

# TEST REPORT

Reference No..... : WTX21X03021564W-1  
FCC ID ..... : 2AZES-AC1L  
Applicant ..... : BrosTrend Technology LLC  
Address ..... : 8 The Green, Suite A, Dover City, Delaware, U.S.A., Zip Code 19901  
Product Name ..... : USB Wi-Fi Adapter  
Test Model. .... : AC1L  
Standards ..... : FCC Part 15.407  
Date of Receipt sample .... : Mar.18, 2021  
Date of Test..... : Mar.18, 2021 to Apr.08, 2021  
Date of Issue ..... : Apr.08, 2021  
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

**Waltek Testing Group (Shenzhen) Co., Ltd.**

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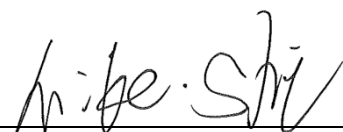
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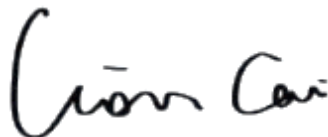
Tested by:

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Mike Shi / Project Engineer



Lion Cai / RF Manager



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**Report version**

Version No.	Date of issue	Description
Rev.00	Apr.08, 2021	Original
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: BrosTrend Technology LLC  
 Address of applicant: 8 The Green, Suite A, Dover City, Delaware, U.S.A., Zip Code 19901

Manufacturer: BrosTrend Technology LLC  
 Address of manufacturer: Room 205, Building No. 5, YaoXing HuaYuan, XinHuiDaDao No. 45, XinHui District, JiangMen City, GuangDong Province, CHINA, Postage Code:529100

General Description of EUT	
Product Name:	USB Wi-Fi Adapter
Trade Name:	BrosTrend
Model No.:	AC1L
Adding Model(s):	AC1, AC8, AC9
Rated Voltage:	DC5V
Battery Capacity:	/
Power Adapter:	/
Software Version:	1030.40.128.2019
Hardware Version:	TC-W8812BU3
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model AC1L, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11a, 802.11n(HT20) , 802.11n-HT40, 802.11ac-VHT80
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	13.69dBm (Conducted)
Type of Modulation:	QPSK,16QAM,64QAM, 256QAM
Type of Antenna:	PCB Antenna
Antenna Gain:	3dBi

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 15.407**: General technical requirements.

**ANSI C63.10-2013**: American National Standard for Testing Unlicensed Wireless Devices.

**KDB789033 D02 v02r01**: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPARTE.

**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 C63.10-2013, KDB789033 D02 v02r01. The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

### 1.4 Table for parameters of Test Software setting

Install “QATool” and follow the instructions given by the manufacturer, you can start to test. 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	Ant.	Test Frequency (MHz)													
		NCB: 20MHz													
		5180	5200	5240	5260	5300	5320	5500	5580	5700	5720	5745	5785	5825	
802.11a 6Mbps	ANT 1	25	25	25	/	/	/	/	/	/	/	23	23	23	
	ANT 2	26	26	26	/	/	/	/	/	/	/	27	27	27	
802.11n-HT20 MCS0	ANT 1	24	24	20	/	/	/	/	/	/	/	20	20	20	
	ANT 2	24	24	23	/	/	/	/	/	/	/	25	25	25	
Mode	Ant.	NCB: 40MHz													
		5190	5230	5270	5310	5510	5550	5670	5710	5755	5795				
802.11n-HT40 MCS0	ANT 1	20	20	/	/	/	/	/	/	/	15	16			
	ANT 2	20	20	/	/	/	/	/	/	/	23	23			
Mode	Ant.	NCB: 80MHz													
		5210	5290	5530	5610	5690	5775								
802.11ac-VH80 MCS0/Nss2	ANT 1	20	/	/	/	/	15								
	ANT 2	20	/	/	/	/	22								

## **1.5 EUT Operating during test**

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

## **1.6 Test Facility**

### **Address of the test laboratory**

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101)

### **FCC – Registration No.: 125990**

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) 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, with a duty cycle equal to 100%, 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-VH80	5210MHz ,5775 MHz

Note: 802.11ac-VHT20, 802.11ac-VHT40 covered by 802.11n-HT20 and 802.11n-HT40.

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45--55 %.
ATM Pressure:	1019 mbar

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

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

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E445	/

## 1.8 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

**1.9 Test Equipment List and Details**

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2020-04-28	2021-04-27
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2020-04-28	2021-04-27
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
SEMT-1042	Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2019-05-05	2021-05-04
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2020-04-28	2021-04-27
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2020-04-28	2021-04-27
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2020-04-28	2021-04-27
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2019-05-05	2021-05-04
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2020-04-28	2021-04-27
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2020-04-28	2021-04-27
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2020-04-28	2021-04-27
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/
SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/

<b>Software List</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Version</b>
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

\*Remark: indicates software version used in the compliance certification testing

## 2. SUMMARY OF TEST RESULTS

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<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§15.203; §15.405	Antenna Requirement	Compliant
15.407 (c)	Automatically Discontinue Transmission	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),(4)	Undesirable 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)	Compliant

N/A: Not applicable

### **3. Antenna Requirement**

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#### **3.1 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.

#### **3.2 Evaluation Information**

This product has two PCB antennas, fulfill the requirement of this section.

## **4. Automatically Discontinue Transmission**

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### **4.1 Standard Applicable**

According to FCC Part 15.407(c), the device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### **4.2 Summary of Test Results**

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

## 5. Power Spectral Density

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### 5.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

### 5.2 Test Procedure

According to 789033 D02 v02r01 General UNII Test Procedures New Rules v02, 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 500kHz bandwidth, the following adjustments to the procedures apply:

- a) Set RBW  $\geq 1/T$ , where T is defined in section II.B.1.a).
- b) Set VBW  $\geq 3$  RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10\log(500\text{kHz}/\text{RBW})$  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  $10\log(1\text{MHz}/\text{RBW})$  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.

### **5.3 Summary of Test Results/Plots**

**Please refer to Appendix A**

## 6. Emission Bandwidth and Occupied Bandwidth

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### 6.1 Standard Applicable

According to 15.407(a) and (e):

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

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

### 6.2 Test Procedure

According to 789033 D02 v02r0r section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.

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

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

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

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

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

## D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v02r01 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

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

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 * RBW$
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.

### **6.3 Summary of Test Results/Plots**

**Please refer to Appendix B**

## 7. Maximum Conducted Output Power

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### 7.1 Standard Applicable

Section 15.407(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

### 7.2 Test Procedure

According to KDB789033 D02 v02r01 section E, the following is the measurement procedure.

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

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

### **7.3 Summary of Test Results/Plots**

**Please refer to Appendix C**

## 8. Radiated Spurious Emissions

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### 8.1 Standard Applicable

According to §15.407(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:
  - (i) All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

According to §15.407(b)(6), Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

According to §15.407(b)(7), The provisions of §15.205 apply to intentional radiators operating under this section.  
789033 D02 v02r01 General UNII Test Procedures New Rules v01

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

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

where:

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

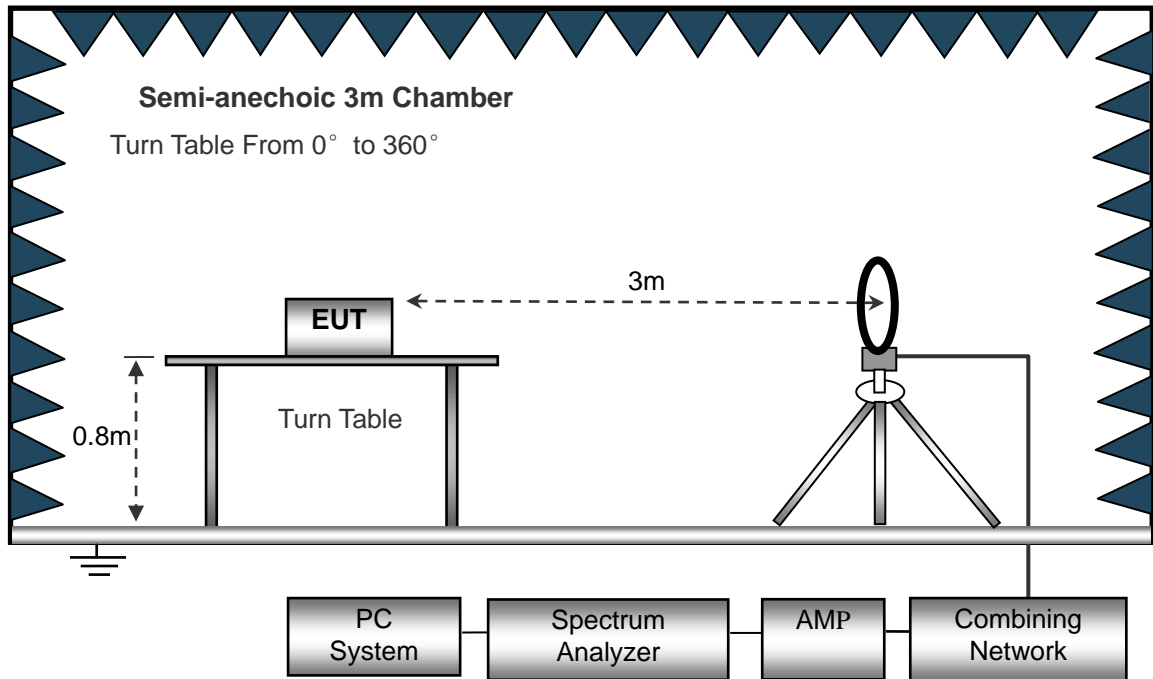
### 8.2 Test Procedure

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..

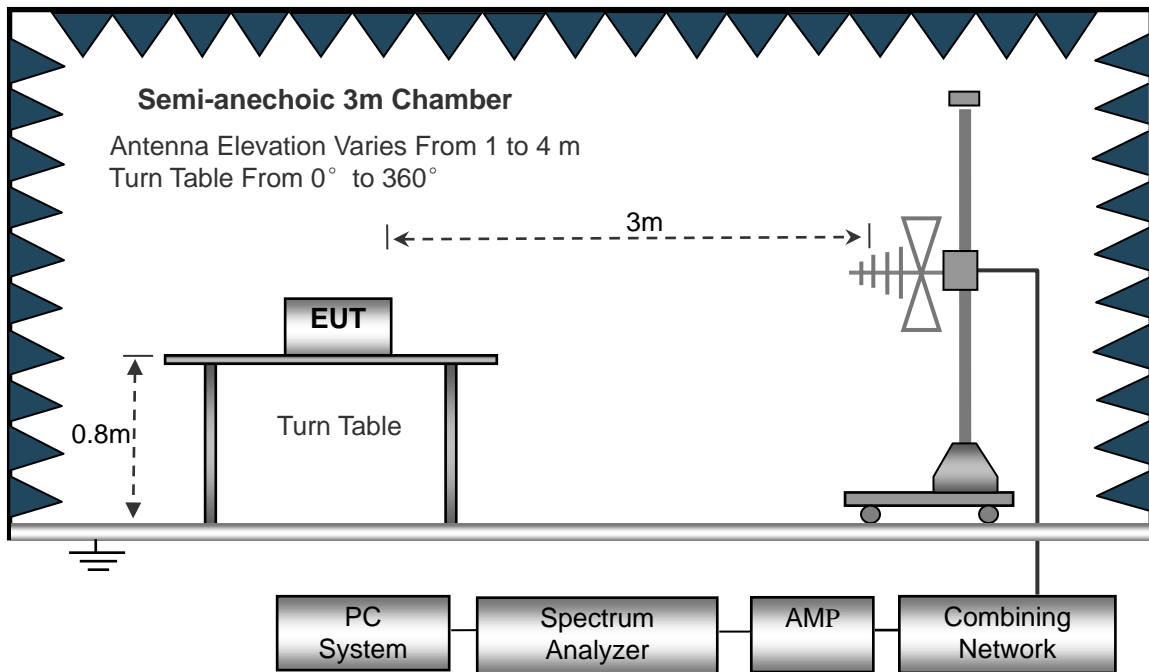
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The test setup for emission measurement below 30MHz..

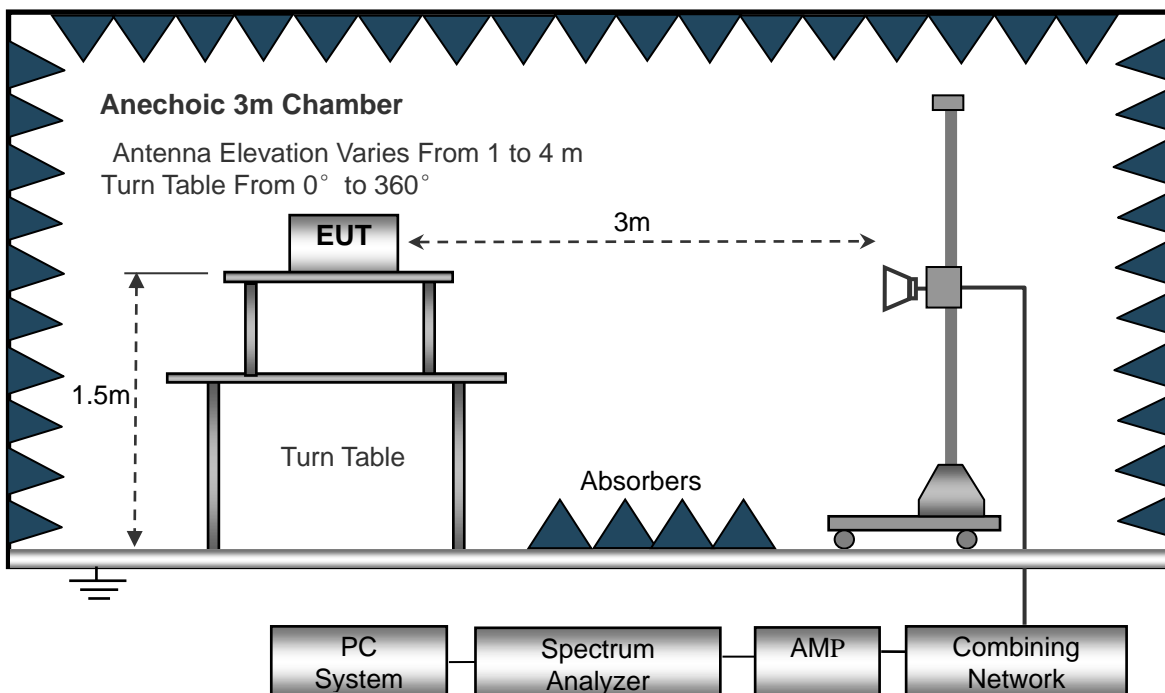


The test setup for emission measurement from 30 MHz to 1 GHz..





The test setup for emission measurement above 1 GHz..



### 8.3 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

### 8.4 Corrected Amplitude & Margin Calculation

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

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

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

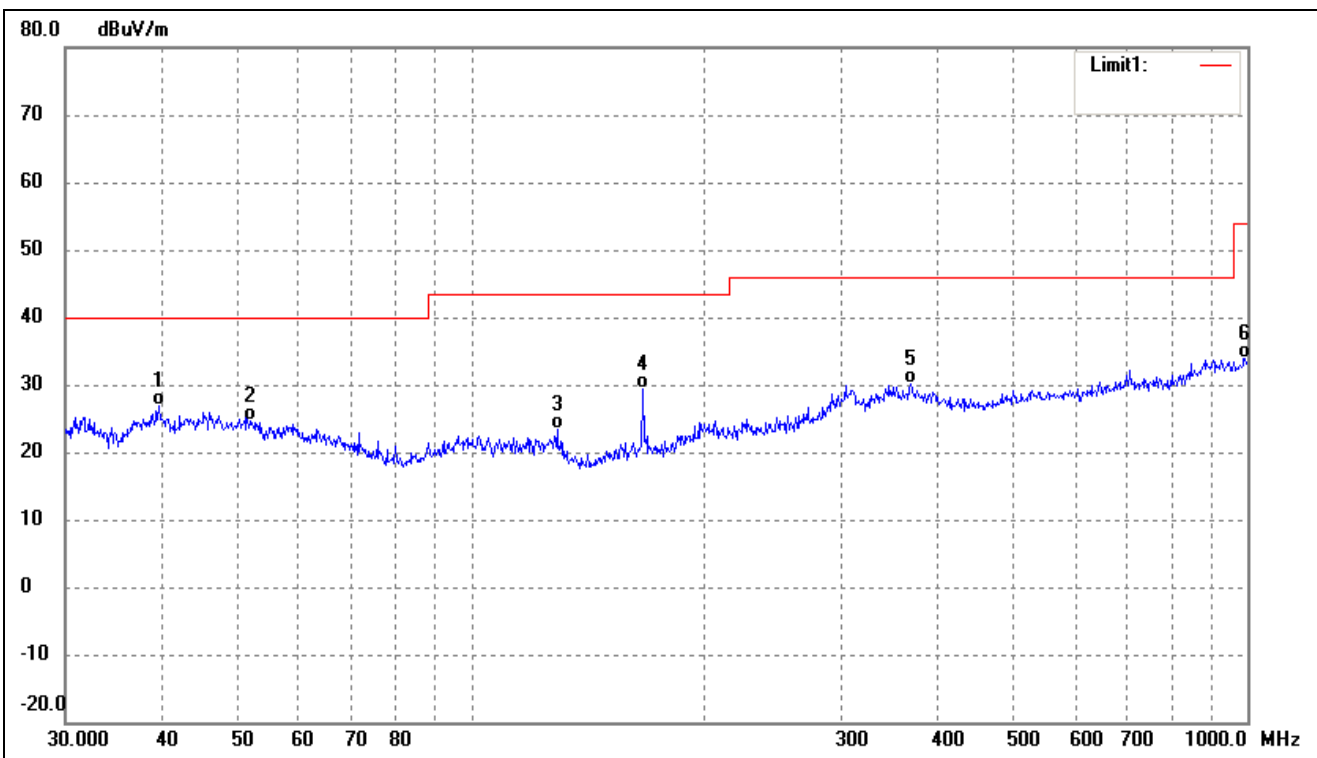
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

### 8.5 Summary of Test Results/Plots

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

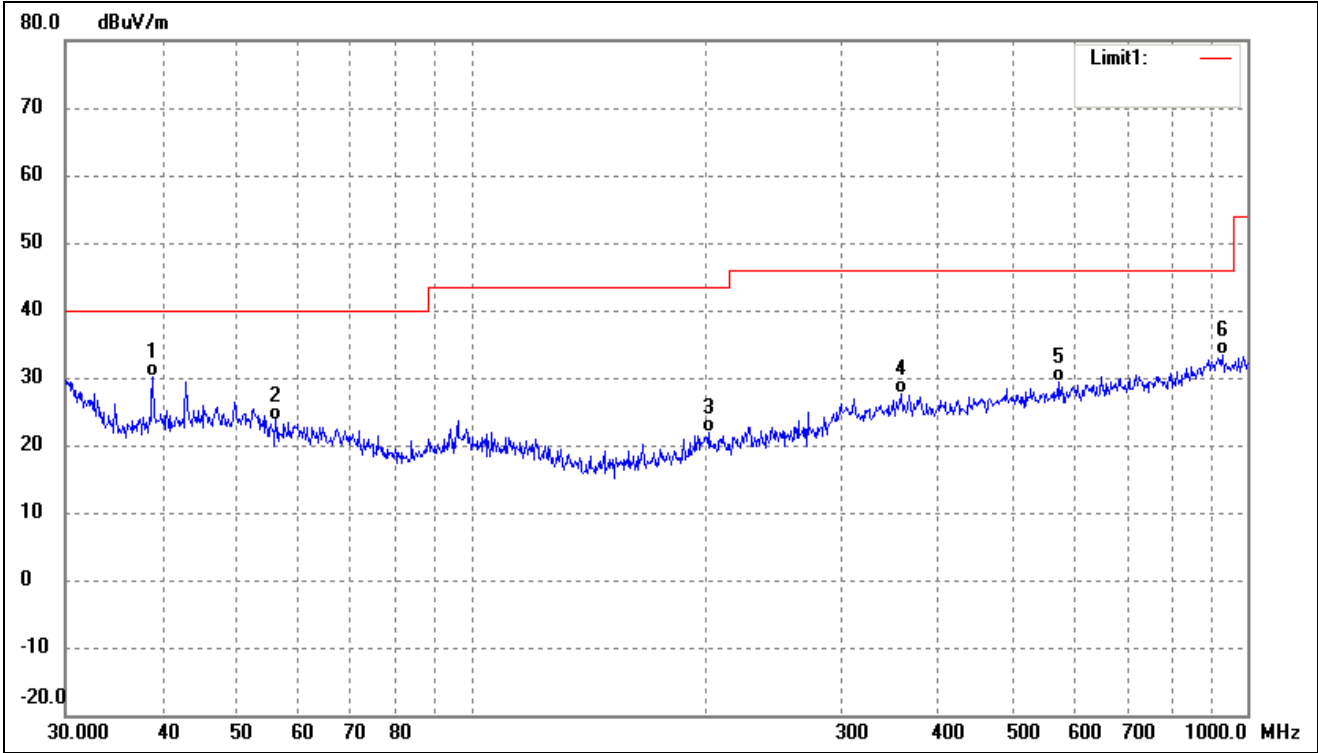
- Spurious Emission From 30 MHz to 1 GHz
- Antenna A(Worst case)
- 5150-5250MHz

