

FCC Part 15E

Measurement and Test Report

For

PEGATRON CORPORATION

5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, 11259

Taiwan

FCC ID: VUI-MT10MT

FCC Rule(s):	<u>FCC Part 15E</u>	
Product Description:	<u>Tablet PC</u>	
Tested Model:	<u>MT10UWB216</u>	
Report No.:	<u>STR17028031I-1</u>	
Tested Date:	<u>2017-02-08 to 2017-03-02</u>	
Issued Date:	<u>2017-03-03</u>	
Tested By:	<u>Neil Wong / Engineer</u>	<i>Neil Wong</i>
Reviewed By:	<u>Silin Chen / EMC Manager</u>	<i>Silin Chen</i>
Approved & Authorized By:	<u>Jandy So / PSQ Manager</u>	<i>Jandy So</i>
Prepared By:		

Shenzhen SEM.Test Technology Co., Ltd.

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 TEST STANDARDS	5
1.3 TEST METHODOLOGY	5
1.4 TABLE FOR PARAMETERS OF TEST SOFTWARE SETTING	5
1.5 EUT OPERATING DURING TEST	6
1.6 TEST FACILITY	6
1.7 EUT SETUP AND TEST MODE	6
1.8 MEASUREMENT UNCERTAINTY	7
1.9 TEST EQUIPMENT LIST AND DETAILS	7
2. SUMMARY OF TEST RESULTS	8
3. RF EXPOSURE	9
3.1 STANDARD APPLICABLE	9
3.2 TEST RESULT	9
4. ANTENNA REQUIREMENT	10
4.1 STANDARD APPLICABLE	10
4.2 EVALUATION INFORMATION	10
5. CONDUCTED EMISSIONS	11
5.1 TEST PROCEDURE	11
5.3 BASIC TEST SETUP BLOCK DIAGRAM	11
5.4 ENVIRONMENTAL CONDITIONS	12
5.5 TEST RECEIVER SETUP	12
5.6 SUMMARY OF TEST RESULTS/PLOTS	12
5.7 CONDUCTED EMISSIONS TEST DATA	12
6. POWER SPECTRAL DENSITY	15
6.1 STANDARD APPLICABLE	15
6.2 TEST PROCEDURE	15
6.3 ENVIRONMENTAL CONDITIONS	16
6.4 SUMMARY OF TEST RESULTS/PLOTS	16
7. EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH	26
7.1 STANDARD APPLICABLE	26
7.2 TEST PROCEDURE	26
7.3 ENVIRONMENTAL CONDITIONS	28
7.4 SUMMARY OF TEST RESULTS/PLOTS	28
8. MAXIMUM CONDUCTED OUTPUT POWER	41
8.1 STANDARD APPLICABLE	41
8.2 TEST PROCEDURE	41
8.3 ENVIRONMENTAL CONDITIONS	42
8.4 SUMMARY OF TEST RESULTS/PLOTS	42
9. CONDUCTED SPURIOUS EMISSIONS	51
9.1 STANDARD APPLICABLE	51
9.2 TEST PROCEDURE	51
9.3 ENVIRONMENTAL CONDITIONS	51
9.4 SUMMARY OF TEST RESULTS/PLOTS	51
10. RADIATED SPURIOUS EMISSIONS	68
10.1 STANDARD APPLICABLE	68
10.2 TEST PROCEDURE	68
10.3 TEST RECEIVER SETUP	69
10.4 CORRECTED AMPLITUDE & MARGIN CALCULATION	69
10.5 ENVIRONMENTAL CONDITIONS	69
10.6 SUMMARY OF TEST RESULTS/PLOTS	70
11. FREQUENCY STABILITY	114
11.1 STANDARD APPLICABLE	114



11.2 TEST PROCEDURE.....114
11.3 ENVIRONMENTAL CONDITIONS114
11.4 SUMMARY OF TEST RESULTS/PLOTS114

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: PEGATRON CORPORATION
Address of applicant: 5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, 11259 Taiwan

Manufacturer: PEGATRON CORPORATION
Address of manufacturer: 5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, 11259 Taiwan

General Description of EUT	
Product Name:	Tablet PC
Trade Name:	Q00Q/SQ00L
Model No.:	MT10UWB216
Adding Model:	/
Software Version:	G1015_V1.1_20170106
Hardware Version:	9594C
IMEI:	/
Rated Voltage:	DC 3.8V by battery
Battery capacity:	8000mAh
Power Adapter Model:	ASSA55e-050200 Input: AC100-240V, 50/60Hz, 0.45A, Output: DC5.0V,2.0A
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40)
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	15.08dBm (Conducted)
Type of Modulation:	QPSK, 16QAM, 64QAM
Data Rate:	6-54Mbps, up to 150Mbps
Quantity of Channels:	15
Channel Separation:	20MHz
Type of Antenna:	Integral
Antenna Gain:	2.85dBi

1.2 Test Standards

The following report is prepared on behalf of the PEGATRON CORPORATION in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 789033 D02 v01r02 for Unlicensed National Information Infrastructure (U-NII) Devices and KDB 662911 D01 Multiple Transmitter Output v02r01 shall be performed also.

1.4 Table for parameters of Test Software setting

The test utility software used during testing was entering “. π 3646633 π *.=” into the calculator. During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Mode	Test Frequency (MHz)												
	NCB: 20MHz												
	5180	5200	5240	5260	5300	5320	5500	5580	5700	5720	5745	5785	5825
802.11a 6Mbps	19	19	19	/	/	/	/	/	/	/	15	15	15
802.11n-HT20 MCS0	19	19	19	/	/	/	/	/	/	/	15	15	15
Mode	NCB: 40MHz												
	5190	5230	5270	5310	5510	5550	5670	5710	5755	5795			
802.11n-HT40 MCS0	19	19	/	/	/	/	/	/	15	15			

1.5 EUT Operating during test

EUT was programmed to be in continuously transmitting mode. During the test, EUT operation to normal function and programs under Android system were executed.

1.6 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.7 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11a	5180MHz,5200MHz,5240MHz, 5745MHz, 5785MHz,5825MHz
TM2	802.11n-HT20	5180MHz,5200MHz,5240MHz, 5745MHz, 5785MHz,5825MHz
TM3	802.11n-HT40	5190MHz,5230MHz,5755MHz,5795MHz

Note: All test modes (different data rate and different modulation) are performed, but only the worst case is recorded in this report.

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Core
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.8 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.9 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.203; § 15.405	Antenna Requirement	Compliant
§ 15.207; § 15.407(b)(6)	Conducted Emission	Compliant
§ 15.407(a)(1),(2)	Power Spectral Density	Compliant
§ 15.407(e)	Emission Bandwidth and Occupied Bandwidth	Compliant
§ 15.407(a)(1),(2)	Maximum Conducted Output Power	Compliant
§ 15.407(b)(1),(2),(3)	Conducted Spurious Emission	Compliant
§ 15.205; § 15.407(b)(1),(2),(3)	Radiated Emission	Compliant
§ 15.407(g)	Frequency Stability	Compliant
§ 15.407(h)	Dynamic Frequency Selection (DFS)	N/A

N/A: not applicable

3. RF Exposure

3.1 Standard Applicable

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

3.2 Test Result

This product complied with the requirement of the RF exposure, please see the SAR Report.

4. Antenna Requirement

4.1 Standard Applicable

According to FCC Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

4.2 Evaluation Information

This product has an integral antenna, fulfill the requirement of this section.

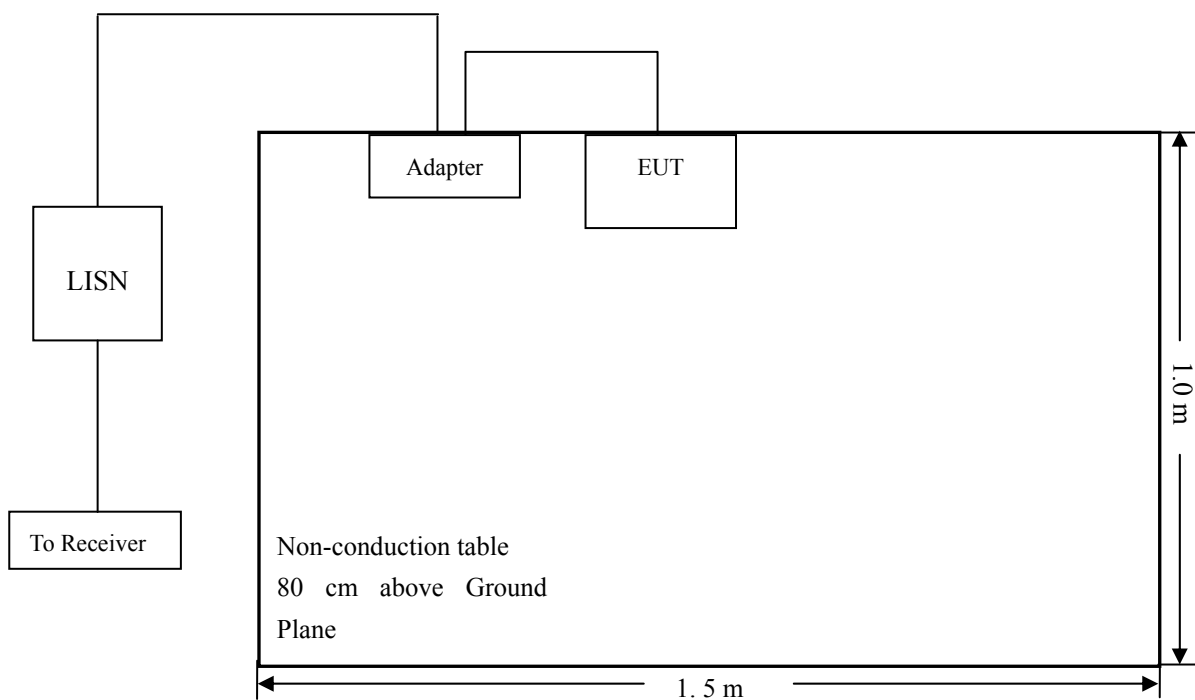
5. Conducted Emissions

5.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

5.3 Basic Test Setup Block Diagram



5.4 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

5.5 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

5.6 Summary of Test Results/Plots

According to the data in section 5.7, the EUT complied with the FCC Part 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

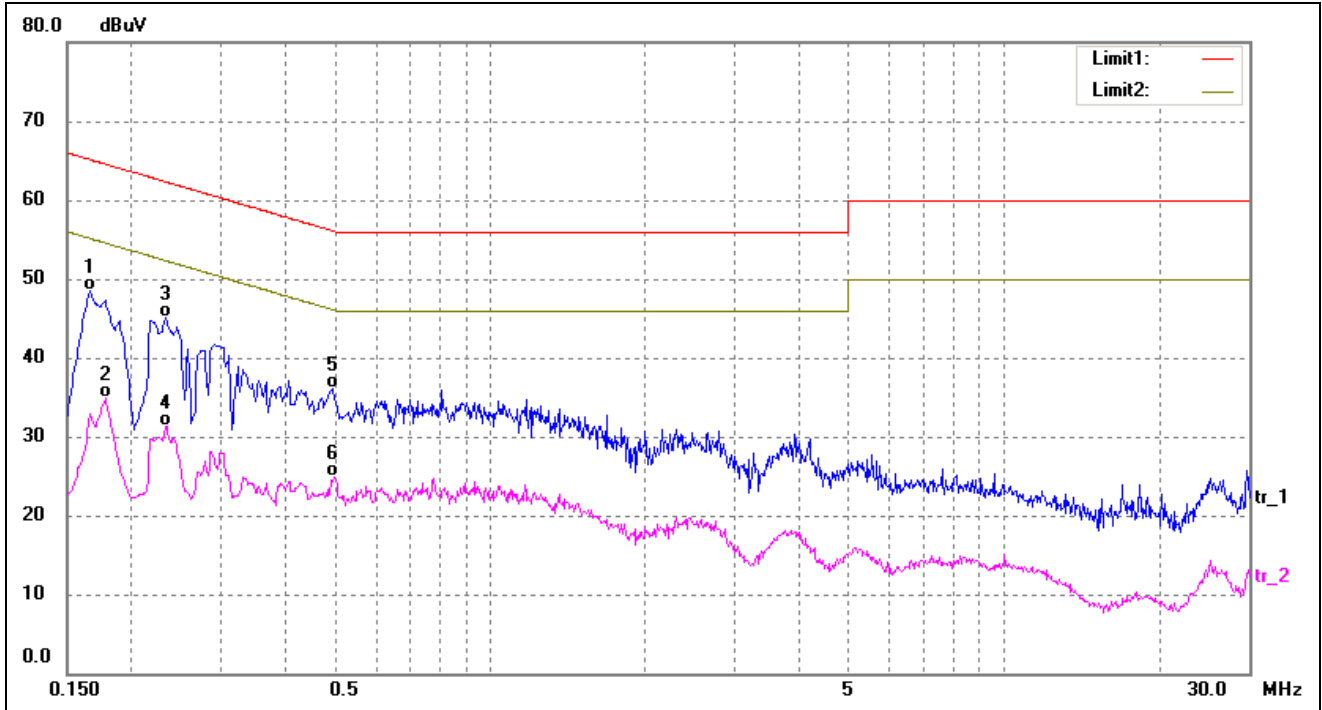
-16.02 dB at 0.2540 MHz in the Line, QP detector, 0.15-30MHz

5.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

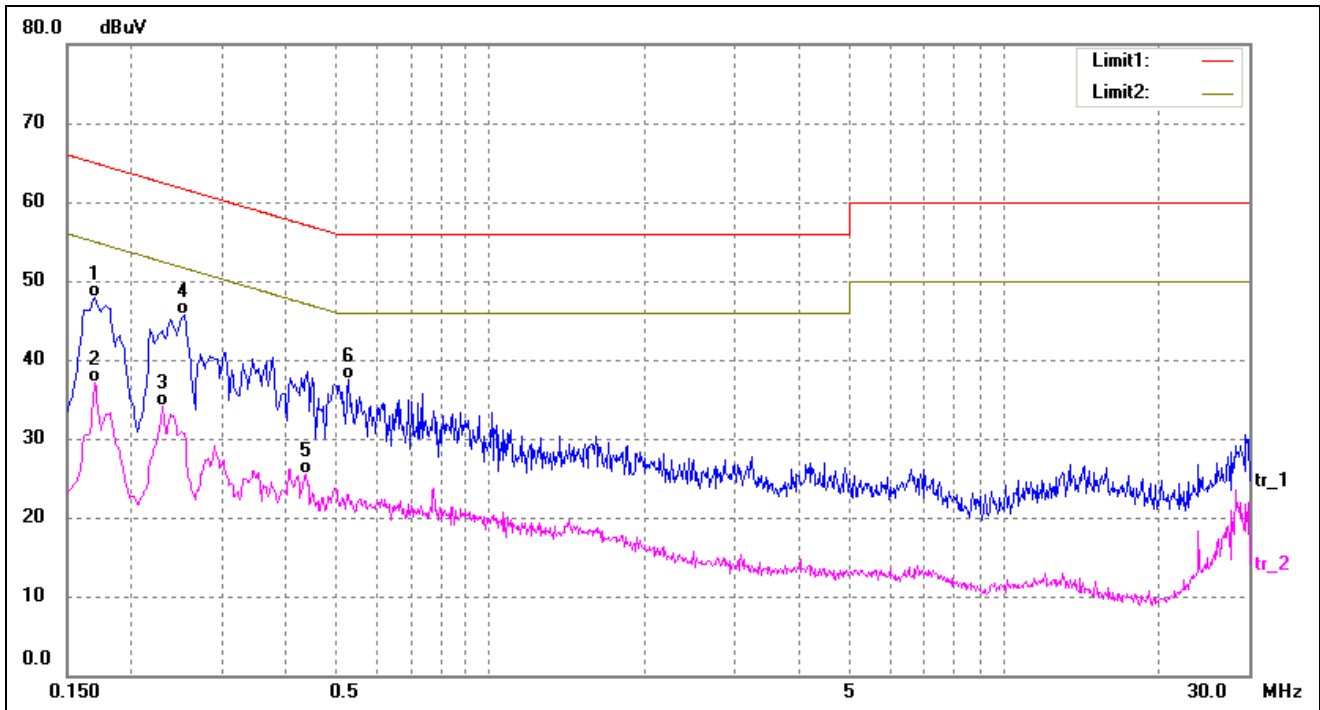
EUT: Tablet PC
 Tested Model: MT10UWB216
 Operating Condition: Transmitting
 Comment: AC 120V/60Hz; Adapter DC 5V/2A

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	38.77	9.83	48.60	65.16	-16.56	QP
2	0.1780	25.00	9.82	34.82	54.58	-19.76	AVG
3	0.2340	35.31	9.80	45.11	62.31	-17.20	QP
4	0.2340	21.47	9.80	31.27	52.31	-21.04	AVG
5	0.4940	26.40	9.80	36.20	56.10	-19.90	QP
6	0.4980	15.04	9.80	24.84	46.03	-21.19	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1700	38.11	9.83	47.94	64.96	-17.02	QP
2	0.1700	27.26	9.83	37.09	54.96	-17.87	AVG
3	0.2300	24.31	9.80	34.11	52.45	-18.34	AVG
4*	0.2540	35.81	9.80	45.61	61.63	-16.02	QP
5	0.4380	15.77	9.80	25.57	47.10	-21.53	AVG
6	0.5300	27.65	9.80	37.45	56.00	-18.55	QP

6. Power Spectral Density

6.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable 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 for fixed, point-to-point operations.

6.2 Test Procedure

According to 789033 D02 General UNII Test Procedures New Rules v01, the following is the measurement procedure.

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.1.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ KHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

6.3 Environmental Conditions

Temperature:	20° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

6.4 Summary of Test Results/Plots

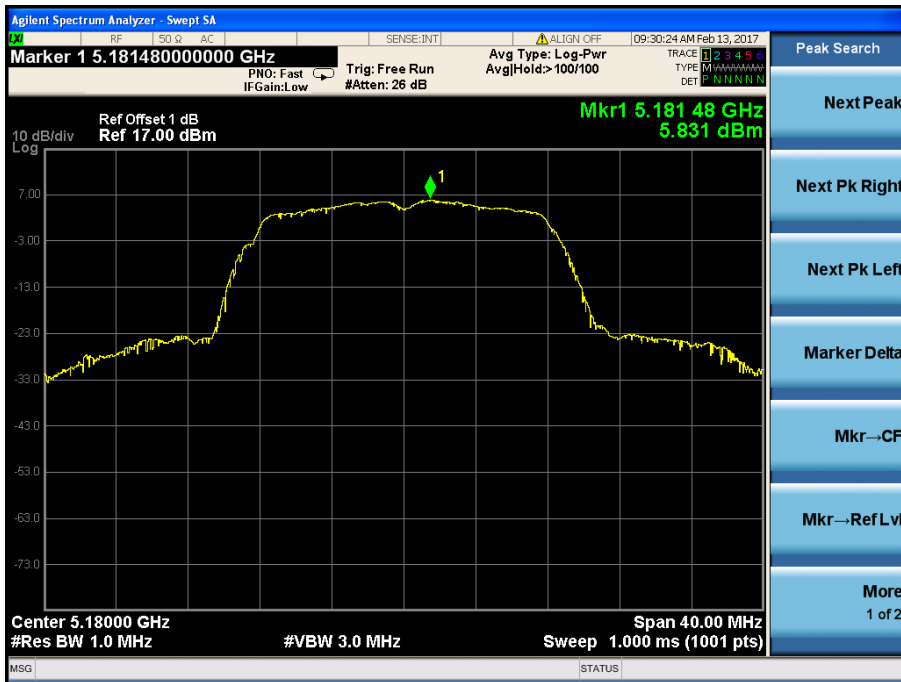
5150-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
802.11a	5180	5.831	11
	5200	6.092	11
	5240	7.674	11
802.11n-HT20	5180	5.974	11
	5200	6.329	11
	5240	7.114	11
802.11n-HT40	5190	2.146	11
	5230	3.348	11

5725-5850MHz

Operating mode	Test Channel	Power Spectral Density dBm/500kHz	Limit (dBm/500kHz)
802.11a	5745	1.135	30
	5785	1.096	30
	5825	-0.413	30
802.11n-HT20	5745	1.134	30
	5785	1.528	30
	5825	0.340	30
802.11n-HT40	5755	-2.047	30
	5795	-3.501	30

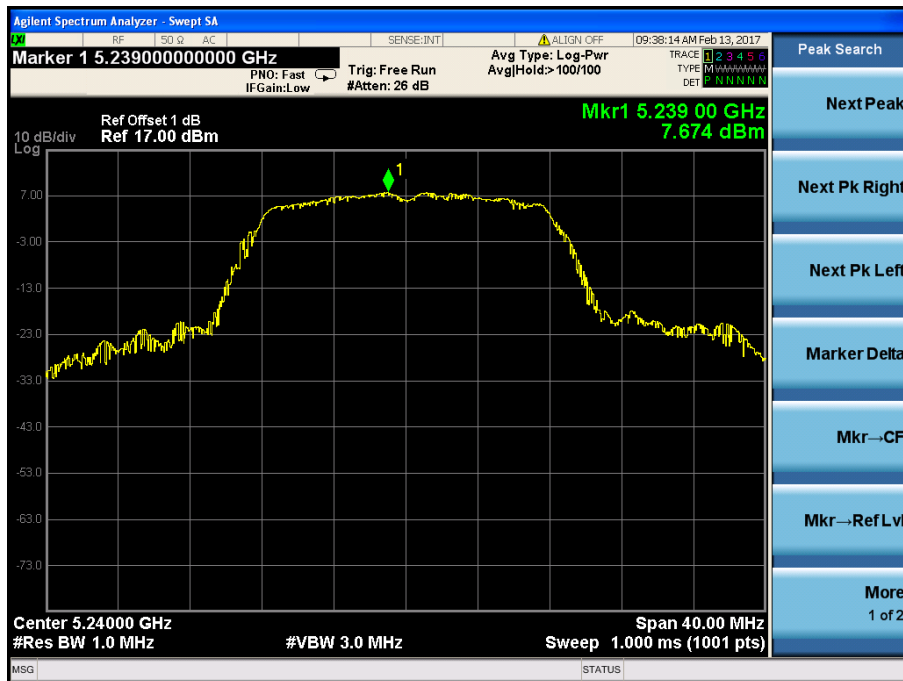
Test Mode: 802.11a
5180MHz



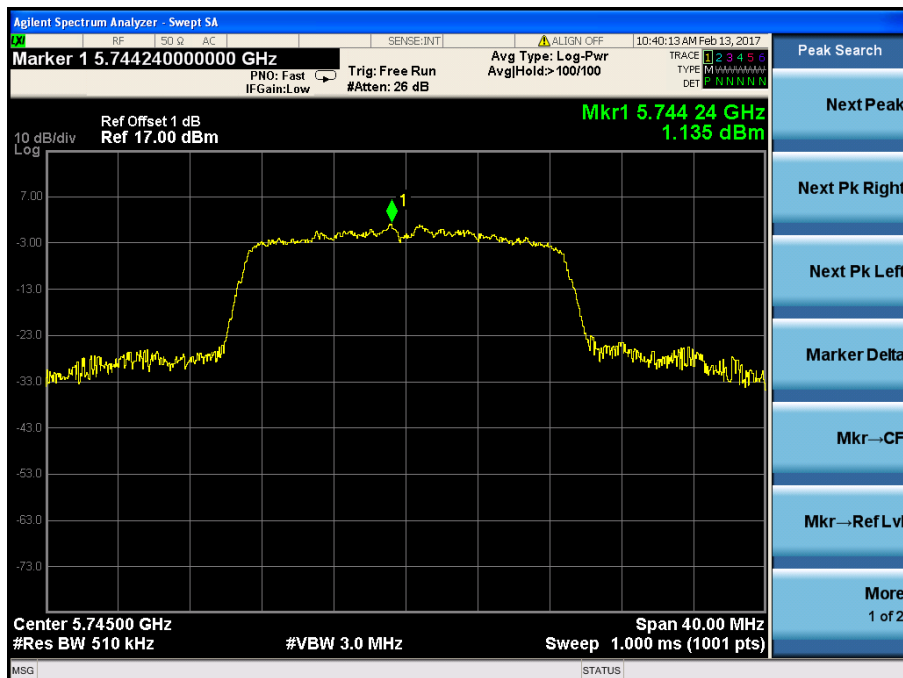
5200MHz



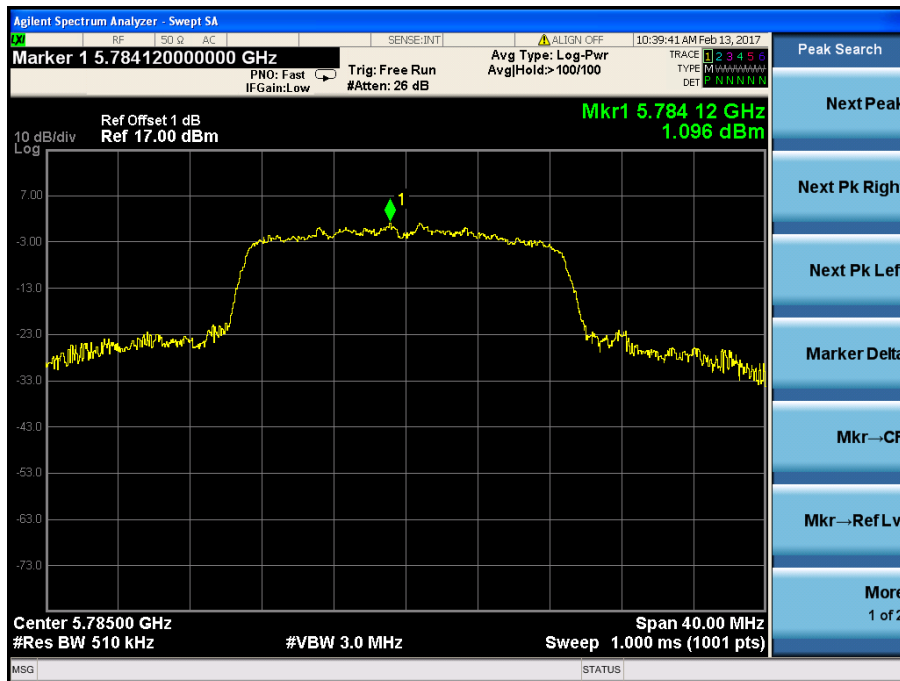
5240MHz



5745MHz



5785MHz

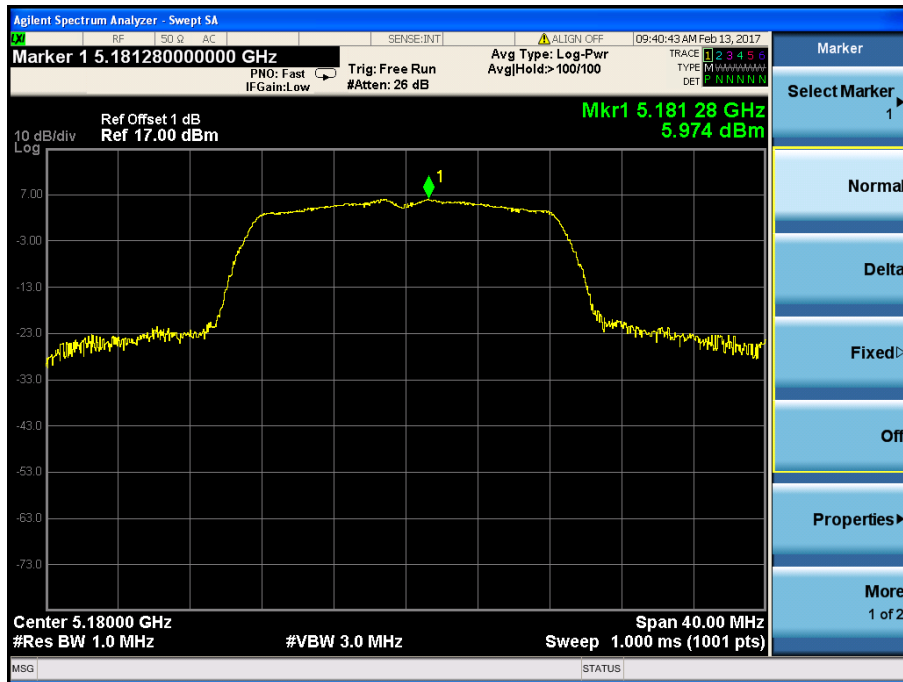


5825MHz

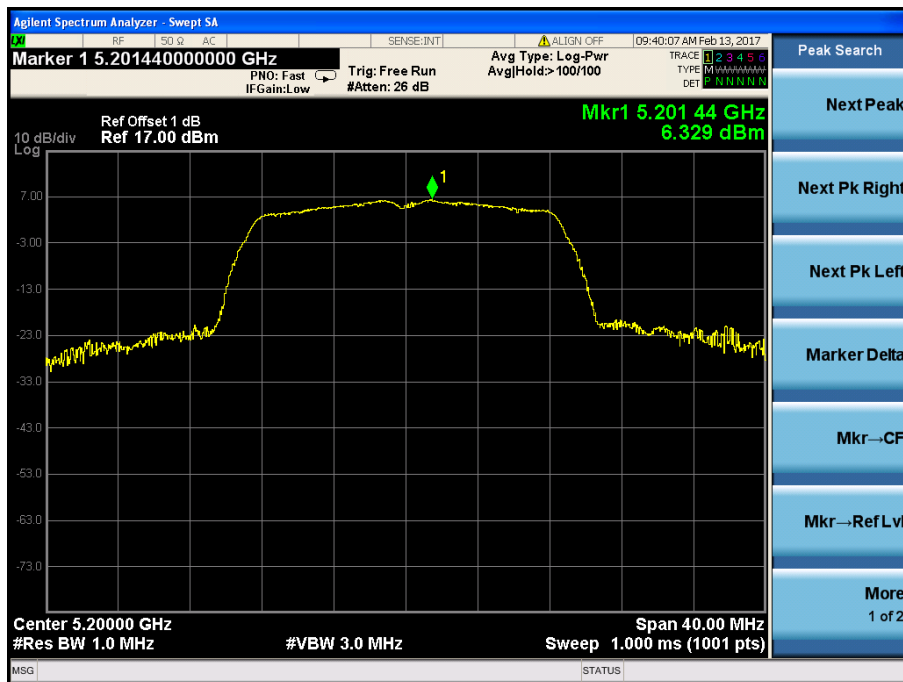


Test Mode: 802.11n-HT20

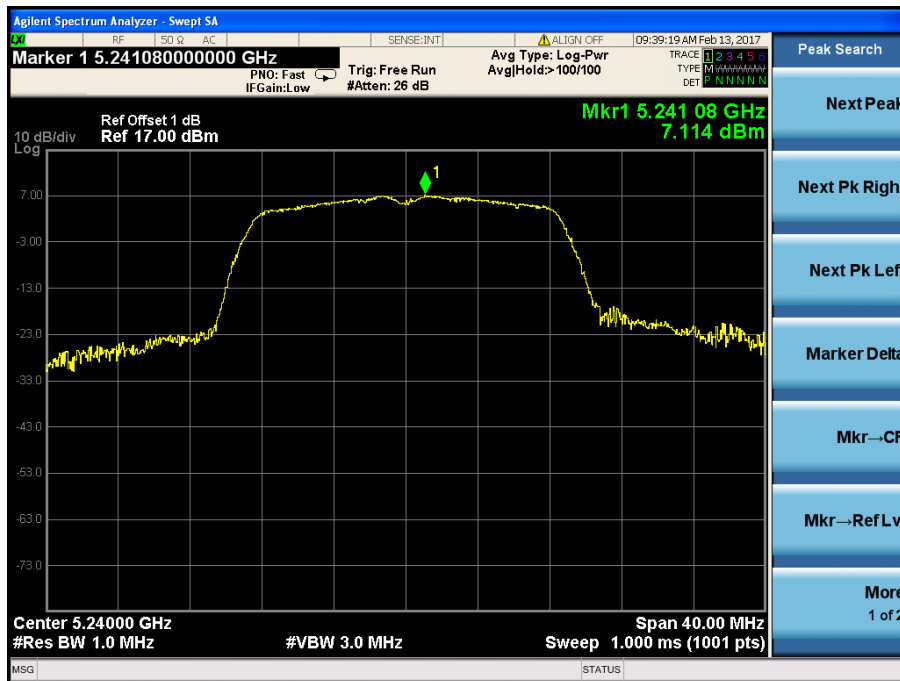
5180MHz



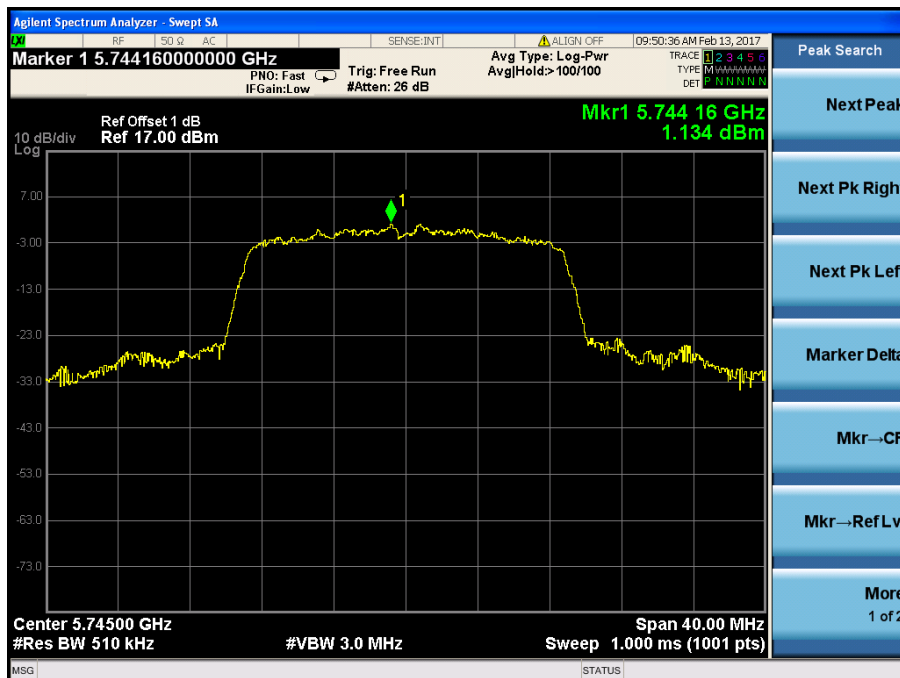
5200MHz



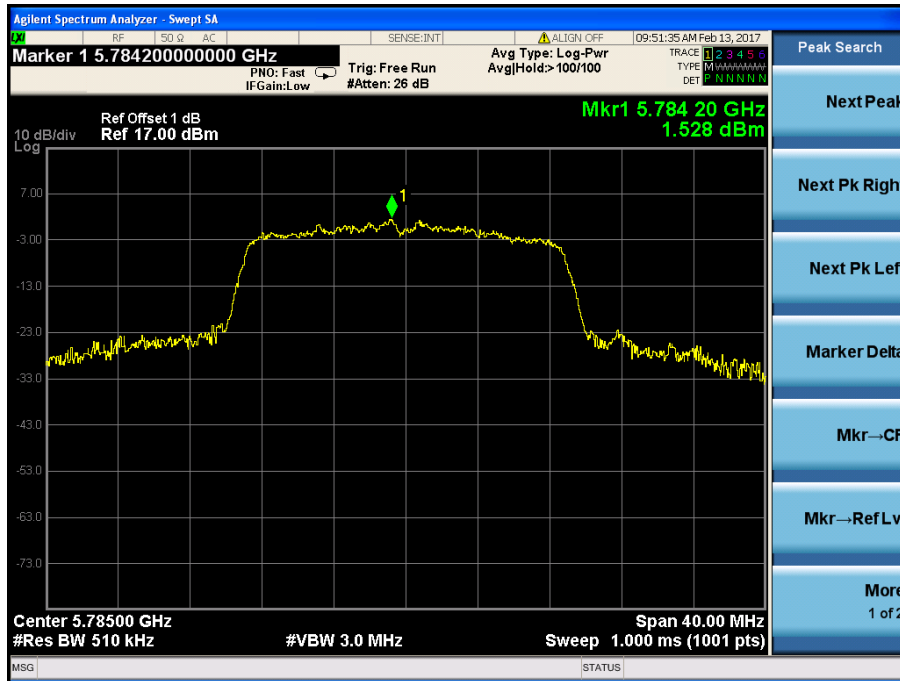
5240MHz



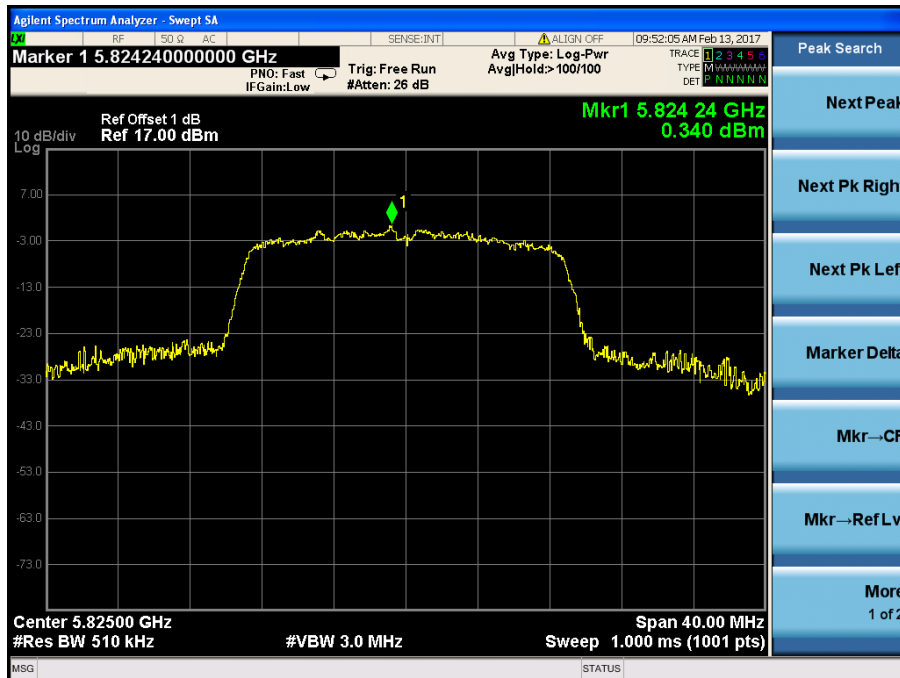
5745MHz



5785MHz

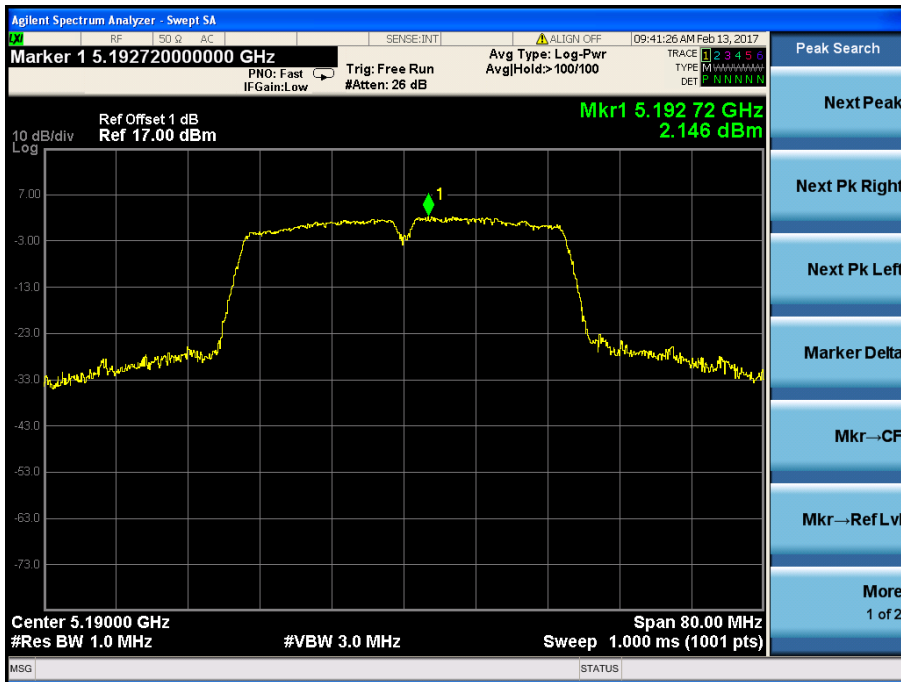


5805MHz

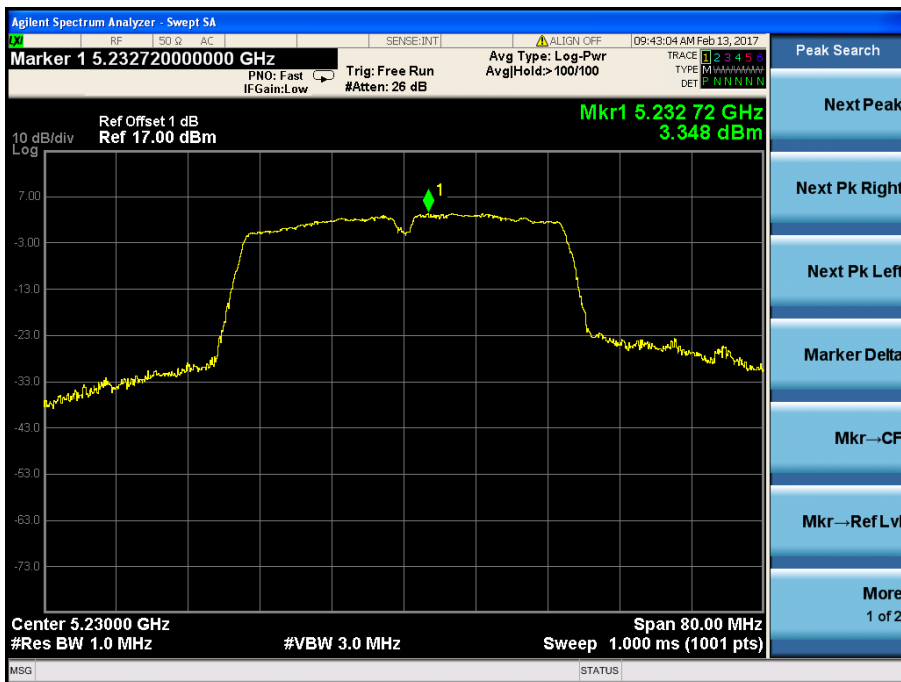


Test Mode: 802.11n-HT40

5190MHz



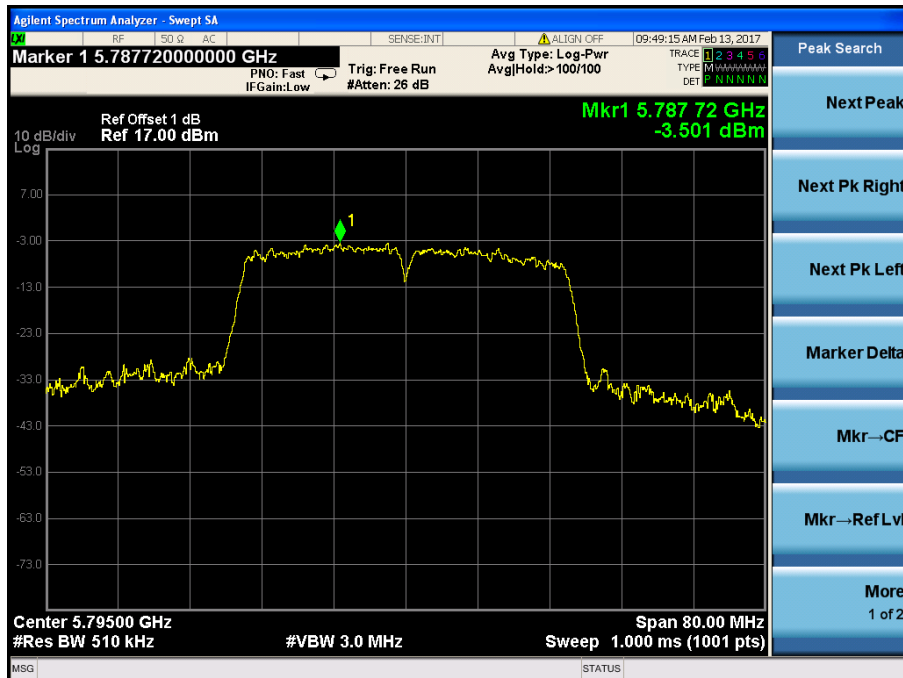
5230MHz



5755MHz



5795MHz



7. Emission Bandwidth and Occupied Bandwidth

7.1 Standard Applicable

According to 15.407 (a) and (e)

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable 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 for fixed, point-to-point operations.

