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Report On

Application for Grant of Equipment Authorization of the
Accriva Diagnostics
GEM Hemochron 100 Whole Blood Microcoagulation System

FCC Part 15 Subpart C §15.247 (DTS)
RSS-247 Issue 2 February 2017

Report No. 72139034A

November 2018



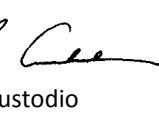
REPORT ON Radio Testing of the
Accriva Diagnostics
Whole Blood Microcoagulation System

TEST REPORT NUMBER 72139034A

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DATED October 31, 2018



Revision History

72139034A Accriva Diagnostics Whole Blood Microcoagulation System GEM Hemochron 100					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
10/31/2018	Initial Release				Ferdinand Custodio



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SECTION 1

REPORT SUMMARY

Radio Testing of the
Accriva Diagnostics
Whole Blood Microcoagulation System



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Accriva Diagnostics GEM Hemochron 100 Whole Blood Microcoagulation System to the requirements of FCC Part 15 Subpart C §15.247 and RSS-247 Issue 2 February 2017.

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	Accriva Diagnostics
Model Number(s)	GEM100
FCC ID Number	2AQV3-GEM100
IC Number	24216-GEM100
Serial Number(s)	TUV1 (Conducted Sample) and TUV2 (Radiated sample)
Number of Samples Tested	2
• Test Specification/Issue/Date	<ul style="list-style-type: none">• FCC Part 15 Subpart C §15.247 (October 1, 2017).• RSS-247 Issue 2 February 2017 - Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.• RSS-Gen - General Requirements for Compliance of Radio Apparatus (Issue 5, April 2018).• 558074 D01 DTS Meas Guidance v05, (August 24, 2018) Guidance for compliance measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices operating under Section 15.247 of the FCC rules.• KDB 558074 D01 DTS Meas Guidance v04 (Rohde & Schwarz TS8997 Test System used during verification uses this version of KDB 558074 at the time of testing)• ANSI C63.10-2013. American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Start of Test	July 16, 2018
Finish of Test	October 24, 2018
Name of Engineer(s)	Ivan Retana
Related Document(s)	None. Supporting documents for EUT certification are separate exhibits.



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.247 with cross-reference to the corresponding IC RSS standard is shown below.

Section	§15.247 Spec Clause	RSS	Test Description	Result	Comments/ Base Standard
2.1	§15.247(b)(3)	RSS-247 5.4(d)	Peak Output Power	Compliant	
2.2	§15.207(a)	RSS-Gen 8.8	Conducted Emissions	Compliant	
2.3		RSS-Gen 6.7	99% Emission Bandwidth	Compliant	
2.4	§15.247(a)(2)	RSS-247 5.2(a)	Minimum 6 dB RF Bandwidth	Compliant	
2.5	§15.247(d)	RSS-247 5.5	Out-of-Band Emissions - Conducted	Compliant	
2.6	§15.247(d)	RSS-247 5.5	Band-edge Compliance of RF Conducted Emissions	Compliant	
2.7	§2.1053 and KDB558074 D01 DTS Meas Guidance v04 Clause 12.2.7		Spurious Radiated Emissions	Compliant	
2.8	§15.247(e)	RSS-247 5.2(b)	Power Spectral Density for Digitally Modulated Device	Compliant	



1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was an Accriva Diagnostics Model GEM Hemochron 100 Whole Blood Microcoagulation System. The EUT is a point of care Whole Blood Microcoagulation System. The EUT is a battery-operated portable instrument that performs individual in vitro quantitative coagulation testing on fresh whole blood..The WLAN radio functions of the EUT were verified in this test report.

1.3.2 EUT General Description

EUT Description	Whole Blood Microcoagulation System
Model Name	GEM Hemochron 100
Model Number(s)	GEM100
Rated Voltage	12VDC 3.4A AC Adapter (7.2VDC 20.88Wh internal rechargeable lithium-ion battery)
Frequency	2412 MHz to 2462 MHz in the 2.4GHz band
Mode Verified	802.11b/g and n in 2.4GHz band
Capability	802.11 a/b/g and n (20MHz BW in 2.4GHz band / 20MHz and 40MHz BW in U-NII bands)
Primary Unit (EUT)	<input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
Antenna Type	Internal, PIFA Antenna
Antenna Manufacturer	molex®
Antenna Model Number	47950-****
Antenna Gain	2.27 dBi (2.4GHz to 2.5GHz) 4.9 dBi (5.15GHz to 5.85GHz)

1.3.3 Maximum Conducted Output Power

Mode	Frequency Range (MHz)	Output Power for Antenna 1 (dBm)	Output Power for Antenna 2 (dBm)
802.11b	2412 - 2462	8.62	14.73
802.11g	2412 - 2462	11.66	18.47
802.11n	2412 - 2462	12.52	20.39



1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
A	FTP Test Mode. The EUT was connected to the support laptop via FTP connection. Traffic was generated, and the amount of data being transferred were adjusted to the maximum the EUT can support in normal operation.
B	Conducted Test Mode. Android ADB or Android Debug Bridge was used to control RF configuration of the EUT to simulate test mode for power measurements (>98% duty cycle).

1.4.2 EUT Exercise Software

Android ADB or Android Debug Bridge which is a command line interface was used to program the EUT during power measurements. Android Jelly Bean version 4.3 was used for this task. For all other tests, FTP test mode was used as this represents worst case in normal operation as declared by the manufacturer.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Cisco	Access Point	AIR-AP2802E-B-K9 S/N FJC2207M33C
Cisco	Ethernet Switch with POE	WS-C2960X-24PS-L V05 S/N: FCW2204B1Z6SW Version15.2(2)E7
Cisco	Wireless Controller	AIR-CT2504-5-K9 V09S/N 74-7363-06 SW Version 8.2.166.0
Dell	Support Laptop	Latitude 5289 S/N D1MY3M2 Windows 10 DHCP Server/FTP Client
-	RF Cable (x2)	150 mm coax cable U.FL (connected to the circuit board) to a SMA male connector

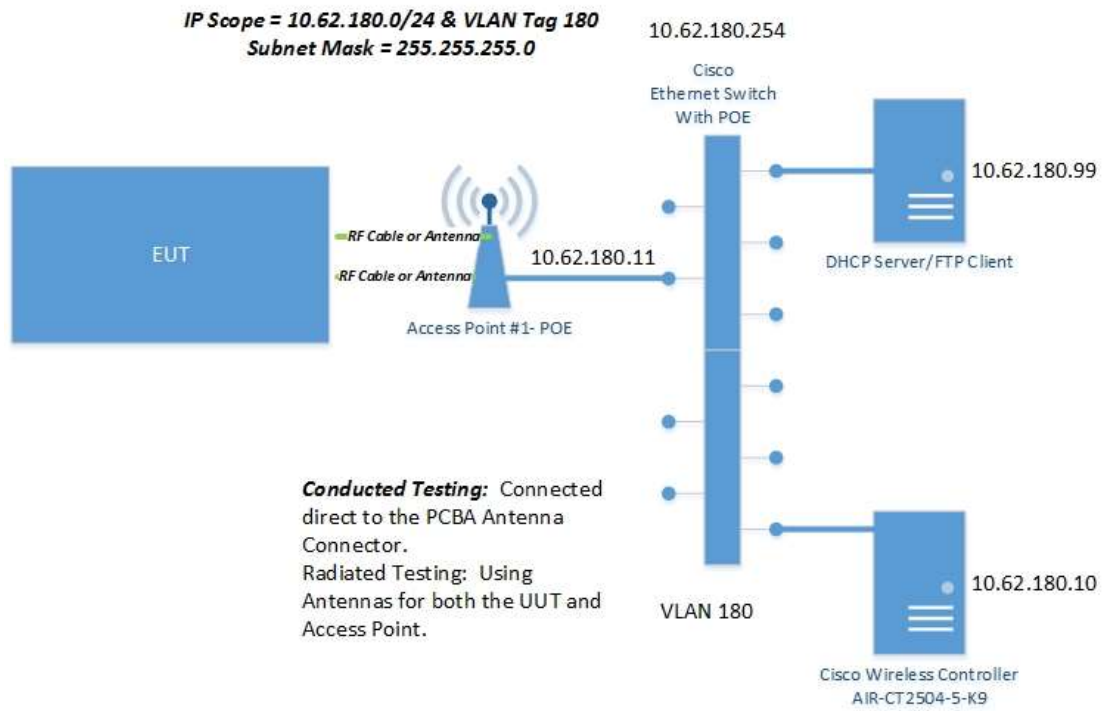
1.4.4 Worst Case Configuration

Worst-case configuration used in this test report as per preliminary prescans performed on the EUT:

Mode	Channel	Data Rate
802.11b	1 (Low Channel)	1Mbps
802.11g	1 (Low Channel)	6 Mbps
802.11n	1 (Low Channel)	MCS0 6.5 Mbit

1.4.5 Simplified Test Configuration Diagram

Wireless Test Network





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 TUV1 and TUV2		
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 C63.10-2013. American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

For conducted and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.4-2014. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY REGISTRATION

1.8.1 FCC – Registration No.: US1146

TUV SUD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Designation is US1146.

1.8.2 Innovation, Science and Economic Development Canada (IC) Registration No.: 3067A-1 & 22806-1

The 10m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Rancho Bernardo) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A-1.

The 3m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Mira Mesa) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 22806-1.



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

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

1.8.4 NCC (National Communications Commission - US0102)

TUV SUD America Inc. (San Diego) is listed as a Foreign Recognized Telecommunication Equipment Testing Laboratory and is accredited to ISO/IEC 17025 (A2LA Certificate No.2955.13) which under APEC TEL MRA Phase 1 was designated as a Conformity Assessment Body competent to perform testing of equipment subject to the Technical Regulations covered under its scope of accreditation including RTTE01, PLMN01 and PLMN08 for TTE type of testing and LP002 for Low-Power RF Device type of testing.

1.8.5 VCCI – Registration No. A-0280 and A-0281

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

1.8.6 RRA – Identification No. US0102

TUV SUD America Inc. (San Diego) is National Radio Research Agency (RRA) recognized laboratory under Phase I of the APEC Tel MRA.

1.8.7 OFCA – U.S. Identification No. US0102

TUV SUD America Inc. (San Diego) is recognized by Office of the Communications Authority (OFCA) under Appendix B, Phase I of the APEC Tel MRA.



SECTION 2

TEST DETAILS

Radio Testing of the
Accriva Diagnostics
Whole Blood Microcoagulation System



2.1 MAXIMUM CONDUCTED OUTPUT POWER

2.1.1 Specification Reference

Part 15 Subpart C §15.247(b)(3) and RSS-247 5.4(4)

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: TUV1 / Test Configuration B

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

October 24, 2018/FSC

2.1.5 Test Equipment Used

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

2.1.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.1 °C
Relative Humidity	48.4 %
ATM Pressure	98.6 kPa

2.1.7 Additional Observations

- This is a conducted test (Maximum peak conducted output power) using direct connection to a power meter.
- Initial prescan performed on the EUT determined the worst case configuration used (see Section 1.4.4 of this test report for details).
- Test methodology is per Clause 11.9.1.3 of ANSI C63.10.
- Both transmit chains complies with the 30dBm limit.

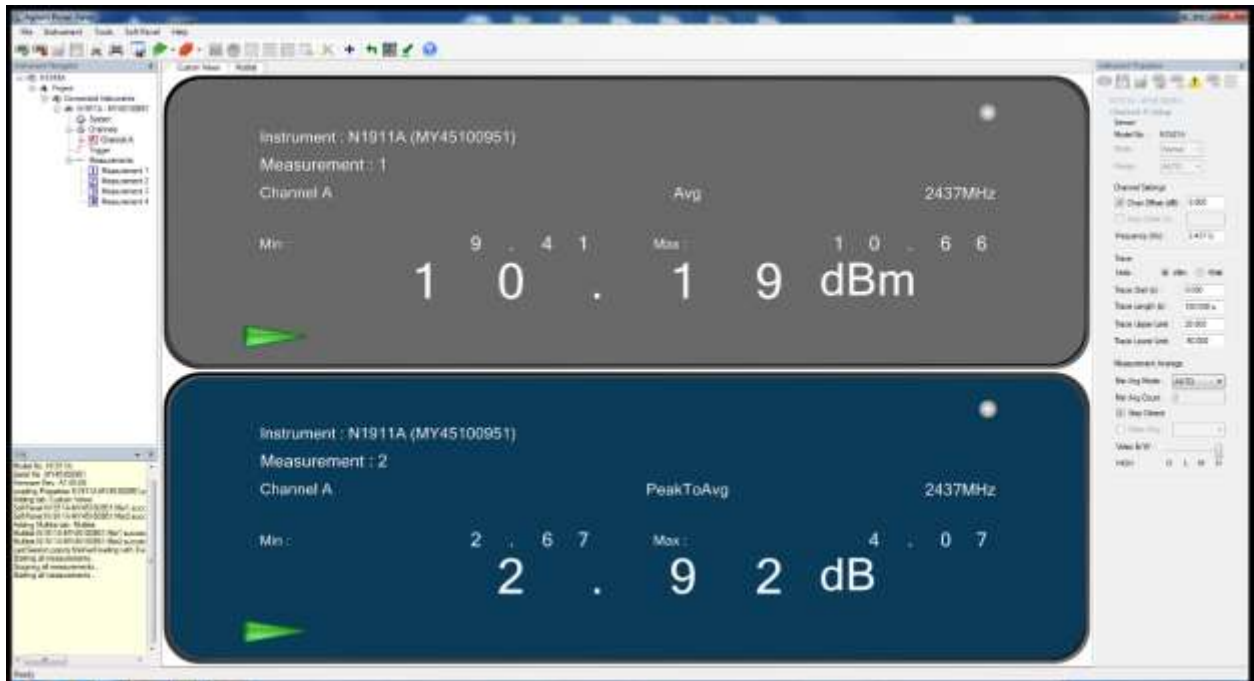


2.1.8 Test Results

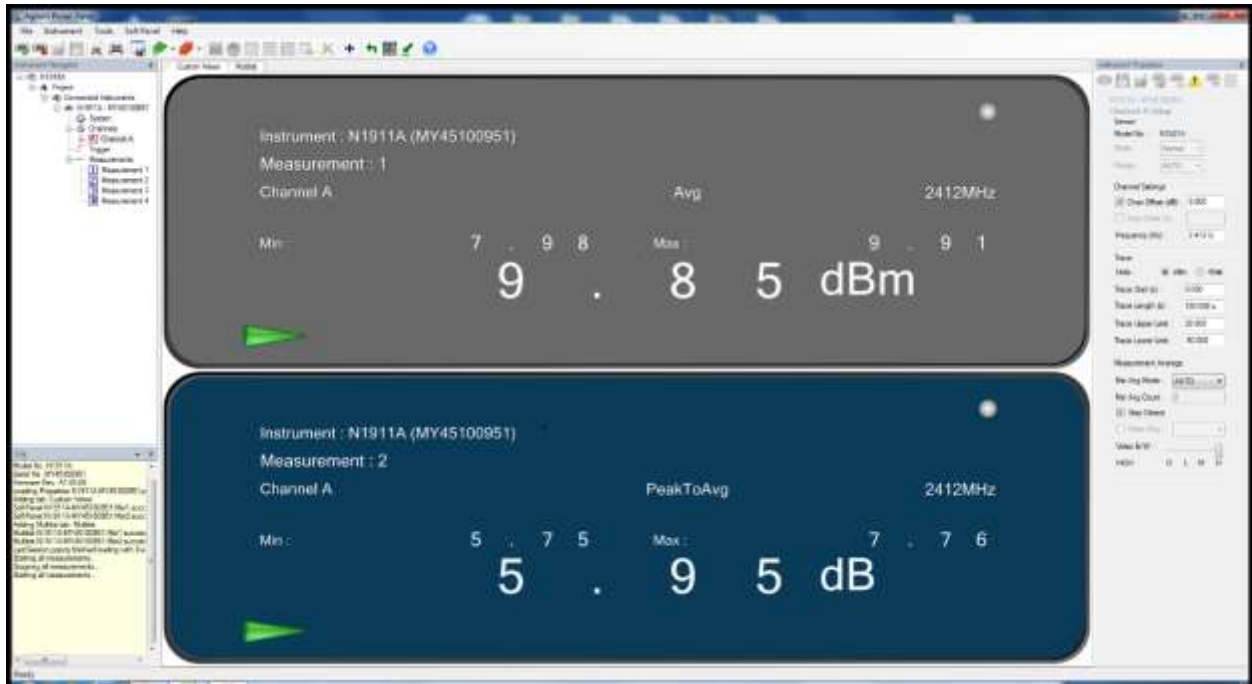
Band	Mode	Channel	Frequency (MHz)	Tx1 (dBm)	Tx2 (dBm)
2450 MHz	B	1	2412	4.96	13.76
		6	2437	6.54	14.73
		11	2462	8.62	14.42
	G	1	2412	8.96	17.67
		6	2437	10.01	18.47
		11	2462	11.66	17.26
	N	1	2412	6.71	19.6
		6	2437	10.63	20.39
		11	2462	12.52	20.35

