FCC Part 15E
Measurement and Test Report

For

International Products Sourcing Group

4119 Leap Road, Hilliard OH, 43026

FCC ID: 2AOBMWBTW110

FCC Rule(s):	FCC Part 15E
Product Description:	Tablet PC
Tested Model:	11"TW110
Report No.:	STR17128083I-1
Sample Receipt Date:	2017-12-07
Tested Date:	2017-12-08 to 2017-12-19
Issued Date:	2017-12-19
Tested By:	Bin Mei / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	International Products Sourcing Group
Address of applicant:	4119 Leap Road, Hilliard OH, 43026
Manufacturer:	Shenzhen Emdoor Digital Technology Co.,Ltd.
Address of manufacturer:	H.Q.:6/F JinFuLai Building,49-1 Dabao Road, Bao An District, Shenzhen

General Description of EUT	
Product Name:	Tablet PC
Trade Name:	WinBook
Model No.:	11"TW110
Adding Model:	/
Rated Voltage:	DC 3.8V by battery
Battery capacity:	10000mAh
Power Adapter Model:	Model: JK050300-S04US Input: AC100-240V, 50/60Hz, 0.5A; Output: DC 5V/ 3000mA
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Support Standards:	802.11a, 802.11n(HT20/40), 802.11ac-HT80
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	Antenna A : 6.71dBm(Conducted) Antenna B : 6.75dBm (Conducted)
Type of Modulation:	OFDM, 64-QAM,16-QAM, QPSK, BPSK, 256-QAM
Data Rate:	6-54Mbps, up to 300Mbps
Quantity of Channels:	8 fort 5150-5250MHz; 5 fort 5725-5850MHz
Channel Separation:	20MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	Antenna A: 2.0dBi Antenna B: 2.0dBi

1.2 Test Standards

The following report is prepared on behalf of the International Products Sourcing Group in accordance with FCC Part 15, Subpart C&E, and section 15.203, 15.205, 15.207, 15.209 and 15.407 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C&E, and section 15.203, 15.205, 15.207, 15.209 and 15.407 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 “RPTA1-71W.M4300.01.GD.2015Sep1”. 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
Mode	NCB: 80MHz					
	5210		5290	5530	5610	5690	5775
802.11ac-HT80 MCS0/Nss2	19						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 WIN XP were executed.

1.6 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

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.

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
TM4	802.11ac-HT80	5210MHz, 5775MHz
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
Adapter Cable	1.5	Shielded	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	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Power Spectral Density	Conducted	±1.8dB
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	±2.88dB
Transmitter Spurious Emissions	Radiated	±5.1dB

1.9 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2017-06-12	2018-06-11
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2017-06-12	2018-06-11
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2017-06-12	2018-06-11
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2017-06-12	2018-06-11
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2018-06-07
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-08	2018-06-07
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2018-06-07
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2017-06-12	2018-06-11
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2017-06-12	2018-06-11
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2017-06-12	2018-06-11
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2017-08-15	2018-08-14
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2017-08-15	2018-08-14
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2017-06-12	2018-06-11
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2017-03-09	2018-03-08

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

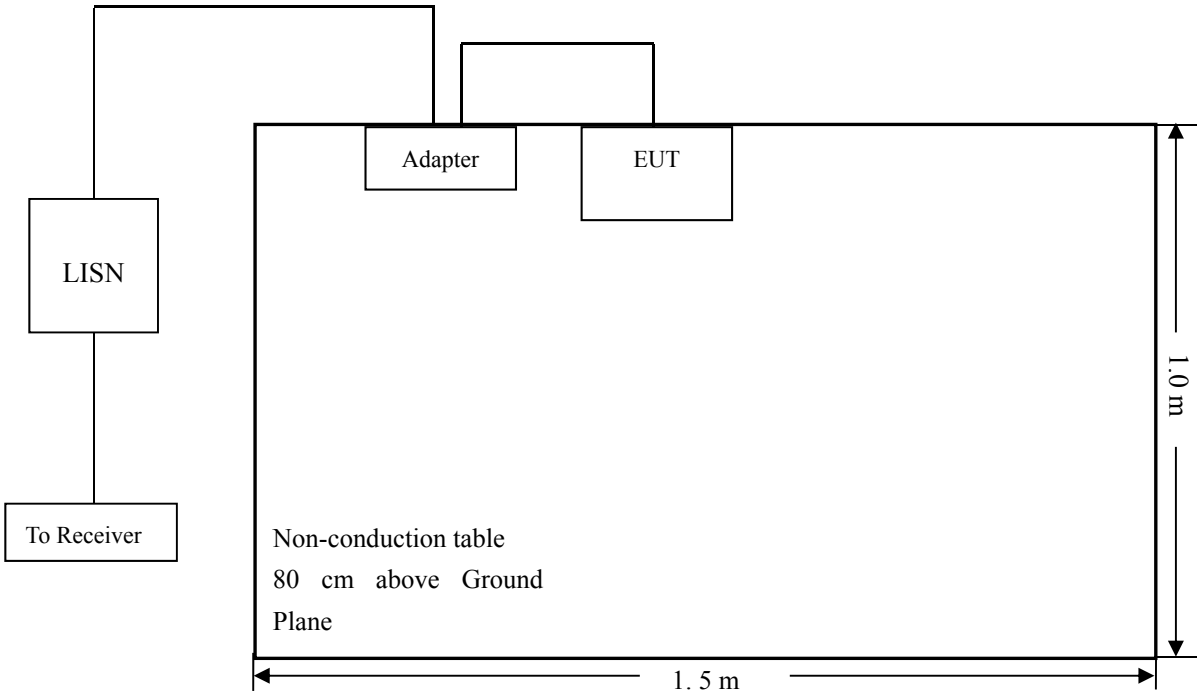
This product has two integral antenna, and they can’t transmit simultaneously, fulfill the requirement of this section.

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 3.8, the EUT complied with the FCC Part 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

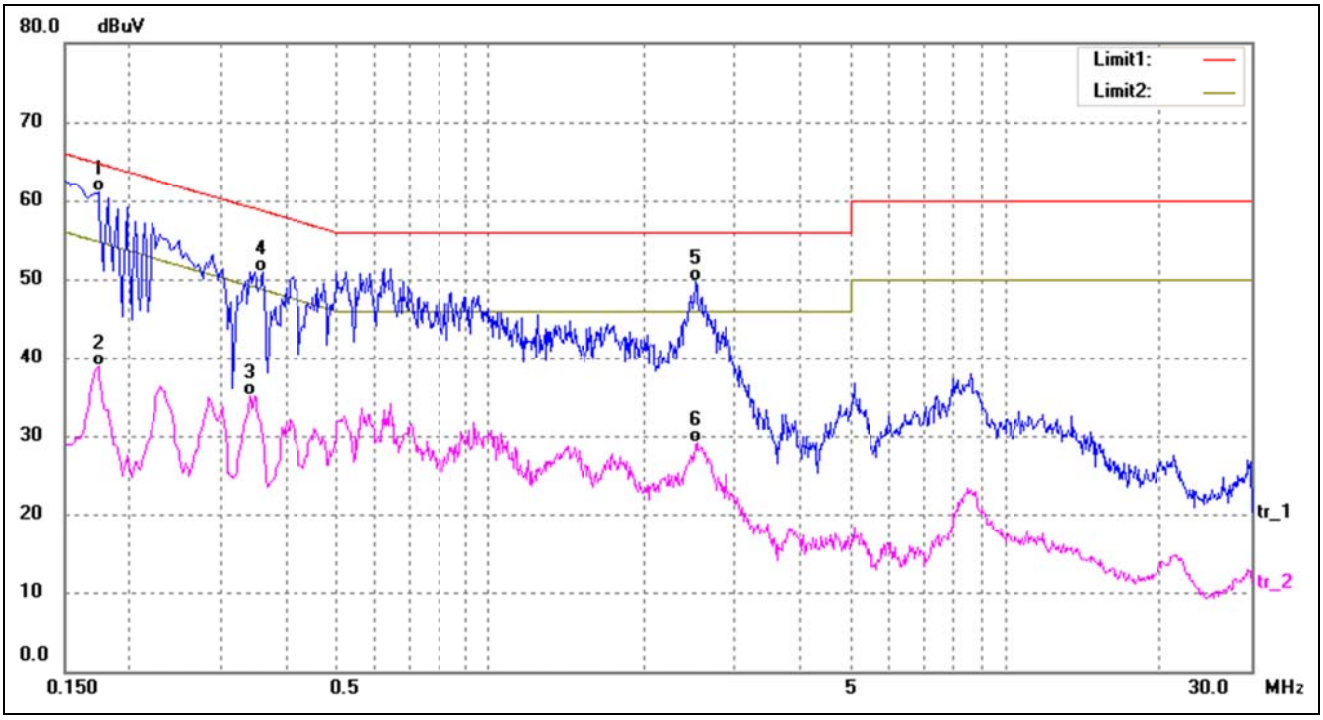
-3.72 dB at **0.1740 MHz** in the **Neutral**, **QP** detector, 0.15-30MHz

5.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

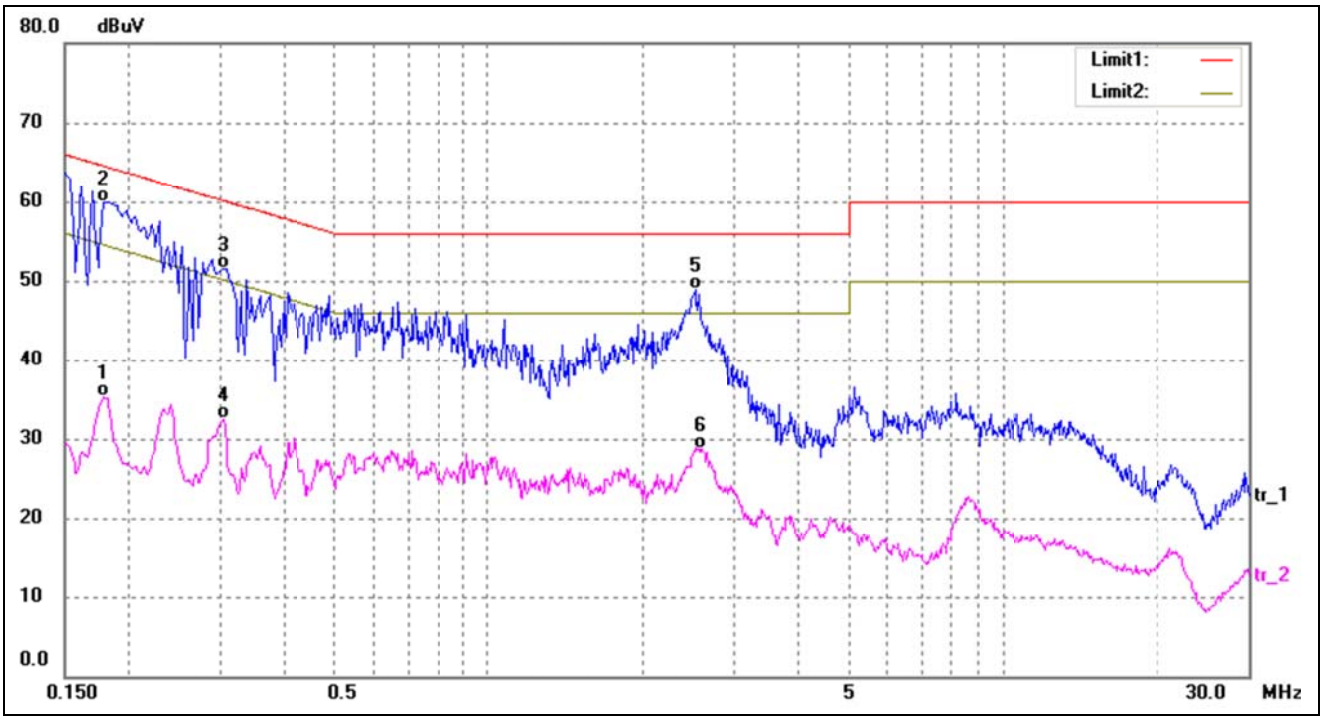
EUT: *Tablet PC*
Tested Model: *11"TW110*
Operating Condition: *Transmitting*
Comment: *AC 120V/60Hz*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1740	51.22	9.83	61.05	64.77	-3.72	QP
2	0.1740	29.17	9.83	39.00	54.77	-15.77	AVG
3	0.3420	25.26	9.80	35.06	49.15	-14.09	AVG
4	0.3620	41.14	9.80	50.94	58.68	-7.74	QP
5	2.5060	39.98	9.72	49.70	56.00	-6.30	QP
6	2.5260	19.40	9.72	29.12	46.00	-16.88	AVG

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1780	25.46	9.82	35.28	54.58	-19.30	AVG
2*	0.1787	50.09	9.82	59.91	64.55	-4.64	QP
3	0.3060	41.72	9.80	51.52	60.08	-8.56	QP
4	0.3060	22.63	9.80	32.43	50.08	-17.65	AVG
5	2.5260	39.16	9.72	48.88	56.00	-7.12	QP
6	2.5940	19.01	9.72	28.73	46.00	-17.27	AVG

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 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 ≥ 1/T, where T is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 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 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 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 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

Antenna A

5150-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit * (dBm/MHz)
802.11a	5180	3.312	11
	5200	2.912	11
	5240	2.987	11
802.11n-HT20	5180	3.612	11
	5200	1.807	11
	5240	2.081	11
802.11n-HT40	5190	-1.145	11
	5230	-1.072	11
802.11ac-HT80	5210	-3.915	11

5725-5850MHz

Operating mode	Test Channel	Power Spectral Density dBm/500kHz	Limit * dBm/500kHz
802.11a	5745	-1.537	30
	5785	-1.207	30
	5825	-0.928	30
802.11n-HT20	5745	-2.208	30
	5785	-1.565	30
	5825	-0.814	30
802.11n-HT40	5755	-6.122	30
	5795	-4.439	30
802.11ac-HT80	5775	-7.682	30

Antenna B

5150-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit * (dBm/MHz)
802.11a	5180	2.296	11
	5200	2.227	11
	5240	1.865	11
802.11n-HT20	5180	1.461	11
	5200	2.027	11
	5240	1.867	11
802.11n-HT40	5190	-1.823	11
	5230	-1.287	11
802.11ac-HT80	5210	-4.771	11

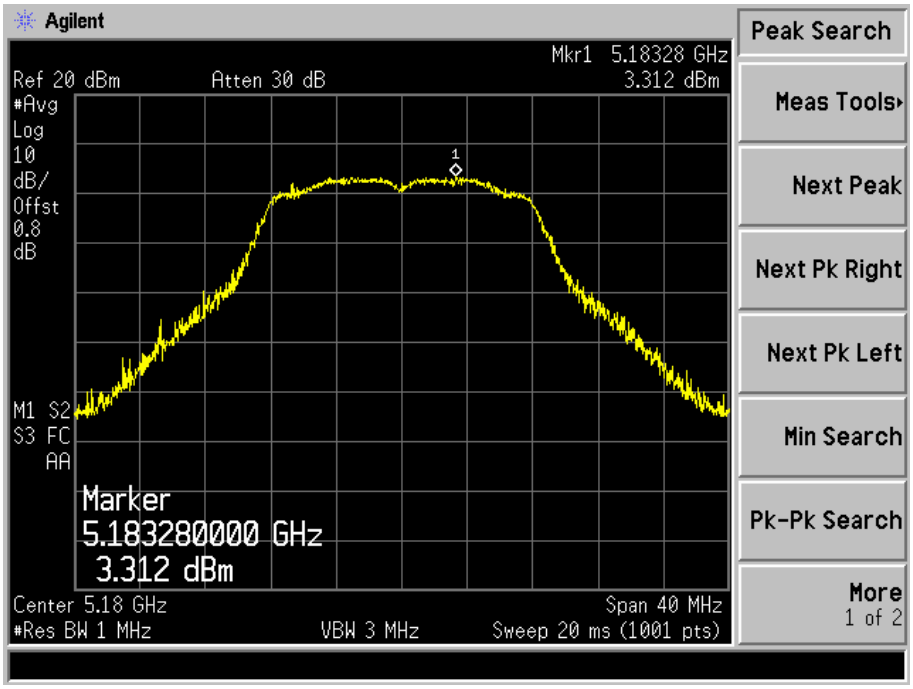
5725-5850MHz

Operating mode	Test Channel	Power Spectral Density dBm/500kHz	Limit * dBm/500kHz
802.11a	5745	-2.030	30
	5785	-1.487	30
	5825	-0.449	30
802.11n-HT20	5745	-1.654	30
	5785	-1.340	30
	5825	-0.712	30
802.11n-HT40	5755	-6.023	30
	5795	-4.494	30
802.11ac-HT80	5775	-7.638	30

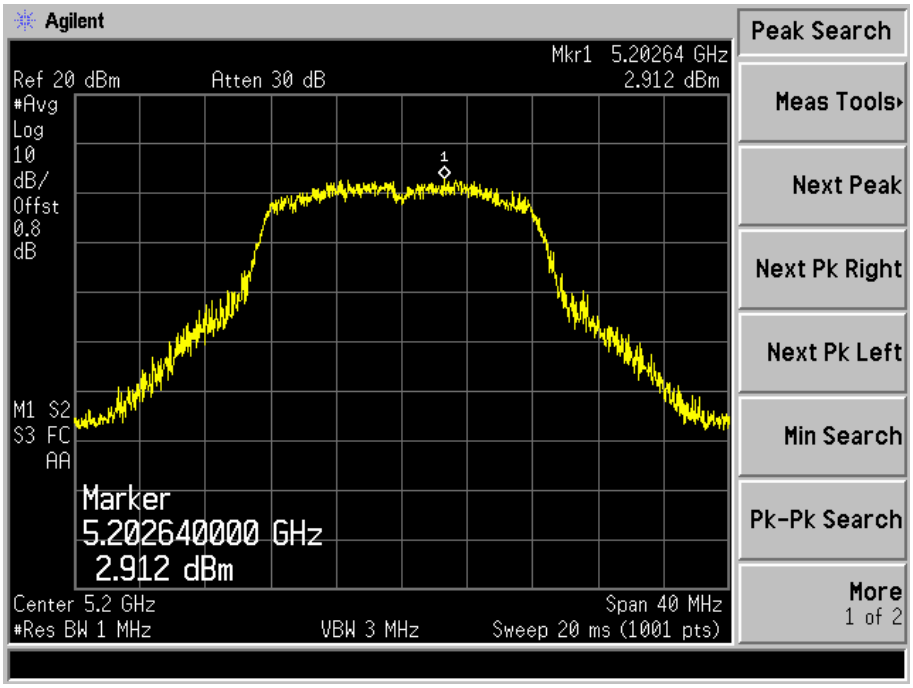
Antenna A

Test Mode: 802.11a

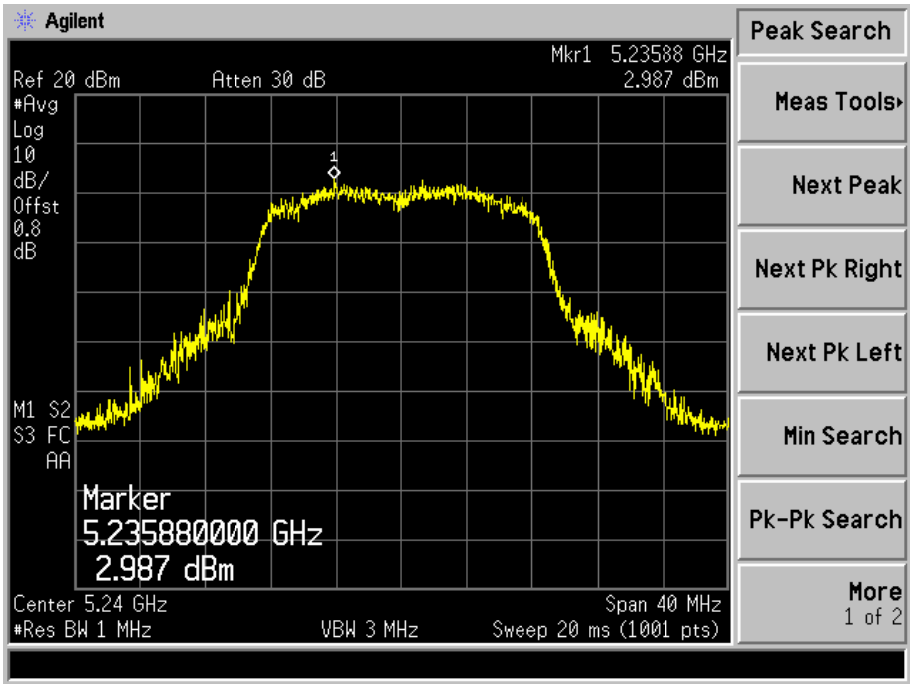
5180MHz



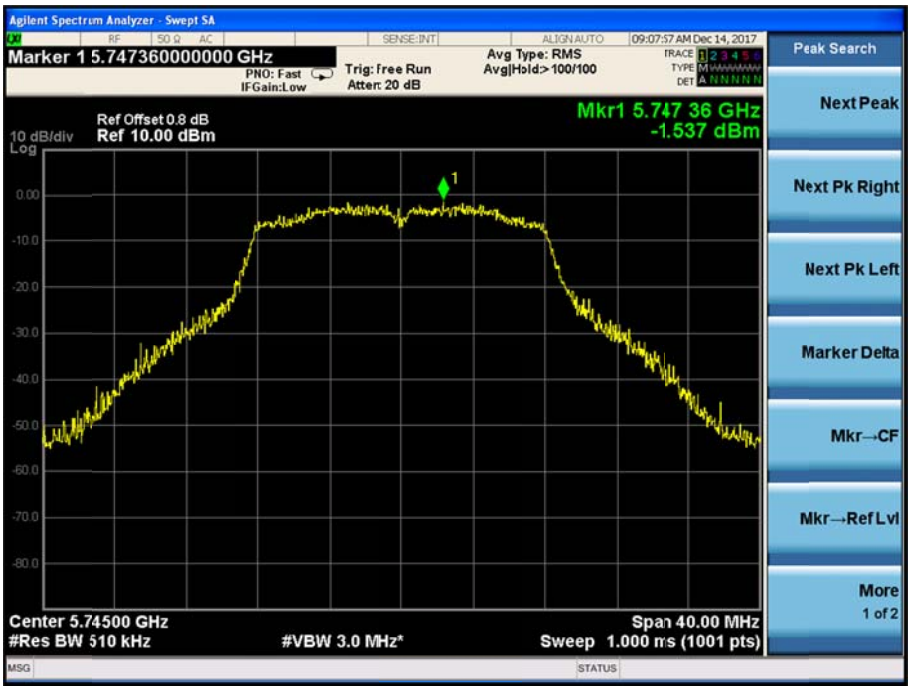
5200MHz



5240MHz



5745MHz

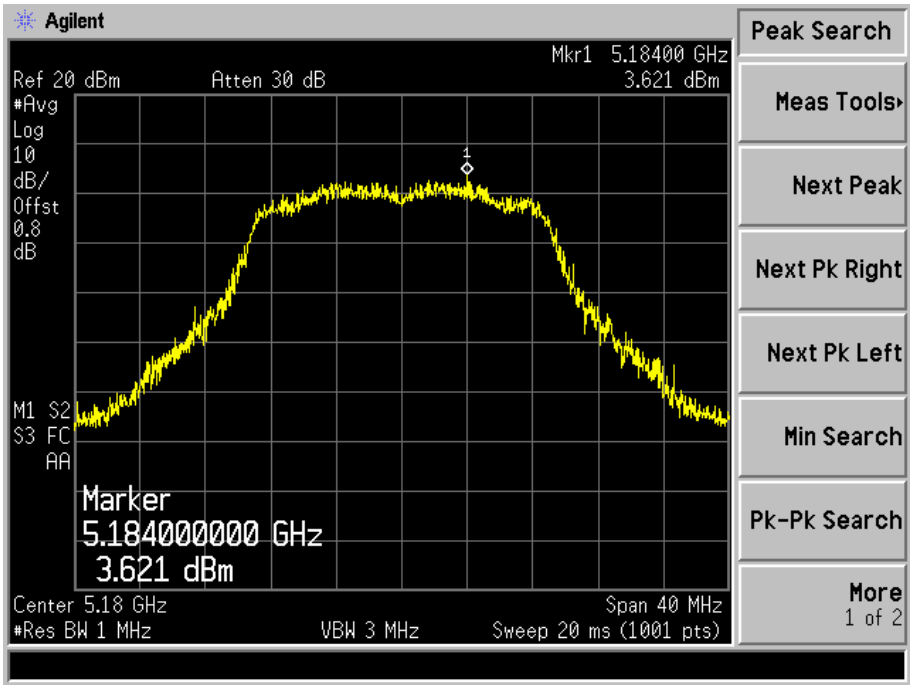


5785MHz

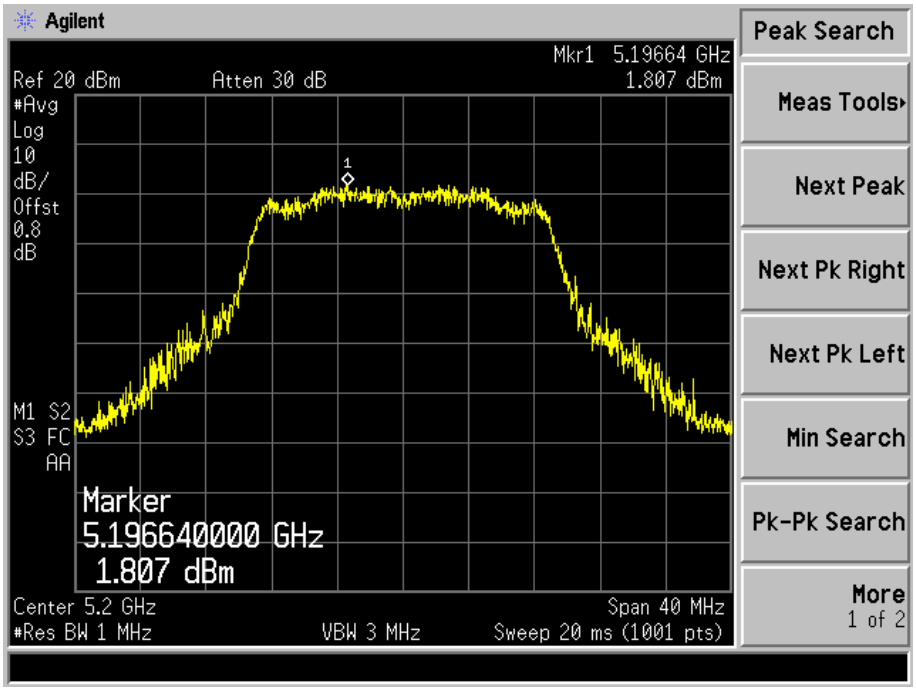
5805MHz

Test Mode: 802.11n-HT20

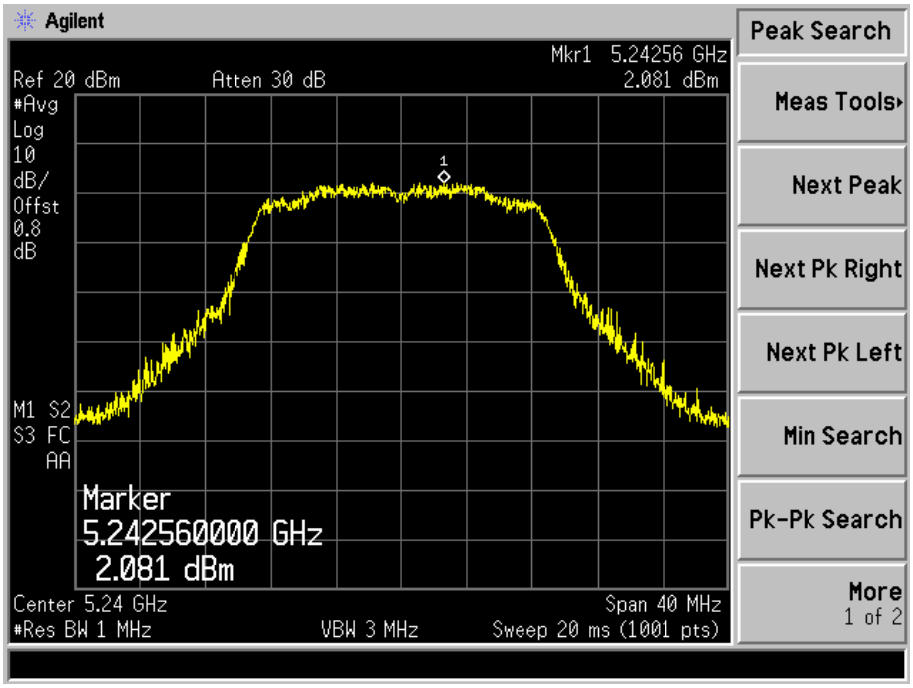
5180MHz



5200MHz



5240MHz



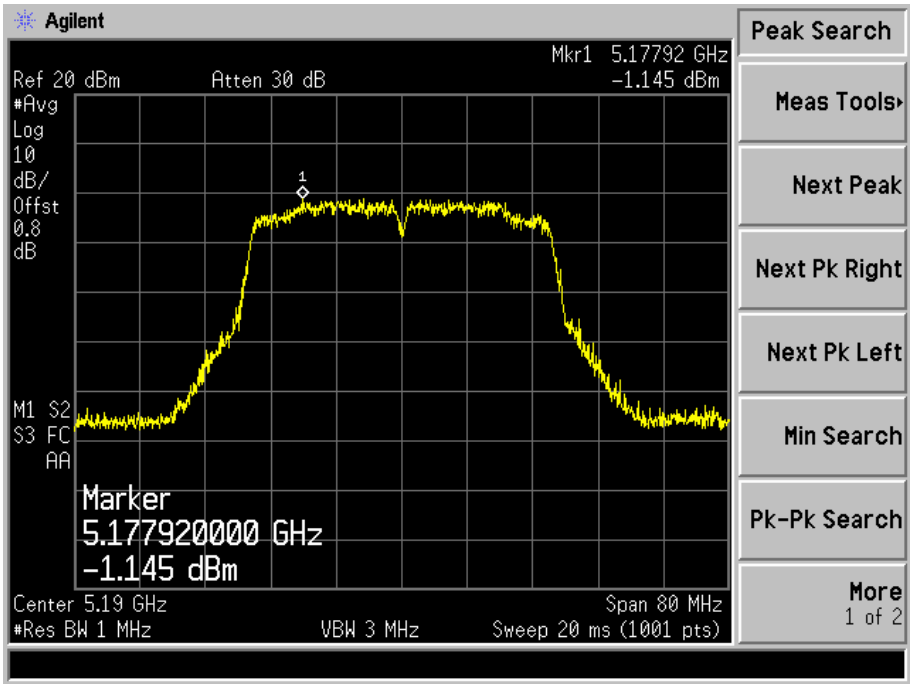
5745MHz

5785MHz

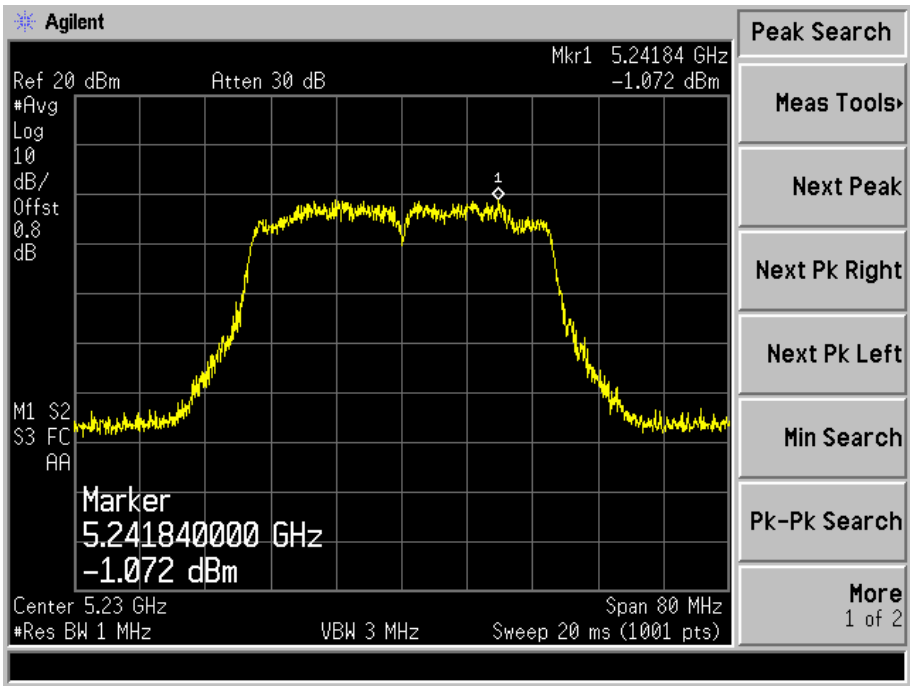
5805MHz

Test Mode: 802.11n-HT40

5190MHz



5230MHz

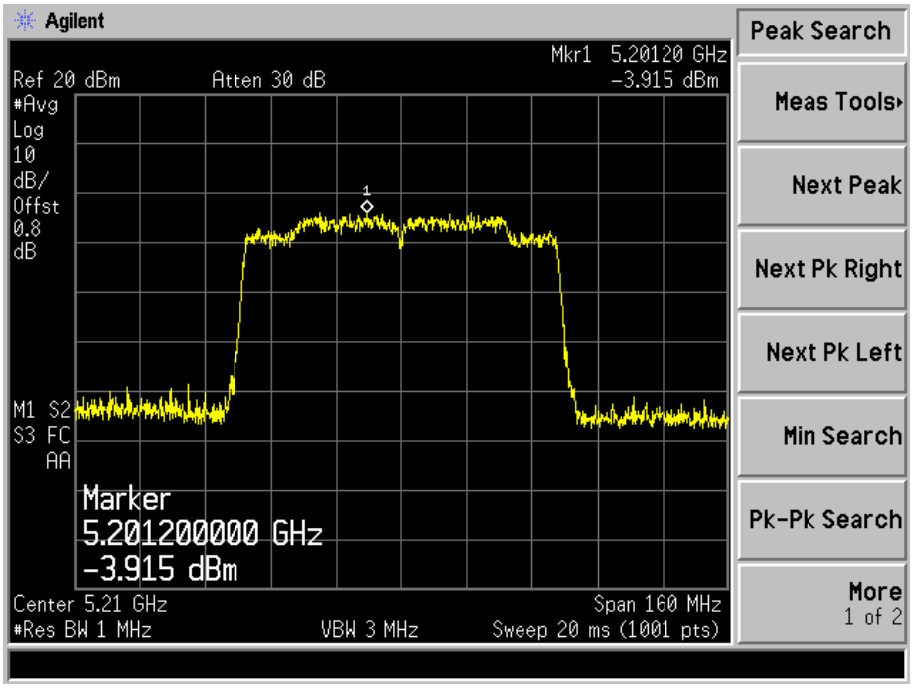


5755MHz

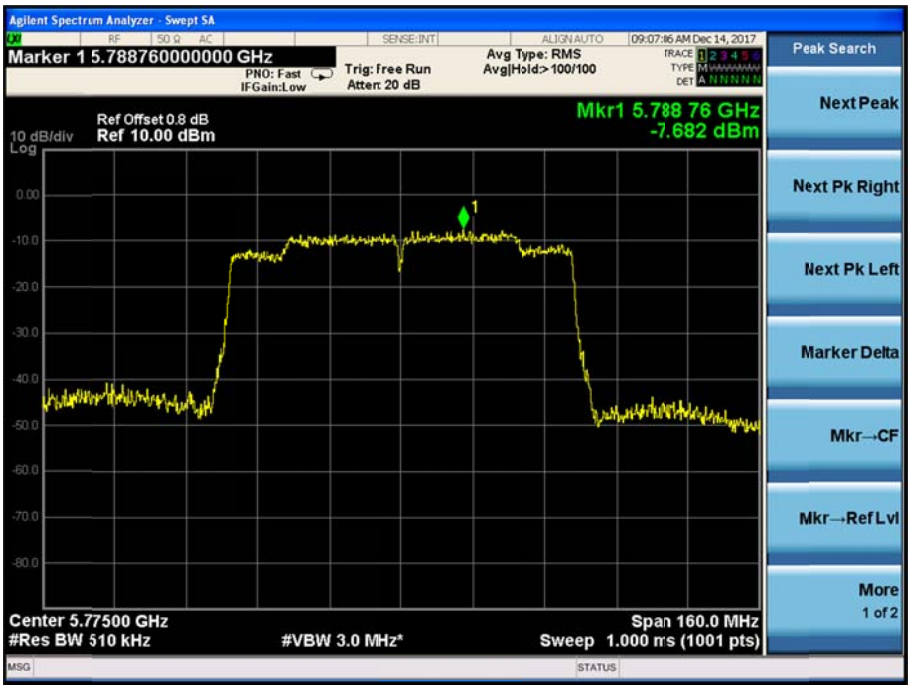
5795MHz

Test Mode: 802.11ac-HT80

5210MHz



5755MHz



Antenna B

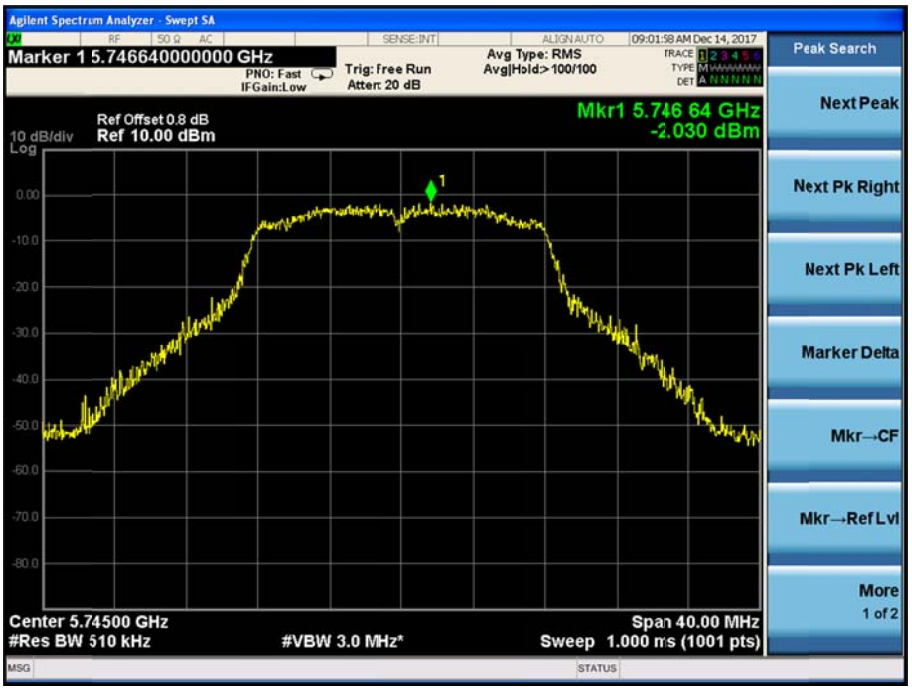
Test Mode: 802.11a

5180MHz

5200MHz

5240MHz

5745MHz



5785MHz

5805MHz

Test Mode: 802.11n-HT20

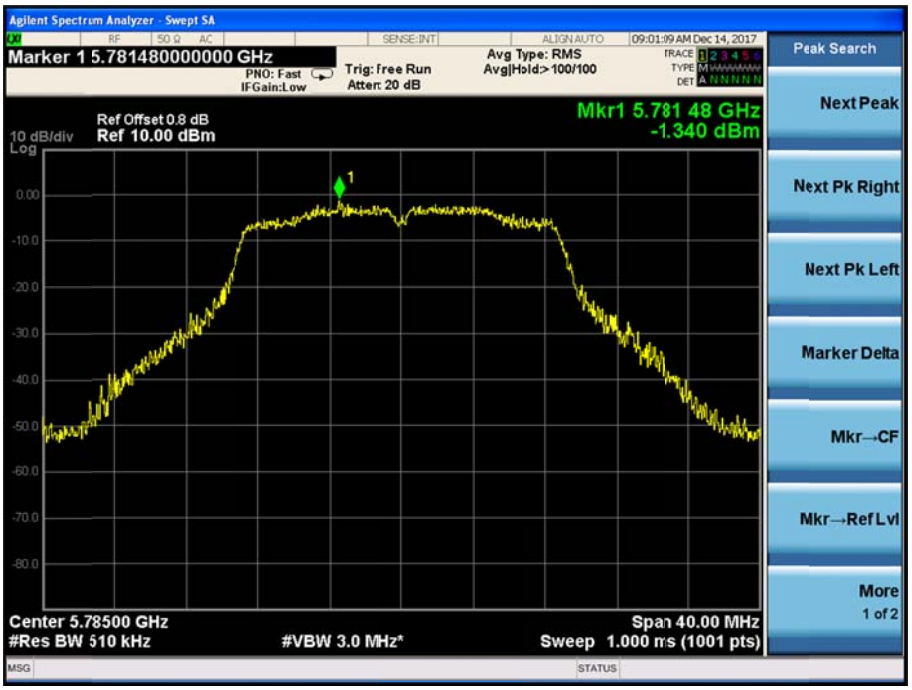
5180MHz

5200MHz

5240MHz

5745MHz

5785MHz



5805MHz

Test Mode: 802.11n-HT40

5190MHz

5230MHz

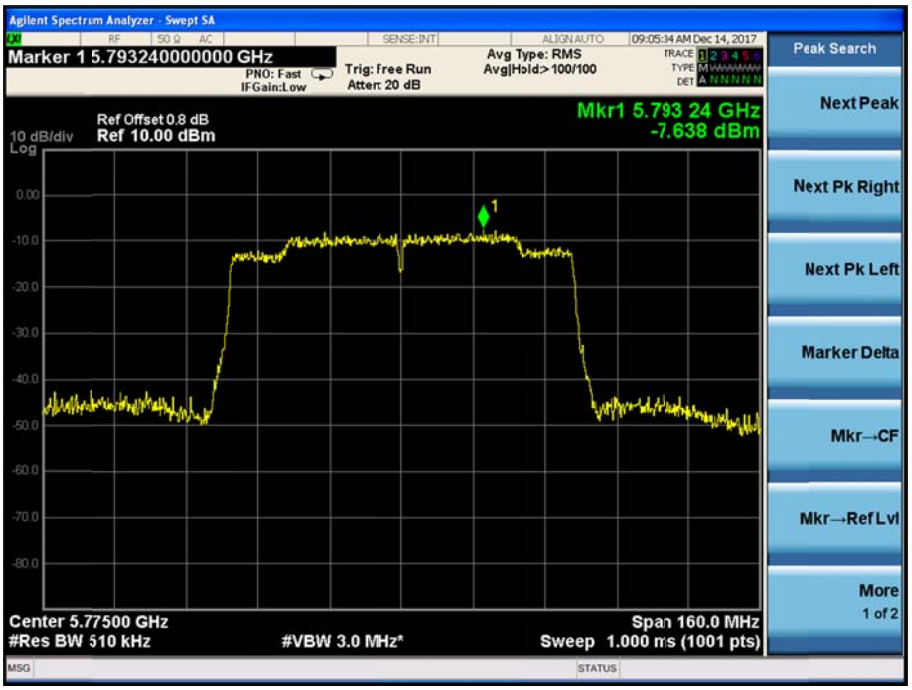
5755MHz

5795MHz

Test Mode: 802.11ac-HT80

5210MHz

5755MHz



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 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) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Note: The 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 ≥ 3 • 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

Antenna A

5150-5250MHz

Test Mode	Test Channel MHz	26 dB Bandwidth MHz	99% Bandwidth MHz	Result
802.11a	5180	23.792	16.6848	Pass
	5200	23.249	16.6455	Pass
	5240	23.336	16.6890	Pass
802.11n-HT20	5180	23.871	17.7850	Pass
	5200	24.830	17.7960	Pass
	5240	23.290	17.7909	Pass
802.11n-HT40	5190	43.928	36.2528	Pass
	5230	42.546	36.2548	Pass
802.11ac-HT80	5210	81.322	75.2536	Pass

5725-5850MHz

Test Mode	Test Channel MHz	26 dB Bandwidth MHz	6 dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11a	5745	23.886	15.140	16.6855	≥500
	5785	23.883	15.435	16.6194	≥500
	5825	23.435	15.444	16.6293	≥500
802.11n-HT20	5745	23.415	15.092	17.7902	≥500
	5785	22.686	15.288	17.7794	≥500
	5825	24.064	15.459	17.8014	≥500
802.11n-HT40	5755	41.960	35.077	36.1370	≥500
	5795	41.60	34.997	36.1450	≥500
802.11ac-HT80	5775	81.812	75.249	75.2077	≥500

Antenna B

5150-5250MHz

Test Mode	Test Channel MHz	26 dB Bandwidth MHz	99% Bandwidth MHz	Result
802.11a	5180	23.705	16.6694	Pass
	5200	23.090	16.6331	Pass
	5240	23.699	16.6386	Pass
802.11n-HT20	5180	24.568	17.7560	Pass
	5200	23.595	17.8013	Pass
	5240	23.738	17.7665	Pass
802.11n-HT40	5190	43.640	36.2836	Pass
	5230	42.574	36.2614	Pass
802.11ac-HT80	5210	81.731	75.1547	Pass

5725-5850MHz

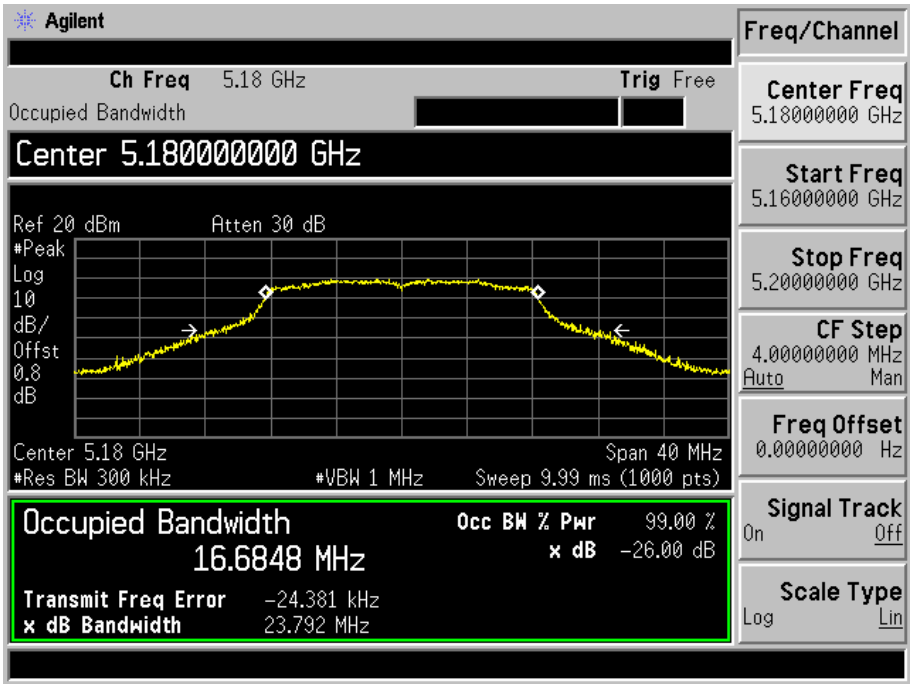
Test Mode	Test Channel MHz	26 dB Bandwidth MHz	6 dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11a	5745	23.208	13.847	16.6541	≥500
	5785	23.441	15.045	16.6191	≥500
	5825	23.117	15.104	16.6291	≥500
802.11n-HT20	5745	23.701	15.939	17.7634	≥500
	5785	23.242	16.142	17.7494	≥500
	5825	24.813	15.103	17.7495	≥500
802.11n-HT40	5755	44.390	35.160	36.3270	≥500
	5795	42.140	35.097	36.1600	≥500
802.11ac-HT80	5775	81.724	75.145	75.1568	≥500

