FCC TEST REPORT

Product	:	Mobile Phone
Trade mark	:	MI
Model/Type reference	:	2016102
Report Number	:	1610280464RFC-3
Date of Issue	:	Dec. 08, 2016
FCC ID	:	2AFZZ-RT6102
Test Standards	:	FCC 47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

Xiaomi Communications Co., Ltd.
The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Tested by: Kevin Liang — Senior Engineer

Reviewed by: Jim Long — Senior Supervisor

Approved by: Billy Li — Technical Director

Date: Dec. 08, 2016

UnionTrust Laboratories * Certified *

Version

Version No.	Date	Description
V1.0	Dec. 08, 2016	Original

Content

1 General Information

1.1 Client Information

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.2 General Description of EUT

Product Name:	Mobile Phone	
Model No.(EUT):	2016102	
Add. Model No.:	N/A	
Trade Mark:	MI	
EUT Supports Radios application:	GSM850/900/1800/1900 WCDMA Band I/Band II/Band V/Band VIII LTE FDD Band 1 /Band 3 /Band 4 /Band 5 /Band 7 /Band 8 /Band 20 LTE TDD Band 38 /Band 40 Wlan 2400MHz-2483.5MHz 802.11b/g/n(HT20&HT40) Wlan 5150MHz-5350MHz, 5470MHz-5725MHz, 5725MHz-5850MHz only support 802.11a Bluetooth V3.0+EDR&Bluetooth V4.0 BLE GPS, Glonass	
Power Supply:	AC adapter	Model: MDY-08-EF Input: 100-240V~50/60Hz 0.35A MAX Output: DC 5.0V ⎓ 2000mA
	Battery	Model: BN43 Brand: MI Rated Voltage: 3.85Vdc Battery Capacity: 4000mAh(Li-on Rechargeable)
USB Micro-B Plug cable:	117cm(Shielded without ferrite)	
Sample Received Date:	Sep. 12, 2016	
Sample Tested Date:	Sep. 22, 2016 ~ Dec. 08, 2016	

1.3 Product Specification subjective to this standard

Operation Frequency:	2400MHz-2483.5MHz
Channel Numbers:	802.11b/g/n(HT20): 11 Channels 802.11n(HT40): 7 Channels
Channel Separation:	Channels with 5MHz step
Transmit Data Rate:	802.11b: 1M/ 2M/ 5.5M/ 11M bps 802.11g: 6M/ 9M/ 12M/ 18M/ 24M/ 36M/ 48M/ 54M bps 802.11n: up to MCS7
Type of Modulation:	802.11b: DSSS(CCK,DQPSK,DBPSK) 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Test Software of EUT:	Provided by the manufacturer
Sample Type:	Portable device
Antenna Type	LDS Antenna

Antenna Gain:	0.96 dBi
Normal Test Voltage:	3.85Vdc
Software Version:	MIUI8
Hardware Version:	P3

Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz	N/A	

Operation Frequency each of channel(802.11n HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
3	2422MHz	6	2437MHz	9	2452MHz
4	2427MHz	7	2442MHz	N/A	
5	2432MHz	8	2447MHz		

1.4 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	Lenovo	E450	SL10G10780	UnionTrust

2) Cable

Cable No.	Description	Connector Type	Cable Type/Length	Supplied by
1	Antenna Cable	SMA	30cm	UnionTrust

1.5 Test Location

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888 Fax: +86 (0) 755 2823 0886

Tests were sub-contracted. (FCC 47 CFR Part 15 Subpart C Section 15.205/15.207/15.209)

Compliance Certification Services (Shenzhen) Inc.

No.10-1 Mingkeda Logistics Park, No.18 Huanguan South RD. Guan lan Town, Baoan Distr, Shenzhen, Guangdong, China.

Tel: 86 0755 28055000 Fax: 86 0755 29055221

1.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

Compliance Certification Services (Shenzhen) Inc.

FCC Registration Number is **441872**.

1.7 Deviation from Standards

None.

1.8 Abnormalities from Standard Conditions

None.

1.9 Other Information Requested by the Customer

None.

1.10 Measurement Uncertainty (95% confidence levels, k=1.96)

No.	Item	Measurement Uncertainty
1	Radio Frequency	±6.3 x 10-8
2	RF power, conducted	±0.52 dB
3	Spurious emissions, radiated (Below 1GHz)	±5.3 dB
	Spurious emissions, radiated (Above 1GHz)	±5.1 dB
4	Conduction emission (9KHz~150KHz)	±3.8 dB
	Conduction emission (150KHz~30MHz)	±3.4 dB
5	Temperature	±0.64 °C
6	Humidity	±2.8 %
7	Supply voltages	±0.49 %

2 Test Summary

Tests for radiated and conducted emissions were performed. All measurements were performed according to the 2013 version of ANSI C63.10

Test Item	Test Requirement	Test method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS*
Conducted Peak Output Power	FCC 47 CFR Part 15 Subpart C Section 15.247 (b)(3)	KDB 558074 D01 v03r05 Section 9.1.2	PASS
6dB Bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(2)	KDB 558074 D01 v03r05 Section 8.1	PASS
Power Spectral Density	FCC 47 CFR Part 15 Subpart C Section 15.247 (e)	KDB 558074 D01 v03r05 Section 10.2	PASS
Conducted Out of Band Emission	FCC 47 CFR Part 15 Subpart C Section 15.247(d)	KDB 558074 D01 v03r05 Section 11	PASS
Radiated Spurious Emissions	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	KDB 558074 D01 v03r05 Section 12.1	PASS*
Band Edge Measurements (Radiated)	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	KDB 558074 D01 v03r05 Section 12.1	PASS*

Remark:
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.
"*": In this whole report "*" means tests were sub-contracted Item.

3 Equipment List

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Due date (mm-dd-yyyy)**	**Cal. Interval**
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	02-20-2017	1 Year
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Bilog Antenna	SCHAFFNER	CBL6143	5063	02-21-2017	1 Year
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02-20-2017	1 Year
Loop Antenna	COM-POWER	AL-130	121044	02-20-2017	1 Year
High Noise Amplifier	Agilent	8449B	3008A01838	02-21-2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9120	D286	02-21-2017	1 Year
Temp. / Humidity Meter	Anymetre	JR913	N/A	02-21-2017	N.C.R
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAO	LZ-RF / CCS-SZ-3A2			

Conducted Emission test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Due date (mm-dd-yyyy)**	**Cal. Interval**
EMI Test Receiver	R&S	ESCI	100783	02-21-2017	1 Year
L.I.S.N	R&S	ENV216	101543-WX	02-21-2017	N.C.R

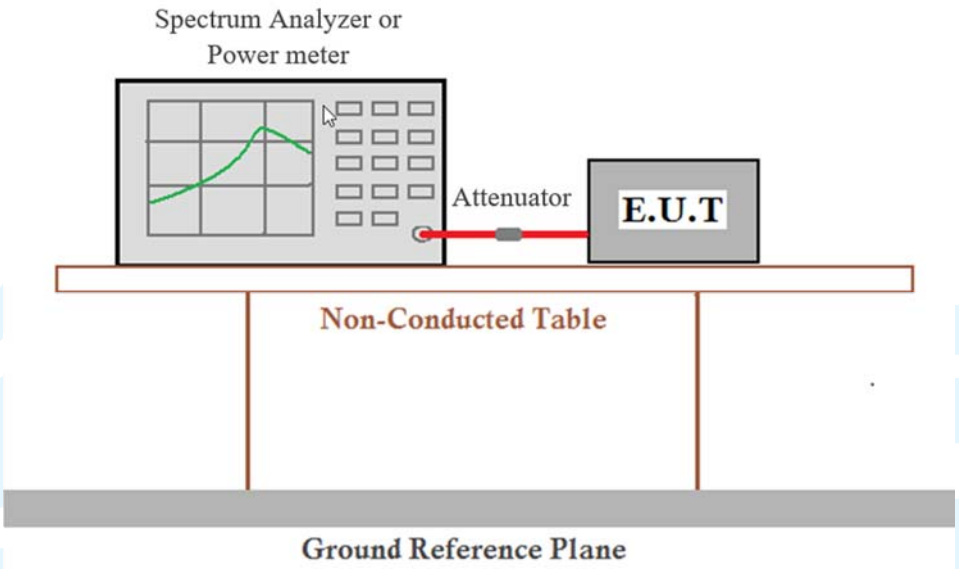
RF test system/ Conducted RF test						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	01-27-2016	01-26-2017
☒	Receiver	R&S	ESR7	1316.3003K07-101181-K3	02-23-2016	02-22-2017
☐	Receiver	R&S	ESIB26	100114	08-06-2015	08-05-2017
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	01-09-2016	01-08-2017
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	12-16-2015	12-15-2017
☐	EXG-B RF Analog Signal Generator	KEYSIGHT	N5171B	MY53051777	01-09-2016	01-08-2017
☐	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	01-08-2016	01-07-2017
☐	4ch. Simultaneous Sampling 14 Bits 2MS/s	KEYSIGHT	U2531A	TW55193502	11-09-2015	11-08-2017
☐	Communication Tester	R&S	CMU200	114713	12-07-2015	12-06-2017
☐	Band rejection filter (5150MHz~5880MHz)	micro-tronics	BRM50716	G1868	06-15-2016	06-14-2017

☐	Band rejection filter (2400MHz~2500MHz)	micro-tronics	BRM50702	G248	06-21-2016	06-20-2017
☐	DC Source	KIKUSUI	PWR400L	LK003024	09-21-2016	09-20-2017
☐	Temp & Humidity chamber	Ispec	GL(U)04K A(W)	1692H201P3	09-21-2016	09-20-2017

4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

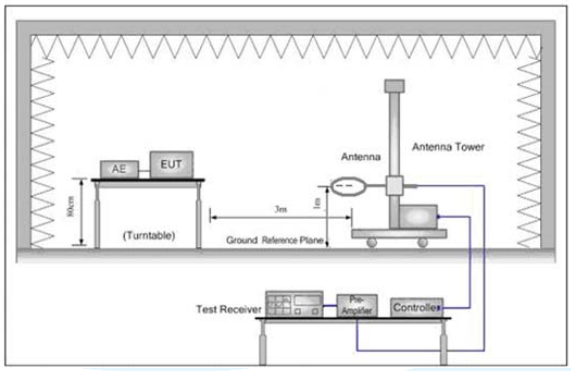


Figure 1. Below 30MHz

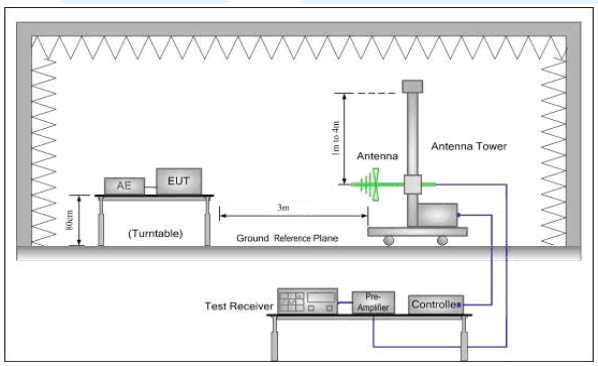


Figure 2. 30MHz to 1GHz

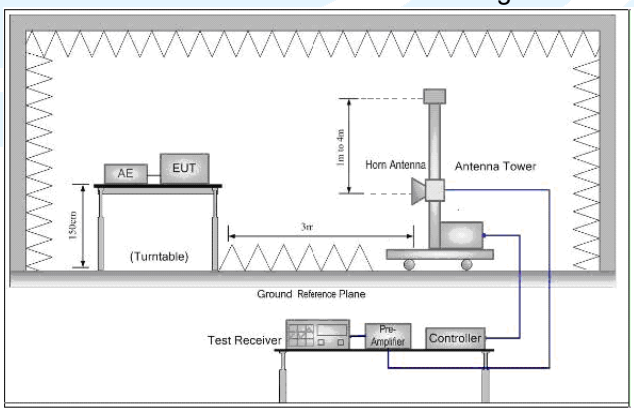
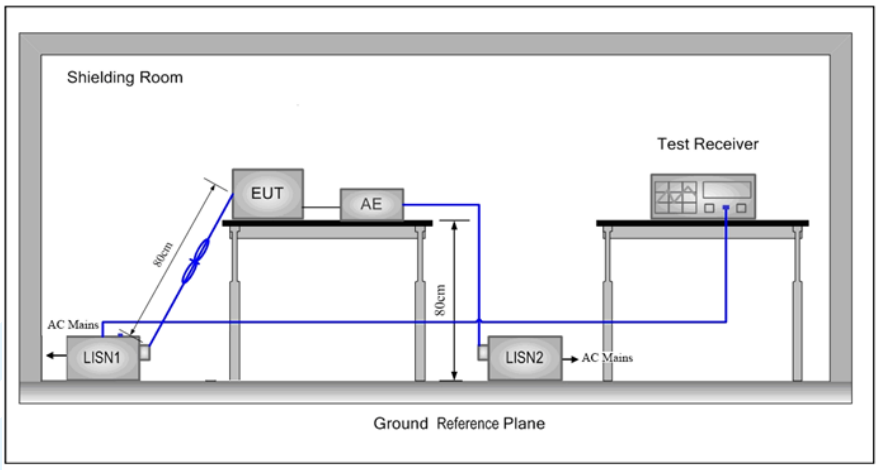


Figure 3. Above 1GHz

4.1.3 For Conducted Emissions test setup

Conducted Emissions setup



4.2 Test Environment

Operating Environment:	
Temperature:	26.0 °C
Humidity:	60 % RH
Atmospheric Pressure:	100.42 Kpa

4.3 System Test Configuration

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85Vdc rechargeable Li-on battery. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in (see table below) orientation.

