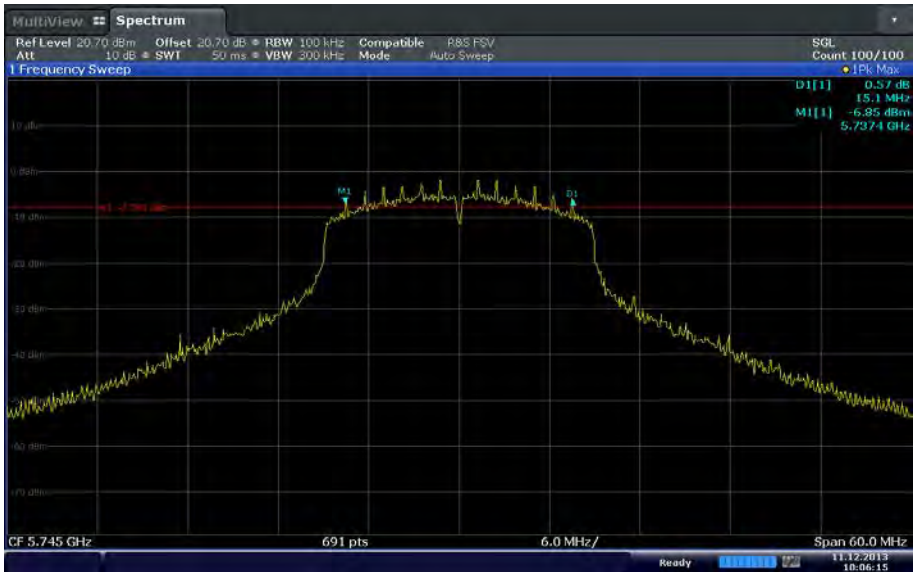
802.11n HT20 Low Channel



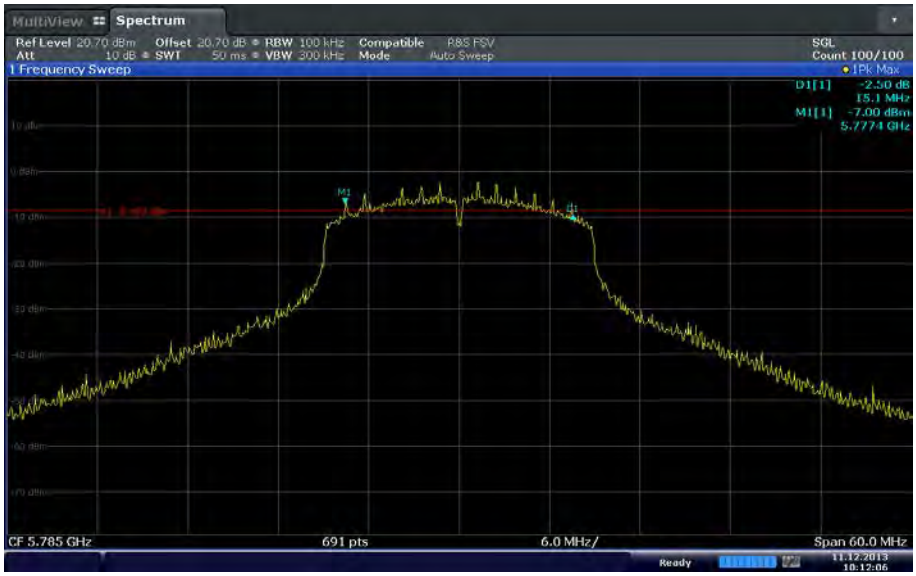
802.11n HT20 Mid Channel



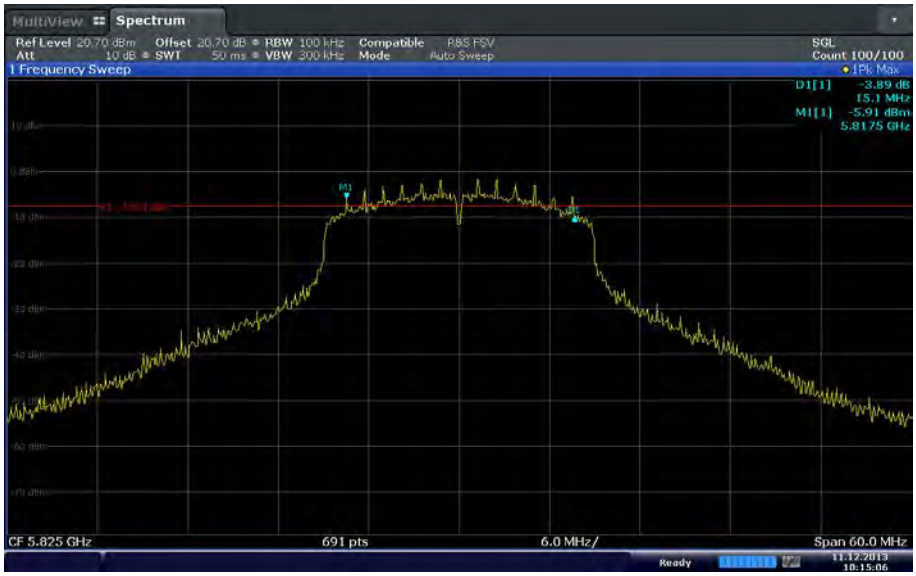
802.11n HT20 High Channel



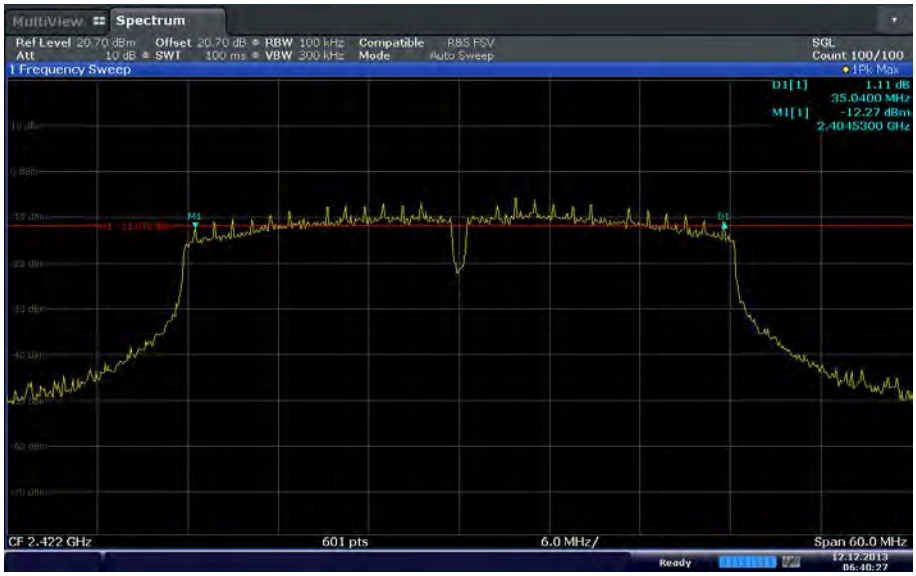
802.11n HT20 Low Channel



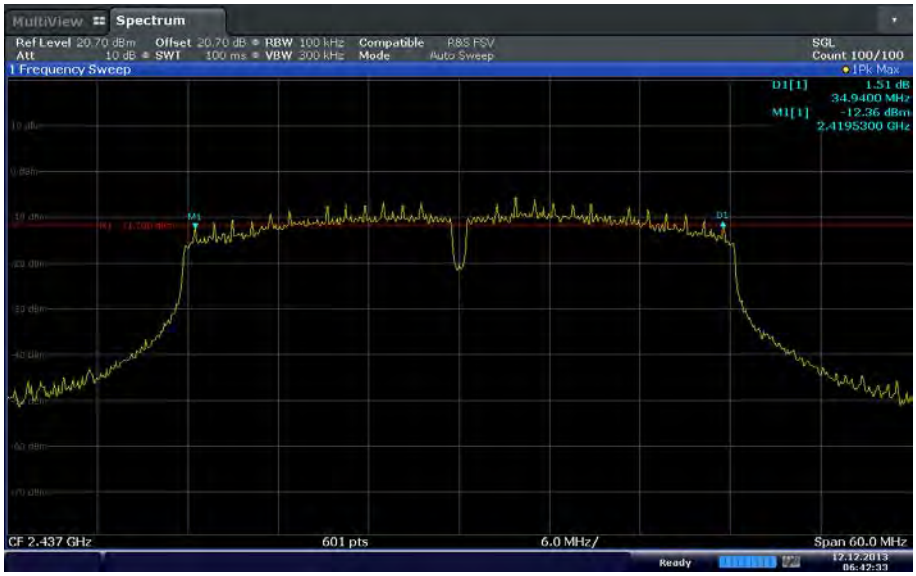
802.11n HT20 Mid Channel



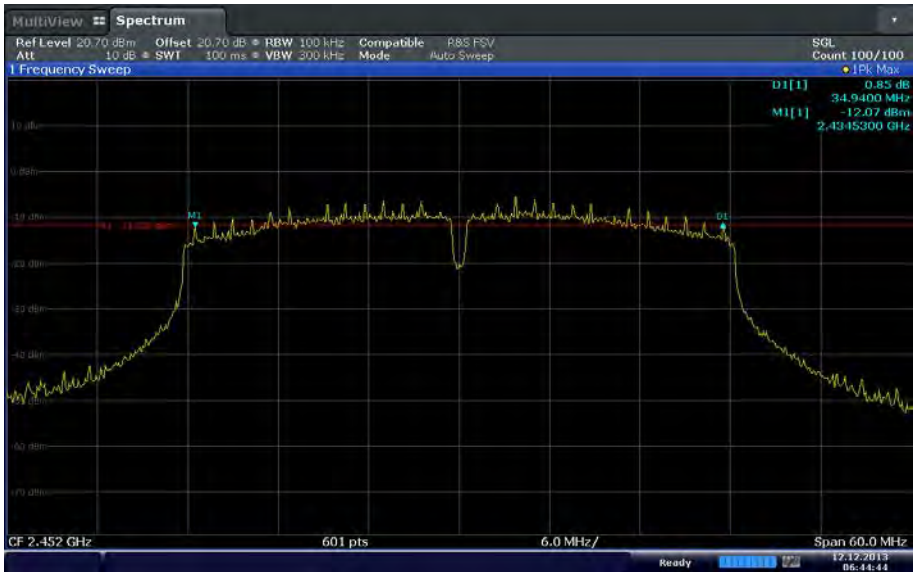
802.11n HT20 High Channel



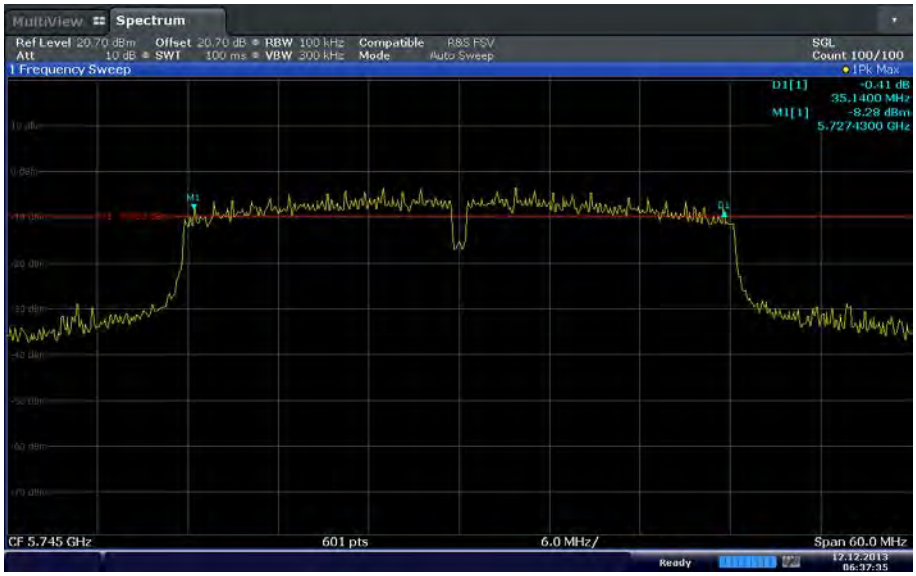
802.11n HT40 Low Channel



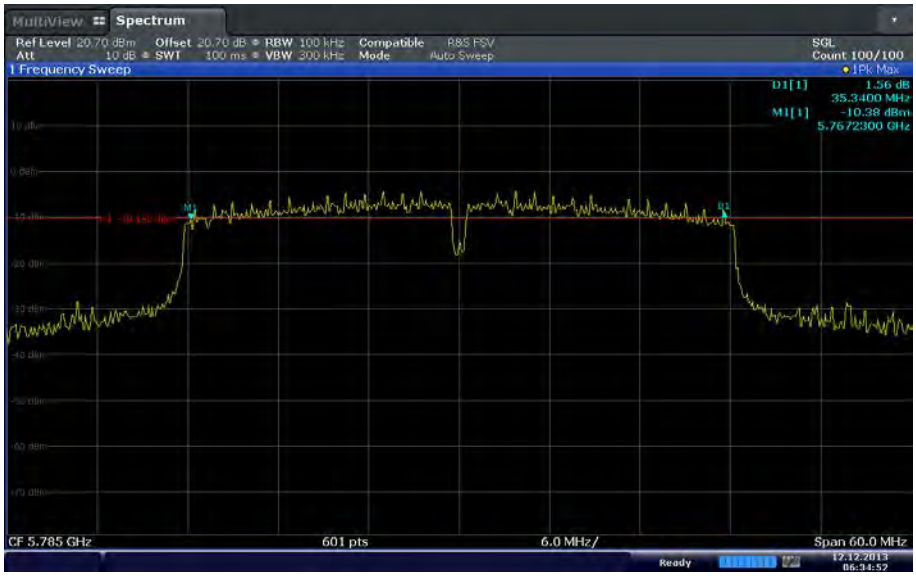
802.11n HT40 Mid Channel



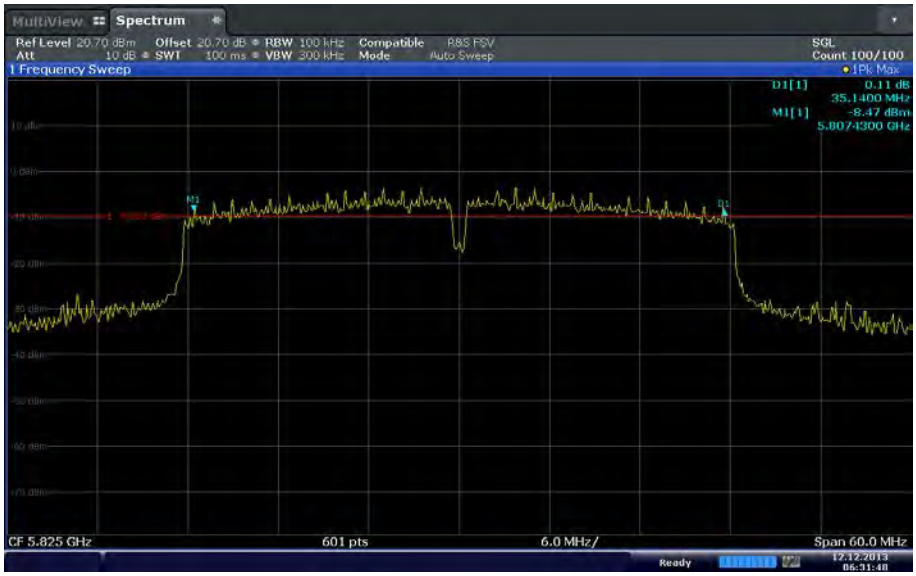
802.11n HT40 High Channel



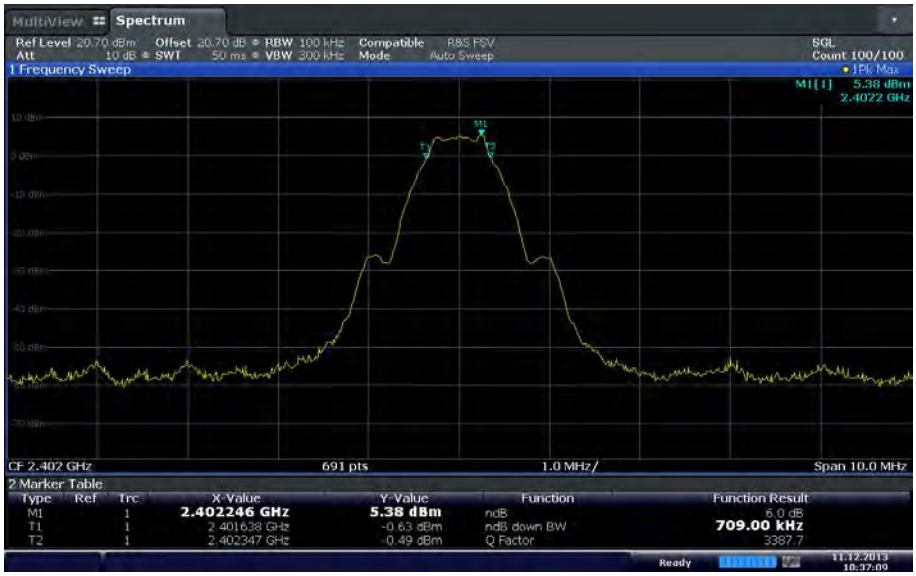
802.11n HT40 Low Channel



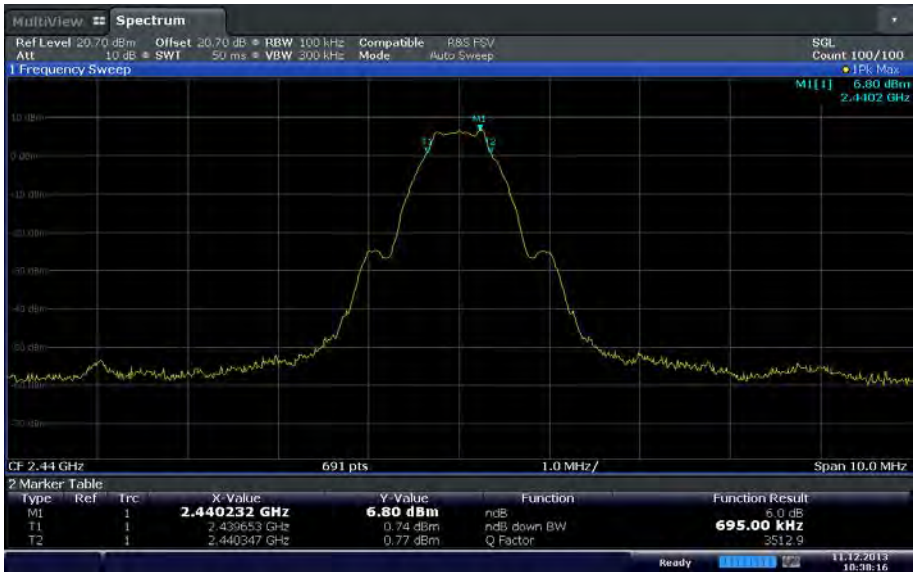
802.11n HT40 Mid Channel



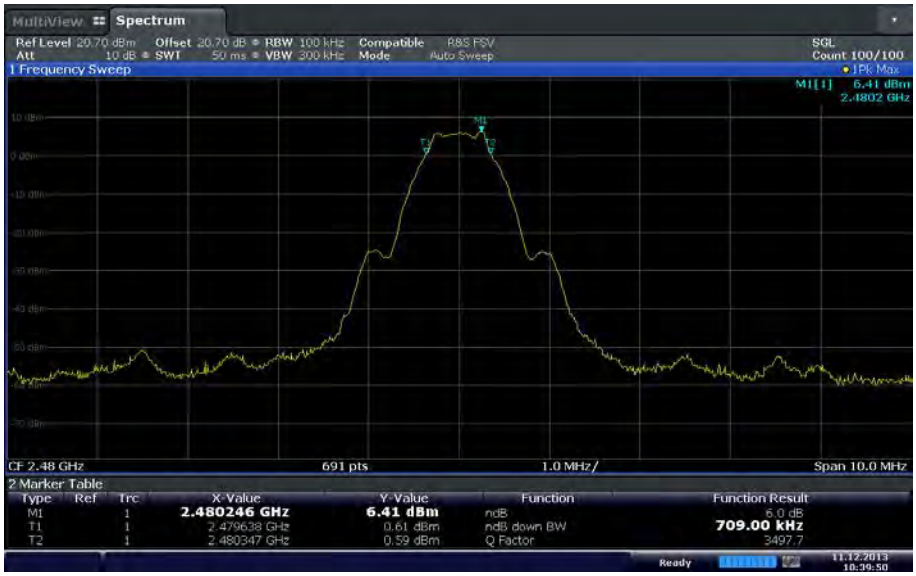
802.11n HT40 High Channel



Bluetooth LE Low Channel



Bluetooth LE Mid Channel



Bluetooth LE High Channel

2.5 OUT-OF-BAND EMISSIONS - CONDUCTED

2.5.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.5.2 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)).

2.5.3 Equipment Under Test and Modification State

Serial No: N/A (Sample #1) / Test Configuration A

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

December 11 and 12, 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	19.4-19.6°C
Relative Humidity	19.3-24.4%
ATM Pressure	99.6-99.8 kPa

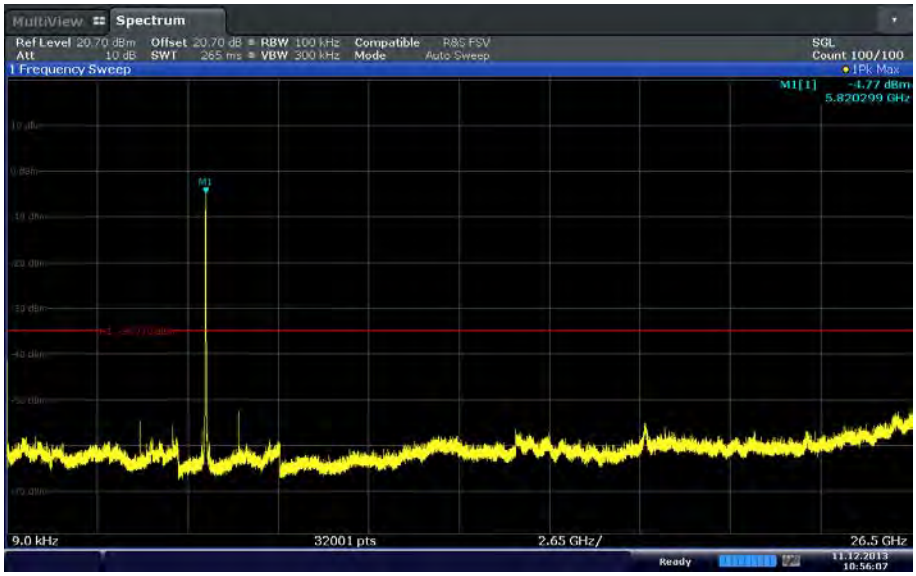
2.5.7 Additional Observations

- This is a conducted test.
- An offset of 20.7dB 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 9 kHz up to 26.5GHz and up to 40GHz for 5GHz 802.11 a and n.
- Only noise floor measurements observed from 26.5GHz up to 40GHz.

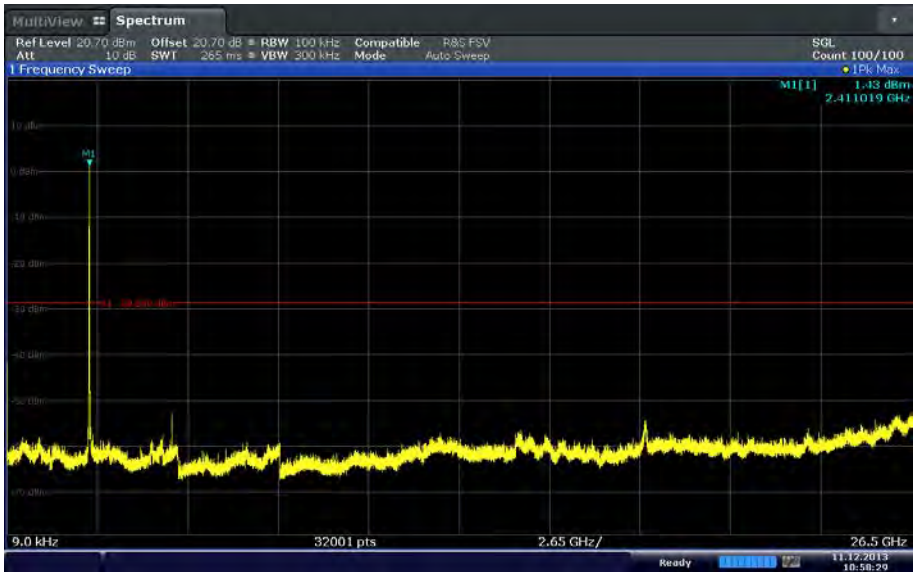
2.5.8 Test Results Plots

802.11a Low Channel

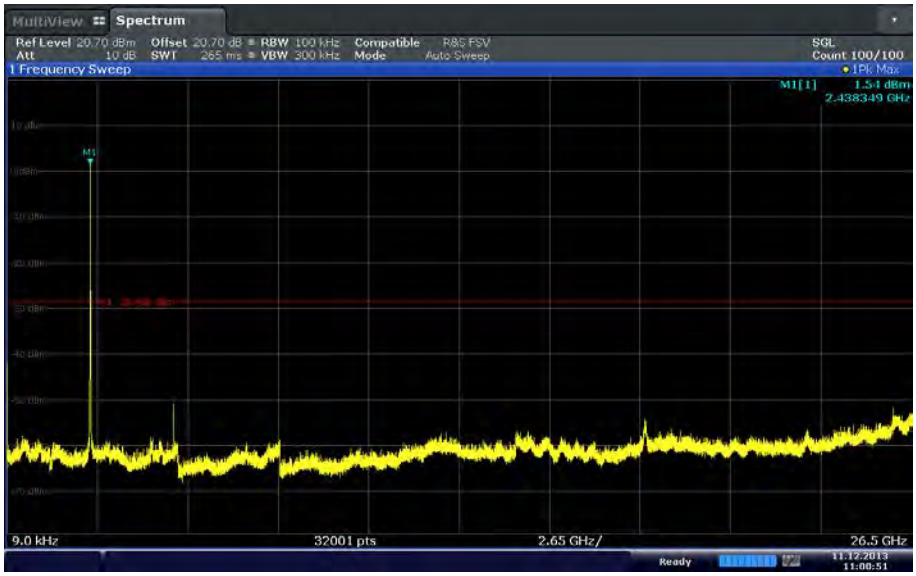
802.11a Mid Channel



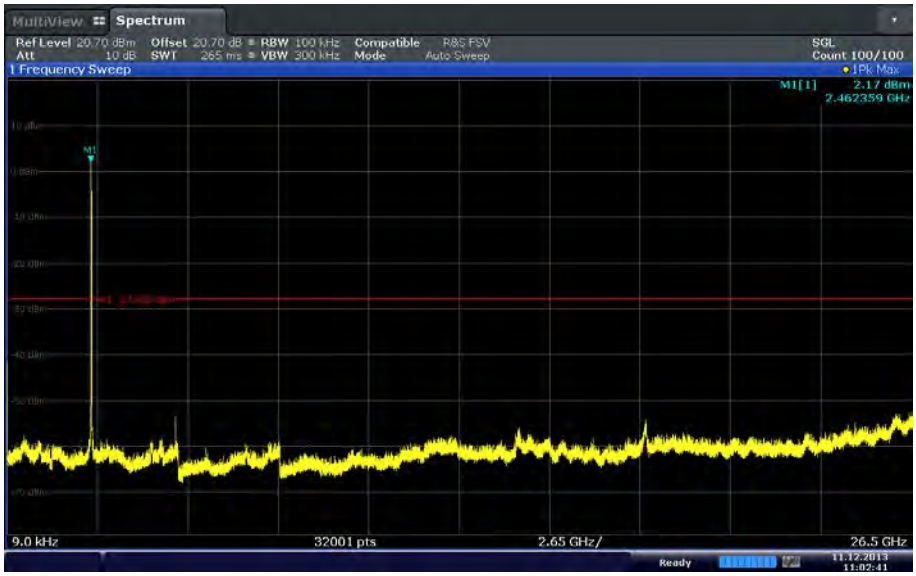
802.11a High Channel



802.11b Low Channel

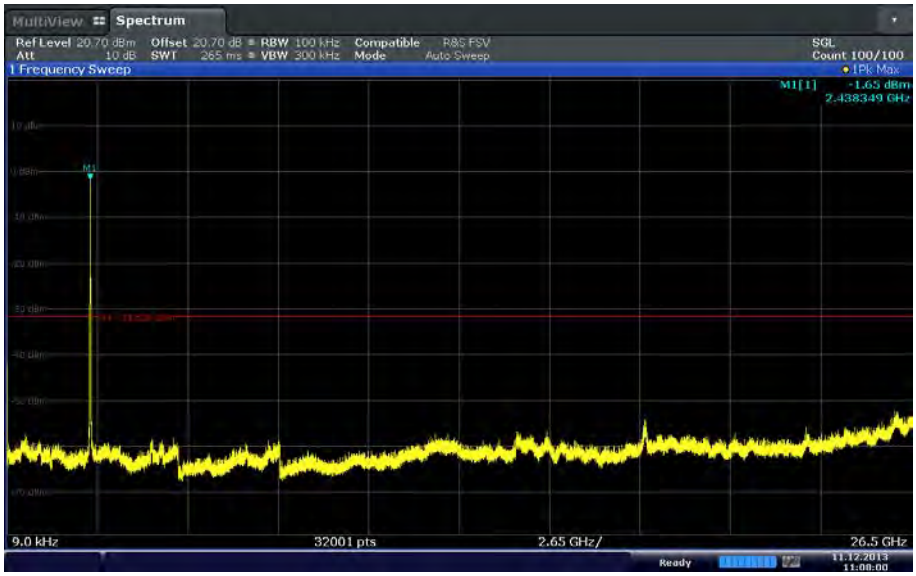


802.11b Mid Channel

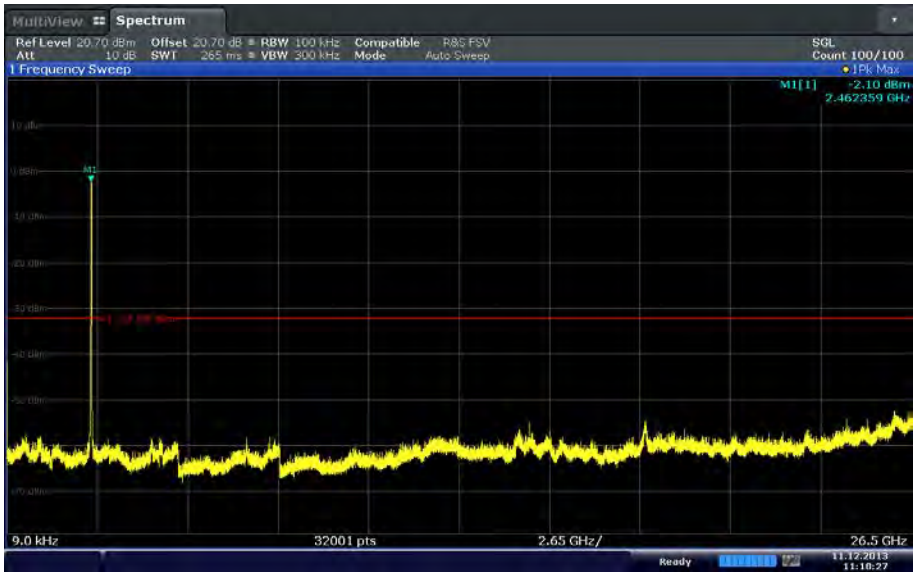


802.11b High Channel

802.11g Low Channel



802.11g Mid Channel

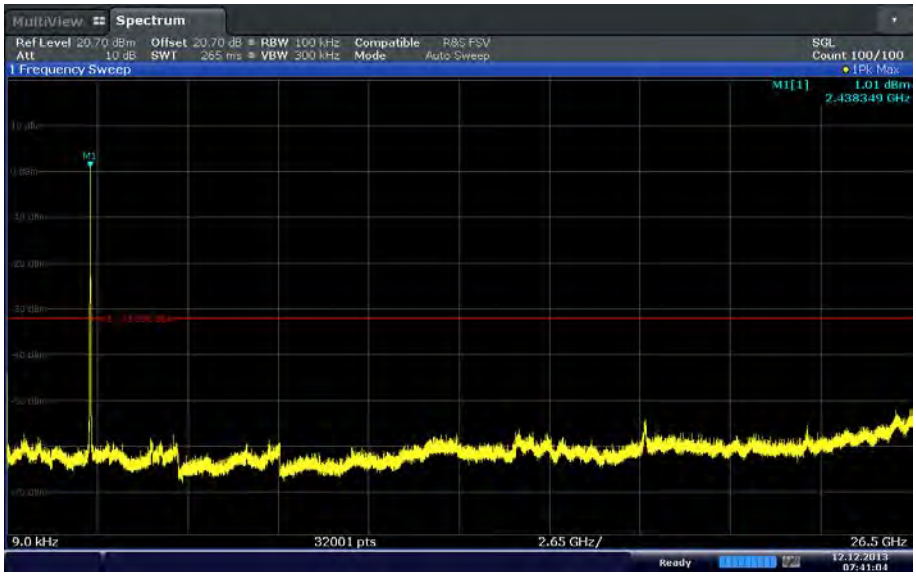


802.11g High Channel

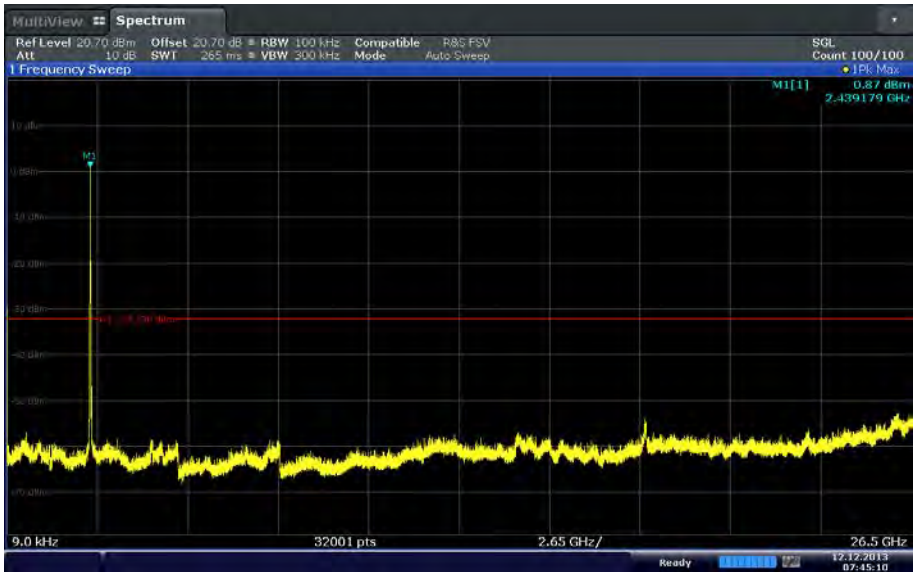
802.11n HT20 Low Channel

802.11n HT20 Mid Channel

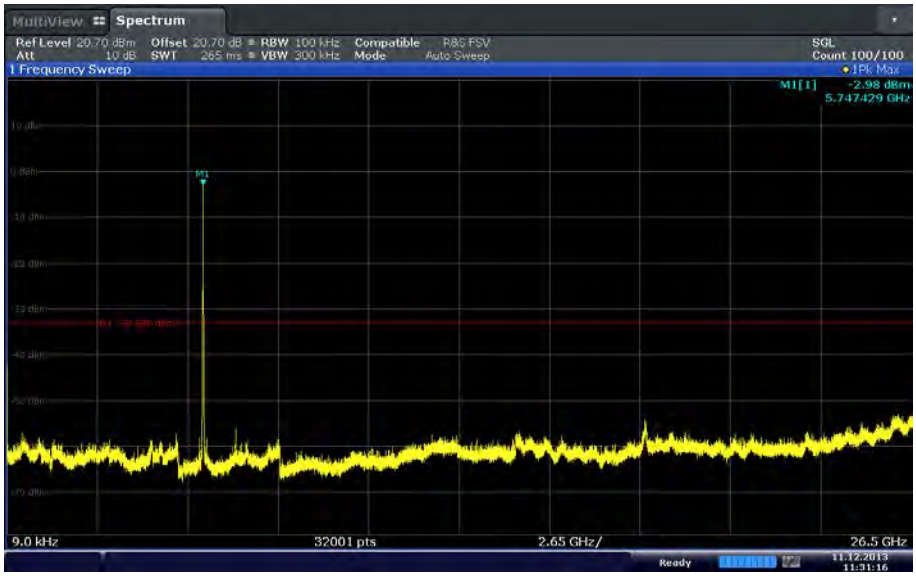
802.11n HT20 High Channel



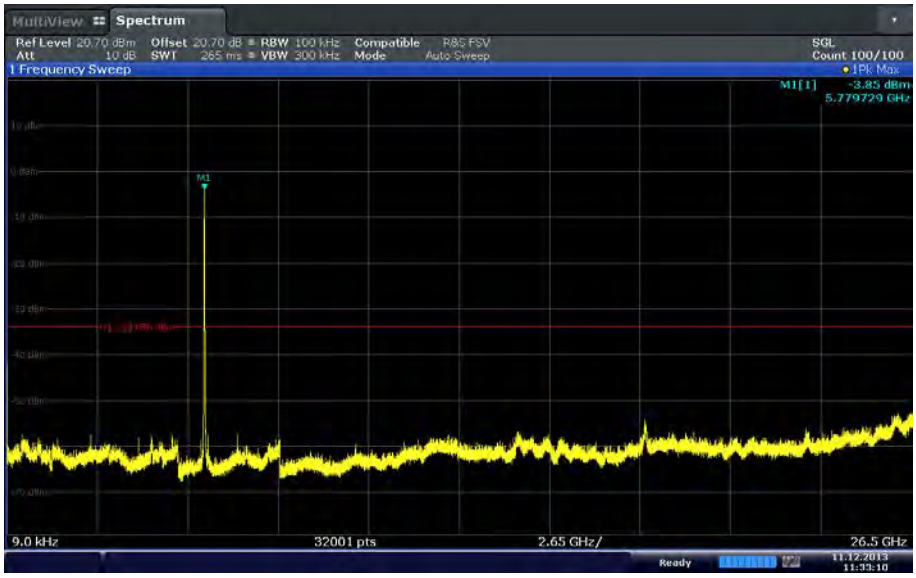
802.11n MIMO HT20 Worse Case Channel on Antenna #1