Antenna A

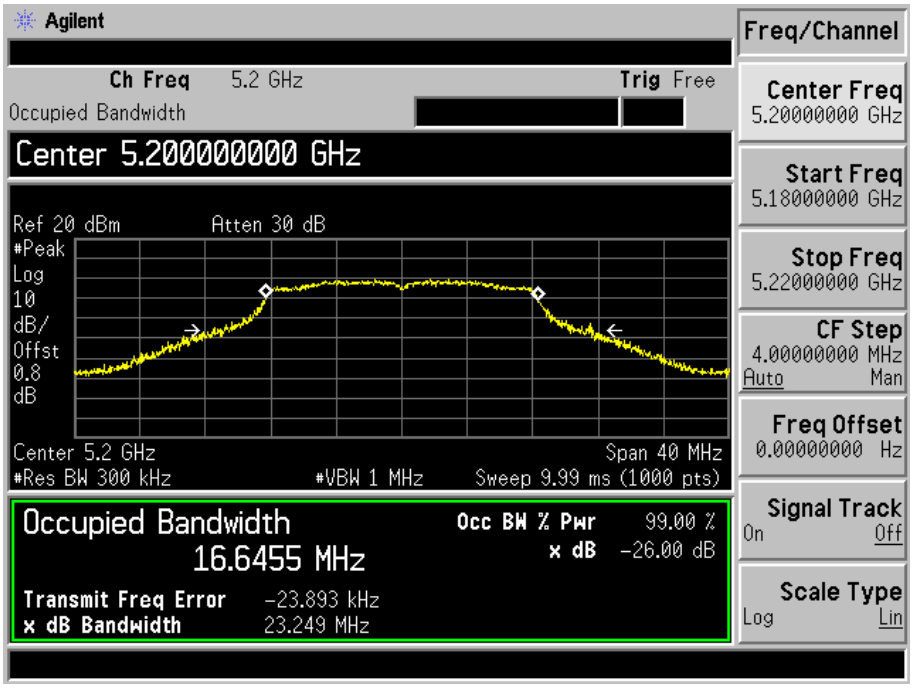
5150-5250MHz

Test mode：802.11a

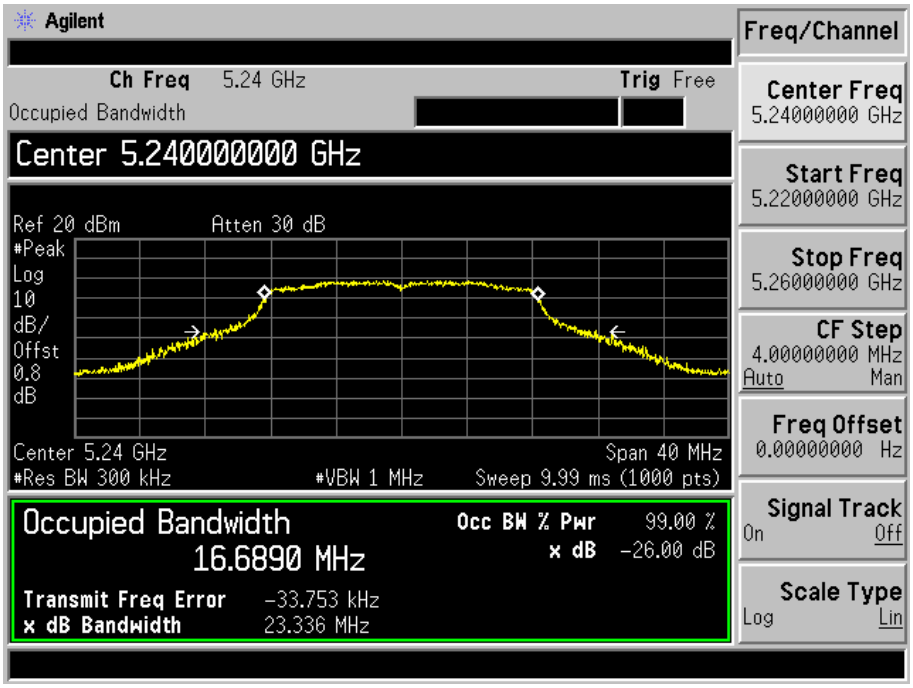
5180MHz



5200MHz

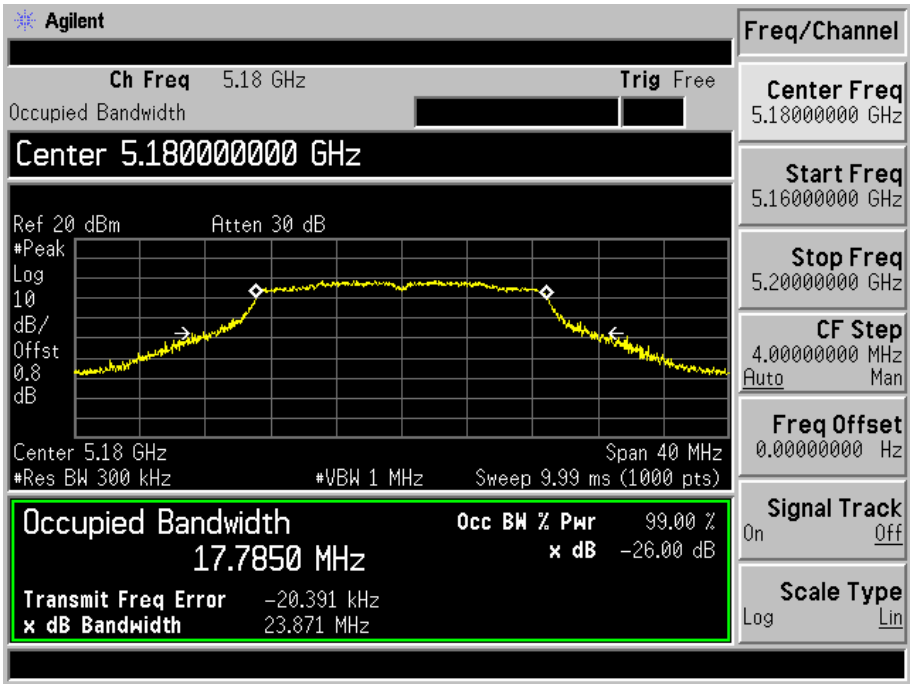


5240MHz

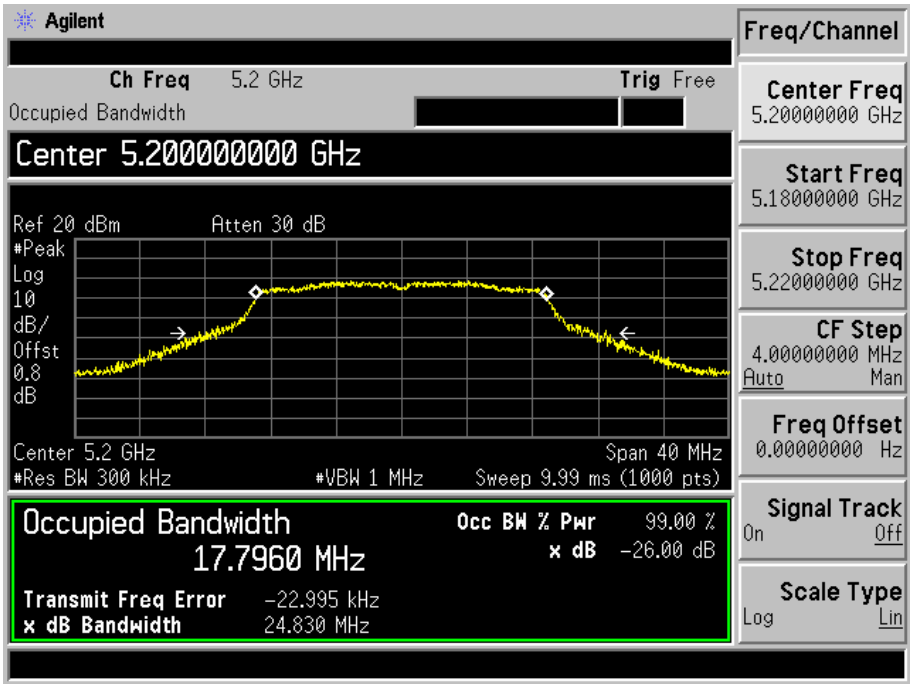


Test mode：802.11n-HT20

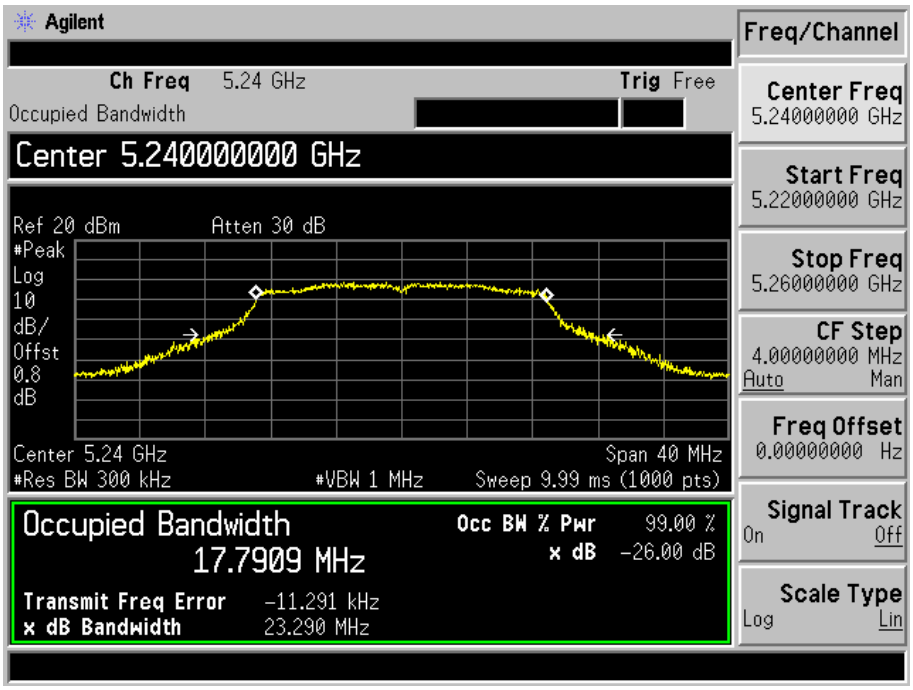
5180MHz



5200MHz

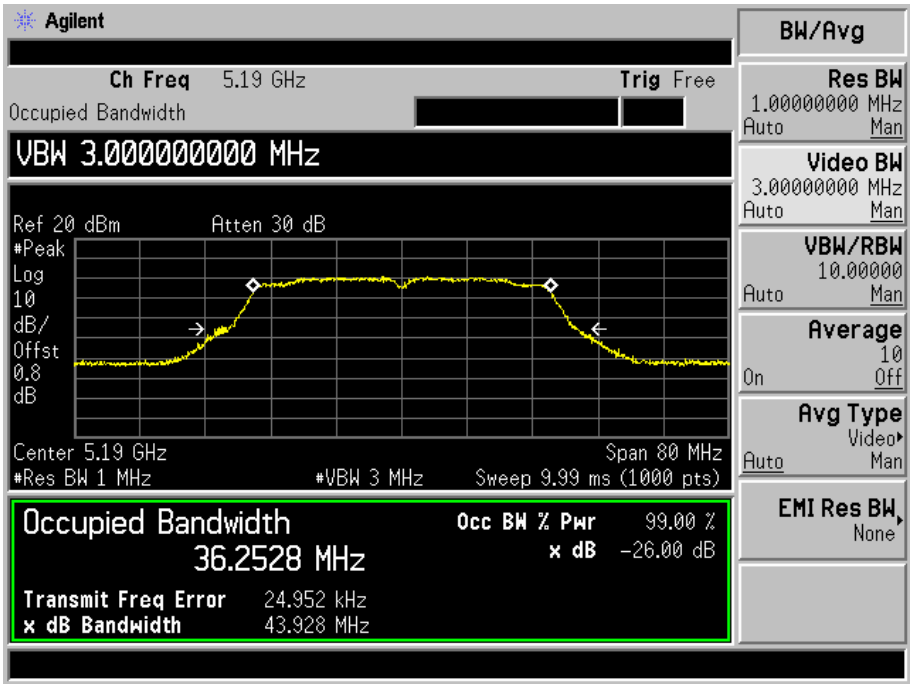


5240MHz

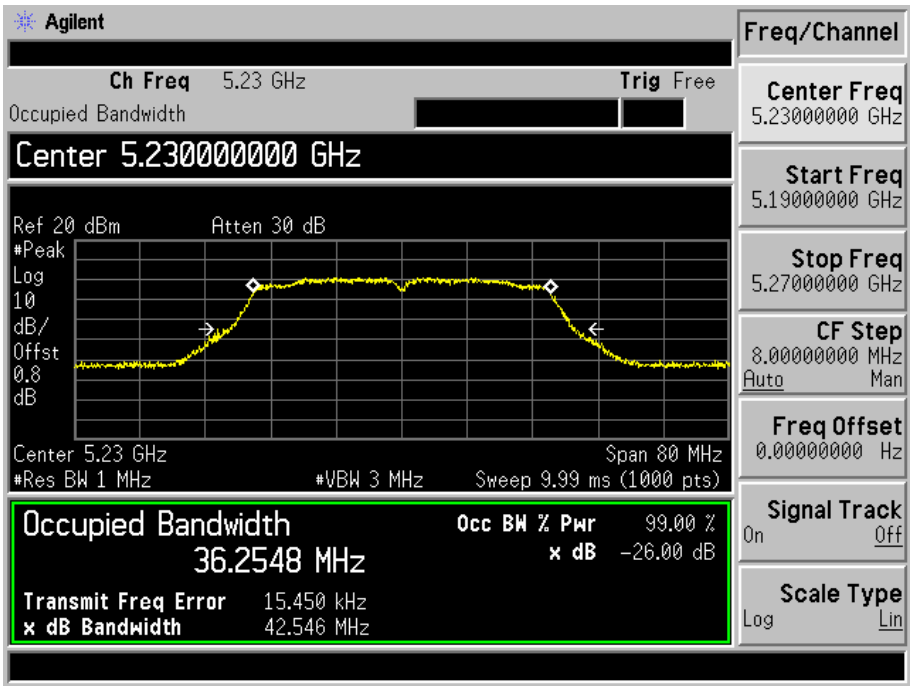


Test mode：802.11n-HT40

5190MHz

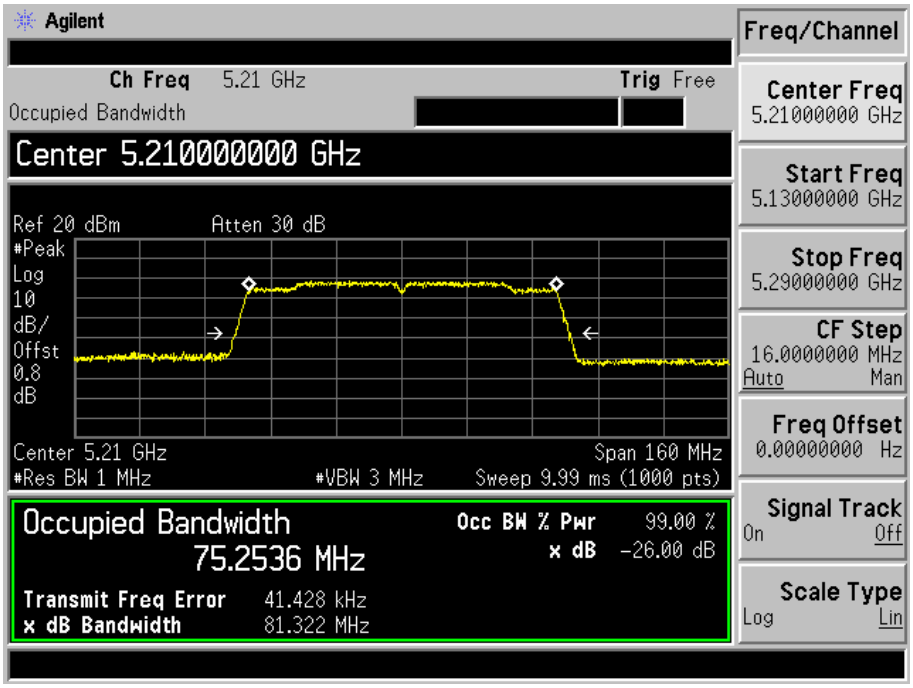


5230MHz



Test mode：802.11ac-HT80

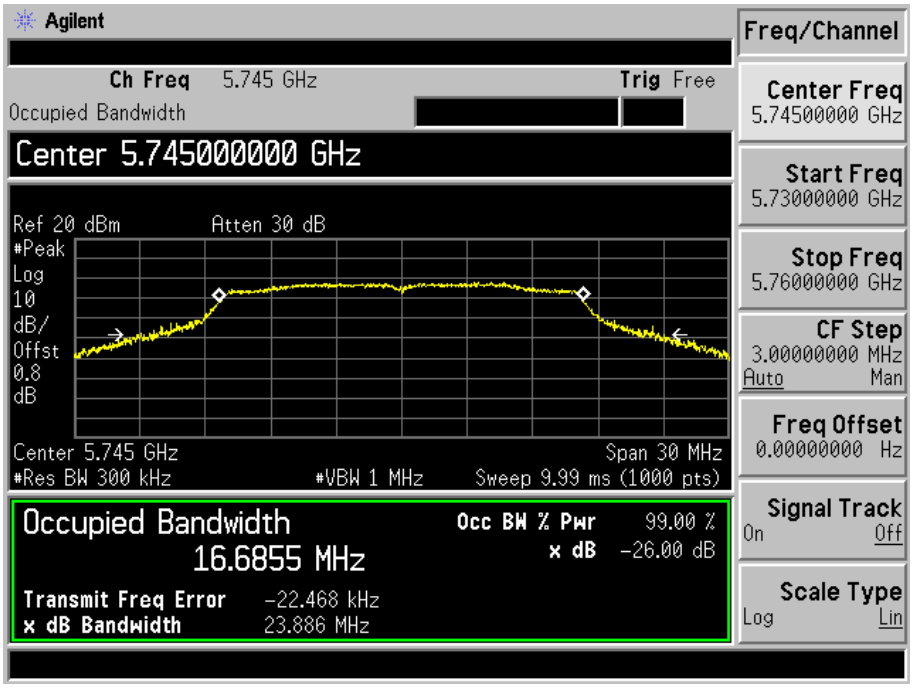
5210MHz

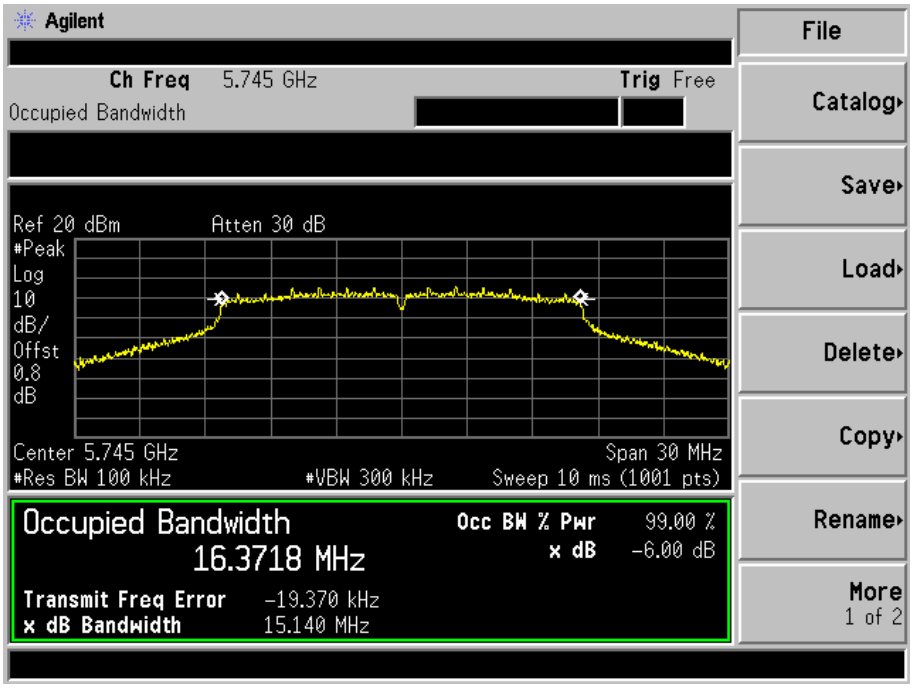


5725-5850MHz

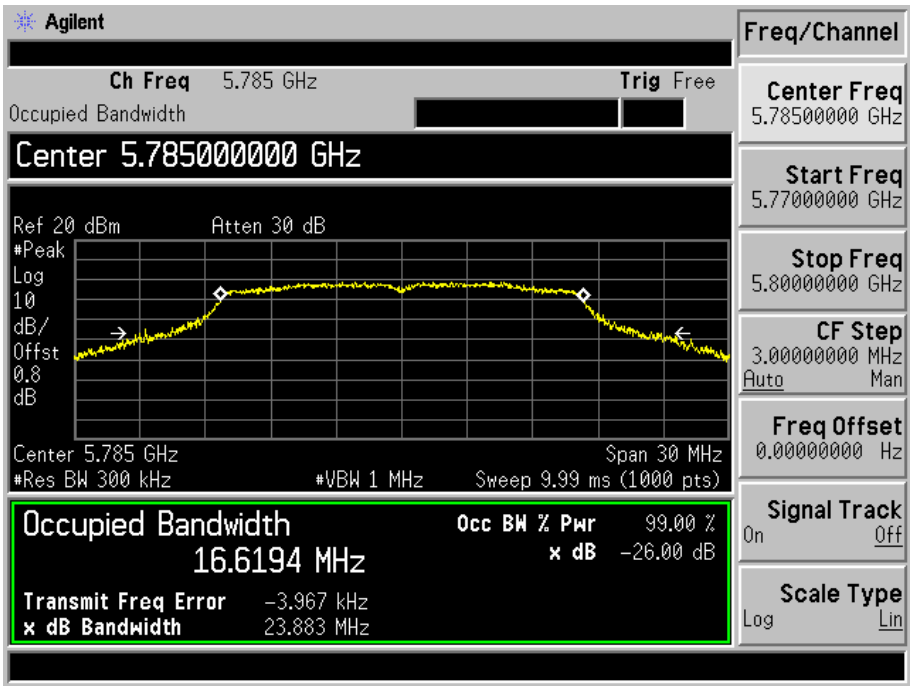
Test mode：802.11a

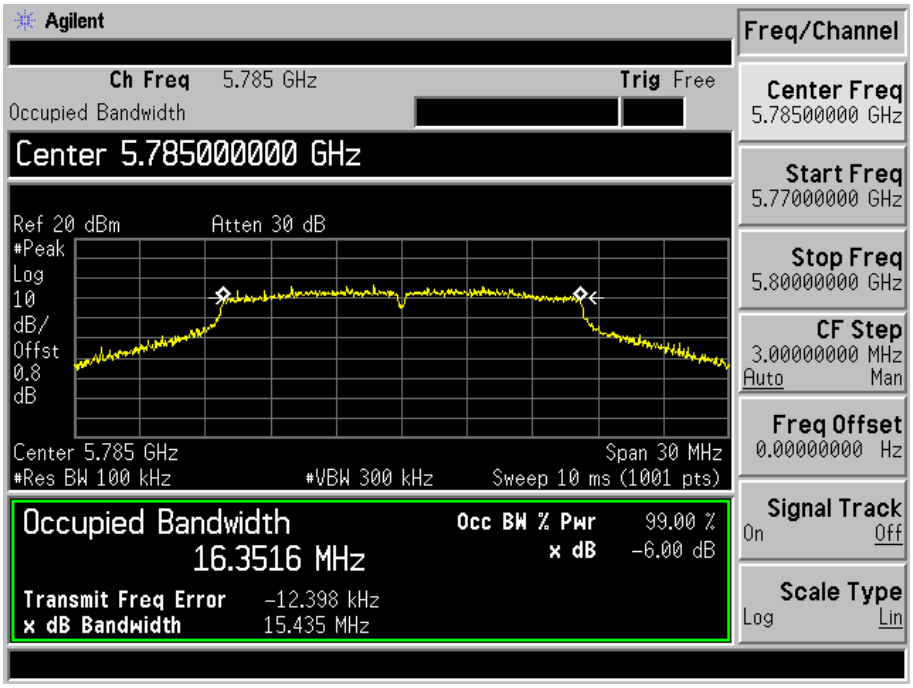
5745MHz



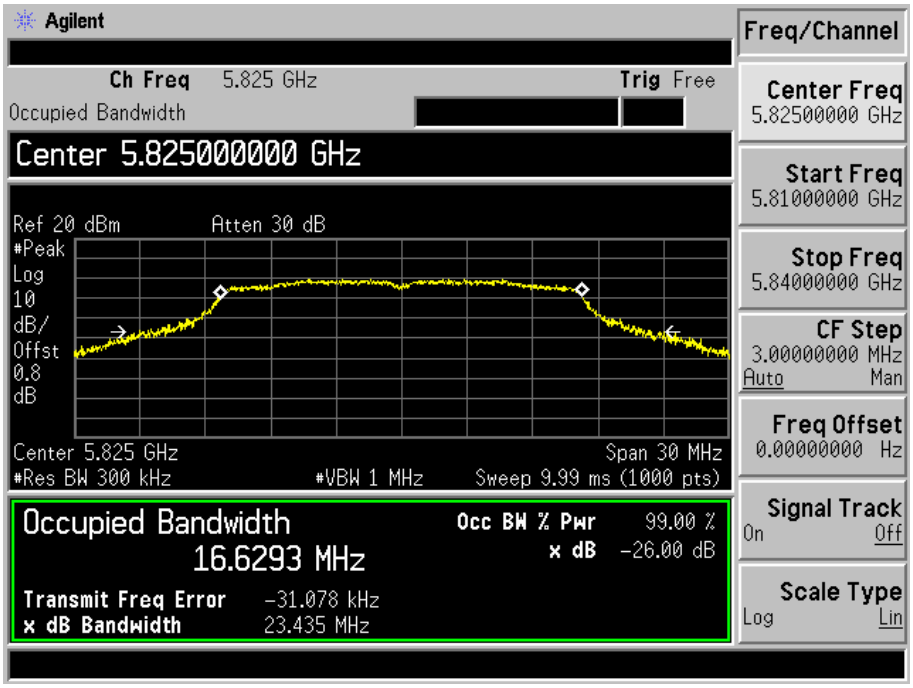

Agilent
Ch Freq 5.745 GHz
Trig Free
Occupied Bandwidth
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.745 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.3718 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -19.370 kHz
x dB Bandwidth 15.140 MHz
File
Catalog
Save
Load
Delete
Copy
Rename
More
1 of 2

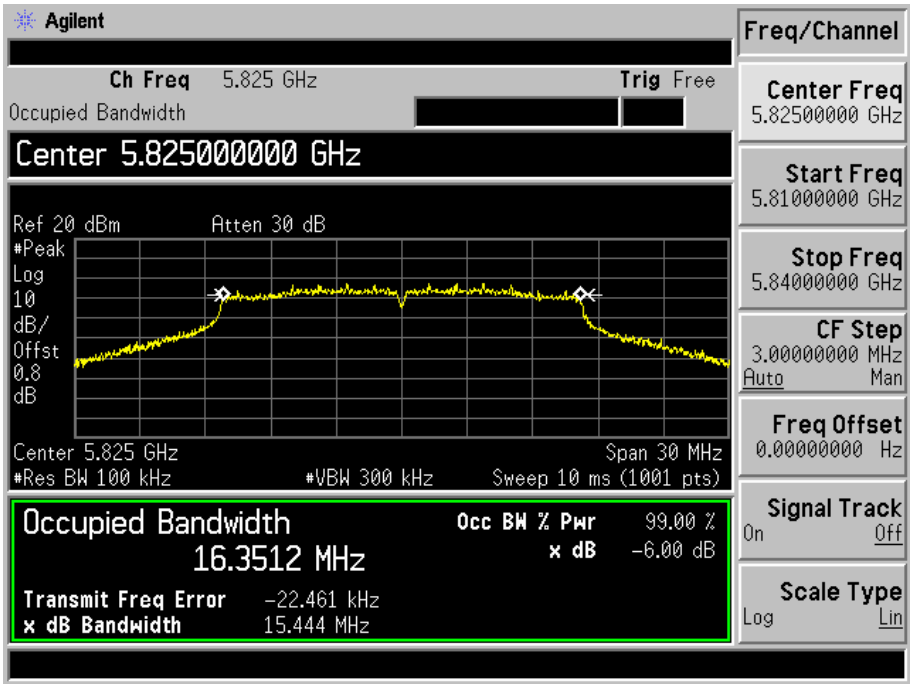
5785MHz


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
Span 30 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 9.99 ms (1000 pts)
Occupied Bandwidth
16.6194 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -3.967 kHz
x dB Bandwidth 23.883 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.3516 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -12.398 kHz
x dB Bandwidth 15.435 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

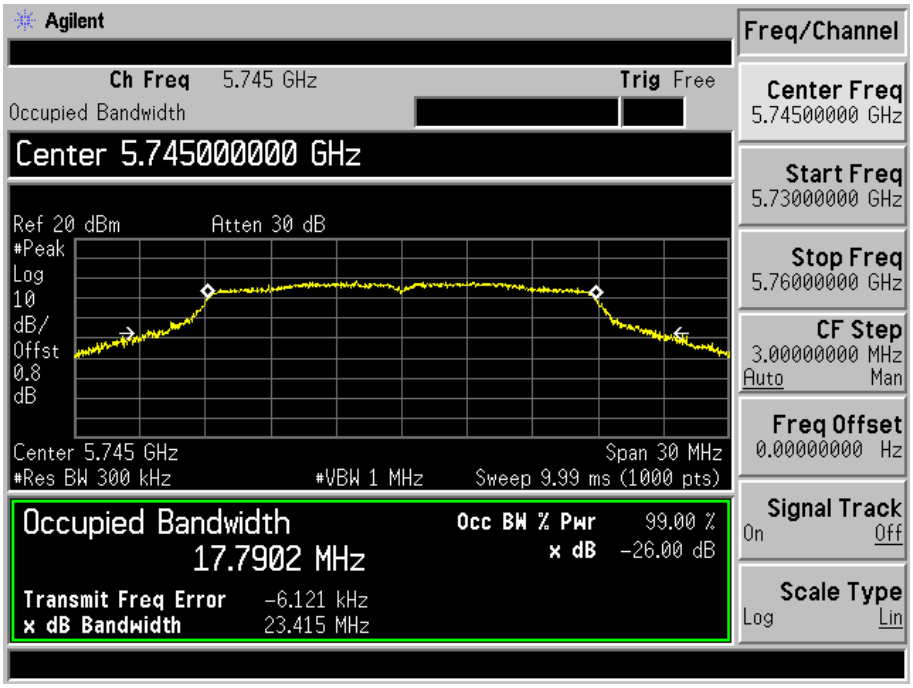
5805MHz

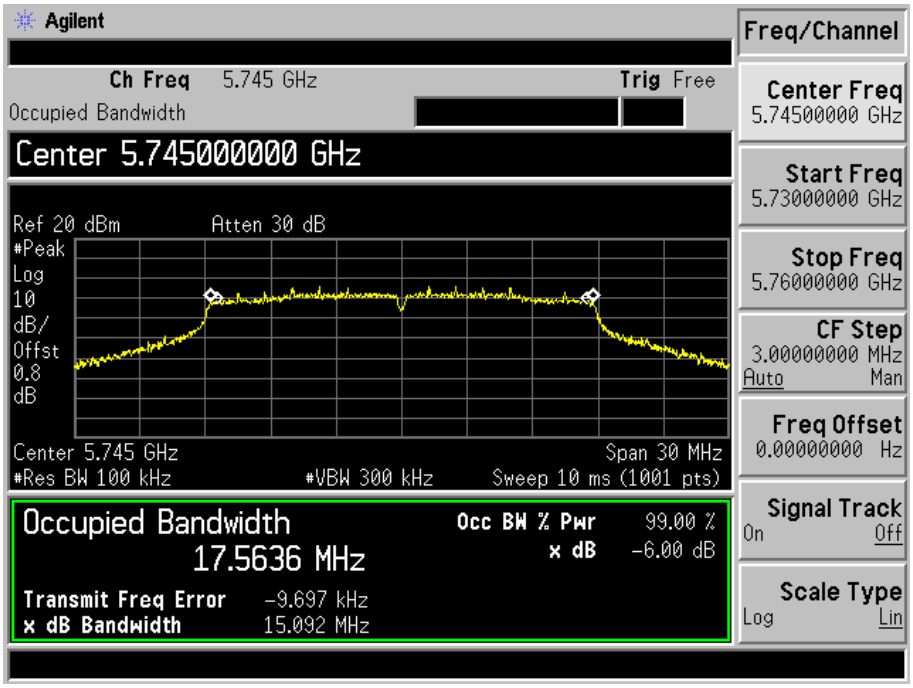

Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
Span 30 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 9.99 ms (1000 pts)
Occupied Bandwidth
16.6293 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -31.078 kHz
x dB Bandwidth 23.435 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin



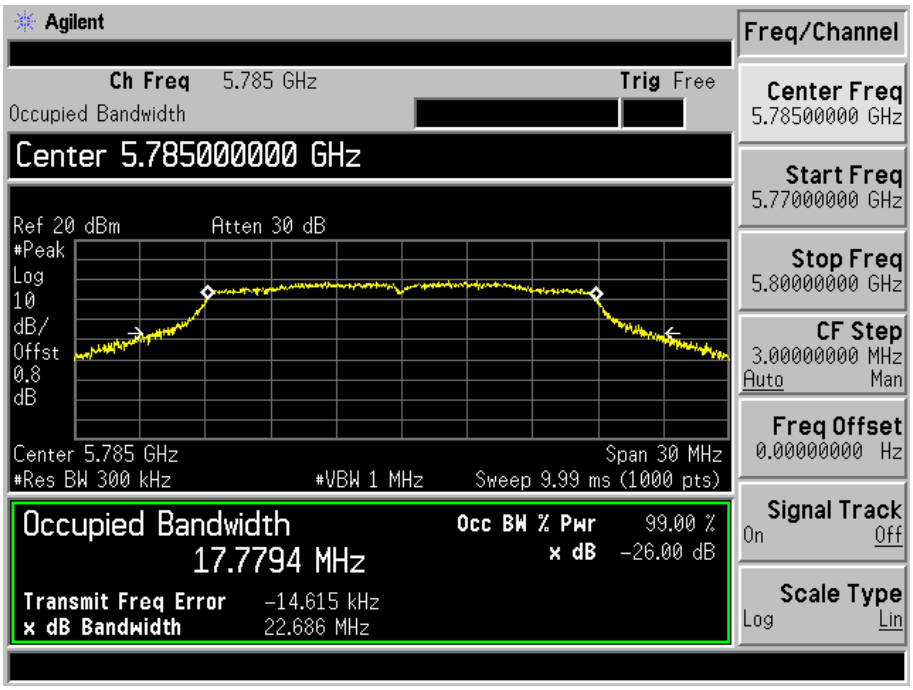
Test mode：802.11-HT20

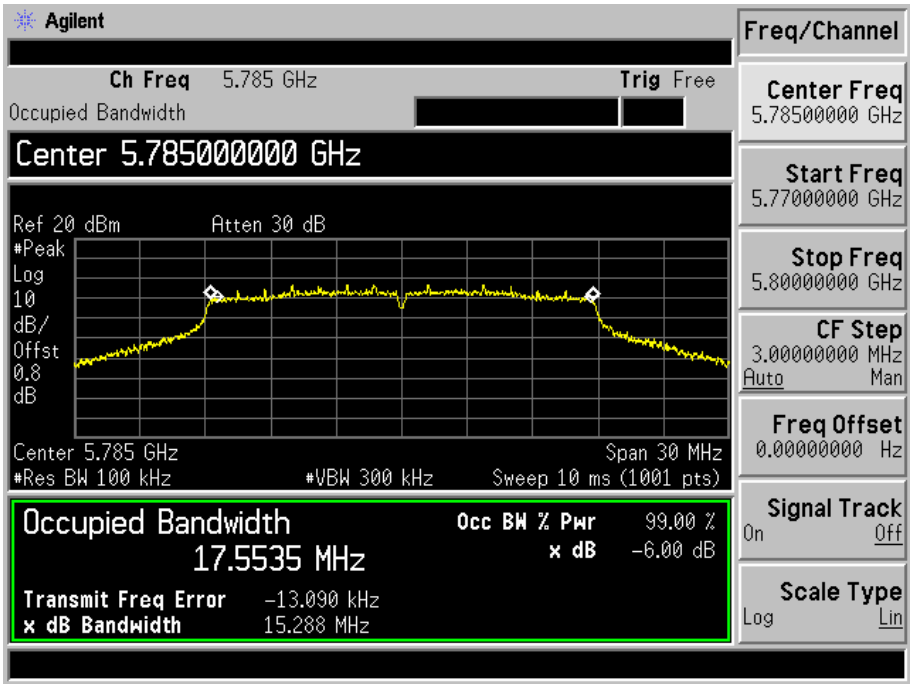
5745MHz



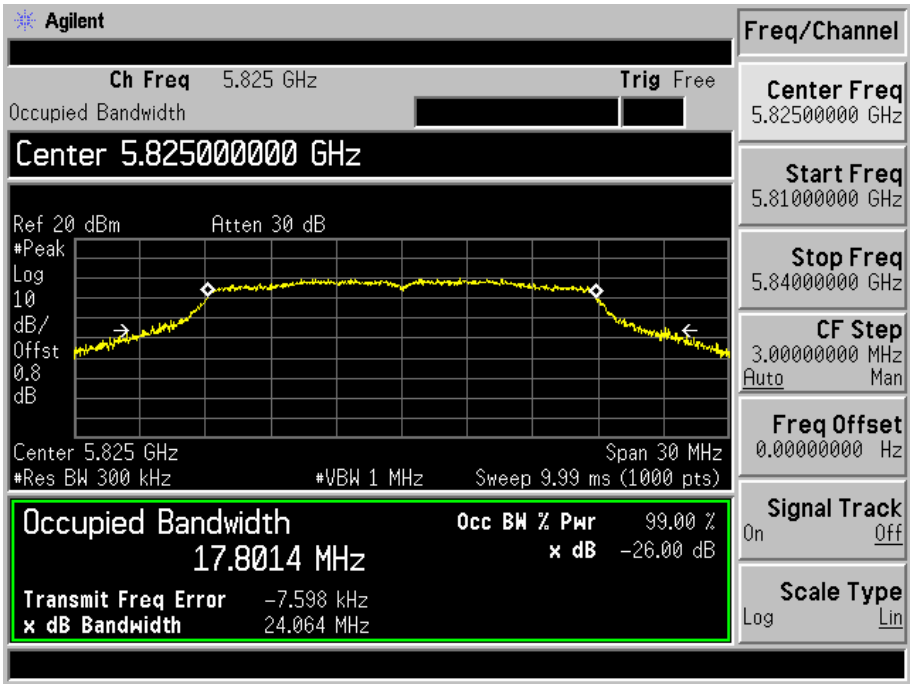

Agilent
Ch Freq 5.745 GHz
Trig Free
Occupied Bandwidth
Center 5.745000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.745 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.5636 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -9.697 kHz
x dB Bandwidth 15.092 MHz
Freq/Channel
Center Freq
5.74500000 GHz
Start Freq
5.73000000 GHz
Stop Freq
5.76000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

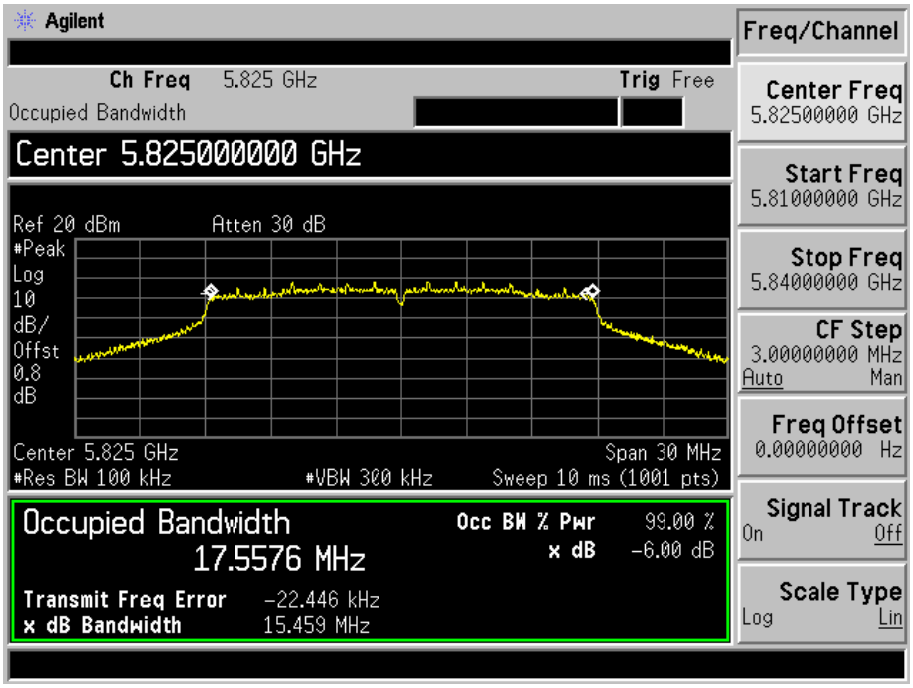
5785MHz


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
Span 30 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 9.99 ms (1000 pts)
Occupied Bandwidth
17.7794 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -14.615 kHz
x dB Bandwidth 22.686 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.5535 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -13.090 kHz
x dB Bandwidth 15.288 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

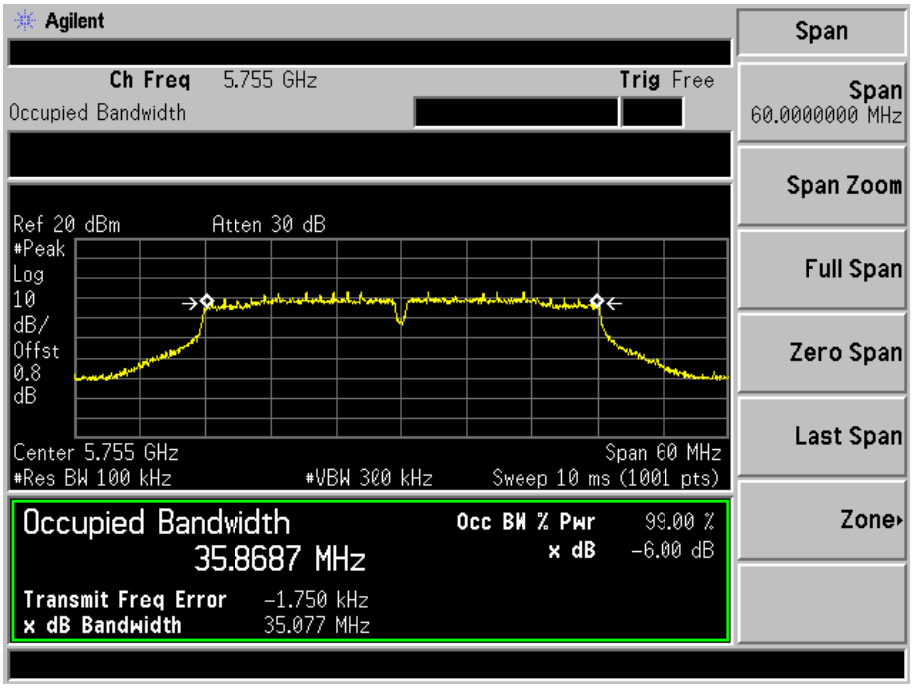
5805MHz


Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
Span 30 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 9.99 ms (1000 pts)
Occupied Bandwidth
17.8014 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -7.598 kHz
x dB Bandwidth 24.064 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin



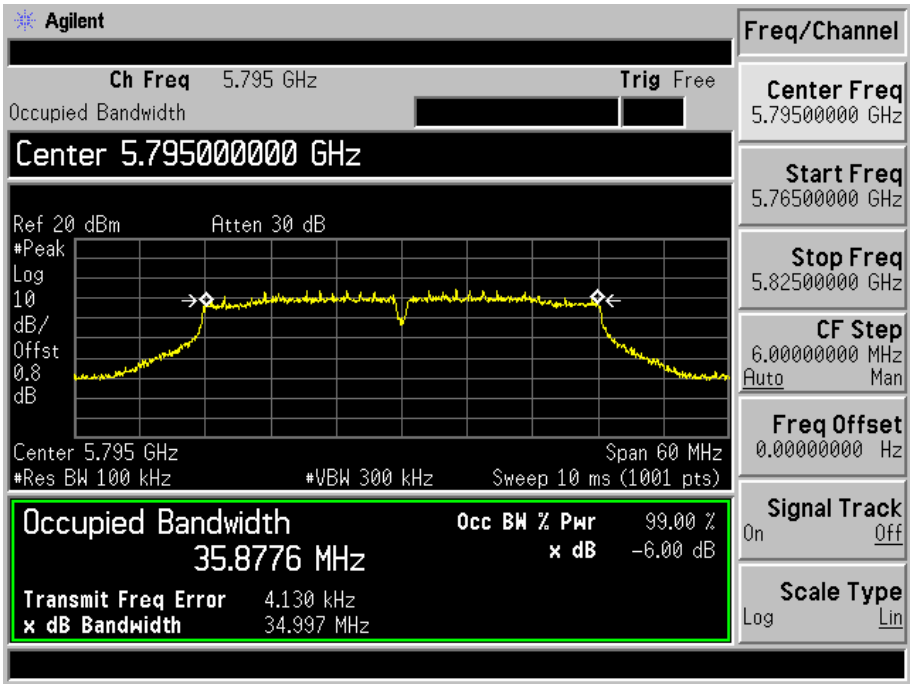
Test mode：802.11n-HT40

5755MHz


Agilent
Ch Freq 5.755 GHz
Trig Free
Occupied Bandwidth
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.755 GHz
Span 60 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
35.8687 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -1.750 kHz
x dB Bandwidth 35.077 MHz
Span
Span
60.0000000 MHz
Span Zoom
Full Span
Zero Span
Last Span
Zone

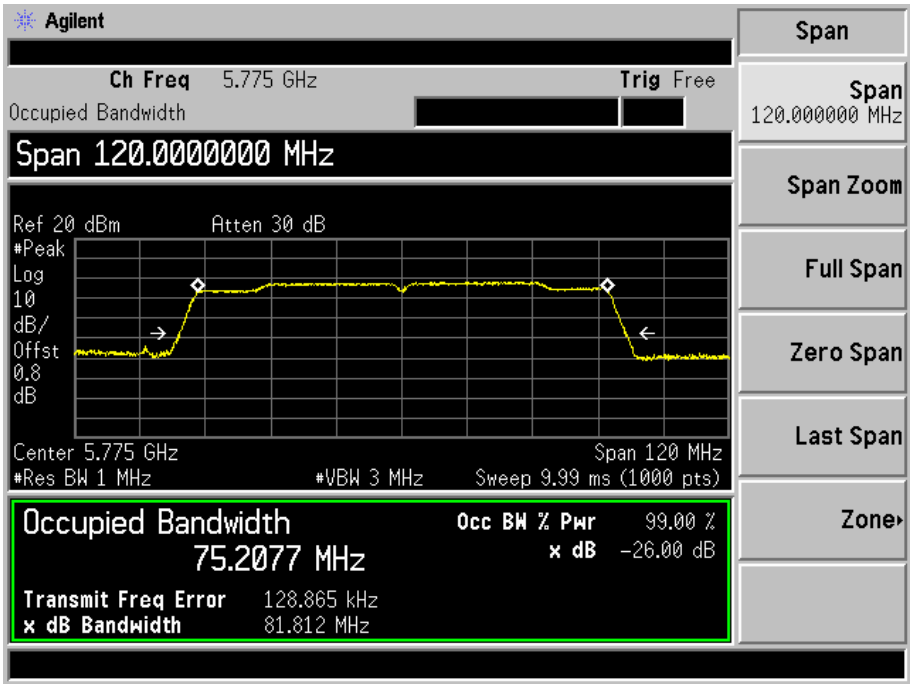
5795MHz

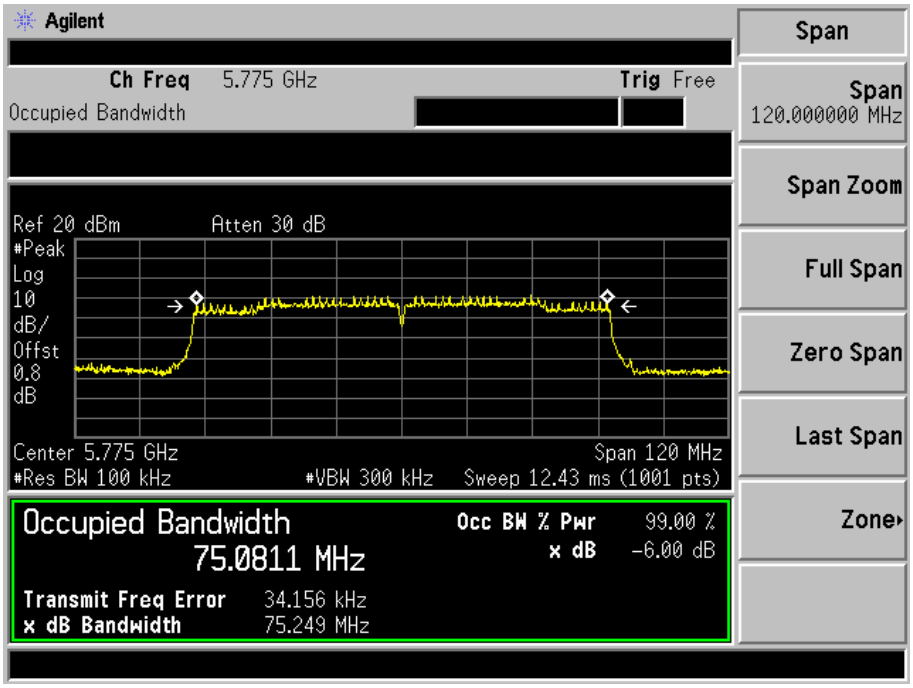

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.795000000 GHz
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
09:21:22 AM Dec 14, 2017
Ref Offset 0.8 dB
10 dB/div
Ref 20.00 dBm
Log
Center 5.795 GHz
#Res BW 510 kHz
#VBW 1.5 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.145 MHz
Total Power 12.4 dBm
Transmit Freq Error 44.256 kHz
OBW Power 99.00 %
x dB Bandwidth 42.15 MHz
x dB -26.00 dB
Frequency
Center Freq
5.795000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS



Test mode：802.11ac-HT80

5775MHz



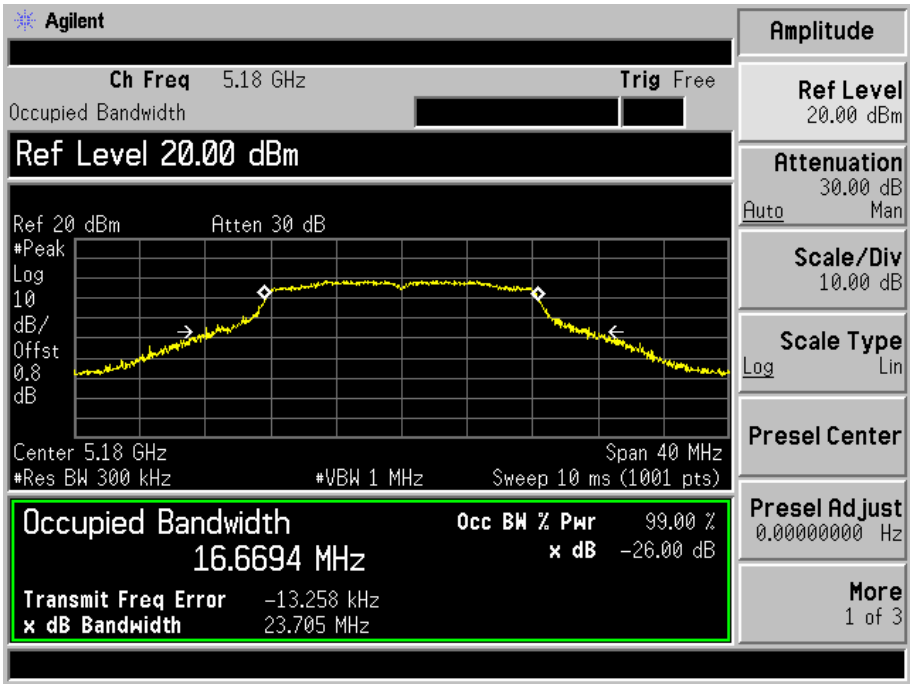


Antenna B

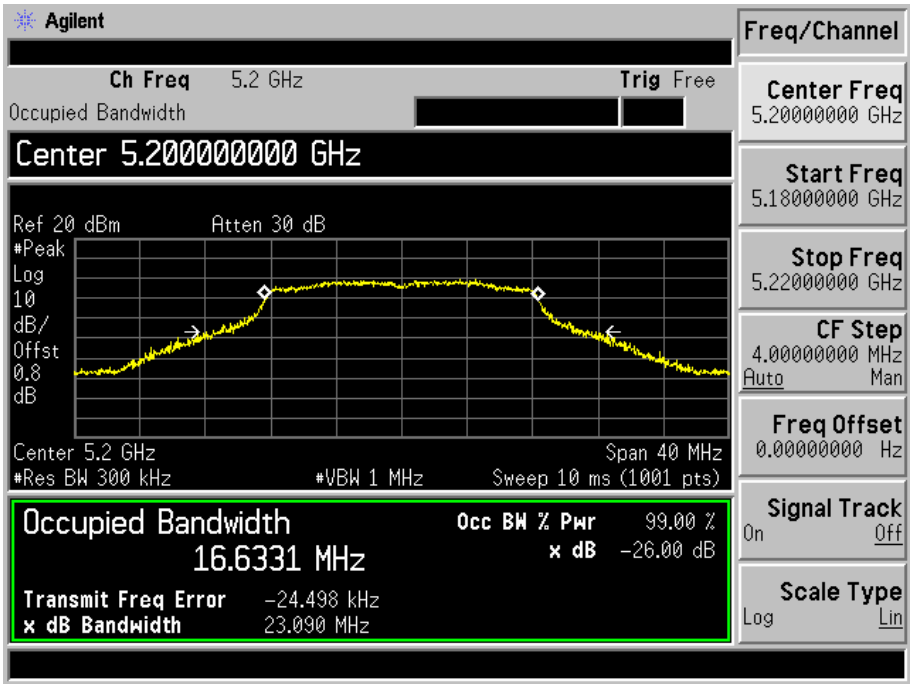
5150-5250MHz

Test mode：802.11a

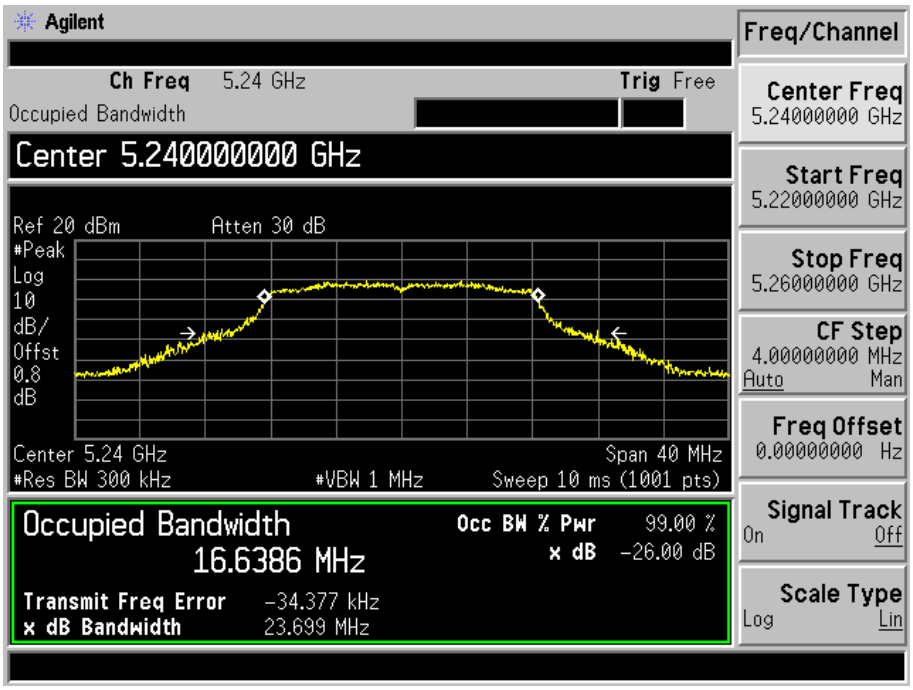
5180MHz



5200MHz

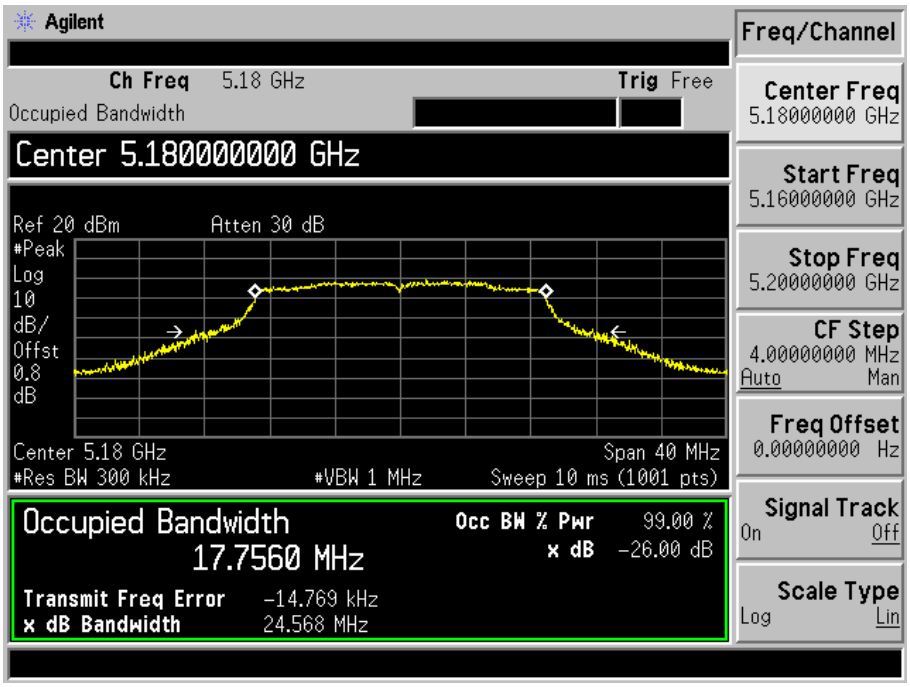


5240MHz

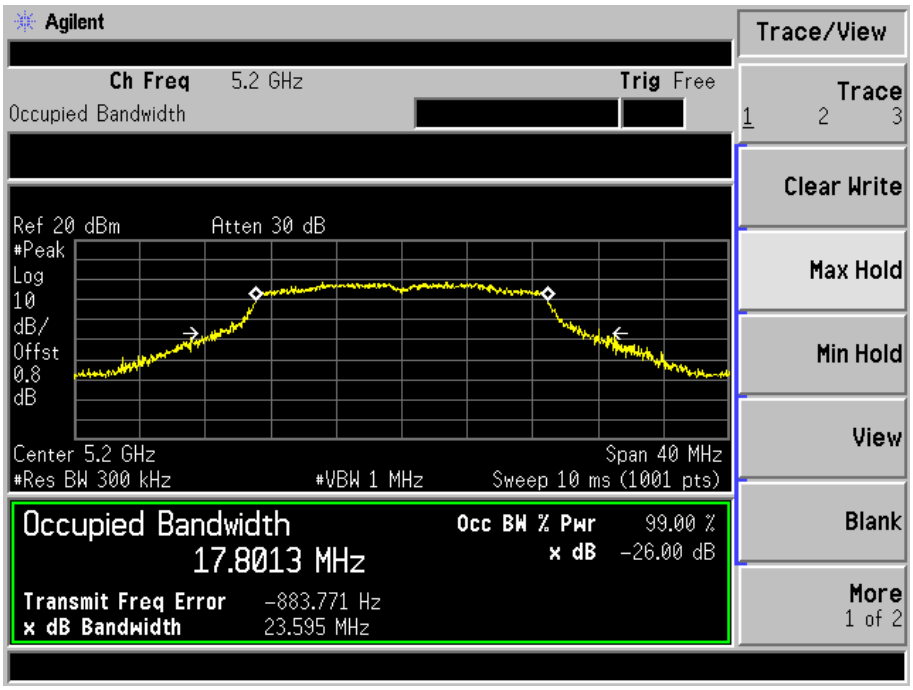


Test mode：802.11n-HT20

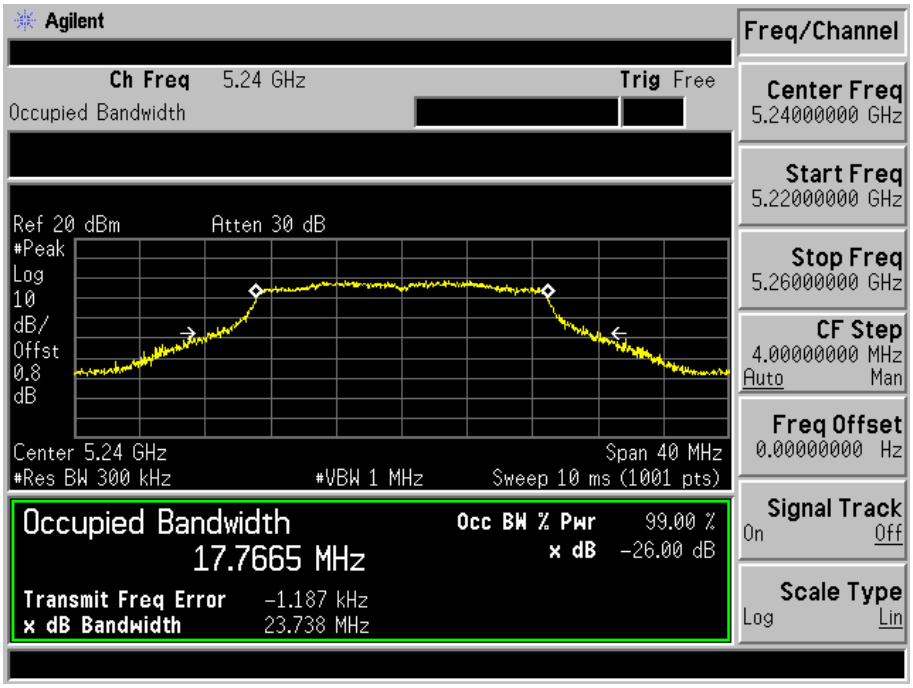
5180MHz



5200MHz

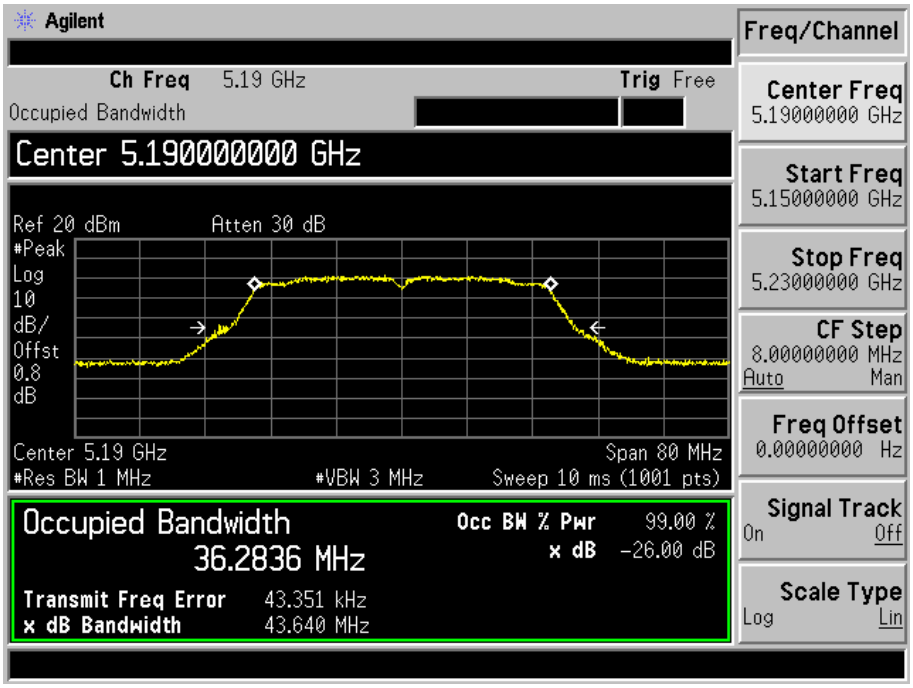


5240MHz

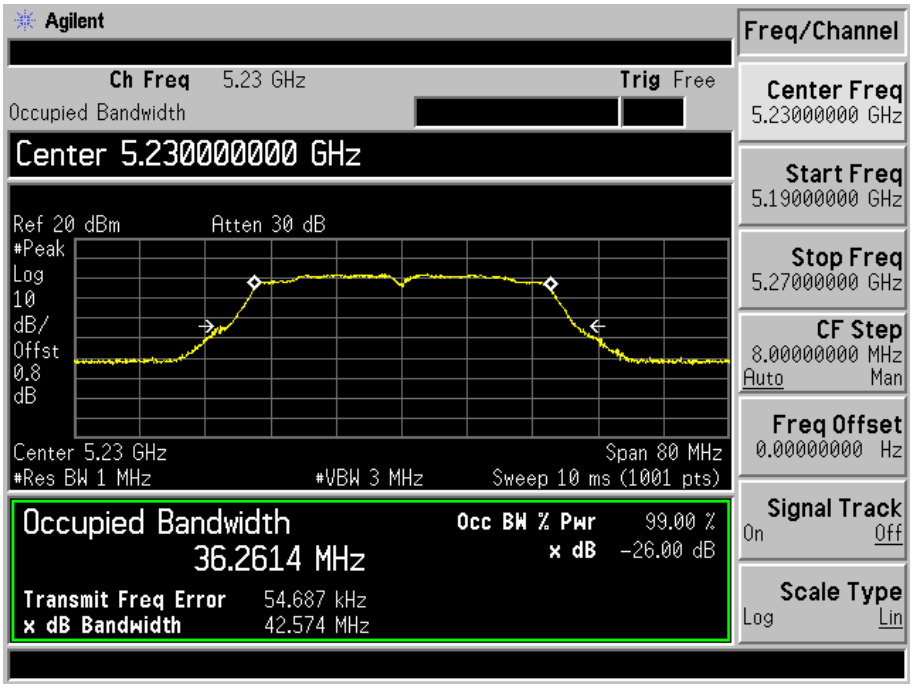


Test mode：802.11n-HT40

5190MHz

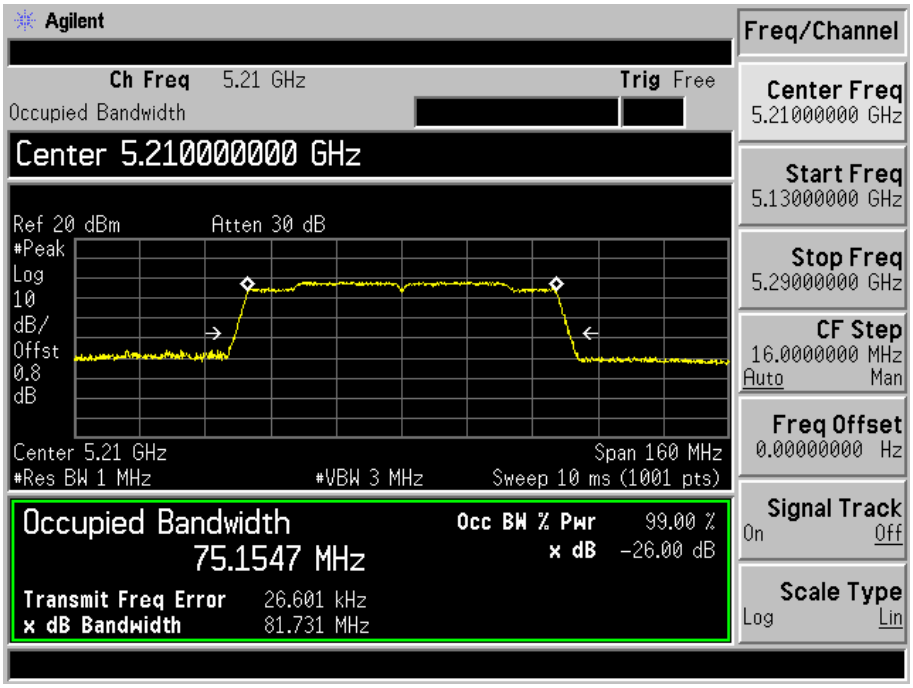


5230MHz



Test mode：802.11ac-HT80

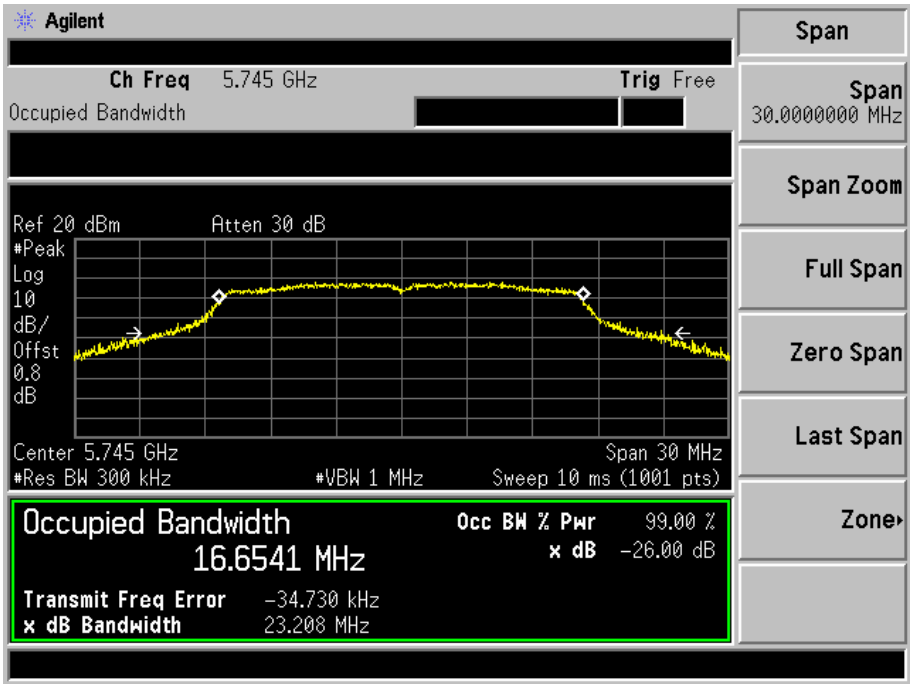
5210MHz

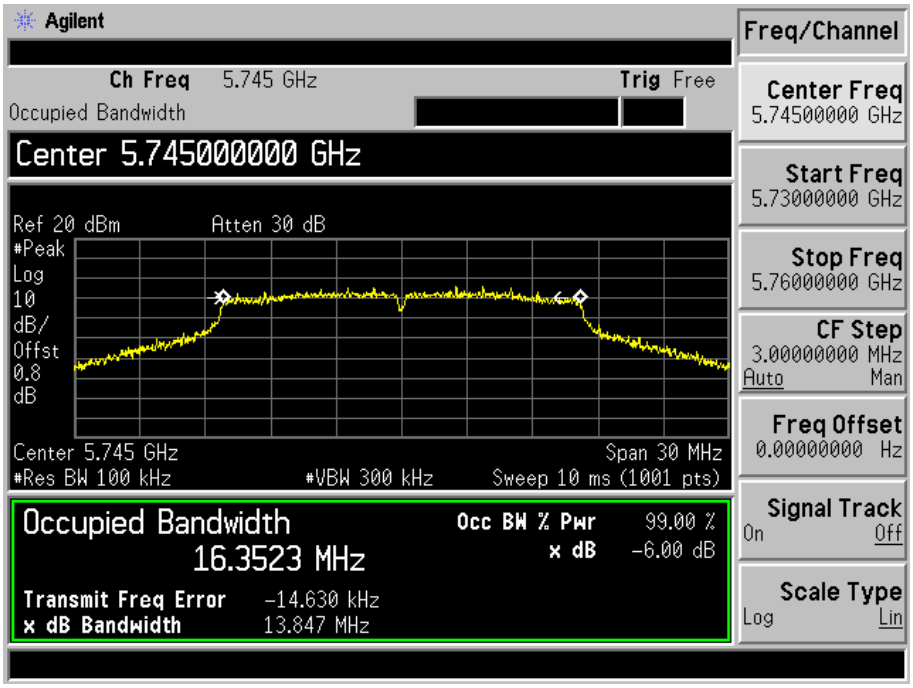


5725-5850MHz

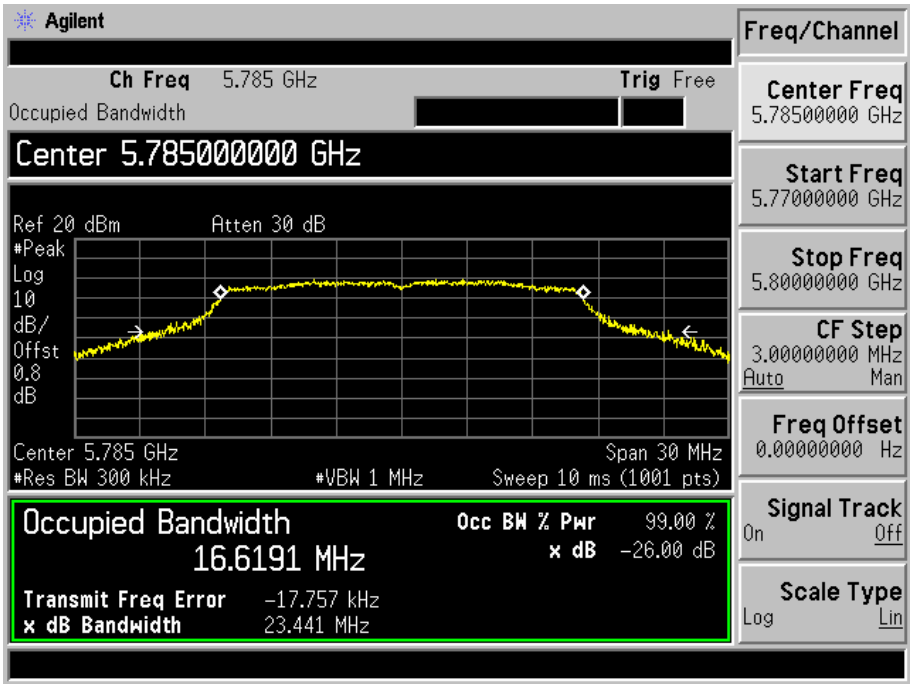
Test mode：802.11a

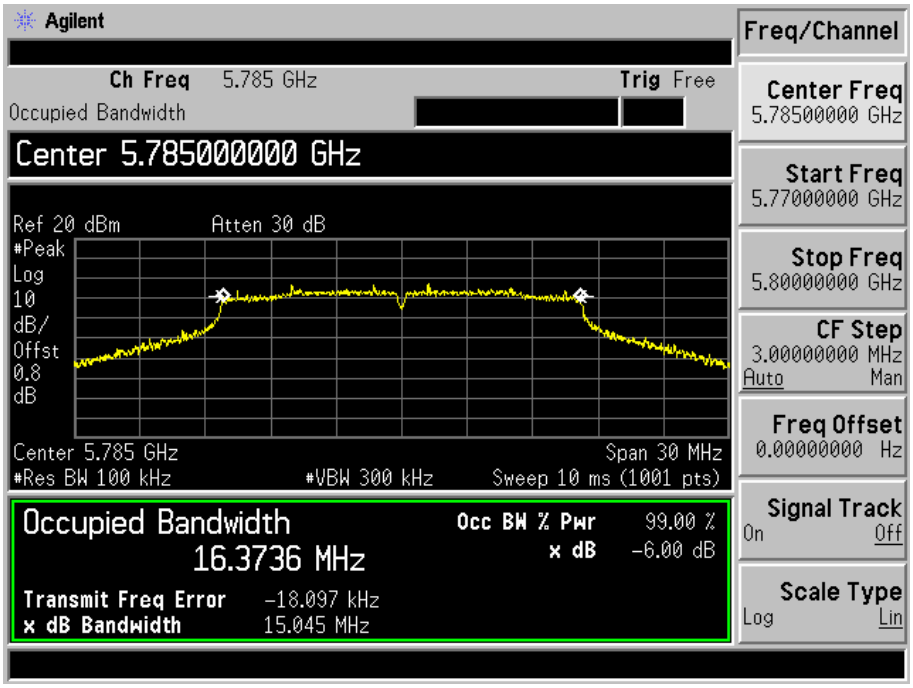
5745MHz



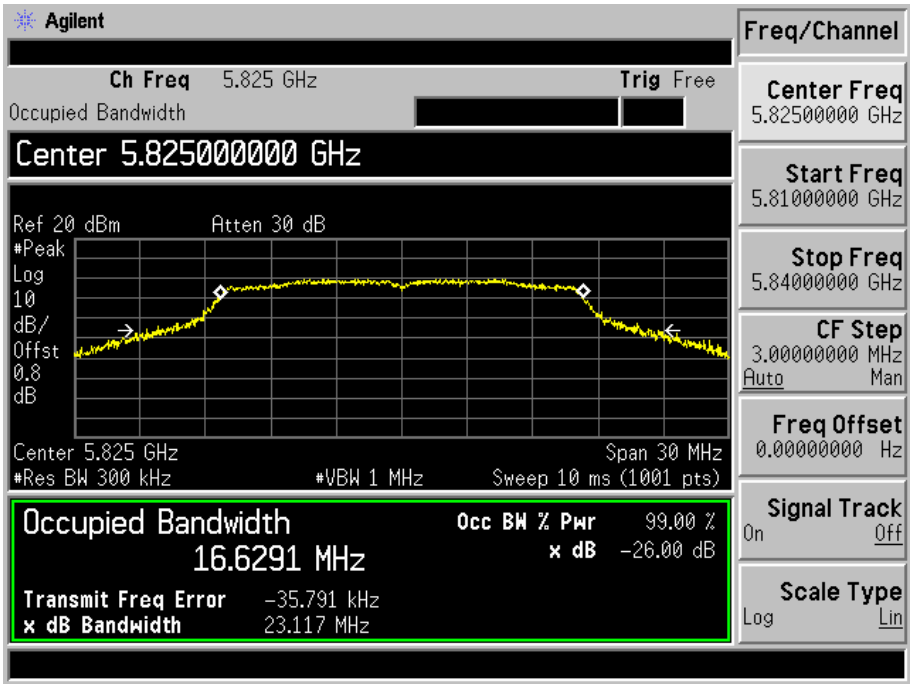


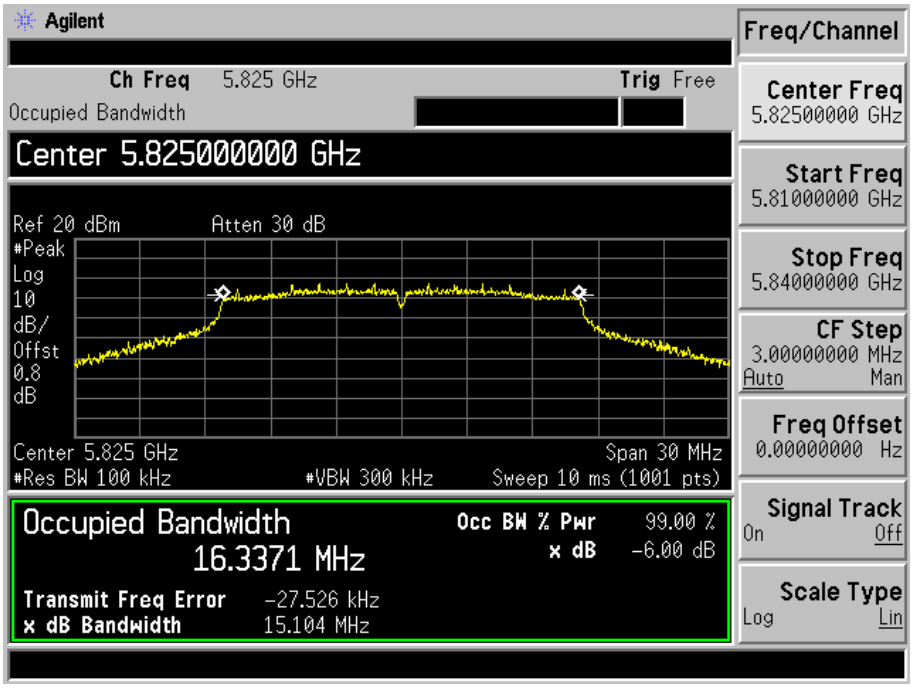
5785MHz


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.6191 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -17.757 kHz
x dB Bandwidth 23.441 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.3736 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -18.097 kHz
x dB Bandwidth 15.045 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

