

FCC TEST REPORT

Product : Mobile Phone
Trade mark : MI
Model/Type reference : 2016102
Report Number : 1610280464RFC-4
Date of Issue : Dec. 08, 2016
FCC ID : 2AFZZ-RT6102
Test Standards : FCC 47 CFR Part 15 Subpart E
Test result : PASS

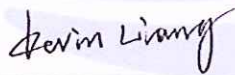
Prepared for:

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

Prepared by:

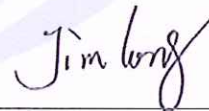
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Version

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

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

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Content

	Page
1 GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 GENERAL DESCRIPTION OF EUT	4
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
1.4 DESCRIPTION OF SUPPORT UNITS	5
1.5 TEST LOCATION.....	5
1.6 TEST FACILITY	6
1.7 DEVIATION FROM STANDARDS	6
1.8 ABNORMALITIES FROM STANDARD CONDITIONS	6
1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
1.10 MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2).....	6
2 TEST SUMMARY	7
3 EQUIPMENT LIST	8
4 TEST REQUIREMENT	10
4.1 TEST SETUP	10
4.1.1 For Conducted test setup.....	10
4.1.2 For Radiated Emissions test setup.....	10
4.1.3 For Conducted Emissions test setup	11
4.2 TEST ENVIRONMENT	11
4.3 SYSTEM TEST CONFIGURATION	11
4.4 TEST CONDITION	12
4.4.1 Test channel	12
4.4.2 Test mode	12
4.4.3 Duty Cycle.....	12
5 RADIO TECHNICAL REQUIREMENTS SPECIFICATION	14
5.1 ANTENNA REQUIREMENT.....	14
5.2 26 DB EMISSION BANDWIDTH	15
5.3 MAXIMUM CONDUCTED OUTPUT POWER	21
5.4 PEAK POWER SPECTRAL DENSITY.....	23
5.5 6 DB BANDWIDTH.....	31
5.6 FREQUENCY STABILITY	34
5.7 RADIATED EMISSIONS AND BAND EDGE MEASUREMENT	36
5.7.1 Radiated Emission Test Data (9 KHz ~ 30MHz)	37
5.7.2 Radiated Emission Test Data (Above 18 GHz)	37
5.7.3 Radiated Emission Test Data (30MHz ~ 1 GHz Worst Case).....	38
5.7.4 Radiated Emission Test Data (1GHz ~ 18GHz).....	40
5.7.5 Band Edge Measurements (Radiated).....	43
5.8 CONDUCTED EMISSIONS	47
APPENDIX 1 PHOTOGRAPHS OF TEST SETUP.....	50
APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS.....	50

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 IEEE 802.11b/g/n(HT20&HT40) Wlan 5150MHz-5350MHz, 5470MHz-5725MHz, 5725MHz-5850MHz only support IEEE 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:	Nov. 21, 2016 ~ Dec. 08, 2016	

1.3 Product Specification subjective to this standard

Type of Modulation:	IEEE for 802.11a:OFDM(64QAM, 16QAM, QPSK, BPSK)
Operating Frequency / Channel Number:	5150MHz to 5250MHz: 4 for IEEE 802.11a 5250MHz to 5350MHz: 4 for IEEE 802.11a 5470MHz to 5725MHz: 11 for IEEE 802.11a 5725MHz to 5850MHz: 5 for IEEE 802.11a
Channels Step:	Channels with 20MHz step
Transmit Data Rate:	IEEE 802.11a:6M/ 9M/ 12M/ 18M/ 24M/ 36M/ 48M/ 54M bps
Sample Type:	Portable device
Test Software of EUT:	Provided by the manufacturer
Antenna Type	LDS Antenna
Antenna Gain:	5150MHz to 5250MHz: -1.72 dBi gain 5250MHz to 5350MHz: -0.96 dBi gain 5470MHz to 5725MHz: 0.04 dBi gain

	5725MHz to 5850MHz: -0.78 dBi gain
Normal Test Voltage:	3.85 Vdc
Extreme Test Voltage:	3.6 ~ 4.4 Vdc
Extreme Test Temperature:	0°C to +55°C
Software Version:	MIUI8
Hardware Version:	P3

Operation Frequency each of channel

For 802.11a Operation in the 5150MHz ~ 5250 MHz band							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

For 802.11a Operation in the 5250MHz ~ 5350 MHz band							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260MHz	56	5280MHz	60	5300MHz	64	5320MHz

For 802.11a Operation in the 5470MHz ~ 5725 MHz band							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
100	5500MHz	112	5560MHz	124	5620MHz	136	5680MHz
104	5520MHz	116	5580MHz	128	5640MHz	140	5700MHz
108	5540MHz	120	5600MHz	132	5660MHz	N/A	N/A

For 802.11a Operation in the 5725MHz ~ 5850 MHz band					
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	153	5765MHz	157	5785MHz
161	5805MHz	165	5825MHz	N/A	N/A

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. (47 CFR Part 15 Subpart C Section 15.205/15.207/15.209)
Compliance Certification Services (Shenzhen) Inc.

Shenzhen UnionTrust Quality and Technology Co., Ltd.

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=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 6.3 \times 10^{-8}$
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

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
26 dB emission bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(2)(5)	KDB 789033 D02 v01r03 Section C.1	PASS
Maximum conducted output power	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)	KDB 789033 D02 v01r03 Section E.3.a(Method PM)	PASS
Peak Power Spectral Density	FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)	KDB 789033 D02 v01r03 Section F	PASS
6 dB bandwidth	FCC 47 CFR Part 15 Subpart E Section 15.407 (e)	KDB 789033 D02 v01r03 Section C.2	PASS
Frequency stability	FCC 47 CFR Part 15 Subpart E Section 15.407 (g)	ANSI C63.10-2013	PASS
Dynamic Frequency Selection	FCC 47 CFR Part 15 Subpart E Section 15.407 (h)	KDB 905462 D03 Client Without DFS New Rules v01r02	PASS ¹
Radiated Emissions and Band Edge Measurement	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6)	KDB 789033 D02 v01r03 Section G.3, G.4, G.5, and G.6	PASS*
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(6)	ANSI C63.10-2013	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.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

“*”: In this whole report “*” means tests were sub-contracted Item.

1 Refer to Report No. **1610280464RFC-5** for DFS Report.

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)
<input checked="" type="checkbox"/>	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	01-27-2016	01-26-2017
<input checked="" type="checkbox"/>	Receiver	R&S	ESR7	1316.3003K07-101181-K3	02-23-2016	02-22-2017
<input type="checkbox"/>	Receiver	R&S	ESIB26	100114	08-06-2015	08-05-2017
<input checked="" type="checkbox"/>	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	01-09-2016	01-08-2017
<input checked="" type="checkbox"/>	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	12-16-2015	12-15-2017
<input type="checkbox"/>	EXG-B RF Analog Signal Generator	KEYSIGHT	N5171B	MY53051777	01-09-2016	01-08-2017
<input type="checkbox"/>	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	01-08-2016	01-07-2017
<input type="checkbox"/>	4ch. Simultaneous Sampling 14 Bits 2MS/s	KEYSIGHT	U2531A	TW55193502	11-09-2015	11-08-2017
<input type="checkbox"/>	Communication Tester	R&S	CMU200	114713	12-07-2015	12-06-2017
<input type="checkbox"/>	Band rejection filter (5150MHz~5880MHz)	micro-tronics	BRM50716	G1868	06-15-2016	06-14-2017

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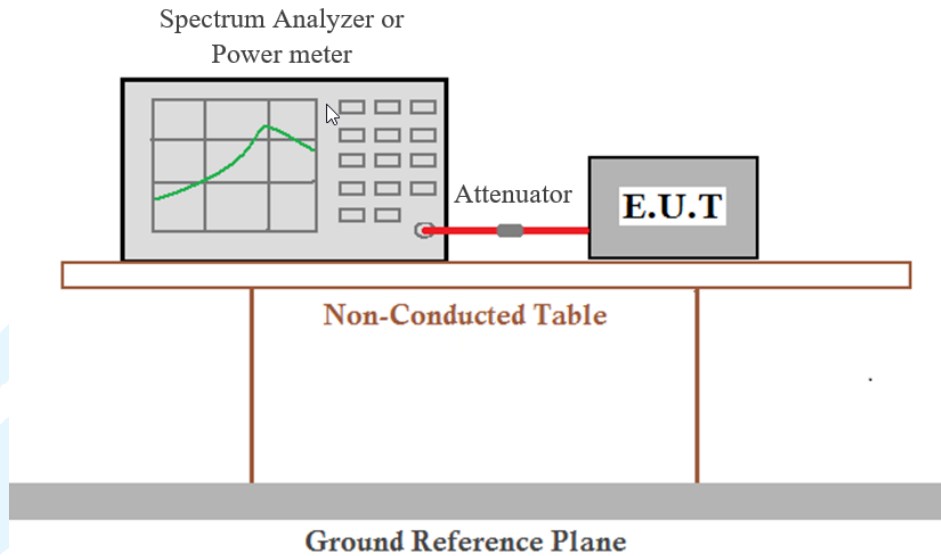
<input type="checkbox"/>	Band rejection filter (2400MHz~2500MHz)	micro-tronics	BRM50702	G248	06-21-2016	06-20-2017
<input type="checkbox"/>	DC Source	KIKUSUI	PWR400L	LK003024	09-21-2016	09-20-2017
<input type="checkbox"/>	Temp & Humidity chamber	Ispec	GL(U)04K A(W)	1692H201P3	09-21-2016	09-20-2017



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:

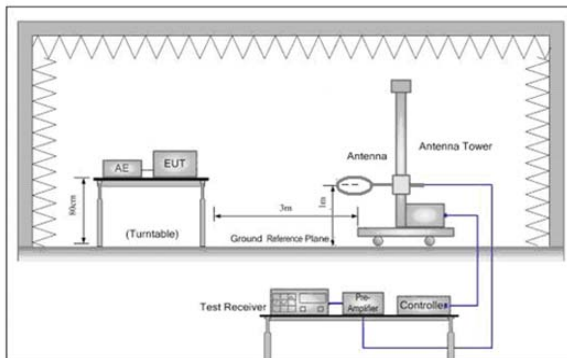


Figure 1. Below 30MHz

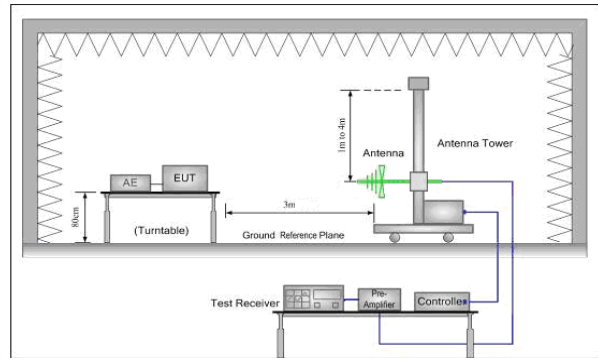


Figure 2. 30MHz to 1GHz

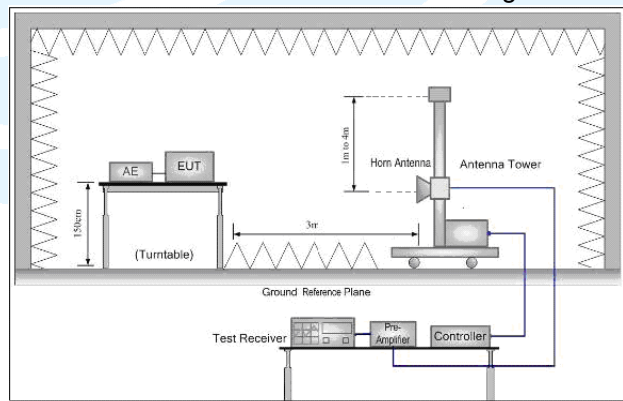
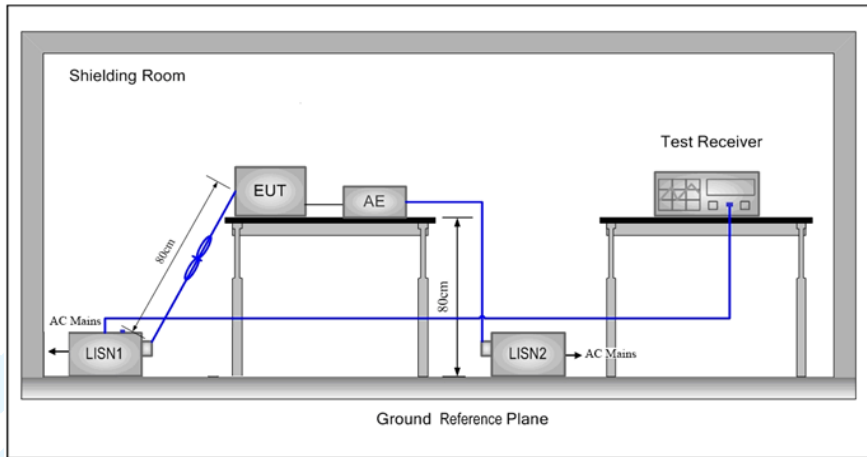


Figure 3. Above 1GHz

4.1.3 For Conducted Emissions test setup

Conducted Emissions setup



4.2 Test Environment

Operating Environment:	
Temperature:	23.8 °C
Humidity:	43 % 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
5150MHz to 5250MHz	1TX	Chain 0	X-Portrait
5250MHz to 5350MHz	1TX	Chain 0	X-Portrait
5470MHz to 5725MHz	1TX	Chain 0	X-Portrait
5725MHz to 5850MHz	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

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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)
802.11a	5150MHz ~5250 MHz	Channel 36	Channel 44	Channel 48
		5180MHz	5220MHz	5240MHz
	5250MHz ~5350 MHz	Channel 52	Channel 60	Channel 64
		5260MHz	5300MHz	5320MHz
	5470MHz ~5725 MHz	Channel 100	Channel116	Channel140
		5500MHz	5580MHz	5700MHz
	5725MHz ~5850 MHz	Channel149	Channel157	Channel165
		5745MHz	5785MHz	5825MHz

Remark:

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 channel 100

Channel/ Frequency (MHz)	Maximum Conducted Average Power (dBm)							
802.11a for 5150MHz ~ 5850 MHz								
Data Rate (Mbps)	6	9	12	18	24	36	48	54
100(5500)	15.14	15.12	15.06	15.07	14.98	14.95	15.03	15.01

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

Mode	Worst-case data rates
802.11a	6 Mbps

4.4.3 Duty Cycle

Procedure: KDB 789033 Zero-Span Spectrum Analyzer Method.