Frequency Band(GHz)	Mode	Antenna Port	Worst-case Orientation
Below 1GHz	1TX	Chain 0	X-Portrait
Above 1GHz	1TX	Chain 0	X-Portrait

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.4 Test Condition

4.4.1 Test channel

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel 11
		2412MHz	2437MHz	2462MHz
802.11n(HT40)	2422MHz ~2452 MHz	Channel 3	Channel 6	Channel 9
		2422MHz	2437MHz	2452MHz
Transmitting mode: Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.				

4.4.2 Test mode

Pre-scan under all rate at lowest or middle or highest channel

Channel/ Frequency (MHz)	Maximum Conducted Average Power (dBm)							
Chain 0_802.11b								
Data Rate (Mbps)	1		2		5.5		11	
11(2462)	**16.24**		16.21		16.22		16.18	
Chain 0_802.11g								
Data Rate (Mbps)	6	9	12	18	24	36	48	54
6(2437)	**14.53**	14.51	14.47	14.43	14.42	14.45	14.49	14.42
Chain 0_802.11n(HT20)								
Data Rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
6(2437)	**12.77**	12.74	12.69	12.71	12.67	12.74	12.73	12.65
Chain 0_802.11n(HT40)								
Data Rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3(2422)	**11.92**	11.87	11.84	11.79	11.81	11.76	11.76	11.82

So, the worst-case data rates see table below:

Mode	Worst-case data rates
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0(6.5 Mbps)
802.11n HT20	MCS0(13.5 Mbps)

4.4.3 Duty Cycle

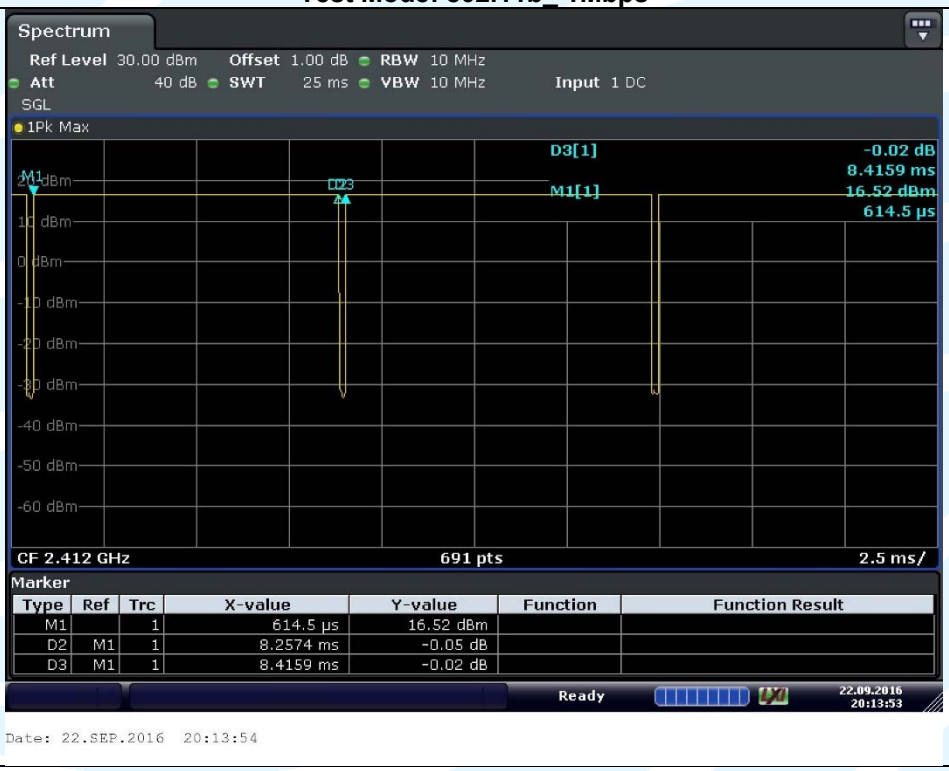
Results:

Mode	Data rates (Mbps)	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW(kHz)
802.11b	1	8.2574	8.4159	0.98	98.12	0.00	0.01
802.11g	6	1.36377	1.55942	0.87	87.45	0.58	0.73
802.11n(HT20)	6.5	1.27681	1.47971	0.86	86.29	0.64	0.78
802.11n(HT40)	13.5	0.63768	0.83623	0.76	76.26	1.18	1.57

Remark:
1) Duty cycle= On Time/ Period
2) Duty Cycle factor = 10 * log(1/ Duty cycle)

The test plot as follows:

Test Mode: 802.11b_ 1Mbps



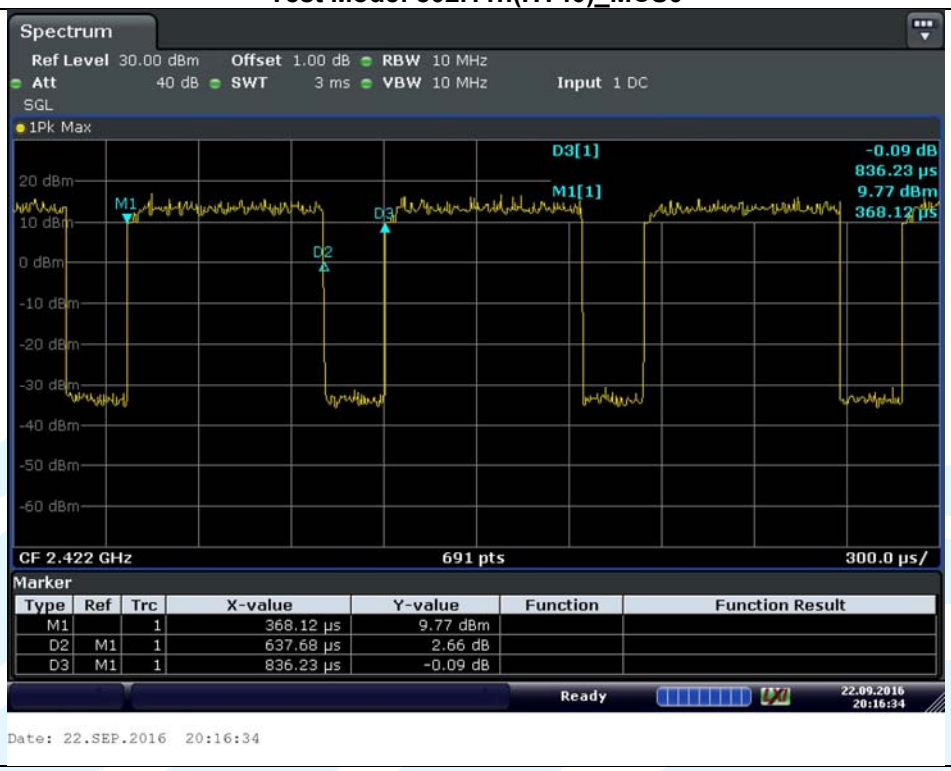
Test Mode: 802.11g_6Mbps

Date: 22.SEP.2016 20:14:38

Test Mode: 802.11n(HT20)_MCS0

Date: 22.SEP.2016 20:15:20

Test Mode: 802.11n(HT40)_MCS0



5 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicesed Wireless Devices
4	KDB 558074 D01 DTS Meas Guidance v03r05	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

5.1 Antenna Requirement

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	
Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is 0.96 dBi.	

5.2 Conducted Peak Output Power

Test Requirement: FCC 47 CFR Part 15 Subpart C Section15.247 (b)(3)

Test Method: KDB 558074 D01 v03r05 Section 9.1.2 & Section 9.2.3

Limit: For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt.

Test Procedure:
1. The output from the transmitter was connected to an attenuator and then to the input of the the power meter.
2. Measure out each test modes' peak or average output power, record the power level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.1.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Data:

Maximum Conducted Power:

Mode	Channel/ Frequency (MHz)	Data Rate (Mbps)	Maximum Conducted Power (dBm)		
			Peak Power	Average Power	
				Measured Power	Power with Duty Factor
802.11b	1(2412)	1	18.46	15.76	15.76
	6(2437)		18.94	16.23	16.23
	11(2462)		18.98	16.24	16.24
802.11g	1(2412)	6	22.11	13.35	13.93
	6(2437)		**22.45**	13.95	14.53
	11(2462)		22.43	13.86	14.44
802.11n (HT20)	1(2412)	MCS0	21.07	11.42	12.06
	6(2437)		21.83	12.13	12.77
	11(2462)		21.76	12.03	12.67
802.11n (HT40)	3(2422)	MCS0	21.74	10.74	11.92
	6(2437)		21.37	10.49	11.67
	9(2452)		21.33	10.23	11.41

Remark:
1. All the data attached was use the worst case data rate.
2. Power with Duty Factor = Measured Power + Duty Cycle Factor

5.3 6dB Bandwidth

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(2)

Test Method: KDB 558074 D01 v03r05 Section 8.1

Limit: For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the spectrum analyzer.

Use the following spectrum analyzer settings:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 x RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.1.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

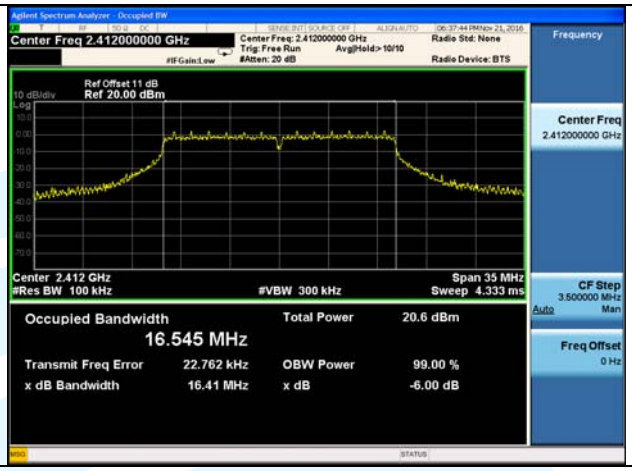
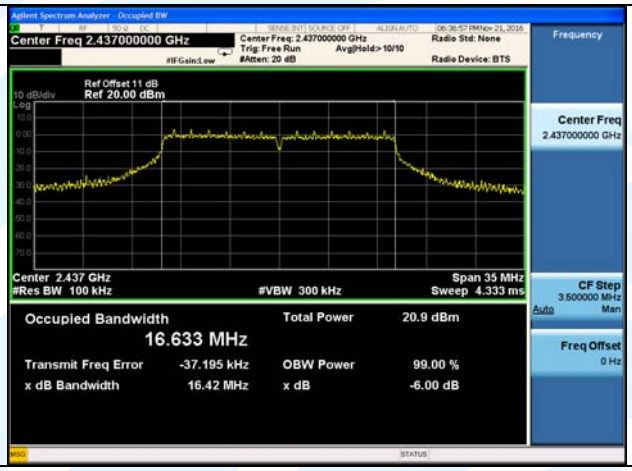
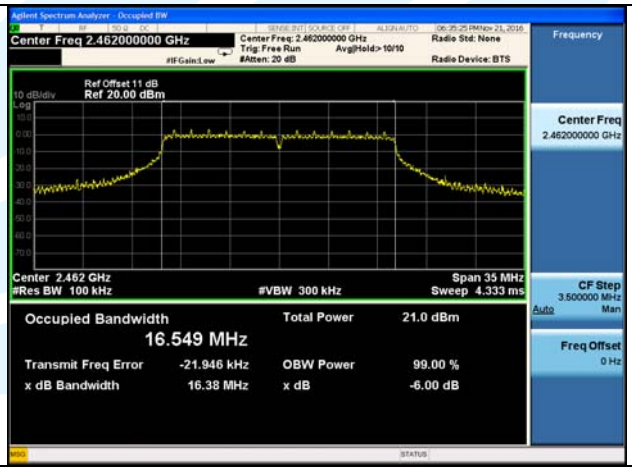
Test Results: Pass