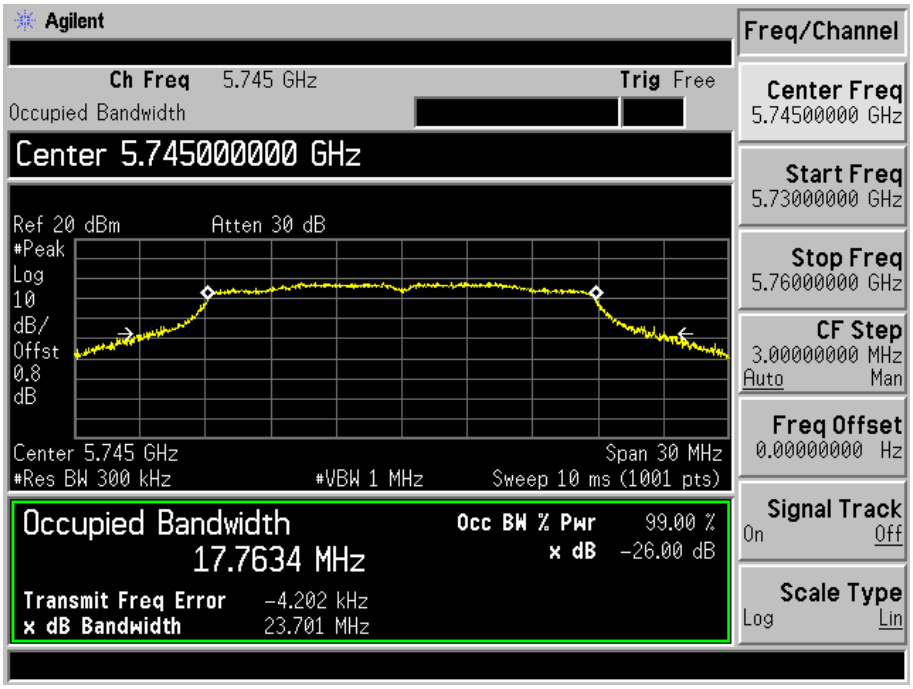
5805MHz

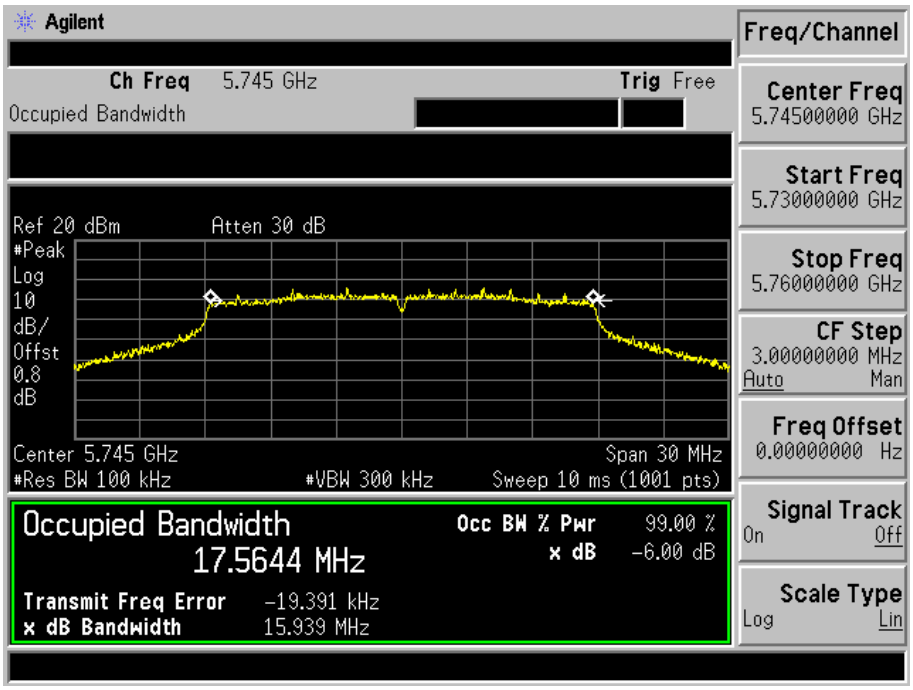

Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.6291 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -35.791 kHz
x dB Bandwidth 23.117 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
16.3371 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -27.526 kHz
x dB Bandwidth 15.104 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

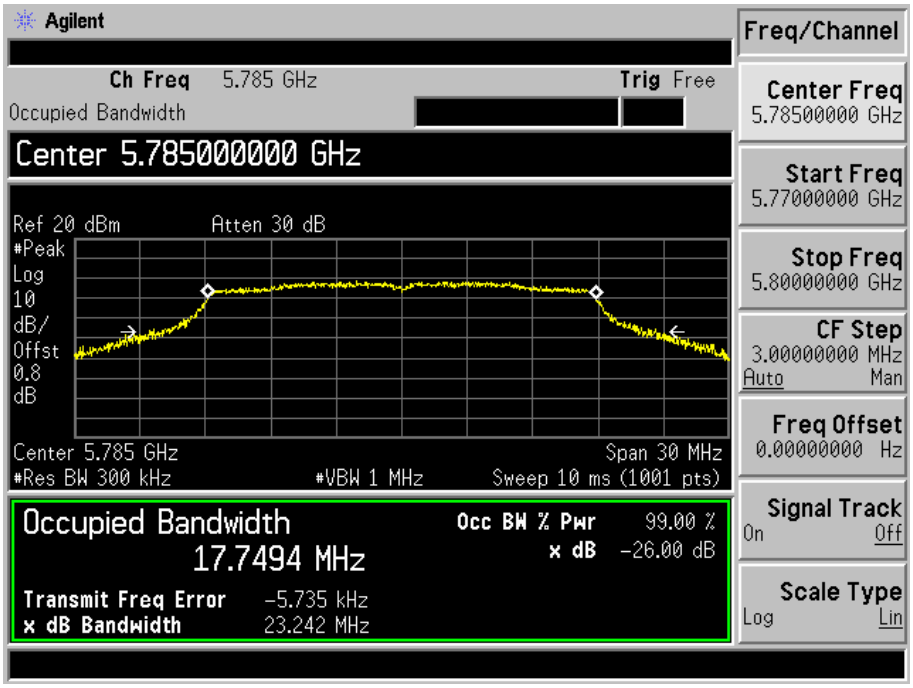
Test mode：802.11-HT20

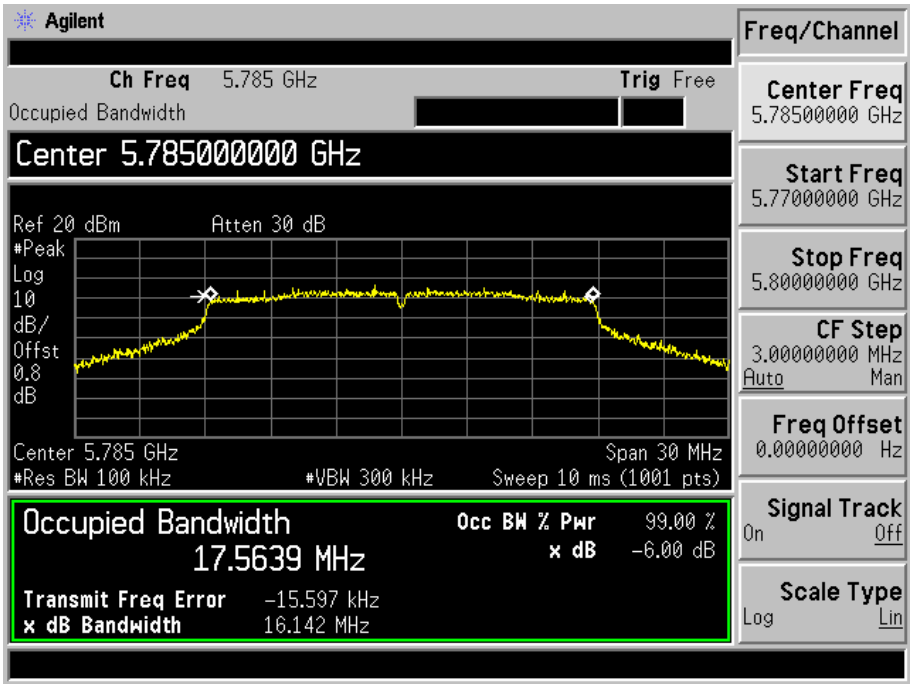
5745MHz



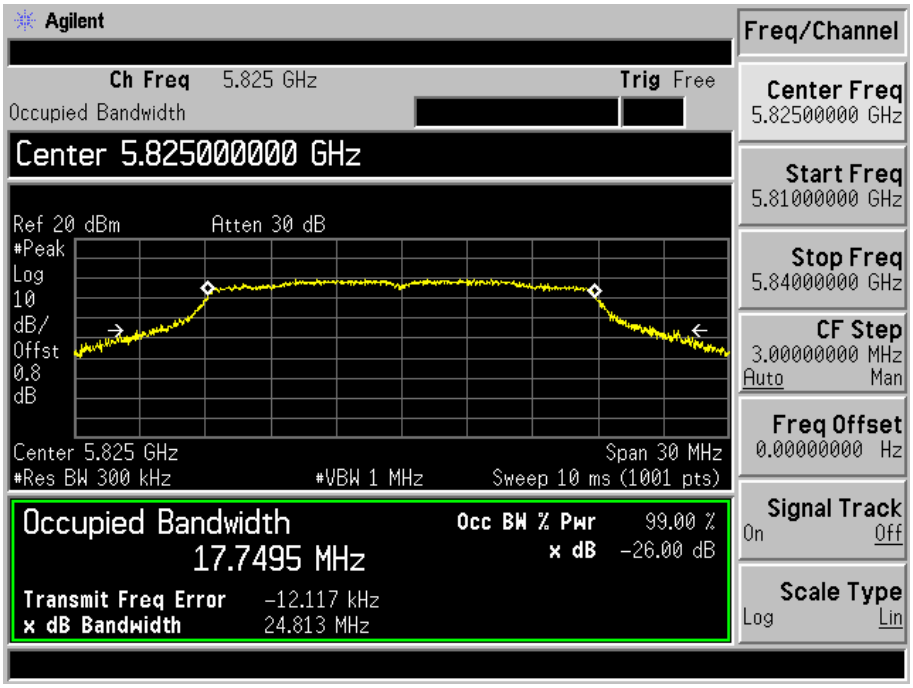


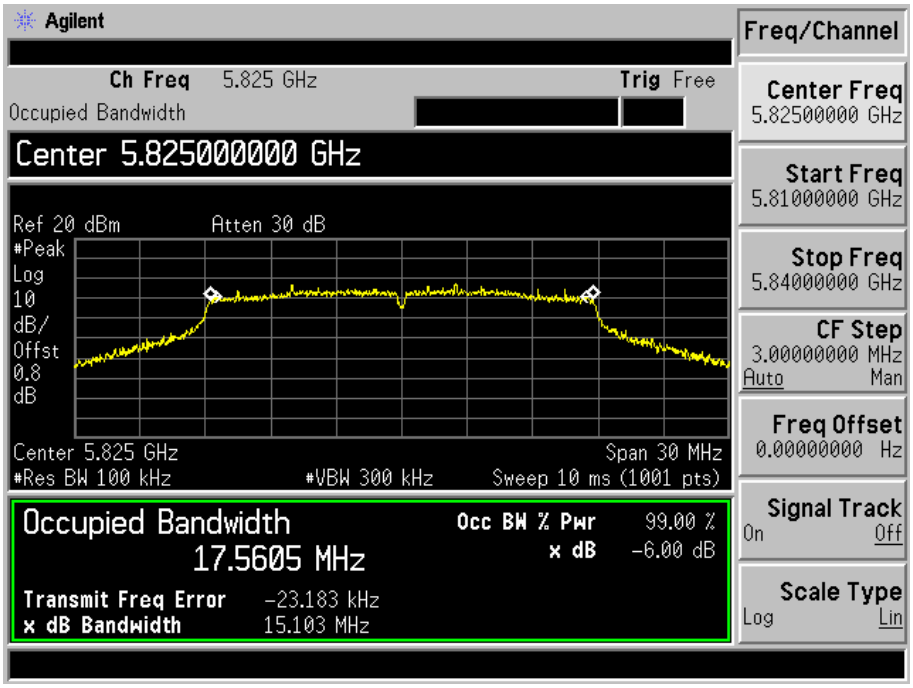
5785MHz


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.7494 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -5.735 kHz
x dB Bandwidth 23.242 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.785 GHz
Trig Free
Occupied Bandwidth
Center 5.785000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.785 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 30 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.5639 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -15.597 kHz
x dB Bandwidth 16.142 MHz
Freq/Channel
Center Freq
5.78500000 GHz
Start Freq
5.77000000 GHz
Stop Freq
5.80000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

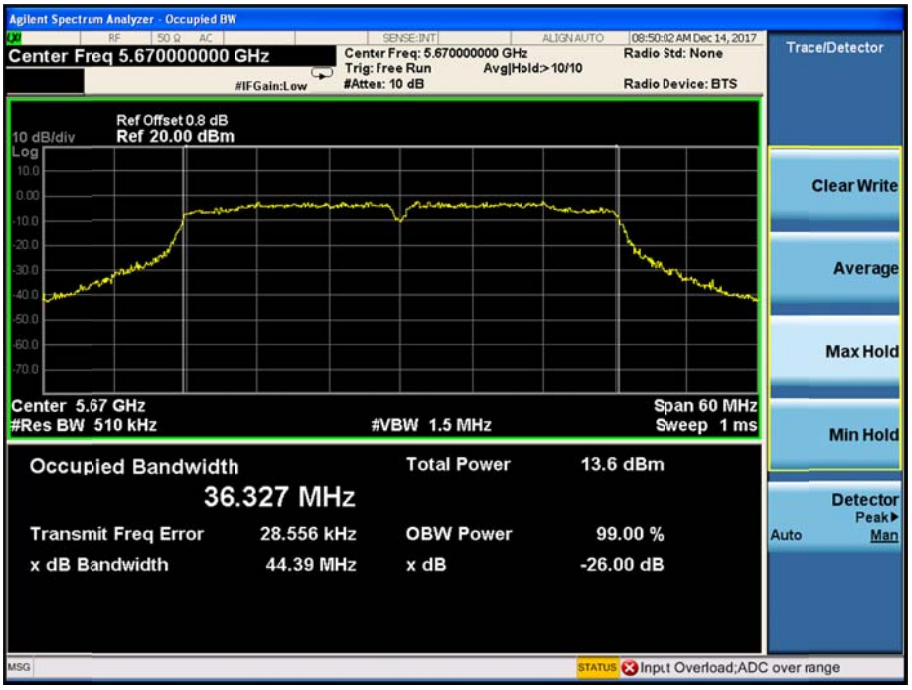
5805MHz

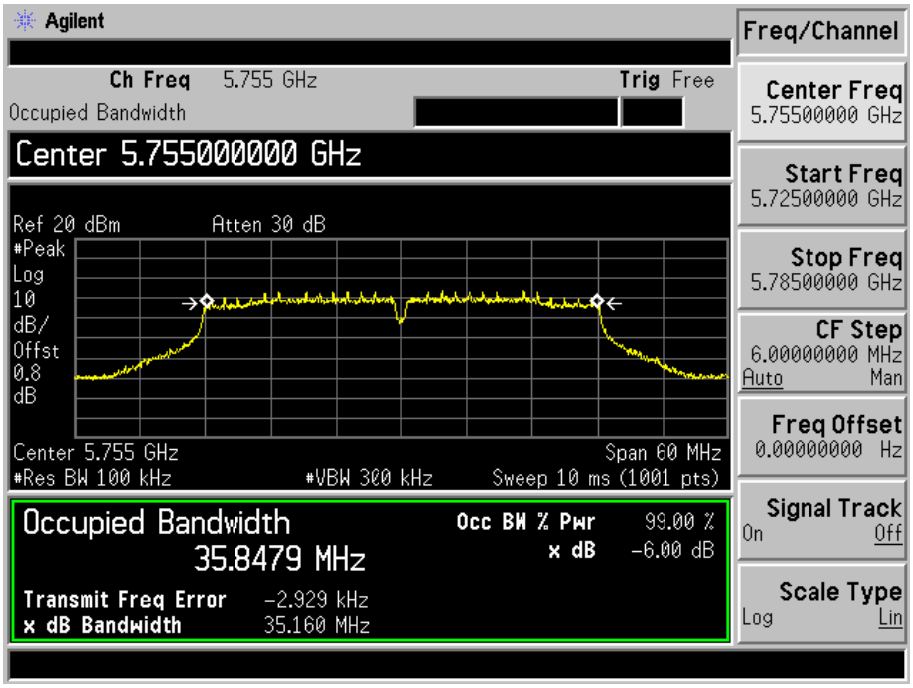

Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
Span 30 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.7495 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -12.117 kHz
x dB Bandwidth 24.813 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent
Ch Freq 5.825 GHz
Trig Free
Occupied Bandwidth
Center 5.825000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.825 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
17.5605 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -23.183 kHz
x dB Bandwidth 15.103 MHz
Freq/Channel
Center Freq
5.82500000 GHz
Start Freq
5.81000000 GHz
Stop Freq
5.84000000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Test mode：802.11n-HT40

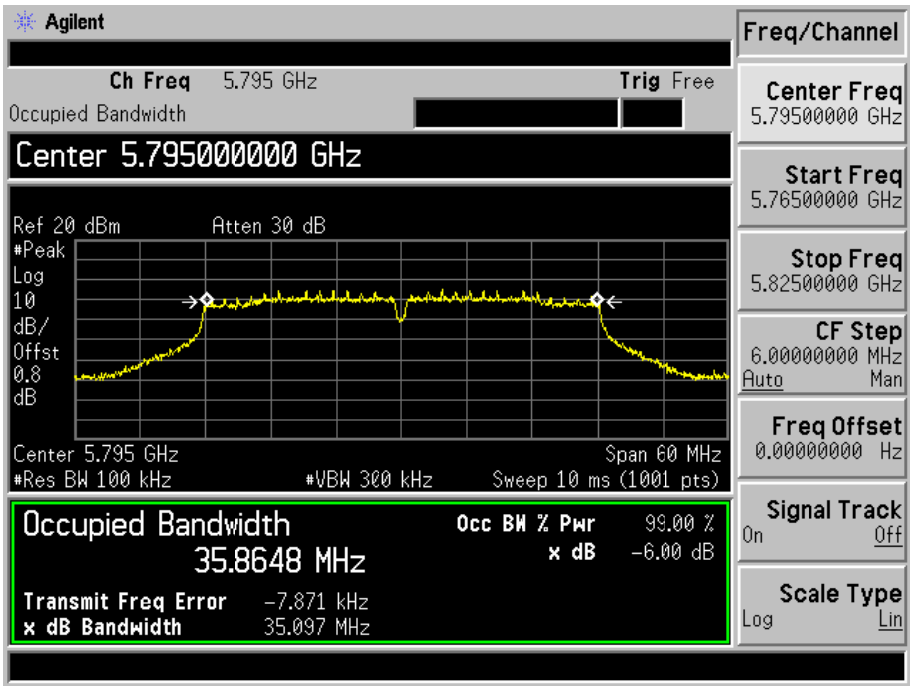
5755MHz





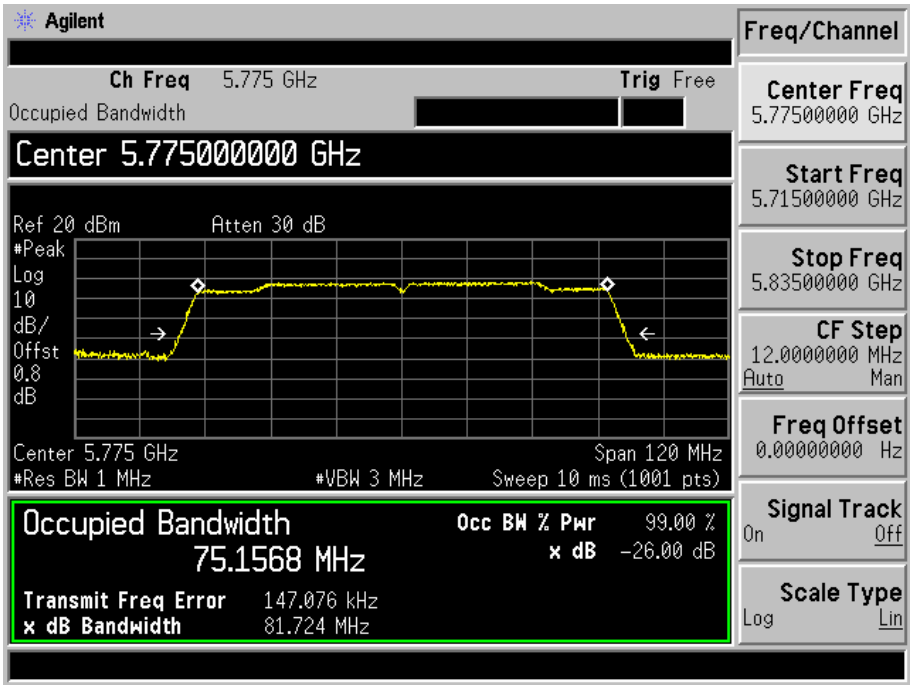
5795MHz

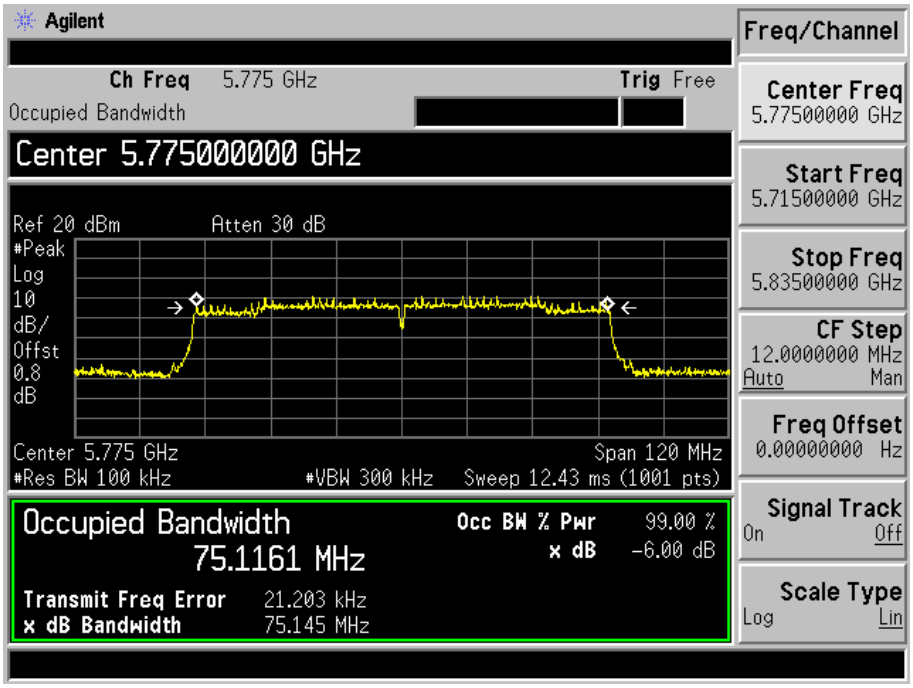

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.795000000 GHz
Centr Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
09:22:05 AM Dec 14, 2017
Frequency
Ref Offset 0.8 dB
10 dB/div
Ref 20.00 dBm
Log
Center 5.795 GHz
#Res BW 510 kHz
#VBW 1.5 MHz
Span 60 MHz
Sweep 1 ms
Occupied Bandwidth
36.160 MHz
Total Power
12.9 dBm
Transmit Freq Error
34.641 kHz
OBW Power
99.00 %
x dB Bandwidth
42.14 MHz
x dB
-26.00 dB
Center Freq
5.795000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Agilent
Freq/Channel
Ch Freq 5.795 GHz
Trig Free
Occupied Bandwidth
Center 5.795000000 GHz
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
0.8
dB
Center 5.795 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 60 MHz
Sweep 10 ms (1001 pts)
Occupied Bandwidth
35.8648 MHz
Occ BW % Pwr
99.00 %
x dB
-6.00 dB
Transmit Freq Error
-7.871 kHz
x dB Bandwidth
35.097 MHz
Center Freq
5.79500000 GHz
Start Freq
5.76500000 GHz
Stop Freq
5.82500000 GHz
CF Step
6.00000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Scale Type
Log
Lin

Test mode：802.11ac-HT80

5775MHz





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 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 ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ 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 ≥ 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

Antenna A

For the frequency band 5.15-5.25GHz, 5.275-5.850GHz

Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11a	5180	6.34	4.305	250
	5200	6.45	4.416	250
	5240	6.33	4.295	250
	5745	5.65	3.673	1000
	5785	6.07	4.046	1000
	5825	6.18	4.150	1000
802.11n-HT20	5180	6.71	4.688	250
	5200	6.65	4.624	250
	5240	6.25	4.217	250
	5745	5.61	3.648	1000
	5785	6.38	4.345	1000
	5825	6.38	4.345	1000
802.11n-HT40	5190	6.55	4.519	250
	5230	6.42	4.382	250
	5755	5.46	3.516	1000
	5795	6.19	4.159	1000
802.11ac-HT80	5210	6.49	4.457	250
	5775	5.80	3.802	1000

Antenna B

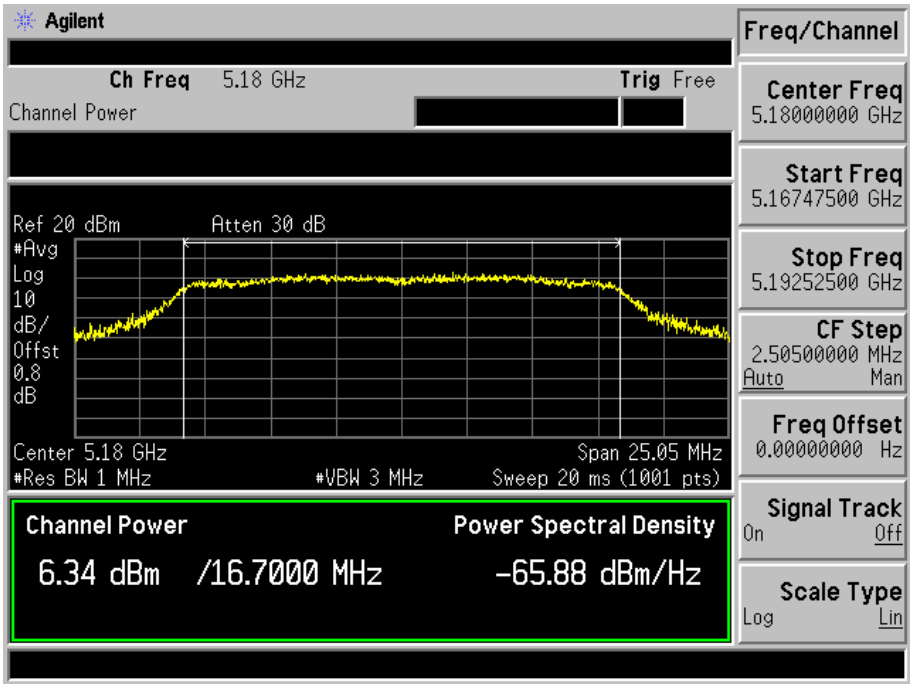
For the frequency band 5.15-5.25GHz, 5.275-5.850GHz

Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11a	5180	6.10	4.074	250
	5200	6.08	4.055	250
	5240	6.29	4.256	250
	5745	5.57	3.058	1000
	5785	6.06	4.036	1000
	5825	6.50	4.467	1000
802.11n-HT20	5180	5.87	3.864	250
	5200	6.34	4.305	250
	5240	6.08	4.055	250
	5745	5.73	3.741	1000
	5785	5.86	3.855	1000
	5825	6.75	4.732	1000
802.11n-HT40	5190	5.33	3.412	250
	5230	5.75	3.758	250
	5755	5.15	3.273	1000
	5795	6.36	3.741	1000
802.11ac-HT80	5210	5.45	3.508	250
	5775	5.45	3.508	1000