Results:

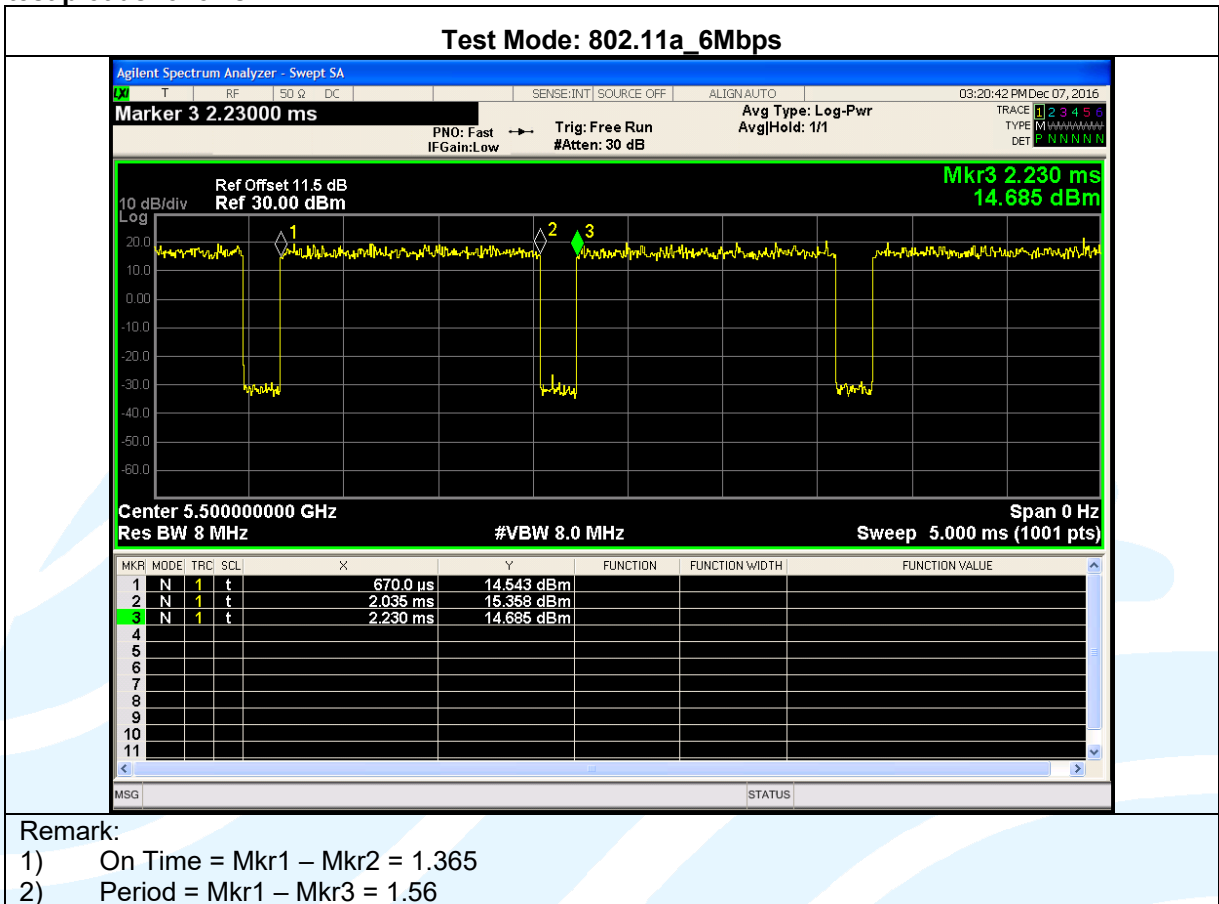
Mode	Channel Frequency (MHz)	Data rates (Mbps)	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)
802.11a	100 (5500)	6 Mbps	1.365	1.56	0.88	87.50	0.58	0.73

Remark:

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

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The test plot as follows:



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 Unlicensed Wireless Devices
4	789033 D02 General U-NII Test Procedures New Rules v01r03	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15 subpart E
5	905462 D06 802.11 Channel Plans New Rules v02	Operation in U-NII bands -802.11 channel PLAN(\$15.407)

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.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the 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 maximum gain of the antenna is 0.04dBi

5.2 26 dB emission bandwidth

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a) (2)(5)
Test Method: KDB 789033 D02 v01r03 Section C.1
Limit: None; for reporting purposes only.
Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum analyzer.

Spectrum analyzer according to the following Settings:

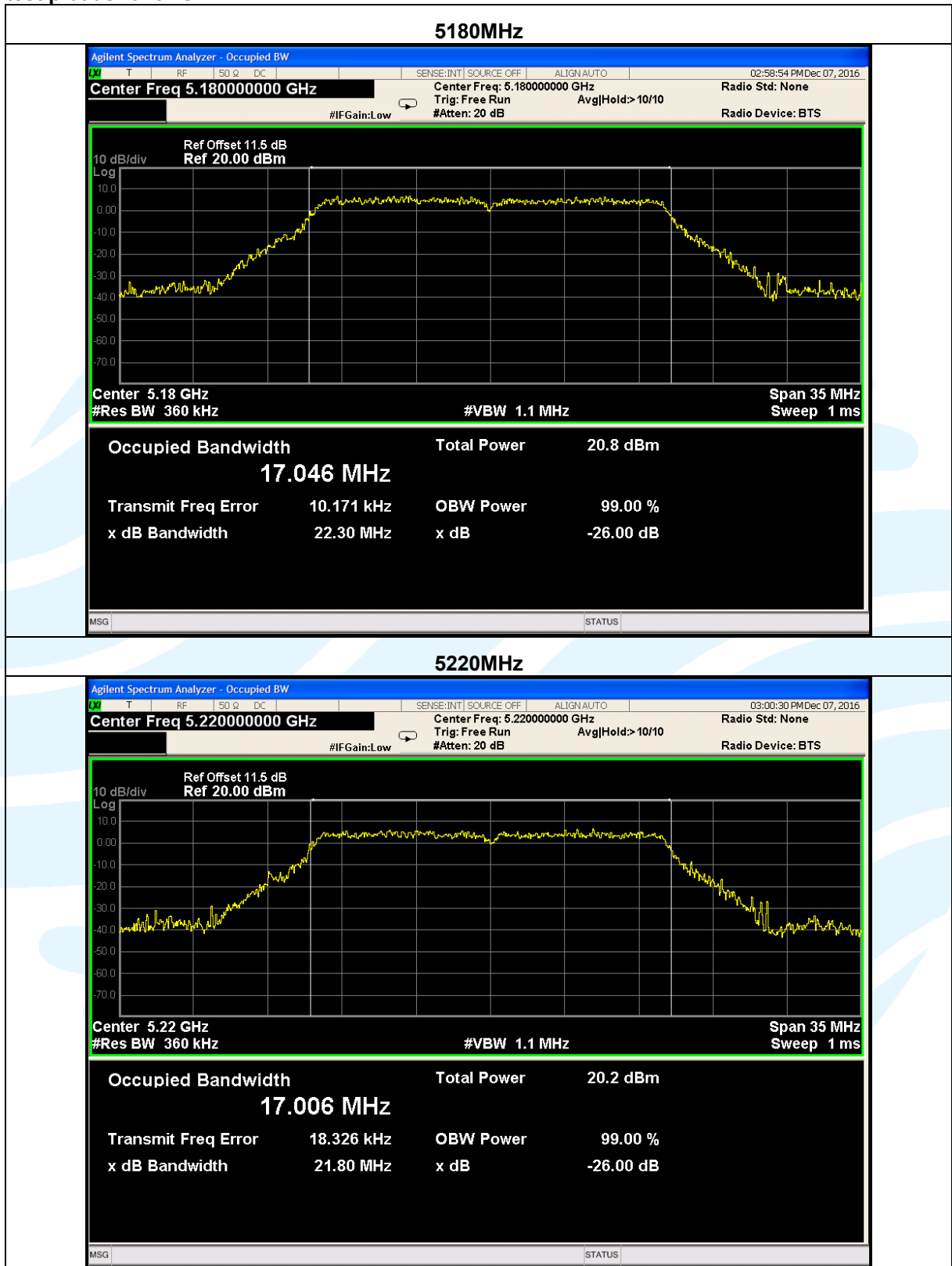
- a) Set RBW = approximately 1 % of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

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

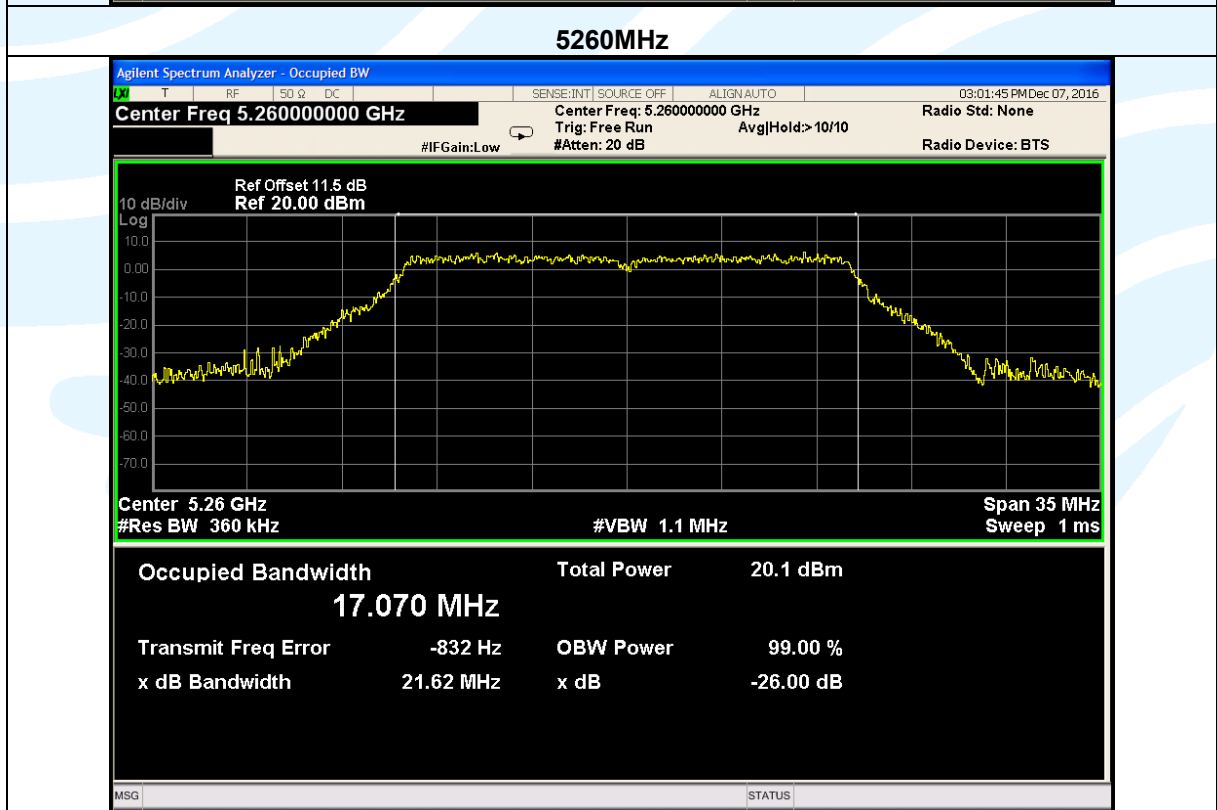
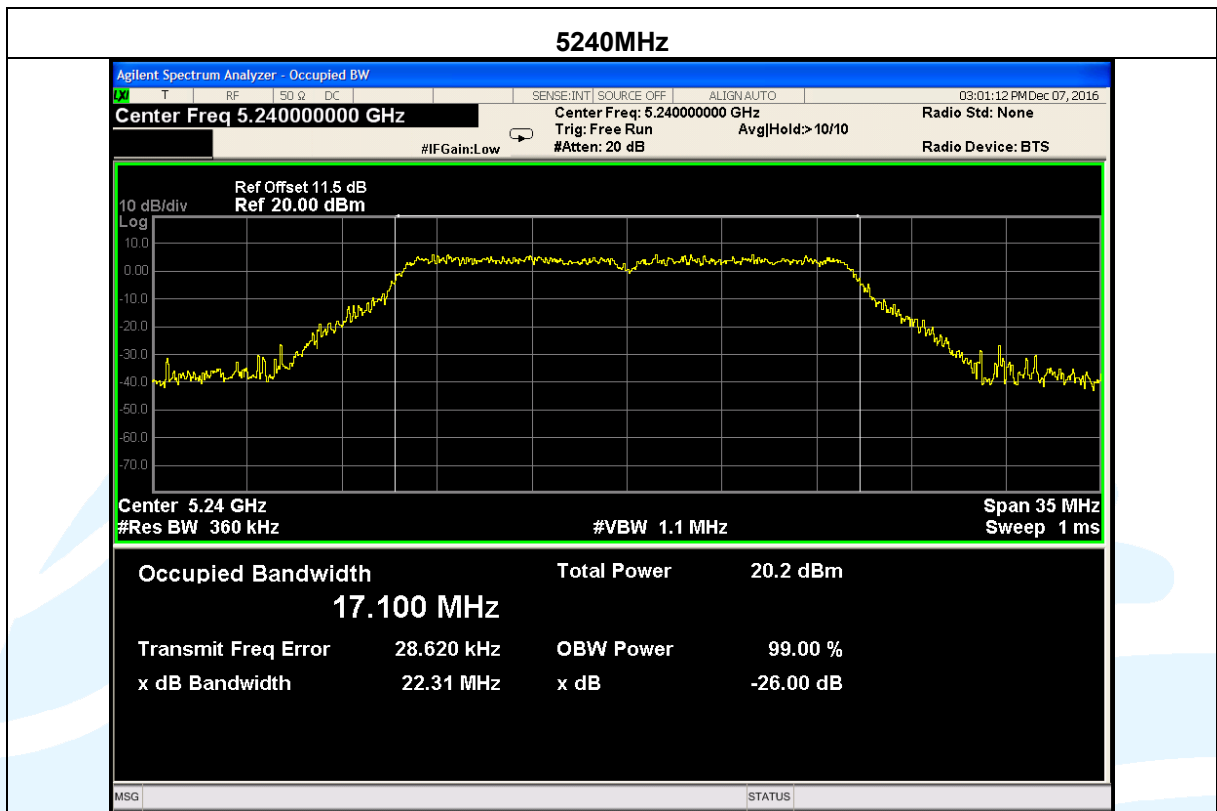
Test Setup: Refer to section 4.1.1 for details.
Instruments Used: Refer to section 3 for details
Test Mode: Transmitter mode
Test Results: Pass
Test Data:

Mode	Channel Frequency (MHz)	26 dB emission bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	36 (5180)	22.30	17.046
	44 (5220)	21.80	17.006
	48 (5240)	22.31	17.100
	52 (5260)	21.62	17.070
	60 (5300)	22.18	17.012
	64 (5320)	21.97	17.098
	100 (5500)	21.87	17.059
	116 (5580)	22.00	17.023
	140 (5700)	22.20	17.092

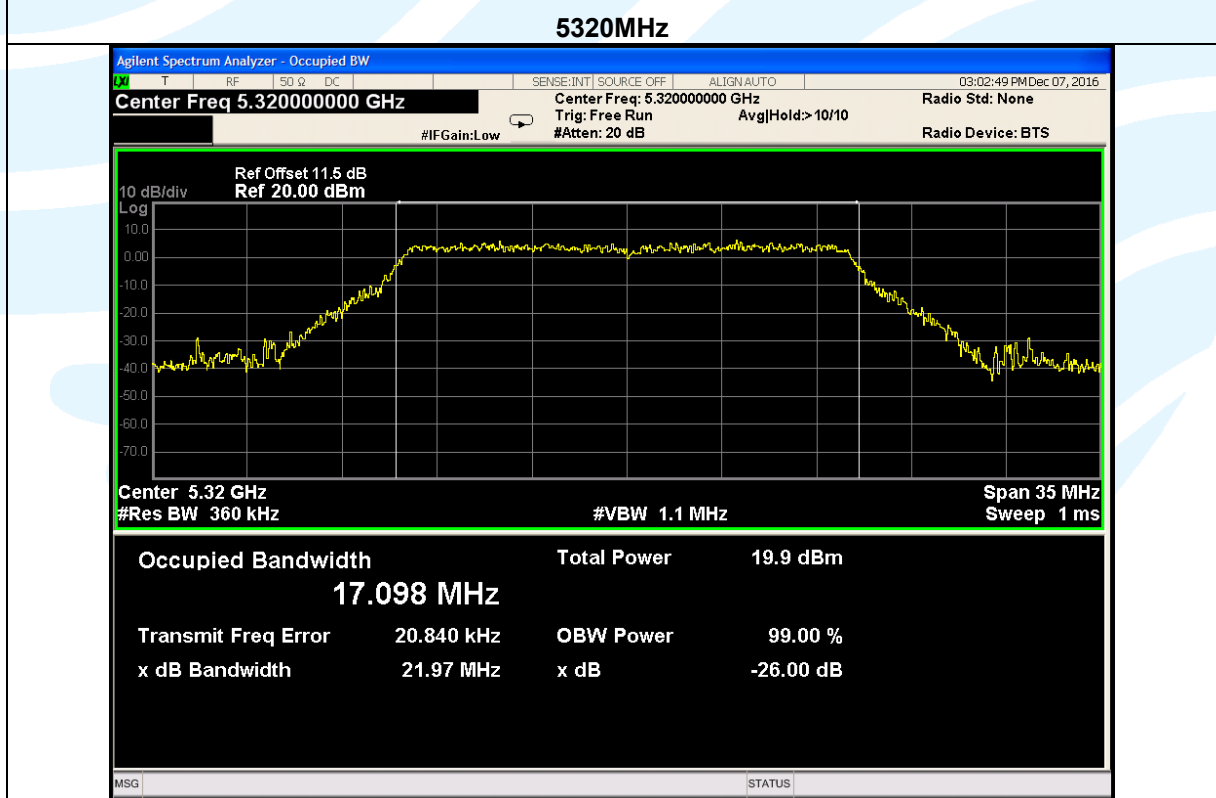
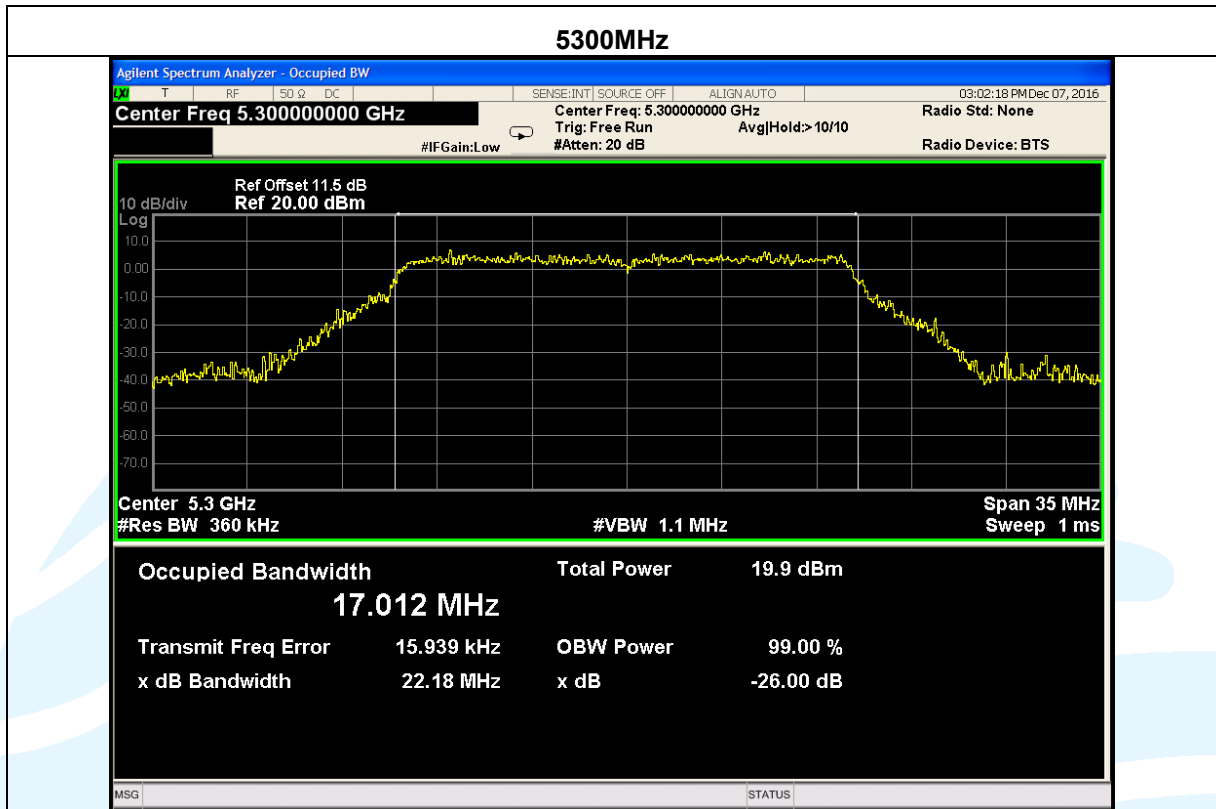
The test plot as follows:

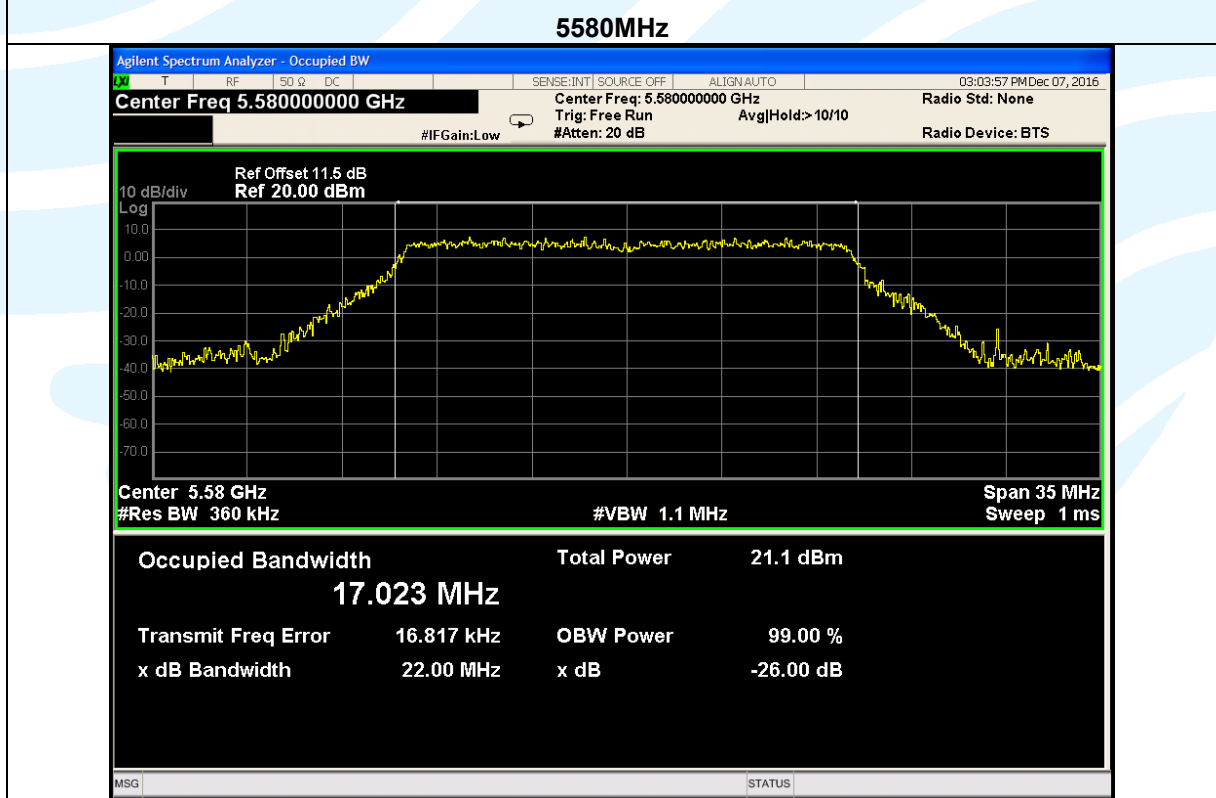
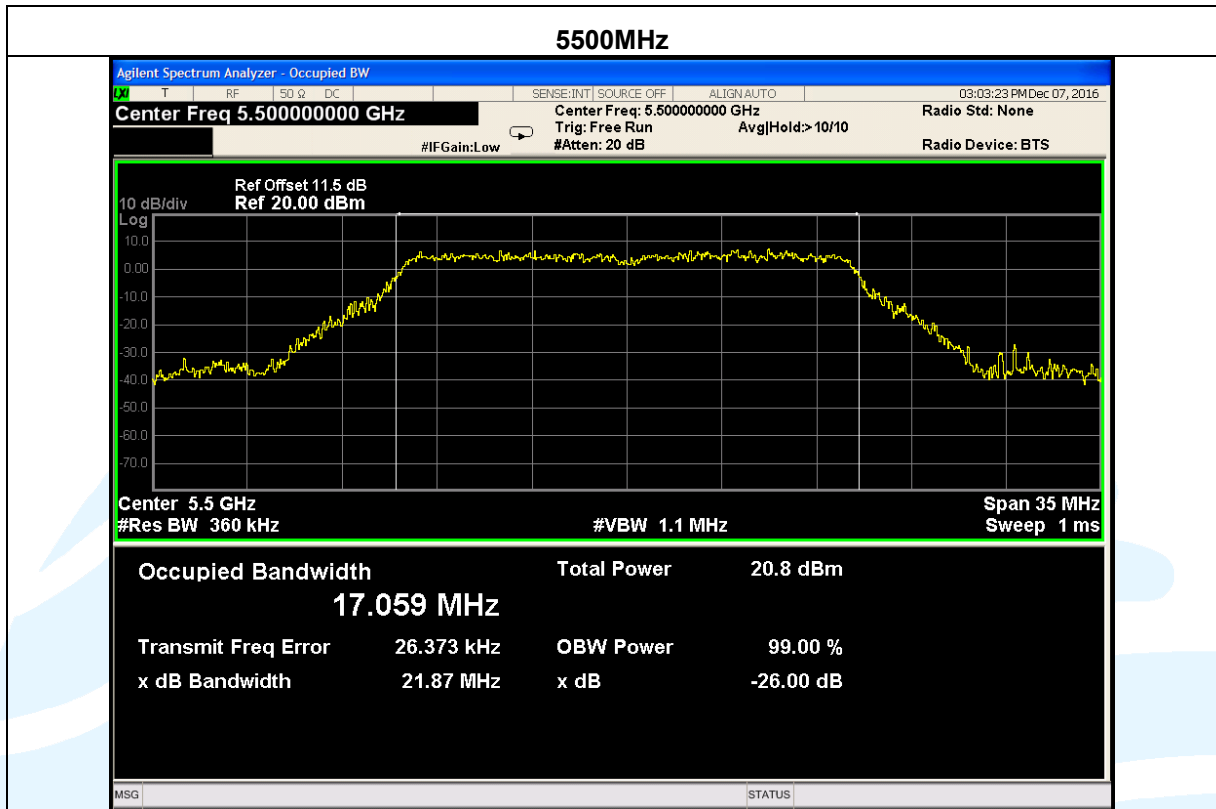


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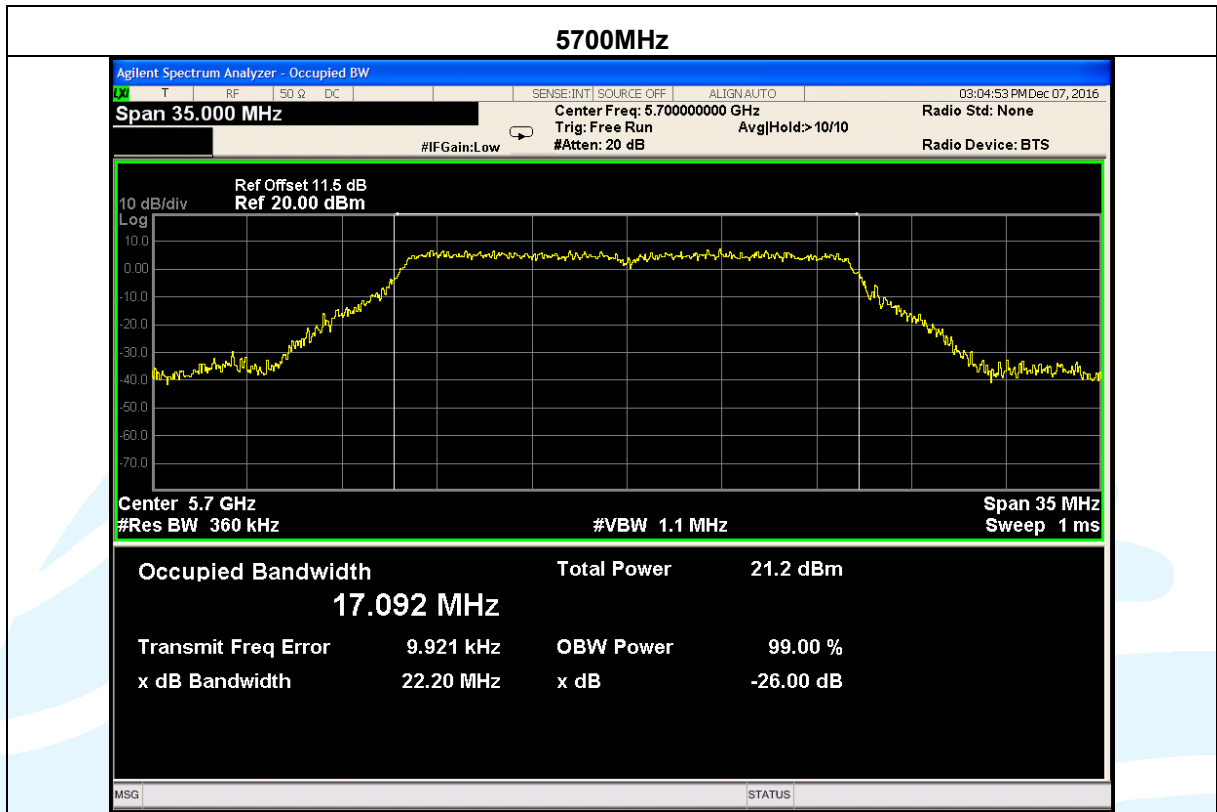


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5.3 Maximum conducted output power

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)

Test Method: KDB 789033 D02 v01r03 Section E.3.a(Method PM)

Limit:

1. For the band 5.15-5.25 GHz.
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively

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for fixed, point-to-point operations.