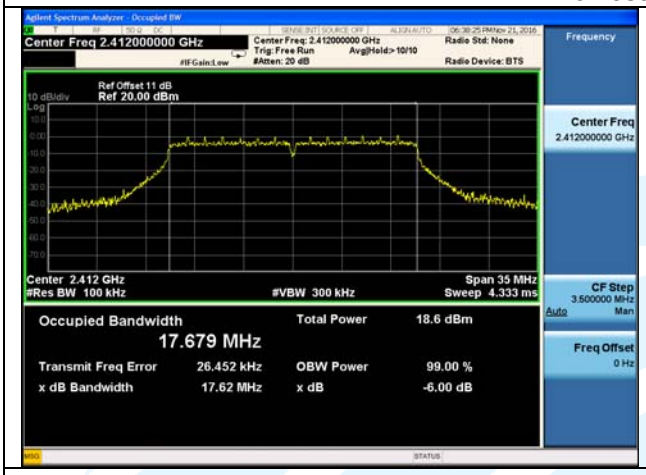
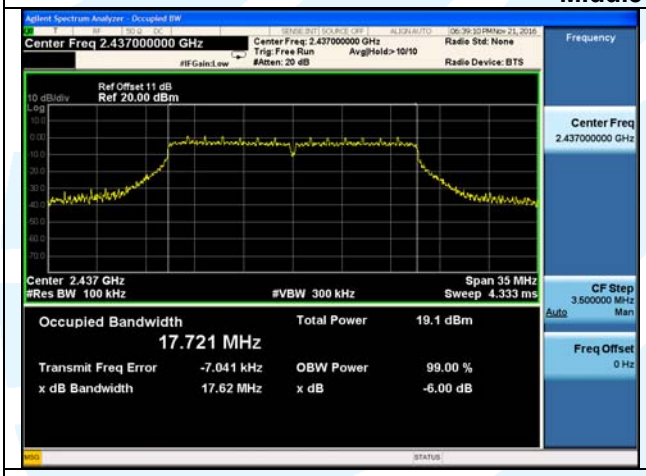
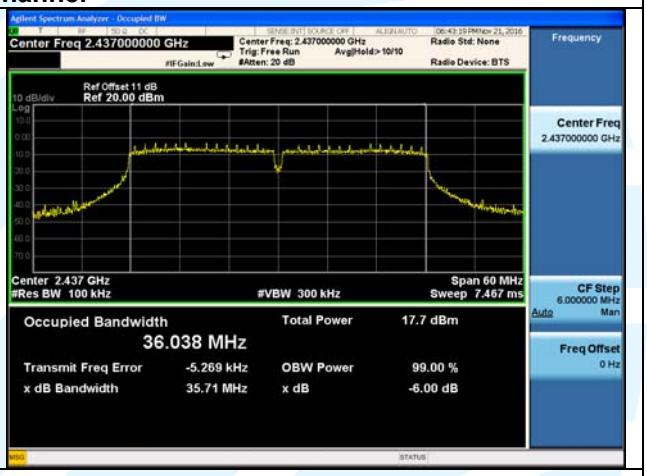
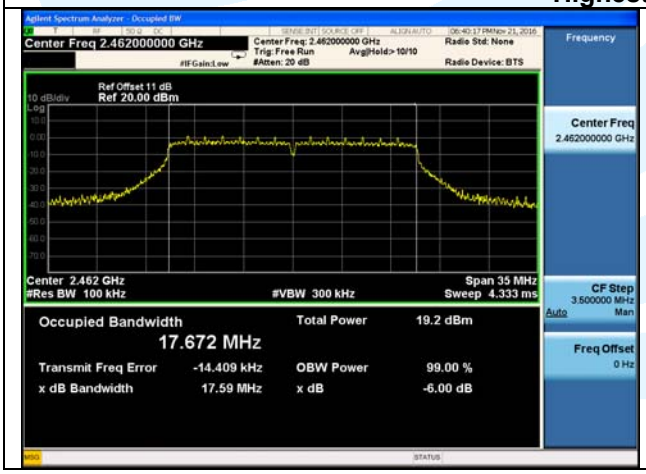
Test Data:

Occupied Bandwidth:

Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limit	Result (Pass / Fail)
802.11b	1	2412	8.071	13.123	> 500 kHz	Pass
	6	2437	8.079	13.182	> 500 kHz	Pass
	11	2462	8.559	13.148	> 500 kHz	Pass
802.11g	1	2412	16.41	16.545	> 500 kHz	Pass
	6	2437	16.42	16.633	> 500 kHz	Pass
	11	2462	16.38	16.549	> 500 kHz	Pass
802.11n (HT20)	1	2412	17.62	17.679	> 500 kHz	Pass
	6	2437	17.62	17.721	> 500 kHz	Pass
	11	2462	17.59	17.672	> 500 kHz	Pass
802.11n (HT40)	3	2422	35.14	35.823	> 500 kHz	Pass
	6	2437	35.71	36.038	> 500 kHz	Pass
	9	2452	35.14	35.910	> 500 kHz	Pass
Remark: All the data attached was use the worst case data rate.						

The test plot as follows:

802.11b	802.11g
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

802.11n(HT20)	802.11n(HT20)
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.4 Power Spectral Density

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.247 (e)

Test Method: KDB 558074 D01 v03r05 Section 10.2

Limit: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the spectrum analyzer.

Use the following spectrum analyzer settings:

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ⩾ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.1.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

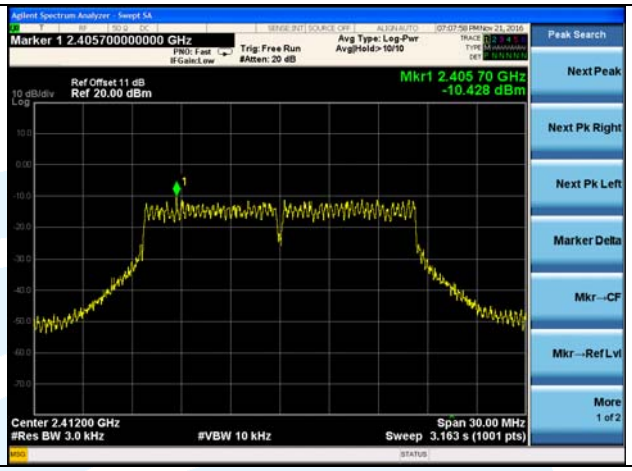
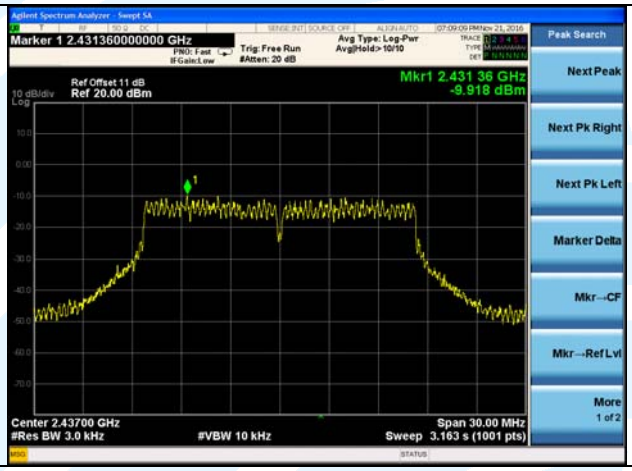
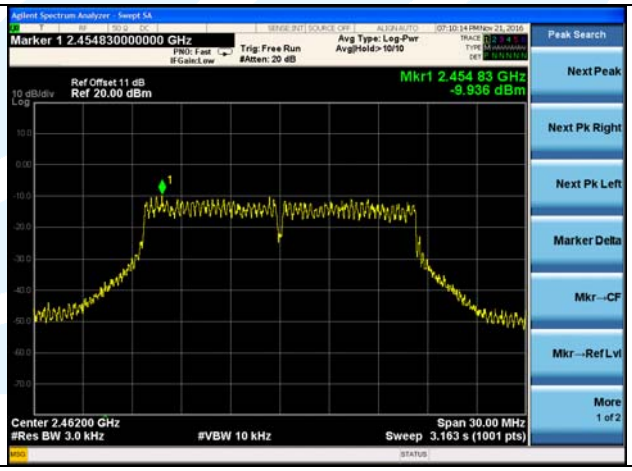
Test Results: Pass

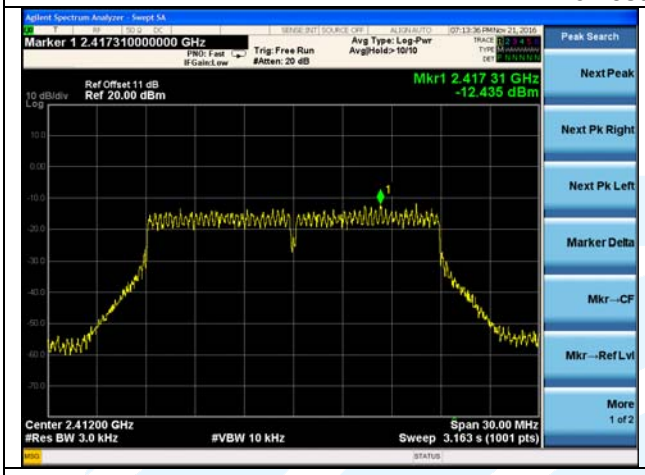
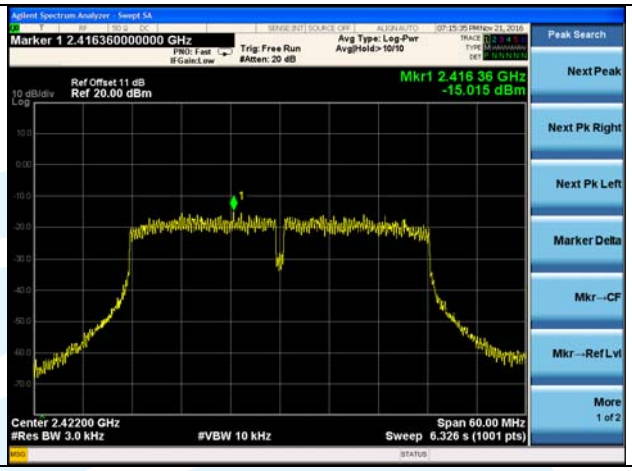
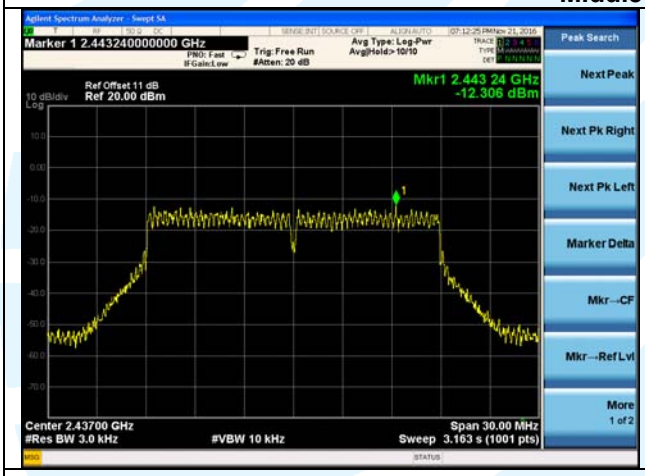
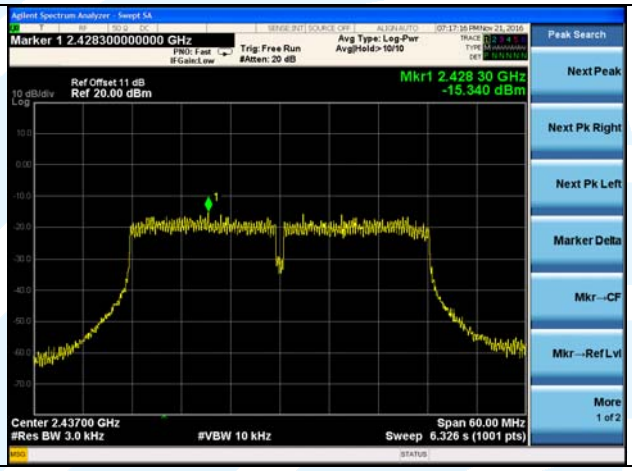
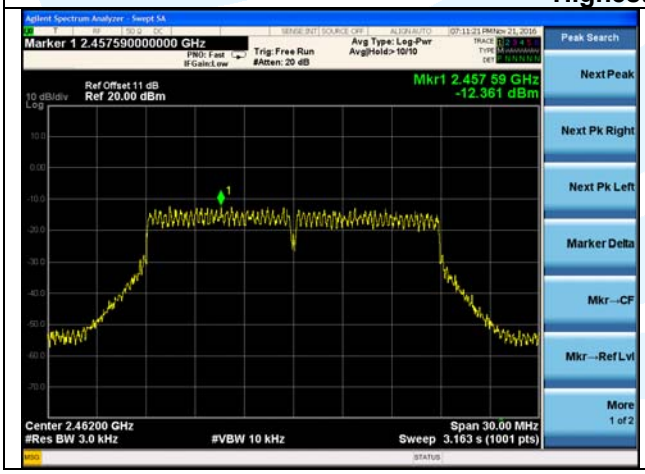
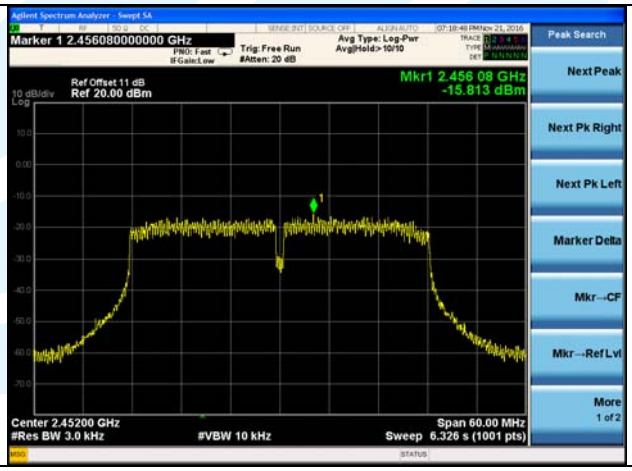
Test Data:

Mode	Channel	Frequency (MHz)	PSD (dBm)	PSD Limit (dBm)	Result (Pass / Fail)
802.11b	1	2412	-6.376	8	Pass
	6	2437	-6.759	8	Pass
	11	2462	-5.295	8	Pass
802.11g	1	2412	-10.428	8	Pass
	6	2437	-9.918	8	Pass
	11	2462	-9.936	8	Pass
802.11n (HT20)	1	2412	-12.435	8	Pass
	6	2437	-12.306	8	Pass
	11	2462	-12.361	8	Pass
802.11n (HT40)	3	2422	-15.015	8	Pass
	6	2437	-15.340	8	Pass
	9	2452	-15.813	8	Pass

Remark:
All the data attached was use the worst case data rate.