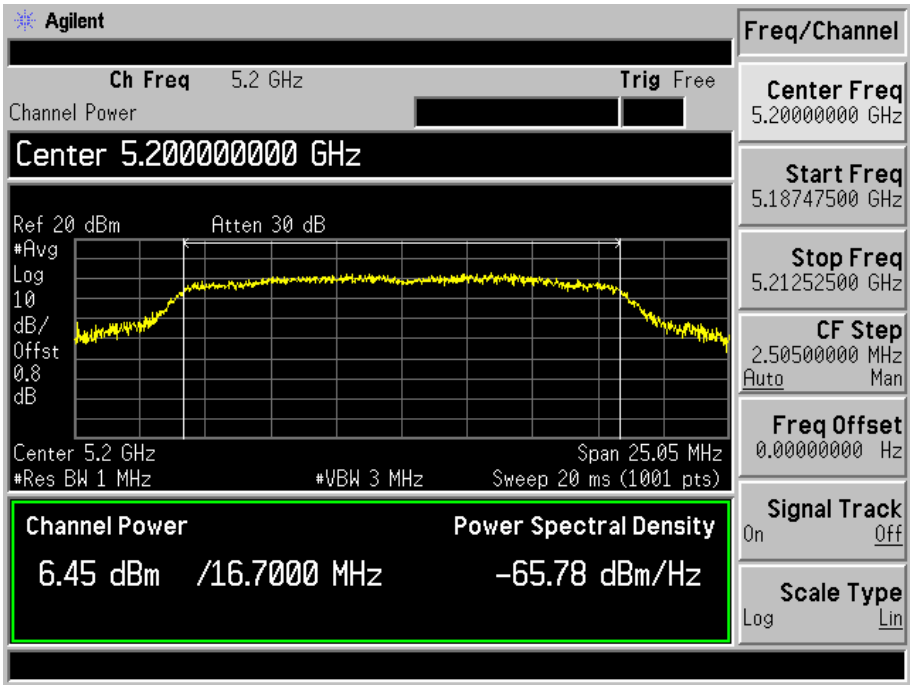
Antenna A

Test Mode: 802.11a

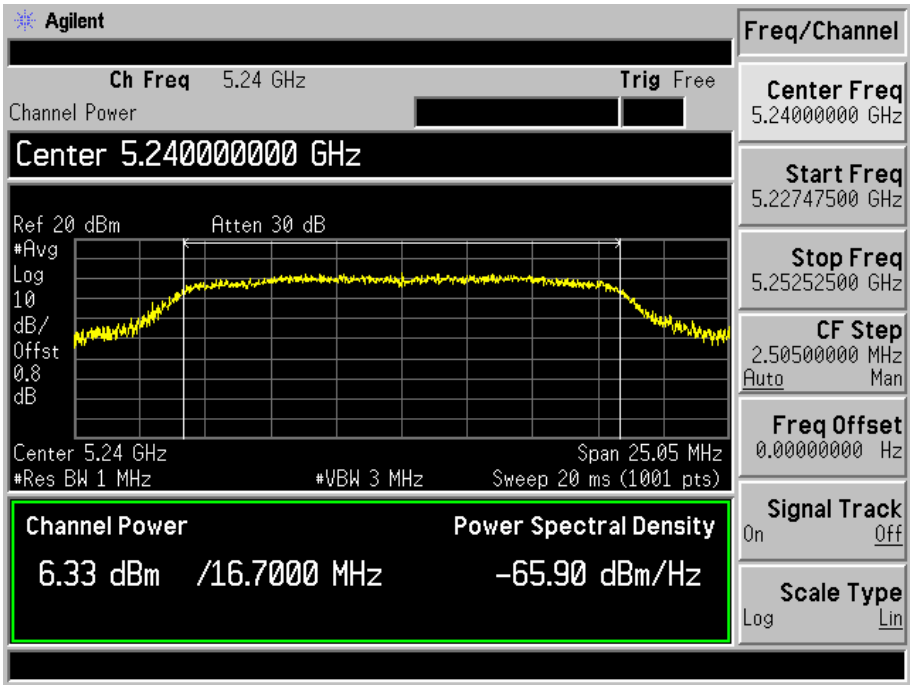
5180MHz



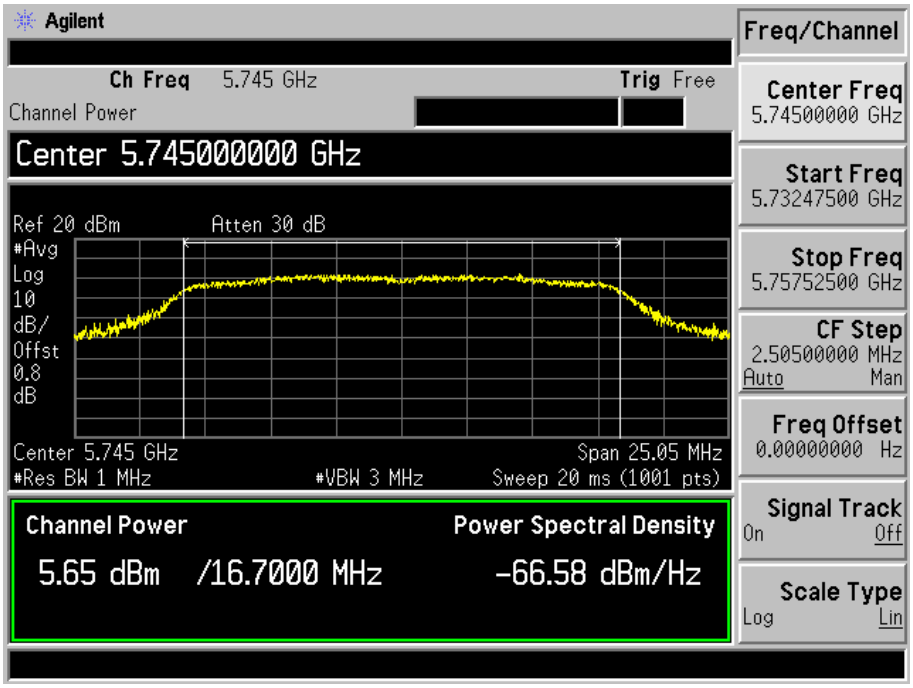
5200MHz



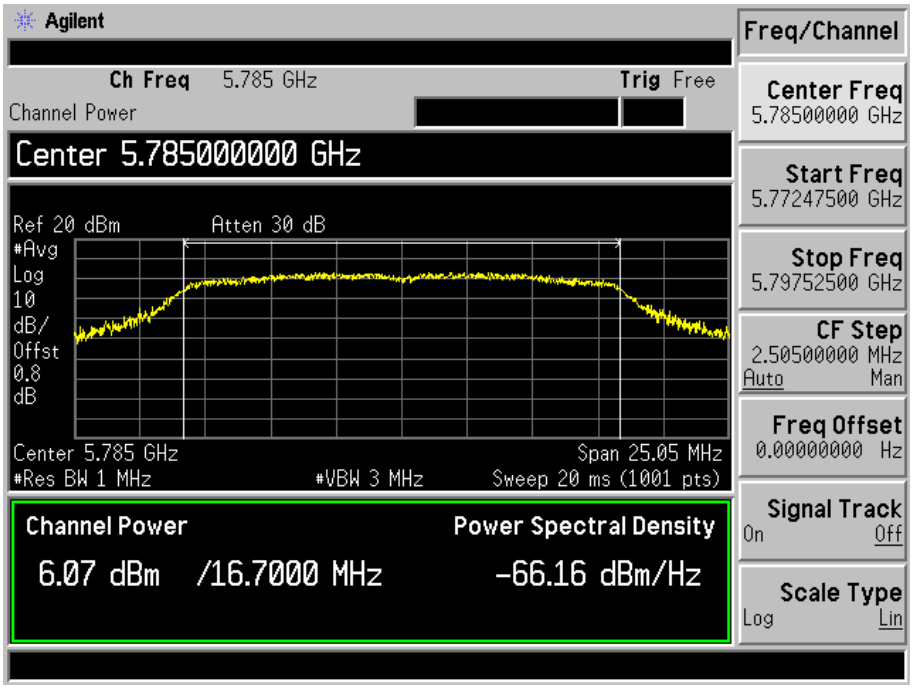
5240MHz



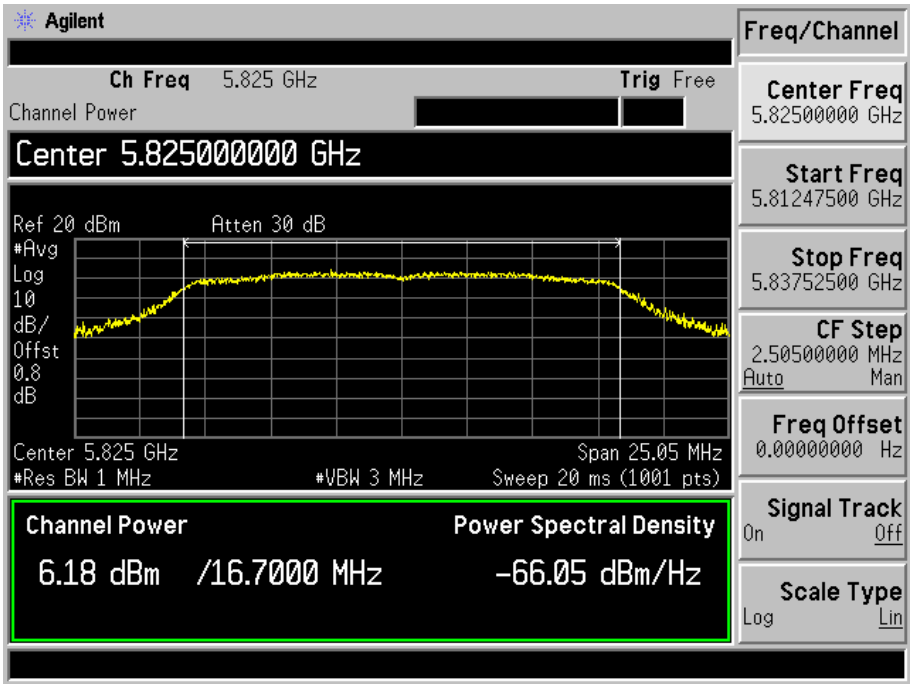
5745MHz



5785MHz

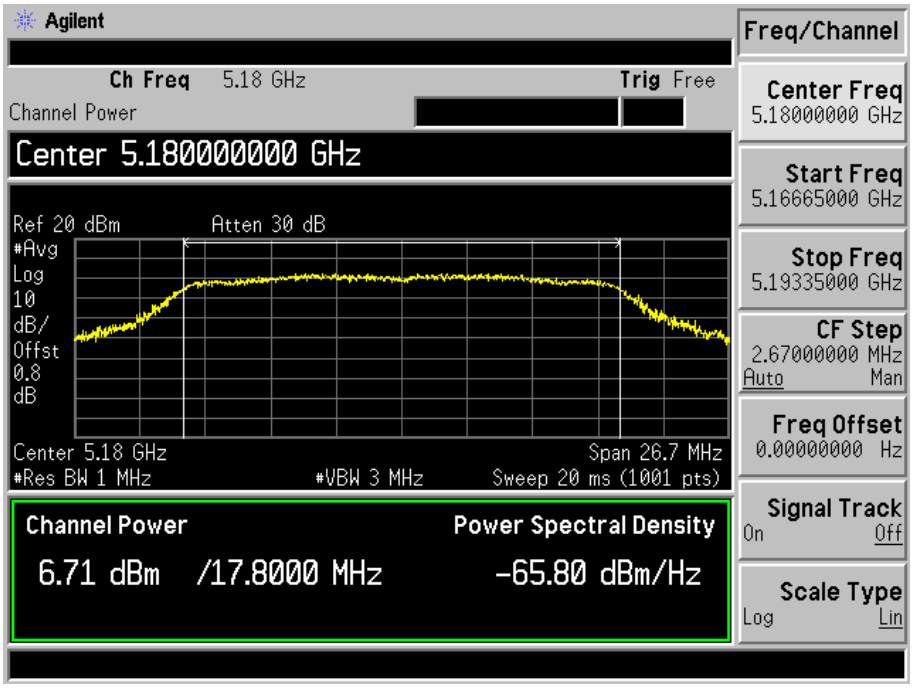


5805MHz

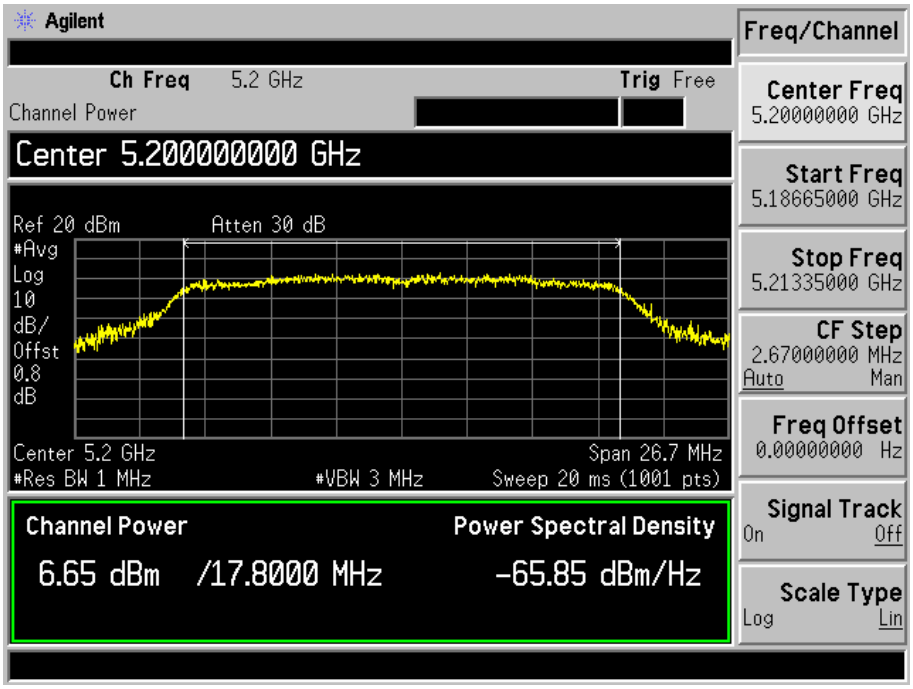


Test Mode: 802.11n-HT20

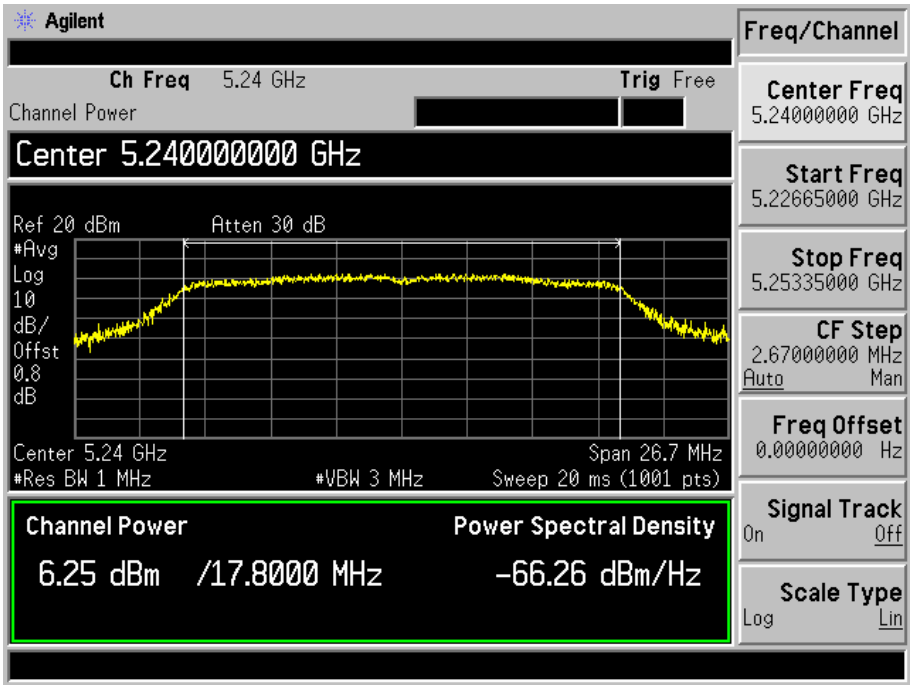
5180MHz



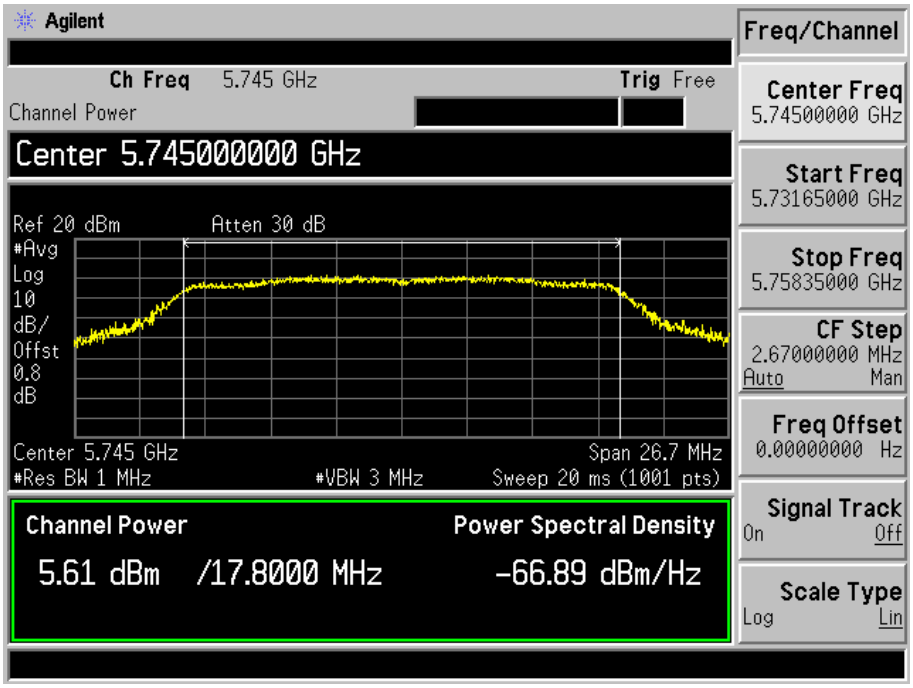
5200MHz



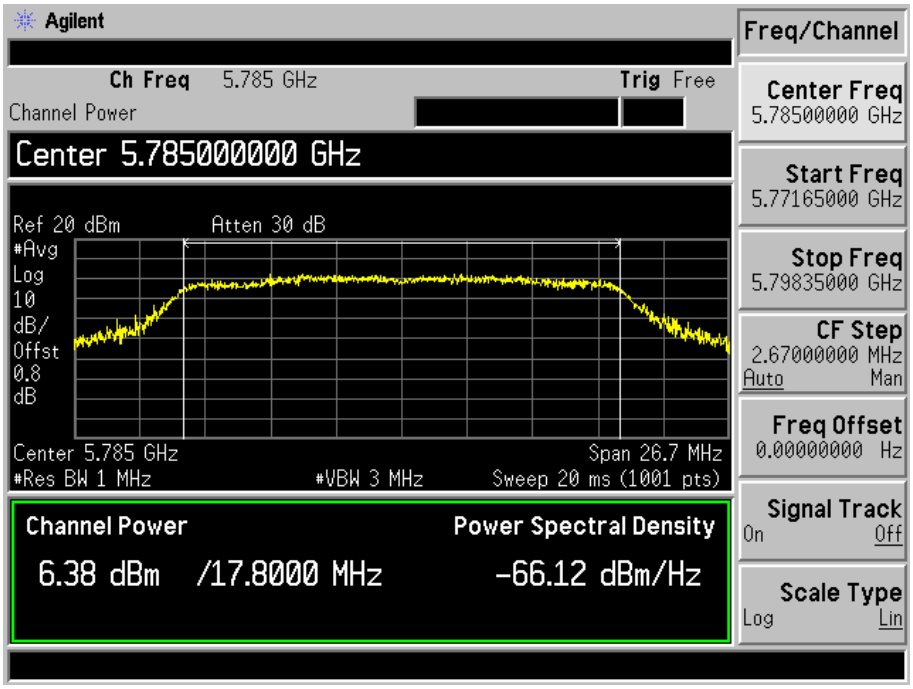
5240MHz



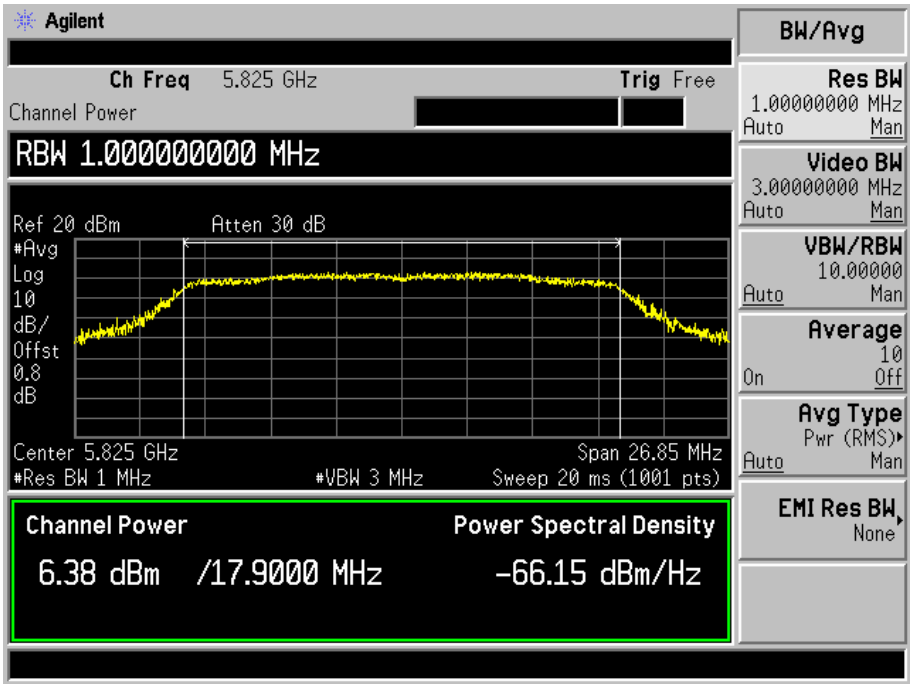
5745MHz



5785MHz

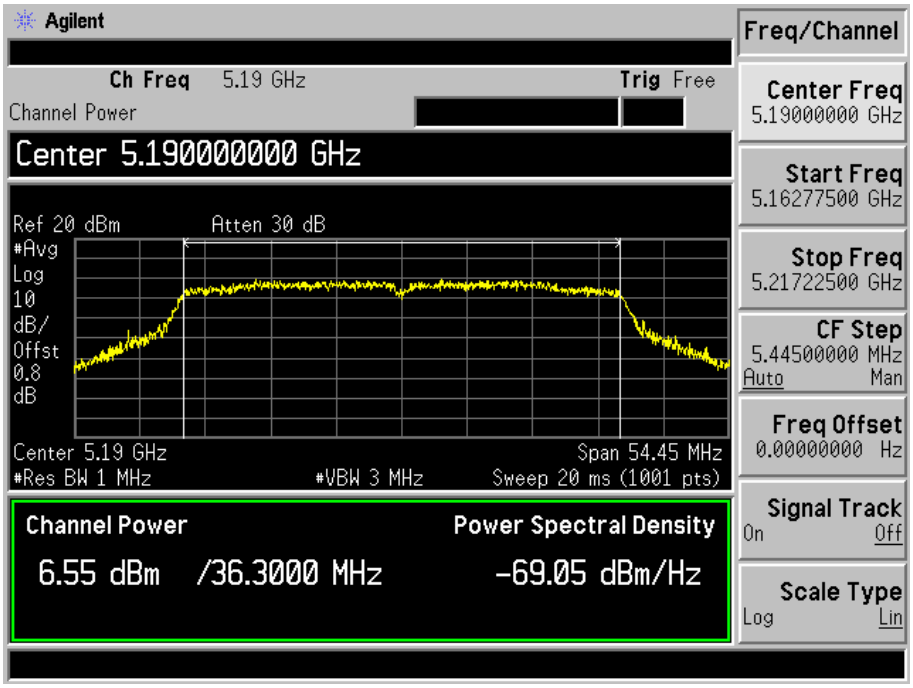


5825MHz

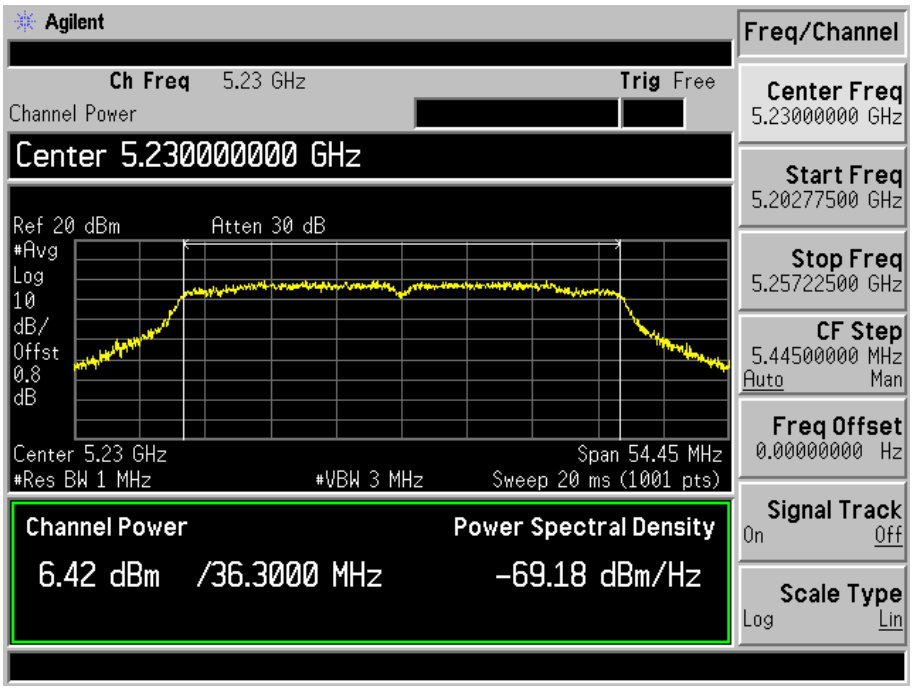


Test Mode: 802.11n-HT40

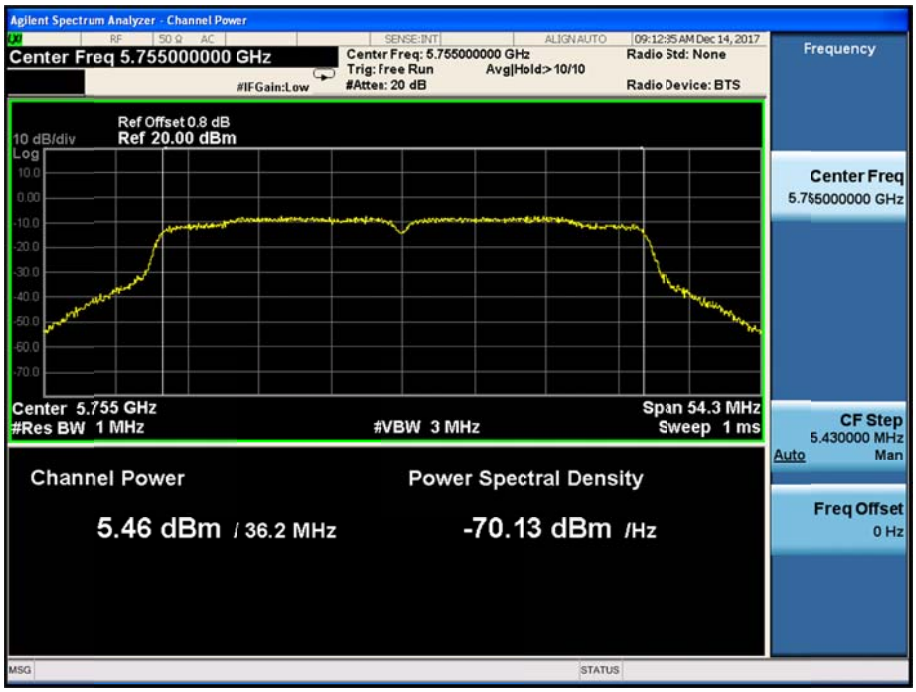
5190MHz



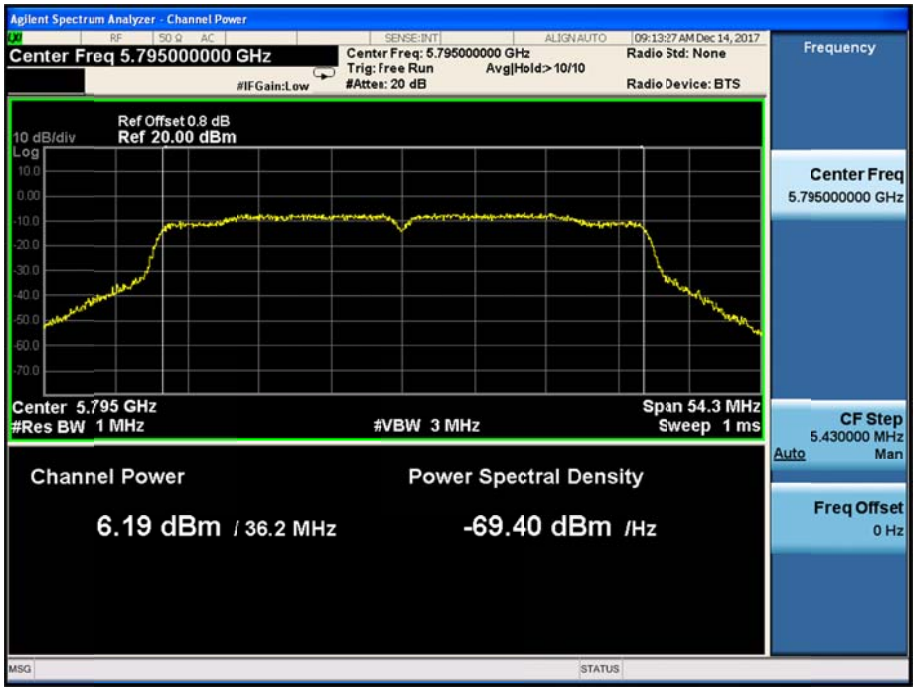
5230MHz



5755MHz

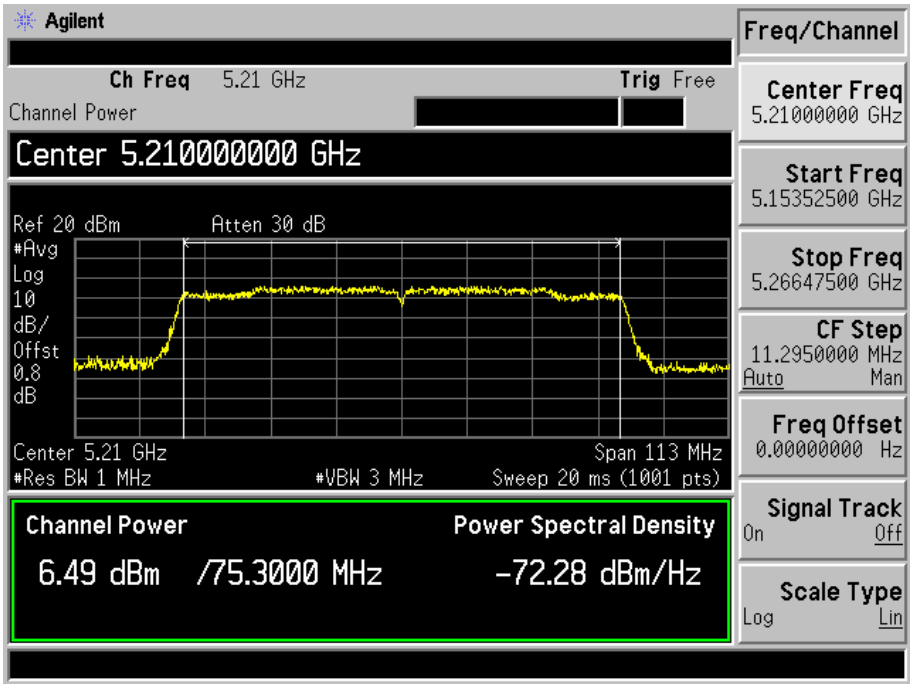


5795MHz

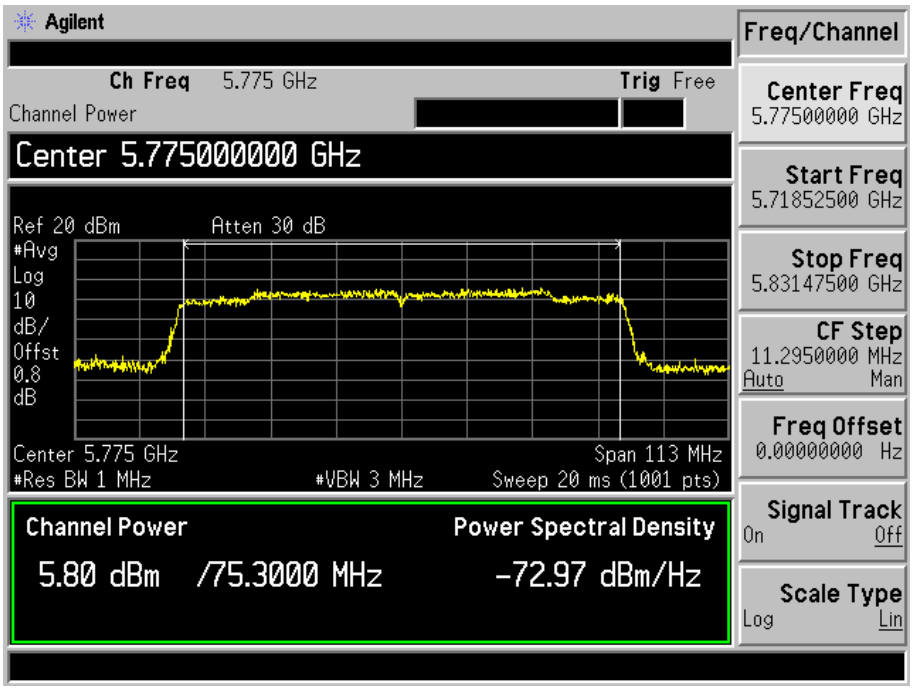


Test Mode: 802.11ac-HT80

5210MHz



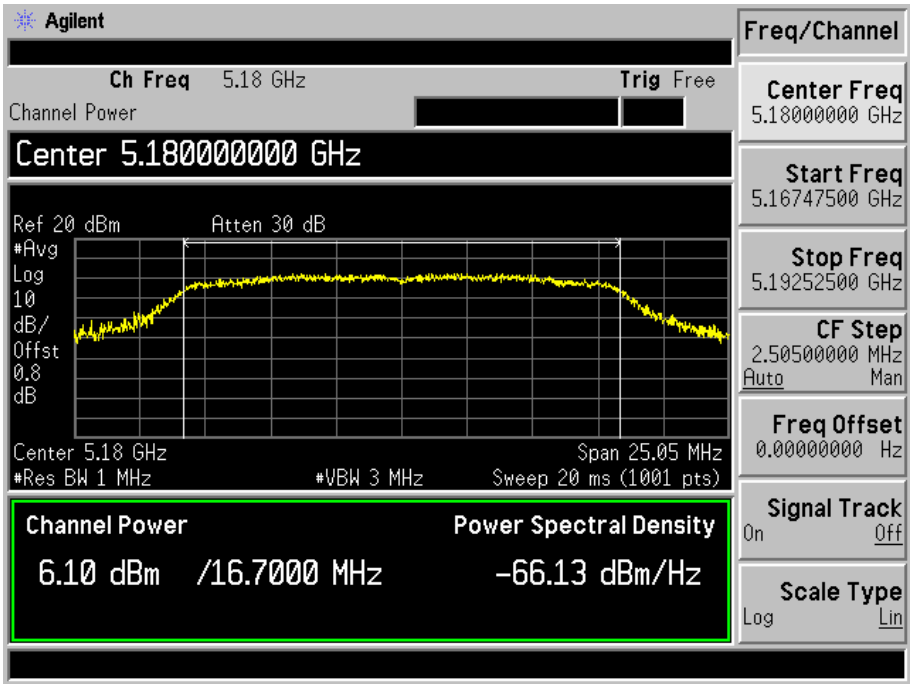
5755MHz



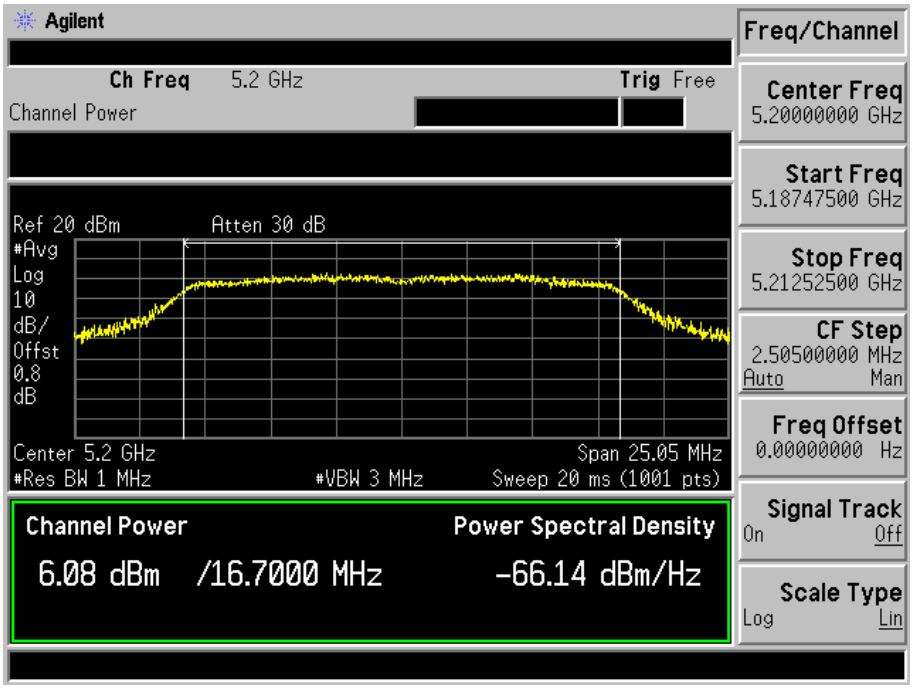
Antenna B

Test Mode: 802.11a

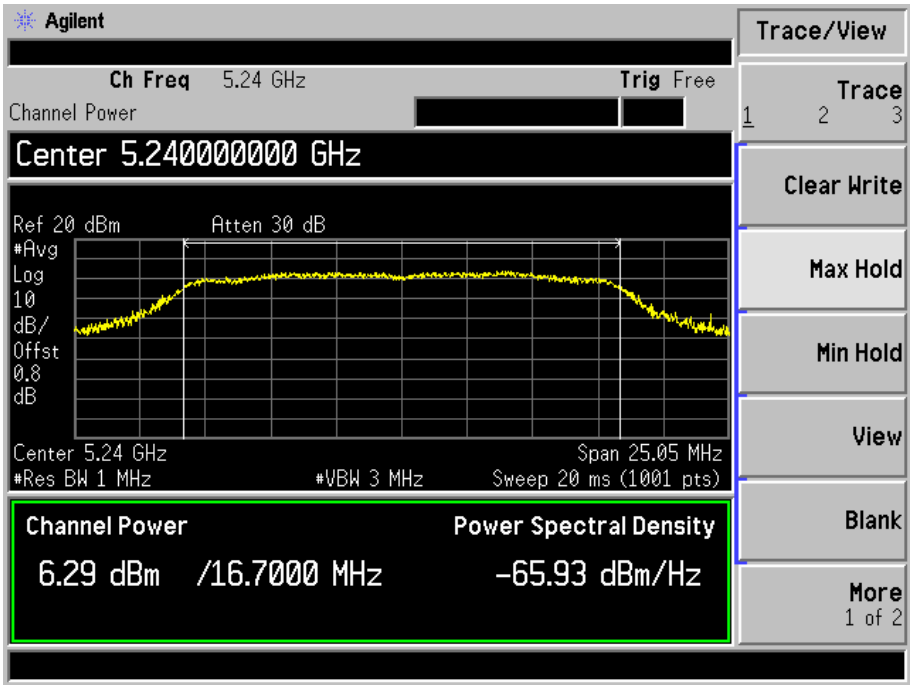
5180MHz



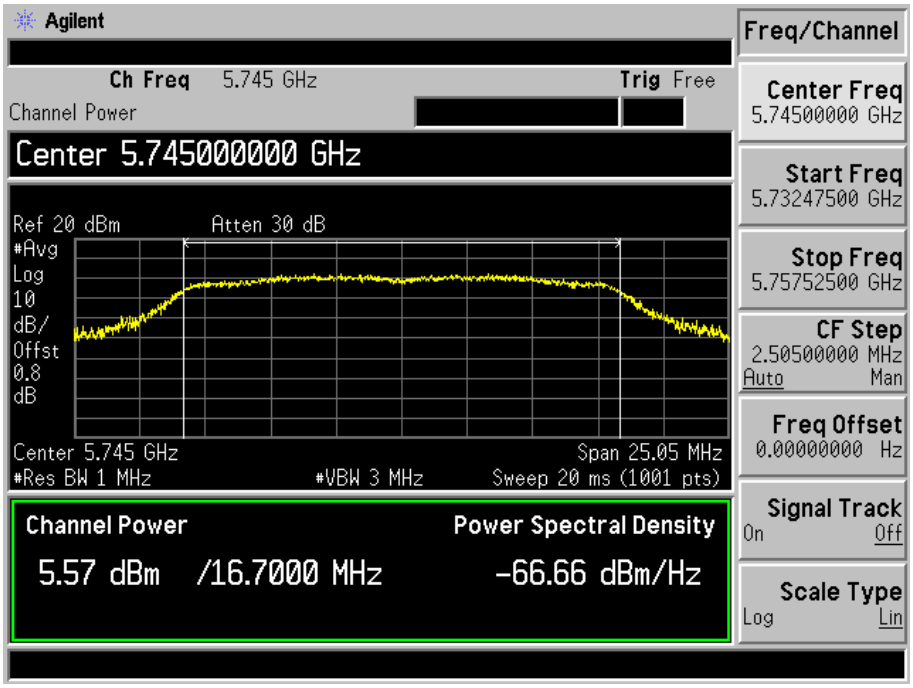
5200MHz



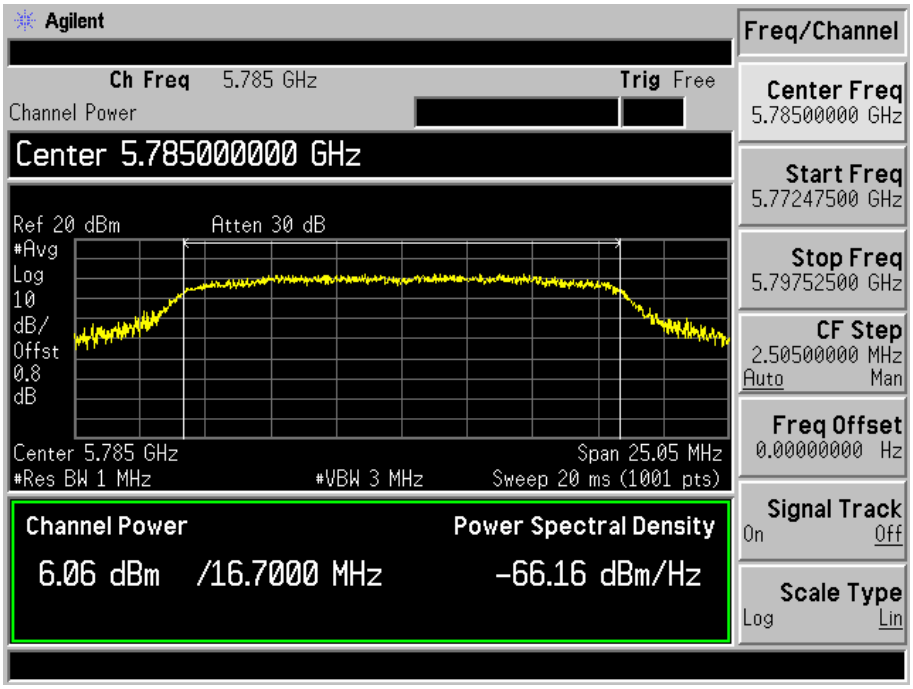
5240MHz



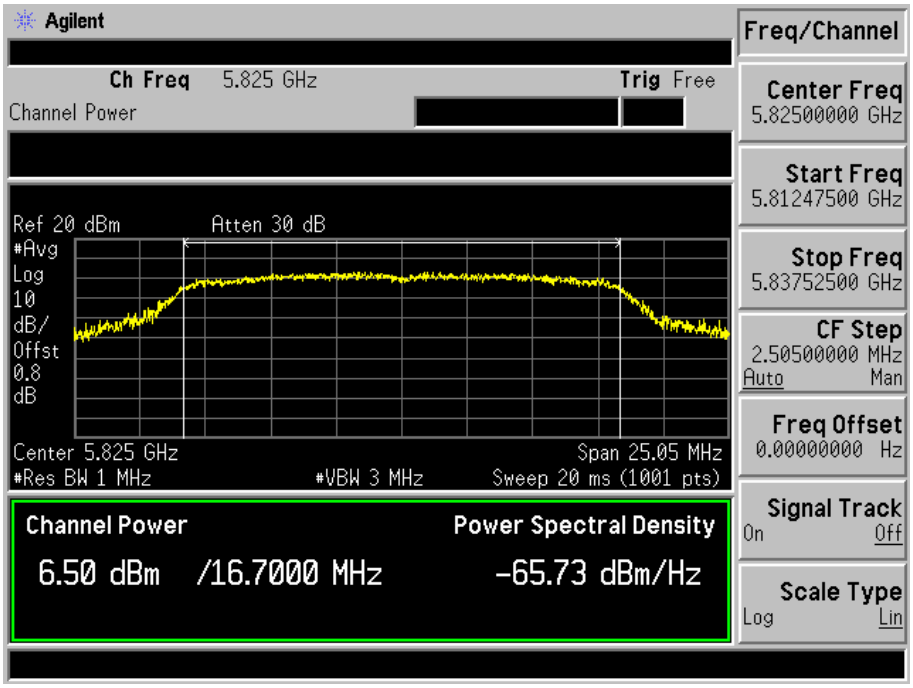
5745MHz



5785MHz

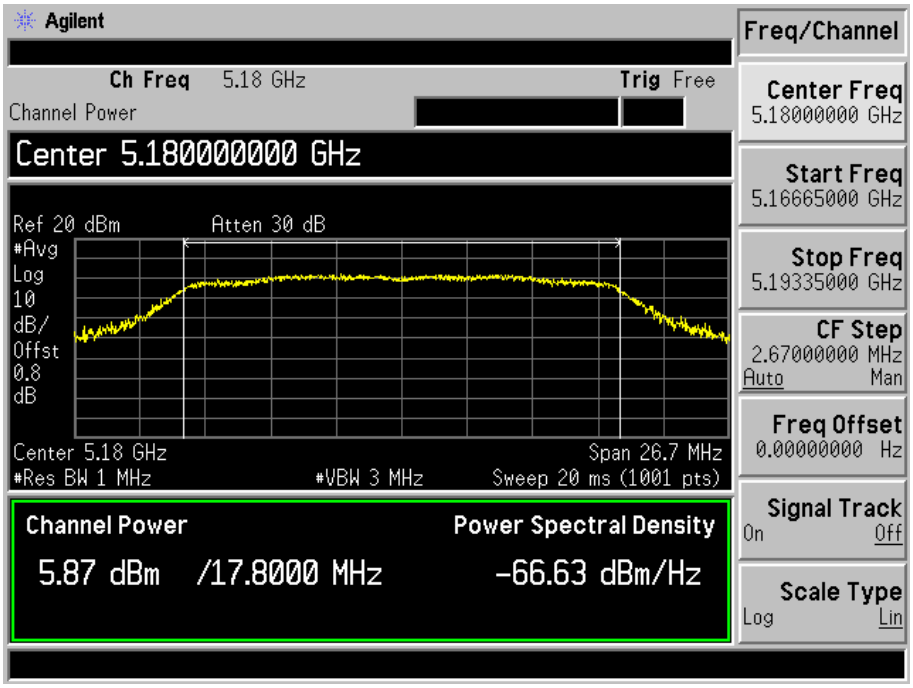


5805MHz

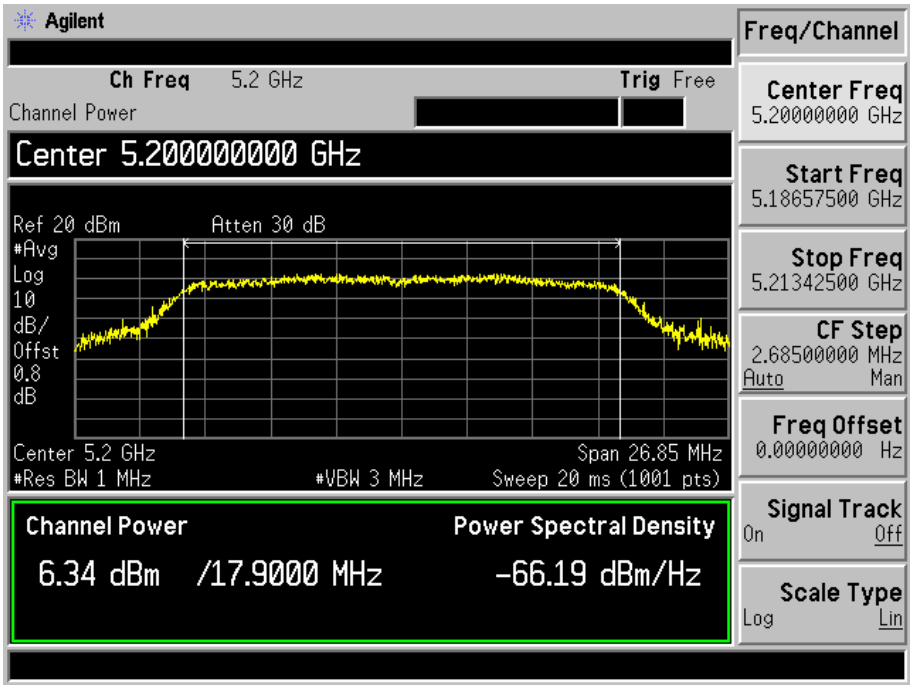


Test Mode: 802.11n-HT20

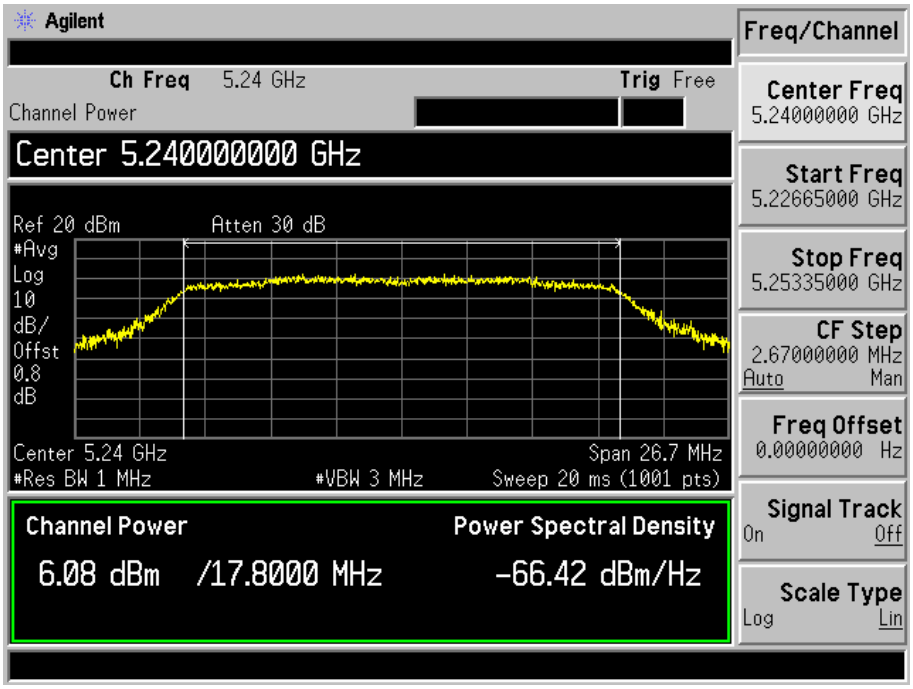
5180MHz



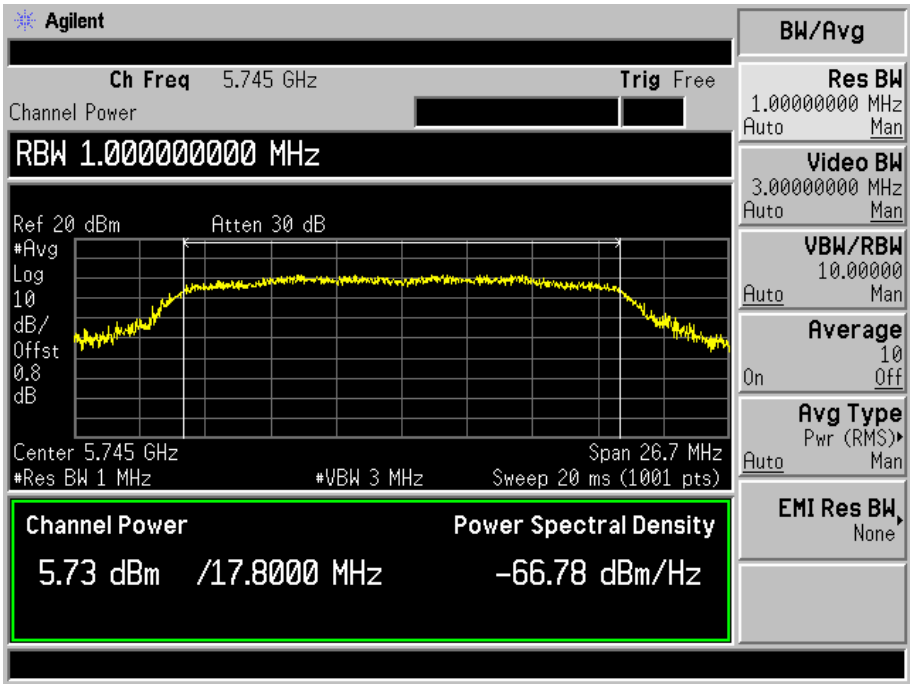
5200MHz



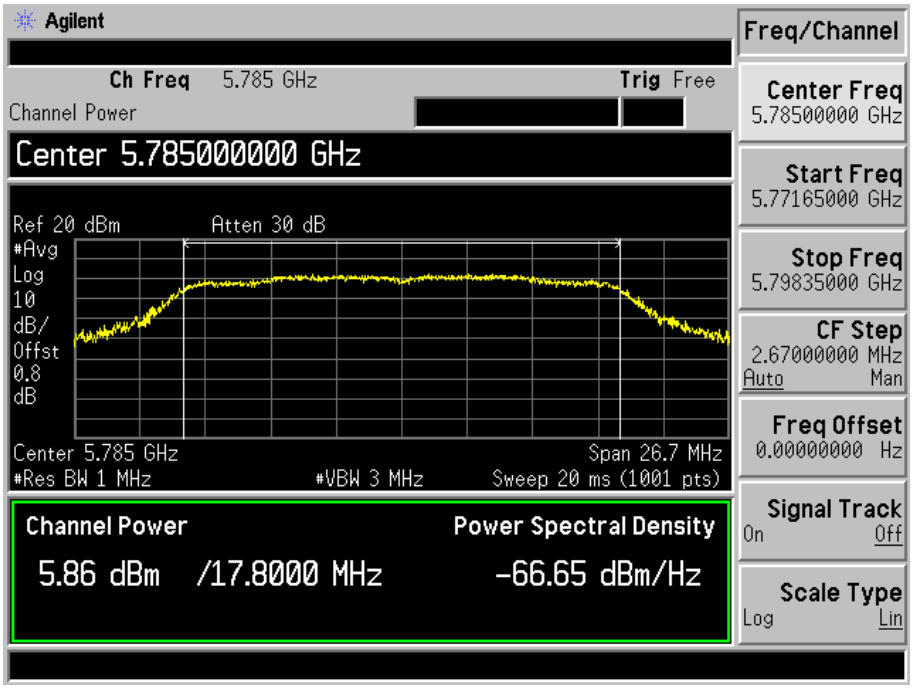
5240MHz



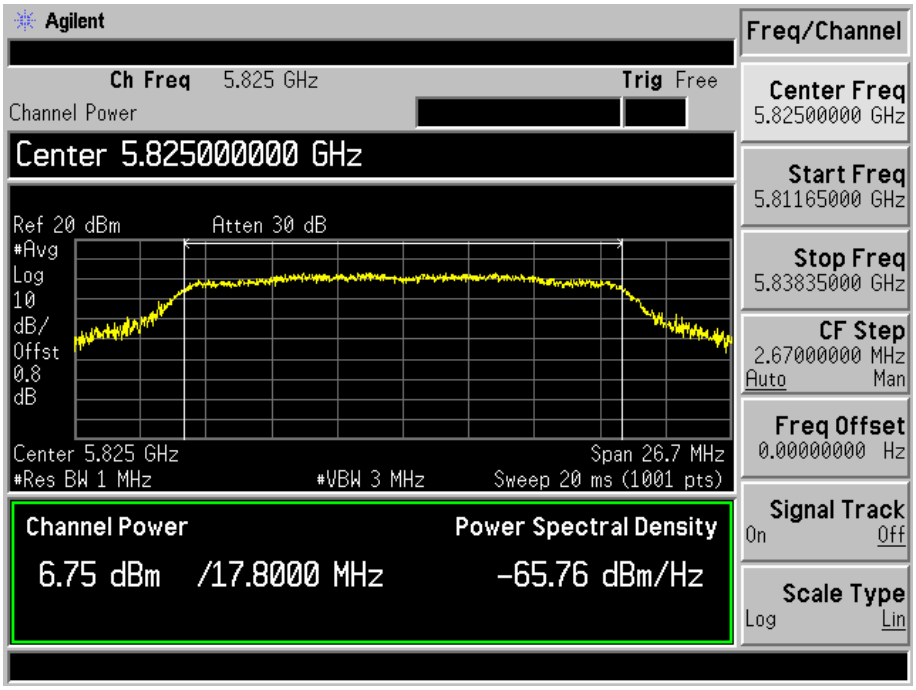
5745MHz



5785MHz

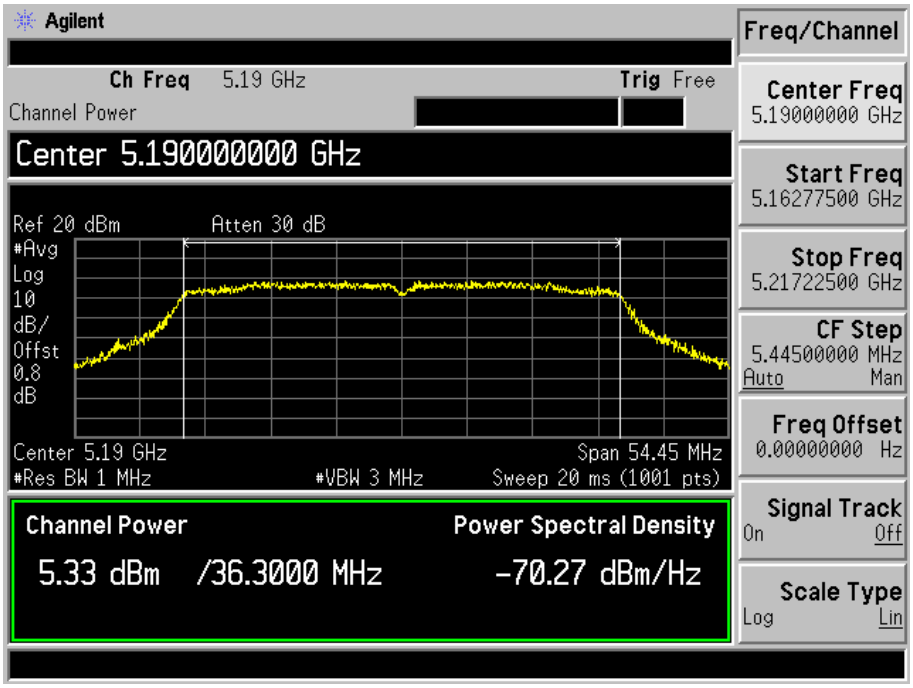


5825MHz

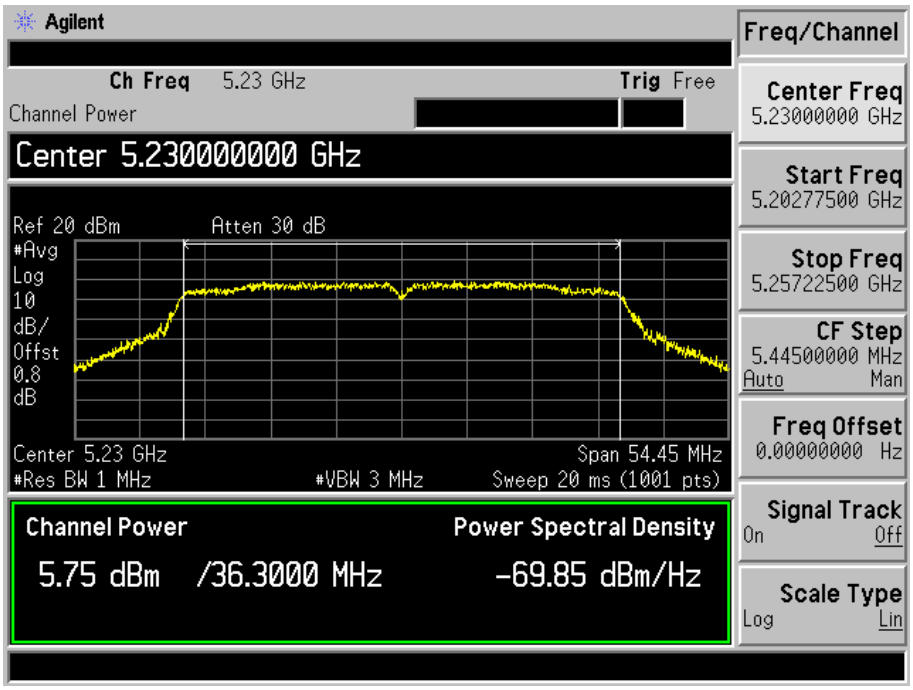


Test Mode: 802.11n-HT40

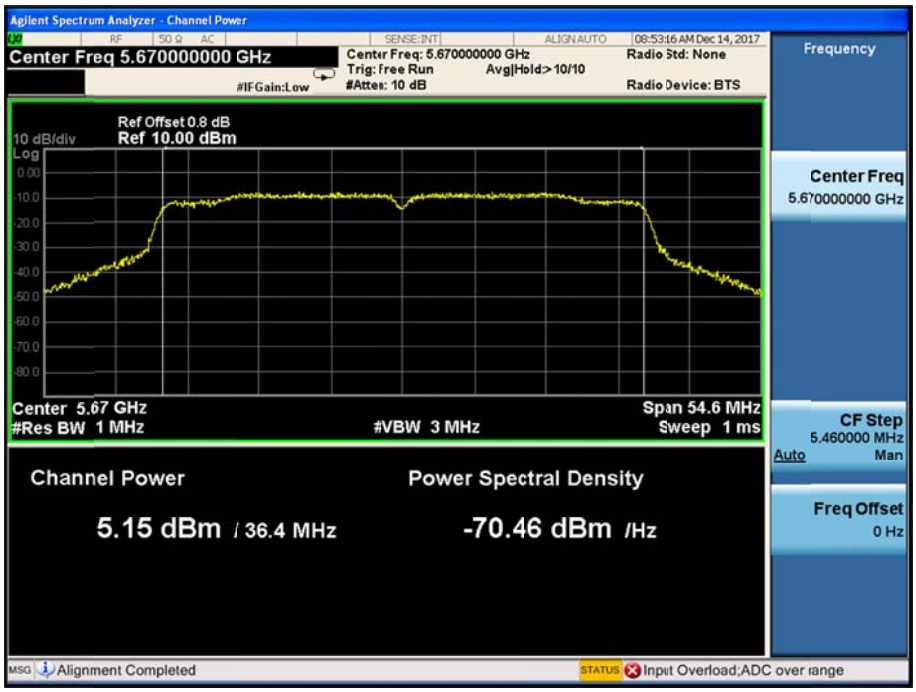
5190MHz



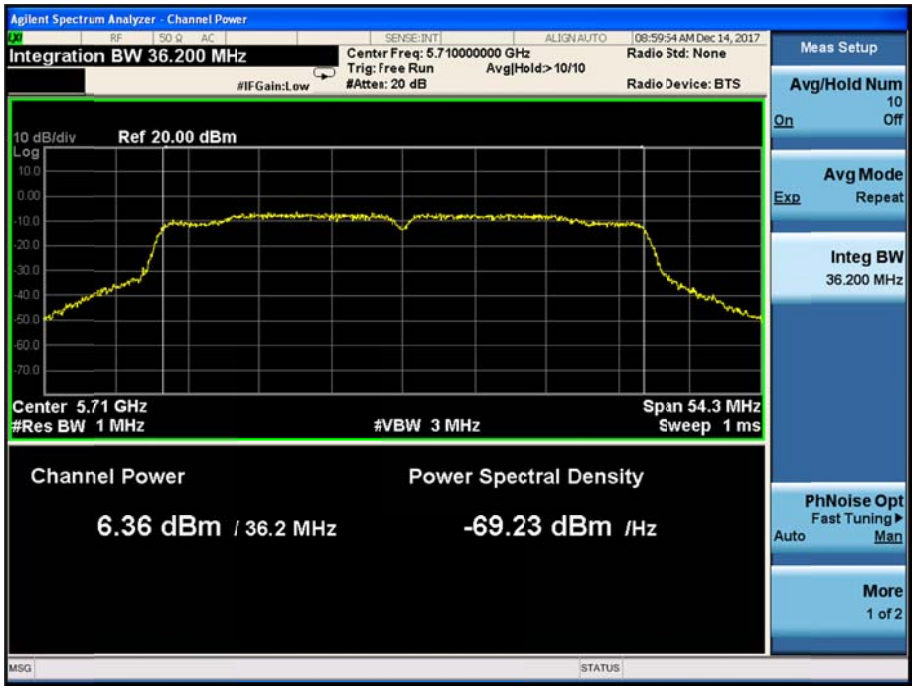
5230MHz



5755MHz

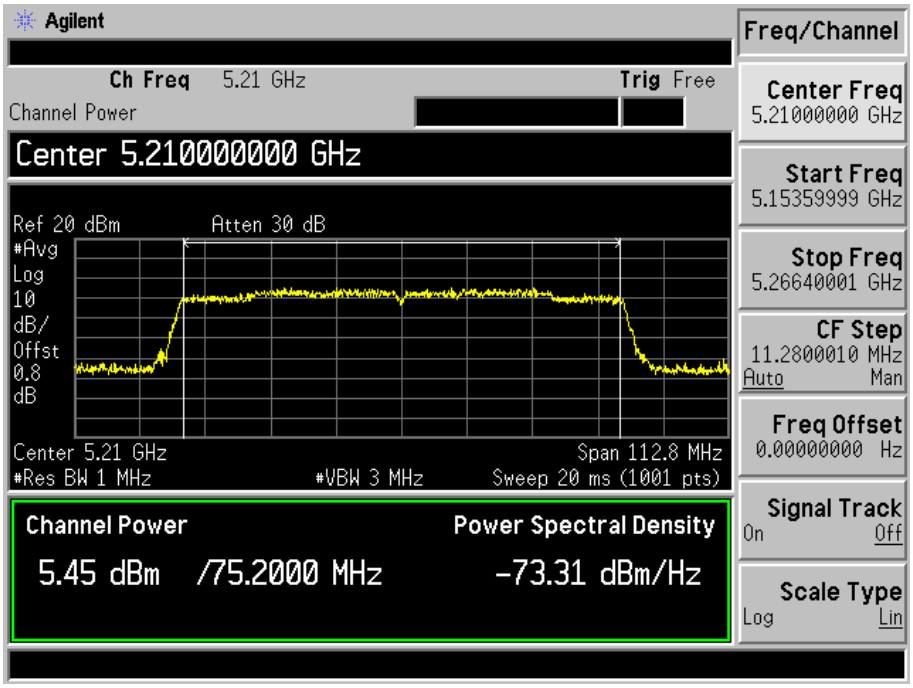


5795MHz

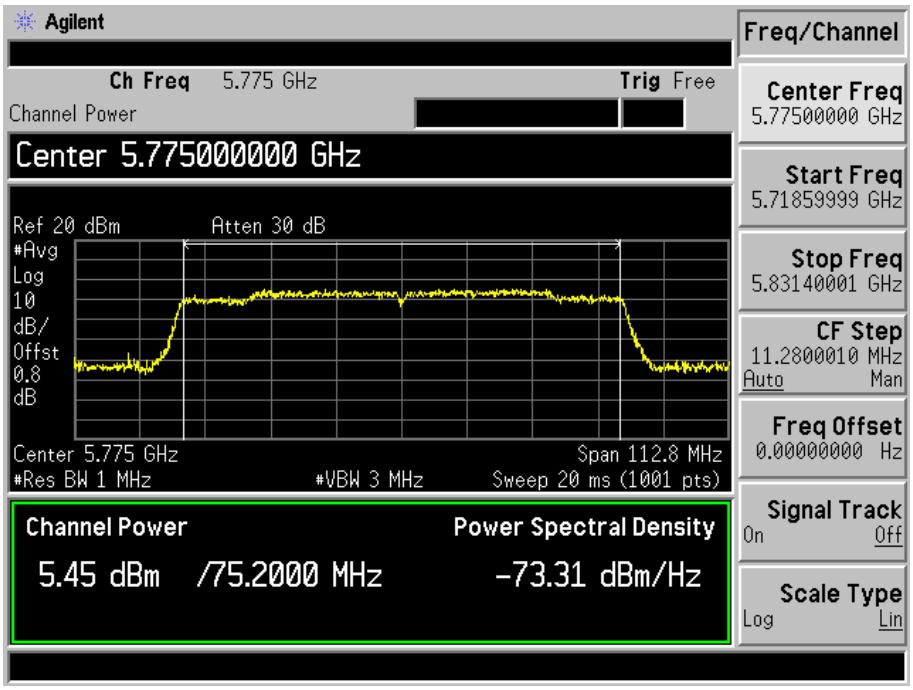


Test Mode: 802.11ac-HT80

5210MHz



5755MHz



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

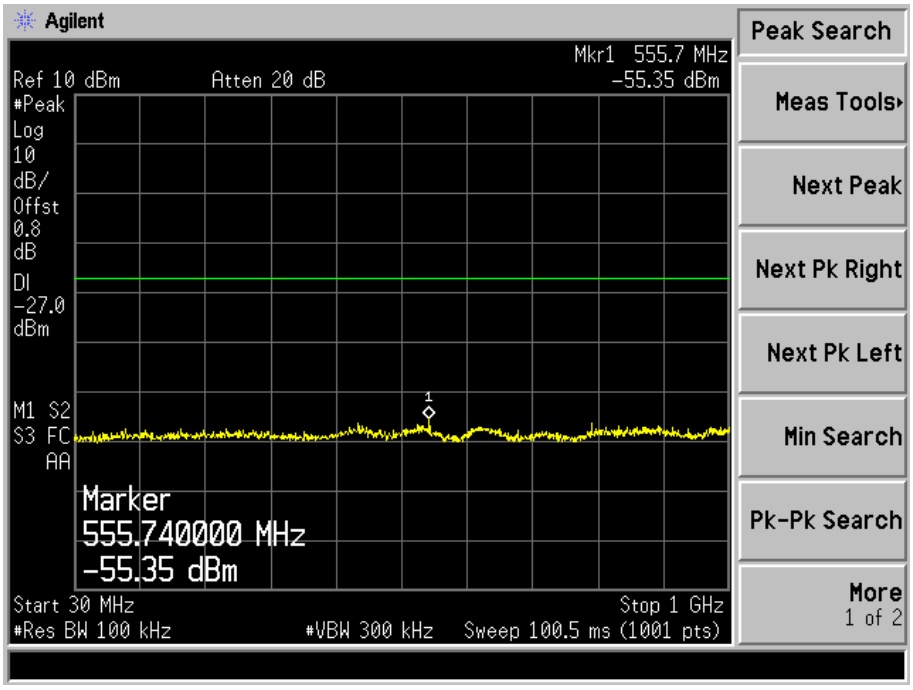
10.4 Summary of Test Results/Plots

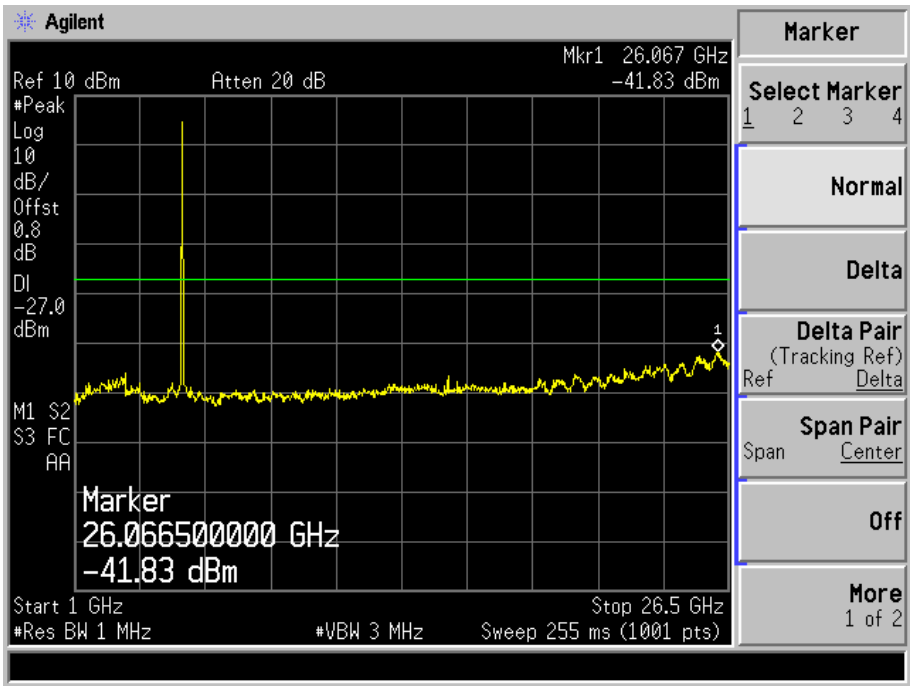
Emissions above 26.5GHz are attenuated more than 20dB below the permissible limits and test data are not reported.

Antenna A

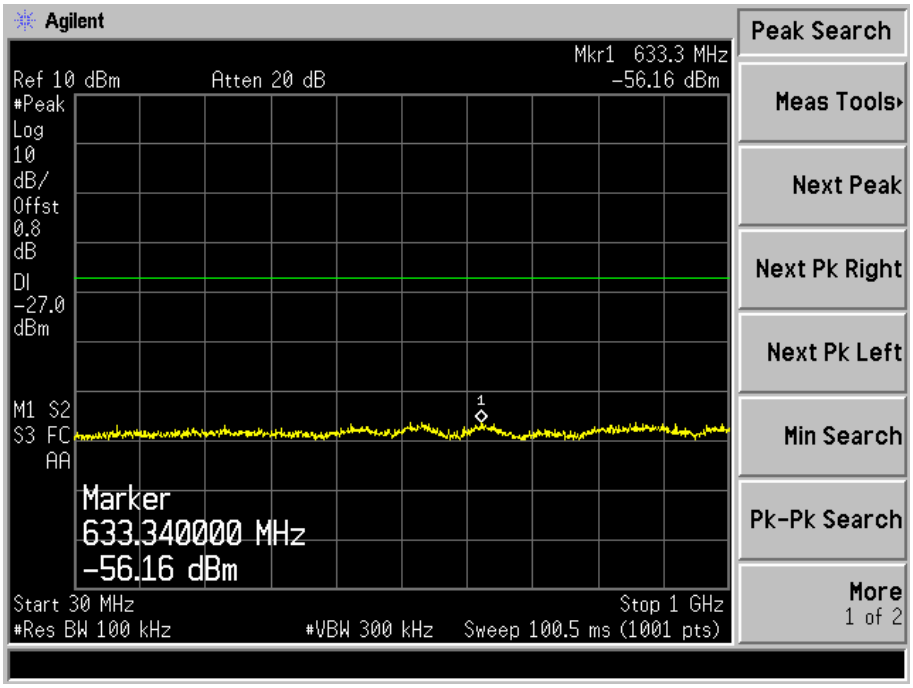
802.11a

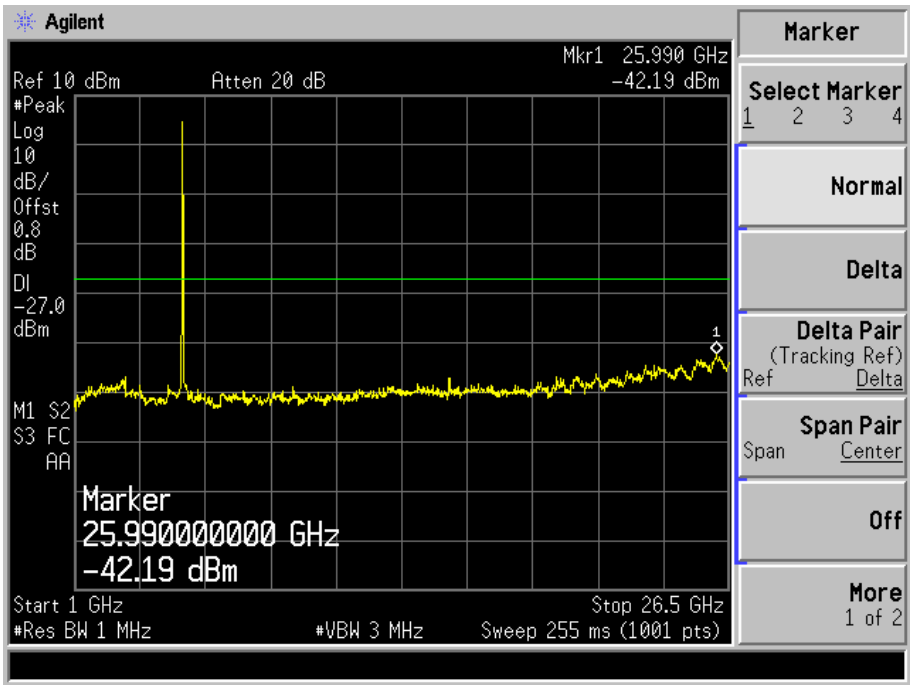
5180MHz



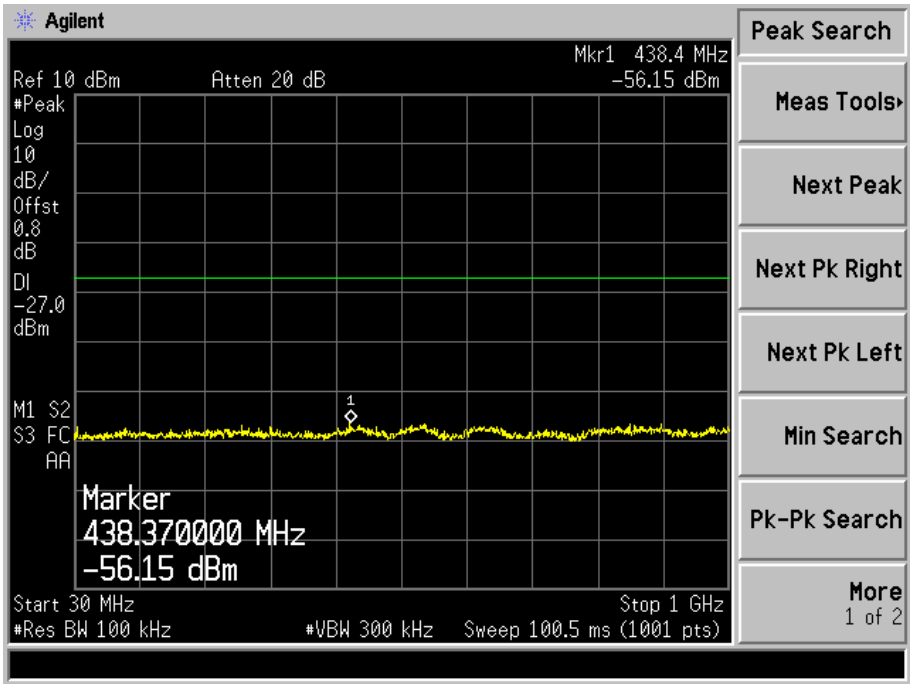


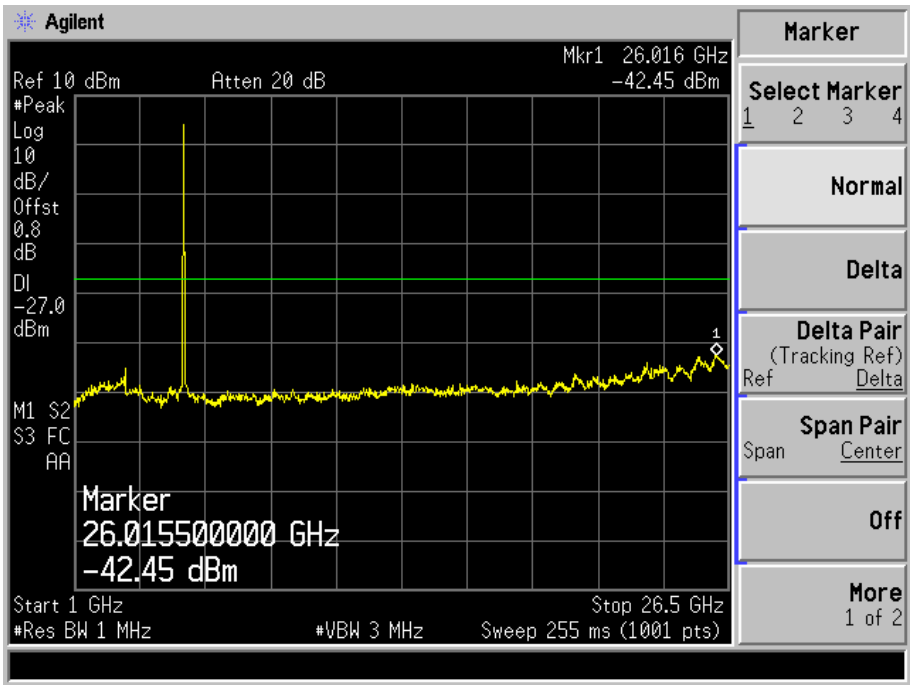
5200MHz


Agilent
Mkr1 633.3 MHz
Ref 10 dBm
Atten 20 dB
-56.16 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
633.340000 MHz
-56.16 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

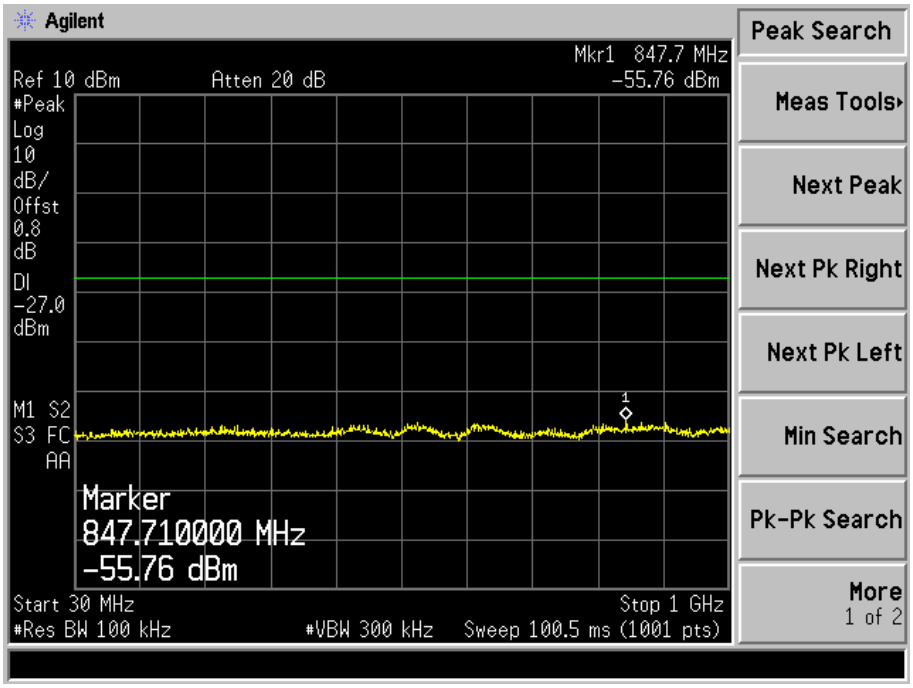

Agilent
Mkr1 25.990 GHz
Ref 10 dBm
Atten 20 dB
-42.19 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.990000000 GHz
-42.19 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

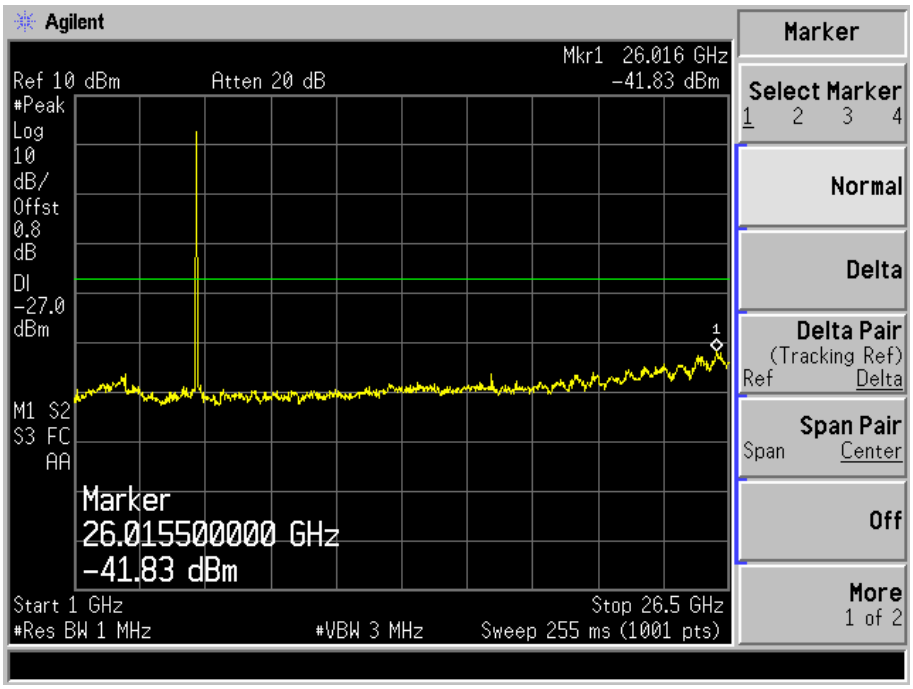
5240MHz


Agilent
Mkr1 438.4 MHz
Ref 10 dBm
Atten 20 dB
-56.15 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
438.370000 MHz
-56.15 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

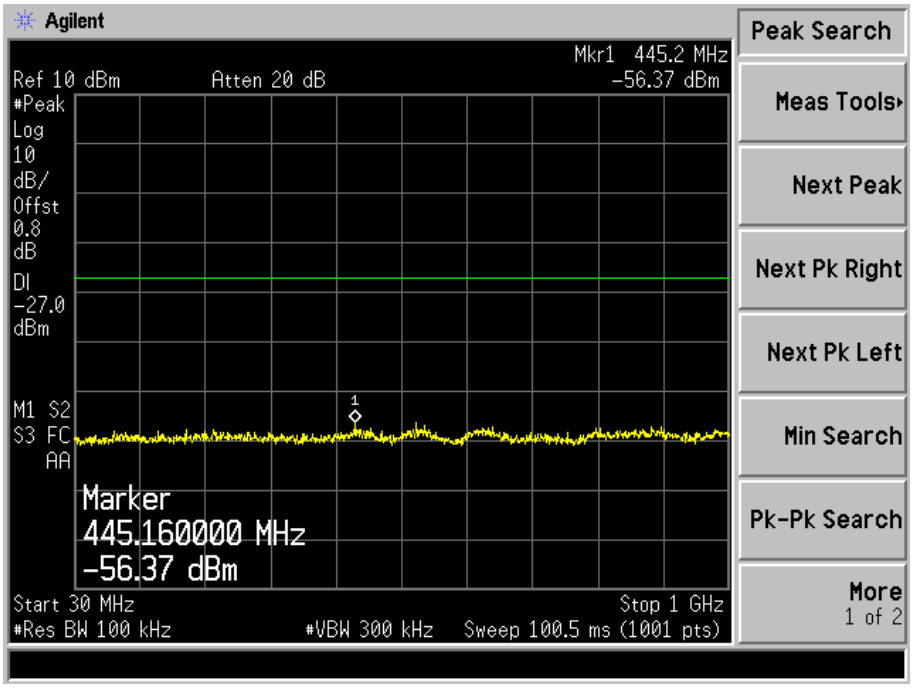

Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-42.45 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-42.45 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

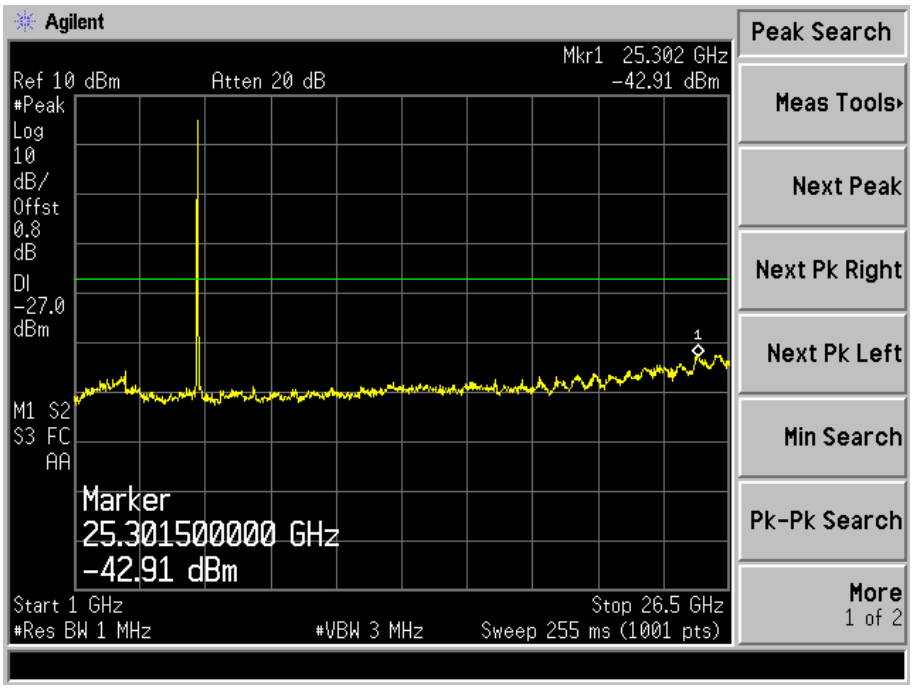
5745MHz


Agilent
Mkr1 847.7 MHz
Ref 10 dBm
Atten 20 dB
-55.76 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
847.710000 MHz
-55.76 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

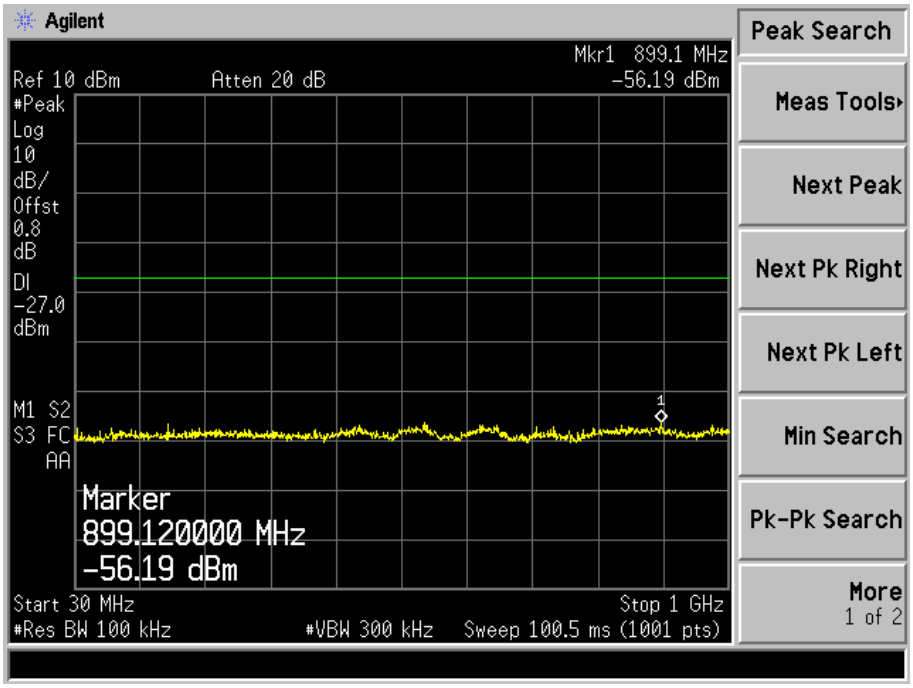

Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-41.83 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-41.83 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

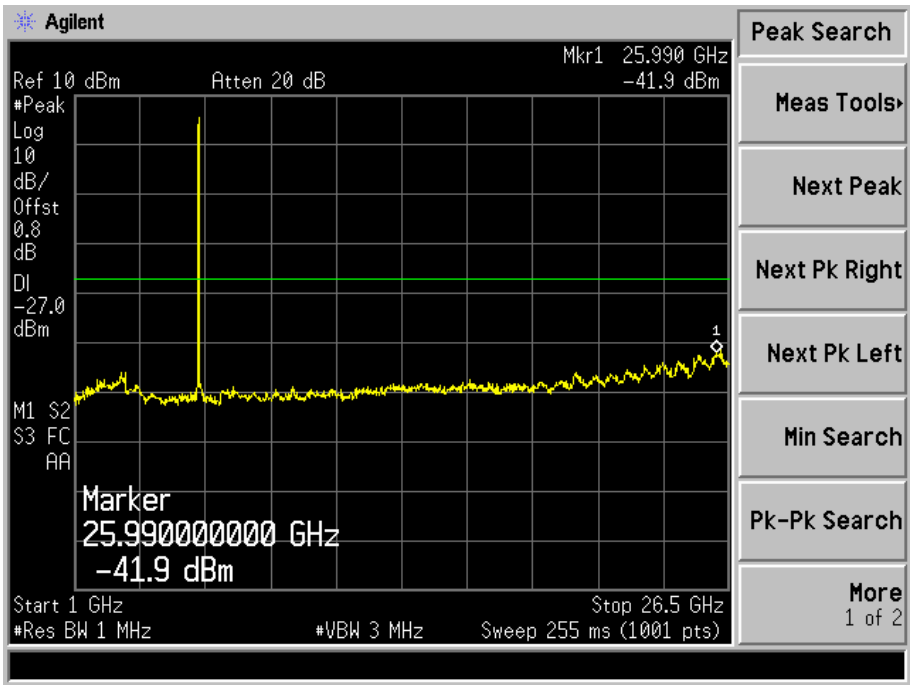
5785MHz


Agilent
Mkr1 445.2 MHz
Ref 10 dBm
Atten 20 dB
-56.37 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
445.160000 MHz
-56.37 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 25.302 GHz
Ref 10 dBm
Atten 20 dB
-42.91 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.301500000 GHz
-42.91 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