802.11a(Worst case)			
Test Channel	5180MHz	Polarity:	Horizontal



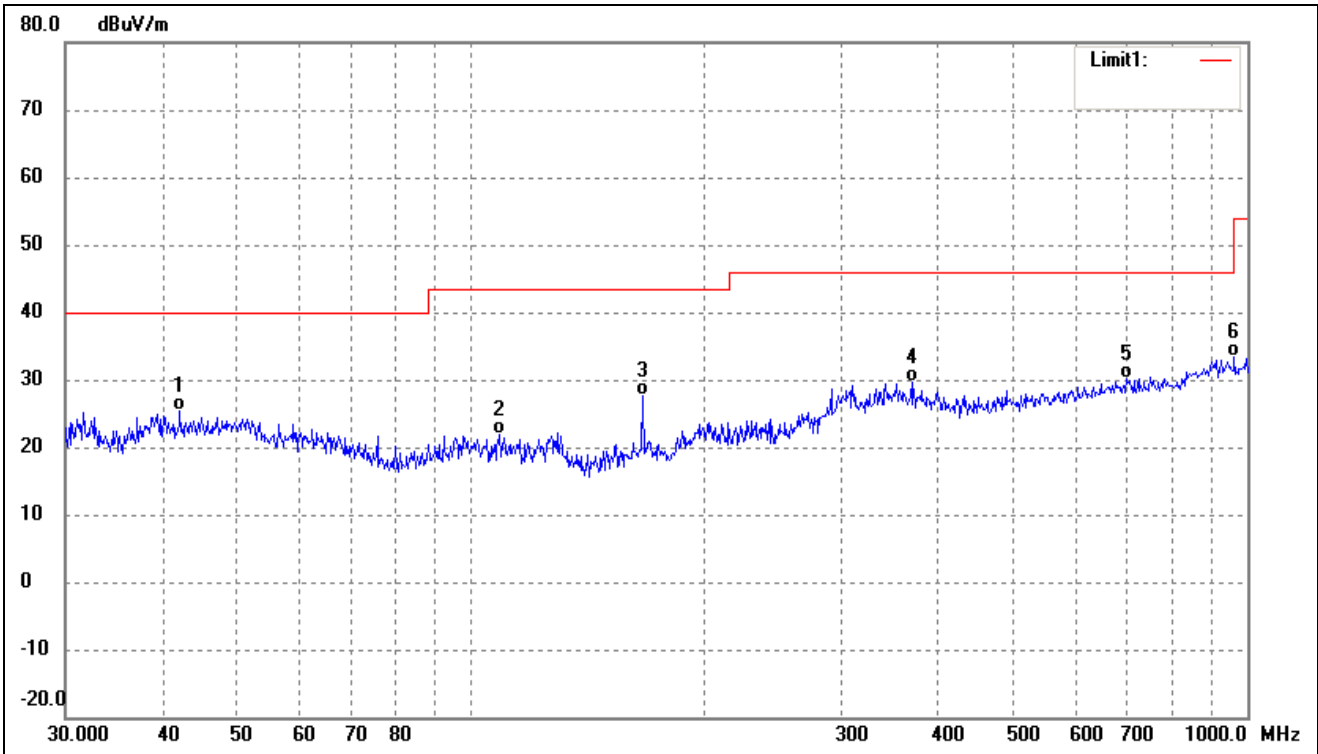
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	39.5757	39.08	-12.14	26.94	40.00	-13.06	-	-	QP
2	52.0251	36.64	-12.10	24.54	40.00	-15.46	-	-	QP
3	129.0146	40.12	-16.70	23.42	43.50	-20.08	-	-	QP
4	166.6514	44.62	-15.20	29.42	43.50	-14.08	-	-	QP
5	368.1116	37.42	-7.26	30.16	46.00	-15.84	-	-	QP
6	993.0114	32.20	1.78	33.98	54.00	-20.02	-	-	QP

802.11a(Worst case)			
Test Channel	5180MHz	Polarity:	Vertical



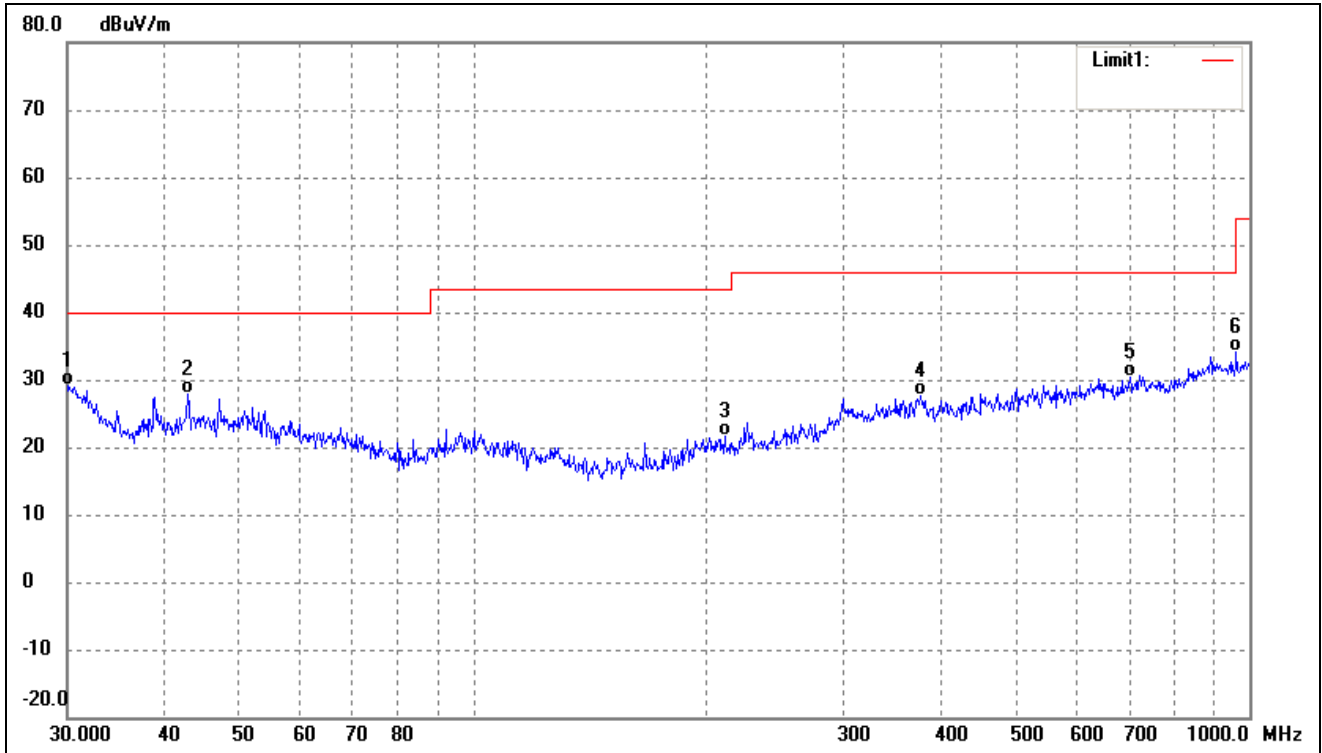
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	38.8879	42.63	-12.40	30.23	40.00	-9.77	-	-	QP
2	56.0007	36.70	-12.95	23.75	40.00	-16.25	-	-	QP
3	202.8104	34.22	-12.39	21.83	43.50	-21.67	-	-	QP
4	357.9287	34.97	-7.36	27.61	46.00	-18.39	-	-	QP
5	570.6100	32.07	-2.78	29.29	46.00	-16.71	-	-	QP
6	929.0082	31.64	1.77	33.41	46.00	-12.59	-	-	QP

802.11a(Worst case)			
Test Channel	5200MHz	Polarity:	Horizontal



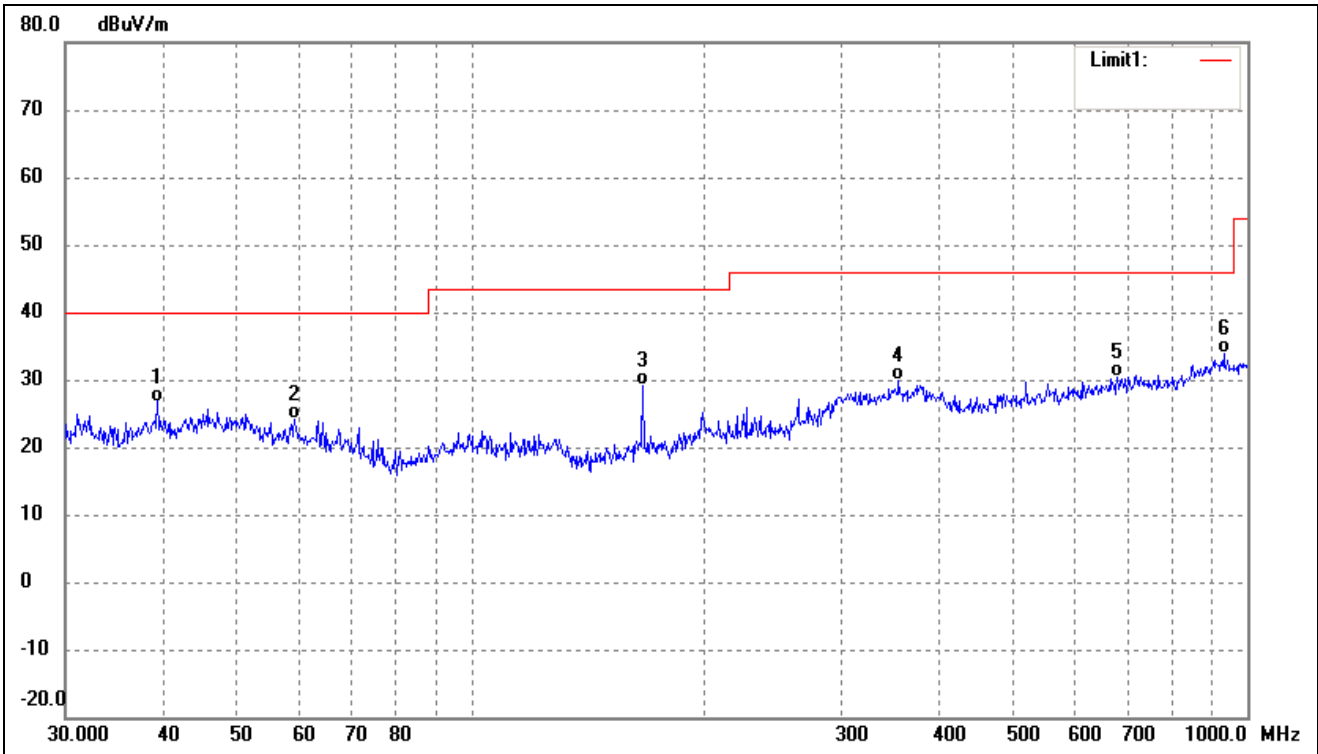
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	42.1542	37.22	-11.90	25.32	40.00	-14.68	-	-	QP
2	108.6470	35.31	-13.31	22.00	43.50	-21.50	-	-	QP
3	166.0680	42.76	-15.23	27.53	43.50	-15.97	-	-	QP
4	369.4047	36.83	-7.24	29.59	46.00	-16.41	-	-	QP
5	699.3046	32.00	-1.86	30.14	46.00	-15.86	-	-	QP
6	962.1623	31.86	1.41	33.27	54.00	-20.73	-	-	QP

802.11a(Worst case)			
Test Channel	5200MHz	Polarity:	Vertical



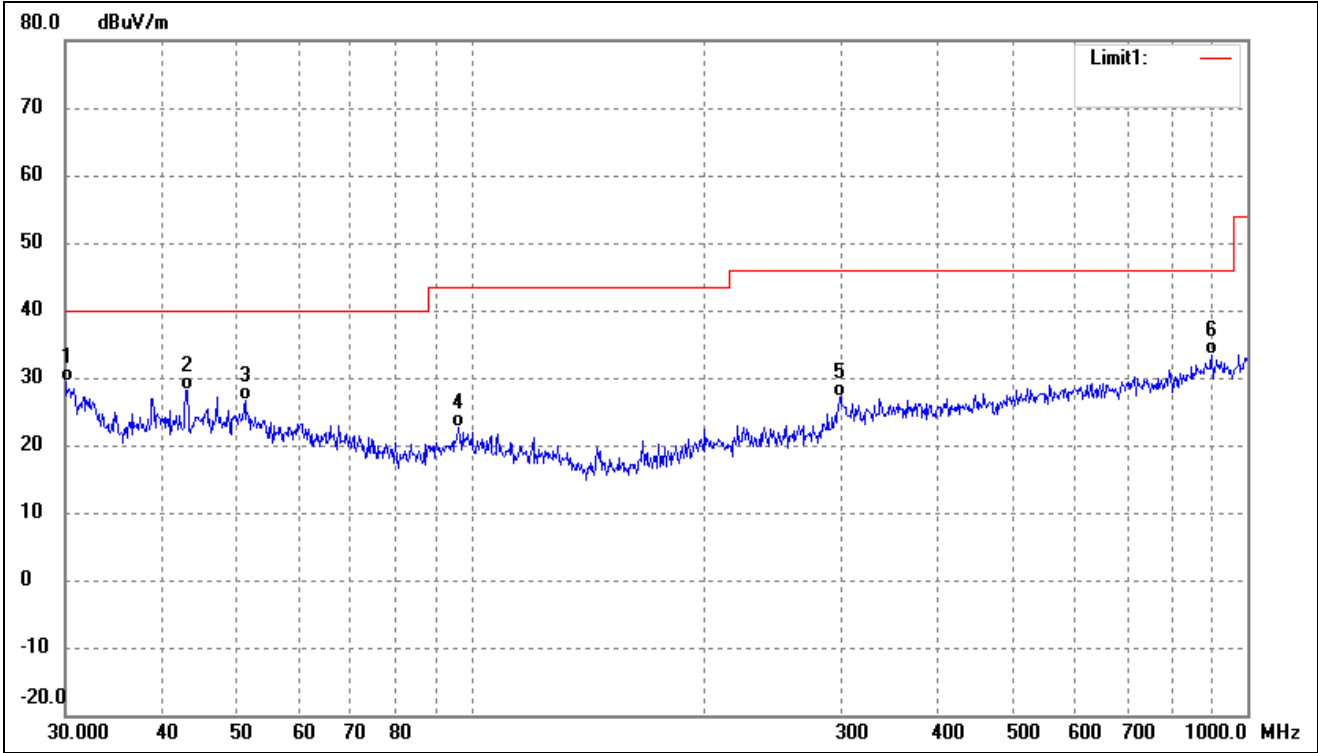
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	30.1054	43.32	-14.15	29.17	40.00	-10.83	-	-	QP
2	42.8998	39.71	-11.87	27.84	40.00	-12.16	-	-	QP
3	210.7860	33.81	-12.30	21.51	43.50	-21.99	-	-	QP
4	377.2591	34.67	-7.12	27.55	46.00	-18.45	-	-	QP
5	701.7610	32.07	-1.81	30.26	46.00	-15.74	-	-	QP
6	962.1623	32.82	1.41	34.23	54.00	-19.77	-	-	QP

802.11a(Worst case)			
Test Channel	5240MHz	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	39.4372	38.94	-12.19	26.75	40.00	-13.25	-	-	QP
2	59.2325	37.11	-12.98	24.13	40.00	-15.87	-	-	QP
3	166.0680	44.43	-15.23	29.20	43.50	-14.30	-	-	QP
4	355.4273	37.34	-7.38	29.96	46.00	-16.04	-	-	QP
5	679.9600	32.34	-1.87	30.47	46.00	-15.53	-	-	QP
6	932.2715	32.09	1.71	33.80	46.00	-12.20	-	-	QP

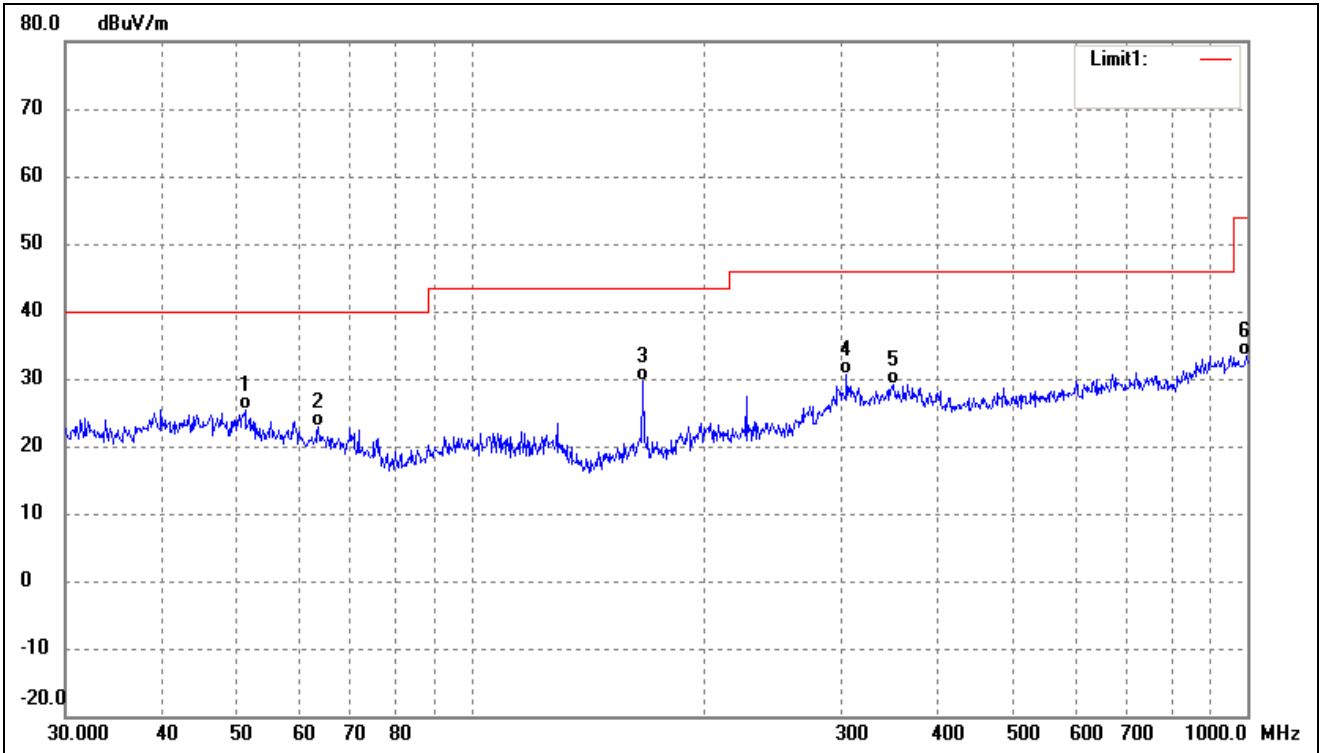
802.11a(Worst case)			
Test Channel	5240MHz	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	30.0000	43.48	-14.15	29.33	40.00	-10.67	-	-	QP
2	43.0505	40.00	-11.87	28.13	40.00	-11.87	-	-	QP
3	51.1209	38.56	-11.85	26.71	40.00	-13.29	-	-	QP
4	96.4362	36.53	-13.91	22.62	43.50	-20.88	-	-	QP
5	298.2681	36.19	-9.05	27.14	46.00	-18.86	-	-	QP
6	900.1474	31.90	1.55	33.45	46.00	-12.55	-	-	QP