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

7.2 Test Procedure

According to 789033 D02 v01r02 section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)

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 maximum 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%.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ 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 automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

7.3 Environmental Conditions

Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

7.4 Summary of Test Results/Plots

5150-5250MHz

Test Mode	Test Channel MHz	26 dB Bandwidth MHz	99% Bandwidth MHz	Limit MHz
802.11a	5180	20.83	16.809	Pass
	5200	20.74	16.775	Pass
	5240	20.04	16.788	Pass
802.11n-HT20	5180	20.30	17.700	Pass
	5200	20.37	17.692	Pass
	5240	20.12	17.696	Pass
802.11n-HT40	5190	40.34	36.083	Pass
	5230	40.50	36.072	Pass

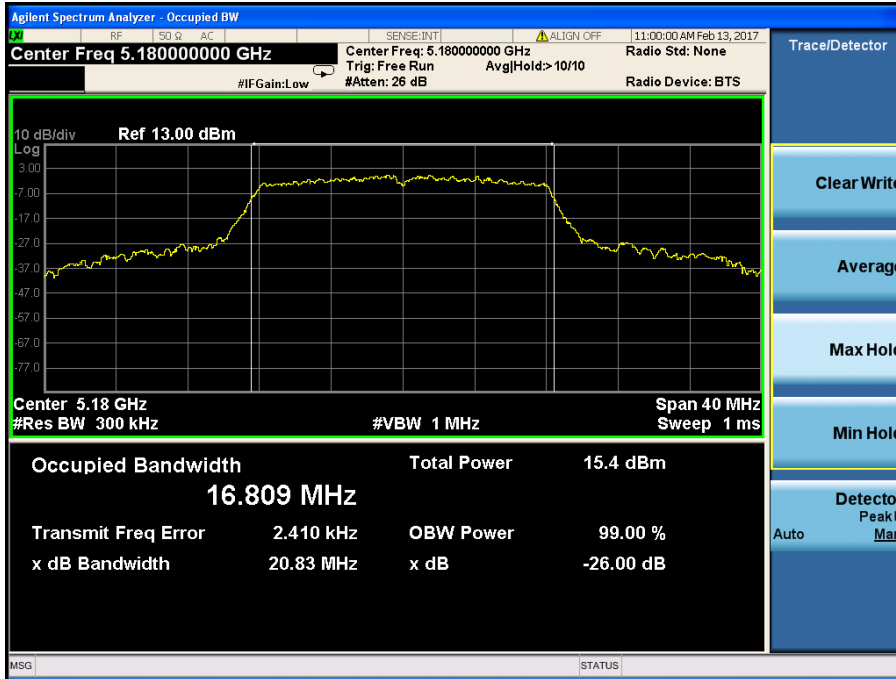
5725-5850MHz

Test Mode	Test Channel MHz	26 dB Bandwidth MHz	6 dB Bandwidth MHz	99% Bandwidth MHz	Limit MHz
802.11a	5745	24.90	16.24	17.113	≥500
	5785	24.41	16.16	17.117	≥500
	5825	23.62	16.21	16.912	≥500
802.11n-HT20	5745	20.37	17.44	17.725	≥500
	5785	25.74	17.45	17.825	≥500
	5825	22.98	17.44	17.788	≥500
802.11n-HT40	5755	51.20	35.80	36.104	≥500
	5795	40.10	35.69	36.105	≥500

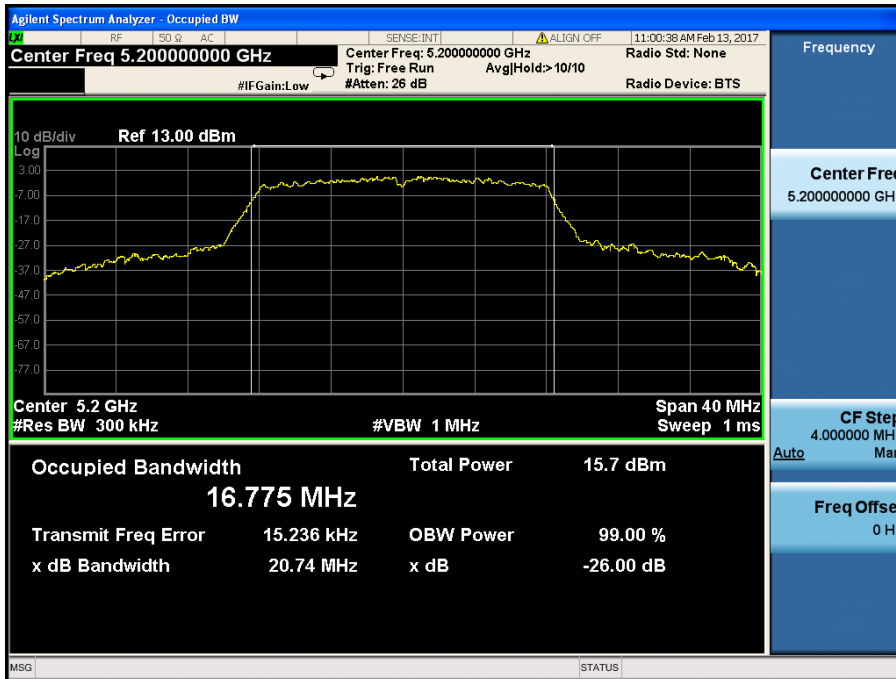
5150-5250MHz

Test mode: 802.11a

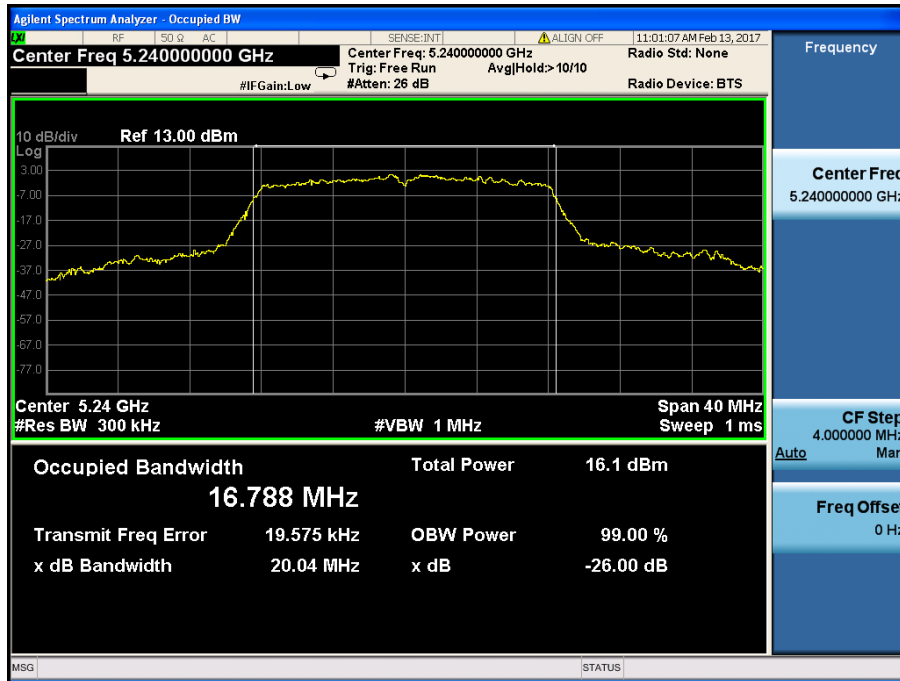
5180MHz



5200MHz

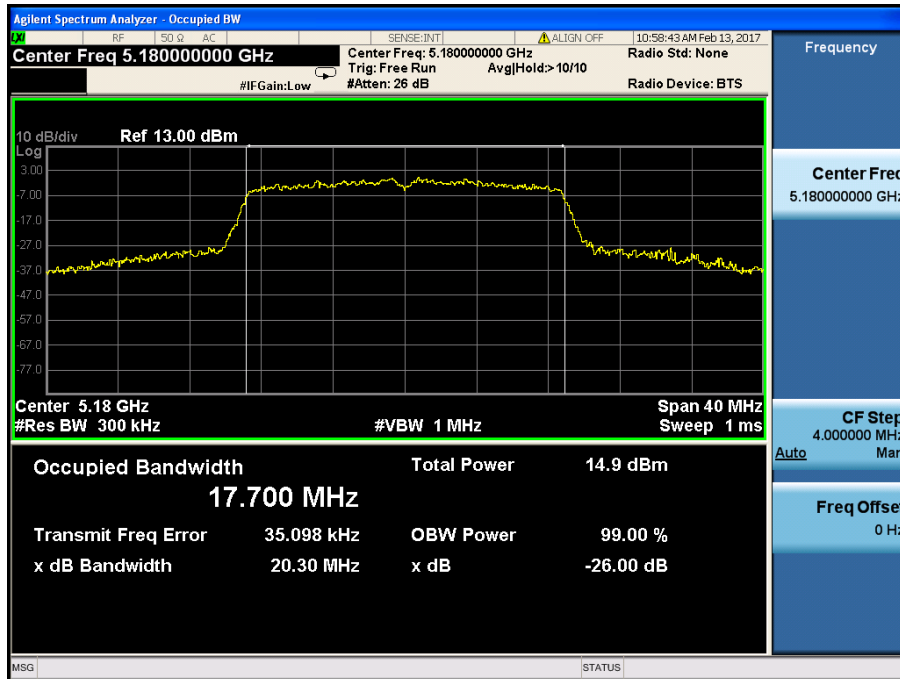


5240MHz

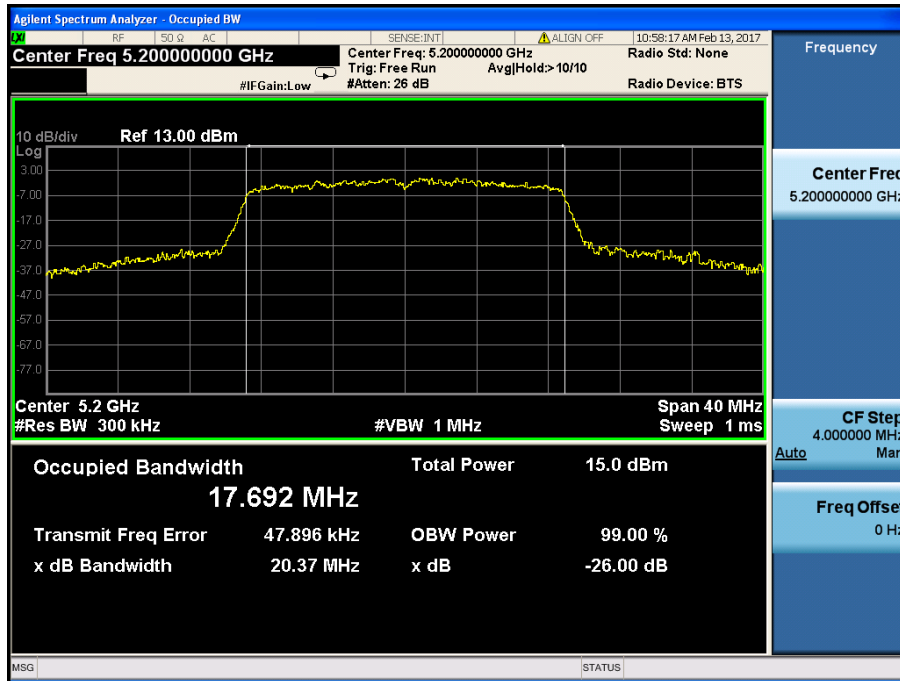


Test mode: 802.11n-HT20

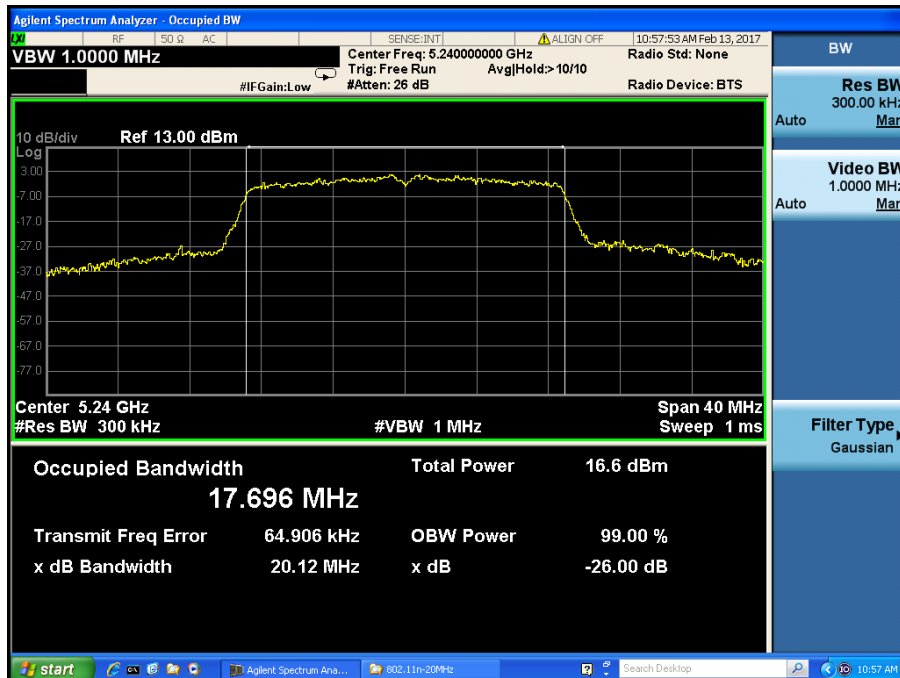
5180MHz



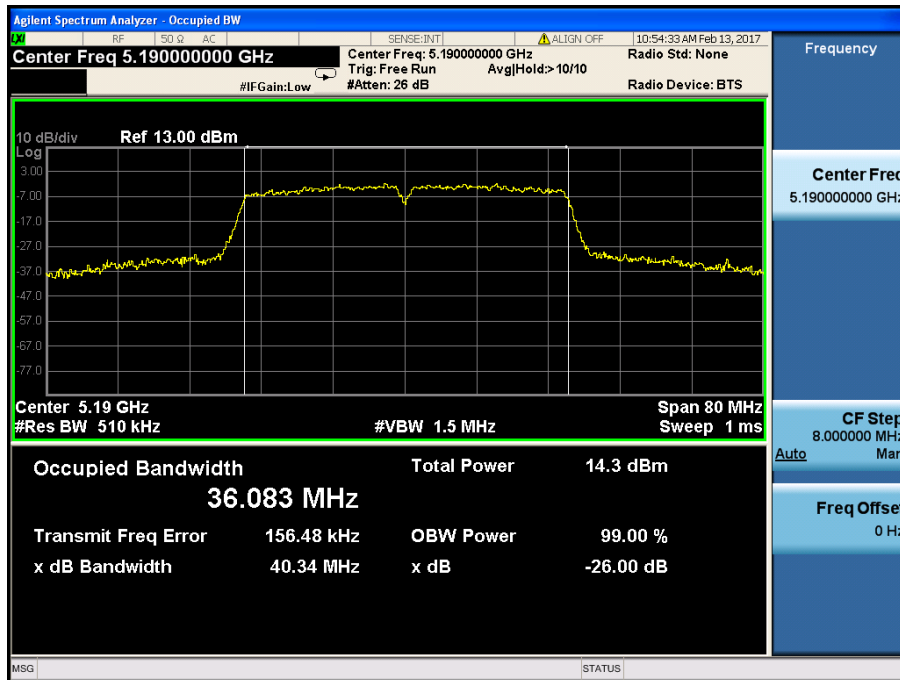
5200MHz



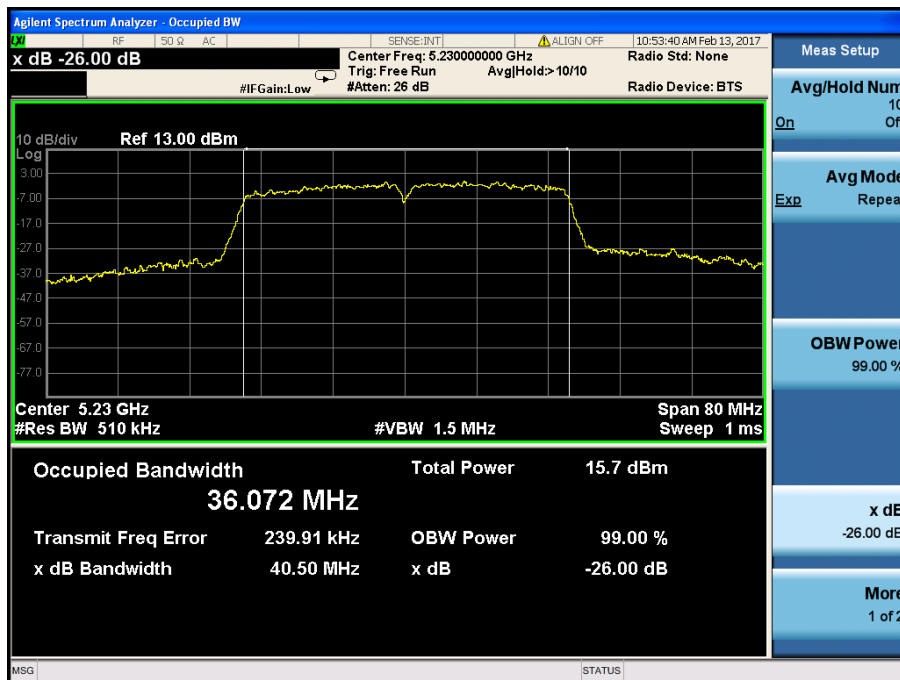
5240MHz



Test mode: 802.11n-HT40
5190MHz



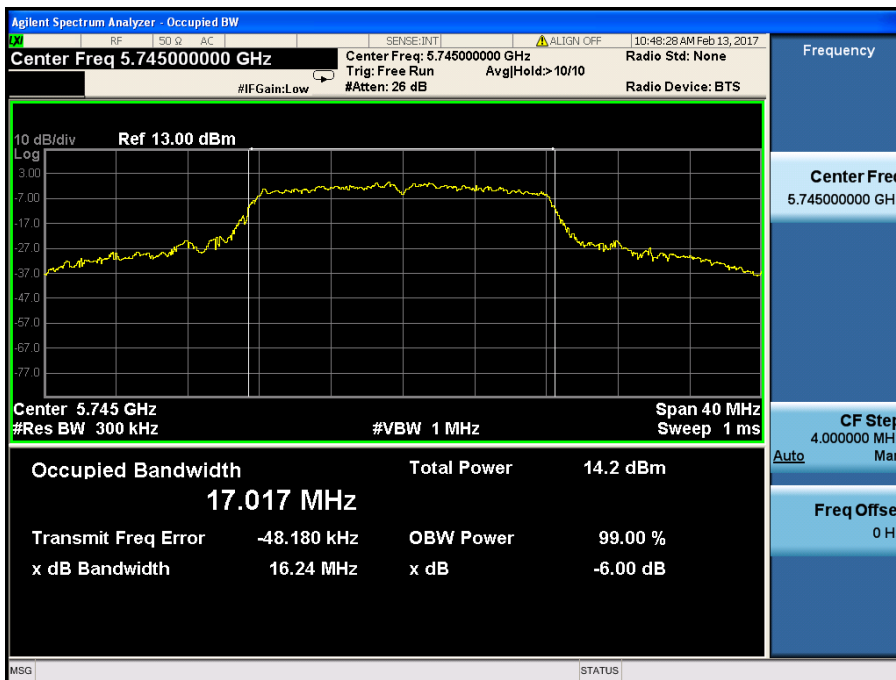
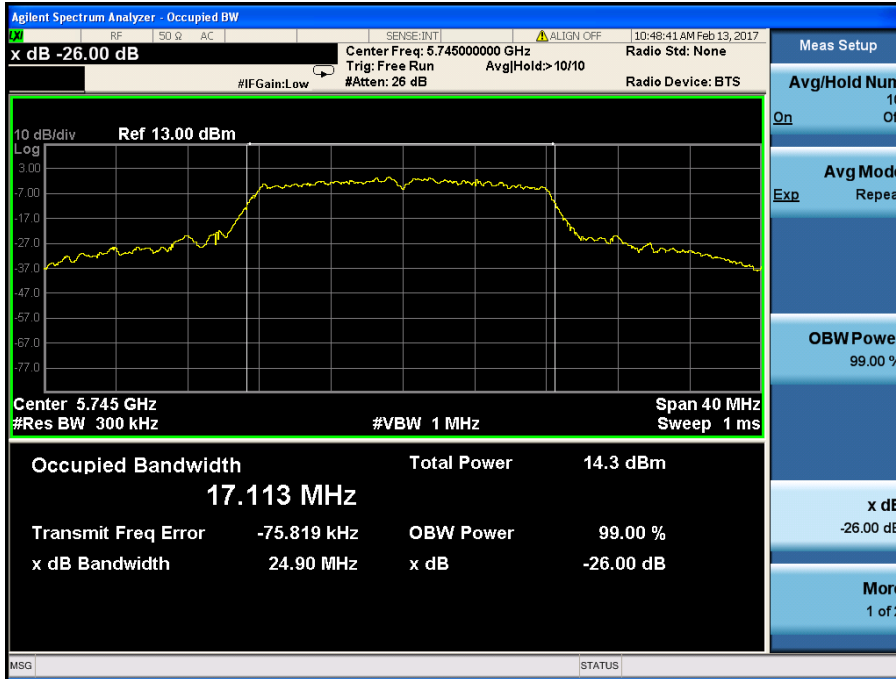
5230MHz



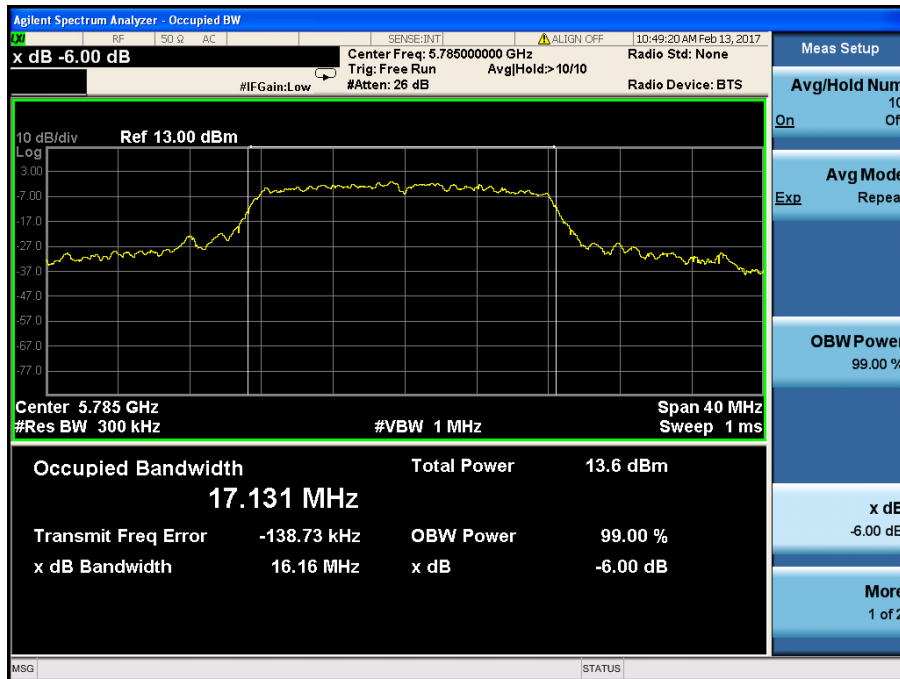
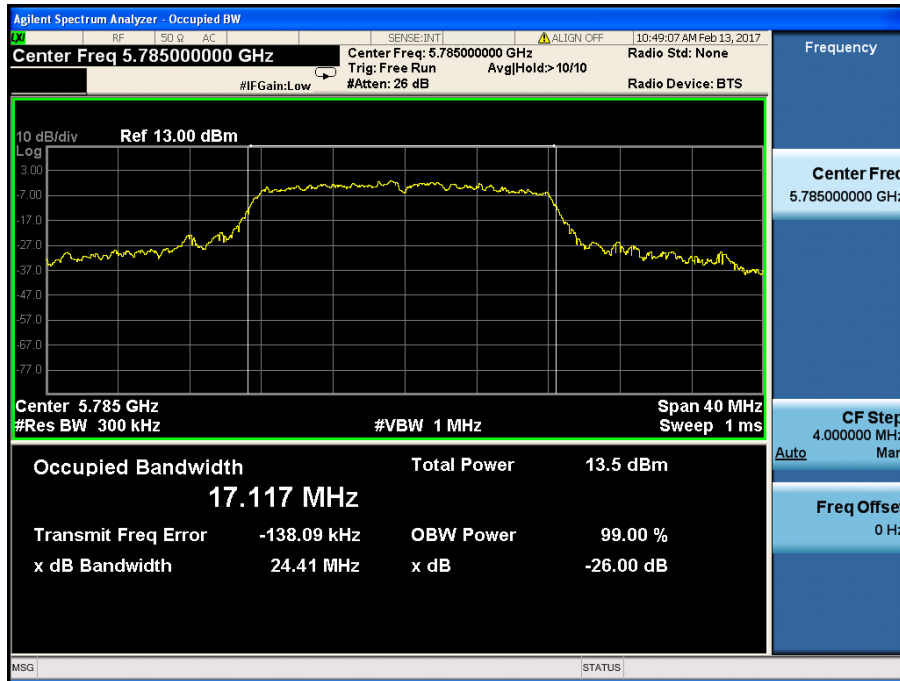
5725-5850MHz

Test mode: 802.11a

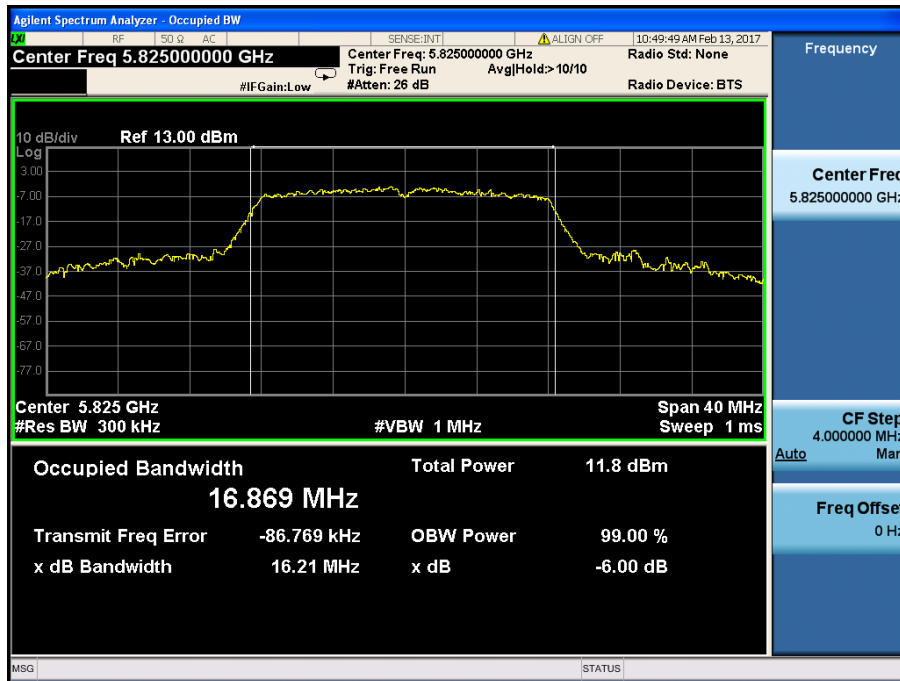
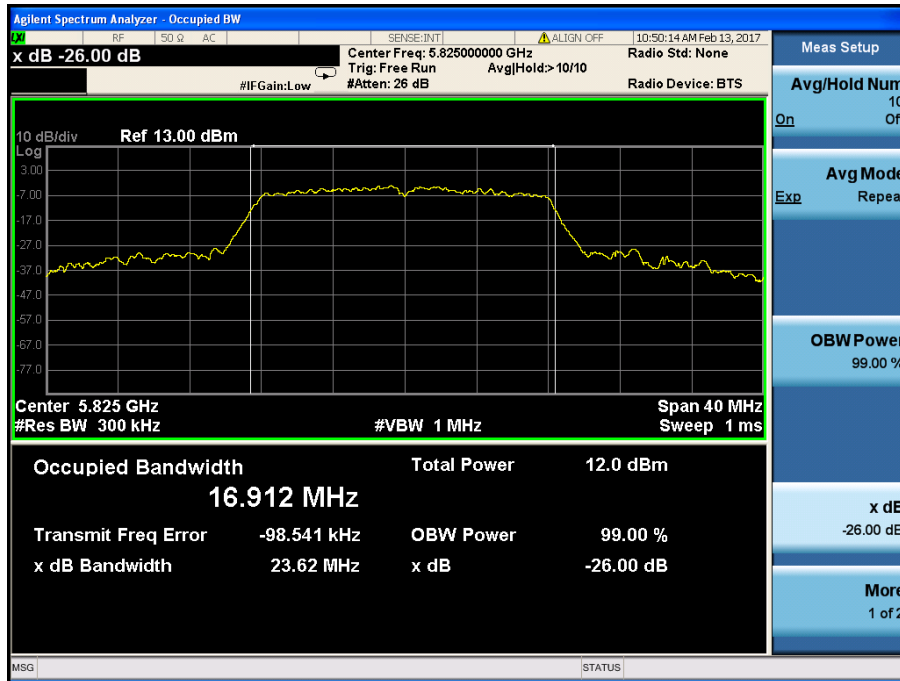
5745MHz



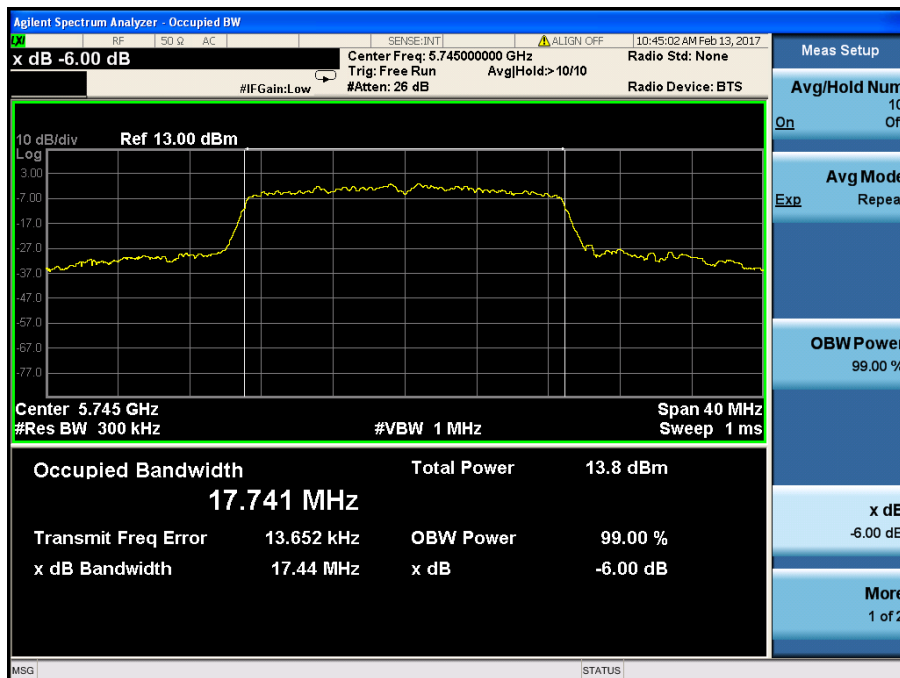
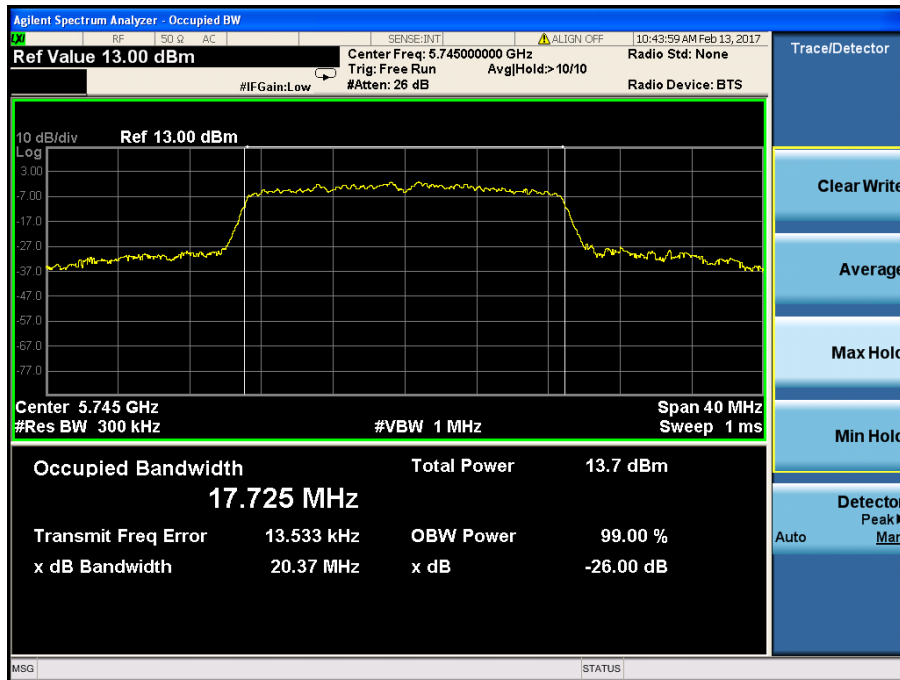
5785MHz



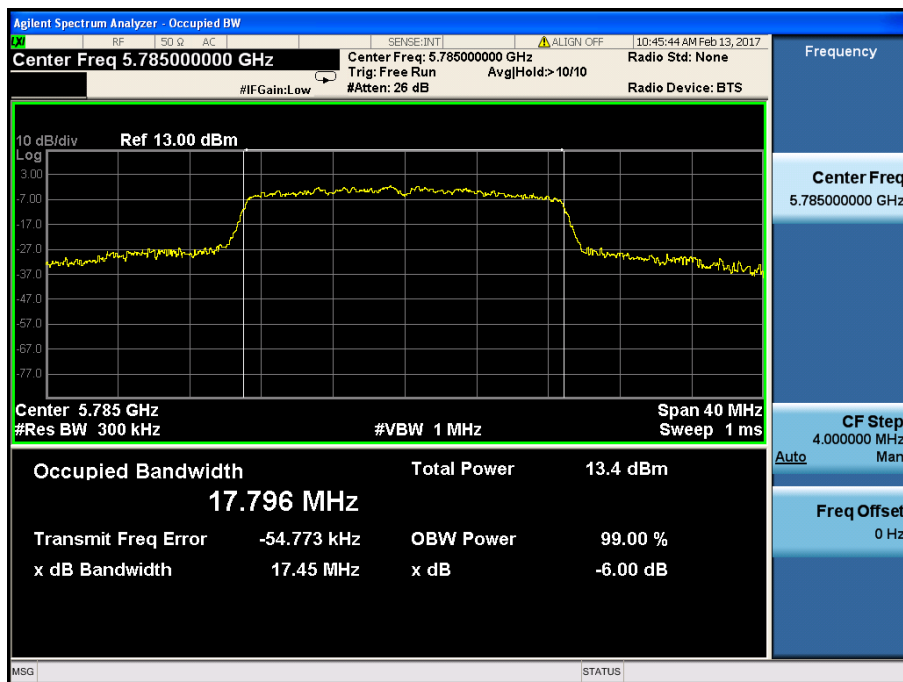
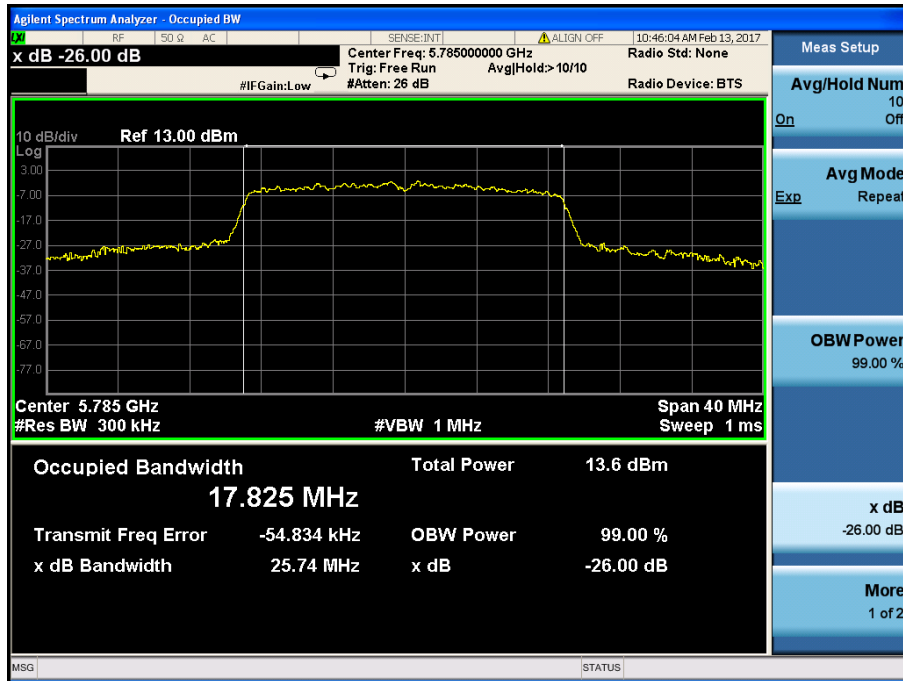
5825MHz



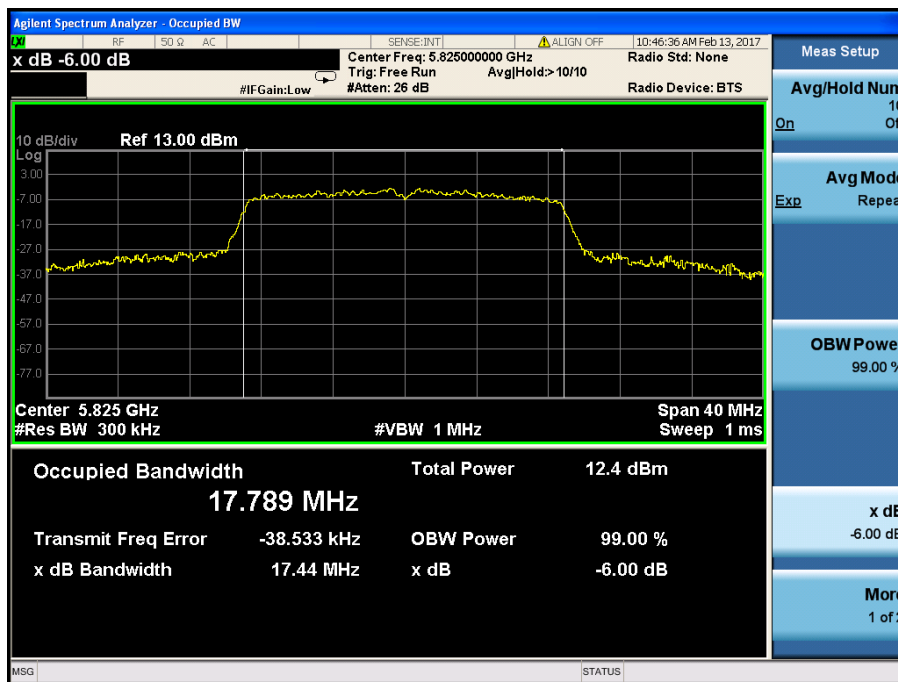
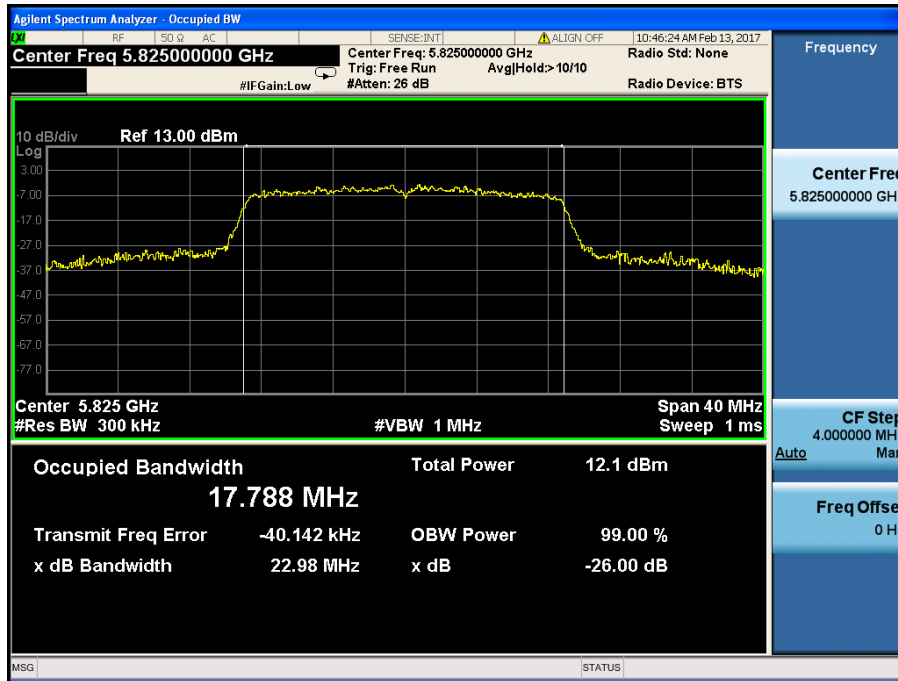
Test mode: 802.11-HT20
5745MHz