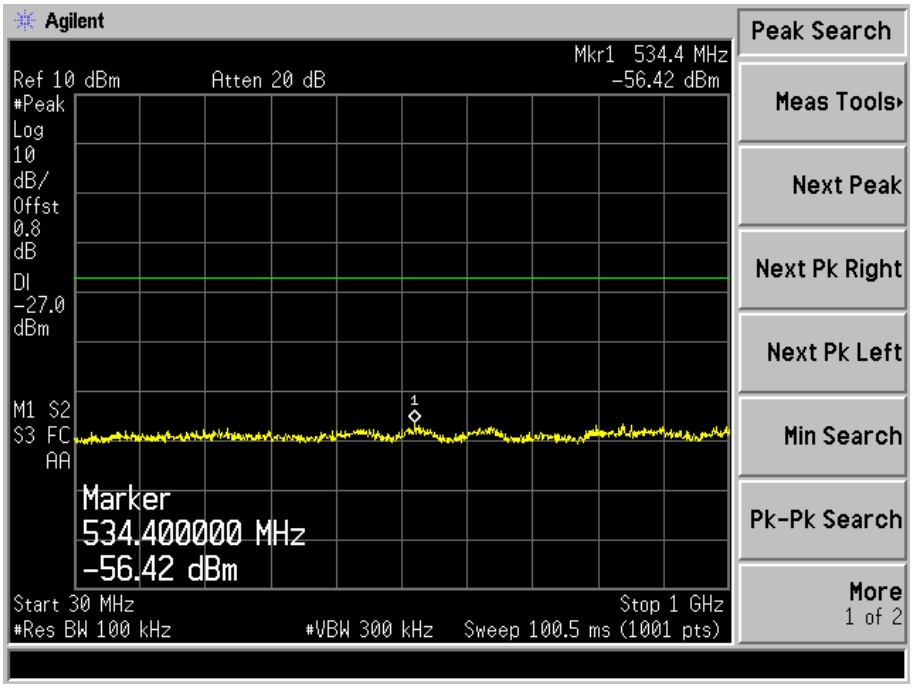
5805MHz

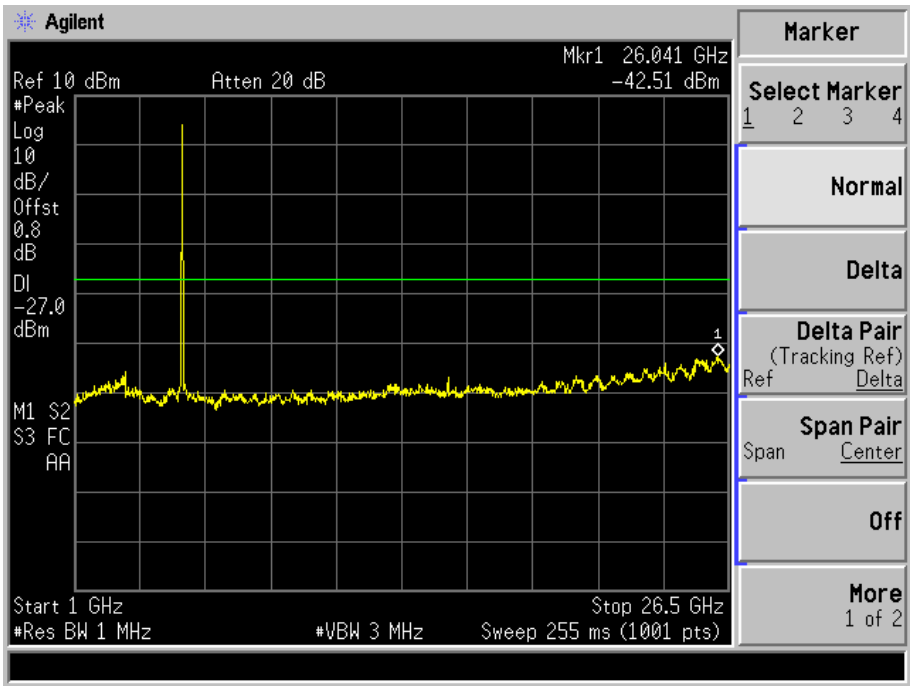

Agilent
Mkr1 899.1 MHz
Ref 10 dBm
Atten 20 dB
-56.19 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
899.120000 MHz
-56.19 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 25.990 GHz
Ref 10 dBm
Atten 20 dB
-41.9 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.990000000 GHz
-41.9 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

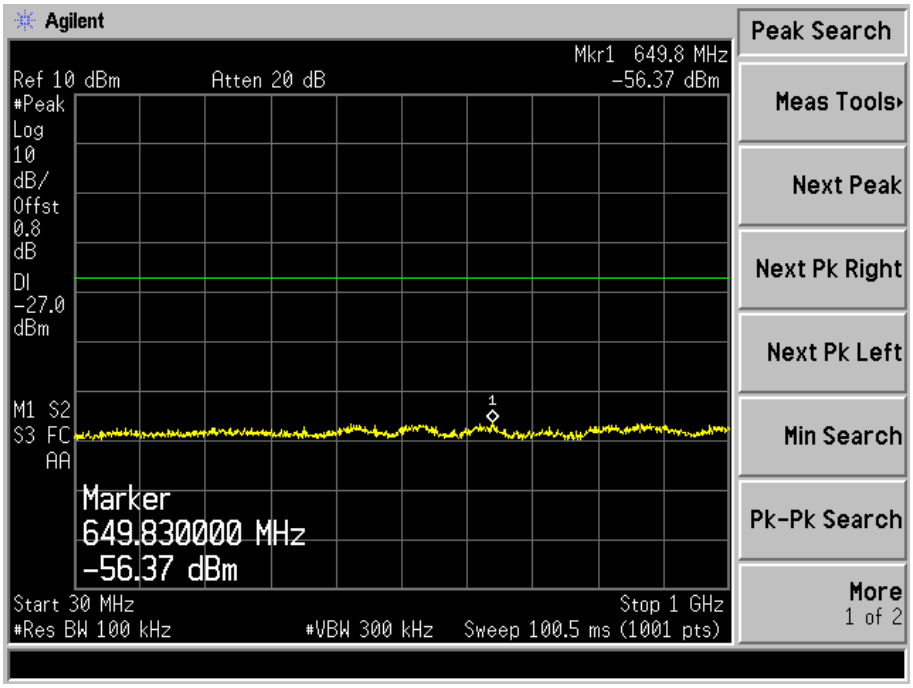
802.11n HT20

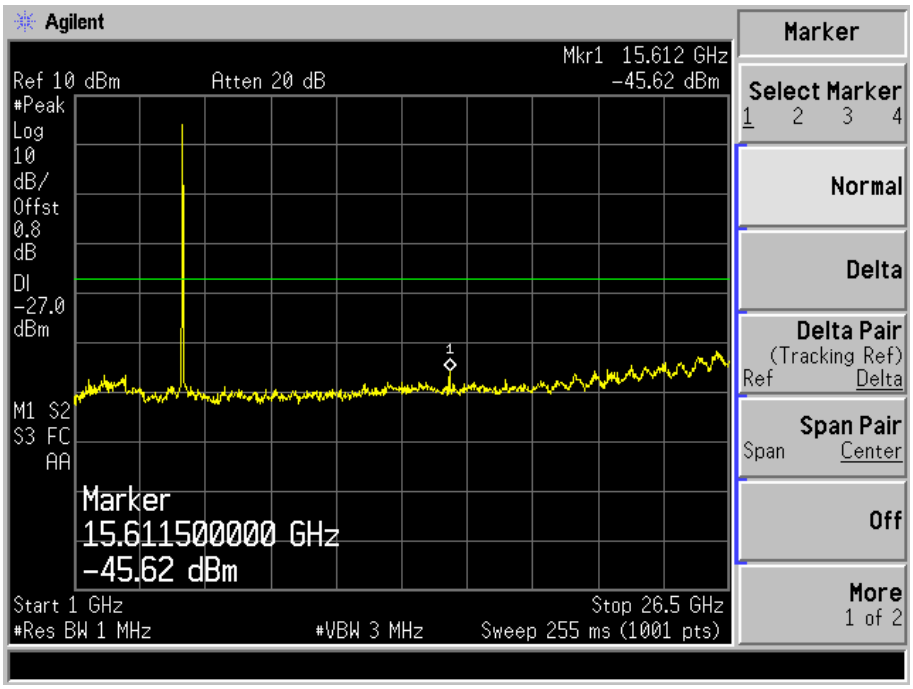
5180MHz



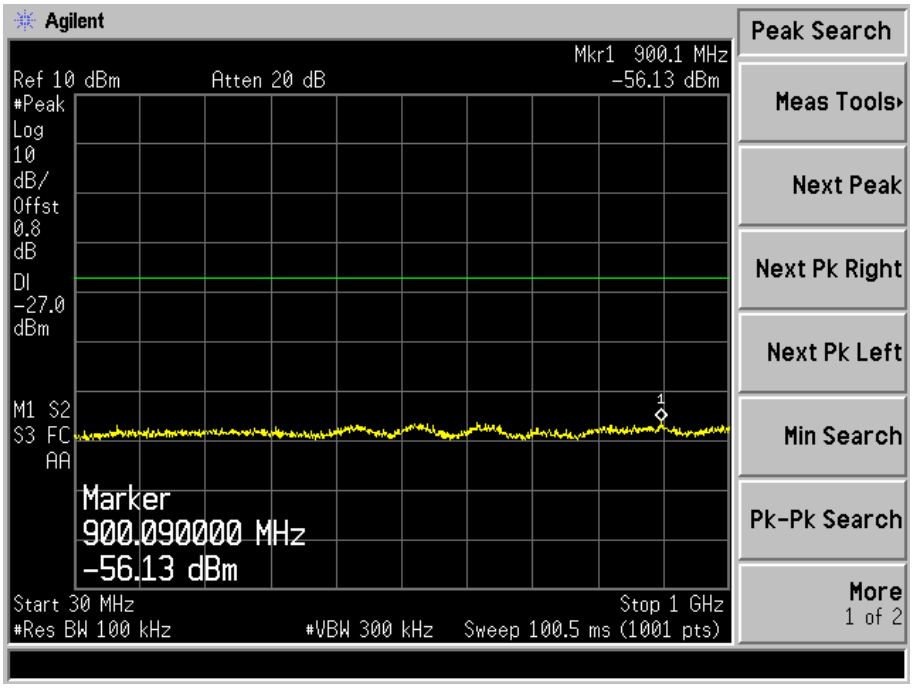


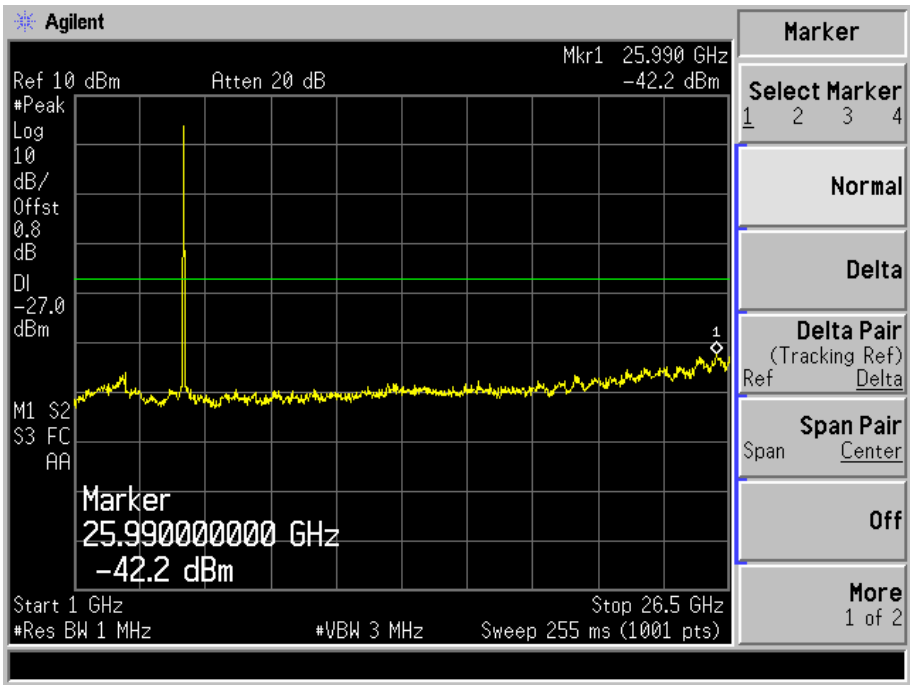
5200MHz


Agilent
Mkr1 649.8 MHz
Ref 10 dBm
Atten 20 dB
-56.37 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
649.830000 MHz
-56.37 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

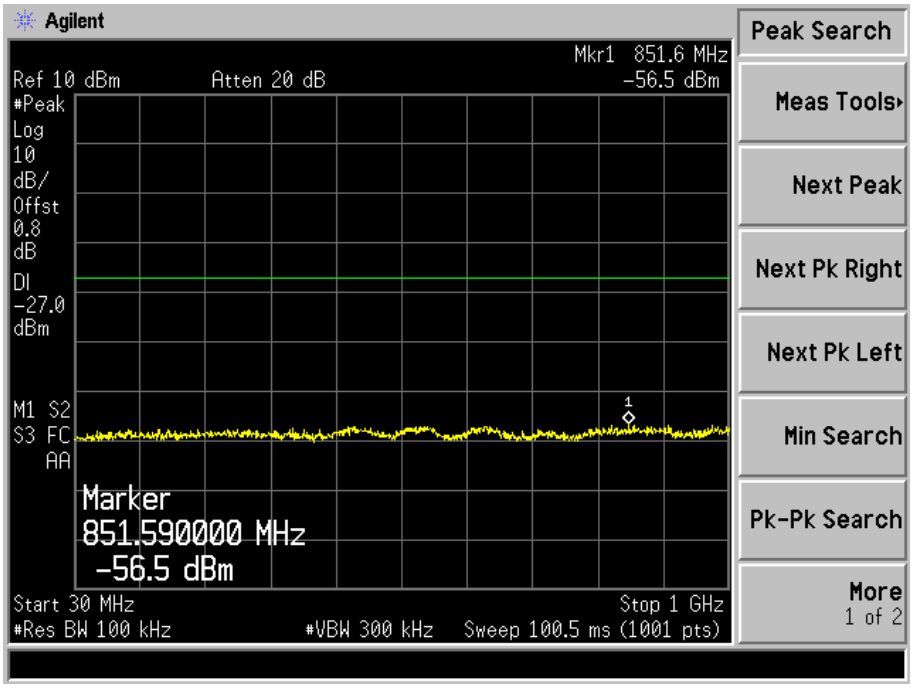

Agilent
Mkr1 15.612 GHz
Ref 10 dBm
Atten 20 dB
-45.62 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
15.611500000 GHz
-45.62 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

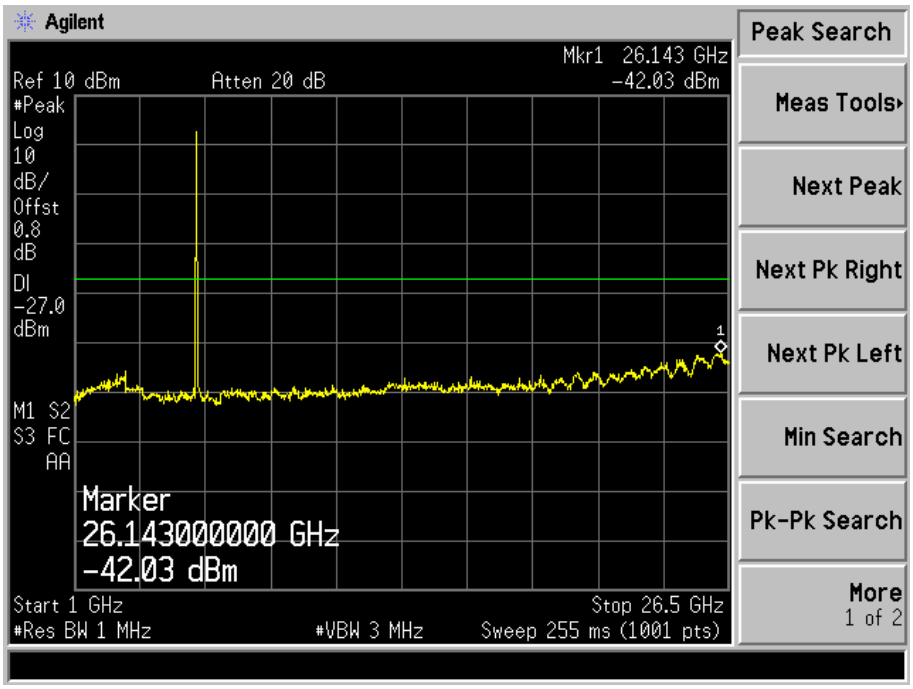
5240MHz


Agilent
Mkr1 900.1 MHz
Ref 10 dBm
Atten 20 dB
-56.13 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
900.090000 MHz
-56.13 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

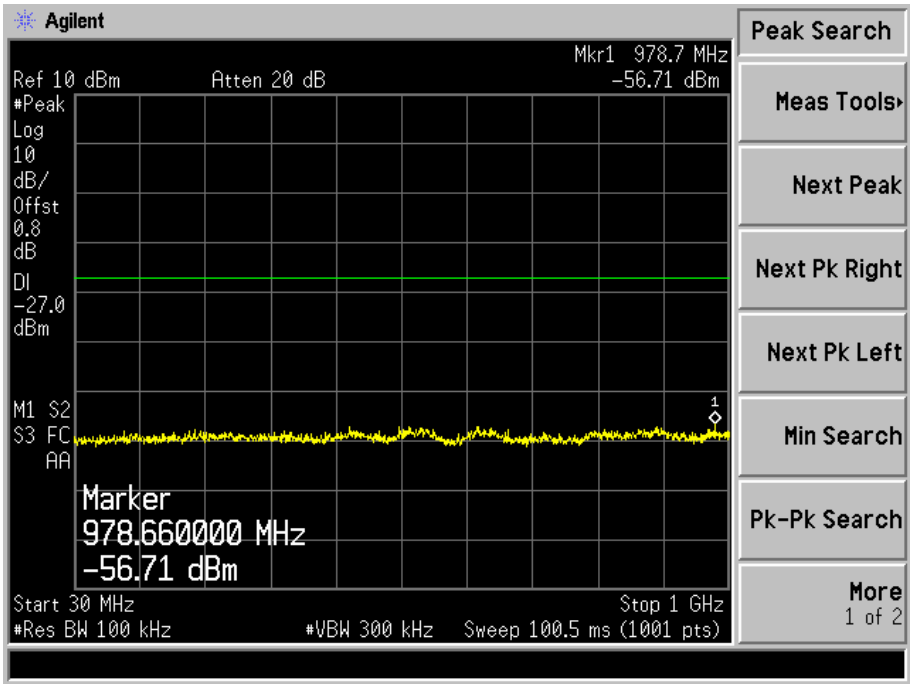

Agilent
Mkr1 25.990 GHz
Ref 10 dBm
Atten 20 dB
-42.2 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.990000000 GHz
-42.2 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

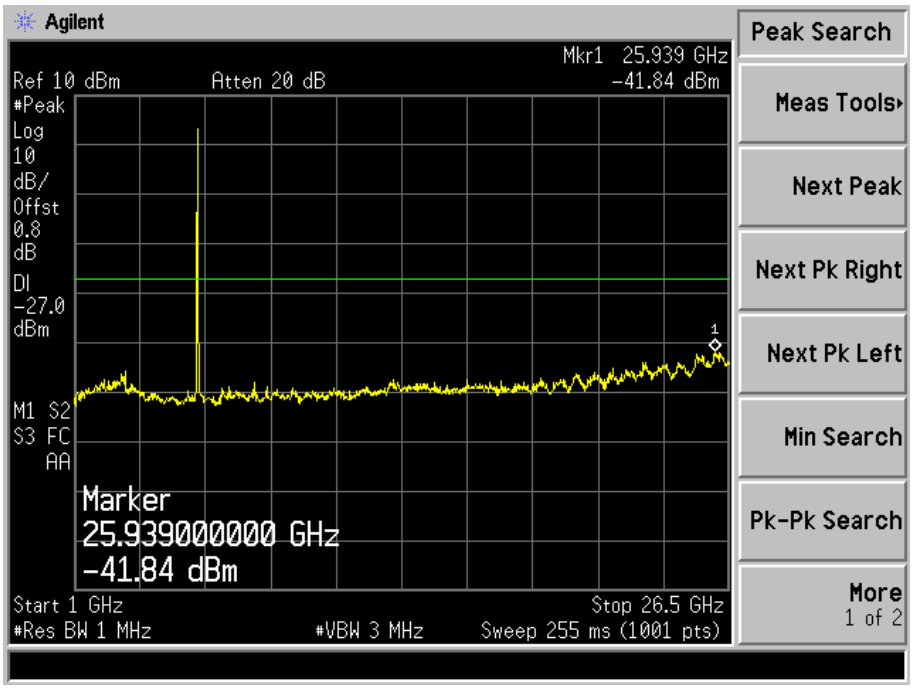
5745MHz


Agilent
Mkr1 851.6 MHz
Ref 10 dBm
Atten 20 dB
-56.5 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
851.590000 MHz
-56.5 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

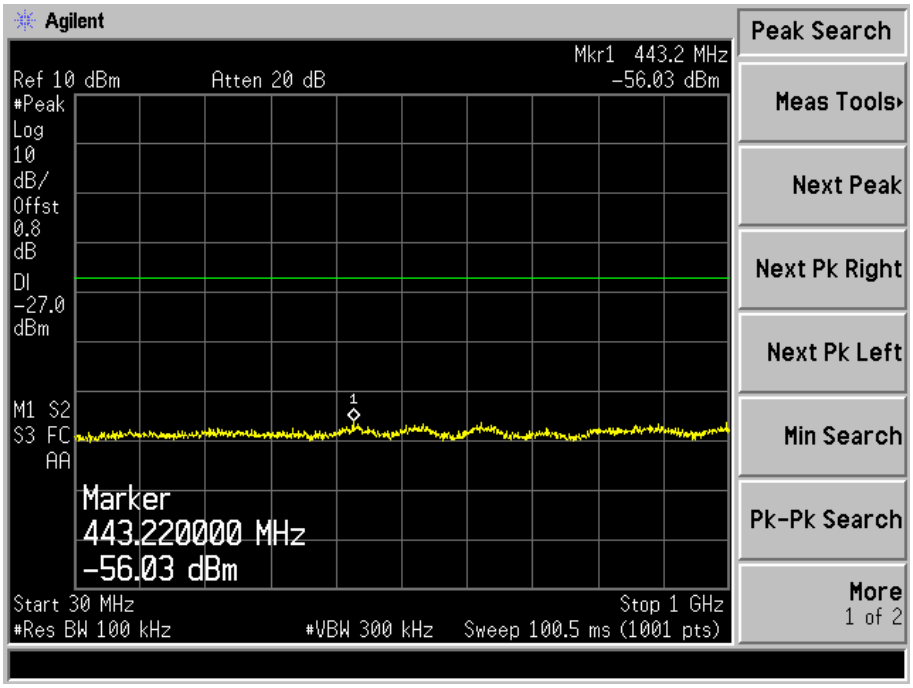

Agilent
Mkr1 26.143 GHz
Ref 10 dBm
Atten 20 dB
-42.03 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.143000000 GHz
-42.03 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

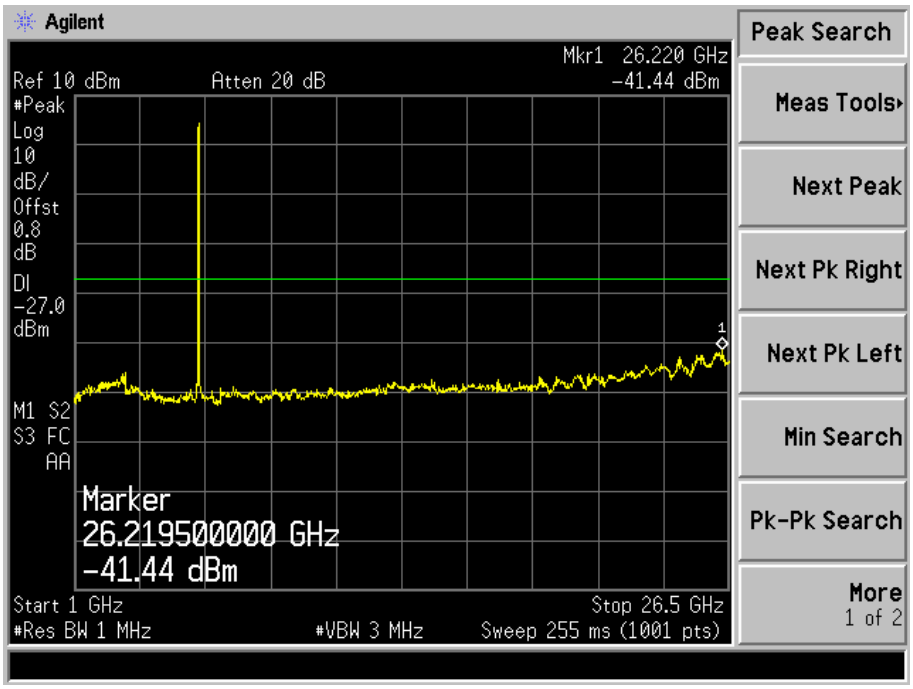
5785MHz


Agilent
Mkr1 978.7 MHz
Ref 10 dBm
Atten 20 dB
-56.71 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
978.660000 MHz
-56.71 dBm
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

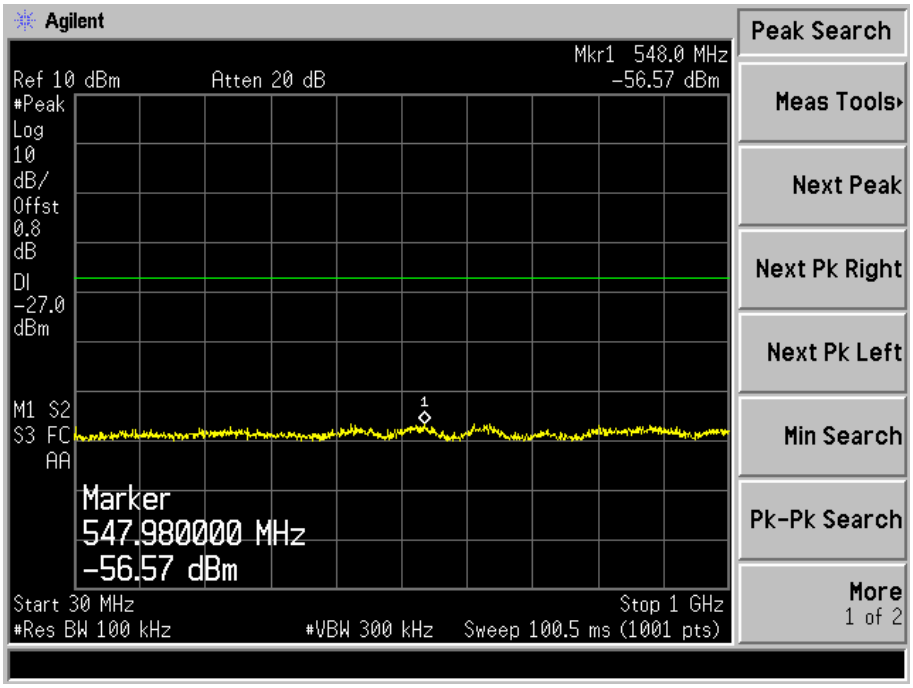

Agilent
Mkr1 25.939 GHz
Ref 10 dBm
Atten 20 dB
-41.84 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.939000000 GHz
-41.84 dBm
Start 1 GHz
Stop 26.5 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

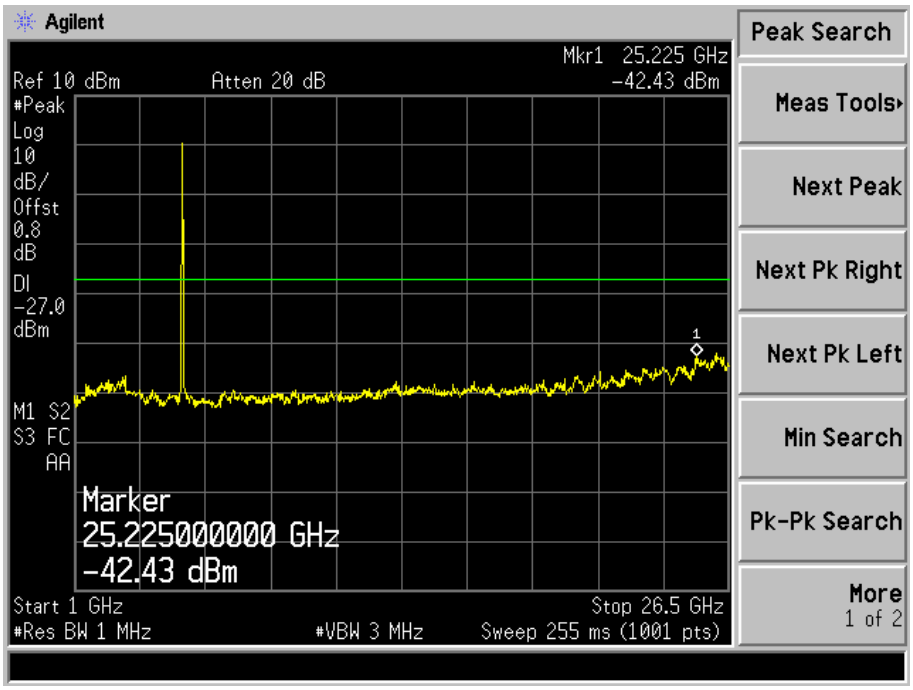
5805MHz


Agilent
Mkr1 443.2 MHz
Ref 10 dBm
Atten 20 dB
-56.03 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
443.220000 MHz
-56.03 dBm
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

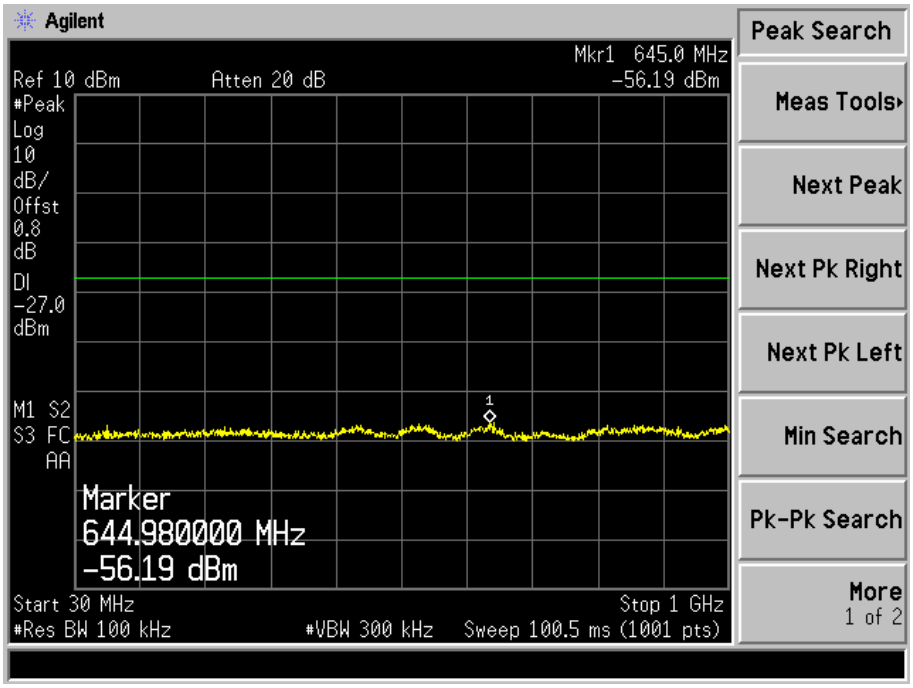

Agilent
Mkr1 26.220 GHz
Ref 10 dBm
Atten 20 dB
-41.44 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.219500000 GHz
-41.44 dBm
Start 1 GHz
Stop 26.5 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

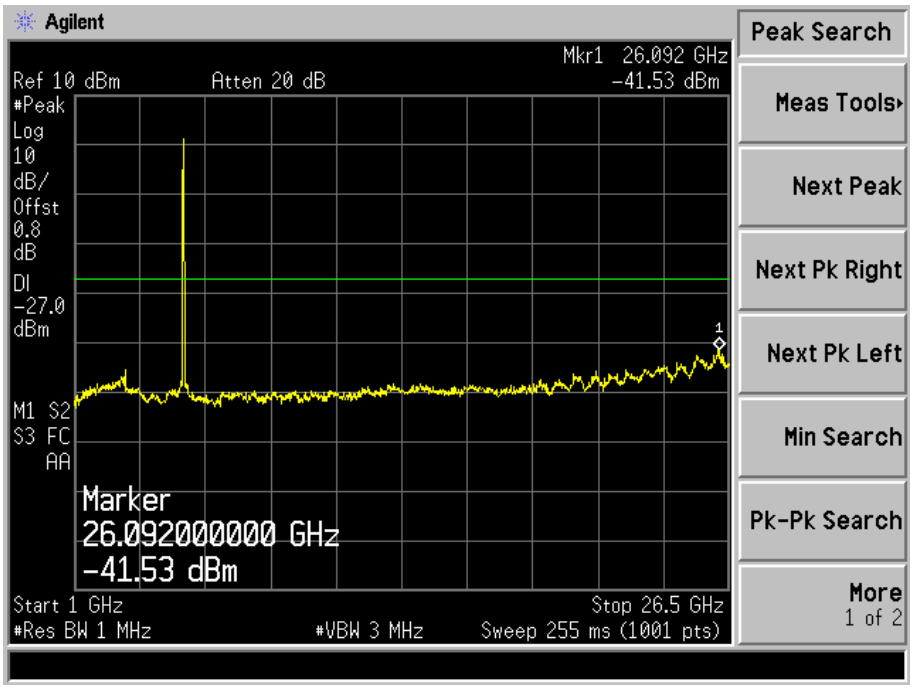
802.11n-HT40
5190MHz



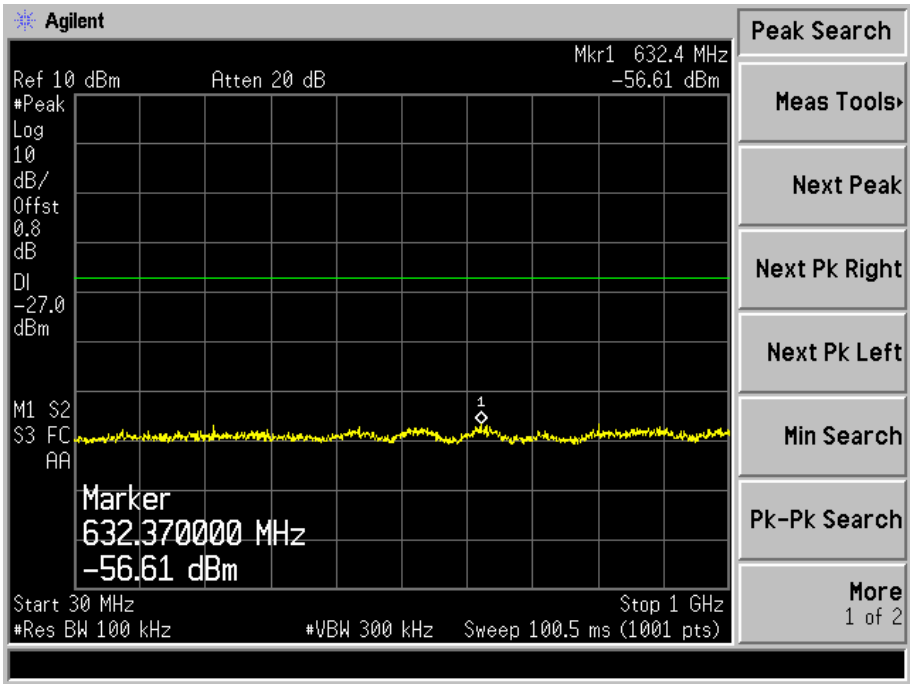


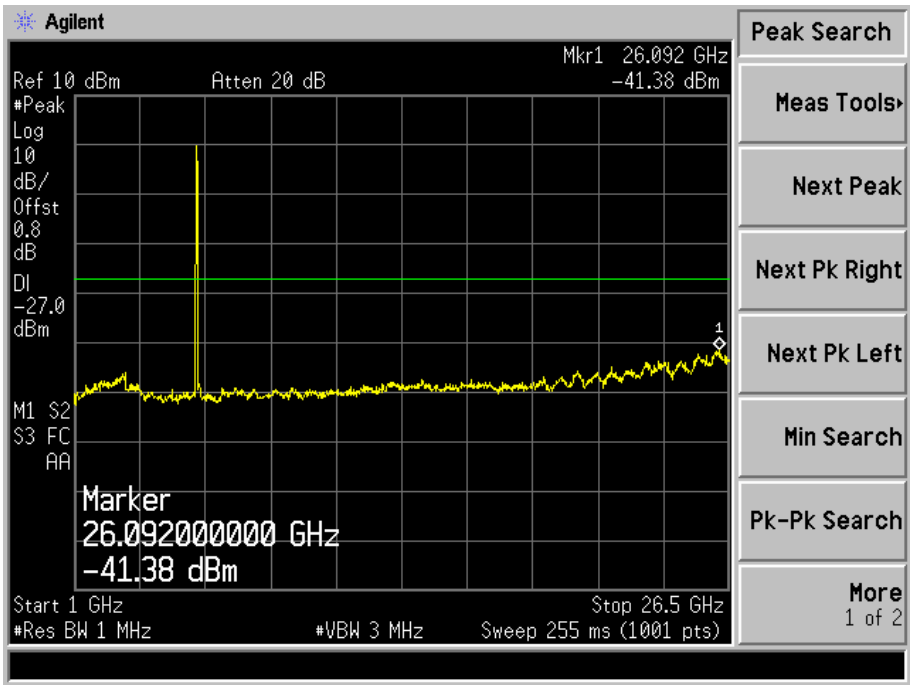
5230MHz


Agilent
Mkr1 645.0 MHz
Ref 10 dBm
Atten 20 dB
-56.19 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
644.980000 MHz
-56.19 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

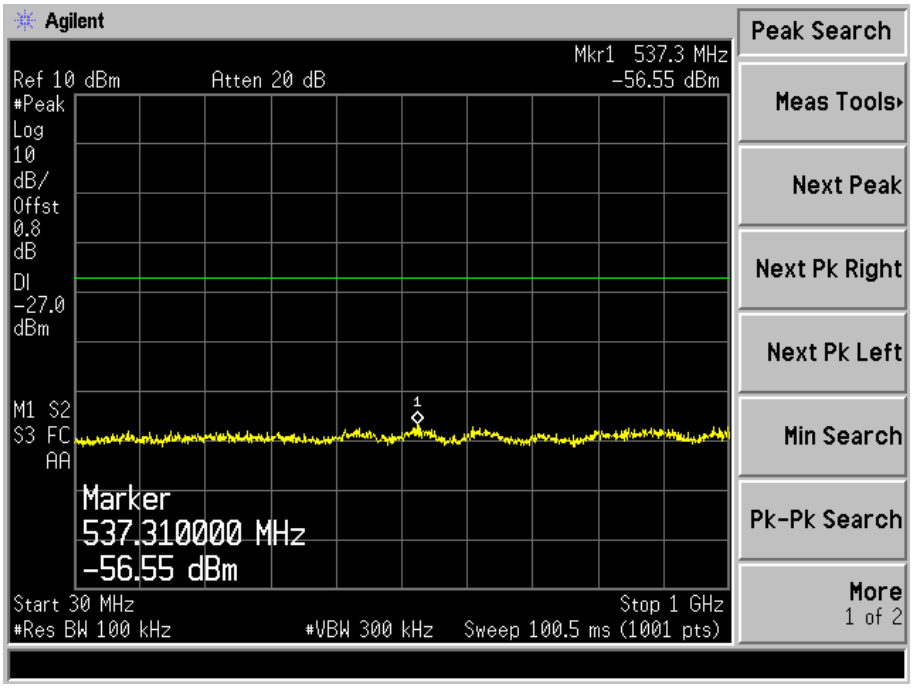

Agilent
Mkr1 26.092 GHz
Ref 10 dBm
Atten 20 dB
-41.53 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.092000000 GHz
-41.53 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

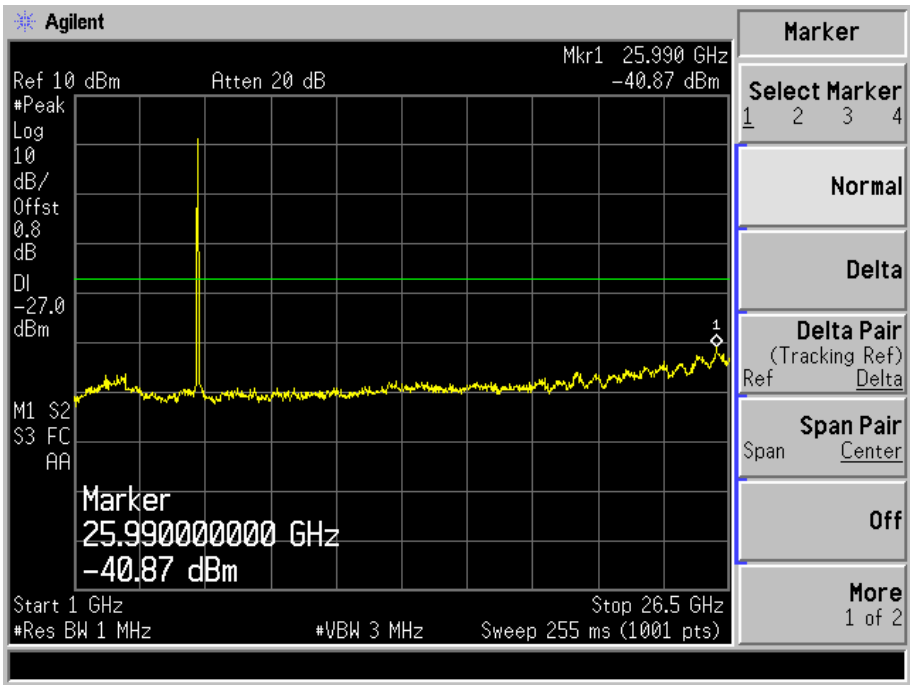
5755MHz


Agilent
Mkr1 632.4 MHz
Ref 10 dBm
Atten 20 dB
-56.61 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
632.370000 MHz
-56.61 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

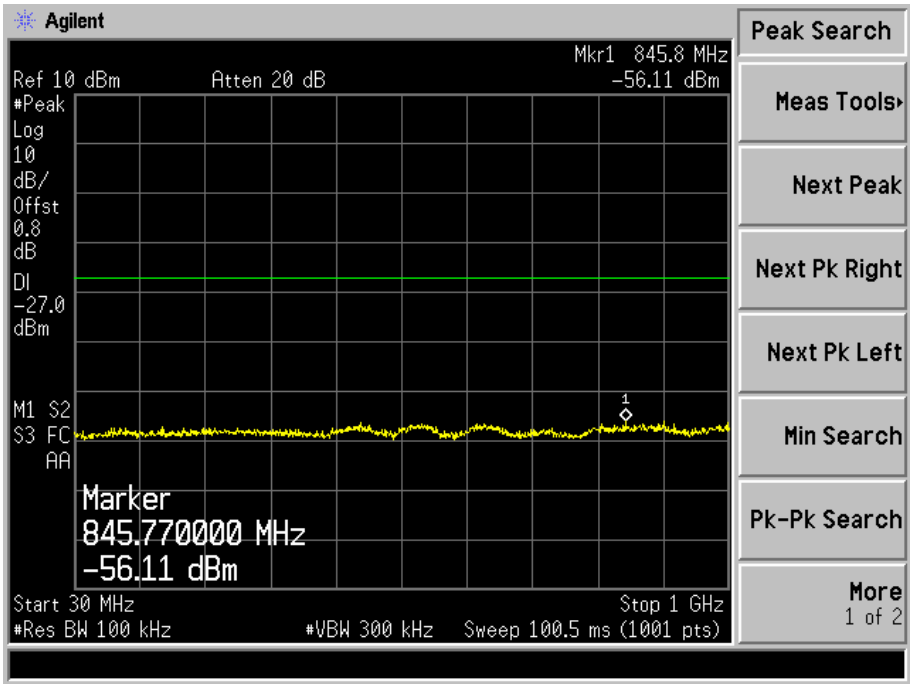

Agilent
Mkr1 26.092 GHz
Ref 10 dBm
Atten 20 dB
-41.38 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.092000000 GHz
-41.38 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

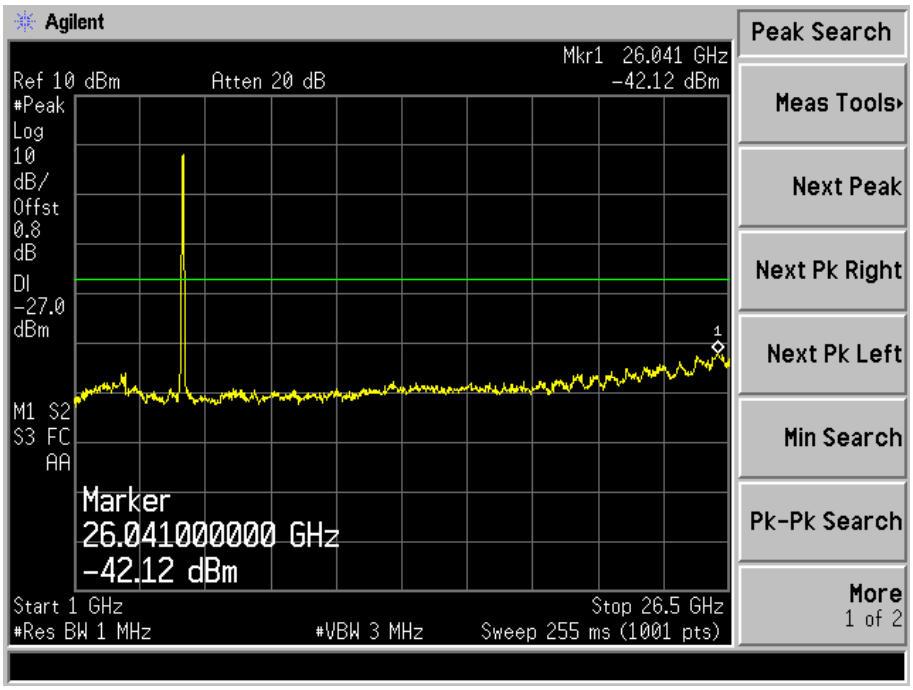
5795MHz


Agilent
Mkr1 537.3 MHz
Ref 10 dBm
Atten 20 dB
-56.55 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
537.310000 MHz
-56.55 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

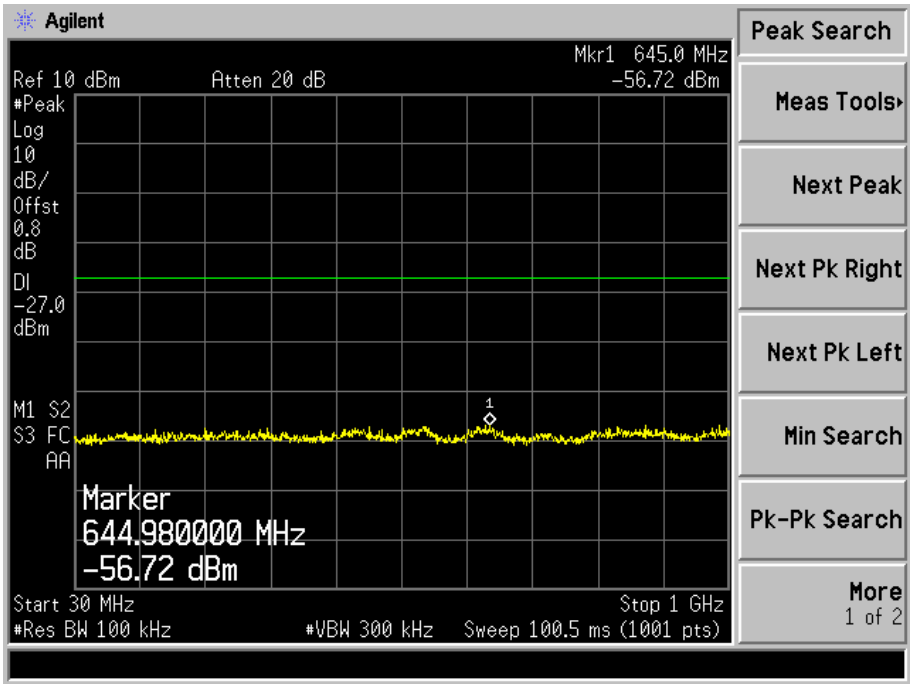

Agilent
Mkr1 25.990 GHz
Ref 10 dBm
Atten 20 dB
-40.87 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.990000000 GHz
-40.87 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

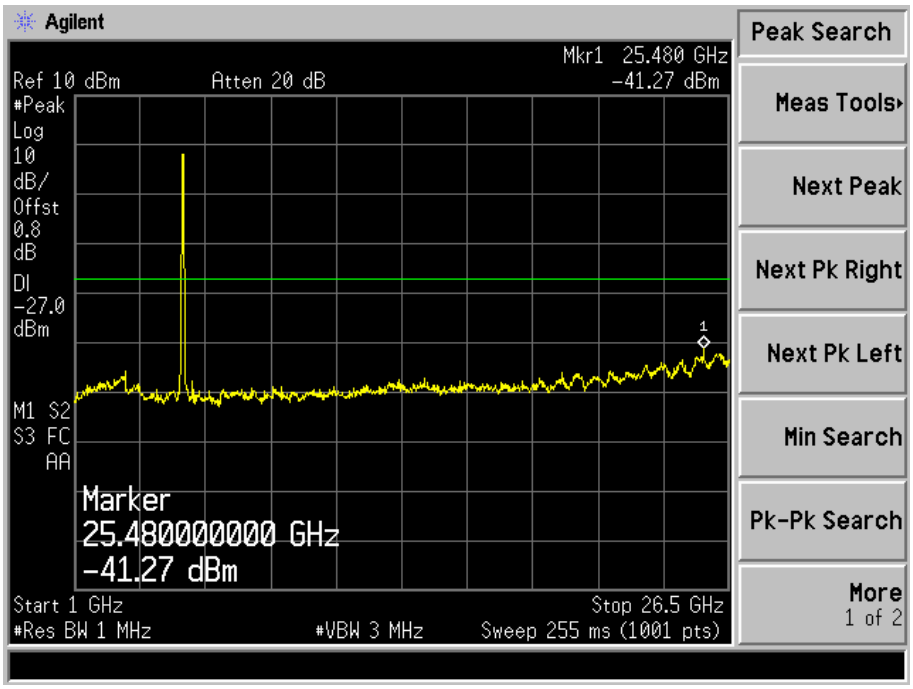
802.11ac-HT80
5210MHz



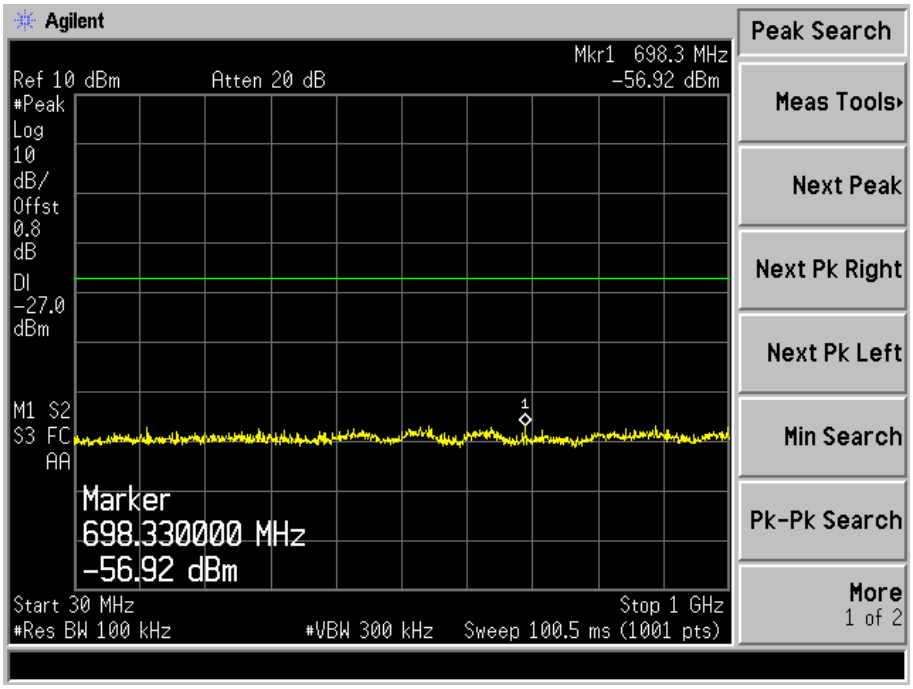


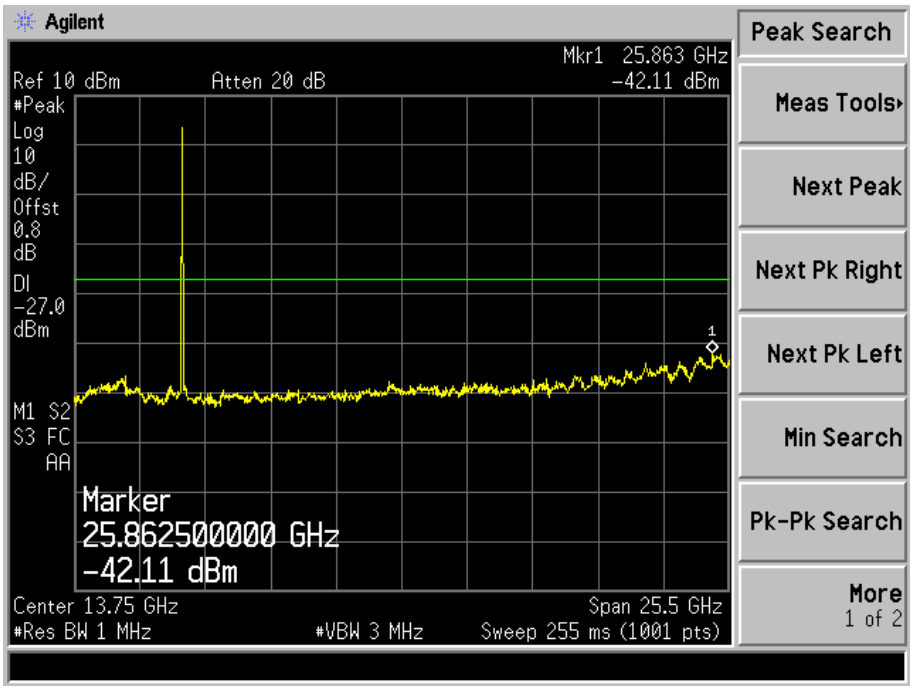
5755MHz


Agilent
Mkr1 645.0 MHz
Ref 10 dBm
Atten 20 dB
-56.72 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
644.980000 MHz
-56.72 dBm
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

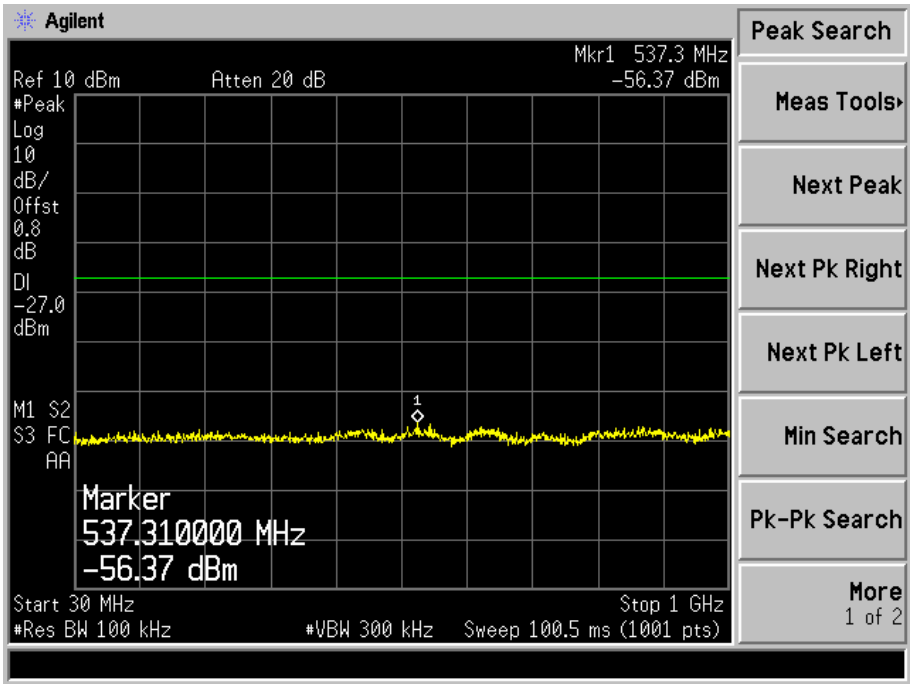

Agilent
Mkr1 25.480 GHz
Ref 10 dBm
Atten 20 dB
-41.27 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.480000000 GHz
-41.27 dBm
Start 1 GHz
Stop 26.5 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

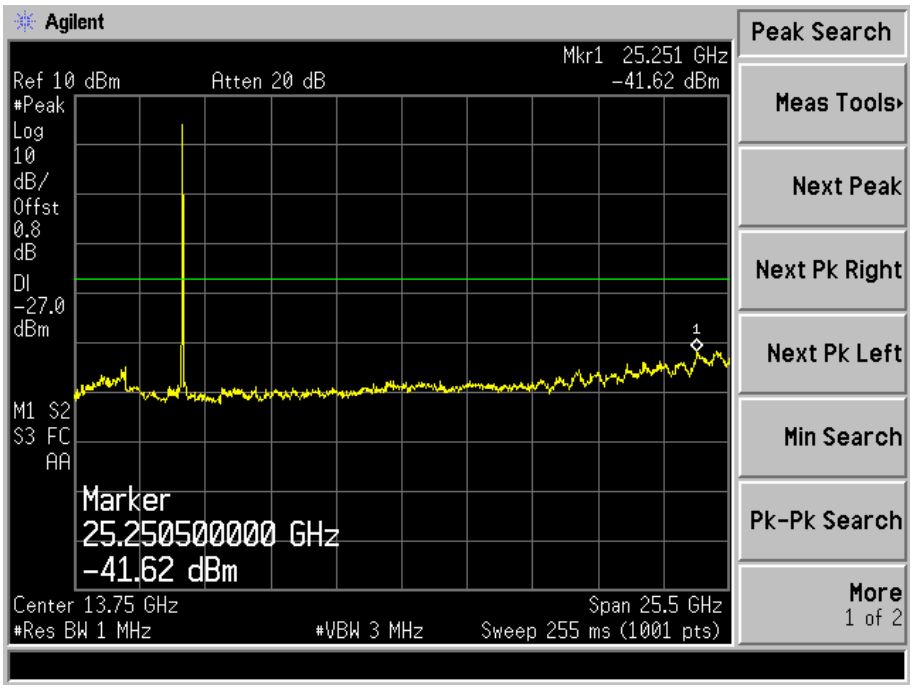
Antenna B
802.11a
5180MHz



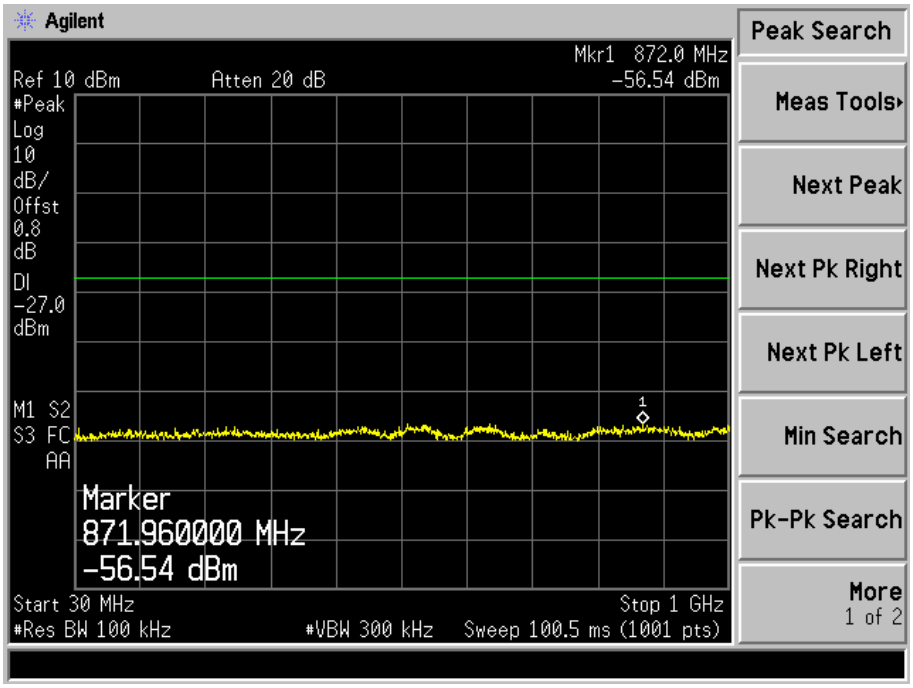


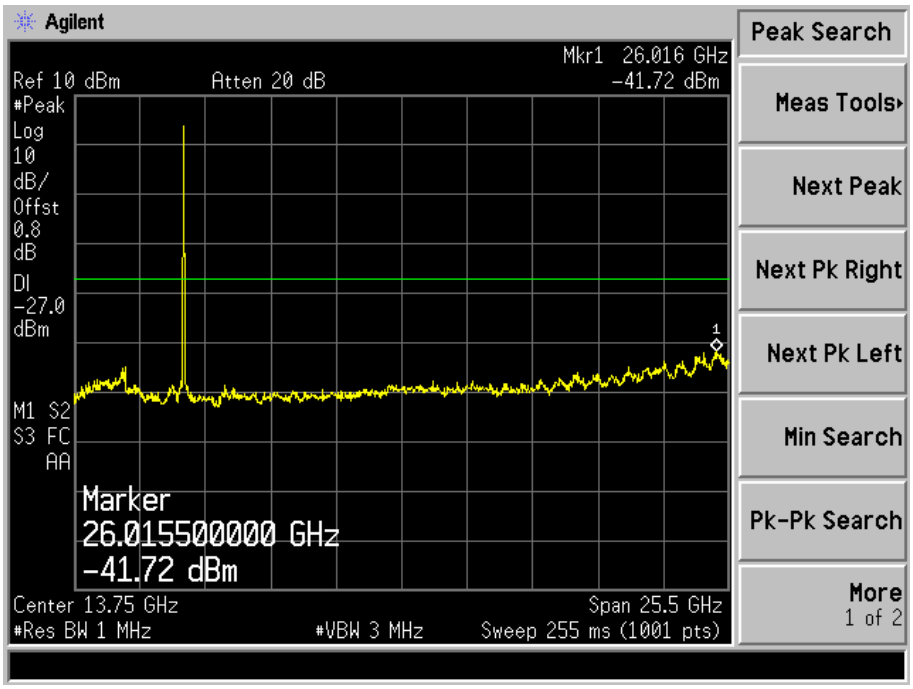
5200MHz


Agilent
Mkr1 537.3 MHz
Ref 10 dBm
Atten 20 dB
-56.37 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
537.310000 MHz
-56.37 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