- Antenna A(worst case)
- 5725-5850MHz

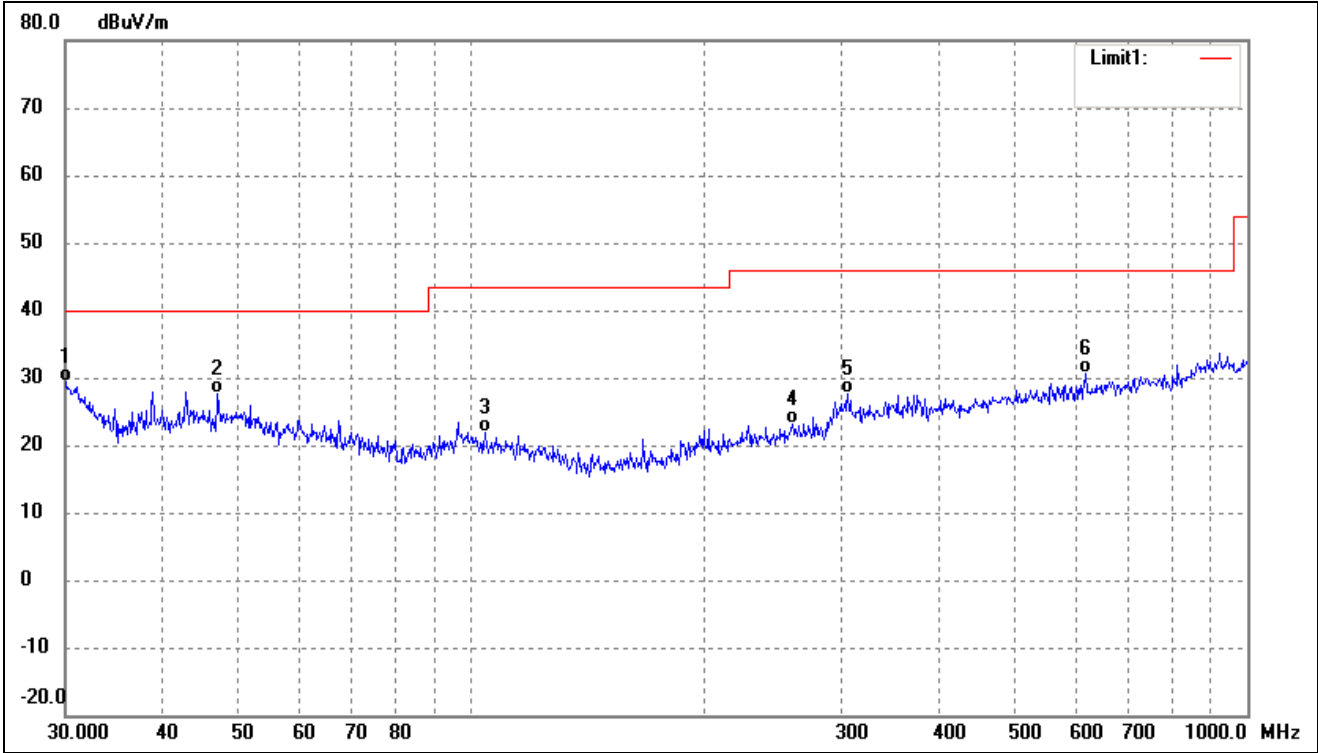
802.11a(worst case)			
Test Channel	5745MHz	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	51.1209	37.34	-11.85	25.49	40.00	-14.51	-	-	QP
2	63.5356	36.43	-13.65	22.78	40.00	-17.22	-	-	QP
3	166.6514	44.87	-15.20	29.67	43.50	-13.83	-	-	QP
4	304.6100	39.57	-8.93	30.64	46.00	-15.36	-	-	QP
5	350.4768	36.52	-7.43	29.09	46.00	-16.91	-	-	QP
6	996.4996	31.64	1.83	33.47	54.00	-20.53	-	-	QP

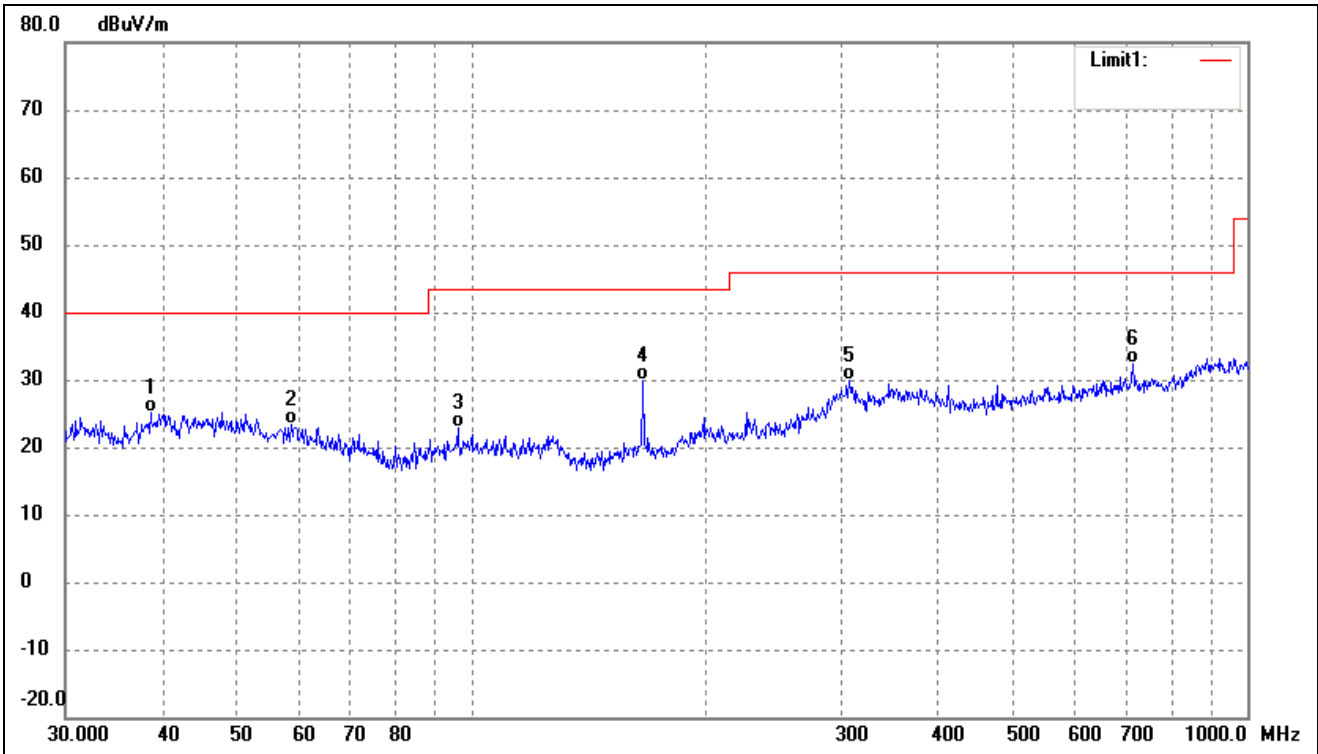


802.11a(worst case)			
Test Channel	5745MHz	Polarity:	Vertical



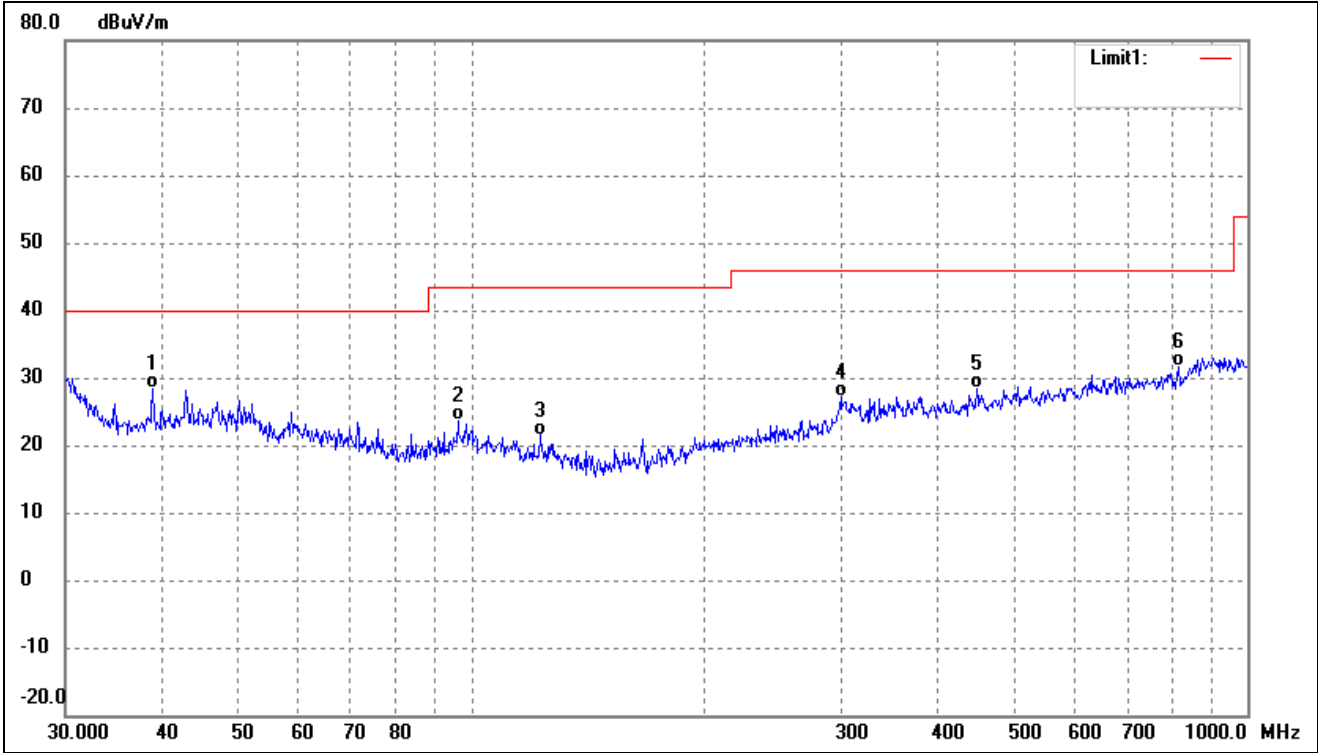
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	30.1054	43.56	-14.15	29.41	40.00	-10.59	-	-	QP
2	47.1599	39.34	-11.68	27.66	40.00	-12.34	-	-	QP
3	104.1701	35.28	-13.31	21.97	43.50	-21.53	-	-	QP
4	259.2338	33.89	-10.84	23.05	46.00	-22.95	-	-	QP
5	305.6800	36.54	-8.93	27.61	46.00	-18.39	-	-	QP
6	618.5369	32.76	-2.10	30.66	46.00	-15.34	-	-	QP

802.11a(worst case)			
Test Channel	5785MHz	Polarity:	Horizontal



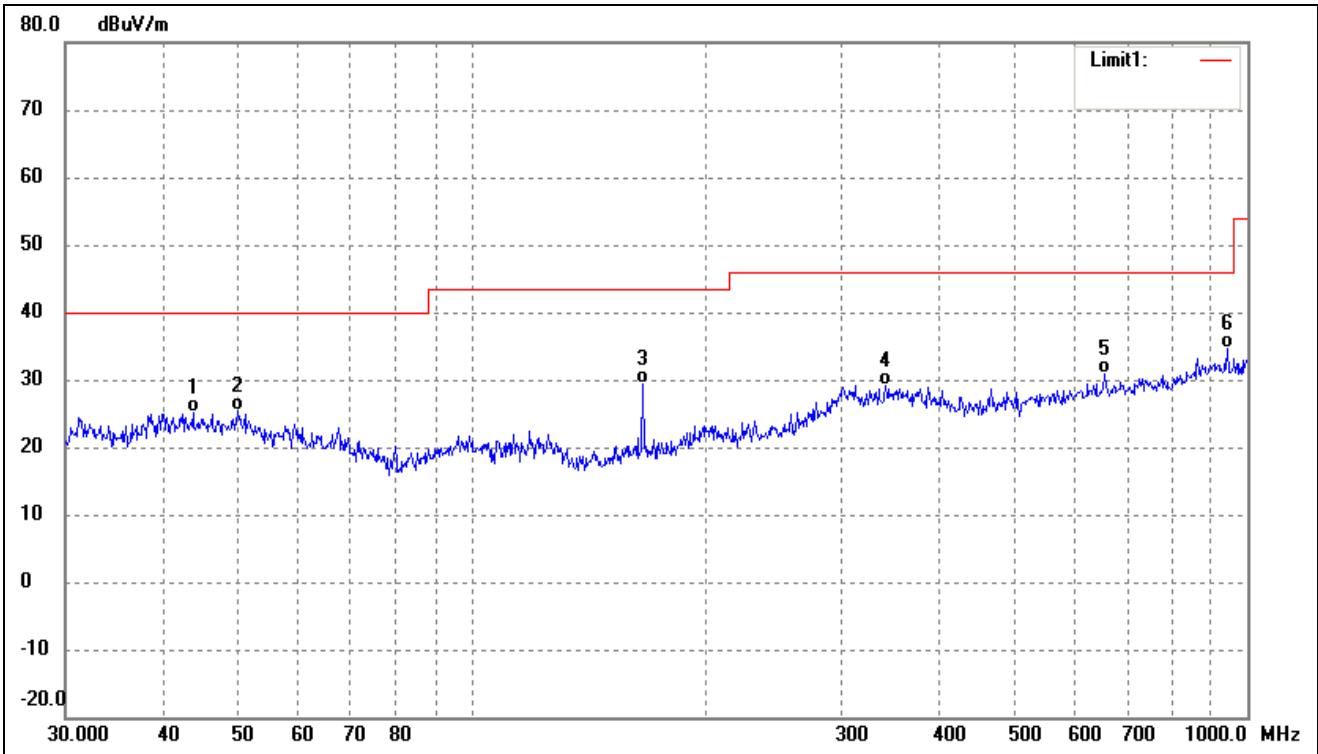
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	38.6161	37.74	-12.51	25.23	40.00	-14.77	-	-	QP
2	58.6126	36.26	-12.98	23.28	40.00	-16.72	-	-	QP
3	96.0986	36.74	-13.96	22.78	43.50	-20.72	-	-	QP
4	166.6514	44.99	-15.20	29.79	43.50	-13.71	-	-	QP
5	306.7537	38.74	-8.93	29.81	46.00	-16.19	-	-	QP
6	711.6734	33.93	-1.45	32.48	46.00	-13.52	-	-	QP

802.11a(worst case)			
Test Channel	5785MHz	Polarity:	Vertical



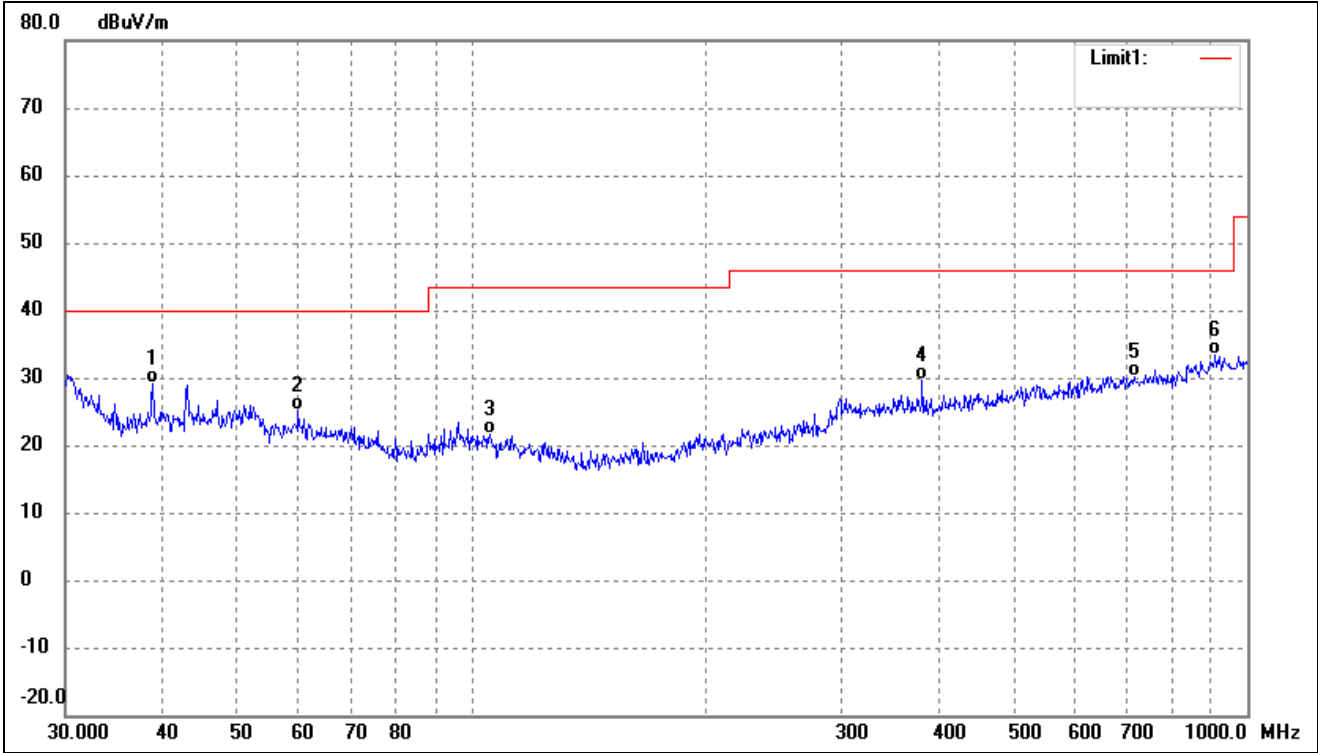
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	38.8879	40.74	-12.40	28.34	40.00	-11.66	-	-	QP
2	96.0986	37.70	-13.96	23.74	43.50	-19.76	-	-	QP
3	122.8340	36.55	-15.05	21.50	43.50	-22.00	-	-	QP
4	299.3158	36.04	-8.96	27.08	46.00	-18.92	-	-	QP
5	447.9822	34.00	-5.61	28.39	46.00	-17.61	-	-	QP
6	815.9678	32.16	-0.45	31.71	46.00	-14.29	-	-	QP

802.11a(worst case)			
Test Channel	5825MHz	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	43.8119	36.93	-11.84	25.09	40.00	-14.91	-	-	QP
2	50.0566	36.95	-11.55	25.40	40.00	-14.60	-	-	QP
3	166.0680	44.55	-15.23	29.32	43.50	-14.18	-	-	QP
4	341.9787	37.11	-7.92	29.19	46.00	-16.81	-	-	QP
5	654.2318	33.28	-2.29	30.99	46.00	-15.01	-	-	QP
6	942.1305	33.08	1.51	34.59	46.00	-11.41	-	-	QP

802.11a(worst case)			
Test Channel	5825MHz	Polarity:	Vertical

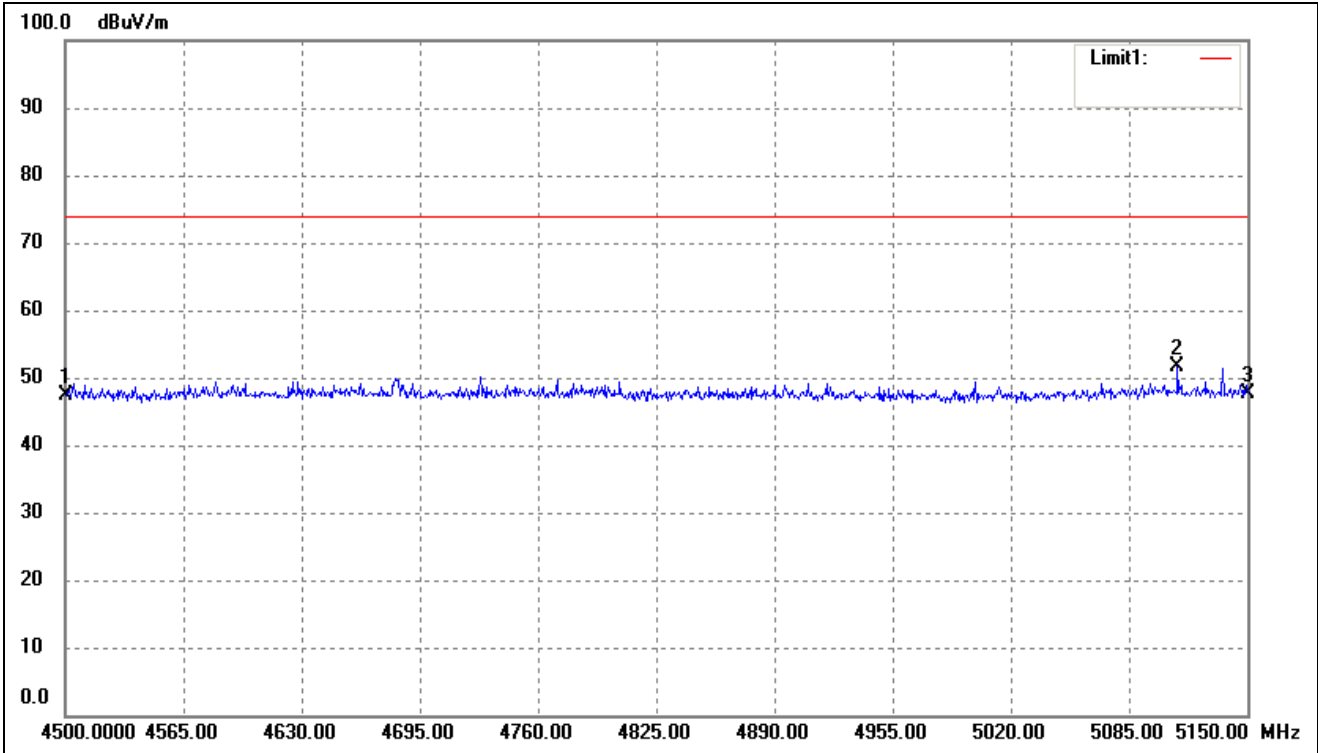


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	38.8879	41.54	-12.40	29.14	40.00	-10.86	-	-	QP
2	59.8588	38.15	-12.99	25.16	40.00	-14.84	-	-	QP
3	105.6415	35.01	-13.31	21.70	43.50	-21.80	-	-	QP
4	381.2487	36.59	-7.01	29.58	46.00	-16.42	-	-	QP
5	714.1734	31.47	-1.36	30.11	46.00	-15.89	-	-	QP
6	909.6667	31.66	1.67	33.33	46.00	-12.67	-	-	QP