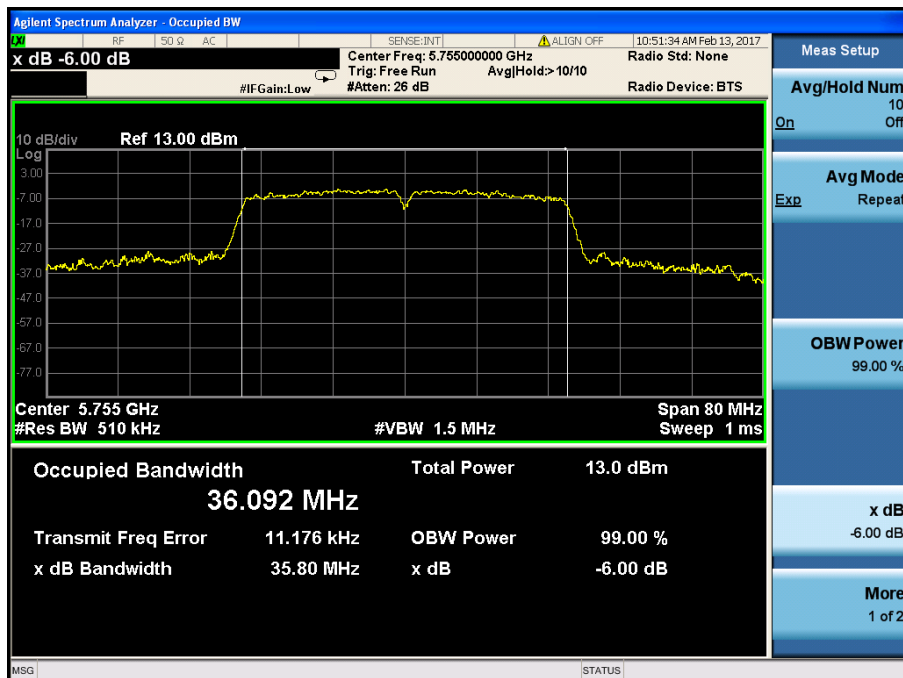
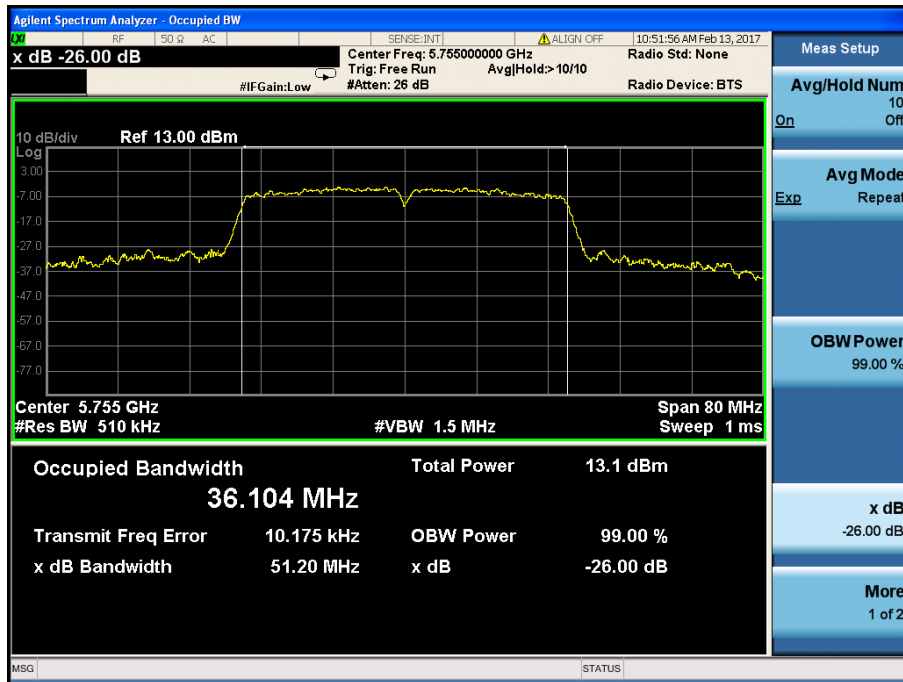
5785MHz



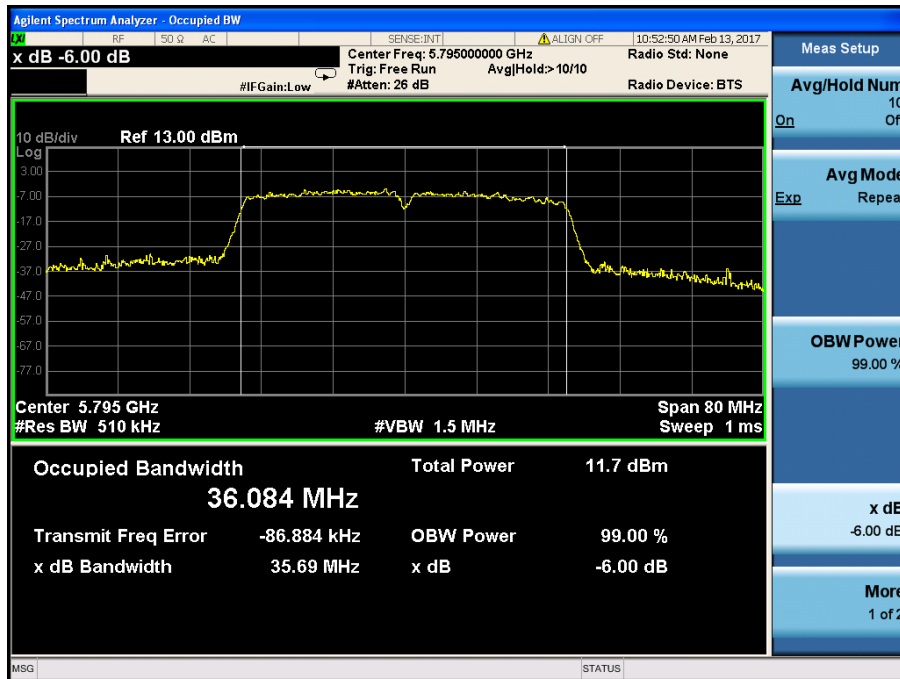
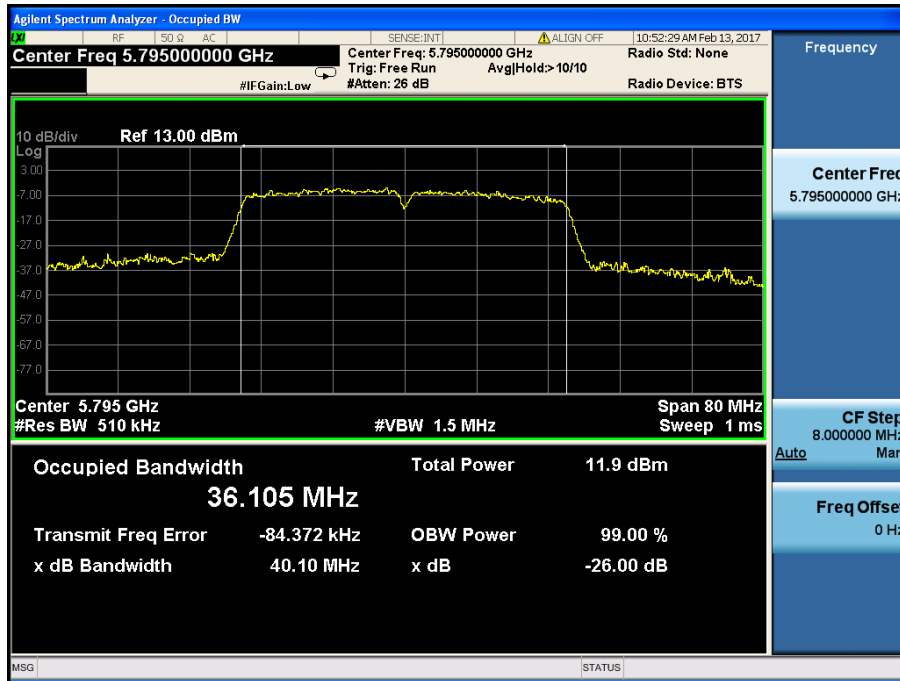
5825MHz



Test mode: 802.11-HT40
5755MHz



5795MHz



8. Maximum Conducted Output Power

8.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable 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 for fixed, point-to-point operations.

8.2 Test Procedure

According to KDB789033 D02 v01r02 section E, the following is the measurement procedure.

- (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (ii) Set RBW = 1 MHz.
- (iii) Set VBW \geq 3 MHz.
- (iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.

- (vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle \geq 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
- (viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- (ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

8.3 Environmental Conditions

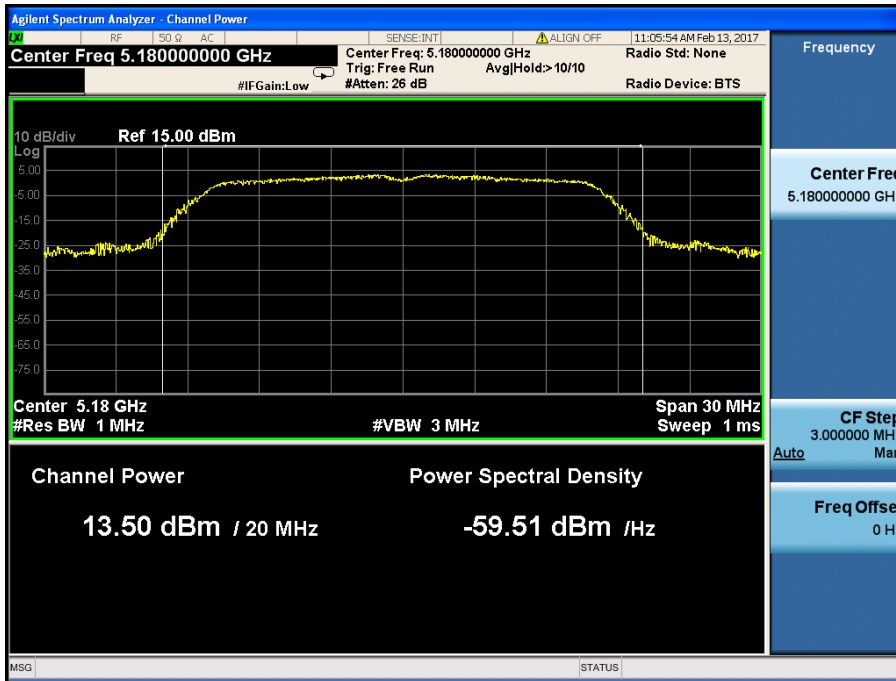
Temperature:	26° C
Relative Humidity:	65%
ATM Pressure:	1011 mbar

8.4 Summary of Test Results/Plots

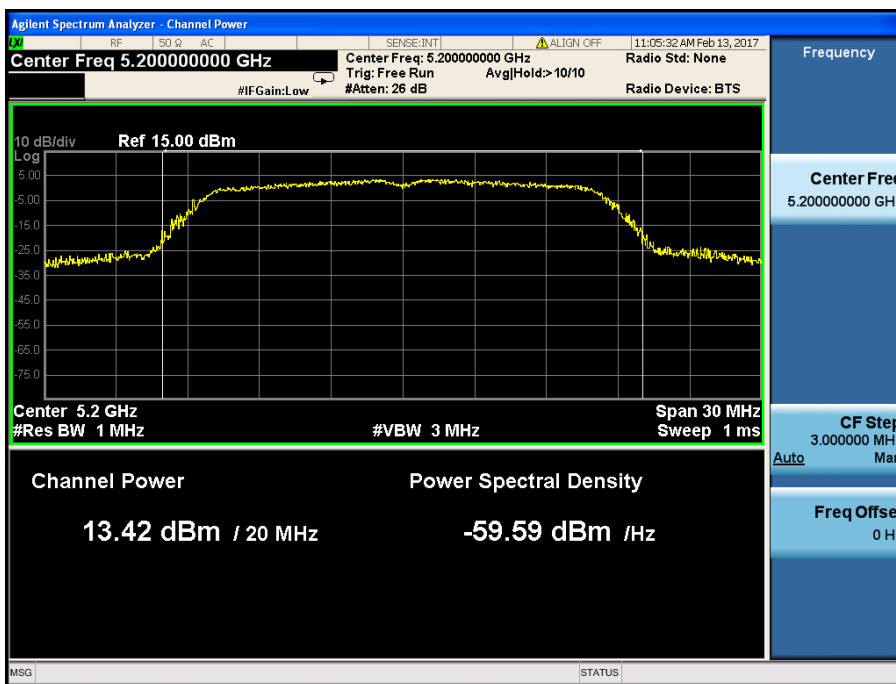
For the frequency band 5.15-5.25GHz, 5725-5850GHz

Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11a	5180	13.5	22.387	250
	5200	13.42	21.979	250
	5240	14.74	29.785	250
	5745	12.33	17.100	1000
	5785	11.81	15.171	1000
	5825	10.34	10.814	1000
802.11n-HT20	5180	13.38	21.777	250
	5200	14.06	25.468	250
	5240	15.08	32.211	250
	5745	11.82	15.205	1000
	5785	12.23	16.711	1000
	5825	11.26	13.366	1000
802.11n-HT40	5190	12.42	17.458	250
	5230	12.98	19.861	250
	5755	11.65	14.622	1000
	5795	10.26	10.617	1000

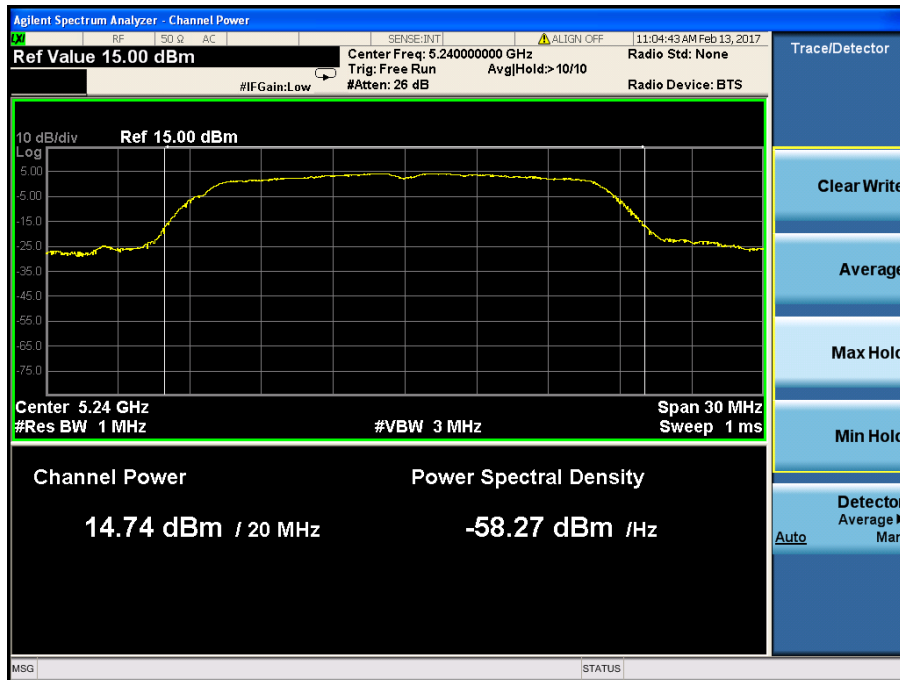
Test Mode: 802.11a
5180MHz



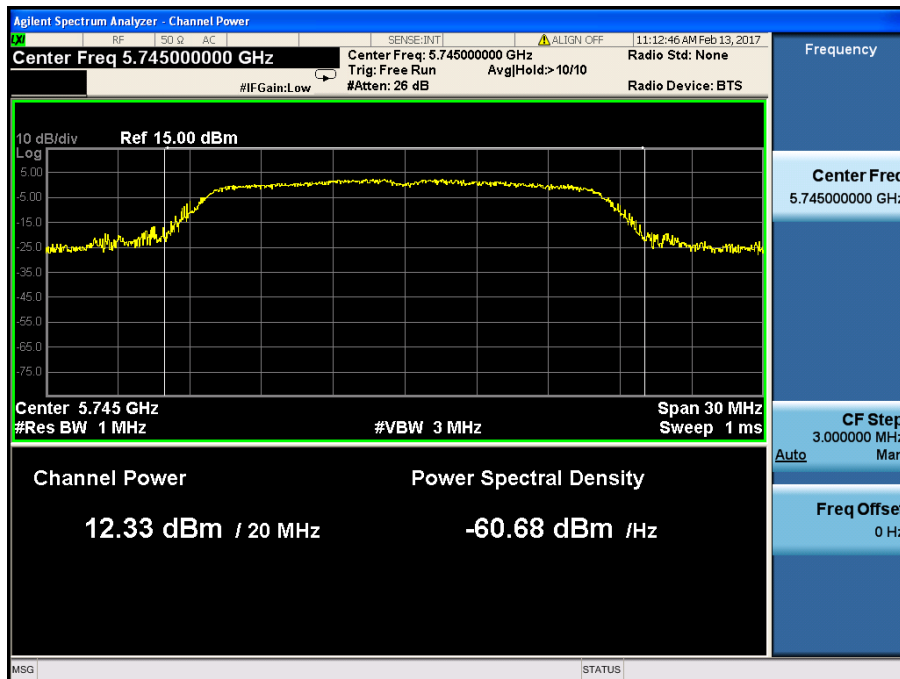
5200MHz



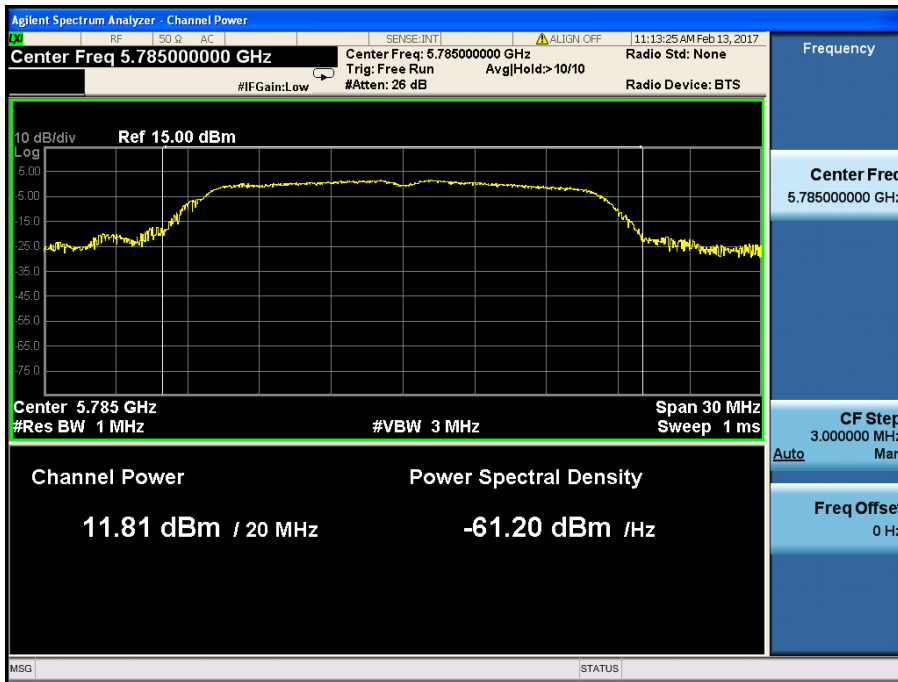
5240MHz



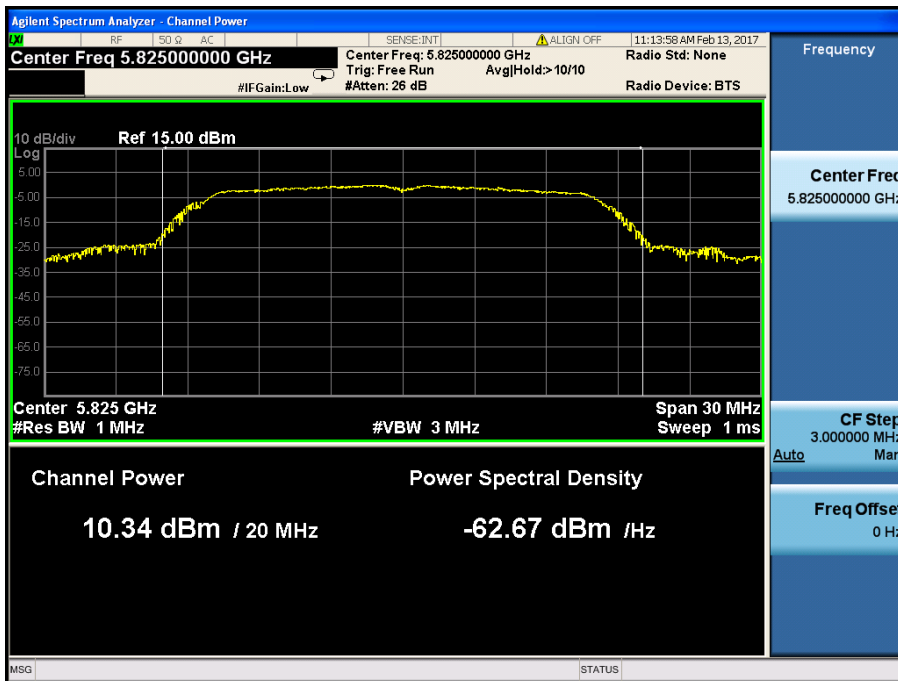
5745MHz



5785MHz

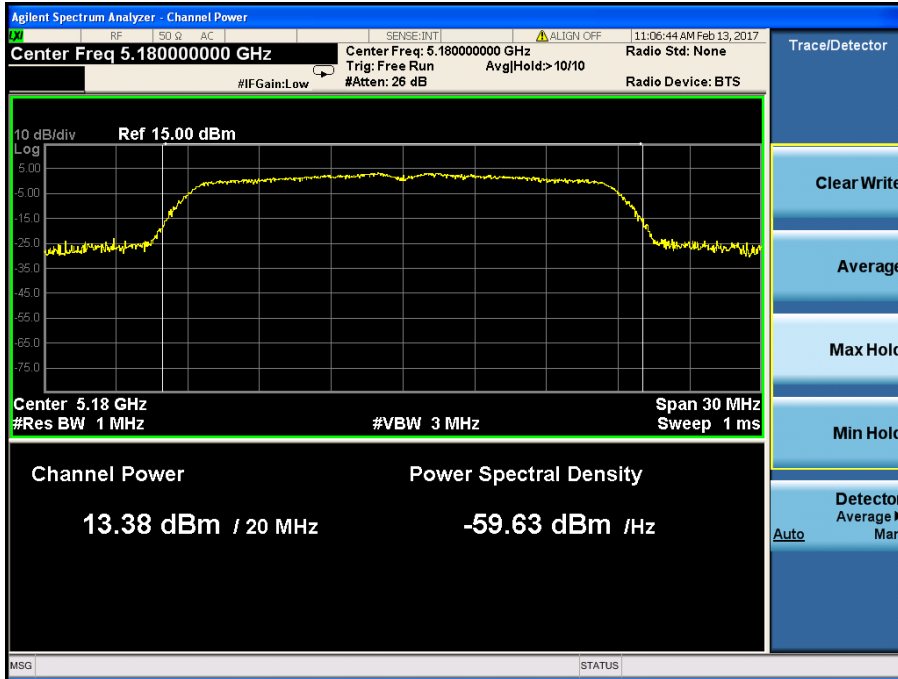


5825MHz

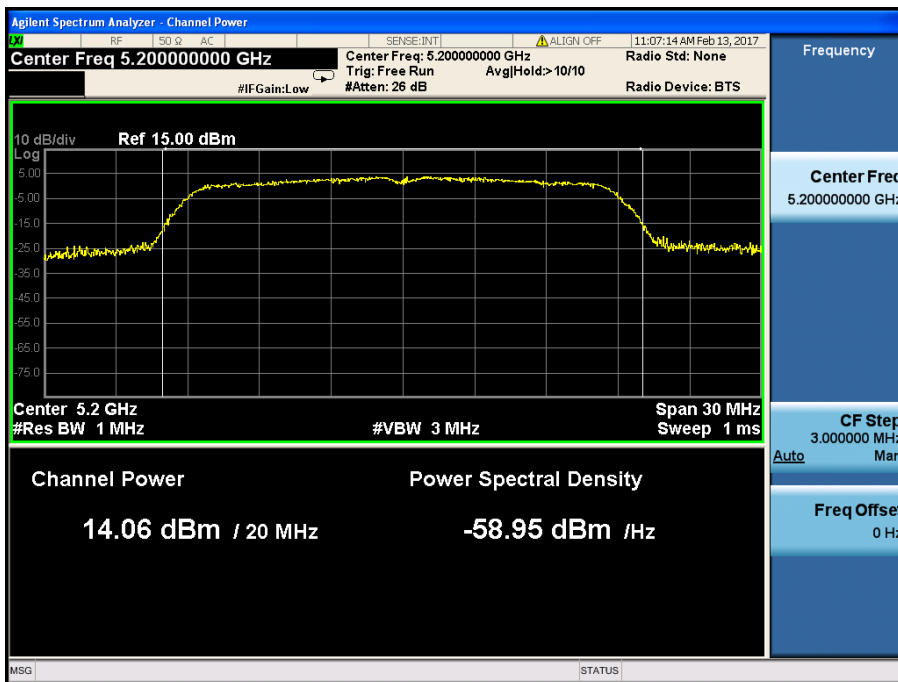


Test Mode: 802.11n-HT20

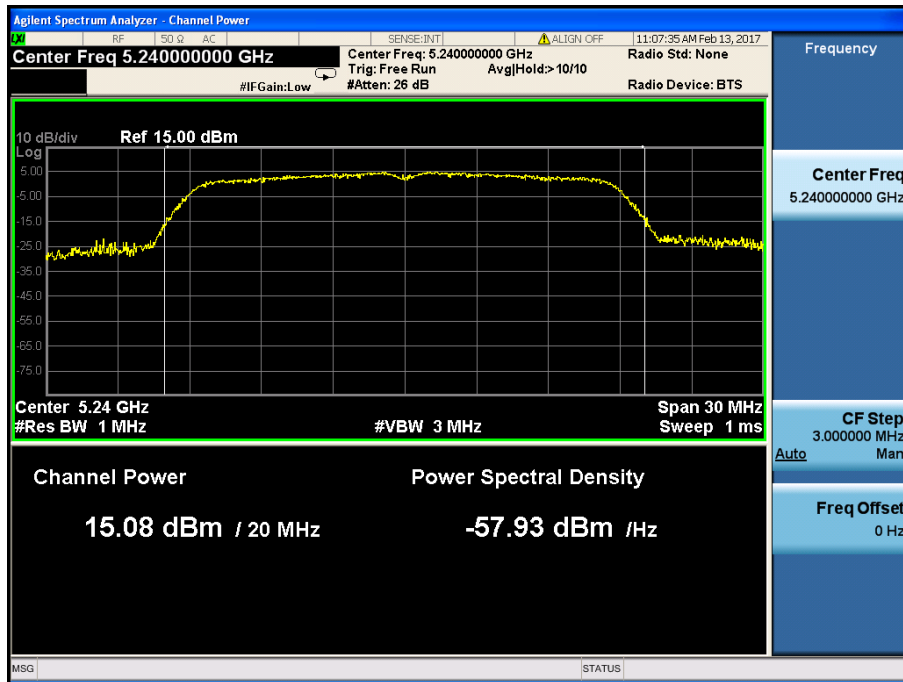
5180MHz



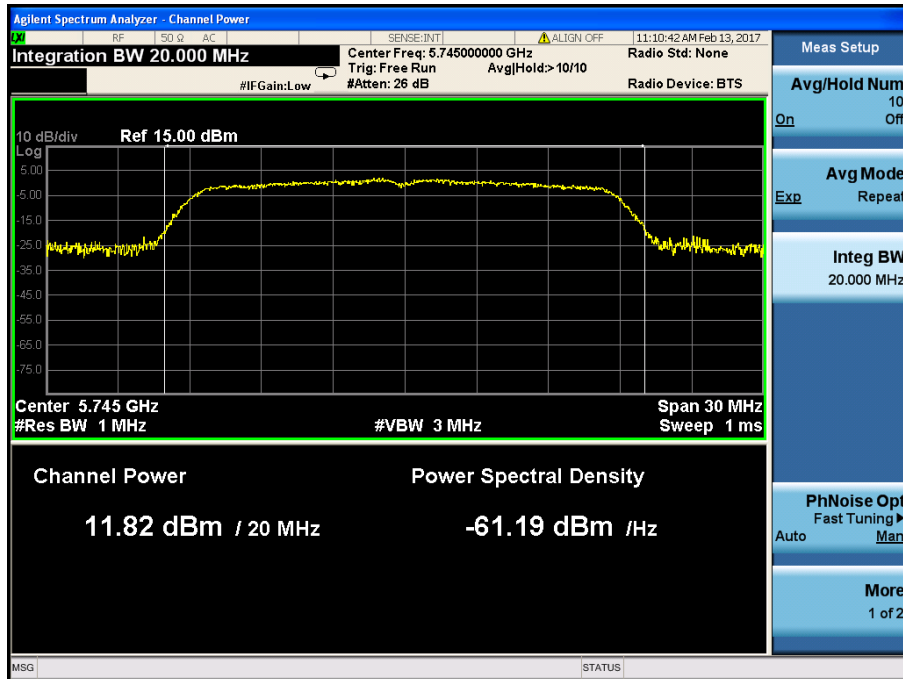
5200MHz



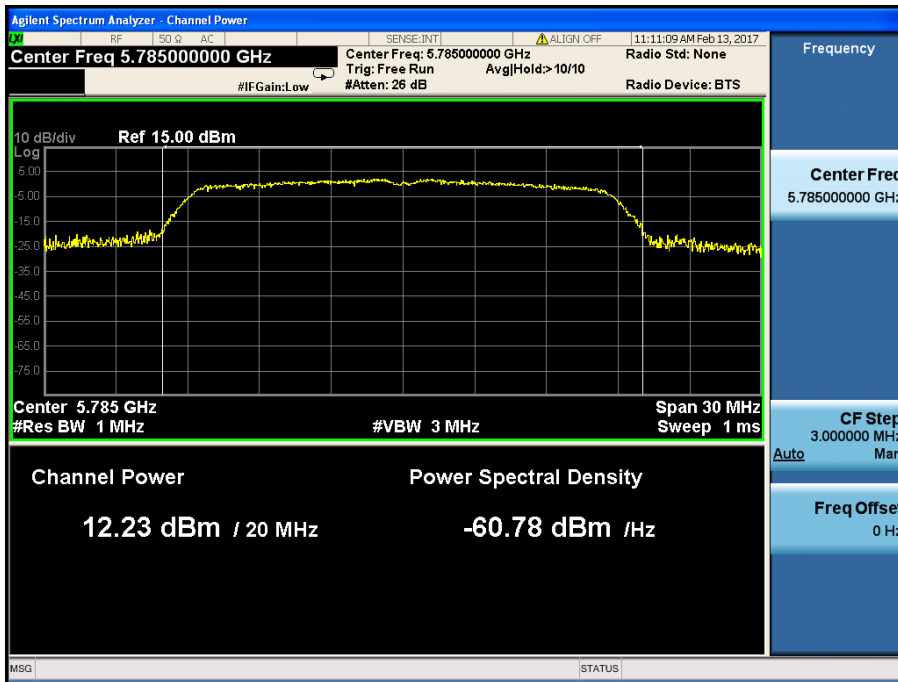
5240MHz



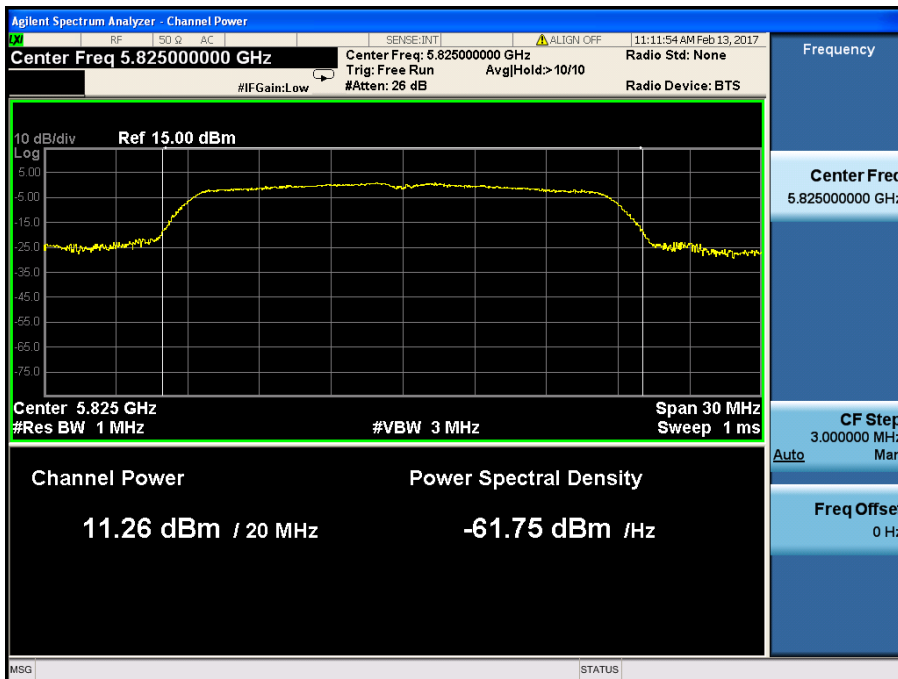
5745MHz



5785MHz

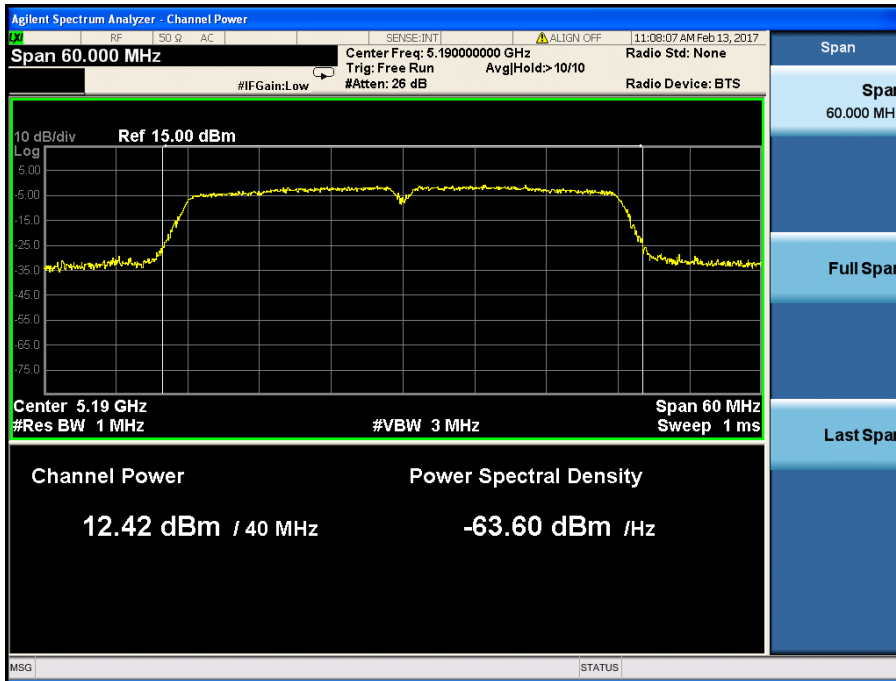


5825MHz

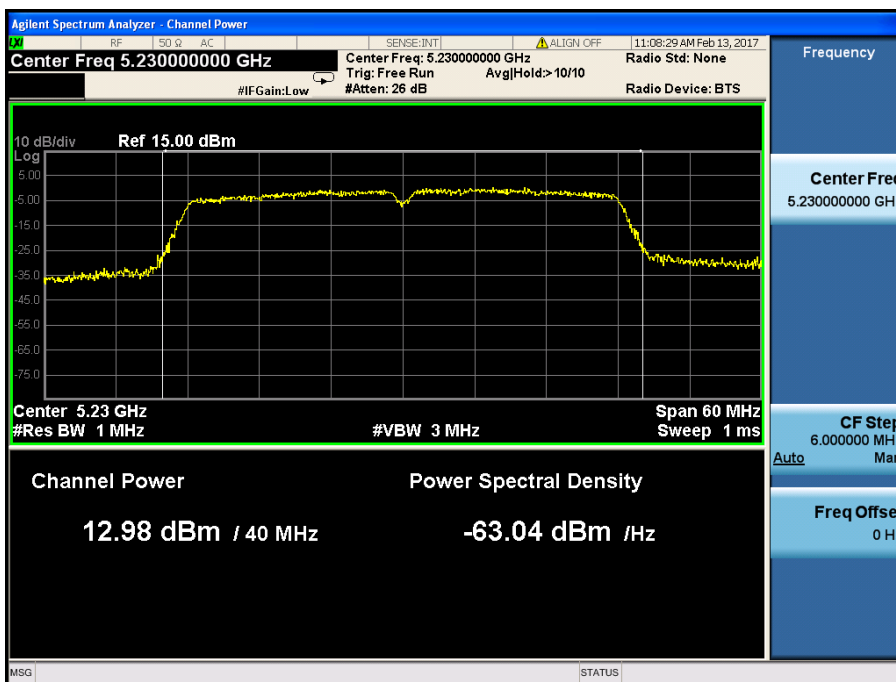


Test Mode: 802.11n-HT40

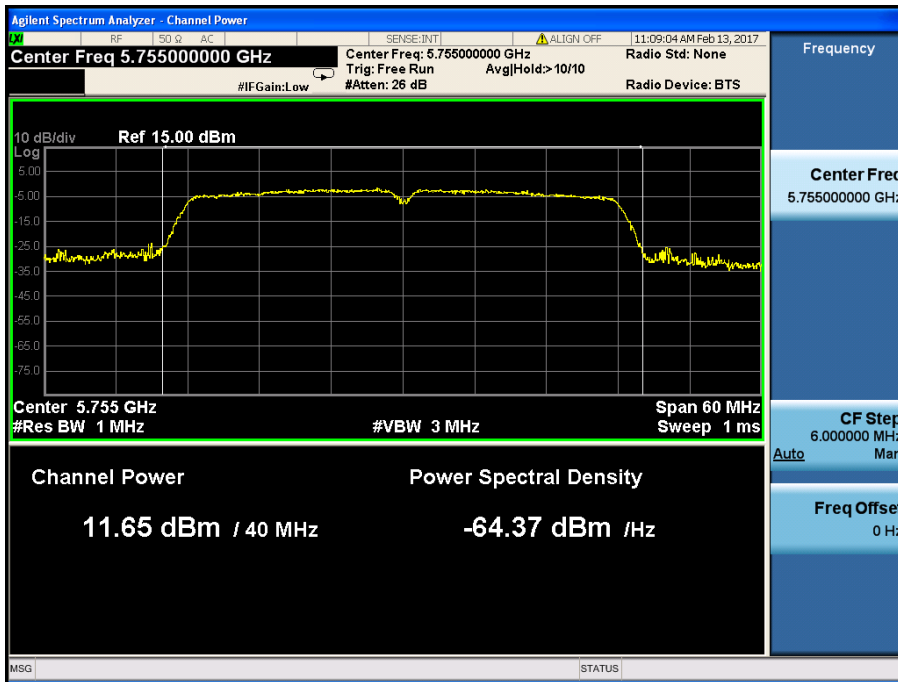
5190MHz



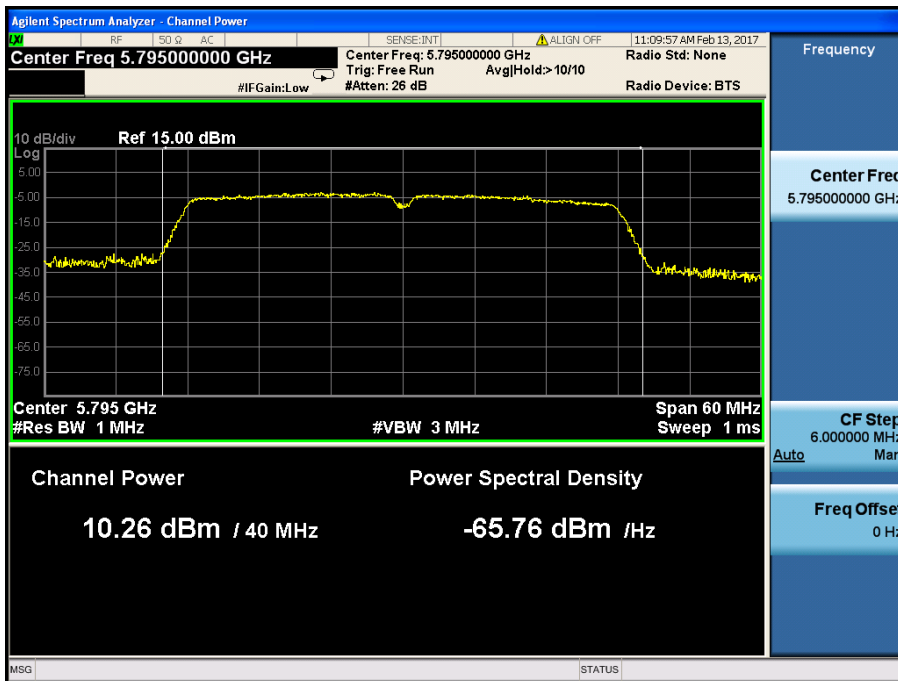
5230MHz



5755MHz



5795MHz



9. Conducted Spurious Emissions

9.1 Standard Applicable

According to §15.407 (b) (b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

9.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer via a RF combiner.
2. Set the spectrum analyzer as RBW = 100kHz/1MHz, VBW=300kHz/3MHz, Sweep = auto
3. Set the Lowest, Middle and Highest Transmitting Channel, observed the outside band of 30MHz to 40GHz, then mark the higher-level emission for comparing with the FCC rules.