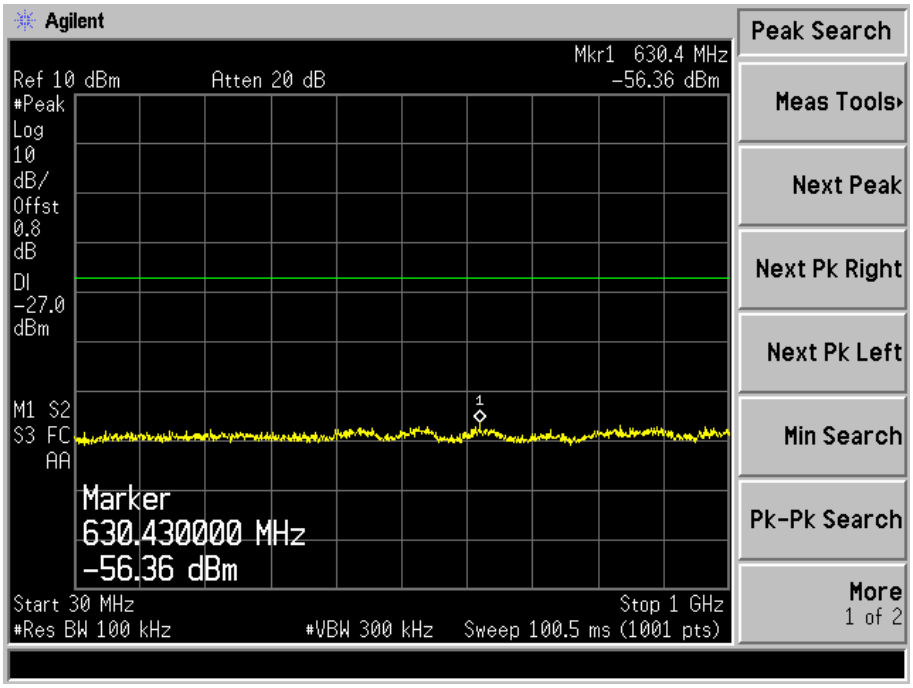

Agilent
Mkr1 25.251 GHz
Ref 10 dBm
Atten 20 dB
-41.62 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.250500000 GHz
-41.62 dBm
Center 13.75 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 25.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

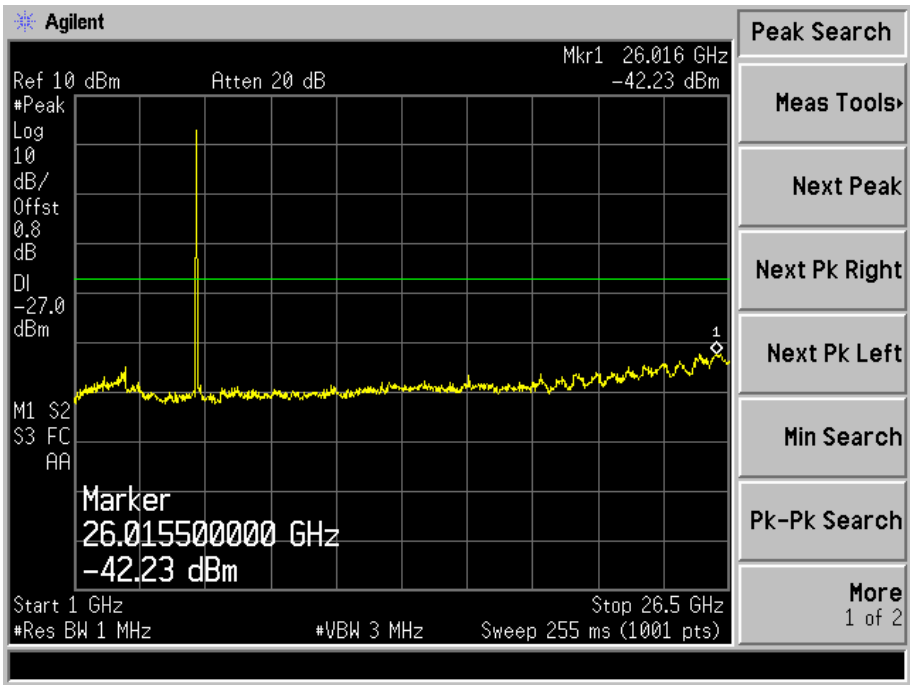
5240MHz


Agilent
Mkr1 872.0 MHz
Ref 10 dBm
Atten 20 dB
-56.54 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
871.960000 MHz
-56.54 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

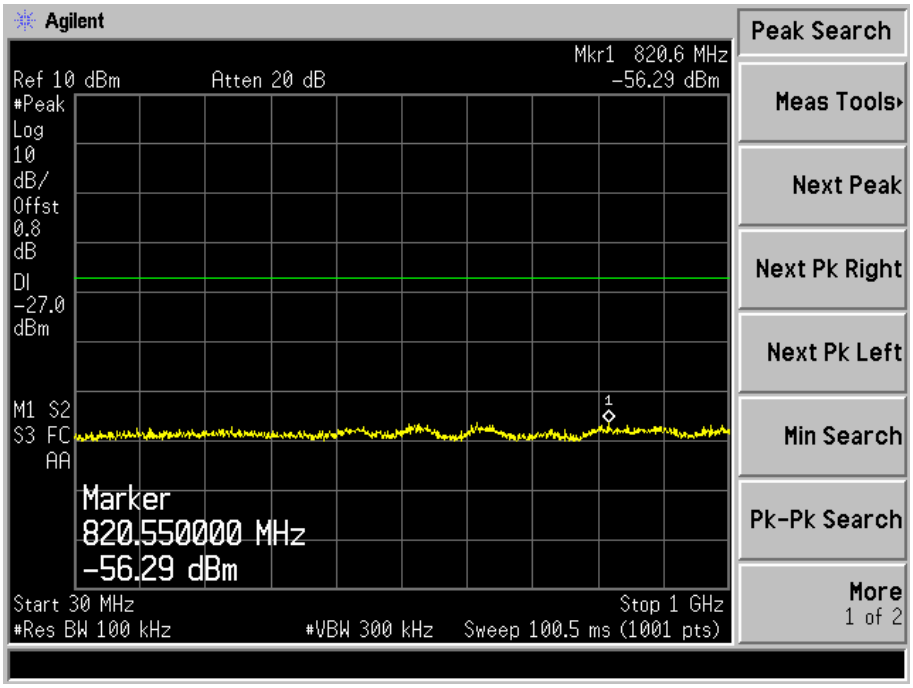

Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-41.72 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-41.72 dBm
Center 13.75 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 25.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

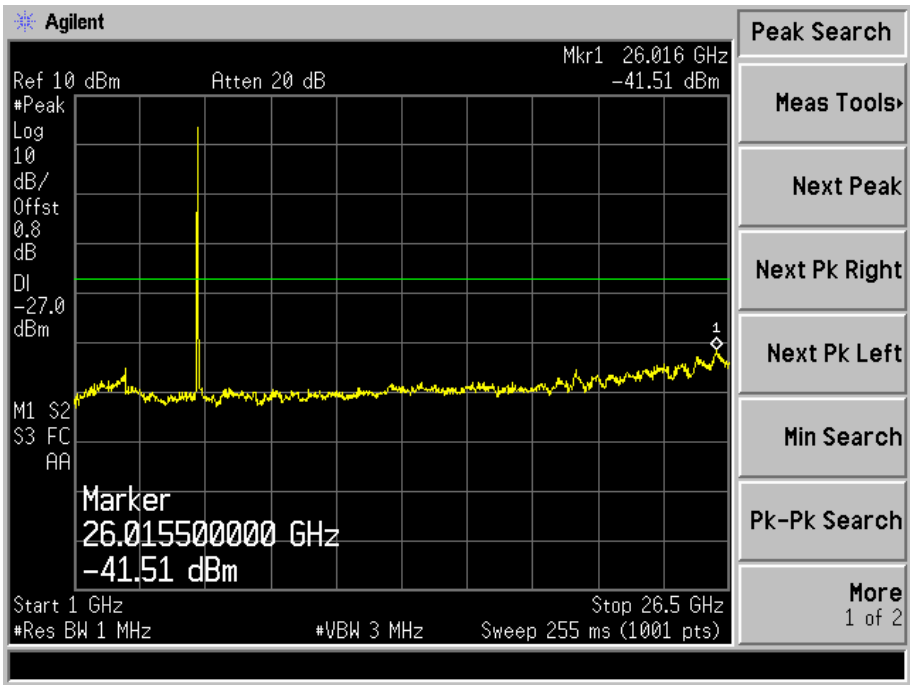
5745MHz


Agilent
Mkr1 630.4 MHz
Ref 10 dBm
Atten 20 dB
-56.36 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
630.430000 MHz
-56.36 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

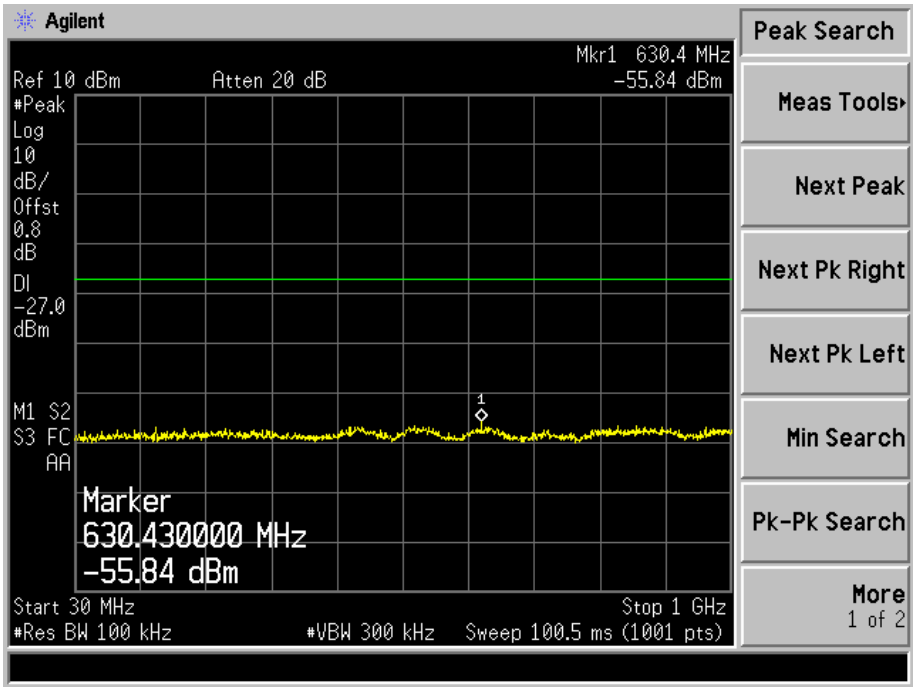

Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-42.23 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-42.23 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

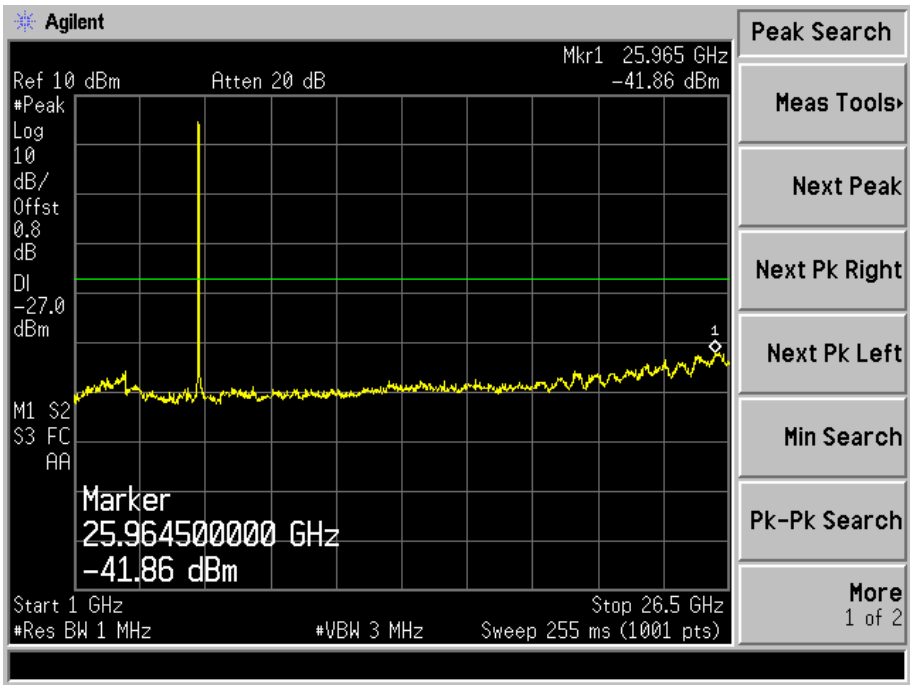
5785MHz


Agilent
Mkr1 820.6 MHz
Ref 10 dBm
Atten 20 dB
-56.29 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
820.550000 MHz
-56.29 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-41.51 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-41.51 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

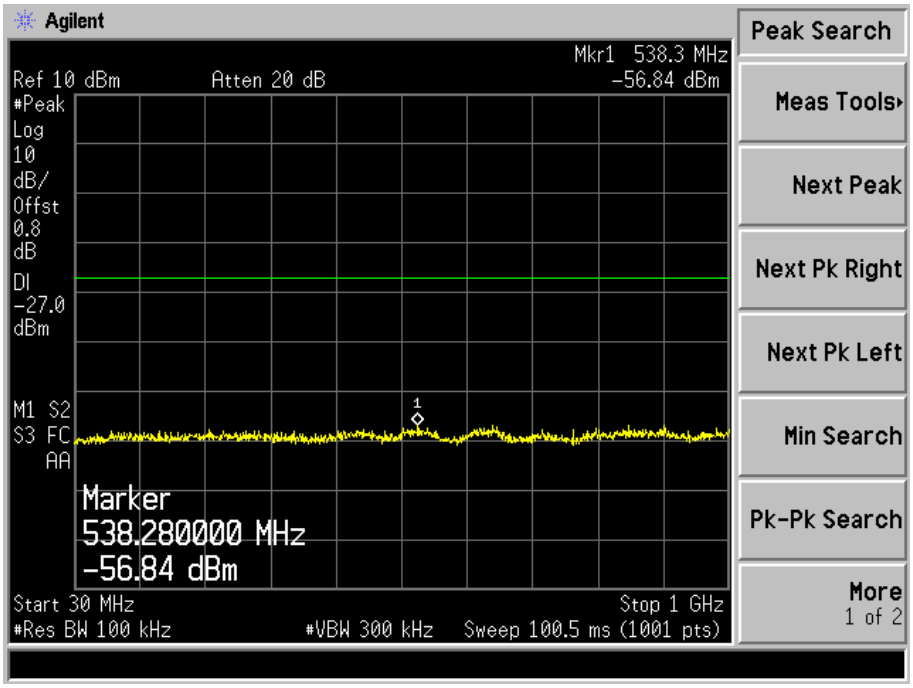
5805MHz

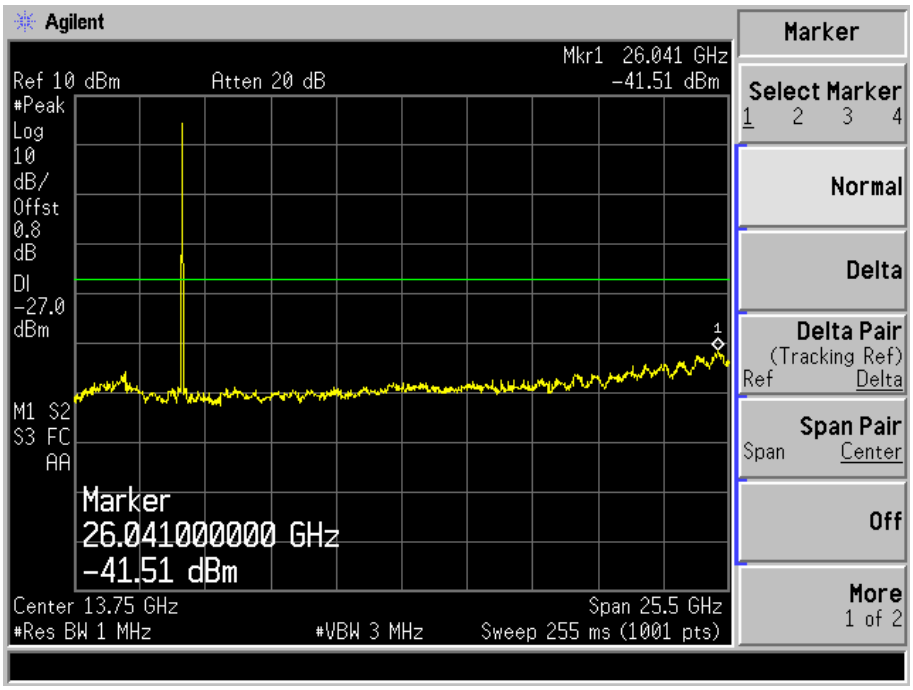

Agilent
Mkr1 630.4 MHz
Ref 10 dBm
Atten 20 dB
-55.84 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
630.430000 MHz
-55.84 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 25.965 GHz
Ref 10 dBm
Atten 20 dB
-41.86 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.964500000 GHz
-41.86 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

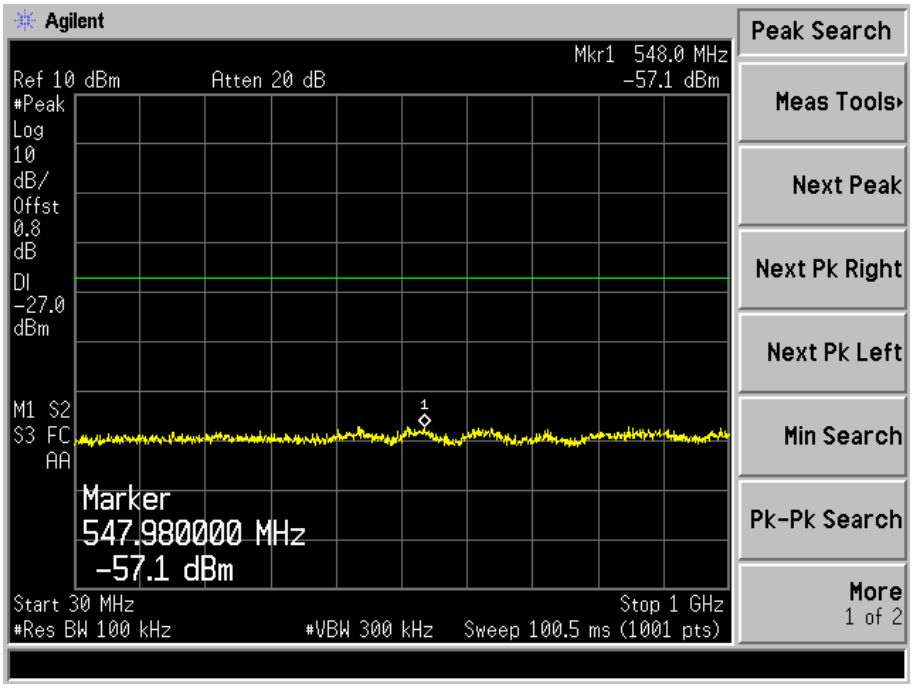
802.11n HT20

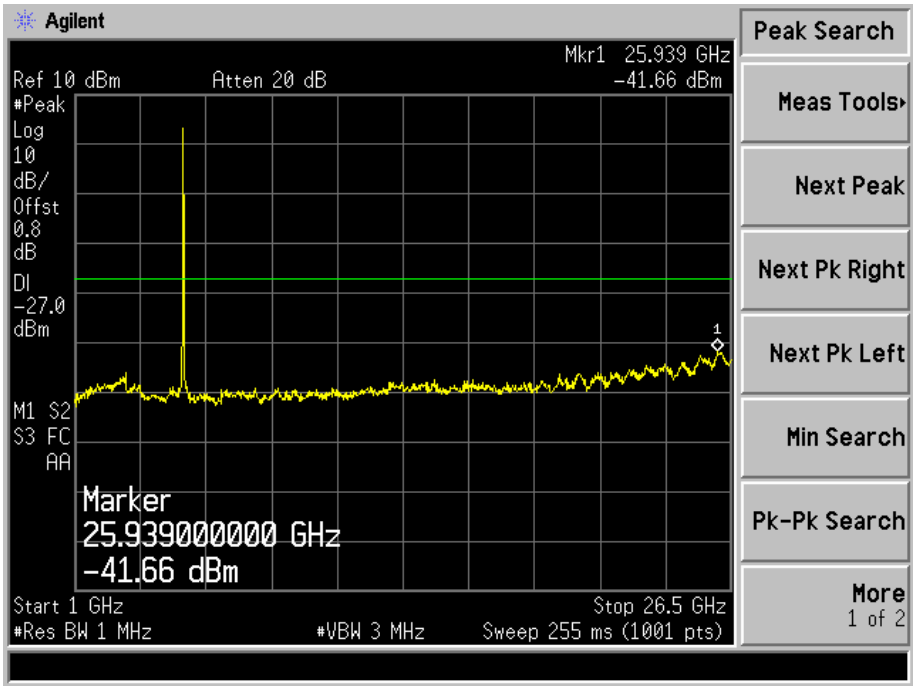
5180MHz



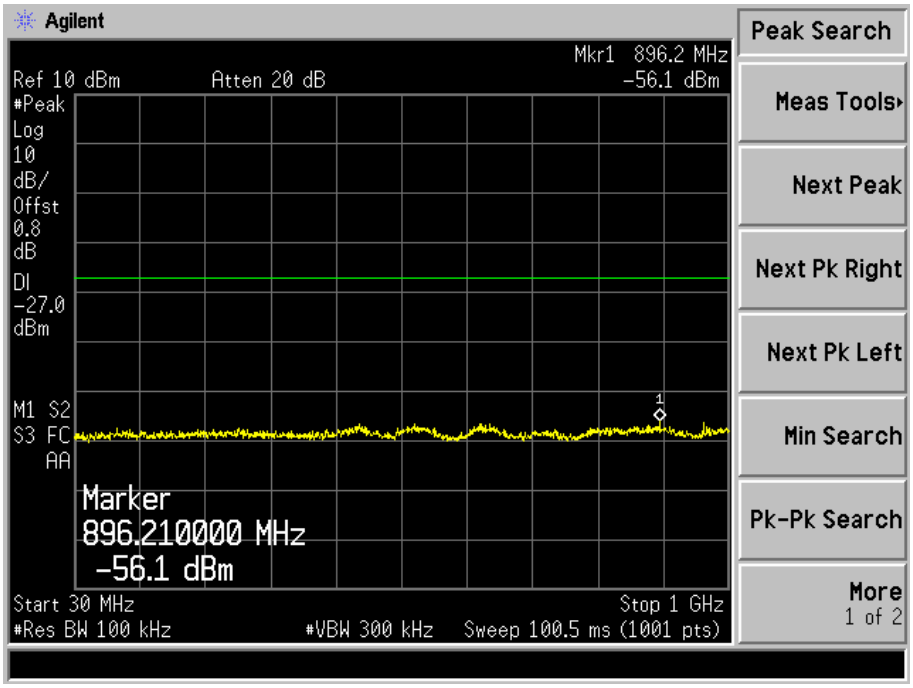


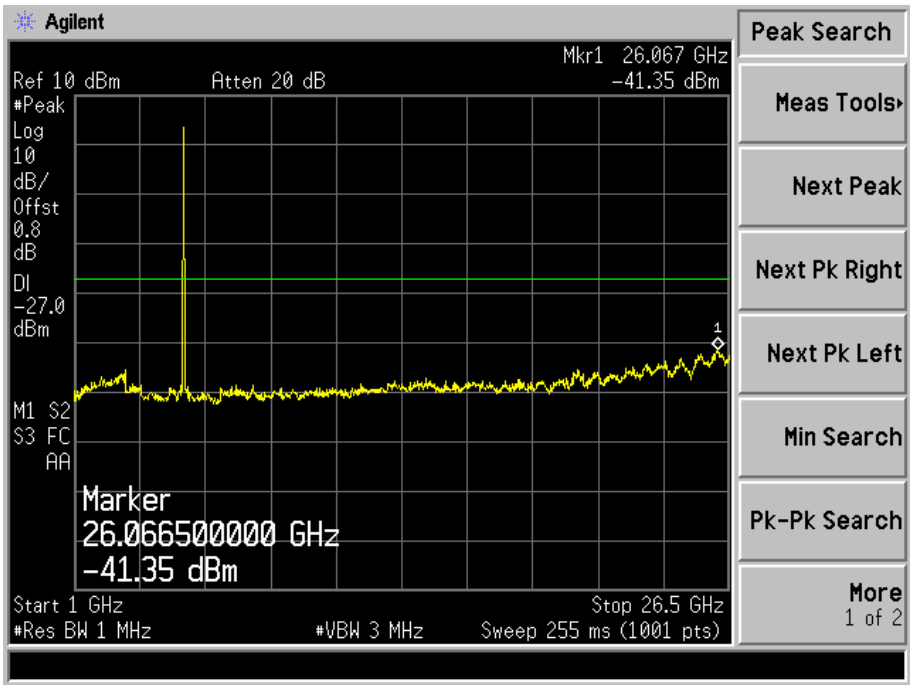
5200MHz


Agilent
Mkr1 548.0 MHz
Ref 10 dBm
Atten 20 dB
-57.1 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
547.980000 MHz
-57.1 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

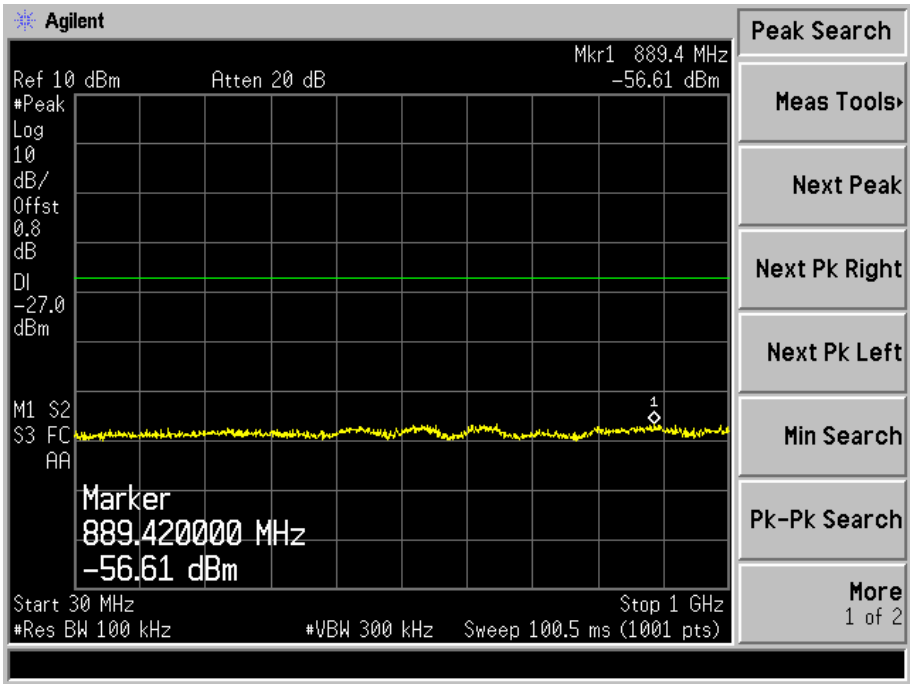

Agilent
Mkr1 25.939 GHz
Ref 10 dBm
Atten 20 dB
-41.66 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.939000000 GHz
-41.66 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

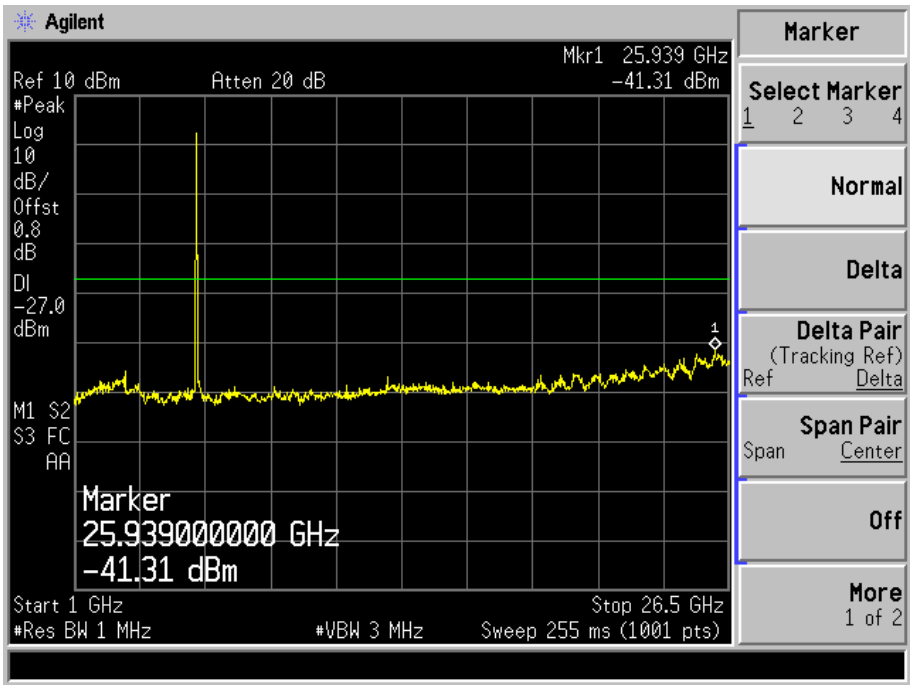
5240MHz


Agilent
Mkr1 896.2 MHz
Ref 10 dBm
Atten 20 dB
-56.1 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
896.210000 MHz
-56.1 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

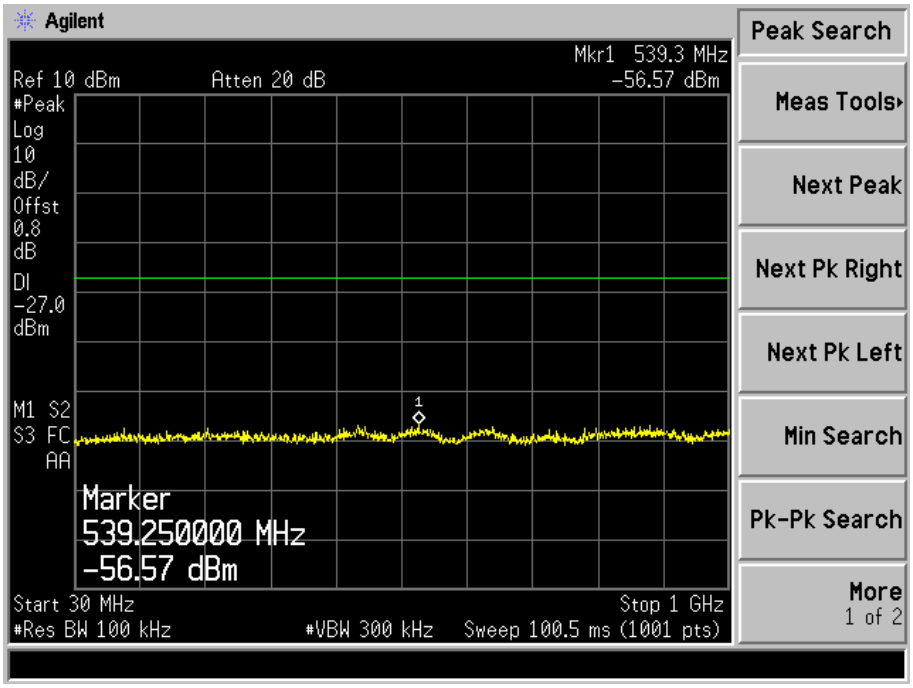

Agilent
Mkr1 26.067 GHz
Ref 10 dBm
Atten 20 dB
-41.35 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.066500000 GHz
-41.35 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

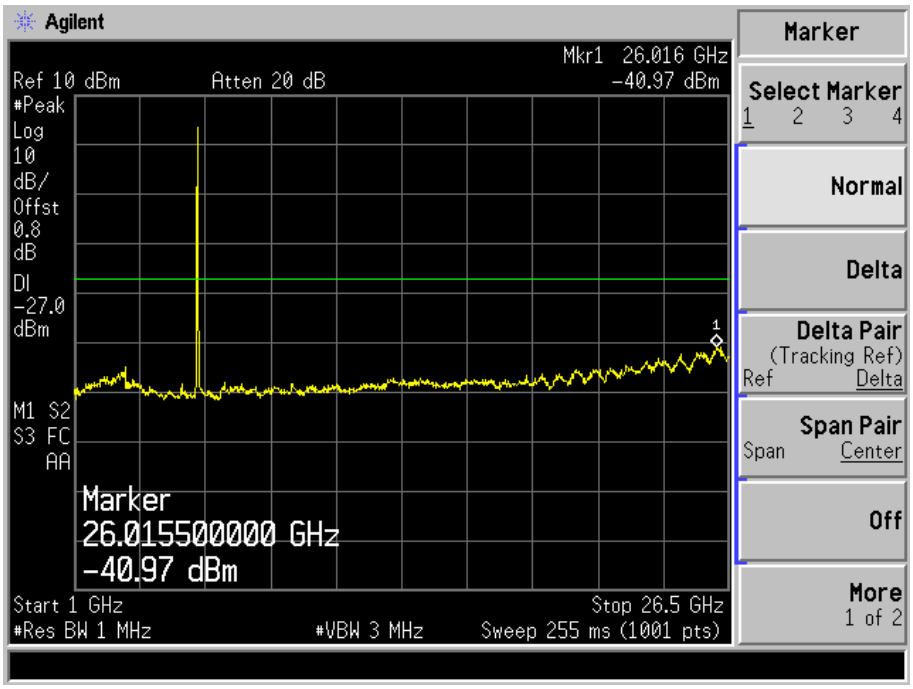
5745MHz


Agilent
Mkr1 889.4 MHz
Ref 10 dBm
Atten 20 dB
-56.61 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
889.420000 MHz
-56.61 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

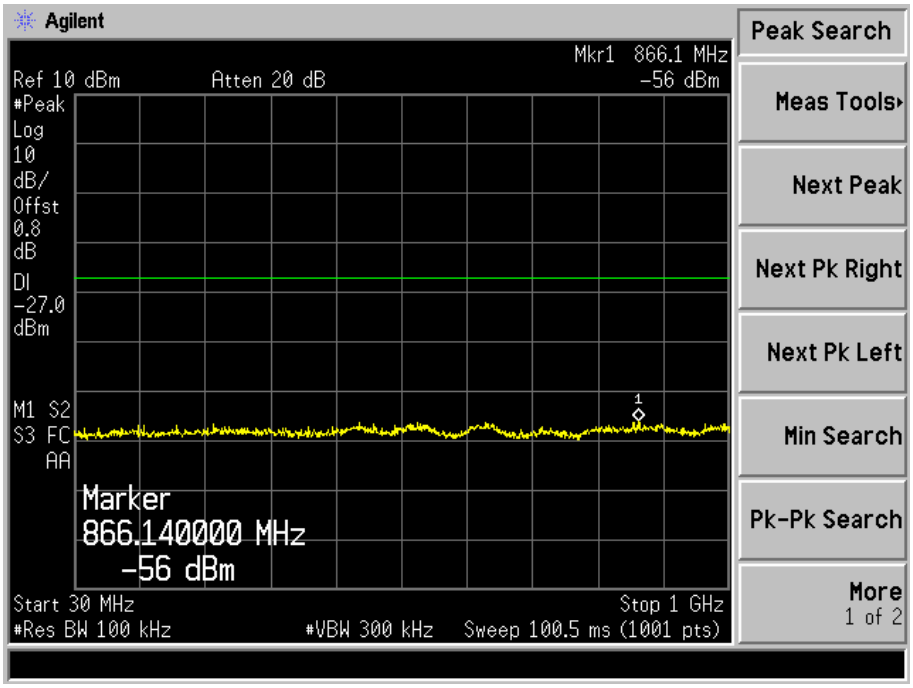

Agilent
Mkr1 25.939 GHz
Ref 10 dBm
Atten 20 dB
-41.31 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.939000000 GHz
-41.31 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

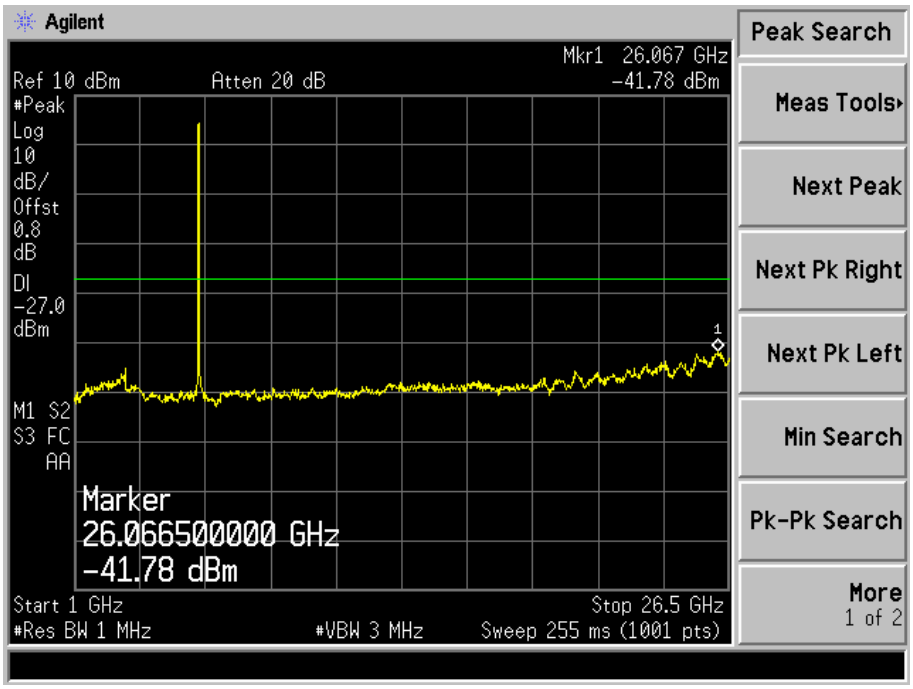
5785MHz


Agilent
Mkr1 539.3 MHz
Ref 10 dBm
Atten 20 dB
-56.57 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
539.250000 MHz
-56.57 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

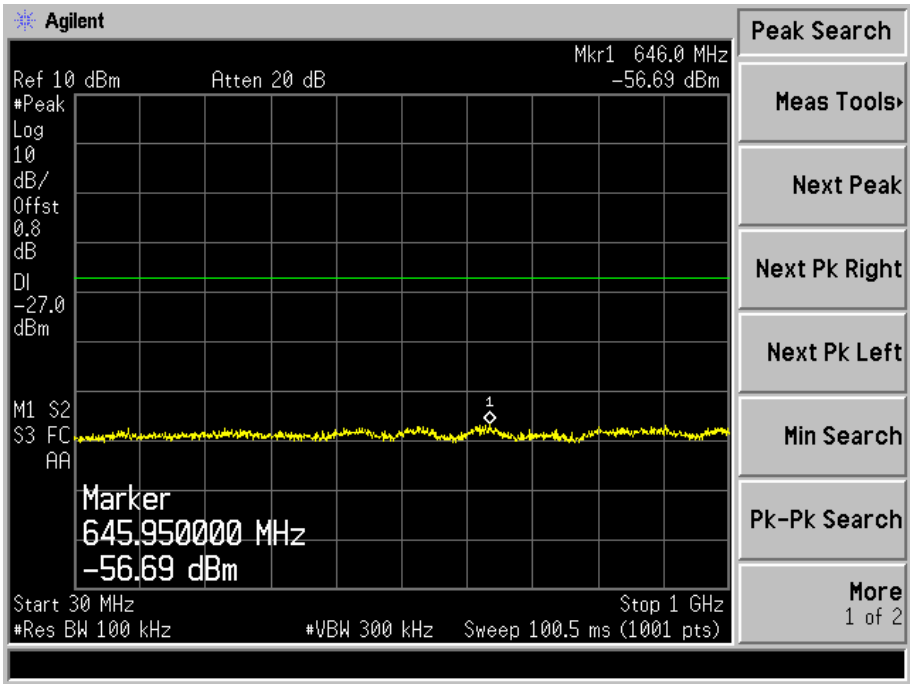

Agilent
Mkr1 26.016 GHz
Ref 10 dBm
Atten 20 dB
-40.97 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.015500000 GHz
-40.97 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

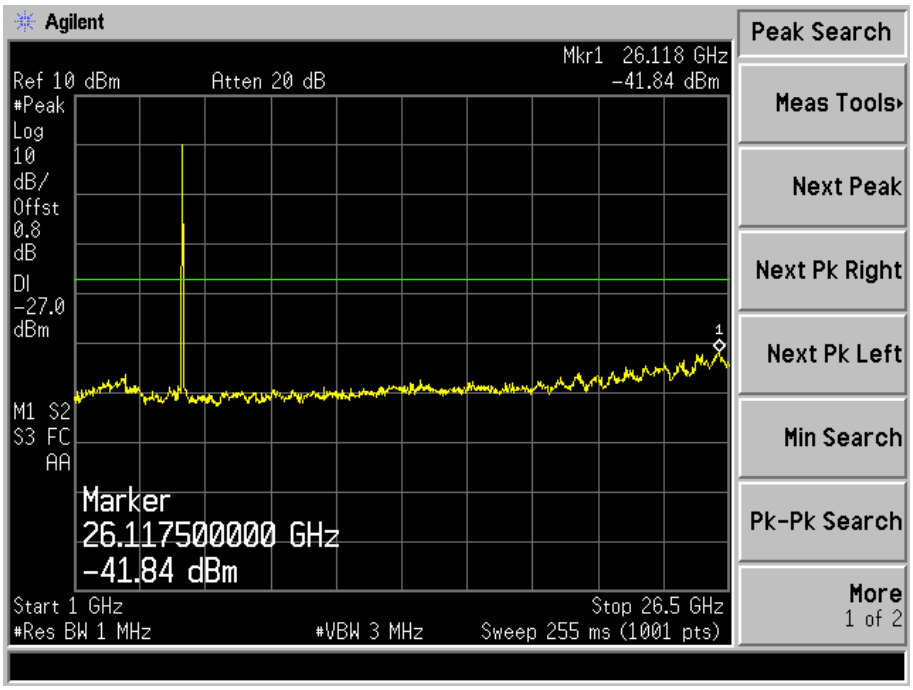
5805MHz


Agilent
Mkr1 866.1 MHz
Ref 10 dBm
Atten 20 dB
-56 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
866.140000 MHz
-56 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

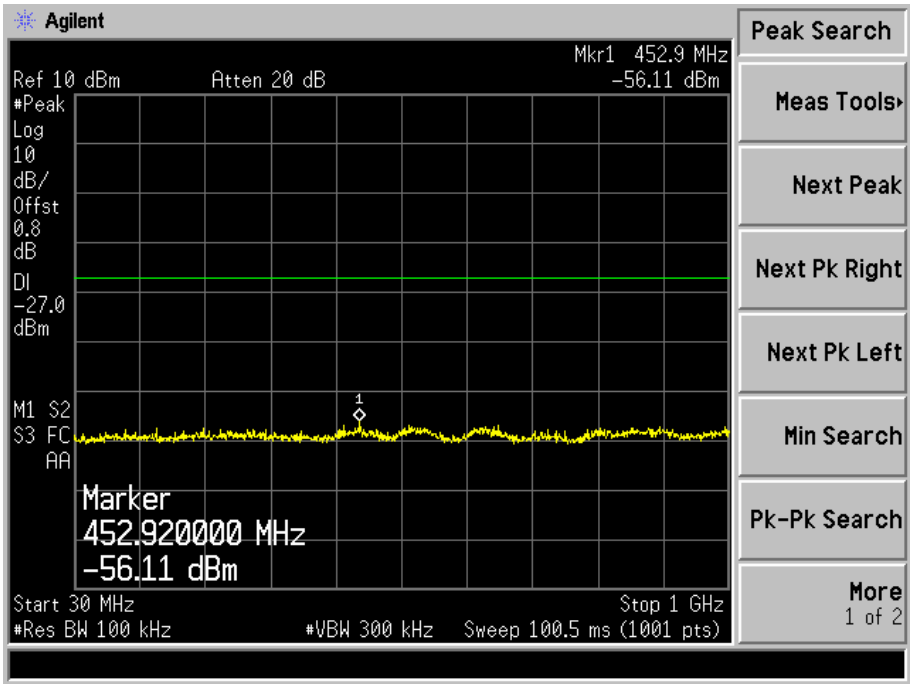

Agilent
Mkr1 26.067 GHz
Ref 10 dBm
Atten 20 dB
-41.78 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.066500000 GHz
-41.78 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

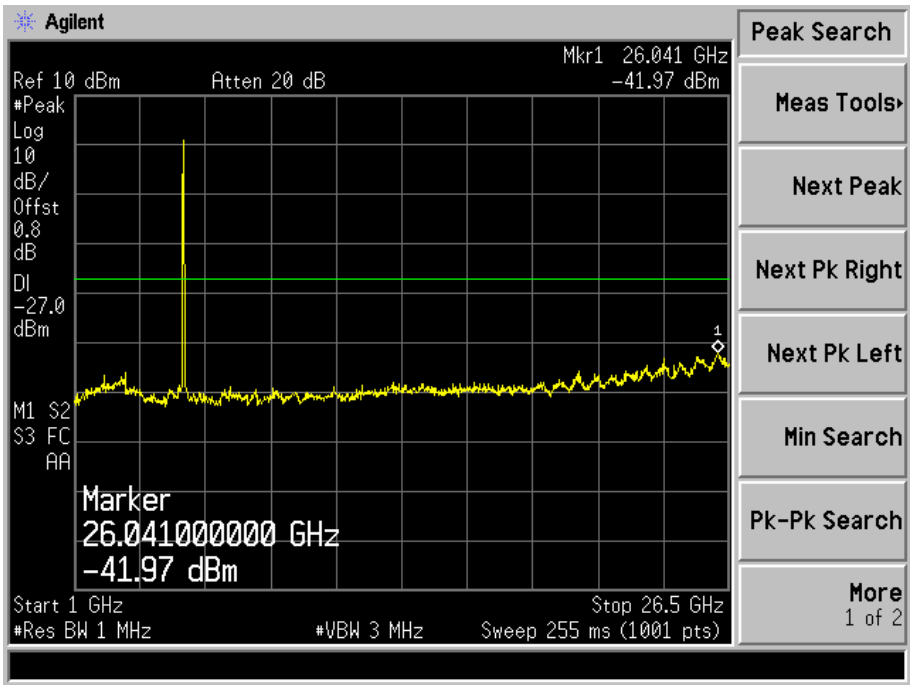
802.11n-HT40
5190MHz



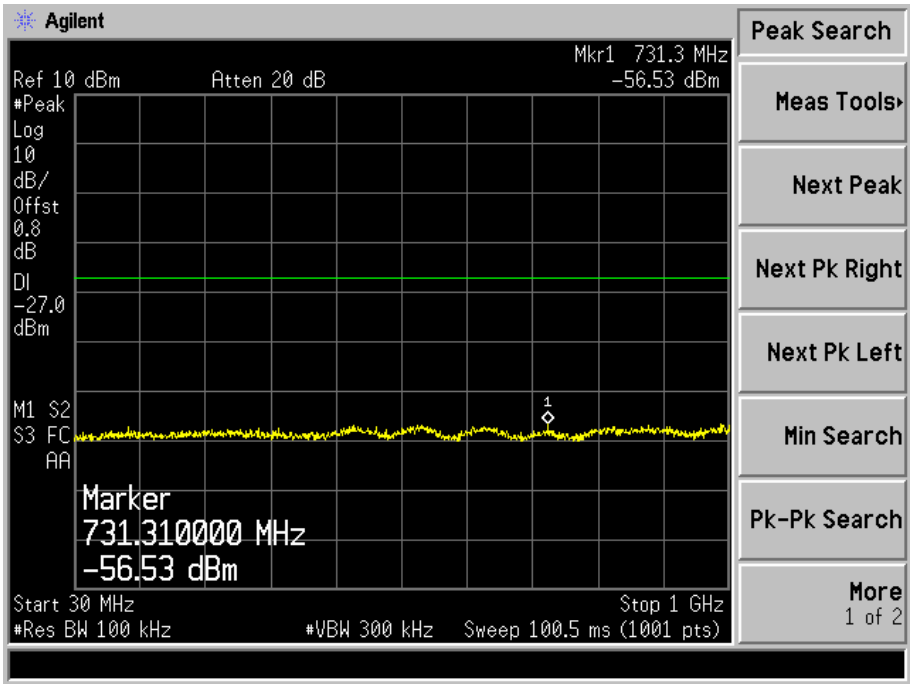


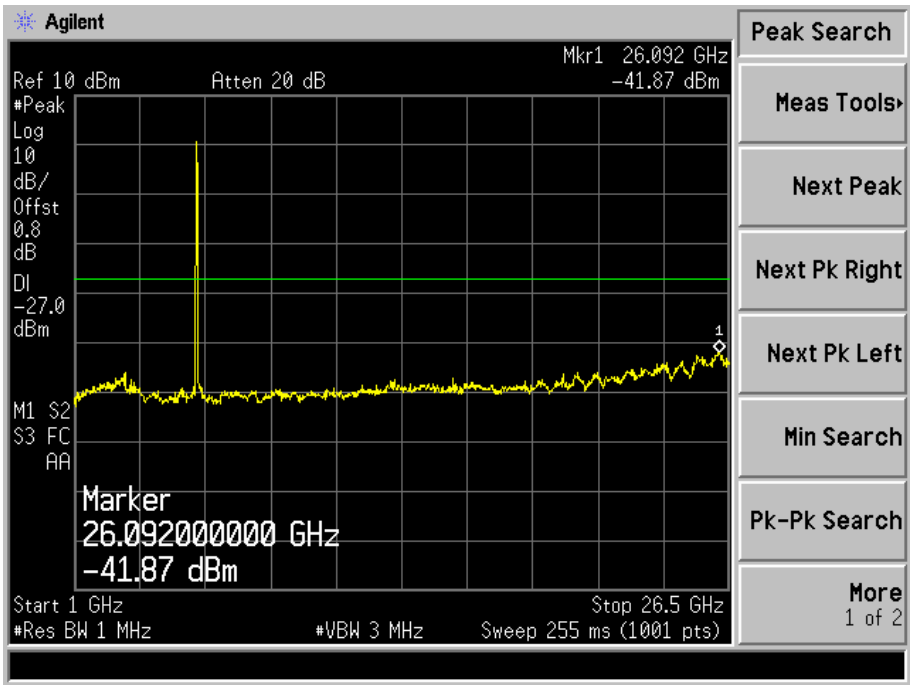
5230MHz


Agilent
Mkr1 452.9 MHz
Ref 10 dBm
Atten 20 dB
-56.11 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
452.920000 MHz
-56.11 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

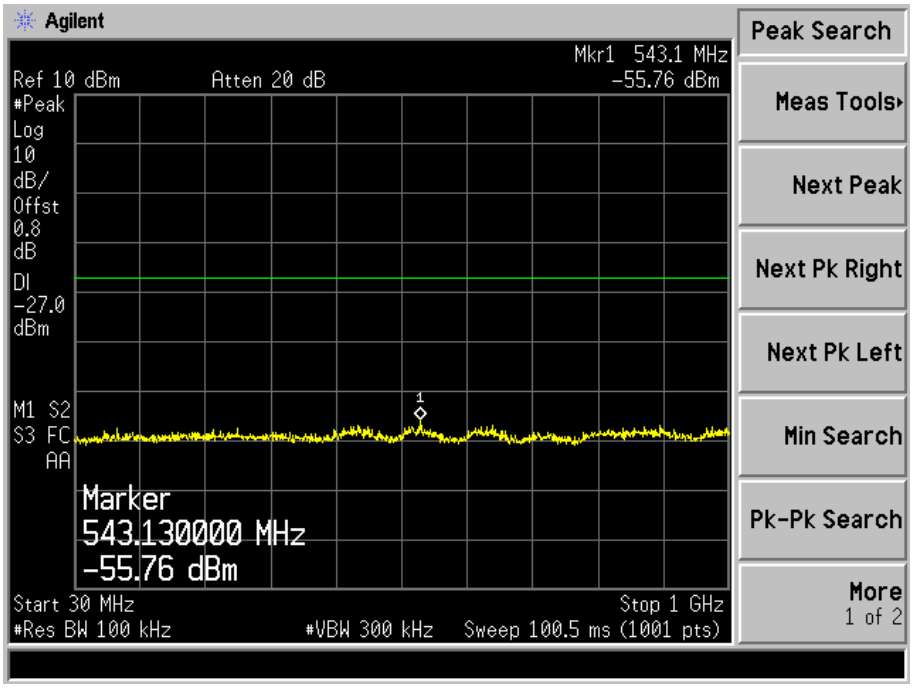

Agilent
Mkr1 26.041 GHz
Ref 10 dBm
Atten 20 dB
-41.97 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.041000000 GHz
-41.97 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

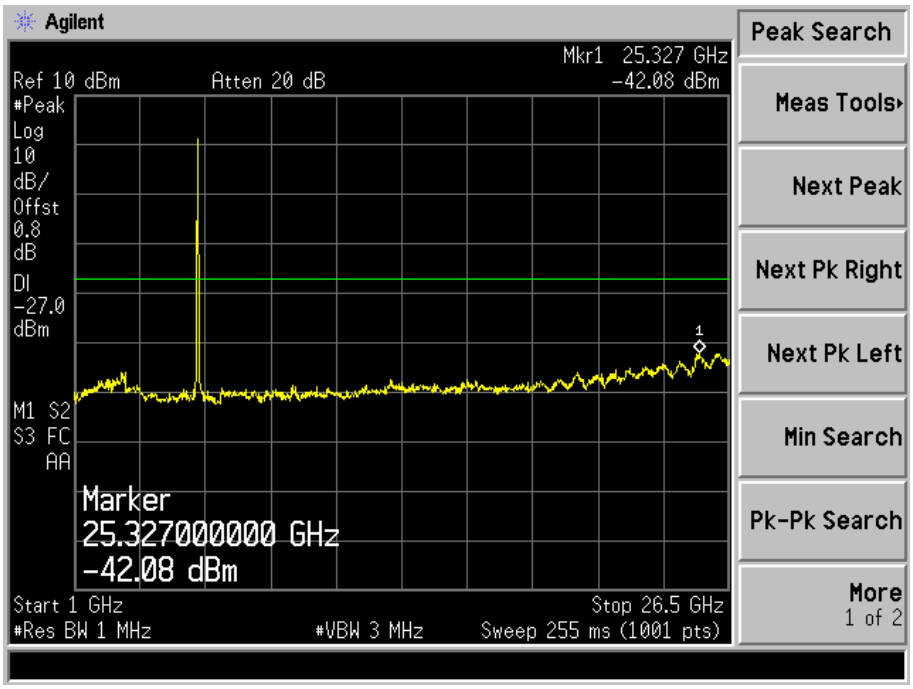
5755MHz


Agilent
Mkr1 731.3 MHz
Ref 10 dBm
Atten 20 dB
-56.53 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
731.310000 MHz
-56.53 dBm
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

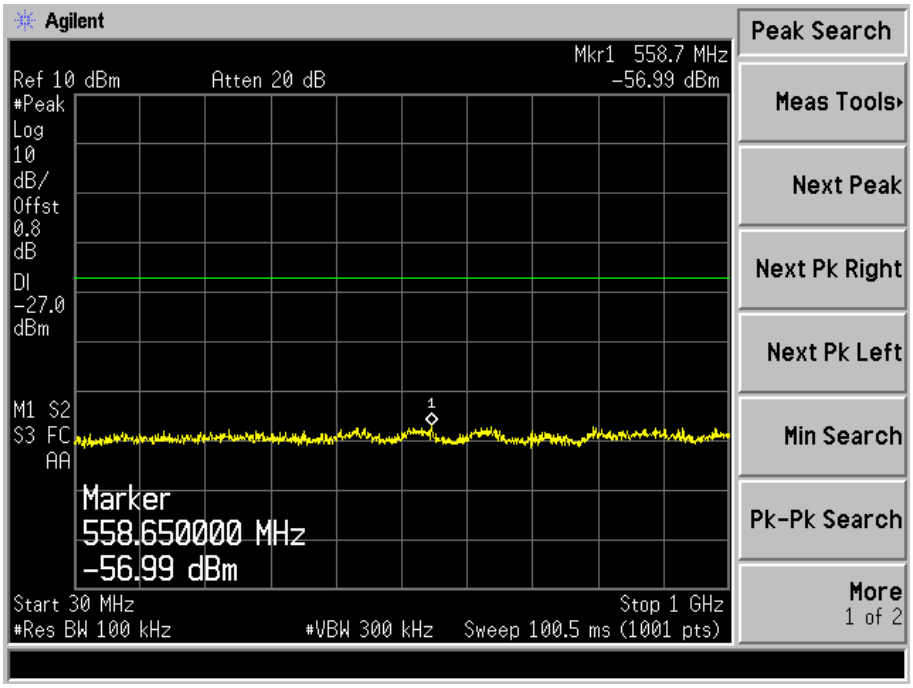

Agilent
Mkr1 26.092 GHz
Ref 10 dBm
Atten 20 dB
-41.87 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.092000000 GHz
-41.87 dBm
Start 1 GHz
Stop 26.5 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

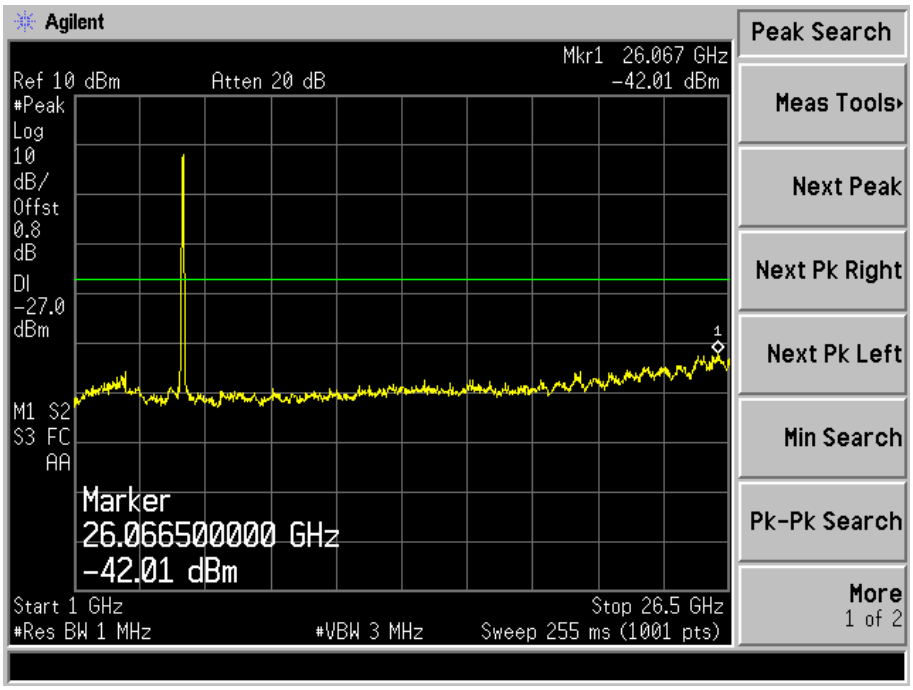
5795MHz


Agilent
Mkr1 543.1 MHz
Ref 10 dBm
Atten 20 dB
-55.76 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
543.130000 MHz
-55.76 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

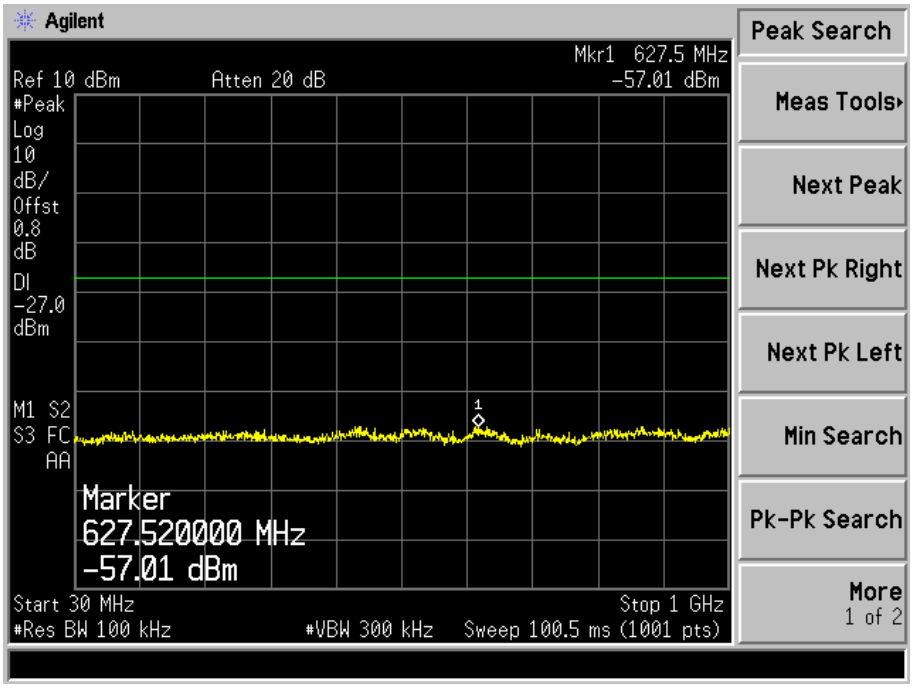

Agilent
Mkr1 25.327 GHz
Ref 10 dBm
Atten 20 dB
-42.08 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
25.327000000 GHz
-42.08 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

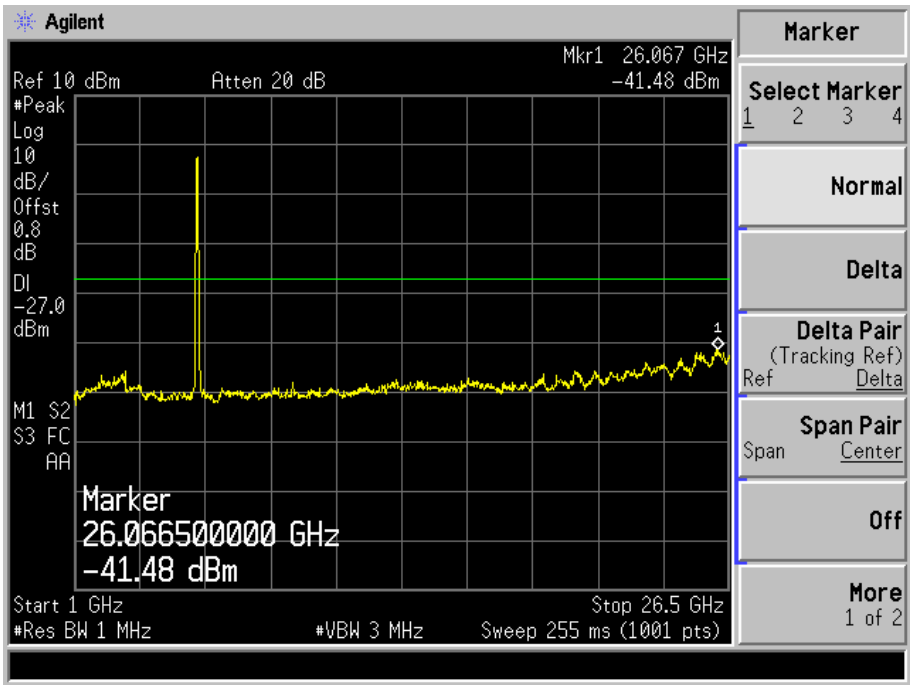
802.11ac-HT80
5210MHz





5755MHz


Agilent
Mkr1 627.5 MHz
Ref 10 dBm
Atten 20 dB
-57.01 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
627.520000 MHz
-57.01 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (1001 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 26.067 GHz
Ref 10 dBm
Atten 20 dB
-41.48 dBm
#Peak
Log
10
dB/
Offst
0.8
dB
Dl
-27.0
dBm
M1 S2
S3 FC
AA
Marker
26.066500000 GHz
-41.48 dBm
Start 1 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 26.5 GHz
Sweep 255 ms (1001 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

11. Radiated Spurious Emissions

11.1 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.