The test plot as follows:

802.11b	802.11g
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

802.11n(HT20)	802.11 n(HT40)
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.5 Conducted Out of Band Emission

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.247(d)

Test Method: KDB 558074 D01 v03r05 Section 11

Limit: In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the spectrum analyzer.

Use the following spectrum analyzer settings:

Step 1:Measurement Procedure REF

a) Set instrument center frequency to DTS channel center frequency.
b) Set the span to ≥ 1.5 times the DTS bandwidth.
c) Set the RBW = 100 kHz.
d) Set the VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum PSD level.
j) Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Step 2:Measurement Procedure OOBE

a) Set RBW = 100 kHz.
b) Set VBW ≥ 300 kHz.
c) Detector = peak.
d) Sweep = auto couple.
e) Trace Mode = max hold.
f) Allow trace to fully stabilize.
g) Use the peak marker function to determine the maximum amplitude level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

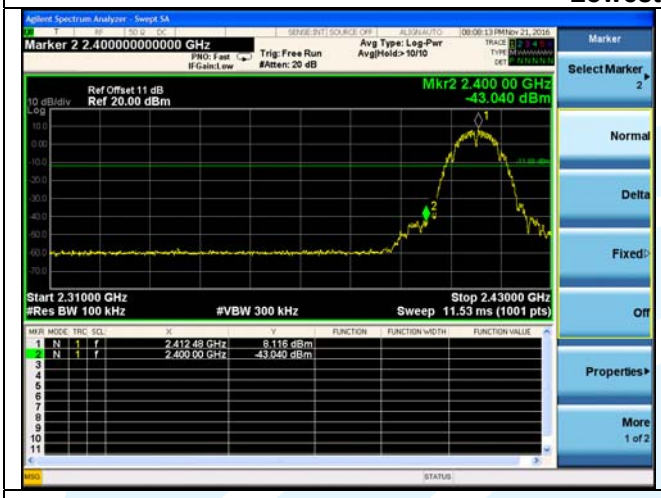
Test Setup: Refer to section 4.1.1 for details.

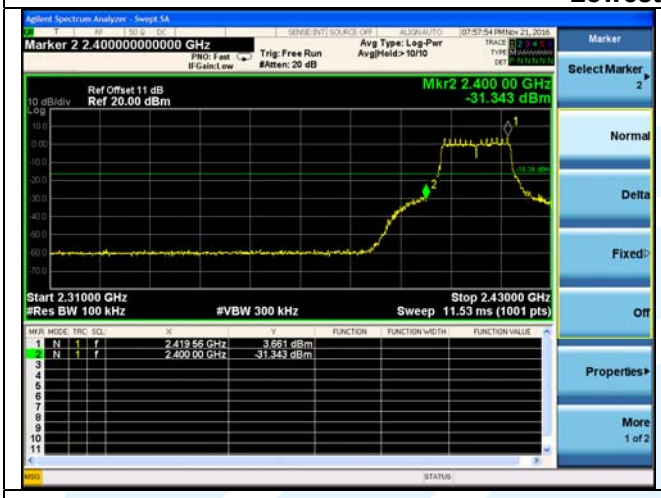
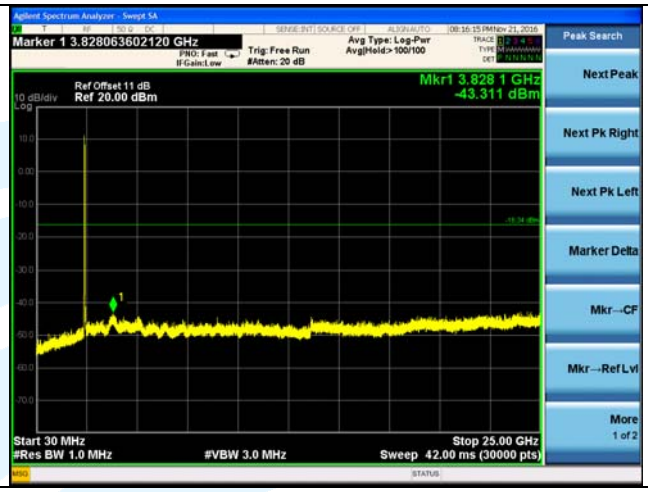
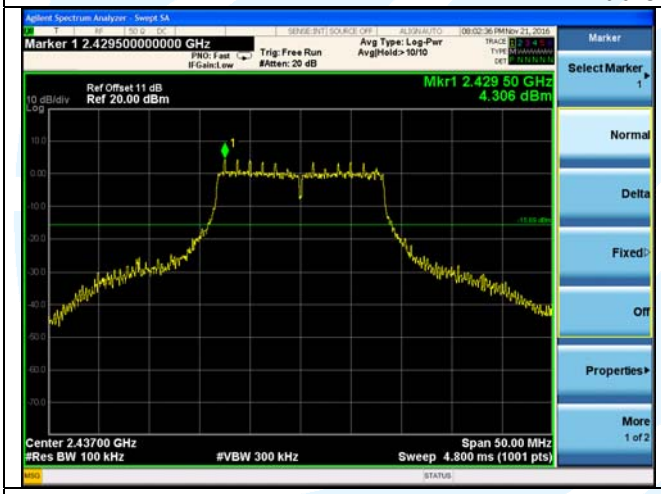
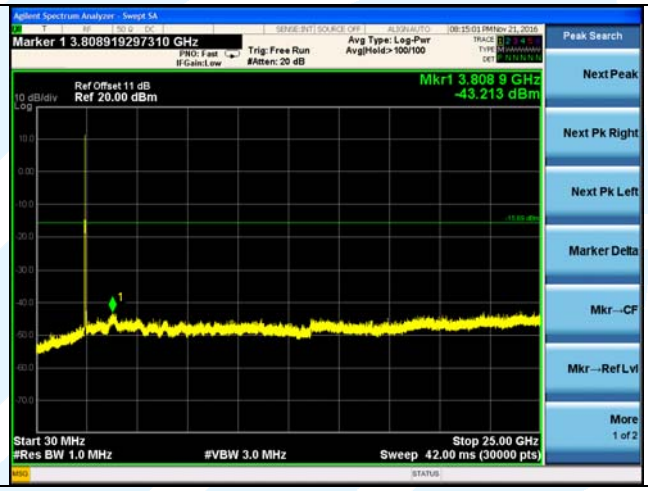
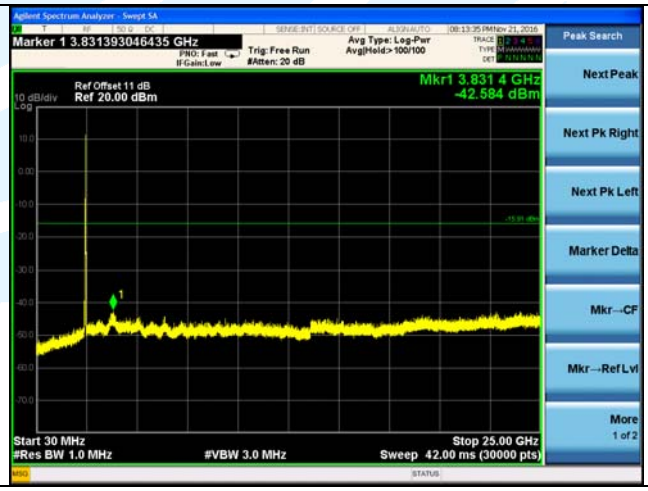
Instruments Used: Refer to section 3 for details

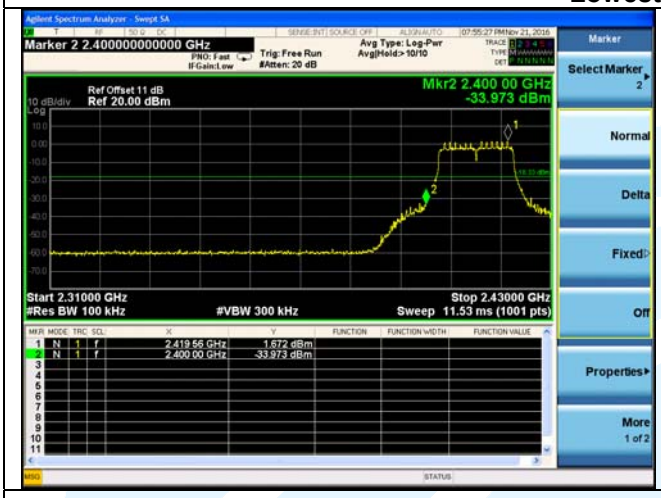
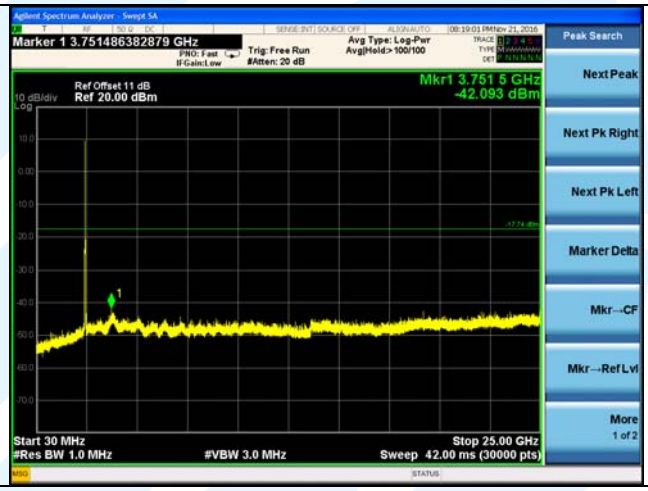
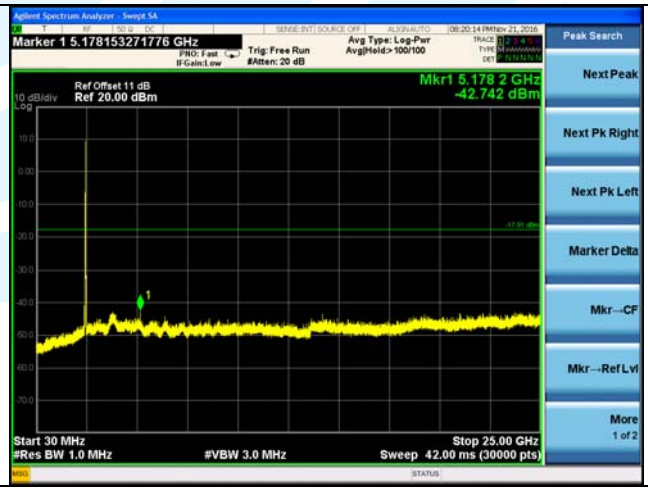
Test Mode: Transmitter mode

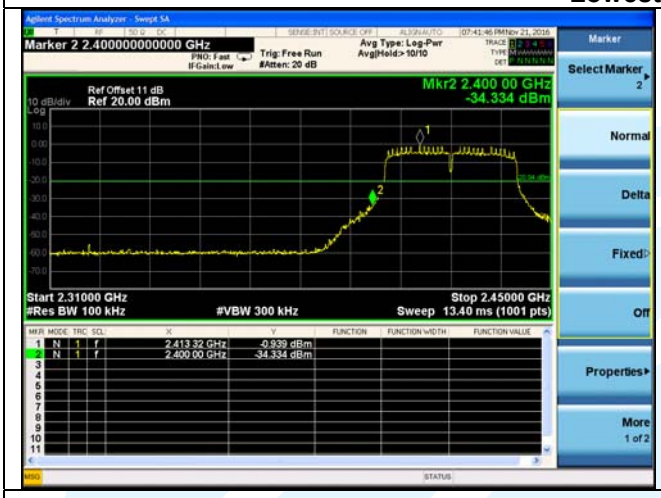
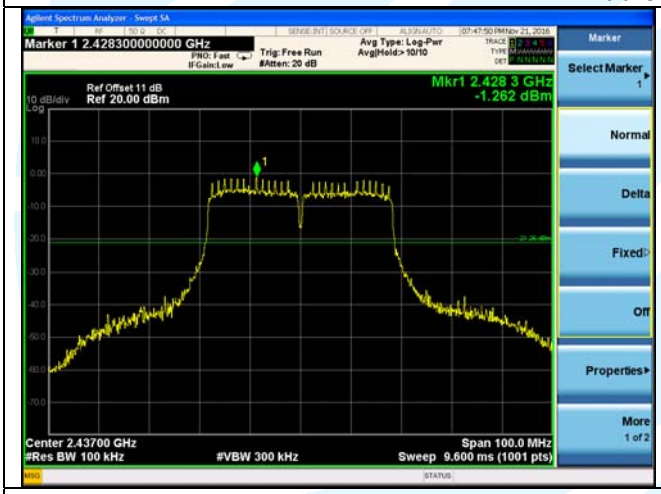
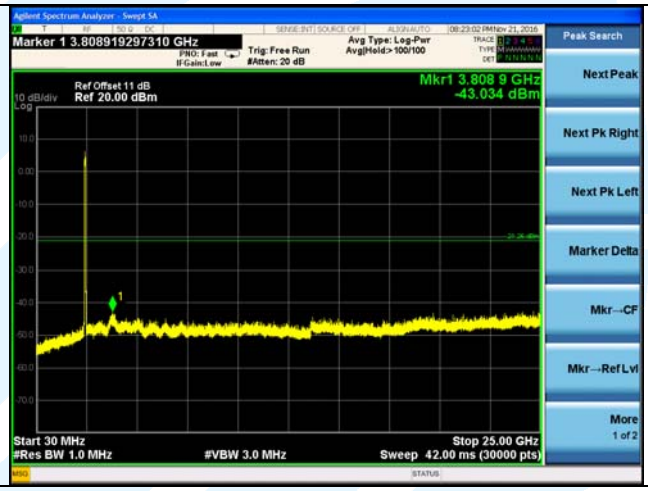
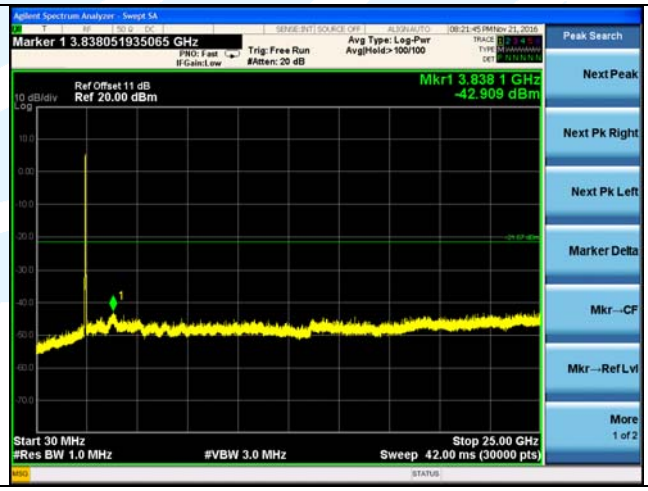
Test Results: Pass