Remark: ‘-’Means’ the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

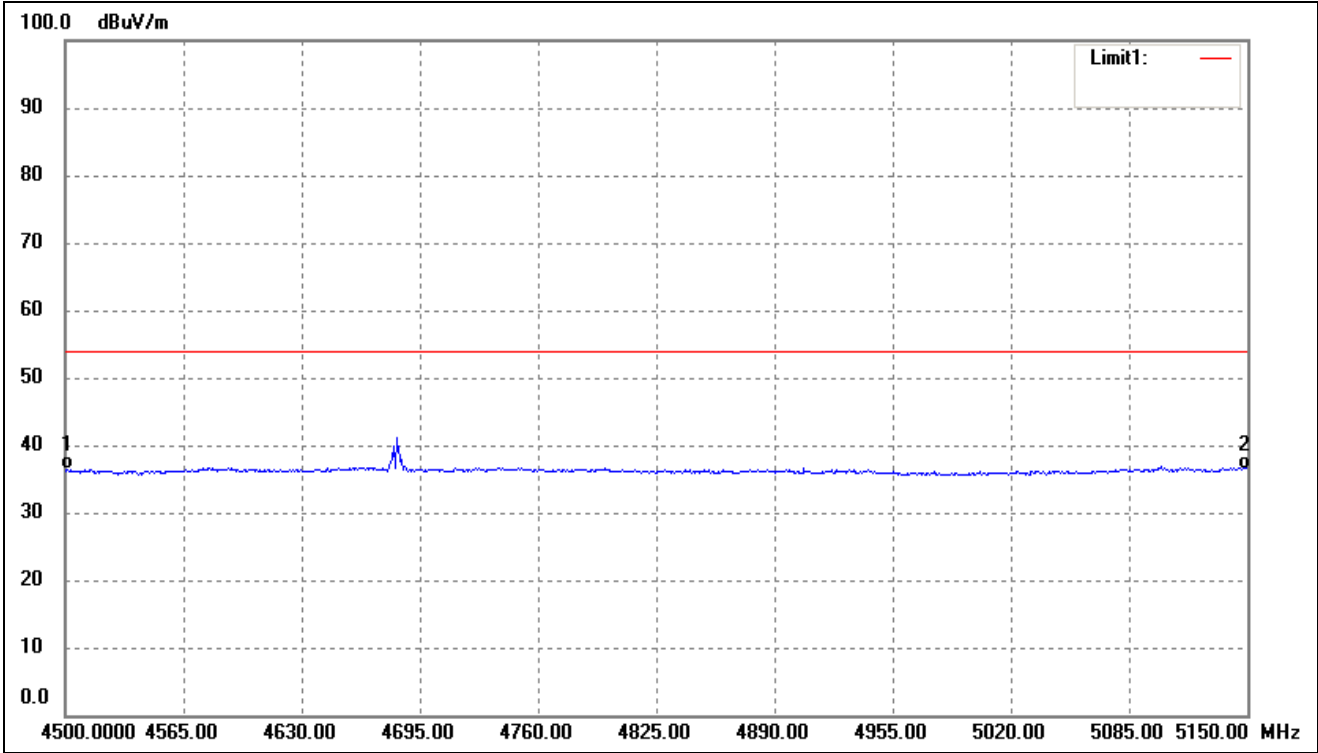
- Spurious Emission above 1GHz
- Antenna A(worst case)

802.11a- Restricted Bandedge(worst case)			
Test Channel	band 4.50-5.15GHz	Polarity:	Horizontal (worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	4500.000	52.10	-4.71	47.39	74.00	-26.61	-	-	peak
2	5111.650	56.02	-4.33	51.69	74.00	-22.31	-	-	peak
3	5150.000	52.02	-4.32	47.70	74.00	-26.30	-	-	peak

802.11a- Restricted Bandedge (worst case)			
Test Channel	band 4.50-5.15GHz	Polarity:	Horizontal (worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	4500.000	41.04	-4.71	36.33	54.00	-17.67	-	-	AVG
2	5150.000	40.80	-4.32	36.48	54.00	-17.52	-	-	AVG

*Note: The Restricted Bandedge was tested in Horizontal /Vertical and the worst case position data was reported.*

Remark: '-'Means' the test Degree and Height is not recorded by the test software and only show the worst case in the test report.

➤ **Antenna A (Worst case)**

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11a)
- Harmonics And Spurious Emissions

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5180MHz)							
10360	56.47	7.11	63.58	74	-10.42	H	PK
15540	37.96	8.22	46.18	54	-7.82	H	AV
10360	60.18	7.11	67.29	74	-6.71	V	PK
15540	38.92	8.22	47.14	54	-6.86	V	AV
Middle Channel (5200MHz)							
10400	58.82	7.22	66.04	74	-7.96	H	PK
15600	36.41	8.67	45.08	54	-8.92	H	AV
10400	56.77	7.22	63.99	74	-10.01	V	PK
15600	39.40	8.67	48.07	54	-5.93	V	AV
High Channel (5240MHz)							
10480	56.92	7.69	64.61	74	-9.39	H	PK
15720	39.30	8.93	48.23	54	-5.77	H	AV
10480	59.11	7.69	66.80	74	-7.20	V	PK
15720	38.81	8.93	47.74	54	-6.26	V	AV

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel (5745MHz)							
11490	56.10	9.45	65.55	74	-8.45	H	PK
17235	33.46	10.36	43.82	54	-10.18	H	AV
11490	54.88	9.45	64.33	74	-9.67	V	PK
17235	37.30	10.36	47.66	54	-6.34	V	AV
Middle Channel (5785MHz)							
11570	58.72	9.62	68.34	74	-5.66	H	PK
17355	37.80	10.67	48.47	54	-5.53	H	AV
11570	56.83	9.62	66.45	74	-7.55	V	PK
17355	35.88	10.67	46.55	54	-7.45	V	AV
High Channel (5825MHz)							
11650	54.60	9.84	64.44	74	-9.56	H	PK
17475	33.25	10.95	44.20	54	-9.80	H	AV
11650	54.98	9.84	64.82	74	-9.18	V	PK
17475	37.31	10.95	48.26	54	-5.74	V	AV

- Out of Band edge for 5150-5250MHz



Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-35.79	-27
Highest	Above 5350	-42.15	-27
Note: the data just list the worst cases			

➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-37.28	-27
	5715 to 5725	-40.50	-17
Highest	5850 to 5860	-41.68	-17
	Above 5860	-42.99	-27
Note: the data just list the worst cases			

- For the frequency band 5.15-5.25GHz5.725-5.850GHz (802.11n HT20)
- Harmonics And Spurious Emissions

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5180MHz)							
10360	55.85	7.11	62.96	74	-11.04	H	PK
15540	40.78	8.22	49.00	54	-5.00	H	AV
10360	61.51	7.11	68.62	74	-5.38	V	PK
15540	38.49	8.22	46.71	54	-7.29	V	AV
Middle Channel (5200MHz)							
10400	58.87	7.22	66.09	74	-7.91	H	PK
15600	36.17	8.67	44.84	54	-9.16	H	AV
10400	57.62	7.22	64.84	74	-9.16	V	PK
15600	37.65	8.67	46.32	54	-7.68	V	AV
High Channel (5240MHz)							
10480	55.91	7.69	63.60	74	-10.40	H	PK
15720	39.47	8.93	48.40	54	-5.60	H	AV
10480	59.94	7.69	67.63	74	-6.37	V	PK
15720	39.30	8.93	48.23	54	-5.77	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5745MHz)							
11490	58.63	9.45	68.08	74	-5.92	H	PK
17235	37.91	10.36	48.27	54	-5.73	H	AV
11490	55.08	9.45	64.53	74	-9.47	V	PK
17235	36.83	10.36	47.19	54	-6.81	V	AV
Middle Channel (5785MHz)							
11570	56.66	9.62	66.28	74	-7.72	H	PK
17355	36.25	10.67	46.92	54	-7.08	H	AV
11570	56.06	9.62	65.68	74	-8.32	V	PK
17355	35.79	10.67	46.46	54	-7.54	V	AV
High Channel (5825MHz)							
11650	55.84	9.84	65.68	74	-8.32	H	PK
17475	35.46	10.95	46.41	54	-7.59	H	AV
11650	56.94	9.84	66.78	74	-7.22	V	PK
17475	35.92	10.95	46.87	54	-7.13	V	AV

## ➤ Out of Band edge 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-33.19	-27
Highest	Above 5350	-37.88	-27
Note: the data just list the worst cases			

## ➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-46.71	-27
	5715 to 5725	-33.80	-17
Highest	5850 to 5860	-37.02	-17
	Above 5860	-42.64	-27
Note: the data just list the worst cases			

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

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11n HT40)
- Harmonics And Spurious Emissions

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5190MHz)							
10380	58.09	7.25	65.34	74	-8.66	H	PK
15570	37.81	8.33	46.14	54	-7.86	H	AV
10380	58.09	7.25	65.34	74	-8.66	V	PK
15570	38.94	8.33	47.27	54	-6.73	V	AV
High Channel (5230MHz)							
10460	56.73	7.54	64.27	74	-9.73	H	PK
15690	39.61	8.86	48.47	54	-5.53	H	AV
10460	59.35	7.54	66.89	74	-7.11	V	PK
15690	38.73	8.86	47.59	54	-6.41	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel (5755MHz)							
11510	56.97	9.65	66.62	74	-7.38	H	PK
17265	37.85	10.87	48.72	54	-5.28	H	AV
11510	55.72	9.65	65.37	74	-8.63	V	PK
17265	36.01	10.87	46.88	54	-7.12	V	AV
High Channel (5795MHz)							
11590	56.04	9.81	65.85	74	-8.15	H	PK
17385	35.09	10.89	45.98	54	-8.02	H	AV
11590	57.99	9.81	67.80	74	-6.20	V	PK
17385	37.06	10.89	47.95	54	-6.05	V	AV

- Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-36.63	-27
Highest	Above 5350	-41.38	-27

Note: the data just list the worst cases

## ➤ Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-40.17	-27
	5715 to 5725	-40.52	-17
Highest	5850 to 5860	-42.57	-17
	Above 5860	-42.00	-27

Note: the data just list the worst cases

- For the frequency band 5.15-5.25GHz, 5.725-5.850GHz (802.11ac VH80)
- Harmonics And Spurious Emissions

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
5210MHz							
10420	59.67	7.33	67.00	74	-7.00	H	PK
15630	37.54	8.75	46.29	54	-7.71	H	AV
10420	56.33	7.33	63.66	74	-10.34	V	PK
15630	37.62	8.75	46.37	54	-7.63	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
5775MHz							
11550	56.62	9.54	66.16	74	-7.84	H	PK
17325	34.16	10.59	44.75	54	-9.25	H	AV
11550	56.80	9.54	66.34	74	-7.66	V	PK
17325	33.37	10.59	43.96	54	-10.04	V	AV

- Out of Band edge for 5150-5250MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5150	-32.02	-27
Highest	Above 5350	-31.11	-27

Note: the data just list the worst cases

- Out of Band edge for 5725-5850MHz

Test CH.	Test Segment	Result	Limit
	MHz	dBm/MHz	dBm/MHz
Lowest	Below 5715	-35.87	-27
	5715 to 5725	-30.45	-17
Highest	5850 to 5860	-30.98	-17
	Above 5860	-38.23	-27

Note: the data just list the worst cases

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## **9. Frequency Stability**

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### **9.1 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.

### **9.2 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.

### **9.3 Summary of Test Results/Plots**

**Please refer to Appendix D**

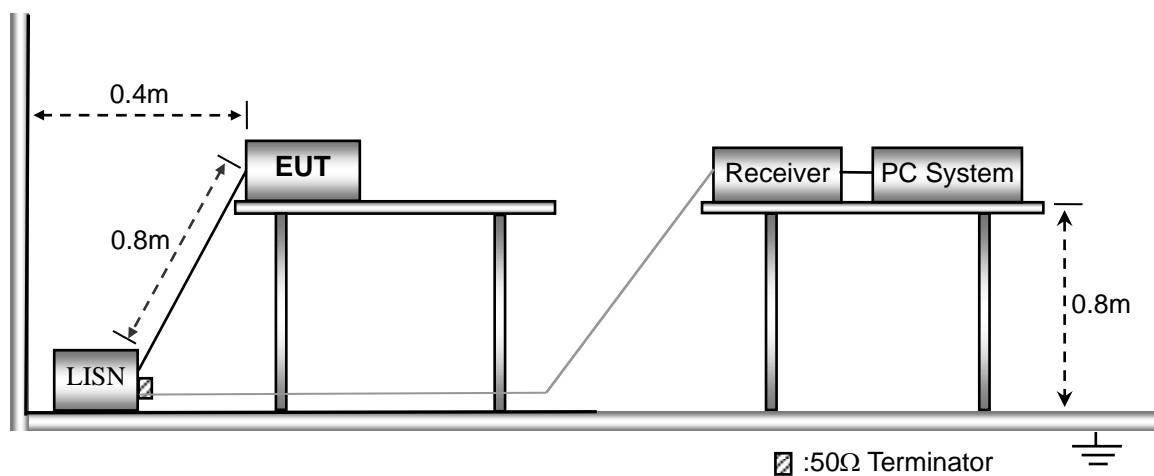
## 10 Conducted Emissions

### 10.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 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.

### 10.2 Basic Test Setup Block Diagram



### 10.3 Test Receiver Setup

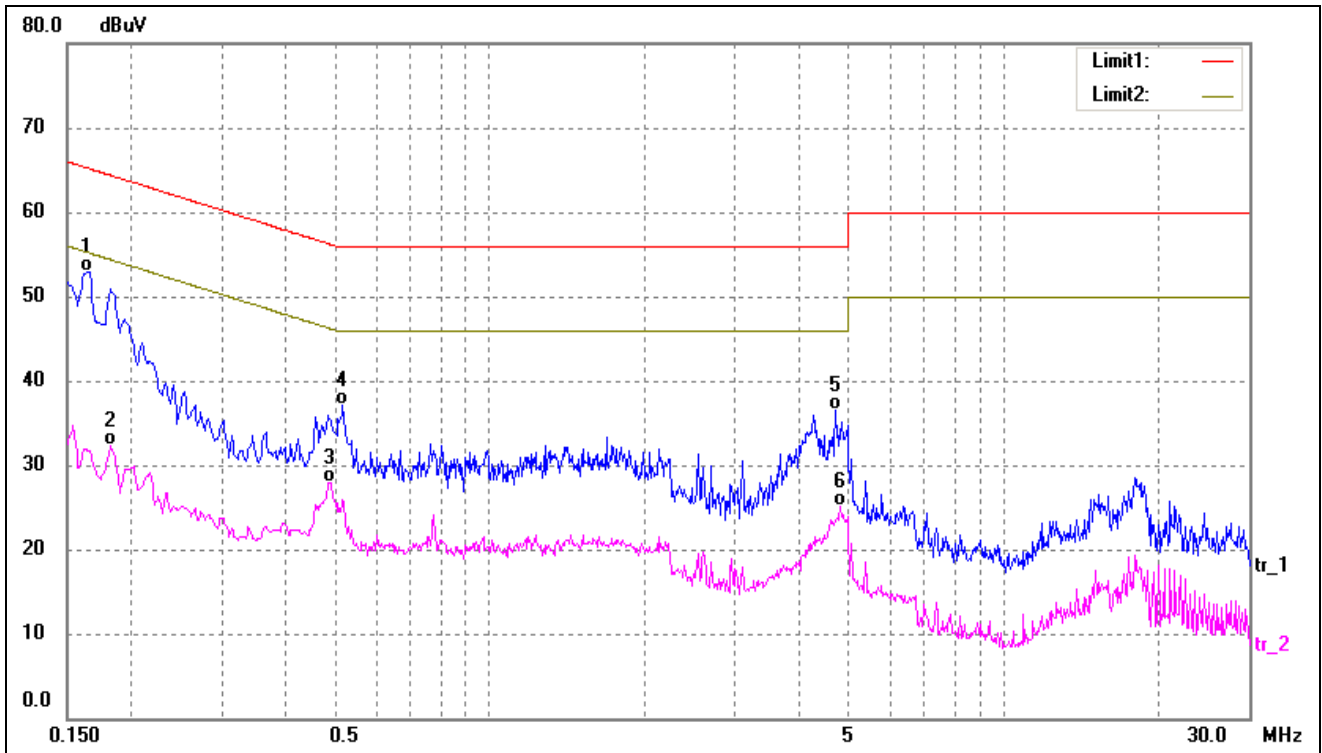
During the conducted emission test, the test receiver was set with the following configurations:

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

### 10.4 Summary of Test Results/Plots

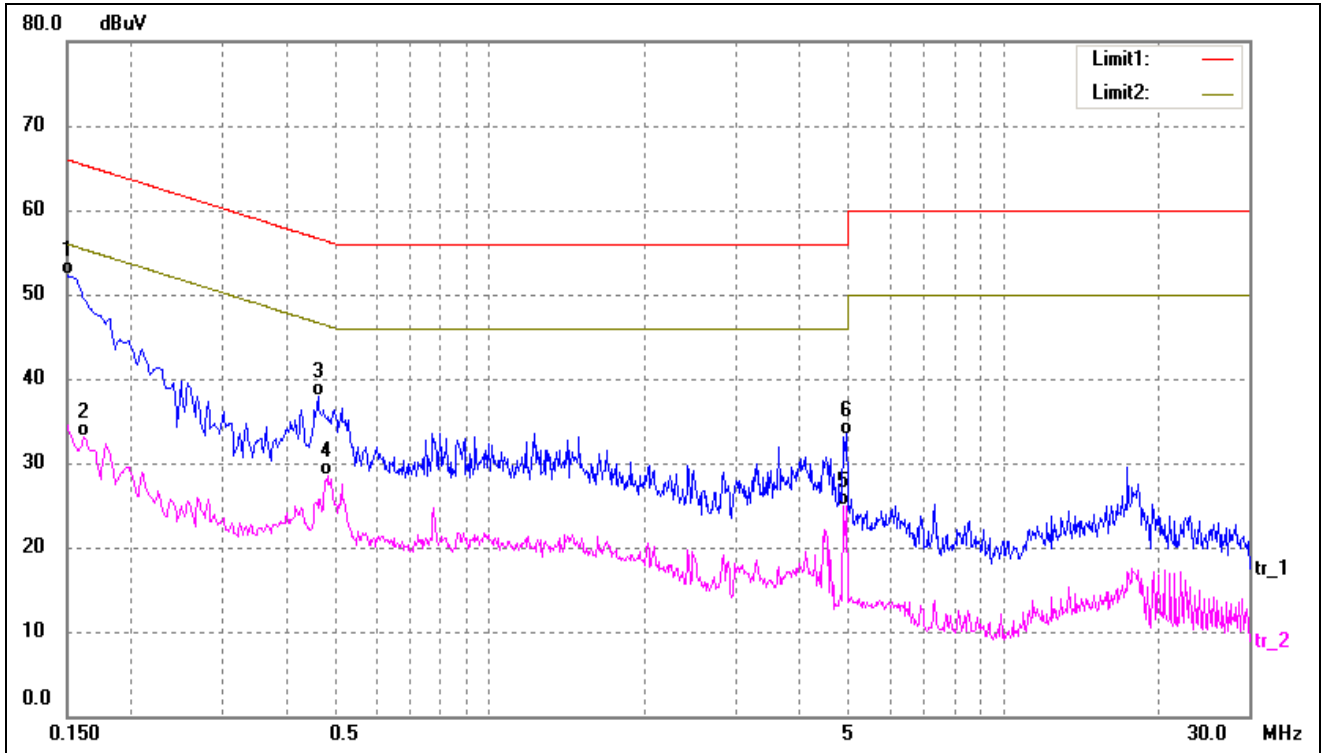


Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	42.73	10.26	52.99	65.16	-12.17	QP
2	0.1820	22.07	10.26	32.33	54.39	-22.06	AVG
3	0.4900	17.71	10.22	27.93	46.17	-18.24	AVG
4	0.5180	26.97	10.22	37.19	56.00	-18.81	QP
5	4.7020	26.29	10.23	36.52	56.00	-19.48	QP
6	4.8140	14.84	10.22	25.06	46.00	-20.94	AVG