Maximum measured combination = 12.52 dBm (17.87mW) and 20.35 dBm (108.39 mW) for total of 126.26 mW (complies with 1000mW limit)

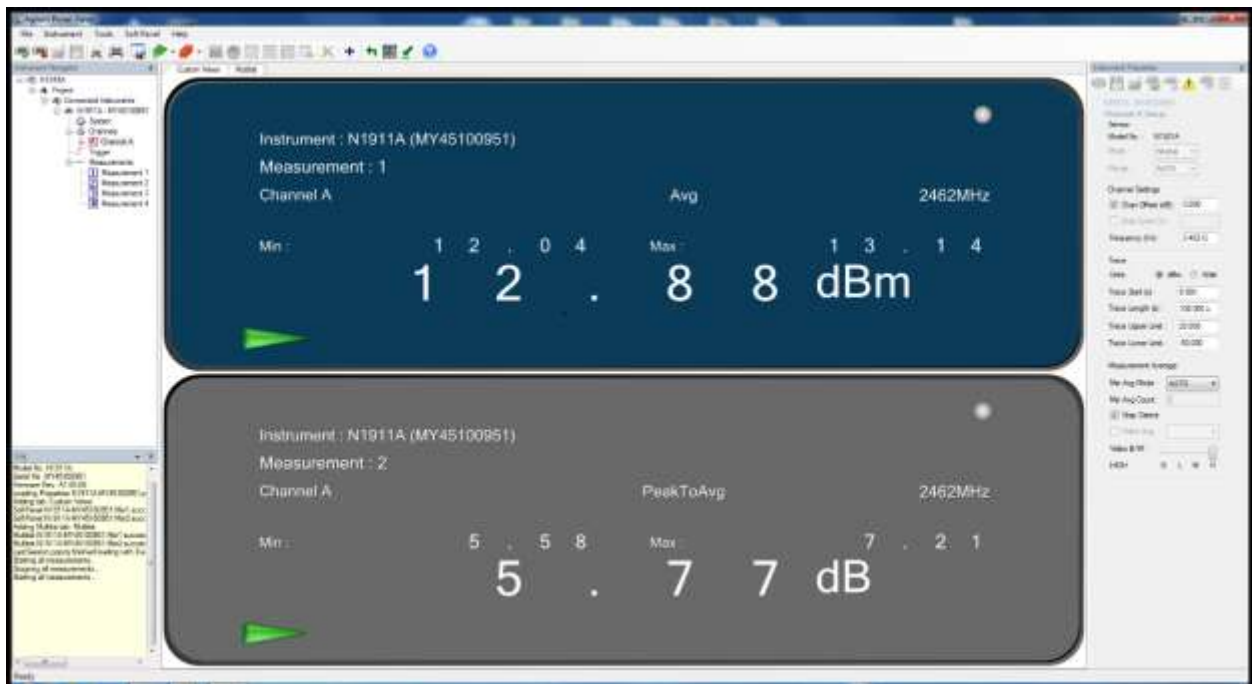
2.1.9 Sample Test Plots



802.11b Channel 6 2437MHz



802.11g Channel 1 2412MHz



802.11n Channel 11 2462MHz



2.2 CONDUCTED EMISSIONS

2.2.1 Specification Reference

Part 15 Subpart C §15.207(a) and RSS-Gen 8.8

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: TUV1 / Test Configuration A

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

August 06, 2018/IR

2.2.5 Test Equipment Used

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

2.2.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Mira Mesa facility

Ambient Temperature 27.2 °C
 Relative Humidity 52.9 %
 ATM Pressure 99.8 kPa

2.2.7 Additional Observations

Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.2.8 for sample computation.



2.2.8 Sample Computation (Conducted Emission – Quasi Peak)

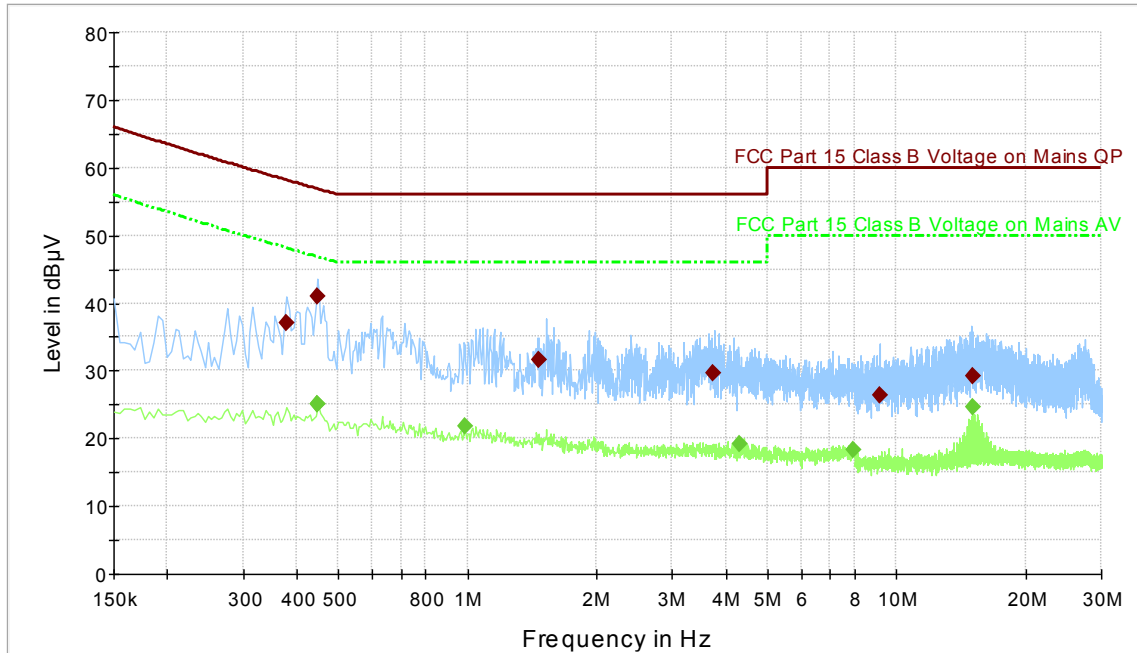
Measuring equipment raw measurement (db μ V) @ 150kHz		5.5
Correction Factor (dB)	Asset# 8607 (20 dB attenuator)	19.9
	Asset# 1177 (cable)	0.15
	Asset# 1176 (cable)	0.35
	Asset# 7568 (LISN)	0.30
Reported QuasiPeak Final Measurement (dbμV) @ 150kHz		26.2

2.2.9 Test Results

Compliant. See attached plots and tables.



2.2.10 Line 1 (120VAC/60Hz)



- FCC Part 15 Class B Voltage on Mains QP [..\EMI conducted\]
- - - FCC Part 15 Class B Voltage on Mains AV [..\EMI conducted\]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- Preview Result 2-AVG [Preview Result 2.Result:2]
- ◆ Final Result 1-QPK [Final Result 1.Result:1]
- ◆ Final Result 2-AVG [Final Result 2.Result:1]

Quasi Peak Result

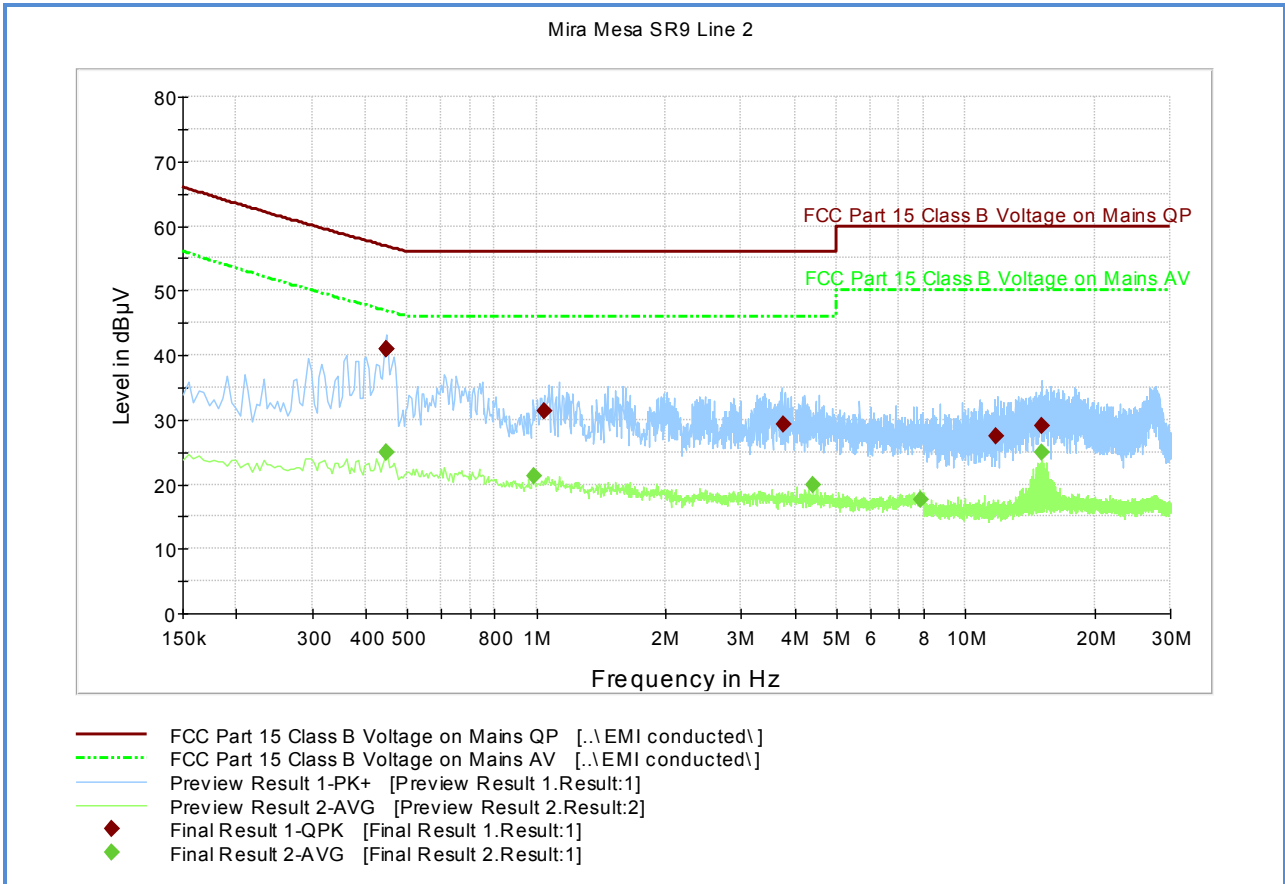
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.379500	37.0	1000.0	9.000	Off	L1	20.1	21.2	58.1
0.447000	41.0	1000.0	9.000	Off	L1	20.1	15.9	56.9
1.464000	31.6	1000.0	9.000	Off	L1	19.9	24.4	56.0
3.745500	29.5	1000.0	9.000	Off	L1	19.8	26.5	56.0
9.109500	26.3	1000.0	9.000	Off	L1	19.8	33.7	60.0
15.009000	29.3	1000.0	9.000	Off	L1	20.4	30.7	60.0

Average Result

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.447000	25.0	1000.0	9.000	Off	L1	20.1	21.8	46.8
0.447000	25.2	1000.0	9.000	Off	L1	20.1	21.7	46.8
0.987000	21.7	1000.0	9.000	Off	L1	20.0	24.3	46.0
4.317000	19.3	1000.0	9.000	Off	L1	19.8	26.7	46.0
7.921500	18.2	1000.0	9.000	Off	L1	19.8	31.8	50.0
15.009000	24.7	1000.0	9.000	Off	L1	20.4	25.3	50.0



2.2.11 Line 2 "Neutral" (120VAC/60Hz)



Quasi Peak Result

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.447000	41.0	1000.0	9.000	Off	N	19.8	15.8	56.9
0.447000	41.0	1000.0	9.000	Off	N	19.8	15.9	56.9
1.045500	31.3	1000.0	9.000	Off	N	19.6	24.7	56.0
3.763500	29.2	1000.0	9.000	Off	N	19.5	26.8	56.0
11.805000	27.5	1000.0	9.000	Off	N	19.5	32.5	60.0
15.013500	29.0	1000.0	9.000	Off	N	20.1	31.0	60.0

Average Result

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.447000	25.0	1000.0	9.000	Off	N	19.8	21.9	46.8
0.447000	24.9	1000.0	9.000	Off	N	19.8	21.9	46.8
0.987000	21.2	1000.0	9.000	Off	N	19.6	24.8	46.0
4.411500	20.0	1000.0	9.000	Off	N	19.5	26.0	46.0
7.867500	17.6	1000.0	9.000	Off	N	19.5	32.4	50.0
15.108000	24.9	1000.0	9.000	Off	N	20.2	25.1	50.0



2.3 99% EMISSION BANDWIDTH

2.3.1 Specification Reference

RSS-Gen Clause 6.7

2.3.2 Standard Applicable

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

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- • The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- • The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

Note: Video averaging is not permitted.

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

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

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

2.3.3 Equipment Under Test and Modification State

Serial No: TUV1 / Test Configuration A

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

July 17, 24, 2018/FC

2.3.5 Test Equipment Used

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



2.3.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature 26.7 °C
 Relative Humidity 45.8 %
 ATM Pressure 99.9 kPa

2.3.7 Additional Observations

- This is a conducted test.
- Test methodology is according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10
- Rohde & Schwarz TS8997 Test System was used for this test.

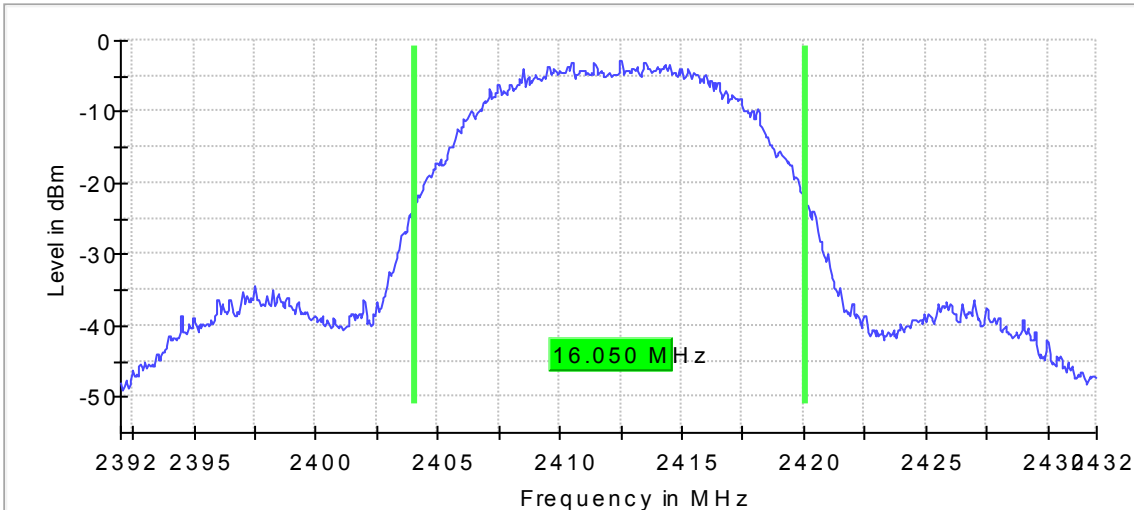
2.3.8 Test Results Port 1 (For reporting purposes only)

Mode	Channel	Port 1 Measured 99% Bandwidth (MHz)	Port 2 Measured 99% Bandwidth (MHz)
802.11b	1 (2412 MHz)	16.05	16.05
	6 (2437 MHz)	15.70	16.15
	11 (2462 MHz)	15.65	15.90
802.11g	1 (2412 MHz)	18.65	18.25
	6 (2437 MHz)	18.40	18.25
	11 (2462 MHz)	18.55	18.35
802.11n	1 (2412 MHz)	18.70	18.50
	6 (2437 MHz)	18.45	18.65
	11 (2462 MHz)	17.80	19.10



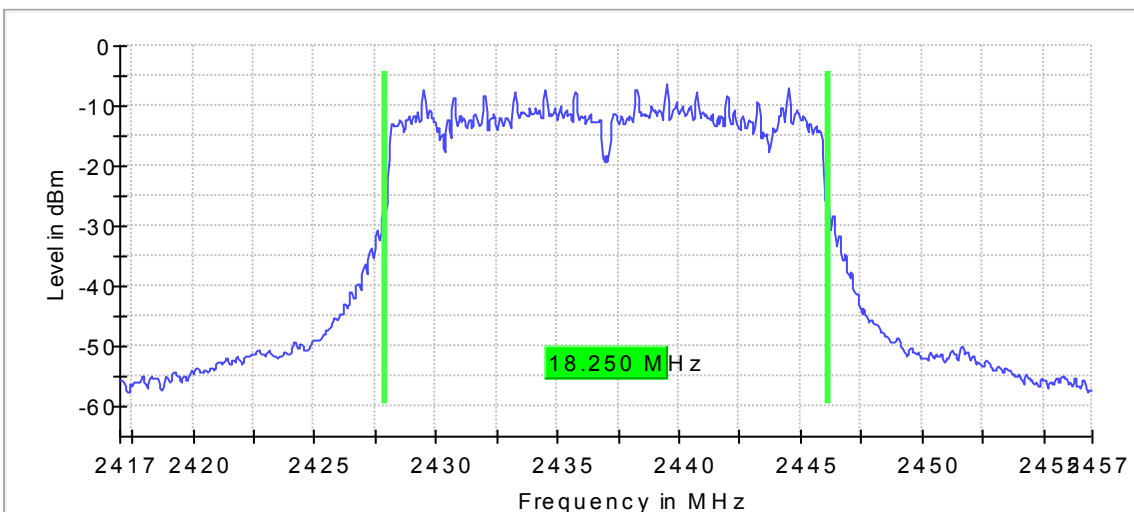
2.3.9 Sample Test Results Plots (Port 1/Port 2)

DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	16.050000	2404.075000	2420.125000	2412.0000	-2.8	PASS



802.11b (Ch 1 Port 1)

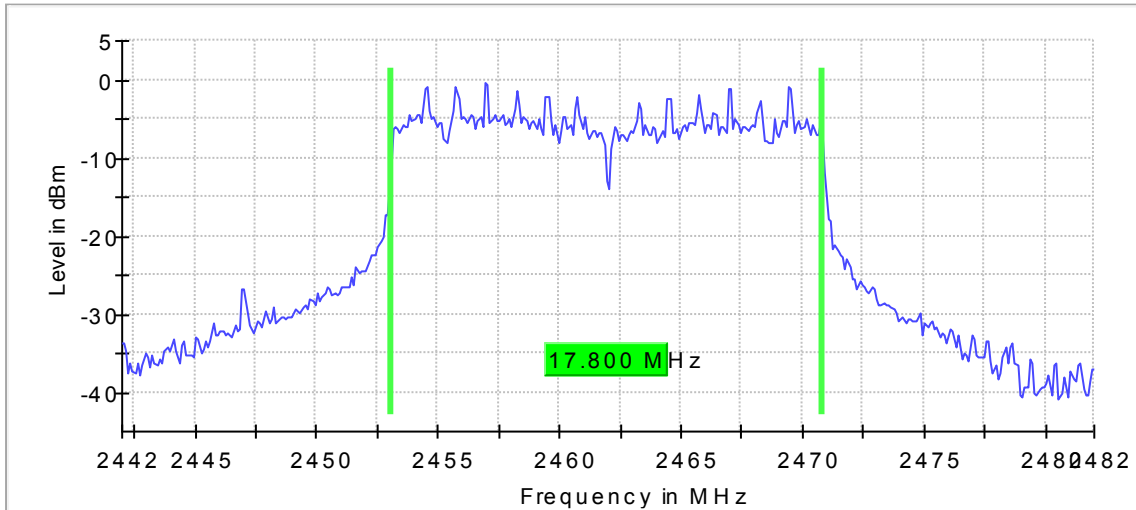
DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	18.250000	2427.925000	2446.175000	2437.00	-6.5	PASS



802.11g (Ch 6 Port 2)



DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	17.800000	0.500000	2453.050000	2470.8500	-0.5	PASS



802.11n (Ch 11 port 1)



2.4 MINIMUM 6 dB RF BANDWIDTH

2.4.1 Specification Reference

Part 15 Subpart C §15.247(a)(2) and RSS-247 5.2(1)

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: TUV1 / Test Configuration A

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

July 17, 24, 2018/FC

2.4.5 Test Equipment Used

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

2.4.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.7 °C
Relative Humidity	45.8 %
ATM Pressure	99.9 kPa

2.4.7 Additional Observations

- This is a conducted test.
- Test methodology is according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10
- Rohde & Schwarz TS8997 Test System was used for this test.



2.4.8 Test Results (Port 1)

Mode	Channel	Measured Bandwidth (MHz)	Minimum Bandwidth (MHz)	Compliance
802.11b	1 (2412 MHz)	10.40	0.500	Complies
	6 (2437 MHz)	9.80	0.500	Complies
	11 (2462 MHz)	9.90	0.500	Complies
802.11g	1 (2412 MHz)	17.8	0.500	Complies
	6 (2437 MHz)	17.7	0.500	Complies
	11 (2462 MHz)	17.8	0.500	Complies
802.11n	1 (2412 MHz)	17.9	0.500	Complies
	6 (2437 MHz)	17.7	0.500	Complies
	11 (2462 MHz)	17.8	0.500	Complies

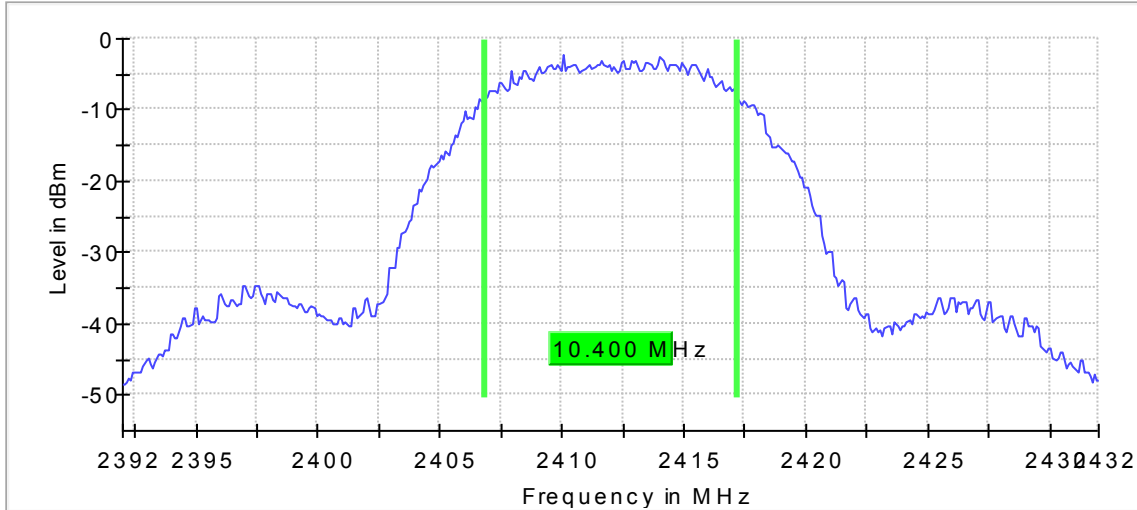
2.4.9 Test Results (Port 2)

Mode	Channel	Measured Bandwidth (MHz)	Minimum Bandwidth (MHz)	Compliance
802.11b	1 (2412 MHz)	16.5	0.500	Complies
	6 (2437 MHz)	16.8	0.500	Complies
	11 (2462 MHz)	17.4	0.500	Complies
802.11g	1 (2412 MHz)	16.5	0.500	Complies
	6 (2437 MHz)	16.8	0.500	Complies
	11 (2462 MHz)	17.4	0.500	Complies
802.11n	1 (2412 MHz)	17.7	0.500	Complies
	6 (2437 MHz)	17.7	0.500	Complies
	11 (2462 MHz)	17.9	0.500	Complies



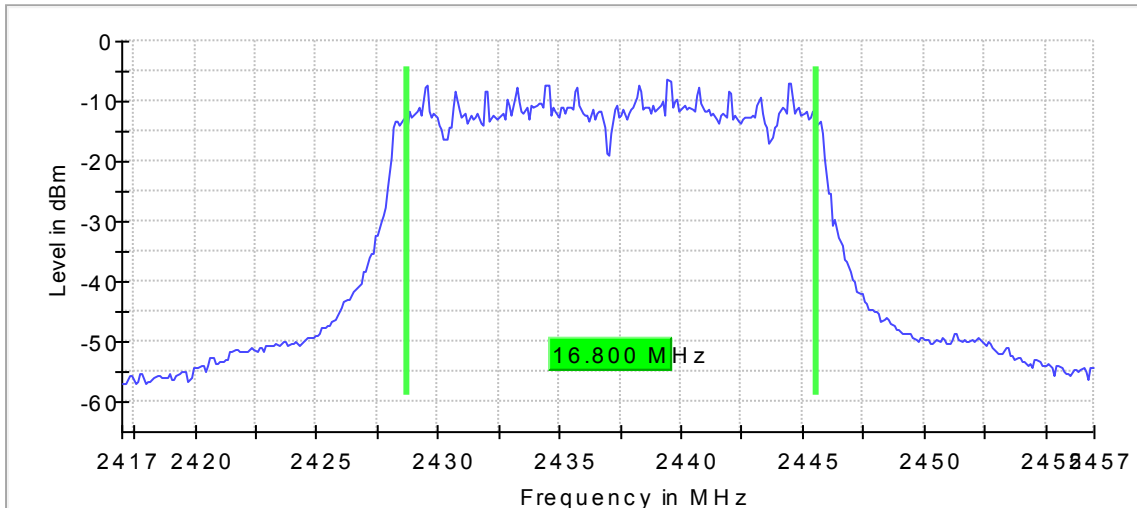
2.4.10 Sample Test Results Plots

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2412.000000	10.400000	0.500000	2406.850000	2417.250000	-2.2	PASS



802.11b Channel 1 (Port 1)

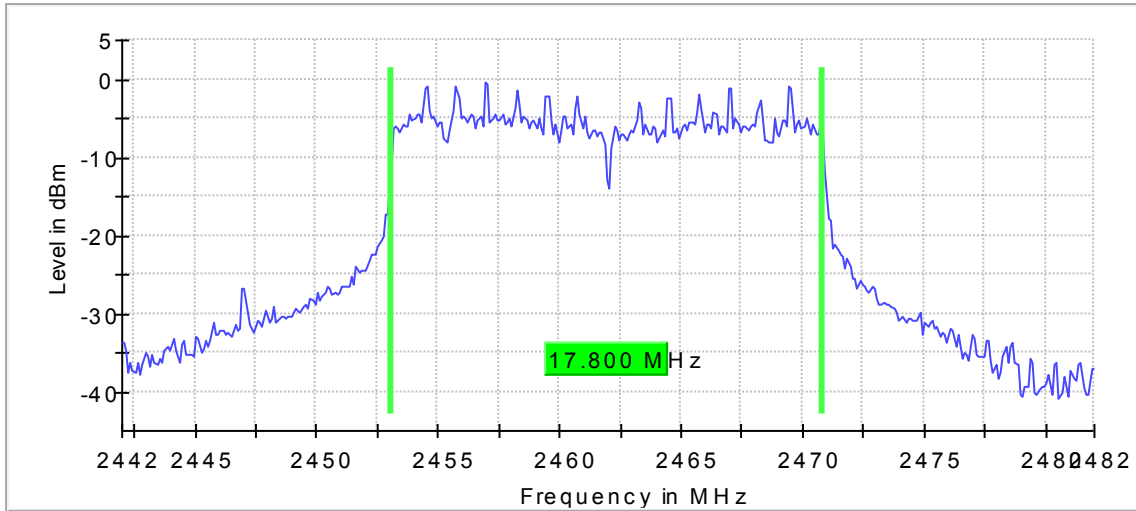
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2437.000000	16.800000	0.500000	2428.750000	2445.550000	-6.5	PASS



802.11g Channel 6 (Port 2)



DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2462.000000	17.800000	0.500000	2453.050000	2470.850000	-0.5	PASS



802.11n Channel 11 (Port 1)



2.5 OUT-OF-BAND EMISSIONS - CONDUCTED

2.5.1 Specification Reference

Part 15 Subpart C §15.247(d) and RSS-247 5.5

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: TUV1 / Test Configuration A

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

July 17, 24, 2018/FC

2.5.5 Test Equipment Used

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

2.5.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

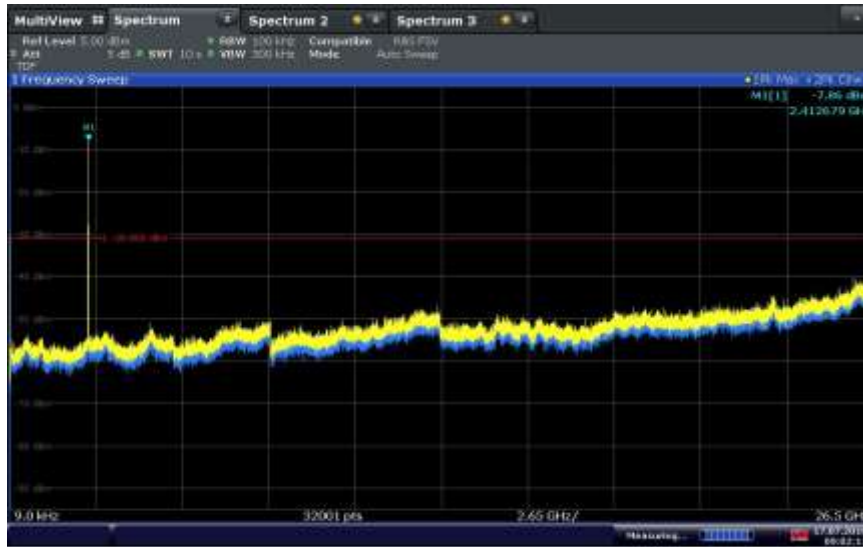
Ambient Temperature	26.7 °C
Relative Humidity	45.8 %
ATM Pressure	99.9 kPa

2.5.7 Additional Observations

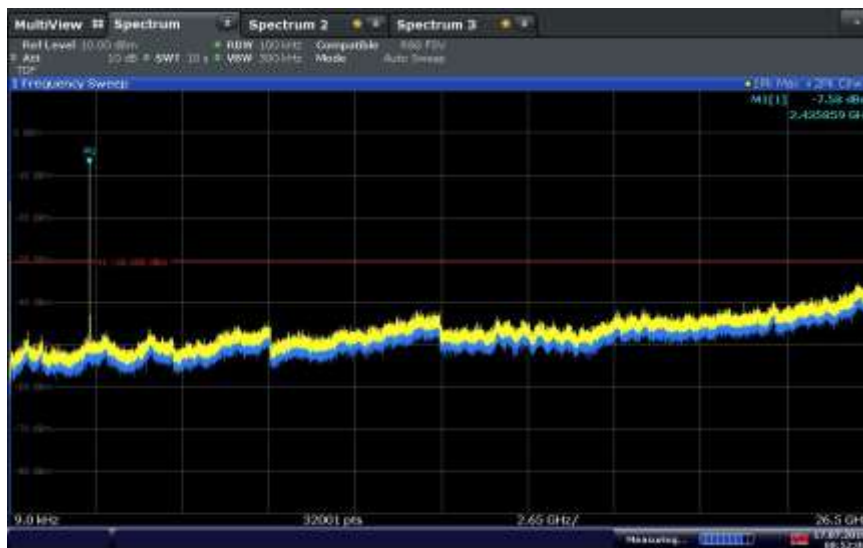
- This is a conducted test.
- TDF (Transducer Factor) was used to compensate for the external attenuator and cables used.
- RBW is 100kHz.VBW is 3X RBW.
- Sweep is auto. Detector is peak. Trace is max hold.
- Initial scan was performed to determine the highest level of the desired power within the band. Limit (display line) was drawn 20dB below this level (Peak Limit).
- Only Port 2 test results presented (worse case between the two ports, power at Port 1 was considerably less than Port 2 level).
- Spectrum was searched from 9 kHz up to 26.5GHz.