The test plot as follows:

802.11b	
In-Band Reference Level	**Out of Band Emission**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

802.11g	
In-Band Reference Level	**Out of Band Emission**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

802.11n(HT20)	
In-Band Reference Level	**Out of Band Emission**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

802.11 n(HT40)	
In-Band Reference Level	**Out of Band Emission**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.6 Radiated Spurious Emissions

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

Test Method: KDB 558074 D01 v03r05 Section 12.1

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

The emissions were measured using the following resolution bandwidths:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Harmonic and Spurious emissions that were identified as coming from the EUT were checked in Peak and in Average Mode. The high frequency, which started from 10 to26.5GHz, which above 10GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured was not reported.

Peak measurements and average measurements are made. All emissions were determined to have a peak-to-average ratio of less than 20dB.

Test Procedure:

Below 1GHz test procedure as below:

a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.

e) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f) Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel

Above 1GHz test procedure as below:

g) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).

h) Test the EUT in the lowest channel , the Highest channel

i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.

j) Repeat above procedures until all frequencies measured was complete.

Test Setup: Refer to section 4.1.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Data:

5.6.1 Radiated Emission Test Data (9 KHz ~ 30MHz)

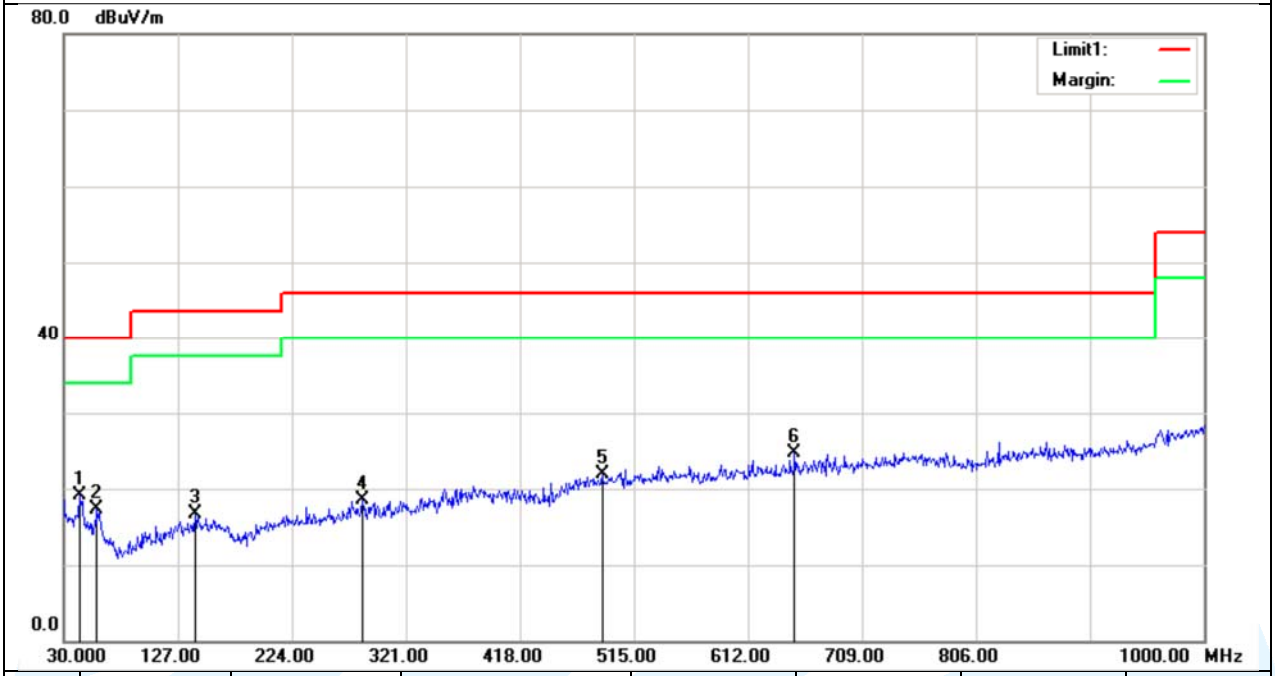
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

5.6.2 Radiated Emission Test Data (Above 18 GHz)

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

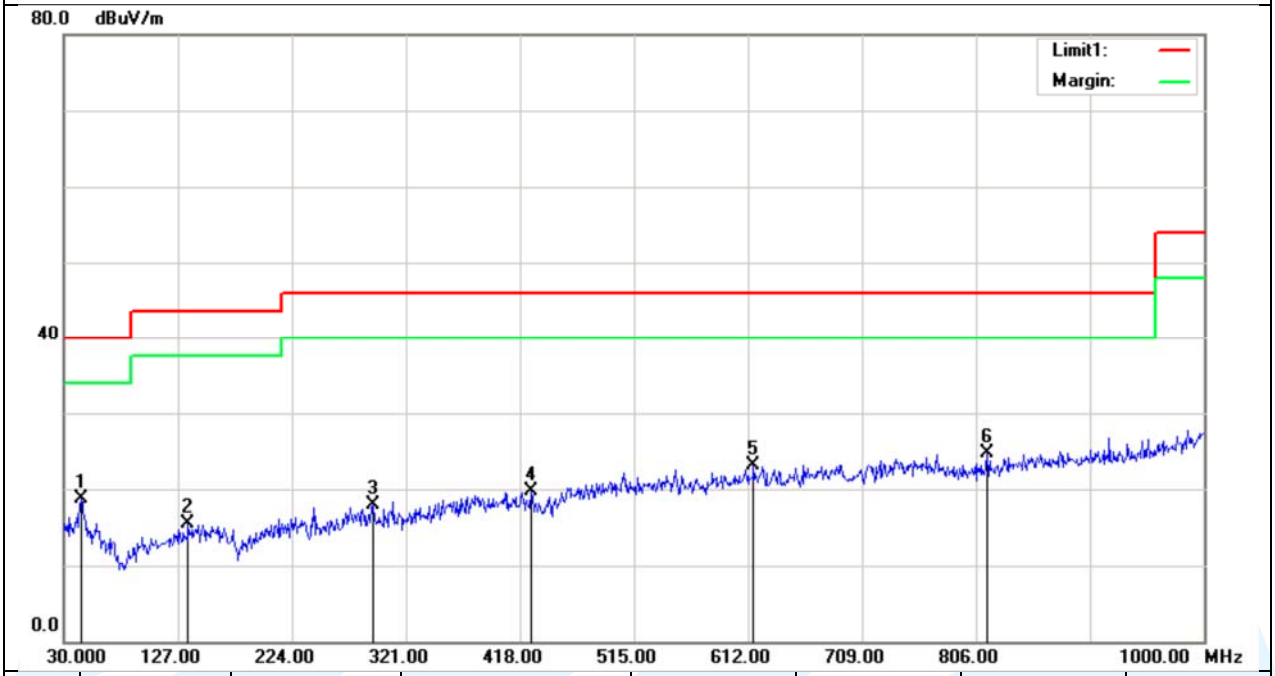
5.6.3 Radiated Emission Test Data (30MHz ~ 1 GHz Worst Case)

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	43.5800	30.78	-11.64	19.14	40.00	-20.86	Qp
2	58.1300	30.43	-13.09	17.34	40.00	-22.66	Qp
3	141.5500	28.56	-11.95	16.61	43.50	-26.89	Qp
4	284.1400	28.23	-9.76	18.47	46.00	-27.53	Qp
5	487.8400	28.97	-7.15	21.82	46.00	-24.18	Qp
6	651.7700	29.83	-5.17	24.66	46.00	-21.34	Qp

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	44.5500	30.36	-11.73	18.63	40.00	-21.37	Qp
2	135.7300	27.71	-12.19	15.52	43.50	-27.98	Qp
3	292.8700	27.88	-9.90	17.98	46.00	-28.02	Qp
4	427.7000	28.58	-8.93	19.65	46.00	-26.35	Qp
5	616.8500	28.67	-5.52	23.15	46.00	-22.85	Qp
6*	815.7000	28.44	-3.65	24.79	46.00	-21.21	Qp

5.6.4 Radiated Emission Test Data (1GHz ~ 18GHz)

802.11b						
Tx_ Lowest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4824.0000	42.80	74.00	-31.20	Peak	Horizontal
2	4824.0000	31.46	54.00	-22.54	Average	Horizontal
3	7236.0000	47.54	74.00	-26.46	Peak	Horizontal
4	7236.0000	34.81	54.00	-19.19	Average	Horizontal
5	4824.0000	42.69	74.00	-31.31	Peak	Vertical
6	4824.0000	30.50	54.00	-23.50	Average	Vertical
7	7236.0000	45.75	74.00	-28.25	Peak	Vertical
8	7236.0000	33.75	54.00	-20.25	Average	Vertical
Tx_ Middle Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4874.0000	45.00	74.00	-29.00	Peak	Horizontal
2	4874.0000	32.87	54.00	-21.13	Average	Horizontal
3	7311.0000	46.51	74.00	-27.49	Peak	Horizontal
4	7311.0000	35.39	54.00	-18.61	Average	Horizontal
5	4874.0000	42.97	74.00	-31.03	Peak	Vertical
6	4874.0000	31.46	54.00	-22.54	Average	Vertical
7	7311.0000	46.48	74.00	-27.52	Peak	Vertical
8	7311.0000	34.27	54.00	-19.73	Average	Vertical
Tx_ Highest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4924.0000	43.64	74.00	-30.36	Peak	Horizontal
2	4924.0000	32.18	54.00	-21.82	Average	Horizontal
3	7386.0000	47.08	74.00	-26.92	Peak	Horizontal
4	7386.0000	35.17	54.00	-18.83	Average	Horizontal
5	4924.0000	43.01	74.00	-30.99	Peak	Vertical
6	4924.0000	31.10	54.00	-22.90	Average	Vertical
7	7386.0000	46.25	74.00	-27.75	Peak	Vertical
8	7386.0000	34.05	54.00	-19.95	Average	Vertical

802.11g						
Tx_ Lowest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4824.0000	43.11	74.00	-30.89	Peak	Horizontal
2	4824.0000	31.61	54.00	-22.39	Average	Horizontal
3	7236.0000	47.91	74.00	-26.09	Peak	Horizontal
4	7236.0000	34.85	54.00	-19.15	Average	Horizontal
5	4824.0000	41.66	74.00	-32.34	Peak	Vertical
6	4824.0000	30.07	54.00	-23.93	Average	Vertical
7	7236.0000	45.39	74.00	-28.61	Peak	Vertical
8	7236.0000	33.53	54.00	-20.47	Average	Vertical
Tx_ Middle Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4874.0000	43.61	74.00	-30.39	Peak	Horizontal
2	4874.0000	32.30	54.00	-21.70	Average	Horizontal
3	7311.0000	46.51	74.00	-27.49	Peak	Horizontal
4	7311.0000	35.23	54.00	-18.77	Average	Horizontal
5	4874.0000	42.88	74.00	-31.12	Peak	Vertical
6	4874.0000	31.48	54.00	-22.52	Average	Vertical
7	7311.0000	45.57	74.00	-28.43	Peak	Vertical
8	7311.0000	34.27	54.00	-19.73	Average	Vertical
Tx_ Highest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4924.0000	43.53	74.00	-30.47	Peak	Horizontal
2	4924.0000	32.23	54.00	-21.77	Average	Horizontal
3	7386.0000	46.87	74.00	-27.13	Peak	Horizontal
4	7386.0000	35.09	54.00	-18.91	Average	Horizontal
5	4924.0000	42.70	74.00	-31.30	Peak	Vertical
6	4924.0000	31.20	54.00	-22.80	Average	Vertical
7	7386.0000	45.90	74.00	-28.10	Peak	Vertical
8	7386.0000	34.13	54.00	-19.87	Average	Vertical