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

EIRP = ((E*d)^2) / 30

where:

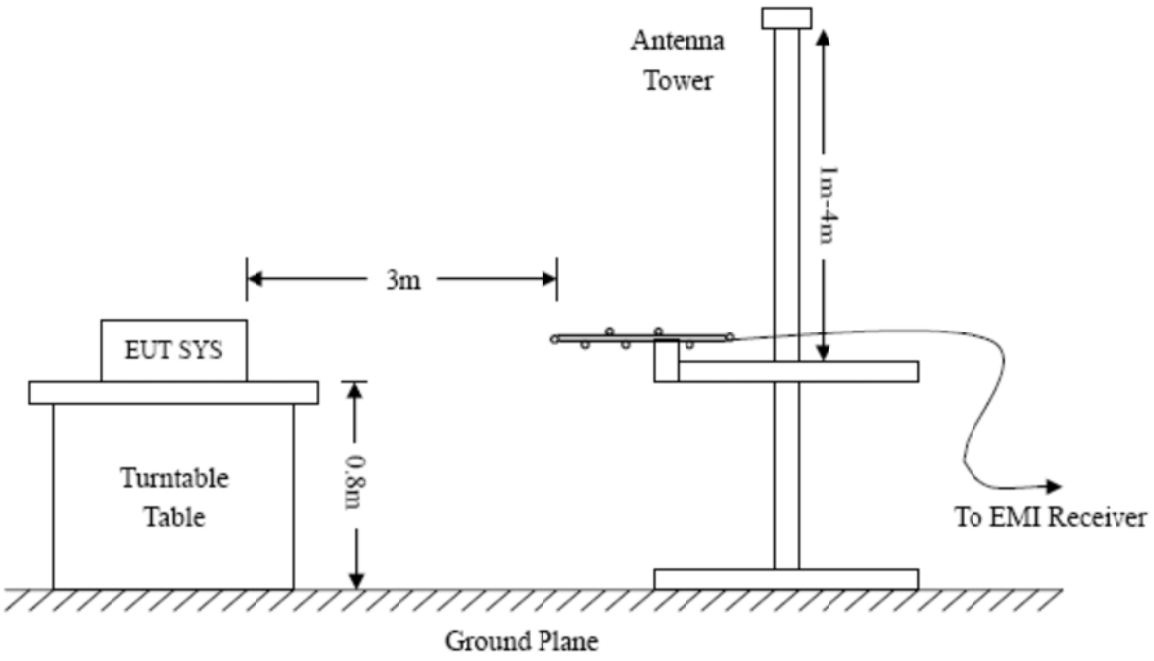
- E is the field strength in V/m;
- d is the measurement distance in meters;
- EIRP is the equivalent isotropically radiated power in watts.

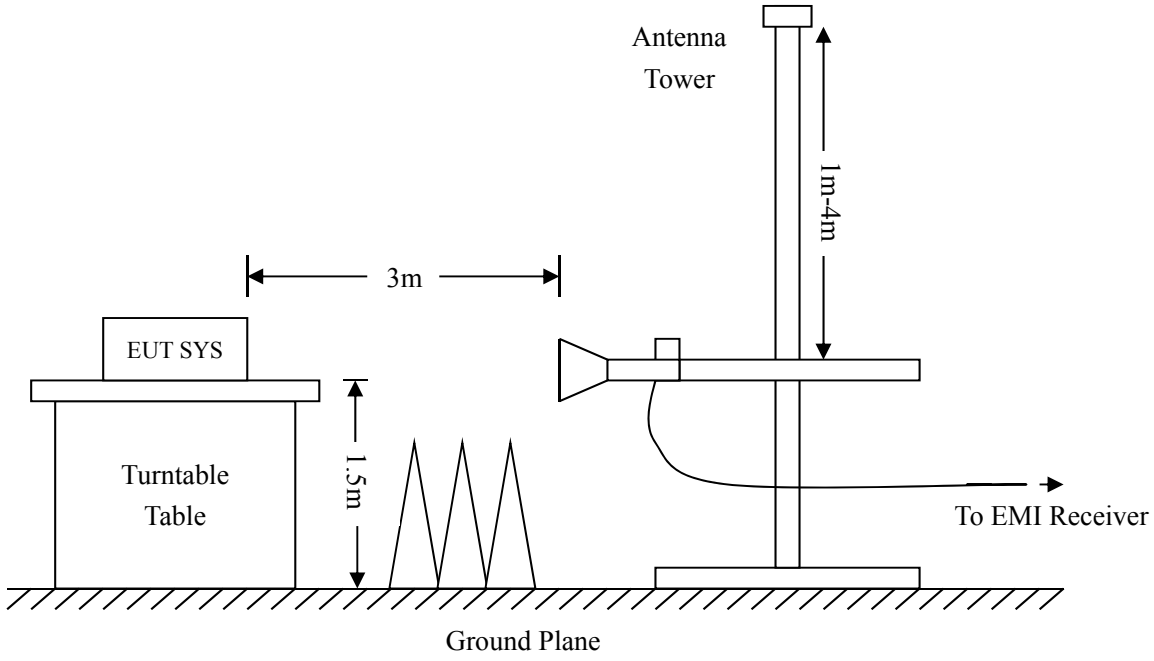
11.2 Test Procedure

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.





11.3 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

11.4 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:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

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

Margin = Corr. Ampl. – FCC Part 15 Limit

11.5 Environmental Conditions

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

11.6 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:

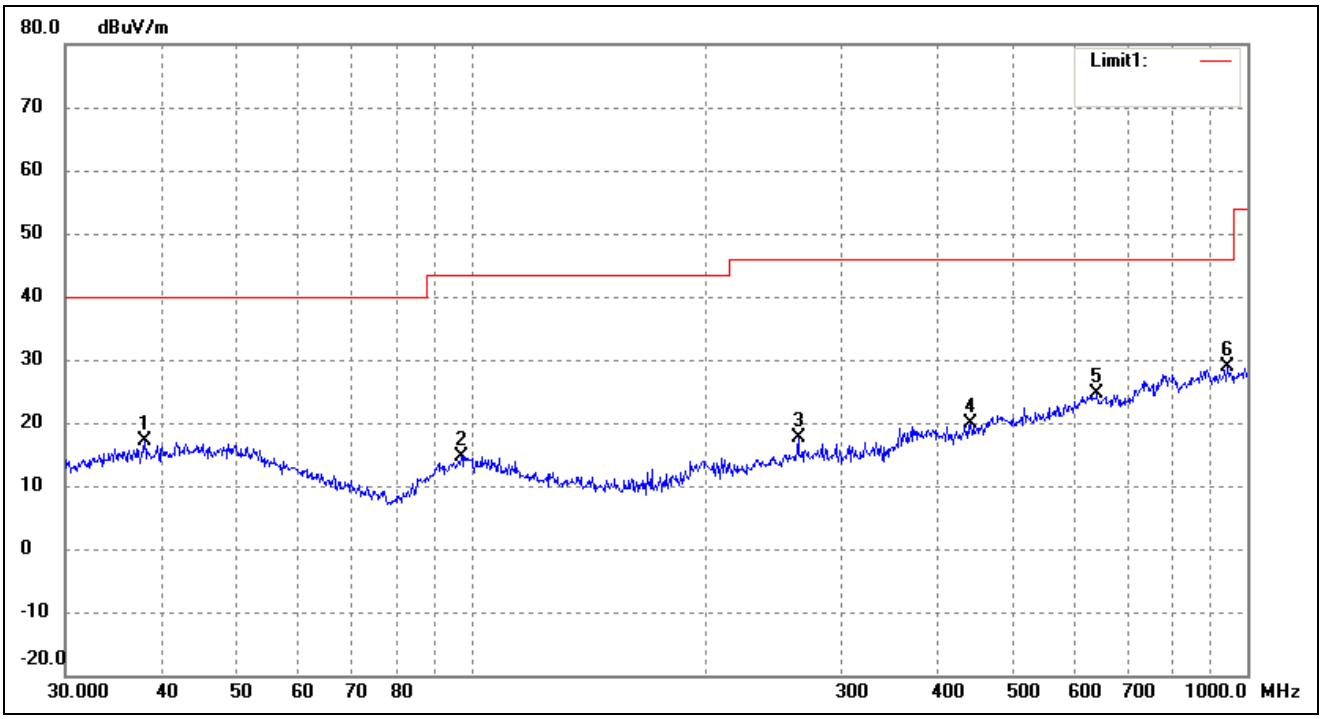
Note: *this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

Antenna A

For 802.11a (worse case)

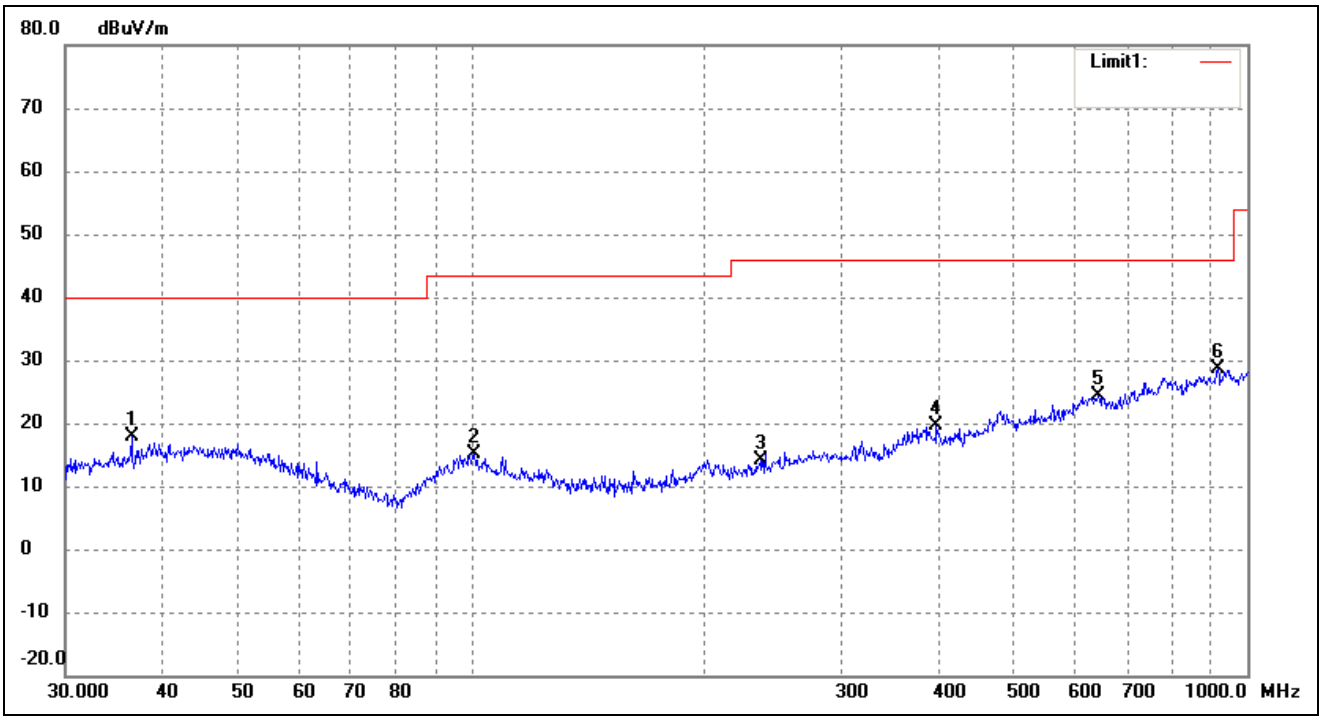
Spurious Emission From 30 MHz to 1 GHz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	37.9450	27.92	-10.87	17.05	40.00	-22.95	278	100	peak
2	97.1148	26.78	-12.04	14.74	43.50	-28.76	100	100	peak
3	263.8190	27.64	-9.96	17.68	46.00	-28.32	251	100	peak
4	440.1963	27.34	-7.43	19.91	46.00	-26.09	93	100	peak
5	640.6109	27.97	-3.22	24.75	46.00	-21.25	270	100	peak
6	942.1304	26.62	2.21	28.83	46.00	-17.17	140	100	peak

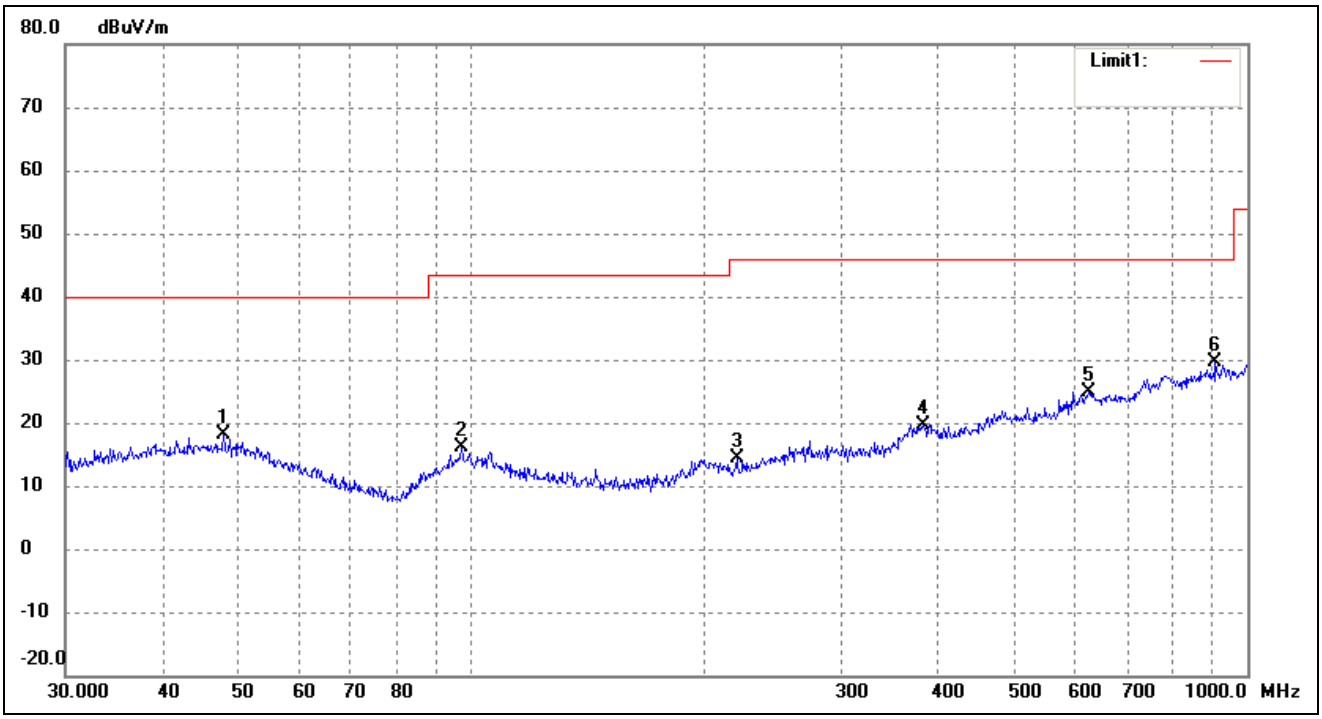
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	36.5092	28.97	-11.20	17.77	40.00	-22.23	269	100	peak
2	100.9340	26.63	-11.51	15.12	43.50	-28.38	92	100	peak
3	235.8164	25.44	-11.28	14.16	46.00	-31.84	160	100	peak
4	397.6334	27.21	-7.53	19.68	46.00	-26.32	92	100	peak
5	642.8613	27.61	-3.27	24.34	46.00	-21.66	178	100	peak
6	916.0687	27.05	1.68	28.73	46.00	-17.27	256	100	peak

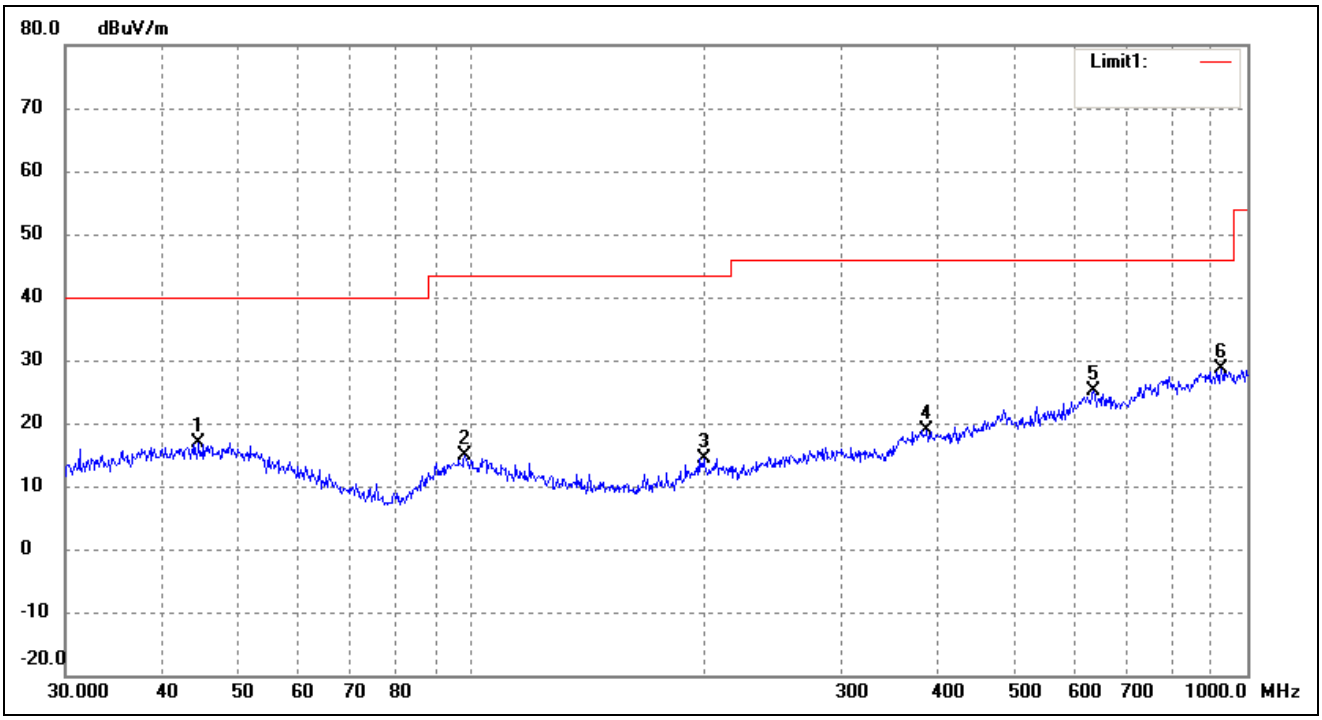
For 802.11n-HT20 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	47.9940	28.80	-10.66	18.14	40.00	-21.86	84	100	peak
2	97.1148	28.06	-12.04	16.02	43.50	-27.48	96	100	peak
3	219.8449	26.86	-12.47	14.39	46.00	-31.61	80	100	peak
4	382.5879	26.67	-7.07	19.60	46.00	-26.40	120	100	peak
5	625.0780	27.78	-2.90	24.88	46.00	-21.12	104	100	peak
6	909.6667	27.95	1.57	29.52	46.00	-16.48	216	100	peak

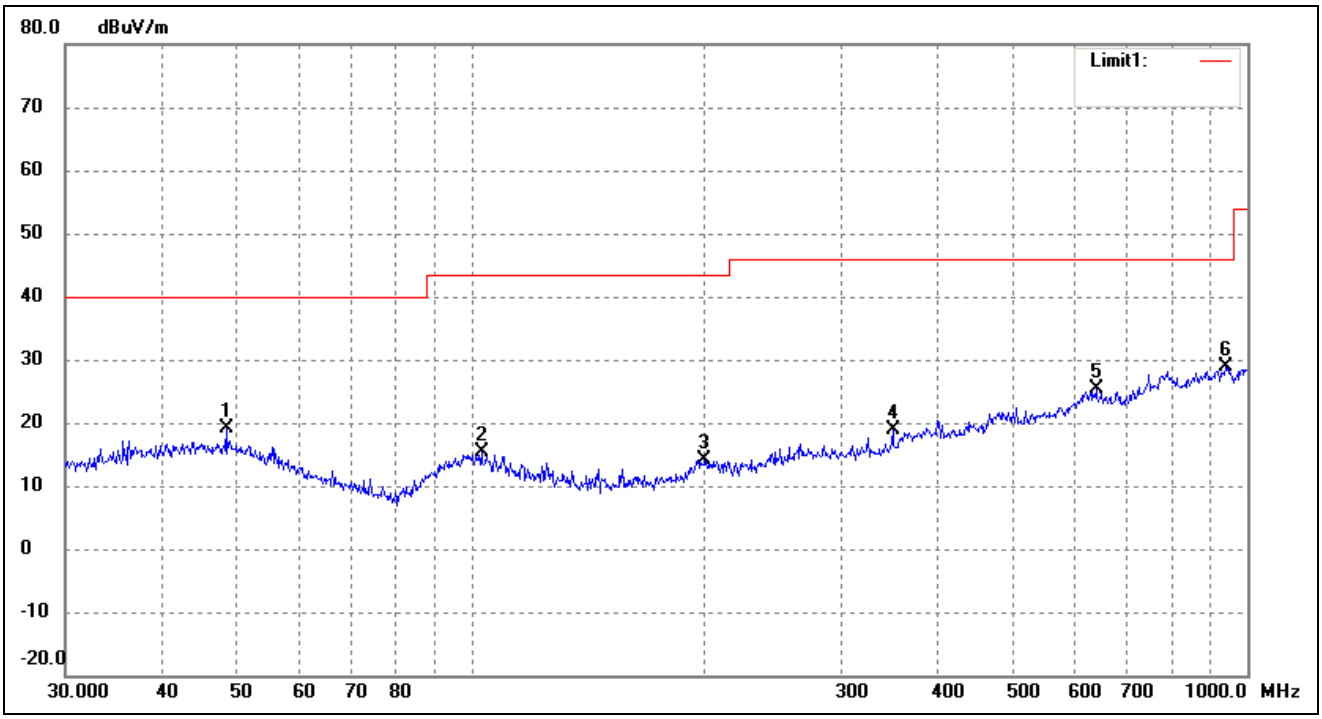
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.5868	27.31	-10.45	16.86	40.00	-23.14	240	100	peak
2	98.1419	26.72	-11.81	14.91	43.50	-28.59	113	100	peak
3	199.2855	26.06	-11.69	14.37	43.50	-29.13	57	100	peak
4	386.6338	26.05	-7.20	18.85	46.00	-27.15	236	100	peak
5	633.9073	28.09	-3.08	25.01	46.00	-20.99	131	100	peak
6	925.7563	26.65	1.90	28.55	46.00	-17.45	173	100	peak

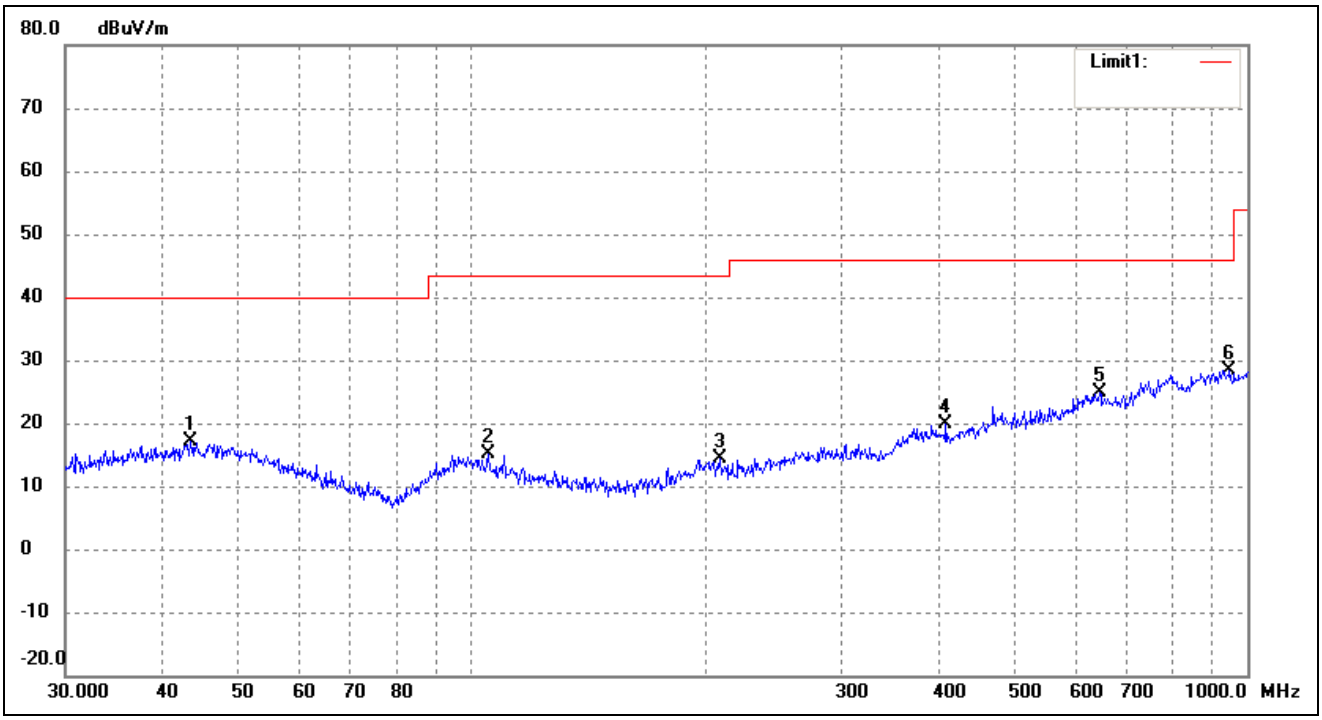
For 802.11n-HT40 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	48.3318	29.74	-10.66	19.08	40.00	-20.92	160	100	peak
2	103.0800	27.04	-11.75	15.29	43.50	-28.21	167	100	peak
3	199.9856	25.80	-11.60	14.20	43.50	-29.30	84	100	peak
4	349.2500	27.70	-8.92	18.78	46.00	-27.22	113	100	peak
5	638.3686	28.56	-3.16	25.40	46.00	-20.60	352	100	peak
6	938.8326	26.73	2.27	29.00	46.00	-17.00	256	100	peak

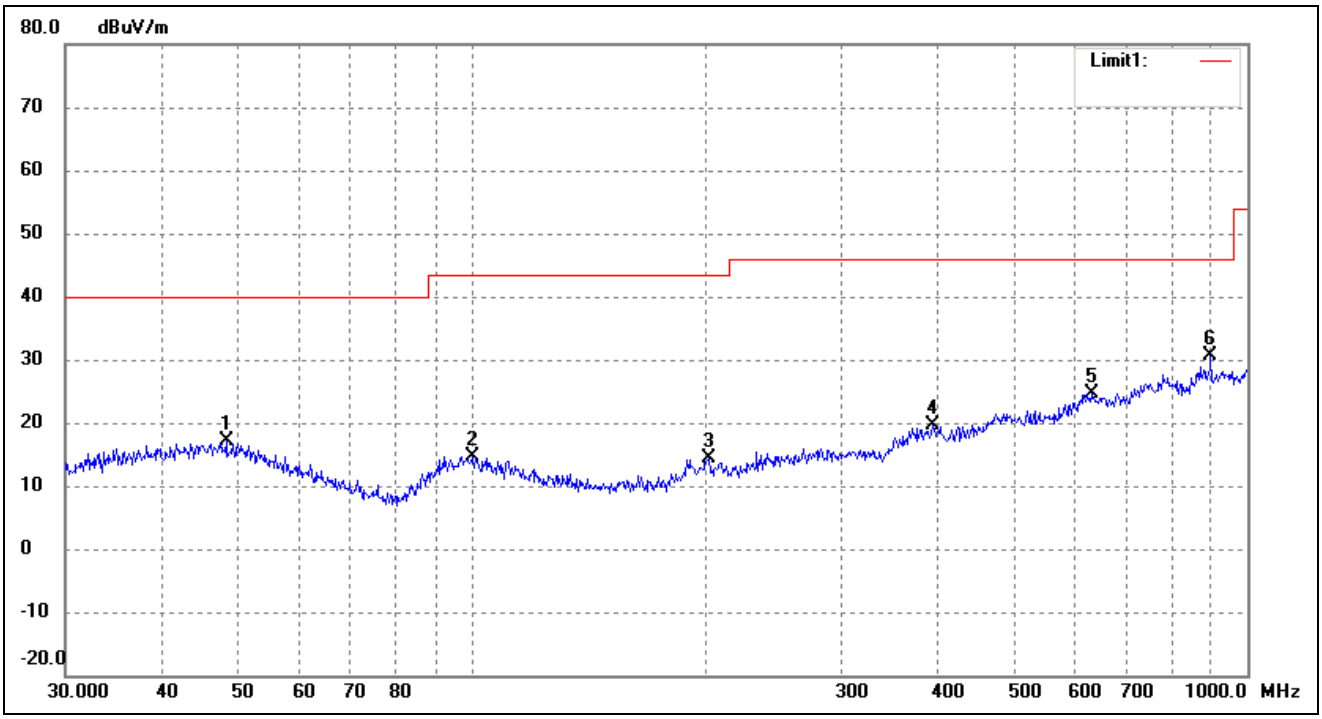
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.5057	27.49	-10.43	17.06	40.00	-22.94	75	100	peak
2	105.2718	27.07	-12.01	15.06	43.50	-28.44	195	100	peak
3	209.3129	26.34	-12.01	14.33	43.50	-29.17	140	100	peak
4	408.9460	27.66	-7.73	19.93	46.00	-26.07	126	100	peak
5	645.1195	28.25	-3.32	24.93	46.00	-21.07	210	100	peak
6	948.7610	26.44	1.97	28.41	46.00	-17.59	106	100	peak

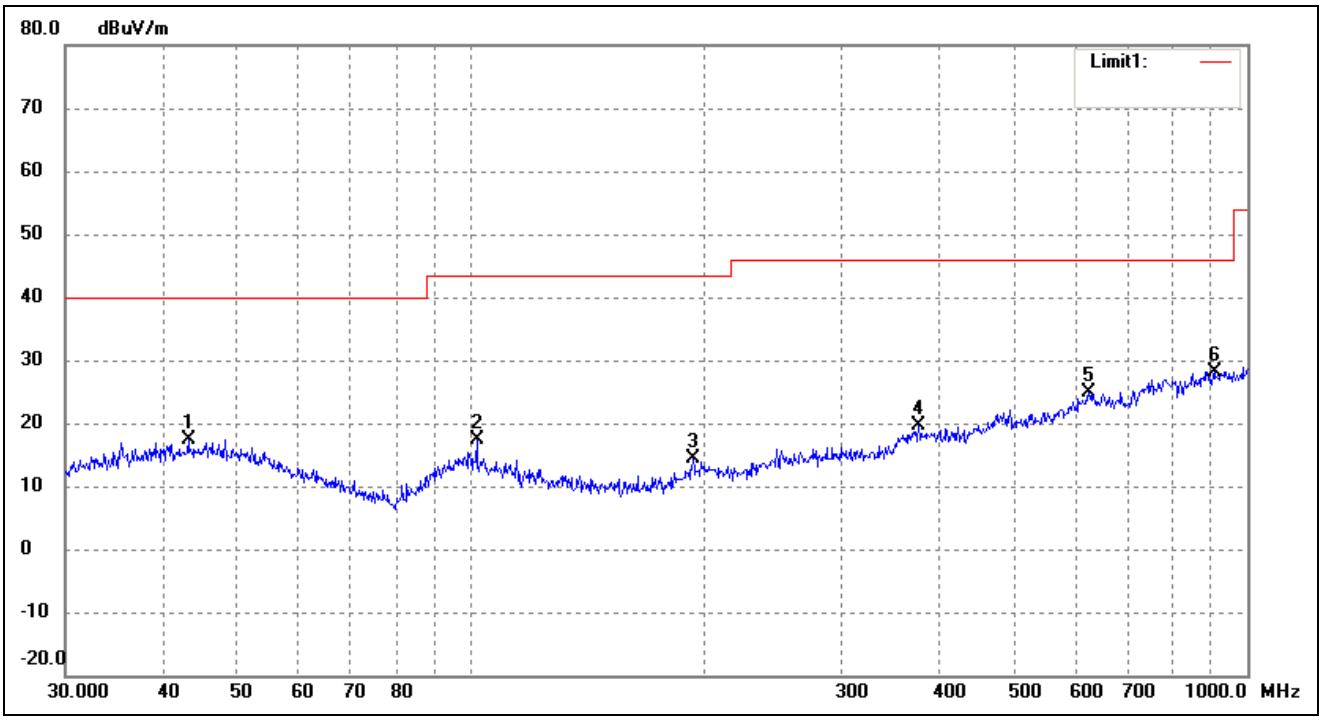
For 802.11ac-HT80 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	48.3318	27.77	-10.66	17.11	40.00	-22.89	204	100	peak
2	100.2286	26.07	-11.43	14.64	43.50	-28.86	99	100	peak
3	202.8104	26.17	-11.72	14.45	43.50	-29.05	122	100	peak
4	393.4724	26.96	-7.41	19.55	46.00	-26.45	111	100	peak
5	629.4772	27.62	-2.99	24.63	46.00	-21.37	79	100	peak
6	896.9965	29.14	1.41	30.55	46.00	-15.45	315	100	peak

Test Specification: *Vertical*



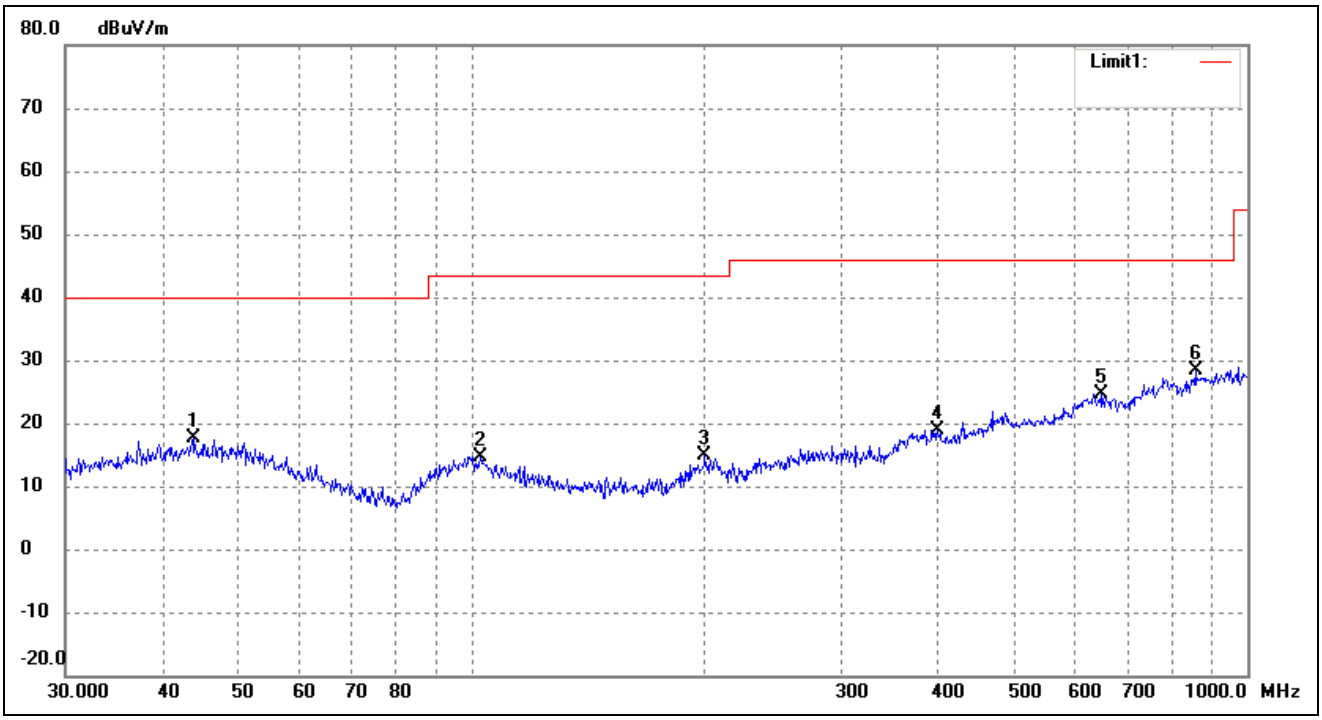
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.2017	27.76	-10.43	17.33	40.00	-22.67	345	100	peak
2	101.6443	29.08	-11.59	17.49	43.50	-26.01	90	100	peak
3	193.0945	26.80	-12.50	14.30	43.50	-29.20	66	100	peak
4	377.2591	26.83	-7.13	19.70	46.00	-26.30	103	100	peak
5	625.0780	27.66	-2.90	24.76	46.00	-21.24	216	100	peak
6	906.4824	26.64	1.51	28.15	46.00	-17.85	221	100	peak

Antenna B

For 802.11a (worse case)

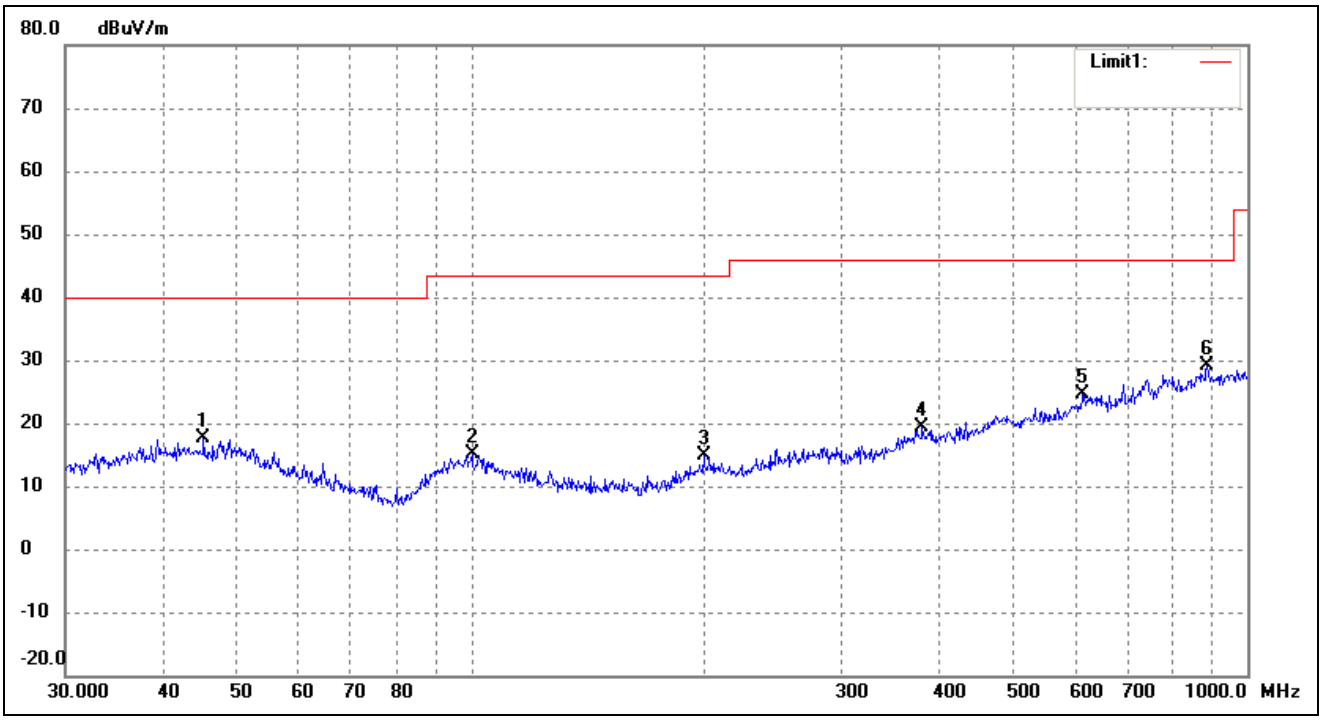
Spurious Emission From 30 MHz to 1 GHz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.8119	28.22	-10.55	17.67	40.00	-22.33	331	100	peak
2	102.7192	26.42	-11.71	14.71	43.50	-28.79	163	100	peak
3	199.9856	26.42	-11.60	14.82	43.50	-28.68	93	100	peak
4	399.0302	26.58	-7.58	19.00	46.00	-27.00	334	100	peak
5	649.6597	28.11	-3.44	24.67	46.00	-21.33	316	100	peak
6	857.0247	27.38	0.91	28.29	46.00	-17.71	109	100	peak

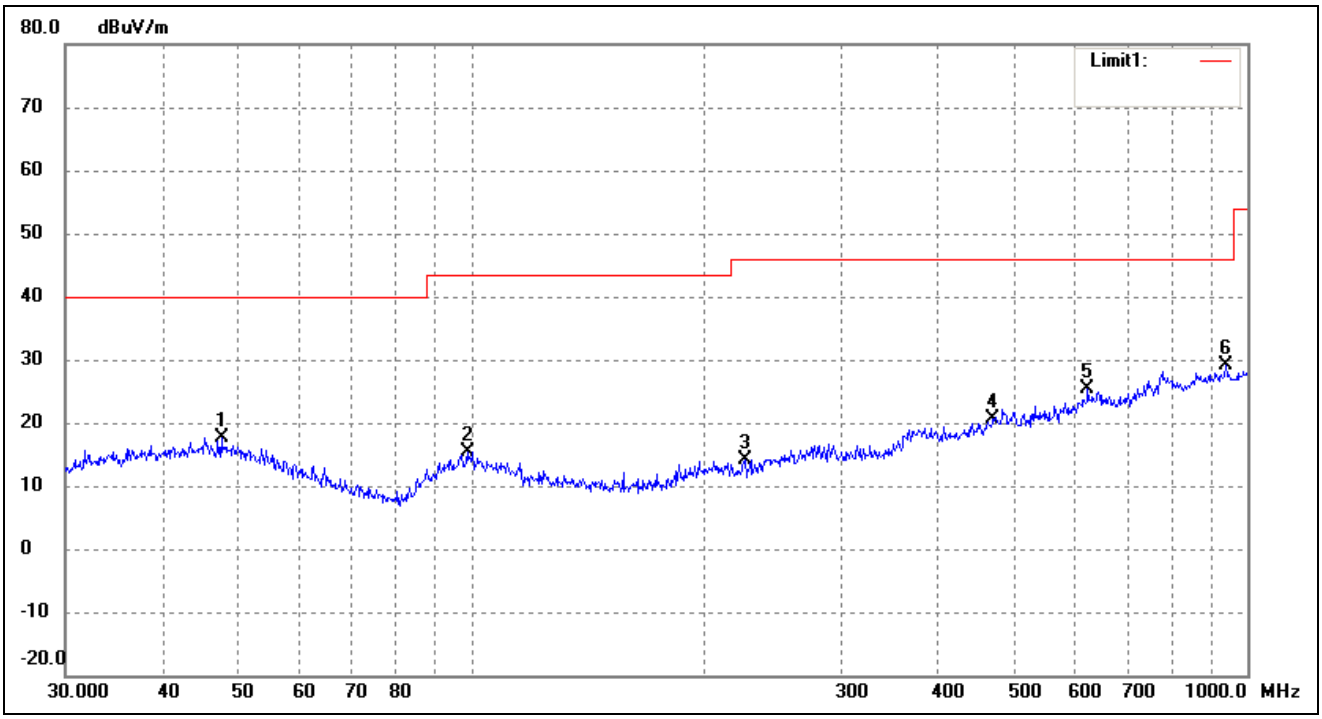
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	45.2166	28.18	-10.45	17.73	40.00	-22.27	345	100	peak
2	100.2286	26.48	-11.43	15.05	43.50	-28.45	121	100	peak
3	199.2855	26.55	-11.69	14.86	43.50	-28.64	83	100	peak
4	381.2487	26.49	-7.04	19.45	46.00	-26.55	117	100	peak
5	614.2142	27.89	-3.24	24.65	46.00	-21.35	101	100	peak
6	887.6099	27.58	1.45	29.03	46.00	-16.97	204	100	peak

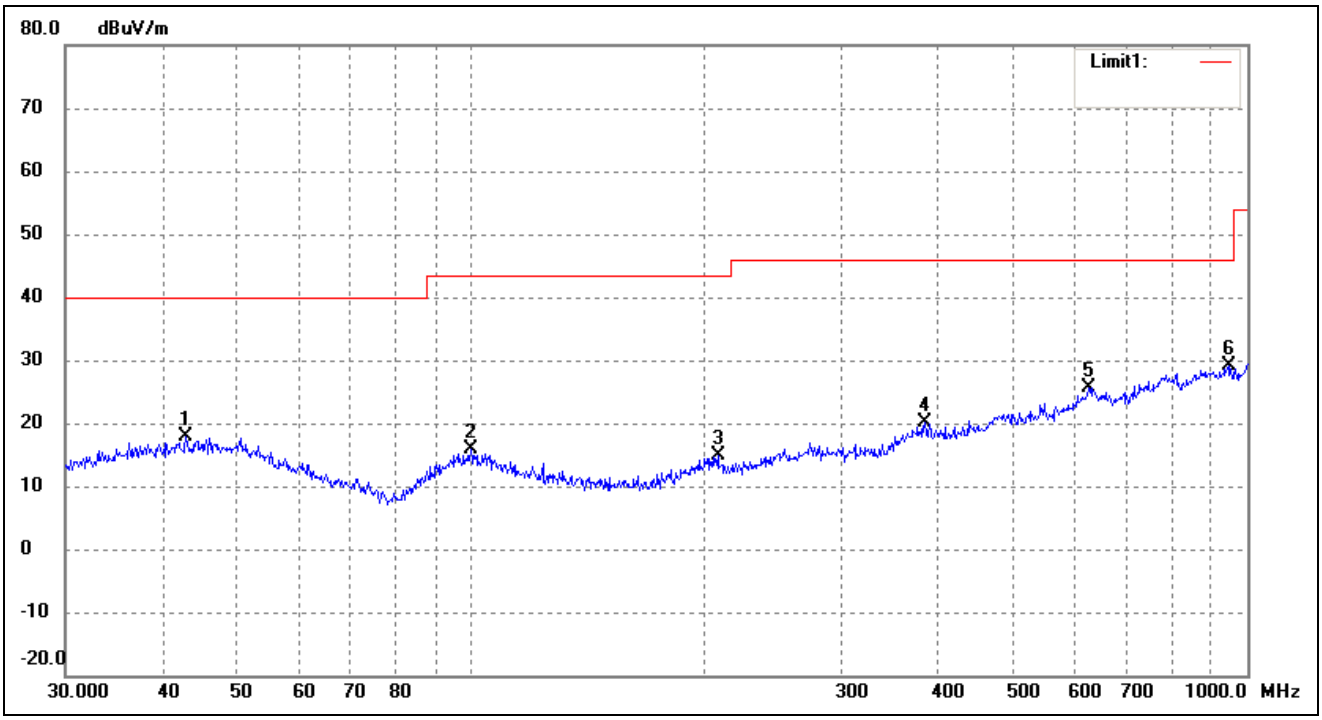
For 802.11n-HT20 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	47.6586	28.21	-10.66	17.55	40.00	-22.45	152	100	peak
2	98.8326	27.02	-11.66	15.36	43.50	-28.14	154	100	peak
3	225.3080	26.22	-12.08	14.14	46.00	-31.86	135	100	peak
4	470.5232	26.63	-6.02	20.61	46.00	-25.39	138	100	peak
5	622.8900	28.15	-2.85	25.30	46.00	-20.70	250	100	peak
6	938.8326	26.87	2.27	29.14	46.00	-16.86	244	100	peak

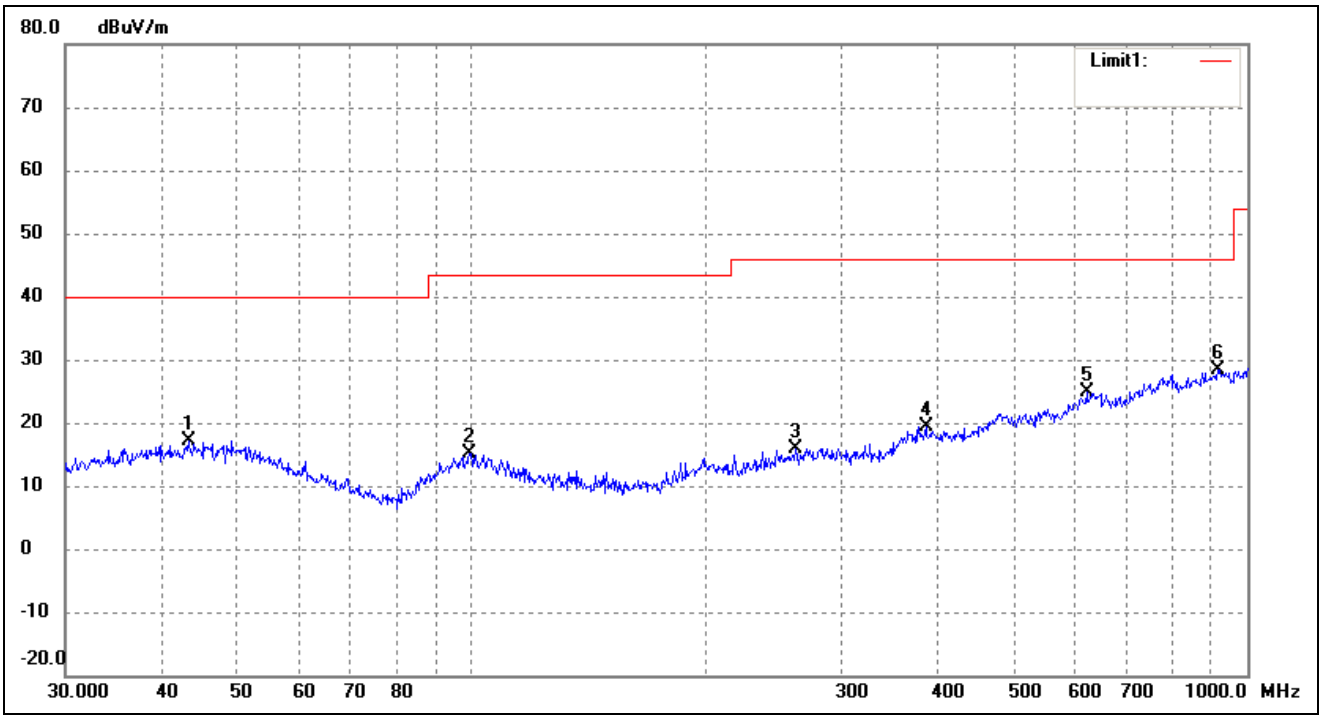
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	42.8998	28.27	-10.43	17.84	40.00	-22.16	84	100	peak
2	99.8777	27.35	-11.43	15.92	43.50	-27.58	148	100	peak
3	207.8501	26.71	-11.94	14.77	43.50	-28.73	84	100	peak
4	383.9318	27.28	-7.12	20.16	46.00	-25.84	110	100	peak
5	625.0780	28.47	-2.90	25.57	46.00	-20.43	326	100	peak
6	945.4399	27.10	2.09	29.19	46.00	-16.81	312	100	peak

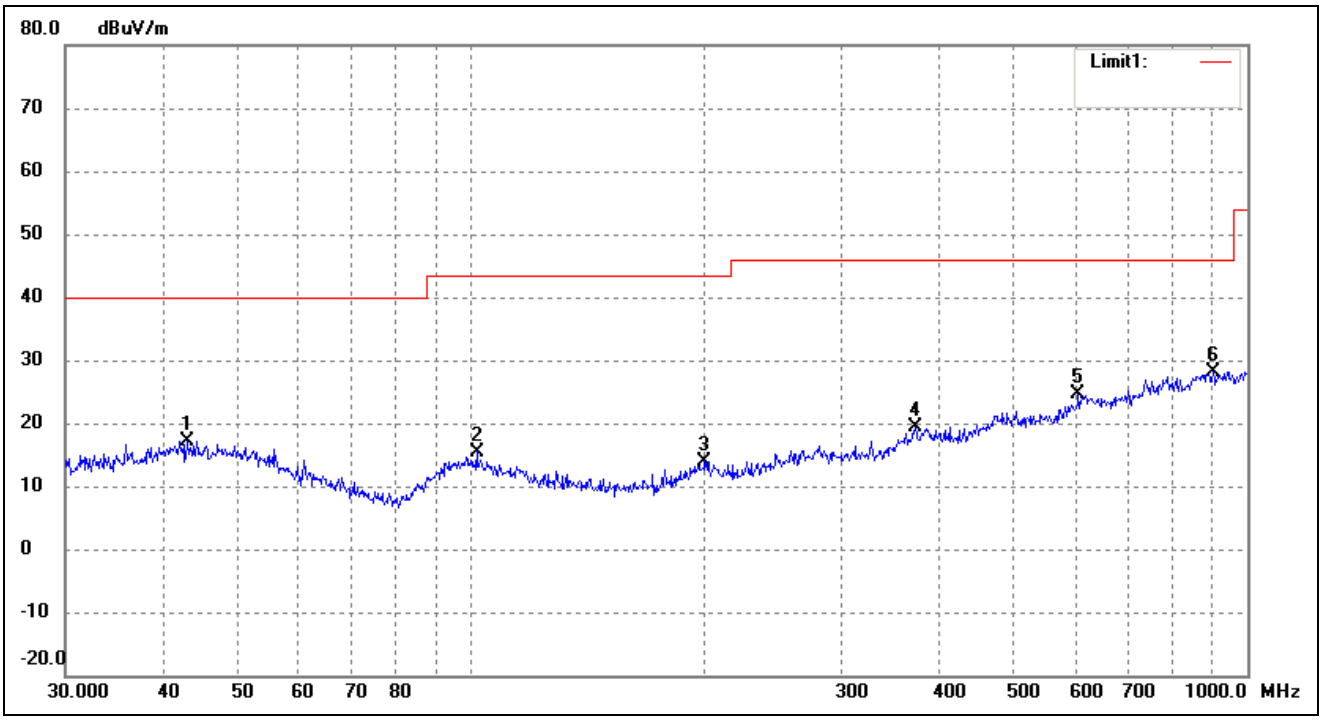
For 802.11n-HT40 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.2017	27.67	-10.53	17.14	40.00	-22.86	230	100	peak
2	99.5281	26.59	-11.50	15.09	43.50	-28.41	95	100	peak
3	261.9753	25.96	-10.02	15.94	46.00	-30.06	114	100	peak
4	385.2805	26.55	-7.16	19.39	46.00	-26.61	113	100	peak
5	620.7096	27.59	-2.82	24.77	46.00	-21.23	357	100	peak
6	916.0687	26.80	1.68	28.48	46.00	-17.52	262	100	peak

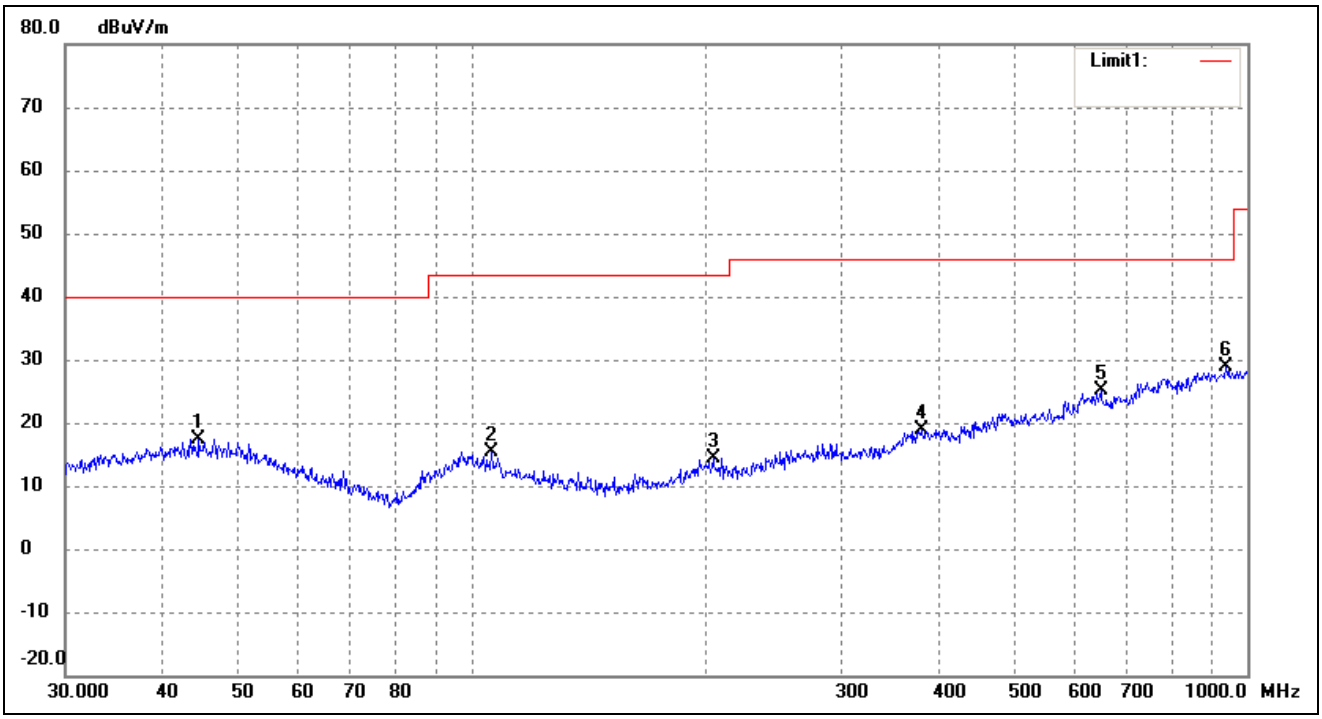
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	43.0505	27.62	-10.43	17.19	40.00	-22.81	282	100	peak
2	101.6443	27.09	-11.59	15.50	43.50	-28.00	97	100	peak
3	199.9856	25.60	-11.60	14.00	43.50	-29.50	165	100	peak
4	373.3112	26.60	-7.30	19.30	46.00	-26.70	110	100	peak
5	605.6592	28.39	-3.87	24.52	46.00	-21.48	144	100	peak
6	903.3094	26.74	1.46	28.20	46.00	-17.80	258	100	peak

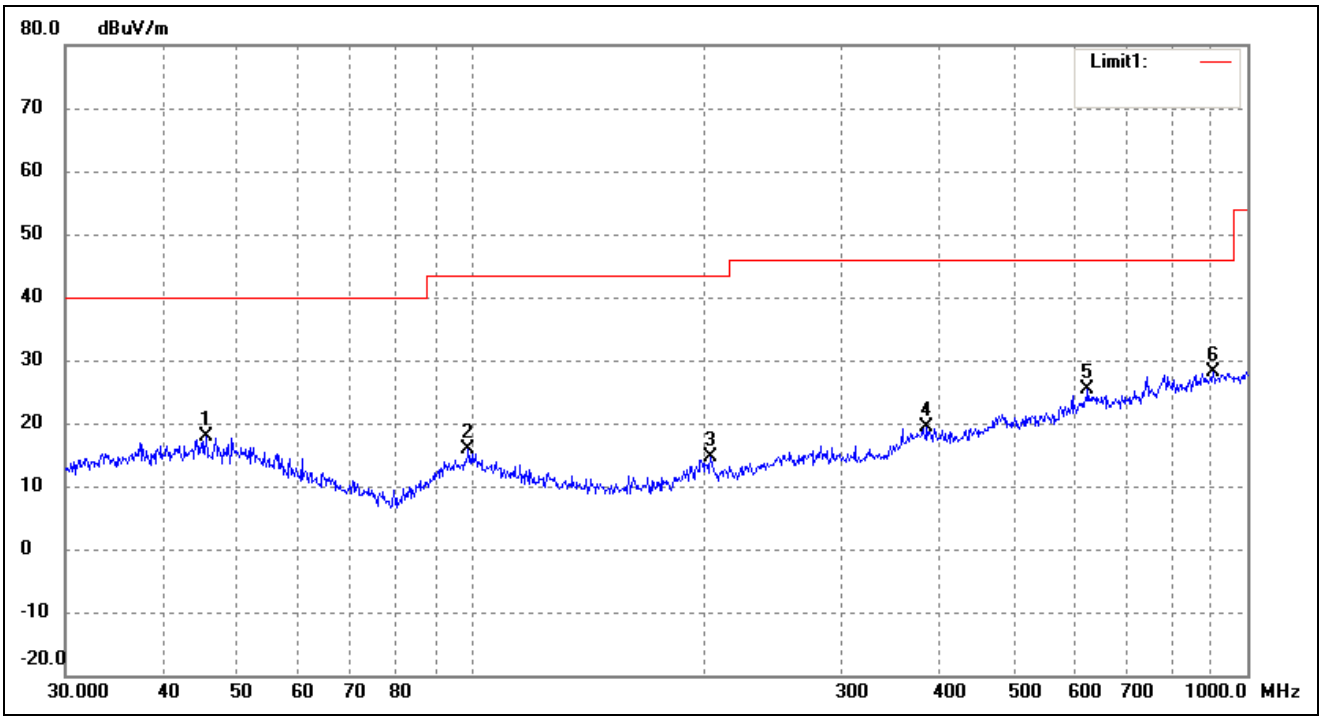
For 802.11ac-HT80 (worse case)