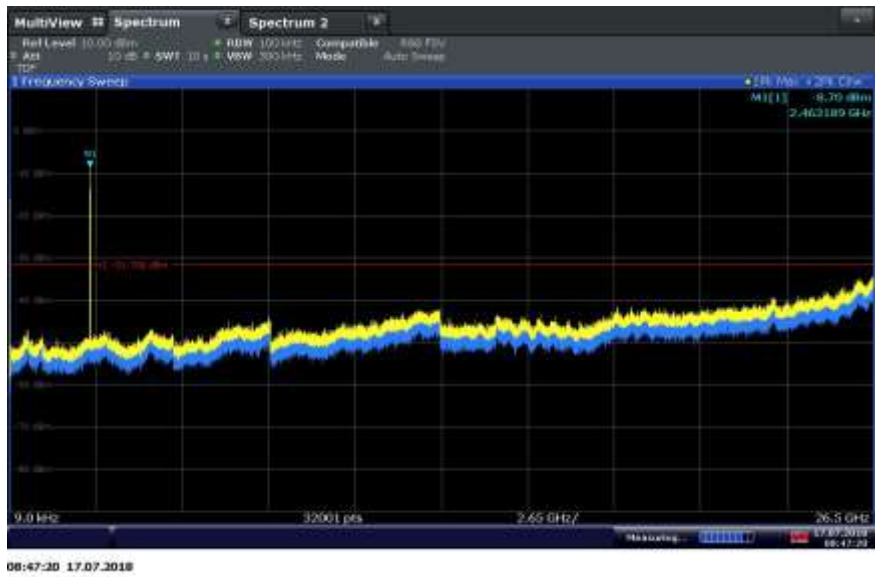
2.5.8 Test Results Plots



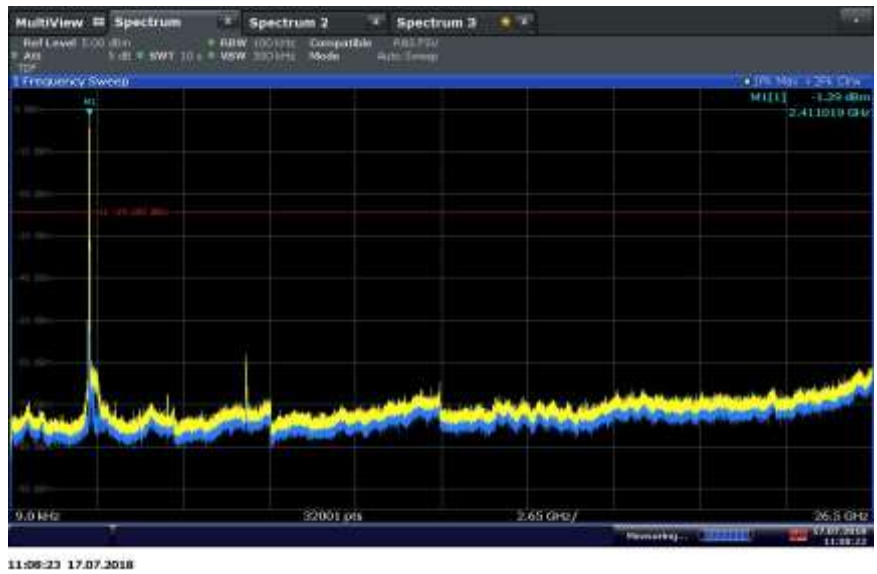
802.11b Low Channel (Port 2)



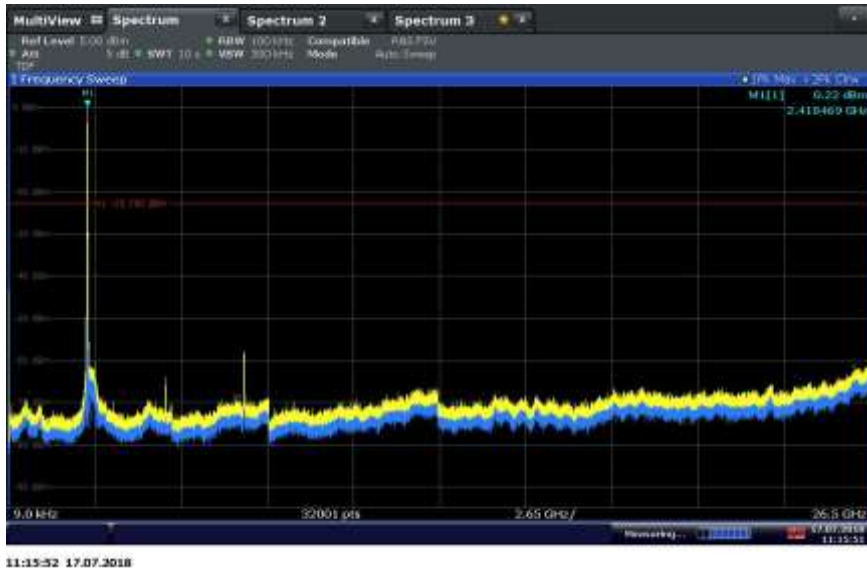
802.11b Mid Channel (Port 2)



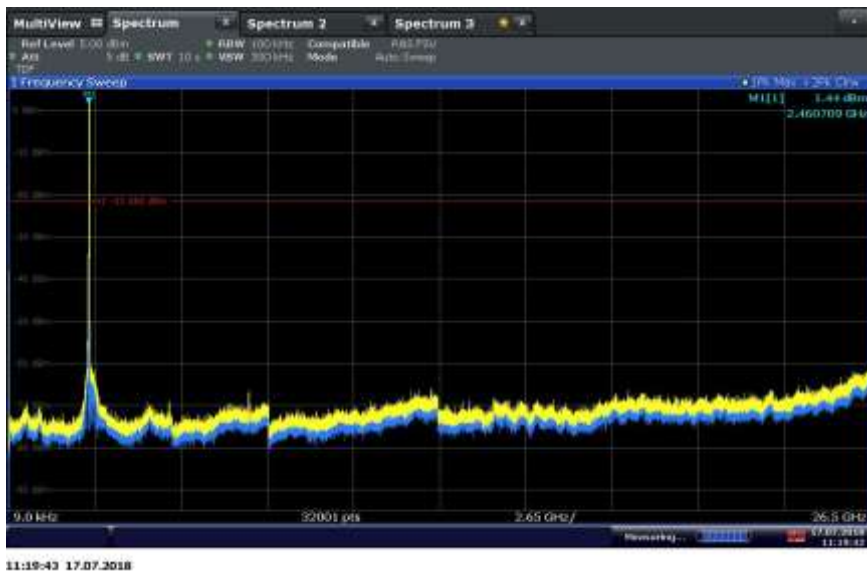
802.11b Mid Channel (Port 2)



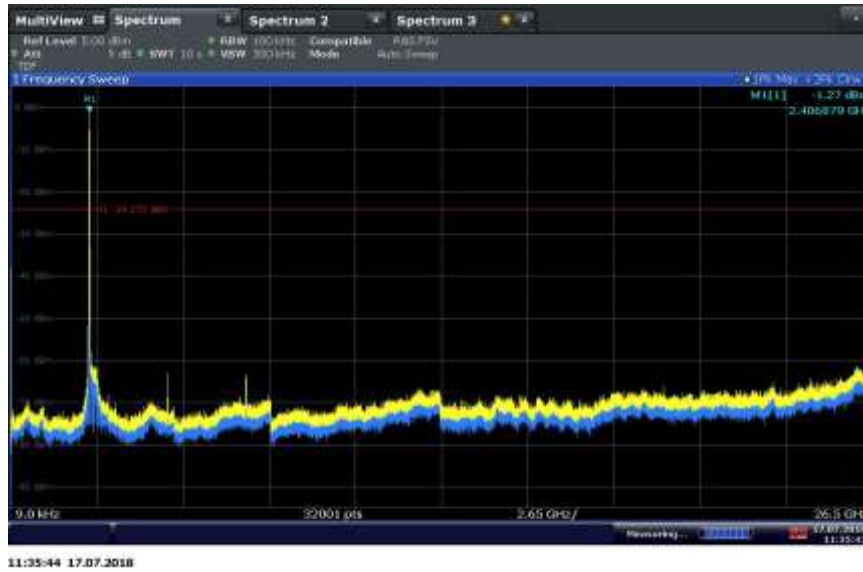
802.11g Low Channel (Port 2)



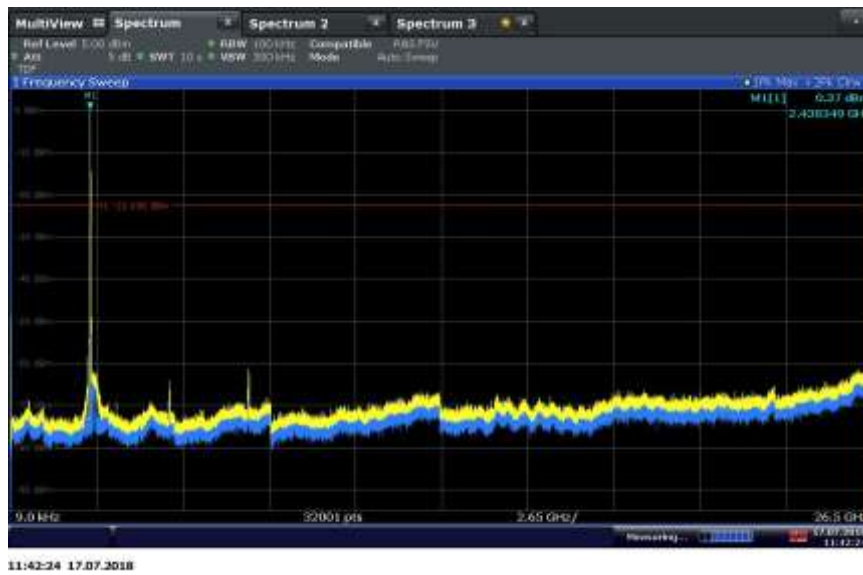
802.11g Mid Channel (Port 2)



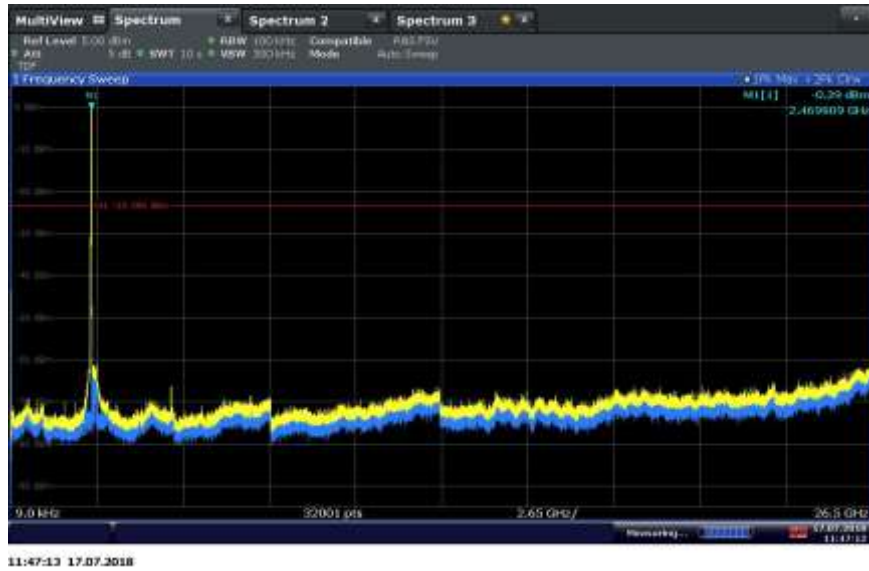
802.11g High Channel (Port 2)



802.11n Low Channel (Port 2)



802.11n Mid Channel (Port 2)



802.11n High Channel (Port 2)



2.6 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

2.6.1 Specification Reference

Part 15 Subpart C §15.247(d) and RSS-247 5.5

2.6.2 Standard Applicable

See previous test.

2.6.3 Equipment Under Test and Modification State

Serial No: TUV1 / Test Configuration A

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

July 17, 24, 2018/FC

2.6.5 Test Equipment Used

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

2.6.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

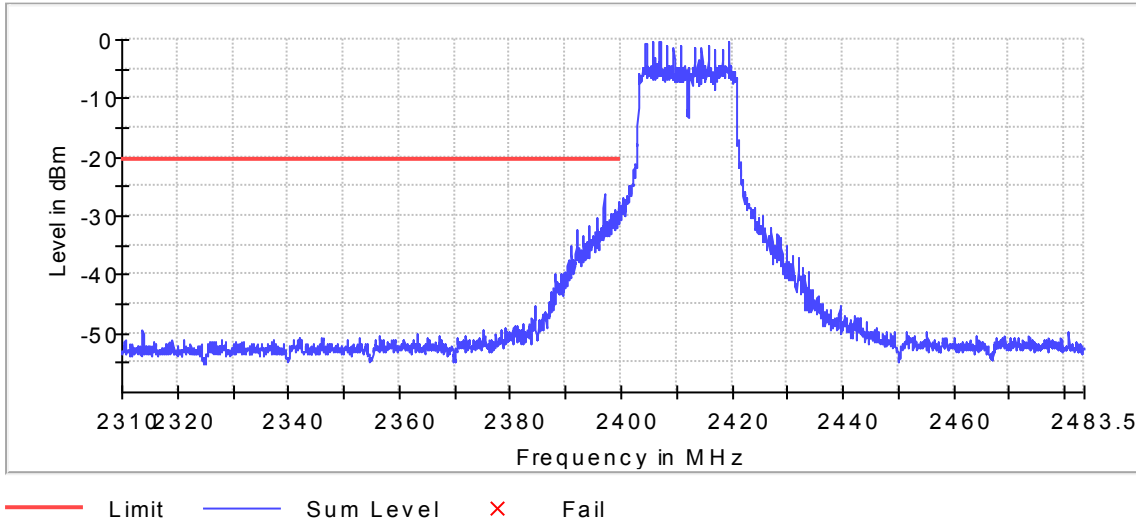
Ambient Temperature	26.7 °C
Relative Humidity	45.8 %
ATM Pressure	99.9 kPa

2.6.7 Additional Observations

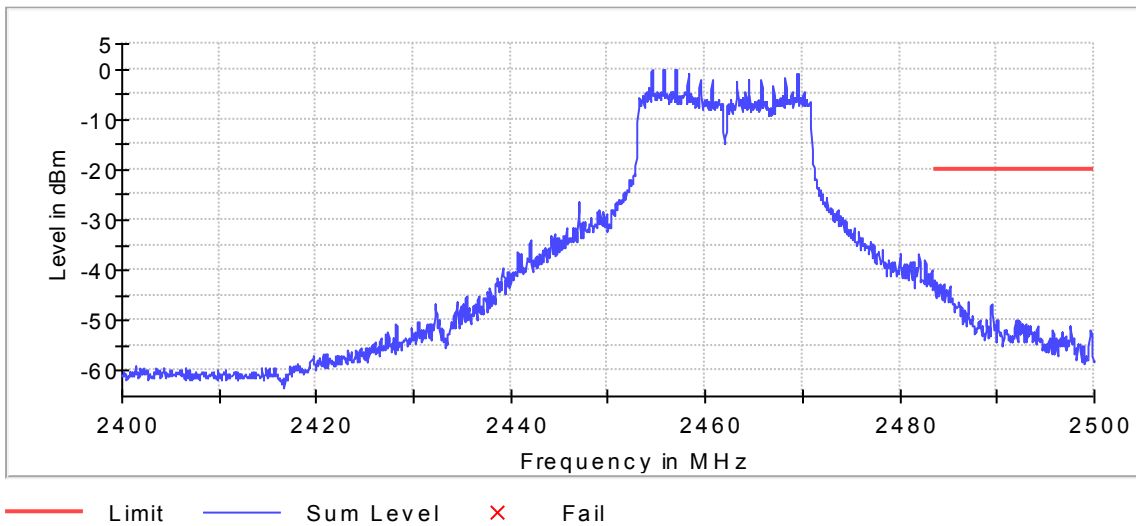
- This is a conducted test.
- Test methodology is according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10
- Rohde & Schwarz TS8997 Test System was used for this test.

2.6.8 Test Results

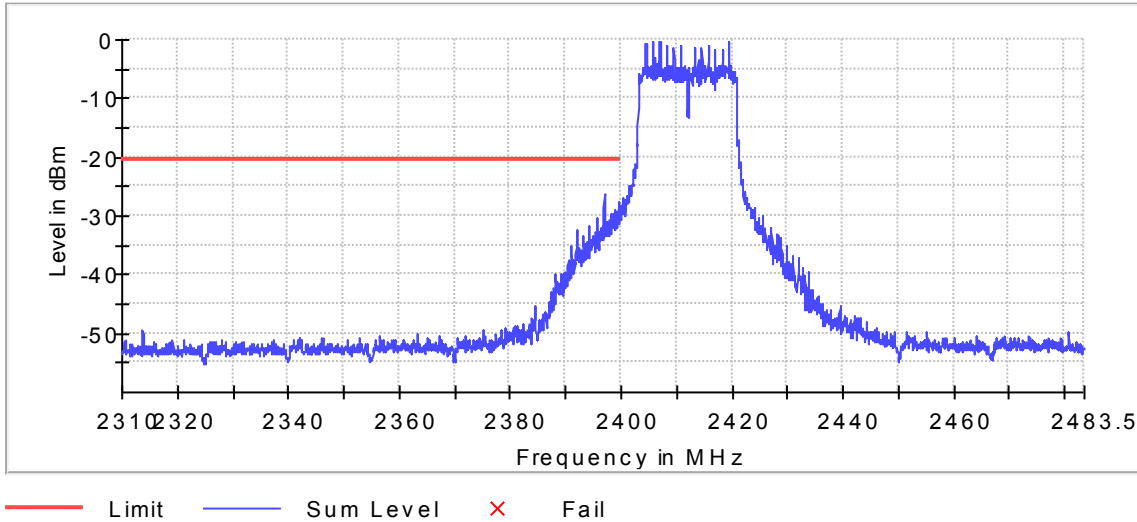
Complies. See attached plots.