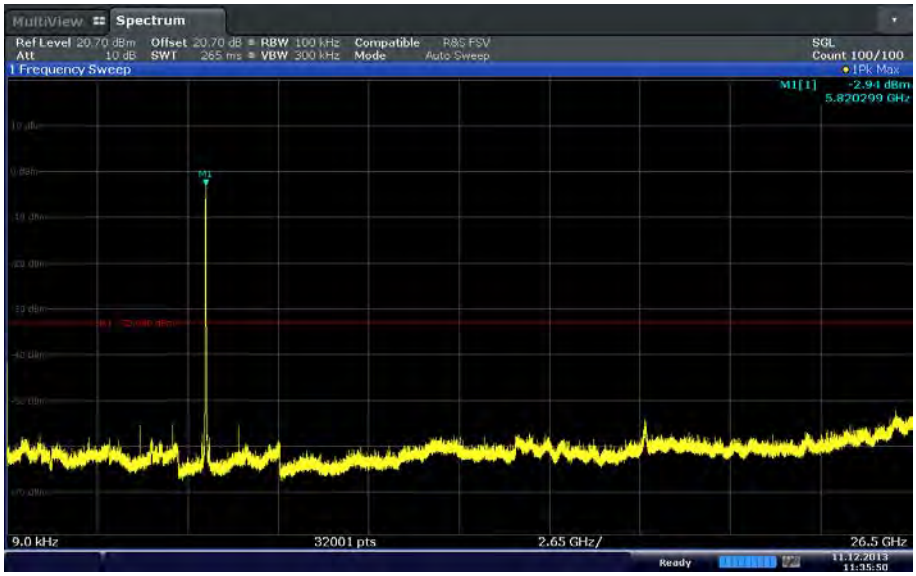
802.11n MIMO HT20 Worse Case Channel on Antenna #2



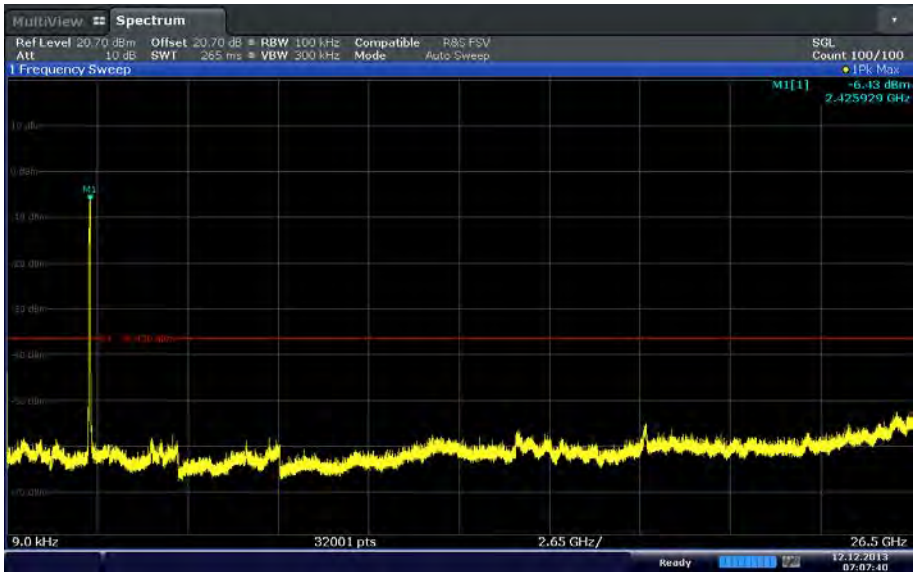
802.11n HT20 Low Channel



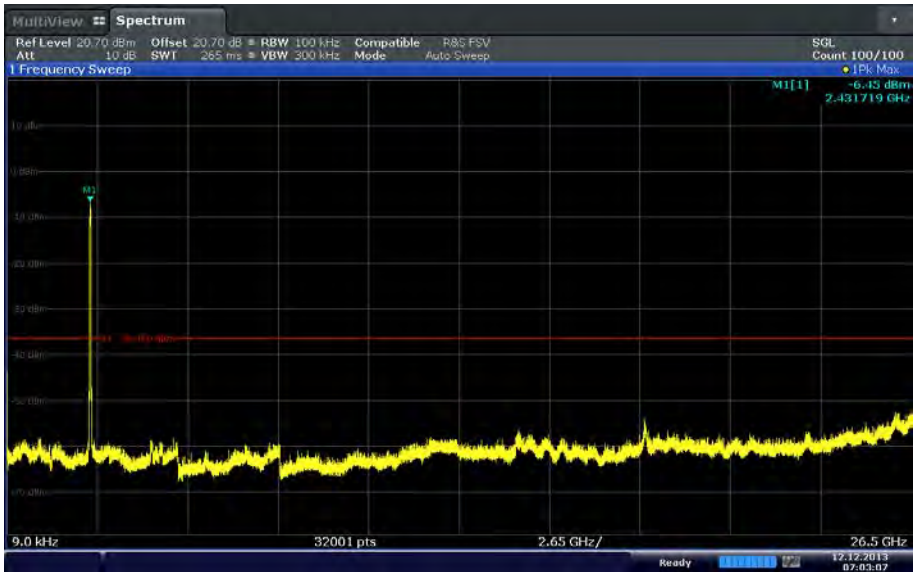
802.11n HT20 Mid Channel



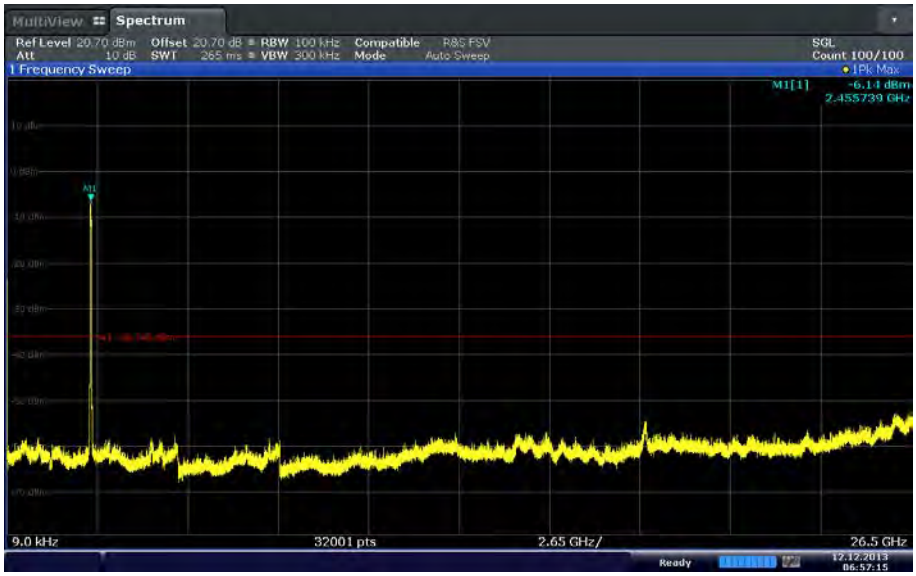
802.11n HT20 High Channel



802.11n HT40 Low Channel

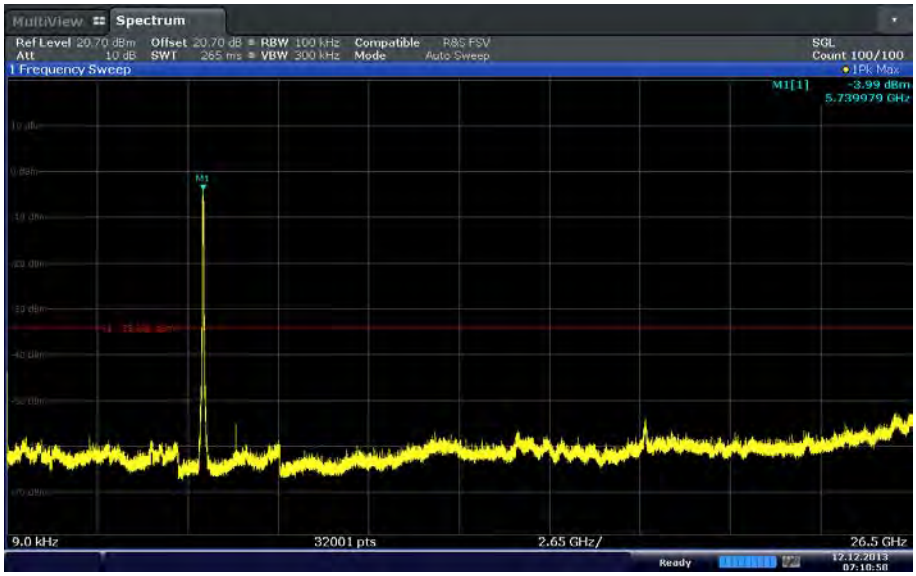


802.11n HT40 Mid Channel

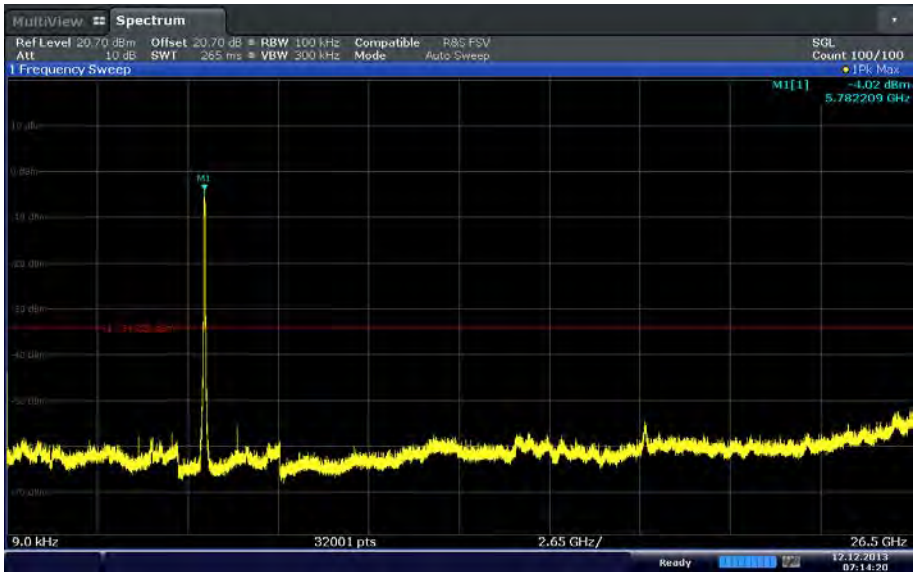


802.11n HT40 High Channel

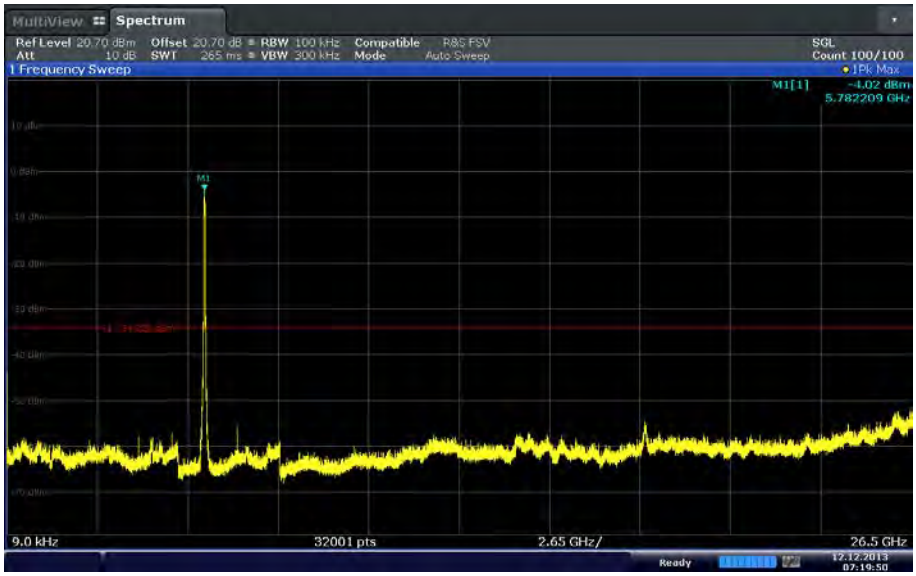
TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364



802.11n HT40 Low Channel

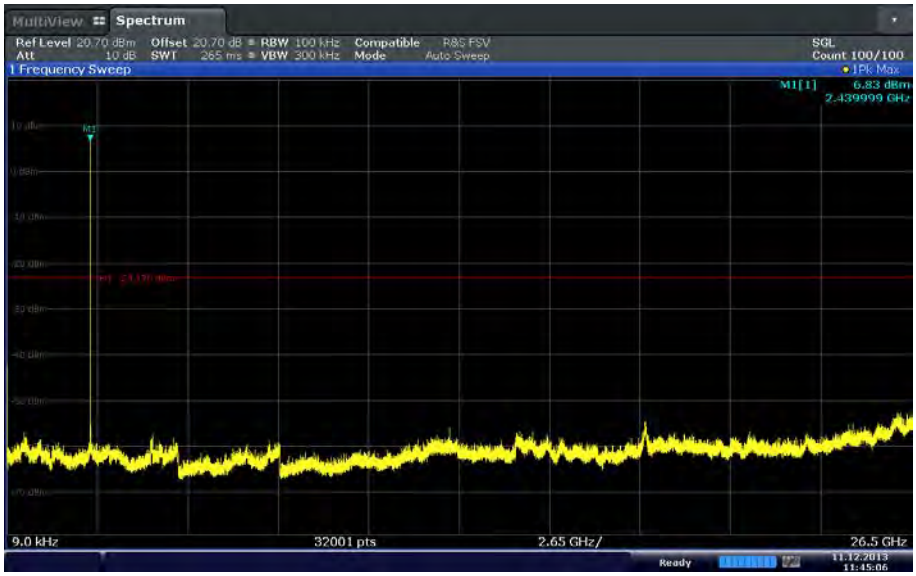


802.11n HT40 Mid Channel

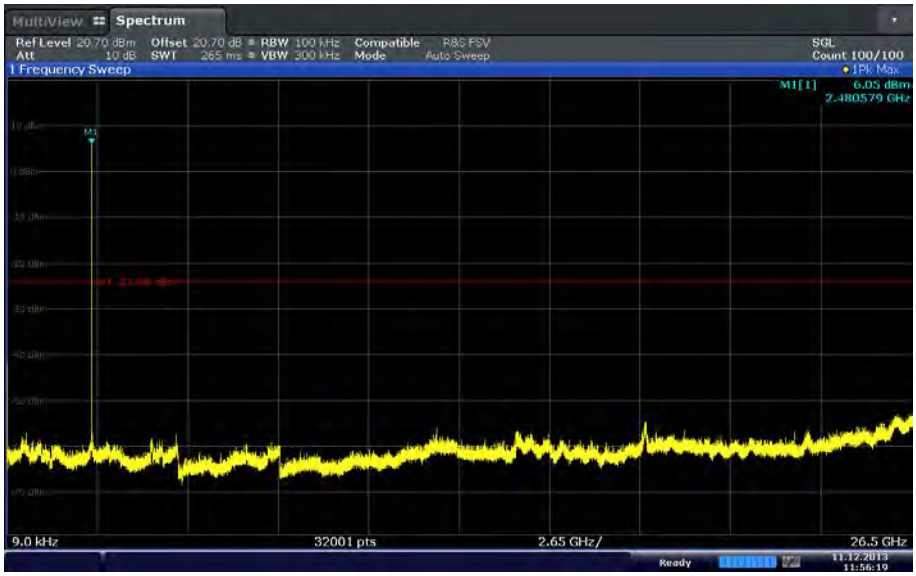


802.11n HT40 High Channel

Bluetooth LE Low Channel



Bluetooth LE Mid Channel



Bluetooth LE High Channel

2.6 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

2.6.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.6.2 Standard Applicable

See previous test.

2.6.3 Equipment Under Test and Modification State

Serial No: N/A (Sample #1) / Test Configuration A

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

December 12, 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

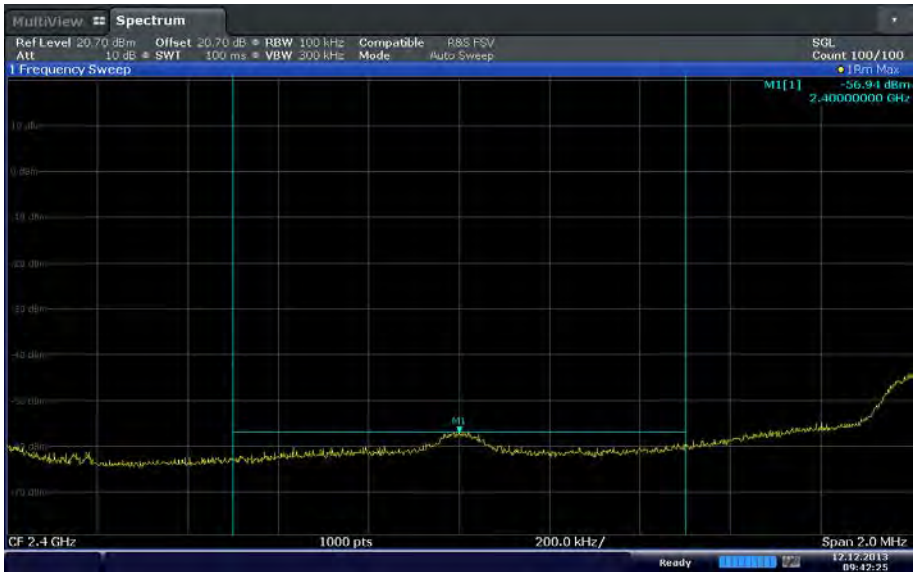
Ambient Temperature	20.5°C
Relative Humidity	23.3.%
ATM Pressure	99.8 kPa

2.6.7 Additional Observations

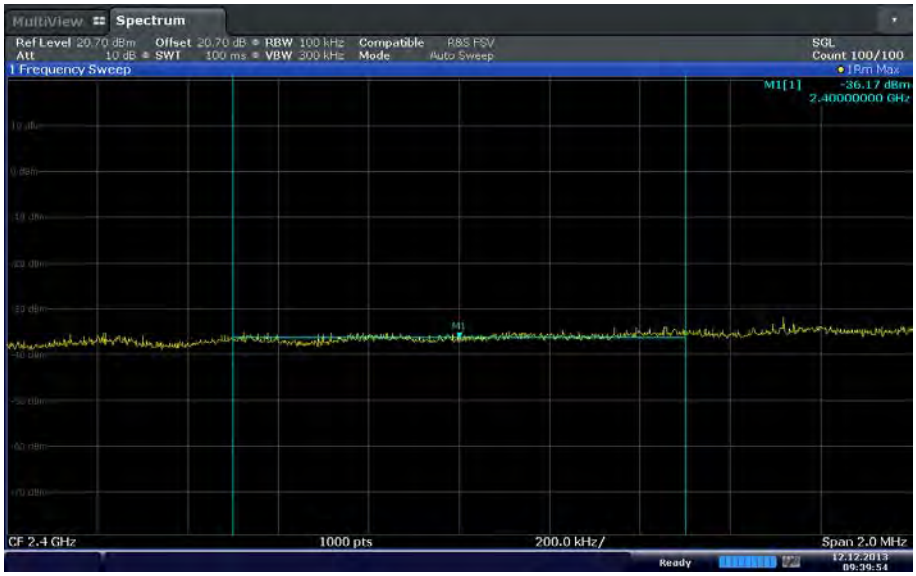
- Setup is identical to "Out-of-Band Emissions – Conducted"test (previous test).
- Both 2.4GHZ band-edge (2400MHz and 2483.5MHz) and 5GHz band-edge (5725MHz and 5850MHz) emissions were verified in this test.
- Test methodology is per Clause 13.3.2 of KDB 558074 (D01 DTS Meas Guidance v03r01, April 09, 2013); trace averaging with continuous EUT transmission at full power.
- Limits are from Section 2.5 of this test report. These are 30dBc from the highest level of the desired power within the band.

2.6.8 Test Results

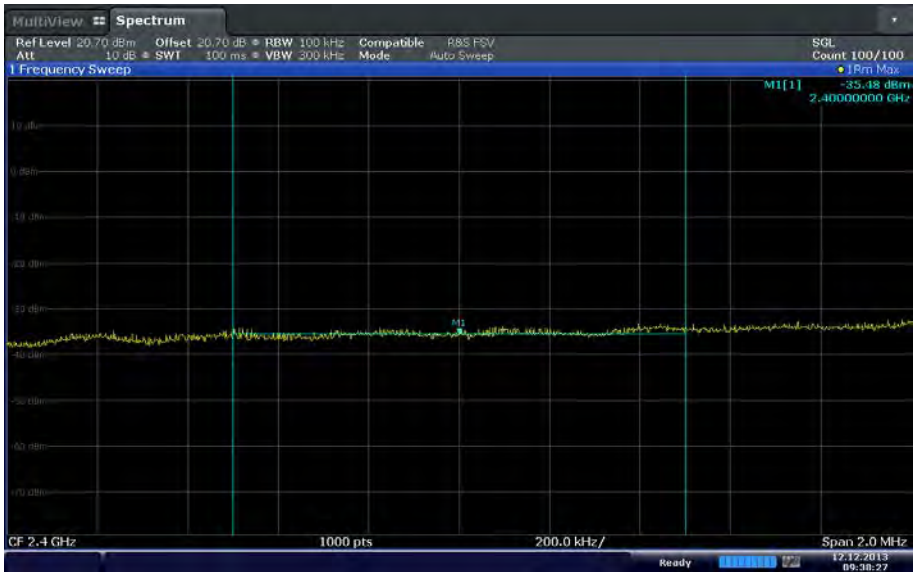
Complies. See attached plots.



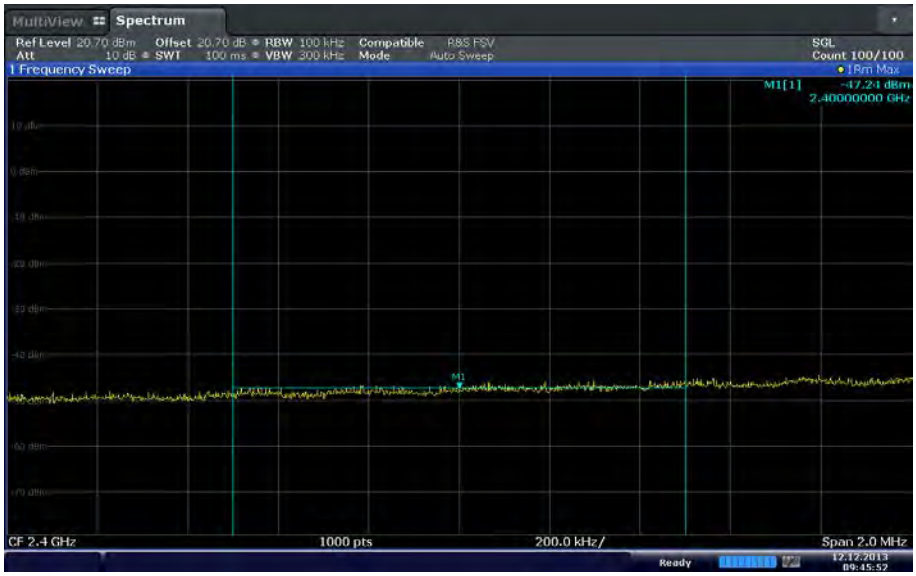
802.11b Low Channel (2412 MHz). Limit is -28.54 dBm. Margin is -28.4 dB.



802.11g Low Channel (2412 MHz). Limit is -29.97 dBm. Margin is -7.77 dB.



802.11n HT20 Low Channel (2412 MHz). Limit is -30.42 dBm. Margin is -5.06 dB.



802.11n HT40 Low Channel (2422 MHz). Limit is -36.43 dBm. Margin is -10.81 dB.

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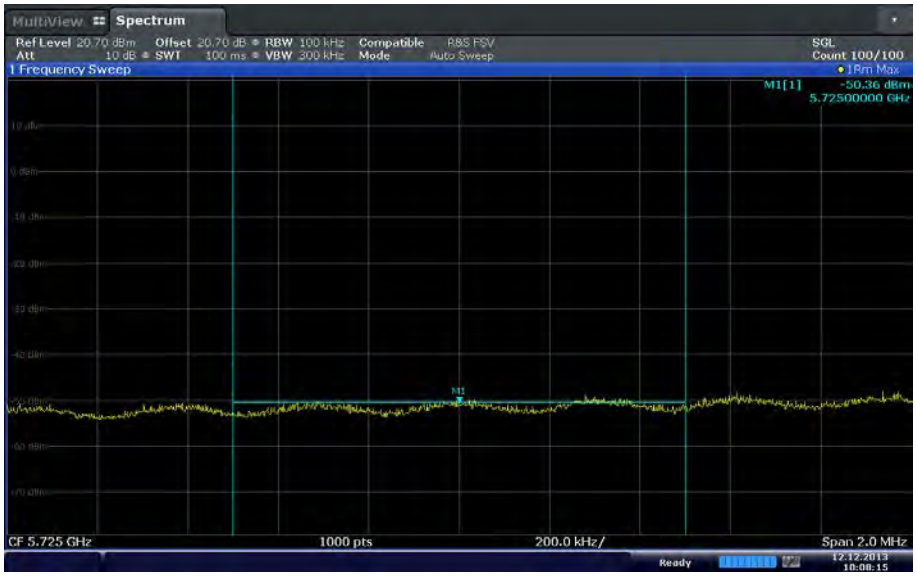
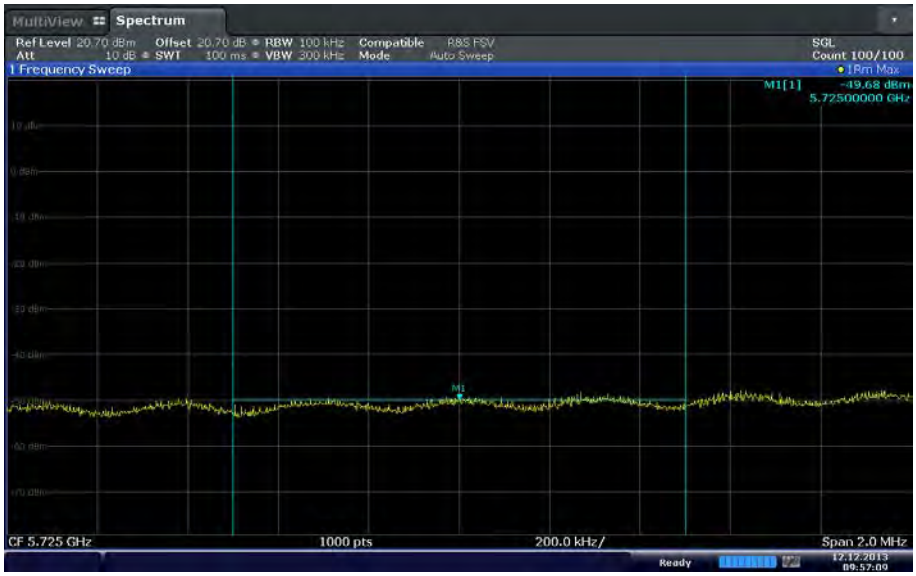
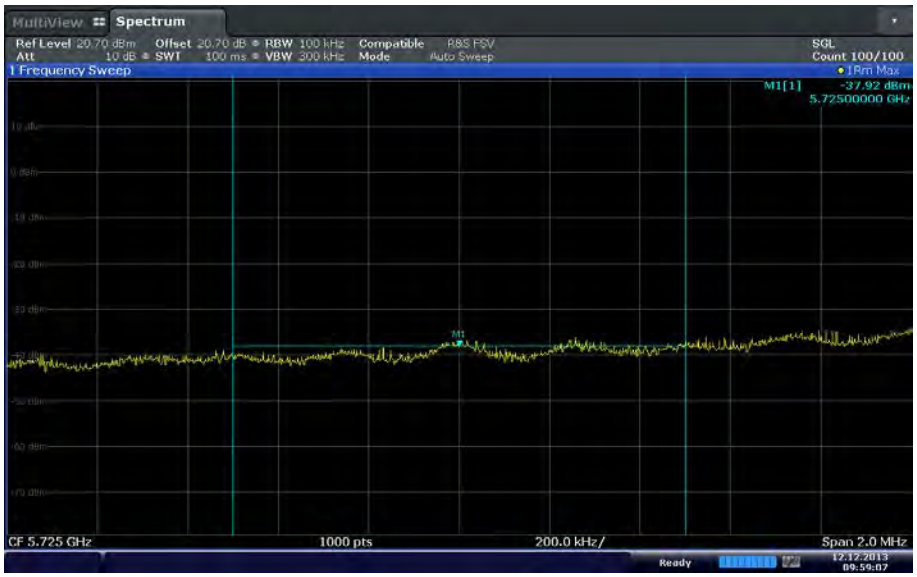


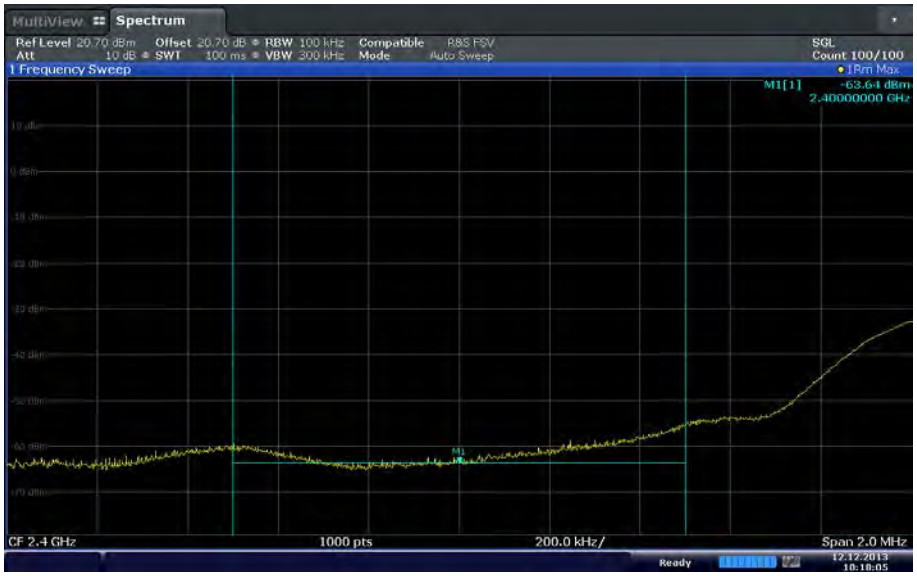
802.11a Low Channel (5745 MHz). Limit is -33.28 dBm. Margin is -17.07 dB.