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.5868	28.08	-10.58	17.50	40.00	-22.50	192	100	peak
2	106.3850	27.63	-12.14	15.49	43.50	-28.01	185	100	peak
3	204.9551	26.12	-11.82	14.30	43.50	-29.20	137	100	peak
4	379.9141	25.80	-7.00	18.80	46.00	-27.20	108	100	peak
5	647.3856	28.48	-3.39	25.09	46.00	-20.91	197	100	peak
6	938.8326	26.73	2.27	29.00	46.00	-17.00	208	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	45.5348	28.21	-10.44	17.77	40.00	-22.23	230	100	peak
2	99.1797	27.34	-11.58	15.76	43.50	-27.74	160	100	peak
3	203.5228	26.45	-11.76	14.69	43.50	-28.81	51	100	peak
4	386.6338	26.50	-7.20	19.30	46.00	-26.70	239	100	peak
5	622.8900	28.19	-2.85	25.34	46.00	-20.66	50	100	peak
6	903.3094	26.65	1.46	28.11	46.00	-17.89	258	100	peak

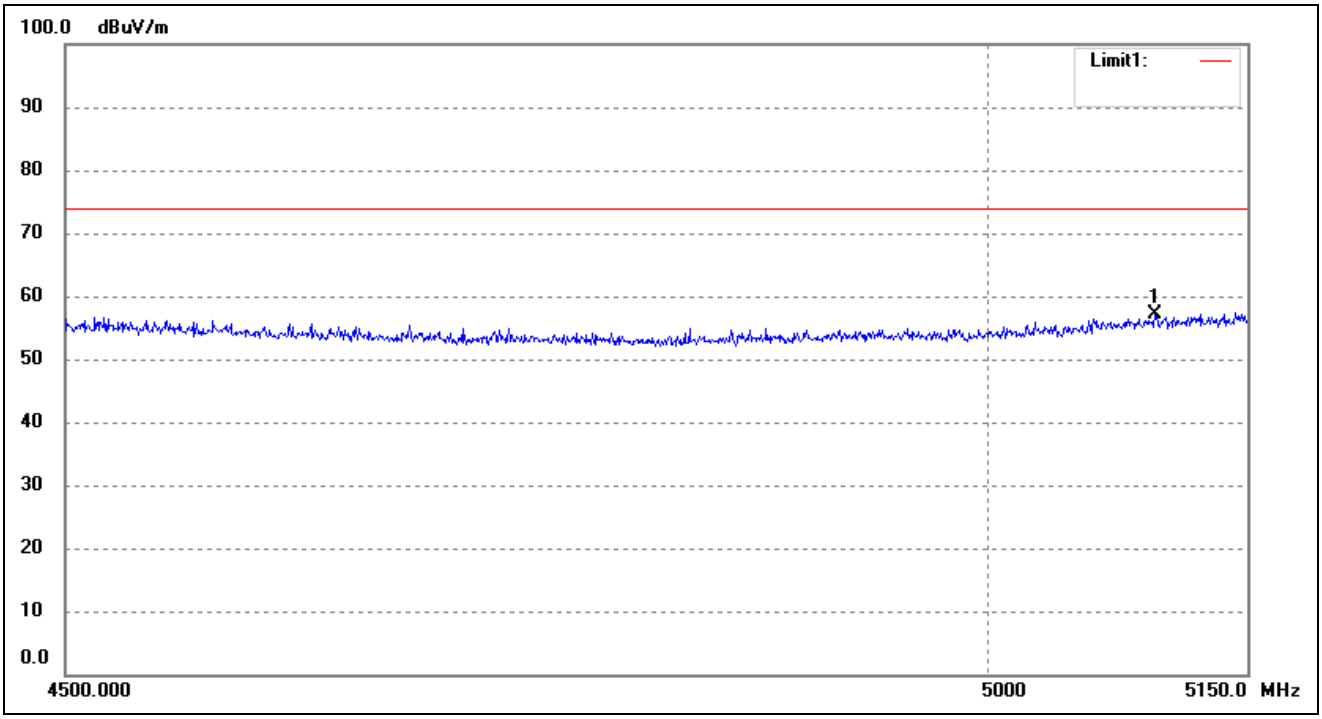
Antenna A

For 802.11a

Spurious Emission above 1GHz

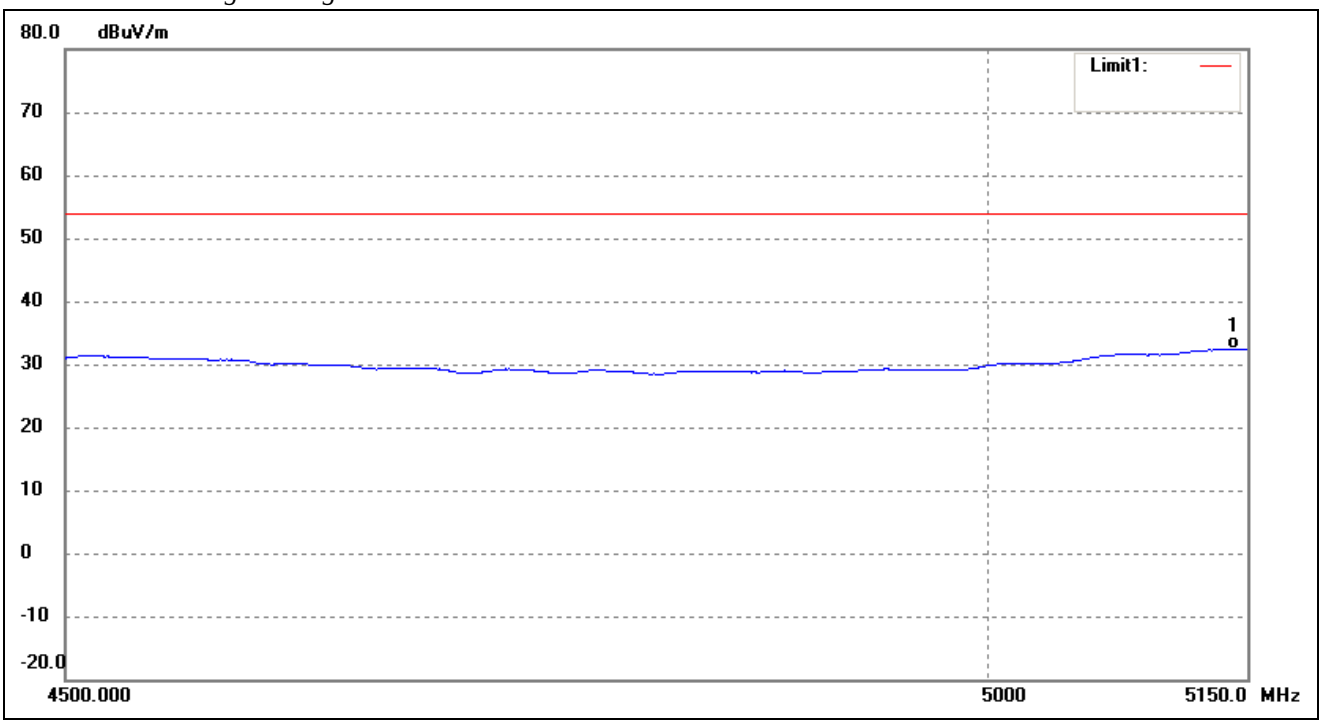
For the frequency band 5.15-5.25GHz(802.11a)

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5096.087	55.57	1.47	57.04	74.00	-16.96	238	100	peak

Restricted Bandedge Average

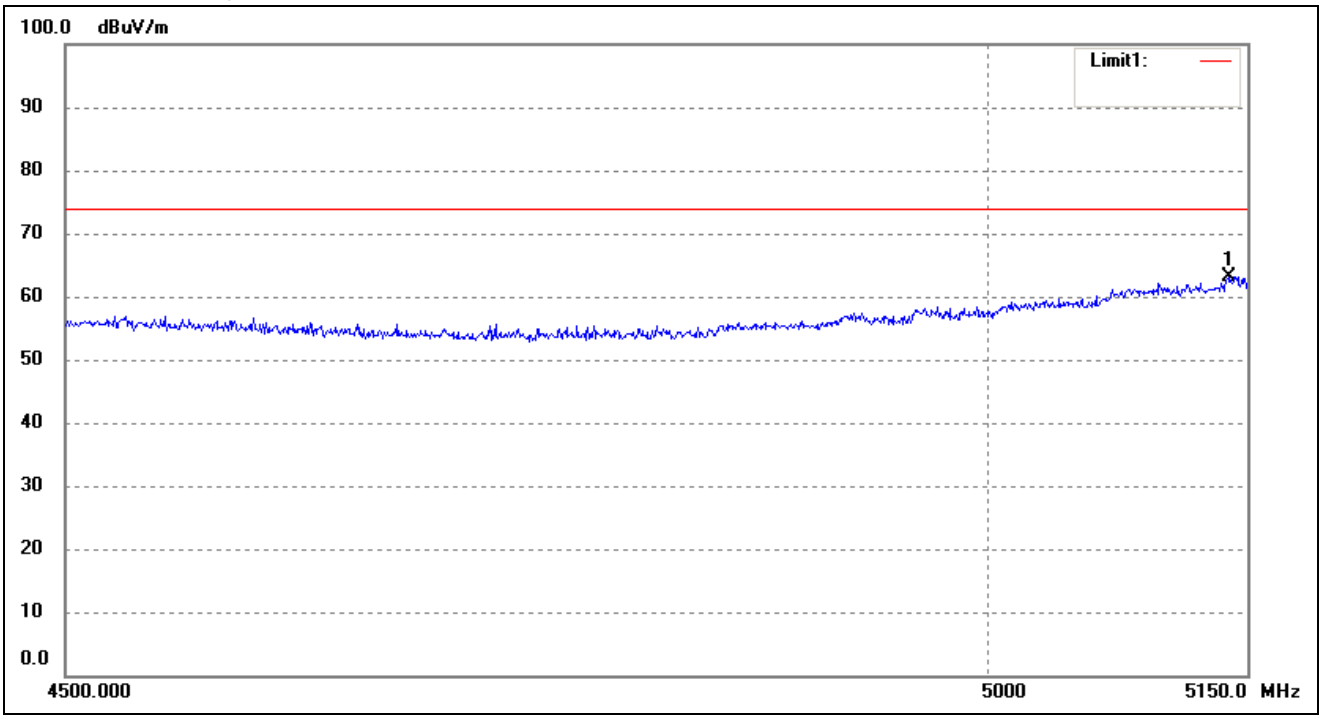


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5141.669	37.67	-5.23	32.44	54.00	-21.56	150	100	AVG

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

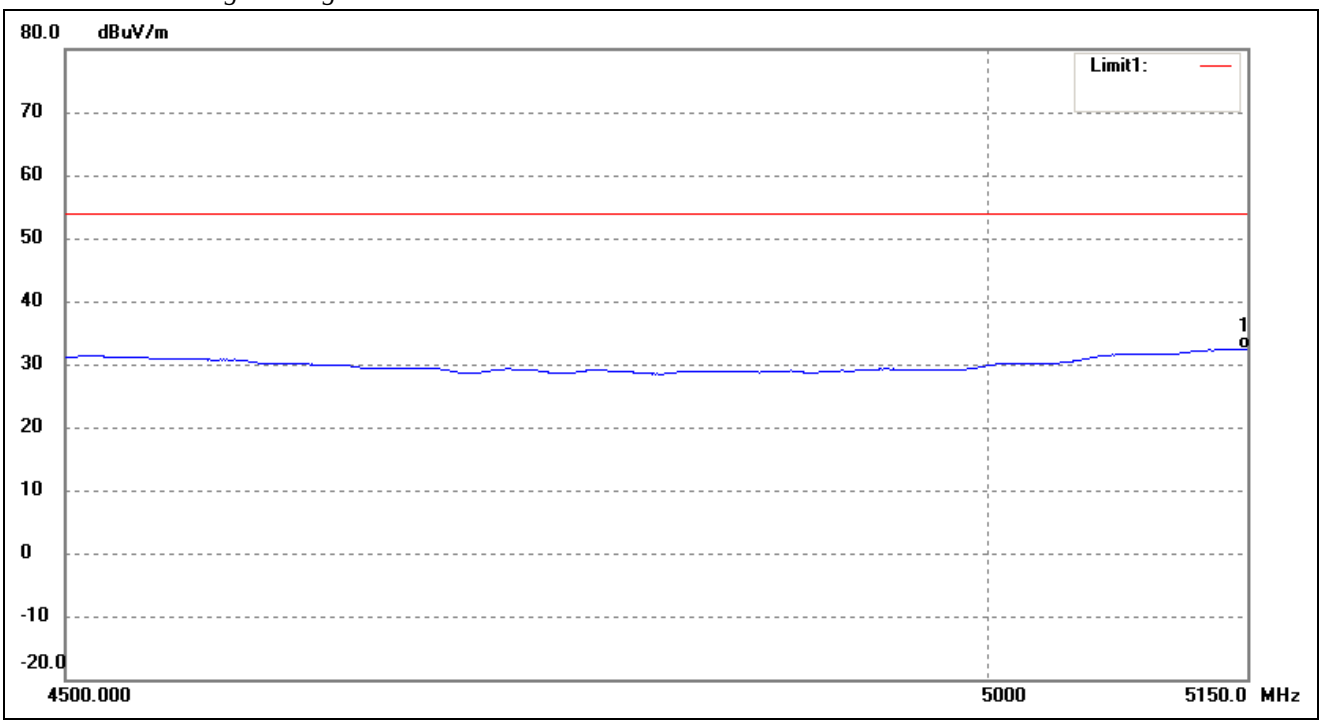
For 802.11n-HT20

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5138.895	61.71	1.50	63.21	74.00	-10.79	225	100	peak

Restricted Bandedge Average

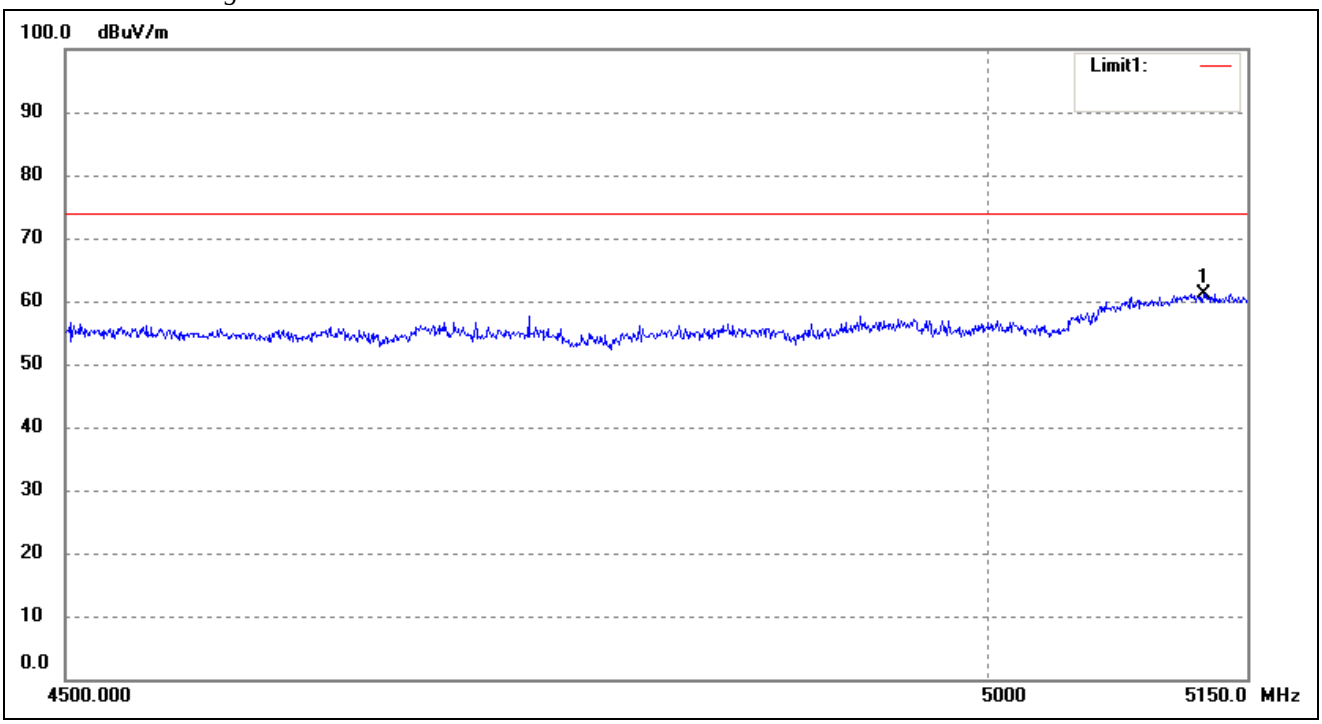


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5148.610	37.63	-5.20	32.43	54.00	-21.57	57	100	AVG

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

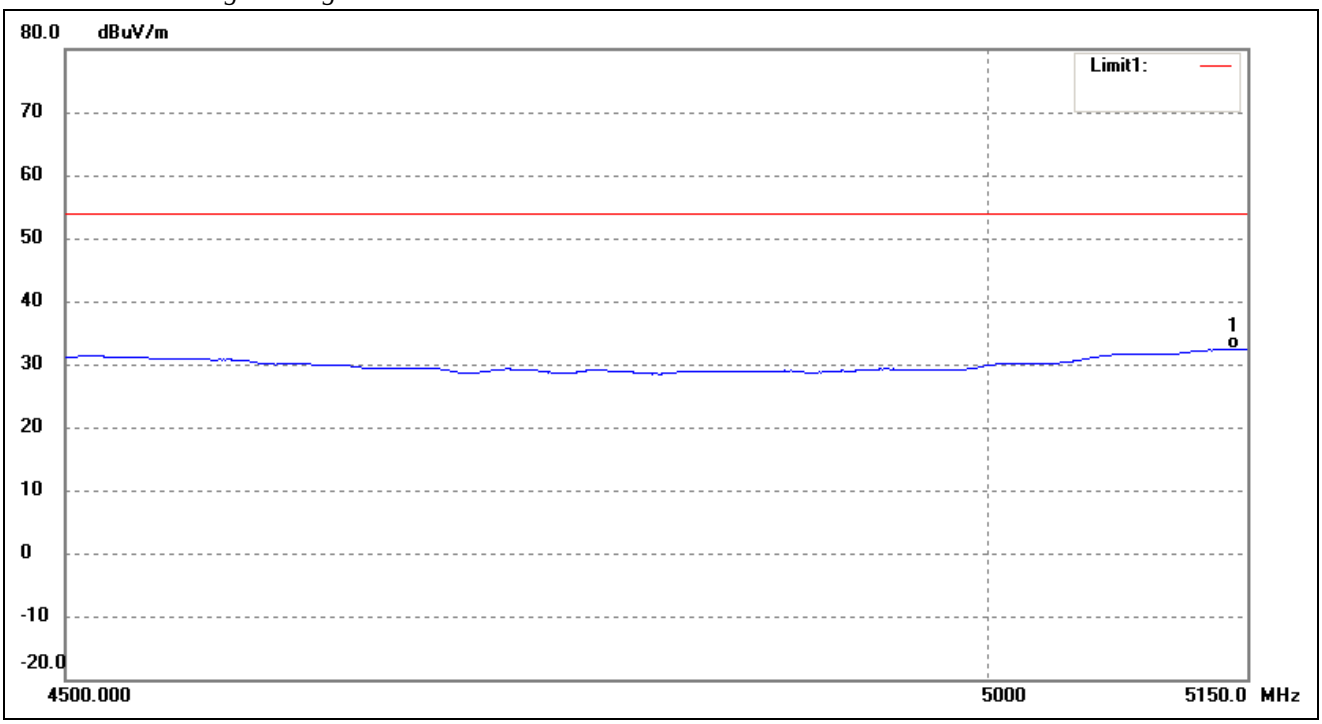
For 802.11n-HT40

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5124.355	59.75	1.49	61.24	74.00	-12.76	110	100	peak

Restricted Bandedge Average

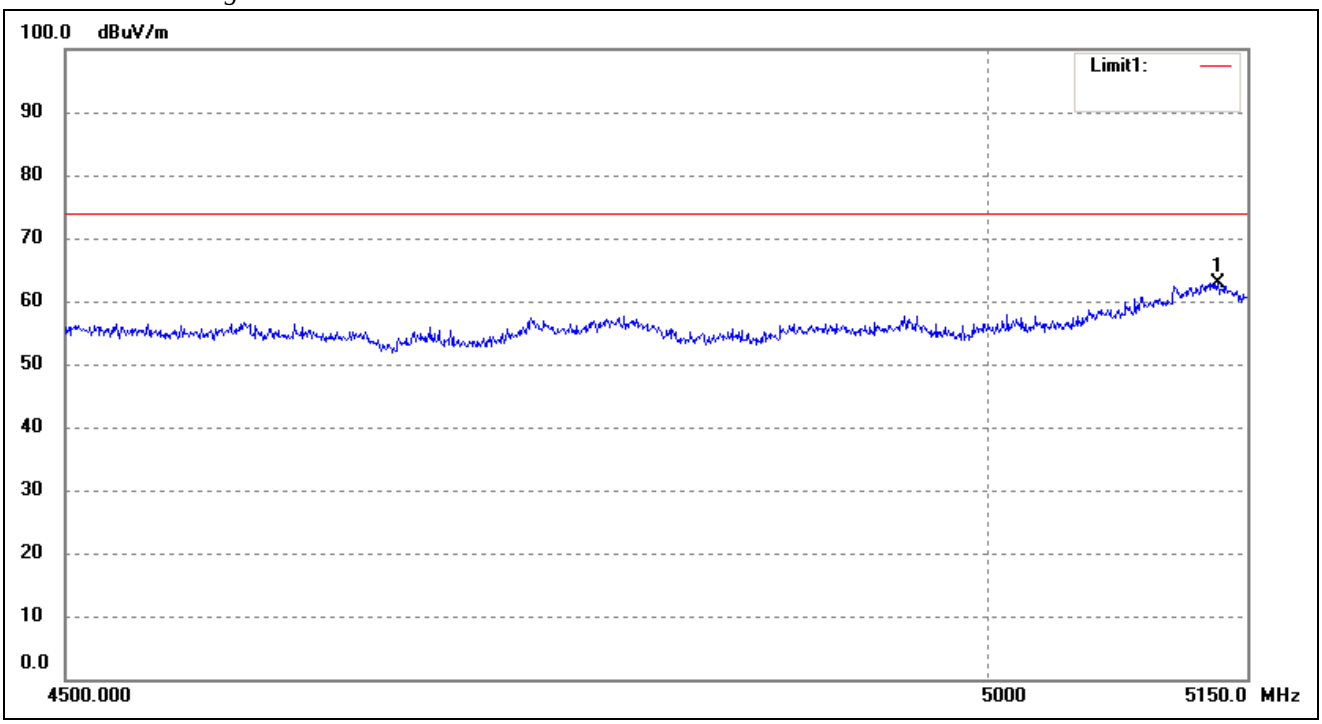


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5141.669	37.66	-5.23	32.43	54.00	-21.57	87	100	AVG

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

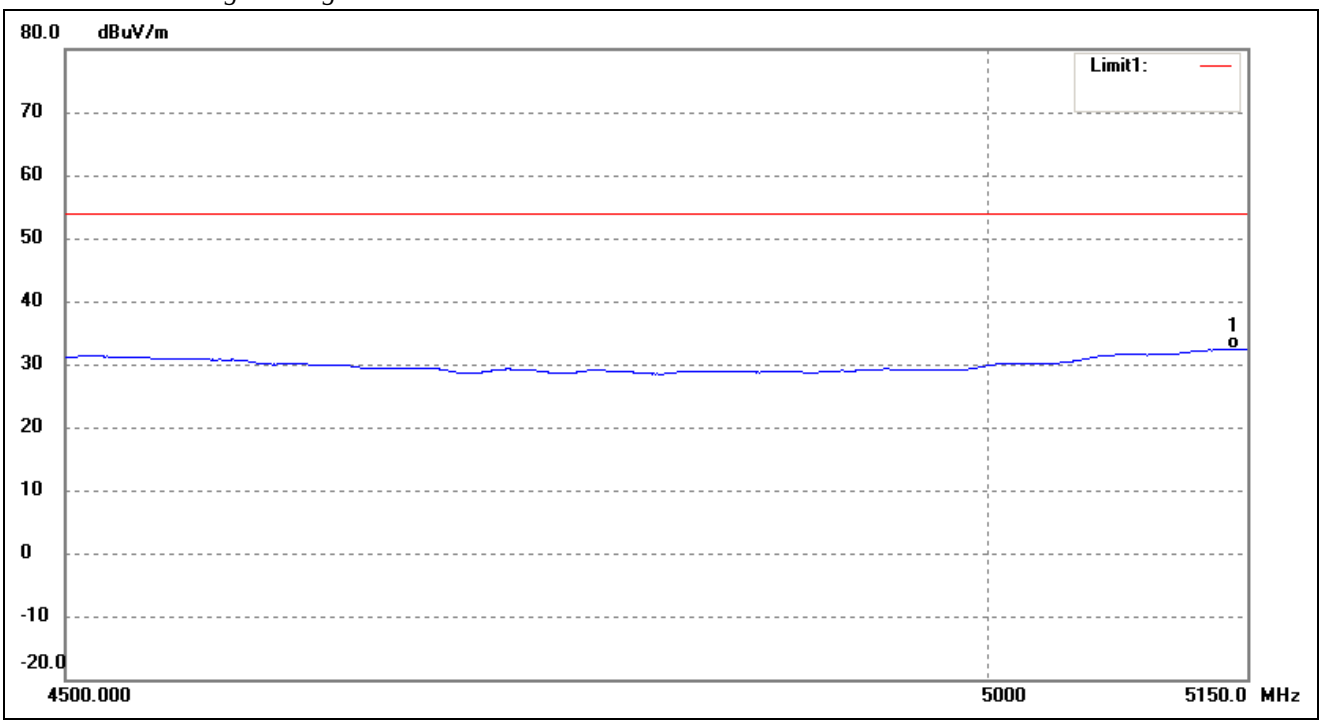
For 802.11ac-HT80

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5132.658	61.49	1.50	62.99	74.00	-11.01	122	100	peak

Restricted Bandedge Average



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5141.669	37.67	-5.23	32.44	54.00	-21.56	338	100	AVG

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

Hormonics 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)										
15540	PK	50.23	185	V	40.7	10.9	39.6	62.23	74	-11.77
15540	PK	49.37	235	H	40.7	10.9	39.6	61.37	74	-12.63
15540	AV	36.52	119	V	40.7	10.9	39.6	48.52	54	-5.48
15540	AV	35.97	170	H	40.7	10.9	39.6	47.97	54	-6.03
High Channel (5240MHz)										
15720	PK	50.07	285	V	40.7	10.9	39.6	62.07	74	-11.93
15720	PK	49.21	132	H	40.7	10.9	39.6	61.21	74	-12.79
15720	AV	36.98	121	V	40.7	10.9	39.6	48.98	54	-5.02
15720	AV	36.43	206	H	40.7	10.9	39.6	48.43	54	-5.57

Out of Band edge

Test CH.	**Test Segment**	**Result**	**Limit**
	MHz	**dBm/MHz**	**dBm/MHz**
Lowest	Below 5150	-41.35	-27
Highest	Above 5350	-42.98	-27
Note: the data just list the worst cases			

For the frequency band 5.725-5.850GHz

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	51.06	155	V	38.9	9.8	40.1	59.66	74	-14.34
11490	PK	49.63	171	H	38.9	9.8	40.1	58.23	74	-15.77
11490	AV	37.89	151	V	38.9	9.8	40.1	46.49	54	-7.51
11490	AV	37.63	216	H	38.9	9.8	40.1	46.23	54	-7.77
High Channel (5825MHz)										
11610	PK	51.23	158	V	38.9	9.8	40.1	59.83	74	-14.17
11610	PK	51.11	308	H	38.9	9.8	40.1	59.71	74	-14.29
11610	AV	39.27	285	V	38.9	9.8	40.1	47.87	54	-6.13
11610	AV	38.96	246	H	38.9	9.8	40.1	47.56	54	-6.44

Out of Band edge

Test CH.	**Test Segment**	**Result**	**Limit**
	MHz	**dBm/MHz**	**dBm/MHz**
Lowest	Below 5715	-45.62	-27
	5715 to 5725	-43.11	-17
Highest	5850 to 5860	-43.25	-17
	Above 5860	-48.26	-27
Note: the data just list the worst cases			

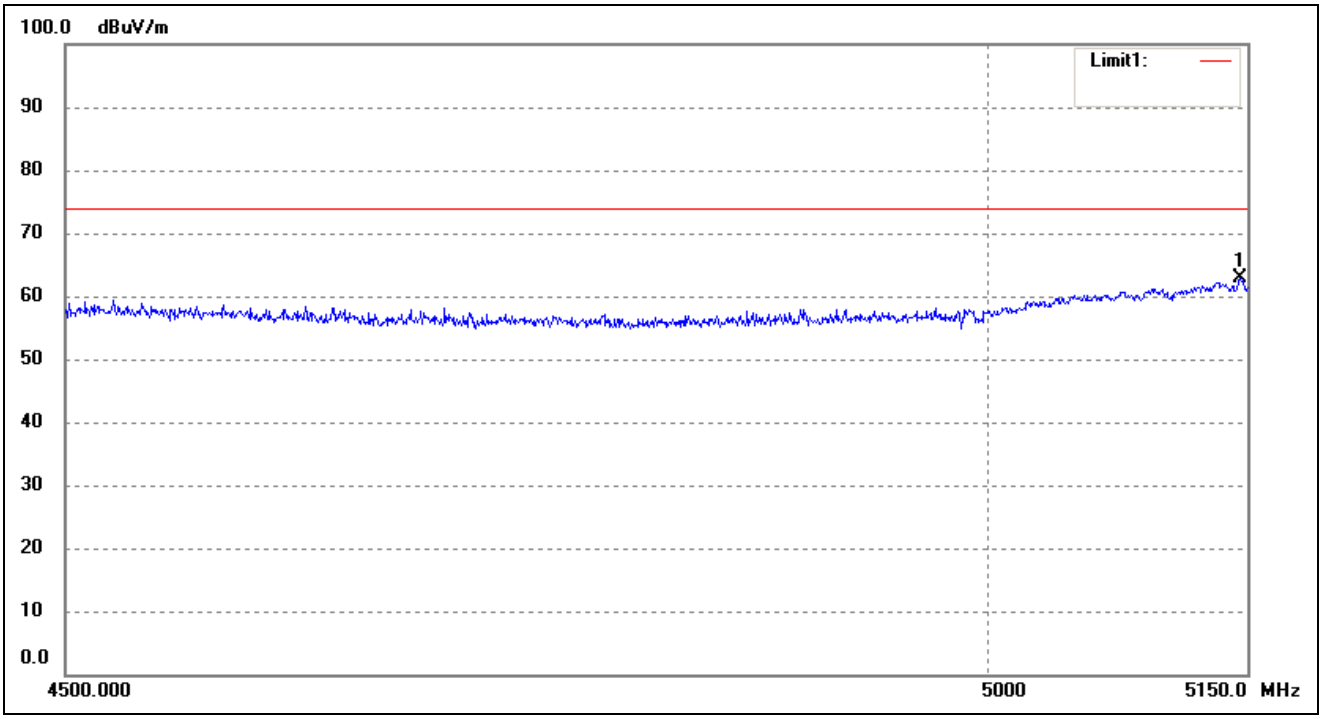
Antenna B

For 802.11a

Spurious Emission above 1GHz

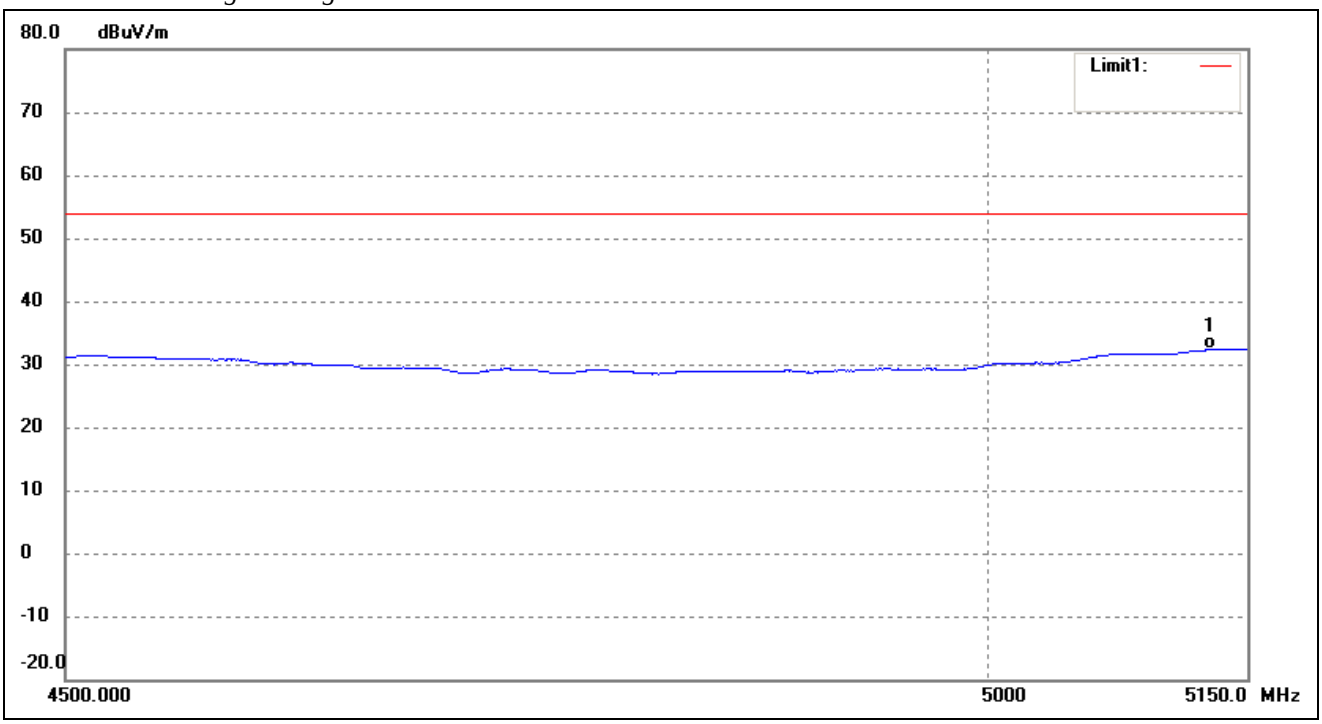
For the frequency band 5.15-5.25GHz(802.11a)

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5145.833	61.34	1.51	62.85	74.00	-11.15	216	100	peak

Restricted Bandedge Average

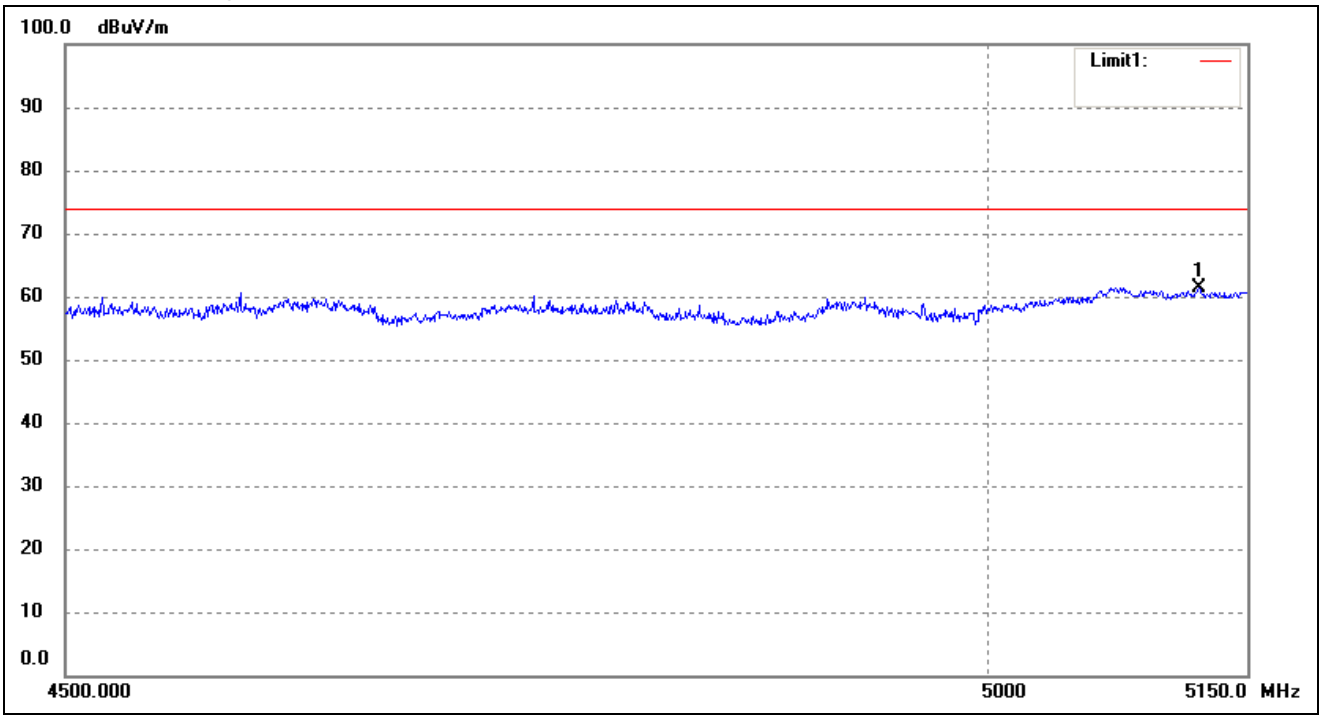


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5127.813	37.55	-5.26	32.29	54.00	-21.71	220	100	AVG

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

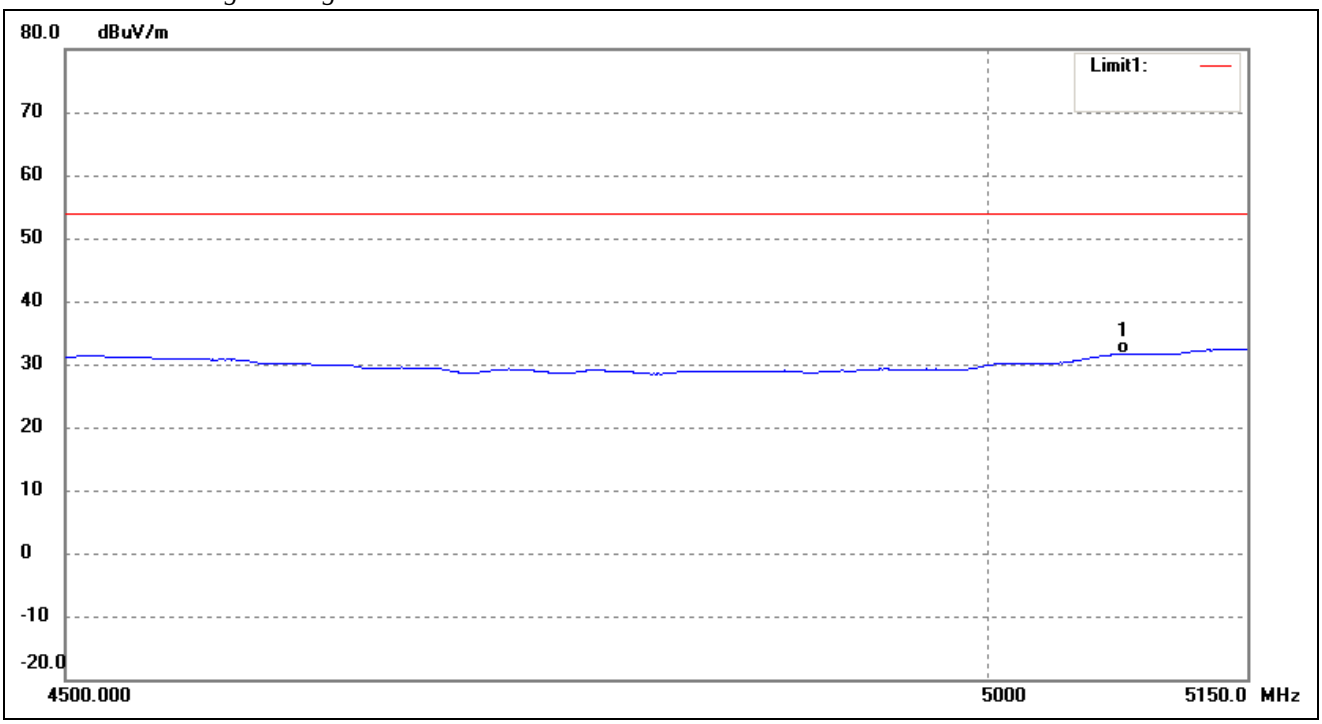
For 802.11n-HT20

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5121.590	59.89	1.49	61.38	74.00	-12.62	92	100	peak

Restricted Bandedge Average

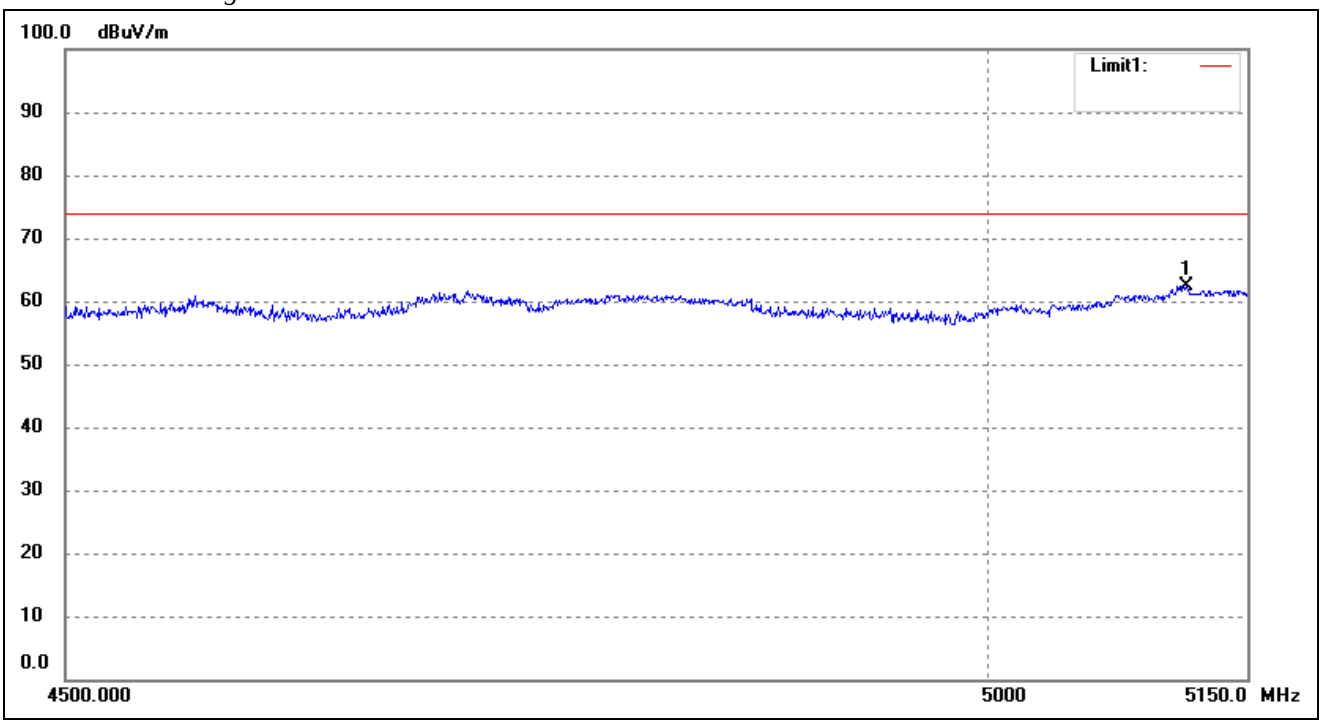


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5076.872	37.01	-5.39	31.62	54.00	-22.38	231	100	AVG

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

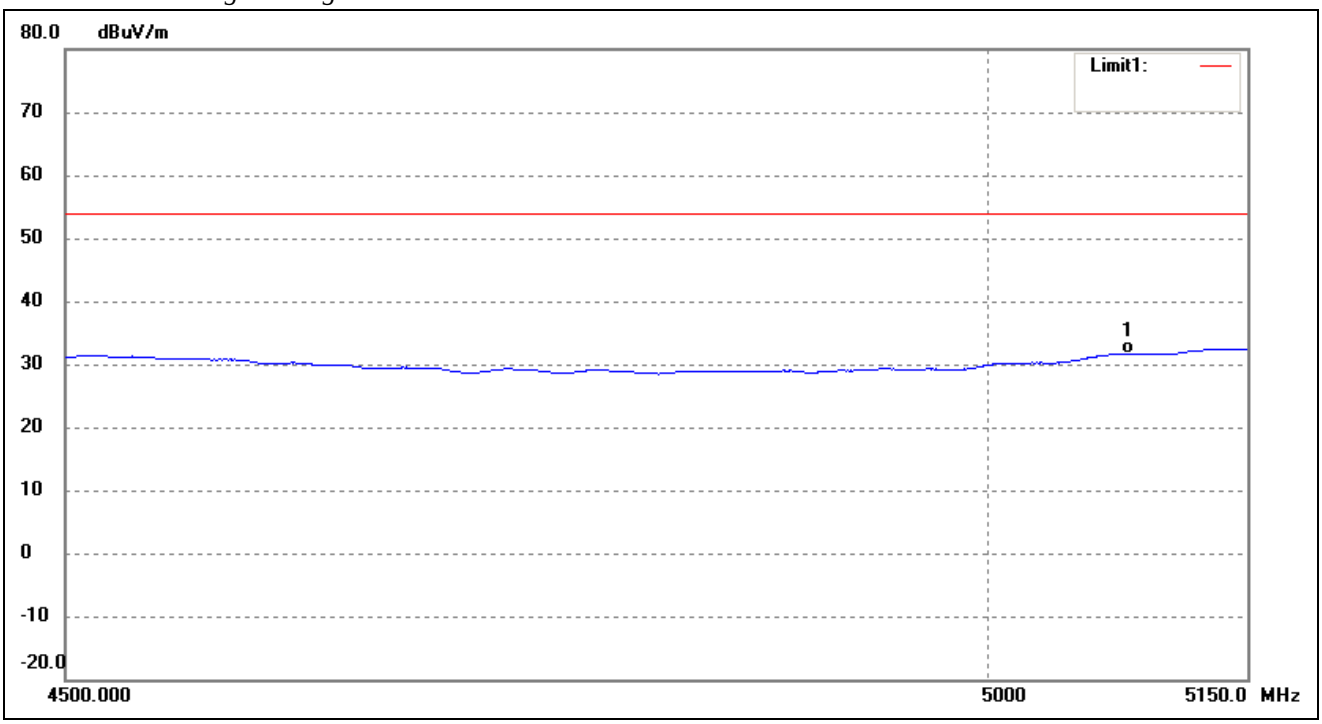
For 802.11n-HT40

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5113.995	60.96	1.49	62.45	74.00	-11.55	100	100	peak

Restricted Bandedge Average

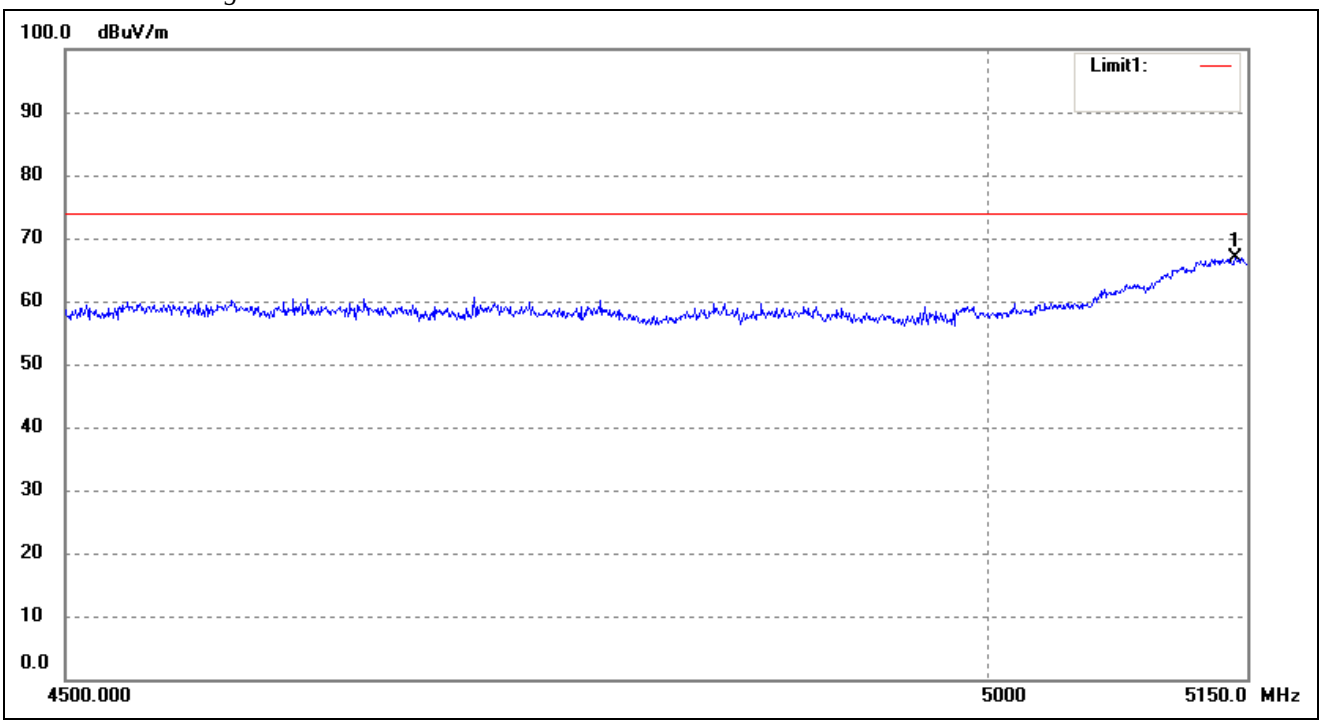


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5080.298	37.07	-5.38	31.69	54.00	-22.31	143	100	AVG

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

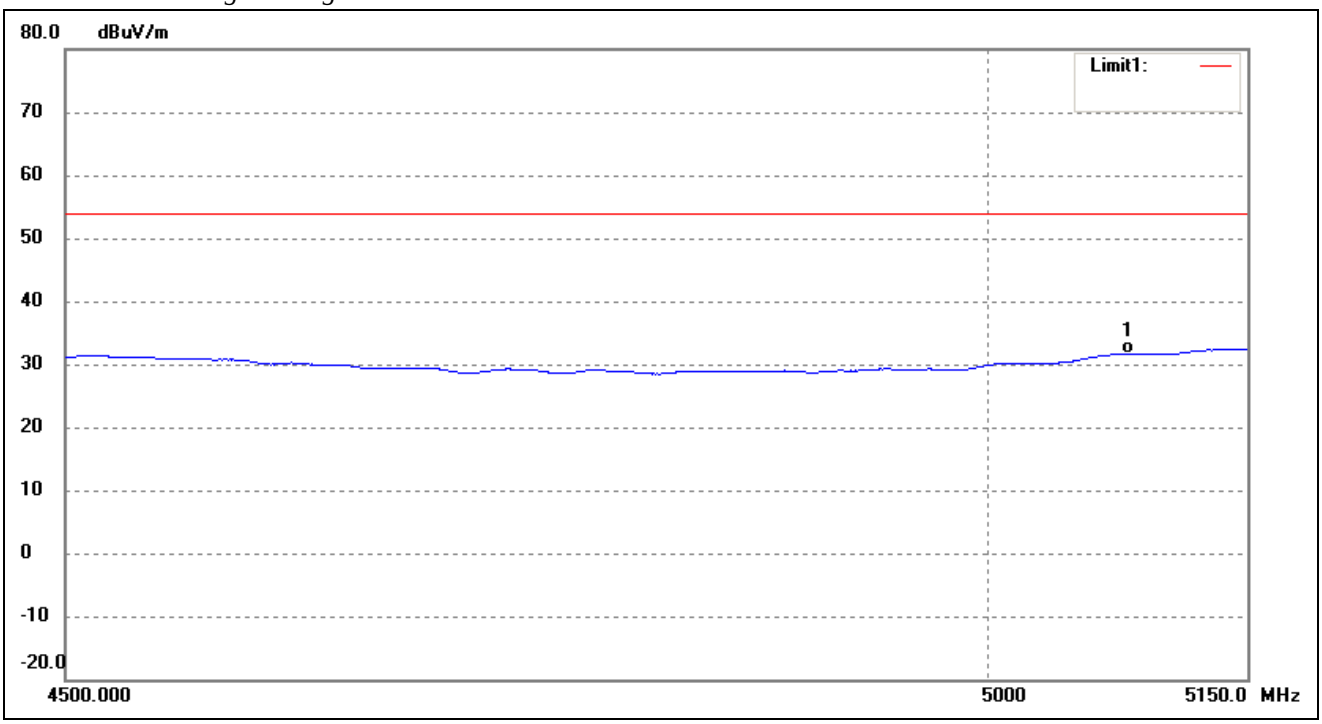
For 802.11ac-HT80

Restricted Bandedge Peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5143.056	65.30	1.51	66.81	74.00	-7.19	251	100	peak

Restricted Bandedge Average



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	5080.298	37.08	-5.38	31.70	54.00	-22.30	96	100	AVG

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

Hormonics 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)										
15540	PK	49.23	185	V	40.7	10.9	39.6	61.23	74	-12.77
15540	PK	48.22	235	H	40.7	10.9	39.6	60.22	74	-13.78
15540	AV	36.13	119	V	40.7	10.9	39.6	48.13	54	-5.87
15540	AV	36.23	170	H	40.7	10.9	39.6	48.23	54	-5.77
High Channel (5240MHz)										
15720	PK	48.47	285	V	40.7	10.9	39.6	60.47	74	-13.53
15720	PK	48.19	132	H	40.7	10.9	39.6	60.19	74	-13.81
15720	AV	36.49	121	V	40.7	10.9	39.6	48.49	54	-5.51
15720	AV	36.38	206	H	40.7	10.9	39.6	48.38	54	-5.62

Out of Band edge

Test CH.	**Test Segment**	**Result**	**Limit**
	MHz	**dBm/MHz**	**dBm/MHz**
Lowest	Below 5150	-41.98	-27
Highest	Above 5350	-42.15	-27
Note: the data just list the worst cases			

For the frequency band 5.725-5.850GHz

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	45.96	155	V	38.9	9.8	40.1	54.56	74	-19.44
11490	PK	49.83	171	H	38.9	9.8	40.1	58.43	74	-15.57
11490	AV	35.68	151	V	38.9	9.8	40.1	44.28	54	-9.72
11490	AV	35.97	216	H	38.9	9.8	40.1	44.57	54	-9.43
High Channel (5825MHz)										
11610	PK	50.23	158	V	38.9	9.8	40.1	58.83	74	-15.17
11610	PK	49.62	308	H	38.9	9.8	40.1	58.22	74	-15.78
11610	AV	36.57	285	V	38.9	9.8	40.1	45.17	54	-8.83
11610	AV	36.62	246	H	38.9	9.8	40.1	45.22	54	-8.78

Out of Band edge

Test CH.	**Test Segment**	**Result**	**Limit**
	MHz	**dBm/MHz**	**dBm/MHz**
Lowest	Below 5715	-45.65	-27
	5715 to 5725	-43.21	-17
Highest	5850 to 5860	-43.55	-17
	Above 5860	-48.65	-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.

12. Frequency Stability

12.1 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.

12.2 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	85-115% of declared nominal voltage
-30°C to +50°C	Normal

12.3 Environmental Conditions

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

12.4 Summary of Test Results/Plots

Antenna A

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	181	0.0348
40	3.8	139	0.0267
30	3.8	162	0.0312
20	3.8	173	0.0333
10	3.8	115	0.0221
0	3.8	137	0.0263
-10	3.8	122	0.0235
-20	3.8	135	0.0260
-30	3.8	134	0.0258

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	156	0.0300
40	3.8	135	0.0260
30	3.8	134	0.0258
20	3.8	128	0.0246
10	3.8	166	0.0319
0	3.8	117	0.0225
-10	3.8	169	0.0325
-20	3.8	173	0.0333
-30	3.8	135	0.0260

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	166	0.0317
40	3.8	177	0.0338
30	3.8	152	0.0291
20	3.8	122	0.0233
10	3.8	133	0.0254
0	3.8	166	0.0317
-10	3.8	183	0.0350
-20	3.8	124	0.0237
-30	3.8	163	0.0312

802.11ac_HT80

Reference Frequency(Fixed Channel): 5210 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	157	0.0301
40	3.8	158	0.0303
30	3.8	115	0.0221
20	3.8	169	0.0324
10	3.8	167	0.0321
0	3.8	176	0.0338
-10	3.8	166	0.0319
-20	3.8	165	0.0317
-30	3.8	136	0.0261

5725-5850MHz

802.11a

Reference Frequency(Middle Channel): 5785MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	128	0.0221
40	3.8	166	0.0287
30	3.8	147	0.0254
20	3.8	199	0.0344
10	3.8	126	0.0218
0	3.8	166	0.0287
-10	3.8	118	0.0204
-20	3.8	137	0.0237
-30	3.8	188	0.0325

802.11n_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	137	0.0237
40	3.8	125	0.0216
30	3.8	186	0.0322
20	3.8	136	0.0235
10	3.8	126	0.0218
0	3.8	166	0.0287
-10	3.8	115	0.0199
-20	3.8	166	0.0287
-30	3.8	188	0.0325

802.11n_HT40

Reference Frequency(Fixed Channel): 5755 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	159	0.0276
40	3.8	162	0.0281
30	3.8	163	0.0283
20	3.8	147	0.0255
10	3.8	129	0.0224
0	3.8	215	0.0374
-10	3.8	127	0.0221
-20	3.8	166	0.0288
-30	3.8	188	0.0327

802.11ac_HT80

Reference Frequency(Fixed Channel): 5775 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	166	0.0287
40	3.8	116	0.0201
30	3.8	162	0.0281
20	3.8	127	0.0220
10	3.8	199	0.0345
0	3.8	126	0.0218
-10	3.8	166	0.0287
-20	3.8	115	0.0199
-30	3.8	167	0.0289

Antenna B

5150-5250MHz

802.11a

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	175	0.0337
40	3.8	126	0.0242
30	3.8	155	0.0298
20	3.8	161	0.0310
10	3.8	104	0.0200
0	3.8	129	0.0248
-10	3.8	118	0.0227
-20	3.8	125	0.0240
-30	3.8	128	0.0246

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	145	0.0279
40	3.8	129	0.0248
30	3.8	122	0.0235
20	3.8	114	0.0219
10	3.8	155	0.0298
0	3.8	104	0.0200
-10	3.8	155	0.0298
-20	3.8	168	0.0323
-30	3.8	126	0.0242

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	156	0.0298
40	3.8	168	0.0321
30	3.8	141	0.0270
20	3.8	111	0.0212
10	3.8	122	0.0233
0	3.8	155	0.0296
-10	3.8	172	0.0329
-20	3.8	113	0.0216
-30	3.8	152	0.0291

802.11ac_HT80

Reference Frequency(Fixed Channel): 5210 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	146	0.0280
40	3.8	147	0.0282
30	3.8	104	0.0200
20	3.8	158	0.0303
10	3.8	156	0.0299
0	3.8	165	0.0317
-10	3.8	155	0.0298
-20	3.8	159	0.0305
-30	3.8	125	0.0240

5725-5850MHz

802.11a

Reference Frequency(Middle Channel): 5785MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	116	0.0201
40	3.8	155	0.0268
30	3.8	138	0.0239
20	3.8	188	0.0325
10	3.8	116	0.0201
0	3.8	155	0.0268
-10	3.8	107	0.0185
-20	3.8	125	0.0216
-30	3.8	183	0.0316

802.11n_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	126	0.0218
40	3.8	114	0.0197
30	3.8	175	0.0303
20	3.8	145	0.0251
10	3.8	125	0.0216
0	3.8	155	0.0268
-10	3.8	114	0.0197
-20	3.8	155	0.0268
-30	3.8	177	0.0306

802.11n_HT40

Reference Frequency(Fixed Channel): 5755 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	149	0.0259
40	3.8	151	0.0262
30	3.8	152	0.0264
20	3.8	136	0.0236
10	3.8	118	0.0205
0	3.8	193	0.0335
-10	3.8	116	0.0202
-20	3.8	155	0.0269
-30	3.8	177	0.0308

802.11ac_HT80

Reference Frequency(Fixed Channel): 5775 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.8	155	0.0268
40	3.8	115	0.0199
30	3.8	151	0.0261
20	3.8	116	0.0201
10	3.8	189	0.0327
0	3.8	116	0.0201
-10	3.8	155	0.0268
-20	3.8	114	0.0197
-30	3.8	168	0.0291

So, Frequency Stability Versus Input Voltage is:

Antenna A

5150-5250MHz

802.11a

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	186	0.0358
	3.8	125	0.0240
	4.35	132	0.0254

802.11n_HT20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	182	0.0350
	3.8	122	0.0235
	4.35	166	0.0319

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	163	0.0312
	3.8	113	0.0216
	4.35	166	0.0317

802.11ac_HT80

Reference Frequency(Fix Channel): 5210 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	166	0.0319
	3.8	116	0.0223
	4.35	169	0.0324

5725-5850MHz

802.11a

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	136	0.0235
	3.8	122	0.0211
	4.35	148	0.0256

802.11n_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	126	0.0218
	3.8	115	0.0199
	4.35	125	0.0216

802.11n_HT40

Reference Frequency(Fixed Channel): 5755 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	162	0.0281
	3.8	112	0.0195
	4.35	122	0.0212

802.11ac_HT80

Reference Frequency(Fixed Channel): 5775MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.35	166	0.0287
	3.8	175	0.0303
	4.35	133	0.0230

Antenna B

5150-5250MHz

802.11a

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	175	0.0337
	3.8	124	0.0238
	3.35	121	0.0233

802.11n_HT20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	171	0.0329
	3.8	111	0.0213
	3.35	155	0.0298

802.11n_HT40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	152	0.0291
	3.8	102	0.0195
	3.35	155	0.0296

802.11ac_HT80

Reference Frequency(Fix Channel): 5210 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	155	0.0298
	3.8	116	0.0223
	3.35	168	0.0322

5725-5850MHz

802.11a

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	145	0.0251
	3.8	122	0.0211
	3.35	148	0.0256

802.11n_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	115	0.0199
	3.8	116	0.0201
	3.35	124	0.0214

802.11n_HT40

Reference Frequency(Fixed Channel): 5755 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	151	0.0262
	3.8	121	0.0210
	3.35	111	0.0193

802.11ac_HT80

Reference Frequency(Fixed Channel): 5775MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	4.35	155	0.0268
	3.8	164	0.0284
	3.35	122	0.0211

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