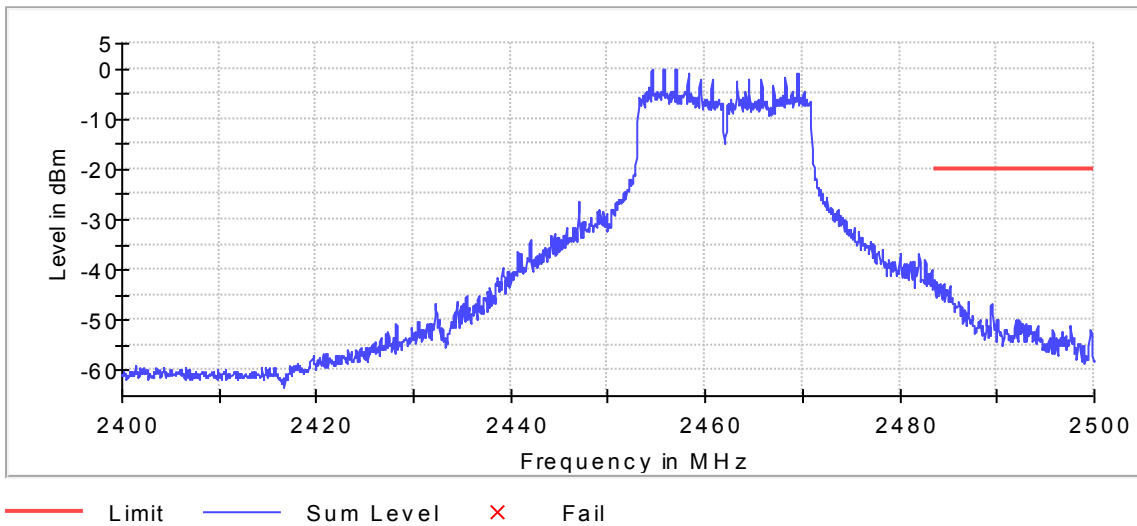
802.11b Low Channel (2412 MHz) (Port 1)



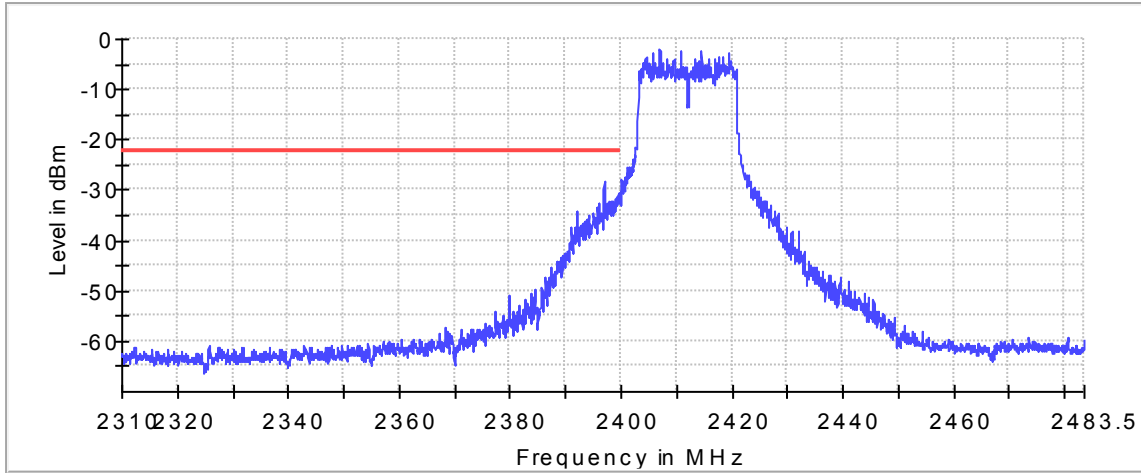
802.11b High Channel (2462 MHz) (Port 1)



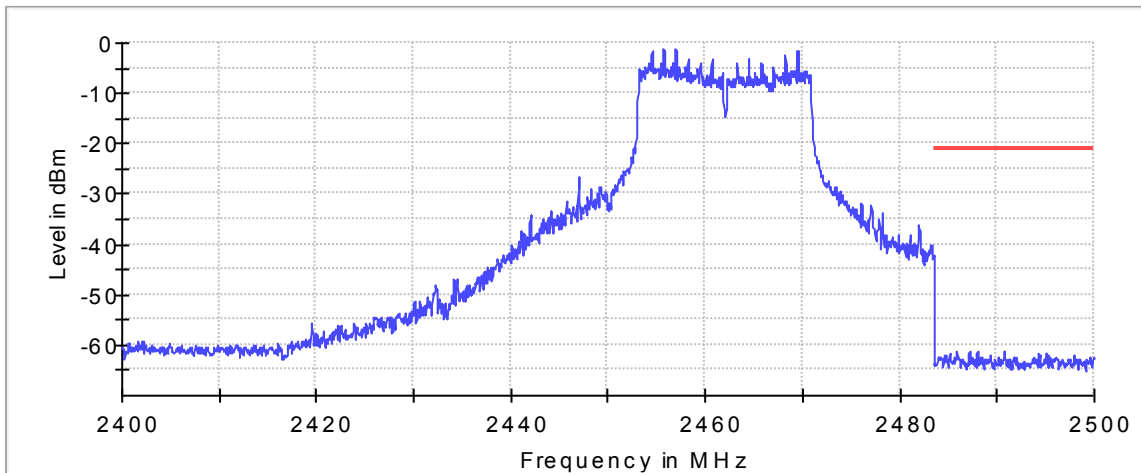
802.11g Low Channel (2412 MHz) (Port 1)



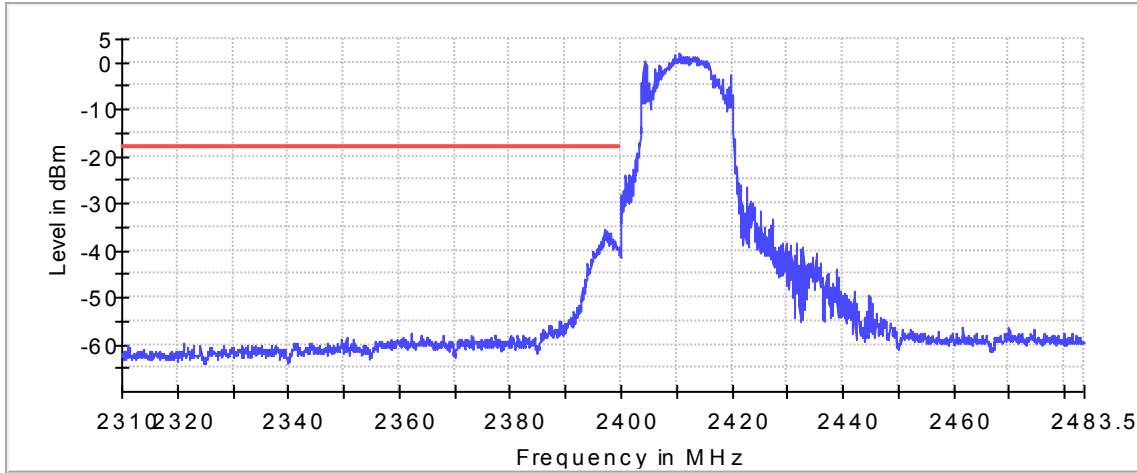
802.11g High Channel (2462 MHz) (Port 1)



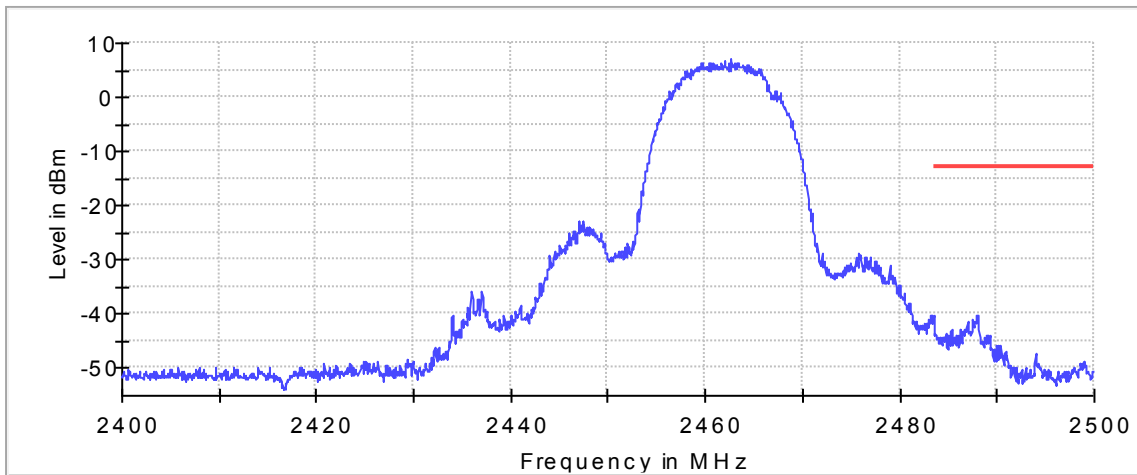
802.11n Low Channel (2412 MHz) (Port 1)



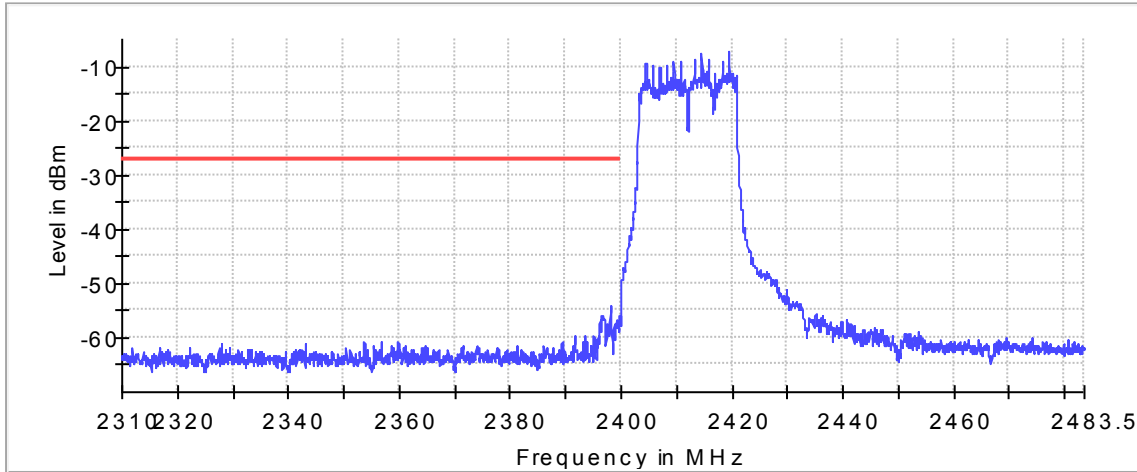
802.11n High Channel (2462 MHz) (Port 1)



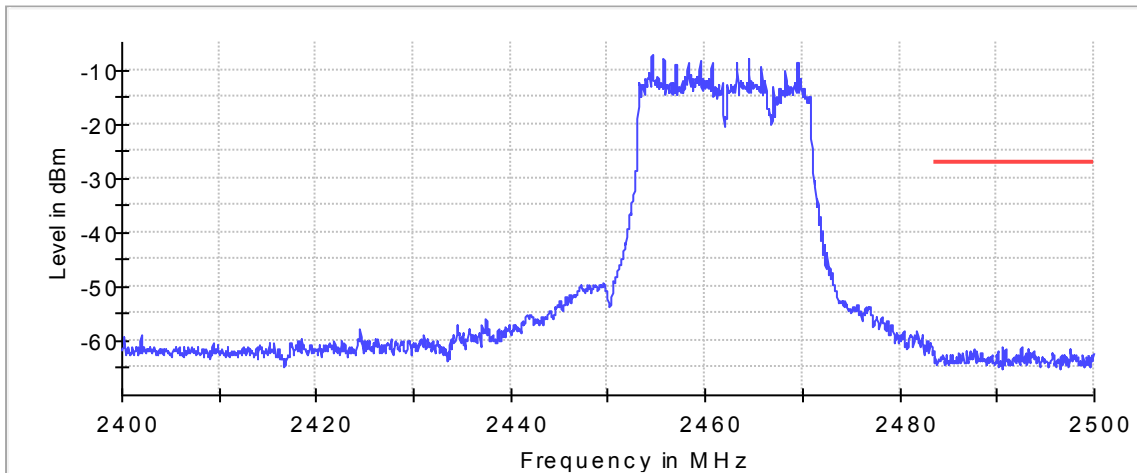
802.11b Low Channel (2412 MHz) (Port 2)



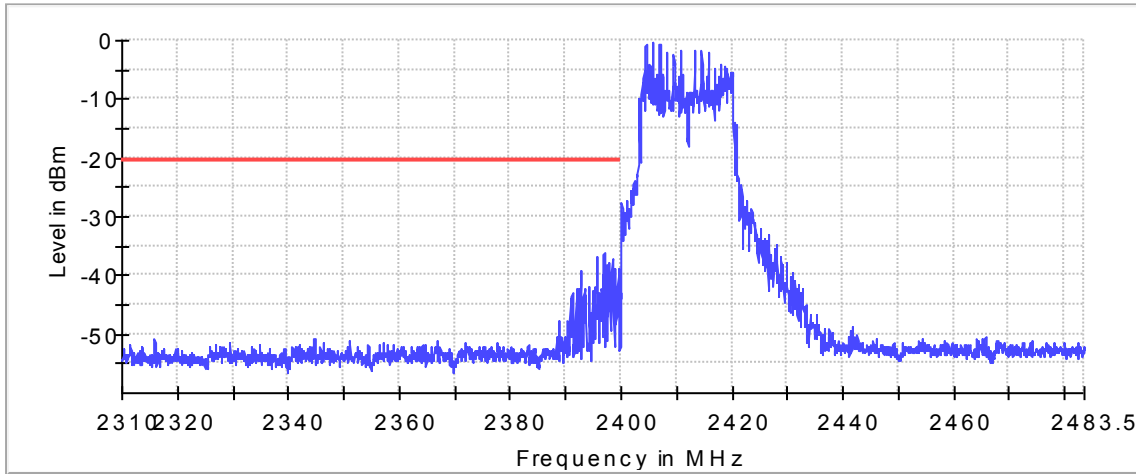
802.11b High Channel (2462 MHz) (Port 2)



802.11g Low Channel (2412 MHz) (Port 2)

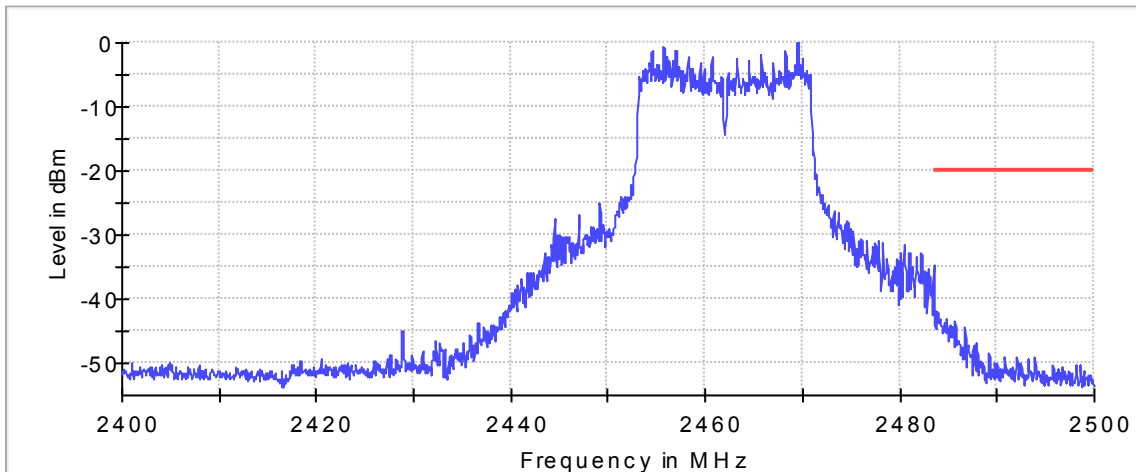


802.11g High Channel (2462 MHz) (Port 2)



— Limit — Sum Level × Fail

802.11n Low Channel (2412 MHz) (Port 2)



— Limit — Sum Level × Fail

802.11n High Channel (2462 MHz) (Port 2)



2.7 SPURIOUS RADIATED EMISSIONS

2.7.1 Specification Reference

KDB558074 D01 DTS Meas Guidance v04 Clause 12.2.7

2.7.2 Standard Applicable

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

2.7.3 Equipment Under Test and Modification State

Serial No: TUV1 / Test Configuration A

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

July 30 - August 03, 2018/IR

2.7.5 Test Equipment Used

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

2.7.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Mira Mesa facility

Ambient Temperature	24.1 °C
Relative Humidity	48.1 %
ATM Pressure	99.2 kPa

2.7.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic.
- Test Methodology is per Clause 12.2.7 of KDB558074 D01 DTS Meas Guidance v04.
- 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 worst case data rate presented.
- 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)