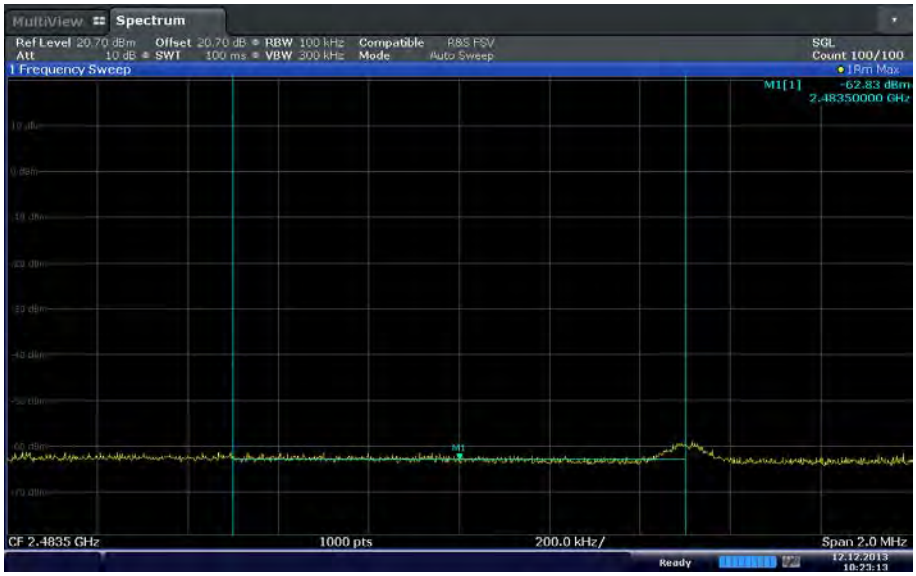
802.11n HT20 Low Channel (5745 MHz). Limit is -32.98 dBm. Margin is -16.7 dB.



802.11n HT40 Low Channel (5745 MHz). Limit is -33.90 dBm. Margin is -4.02 dB.

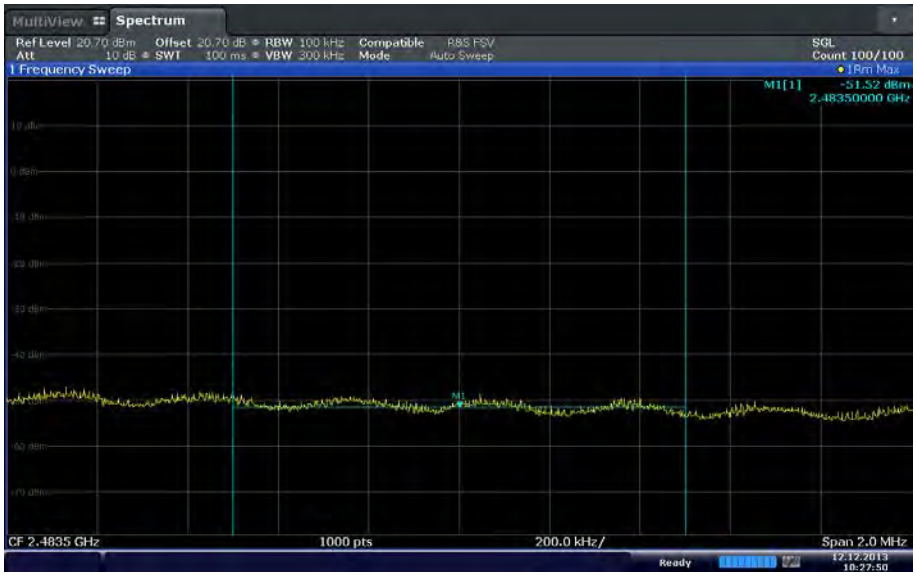


Bluetooth LE Low Channel (2402 MHz). Limit is -32.94 dBm. Margin is -30.7 dB.

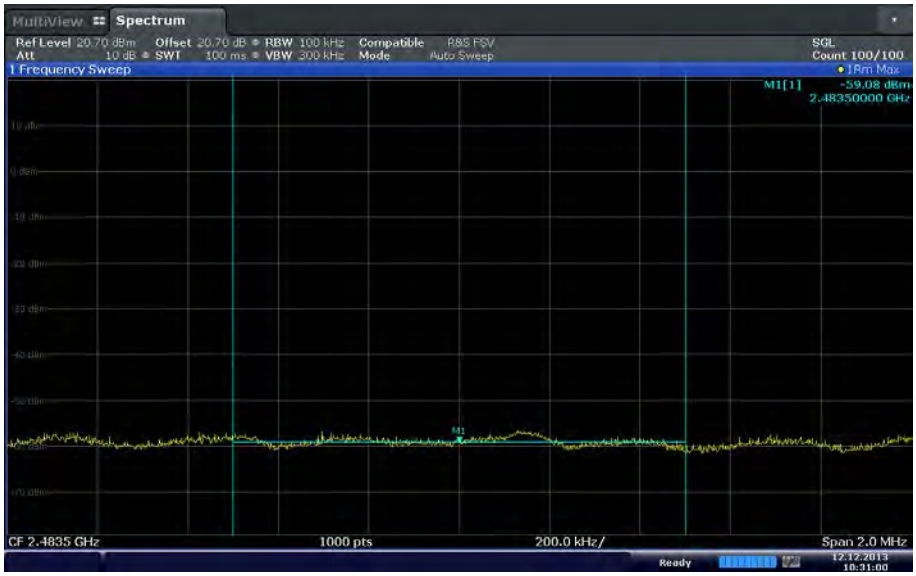


802.11b High Channel (2462 MHz). Limit is -27.83 dBm. Margin is -35 dB.

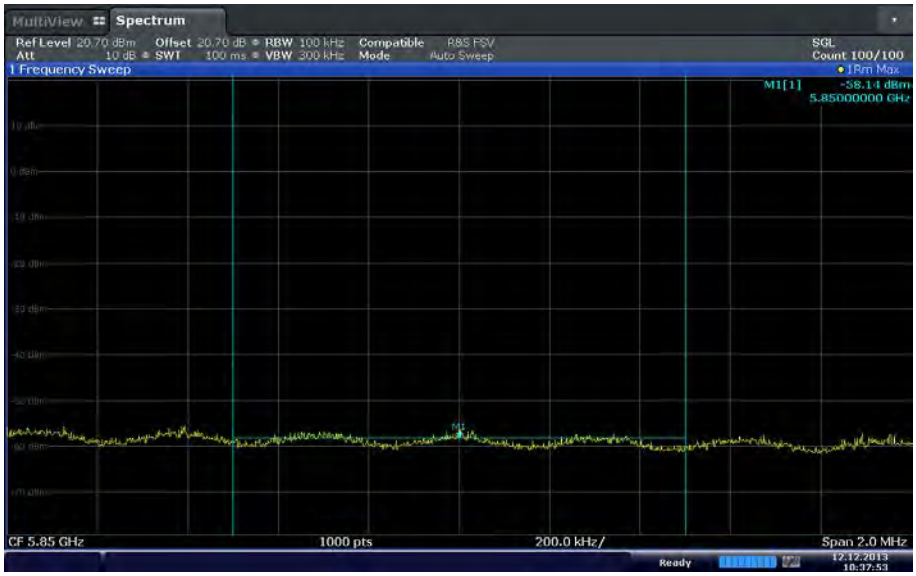
802.11g High Channel (2462 MHz). Limit is -32.1 dBm. Margin is -21.03 dB.



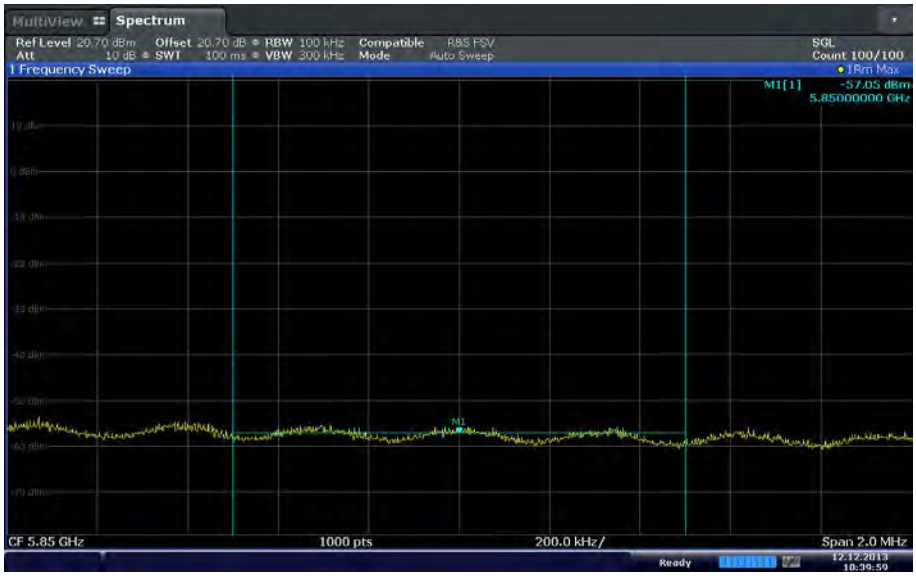
802.11n HT20 High Channel (2462 MHz). Limit is -29.73 dBm. Margin is -21.79dB.



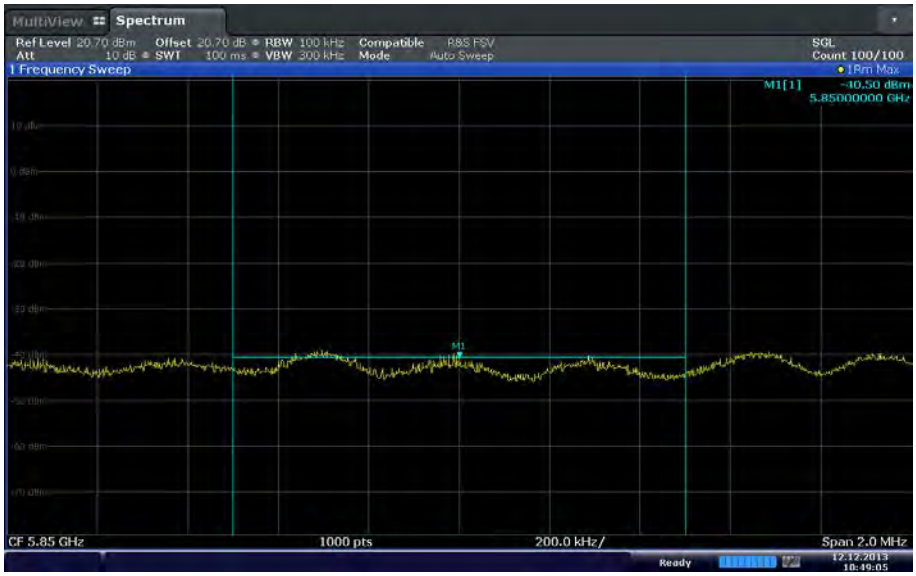
802.11n HT40 High Channel (2452 MHz). Limit is -36.14 dBm. Margin is -22.94 dB.



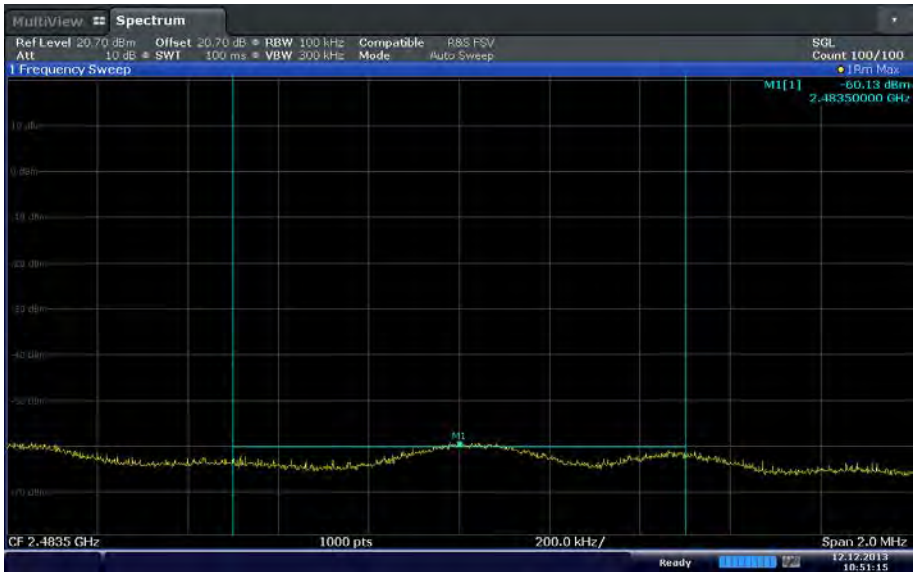
802.11a High Channel (5825 MHz). Limit is -34.77 dBm. Margin is -23.37 dB.



802.11n HT20 High Channel (5825 MHz). Limit is -32.94 dBm. Margin is -24.11 dB.



802.11n HT40 High Channel (5825 MHz). Limit is -36.14 dBm. Margin is -4.36 dB.



Bluetooth LE High Channel (2480 MHz). Limit is -23.95 dBm. Margin is -36.18 dB.

2.7 SPURIOUS RADIATED EMISSIONS

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: 34008112 and 34008096/ Test Configuration B

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

December 5 to 24, 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	25.4-25.8°C
Relative Humidity	43.5-44.5%
ATM Pressure	98.7-99.0 kPa

2.7.7 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 restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Only the considered worst case WLAN configuration (802.11b, Mid Channel,5.5Mbps) presented for radiated emissions below 1GHz. There are no significant differences in emissions between all modes below 1GHz.

- 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 2.7.8 for sample computation.

2.7.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 30 MHz			24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3	-12.6
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measurement (dbµV/m) @ 30MHz			**11.8**

2.7.9 Test Results

See attached plots.

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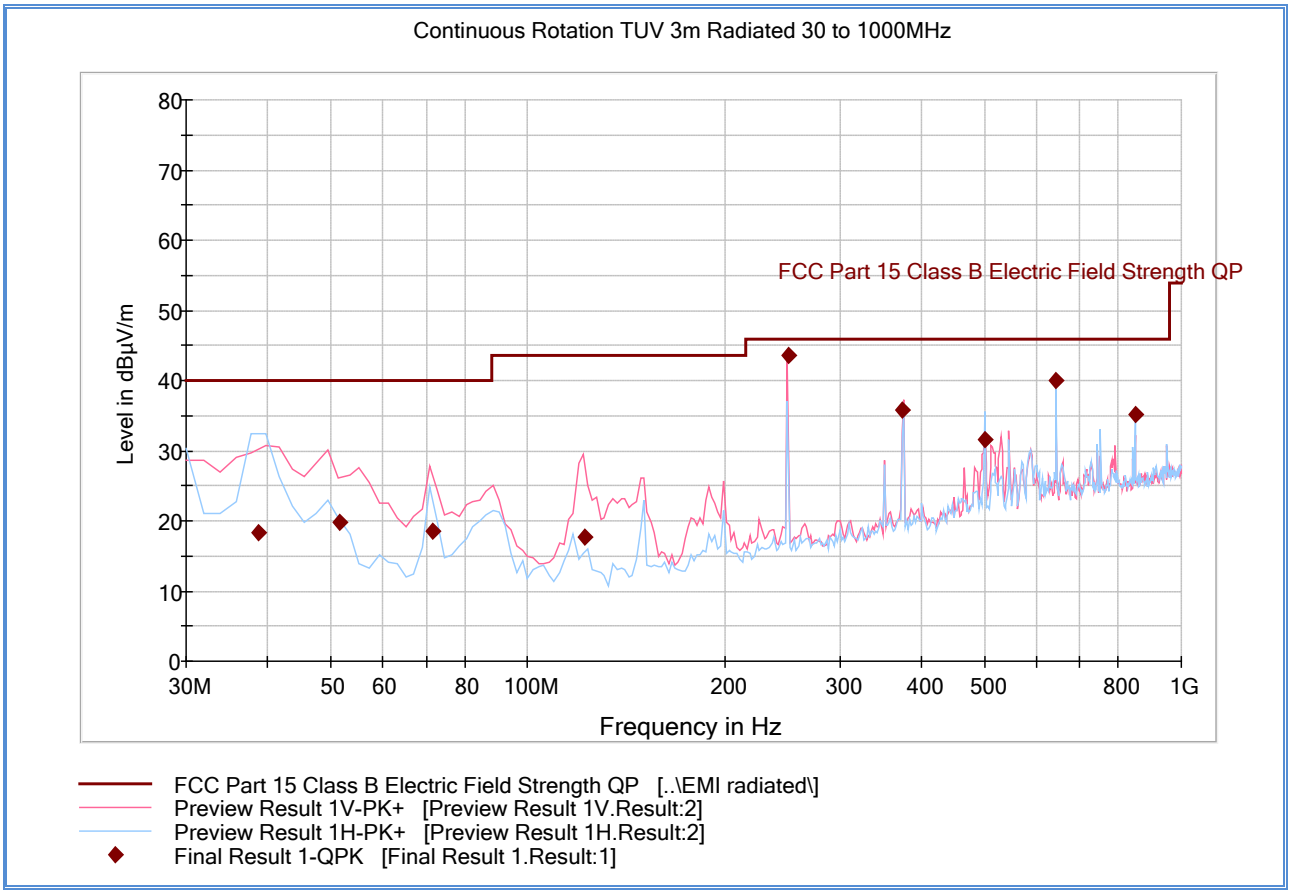
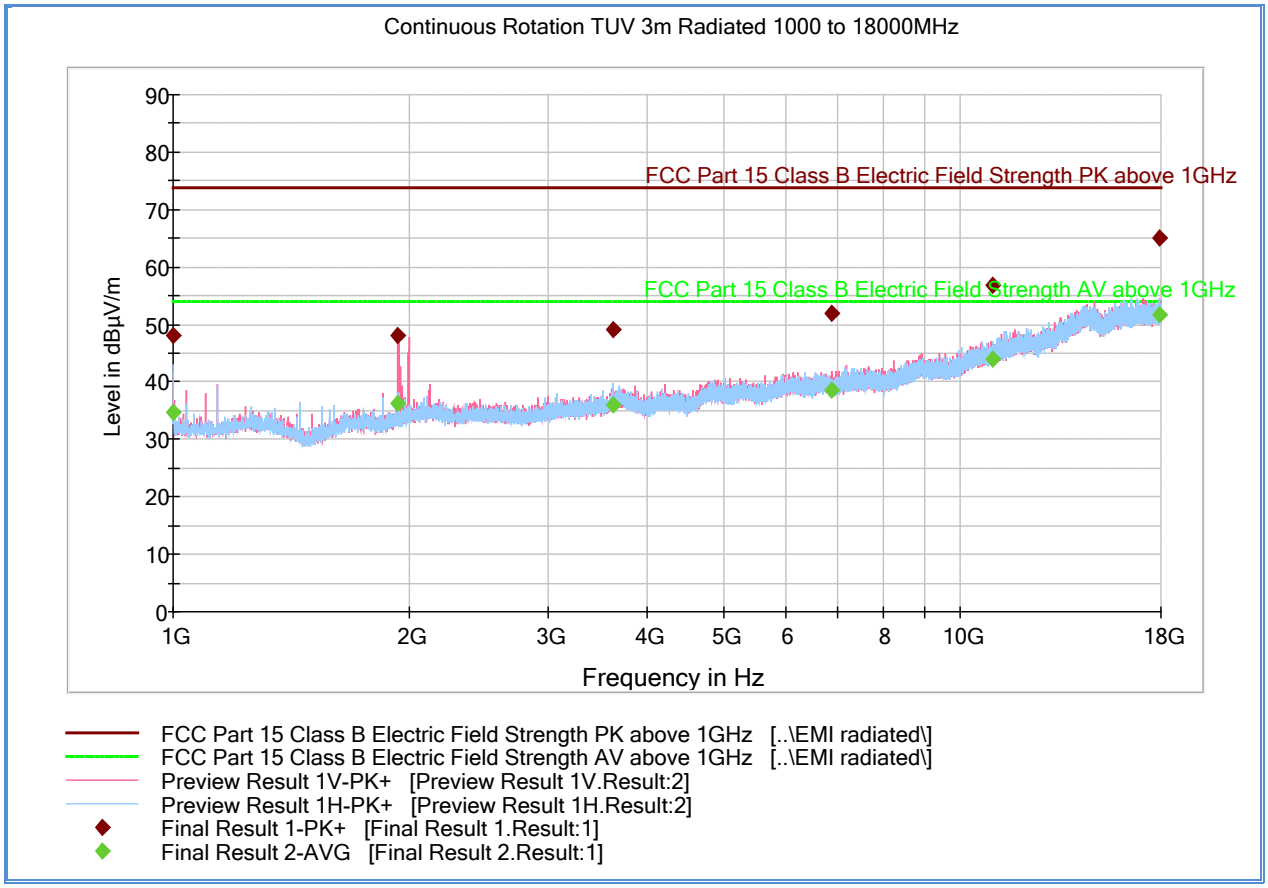
2.7.10 Test Results Below 1GHz (Receive Mode)



Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
38.775551	18.4	1000.0	120.000	283.0	H	342.0	-15.5	21.6	40.0
51.438878	19.8	1000.0	120.000	109.0	V	285.0	-19.4	20.2	40.0
71.581643	18.4	1000.0	120.000	100.0	V	307.0	-21.3	21.6	40.0
122.322725	17.6	1000.0	120.000	106.0	V	-12.0	-19.2	25.9	43.5
250.099319	43.5	1000.0	120.000	100.0	V	46.0	-12.6	2.5	46.0
374.812024	35.8	1000.0	120.000	145.0	V	9.0	-7.9	10.2	46.0
499.940842	31.6	1000.0	120.000	105.0	H	284.0	-5.1	14.4	46.0
643.468537	40.0	1000.0	120.000	105.0	H	213.0	-2.1	6.0	46.0
849.960641	35.1	1000.0	120.000	100.0	H	235.0	1.1	10.9	46.0

2.7.11 Test Results Above 1GHz (Receive Mode)



Peak Data

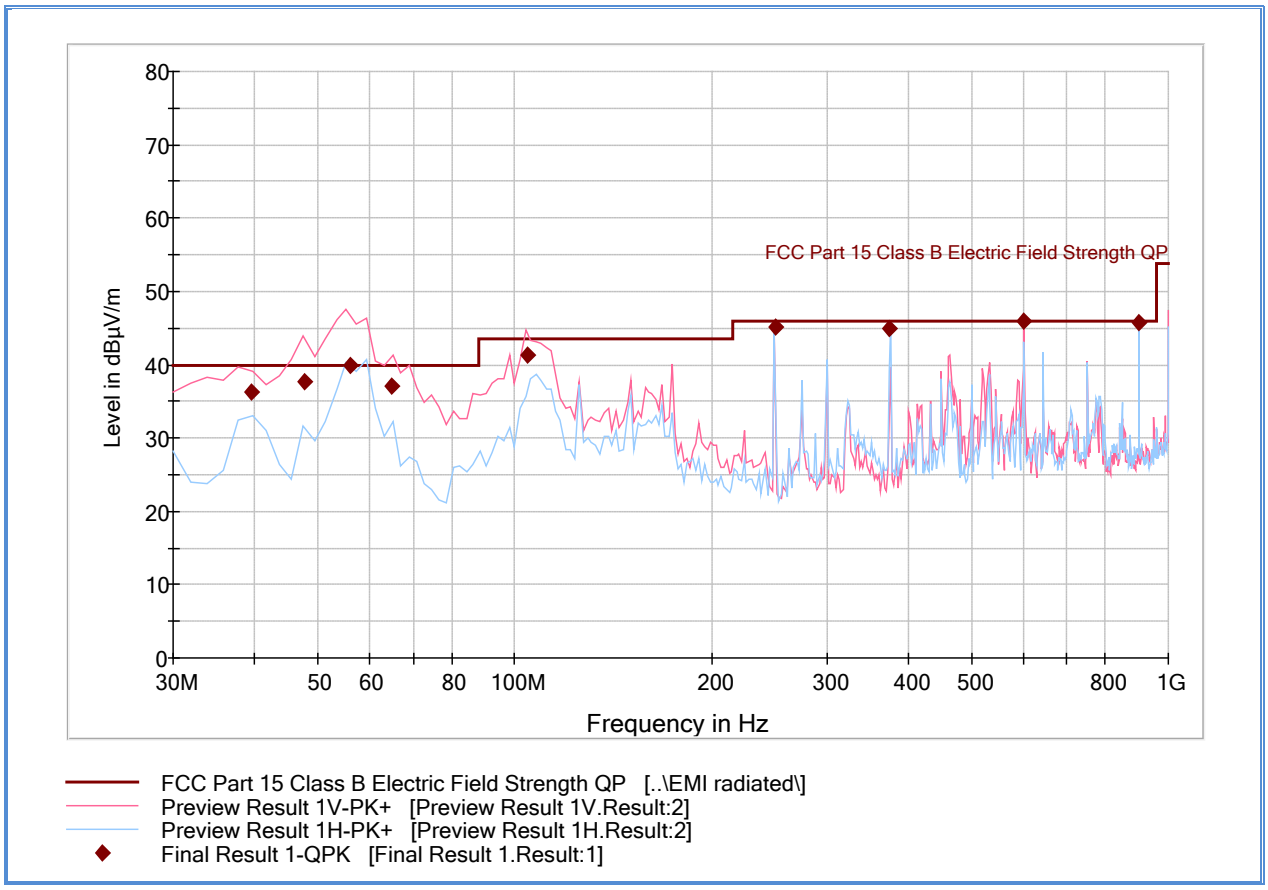
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	48.2	1000.0	1000.000	300.6	H	87.0	-1.0	25.7	73.9
1932.566667	48.2	1000.0	1000.000	257.3	V	178.0	1.8	25.7	73.9
3624.066667	49.2	1000.0	1000.000	260.3	H	-10.0	5.7	24.7	73.9
6866.733333	51.9	1000.0	1000.000	202.4	V	243.0	10.5	22.0	73.9
10998.63333	56.9	1000.0	1000.000	201.4	H	293.0	16.3	17.0	73.9
17902.66666	64.9	1000.0	1000.000	259.3	V	122.0	23.7	9.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	34.7	1000.0	1000.000	300.6	H	87.0	-1.0	19.2	53.9
1932.566667	36.3	1000.0	1000.000	257.3	V	178.0	1.8	17.6	53.9
3624.066667	35.9	1000.0	1000.000	260.3	H	-10.0	5.7	18.0	53.9
6866.733333	38.6	1000.0	1000.000	202.4	V	243.0	10.5	15.3	53.9
10998.63333	44.0	1000.0	1000.000	201.4	H	293.0	16.3	9.9	53.9
17902.66666	51.6	1000.0	1000.000	259.3	V	122.0	23.7	2.3	53.9

Test Notes: No significant emissions observed above 18GHz.

2.7.12 Test Results Below 1GHz (WLAN worst Case Configuration)

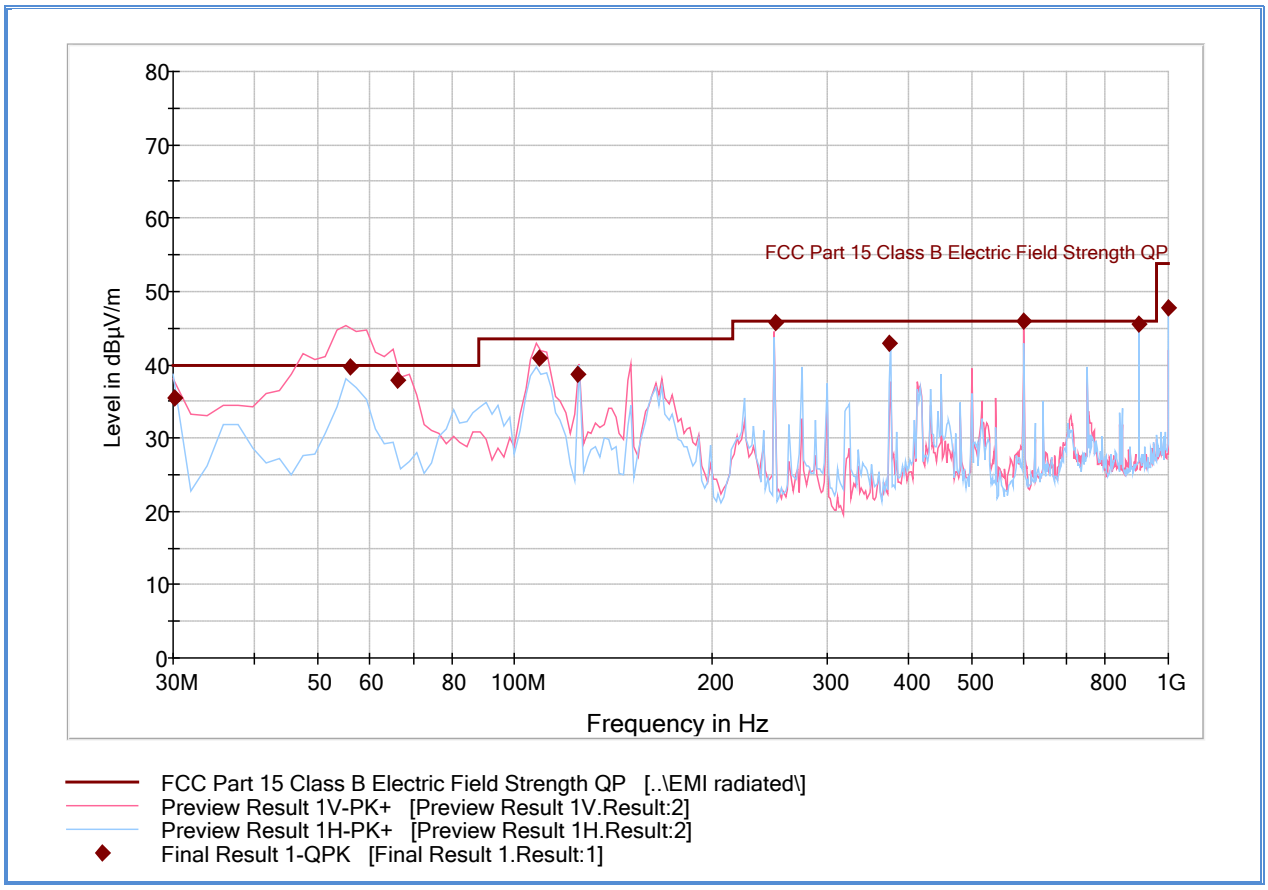


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
39.535551	36.3	1000.0	120.000	100.0	V	193.0	-15.8	3.7	40.0
47.774990	37.6	1000.0	120.000	100.0	V	284.0	-18.6	2.4	40.0
55.870541	39.8	1000.0	120.000	100.0	V	86.0	-20.2	0.2	40.0
64.789980	37.0	1000.0	120.000	100.0	V	193.0	-21.2	3.0	40.0
104.707735	41.4	1000.0	120.000	100.0	V	3.0	-18.6	2.1	43.5
249.979319	45.2	1000.0	120.000	100.0	V	39.0	-12.6	0.8	46.0
374.972024	45.0	1000.0	120.000	105.0	H	211.0	-7.9	1.0	46.0
600.023006	46.0	1000.0	120.000	100.0	V	177.0	-2.8	0.0	46.0
900.021723	45.8	1000.0	120.000	100.0	H	170.0	2.0	0.2	46.0