9.3 Environmental Conditions

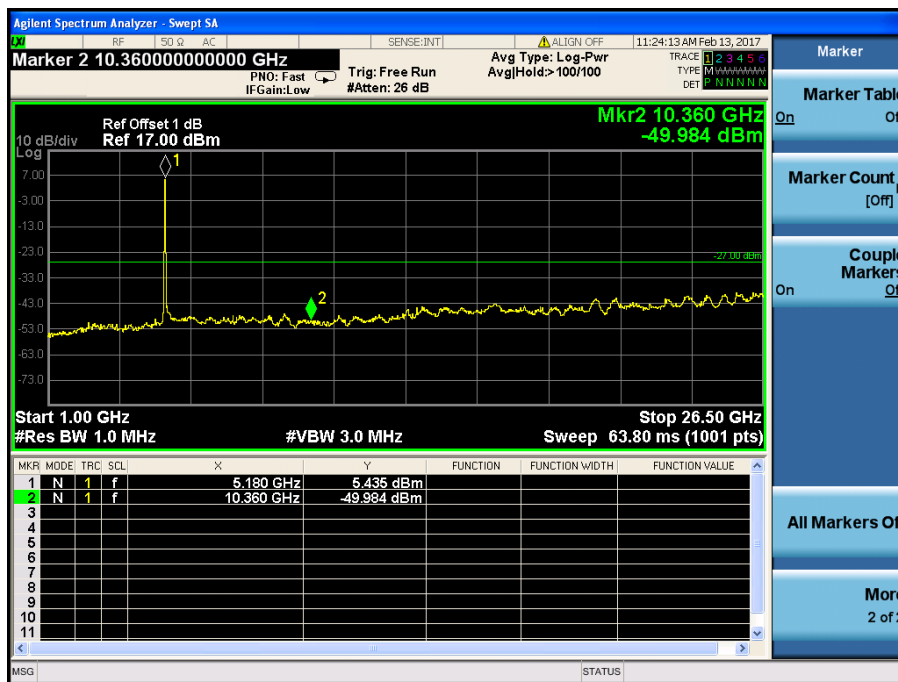
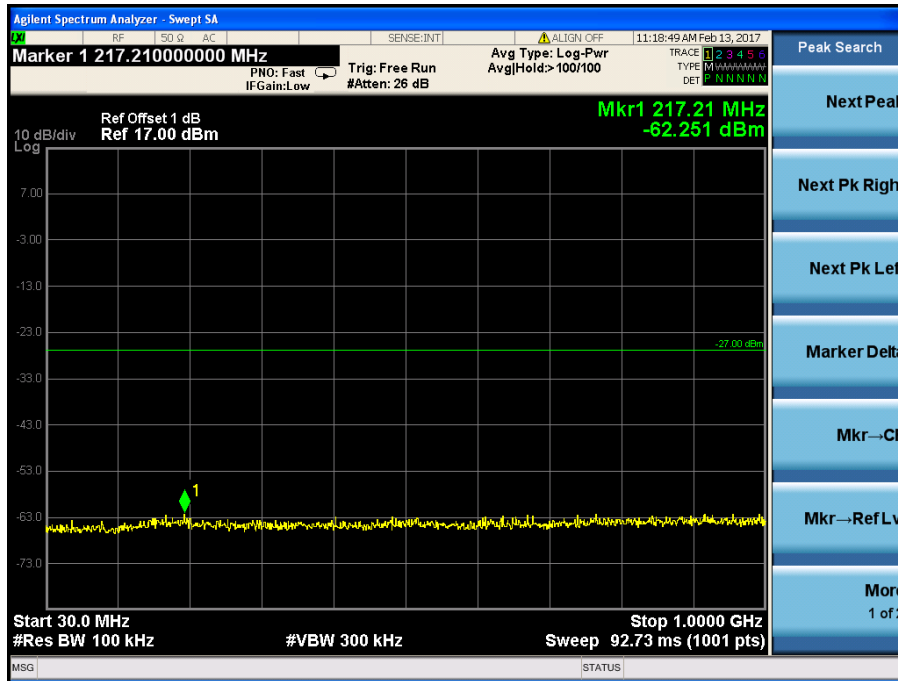
Temperature:	21° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

9.4 Summary of Test Results/Plots

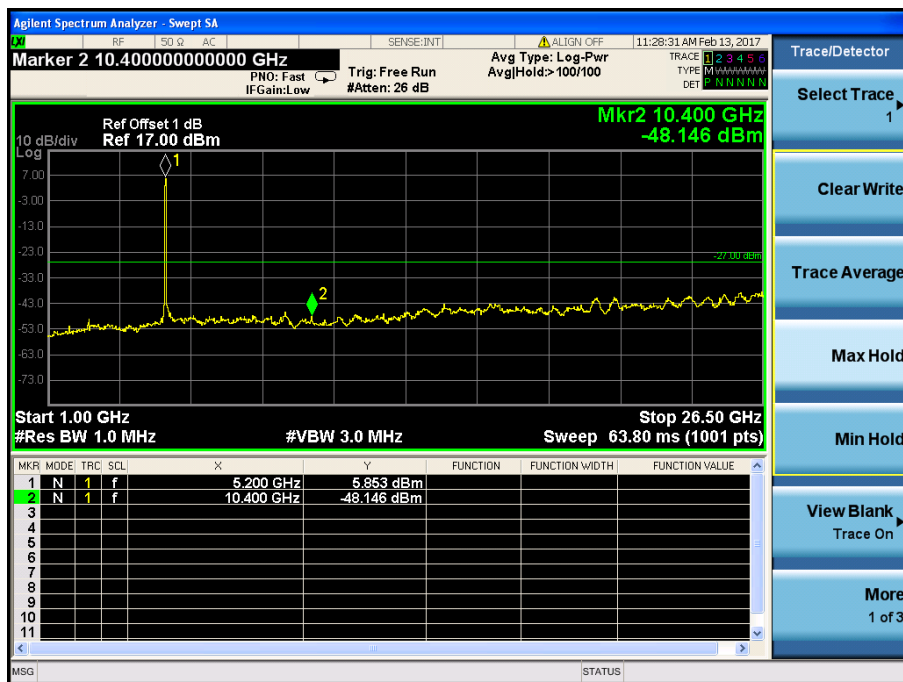
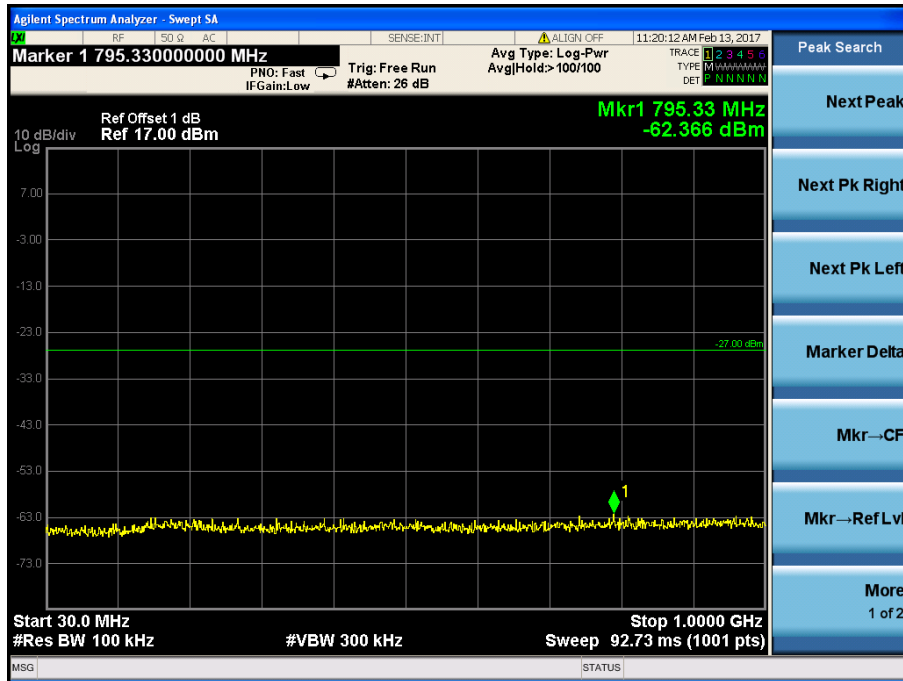
Emissions above 26.5GHz are attenuated more than 20dB below the permissible limits and test data are not reported.

802.11a

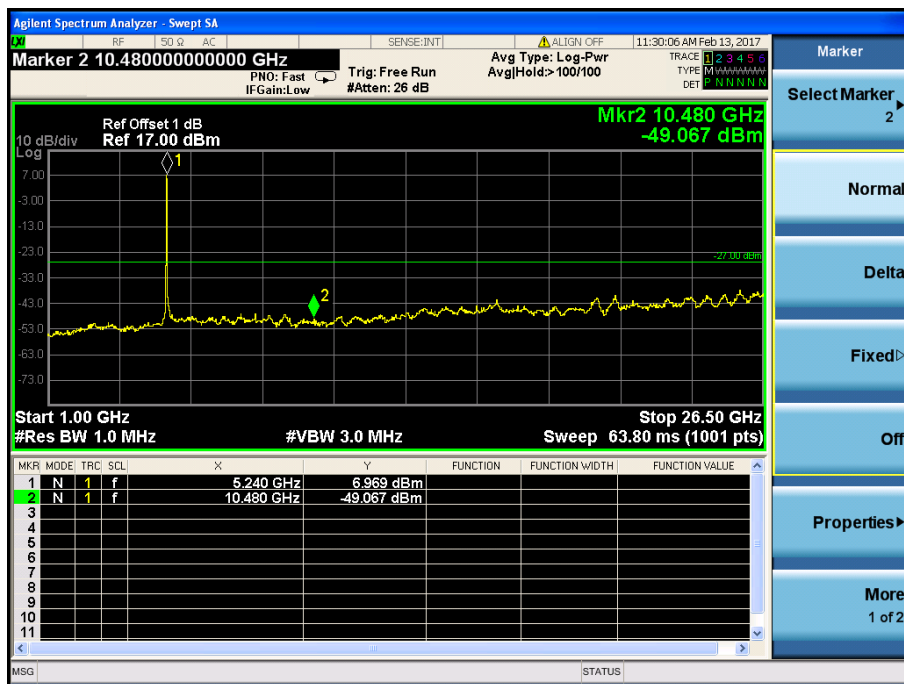
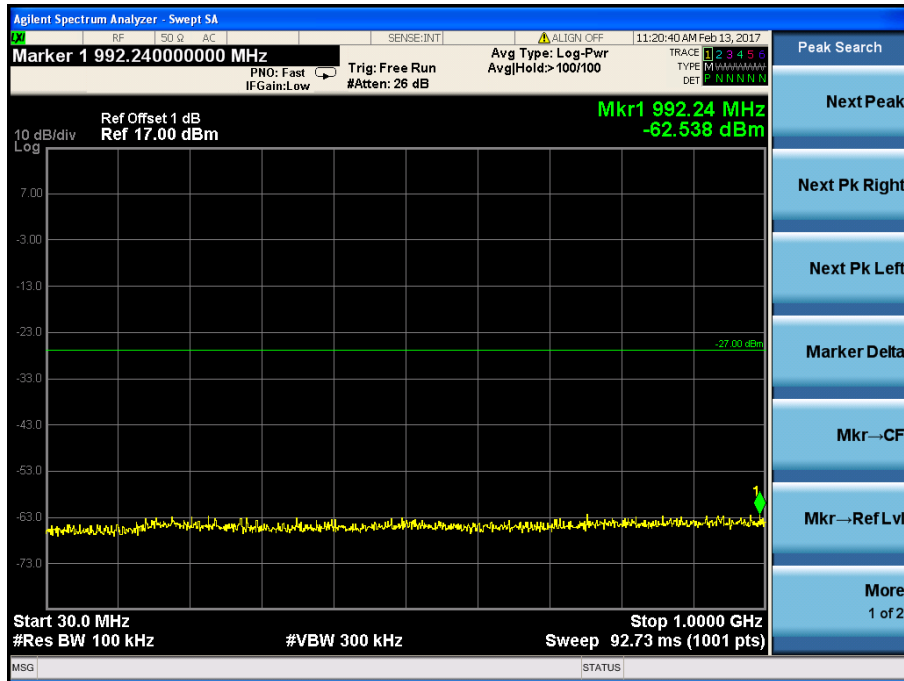
5180MHz



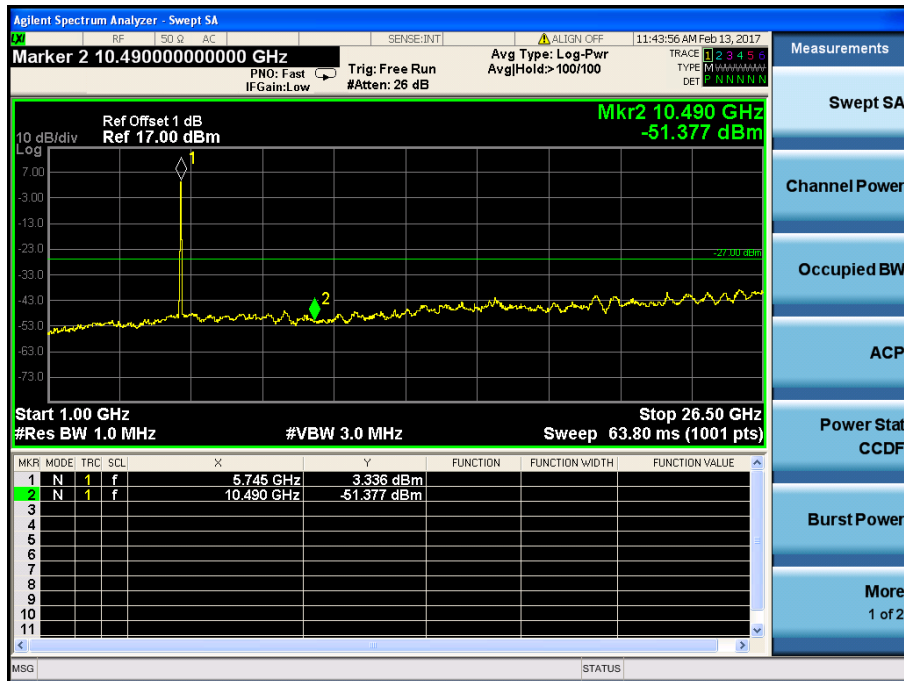
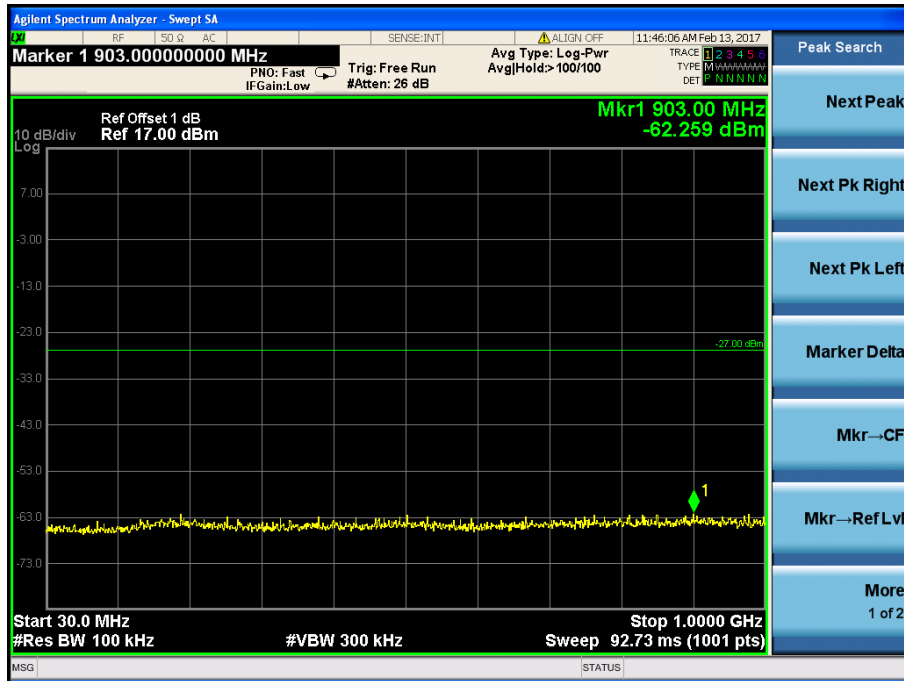
5200MHz



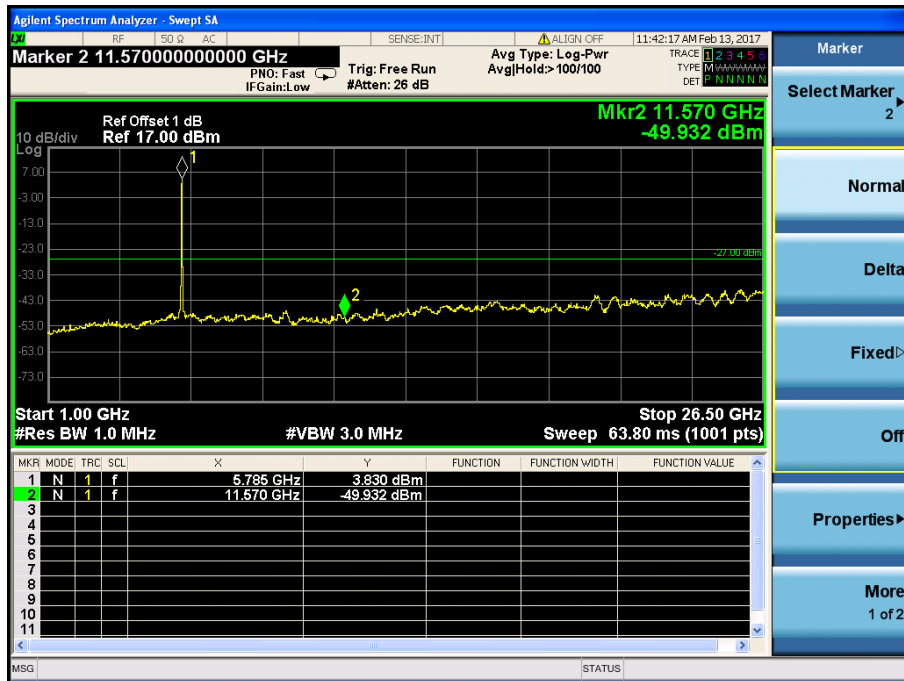
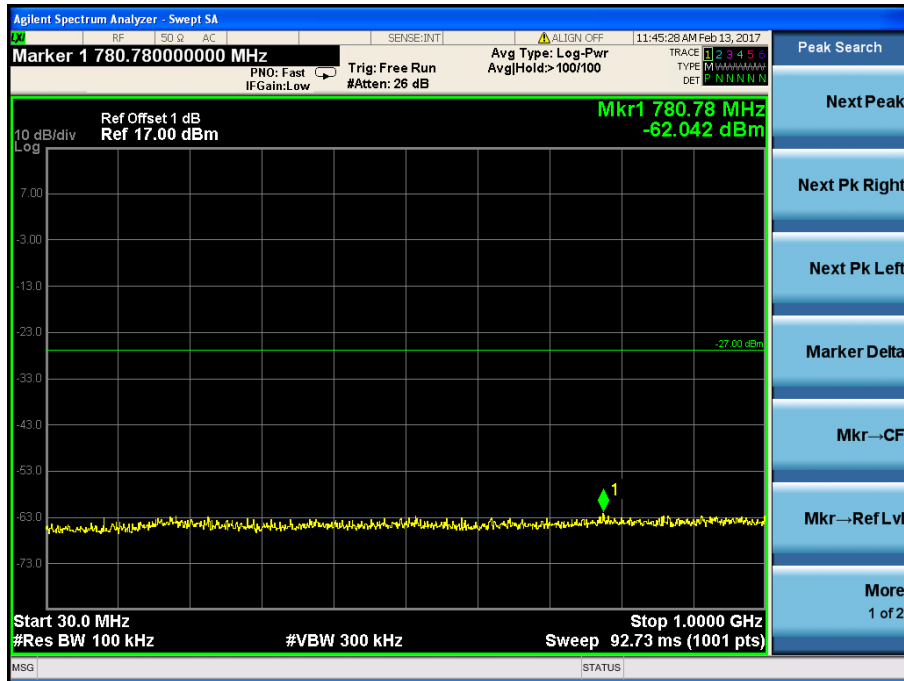
5240MHz



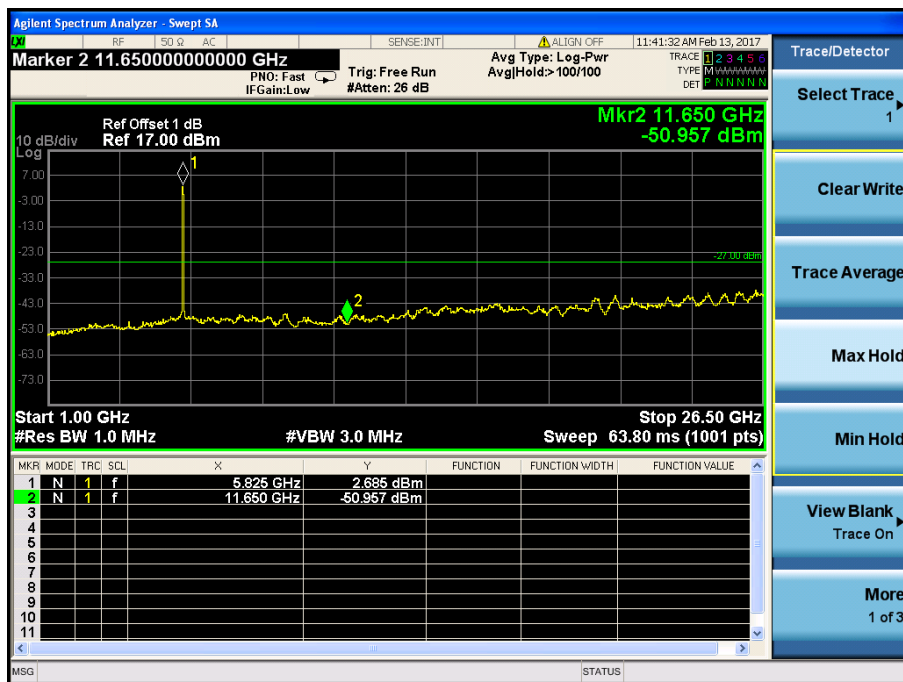
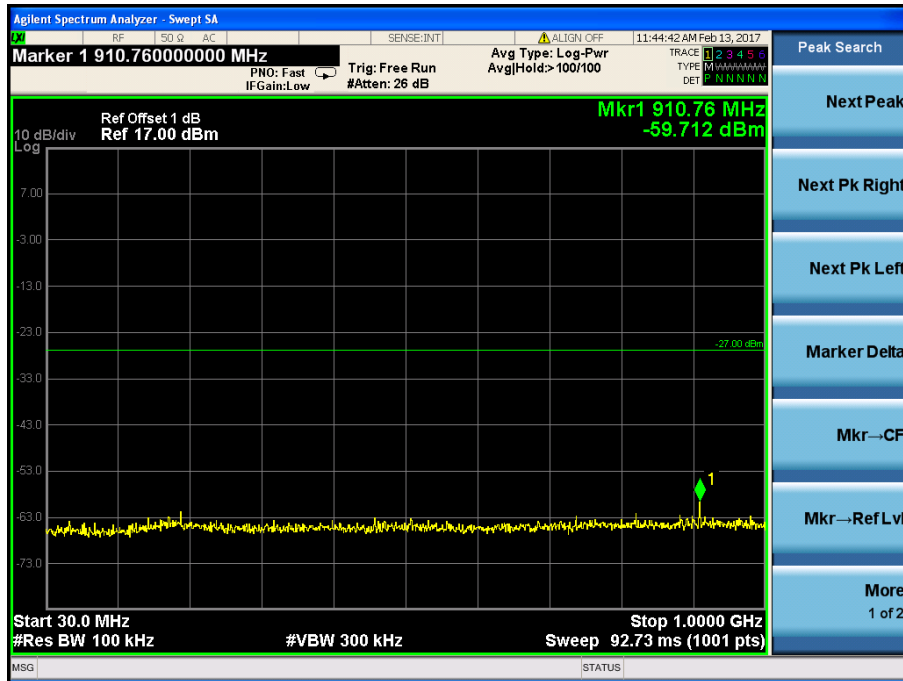
5745MHz



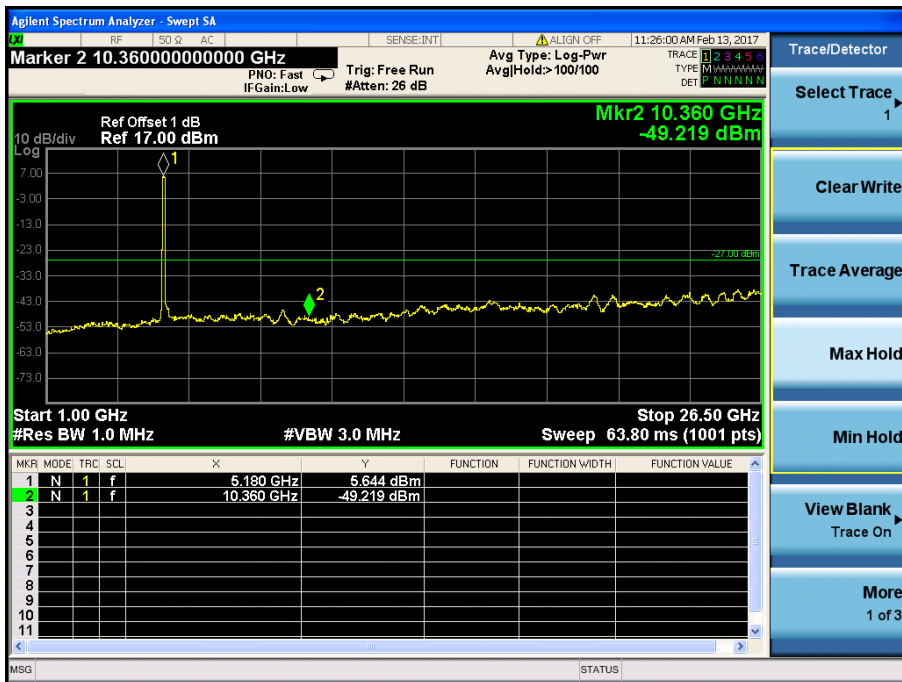
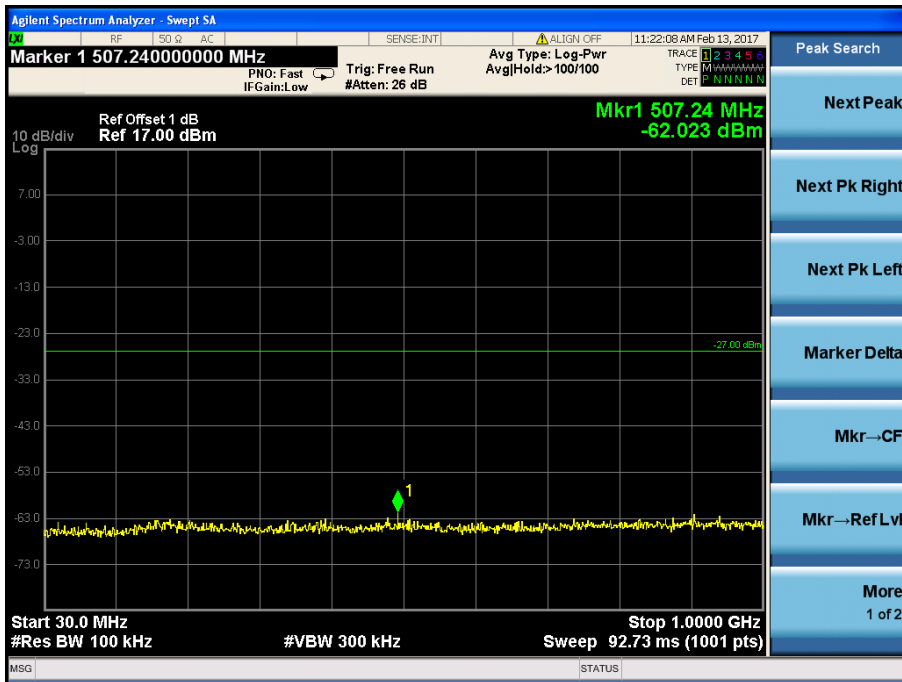
5785MHz



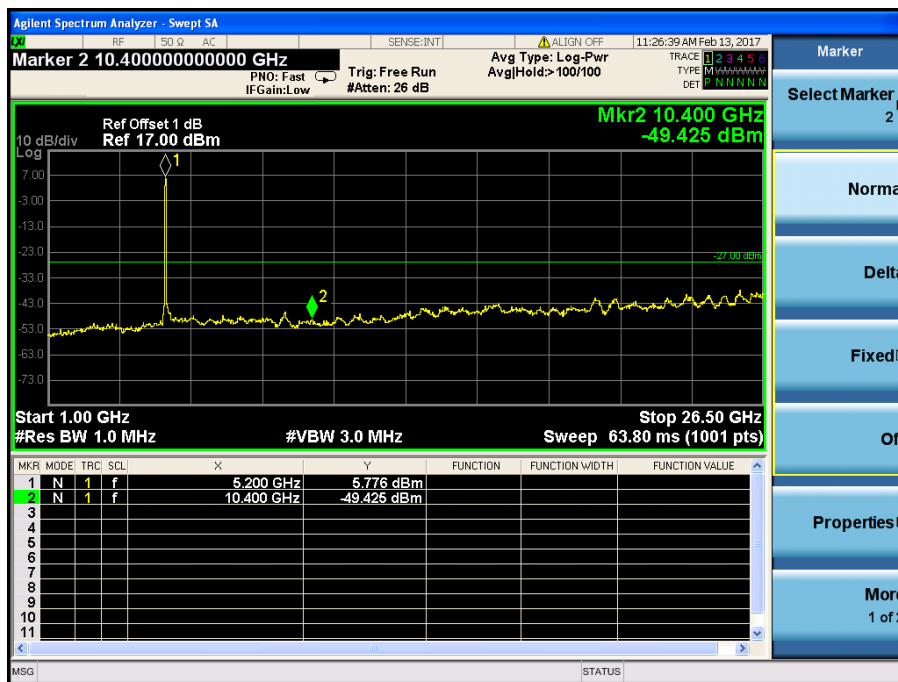
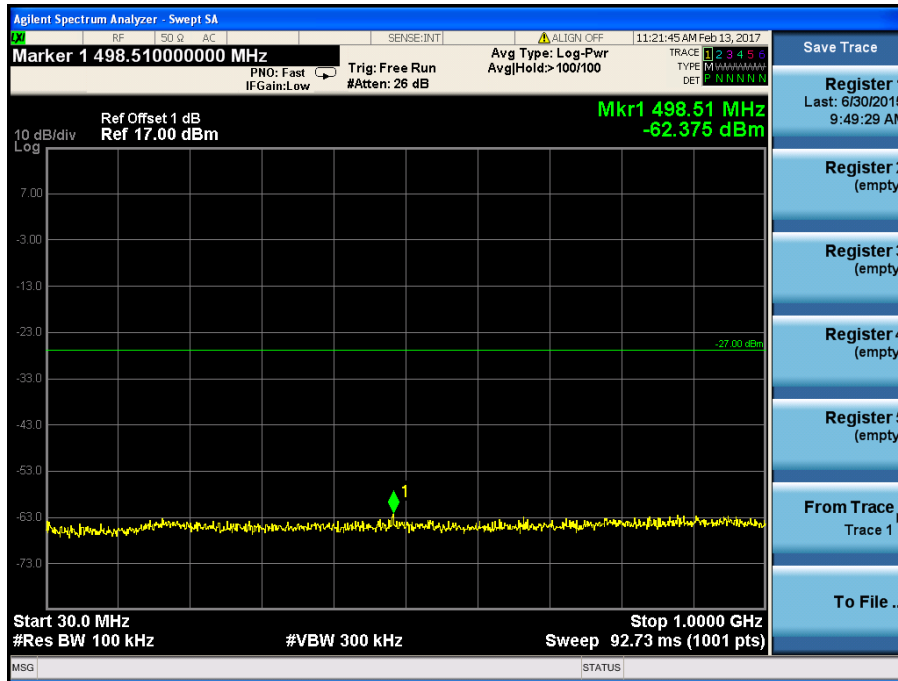
5825MHz



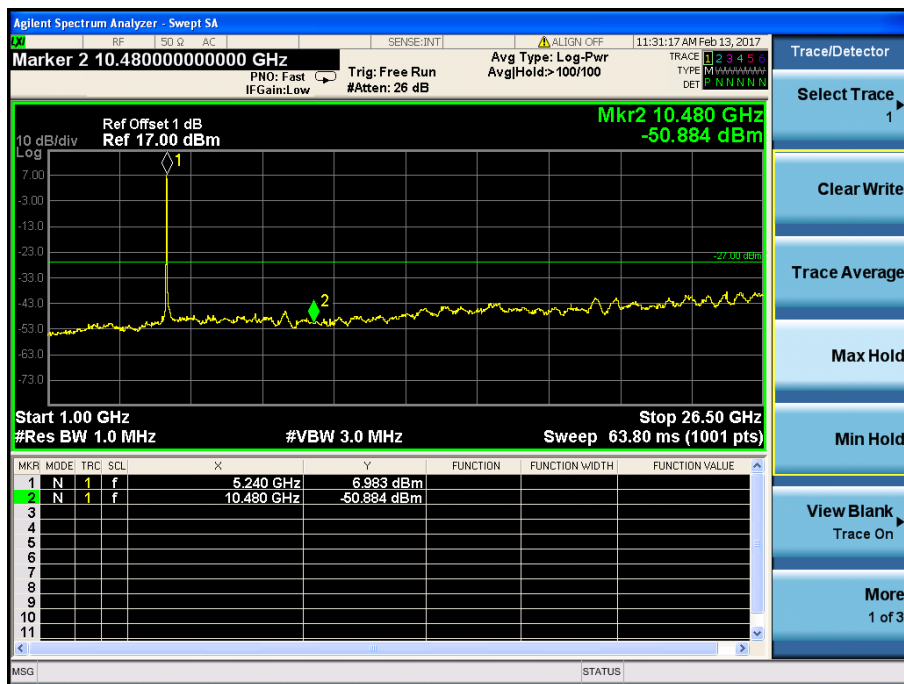
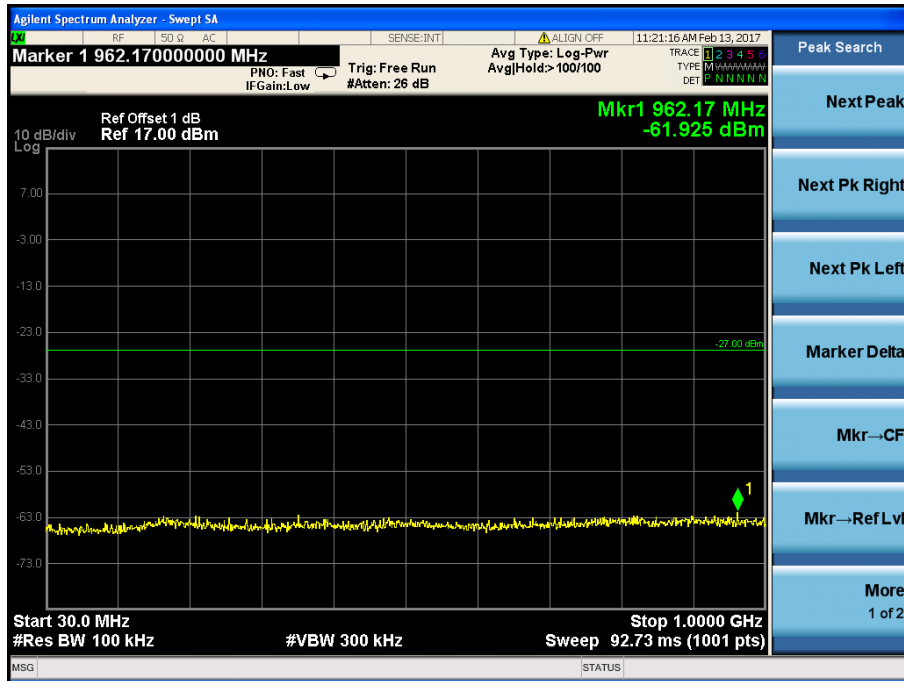
802.11n HT20
5180MHz



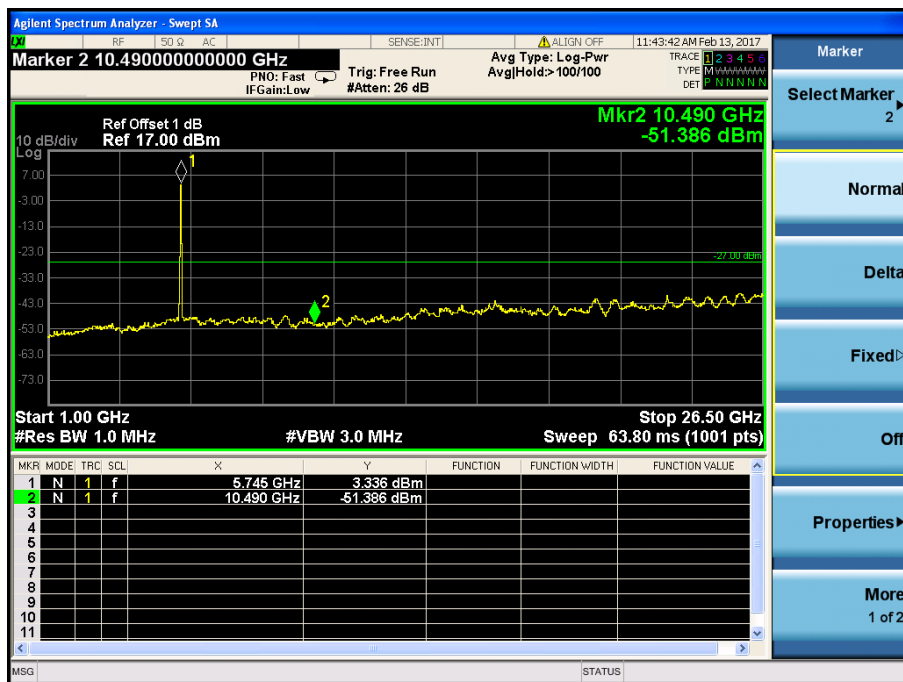
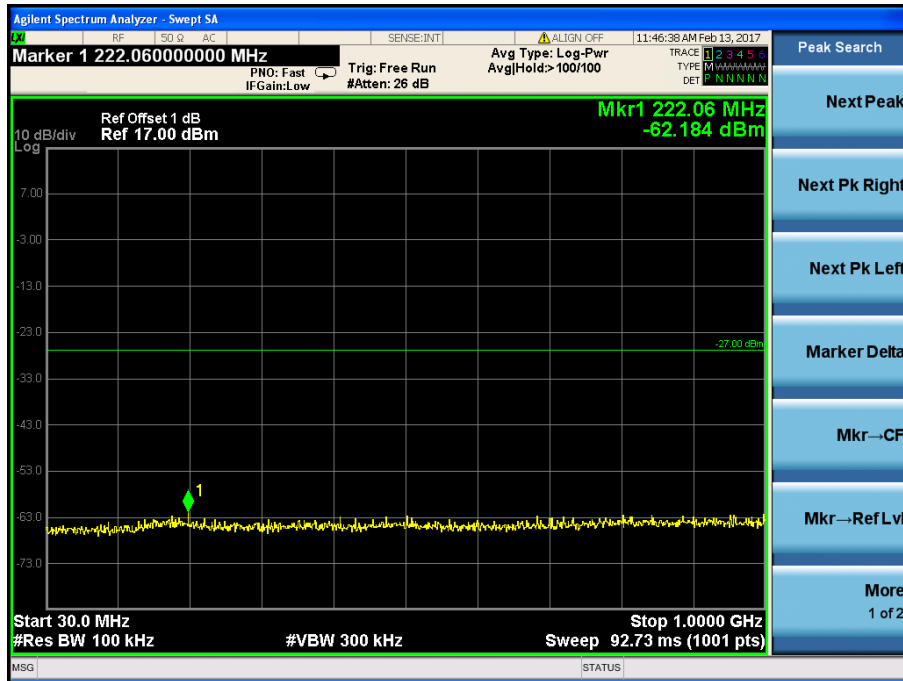
5200MHz