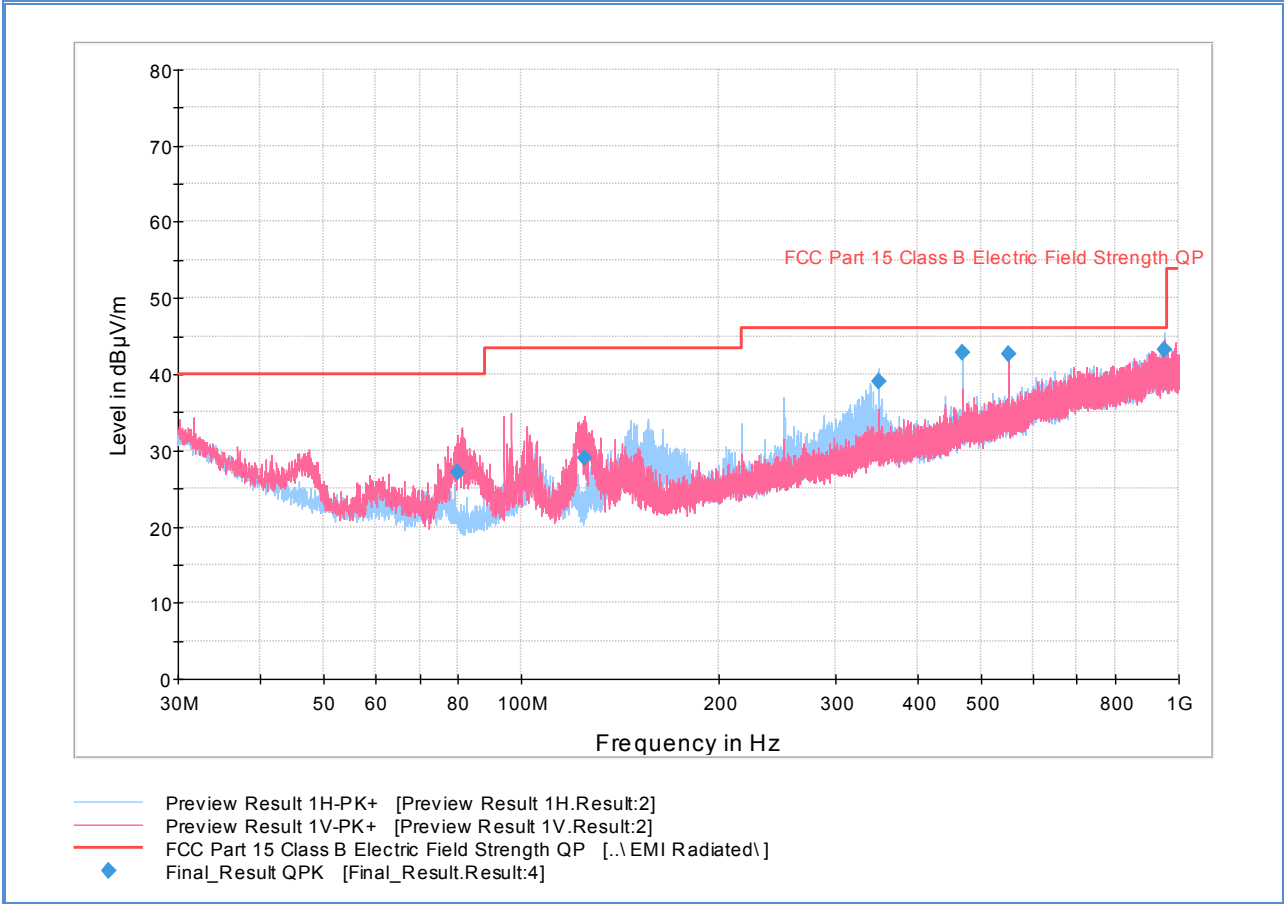
Measuring equipment raw measurement (db μ V) @ 30 MHz		24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3
	Asset# 1172 (cable)	0.3
	Asset# 1016 (preamplifier)	-30.7
	Asset# 1175(cable)	0.3
	Asset# 1002 (antenna)	17.2
Reported QuasiPeak Final Measurement (dbμV/m) @ 30MHz		11.8

2.7.9 Test Results

See attached plots.



2.7.10 Test Results Below 1GHz (Worst Case Configuration – 802.11b Ch1)

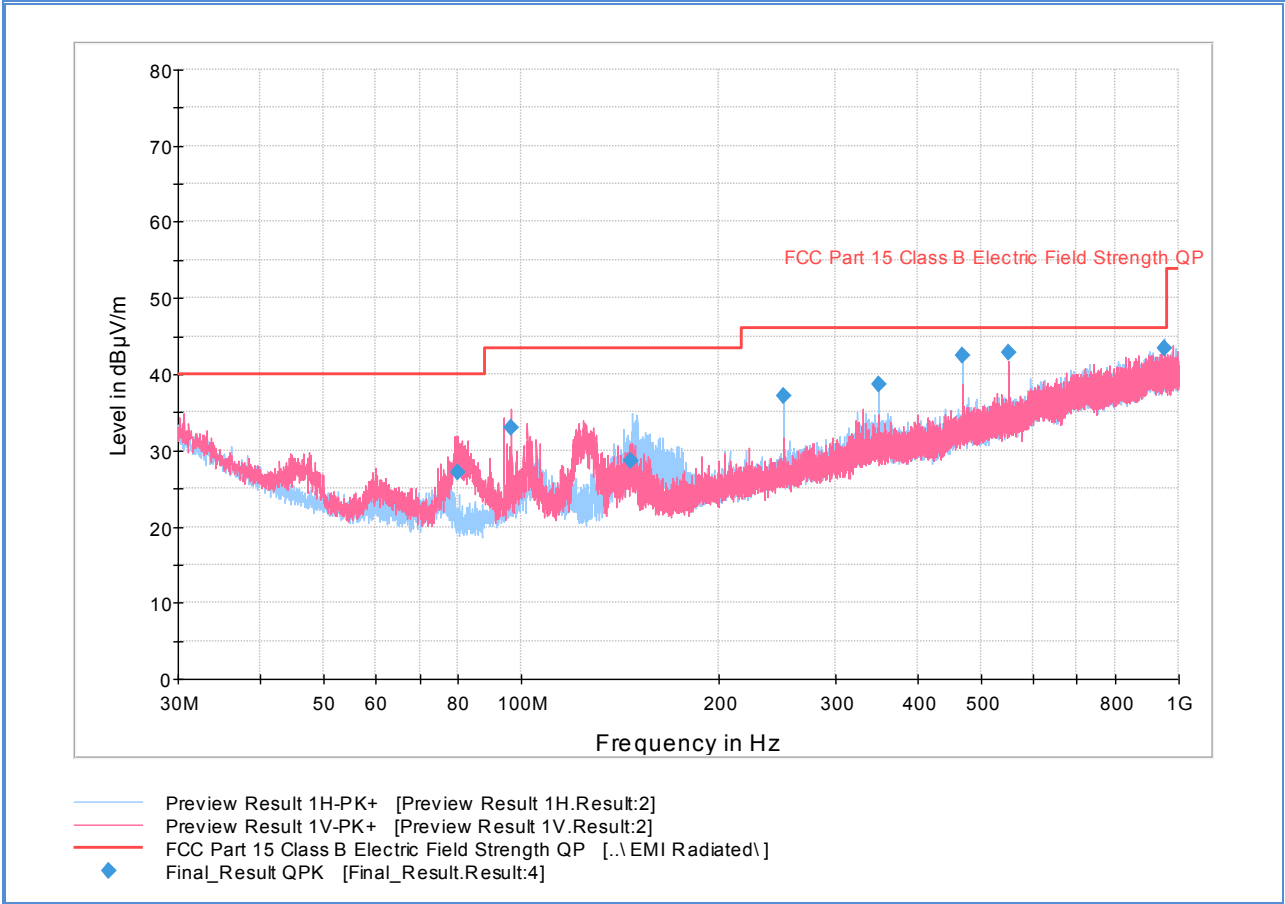


Quasi Peak Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
79.911333	27.19	40.00	12.81	1000.0	120.000	104.4	V	176.0	14.0
125.001333	29.08	43.50	14.42	1000.0	120.000	125.0	V	239.0	15.0
349.963000	39.12	46.00	6.88	1000.0	120.000	99.8	H	245.0	24.3
467.987333	42.79	46.00	3.21	1000.0	120.000	178.9	H	271.0	27.1
549.977000	42.73	46.00	3.27	1000.0	120.000	104.4	V	47.0	28.5
949.972667	43.26	46.00	2.74	1000.0	120.000	99.9	H	13.0	34.2



2.7.11 Test Results Below 1GHz (Worst Case Configuration – 802.11g Ch11)

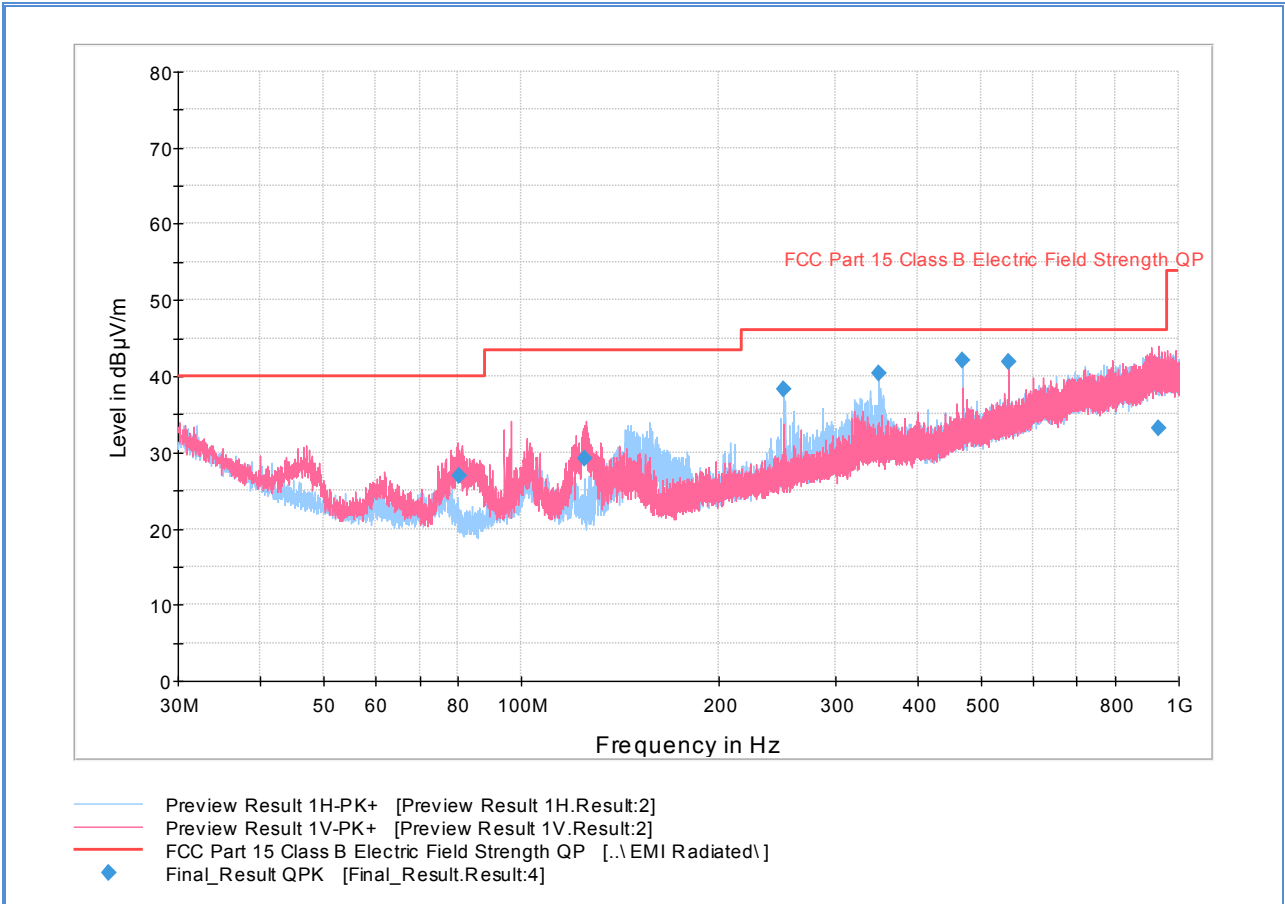


Quasi Peak Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
79.757667	27.10	40.00	12.90	1000.0	120.000	125.3	V	164.0	14.0
96.485000	32.99	43.50	10.51	1000.0	120.000	105.0	V	217.0	16.0
146.920667	28.71	43.50	14.79	1000.0	120.000	185.5	H	106.0	16.4
249.996000	37.15	46.00	8.85	1000.0	120.000	125.3	H	120.0	20.9
349.970667	38.73	46.00	7.27	1000.0	120.000	104.2	H	252.0	24.3
467.979667	42.50	46.00	3.50	1000.0	120.000	212.9	H	275.0	27.1
549.977000	42.85	46.00	3.15	1000.0	120.000	103.8	V	54.0	28.5
949.980333	43.43	46.00	2.57	1000.0	120.000	99.8	H	27.0	34.2



2.7.12 Test Results Below 1GHz (Worst Case Configuration – 802.11n Ch6)

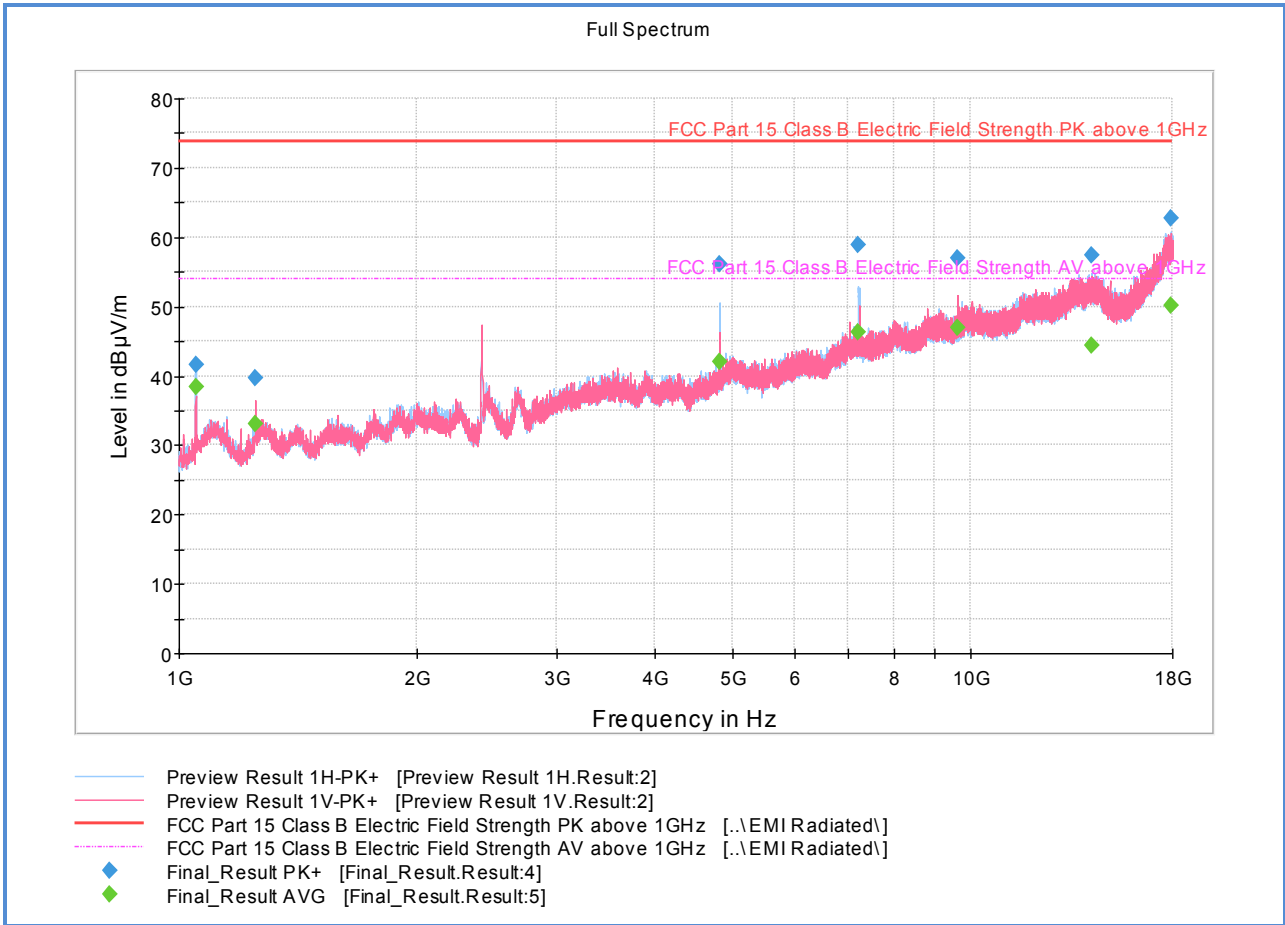


Quasi Peak Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
80.236667	26.95	40.00	13.05	1000.0	120.000	110.1	V	129.0	14.0
125.006333	29.24	43.50	14.26	1000.0	120.000	125.2	V	234.0	15.0
249.996000	38.29	46.00	7.71	1000.0	120.000	125.3	H	210.0	20.9
349.963000	40.42	46.00	5.58	1000.0	120.000	99.8	H	124.0	24.3
467.979667	42.14	46.00	3.86	1000.0	120.000	174.8	H	87.0	27.1
549.984667	41.87	46.00	4.13	1000.0	120.000	99.8	V	111.0	28.5
930.608667	33.15	46.00	12.85	1000.0	120.000	374.6	V	152.0	34.0