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

2.7.13 Test Results Below 1GHz (Bluetooth LE)

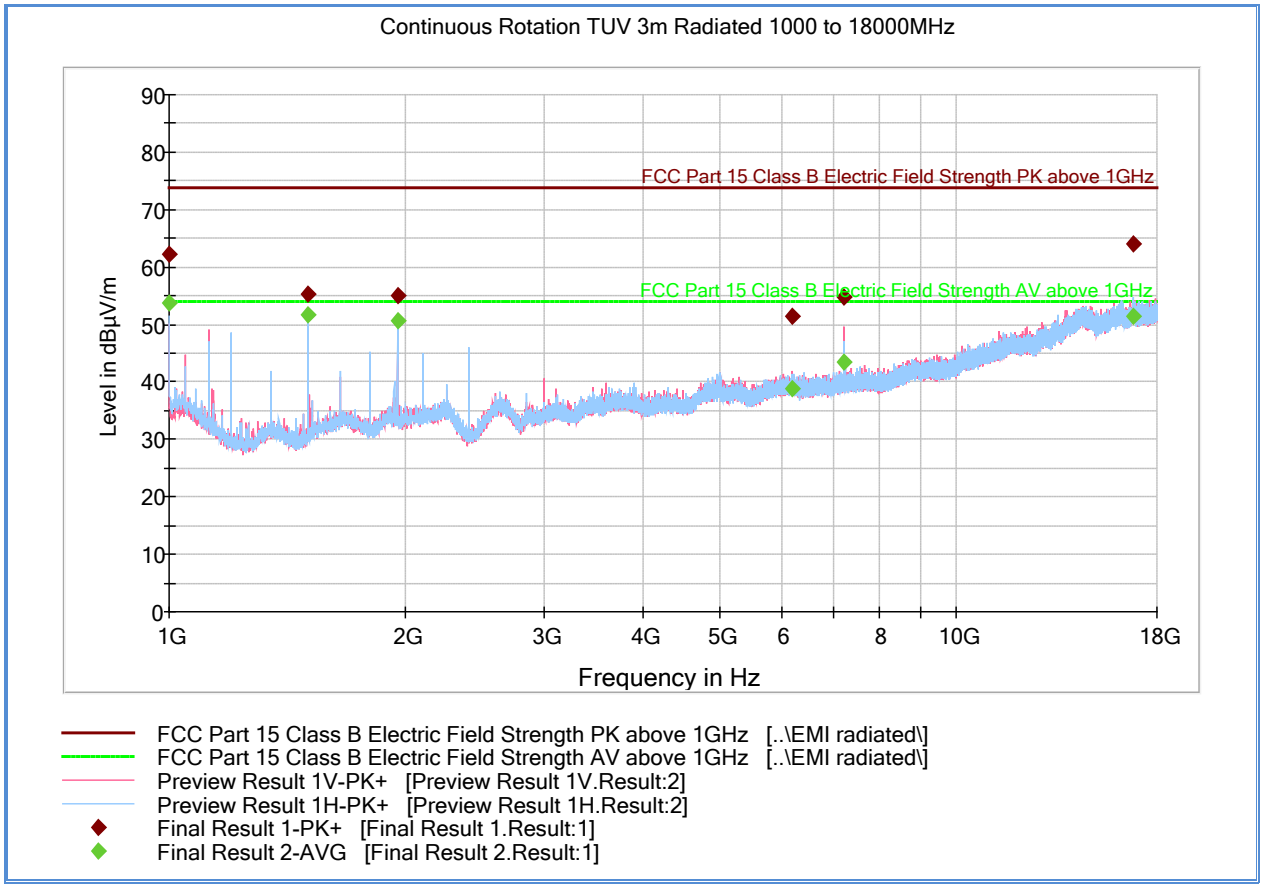


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.200000	35.5	1000.0	120.000	127.0	H	11.0	-10.7	4.5	40.0
56.030541	39.7	1000.0	120.000	100.0	V	189.0	-20.3	0.3	40.0
66.309980	37.9	1000.0	120.000	100.0	V	87.0	-21.3	2.1	40.0
108.795511	41.0	1000.0	120.000	105.0	V	208.0	-18.6	2.5	43.5
124.970501	38.6	1000.0	120.000	100.0	V	99.0	-19.3	4.9	43.5
249.979319	45.8	1000.0	120.000	100.0	V	197.0	-12.6	0.2	46.0
375.012024	42.9	1000.0	120.000	100.0	H	310.0	-7.9	3.1	46.0
600.023006	46.0	1000.0	120.000	100.0	V	166.0	-2.8	0.0	46.0
900.021723	45.5	1000.0	120.000	100.0	H	35.0	2.0	0.5	46.0
999.960000	47.8	1000.0	120.000	100.0	H	51.0	3.3	6.1	53.9

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

2.7.14 Test Results Above 1GHz (Bluetooth LE Low Channel)



Peak Data

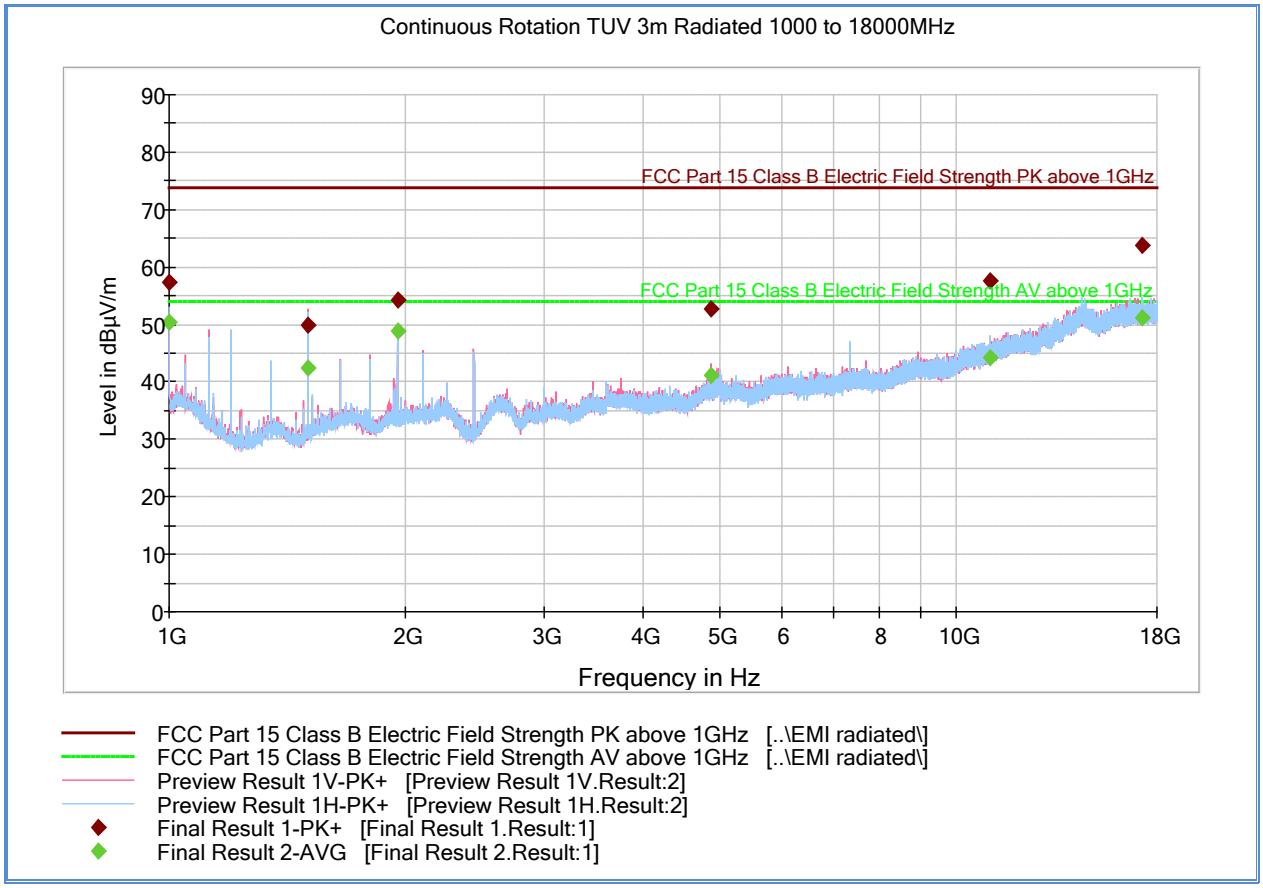
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	62.3	1000.0	1000.000	178.5	H	290.0	-1.0	11.6	73.9
1500.000000	55.4	1000.0	1000.000	99.6	H	16.0	-1.9	18.5	73.9
1949.933333	55.0	1000.0	1000.000	99.6	H	217.0	1.9	18.9	73.9
6181.633333	51.3	1000.0	1000.000	372.1	V	291.0	10.4	22.6	73.9
7205.366667	54.8	1000.0	1000.000	167.5	V	331.0	11.1	19.1	73.9
16814.333333	64.1	1000.0	1000.000	179.5	H	132.0	23.4	9.8	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	53.9	1000.0	1000.000	178.5	H	290.0	-1.0	0.0	53.9
1500.000000	51.7	1000.0	1000.000	99.6	H	16.0	-1.9	2.2	53.9
1949.933333	50.7	1000.0	1000.000	99.6	H	217.0	1.9	3.2	53.9
6181.633333	38.8	1000.0	1000.000	372.1	V	291.0	10.4	15.1	53.9
7205.366667	43.3	1000.0	1000.000	167.5	V	331.0	11.1	10.6	53.9
16814.333333	51.4	1000.0	1000.000	179.5	H	132.0	23.4	2.5	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.15 Test Results Above 1GHz (Bluetooth LE Mid Channel)



Peak Data

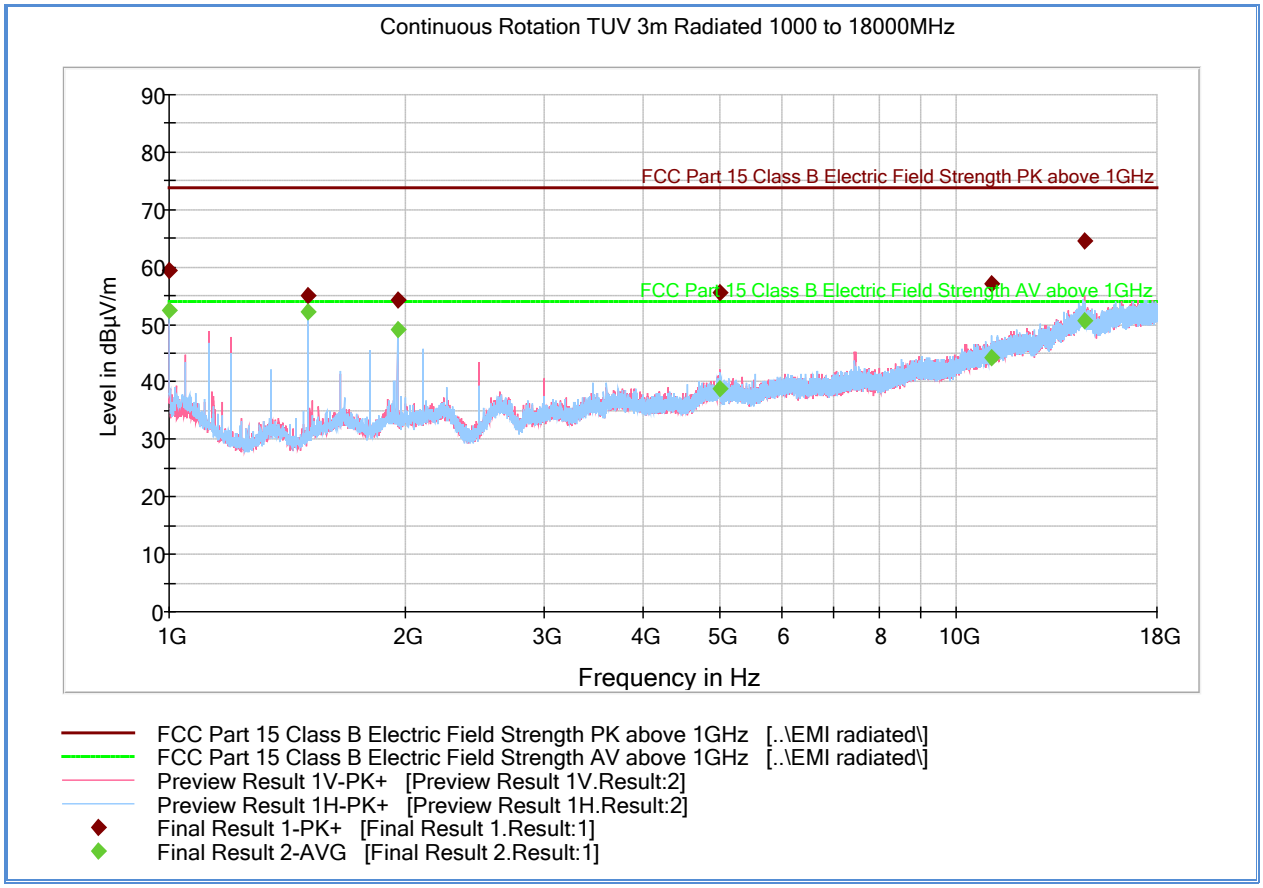
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	57.4	1000.0	1000.000	358.1	H	268.0	-1.0	16.5	73.9
1499.800000	49.8	1000.0	1000.000	131.6	V	20.0	-1.9	24.1	73.9
1950.333333	54.4	1000.0	1000.000	99.6	H	218.0	1.9	19.5	73.9
4879.600000	52.8	1000.0	1000.000	368.1	V	69.0	7.8	21.1	73.9
11041.366667	57.6	1000.0	1000.000	258.3	H	141.0	16.4	16.3	73.9
17248.966667	63.8	1000.0	1000.000	410.7	H	107.0	23.1	10.1	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	50.4	1000.0	1000.000	358.1	H	268.0	-1.0	3.5	53.9
1499.800000	42.3	1000.0	1000.000	131.6	V	20.0	-1.9	11.6	53.9
1950.333333	49.0	1000.0	1000.000	99.6	H	218.0	1.9	4.9	53.9
4879.600000	41.1	1000.0	1000.000	368.1	V	69.0	7.8	12.8	53.9
11041.366667	44.2	1000.0	1000.000	258.3	H	141.0	16.4	9.7	53.9
17248.966667	51.2	1000.0	1000.000	410.7	H	107.0	23.1	2.7	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.16 Test Results Above 1GHz (Bluetooth LE High Channel)



Peak Data

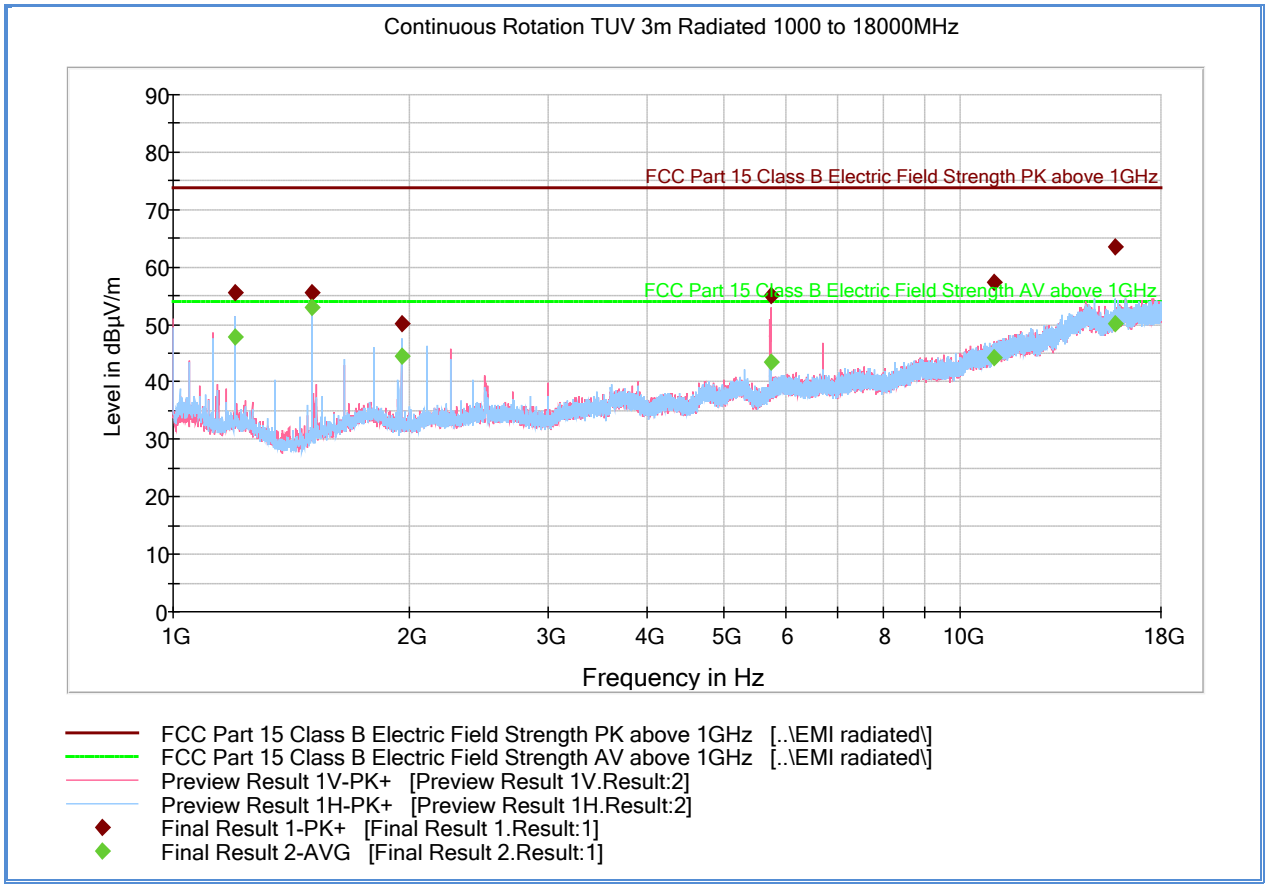
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.3	1000.0	1000.000	114.6	H	87.0	-1.0	14.6	73.9
1500.000000	55.0	1000.0	1000.000	99.6	H	200.0	-1.9	18.9	73.9
1949.733333	54.3	1000.0	1000.000	100.6	H	212.0	1.9	19.6	73.9
5010.833333	55.5	1000.0	1000.000	202.4	V	181.0	7.9	18.4	73.9
11115.800000	57.0	1000.0	1000.000	101.6	H	340.0	16.6	16.9	73.9
14537.500000	64.5	1000.0	1000.000	197.4	V	92.0	22.9	9.4	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	52.5	1000.0	1000.000	114.6	H	87.0	-1.0	1.4	53.9
1500.000000	52.1	1000.0	1000.000	99.6	H	200.0	-1.9	1.8	53.9
1949.733333	49.0	1000.0	1000.000	100.6	H	212.0	1.9	4.9	53.9
5010.833333	38.8	1000.0	1000.000	202.4	V	181.0	7.9	15.1	53.9
11115.800000	44.3	1000.0	1000.000	101.6	H	340.0	16.6	9.6	53.9
14537.500000	50.6	1000.0	1000.000	197.4	V	92.0	22.9	3.3	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.17 Test Results Above 1GHz (802.11a Low Channel)



Peak Data

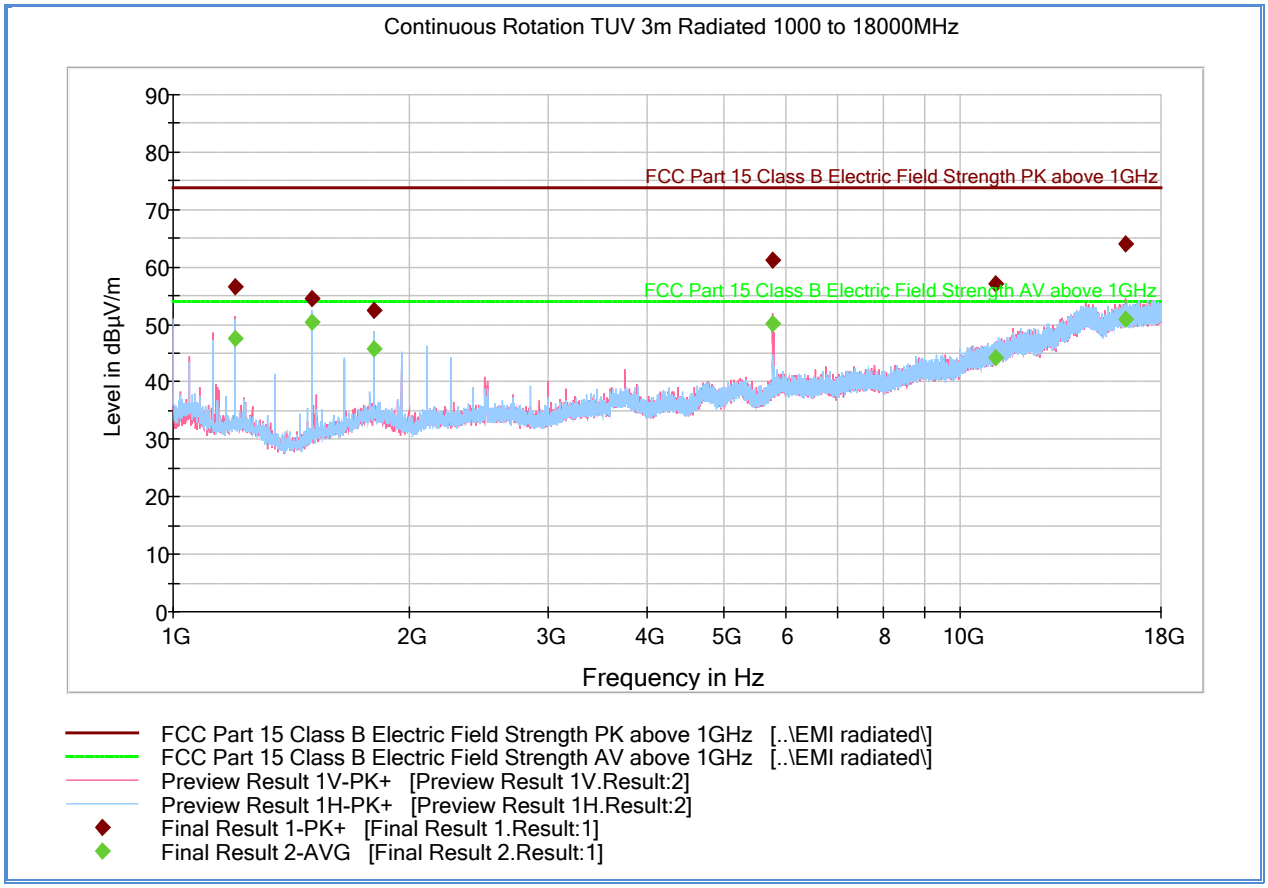
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	55.6	1000.0	1000.000	99.6	H	337.0	-1.5	18.3	73.9
1500.000000	55.7	1000.0	1000.000	99.6	H	201.0	-1.9	18.2	73.9
1949.933333	50.1	1000.0	1000.000	115.6	H	201.0	1.9	23.8	73.9
5744.566667	55.1	1000.0	1000.000	227.3	V	10.0	9.4	18.8	73.9
11040.000000	57.2	1000.0	1000.000	134.6	V	286.0	16.4	16.7	73.9
15755.800000	63.6	1000.0	1000.000	302.2	H	0.0	22.5	10.3	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)
1199.833333	47.9	1000.0	1000.000	99.6	H	337.0	-1.5	6.0	53.9
1500.000000	52.9	1000.0	1000.000	99.6	H	201.0	-1.9	1.0	53.9
1949.933333	44.6	1000.0	1000.000	115.6	H	201.0	1.9	9.3	53.9
5744.566667	43.4	1000.0	1000.000	227.3	V	10.0	9.4	10.5	53.9
11040.000000	44.2	1000.0	1000.000	134.6	V	286.0	16.4	9.7	53.9
15755.800000	50.2	1000.0	1000.000	302.2	H	0.0	22.5	3.7	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.18 Test Results Above 1GHz (802.11a Mid Channel)



Peak Data

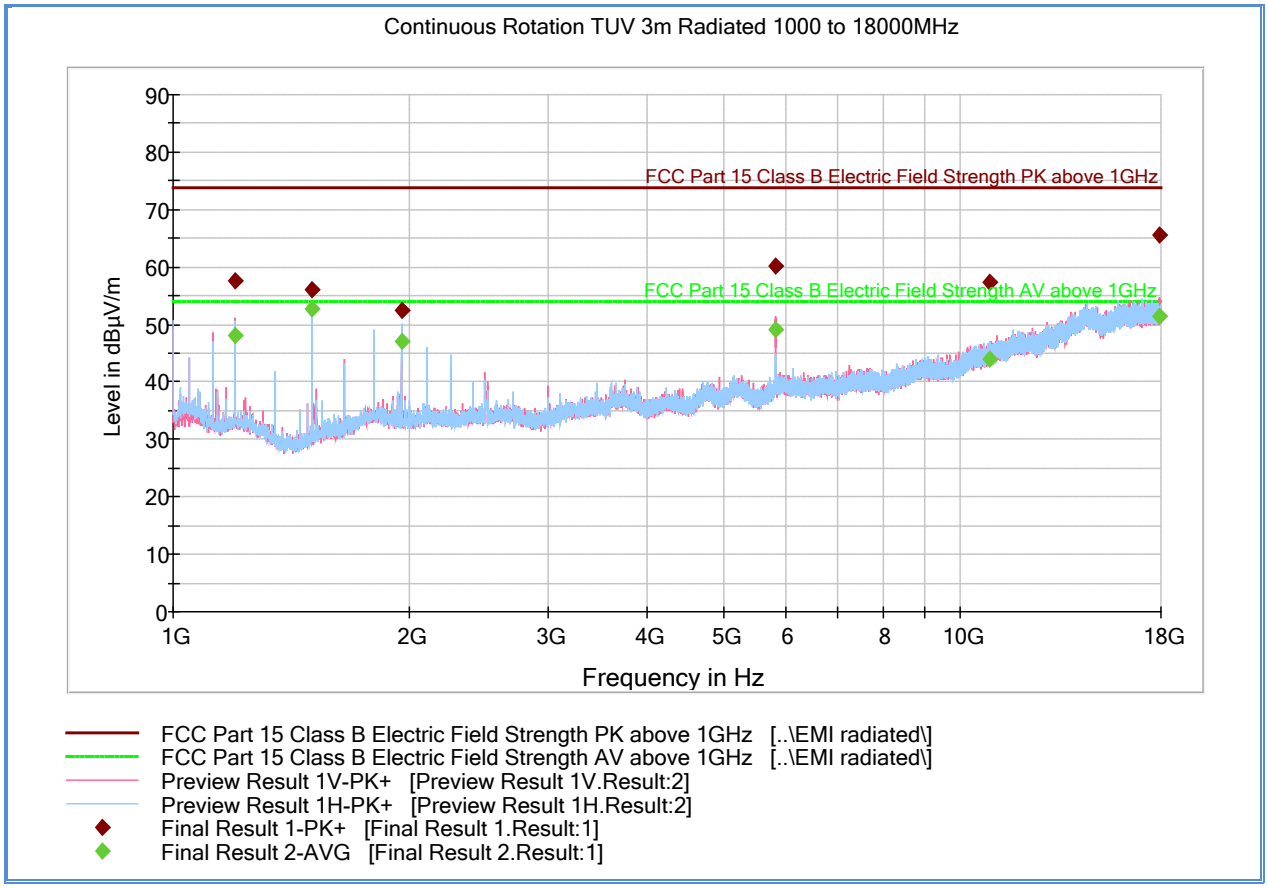
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	56.6	1000.0	1000.000	99.6	V	3.0	-1.5	17.3	73.9
1500.000000	54.6	1000.0	1000.000	102.6	H	20.0	-1.9	19.3	73.9
1799.966667	52.5	1000.0	1000.000	114.6	H	224.0	1.0	21.4	73.9
5786.833333	61.1	1000.0	1000.000	198.4	V	49.0	9.5	12.8	73.9
11097.266667	57.0	1000.0	1000.000	347.1	H	260.0	16.6	16.9	73.9
16251.100000	64.0	1000.0	1000.000	115.6	V	24.0	23.0	9.9	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	47.5	1000.0	1000.000	99.6	V	3.0	-1.5	6.4	53.9
1500.000000	50.3	1000.0	1000.000	102.6	H	20.0	-1.9	3.6	53.9
1799.966667	45.7	1000.0	1000.000	114.6	H	224.0	1.0	8.2	53.9
5786.833333	50.1	1000.0	1000.000	198.4	V	49.0	9.5	3.8	53.9
11097.266667	44.2	1000.0	1000.000	347.1	H	260.0	16.6	9.7	53.9
16251.100000	51.0	1000.0	1000.000	115.6	V	24.0	23.0	2.9	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.19 Test Results Above 1GHz (802.11a High Channel)



Peak Data

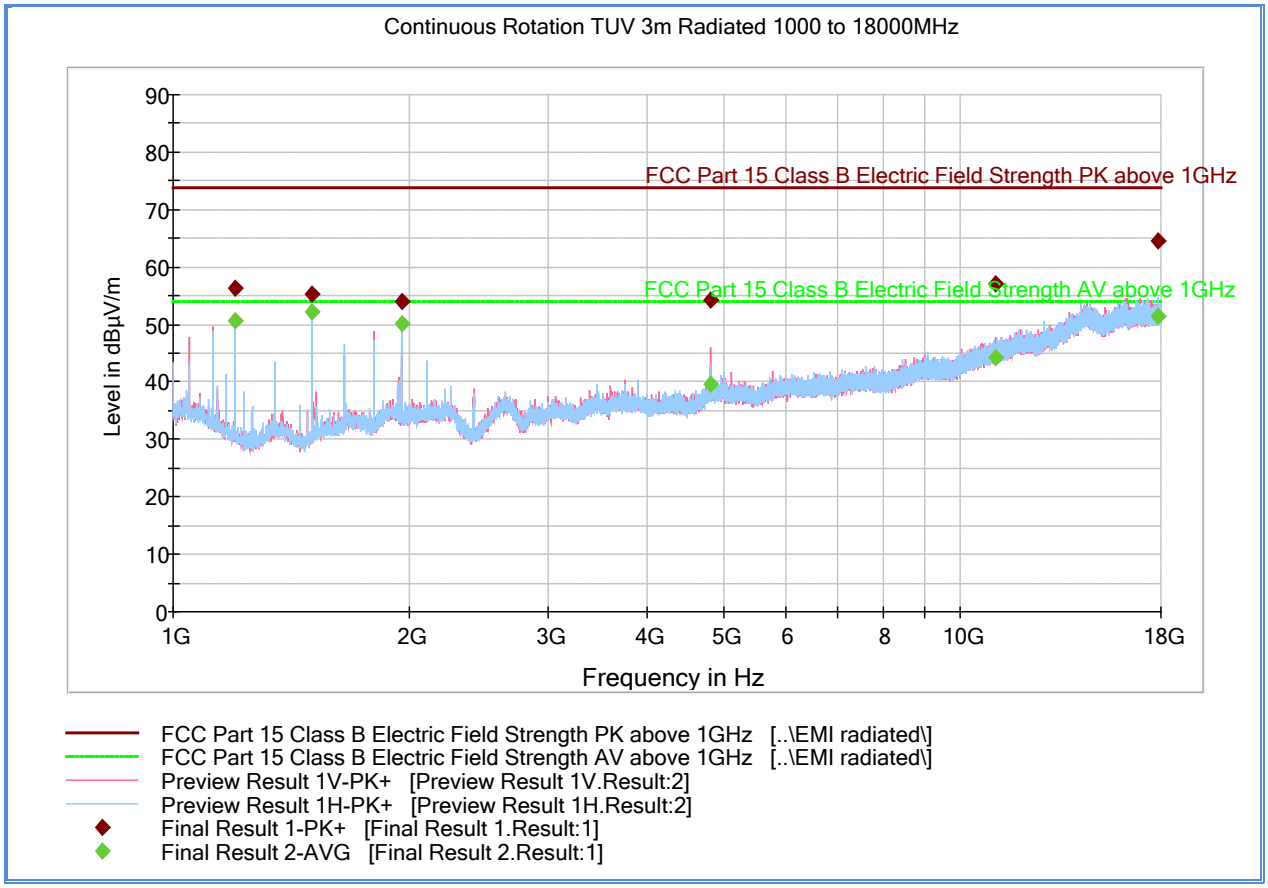
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	57.5	1000.0	1000.000	99.6	V	0.0	-1.5	16.4	73.9
1500.000000	55.9	1000.0	1000.000	99.6	H	15.0	-1.9	18.0	73.9
1950.333333	52.5	1000.0	1000.000	100.6	H	215.0	1.9	21.4	73.9
5823.666667	60.2	1000.0	1000.000	178.5	V	90.0	9.6	13.7	73.9
10928.200000	57.2	1000.0	1000.000	101.6	H	270.0	16.1	16.7	73.9
17954.900000	65.6	1000.0	1000.000	406.7	V	16.0	23.8	8.3	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)
1199.833333	48.1	1000.0	1000.000	99.6	V	0.0	-1.5	5.8	53.9
1500.000000	52.6	1000.0	1000.000	99.6	H	15.0	-1.9	1.3	53.9
1950.333333	47.2	1000.0	1000.000	100.6	H	215.0	1.9	6.7	53.9
5823.666667	49.1	1000.0	1000.000	178.5	V	90.0	9.6	4.8	53.9
10928.200000	43.8	1000.0	1000.000	101.6	H	270.0	16.1	10.1	53.9
17954.900000	51.5	1000.0	1000.000	406.7	V	16.0	23.8	2.4	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.20 Test Results Above 1GHz (802.11b Low Channel)



Peak Data

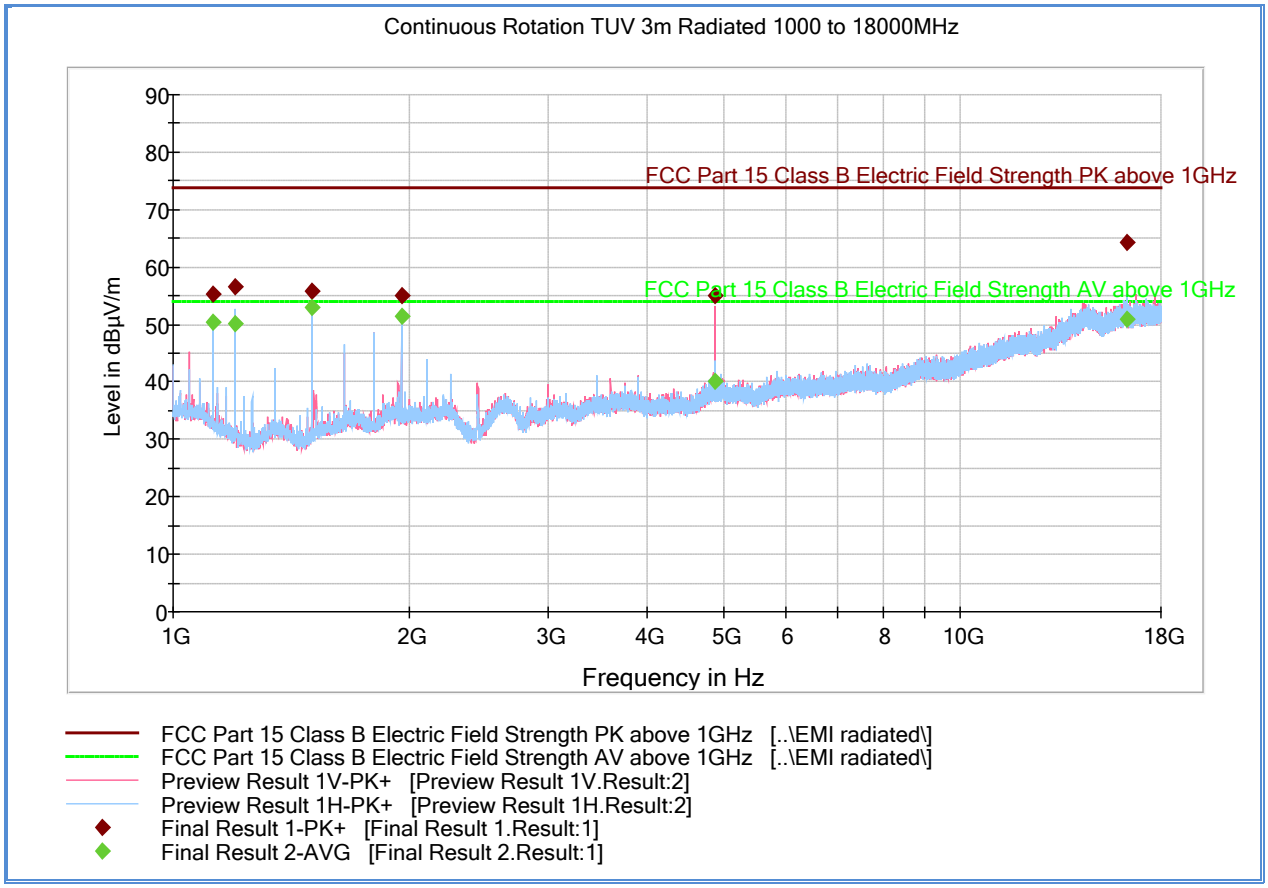
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	56.4	1000.0	1000.000	100.6	H	157.0	-1.5	17.5	73.9
1500.000000	55.3	1000.0	1000.000	99.6	H	27.0	-1.9	18.6	73.9
1950.133333	54.0	1000.0	1000.000	152.5	H	229.0	1.9	19.9	73.9
4824.066667	54.4	1000.0	1000.000	132.6	V	68.0	7.8	19.5	73.9
11075.866667	57.0	1000.0	1000.000	316.1	V	334.0	16.5	16.9	73.9
17834.500000	64.6	1000.0	1000.000	99.6	H	290.0	23.6	9.3	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)
1199.833333	50.7	1000.0	1000.000	100.6	H	157.0	-1.5	3.2	53.9
1500.000000	52.2	1000.0	1000.000	99.6	H	27.0	-1.9	1.7	53.9
1950.133333	50.3	1000.0	1000.000	152.5	H	229.0	1.9	3.6	53.9
4824.066667	39.6	1000.0	1000.000	132.6	V	68.0	7.8	14.3	53.9
11075.866667	44.2	1000.0	1000.000	316.1	V	334.0	16.5	9.7	53.9
17834.500000	51.3	1000.0	1000.000	99.6	H	290.0	23.6	2.6	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.21 Test Results Above 1GHz (802.11b Mid Channel)