802.11n(HT20)						
Tx_ Lowest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4824.0000	42.51	74.00	-31.49	Peak	Horizontal
2	4824.0000	31.16	54.00	-22.84	Average	Horizontal
3	7236.0000	46.63	74.00	-27.37	Peak	Horizontal
4	7236.0000	34.49	54.00	-19.51	Average	Horizontal
5	4824.0000	42.15	74.00	-31.85	Peak	Vertical
6	4824.0000	30.29	54.00	-23.71	Average	Vertical
7	7236.0000	45.62	74.00	-28.38	Peak	Vertical
8	7236.0000	33.75	54.00	-20.25	Average	Vertical
Tx_ Middle Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4874.0000	42.96	74.00	-31.04	Peak	Horizontal
2	4874.0000	31.50	54.00	-22.50	Average	Horizontal
3	7311.0000	46.77	74.00	-27.23	Peak	Horizontal
4	7311.0000	34.78	54.00	-19.22	Average	Horizontal
5	4874.0000	42.29	74.00	-31.71	Peak	Vertical
6	4874.0000	30.46	54.00	-23.54	Average	Vertical
7	7311.0000	45.87	74.00	-28.13	Peak	Vertical
8	7311.0000	33.72	54.00	-20.28	Average	Vertical
Tx_ Highest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4924.0000	42.75	74.00	-31.25	Peak	Horizontal
2	4924.0000	31.45	54.00	-22.55	Average	Horizontal
3	7386.0000	46.24	74.00	-27.76	Peak	Horizontal
4	7386.0000	34.69	54.00	-19.31	Average	Horizontal
5	4924.0000	43.07	74.00	-30.93	Peak	Vertical
6	4924.0000	30.50	54.00	-23.50	Average	Vertical
7	7386.0000	46.12	74.00	-27.88	Peak	Vertical
8	7386.0000	33.50	54.00	-20.50	Average	Vertical

802.11n(HT40)						
Tx_ Lowest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4844.0000	43.82	74.00	-30.18	Peak	Horizontal
2	4844.0000	31.38	54.00	-22.62	Average	Horizontal
3	7266.0000	46.67	74.00	-27.33	Peak	Horizontal
4	7266.0000	34.65	54.00	-19.35	Average	Horizontal
5	4844.0000	41.50	74.00	-32.50	Peak	Vertical
6	4844.0000	30.45	54.00	-23.55	Average	Vertical
7	7266.0000	45.34	74.00	-28.66	Peak	Vertical
8	7266.0000	33.64	54.00	-20.36	Average	Vertical
Tx_ Middle Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4874.0000	42.87	74.00	-31.13	Peak	Horizontal
2	4874.0000	31.48	54.00	-22.52	Average	Horizontal
3	7311.0000	47.04	74.00	-26.96	Peak	Horizontal
4	7311.0000	34.79	54.00	-19.21	Average	Horizontal
5	4874.0000	42.02	74.00	-31.98	Peak	Vertical
6	4874.0000	30.75	54.00	-23.25	Average	Vertical
7	7311.0000	46.04	74.00	-27.96	Peak	Vertical
8	7311.0000	33.83	54.00	-20.17	Average	Vertical
Tx_ Highest Channel						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	4904.0000	42.56	74.00	-31.44	Peak	Horizontal
2	4904.0000	31.30	54.00	-22.70	Average	Horizontal
3	7356.0000	47.58	74.00	-26.42	Peak	Horizontal
4	7356.0000	34.76	54.00	-19.24	Average	Horizontal
5	4904.0000	41.98	74.00	-32.02	Peak	Vertical
6	4904.0000	30.64	54.00	-23.36	Average	Vertical
7	7356.0000	45.62	74.00	-28.38	Peak	Vertical
8	7356.0000	33.68	54.00	-20.32	Average	Vertical

Remark:
Scan from 9 kHz to 25GHz, the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

5.7 Band Edge Measurements (Radiated)

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

Test Method: KDB 558074 D01 v03r05 Section 12.1

Limit:

Frequency	Limit (dBμV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Procedure: Radiated band edge measurements at 2390MHz and 2483MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

1. Use radiated spurious emission test procedure described in 5.6 clause. The transmitter output (antenna port) was connected to the test receiver.
2. Set the PK and AV limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

Test Setup: Refer to section 4.1.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

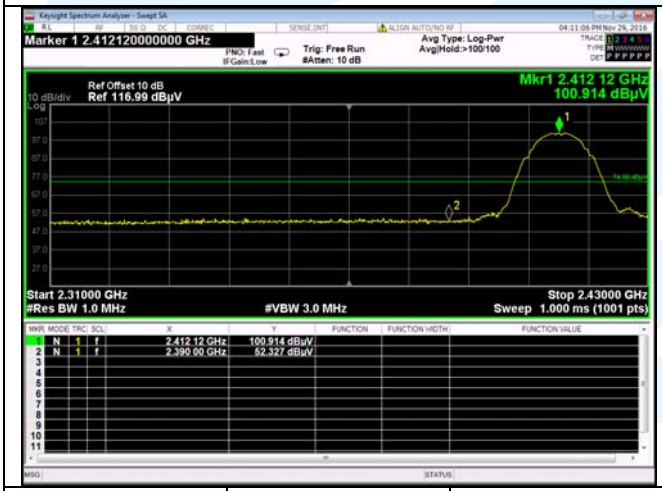
Test Results: Pass

Test Data:

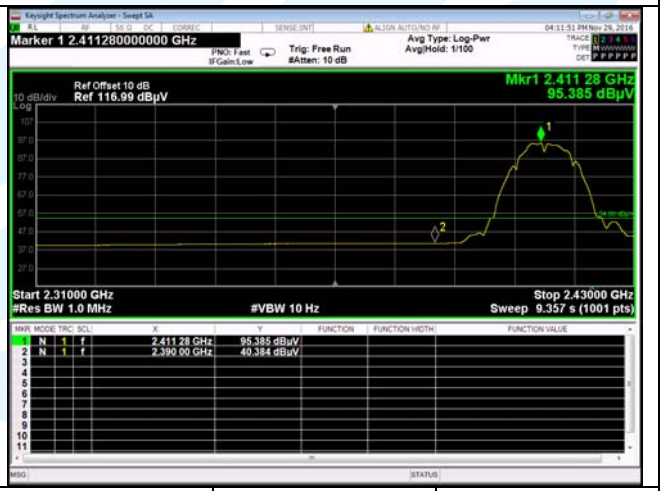
802.11b

Frequency (MHz)	2412	Ant. Polar.	Horizontal

Detector: Peak

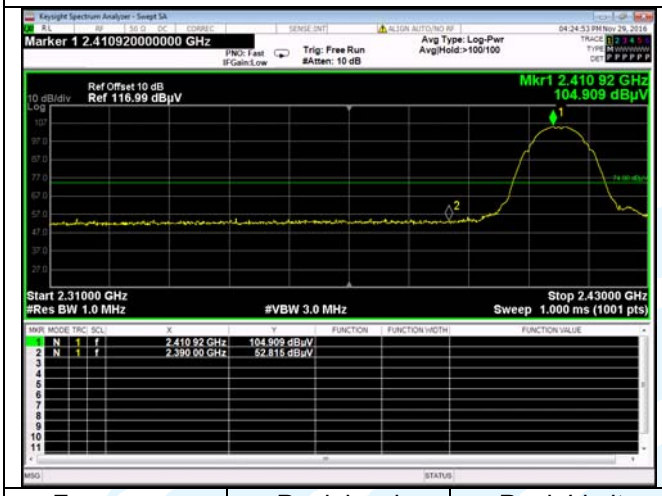


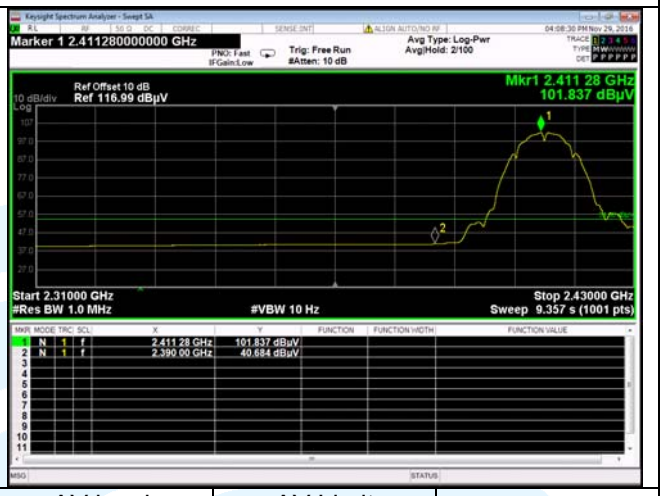
Detector: AV



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	52.327	74	40.384	54	Pass

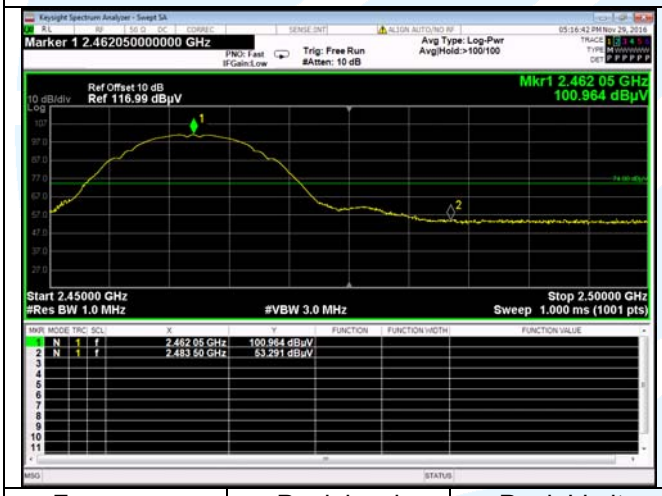
Frequency (MHz)	2412	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	





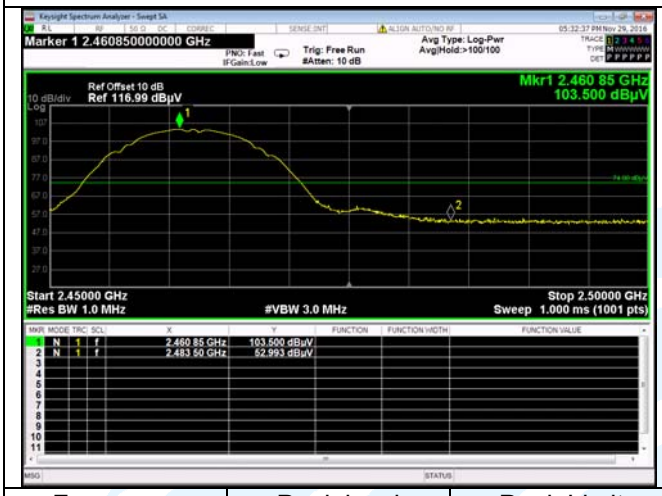
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	52.815	74	40.684	54	Pass

Frequency (MHz)	2462	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	53.291	74	41.407	54	Pass

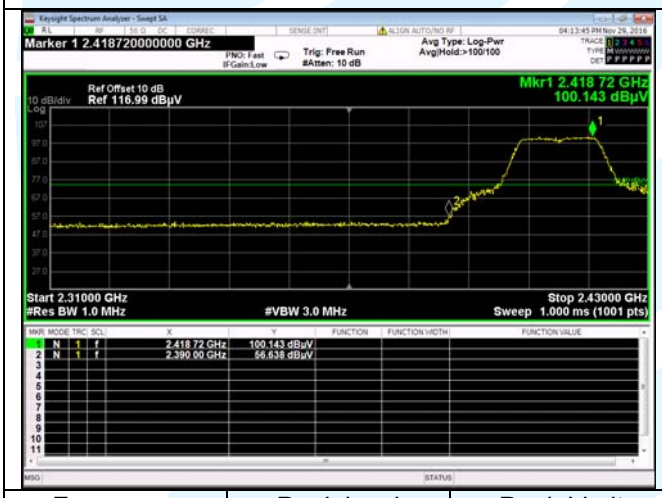
Frequency (MHz)	2462	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	

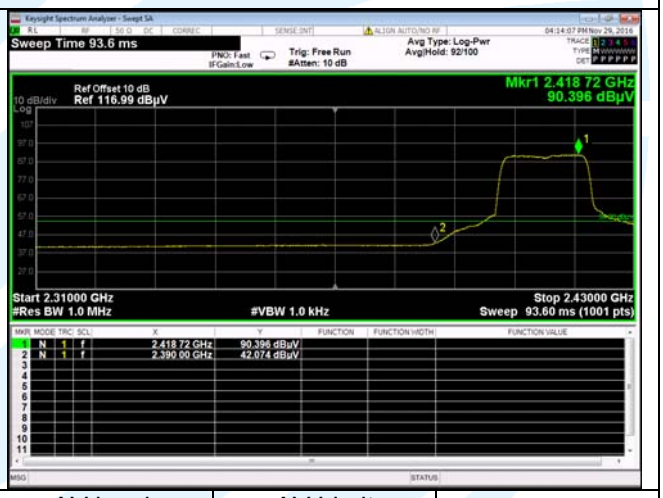


Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	52.993	74	41.364	54	Pass

802.11g

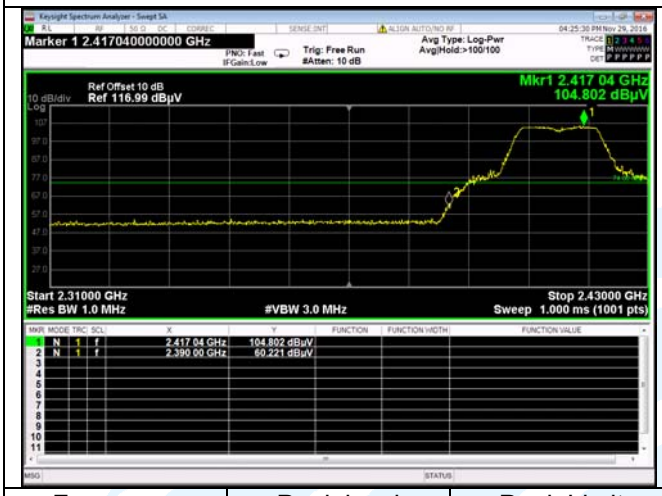
Frequency (MHz)	2412	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	