Test Mode	Communication	AC120V 60Hz	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1500	41.98	10.25	52.23	66.00	-13.77	QP
2	0.1620	22.87	10.26	33.13	55.36	-22.23	AVG
3	0.4620	27.76	10.22	37.98	56.66	-18.68	QP
4	0.4820	18.33	10.22	28.55	46.30	-17.75	AVG
5	4.8700	14.76	10.23	24.99	46.00	-21.01	AVG
6	4.9300	23.18	10.22	33.40	56.00	-22.60	QP

**APPENDIX SUMMARY**

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Project No.	WTX21X03021564W	Test Engineer	Moon
Start date	2021/03/27	Finish date	2021/03/27
Temperature	23.6°C	Humidity	48%
RF specifications	U-NII		

<b>APPENDIX</b>	<b>Description of Test Item</b>	<b>Result</b>
A	Power Spectral Density	Compliant
B	Emission Bandwidth and Occupied Bandwidth	Compliant
C	Maximum Conducted Output Power	Compliant
D	Frequency Stability	Compliant

**APPENDIX A**

<b>Power Spectral Density</b>					
<b>U-NII-1:5150-5250MHz</b>					
Operating mode	Test Channel	ANT A dBm/MHz	ANT B dBm/MHz	Total dBm/MHz	Limit (dBm/MHz)
802.11a	5180	1.090	1.480	/	11
	5200	1.833	1.385	/	11
	5240	3.219	2.514	/	11
802.11n-HT20	5180	0.832	1.470	4.17	11
	5200	2.534	1.651	5.13	11
	5240	1.893	2.289	5.11	11
802.11n-HT40	5190	-3.756	-4.421	-1.07	11
	5230	-2.607	-3.368	0.04	11
802.11ac-HT80	5210	-5.504	-6.464	-2.95	11

<b>Power Spectral Density</b>							
<b>U-NII-3: 5725-5850MHz</b>							
Operating mode	Test Channel	ANT A dBm/300kHz	ANT B dBm/300kHz	Factor	ANT A dBm/500kHz*	ANT B dBm/500kHz*	Limit dBm/500kHz
802.11a	5745	-2.193	-3.007	2.22	0.027	-0.787	30
	5785	-2.345	-2.916	2.22	-0.125	-0.696	30
	5825	-2.206	-3.268	2.22	0.014	-1.048	30

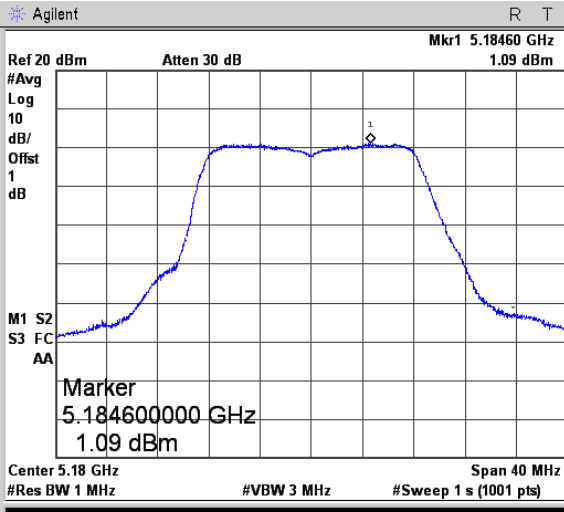
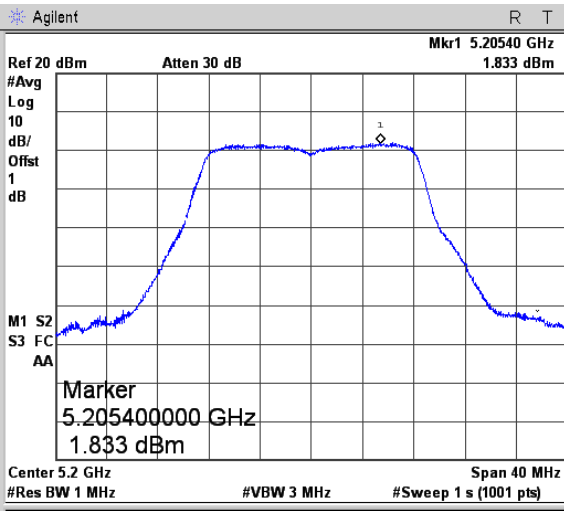
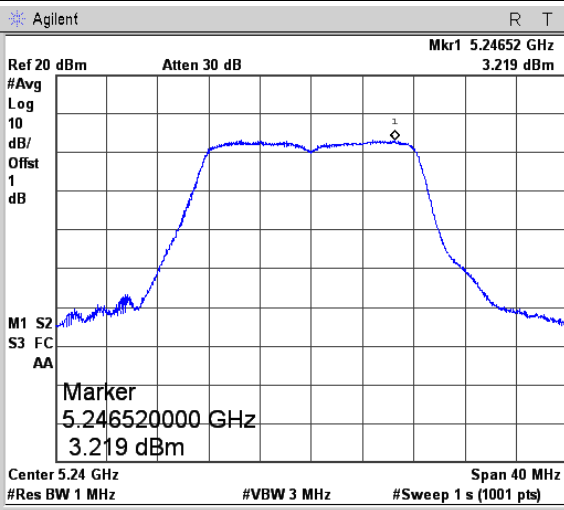
\*Note: Maximum PSD=PSD(dBm/300kHz)+10log(500kHz/300kHz)=2.22

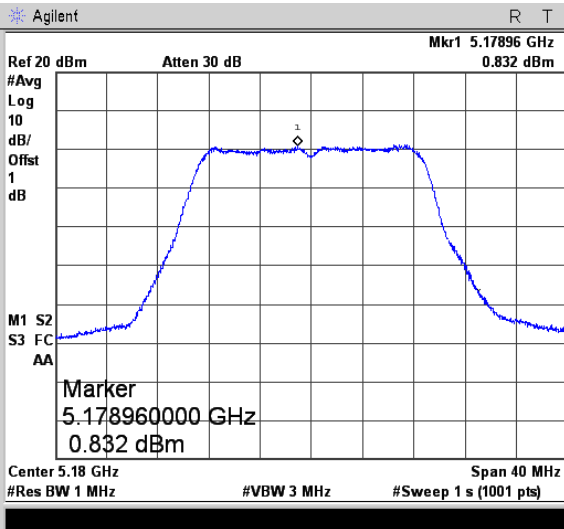
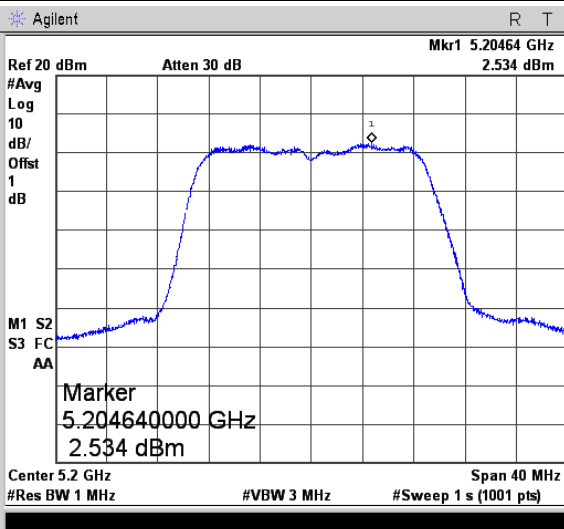
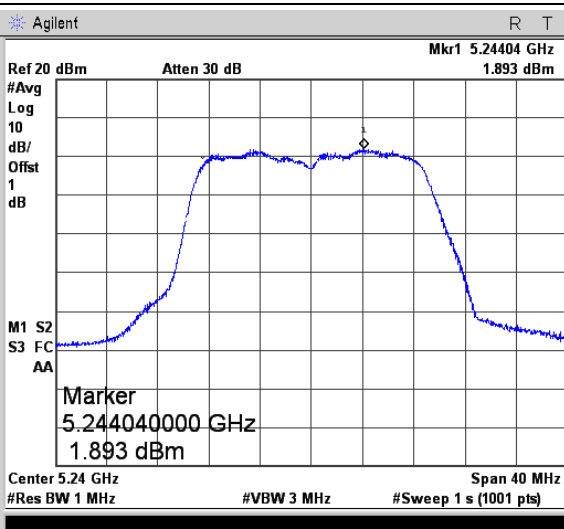
<b>Power Spectral Density</b>							
<b>U-NII-3: 5725-5850MHz</b>							
Operating mode	Test Channel	ANT A dBm/300kHz	ANT B dBm/300kHz	Factor	Total dBm/500kHz*	Limit dBm/500kHz	
802.11n-HT20	5745	-3.341	-3.720	2.22	1.70	30	
	5785	-3.332	-4.596	2.22	1.31	30	
	5825	-3.304	-4.181	2.22	1.51	30	
802.11n HT40	5755	-9.342	-7.659	2.22	-3.19	30	
	5795	-9.031	-8.327	2.22	-3.43	30	
802.11ac VH80	5775	-7.329	-6.864	2.22	-1.86	30	

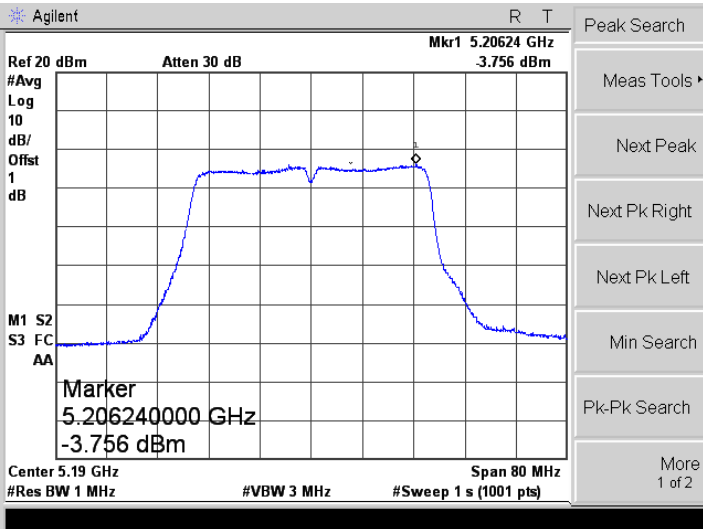
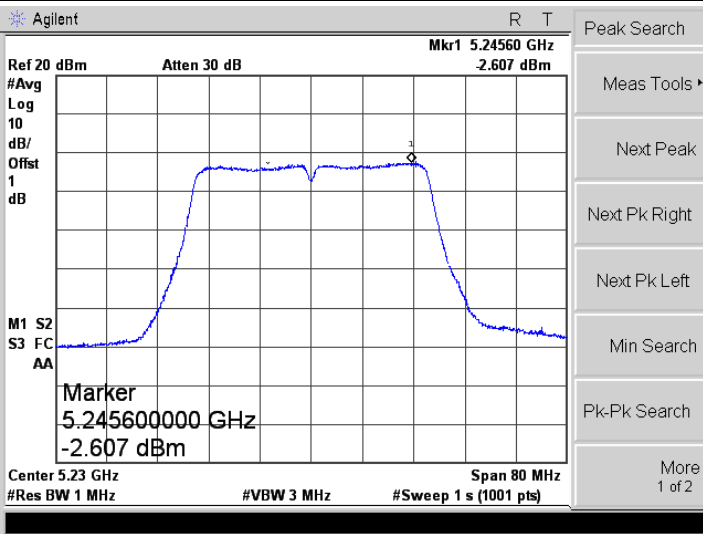
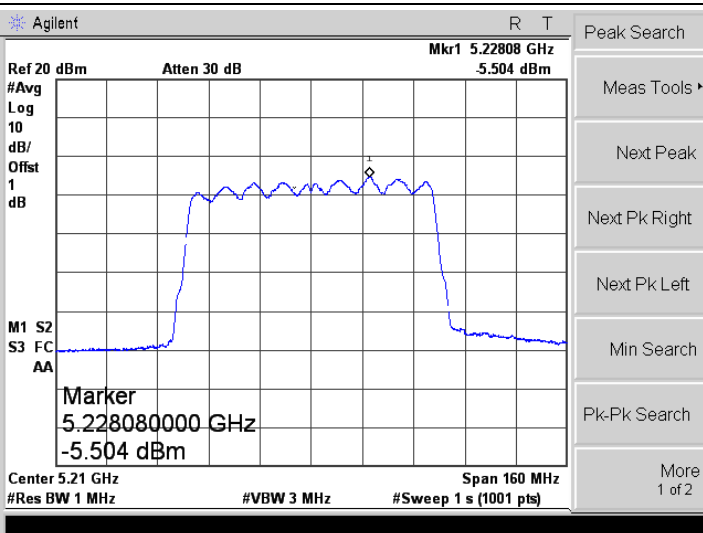
\*Note: Maximum PSD=PSD(dBm/300kHz)+10log(500kHz/300kHz)=2.22

ANT A

5150-5250MHz

<p>802.11a-Low</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.18460 GHz 1.09 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.184600000 GHz 1.09 dBm</p> <p>Center 5.18 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-Middle</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.20540 GHz 1.833 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.205400000 GHz 1.833 dBm</p> <p>Center 5.2 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-High</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.24652 GHz 3.219 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.246520000 GHz 3.219 dBm</p> <p>Center 5.24 GHz Span 40 MHz #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

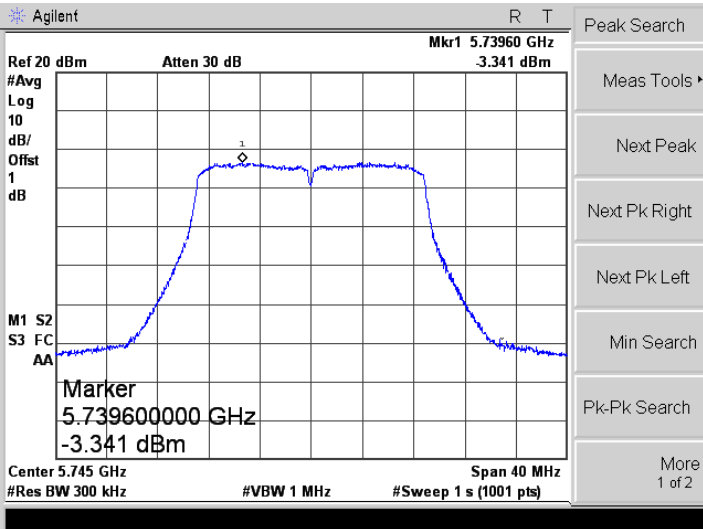
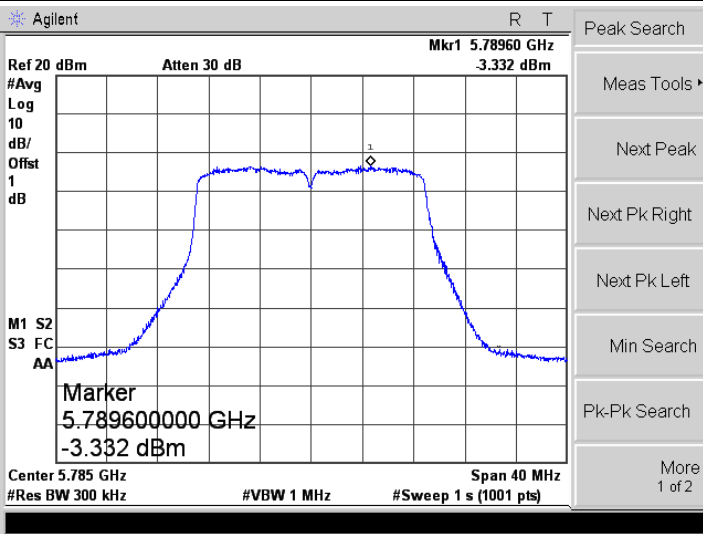
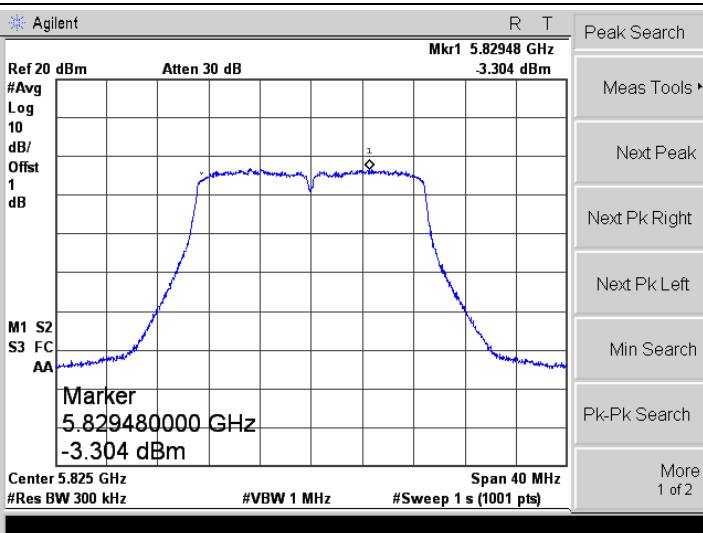
<p>802.11n-HT20-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.17896 GHz          0.832 dBm          #Avg 10          Log dB/Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.178960000 GHz          0.832 dBm          Center 5.18 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.20464 GHz          2.534 dBm          #Avg 10          Log dB/Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.204640000 GHz          2.534 dBm          Center 5.2 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.24404 GHz          1.893 dBm          #Avg 10          Log dB/Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.244040000 GHz          1.893 dBm          Center 5.24 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>

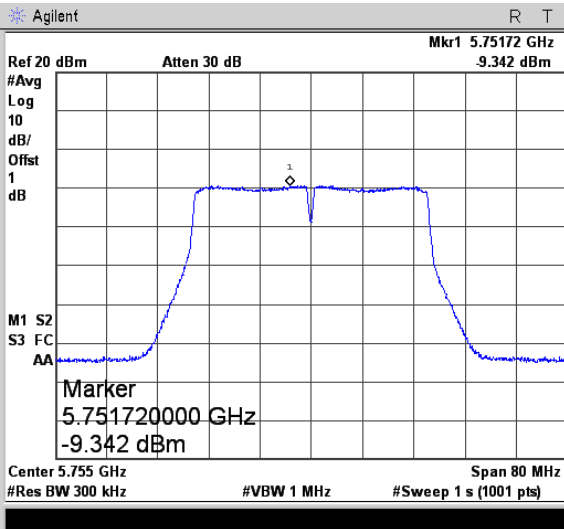
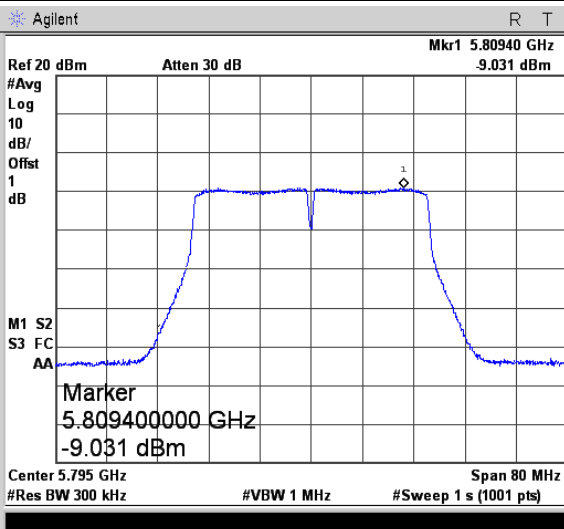
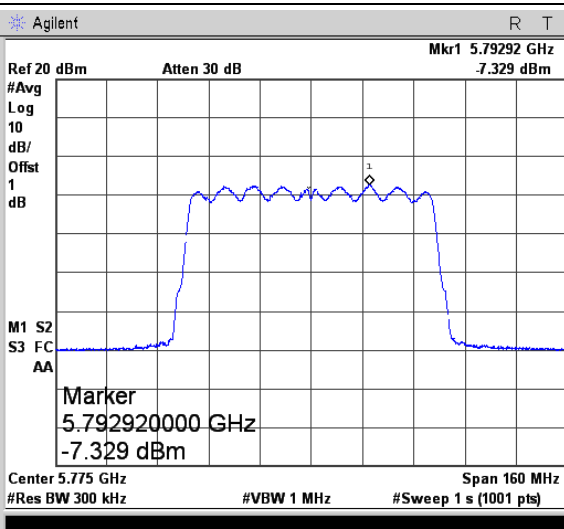
<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	