Peak Data

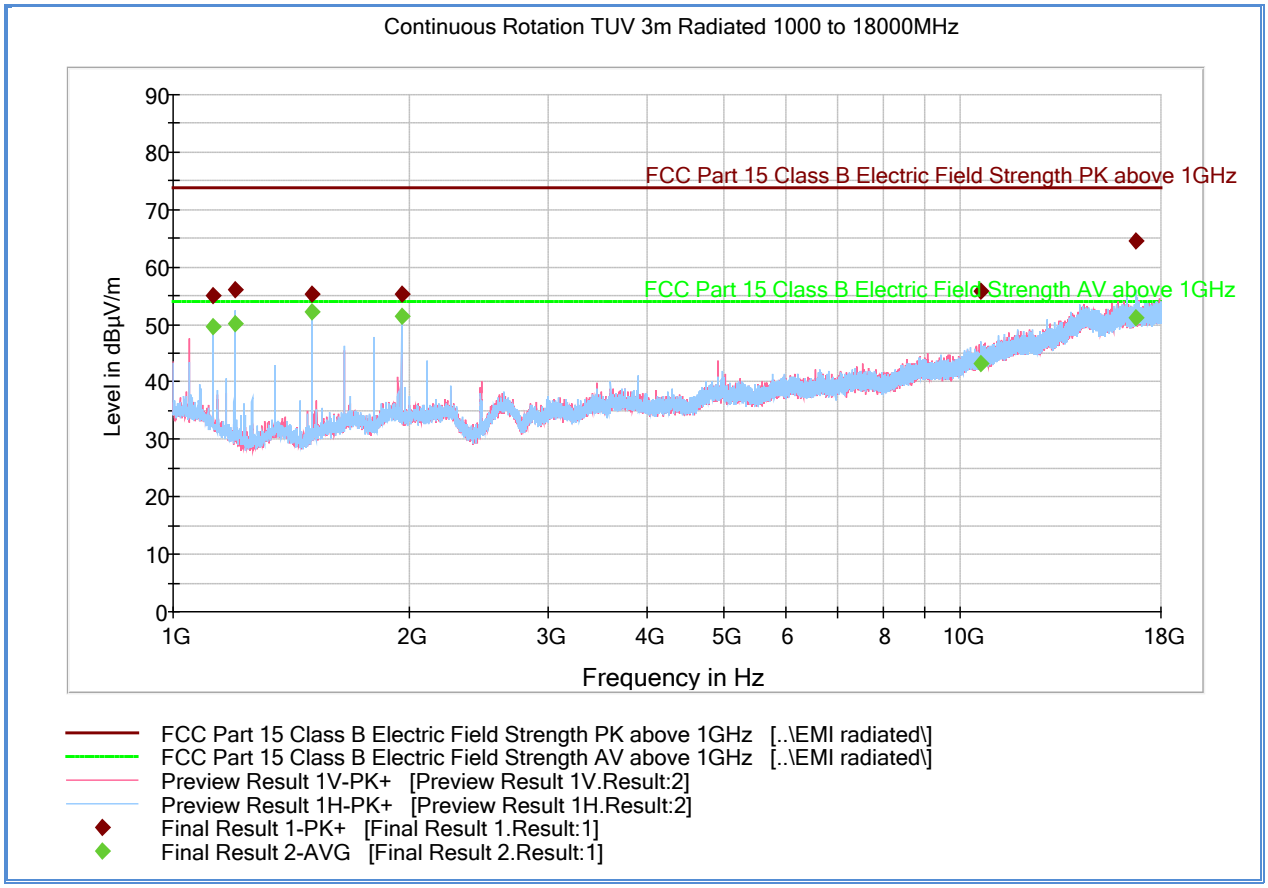
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1124.866667	55.3	1000.0	1000.000	197.4	V	332.0	-1.7	18.6	73.9
1200.233333	56.6	1000.0	1000.000	99.6	H	157.0	-1.5	17.3	73.9
1500.000000	55.7	1000.0	1000.000	100.6	H	194.0	-1.9	18.2	73.9
1949.933333	55.0	1000.0	1000.000	101.6	H	228.0	1.9	18.9	73.9
4873.933333	55.0	1000.0	1000.000	131.6	V	74.0	7.8	18.9	73.9
16274.166667	64.2	1000.0	1000.000	304.2	H	264.0	23.0	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)
1124.866667	50.3	1000.0	1000.000	197.4	V	332.0	-1.7	3.6	53.9
1200.233333	50.2	1000.0	1000.000	99.6	H	157.0	-1.5	3.7	53.9
1500.000000	52.9	1000.0	1000.000	100.6	H	194.0	-1.9	1.0	53.9
1949.933333	51.4	1000.0	1000.000	101.6	H	228.0	1.9	2.5	53.9
4873.933333	40.0	1000.0	1000.000	131.6	V	74.0	7.8	13.9	53.9
16274.166667	50.9	1000.0	1000.000	304.2	H	264.0	23.0	3.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.22 Test Results Above 1GHz (802.11b High Channel)



Peak Data

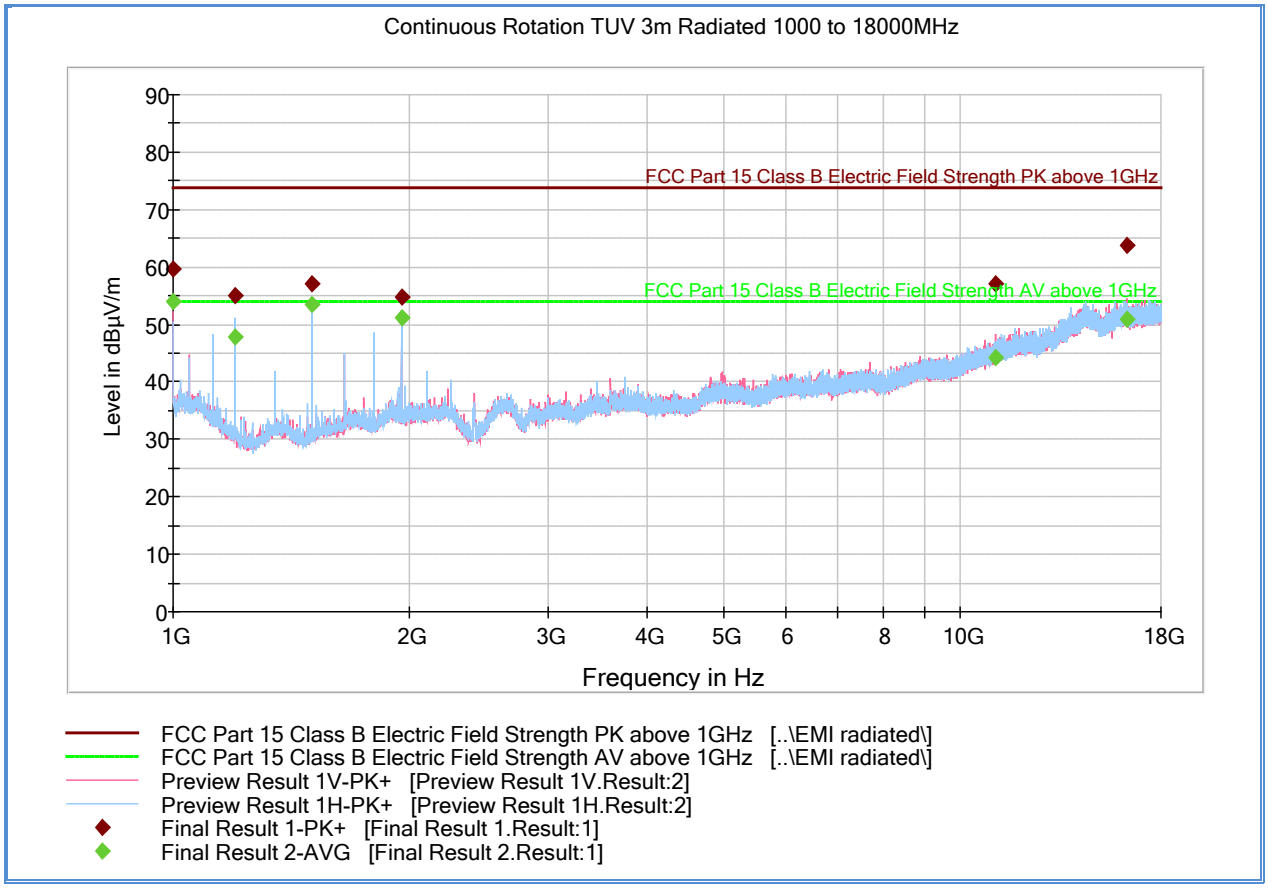
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1125.066667	55.0	1000.0	1000.000	189.4	V	336.0	-1.7	18.9	73.9
1200.233333	55.9	1000.0	1000.000	99.6	H	157.0	-1.5	18.0	73.9
1500.000000	55.4	1000.0	1000.000	103.6	H	26.0	-1.9	18.5	73.9
1949.933333	55.2	1000.0	1000.000	101.6	H	234.0	1.9	18.7	73.9
10612.000000	55.9	1000.0	1000.000	357.1	H	142.0	15.6	18.0	73.9
16739.600000	64.6	1000.0	1000.000	410.7	H	-16.0	23.4	9.3	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)
1125.066667	49.7	1000.0	1000.000	189.4	V	336.0	-1.7	4.2	53.9
1200.233333	50.2	1000.0	1000.000	99.6	H	157.0	-1.5	3.7	53.9
1500.000000	52.3	1000.0	1000.000	103.6	H	26.0	-1.9	1.6	53.9
1949.933333	51.5	1000.0	1000.000	101.6	H	234.0	1.9	2.4	53.9
10612.000000	43.2	1000.0	1000.000	357.1	H	142.0	15.6	10.7	53.9
16739.600000	51.3	1000.0	1000.000	410.7	H	-16.0	23.4	2.6	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.23 Test Results Above 1GHz (802.11g Low Channel)



Peak Data

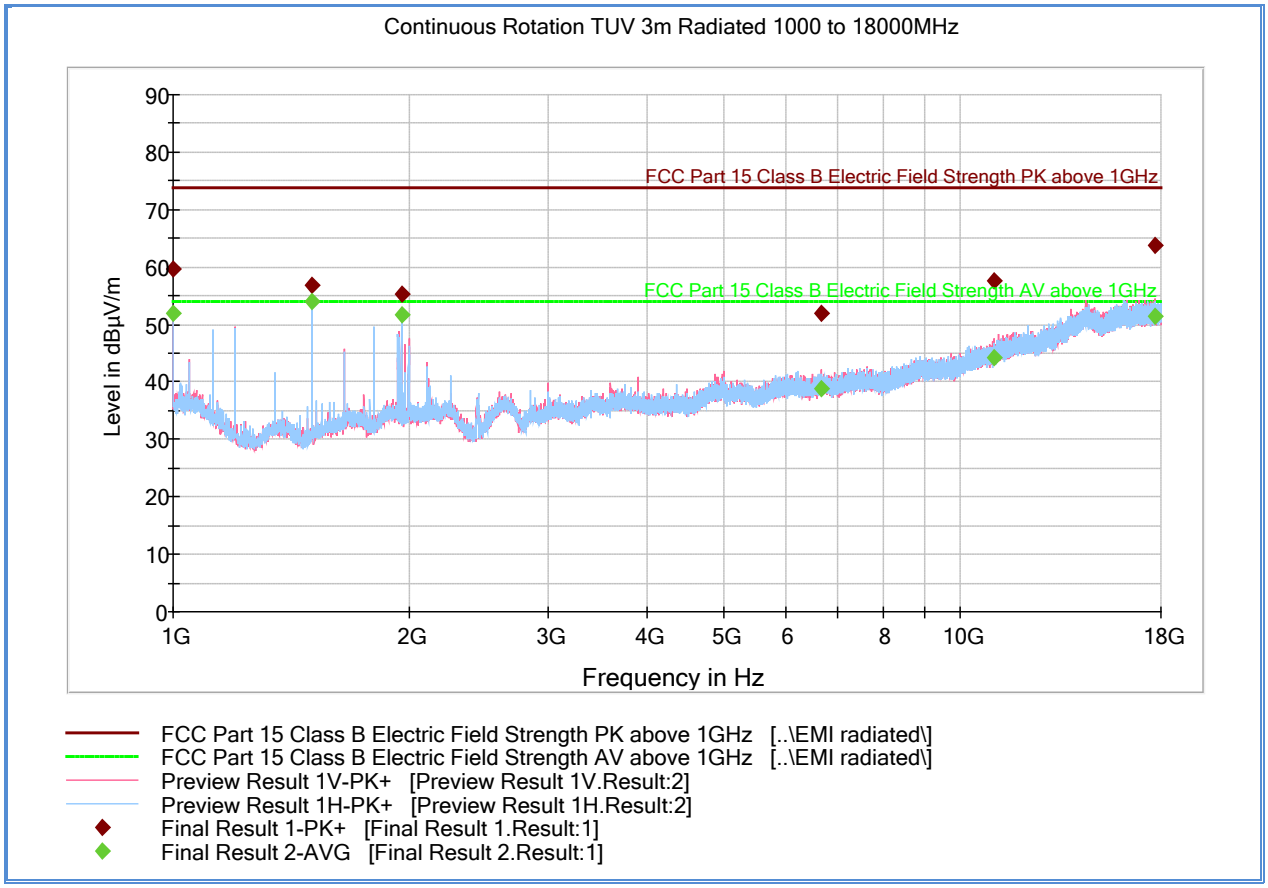
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.8	1000.0	1000.000	314.2	V	324.0	-1.0	14.2	73.9
1199.833333	55.1	1000.0	1000.000	99.6	H	157.0	-1.5	18.8	73.9
1500.000000	57.0	1000.0	1000.000	100.6	H	213.0	-1.9	16.9	73.9
1950.133333	54.7	1000.0	1000.000	101.6	H	241.0	1.9	19.2	73.9
11112.966667	57.2	1000.0	1000.000	300.6	V	234.0	16.6	16.7	73.9
16288.066667	63.8	1000.0	1000.000	383.1	V	20.0	23.0	10.1	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	53.9	1000.0	1000.000	314.2	V	324.0	-1.0	0.0	53.9
1199.833333	47.8	1000.0	1000.000	99.6	H	157.0	-1.5	6.1	53.9
1500.000000	53.6	1000.0	1000.000	100.6	H	213.0	-1.9	0.3	53.9
1950.133333	51.3	1000.0	1000.000	101.6	H	241.0	1.9	2.6	53.9
11112.966667	44.2	1000.0	1000.000	300.6	V	234.0	16.6	9.7	53.9
16288.066667	50.9	1000.0	1000.000	383.1	V	20.0	23.0	3.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.24 Test Results Above 1GHz (802.11g Mid Channel)



Peak Data

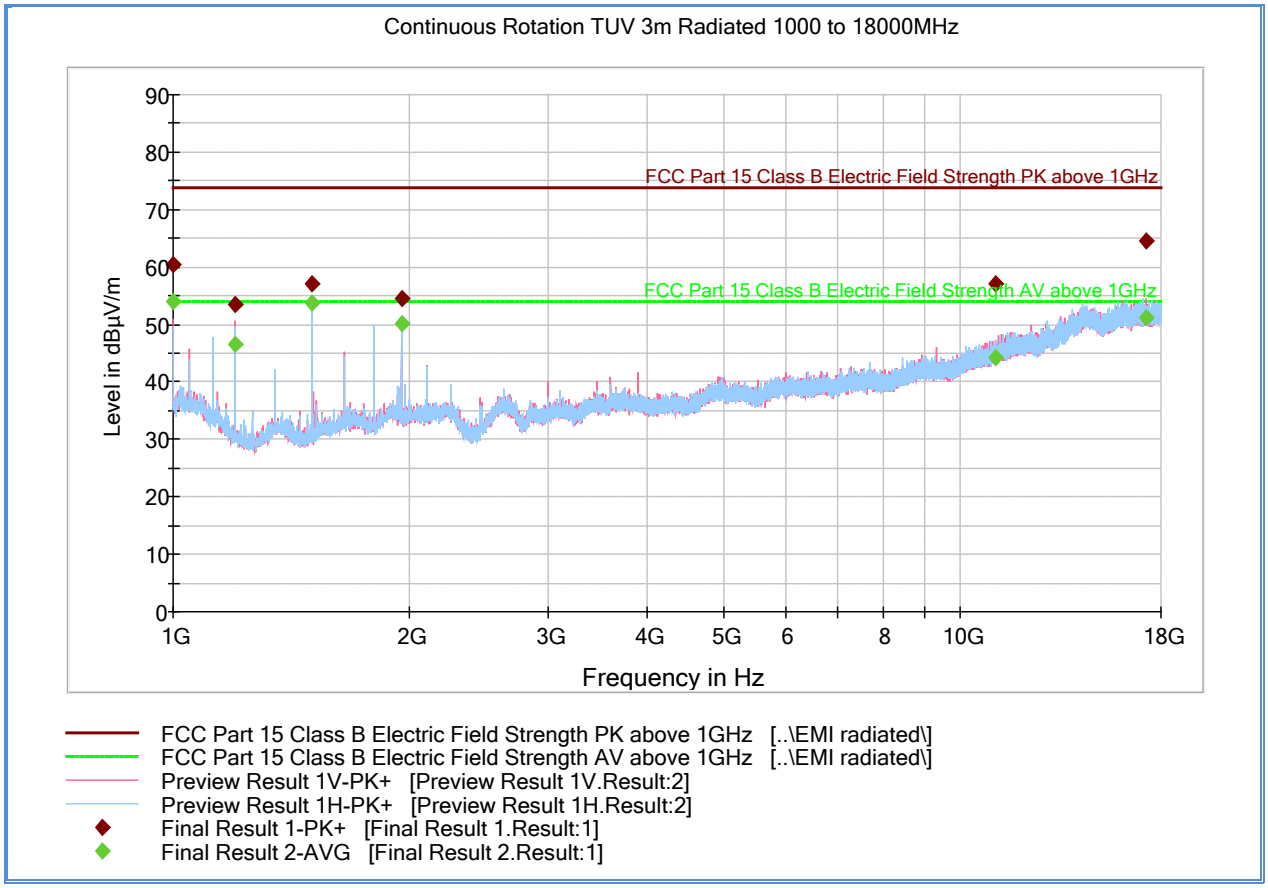
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.7	1000.0	1000.000	313.2	H	286.0	-1.0	14.2	73.9
1500.000000	56.9	1000.0	1000.000	99.6	H	202.0	-1.9	17.0	73.9
1949.933333	55.2	1000.0	1000.000	100.6	H	235.0	1.9	18.7	73.9
6663.833333	51.9	1000.0	1000.000	226.4	V	51.0	10.4	22.0	73.9
11047.600000	57.7	1000.0	1000.000	322.2	V	3.0	16.4	16.2	73.9
17659.466667	63.8	1000.0	1000.000	151.5	V	277.0	23.4	10.1	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	51.9	1000.0	1000.000	313.2	H	286.0	-1.0	2.0	53.9
1500.000000	53.9	1000.0	1000.000	99.6	H	202.0	-1.9	0.0	53.9
1949.933333	51.7	1000.0	1000.000	100.6	H	235.0	1.9	2.2	53.9
6663.833333	38.9	1000.0	1000.000	226.4	V	51.0	10.4	15.0	53.9
11047.600000	44.2	1000.0	1000.000	322.2	V	3.0	16.4	9.7	53.9
17659.466667	51.4	1000.0	1000.000	151.5	V	277.0	23.4	2.5	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.25 Test Results Above 1GHz (802.11g High Channel)



Peak Data

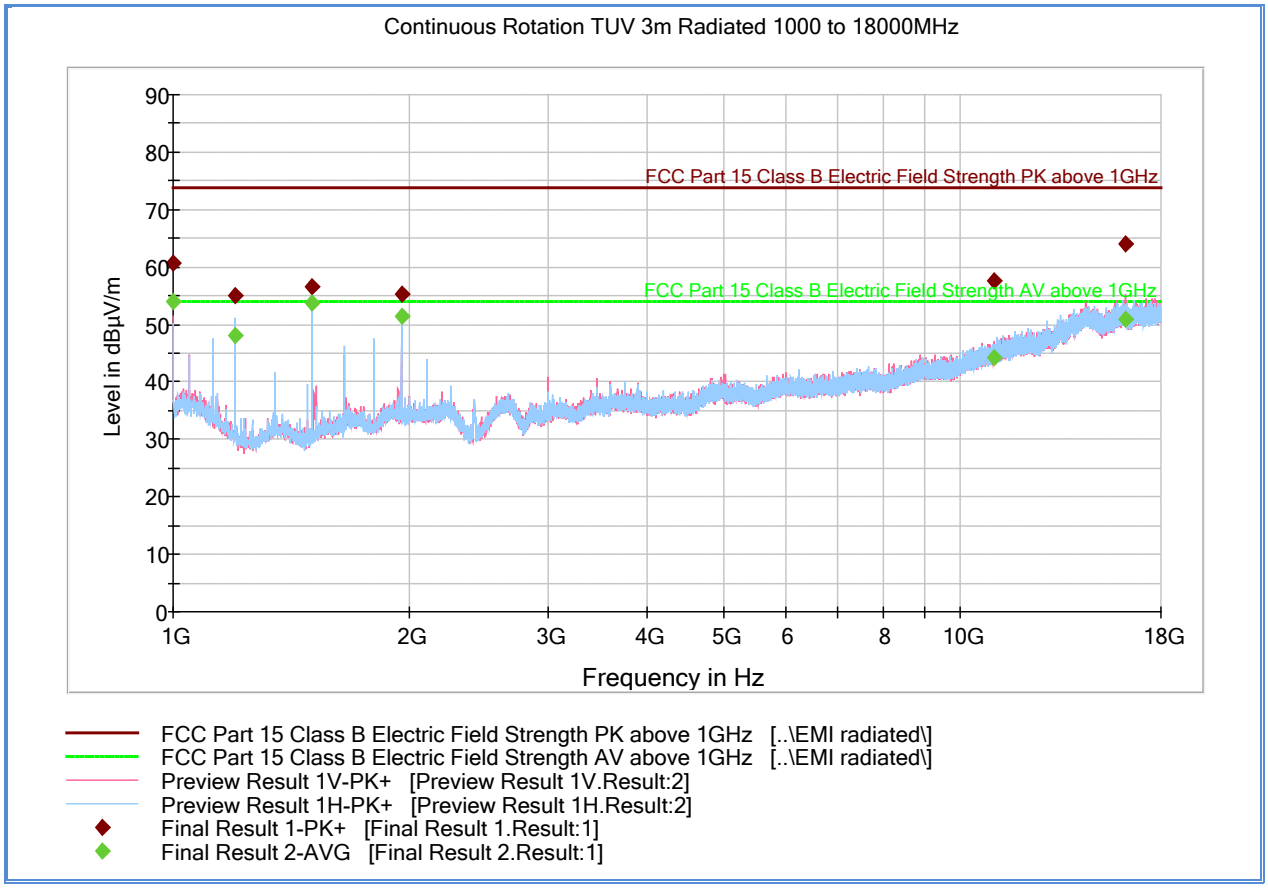
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	60.3	1000.0	1000.000	178.5	V	337.0	-1.0	13.6	73.9
1200.233333	53.6	1000.0	1000.000	227.3	V	158.0	-1.5	20.3	73.9
1500.000000	57.2	1000.0	1000.000	99.6	H	213.0	-1.9	16.7	73.9
1949.933333	54.6	1000.0	1000.000	101.6	H	225.0	1.9	19.3	73.9
11116.700000	57.0	1000.0	1000.000	194.4	H	-20.0	16.6	16.9	73.9
17226.866667	64.5	1000.0	1000.000	99.6	V	250.0	23.1	9.4	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	53.9	1000.0	1000.000	178.5	V	337.0	-1.0	0.0	53.9
1200.233333	46.7	1000.0	1000.000	227.3	V	158.0	-1.5	7.2	53.9
1500.000000	53.7	1000.0	1000.000	99.6	H	213.0	-1.9	0.2	53.9
1949.933333	50.2	1000.0	1000.000	101.6	H	225.0	1.9	3.7	53.9
11116.700000	44.2	1000.0	1000.000	194.4	H	-20.0	16.6	9.7	53.9
17226.866667	51.1	1000.0	1000.000	99.6	V	250.0	23.1	2.8	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.26 Test Results Above 1GHz (802.11n HT20 2.4GHz Low Channel)



Peak Data

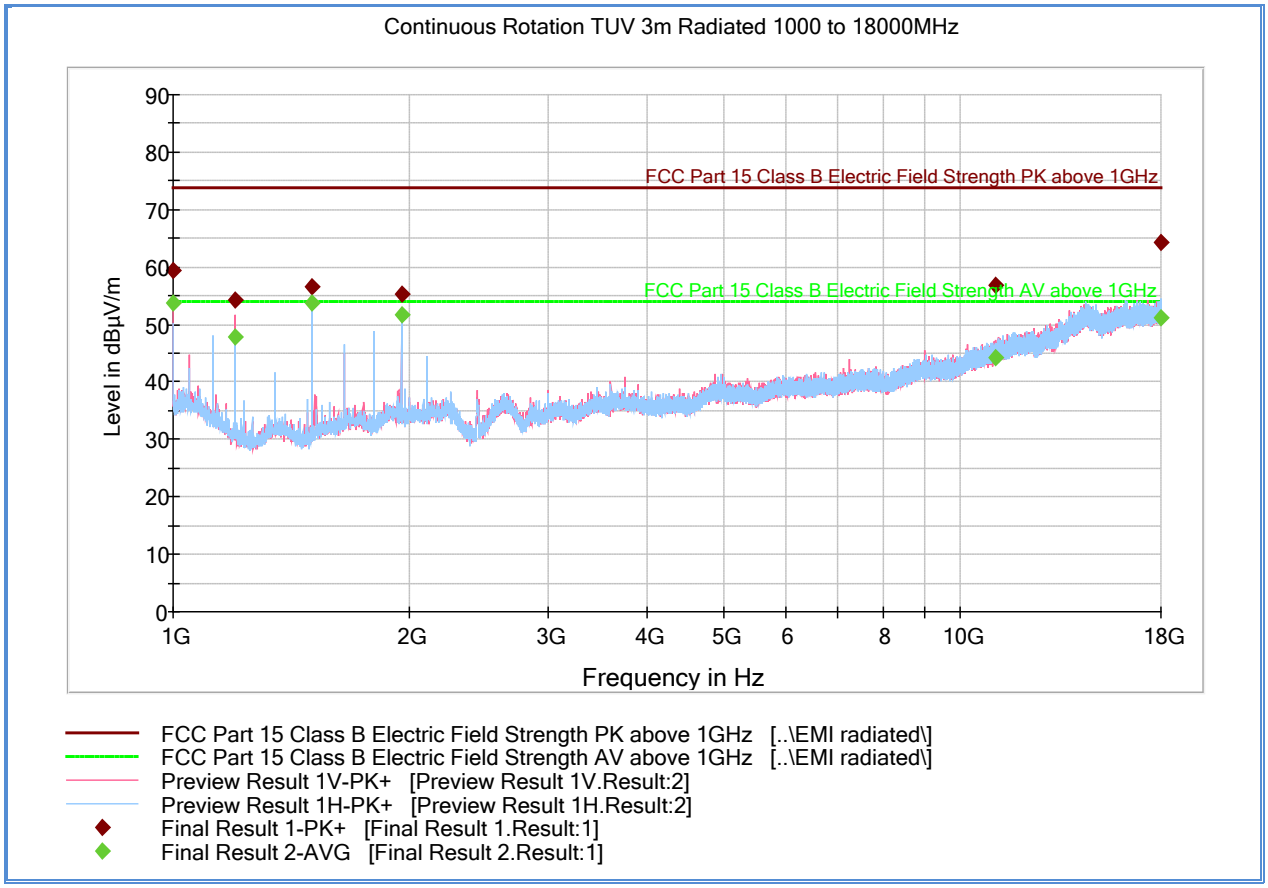
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	60.7	1000.0	1000.000	169.5	V	327.0	-1.0	13.2	73.9
1200.233333	55.0	1000.0	1000.000	99.6	H	157.0	-1.5	18.9	73.9
1500.000000	56.5	1000.0	1000.000	100.6	H	201.0	-1.9	17.4	73.9
1949.933333	55.2	1000.0	1000.000	101.6	H	236.0	1.9	18.7	73.9
11032.066667	57.5	1000.0	1000.000	305.1	V	245.0	16.4	16.4	73.9
16244.866667	63.9	1000.0	1000.000	202.4	V	304.0	23.0	10.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	53.9	1000.0	1000.000	169.5	V	327.0	-1.0	0.0	53.9
1200.233333	48.0	1000.0	1000.000	99.6	H	157.0	-1.5	5.9	53.9
1500.000000	53.7	1000.0	1000.000	100.6	H	201.0	-1.9	0.2	53.9
1949.933333	51.5	1000.0	1000.000	101.6	H	236.0	1.9	2.4	53.9
11032.066667	44.1	1000.0	1000.000	305.1	V	245.0	16.4	9.8	53.9
16244.866667	51.0	1000.0	1000.000	202.4	V	304.0	23.0	2.9	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.27 Test Results Above 1GHz (802.11n HT20 2.4GHz Mid Channel)



Peak Data

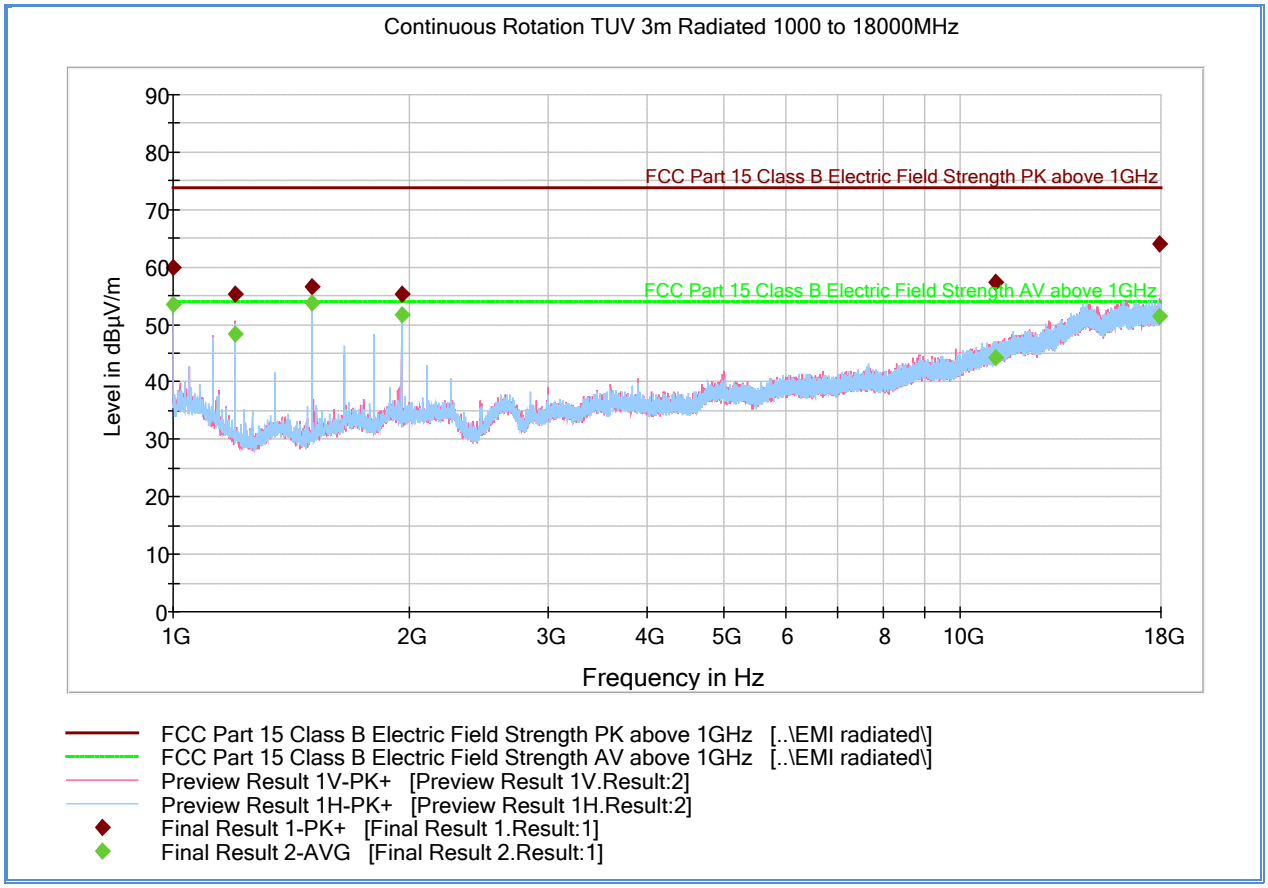
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.4	1000.0	1000.000	305.1	V	334.0	-1.0	14.5	73.9
1199.833333	54.4	1000.0	1000.000	218.4	V	158.0	-1.5	19.5	73.9
1500.000000	56.6	1000.0	1000.000	99.6	H	201.0	-1.9	17.3	73.9
1950.133333	55.3	1000.0	1000.000	100.6	H	241.0	1.9	18.6	73.9
11118.800000	56.8	1000.0	1000.000	123.6	V	261.0	16.6	17.1	73.9
17973.766667	64.3	1000.0	1000.000	401.7	H	229.0	23.9	9.6	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)
1000.000000	53.7	1000.0	1000.000	305.1	V	334.0	-1.0	0.2	53.9
1199.833333	47.9	1000.0	1000.000	218.4	V	158.0	-1.5	6.0	53.9
1500.000000	53.8	1000.0	1000.000	99.6	H	201.0	-1.9	0.1	53.9
1950.133333	51.6	1000.0	1000.000	100.6	H	241.0	1.9	2.3	53.9
11118.800000	44.2	1000.0	1000.000	123.6	V	261.0	16.6	9.7	53.9
17973.766667	51.3	1000.0	1000.000	401.7	H	229.0	23.9	2.6	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.28 Test Results Above 1GHz (802.11n HT20 2.4GHz High Channel)