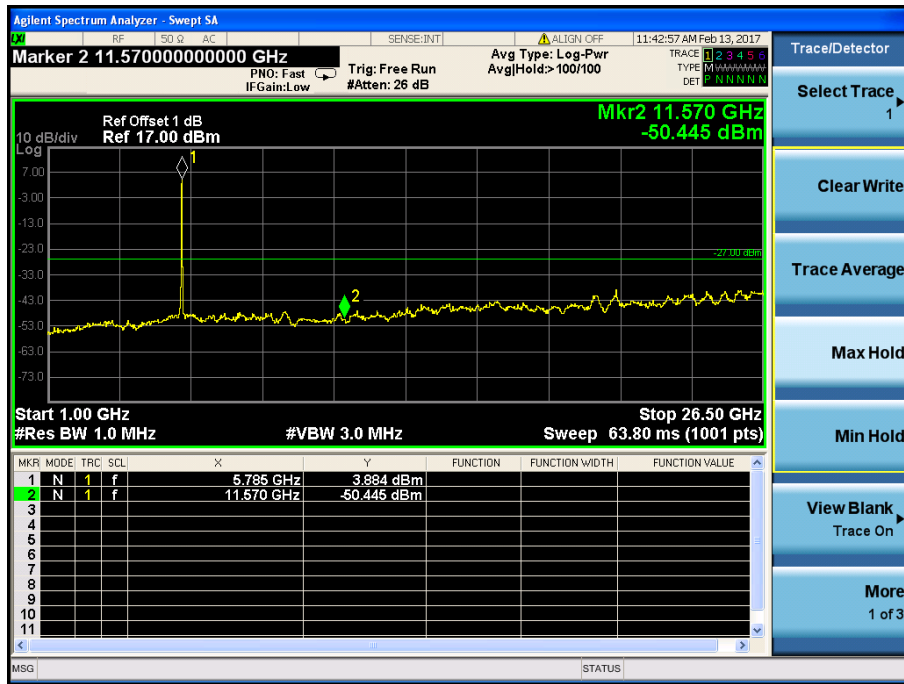
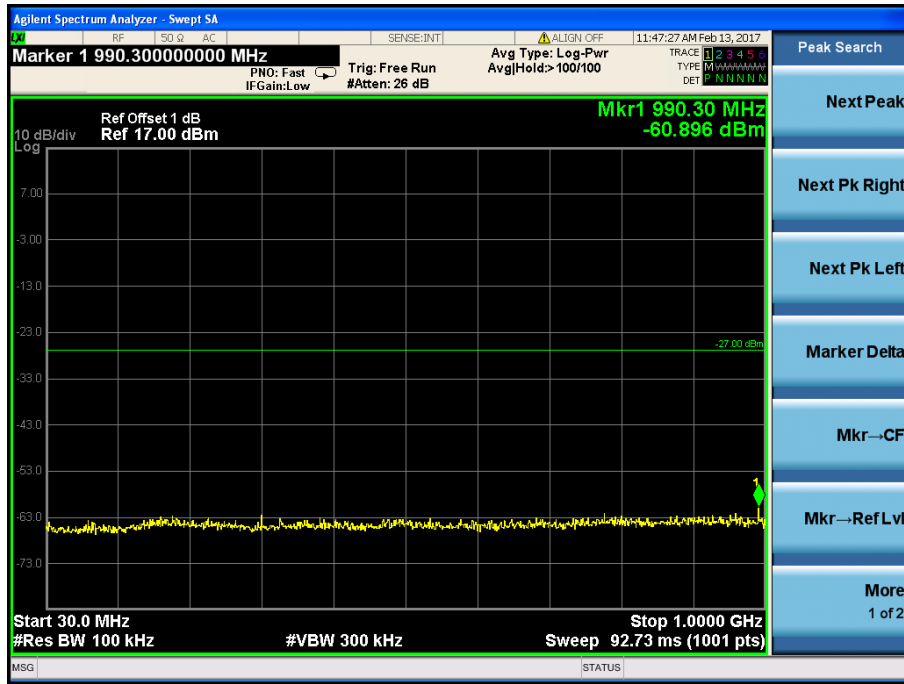
5240MHz



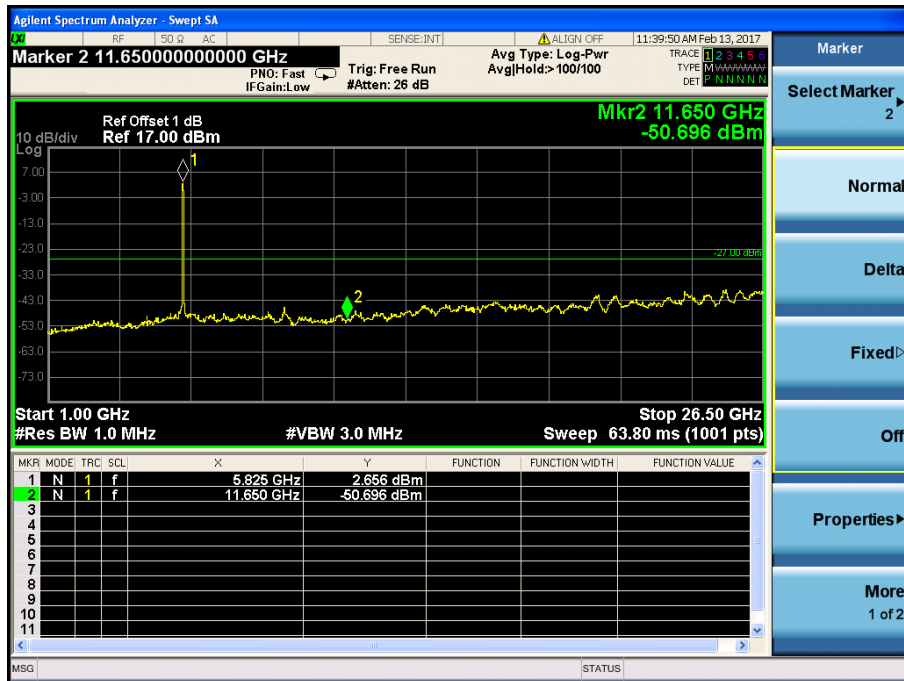
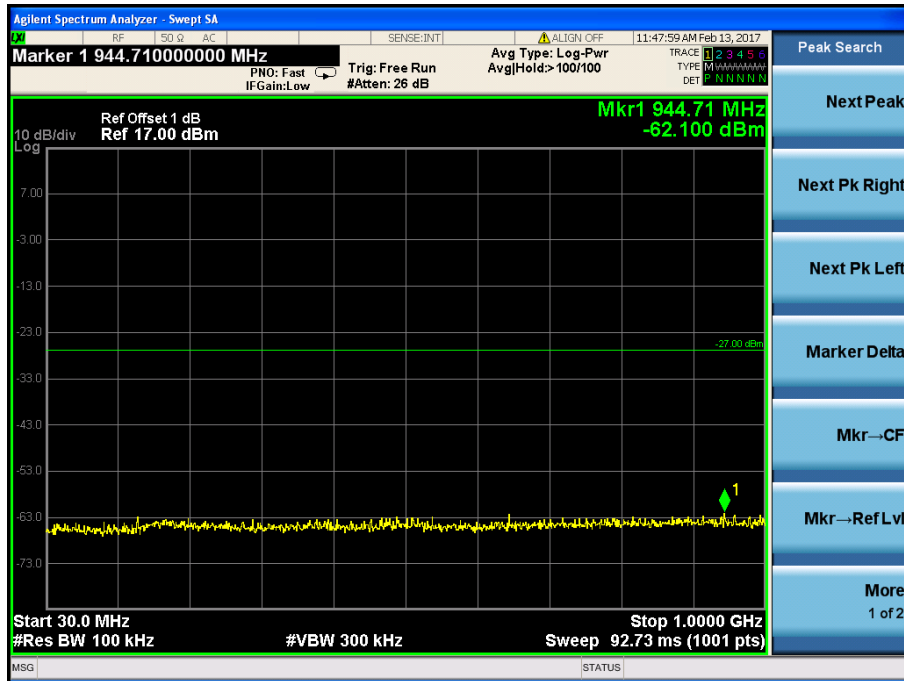
5745MHz



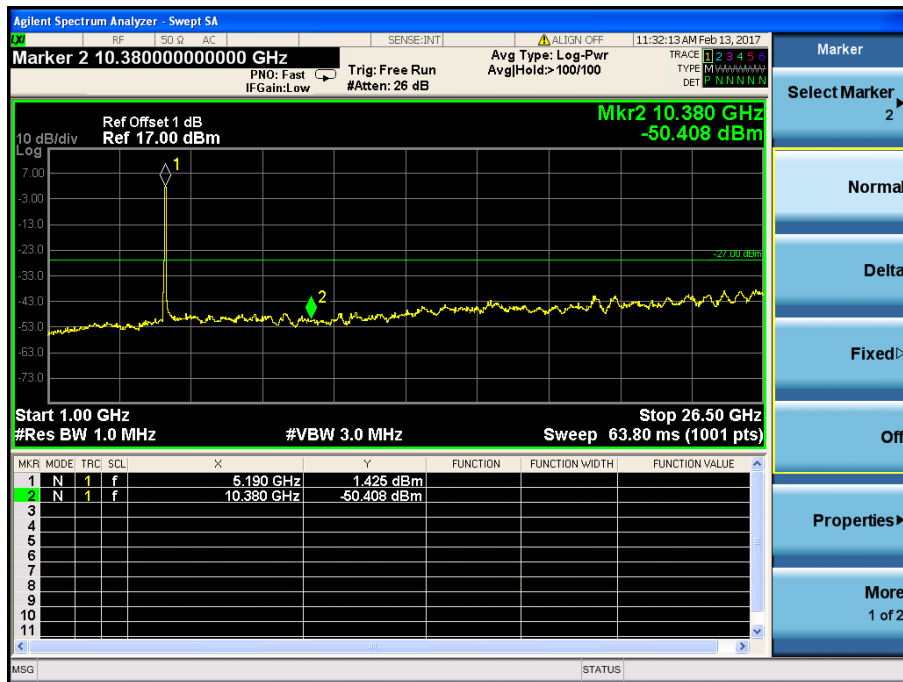
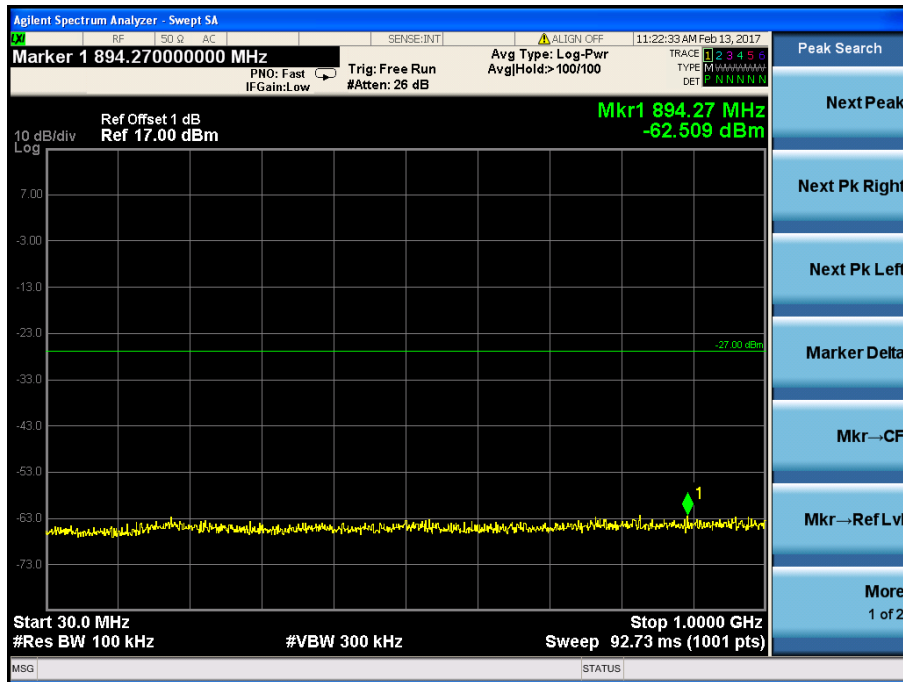
5785MHz



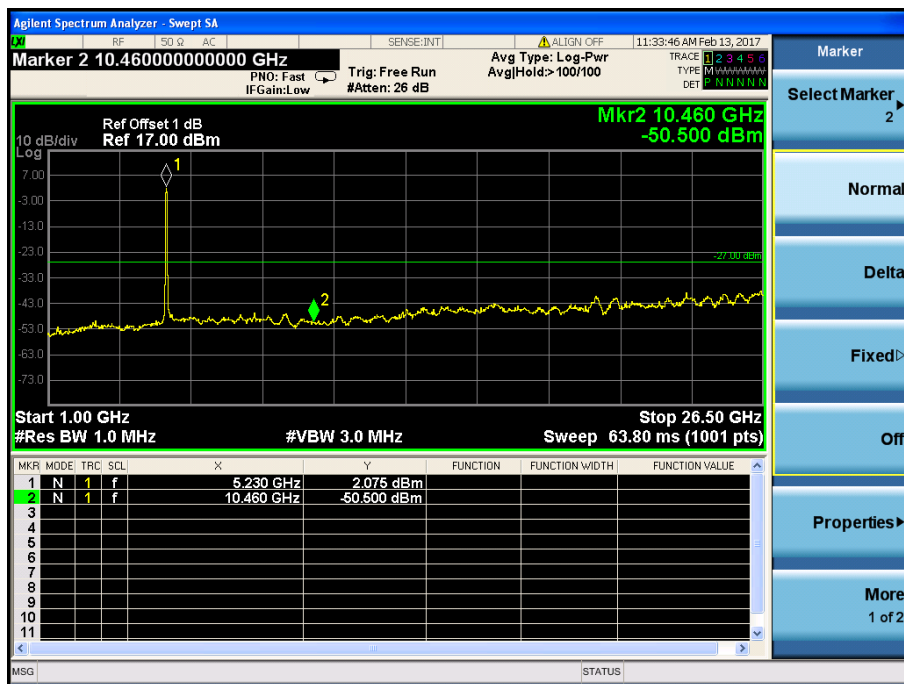
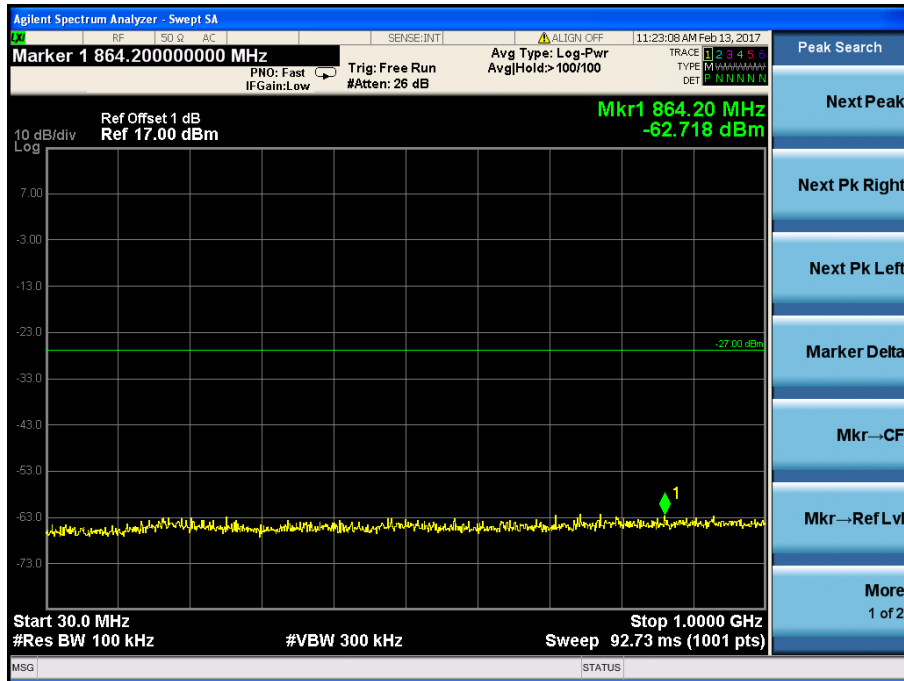
5805MHz



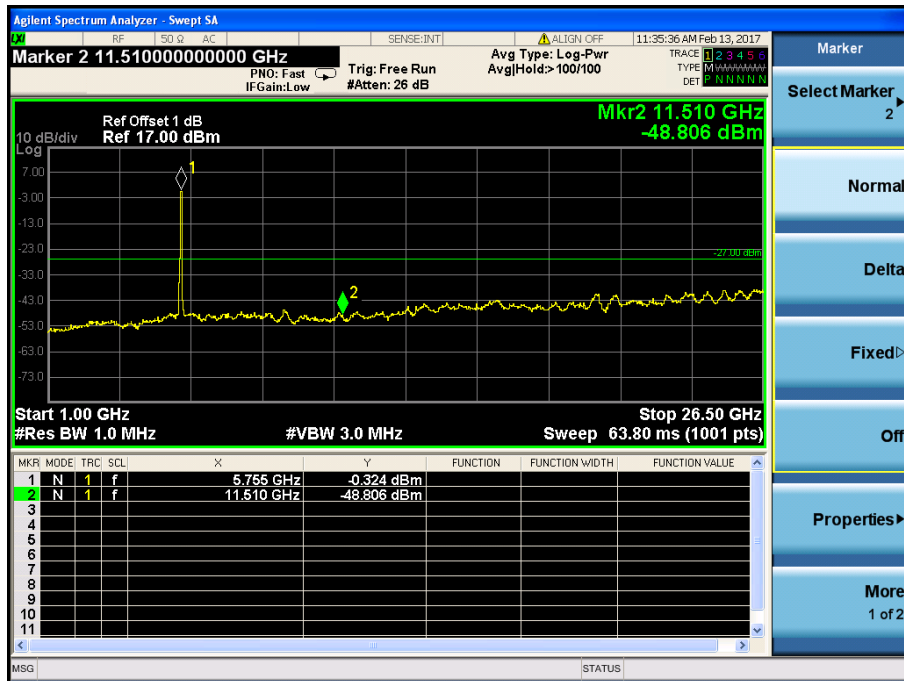
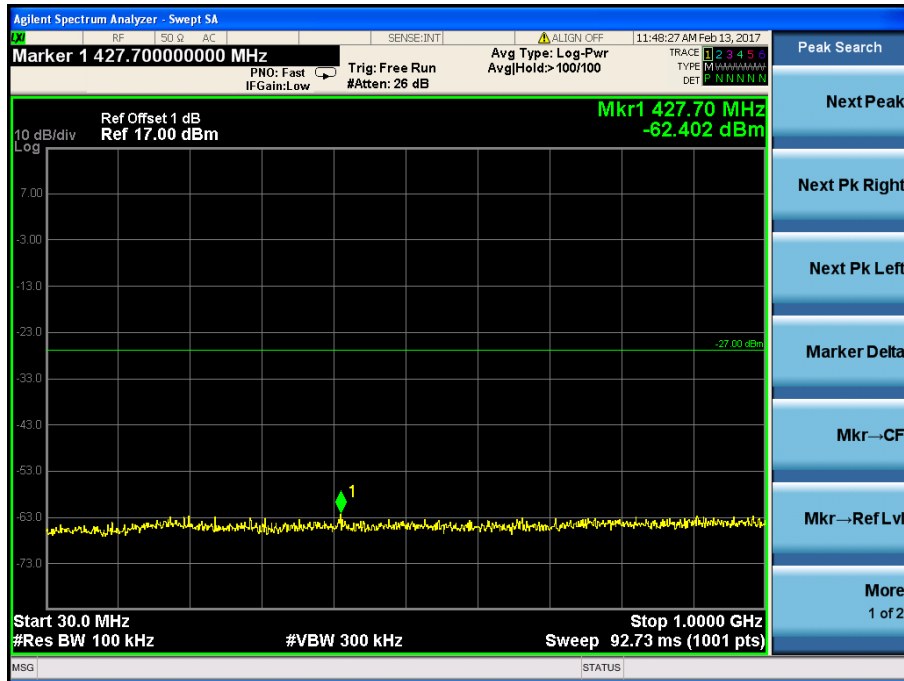
802.11n HT40
5190MHz



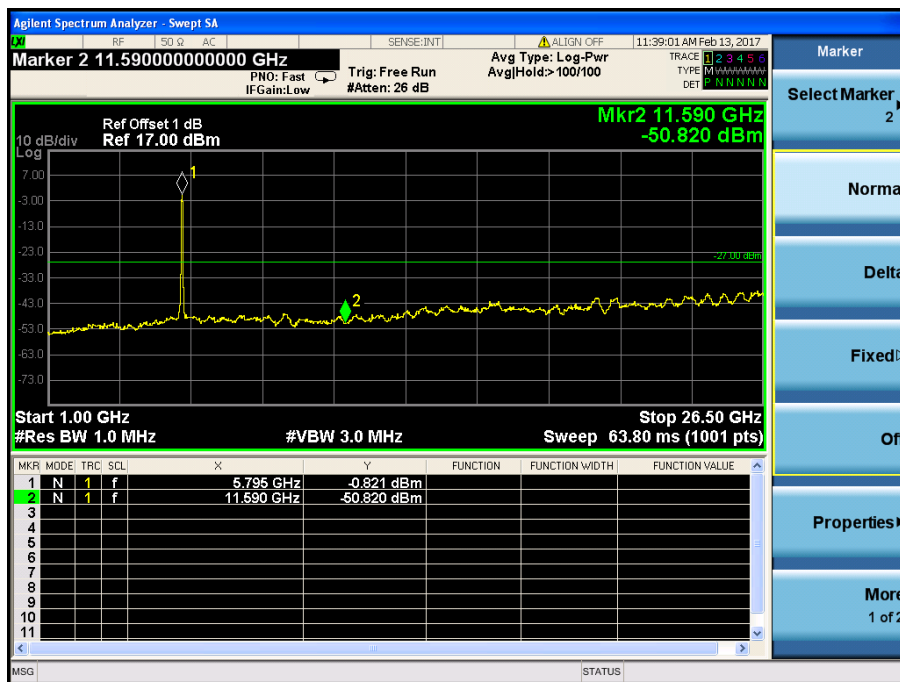
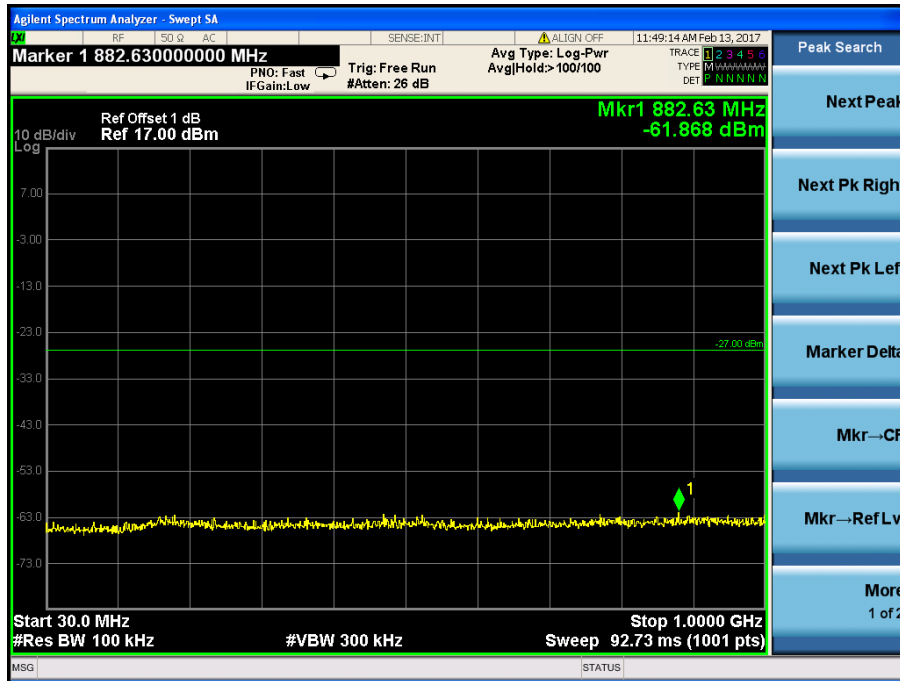
5230MHz



5755MHz



5795MHz



10. Radiated Spurious Emissions

10.1 Standard Applicable

According to §15.407(b)(6), Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209.

According to §15.407(b)(7), The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

789033 D02 v01r02 General UNII Test Procedures New Rules v01

If radiated measurements are performed, field strength is then converted to EIRP as follows:

$$\text{EIRP} = ((E*d)^2) / 30$$

where:

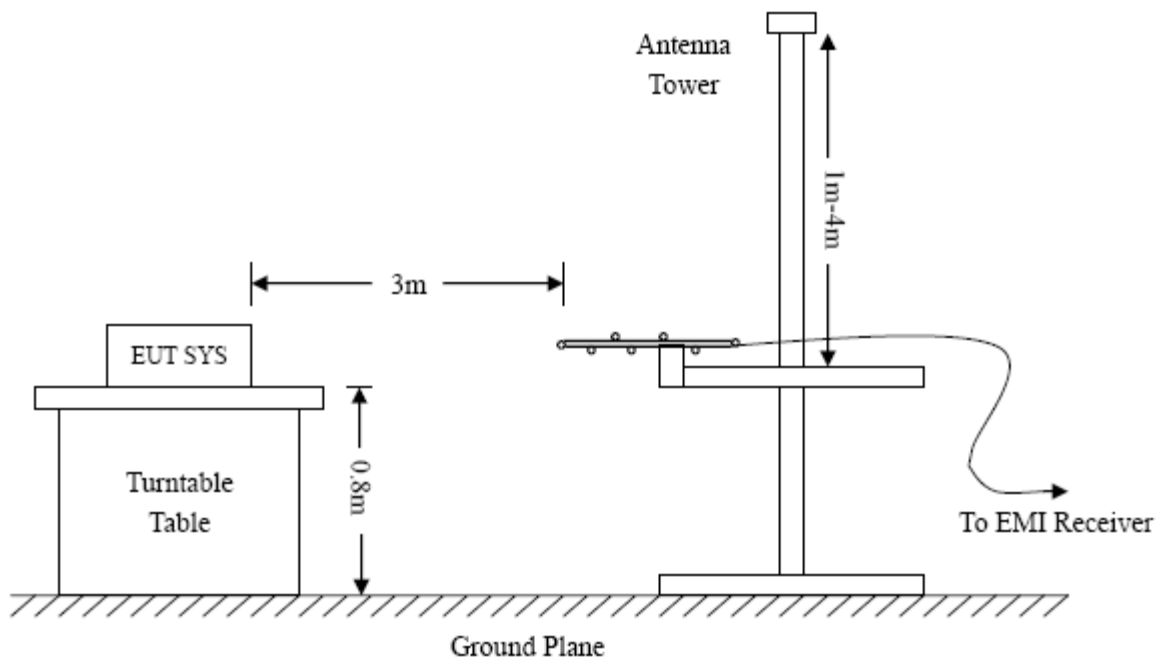
- E is the field strength in V/m;
- d is the measurement distance in meters;
- EIRP is the equivalent isotropically radiated power in watts.

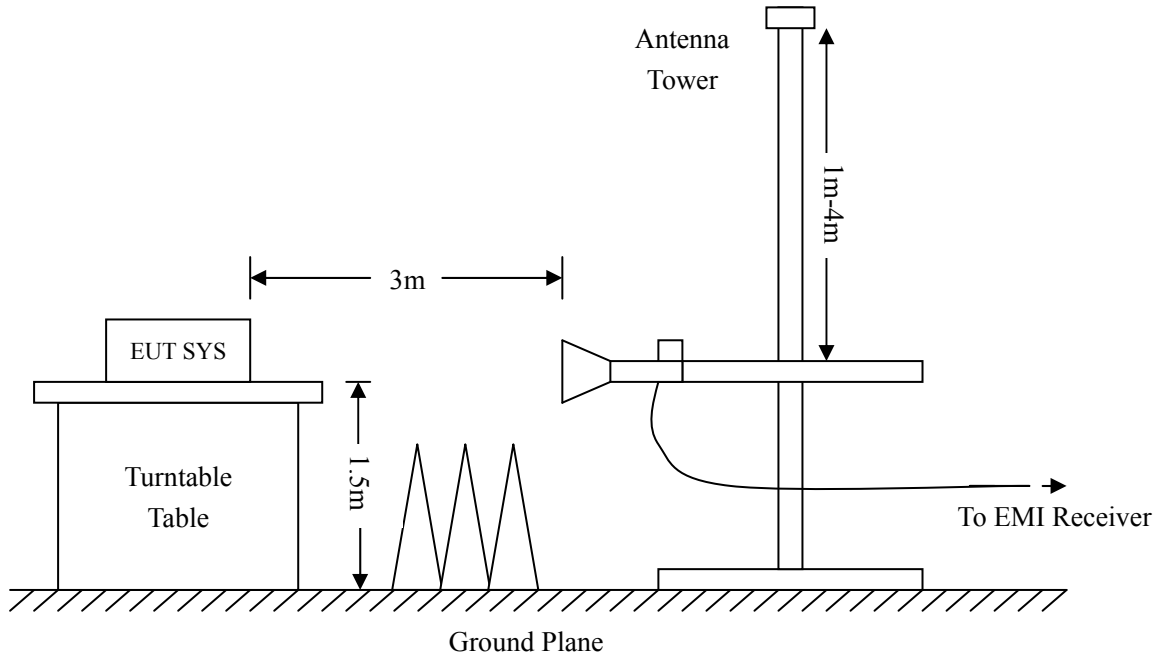
10.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.407(b)(6) and FCC Part 15.209 Limit..

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.





10.3 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

10.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

10.5 Environmental Conditions

Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

10.6 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.407(b)(6) standards, and had the worst margin of:

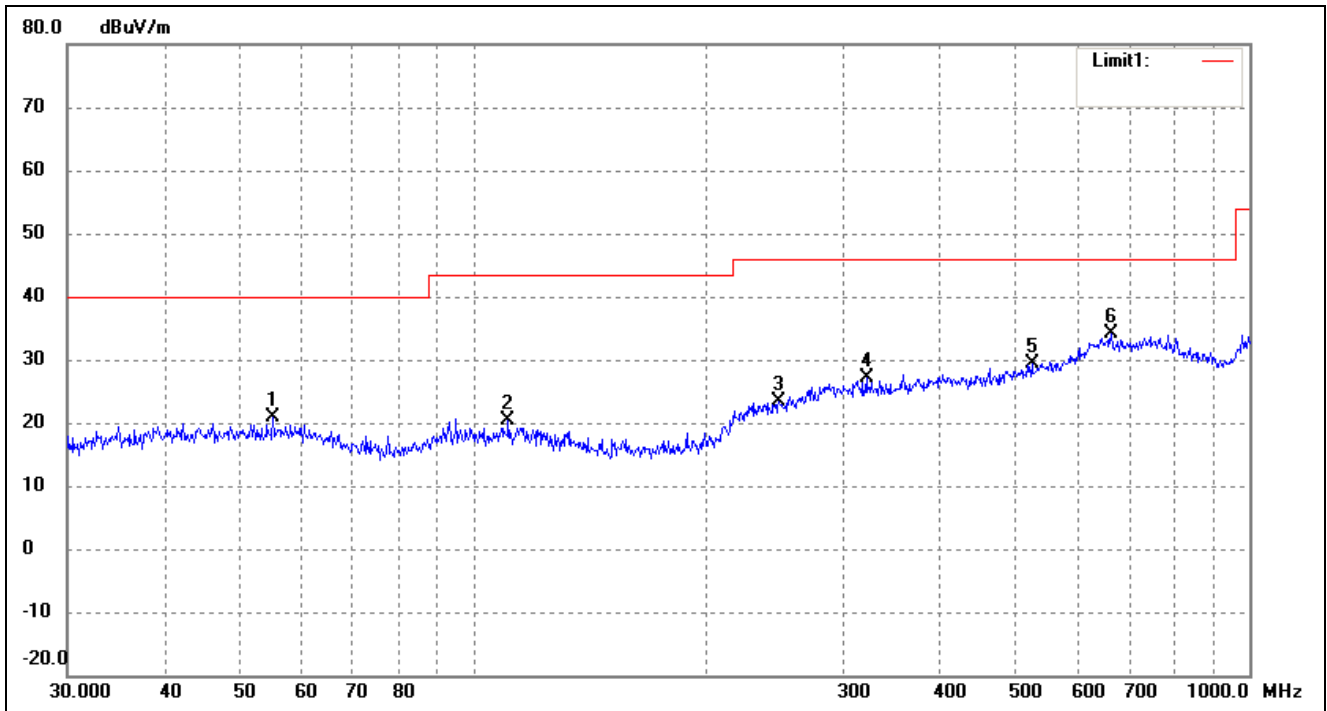
Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

For 802.11a

Spurious Emission From 30 MHz to 1 GHz

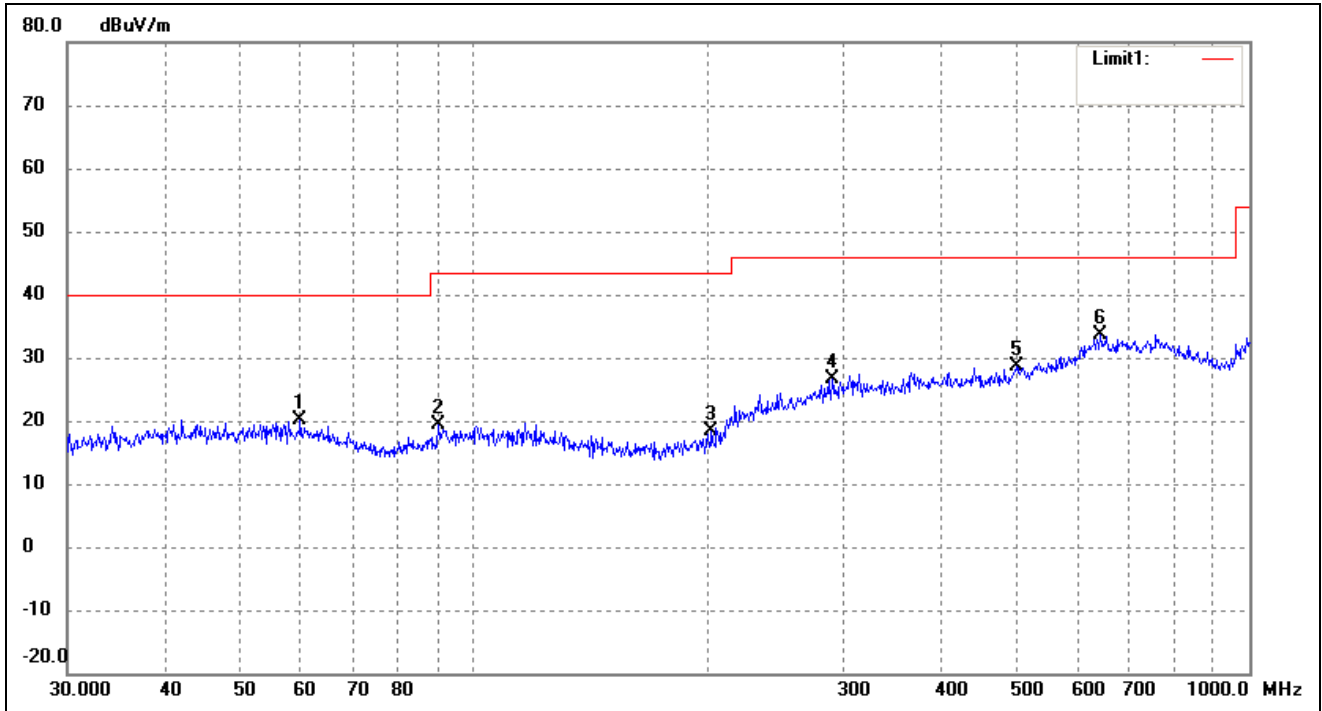
Test mode: Transmitting Channel 5180MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	15.85	5.02	20.87	40.00	-19.13	90	100	peak
2	110.9571	15.45	4.87	20.32	43.50	-23.18	325	100	peak
3	247.6819	14.18	9.22	23.40	46.00	-22.60	59	100	peak
4	321.0608	15.22	11.92	27.14	46.00	-18.86	220	100	peak
5	524.5541	15.59	13.87	29.46	46.00	-16.54	347	100	peak
6	663.4729	16.40	17.76	34.16	46.00	-11.84	260	100	peak

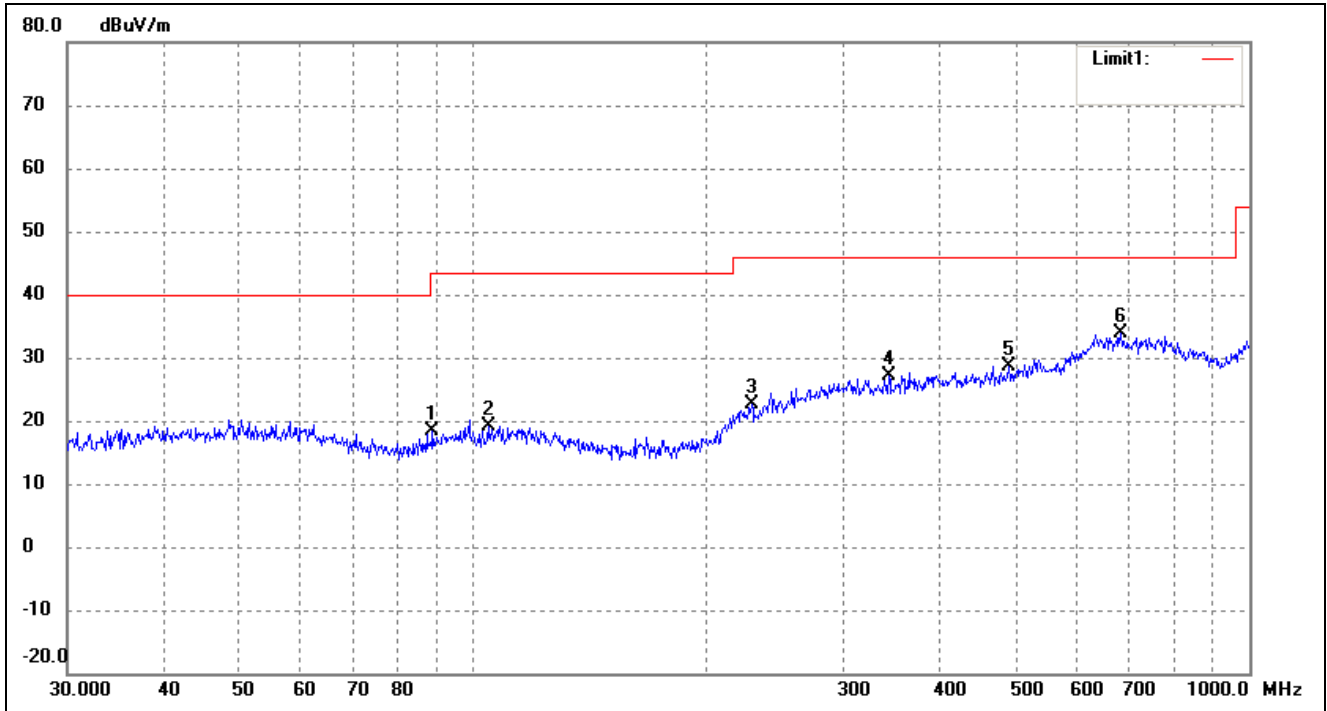
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	59.8588	15.04	5.03	20.07	40.00	-19.93	271	100	peak
2	90.2205	15.90	3.44	19.34	43.50	-24.16	92	100	peak
3	202.8104	14.52	3.97	18.49	43.50	-25.01	334	100	peak
4	290.0172	15.06	11.57	26.63	46.00	-19.37	93	100	peak
5	501.1790	15.19	13.37	28.56	46.00	-17.44	299	100	peak
6	642.8613	15.73	18.00	33.73	46.00	-12.27	200	100	peak

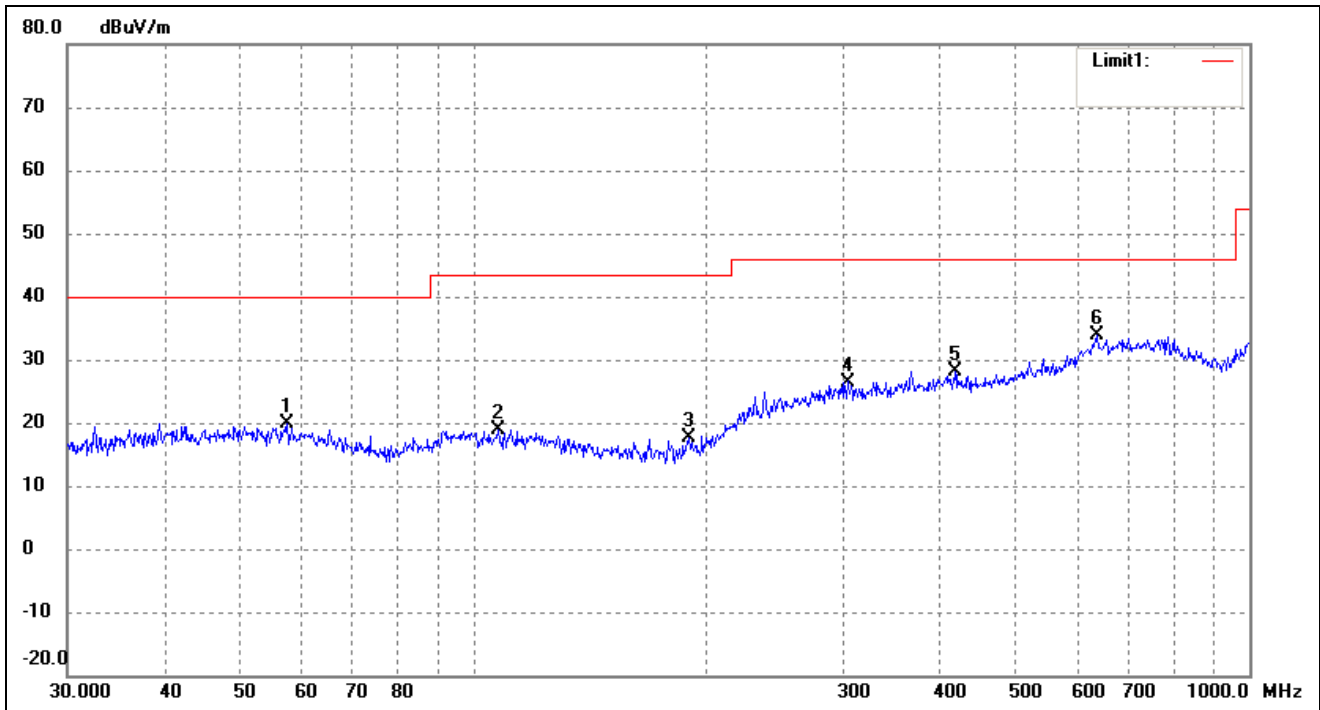
Test mode: Transmitting Channel 5200MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	88.6525	15.16	3.16	18.32	43.50	-25.18	339	100	peak
2	104.5361	14.23	4.88	19.11	43.50	-24.39	93	100	peak
3	228.4904	14.47	8.20	22.67	46.00	-23.33	200	100	peak
4	343.1800	15.76	11.45	27.21	46.00	-18.79	119	100	peak
5	490.7447	15.71	12.97	28.68	46.00	-17.32	268	100	peak
6	682.3485	15.28	18.50	33.78	46.00	-12.22	167	100	peak