2.7.13 Test Results Above 1GHz (Worst Case Configuration – 802.11b Ch 1)



Peak Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1050.066667	41.64	73.90	32.26	1000.0	1000.000	99.7	H	7.0	-4.0
1250.100000	39.64	73.90	34.26	1000.0	1000.000	204.2	V	269.0	-3.2
4824.066667	56.14	73.90	17.76	1000.0	1000.000	105.7	H	110.0	10.5
7227.700000	58.85	73.90	15.05	1000.0	1000.000	99.7	H	115.0	17.1
9648.100000	56.99	73.90	16.91	1000.0	1000.000	99.8	V	52.0	20.9
14207.933333	57.48	73.90	16.42	1000.0	1000.000	304.7	H	110.0	26.4
17895.033333	62.81	73.90	11.09	1000.0	1000.000	108.3	V	44.0	32.3

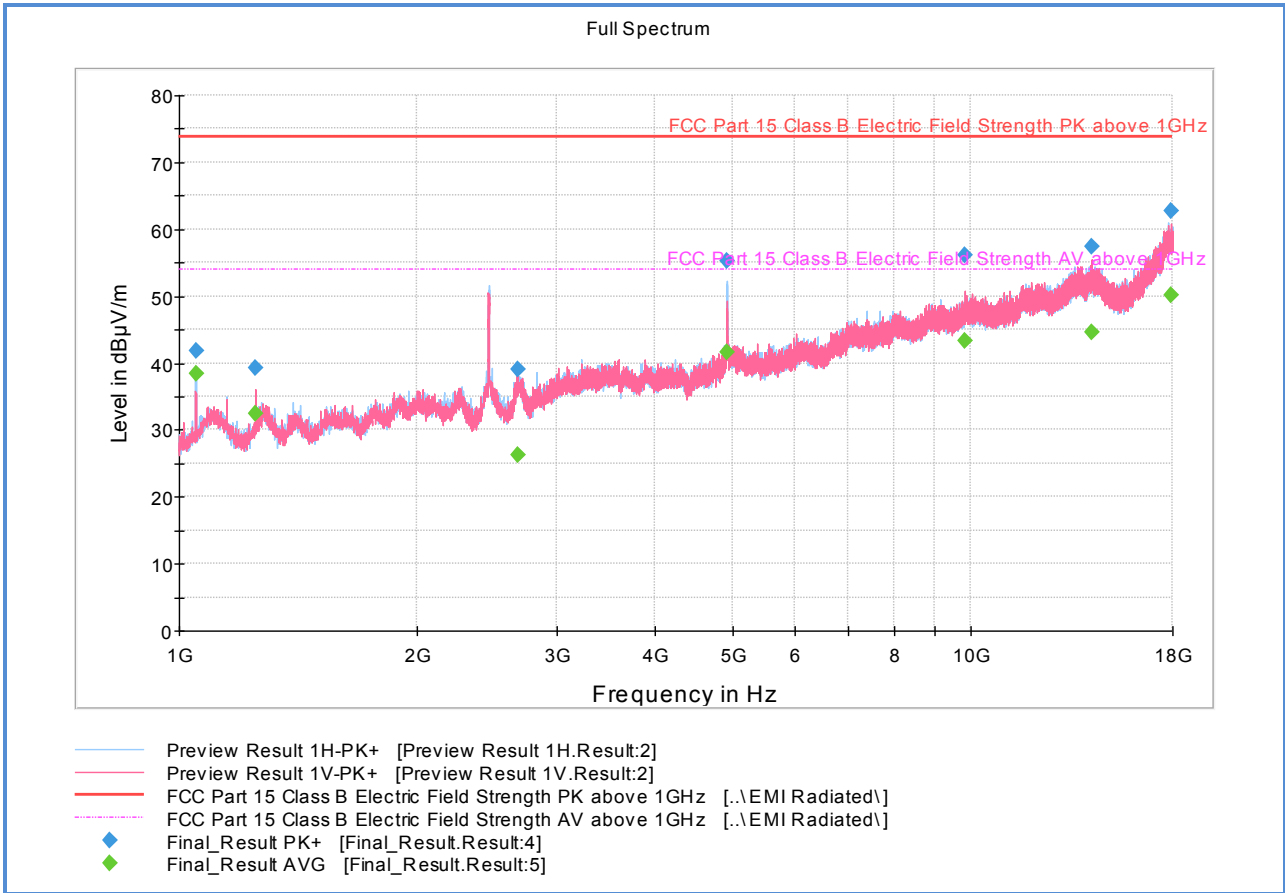
Average Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1050.066667	38.33	53.90	15.57	1000.0	1000.000	99.7	H	7.0	-4.0
1250.100000	33.13	53.90	20.77	1000.0	1000.000	204.2	V	269.0	-3.2
4824.066667	42.07	53.90	11.83	1000.0	1000.000	105.7	H	110.0	10.5
7227.700000	46.23	53.90	7.67	1000.0	1000.000	99.7	H	115.0	17.1
9648.100000	46.91	53.90	6.99	1000.0	1000.000	99.8	V	52.0	20.9
14207.933333	44.31	53.90	9.59	1000.0	1000.000	304.7	H	110.0	26.4
17895.033333	50.04	53.90	3.86	1000.0	1000.000	108.3	V	44.0	32.3

Test Notes: No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures. Emissions within the boundary of the notch filter will be ignored for this test.



2.7.14 Test Results Above 1GHz (Worst Case Configuration – 802.11g Ch 11)



Peak Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1049.900000	41.73	73.90	32.17	1000.0	1000.000	99.8	H	8.0	-4.0
1249.933333	39.16	73.90	34.74	1000.0	1000.000	381.2	V	280.0	-3.2
2679.933333	39.08	73.90	34.82	1000.0	1000.000	275.9	V	-22.0	2.2
4923.966667	55.34	73.90	18.56	1000.0	1000.000	324.8	H	-18.0	10.9
9836.966667	56.15	73.90	17.75	1000.0	1000.000	99.8	V	114.0	21.6
14256.666667	57.44	73.90	16.46	1000.0	1000.000	305.1	V	340.0	26.6
17931.033333	62.71	73.90	11.19	1000.0	1000.000	409.9	V	274.0	32.6

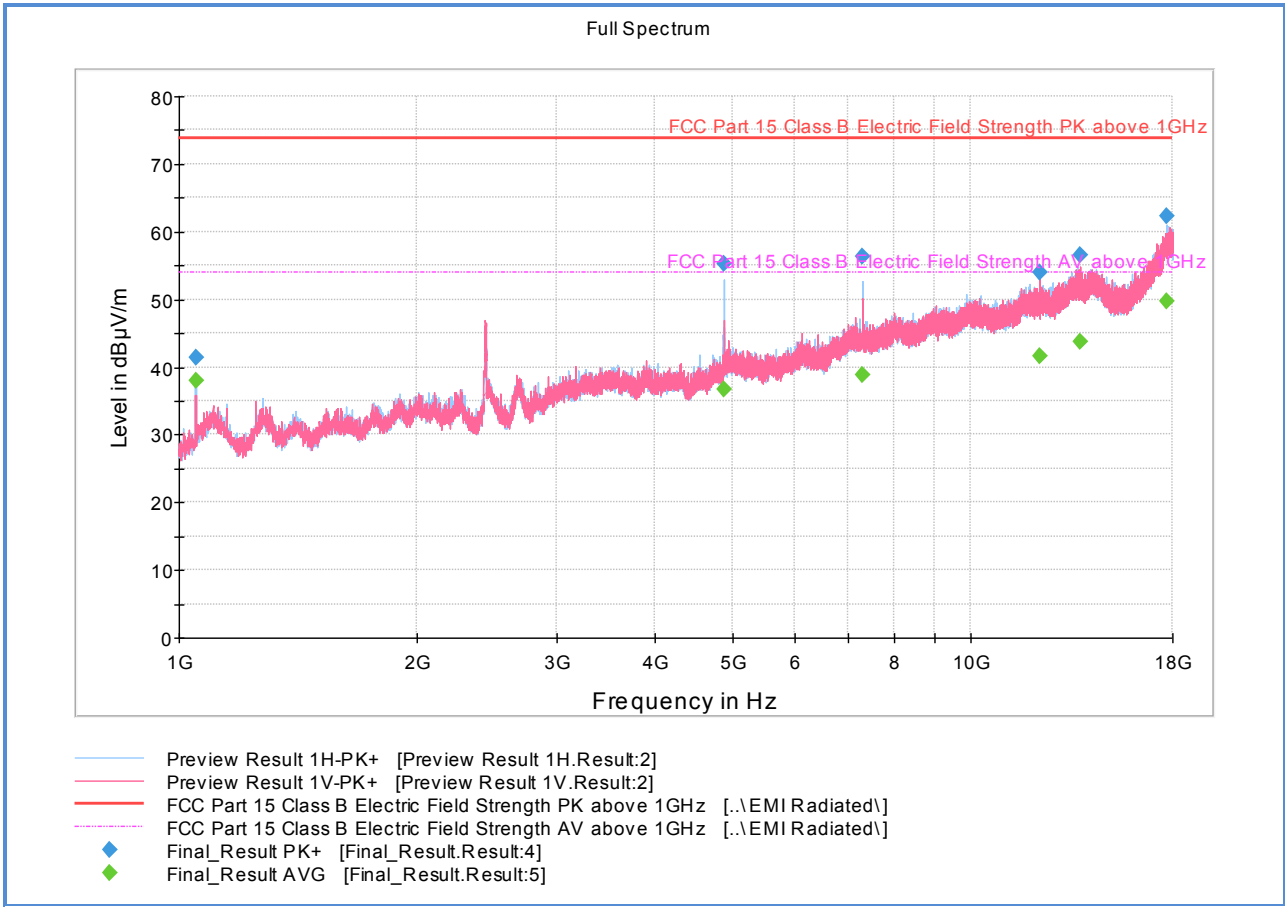
Average Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1049.900000	38.33	53.90	15.57	1000.0	1000.000	99.8	H	8.0	-4.0
1249.933333	32.44	53.90	21.46	1000.0	1000.000	381.2	V	280.0	-3.2
2679.933333	26.19	53.90	27.71	1000.0	1000.000	275.9	V	-22.0	2.2
4923.966667	41.61	53.90	12.29	1000.0	1000.000	324.8	H	-18.0	10.9
9836.966667	43.40	53.90	10.50	1000.0	1000.000	99.8	V	114.0	21.6
14256.666667	44.59	53.90	9.31	1000.0	1000.000	305.1	V	340.0	26.6
17931.033333	50.22	53.90	3.68	1000.0	1000.000	409.9	V	274.0	32.6

Test Notes: No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures. Emissions within the boundary of the notch filter will be ignored for this test.



2.7.15 Test Results Above 1GHz (Worst Case Configuration – 802.11n Ch 6)



Peak Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1050.066667	41.45	73.90	32.45	1000.0	1000.000	99.7	H	9.0	-4.0
4873.933333	55.25	73.90	18.65	1000.0	1000.000	99.8	H	86.0	10.8
7308.500000	56.27	73.90	17.63	1000.0	1000.000	99.9	H	113.0	17.3
12218.633333	54.01	73.90	19.89	1000.0	1000.000	410.1	V	90.0	23.3
13779.566667	56.58	73.90	17.32	1000.0	1000.000	410.1	V	237.0	25.8
17689.833333	62.39	73.90	11.51	1000.0	1000.000	225.1	H	274.0	31.3

Average Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1050.066667	38.06	53.90	15.84	1000.0	1000.000	99.7	H	9.0	-4.0
4873.933333	36.63	53.90	17.27	1000.0	1000.000	99.8	H	86.0	10.8
7308.500000	38.84	53.90	15.06	1000.0	1000.000	99.9	H	113.0	17.3
12218.633333	41.54	53.90	12.36	1000.0	1000.000	410.1	V	90.0	23.3
13779.566667	43.72	53.90	10.18	1000.0	1000.000	410.1	V	237.0	25.8
17689.833333	49.70	53.90	4.20	1000.0	1000.000	225.1	H	274.0	31.3

Test Notes: No significant emissions observed above 18GHz. Measurements above 18GHz were noise floor figures. Emissions within the boundary of the notch filter will be ignored for this test.



2.8 POWER SPECTRAL DENSITY

2.8.1 Specification Reference

Part 15 Subpart C §15.247(e) and RSS-247 5.2(2)

2.8.2 Standard Applicable

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

2.8.3 Equipment Under Test and Modification State

Serial No: TUV1 / Test Configuration A

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

July 17, 24, 2018/FC

2.8.5 Test Equipment Used

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

2.8.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.7 °C
Relative Humidity	45.8 %
ATM Pressure	99.9 kPa

2.8.7 Additional Observations

- This is a conducted test.
- Test methodology is according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10
- Rohde & Schwarz TS8997 Test System was used for this test.



2.8.8 Test Results Summary (Port 1)

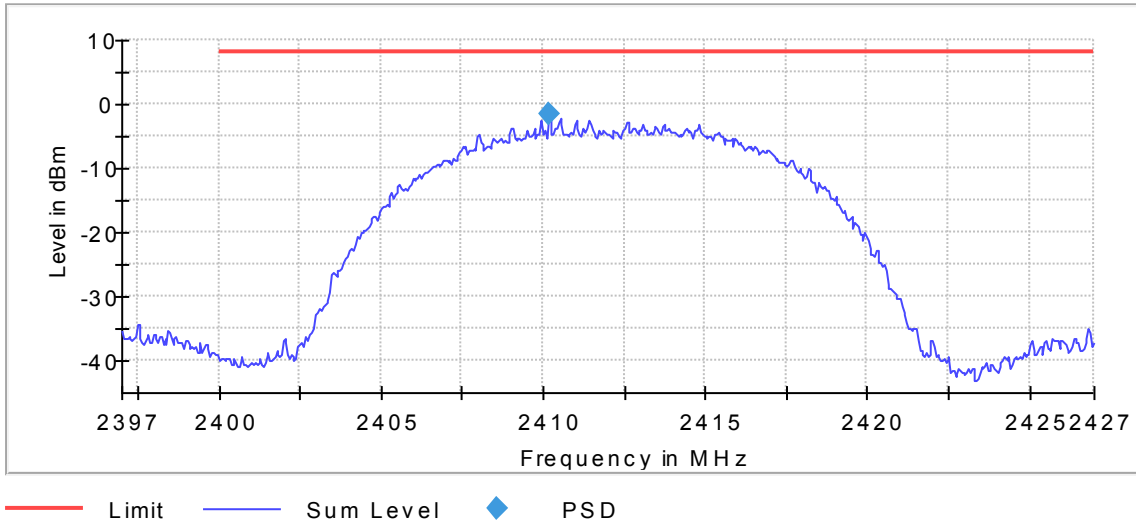
Mode	Channel	Marker Reading (dBm)/RBW used	PSD Limit (dBm)	Margin (dB)	Compliance
802.11b	1 (2412 MHz)	-1.67/100kHz	8	9.67	Complies
	6 (2437MHz)	1.85/100kHz	8	6.15	Complies
	11 (2462 MHz)	2.96/100kHz	8	5.04	Complies
802.11g	1 (2412 MHz)	-9.52/100kHz	8	17.52	Complies
	6 (2437MHz)	-8.24/100kHz	8	16.24	Complies
	11 (2462 MHz)	-8.04/100kHz	8	16.04	Complies
802.11n	1 (2412 MHz)	-10.56/100kHz	8	18.56	Complies
	6 (2437MHz)	-8.57/100kHz	8	16.57	Complies
	11 (2462 MHz)	-8.10/100kHz	8	-16.10	Complies

2.8.9 Test Results Summary (Port 2)

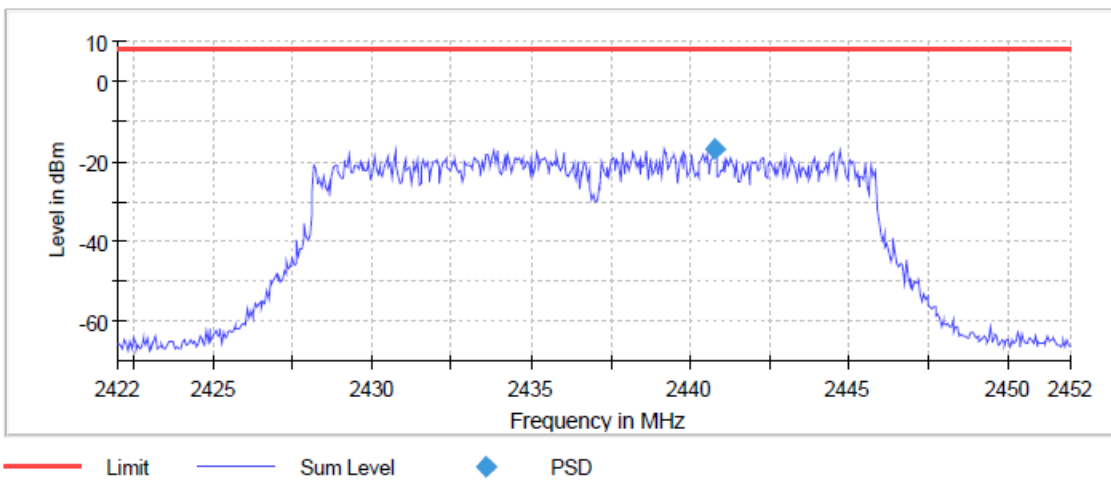
Mode	Channel	Marker Reading (dBm)/RBW used	PSD Limit (dBm)	Margin (dB)	Compliance
802.11b	1 (2412 MHz)	-1.32/100kHz	8	6.68	Complies
	6 (2437MHz)	7.65/100kHz	8	0.35	Complies
	11 (2462 MHz)	7.34/100kHz	8	0.66	Complies
802.11g	1 (2412 MHz)	-17.97/100kHz	8	25.97	Complies
	6 (2437MHz)	-16.60/100kHz	8	24.60	Complies
	11 (2462 MHz)	-17.11/100kHz	8	25.11	Complies
802.11n	1 (2412 MHz)	-13.39/100kHz	8	21.39	Complies
	6 (2437MHz)	-10.71/100kHz	8	18.71	Complies
	11 (2462 MHz)	-10.58/100kHz	8	18.58	Complies