Peak Data

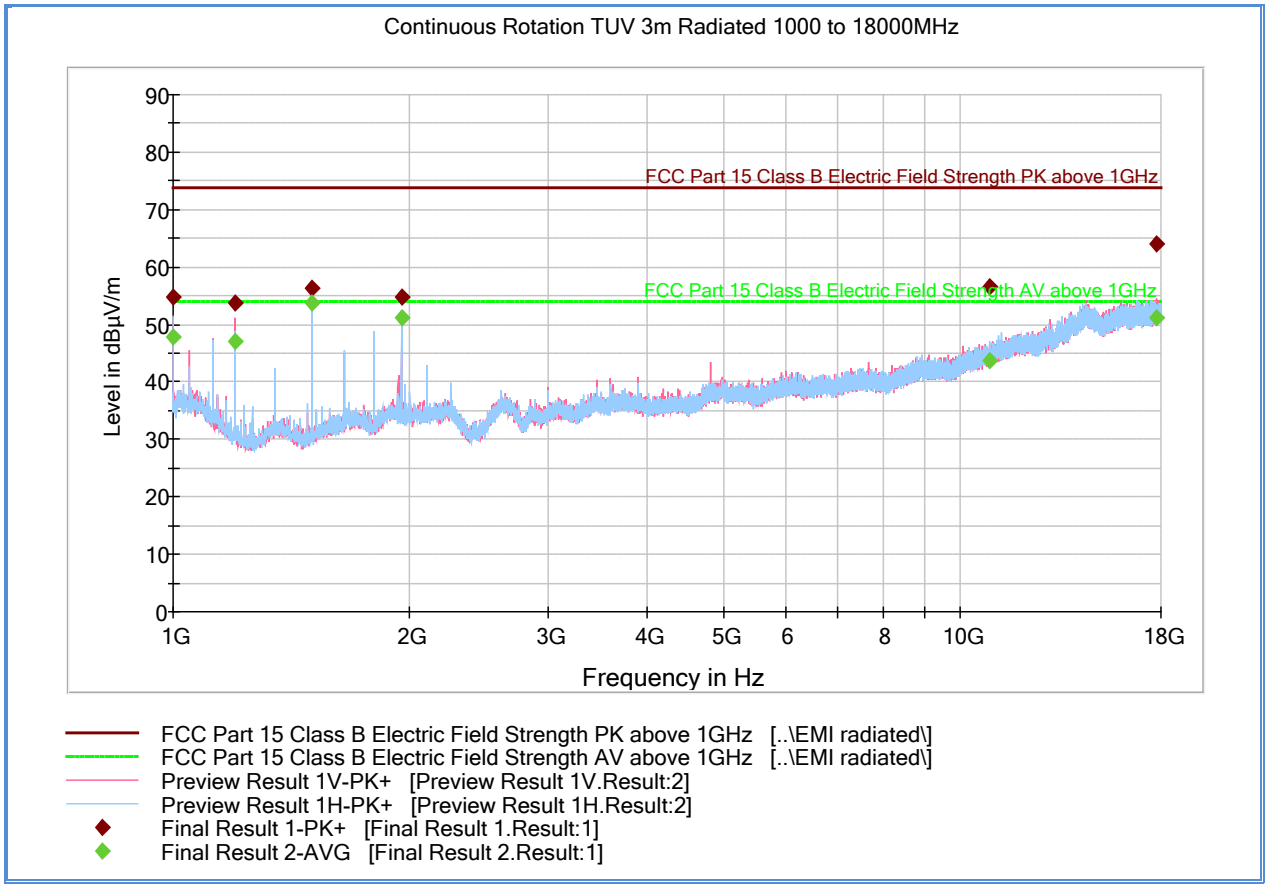
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.9	1000.0	1000.000	303.2	H	268.0	-1.0	14.0	73.9
1200.233333	55.2	1000.0	1000.000	99.6	V	194.0	-1.5	18.7	73.9
1500.000000	56.6	1000.0	1000.000	100.6	H	201.0	-1.9	17.3	73.9
1950.133333	55.2	1000.0	1000.000	101.6	H	235.0	1.9	18.7	73.9
11075.133333	57.2	1000.0	1000.000	99.6	H	102.0	16.5	16.7	73.9
17939.966667	64.0	1000.0	1000.000	100.6	V	263.0	23.8	9.9	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	53.5	1000.0	1000.000	303.2	H	268.0	-1.0	0.4	53.9
1200.233333	48.4	1000.0	1000.000	99.6	V	194.0	-1.5	5.5	53.9
1500.000000	53.7	1000.0	1000.000	100.6	H	201.0	-1.9	0.2	53.9
1950.133333	51.6	1000.0	1000.000	101.6	H	235.0	1.9	2.3	53.9
11075.133333	44.2	1000.0	1000.000	99.6	H	102.0	16.5	9.7	53.9
17939.966667	51.5	1000.0	1000.000	100.6	V	263.0	23.8	2.4	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.29 Test Results Above 1GHz (802.11n HT40 2.4GHz Low Channel)



Peak Data

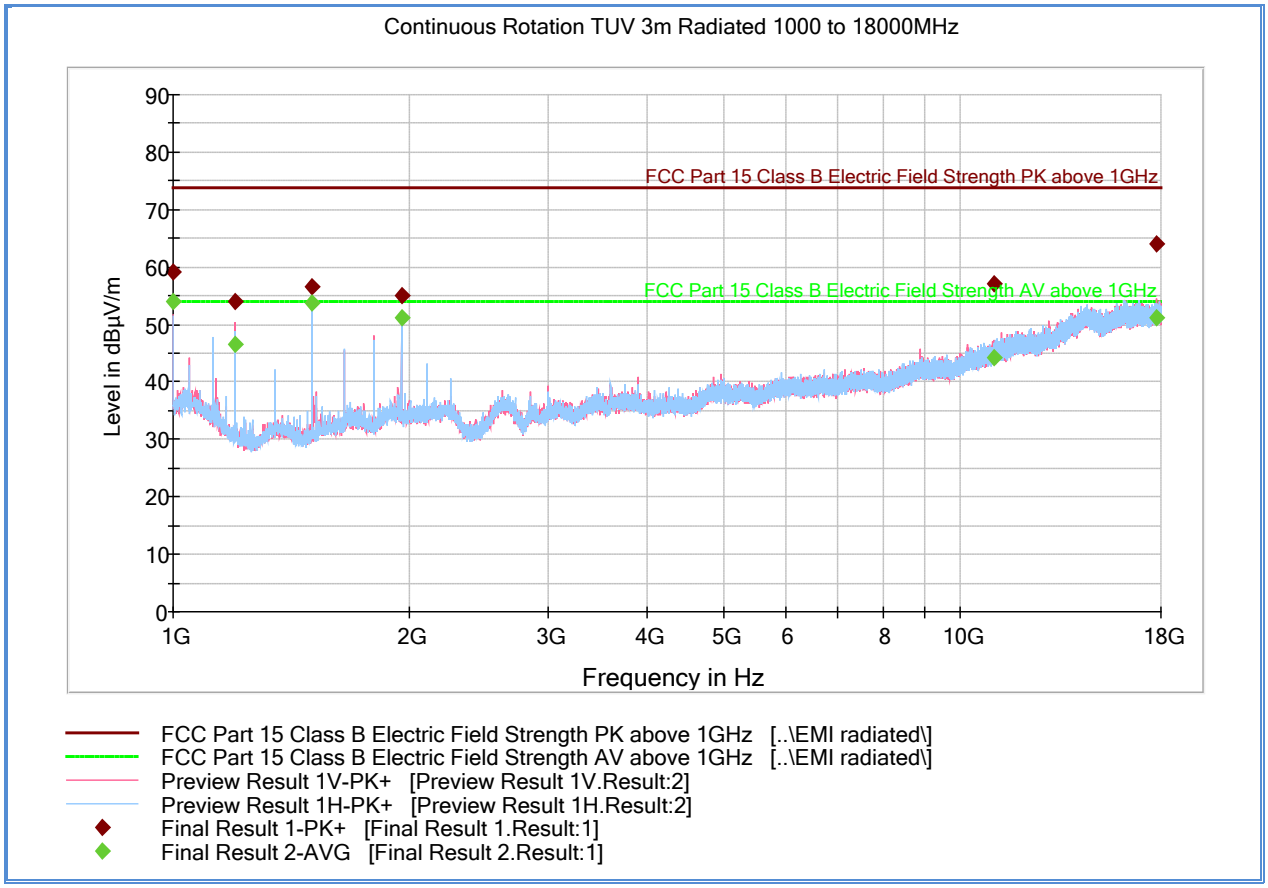
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	54.8	1000.0	1000.000	360.1	H	268.0	-1.0	19.1	73.9
1200.233333	53.8	1000.0	1000.000	228.3	V	159.0	-1.5	20.1	73.9
1500.000000	56.3	1000.0	1000.000	99.6	H	200.0	-1.9	17.6	73.9
1949.933333	54.7	1000.0	1000.000	100.6	H	242.0	1.9	19.2	73.9
10890.966667	56.5	1000.0	1000.000	404.0	H	219.0	16.0	17.4	73.9
17781.266667	64.1	1000.0	1000.000	326.1	V	155.0	23.5	9.8	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	47.8	1000.0	1000.000	360.1	H	268.0	-1.0	6.1	53.9
1200.233333	47.1	1000.0	1000.000	228.3	V	159.0	-1.5	6.8	53.9
1500.000000	53.7	1000.0	1000.000	99.6	H	200.0	-1.9	0.2	53.9
1949.933333	51.1	1000.0	1000.000	100.6	H	242.0	1.9	2.8	53.9
10890.966667	43.8	1000.0	1000.000	404.0	H	219.0	16.0	10.1	53.9
17781.266667	51.2	1000.0	1000.000	326.1	V	155.0	23.5	2.7	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.30 Test Results Above 1GHz (802.11n HT40 2.4GHz Mid Channel)



Peak Data

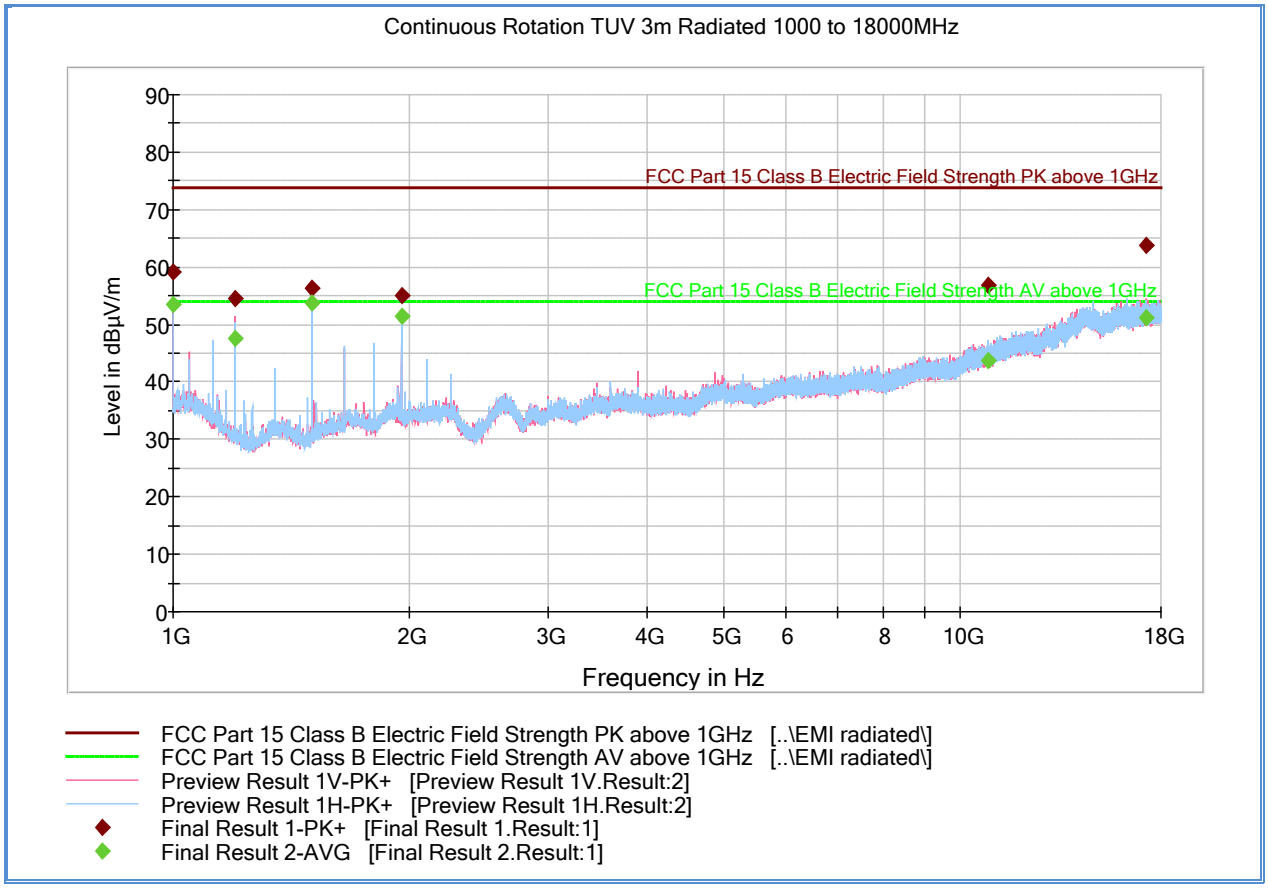
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.1	1000.0	1000.000	316.1	V	332.0	-1.0	14.8	73.9
1199.833333	53.9	1000.0	1000.000	99.6	V	205.0	-1.5	20.0	73.9
1500.000000	56.6	1000.0	1000.000	99.6	H	202.0	-1.9	17.3	73.9
1949.933333	55.1	1000.0	1000.000	100.6	H	242.0	1.9	18.8	73.9
11055.933333	57.1	1000.0	1000.000	201.4	V	108.0	16.5	16.8	73.9
17759.533333	63.9	1000.0	1000.000	101.6	V	254.0	23.4	10.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	53.9	1000.0	1000.000	316.1	V	332.0	-1.0	0.0	53.9
1199.833333	46.6	1000.0	1000.000	99.6	V	205.0	-1.5	7.3	53.9
1500.000000	53.8	1000.0	1000.000	99.6	H	202.0	-1.9	0.1	53.9
1949.933333	51.3	1000.0	1000.000	100.6	H	242.0	1.9	2.6	53.9
11055.933333	44.2	1000.0	1000.000	201.4	V	108.0	16.5	9.7	53.9
17759.533333	51.2	1000.0	1000.000	101.6	V	254.0	23.4	2.7	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.31 Test Results Above 1GHz (802.11n HT40 2.4GHz High Channel)



Peak Data

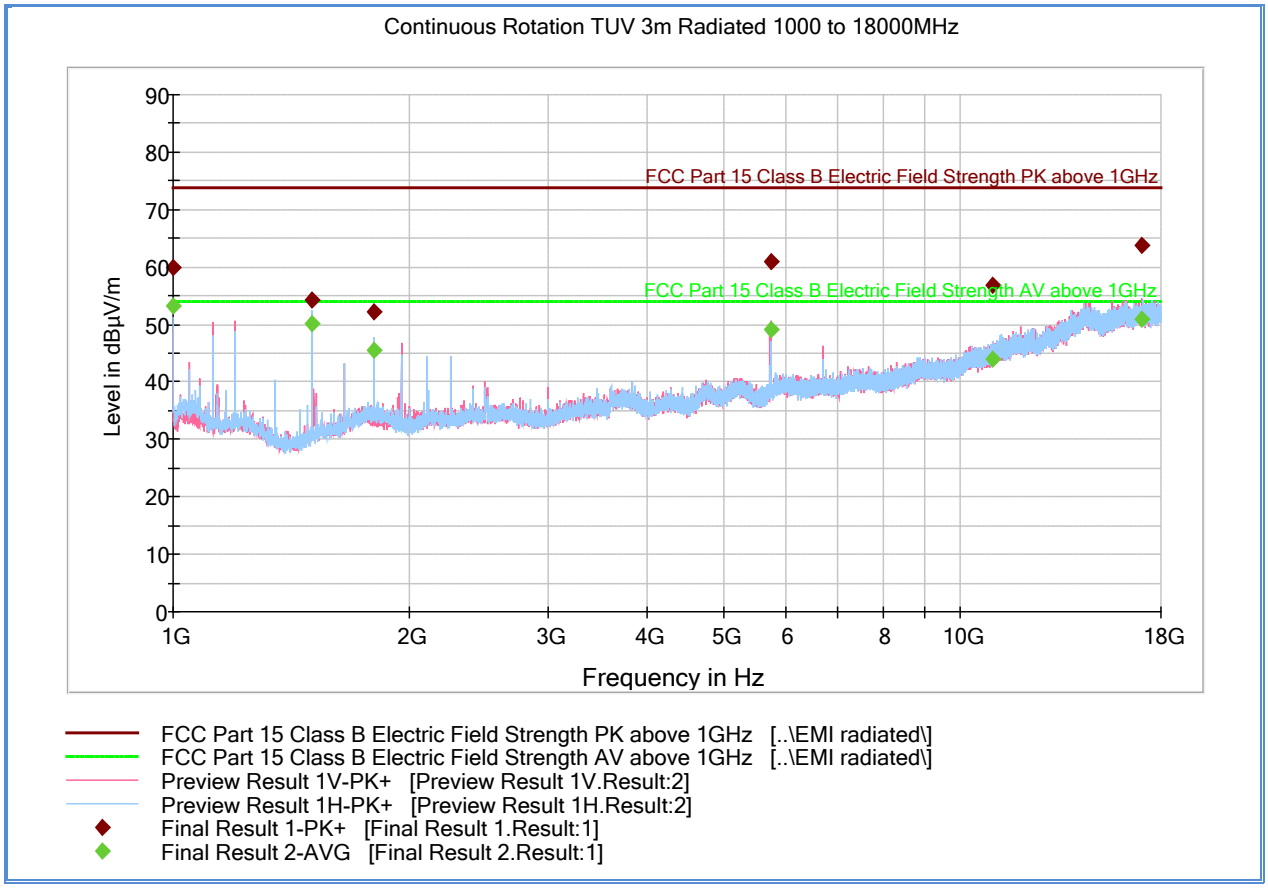
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.3	1000.0	1000.000	303.1	V	333.0	-1.0	14.6	73.9
1199.833333	54.4	1000.0	1000.000	99.6	V	200.0	-1.5	19.5	73.9
1500.000000	56.4	1000.0	1000.000	99.6	H	202.0	-1.9	17.5	73.9
1949.933333	55.0	1000.0	1000.000	100.6	H	241.0	1.9	18.9	73.9
10855.033333	56.8	1000.0	1000.000	300.6	H	16.0	15.9	17.1	73.9
17234.966667	63.8	1000.0	1000.000	169.5	V	178.0	23.1	10.1	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	53.5	1000.0	1000.000	303.1	V	333.0	-1.0	0.4	53.9
1199.833333	47.7	1000.0	1000.000	99.6	V	200.0	-1.5	6.2	53.9
1500.000000	53.6	1000.0	1000.000	99.6	H	202.0	-1.9	0.3	53.9
1949.933333	51.5	1000.0	1000.000	100.6	H	241.0	1.9	2.4	53.9
10855.033333	43.8	1000.0	1000.000	300.6	H	16.0	15.9	10.1	53.9
17234.966667	51.1	1000.0	1000.000	169.5	V	178.0	23.1	2.8	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures.

2.7.32 Test Results Above 1GHz (802.11n HT20 5GHz Low Channel)



Peak Data

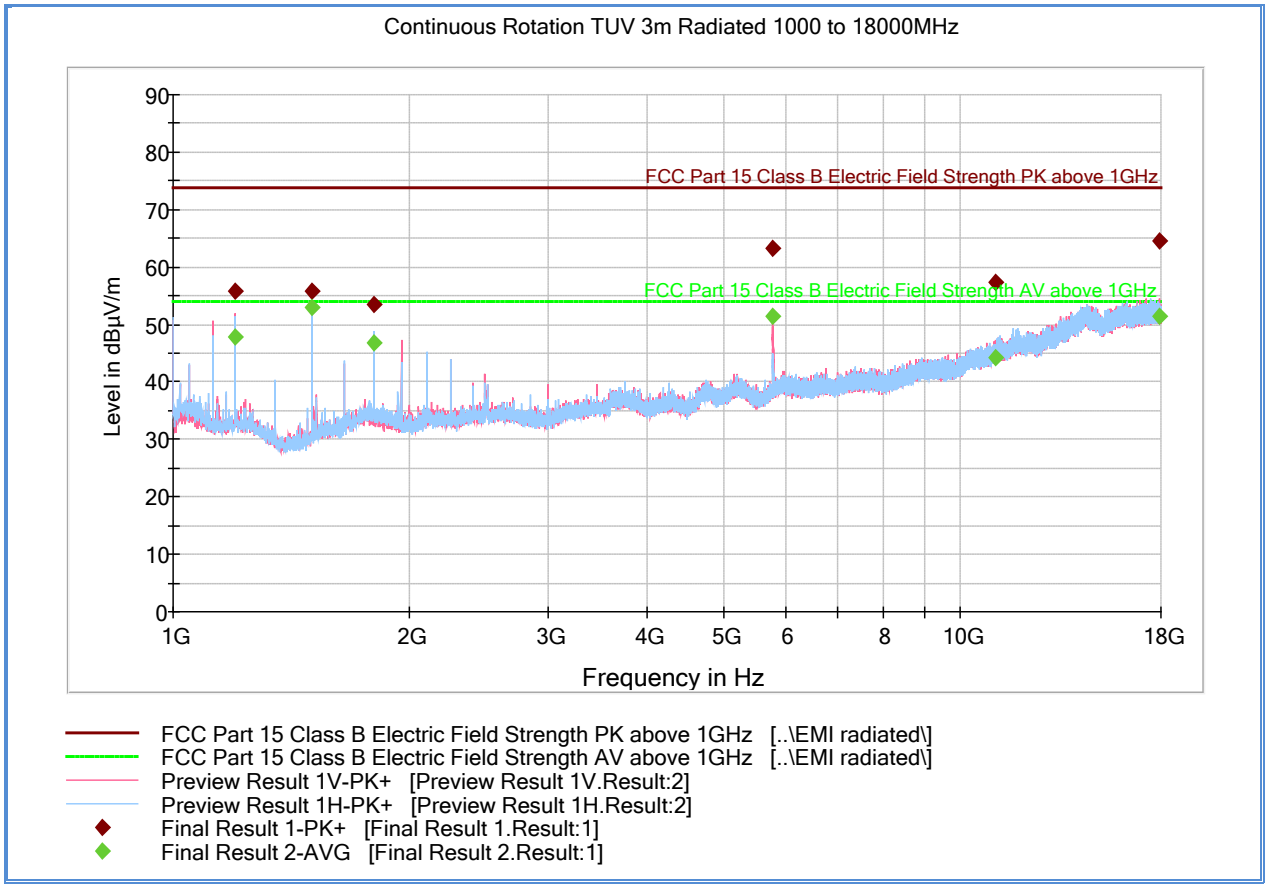
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.8	1000.0	1000.000	314.1	H	268.0	-1.0	14.1	73.9
1500.000000	54.2	1000.0	1000.000	102.6	H	20.0	-1.9	19.7	73.9
1800.166667	52.1	1000.0	1000.000	168.5	H	224.0	1.0	21.8	73.9
5747.000000	60.9	1000.0	1000.000	189.4	V	208.0	9.5	13.0	73.9
10986.400000	56.8	1000.0	1000.000	219.3	H	20.0	16.3	17.1	73.9
17020.766667	63.7	1000.0	1000.000	279.2	V	202.0	23.4	10.2	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	53.3	1000.0	1000.000	314.1	H	268.0	-1.0	0.6	53.9
1500.000000	50.1	1000.0	1000.000	102.6	H	20.0	-1.9	3.8	53.9
1800.166667	45.5	1000.0	1000.000	168.5	H	224.0	1.0	8.4	53.9
5747.000000	49.2	1000.0	1000.000	189.4	V	208.0	9.5	4.7	53.9
10986.400000	44.0	1000.0	1000.000	219.3	H	20.0	16.3	9.9	53.9
17020.766667	51.0	1000.0	1000.000	279.2	V	202.0	23.4	2.9	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.33 Test Results Above 1GHz (802.11n HT20 5GHz Mid Channel)



Peak Data

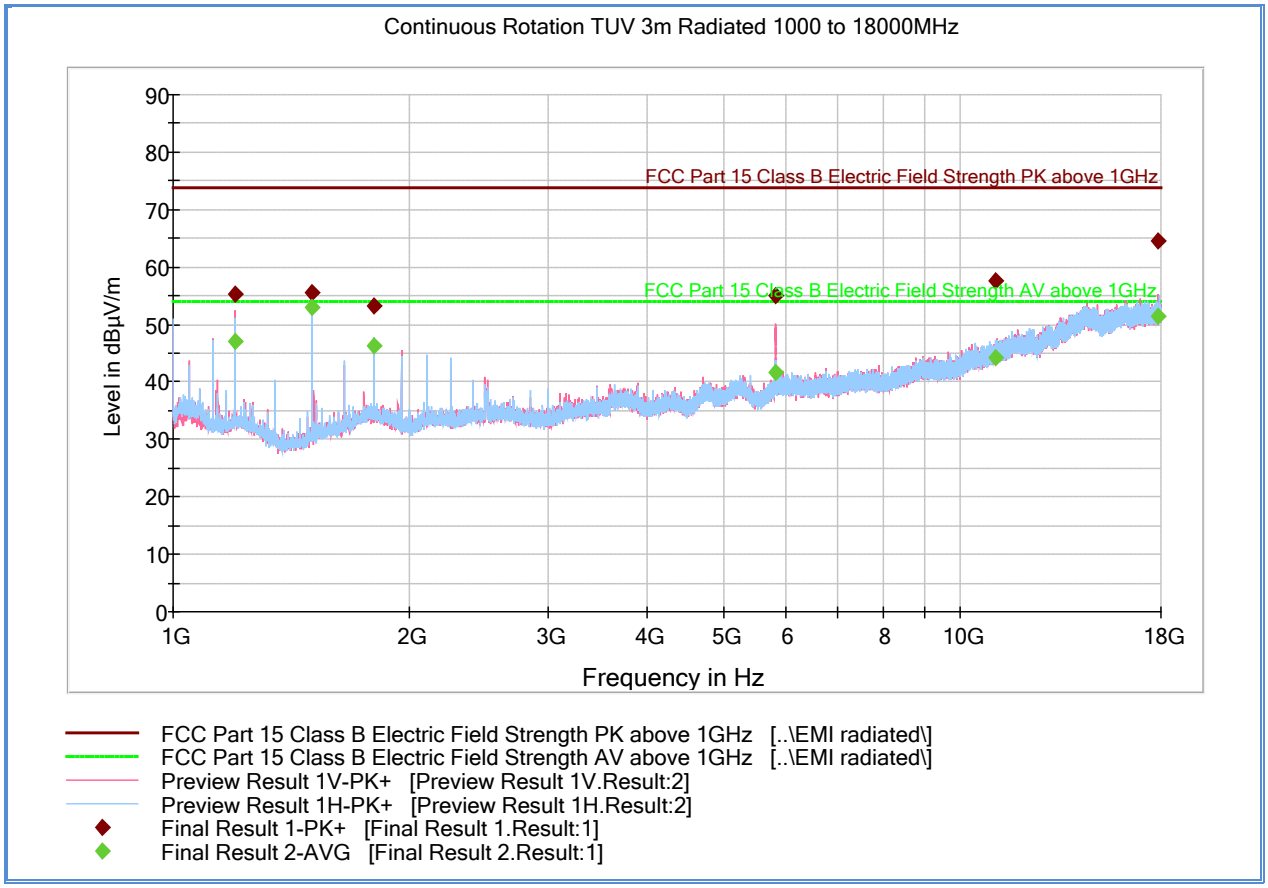
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1199.833333	55.9	1000.0	1000.000	102.6	V	0.0	-1.5	18.0	73.9
1500.000000	55.7	1000.0	1000.000	99.6	H	202.0	-1.9	18.2	73.9
1799.966667	53.5	1000.0	1000.000	115.6	H	224.0	1.0	20.4	73.9
5786.866667	63.2	1000.0	1000.000	197.4	V	41.0	9.5	10.7	73.9
11084.200000	57.3	1000.0	1000.000	202.4	V	9.0	16.5	16.6	73.9
17912.033333	64.6	1000.0	1000.000	134.6	V	182.0	23.7	9.3	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)
1199.833333	47.9	1000.0	1000.000	102.6	V	0.0	-1.5	6.0	53.9
1500.000000	53.1	1000.0	1000.000	99.6	H	202.0	-1.9	0.8	53.9
1799.966667	46.9	1000.0	1000.000	115.6	H	224.0	1.0	7.0	53.9
5786.866667	51.4	1000.0	1000.000	197.4	V	41.0	9.5	2.5	53.9
11084.200000	44.2	1000.0	1000.000	202.4	V	9.0	16.5	9.7	53.9
17912.033333	51.6	1000.0	1000.000	134.6	V	182.0	23.7	2.3	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.34 Test Results Above 1GHz (802.11n HT20 5GHz High Channel)



Peak Data

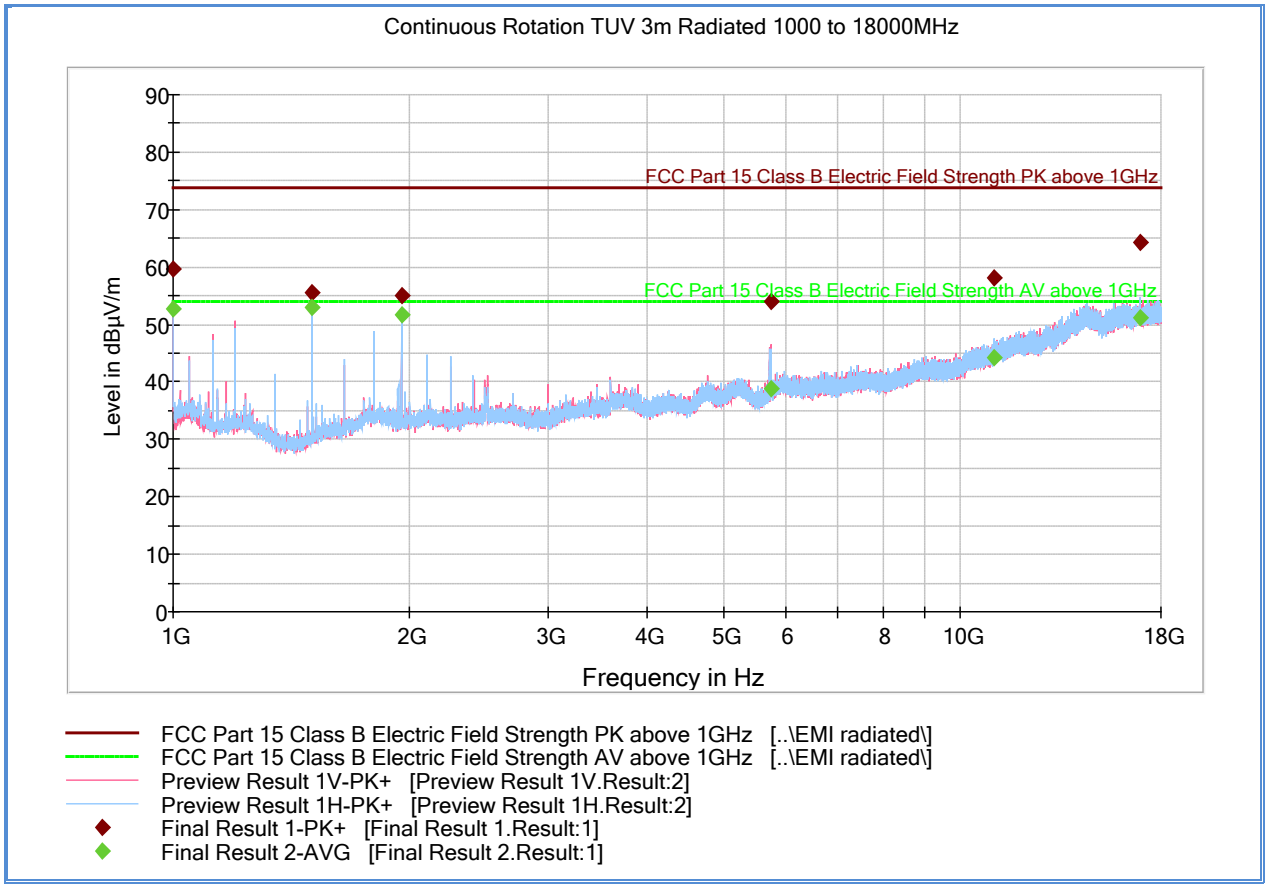
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1200.233333	55.3	1000.0	1000.000	101.6	V	3.0	-1.5	18.6	73.9
1500.000000	55.6	1000.0	1000.000	99.6	H	202.0	-1.9	18.3	73.9
1800.166667	53.1	1000.0	1000.000	115.6	H	224.0	1.0	20.8	73.9
5827.800000	55.1	1000.0	1000.000	248.3	V	68.0	9.6	18.8	73.9
11105.033333	57.6	1000.0	1000.000	131.6	H	90.0	16.6	16.3	73.9
17851.533333	64.5	1000.0	1000.000	114.6	V	326.0	23.6	9.4	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)
1200.233333	47.1	1000.0	1000.000	101.6	V	3.0	-1.5	6.8	53.9
1500.000000	53.1	1000.0	1000.000	99.6	H	202.0	-1.9	0.8	53.9
1800.166667	46.2	1000.0	1000.000	115.6	H	224.0	1.0	7.7	53.9
5827.800000	41.8	1000.0	1000.000	248.3	V	68.0	9.6	12.1	53.9
11105.033333	44.2	1000.0	1000.000	131.6	H	90.0	16.6	9.7	53.9
17851.533333	51.5	1000.0	1000.000	114.6	V	326.0	23.6	2.4	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.35 Test Results Above 1GHz (802.11n HT40 5GHz Low Channel)