- Test Procedure:**
1. Connected the EUT's antenna port to measure device by 10dB attenuator.
 2. Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of Tx on burst.

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:

Duty Cycle Factor

Duty Cycle Factor	0.58(dB)
--------------------------	----------

Antenna Gain and Power Limits of U-NII-2A and U-NII-2C band:

Band	Antenna Gain (dBi)	Power Limits (dBm)
U-NII-1	-1.72	24
U-NII-3	-0.78	30

Bandwidth, Antenna Gain and Power Limits of U-NII-2A and U-NII-2C band:

Band	Min 26 dB BW (MHz)	11 dBm + 10 log B	Antenna Gain (dBi)	Power Limits (dBm)
U-NII-2A	21.62	24.35	-0.96	24
U-NII-2C	21.87	24.40	0.04	24

Mode	Channel Frequency(MHz)	Conducted Average Power (dBm)	Maximum conducted output power (dBm)	Power Limit (dBm)
802.11a	36 (5180)	14.51	15.09	24
	44 (5220)	14.40	14.98	24
	48 (5240)	14.48	15.06	24
	52 (5260)	14.50	15.08	24
	60 (5300)	14.31	14.89	24
	64 (5320)	14.07	14.65	24
	100 (5500)	14.56	15.14	24
	116 (5580)	14.47	15.05	24
	140(5700)	14.35	14.93	24
	149 (5745)	13.45	14.03	30
	157 (5785)	13.65	14.23	30
	165 (5825)	13.92	14.50	30

Remark:

1. Maximum conducted output power = Conducted Average Power + Duty Cycle Factor:

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5.4 Peak Power Spectral Density

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(3)
Test Method: KDB 789033 D02 v01r03 Section E.3.a(Method PM)
Limit:

- For mobile and portable client devices in the 5.15-5.25 GHz band, The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
- For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.

Spectrum analyzer according to the following Settings:

1. 5.15-5.25 GHz band:

Using method SA-2

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value and add 10 log (1/duty cycle)

2. 5.725-5.85 GHz band:

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
- Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value and add 10 log (1/duty cycle)

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:

Duty Cycle Factor

Duty Cycle Factor	0.58(dB)
--------------------------	----------

Antenna Gain and PSD Limits

Band	Antenna Gain (dBi)	PSD Limits
U-NII-1	-1.72	11 dBm/MHz
U-NII-2A	-0.96	11 dBm/MHz
U-NII-2C	0.04	11 dBm/MHz
U-NII-3	-0.78	30 dBm/500 KHz

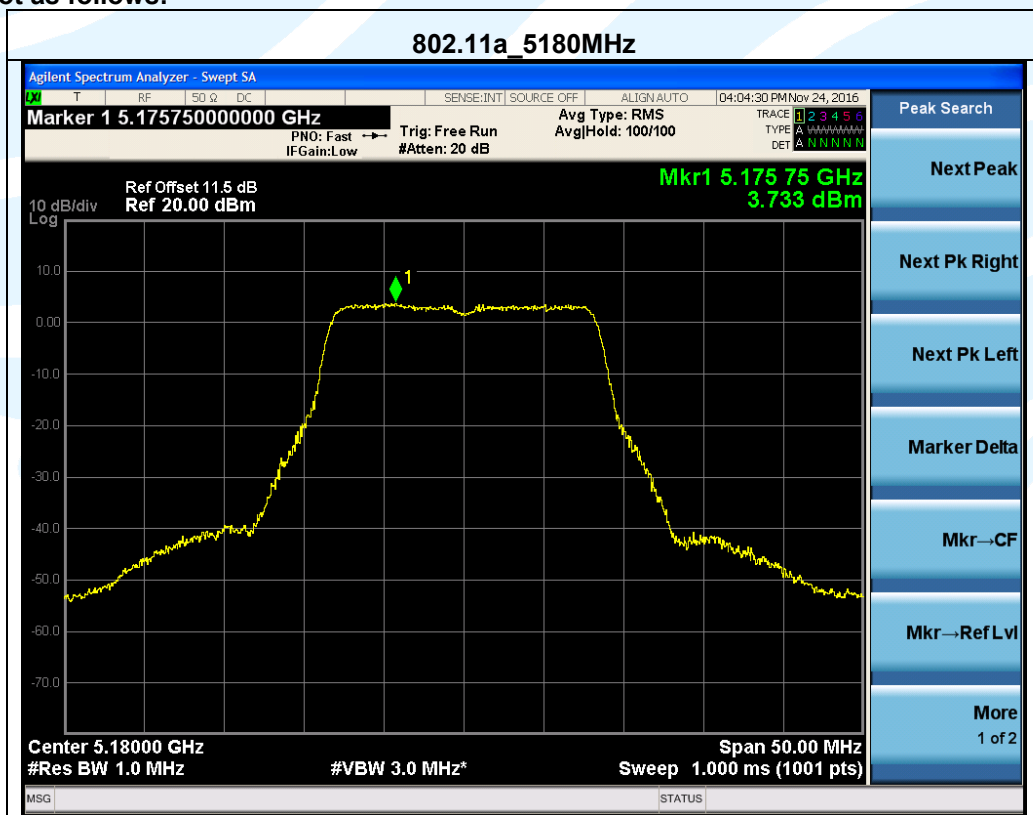
Mode	Channel Frequency(MHz)	Measured PSD (dBm/MHz)	Peak Power Spectral Density (dBm/MHz)	Power Limit (dBm/MHz)
802.11a	36 (5180)	3.73	4.31	11
	44 (5220)	3.59	4.17	11
	48 (5240)	3.35	3.93	11
	52 (5260)	3.48	4.06	11
	60 (5300)	3.15	3.73	11
	64 (5320)	2.91	3.49	11
	100 (5500)	2.88	3.46	11
	116 (5580)	3.42	4.00	11
	140(5700)	3.70	4.28	11

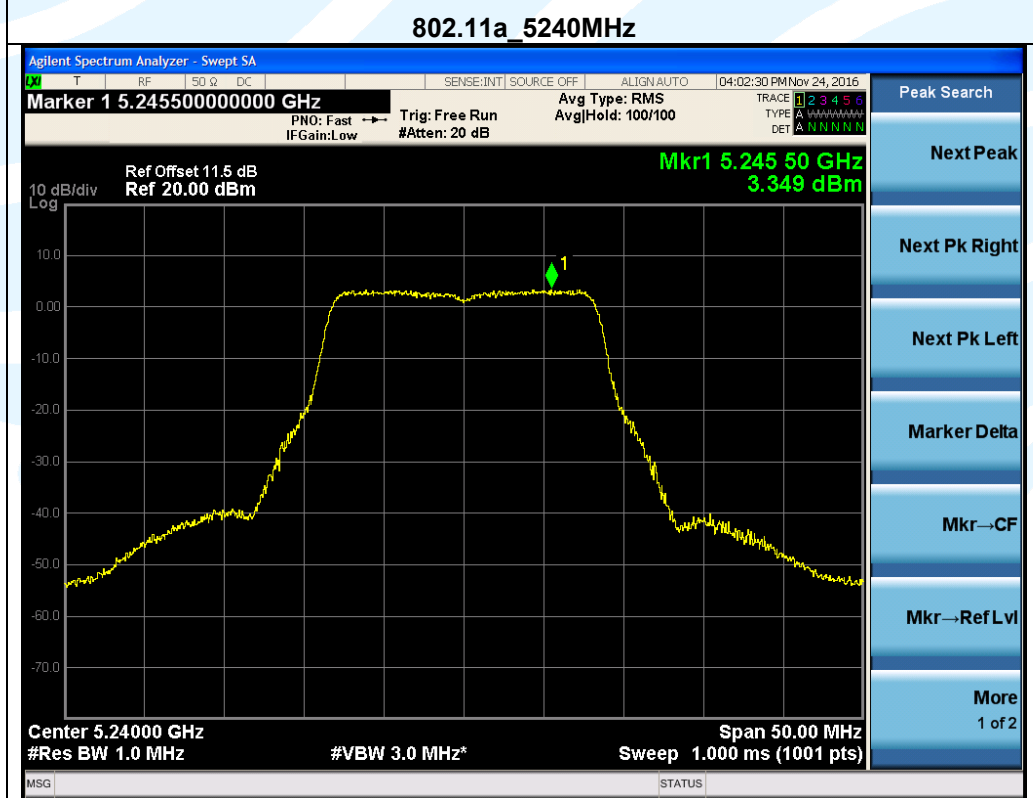
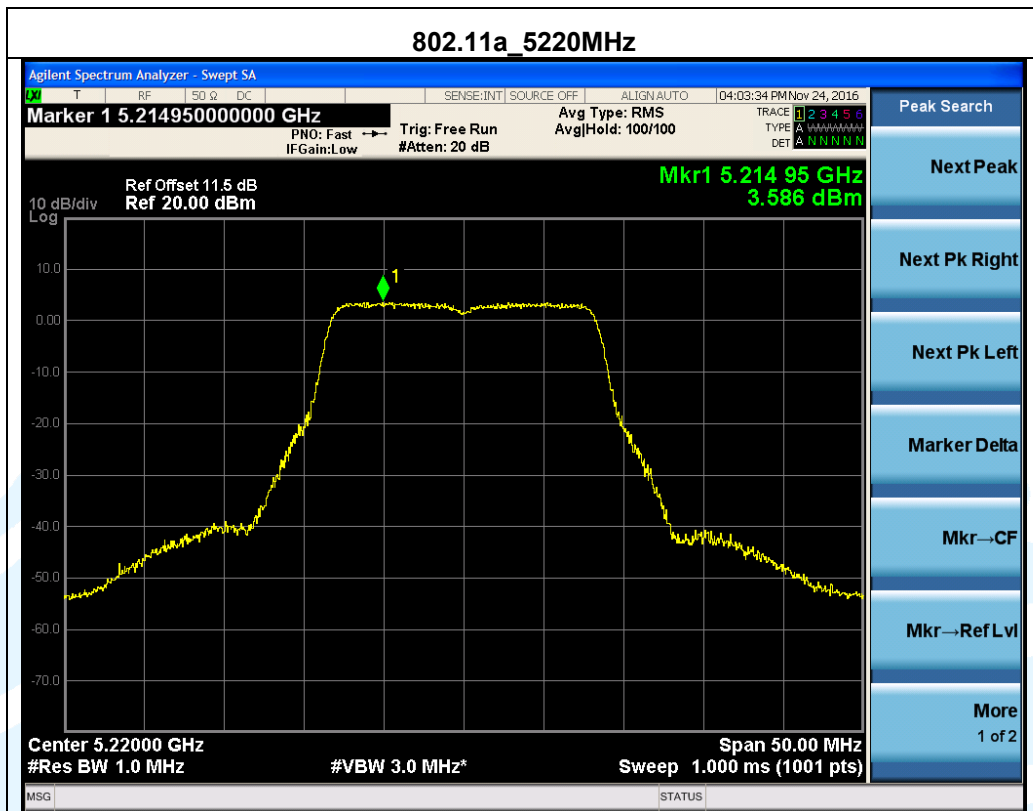
Mode	Channel Frequency(MHz)	Measured PSD (dBm/500 KHz)	Peak Power Spectral Density (dBm/500 KHz)	Power Limit (dBm/500 KHz)
802.11a	149 (5745)	0.13	0.71	30
	157 (5785)	0.62	1.20	30
	165 (5825)	0.77	1.35	30

Remark:

- Maximum conducted output power = Conducted Average Power + Duty Cycle Factor:

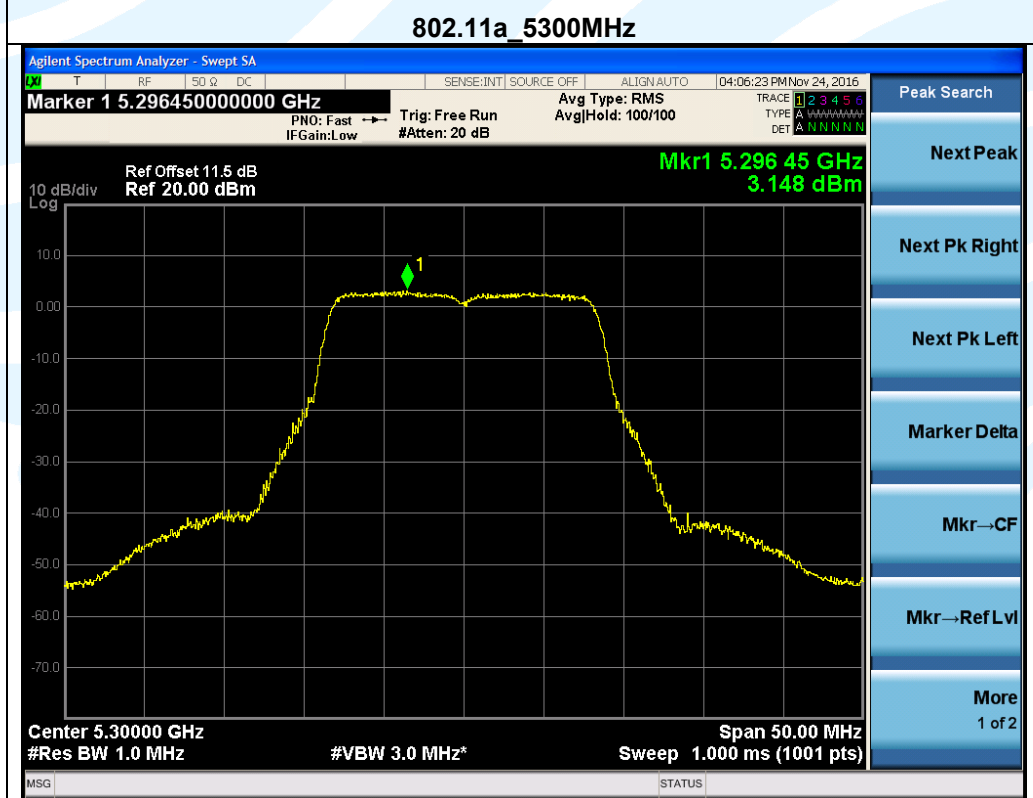
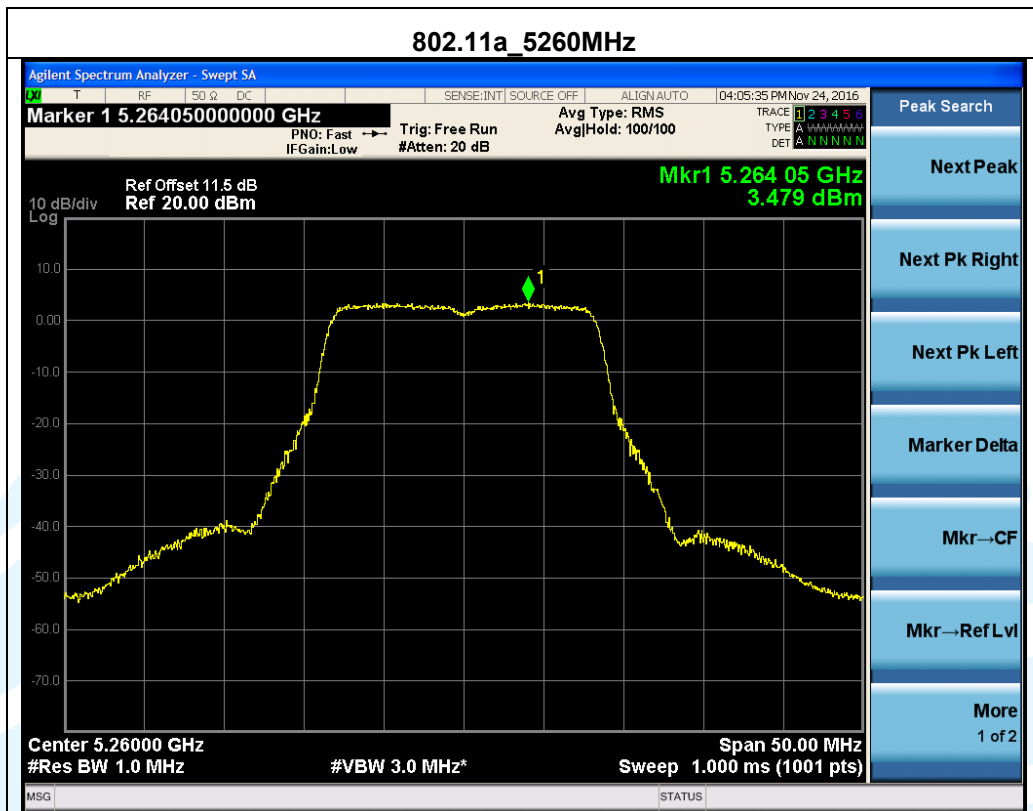
The test plot as follows:





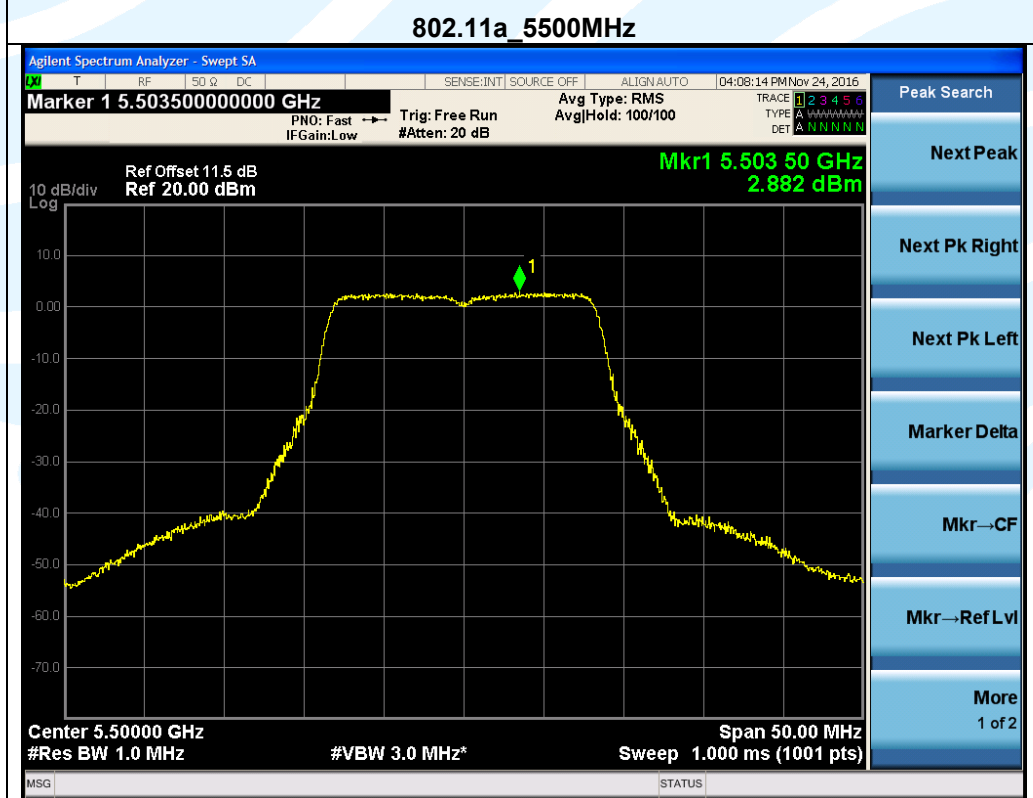
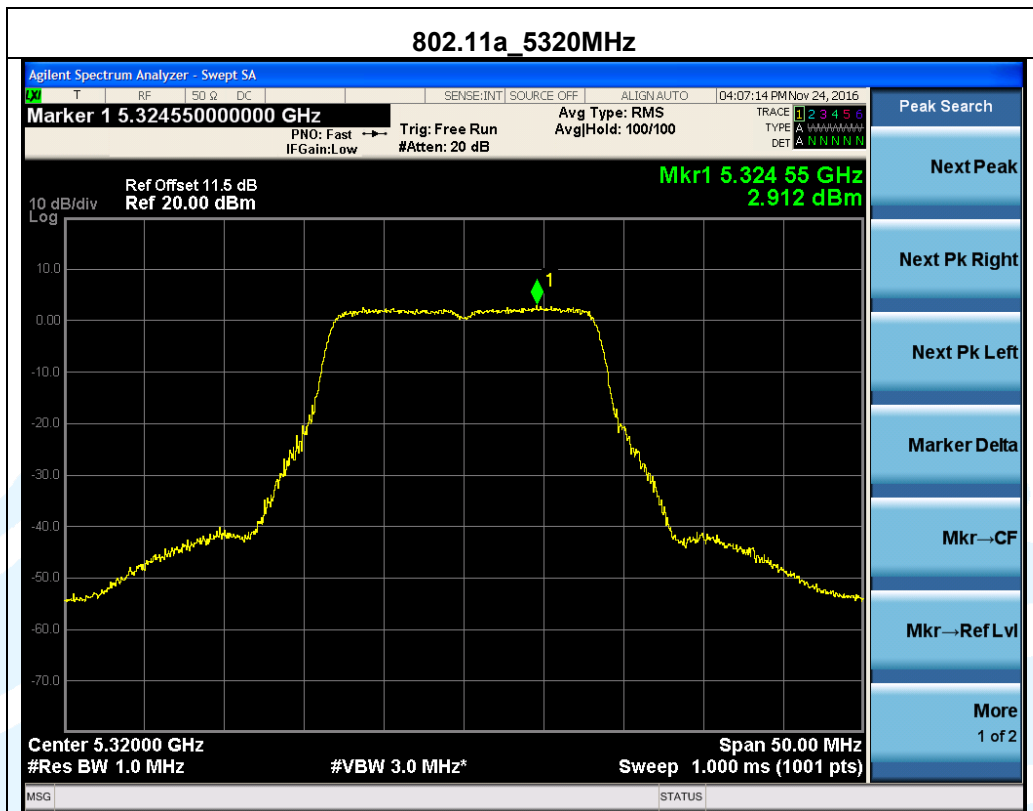
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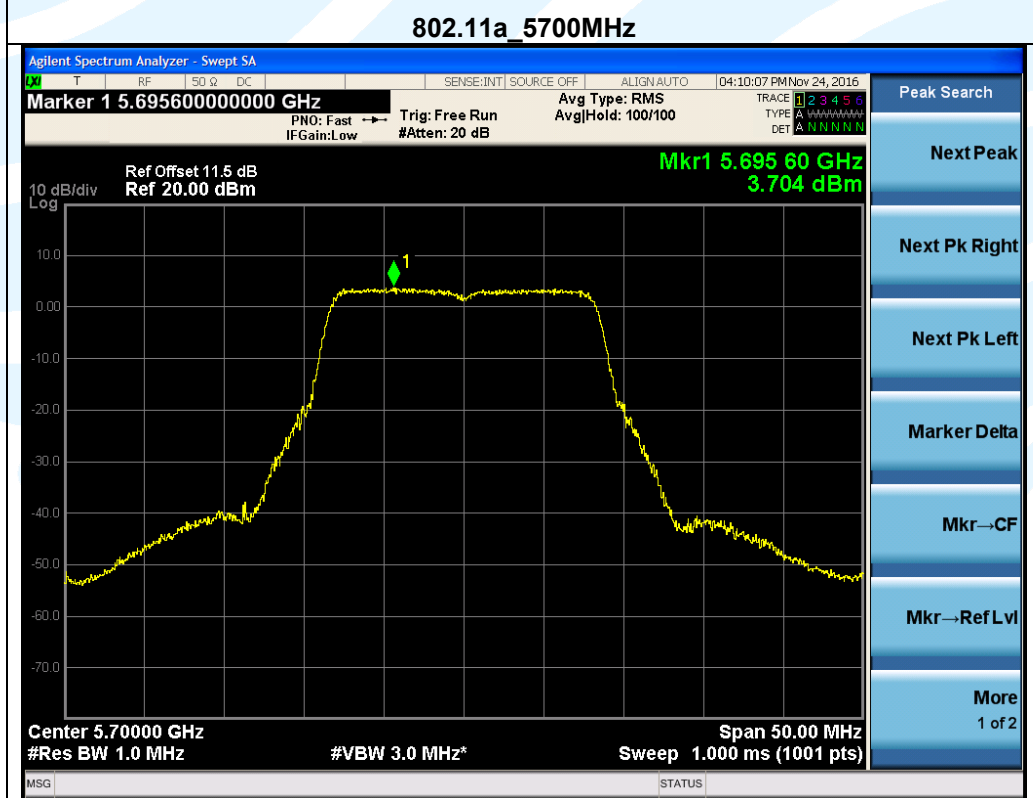
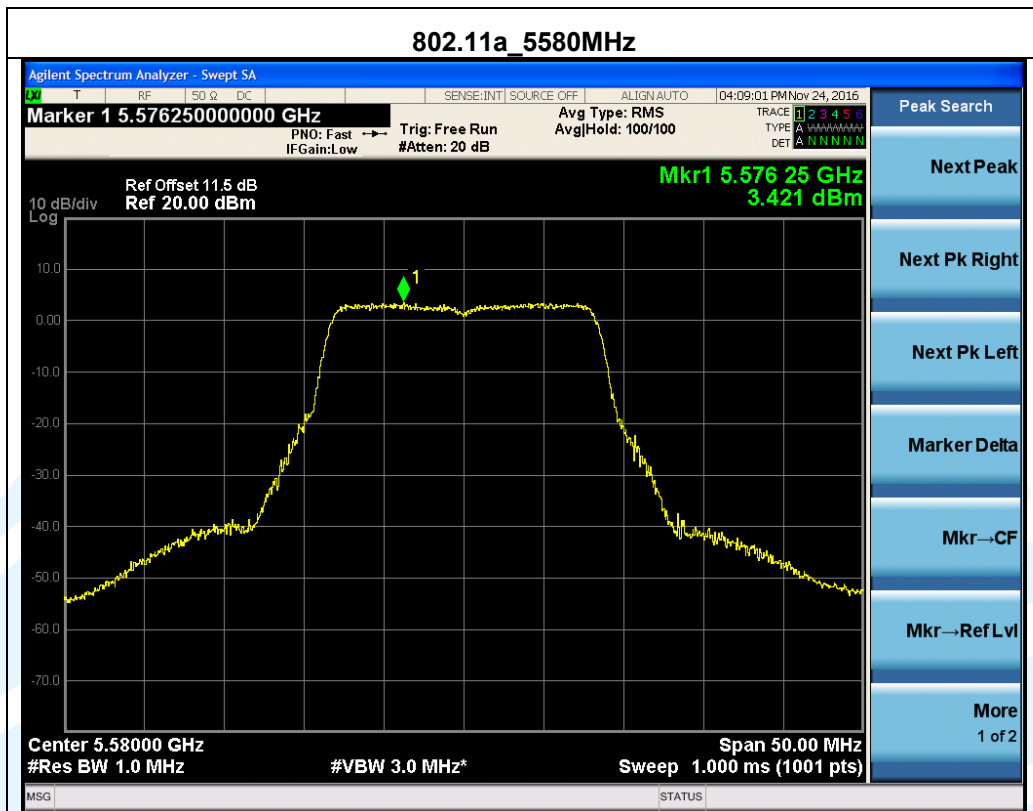
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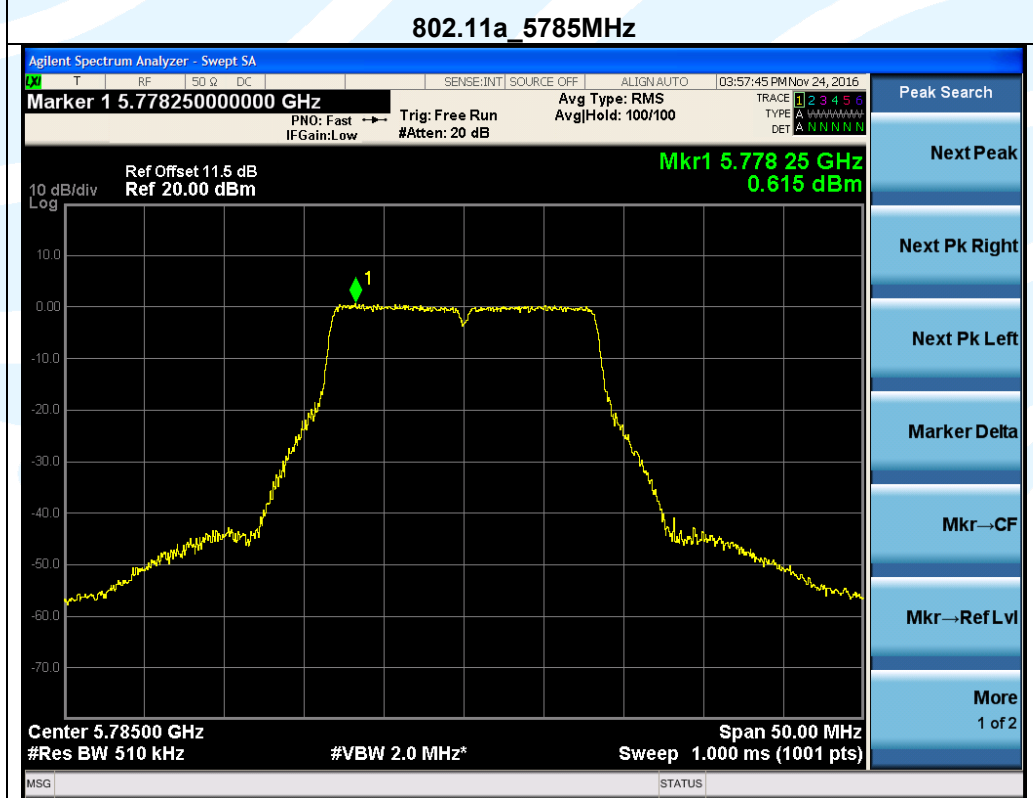
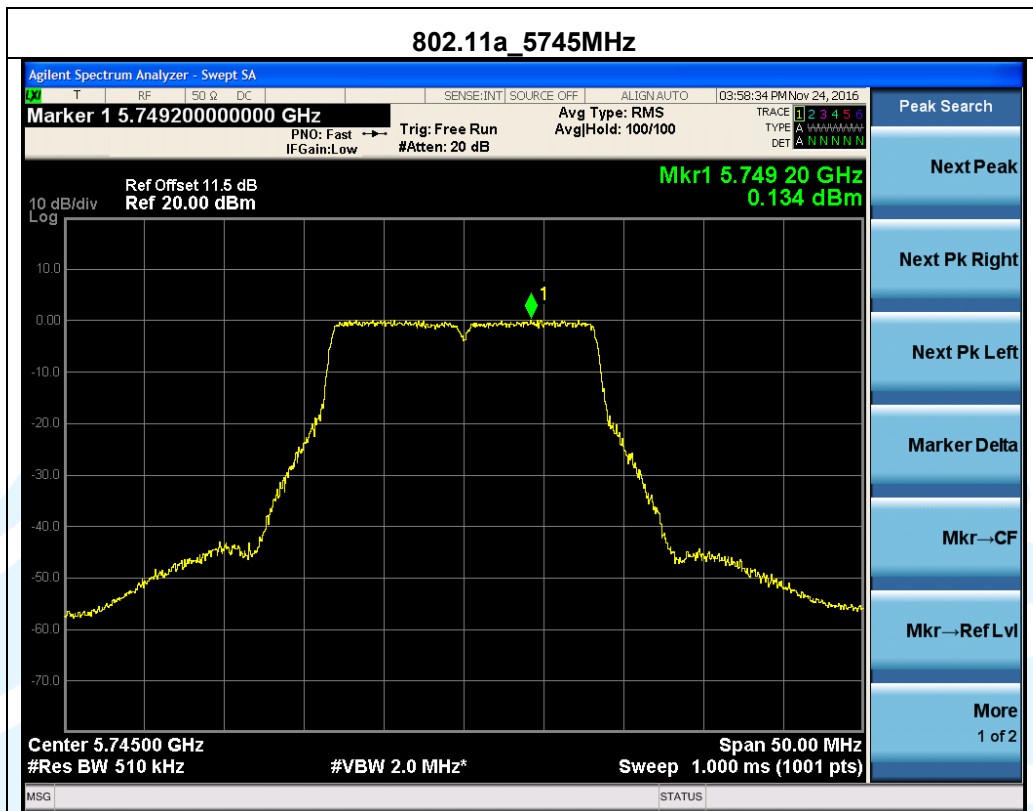
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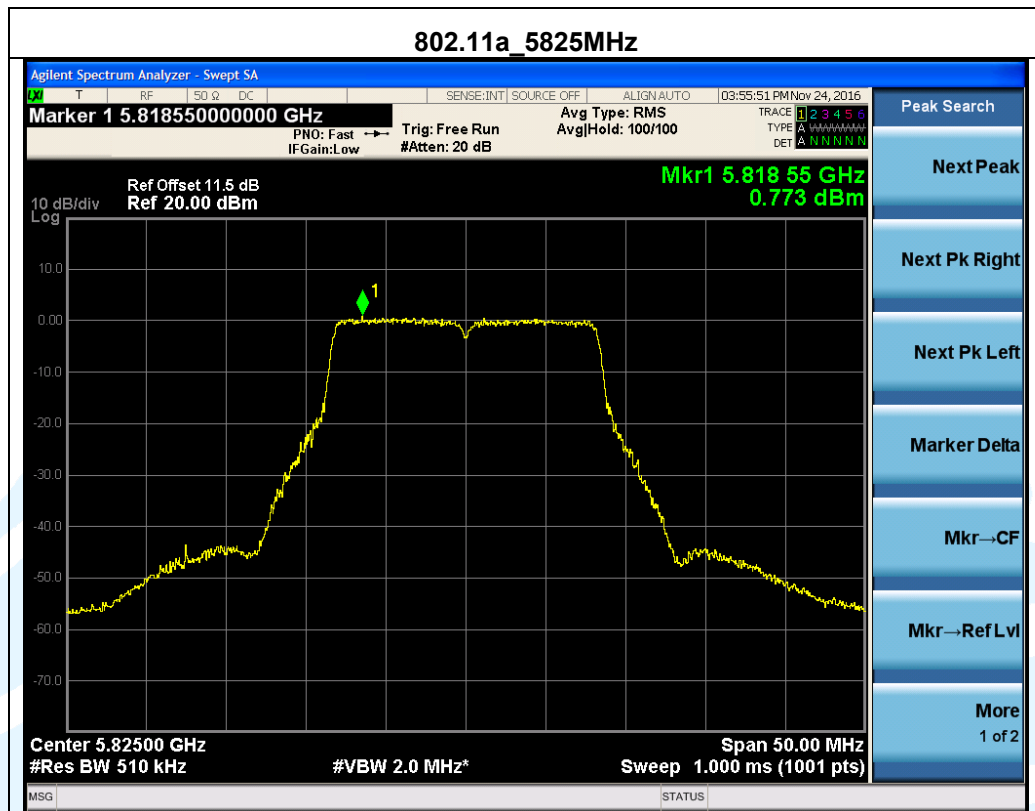
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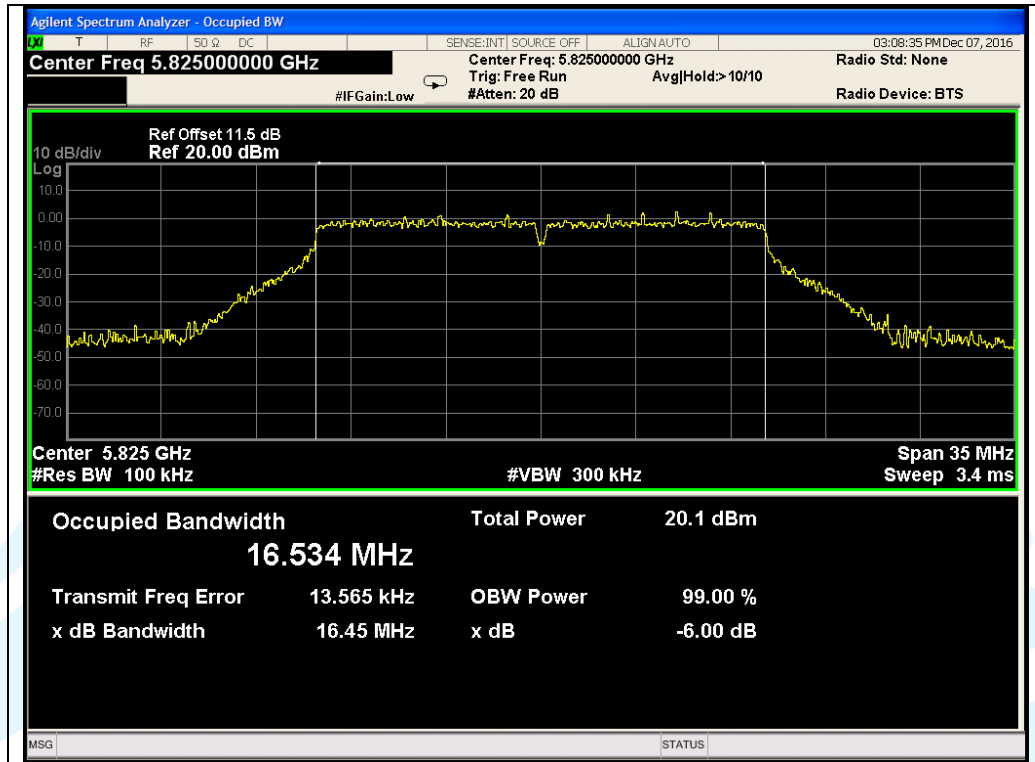
5.5 6 dB bandwidth

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (e)
Test Method: KDB 789033 D02 v01r03 Section C.2
Limit: Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Procedure: The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.
 Spectrum analyzer according to the following Settings:
 a) Set RBW = 100 kHz.
 b) Set the video bandwidth (VBW) $\geq 3 * RBW$.
 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:

Mode	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limit	Result (Pass / Fail)
802.11a	149 (5745)	16.39	16.510	> 500 kHz	Pass
	157 (5785)	16.41	16.525	> 500 kHz	Pass
	165 (5825)	16.45	16.534	> 500 kHz	Pass

The test plot as follows:





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5.6 Frequency stability

Test Requirement: FCC 47 CFR Part 15 Subpart E Section 15.407 (g)
Test Method: ANSI C63.10-2013
Limit: The frequency of the carrier signal shall be maintained within band of operation.
Test Procedure: a) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
 b) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
 c) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.
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:

Frequency Stability Versus Temp.					
Temp. (°C)	Power Supply (Vdc)	Measured Frequency (GHz)		Frequency Drift (ppm)	Result (Pass / Fail)
		FL	FH		
Operating Frequency: 5180 MHz					
55	3.85	5171.65	5188.35	0.00	Pass
25	3.85	5171.60	5188.35	-4.83	Pass
0	3.85	5171.65	5188.35	0.00	Pass
Operating Frequency: 5320 MHz					
55	3.85	5311.65	5328.35	0.00	Pass
25	3.85	5311.60	5328.35	-4.70	Pass
0	3.85	5311.65	5328.35	0.00	Pass
Operating Frequency: 5500 MHz					
55	3.85	5491.65	5508.35	0.00	Pass
25	3.85	5491.60	5508.35	-4.55	Pass
0	3.85	5491.65	5508.35	0.00	Pass
Operating Frequency: 5745 MHz					
55	3.85	5736.65	5753.35	0.00	Pass
25	3.85	5736.65	5753.35	0.00	Pass
0	3.85	5736.65	5753.35	0.00	Pass

Frequency Stability Versus Voltage					
Temp. (°C)	Power Supply (Vdc)	Measured Frequency (GHz)		Frequency Drift (ppm)	Result (Pass / Fail)
		FL	FH		
Operating Frequency: 5180 MHz					
25	4.4	5171.65	5188.35	0.00	Pass
	3.85	5171.60	5188.35	-4.83	Pass
	3.6	5171.60	5188.35	-4.83	Pass
Operating Frequency: 5320 MHz					
25	4.4	5311.65	5328.35	0.00	Pass
	3.85	5311.60	5328.35	-4.70	Pass
	3.6	5311.65	5328.35	0.00	Pass
Operating Frequency: 5500 MHz					
25	4.4	5491.65	5508.35	0.00	Pass
	3.85	5491.60	5508.35	-4.55	Pass
	3.6	5491.65	5508.35	0.00	Pass
Operating Frequency: 5745 MHz					
25	4.4	5736.65	5753.35	0.00	Pass
	3.85	5736.65	5753.35	0.00	Pass
	3.6	5736.65	5753.35	0.00	Pass

5.7 Radiated Emissions and Band Edge Measurement

Test Requirement:

Test Method:

Limit:

FCC 47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(4)(6)

KDB 789033 D02 v01r03 Section G.3, G.4, G.5, and G.6

1. Limits of Radiated Emission and Bandedge Measurement

Radiated emissions that fall in the restricted bands must comply with the general emissions limits in 15.209(a) as below table. Other emissions shall be at least 20 dB below the highest level of the desired power.

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:

a) The lower limit shall apply at the transition frequencies.

b) Emission level (dBuV/m) = 20 log Emission level (uV/m).

c) 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.

2. Limits of Unwanted Emission Out of the Restricted Bands

Applicable To	Limit	
	Field Strength at 3 m	
789033 D02 General U-NII Test Procedures New Rules v01r02	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
15.407(b)(4) Beyond 10 MHz of the band edge	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
15.407(b)(4) Within 10 MHz of band edge	PK: -17 (dBm/MHz)	PK: 78.2 (dBµV/m)

Test Procedure:

- The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna 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.