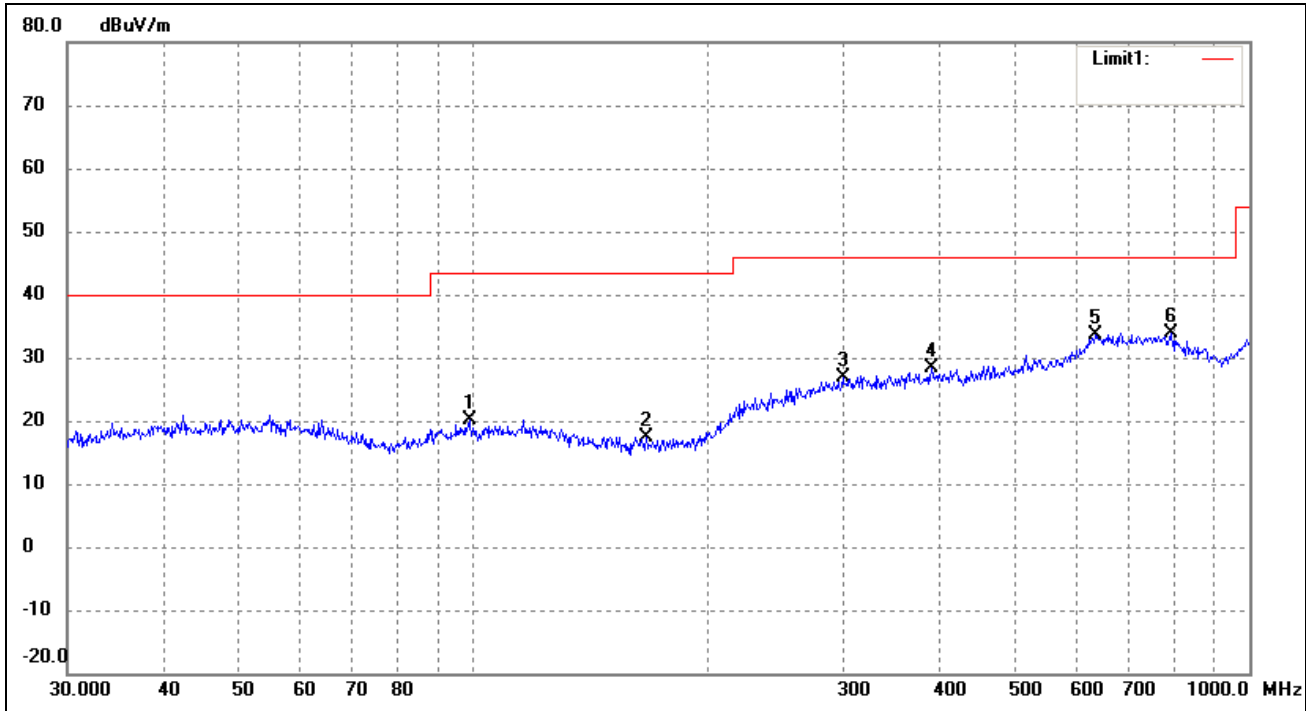
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	57.5939	14.78	4.99	19.77	40.00	-20.23	187	100	peak
2	107.8877	14.07	4.88	18.95	43.50	-24.55	185	100	peak
3	189.7385	14.76	2.88	17.64	43.50	-25.86	85	100	peak
4	303.5437	14.56	11.94	26.50	46.00	-19.50	137	100	peak
5	417.6411	16.11	11.98	28.09	46.00	-17.91	136	100	peak
6	636.1340	15.86	17.93	33.79	46.00	-12.21	350	100	peak

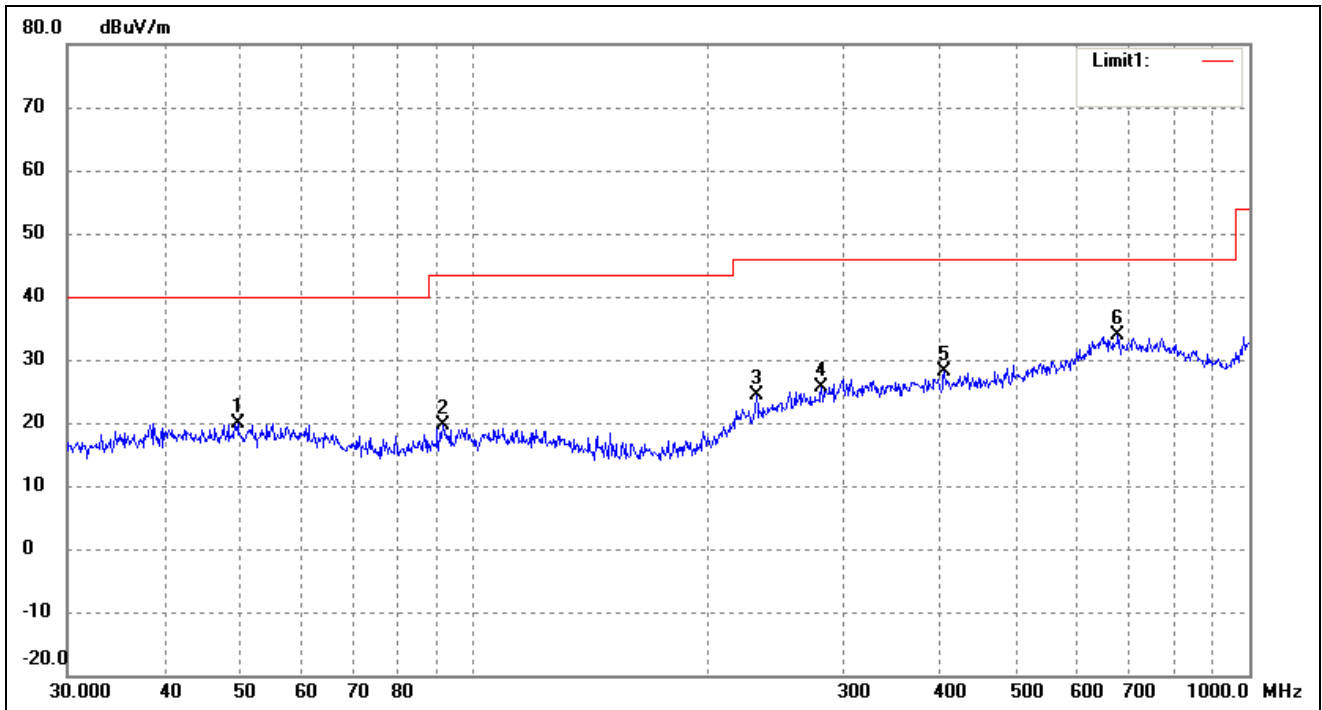
Test mode: Transmitting Channel 5240MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	98.8326	15.49	4.76	20.25	43.50	-23.25	53	100	peak
2	167.2368	14.97	2.46	17.43	43.50	-26.07	182	100	peak
3	299.3158	15.03	11.92	26.95	46.00	-19.05	122	100	peak
4	389.3549	16.14	12.20	28.34	46.00	-17.66	92	100	peak
5	633.9073	15.73	17.86	33.59	46.00	-12.41	67	100	peak
6	793.3960	17.39	16.48	33.87	46.00	-12.13	236	100	peak

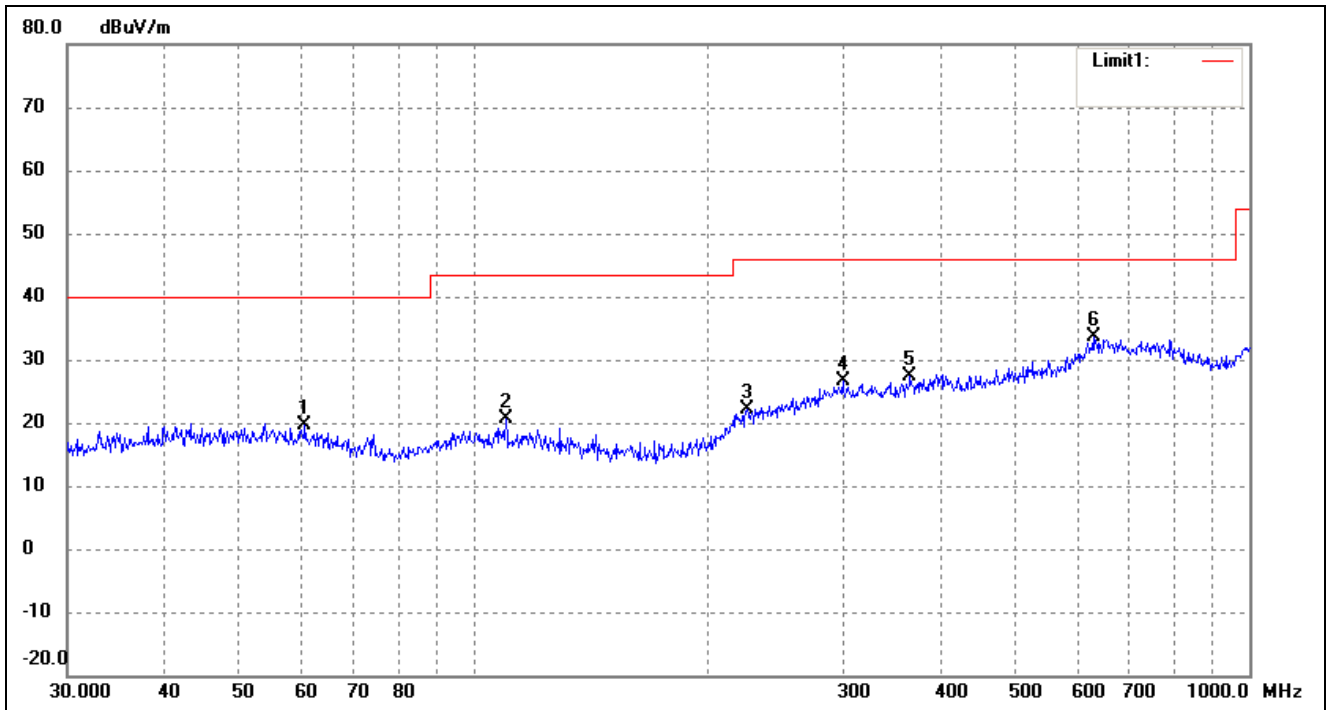
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	49.7068	14.91	4.98	19.89	40.00	-20.11	356	100	peak
2	91.4949	15.99	3.64	19.63	43.50	-23.87	115	100	peak
3	231.7179	15.92	8.40	24.32	46.00	-21.68	95	100	peak
4	281.0075	14.54	11.18	25.72	46.00	-20.28	319	100	peak
5	404.6665	15.55	12.50	28.05	46.00	-17.95	325	100	peak
6	677.5798	15.43	18.55	33.98	46.00	-12.02	230	100	peak

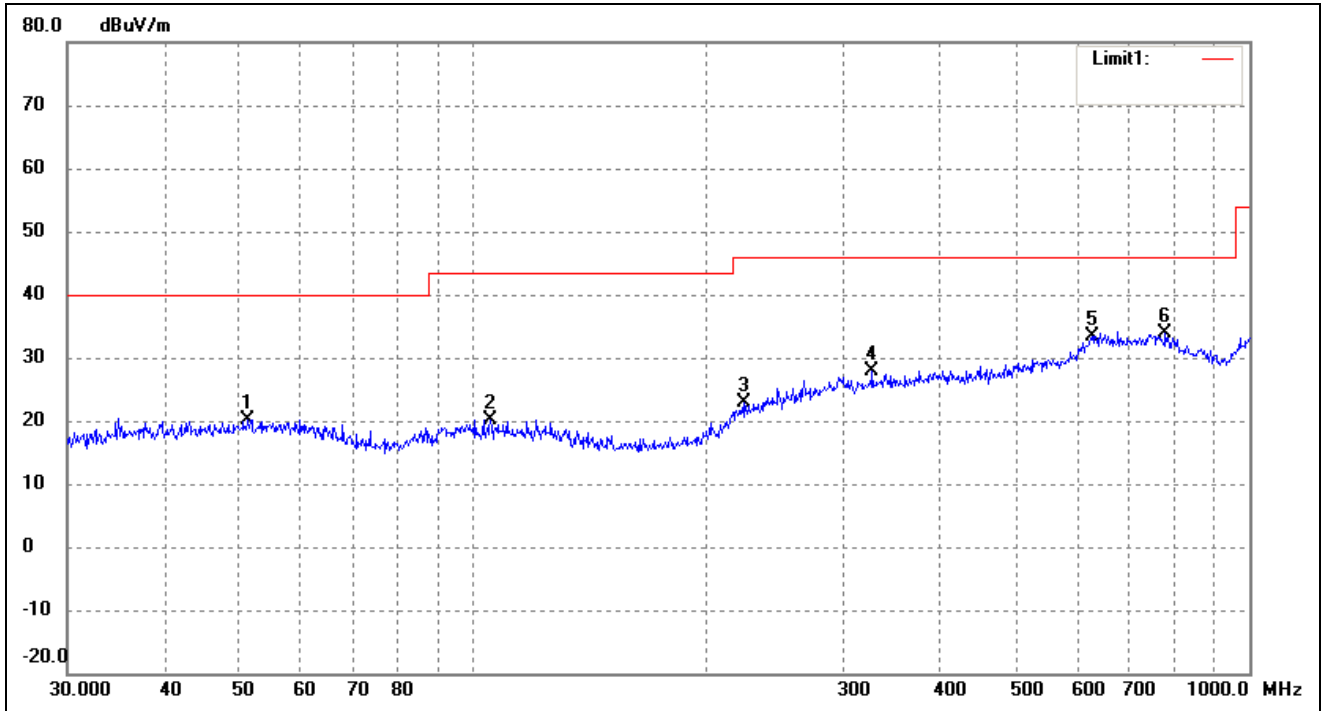
Test mode: Transmitting Channel 5745MHz

Horizontal



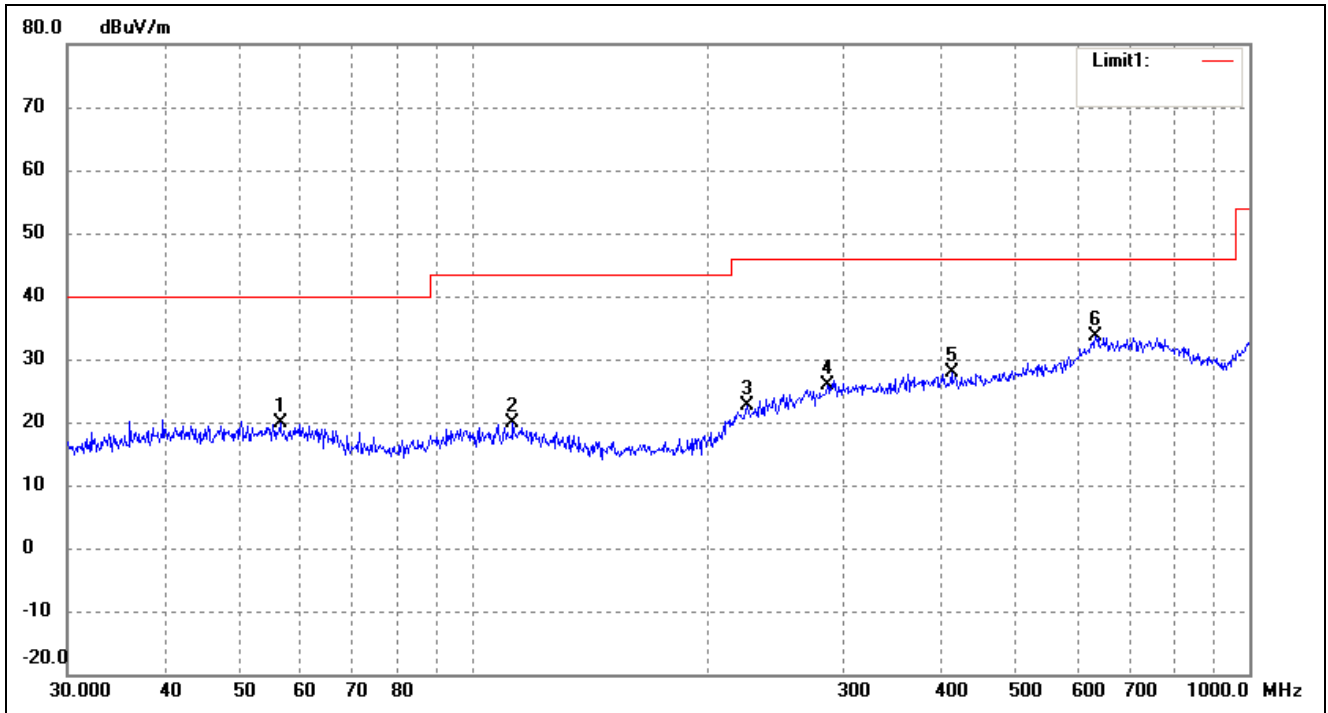
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	60.7044	14.62	4.90	19.52	40.00	-20.48	351	100	peak
2	110.1816	15.71	4.86	20.57	43.50	-22.93	338	100	peak
3	225.3080	14.25	8.00	22.25	46.00	-23.75	68	100	peak
4	299.3158	14.66	11.92	26.58	46.00	-19.42	155	100	peak
5	365.5391	15.53	11.87	27.40	46.00	-18.60	107	100	peak
6	629.4772	15.83	17.70	33.53	46.00	-12.47	304	100	peak

Test Specification: Vertical



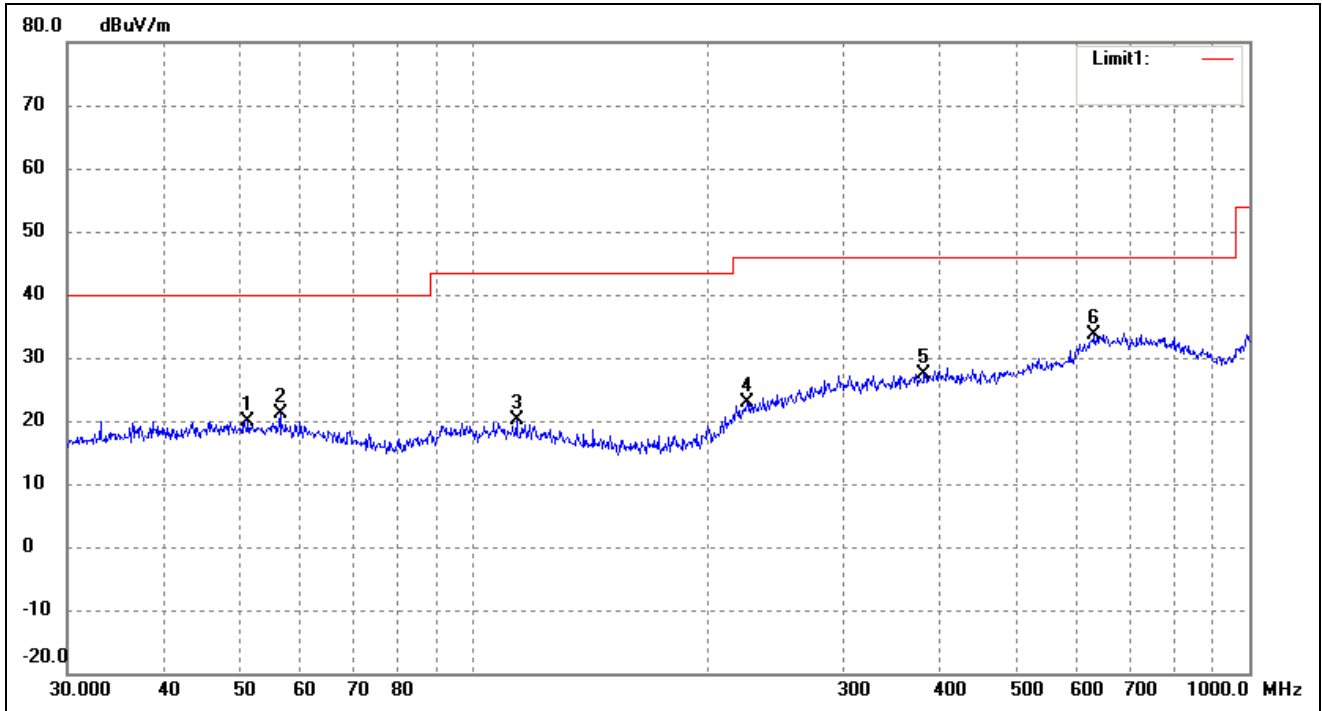
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	51.3005	15.18	5.02	20.20	40.00	-19.80	209	100	peak
2	105.2718	15.23	4.89	20.12	43.50	-23.38	95	100	peak
3	223.7334	14.92	7.90	22.82	46.00	-23.18	87	100	peak
4	326.7395	16.16	11.74	27.90	46.00	-18.10	97	100	peak
5	627.2738	15.78	17.61	33.39	46.00	-12.61	233	100	peak
6	779.6068	16.99	16.80	33.79	46.00	-12.21	302	100	peak

Test mode: Transmitting Channel 5785MHz
 Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	56.3948	14.98	5.00	19.98	40.00	-20.02	209	100	peak
2	112.5244	15.04	4.85	19.89	43.50	-23.61	96	100	peak
3	225.3080	14.56	8.00	22.56	46.00	-23.44	262	100	peak
4	285.9778	14.59	11.39	25.98	46.00	-20.02	116	100	peak
5	413.2706	15.62	12.15	27.77	46.00	-18.23	210	100	peak
6	633.9073	15.81	17.86	33.67	46.00	-12.33	223	100	peak

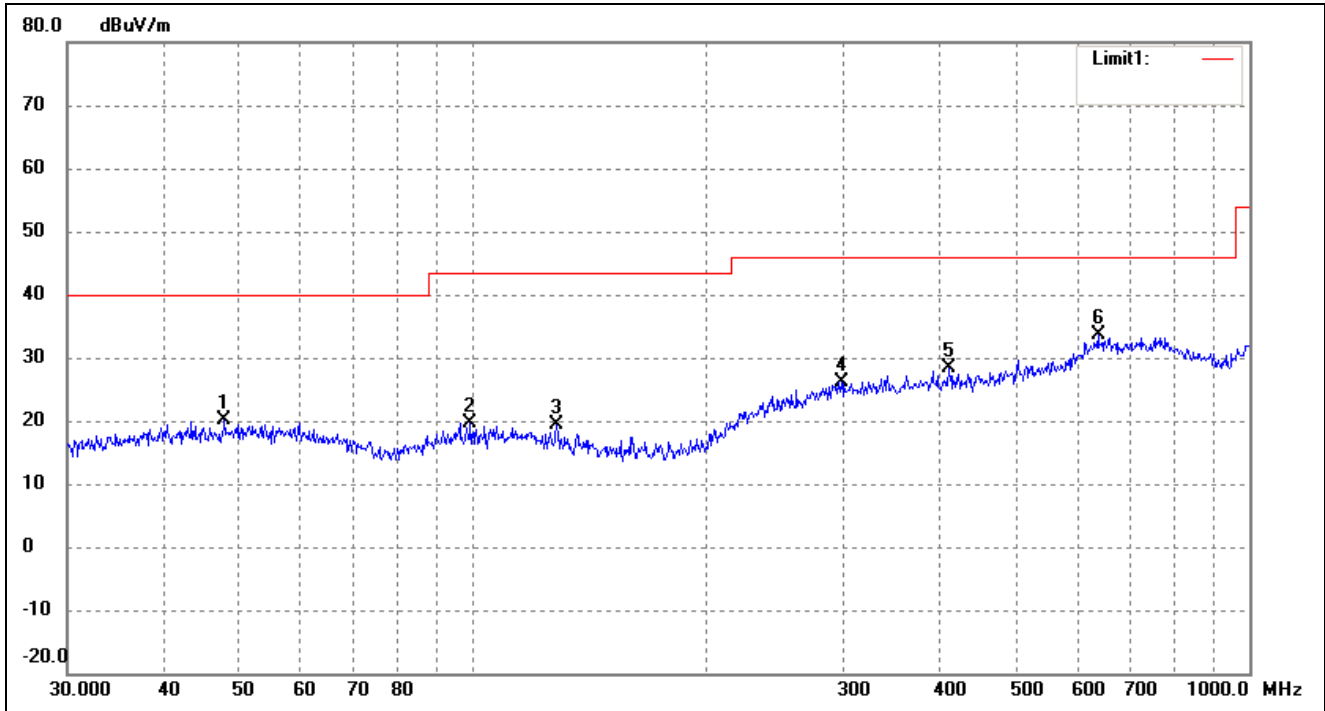
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	51.3005	14.96	5.02	19.98	40.00	-20.02	171	100	peak
2	56.3948	16.04	5.00	21.04	40.00	-18.96	102	100	peak
3	113.7143	15.18	4.85	20.03	43.50	-23.47	131	100	peak
4	225.3080	14.98	8.00	22.98	46.00	-23.02	105	100	peak
5	381.2487	15.58	11.85	27.43	46.00	-18.57	274	100	peak
6	631.6884	15.95	17.78	33.73	46.00	-12.27	251	100	peak

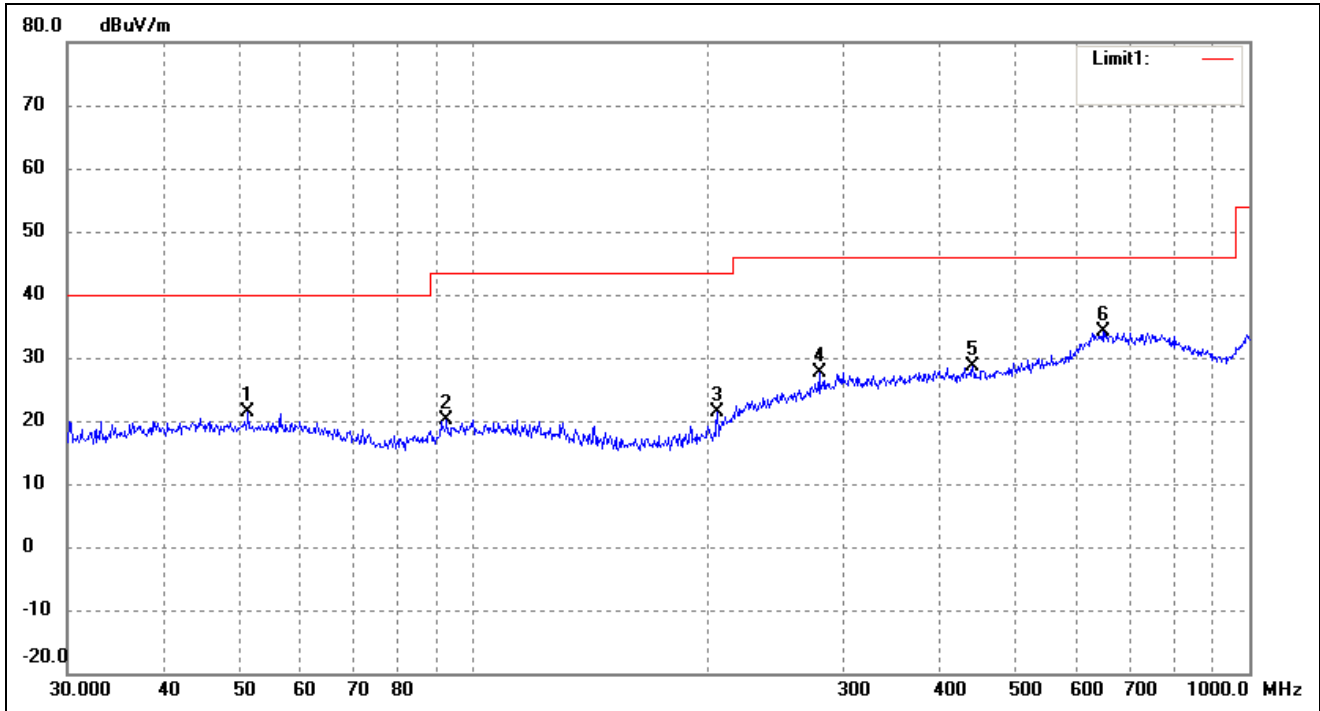
Test mode: Transmitting Channel 5825MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	47.8260	15.12	4.96	20.08	40.00	-19.92	65	100	peak
2	99.1797	14.83	4.81	19.64	43.50	-23.86	139	100	peak
3	128.1130	15.31	4.14	19.45	43.50	-24.05	133	100	peak
4	298.2681	14.27	11.89	26.16	46.00	-19.84	149	100	peak
5	410.3825	16.02	12.27	28.29	46.00	-17.71	144	100	peak
6	638.3686	15.69	18.01	33.70	46.00	-12.30	147	100	peak

Test Specification: Vertical

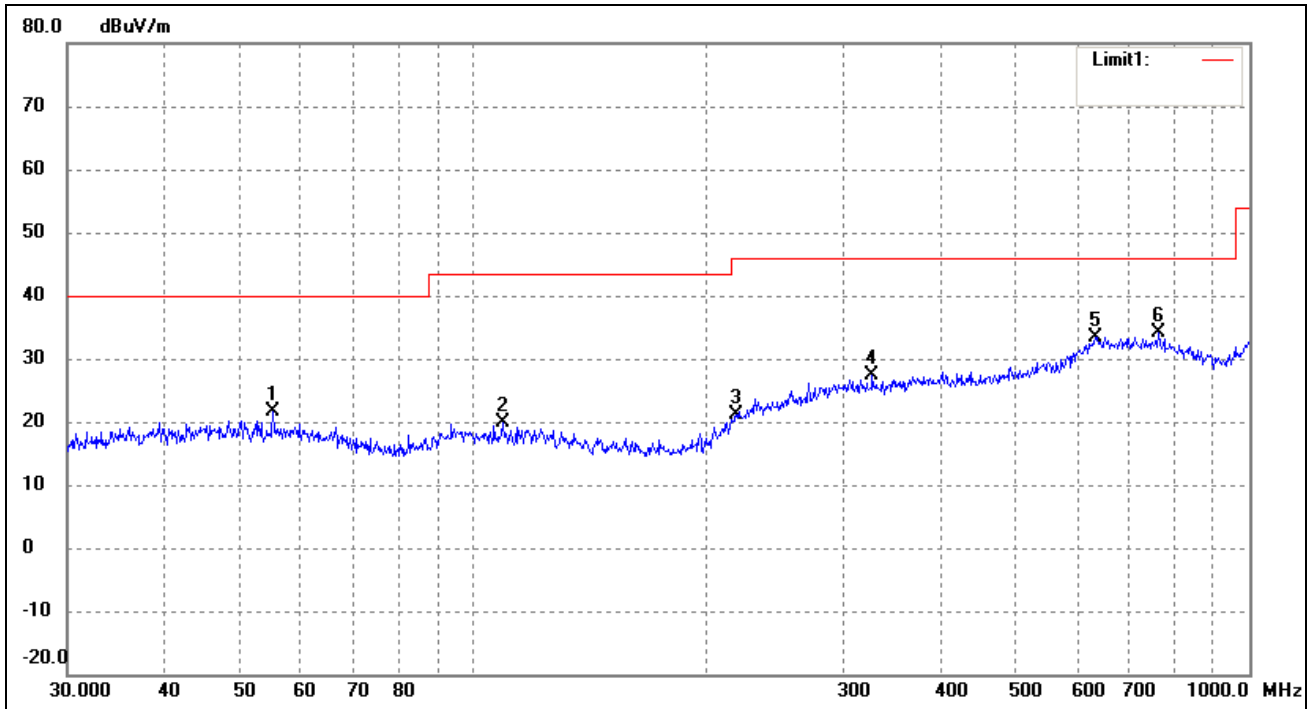


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	51.3005	16.40	5.02	21.42	40.00	-18.58	203	100	peak
2	92.4624	16.25	3.80	20.05	43.50	-23.45	338	100	peak
3	206.3976	16.59	4.75	21.34	43.50	-22.16	52	100	peak
4	279.0436	16.46	11.07	27.53	46.00	-18.47	150	100	peak
5	440.1963	16.02	12.51	28.53	46.00	-17.47	261	100	peak
6	647.3856	16.22	17.90	34.12	46.00	-11.88	297	100	peak

For 802.11n-HT20

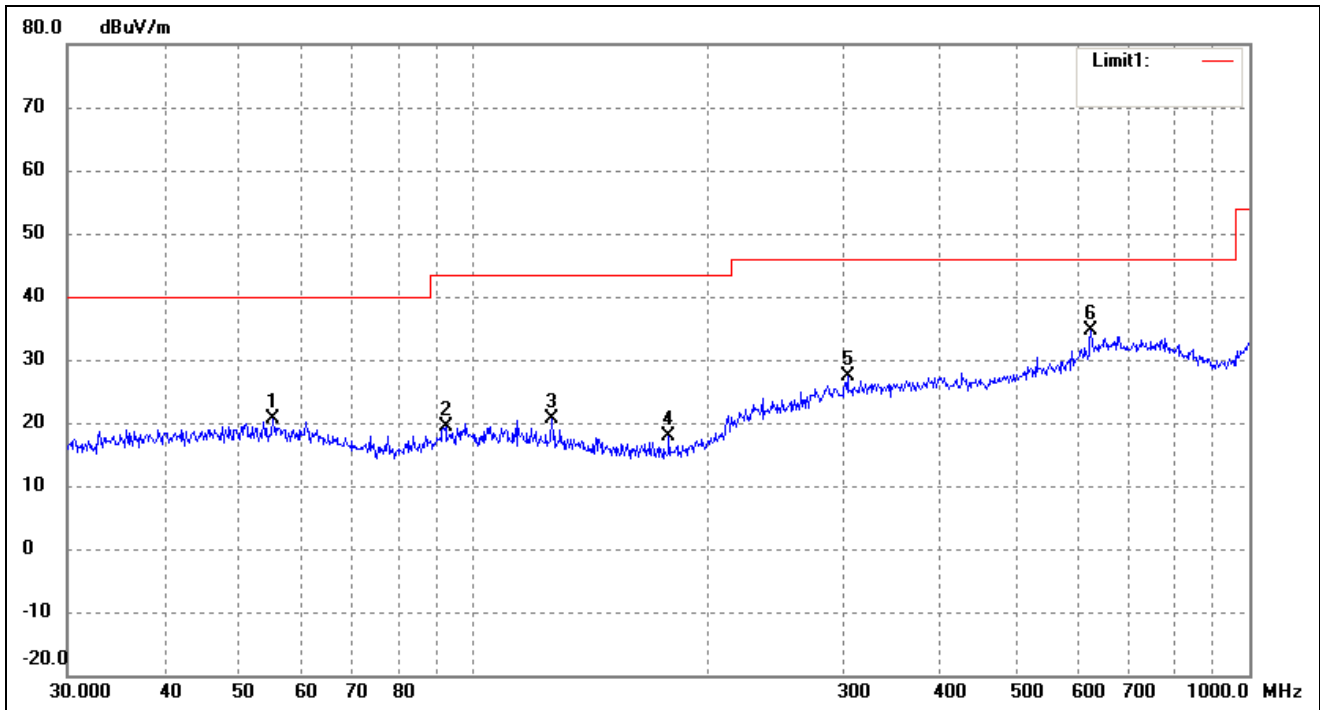
Test mode: Transmitting Channel 5180MHz

Horizontal



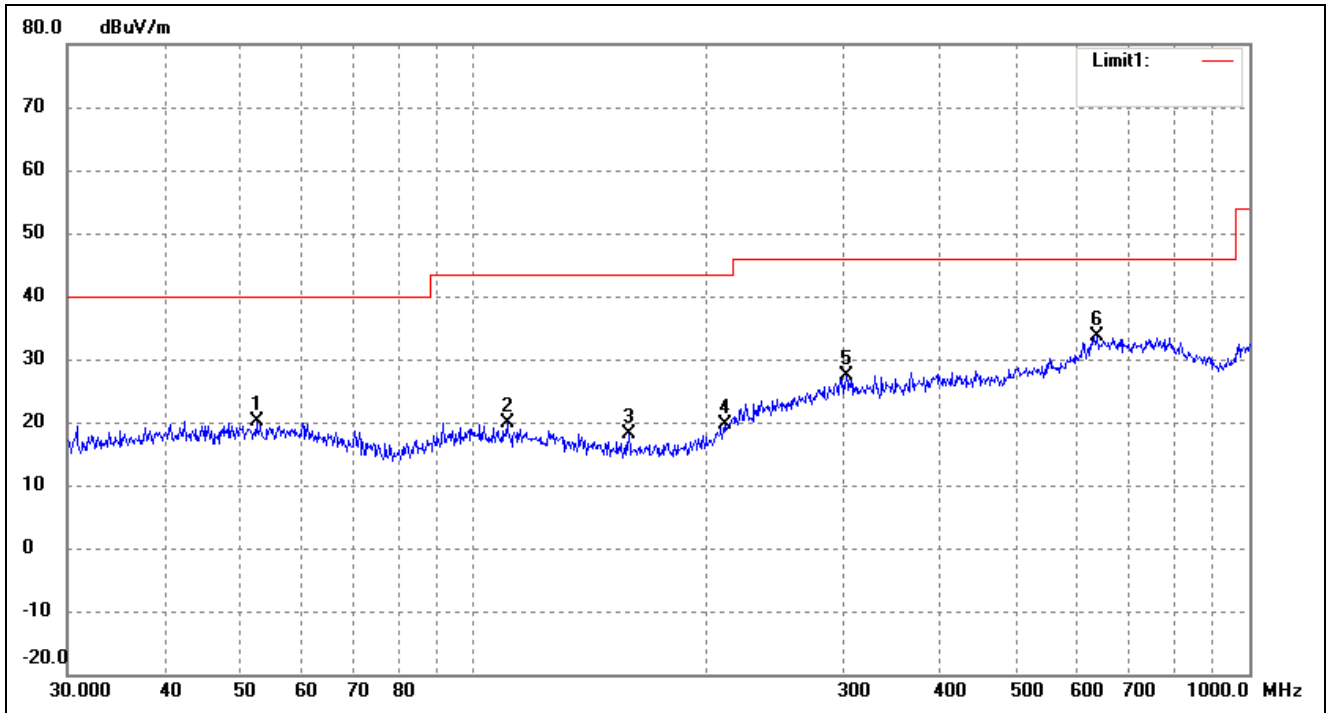
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	16.70	5.02	21.72	40.00	-18.28	216	100	peak
2	109.0286	15.02	4.87	19.89	43.50	-23.61	233	100	peak
3	218.3085	13.92	7.32	21.24	46.00	-24.76	83	100	peak
4	326.7395	15.55	11.74	27.29	46.00	-18.71	300	100	peak
5	633.9073	15.59	17.86	33.45	46.00	-12.55	198	100	peak
6	763.3757	16.26	17.95	34.21	46.00	-11.79	219	100	peak

Test Specification: Vertical



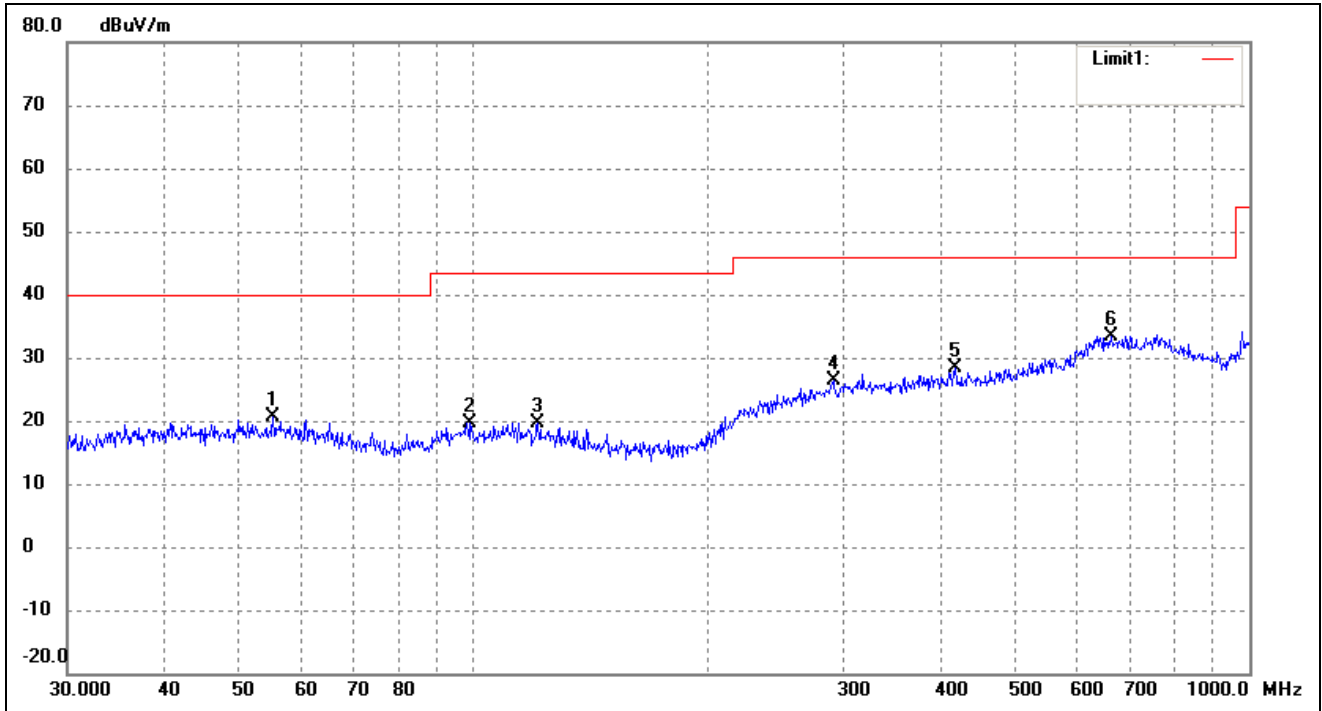
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	15.58	5.02	20.60	40.00	-19.40	232	100	peak
2	92.1388	15.69	3.74	19.43	43.50	-24.07	91	100	peak
3	126.3286	16.26	4.29	20.55	43.50	-22.95	333	100	peak
4	178.7584	15.43	2.45	17.88	43.50	-25.62	108	100	peak
5	303.5437	15.47	11.94	27.41	46.00	-18.59	188	100	peak
6	625.0780	17.03	17.55	34.58	46.00	-11.42	191	100	peak