Peak Data

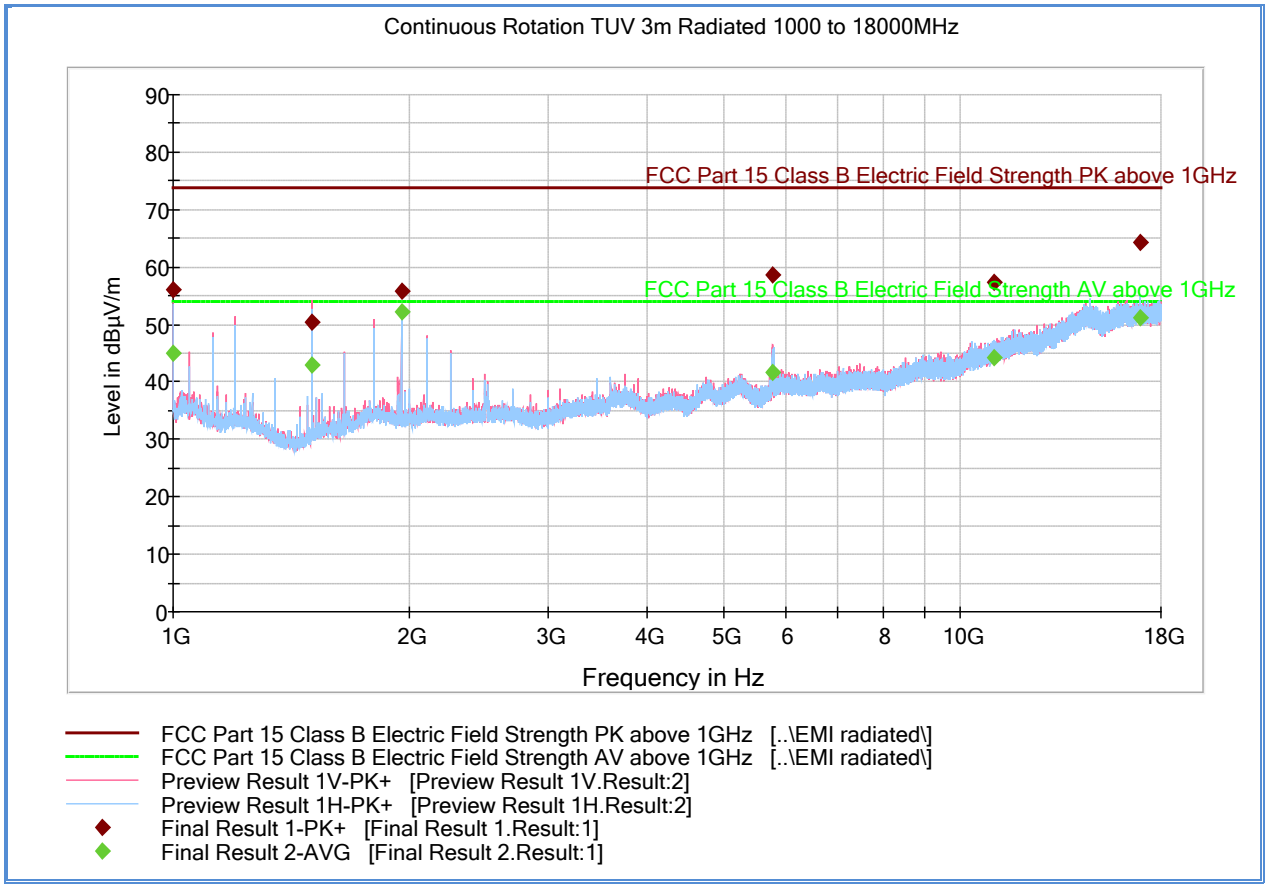
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	59.7	1000.0	1000.000	189.4	V	204.0	-1.0	14.2	73.9
1500.000000	55.6	1000.0	1000.000	99.6	H	201.0	-1.9	18.3	73.9
1950.133333	55.0	1000.0	1000.000	100.6	H	213.0	1.9	18.9	73.9
5754.366667	53.9	1000.0	1000.000	133.6	V	43.0	9.5	20.0	73.9
11041.466667	58.2	1000.0	1000.000	301.2	H	65.0	16.4	15.7	73.9
16917.500000	64.4	1000.0	1000.000	392.1	H	0.0	23.4	9.5	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	52.6	1000.0	1000.000	189.4	V	204.0	-1.0	1.3	53.9
1500.000000	52.9	1000.0	1000.000	99.6	H	201.0	-1.9	1.0	53.9
1950.133333	51.6	1000.0	1000.000	100.6	H	213.0	1.9	2.3	53.9
5754.366667	38.9	1000.0	1000.000	133.6	V	43.0	9.5	15.0	53.9
11041.466667	44.2	1000.0	1000.000	301.2	H	65.0	16.4	9.7	53.9
16917.500000	51.2	1000.0	1000.000	392.1	H	0.0	23.4	2.7	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.36 Test Results Above 1GHz (802.11n HT40 5GHz Mid Channel)



Peak Data

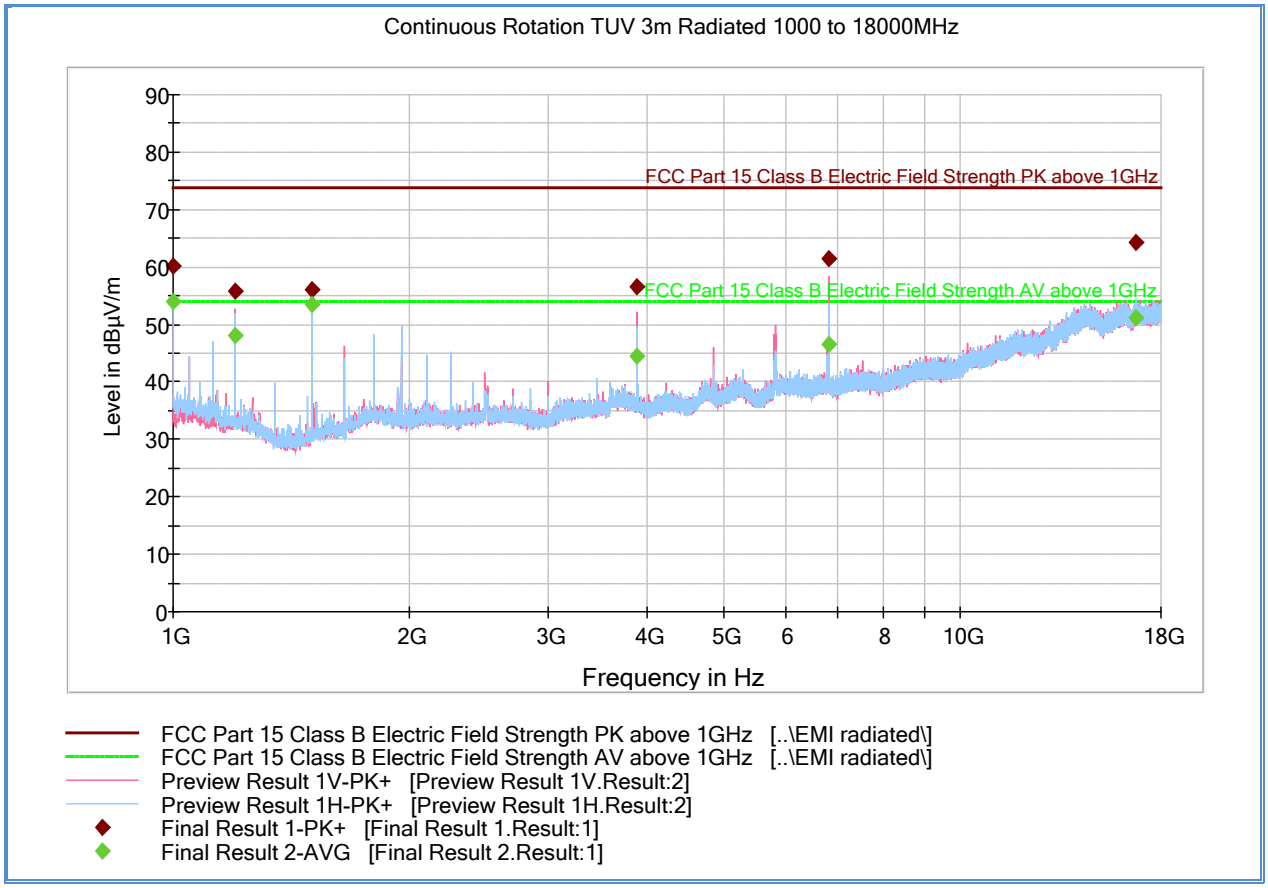
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	56.0	1000.0	1000.000	175.5	V	92.0	-1.0	17.9	73.9
1500.000000	50.5	1000.0	1000.000	122.6	V	211.0	-1.9	23.4	73.9
1949.933333	55.8	1000.0	1000.000	103.6	H	211.0	1.9	18.1	73.9
5780.633333	58.7	1000.0	1000.000	124.6	V	26.0	9.5	15.2	73.9
11048.000000	57.4	1000.0	1000.000	140.6	H	279.0	16.4	16.5	73.9
16911.100000	64.2	1000.0	1000.000	302.2	H	69.0	23.4	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)
1000.000000	45.0	1000.0	1000.000	175.5	V	92.0	-1.0	8.9	53.9
1500.000000	43.1	1000.0	1000.000	122.6	V	211.0	-1.9	10.8	53.9
1949.933333	52.1	1000.0	1000.000	103.6	H	211.0	1.9	1.8	53.9
5780.633333	41.6	1000.0	1000.000	124.6	V	26.0	9.5	12.3	53.9
11048.000000	44.2	1000.0	1000.000	140.6	H	279.0	16.4	9.7	53.9
16911.100000	51.2	1000.0	1000.000	302.2	H	69.0	23.4	2.7	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.37 Test Results Above 1GHz (802.11n HT40 5GHz High Channel)



Peak Data

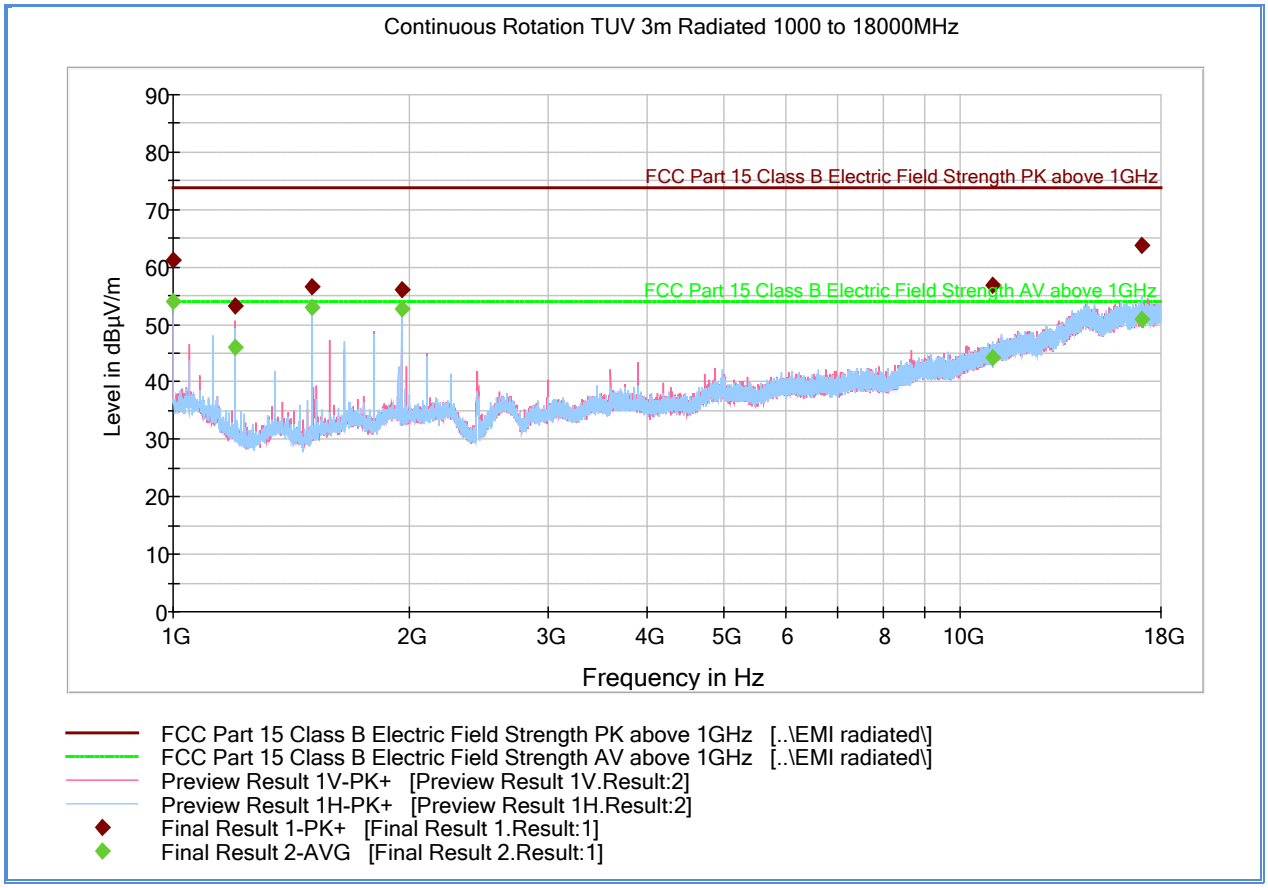
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	60.1	1000.0	1000.000	99.6	H	49.0	-1.0	13.8	73.9
1199.833333	55.8	1000.0	1000.000	103.6	V	43.0	-1.5	18.1	73.9
1500.000000	56.0	1000.0	1000.000	99.6	H	176.0	-1.9	17.9	73.9
3883.400000	56.4	1000.0	1000.000	278.2	V	-3.0	5.6	17.5	73.9
6796.266667	61.4	1000.0	1000.000	99.6	V	50.0	10.5	12.5	73.9
16704.433333	64.2	1000.0	1000.000	125.6	H	154.0	23.4	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)
1000.000000	53.9	1000.0	1000.000	99.6	H	49.0	-1.0	0.0	53.9
1199.833333	48.0	1000.0	1000.000	103.6	V	43.0	-1.5	5.9	53.9
1500.000000	53.5	1000.0	1000.000	99.6	H	176.0	-1.9	0.4	53.9
3883.400000	44.4	1000.0	1000.000	278.2	V	-3.0	5.6	9.5	53.9
6796.266667	46.5	1000.0	1000.000	99.6	V	50.0	10.5	7.4	53.9
16704.433333	51.2	1000.0	1000.000	125.6	H	154.0	23.4	2.7	53.9

Test Notes: Measurement was performed with a 5.0GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.7.38 Test Results Above 1GHz (802.11n HT20 MIMO 2.4GHz Worst Case 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	61.1	1000.0	1000.000	301.2	H	280.0	-1.0	12.8	73.9
1199.833333	53.2	1000.0	1000.000	99.6	V	241.0	-1.5	20.7	73.9
1500.000000	56.6	1000.0	1000.000	99.6	H	225.0	-1.9	17.3	73.9
1949.933333	56.1	1000.0	1000.000	100.6	H	243.0	1.9	17.8	73.9
11013.366667	56.9	1000.0	1000.000	103.6	H	164.0	16.4	17.0	73.9
16983.833333	63.9	1000.0	1000.000	300.6	H	9.0	23.4	10.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	53.9	1000.0	1000.000	301.2	H	280.0	-1.0	0.0	53.9
1199.833333	46.0	1000.0	1000.000	99.6	V	241.0	-1.5	7.9	53.9
1500.000000	52.9	1000.0	1000.000	99.6	H	225.0	-1.9	1.0	53.9
1949.933333	52.7	1000.0	1000.000	100.6	H	243.0	1.9	1.2	53.9
11013.366667	44.1	1000.0	1000.000	103.6	H	164.0	16.4	9.8	53.9
16983.833333	50.9	1000.0	1000.000	300.6	H	9.0	23.4	3.0	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 6GHz. Measurements above 6GHz are noise floor figures. Only the worst case channel presented (Mid Channel in MIMO mode).

2.8 RADIATED BAND EDGE MEASUREMENTS AND IMMEDIATE RESTRICTED BANDS

2.8.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.8.2 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)).

2.8.3 Equipment Under Test and Modification State

Serial No: 34008112 and 34008096/ Test Configuration B

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

December 24, 2013/FSC

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

Ambient Temperature	25.4 °C
Relative Humidity	43.5 %
ATM Pressure	99.0 kPa

2.8.7 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.
- Only worst-case WiFi mode presented (802.11 n HT20 2.4GHz).

- 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 2.8.8 for sample computation.

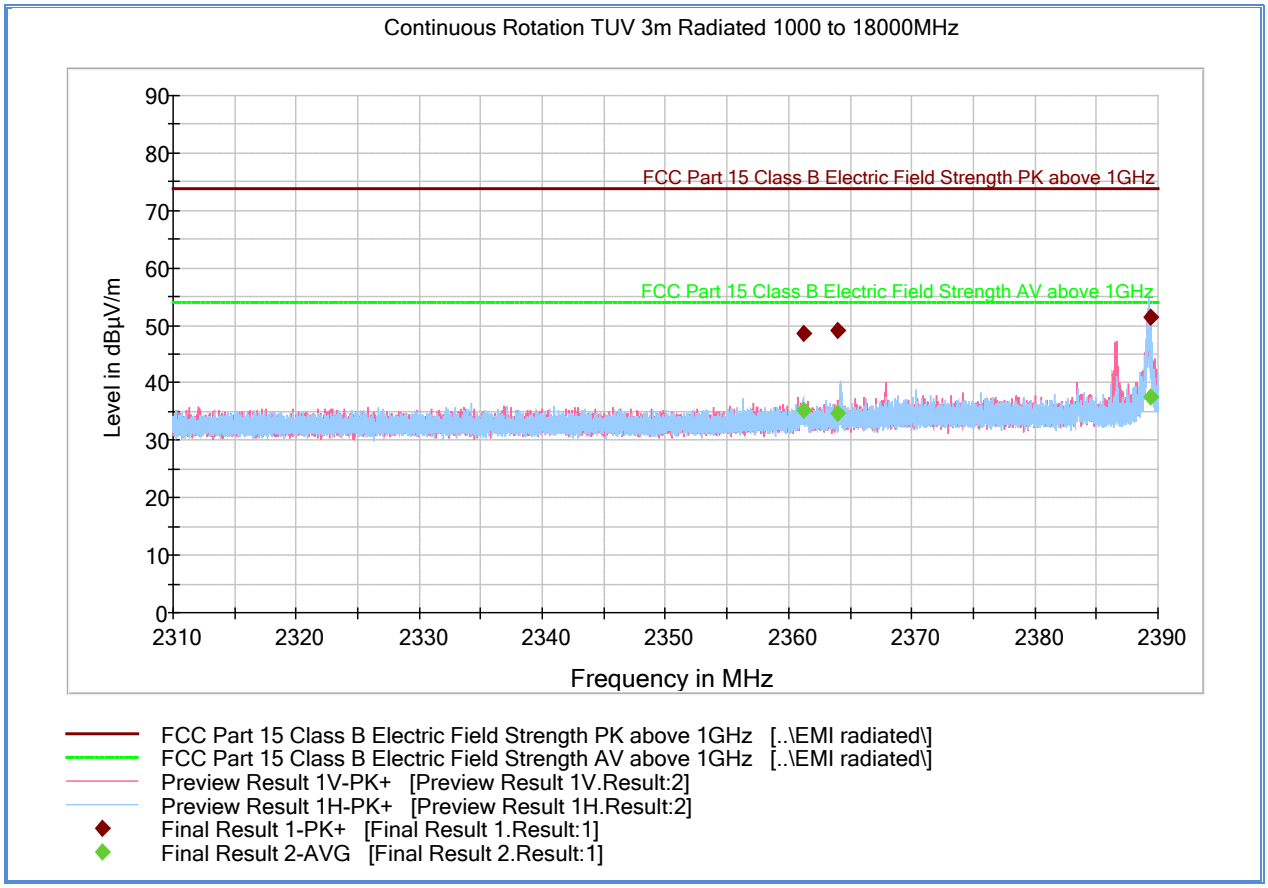
2.8.8 Sample Computation (Radiated Emission)

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**

2.8.9 Test Results

See attached plots.

2.8.10 Test Results Restricted Band 2310MHz to 2490MHz (Bluetooth LE Low Channel)



Peak Data

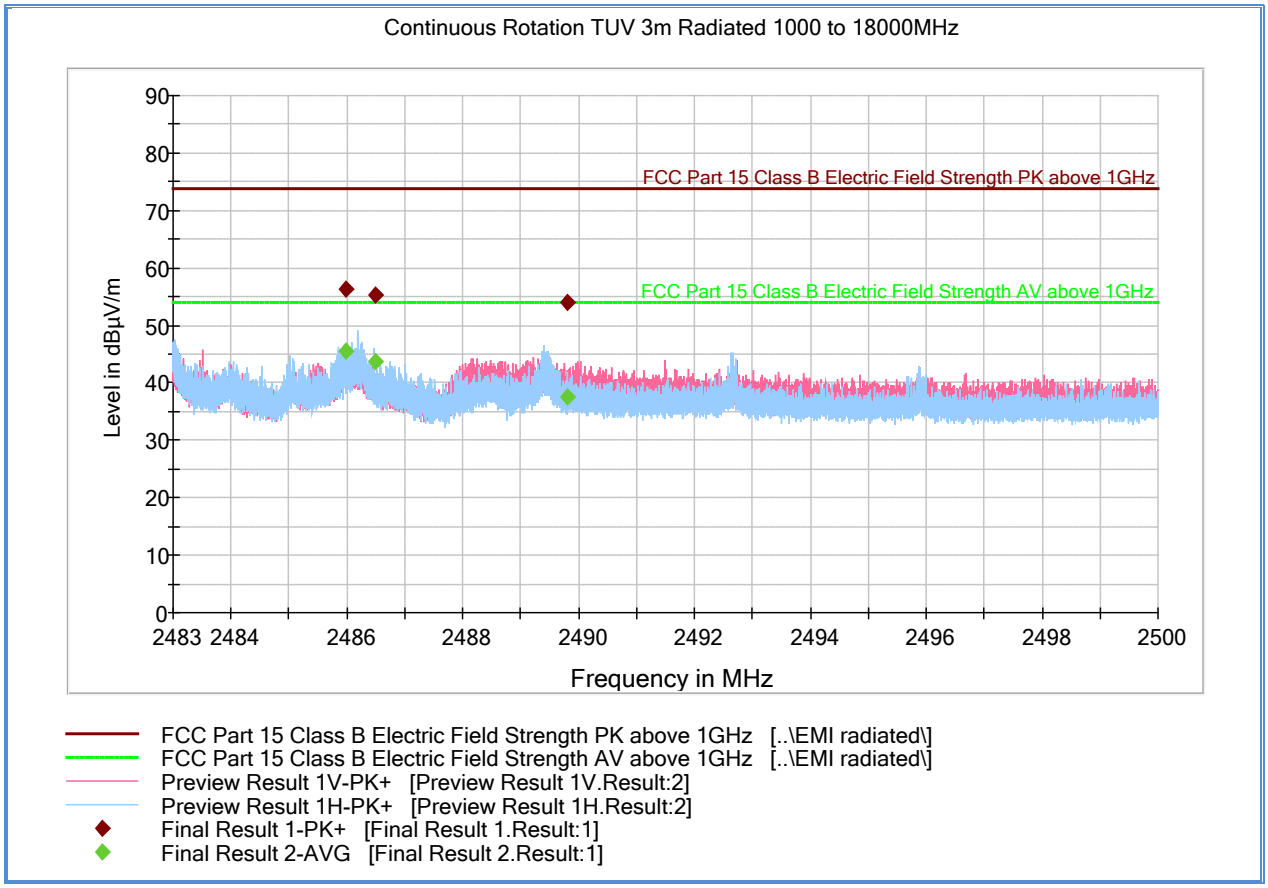
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2361.178667	48.6	1000.0	1000.000	390.0	V	131.0	2.4	25.3	73.9
2363.997333	49.1	1000.0	1000.000	405.1	H	86.0	2.4	24.8	73.9
2389.453333	51.4	1000.0	1000.000	402.0	H	80.0	2.4	22.5	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)
2361.178667	35.3	1000.0	1000.000	390.0	V	131.0	2.4	18.6	53.9
2363.997333	34.7	1000.0	1000.000	405.1	H	86.0	2.4	19.2	53.9
2389.453333	37.4	1000.0	1000.000	402.0	H	80.0	2.4	16.5	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.8.11 Test Results Restricted Band 2483.5MHz to 2500MHz (Bluetooth LE High Channel)



Peak Data

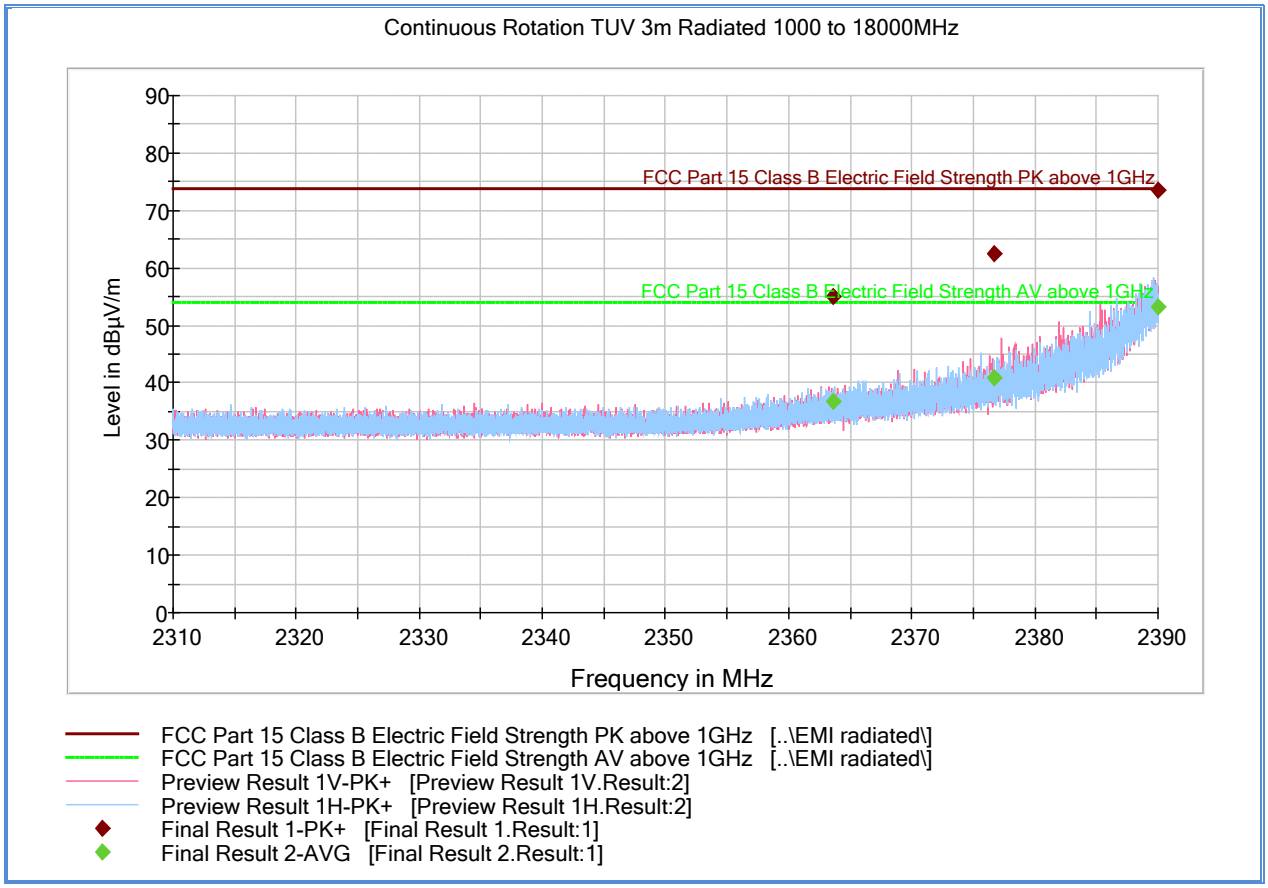
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2485.989767	56.2	1000.0	1000.000	177.5	H	102.0	2.4	17.7	73.9
2486.489767	55.2	1000.0	1000.000	178.5	H	103.0	2.4	18.7	73.9
2489.807300	54.1	1000.0	1000.000	186.5	H	102.0	2.4	19.8	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)
2485.989767	45.5	1000.0	1000.000	177.5	H	102.0	2.4	8.4	53.9
2486.489767	43.8	1000.0	1000.000	178.5	H	103.0	2.4	10.1	53.9
2489.807300	37.6	1000.0	1000.000	186.5	H	102.0	2.4	16.3	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.8.12 Test Results Restricted Band 2310MHz to 2390MHz (Low Channel Worst Case WiFi Mode)



Peak Data

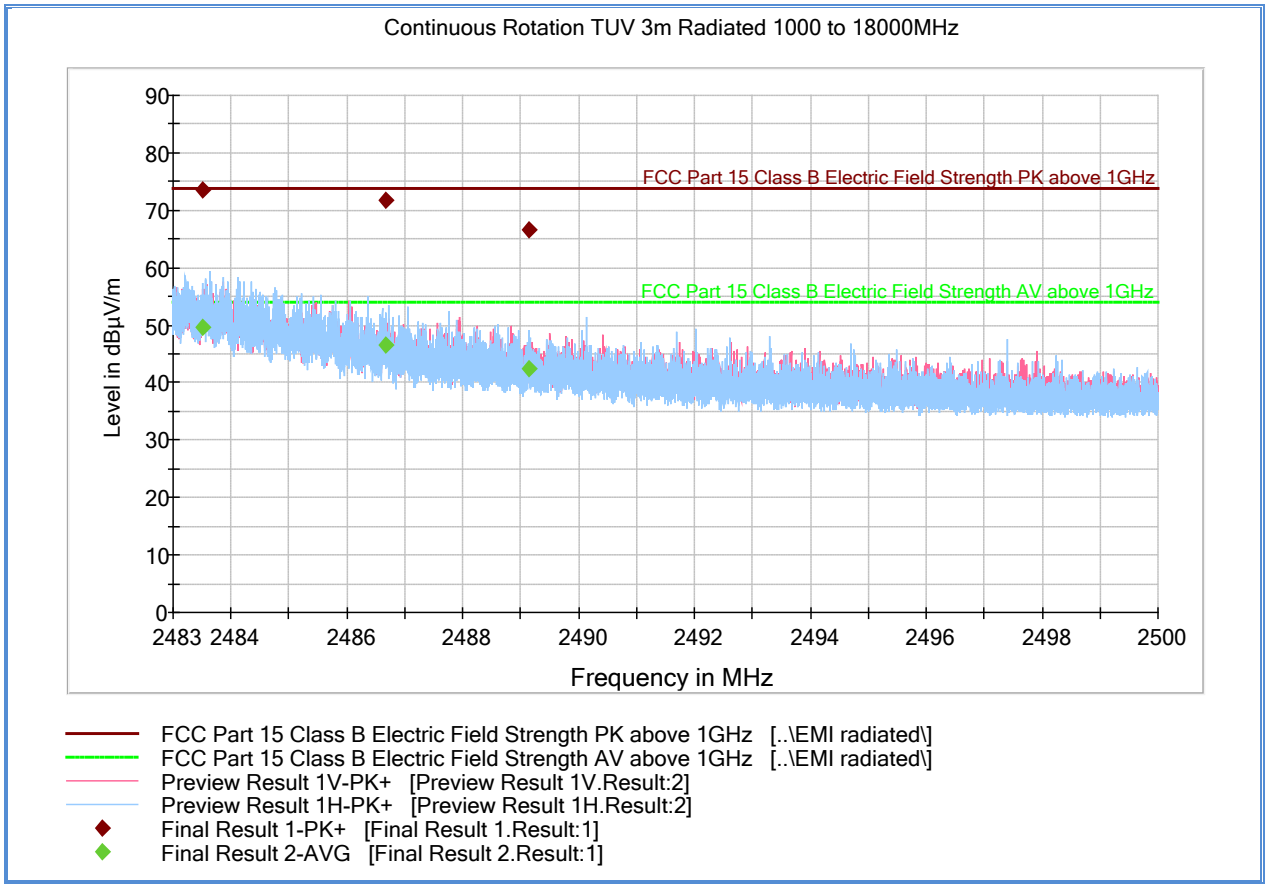
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2363.600000	55.1	1000.0	1000.000	200.4	V	301.0	2.4	18.8	73.9
2376.629333	62.4	1000.0	1000.000	314.1	H	70.0	2.4	11.5	73.9
2390.000000	73.5	1000.0	1000.000	304.2	H	71.0	2.4	0.1	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)
2363.600000	36.7	1000.0	1000.000	200.4	V	301.0	2.4	17.2	53.9
2376.629333	40.9	1000.0	1000.000	314.1	H	70.0	2.4	13.0	53.9
2390.000000	53.3	1000.0	1000.000	304.2	H	71.0	2.4	0.6	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.8.13 Test Results Restricted Band 2483.5MHz to 2500MHz (High Channel Worst Case WiFi 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)
2483.500000	73.5	1000.0	1000.000	99.6	H	100.0	2.4	0.4	73.9
2486.668267	71.7	1000.0	1000.000	179.5	H	100.0	2.4	2.2	73.9
2489.142267	66.6	1000.0	1000.000	187.4	H	100.0	2.4	7.3	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)
2483.500000	49.6	1000.0	1000.000	99.6	H	100.0	2.4	4.3	53.9
2486.668267	46.5	1000.0	1000.000	179.5	H	100.0	2.4	7.4	53.9
2489.142267	42.3	1000.0	1000.000	187.4	H	100.0	2.4	11.6	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.9 POWER SPECTRAL DENSITY

2.9.1 Specification Reference

Part 15 Subpart C §15.247(e)

2.9.2 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.