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- 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 table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Remark:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for RMS Average (Duty cycle < 98 %) for Average detection (AV) at frequency above 1 GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) or ≥ 1/T(duty cycle is < 98%) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

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:

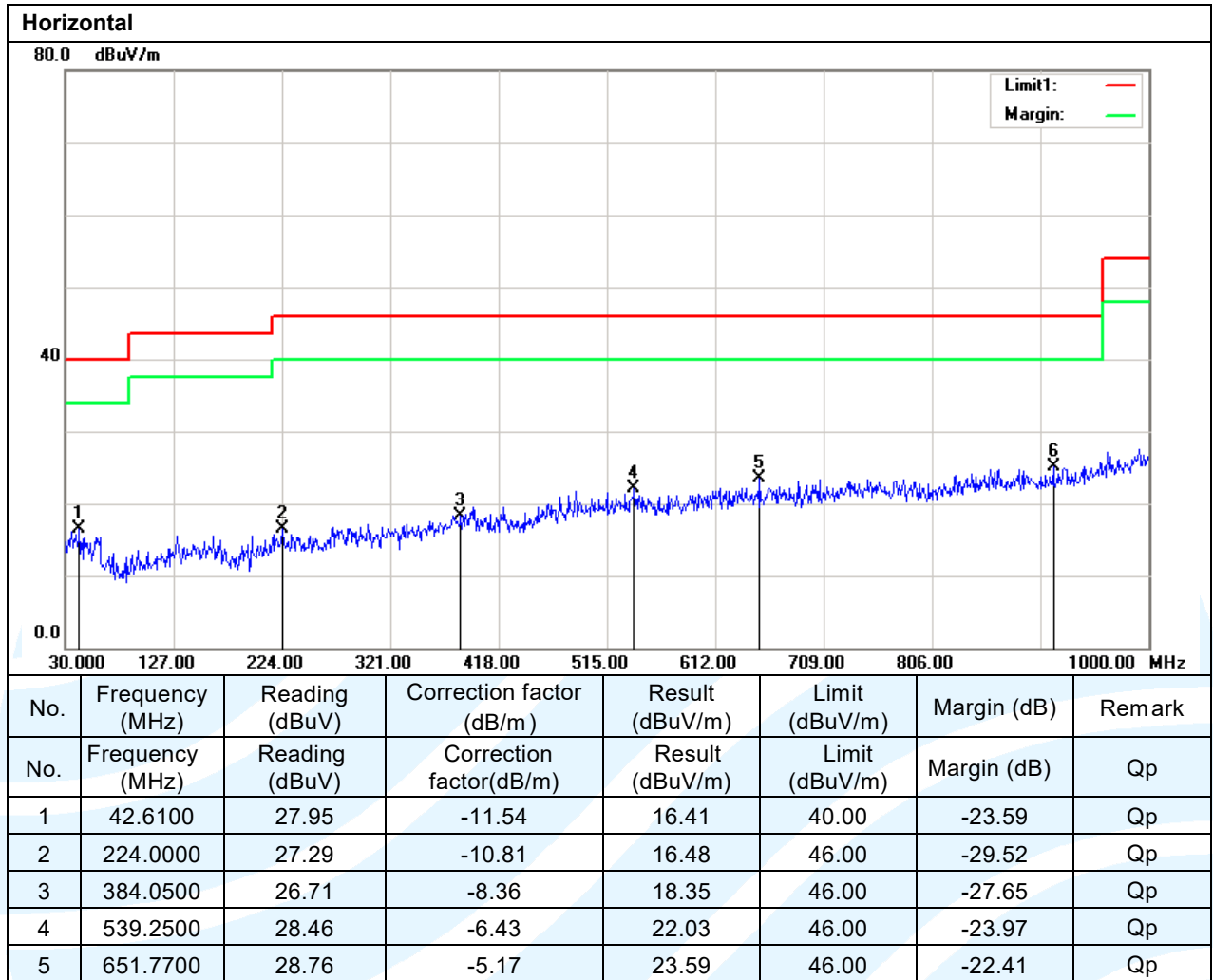
5.7.1 Radiated Emission Test Data (9 KHz ~ 30MHz)

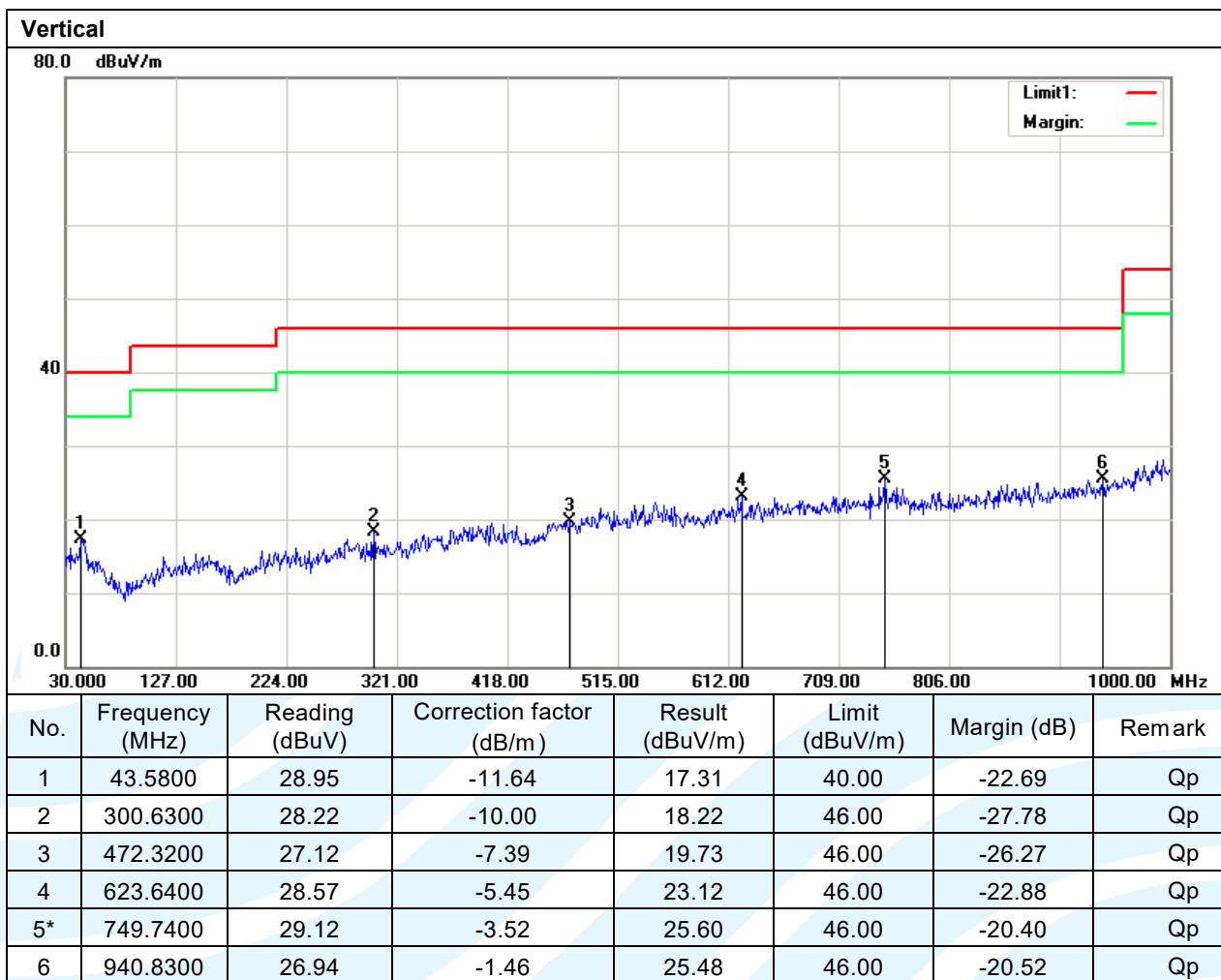
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

5.7.2 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.

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





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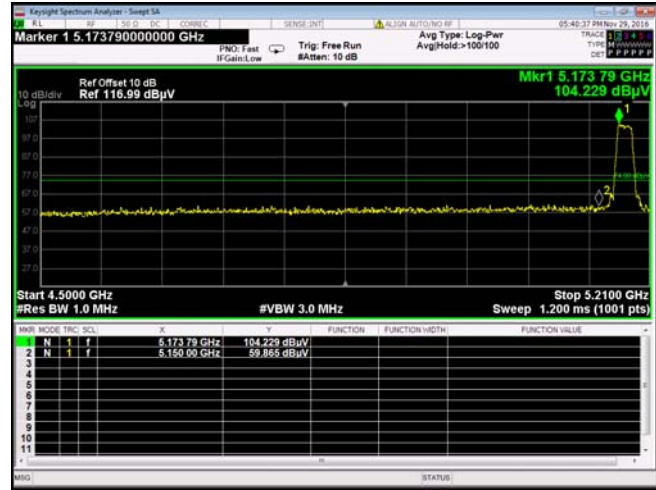
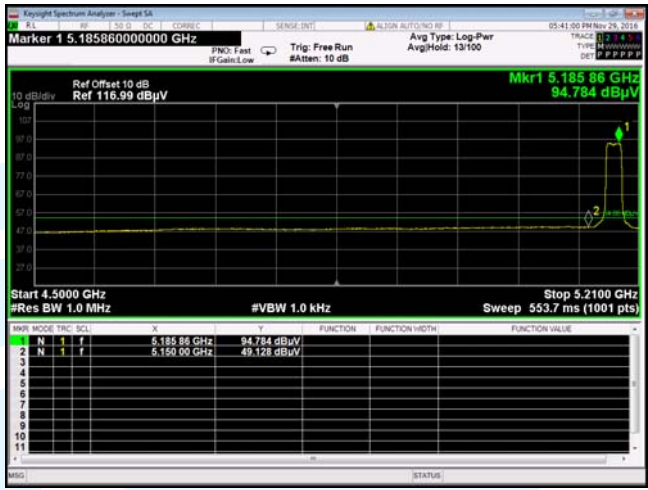
5.7.4 Radiated Emission Test Data (1GHz ~ 18GHz)

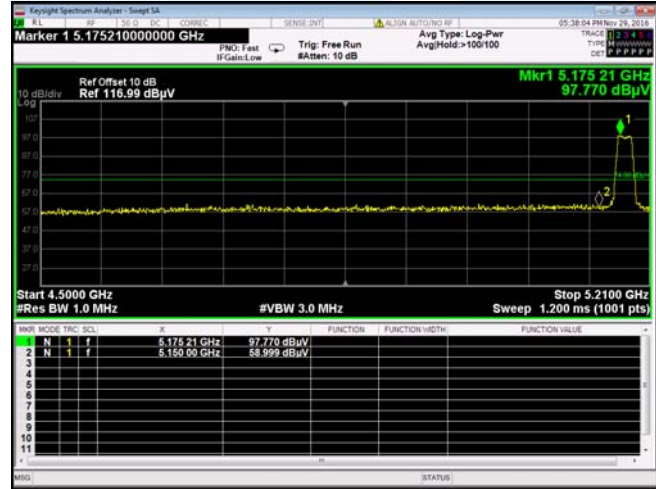
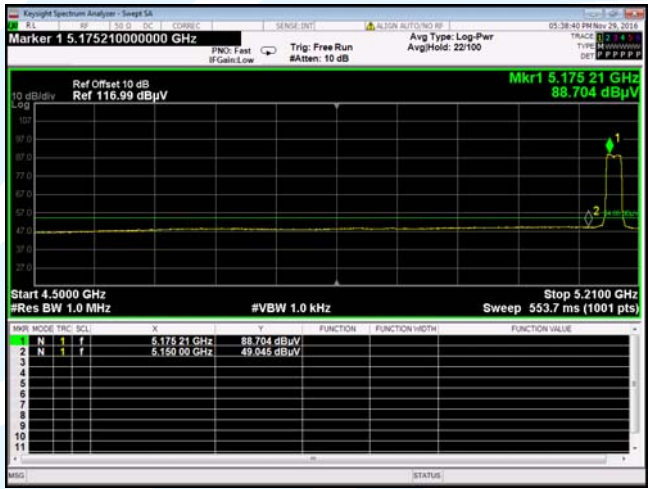
802.11a						
Tx_5180 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10360.0000	50.71	74.00	-23.29	Peak	Horizontal
2	10360.0000	38.66	54.00	-15.34	Average	Horizontal
3	15540.0000	53.52	74.00	-20.48	Peak	Horizontal
4	15540.0000	41.04	54.00	-12.96	Average	Horizontal
5	10360.0000	50.03	74.00	-23.97	Peak	Vertical
6	10360.0000	37.64	54.00	-16.36	Average	Vertical
7	15540.0000	52.60	74.00	-21.40	Peak	Vertical
8	15540.0000	40.03	54.00	-13.97	Average	Vertical
Tx_5220 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10440.0000	51.32	74.00	-22.68	Peak	Horizontal
2	10440.0000	38.19	54.00	-15.81	Average	Horizontal
3	15660.0000	53.17	74.00	-20.83	Peak	Horizontal
4	15660.0000	40.83	54.00	-13.17	Average	Horizontal
5	10440.0000	50.87	74.00	-23.13	Peak	Vertical
6	10440.0000	37.54	54.00	-16.46	Average	Vertical
7	15660.0000	53.05	74.00	-20.95	Peak	Vertical
8	15660.0000	39.74	54.00	-14.26	Average	Vertical
Tx_5240 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10480.0000	50.56	74.00	-23.44	Peak	Horizontal
2	10480.0000	37.55	54.00	-16.45	Average	Horizontal
3	15720.0000	53.94	74.00	-20.06	Peak	Horizontal
4	15720.0000	40.87	54.00	-13.13	Average	Horizontal
5	10480.0000	51.53	74.00	-22.47	Peak	Vertical
6	10480.0000	37.07	54.00	-16.93	Average	Vertical
7	15720.0000	52.41	74.00	-21.59	Peak	Vertical
8	15720.0000	39.58	54.00	-14.42	Average	Vertical
Tx_5260 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10520.0000	50.70	74.00	-23.30	Peak	Horizontal
2	10520.0000	37.71	54.00	-16.29	Average	Horizontal
3	15780.0000	54.02	74.00	-19.98	Peak	Horizontal
4	15780.0000	40.73	54.00	-13.27	Average	Horizontal
5	10520.0000	49.77	74.00	-24.23	Peak	Vertical
6	10520.0000	36.81	54.00	-17.19	Average	Vertical
7	15780.0000	52.88	74.00	-21.12	Peak	Vertical
8	15780.0000	39.70	54.00	-14.30	Average	Vertical