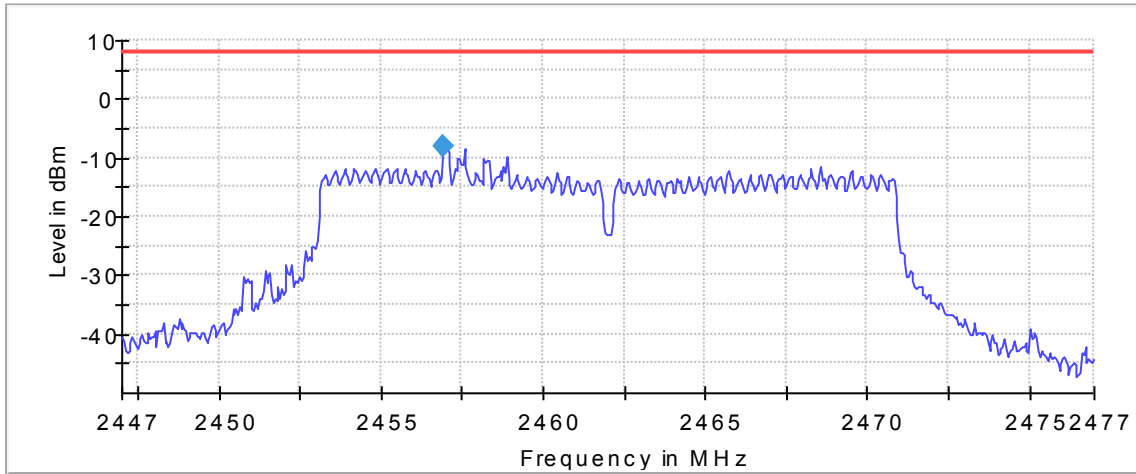
2.8.10 Sample Test Results Plots



802.11b Channel 1



802.11g Channel 6



802.11n Channel 11



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						
7662	P-Series Power Meter	N1911A	MY45100951	Agilent	06/15/18	06/15/19
7661	50MHz-18GHz Wideband Power Sensor	N1921A	MY45241383	Agilent	06/15/18	06/15/19
7611	Signal/Spectrum Analyzer	FSW26	102017	Rhode & Schwarz	05/09/18	05/09/19
7643	Signal/Spectrum Analyzer	FSV30	1321.3008K30/ 103166	Rhode & Schwarz	04/11/18	04/11/19
7655	Vector Signal Generator	SMBV100A	260734	Rhode & Schwarz	11/13/17	11/13/18
7654	Signal Generator	SMB 100A	175750	Rhode & Schwarz	11/07/17	11/07/18
7656	OSP with B157	OSP120	101310	Rhode & Schwarz	12/27/17	12/27/18
8825	20dB Attenuator	46-20-34	BK5773	Weinschel Corp.	Verified by 7643 and 7654	
8832	20dB Attenuator	34-20-34	BP4150	MCE/Weinschel	Verified by 7643 and 7654	
AC Conducted Emissions Test Setup						
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	07/13/18	07/13/19
7568	LISN	FCC-LISN-50-25-2-10	120305	Fischer Custom Comm.	02/08/18	02/08/19
7567	LISN	FCC-LISN-50-25-2-10	120304	Fischer Custom Comm.	12/14/17	12/14/18
8822	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	03/06/18	03/06/19
8824	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	03/06/18	03/06/19
Radiated Test Setup						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	11/20/17	11/20/19
1016	Pre-amplifier	PAM-0202	187	PAM	02/06/18	02/06/19
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	06/16/18	06/16/20
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	07/13/18	07/13/19
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 7643 and 7654	
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	03/06/18	03/06/19
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	Verified by 7643 and 7654	
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	Verified by 7643 and 7654	
Miscellaneous						
6708	Multimeter	34401A	US36086974	Hewlett Packard	07/18/18	07/18/19
7554	Barometer/Temperature/Humidity Transmitter	iBTHX-W	0400706	Omega	05/25/18	05/25/19



3.2 MEASUREMENT UNCERTAINTY

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

3.2.1 Radiated Measurements (Below 1GHz)

Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.75	0.44	0.19
4	Antenna	Rectangular	3.52	1.44	2.07
5	Site	Rectangular	1.00	0.58	0.33
6	EUT Setup	Rectangular	0.45	0.26	0.07
Combined Uncertainty (u_c):					1.66
Coverage Factor (k):					2
Expanded Uncertainty:					3.31

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	3.00	1.22	1.50
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					1.49
Coverage Factor (k):					2
Expanded Uncertainty:					2.99

3.2.3 Conducted Antenna Port Measurements

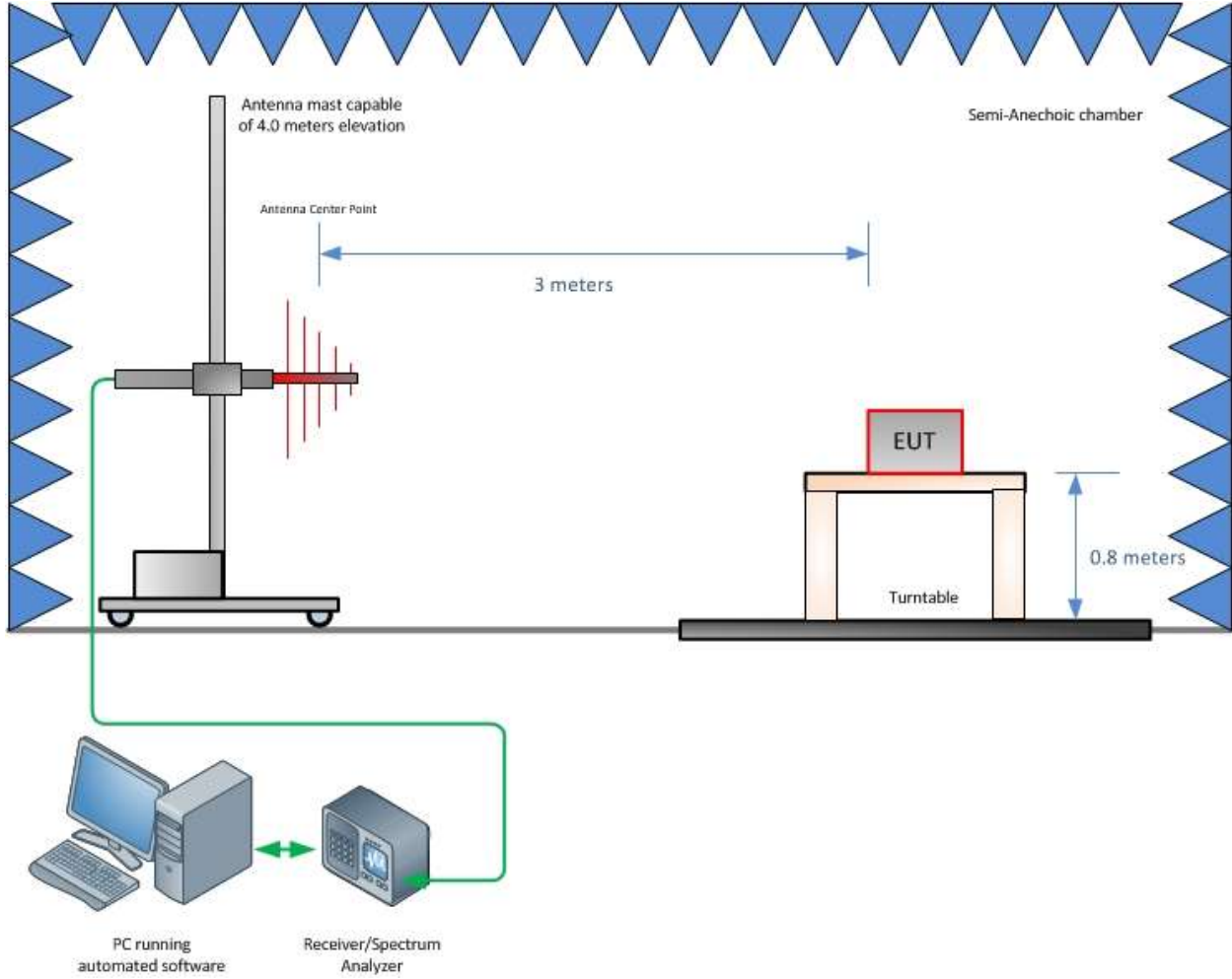
Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.08	0.05	0.00
2	Cables	Rectangular	0.30	0.17	0.03
3	EUT Setup	Rectangular	0.50	0.29	0.08
Combined Uncertainty (u_c):					0.34
Coverage Factor (k):					1.96
Expanded Uncertainty:					0.67



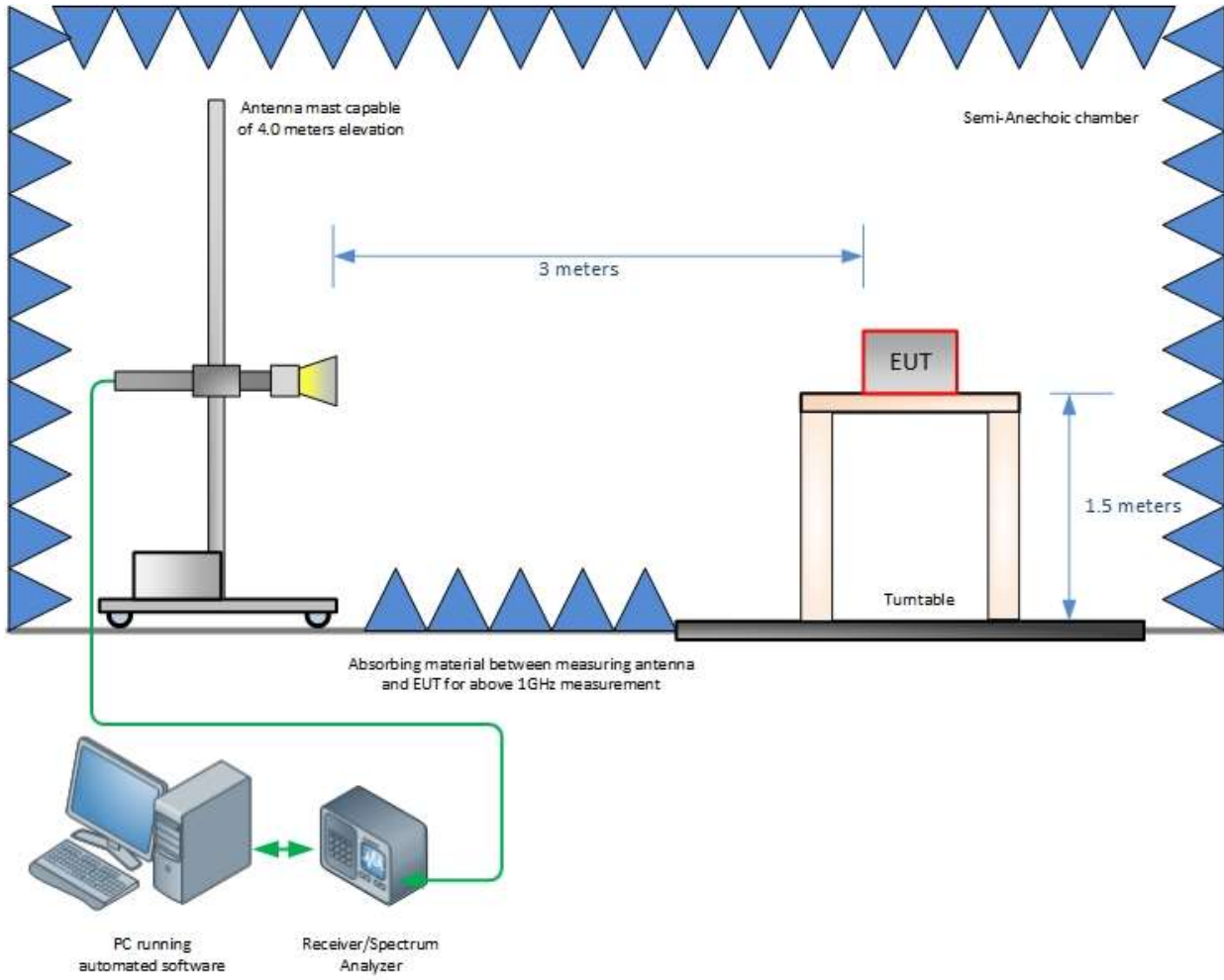
SECTION 4

DIAGRAM OF TEST SETUP

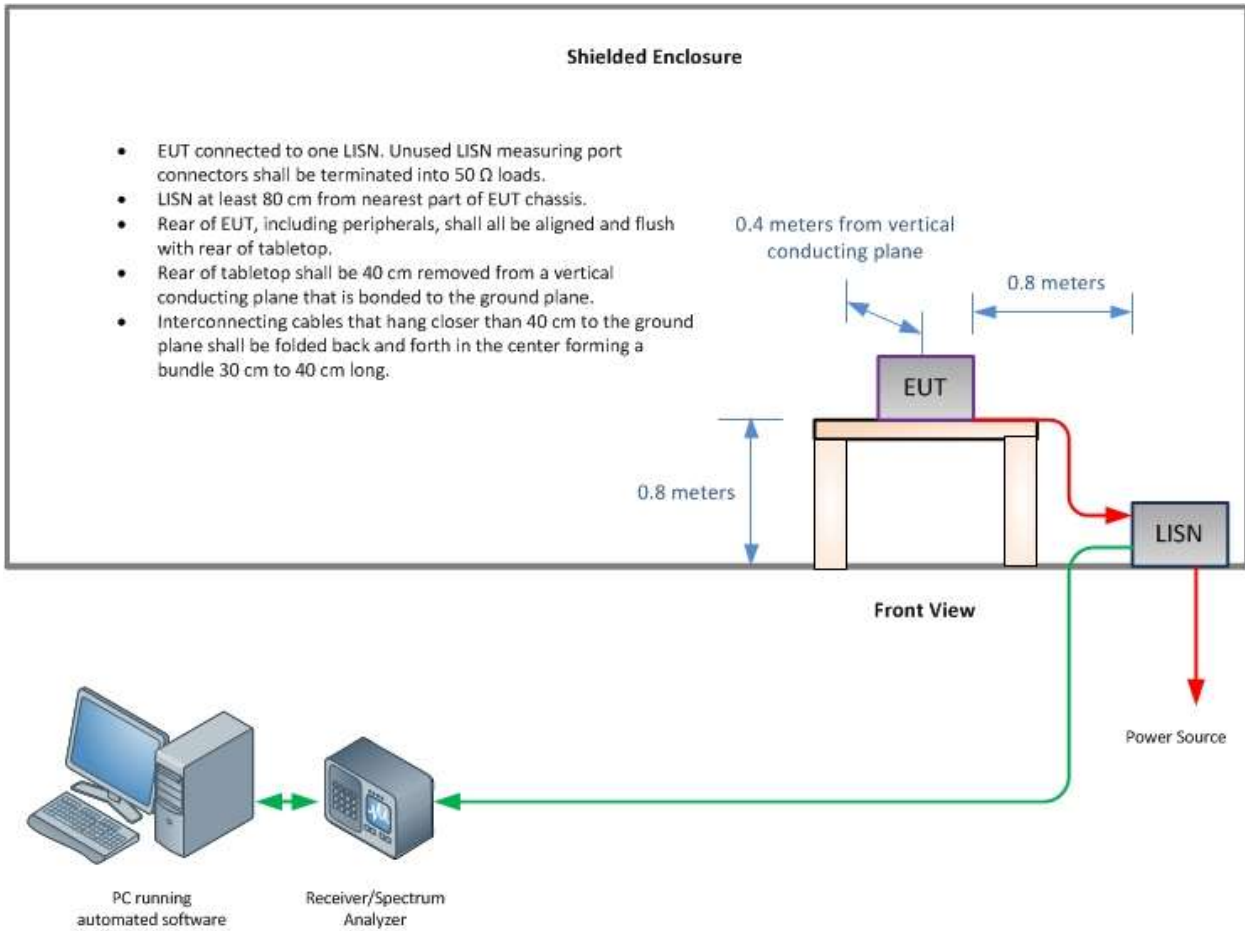
4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)





SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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