5725-5850MHz

<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.73840 GHz -2.193 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.73840000 GHz -2.193 dBm</p> <p>Center 5.745 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.79136 GHz -2.345 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.79136000 GHz -2.345 dBm</p> <p>Center 5.785 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.83116 GHz -2.206 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.83116000 GHz -2.206 dBm</p> <p>Center 5.825 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

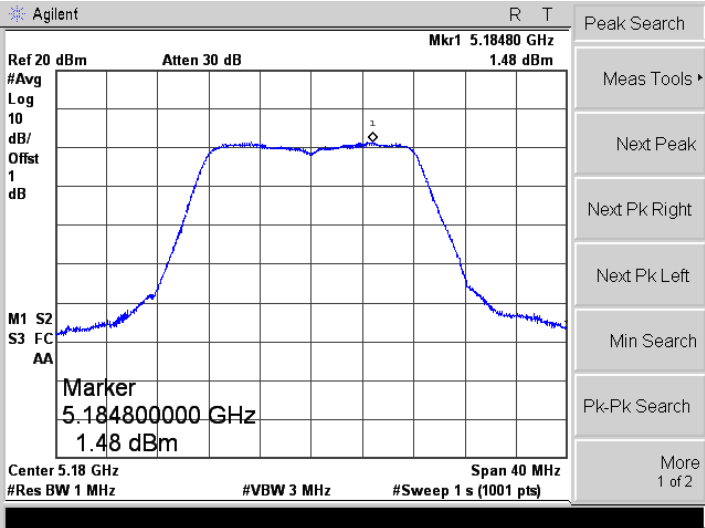
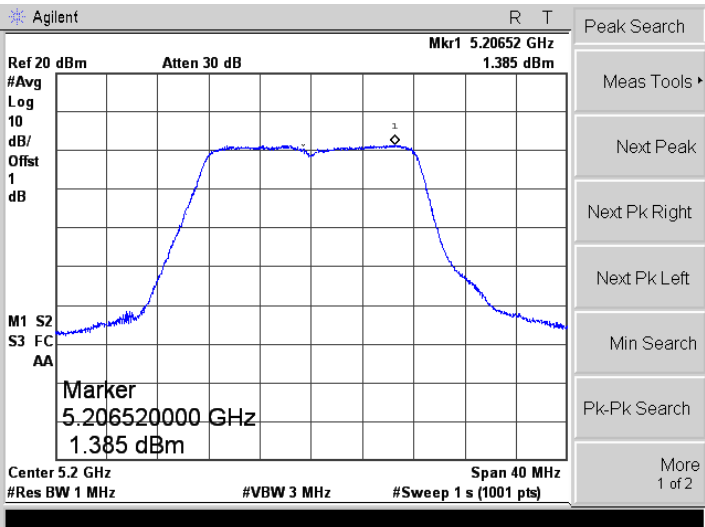
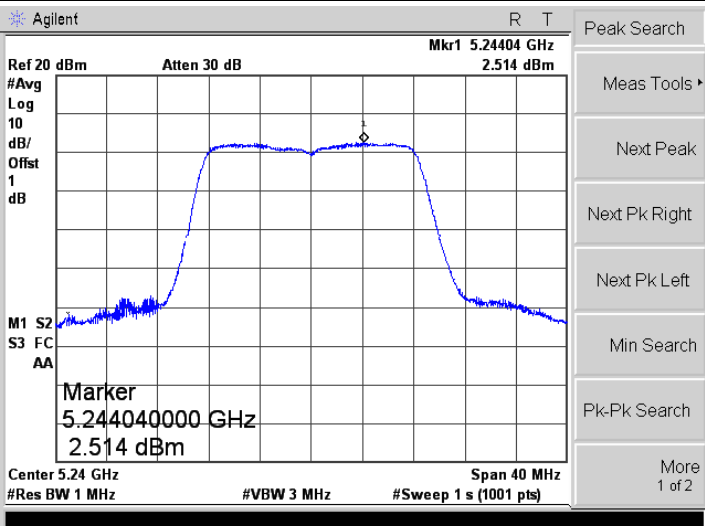


<p>802.11n-HT20-Low</p>	
<p>802.11n-HT20-Middle</p>	
<p>802.11n-HT20-High</p>	

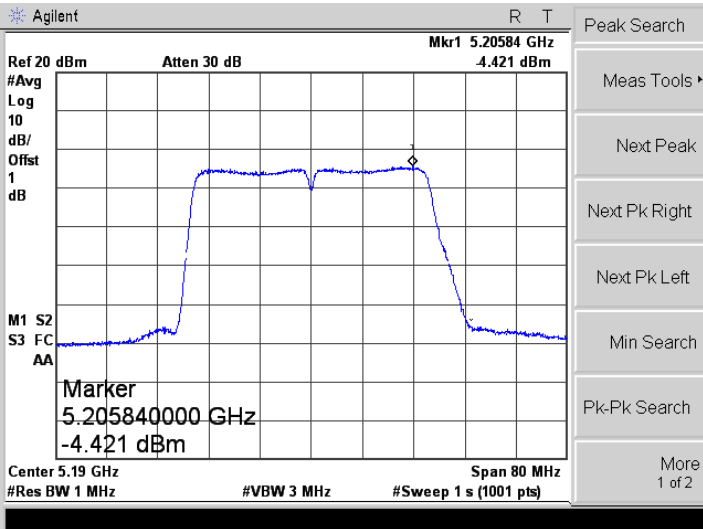
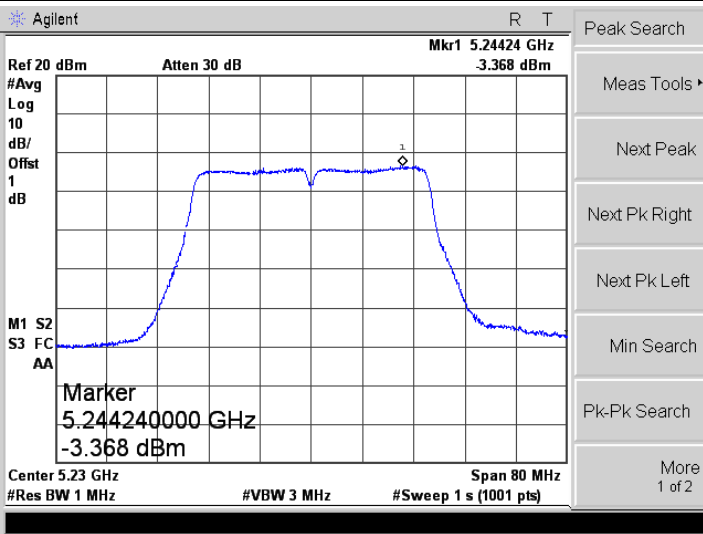
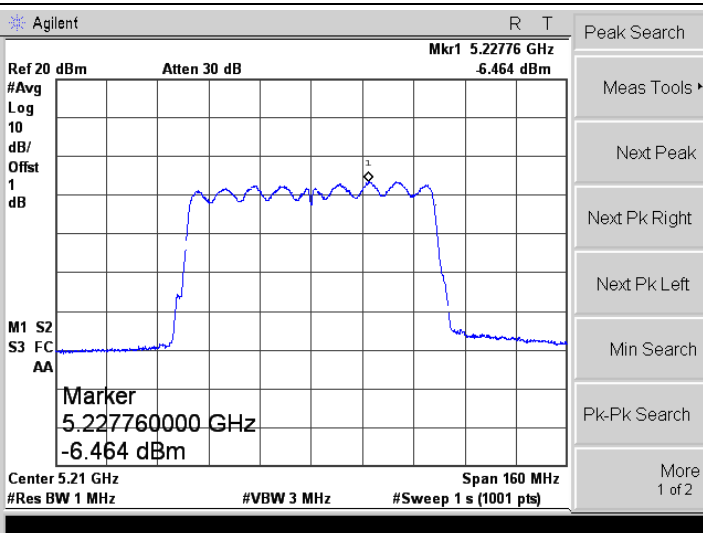
<p>802.11n-HT40-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.75172 GHz          -9.342 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.751720000 GHz          -9.342 dBm          Center 5.755 GHz Span 80 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.80940 GHz          -9.031 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.809400000 GHz          -9.031 dBm          Center 5.795 GHz Span 80 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.79292 GHz          -7.329 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.792920000 GHz          -7.329 dBm          Center 5.775 GHz Span 160 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>

**ANT B**

**5150-5250MHz**

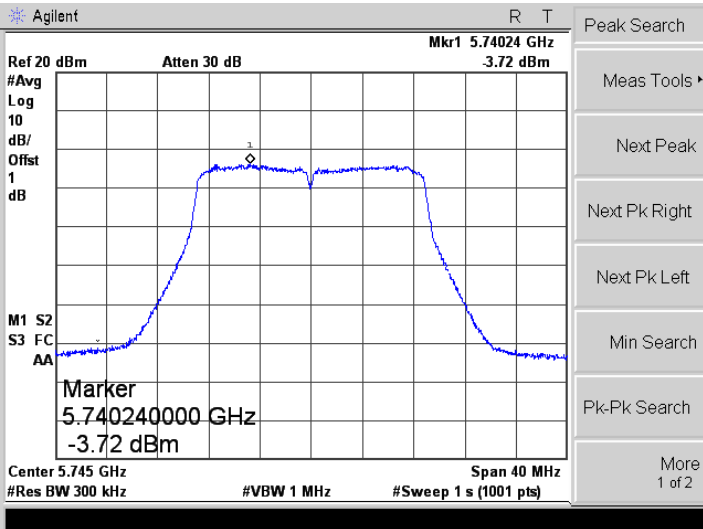
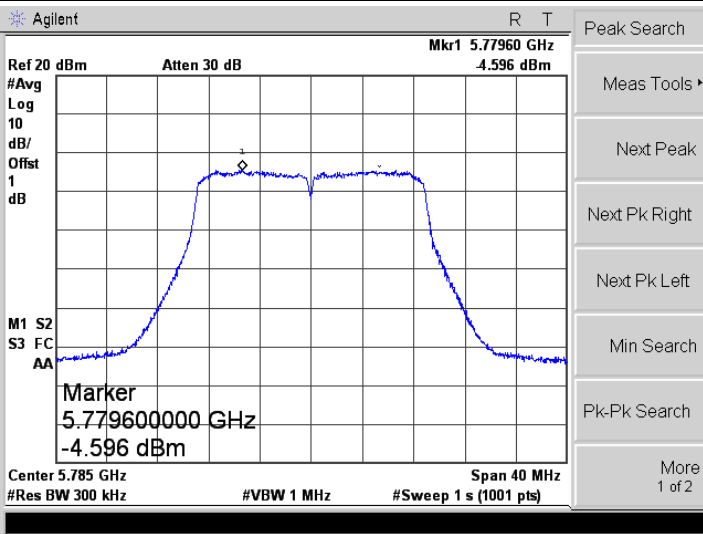
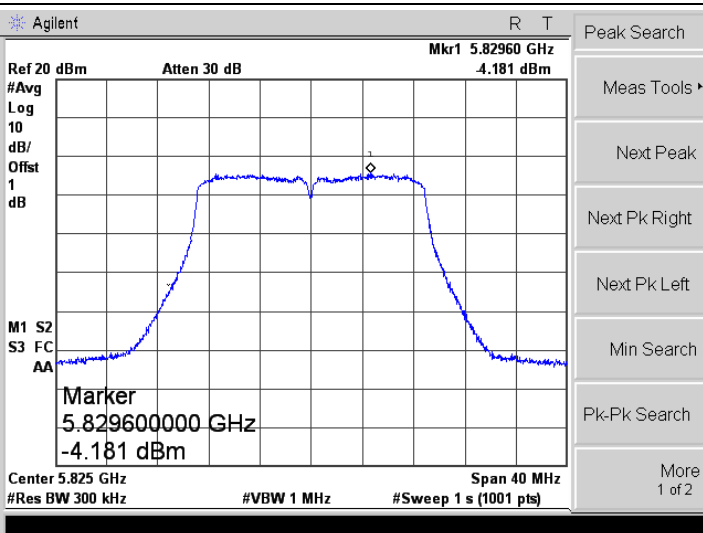
<p>802.11a-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.18480 GHz 1.48 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker          5.184800000 GHz          1.48 dBm          Center 5.18 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11a-Middle</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.20652 GHz 1.385 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker          5.206520000 GHz          1.385 dBm          Center 5.2 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11a-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.24404 GHz 2.514 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker          5.244040000 GHz          2.514 dBm          Center 5.24 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>

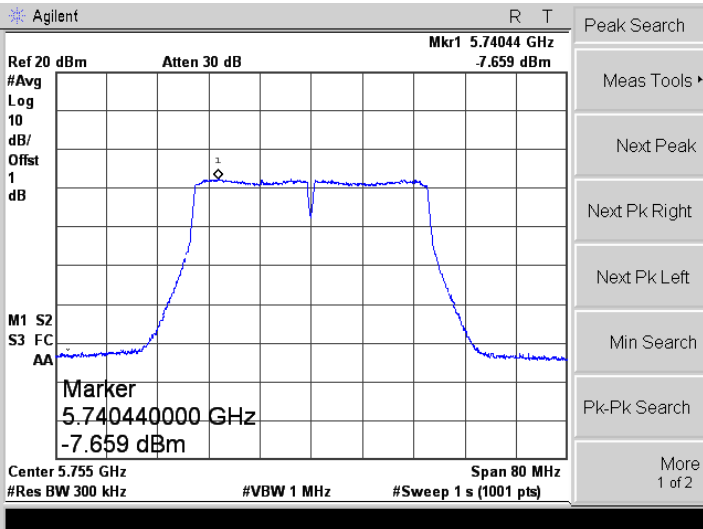
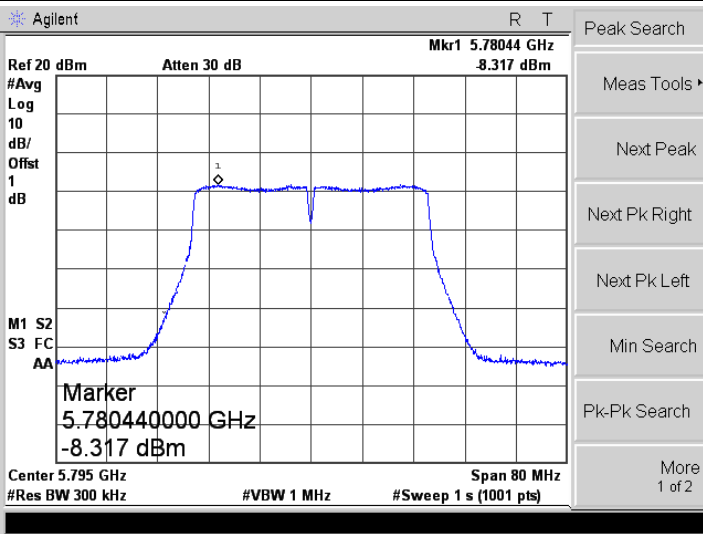
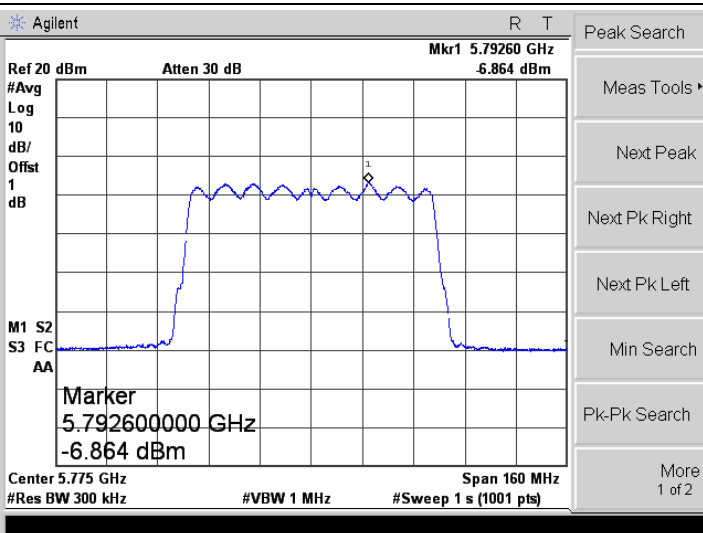
<p>802.11n-HT20-Low</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.18456 GHz 1.47 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.184560000 GHz          1.47 dBm          Center 5.18 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-Middle</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.20592 GHz 1.651 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.205920000 GHz          1.651 dBm          Center 5.2 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-High</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.23544 GHz 2.289 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.235440000 GHz          2.289 dBm          Center 5.24 GHz Span 40 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>

<p>802.11n-HT40-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.20584 GHz          4.421 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.205840000 GHz          -4.421 dBm          Center 5.19 GHz Span 80 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.24424 GHz          -3.368 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.244240000 GHz          -3.368 dBm          Center 5.23 GHz Span 80 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.22776 GHz          -6.464 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.227760000 GHz          -6.464 dBm          Center 5.21 GHz Span 160 MHz          #Res BW 1 MHz #VBW 3 MHz #Sweep 1 s (1001 pts)</p>

5725-5850MHz

<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.75136 GHz -3.007 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.751360000 GHz -3.007 dBm</p> <p>Center 5.745 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.79132 GHz -2.916 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.791320000 GHz -2.916 dBm</p> <p>Center 5.785 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 5.83140 GHz -3.268 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 5.831400000 GHz -3.268 dBm</p> <p>Center 5.825 GHz Span 40 MHz #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

<p>802.11n-HT20-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.74024 GHz -3.72 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.740240000 GHz          -3.72 dBm          Center 5.745 GHz Span 40 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.77960 GHz -4.596 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.779600000 GHz          -4.596 dBm          Center 5.785 GHz Span 40 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 5.82960 GHz -4.181 dBm          #Avg 10          Log dB/ Offst 1 dB          M1 S2          S3 FC          AA          Marker          5.829600000 GHz          -4.181 dBm          Center 5.825 GHz Span 40 MHz          #Res BW 300 kHz #VBW 1 MHz #Sweep 1 s (1001 pts)</p>

<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	



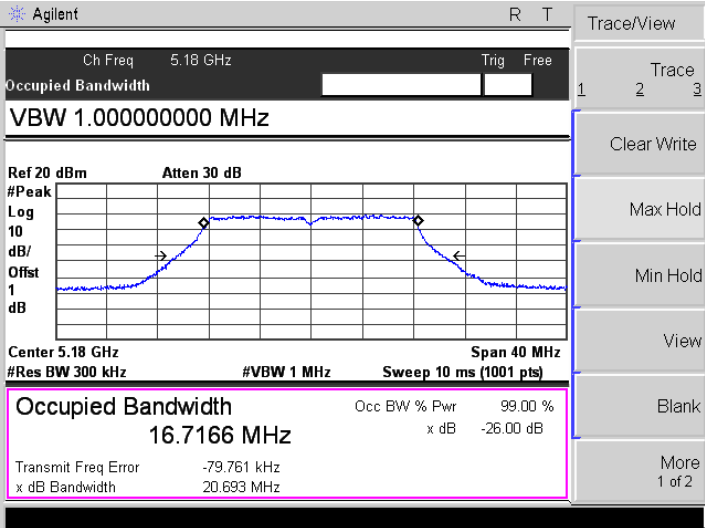
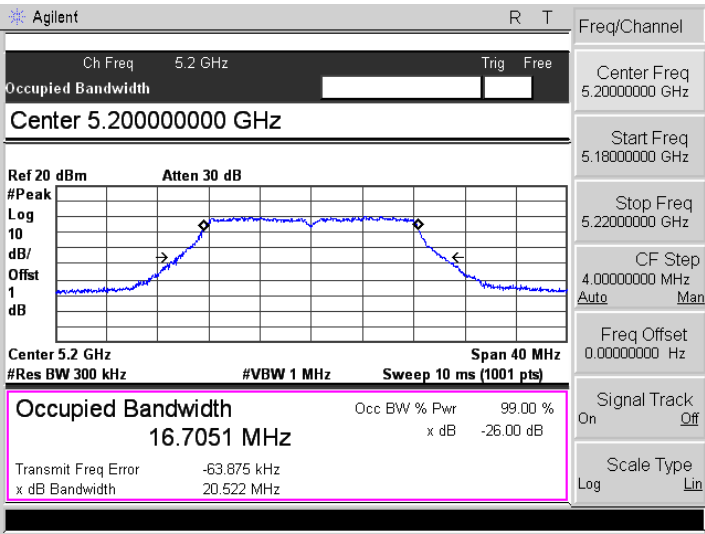
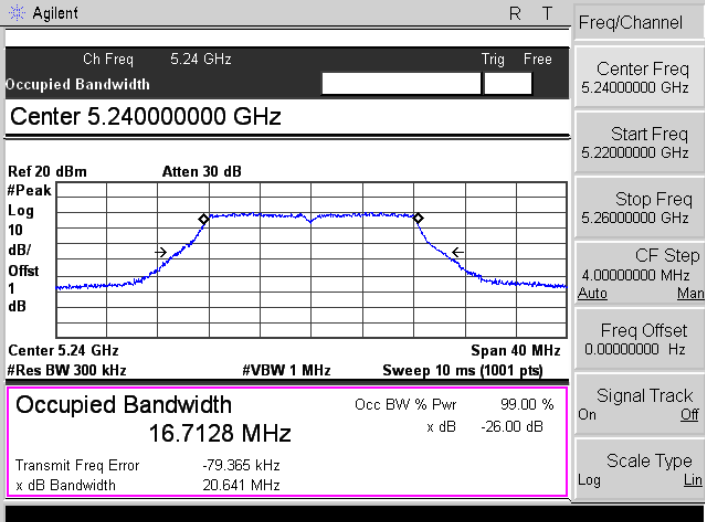
**APPENDIX B****Emission Bandwidth and Occupied Bandwidth**