Test mode: Transmitting Channel 5200MHz
 Horizontal



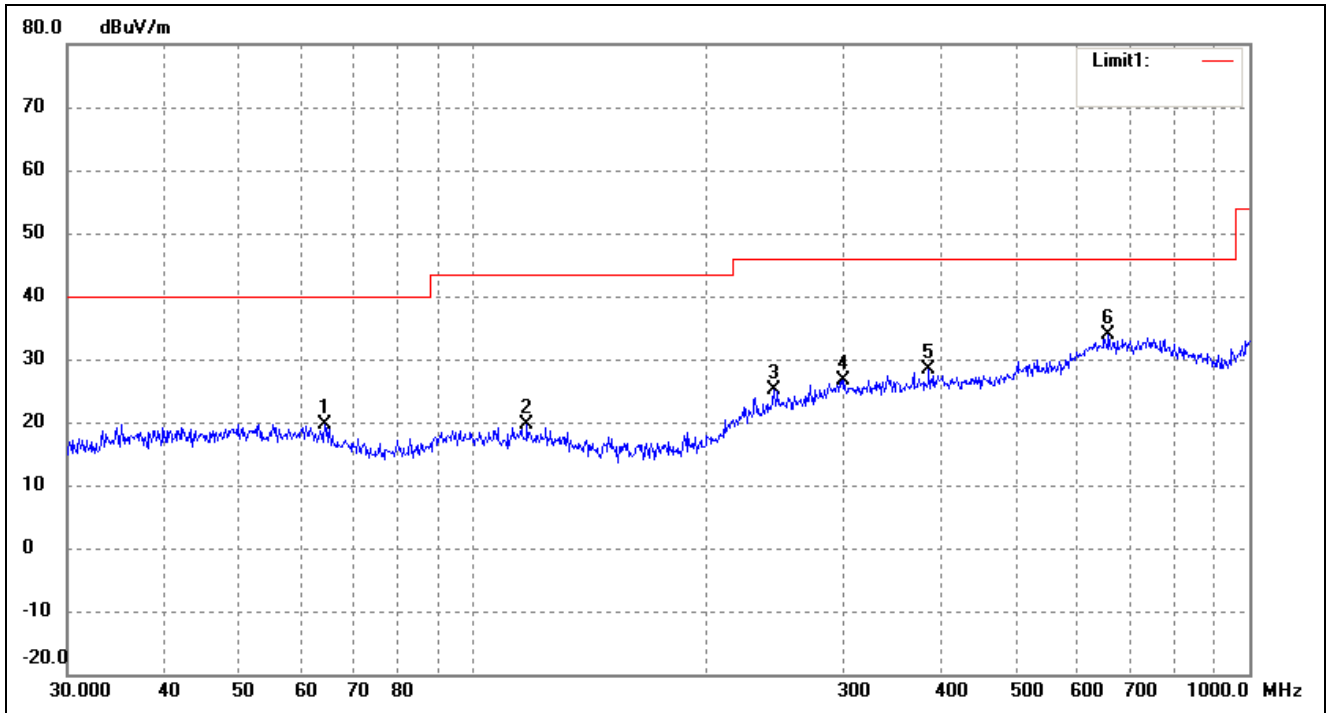
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.5753	15.13	5.05	20.18	40.00	-19.82	302	100	peak
2	110.5687	14.96	4.87	19.83	43.50	-23.67	93	100	peak
3	158.6677	15.66	2.44	18.10	43.50	-25.40	134	100	peak
4	210.7860	13.96	5.69	19.65	43.50	-23.85	111	100	peak
5	302.4812	15.49	11.95	27.44	46.00	-18.56	271	100	peak
6	636.1340	15.65	17.93	33.58	46.00	-12.42	105	100	peak

Test Specification: Vertical



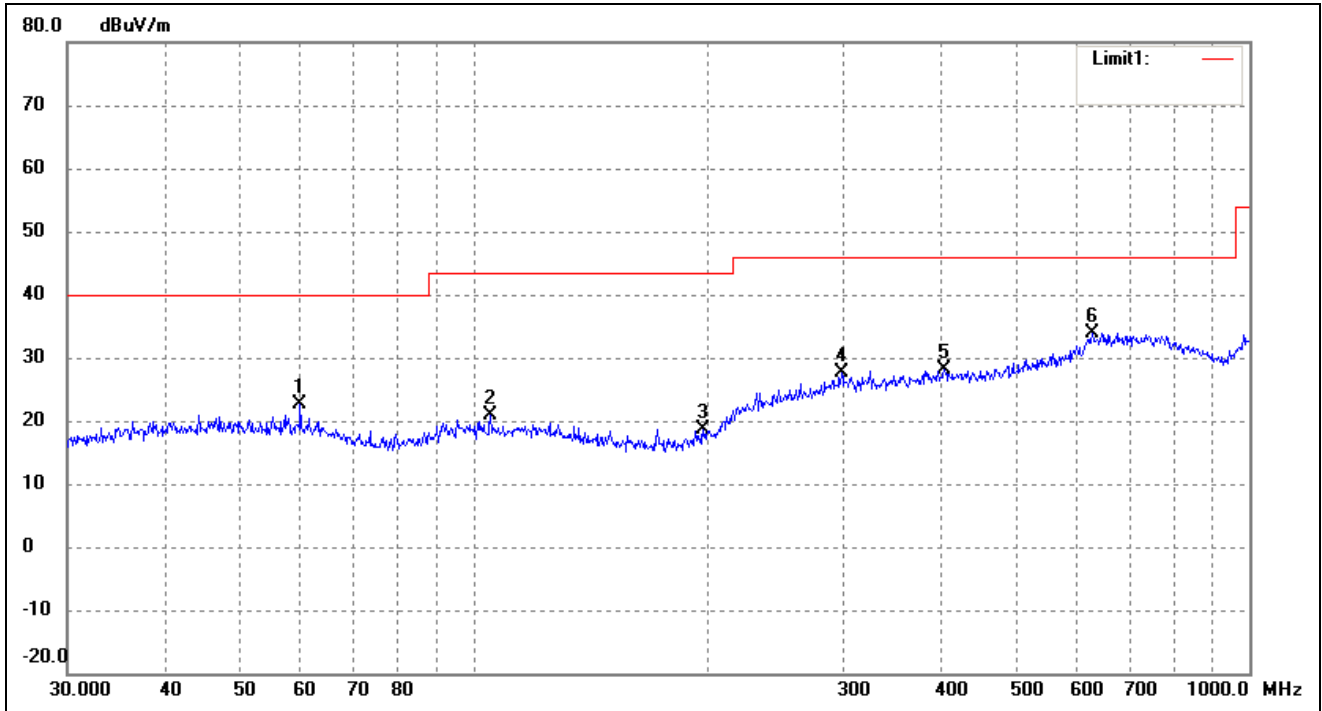
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	15.67	5.02	20.69	40.00	-19.31	103	100	peak
2	99.1797	14.89	4.81	19.70	43.50	-23.80	95	100	peak
3	121.1231	14.91	4.72	19.63	43.50	-23.87	95	100	peak
4	291.0360	14.66	11.61	26.27	46.00	-19.73	90	100	peak
5	417.6411	16.31	11.98	28.29	46.00	-17.71	216	100	peak
6	663.4729	15.62	17.76	33.38	46.00	-12.62	121	100	peak

Test mode: Transmitting Channel 5240MHz
Horizontal



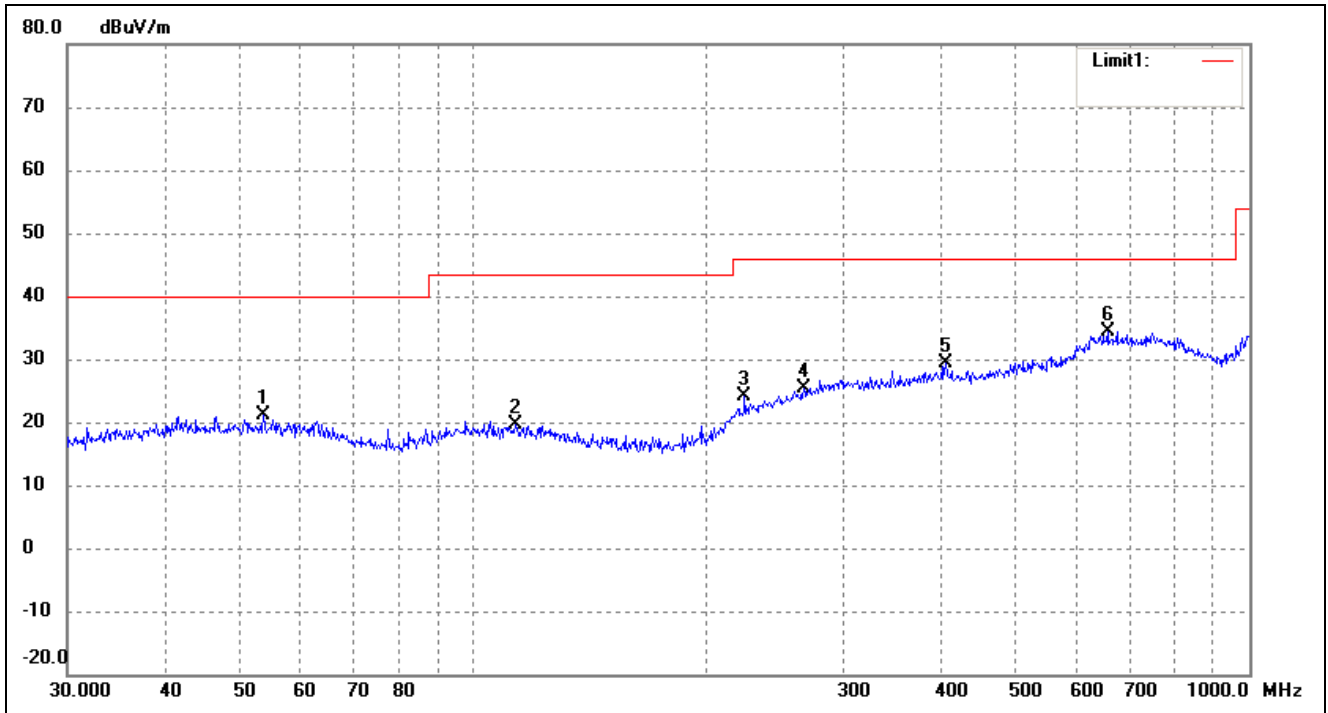
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	64.4331	15.57	4.11	19.68	40.00	-20.32	76	100	peak
2	117.3603	14.82	4.83	19.65	43.50	-23.85	98	100	peak
3	244.2321	15.94	9.09	25.03	46.00	-20.97	89	100	peak
4	300.3673	14.78	11.95	26.73	46.00	-19.27	102	100	peak
5	386.6338	16.30	12.09	28.39	46.00	-17.61	223	100	peak
6	658.8362	16.26	17.61	33.87	46.00	-12.13	171	100	peak

Test Specification: Vertical



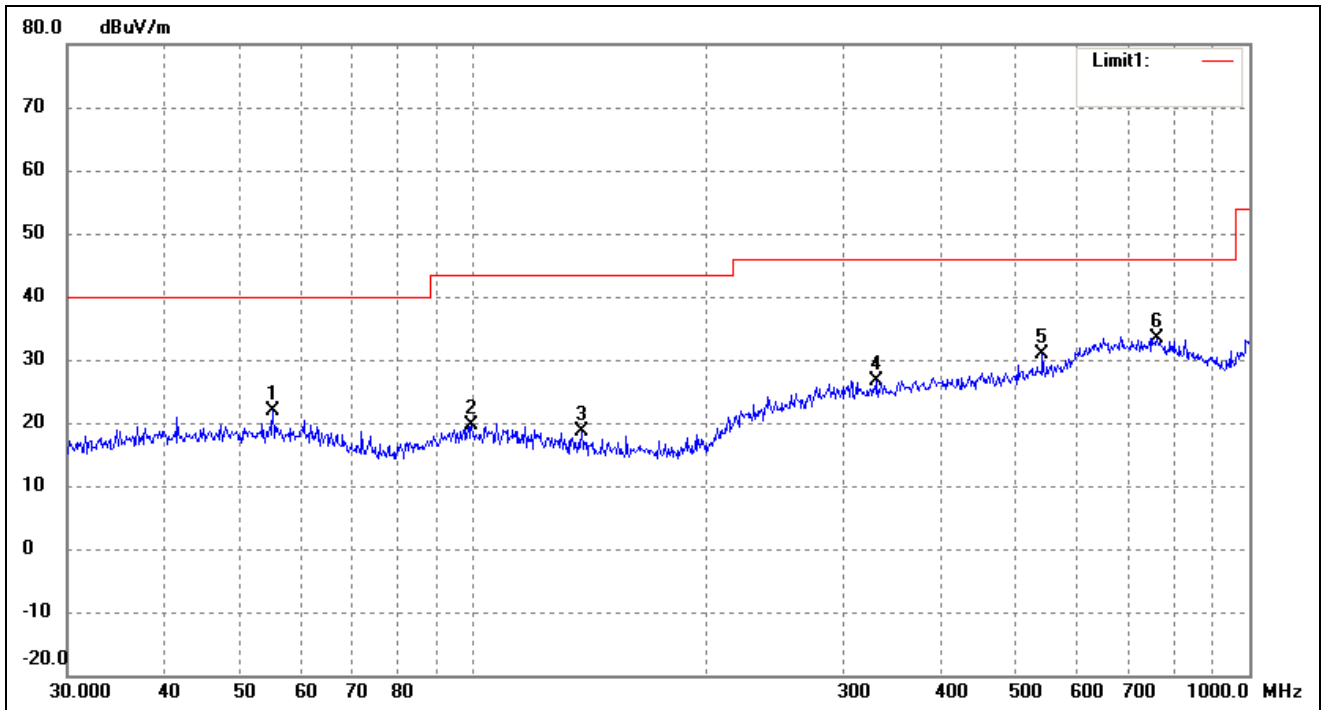
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	59.8588	17.58	5.03	22.61	40.00	-17.39	325	100	peak
2	105.2718	15.90	4.89	20.79	43.50	-22.71	98	100	peak
3	197.8928	15.40	3.26	18.66	43.50	-24.84	209	100	peak
4	298.2681	15.83	11.89	27.72	46.00	-18.28	121	100	peak
5	404.6665	15.55	12.50	28.05	46.00	-17.95	348	100	peak
6	627.2738	16.20	17.61	33.81	46.00	-12.19	188	100	peak

Test mode: Transmitting Channel 5745MHz
 Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	53.6932	15.97	5.05	21.02	40.00	-18.98	199	100	peak
2	113.3163	14.77	4.86	19.63	43.50	-23.87	196	100	peak
3	223.7334	16.32	7.90	24.22	46.00	-21.78	60	100	peak
4	266.6089	15.27	10.17	25.44	46.00	-20.56	330	100	peak
5	406.0880	16.82	12.45	29.27	46.00	-16.73	110	100	peak
6	656.5300	16.65	17.67	34.32	46.00	-11.68	319	100	peak

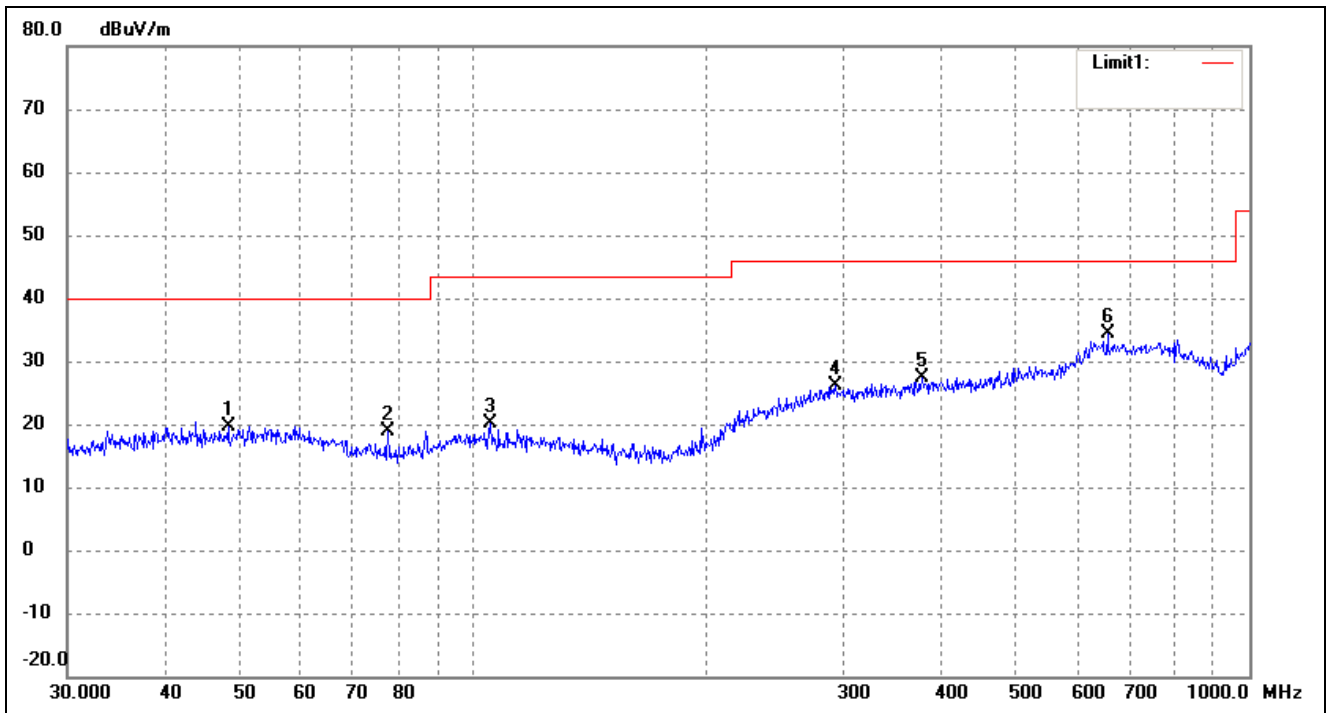
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	16.76	5.02	21.78	40.00	-18.22	341	100	peak
2	99.5281	14.74	4.86	19.60	43.50	-23.90	95	100	peak
3	137.9029	15.36	3.32	18.68	43.50	-24.82	265	100	peak
4	331.3547	15.15	11.60	26.75	46.00	-19.25	98	100	peak
5	541.3725	17.04	13.82	30.86	46.00	-15.14	269	100	peak
6	760.7036	15.38	18.10	33.48	46.00	-12.52	133	100	peak

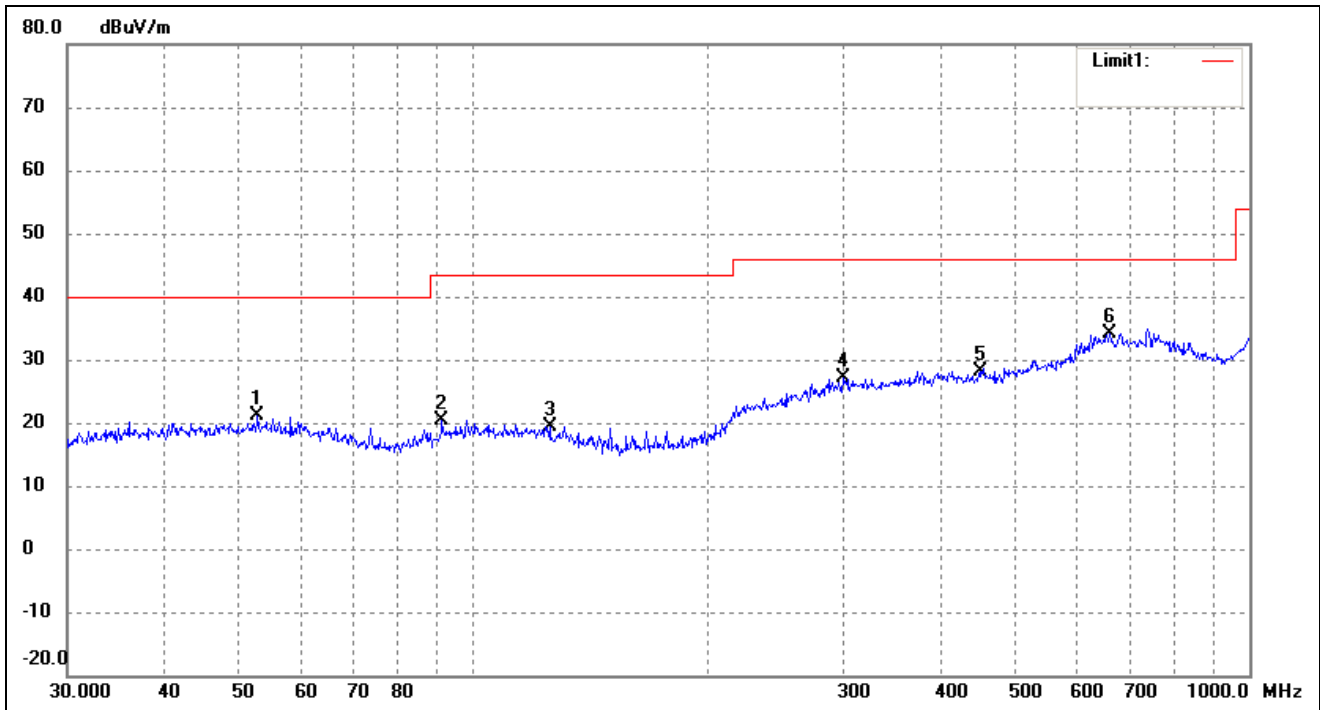
Test mode: Transmitting Channel 5785MHz

Horizontal



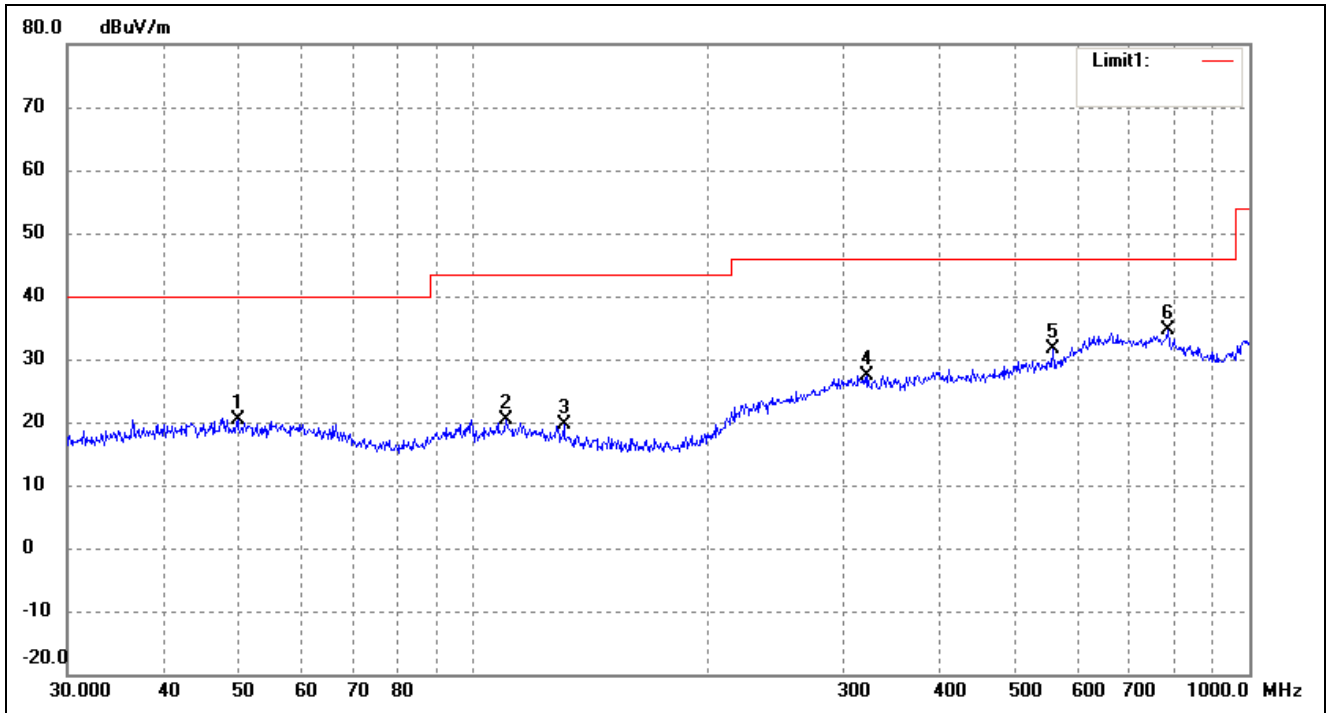
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	48.3318	14.61	4.96	19.57	40.00	-20.43	63	100	peak
2	77.5928	16.87	2.00	18.87	40.00	-21.13	115	100	peak
3	105.2718	15.34	4.89	20.23	43.50	-23.27	125	100	peak
4	293.0842	14.45	11.69	26.14	46.00	-19.86	102	100	peak
5	378.5843	15.66	11.80	27.46	46.00	-18.54	285	100	peak
6	656.5300	16.65	17.67	34.32	46.00	-11.68	290	100	peak

Test Specification: Vertical



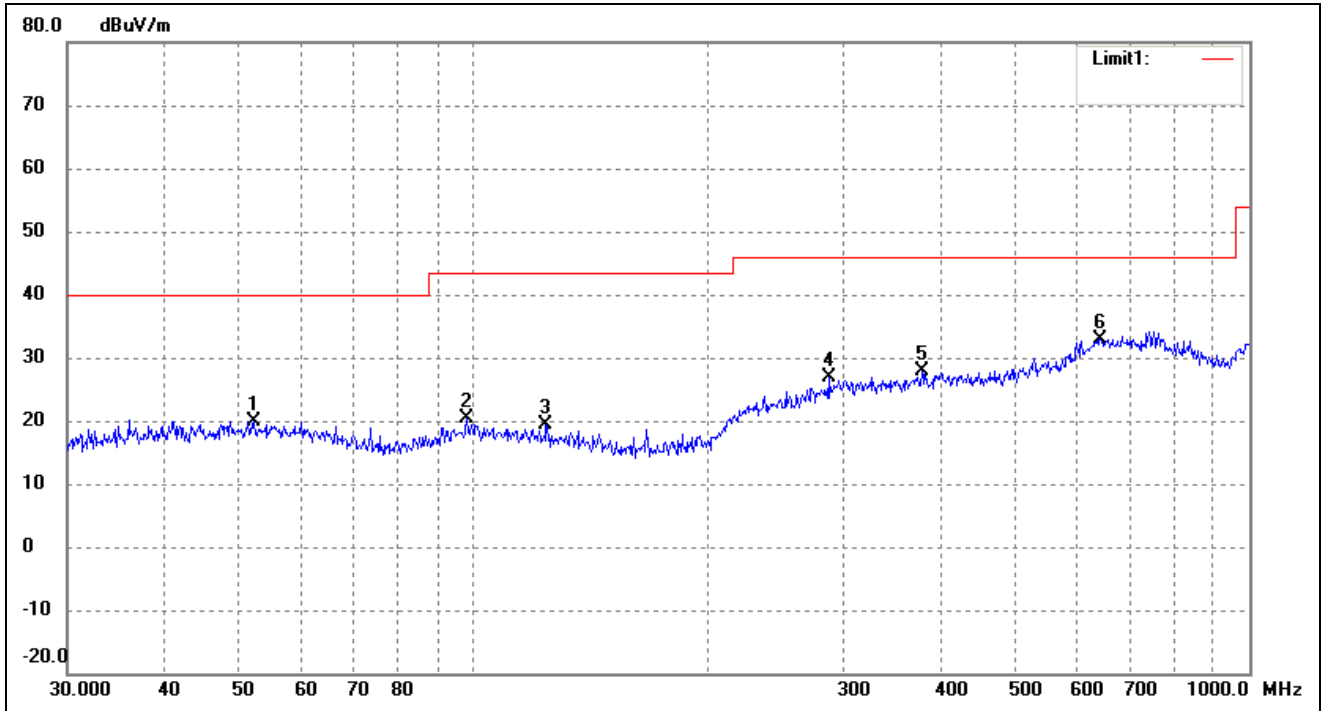
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.7600	15.95	5.06	21.01	40.00	-18.99	146	100	peak
2	91.1746	16.75	3.60	20.35	43.50	-23.15	126	100	peak
3	125.4457	15.01	4.37	19.38	43.50	-24.12	89	100	peak
4	299.3158	15.18	11.92	27.10	46.00	-18.90	95	100	peak
5	449.5558	15.49	12.75	28.24	46.00	-17.76	287	100	peak
6	661.1505	16.42	17.64	34.06	46.00	-11.94	195	100	peak

Test mode: Transmitting Channel 5825MHz
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	49.7068	15.47	4.98	20.45	40.00	-19.55	298	100	peak
2	110.1816	15.47	4.86	20.33	43.50	-23.17	317	100	peak
3	130.8369	15.63	3.92	19.55	43.50	-23.95	75	100	peak
4	322.1886	15.45	11.88	27.33	46.00	-18.67	334	100	peak
5	558.7302	17.68	14.01	31.69	46.00	-14.31	59	100	peak
6	785.0935	17.94	16.65	34.59	46.00	-11.41	240	100	peak

Test Specification: Vertical

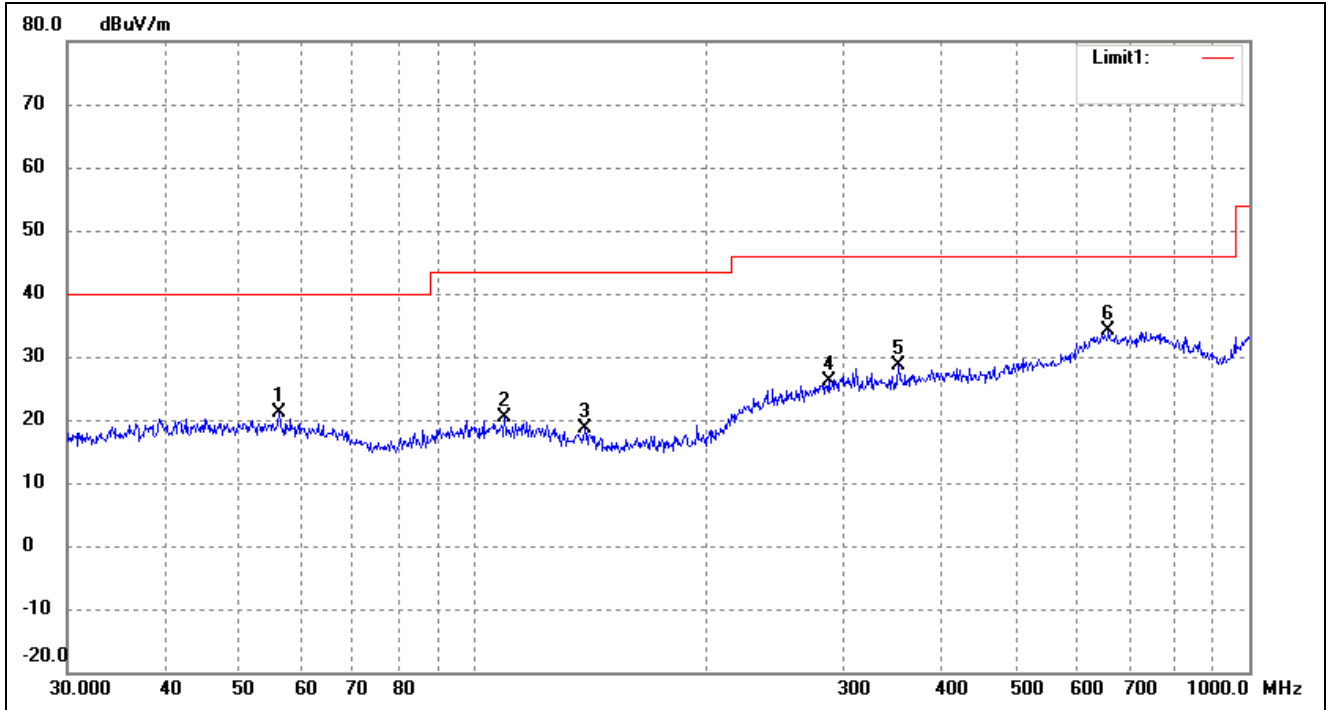


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.2079	14.94	5.04	19.98	40.00	-20.02	222	100	peak
2	98.1419	15.62	4.66	20.28	43.50	-23.22	271	100	peak
3	124.1330	14.87	4.48	19.35	43.50	-24.15	92	100	peak
4	286.9823	15.34	11.43	26.77	46.00	-19.23	245	100	peak
5	378.5843	16.04	11.80	27.84	46.00	-18.16	200	100	peak
6	642.8613	14.93	18.00	32.93	46.00	-13.07	166	100	peak

For 802.11n-HT40

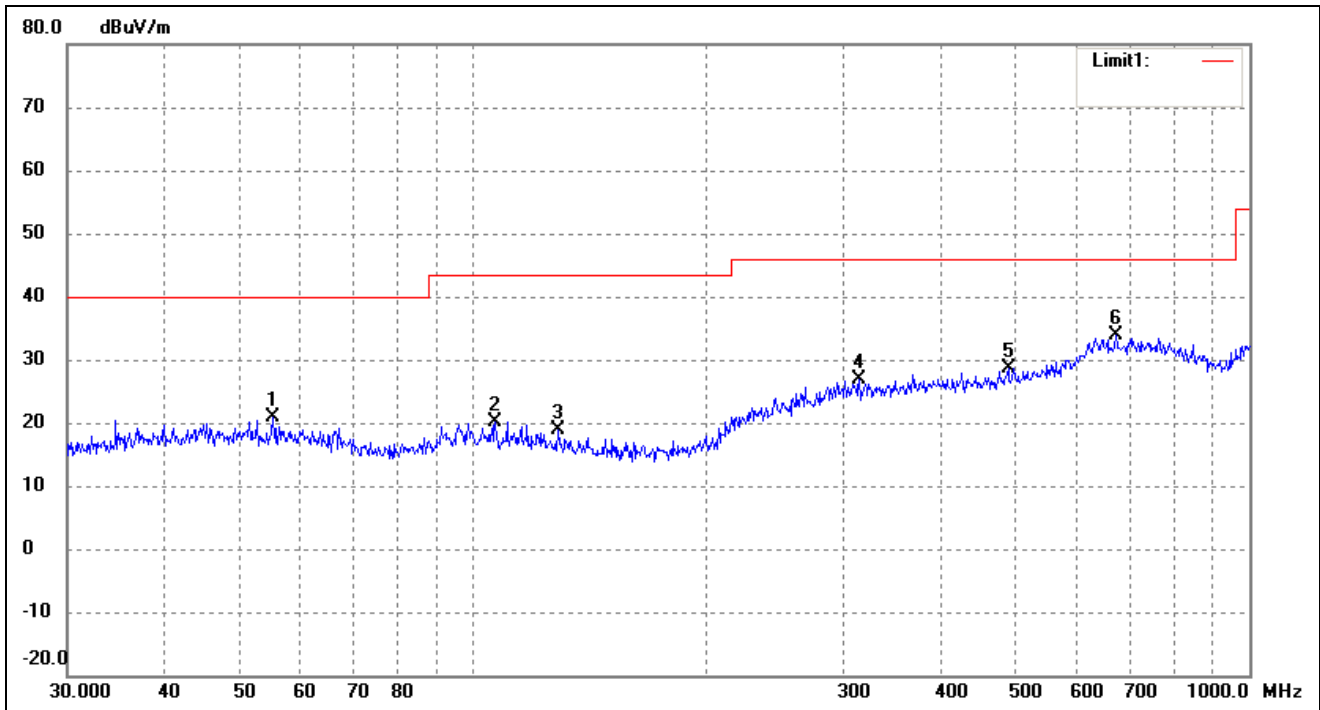
Test mode: Transmitting Channel 5190MHz

Horizontal



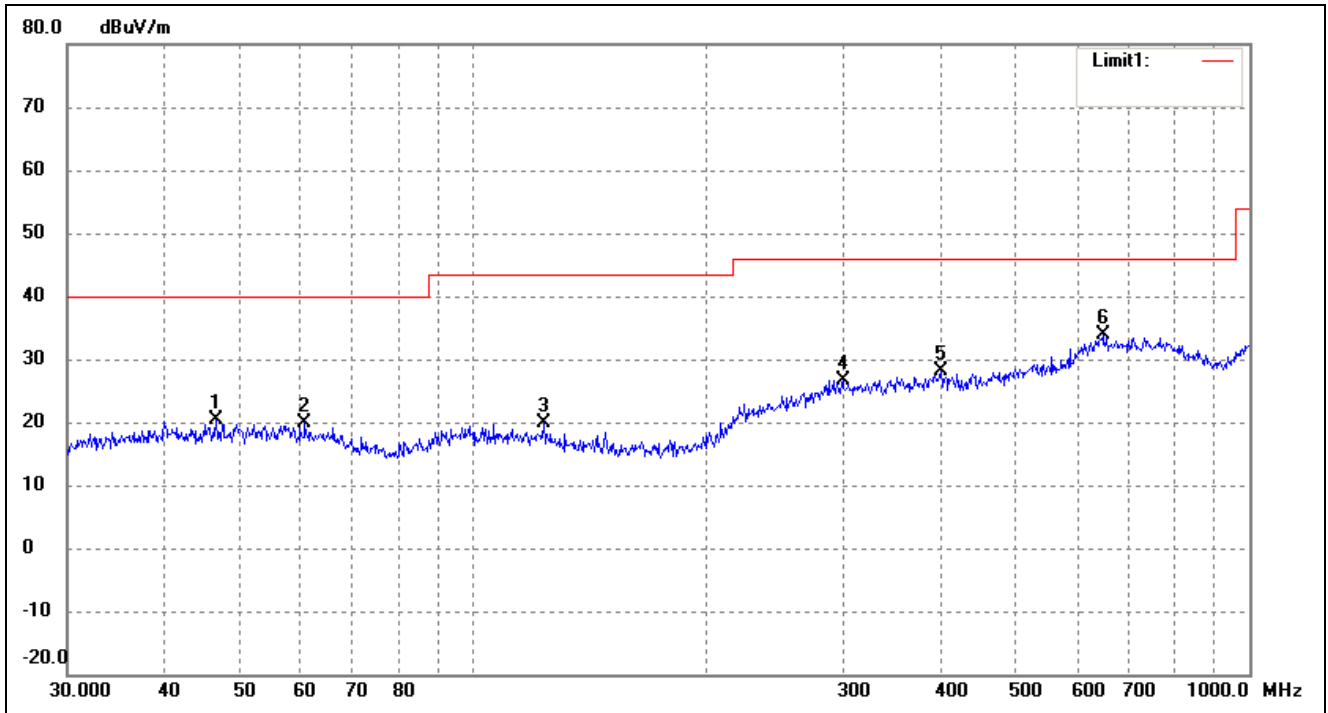
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	56.1974	16.19	5.01	21.20	40.00	-18.80	308	100	peak
2	109.7960	15.56	4.86	20.42	43.50	-23.08	93	100	peak
3	139.3613	15.39	3.21	18.60	43.50	-24.90	352	100	peak
4	286.9823	14.61	11.43	26.04	46.00	-19.96	106	100	peak
5	352.9434	16.82	11.72	28.54	46.00	-17.46	169	100	peak
6	658.8362	16.63	17.61	34.24	46.00	-11.76	346	100	peak

Test Specification: Vertical



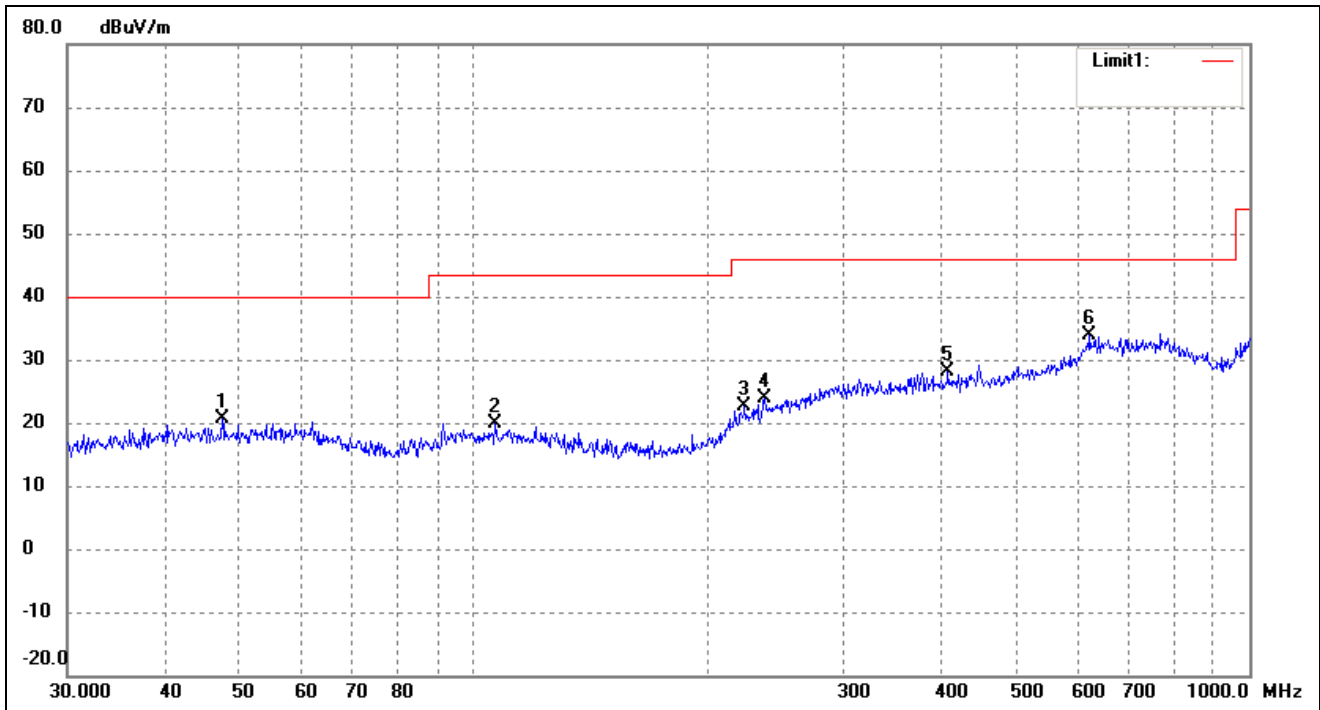
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	15.81	5.02	20.83	40.00	-19.17	308	100	peak
2	106.7587	15.25	4.88	20.13	43.50	-23.37	93	100	peak
3	128.5630	14.67	4.10	18.77	43.50	-24.73	276	100	peak
4	314.3765	14.88	11.96	26.84	46.00	-19.16	117	100	peak
5	489.0269	15.68	12.91	28.59	46.00	-17.41	246	100	peak
6	672.8445	15.48	18.29	33.77	46.00	-12.23	128	100	peak

Test mode: Transmitting Channel 5230MHz
Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	46.6664	15.50	4.96	20.46	40.00	-19.54	100	100	peak
2	60.7044	15.06	4.90	19.96	40.00	-20.04	94	100	peak
3	123.2655	15.39	4.55	19.94	43.50	-23.56	58	100	peak
4	299.3158	14.80	11.92	26.72	46.00	-19.28	97	100	peak
5	400.4319	15.34	12.67	28.01	46.00	-17.99	315	100	peak
6	647.3856	15.88	17.90	33.78	46.00	-12.22	292	100	peak