2.9.3 Equipment Under Test and Modification State

Serial No: N/A (Sample #1) / Test Configuration A

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

December 13, 2013/FSC

2.9.5 Test Equipment Used

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

2.9.6 Environmental Conditions

Ambient Temperature	17.9°C
Relative Humidity	30.0.%
ATM Pressure	99.8 kPa

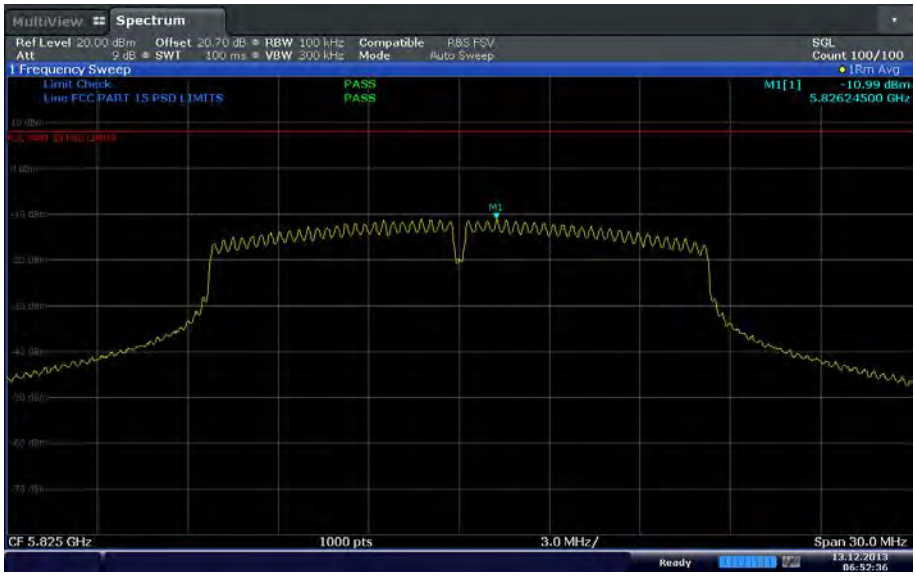
2.9.7 Additional Observations

- This is a conducted test.
- Test procedure is per Section 10.3 of KDB 558074 (April 09, 2013).
- An offset of 20.7dB was added to compensate for the external attenuator and cable used.
- Detector is RMS power averaging.
- Trace averaging mode over 100 traces.
- Sweep time is Auto Couple.
- EUT complies with 100 kHz RBW.
- For MIMO mode, the limit was adjusted using a factor of 10log(N) dB where “N” is the number of outputs and assuming number of spatial streams is 1 (MCS 0).

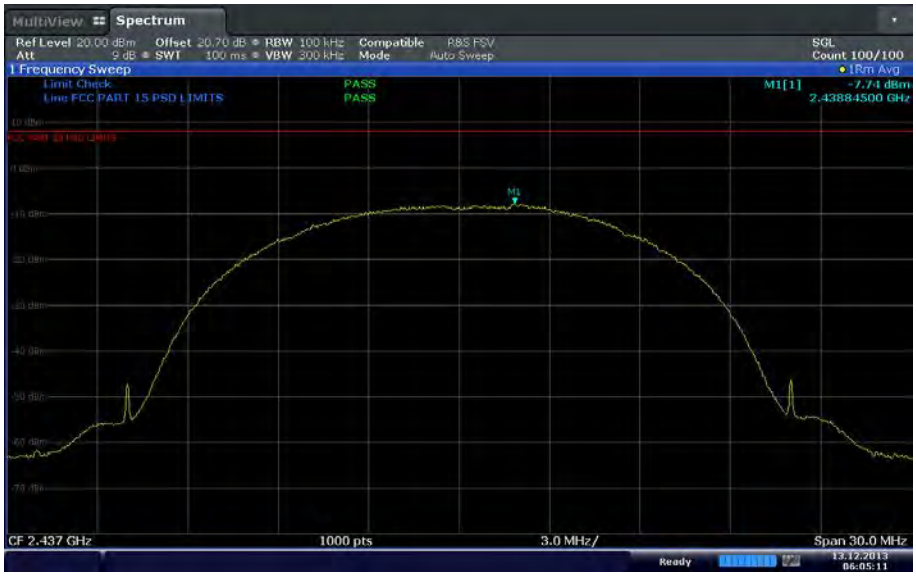
2.9.8 Test Results Summary

Mode	Channel	Marker Reading using 100 kHz RBW (dBm)	PSD Limit (dBm)	Margin (dB)	Compliance
802.11a	149 (5745 MHz)	-11.10	8	19.1	Complies
	157 (5785 MHz)	-12.19	8	20.19	Complies
	165 (5825 MHz)	-10.99	8	18.99	Complies
802.11b	1 (2412 MHz)	-7.72	8	15.72	Complies
	6 (2437 MHz)	-7.74	8	15.74	Complies
	11 (2462 MHz)	-7.71	8	15.71	Complies
802.11g	1 (2412 MHz)	-9.01	8	17.01	Complies
	6 (2437 MHz)	-8.35	8	16.35	Complies
	11 (2462 MHz)	-8.66	8	16.66	Complies
802.11n HT20	1 (2412 MHz)	-8.69	8	16.69	Complies
	6 (2437 MHz)	-8.61	8	16.61	Complies
	11 (2462 MHz)	-8.53	8	16.53	Complies
802.11n HT20 MIMO	1 (2412 MHz)	-9.74	5	14.74	Complies
	6 (2437 MHz)	-9.06	5	14.06	Complies
	11 (2462 MHz)	-9.07	5	14.07	Complies
802.11n HT20	149 (5745 MHz)	-11.29	8	19.29	Complies
	157 (5785 MHz)	-11.42	8	19.42	Complies
	165 (5825 MHz)	-10.69	8	18.69	Complies
802.11n HT40	3 (2422 MHz)	-17.14	8	25.14	Complies
	6 (2437 MHz)	-17.29	8	25.29	Complies
	9 (2452 MHz)	-16.50	8	24.5	Complies
802.11n HT40	149 (5745 MHz)	-15.55	8	23.55	Complies
	157 (5785 MHz)	-15.86	8	23.86	Complies
	165 (5825 MHz)	-15.61	8	23.61	Complies
Bluetooth LE	37 (2402 MHz)	-0.75	8	8.75	Complies
	17 (2440 MHz)	0.98	8	7.02	Complies
	39 (2480 MHz)	0.53	8	7.47	Complies

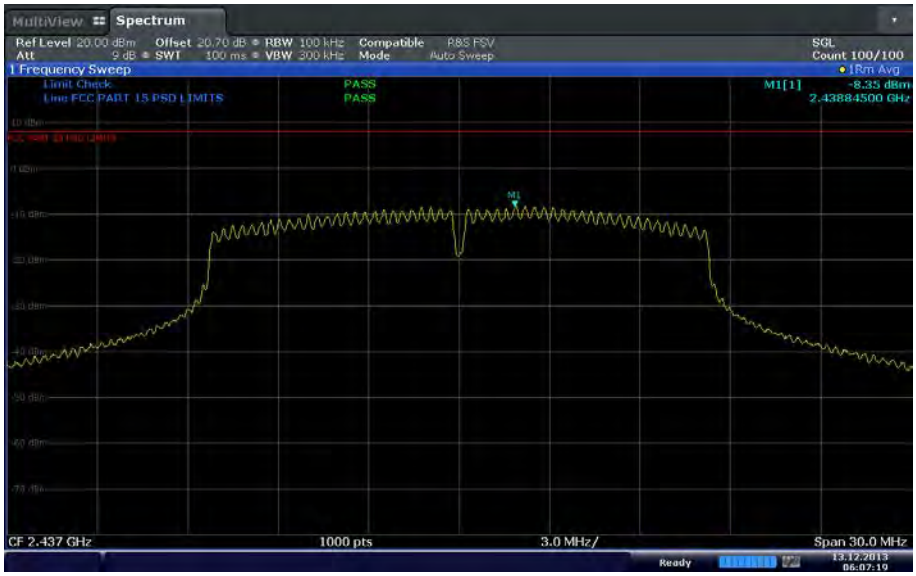
2.9.9 Test Results Plots



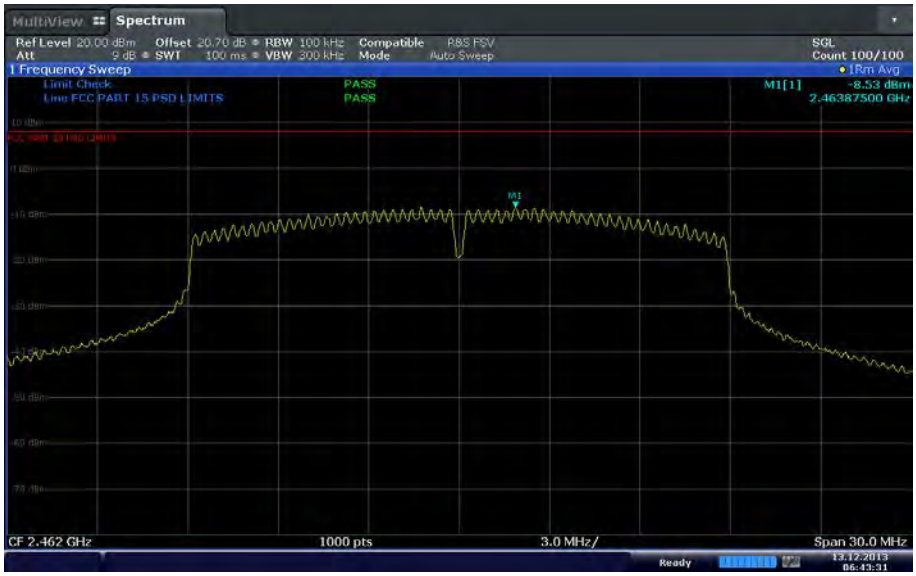
802.11a Worst Case Channel



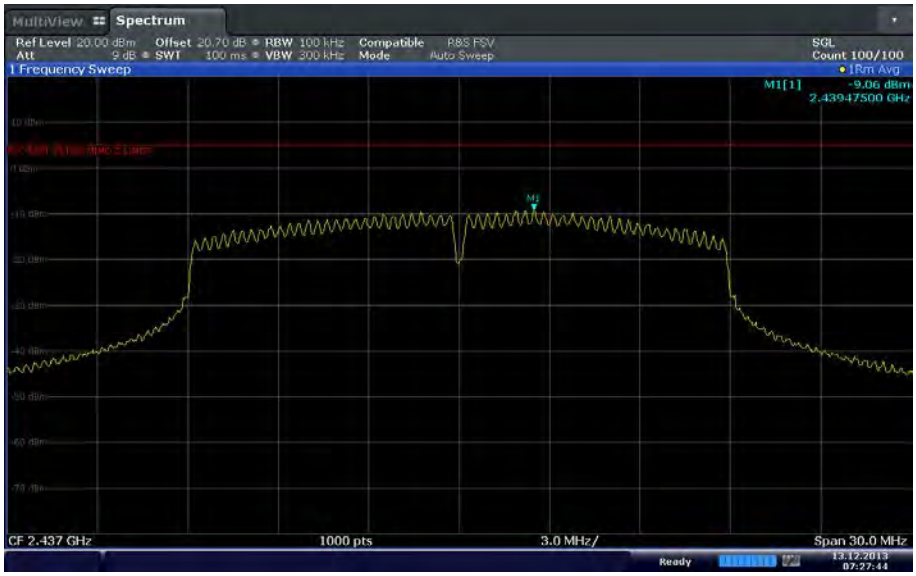
802.11b Worst Case Channel



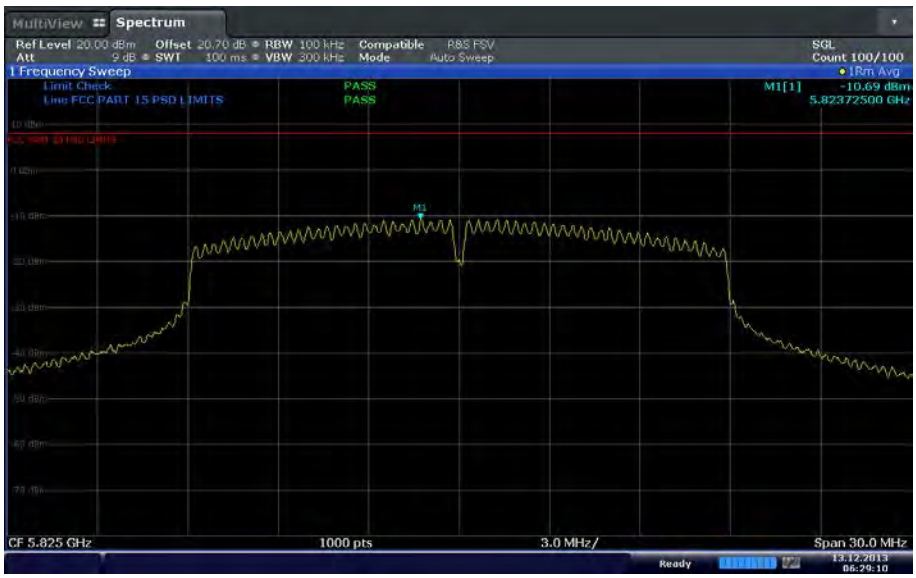
802.11g Worst Case Channel



802.11n HT20 Worst Case Channel

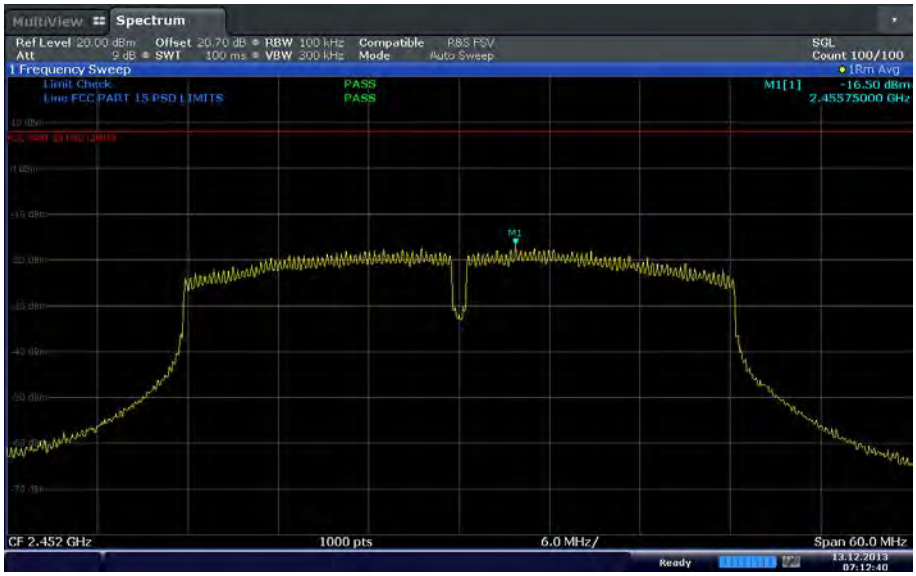


802.11n HT20 MIMO Worst Case Channel*

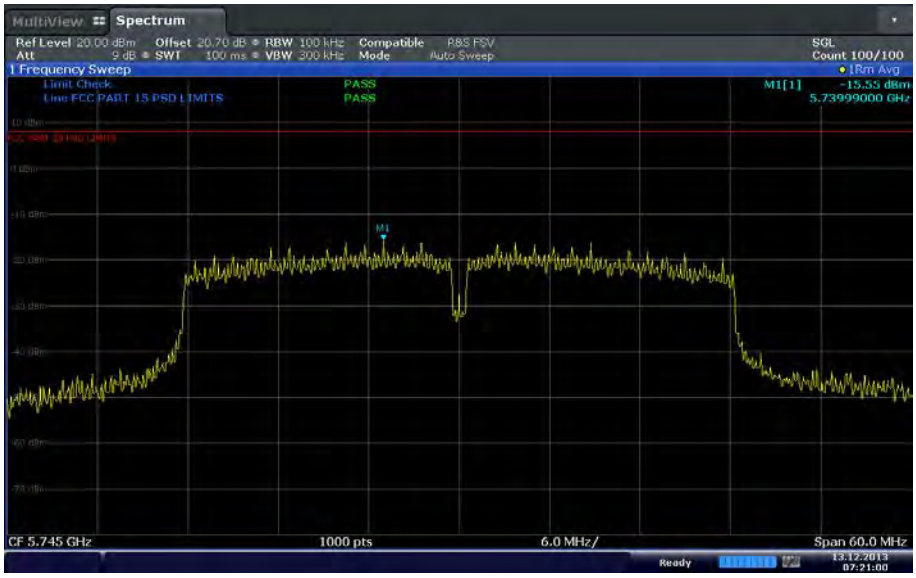


802.11n HT20 5GHz Worst Case Channel

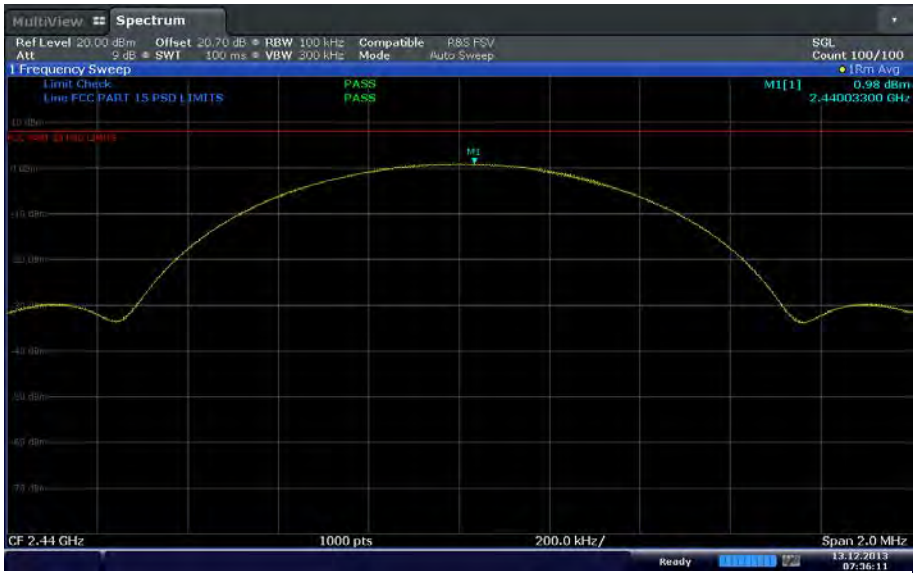
*The limits for MIMO mode adjusted by 10log(n) where n is the number of outputs.



802.11n HT40 Worst Case Channel



802.11n HT40 5GHz Worst Case Channel



Bluetooth LE Worst Case 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
Antenna Conducted Port Setup						
7569	Series Power Meter	N1911A P-	MY45100625	Agilent	04/15/13	04/15/14
7570	50MHz-18GHz Wideband Power Sensor	N1921A	MY45240588	Agilent	05/06/13	05/06/14
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	11/19/13	11/19/14
1189	Signal Generator	8648C	3623A03059	Hewlett Packard	08/06/13	08/06/14
-	20dB Attenuator	46-20-34	BK5773	Weinschel Corp.	Verified by 1189 and 7582	
Radiated Test Setup						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/21/13	01/21/14
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	03/25/13	03/25/14
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	09/03/13	09/03/14
1150	Horn antenna	3160-09	012054-004	ETS	04/26/13	04/26/15
1151	Pre-amplifier	TS-PR26	100026	Rhode & Schwarz	05/02/13	05/02/14
1051	Double-ridged waveguide horn antenna	3115	9408-4329	EMCO	06/11/13	06/11/14
8760	Pre-amplifier	ZKL-2	1001	Mini-Circuits	09/03/13	09/03/14
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	09/03/13	09/03/14
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	09/03/13	09/03/14
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	07/31/13	07/31/14
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	07/24/13	07/24/14
-	5.0GHz Band Notch Filter	BRM50716	015	Micro-Tronics	Verified by 1189 and 7582	
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 1189 and 7582	
1016	Pre-amplifier	PAM-0202	187	PAM	10/08/13	10/08/14
Conducted Emissions						
1024	EMI Test Receiver	ESCS 30	847793/001	Rhode & Schwarz	03/11/13	03/11/14
7567	LISN	FCC-LISN-50-25-2-10	120304	Fischer Custom Comm.	06/11/13	06/11/14
7568	LISN	FCC-LISN-50-25-2-10	120305	Fischer Custom Comm.	07/10/13	07/10/14
8789	20dB Attenuator	HAT-20	YUU29001245	Mini Circuits	03/01/13	03/01/14
8792	20dB Attenuator	HAT-20	YUU29001245	Mini Circuits	03/01/13	03/01/14
Miscellaneous						
6452	Multimeter	3478A	2911A52177	Hewlett Packard	08/02/13	08/02/14
7554	Barometer/Temperature /Humidity Transmitter	iBTHX-W	0400706	Omega	04/17/13	04/17/14
1123	DC Power Supply	E3631A	N/A	Hewlett Packard	Verified by 6452	
	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 Radiated Emission Measurements (Below 1GHz)

	Contribution	Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	2.41
				Coverage Factor (k):	2
				Expanded Uncertainty:	4.82

3.2.2 Radiated Emission Measurements (Above 1GHz)

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

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

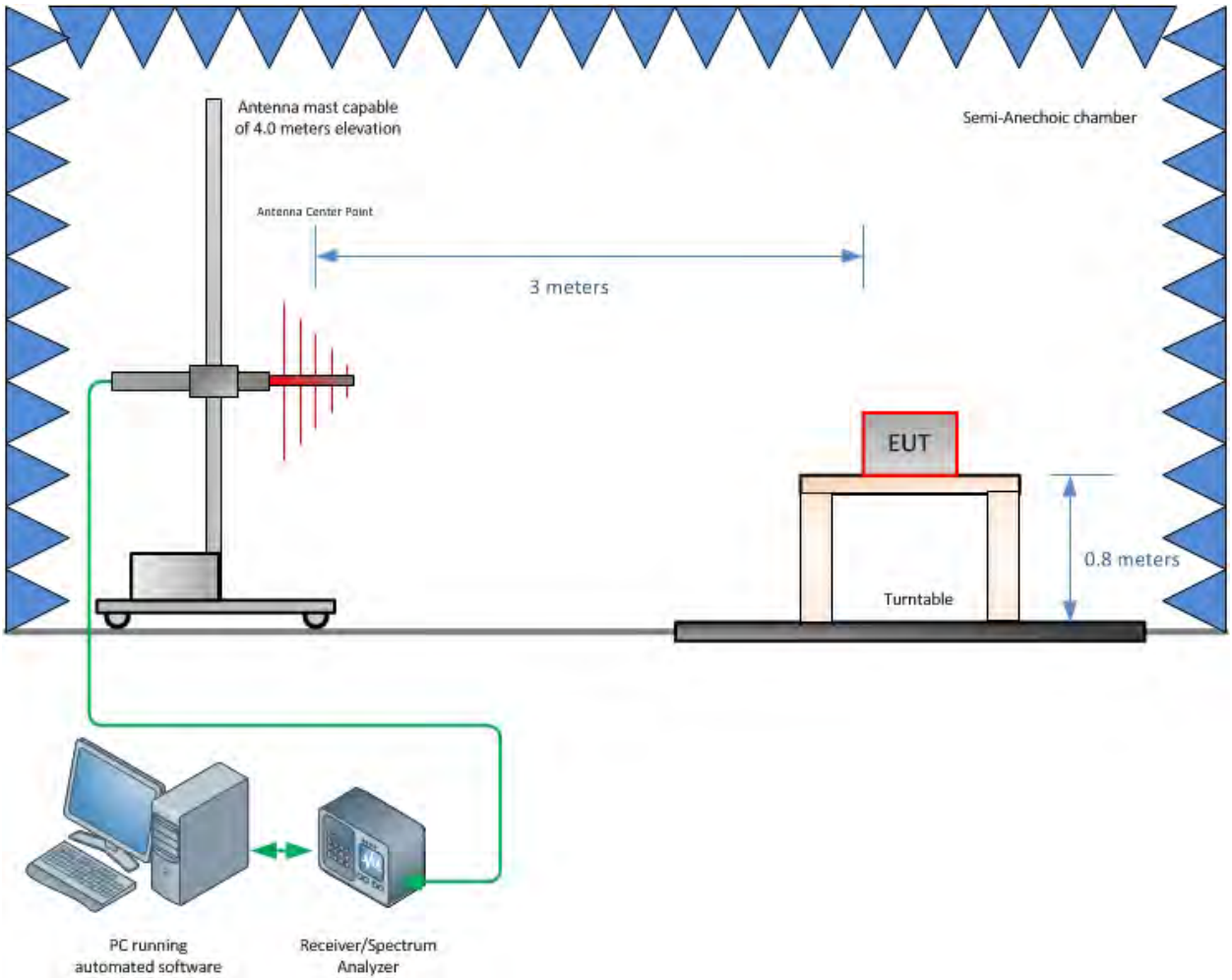
3.2.1 AC Conducted Emissions Measurements

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

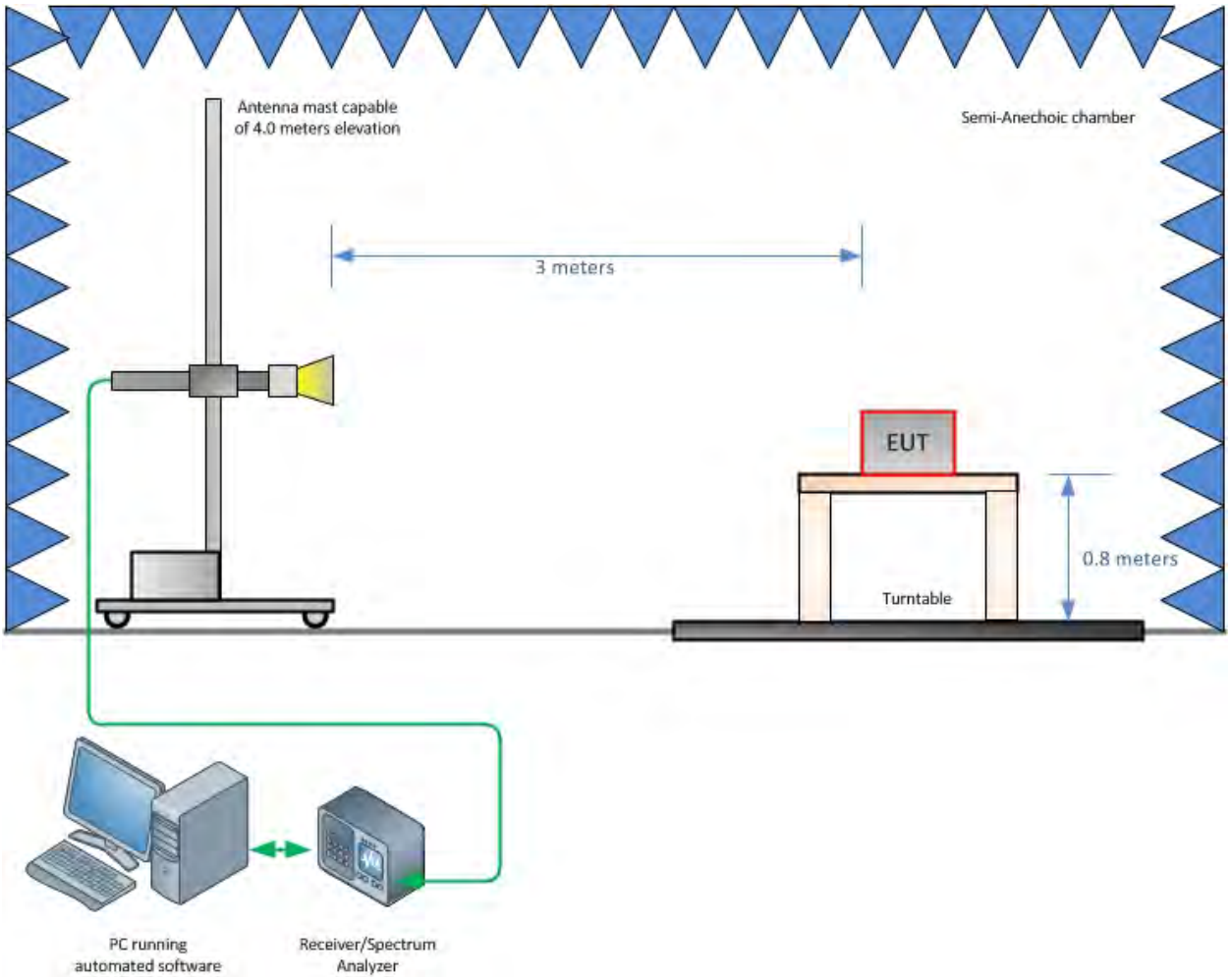
SECTION 4

DIAGRAM OF TEST SETUP

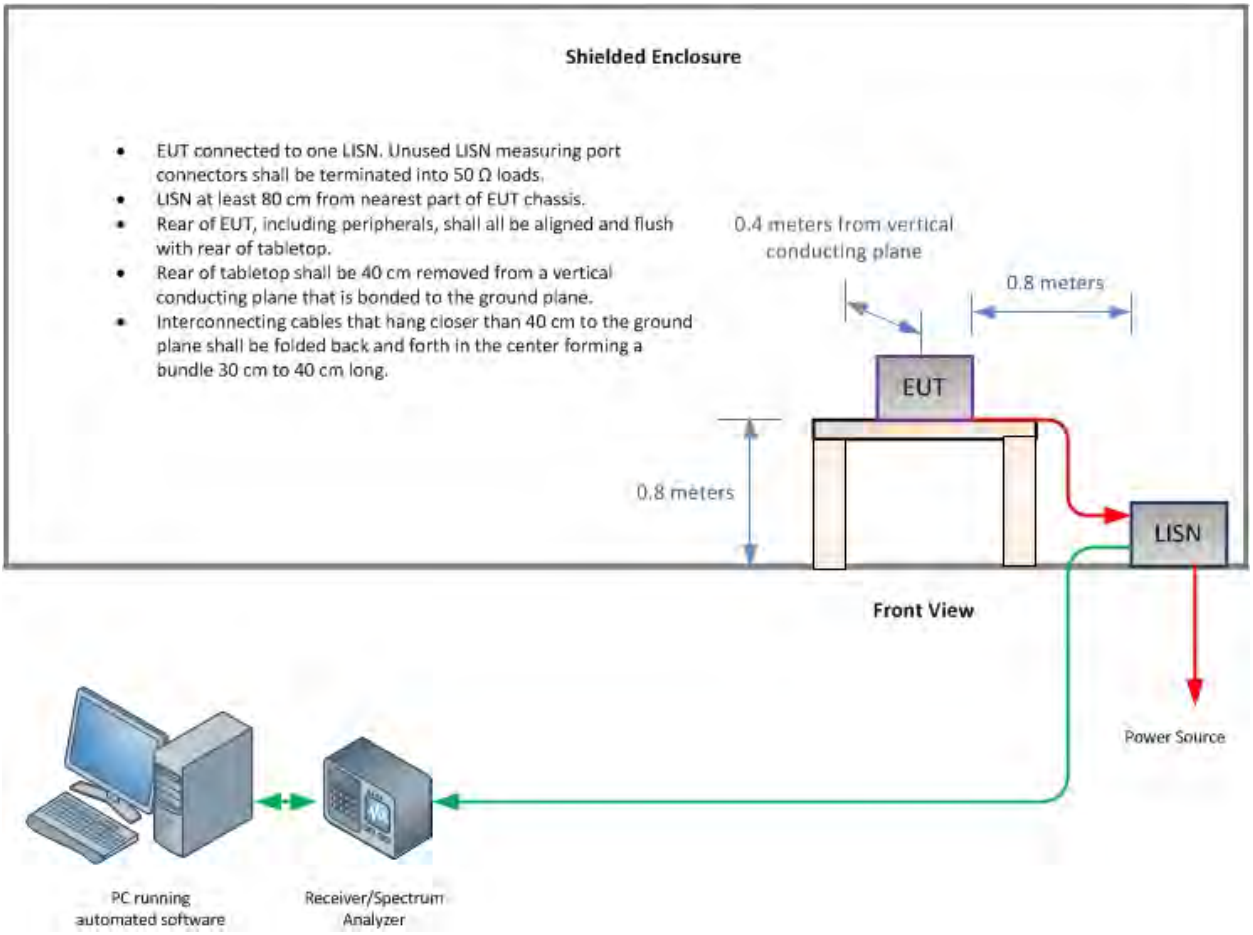
4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)



Conducted Emission Test Setup

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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