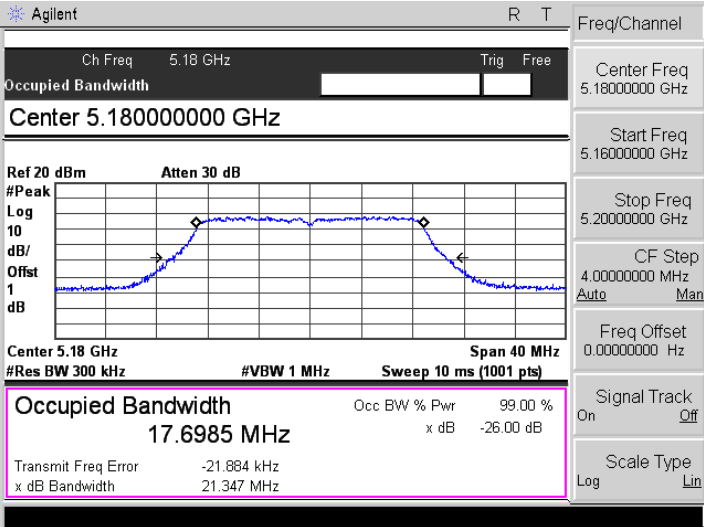
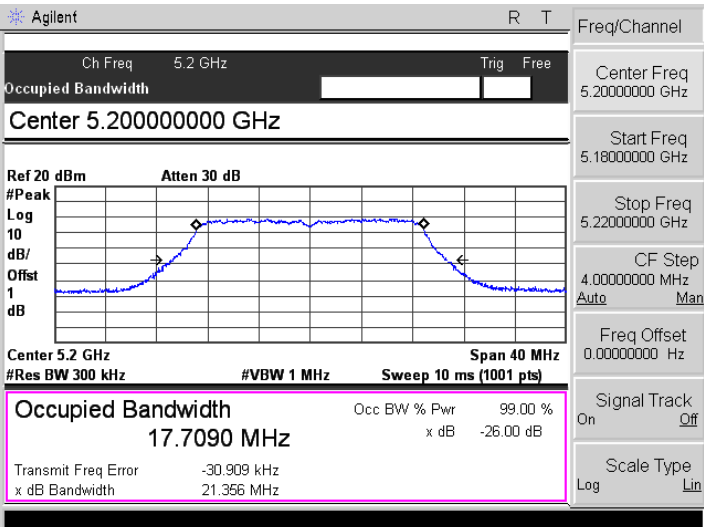
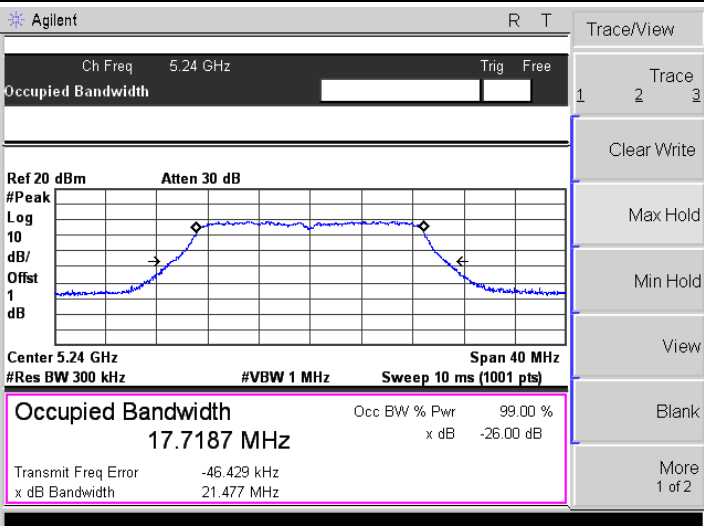
<b>U-NII-1:5150-5250MHz</b>						
<b>Test Mode</b>	<b>Test Channel MHz</b>	<b>ANT A</b>		<b>ANT B</b>		<b>Result</b>
		<b>26 dB Bandwidth MHz</b>	<b>99% Bandwidth MHz</b>	<b>26 dB Bandwidth MHz</b>	<b>99% Bandwidth MHz</b>	
802.11a	5180	20.693	16.717	20.762	16.765	Pass
	5200	20.522	16.705	20.694	16.725	Pass
	5240	20.641	16.713	20.707	16.767	Pass
802.11n-HT20	5180	21.347	17.699	21.293	17.751	Pass
	5200	21.3556	17.709	21.389	17.719	Pass
	5240	21.477	17.719	21.339	17.740	Pass
802.11n-HT40	5190	42.361	36.186	42.728	36.264	Pass
	5230	42.303	36.203	42.675	36.281	Pass
802.11ac-HT80	5210	82.421	75.357	82.705	75.601	Pass

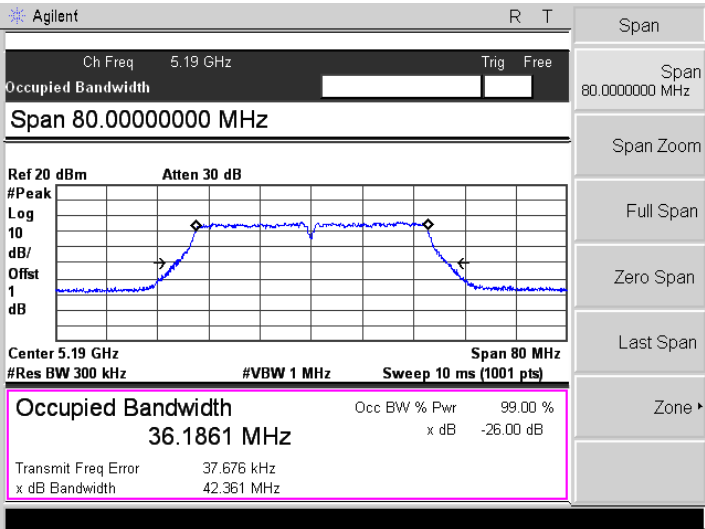
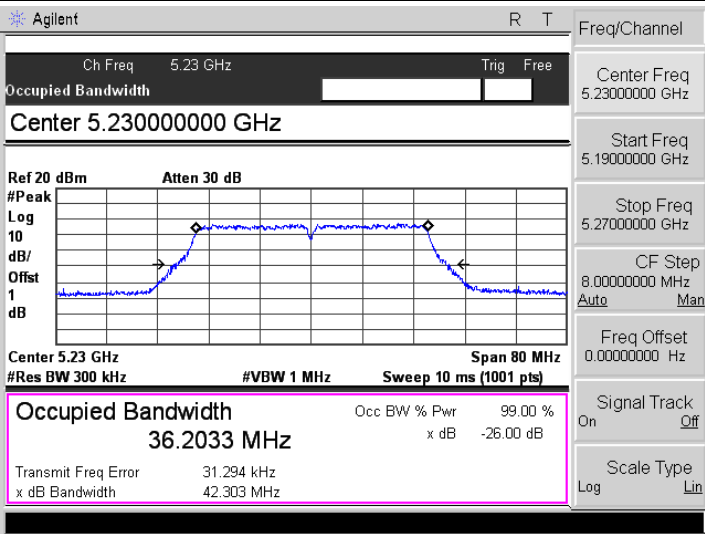
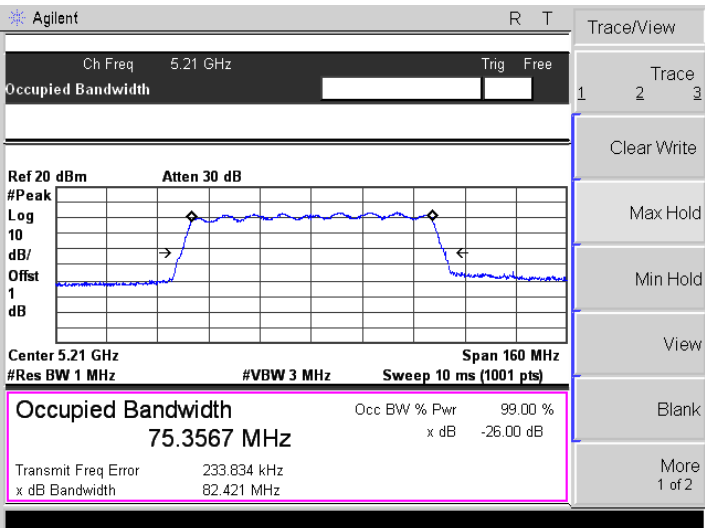
<b>U-NII-3: 5725-5850MHz</b>						
<b>Test Mode</b>	<b>Test Channel MHz</b>	<b>ANT A</b>		<b>ANT B</b>		<b>Limit kHz</b>
		<b>6 dB Bandwidth MHz</b>	<b>99% Bandwidth MHz</b>	<b>6 dB Bandwidth MHz</b>	<b>99% Bandwidth MHz</b>	
802.11a	5745	16.449	16.765	16.488	16.756	≥500
	5785	16.452	16.746	16.437	16.754	≥500
	5825	16.438	16.687	16.479	16.769	≥500
802.11n-HT20	5745	17.647	17.705	17.632	17.716	≥500
	5785	17.645	17.728	17.643	17.724	≥500
	5825	17.655	17.724	17.646	17.727	≥500
802.11n-HT40	5755	36.475	36.217	35.514	36.256	≥500
	5795	36.498	36.195	36.521	36.253	≥500
802.11ac-HT80	5775	76.223	75.523	76.391	75.656	≥500

ANT A

5150-5250MHz

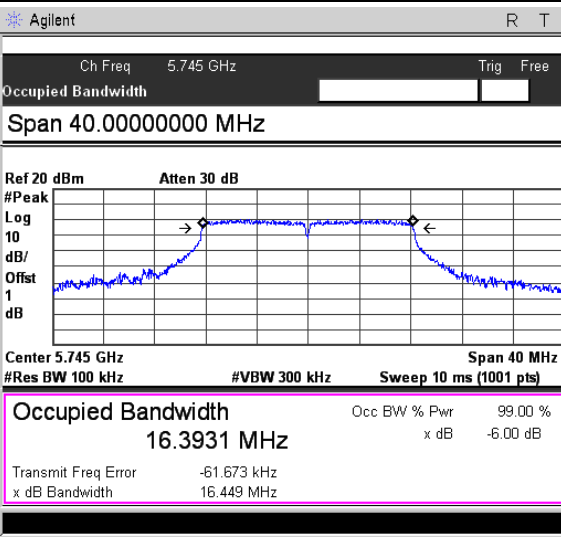
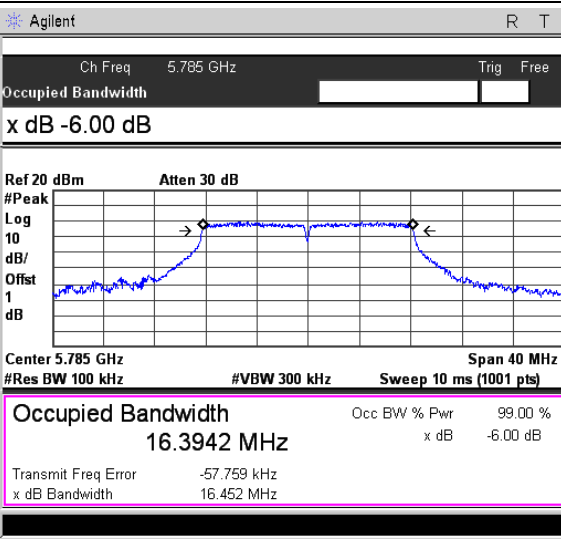
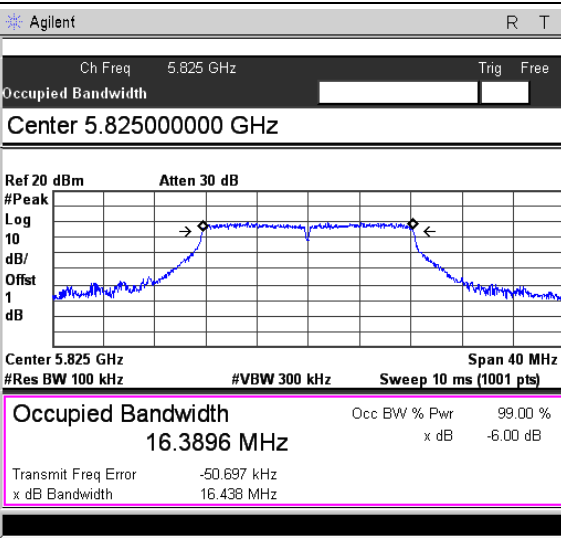
<p>802.11a-Low</p>	
<p>802.11a-Middle</p>	
<p>802.11a-High</p>	

<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.18 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.18000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.18 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.6985 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -21.884 kHz x dB Bandwidth 21.347 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.18000000 GHz</p> <p>Start Freq 5.16000000 GHz</p> <p>Stop Freq 5.20000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.2 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.20000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.2 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7090 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -30.909 kHz x dB Bandwidth 21.356 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.20000000 GHz</p> <p>Start Freq 5.18000000 GHz</p> <p>Stop Freq 5.22000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.24 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.24 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.24 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7187 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -46.429 kHz x dB Bandwidth 21.477 MHz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>

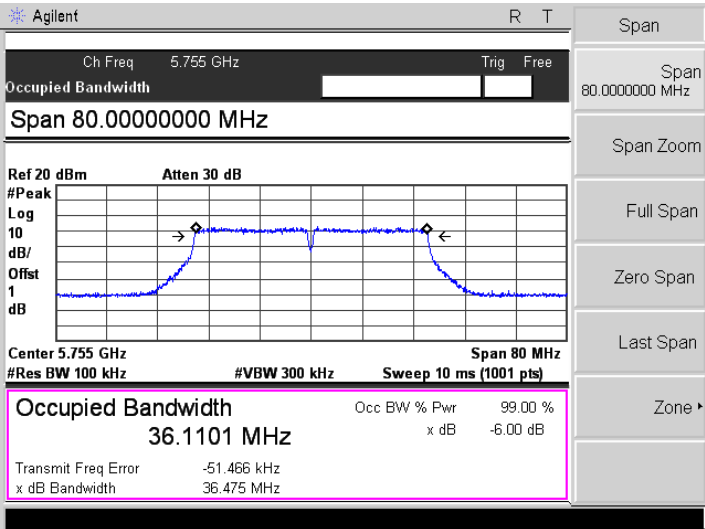
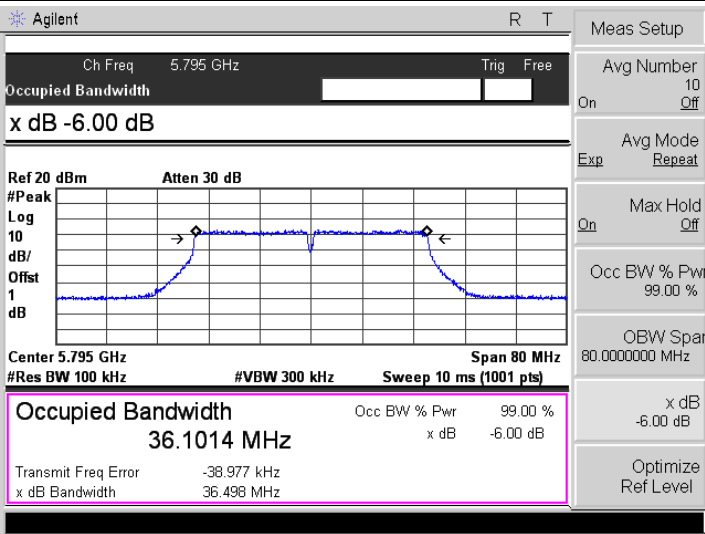
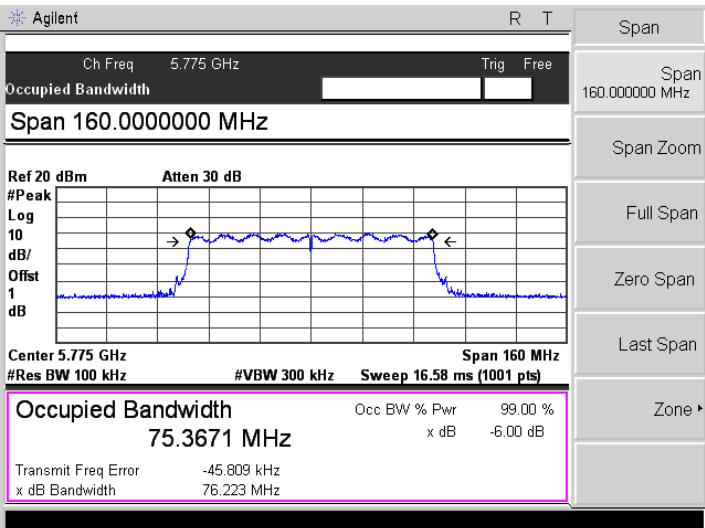
<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	

5725-5850MHz

6 dB Bandwidth

<p>802.11a-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Span 40.00000000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Offst 1</p> <p>dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.3931 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -61.673 kHz</p> <p>x dB Bandwidth 16.449 MHz</p> <p>Span 40.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11a-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>x dB -6.00 dB</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Offst 1</p> <p>dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.3942 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -57.759 kHz</p> <p>x dB Bandwidth 16.452 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold Off On</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Span 40.00000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>
<p>802.11a-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.825000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Offst 1</p> <p>dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.3896 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -50.697 kHz</p> <p>x dB Bandwidth 16.438 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.825000000 GHz</p> <p>Start Freq 5.805000000 GHz</p> <p>Stop Freq 5.845000000 GHz</p> <p>CF Step 4.000000000 MHz Auto Man</p> <p>Freq Offset 0.000000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

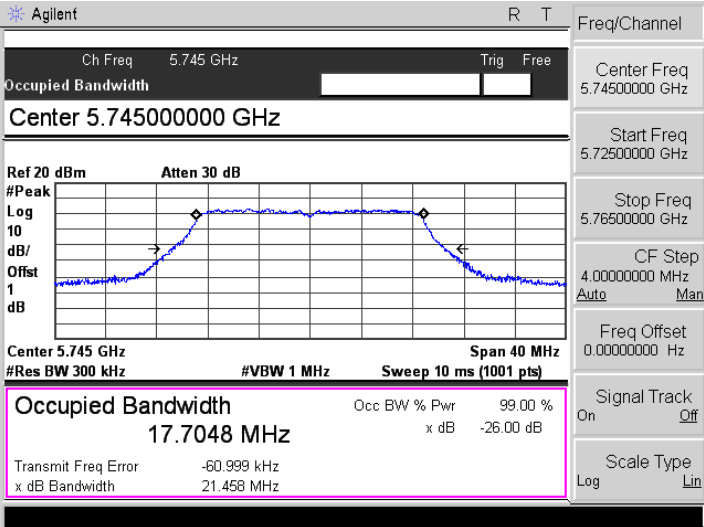
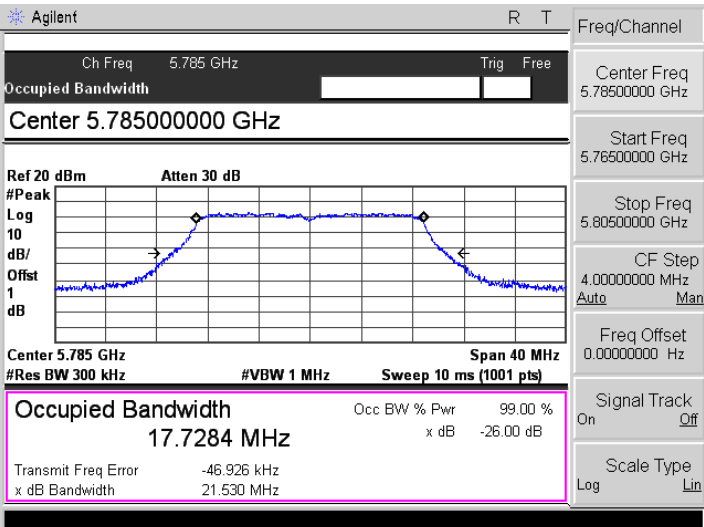
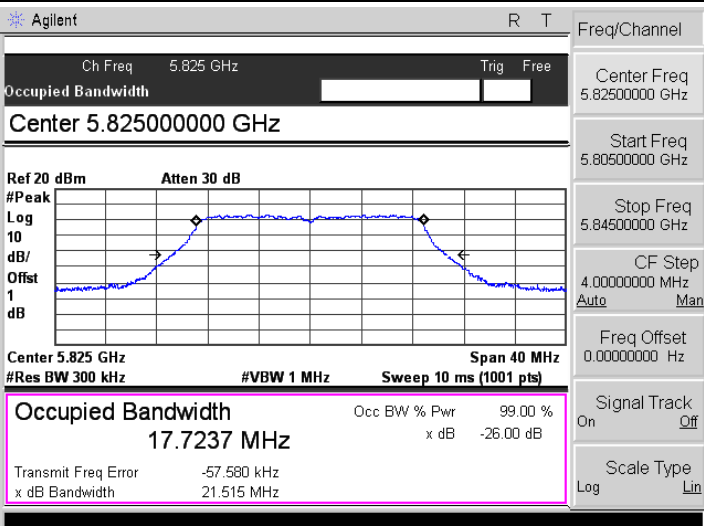
<p>802.11n-HT20-Low</p>	<p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/ Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.5575 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -45.251 kHz x dB Bandwidth 17.647 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold Off On</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 40.0000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>
<p>802.11n-HT20-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.78500000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/ Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.5487 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -40.699 kHz x dB Bandwidth 17.645 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off On</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	<p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>x dB -6.00 dB</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/ Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.5495 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -38.605 kHz x dB Bandwidth 17.655 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold Off On</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 40.0000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>