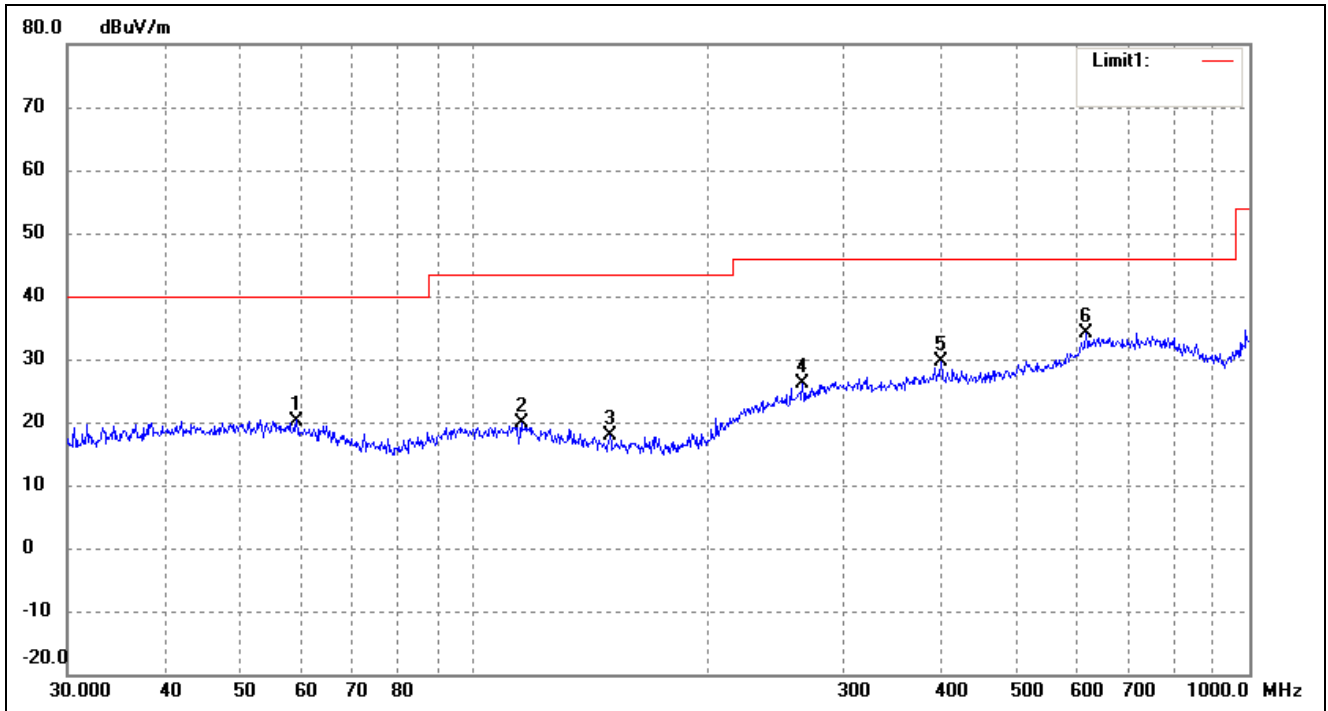
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	47.4918	15.57	4.96	20.53	40.00	-19.47	199	100	peak
2	106.7587	15.03	4.88	19.91	43.50	-23.59	108	100	peak
3	223.7334	14.75	7.90	22.65	46.00	-23.35	87	100	peak
4	237.4760	15.05	8.77	23.82	46.00	-22.18	130	100	peak
5	408.9460	15.84	12.33	28.17	46.00	-17.83	130	100	peak
6	622.8900	16.42	17.47	33.89	46.00	-12.11	179	100	peak

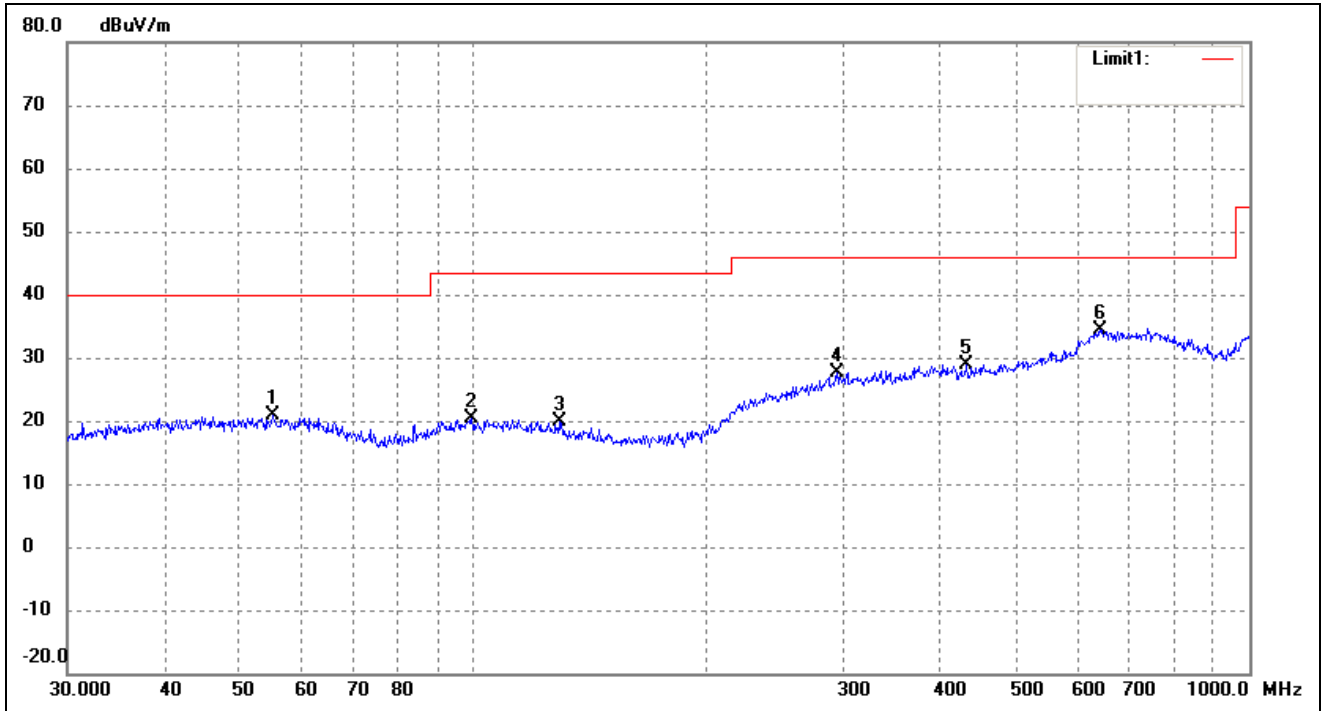
Test mode: Transmitting Channel 5755MHz

Horizontal



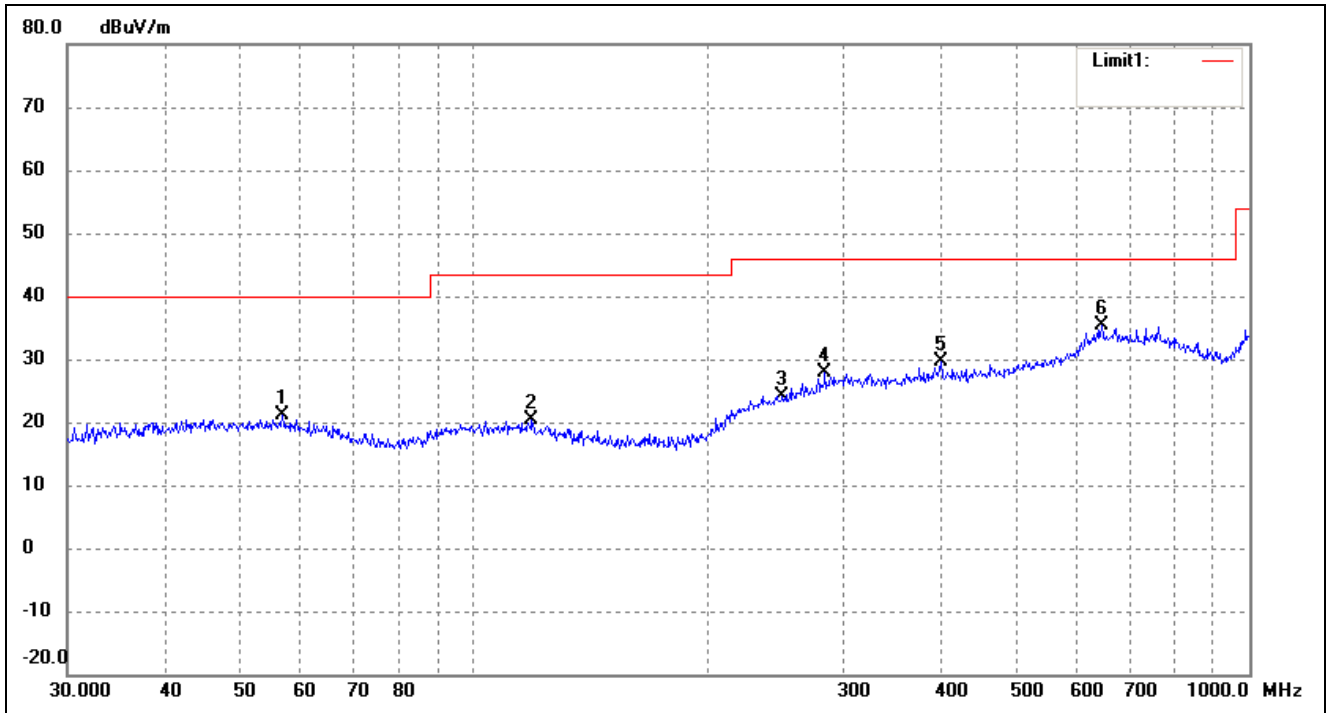
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	59.2325	15.23	5.02	20.25	40.00	-19.75	79	100	peak
2	115.3205	15.02	4.85	19.87	43.50	-23.63	245	100	peak
3	150.0108	15.09	2.75	17.84	43.50	-25.66	100	100	peak
4	265.6757	15.99	10.10	26.09	46.00	-19.91	180	100	peak
5	400.4319	16.86	12.67	29.53	46.00	-16.47	129	100	peak
6	616.3718	16.45	17.61	34.06	46.00	-11.94	90	100	peak

Test Specification: Vertical



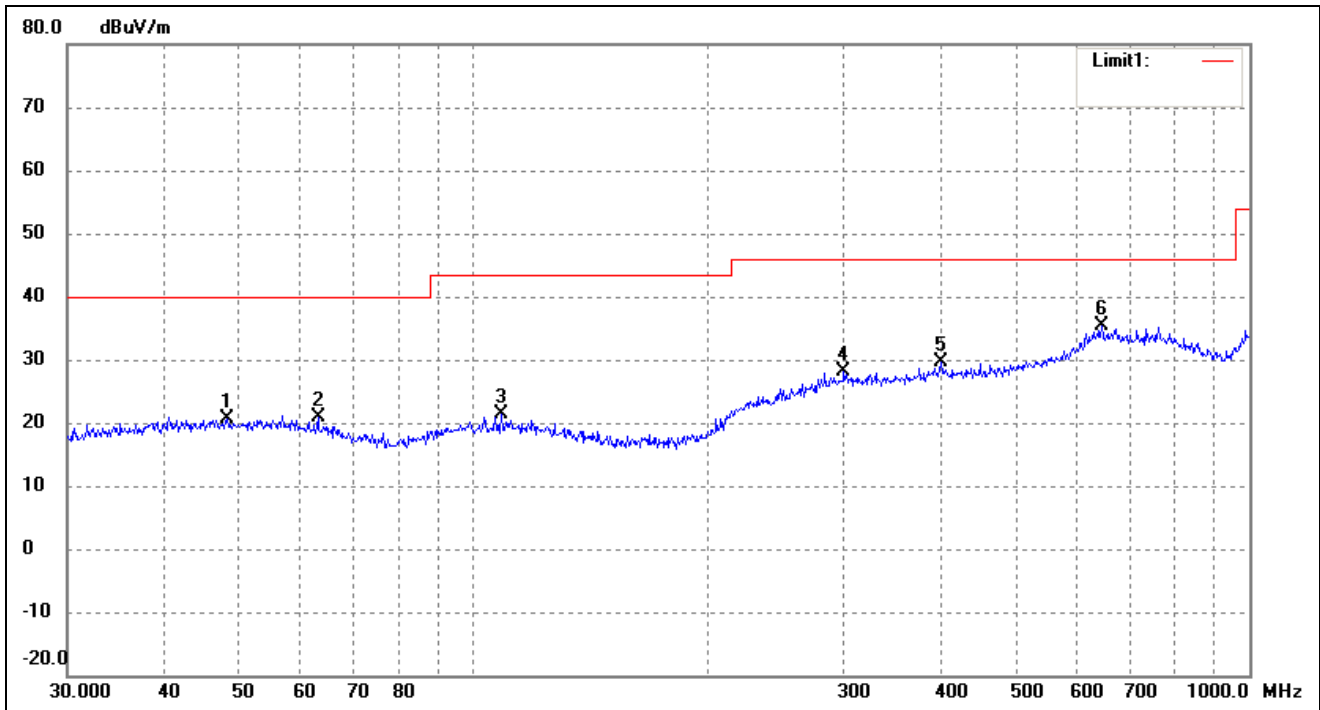
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	55.2207	15.93	5.02	20.95	40.00	-19.05	334	100	peak
2	99.5281	15.57	4.86	20.43	43.50	-23.07	214	100	peak
3	129.0146	15.91	4.06	19.97	43.50	-23.53	65	100	peak
4	294.1137	15.88	11.74	27.62	46.00	-18.38	229	100	peak
5	432.5457	16.66	12.26	28.92	46.00	-17.08	180	100	peak
6	642.8613	16.29	18.00	34.29	46.00	-11.71	285	100	peak

Test mode: Transmitting Channel 5795MHz
 Horizontal



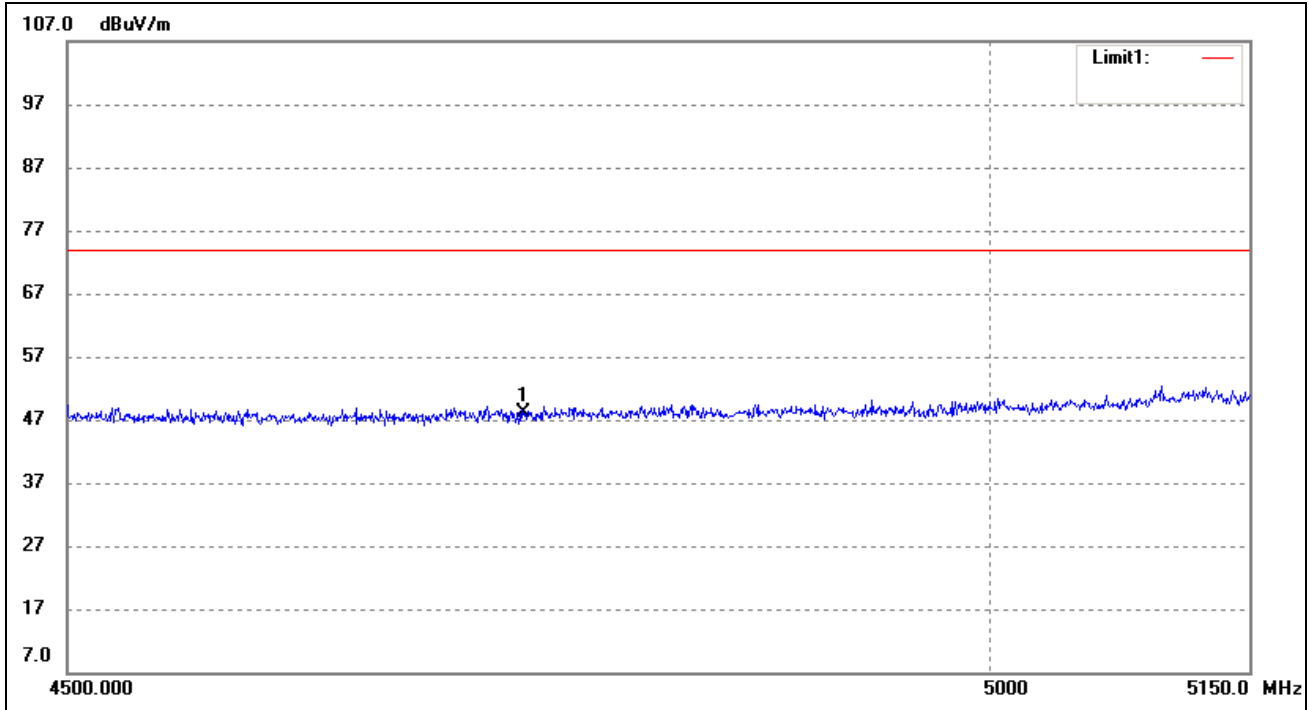
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	56.7917	16.17	5.00	21.17	40.00	-18.83	242	100	peak
2	119.0180	15.61	4.82	20.43	43.50	-23.07	96	100	peak
3	250.3012	14.91	9.32	24.23	46.00	-21.77	77	100	peak
4	283.9792	16.70	11.30	28.00	46.00	-18.00	107	100	peak
5	400.4319	16.86	12.67	29.53	46.00	-16.47	330	100	peak
6	645.1195	17.40	17.94	35.34	46.00	-10.66	178	100	peak

Test Specification: Vertical



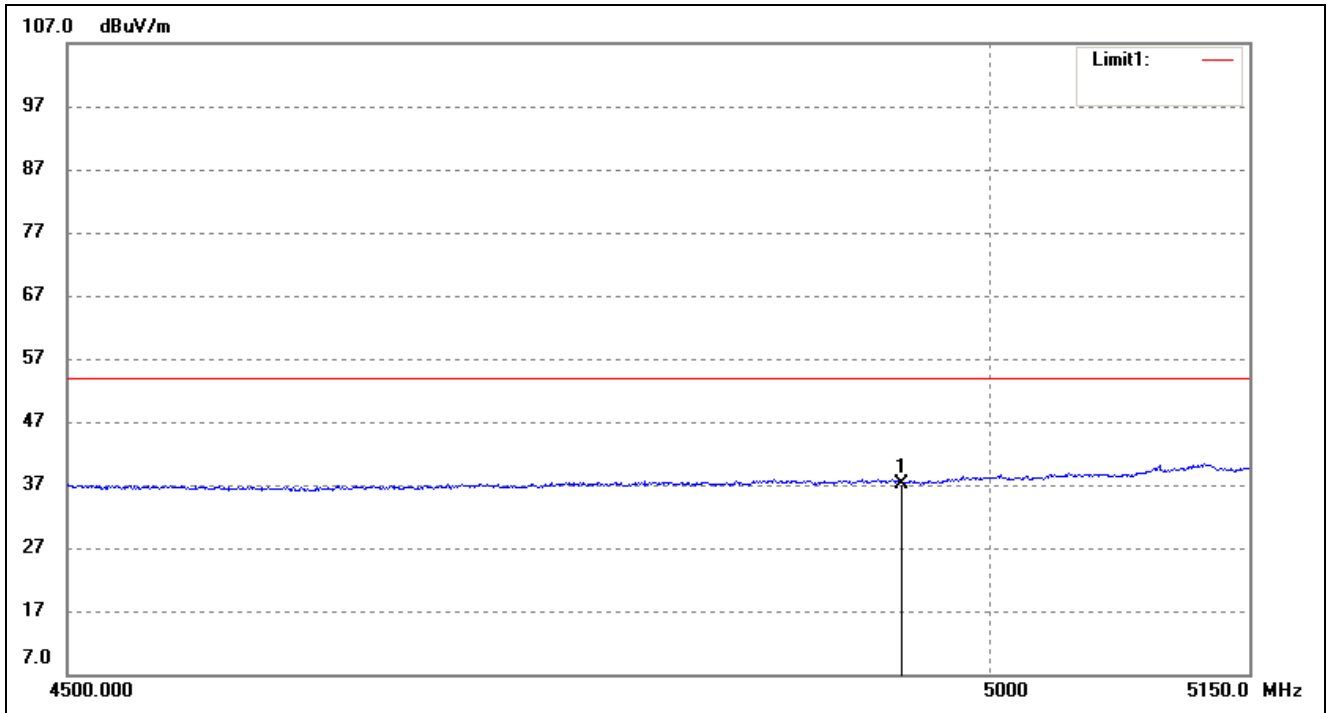
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	48.1626	15.66	4.96	20.62	40.00	-19.38	357	100	peak
2	63.0916	16.43	4.40	20.83	40.00	-19.17	91	100	peak
3	108.6470	16.41	4.87	21.28	43.50	-22.22	328	100	peak
4	300.3673	16.15	11.95	28.10	46.00	-17.90	105	100	peak
5	400.4319	16.86	12.67	29.53	46.00	-16.47	195	100	peak
6	645.1195	17.40	17.94	35.34	46.00	-10.66	333	100	peak

For 802.11a
 Spurious Emission above 1GHz
 For the frequency band 5.15-5.25GHz(802.11a)
 Restricted Bandedge Peak



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	4740.500	49.27	-1.16	48.11	74.00	-25.89	130	100	peak

Restricted Bandedge Average



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	4949.800	37.82	-0.61	37.21	54.00	-16.79	292	100	AVG

Note: this EUT was tested in the low, high channel and the worst case position data was reported.

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5180MHz)										
10360	PK	51.15	360	V	40.7	10.9	39.6	63.15	74	-10.85
10360	PK	49.61	360	H	40.7	10.9	39.6	61.61	74	-10.85
10360	AV	36.10	360	V	40.7	10.9	39.6	48.10	54	9.15
10360	AV	35.01	360	H	40.7	10.9	39.6	47.01	54	9.15
High Channel (5240MHz)										
10480	PK	51.86	360	V	40.7	10.9	39.6	63.86	74	-10.14
10480	PK	50.90	360	H	40.7	10.9	39.6	62.90	74	-11.10
10480	AV	35.71	360	V	40.7	10.9	39.6	47.71	54	-6.29
10480	AV	34.92	360	H	40.7	10.9	39.6	46.92	54	-7.08

Out of Band edge

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-44.69	-27
Highest	Above 5350	-45.12	-27

Note: the data just list the worst cases

For the frequency band 5.725-5.850GHz (802.11a)

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5745MHz)										
11490	PK	56.16	360	V	38.9	9.8	40.1	64.76	74	-9.24
11490	PK	54.82	360	H	38.9	9.8	40.1	63.42	74	-10.58
11490	AV	36.84	360	V	38.9	9.8	40.1	45.44	54	-8.56
11490	AV	37.27	360	H	38.9	9.8	40.1	45.87	54	-8.13
High Channel (5825MHz)										
11610	PK	54.68	360	V	38.9	9.8	40.1	63.28	74	-10.72
11610	PK	53.54	360	H	38.9	9.8	40.1	62.14	74	-11.86
11610	AV	37.95	360	V	38.9	9.8	40.1	46.55	54	-7.45
11610	AV	35.71	360	H	38.9	9.8	40.1	44.31	54	-9.69

Out of Band edge

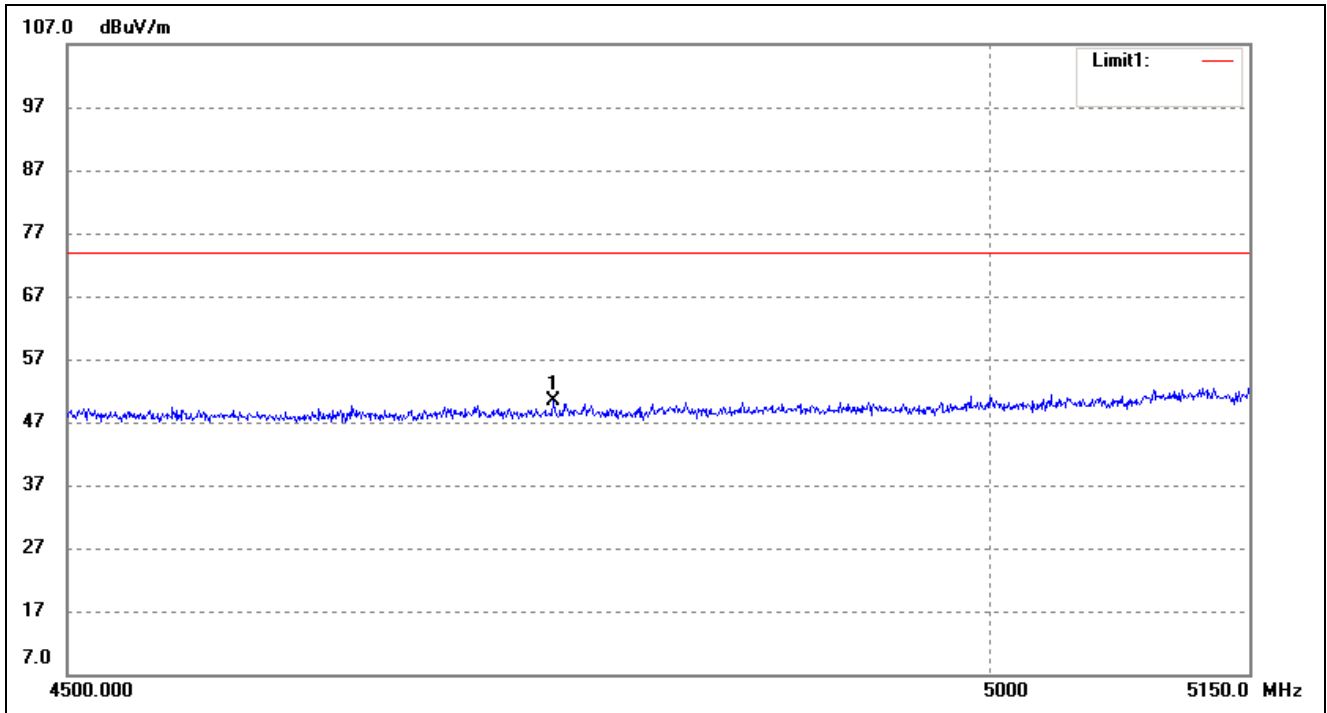
Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-47.96	-27
	5715 to 5725	-45.38	-17
Highest	5850 to 5860	-46.31	-17
	Above 5860	-47.22	-27

Note: the data just list the worst cases

802.11n HT20

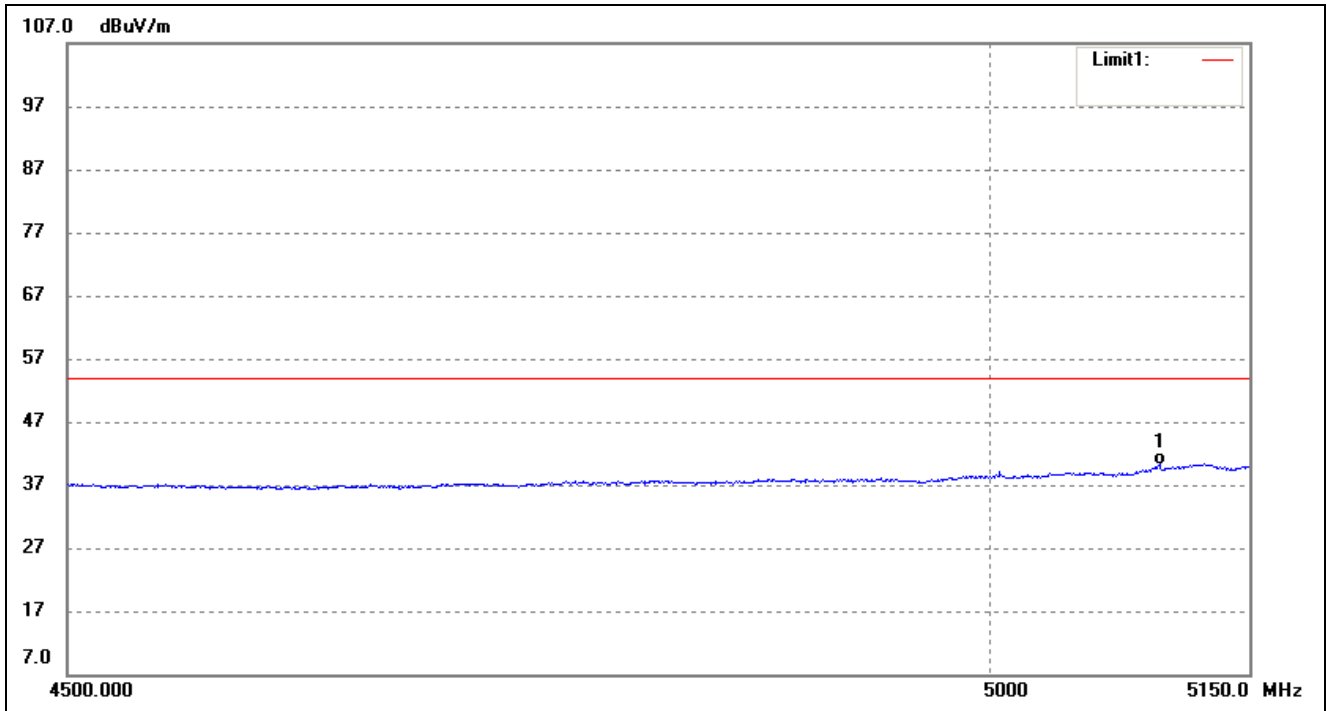
For the frequency band 5.15-5.25GHz(802.11n HT20)

Restricted Bandedge Peak



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	4756.582	51.44	-1.11	50.33	74.00	-23.67	58	100	peak

Restricted Bandedge Average



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	5097.462	40.50	-0.25	40.25	54.00	-13.75	100	100	AVG

Note: this EUT was tested in the low, high channel and the worst case position data was reported.

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5180MHz)										
10360	PK	51.12	360	V	40.7	10.9	39.6	63.12	74	-10.88
10360	PK	49.43	360	H	40.7	10.9	39.6	61.43	74	-10.88
10360	AV	35.75	360	V	40.7	10.9	39.6	47.75	54	9.12
10360	AV	34.99	360	H	40.7	10.9	39.6	46.99	54	9.12
High Channel (5240MHz)										
10480	PK	51.50	360	V	40.7	10.9	39.6	63.50	74	-10.50
10480	PK	50.80	360	H	40.7	10.9	39.6	62.80	74	-11.20
10480	AV	35.93	360	V	40.7	10.9	39.6	47.93	54	-6.07
10480	AV	34.80	360	H	40.7	10.9	39.6	46.80	54	-7.20

Out of Band edge

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-47.29	-27
Highest	Above 5350	-42.51	-27

Note: the data just list the worst cases

For the frequency band 5.725-5.850GHz (802.11n HT20)

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5725MHz)										
11490	PK	56.12	360	V	38.9	9.8	40.1	64.72	74	-9.28
11490	PK	54.93	360	H	38.9	9.8	40.1	63.53	74	-10.47
11490	AV	36.96	360	V	38.9	9.8	40.1	45.56	54	-8.44
11490	AV	37.12	360	H	38.9	9.8	40.1	45.72	54	-8.28
High Channel (5825MHz)										
11610	PK	54.61	360	V	38.9	9.8	40.1	63.21	74	-10.79
11610	PK	53.94	360	H	38.9	9.8	40.1	62.54	74	-11.46
11610	AV	38.16	360	V	38.9	9.8	40.1	46.76	54	-7.24
11610	AV	35.87	360	H	38.9	9.8	40.1	44.47	54	-9.53

Out of Band edge

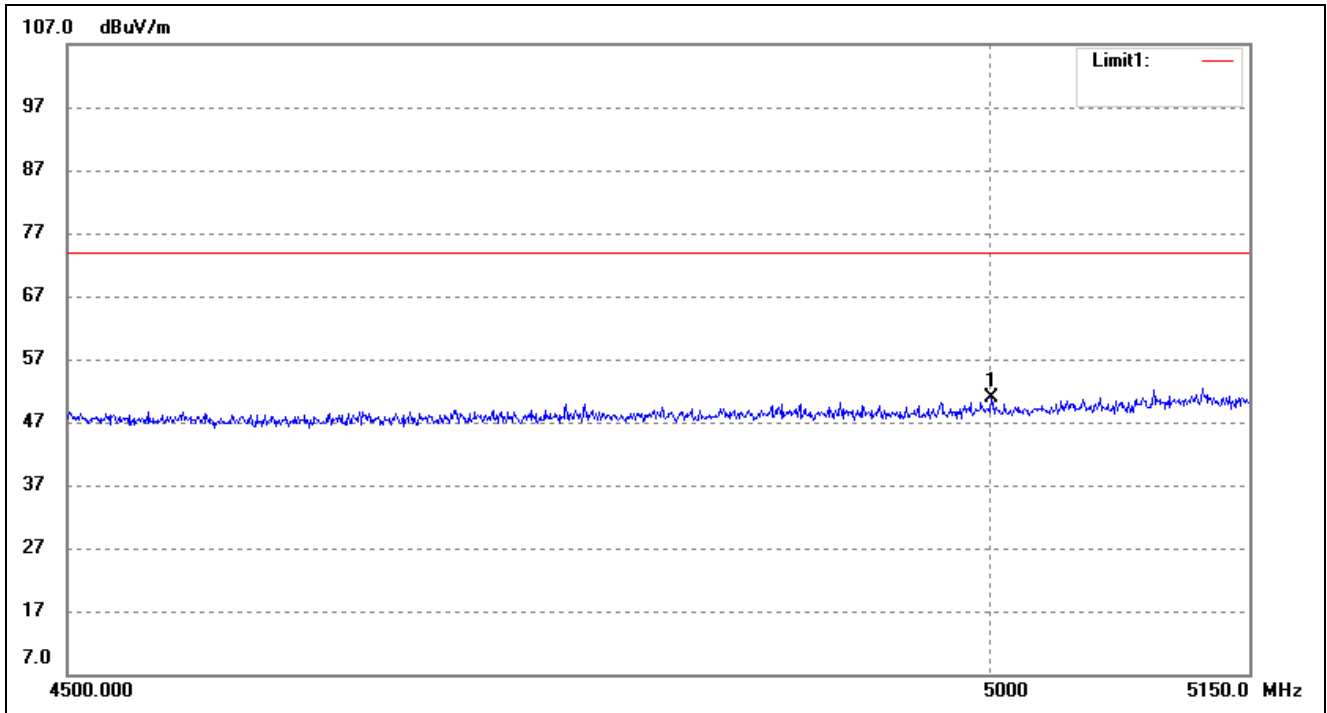
Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-46.52	-27
	5715 to 5725	-43.48	-17
Highest	5850 to 5860	-44.69	-17
	Above 5860	-47.16	-27

Note: the data just list the worst cases

802.11n HT40

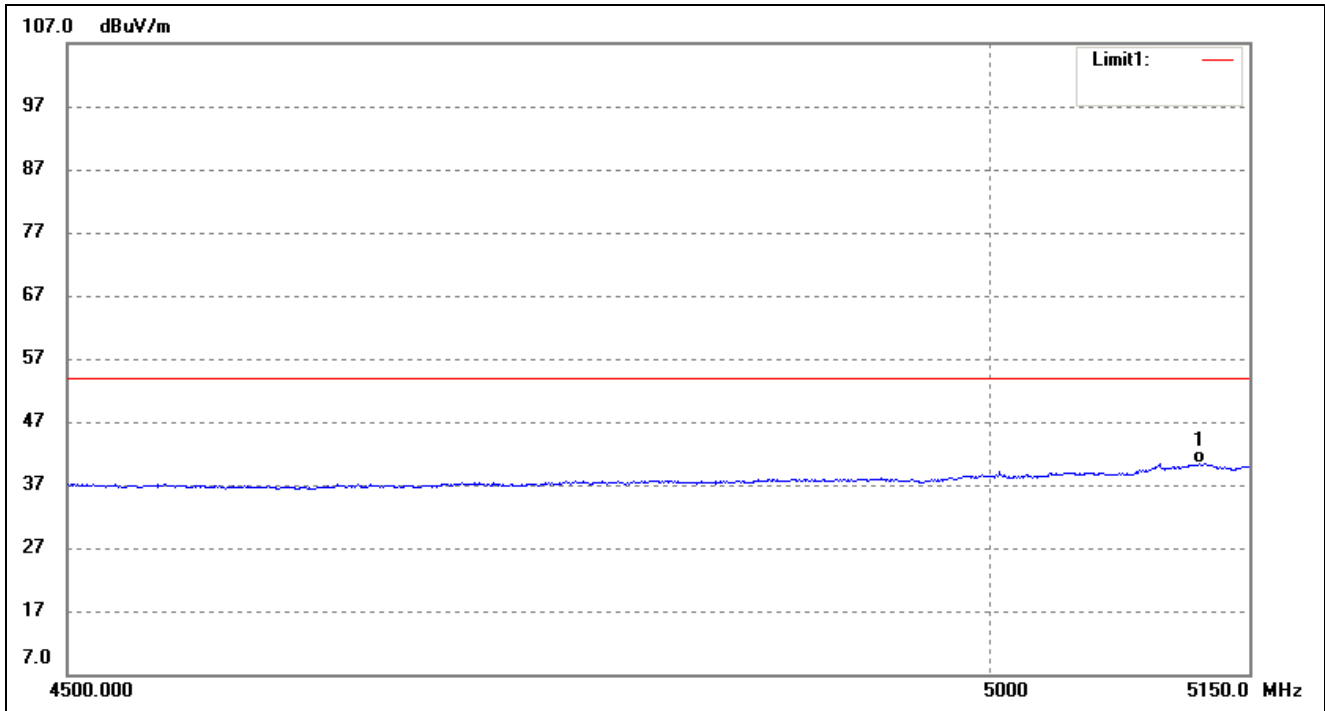
For the frequency band 5.19-5.30GHz(802.11n HT40)

Restricted Bandedge Peak



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	5000.732	51.43	-0.48	50.95	74.00	-23.05	245	100	peak

Restricted Bandedge Average



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	5120.900	40.56	-0.20	40.36	54.00	-13.64	91	100	AVG

Note: this EUT was tested in the low, high channel and the worst case position data was reported.

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5190MHz)										
10380	PK	50.83	360	V	40.7	10.9	39.6	62.83	74	-11.17
10380	PK	49.48	360	H	40.7	10.9	39.6	61.48	74	-11.17
10380	AV	35.68	360	V	40.7	10.9	39.6	47.68	54	8.83
10380	AV	34.70	360	H	40.7	10.9	39.6	46.70	54	8.83
High Channel (5230MHz)										
10460	PK	51.59	360	V	40.7	10.9	39.6	63.59	74	-10.41
10460	PK	50.69	360	H	40.7	10.9	39.6	62.69	74	-11.31
10460	AV	35.61	360	V	40.7	10.9	39.6	47.61	54	-6.39
10460	AV	34.51	360	H	40.7	10.9	39.6	46.51	54	-7.49

Out of Band edge

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-46.21	-27
Highest	Above 5350	-42.98	-27

Note: the data just list the worst cases

For the frequency band 5.725-5.850GHz (802.11n HT40)

Harmonics And Spurious Emissions

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (5755MHz)										
11510	PK	55.86	360	V	38.9	9.8	40.1	64.46	74	-9.54
11510	PK	54.60	360	H	38.9	9.8	40.1	63.20	74	-10.80
11510	AV	36.70	360	V	38.9	9.8	40.1	45.30	54	-8.70
11510	AV	36.95	360	H	38.9	9.8	40.1	45.55	54	-8.45
High Channel (5795MHz)										
11590	PK	54.68	360	V	38.9	9.8	40.1	63.28	74	-10.72
11590	PK	53.55	360	H	38.9	9.8	40.1	62.15	74	-11.85
11590	AV	37.98	360	V	38.9	9.8	40.1	46.58	54	-7.42
11590	AV	35.68	360	H	38.9	9.8	40.1	44.28	54	-9.72

Out of Band edge

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-46.59	-27
	5715 to 5725	-43.26	-17
Highest	5850 to 5860	-42.85	-17
	Above 5860	-46.54	-27

Note: the data just list the worst cases

Note: Testing is carried out with frequency rang 30MHz to 40GHz, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

11. Frequency Stability

11.1 Standard Applicable

According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

11.2 Test Procedure

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode

Temperature:	Supply Voltage
20°C	3.3-4.3V declared by the manufacturer
-30°C to +50°C	Normal

11.3 Environmental Conditions

Temperature:	20°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

11.4 Summary of Test Results/Plots

5150-5250MHz

802.11a_20MHz

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	65	0.0125
40	3.8	50	0.0096
30	3.8	44	0.0085
20	3.8	38	0.0073
10	3.8	32	0.0062
0	3.8	25	0.0048
-10	3.8	28	0.0054
-20	3.8	36	0.0069
-30	3.8	43	0.0083

802.11n_HT20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	45	0.0087
40	3.8	42	0.0081
30	3.8	32	0.0062
20	3.8	27	0.0052
10	3.8	23	0.0044
0	3.8	19	0.0037
-10	3.8	26	0.0050
-20	3.8	32	0.0062
-30	3.8	38	0.0073

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	56	0.0107
40	3.8	48	0.0092
30	3.8	38	0.0073
20	3.8	31	0.0059
10	3.8	27	0.0052
0	3.8	22	0.0042
-10	3.8	28	0.0054
-20	3.8	36	0.0069
-30	3.8	43	0.0082

5725-5850MHz

802.11a_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	65	0.0112
40	3.8	52	0.0090
30	3.8	42	0.0073
20	3.8	34	0.0059
10	3.8	27	0.0047
0	3.8	22	0.0038
-10	3.8	28	0.0048
-20	3.8	35	0.0061
-30	3.8	42	0.0073

802.11n_HT20

Reference Frequency(Middle Channel): 5785MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	57	0.0099
40	3.8	42	0.0073
30	3.8	32	0.0055
20	3.8	26	0.0045
10	3.8	21	0.0036
0	3.8	15	0.0026
-10	3.8	19	0.0033
-20	3.8	26	0.0045
-30	3.8	32	0.0055

802.11n_HT40

Reference Frequency(Middle Channel): 5795MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	68	0.0117
40	3.8	55	0.0095
30	3.8	49	0.0085
20	3.8	42	0.0072
10	3.8	38	0.0066
0	3.8	32	0.0055
-10	3.8	37	0.0064
-20	3.8	43	0.0074
-30	3.8	50	0.0086

So, Frequency Stability Versus Input Voltage is:

5150-5250MHz

802.11a_HT20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	35	0.0067
	3.8	38	0.0073
	4.2	44	0.0085

802.11n_HT20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	27	0.0052
	3.8	27	0.0052
	4.2	21	0.0040

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	23	0.0044
	3.8	31	0.0059
	4.2	25	0.0048

5725-5850MHz

802.11a_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	38	0.0066
	3.8	34	0.0059
	4.2	38	0.0066

802.11n_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	52	0.0090
	3.8	26	0.0045
	4.2	45	0.0078

802.11n_HT40

Reference Frequency(Middle Channel): 5795 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	45	0.0078
	3.8	42	0.0072
	4.2	42	0.0072

***** END OF REPORT *****