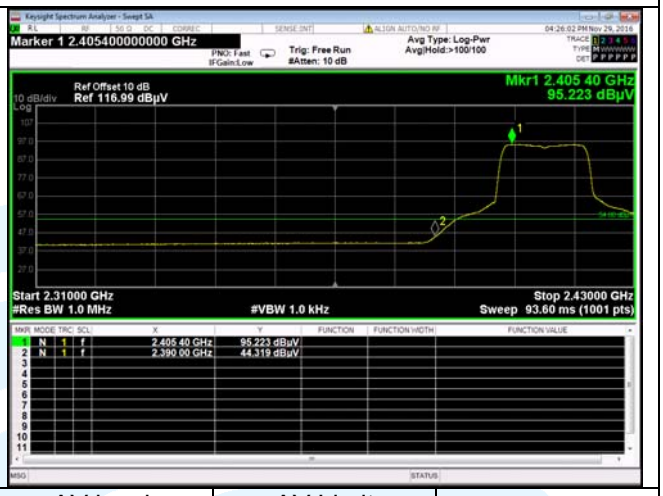




Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	56.638	74	42.074	54	Pass

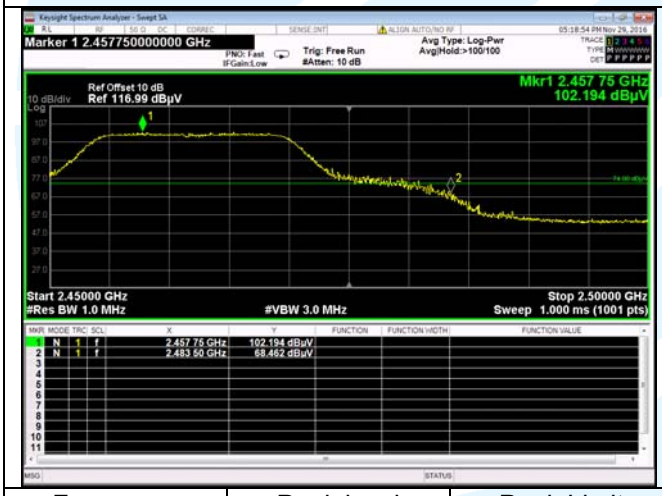
Frequency (MHz)	2412	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	





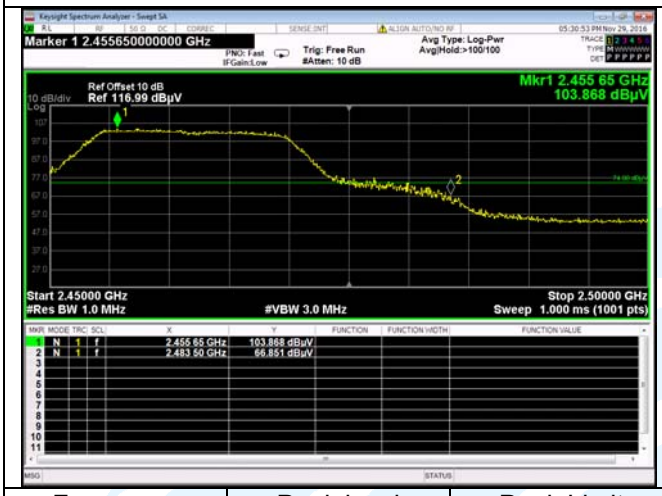
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	60.221	74	44.319	54	Pass

Frequency (MHz)	2462	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	68.462	74	47.619	54	Pass

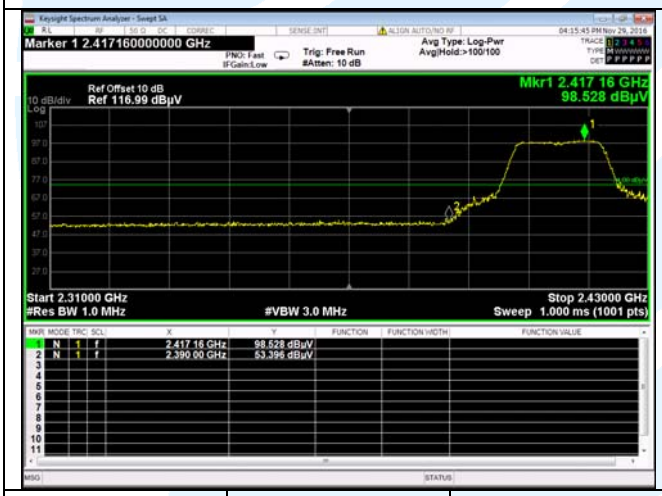
Frequency (MHz)	2462	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	

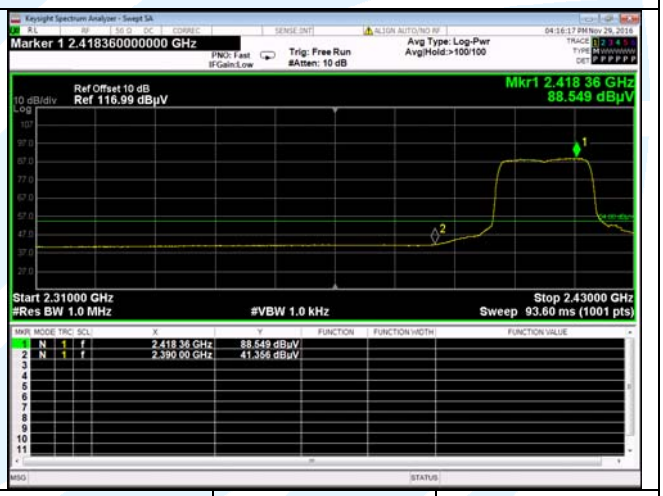


Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	66.851	74	47.372	54	Pass

802.11n(HT20)

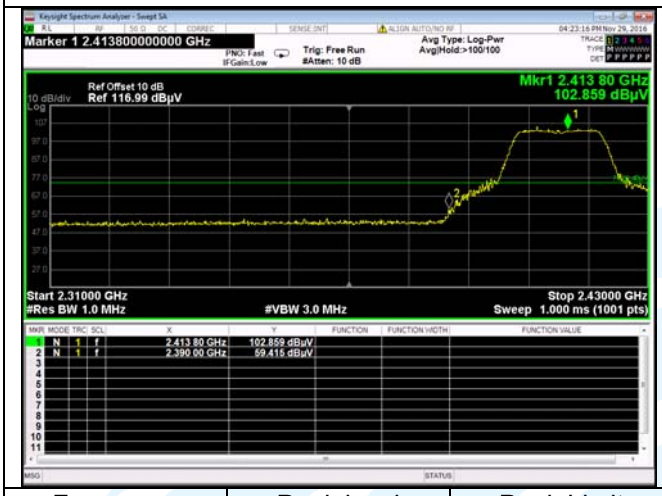
Frequency (MHz)	2412	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	

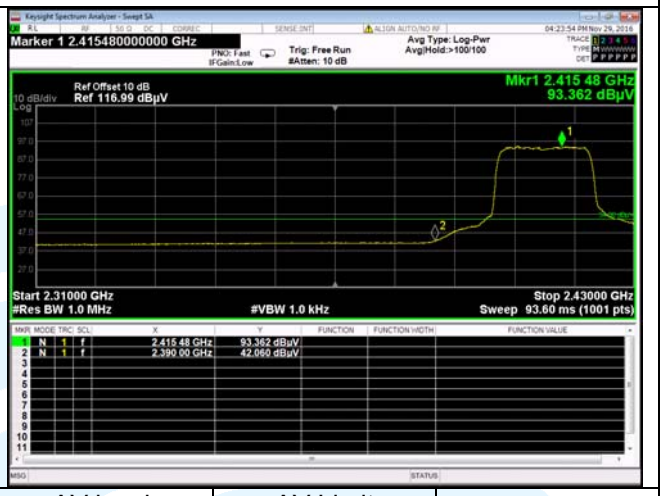




Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	53.396	74	41.356	54	Pass

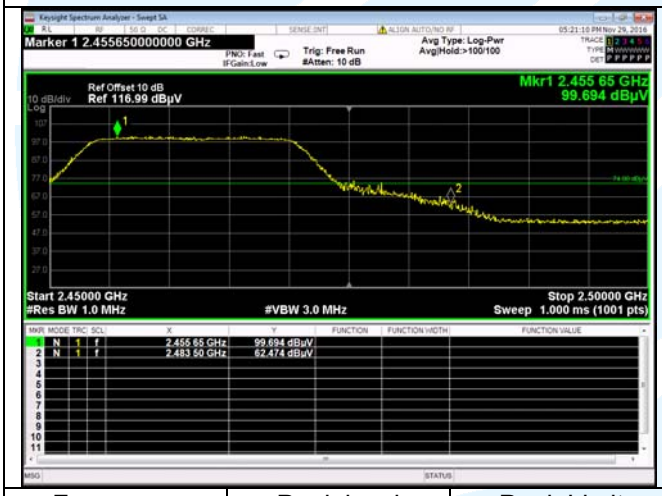
Frequency (MHz)	2412	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	

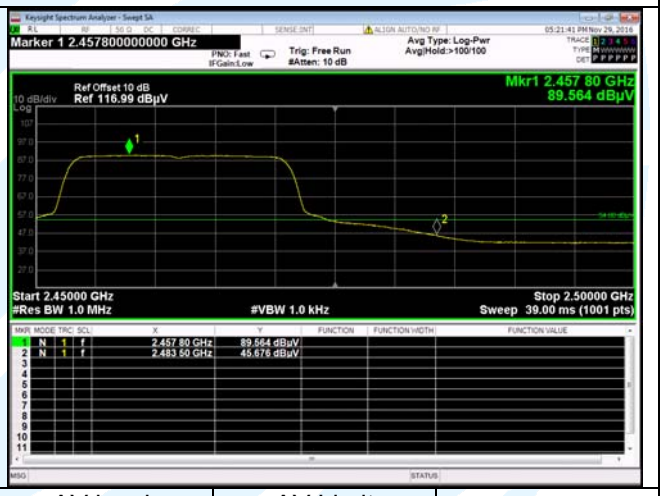




Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	59.415	74	42.060	54	Pass

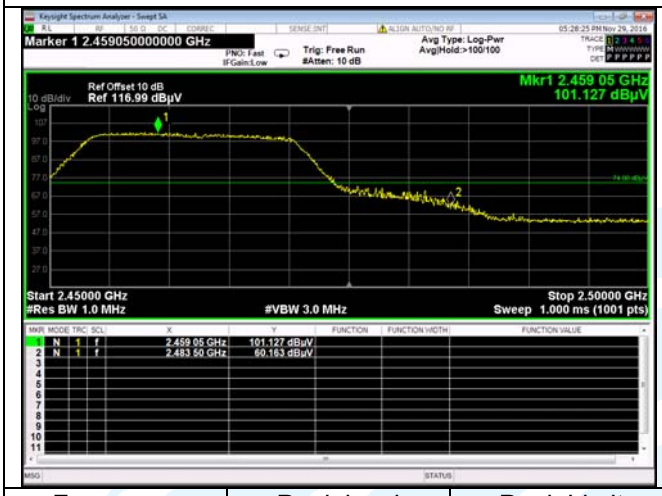
Frequency (MHz)	2462	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	