Tx_5300 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10600.0000	51.45	74.00	-22.55	Peak	Horizontal
2	10600.0000	38.34	54.00	-15.66	Average	Horizontal
3	15900.0000	54.77	74.00	-19.23	Peak	Horizontal
4	15900.0000	42.85	54.00	-11.15	Average	Horizontal
5	10600.0000	50.49	74.00	-23.51	Peak	Vertical
6	10600.0000	37.53	54.00	-16.47	Average	Vertical
7	15900.0000	53.73	74.00	-20.27	Peak	Vertical
8	15900.0000	41.51	54.00	-12.49	Average	Vertical
Tx_5320 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	10640.0000	51.13	74.00	-22.87	Peak	Horizontal
2	10640.0000	38.35	54.00	-15.65	Average	Horizontal
3	15960.0000	55.12	74.00	-18.88	Peak	Horizontal
4	15960.0000	42.83	54.00	-11.17	Average	Horizontal
5	10640.0000	50.32	74.00	-23.68	Peak	Vertical
6	10640.0000	37.42	54.00	-16.58	Average	Vertical
7	15960.0000	53.75	74.00	-20.25	Peak	Vertical
8	15960.0000	41.56	54.00	-12.44	Average	Vertical
Tx_5500 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11000.0000	51.00	74.00	-23.00	Peak	Horizontal
2	11000.0000	38.68	54.00	-15.32	Average	Horizontal
3	16500.0000	55.44	74.00	-18.56	Peak	Horizontal
4	16500.0000	43.15	54.00	-10.85	Average	Horizontal
5	11000.0000	50.02	74.00	-23.98	Peak	Vertical
6	11000.0000	37.72	54.00	-16.28	Average	Vertical
7	16500.0000	54.31	74.00	-19.69	Peak	Vertical
8	16500.0000	42.05	54.00	-11.95	Average	Vertical
Tx_5580 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11160.0000	50.75	74.00	-23.25	Peak	Horizontal
2	11160.0000	38.47	54.00	-15.53	Average	Horizontal
3	16740.0000	55.08	74.00	-18.92	Peak	Horizontal
4	16740.0000	42.64	54.00	-11.36	Average	Horizontal
5	11160.0000	50.28	74.00	-23.72	Peak	Vertical
6	11160.0000	36.73	54.00	-17.27	Average	Vertical
7	16740.0000	53.42	74.00	-20.58	Peak	Vertical
8	16740.0000	40.24	54.00	-13.76	Average	Vertical

Tx_5700 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11400.0000	52.58	74.00	-21.42	Peak	Horizontal
2	11400.0000	38.80	54.00	-15.20	Average	Horizontal
3	17100.0000	54.22	74.00	-19.78	Peak	Horizontal
4	17100.0000	42.34	54.00	-11.66	Average	Horizontal
5	11400.0000	51.32	74.00	-22.68	Peak	Vertical
6	11400.0000	37.70	54.00	-16.30	Average	Vertical
7	17100.0000	53.29	74.00	-20.71	Peak	Vertical
8	17100.0000	41.13	54.00	-12.87	Average	Vertical
Tx_5745 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11490.0000	51.92	74.00	-22.08	Peak	Horizontal
2	11490.0000	38.47	54.00	-15.53	Average	Horizontal
3	17235.0000	54.90	74.00	-19.10	Peak	Horizontal
4	17235.0000	42.44	54.00	-11.56	Average	Horizontal
5	11490.0000	51.09	74.00	-22.91	Peak	Vertical
6	11490.0000	37.57	54.00	-16.43	Average	Vertical
7	17235.0000	54.42	74.00	-19.58	Peak	Vertical
8	17235.0000	41.32	54.00	-12.68	Average	Vertical
Tx_5785 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11570.0000	52.23	74.00	-21.77	Peak	Horizontal
2	11570.0000	38.56	54.00	-15.44	Average	Horizontal
3	17355.0000	55.84	74.00	-18.16	Peak	Horizontal
4	17355.0000	43.88	54.00	-10.12	Average	Horizontal
5	11570.0000	50.80	74.00	-23.20	Peak	Vertical
6	11570.0000	37.34	54.00	-16.66	Average	Vertical
7	17355.0000	54.89	74.00	-19.11	Peak	Vertical
8	17355.0000	42.84	54.00	-11.16	Average	Vertical
Tx_5825 MHz						
.No.	Frequency (MHz)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Polar.
1	11650.0000	54.22	74.00	-19.78	Peak	Horizontal
2	11650.0000	39.56	54.00	-14.44	Average	Horizontal
3	17475.0000	57.91	74.00	-16.09	Peak	Horizontal
4	17475.0000	44.69	54.00	-9.31	Average	Horizontal
5	11650.0000	51.57	74.00	-22.43	Peak	Vertical
6	11650.0000	38.10	54.00	-15.90	Average	Vertical
7	17475.0000	55.66	74.00	-18.34	Peak	Vertical
8	17475.0000	43.51	54.00	-10.49	Average	Vertical

5.7.5 Band Edge Measurements (Radiated)

Frequency (MHz)		Tx_802.11a_Channel 36		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	
5150.00	59.865	74	49.128	54	Pass	

Frequency (MHz)		Tx_802.11a_Channel 36		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	
5150.00	58.999	74	49.045	54	Pass	

Frequency (MHz)		Tx_802.11a_Channel 64		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		
5350.00	57.496	74	48.046	54	Pass		

Frequency (MHz)		Tx_802.11a_Channel 64		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		
5350.00	56.511	74	48.117	54	Pass		

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Frequency (MHz)	Tx_802.11a_Channel 100	Detector	Peak
Horizontal		Vertical	
Frequency (MHz)	Peak level (dBuV/m)	Peak Limit (dBuV/m)	Ant. Polar.
5470.00	56.276	68.2	Horizontal
5470.00	58.670	68.2	Vertical
		Conclusion	
		Pass	
		Pass	

Frequency (MHz)	Tx_802.11a_Channel 149	Detector	Peak
Horizontal		Vertical	
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Ant. Polar.
5637.12	-37.365	-27	Horizontal
5643.10	-37.000	-27	Vertical
		Conclusion	
		Pass	
		Pass	

Frequency (MHz)	Tx_802.11a_Channel 165	Detector	Peak	
Horizontal		Vertical		
Frequency (MHz)	Peak level (dBm)	Peak Limit (dBm)	Ant. Polar.	Conclusion
5958.96	-37.622	-27	Horizontal	Pass
5970.74	-37.219	-27	Vertical	Pass

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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

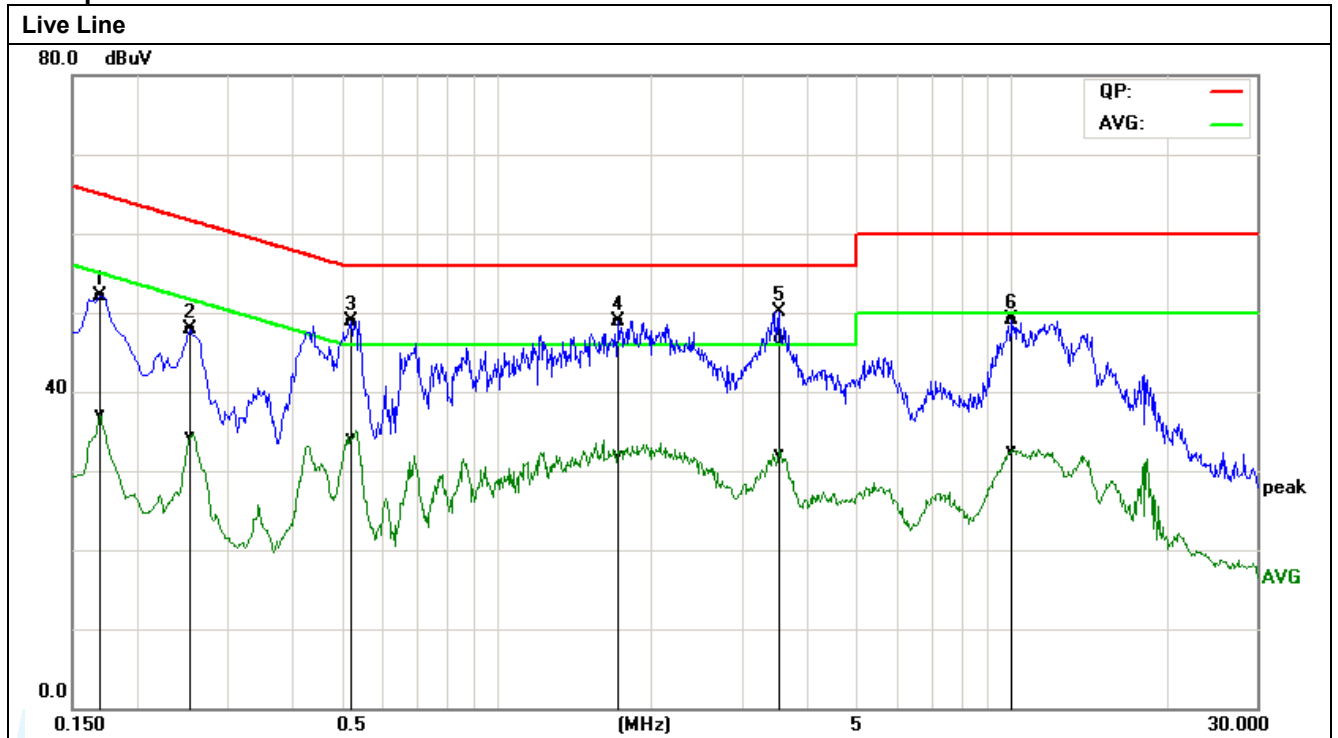
Test Results: Pass

Test Data

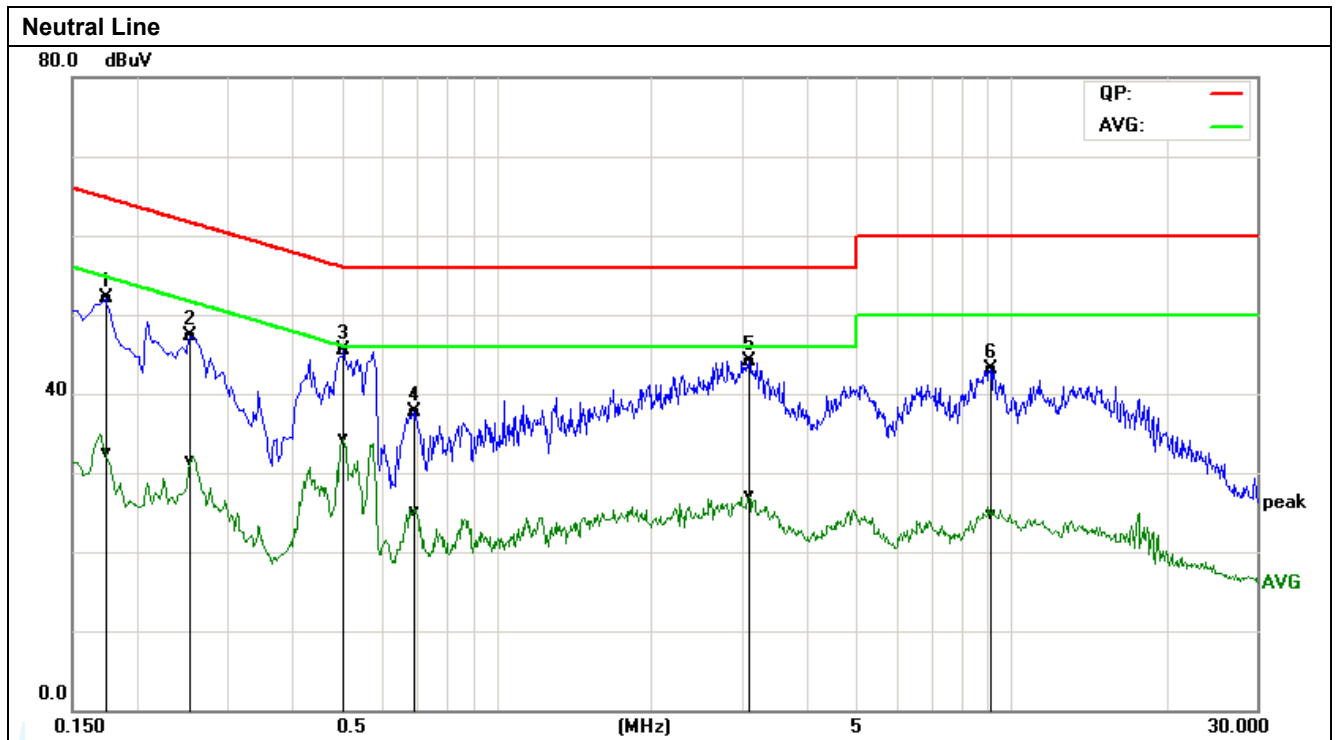
An initial pre-scan was performed on the live and neutral lines with peak detector.

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

Test plot as follows:



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.1700	32.62	17.62	19.57	52.19	37.19	64.96	54.96	-12.77	-17.77	Pass
2P	0.2540	28.23	14.57	19.64	47.87	34.21	61.62	51.63	-13.75	-17.42	Pass
3*	0.5220	29.35	14.48	19.65	49.00	34.13	56.00	46.00	-7.00	-11.87	Pass
4P	1.7340	29.28	12.26	19.70	48.98	31.96	56.00	46.00	-7.02	-14.04	Pass
5P	3.5380	27.02	12.46	19.68	46.70	32.14	56.00	46.00	-9.30	-13.86	Pass
6P	10.0500	28.92	12.29	20.15	49.07	32.44	60.00	50.00	-10.93	-17.56	Pass



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.1740	32.33	12.68	19.73	52.06	32.41	64.76	54.77	-12.70	-22.36	Pass
2P	0.2540	27.53	11.76	19.72	47.25	31.48	61.62	51.63	-14.37	-20.15	Pass
3*	0.5060	25.90	14.72	19.63	45.53	34.35	56.00	46.00	-10.47	-11.65	Pass
4P	0.6900	18.04	5.45	19.71	37.75	25.16	56.00	46.00	-18.25	-20.84	Pass
5P	3.1020	24.44	7.35	19.72	44.16	27.07	56.00	46.00	-11.84	-18.93	Pass
6P	9.1540	23.08	4.62	20.03	43.11	24.65	60.00	50.00	-16.89	-25.35	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 *****

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