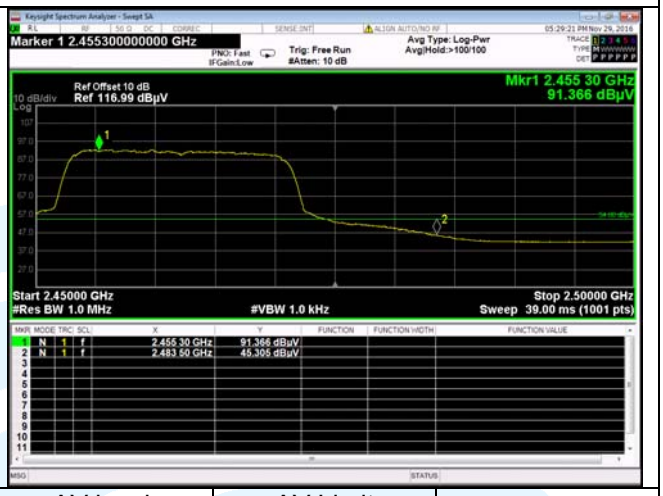




Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	62.474	74	45.676	54	Pass

Frequency (MHz)	2462	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	





Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	60.163	74	45.306	54	Pass

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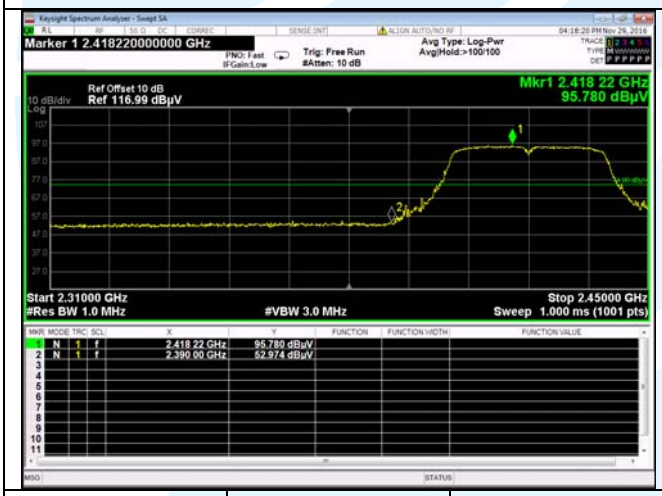
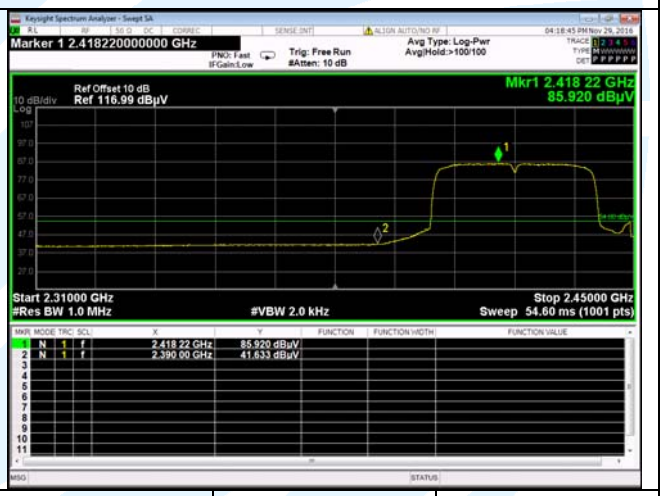
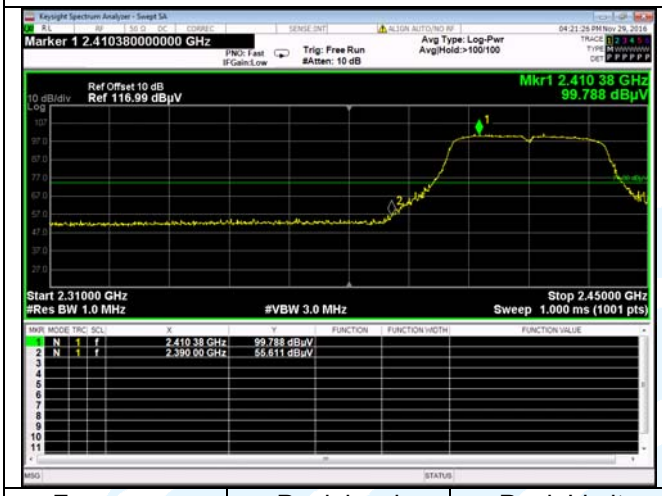
Frequency (MHz)	2422	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	

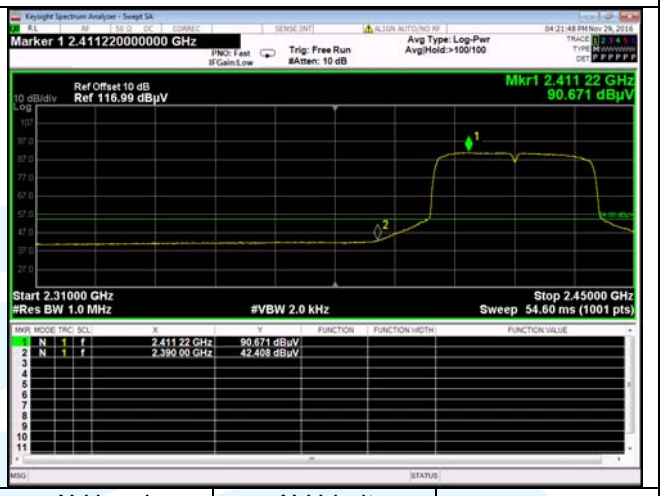




Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	52.974	74	41.633	54	Pass

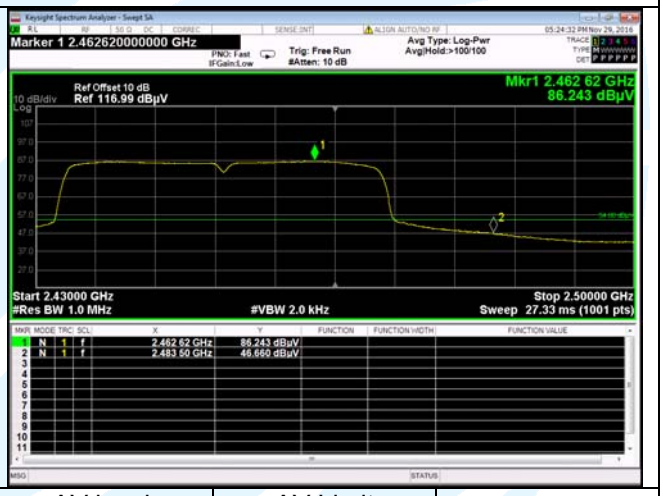
Frequency (MHz)	2422	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	





Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2390	55.611	74	42.408	54	Pass

Frequency (MHz)	2452	Ant. Polar.	Horizontal
Detector: Peak		Detector: AV	



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	61.436	74	46.660	54	Pass

Frequency (MHz)	2452	Ant. Polar.	Vertical
Detector: Peak		Detector: AV	

Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
2483.5	59.357	74	45.691	54	Pass

5.8 Conducted Emissions

Test Requirement: 47 CFR Part 15C Section 15.207

Test Method: ANSI C63.10

Test Frequency Range: 150KHz to 30MHz

Limit:

Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

NOTE : The lower limit is applicable at the transition frequency

Test Procedure: Test frequency range :150KHz-30MHz

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Test Setup: Refer to section 4.1.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

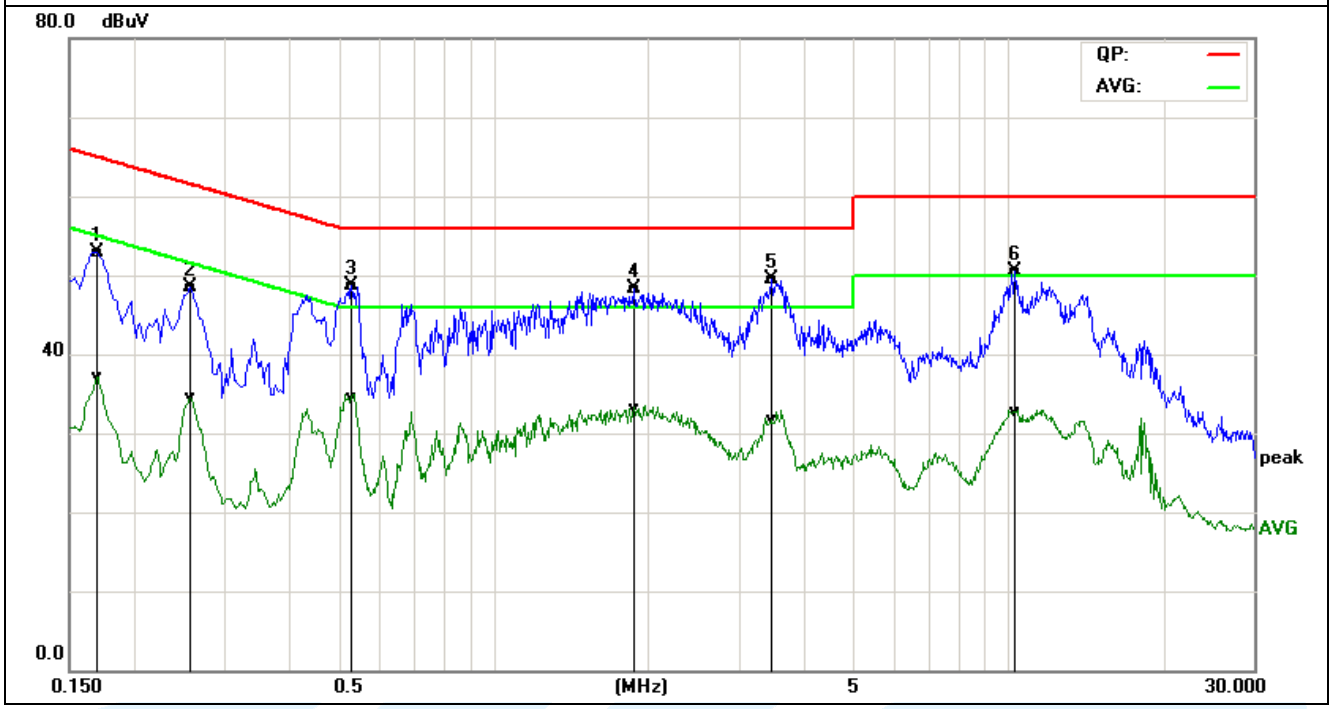
Test Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

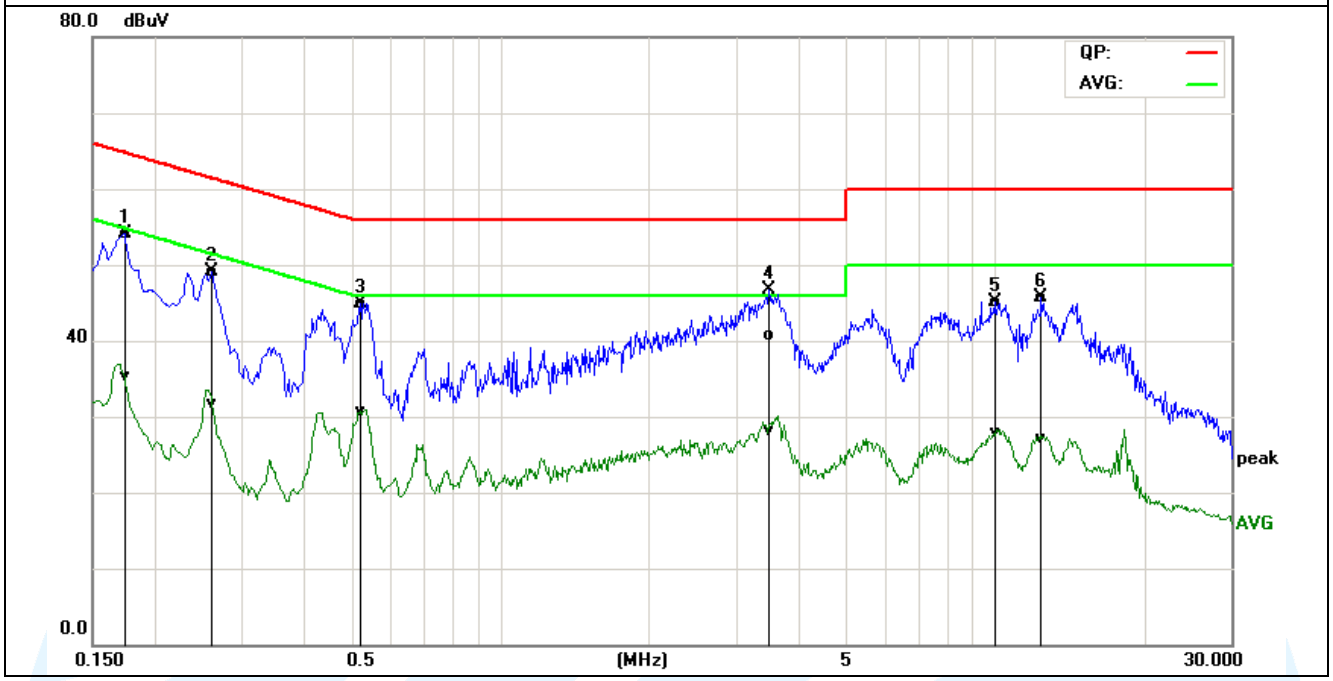
Test plot as follows:

Live Line



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.1700	33.34	17.62	19.57	52.91	37.19	64.96	54.96	-12.05	-17.77	Pass
2P	0.2580	28.80	14.90	19.64	48.44	34.54	61.49	51.50	-13.05	-16.96	Pass
3P	0.5299	29.09	14.83	19.65	48.74	34.48	56.00	46.00	-7.26	-11.52	Pass
4P	1.8740	28.58	13.32	19.71	48.29	33.03	56.00	46.00	-7.71	-12.97	Pass
5*	3.4900	29.85	12.12	19.67	49.52	31.79	56.00	46.00	-6.48	-14.21	Pass
6P	10.3139	30.41	12.63	20.13	50.54	32.76	60.00	50.00	-9.46	-17.24	Pass

Neutral Line



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1740	34.43	15.58	19.73	54.16	35.31	64.76	54.77	-10.60	-19.46	Pass
2P	0.2620	29.30	11.95	19.72	49.02	31.67	61.36	51.37	-12.34	-19.70	Pass
3P	0.5220	25.27	11.02	19.64	44.91	30.66	56.00	46.00	-11.09	-15.34	Pass
4P	3.5020	20.98	8.38	19.72	40.70	28.10	56.00	46.00	-15.30	-17.90	Pass
5P	10.0020	24.90	7.81	20.15	45.05	27.96	60.00	50.00	-14.95	-22.04	Pass
6P	12.4420	25.79	7.17	19.93	45.72	27.10	60.00	50.00	-14.28	-22.90	Pass

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photographs.

*** End of Report ***