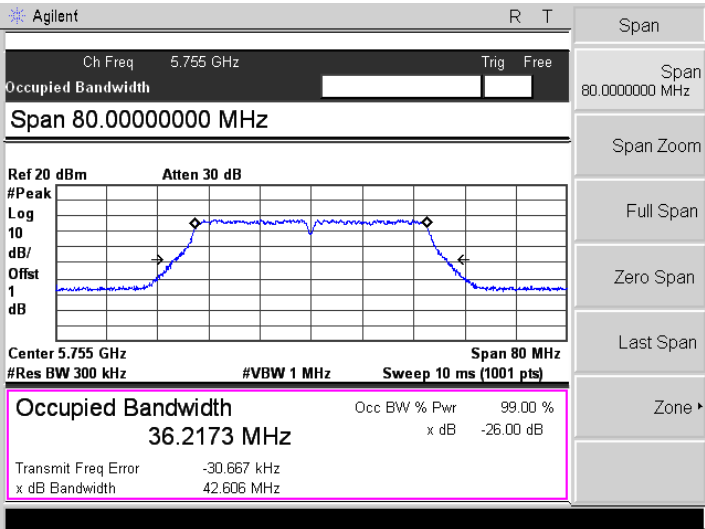
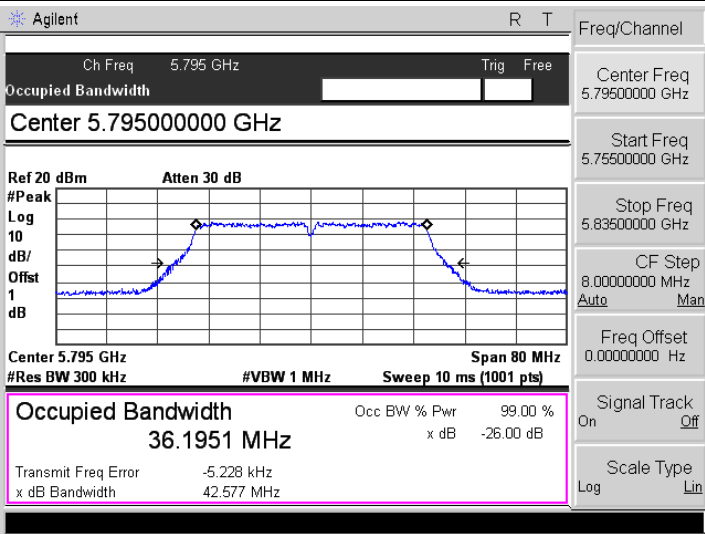
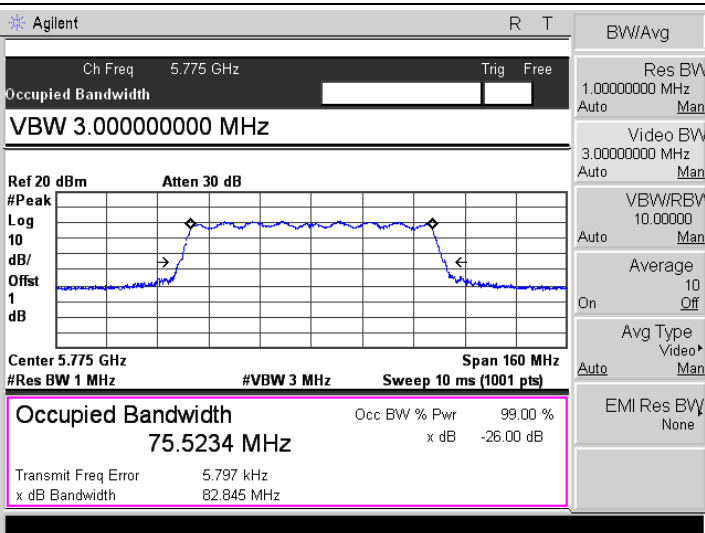
<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.755 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Span 80.00000000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.755 GHz Span 80 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 36.1101 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -51.466 kHz x dB Bandwidth 36.475 MHz</p> <p>Span 80.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.795 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>x dB -6.00 dB</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.795 GHz Span 80 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 36.1014 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -38.977 kHz x dB Bandwidth 36.498 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold On Off</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Span 80.00000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.775 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Span 160.00000000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.775 GHz Span 160 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 16.58 ms (1001 pts)</p> <p>Occupied Bandwidth 75.3671 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -45.809 kHz x dB Bandwidth 76.223 MHz</p> <p>Span 160.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>

99 % Bandwidth

<p>802.11a-Low</p>	
<p>802.11a-Middle</p>	
<p>802.11a-High</p>	



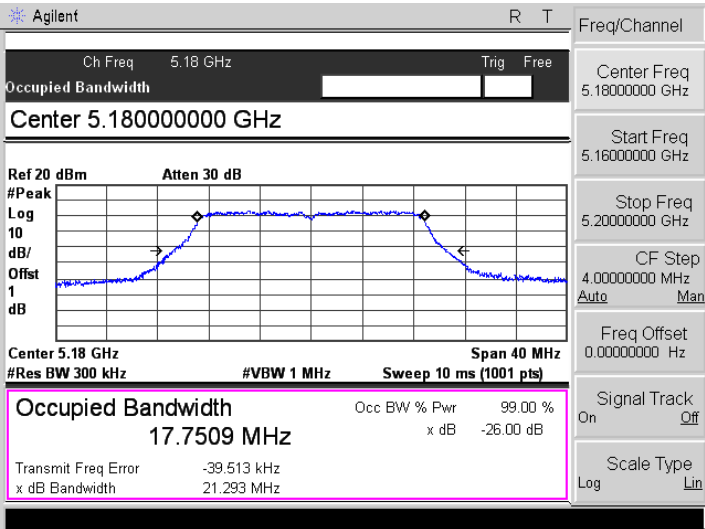
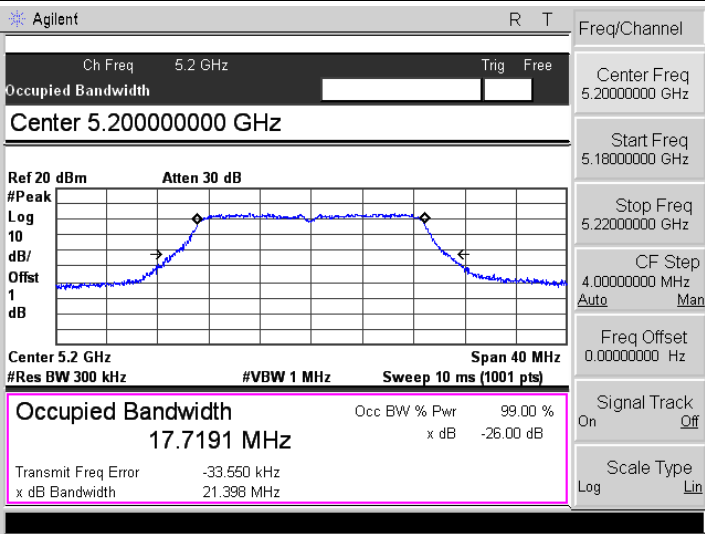
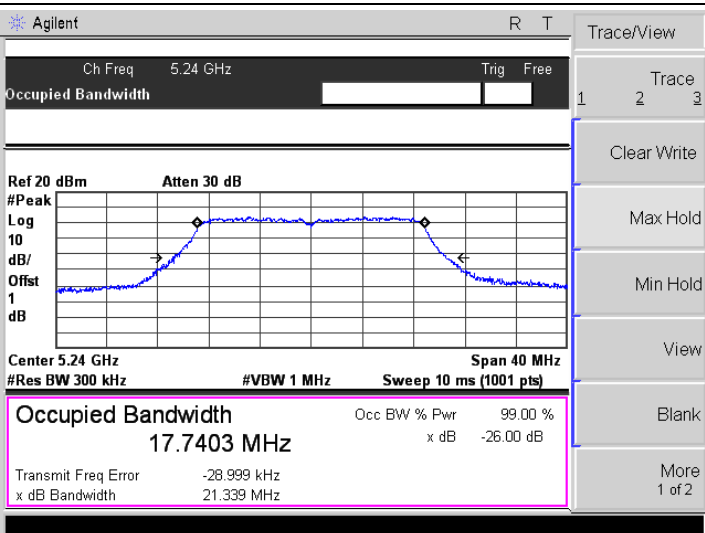
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.74500000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.7048 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -60.999 kHz x dB Bandwidth 21.458 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.78500000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.7284 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -46.926 kHz x dB Bandwidth 21.530 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.82500000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 17.7237 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -57.580 kHz x dB Bandwidth 21.515 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.82500000 GHz</p> <p>Start Freq 5.80500000 GHz</p> <p>Stop Freq 5.84500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

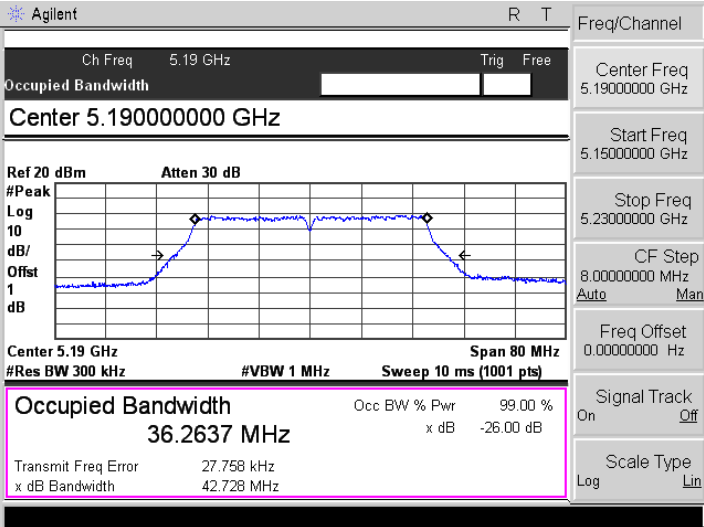
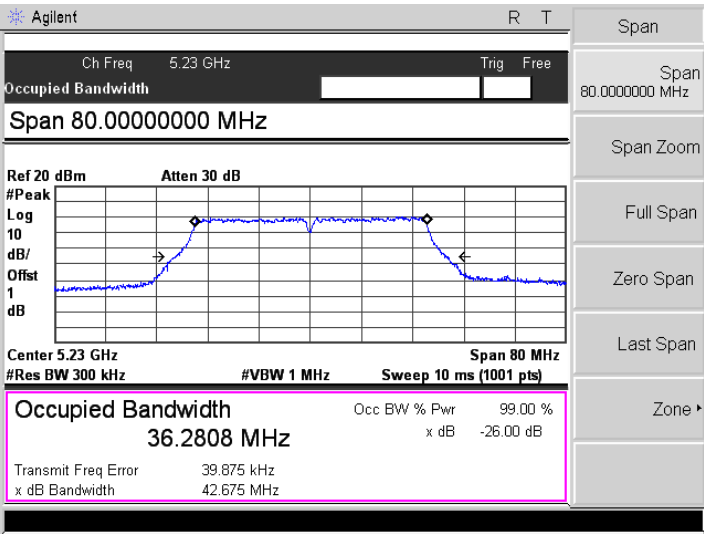
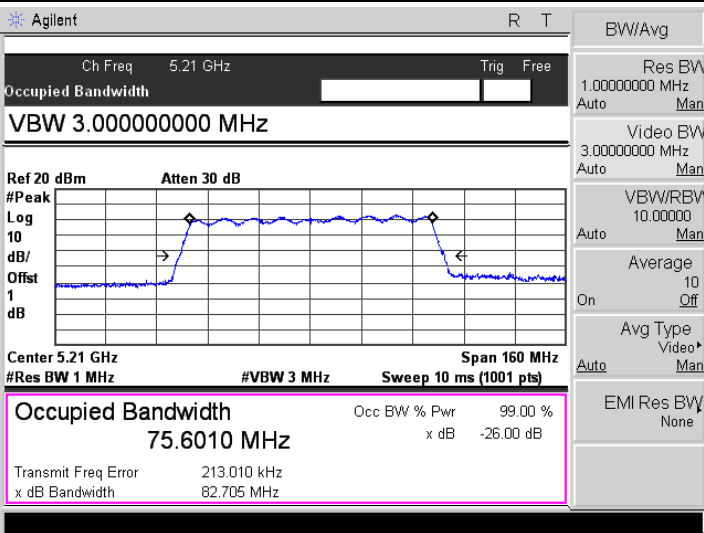
<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.755 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Span 80.00000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.755 GHz Span 80 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.2173 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -30.667 kHz x dB Bandwidth 42.606 MHz</p> <p>Span 80.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.795 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.795000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.795 GHz Span 80 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.1951 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -5.228 kHz x dB Bandwidth 42.577 MHz</p> <p>Span 80 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.795000000 GHz</p> <p>Start Freq 5.755000000 GHz</p> <p>Stop Freq 5.835000000 GHz</p> <p>CF Step 8.000000000 MHz Auto Man</p> <p>Freq Offset 0.000000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.775 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 3.000000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.775 GHz Span 160 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 75.5234 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 5.797 kHz x dB Bandwidth 82.845 MHz</p> <p>Span 160 MHz</p> <p>BW/Avg</p> <p>Res BW 1.000000000 MHz Auto Man</p> <p>Video BW 3.000000000 MHz Auto Man</p> <p>VBW/RBW 10.00000 Auto Man</p> <p>Average 10 On Off</p> <p>Avg Type Video▶ Auto Man</p> <p>EMI Res BW None</p>

**ANT B**

**5150-5250MHz**

<p>802.11a-Low</p>	
<p>802.11a-Middle</p>	
<p>802.11a-High</p>	

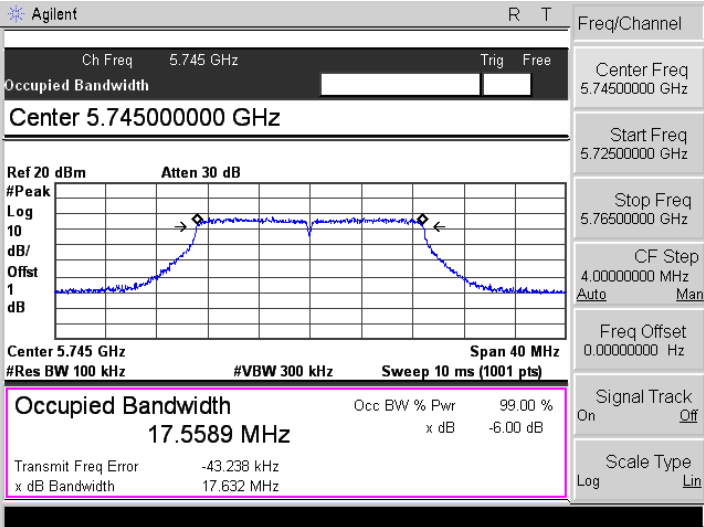
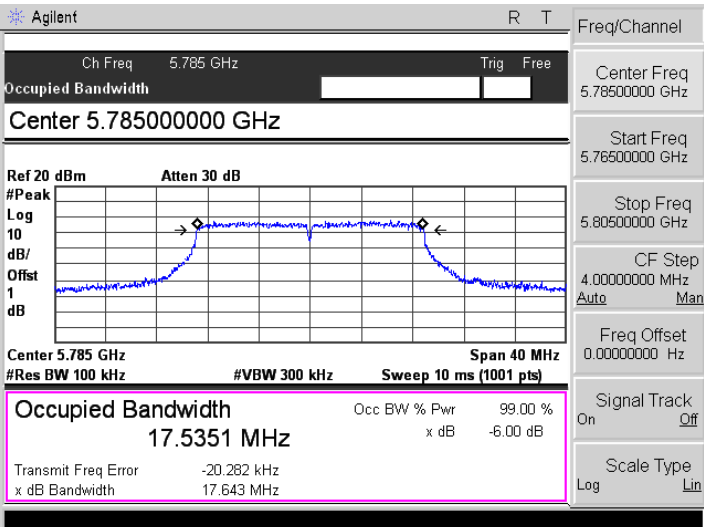
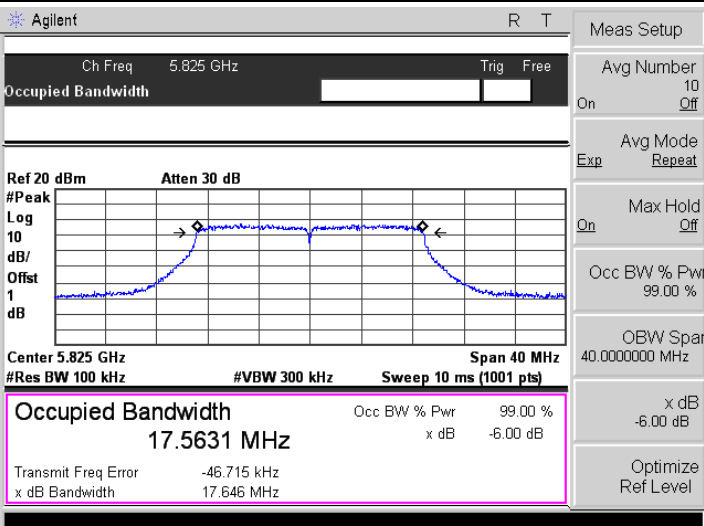
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.18 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.18000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.18 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7509 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -39.513 kHz x dB Bandwidth 21.293 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.18000000 GHz</p> <p>Start Freq 5.16000000 GHz</p> <p>Stop Freq 5.20000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.2 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.20000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.2 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7191 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -33.550 kHz x dB Bandwidth 21.398 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.20000000 GHz</p> <p>Start Freq 5.18000000 GHz</p> <p>Stop Freq 5.22000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.24 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.24 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7403 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -28.999 kHz x dB Bandwidth 21.339 MHz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>

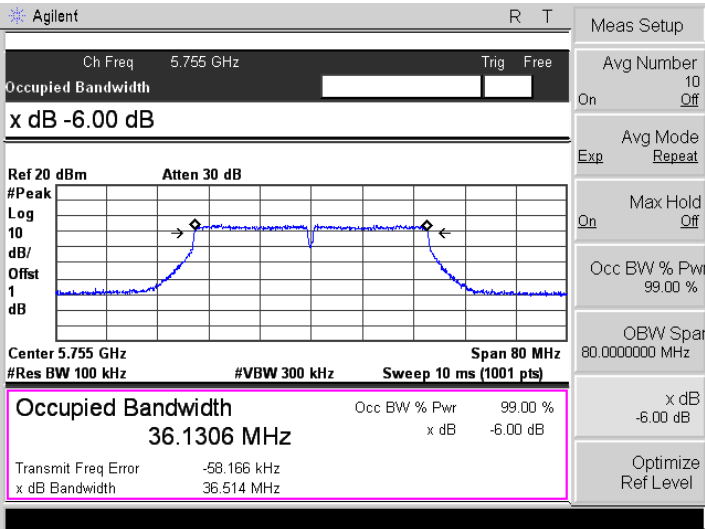
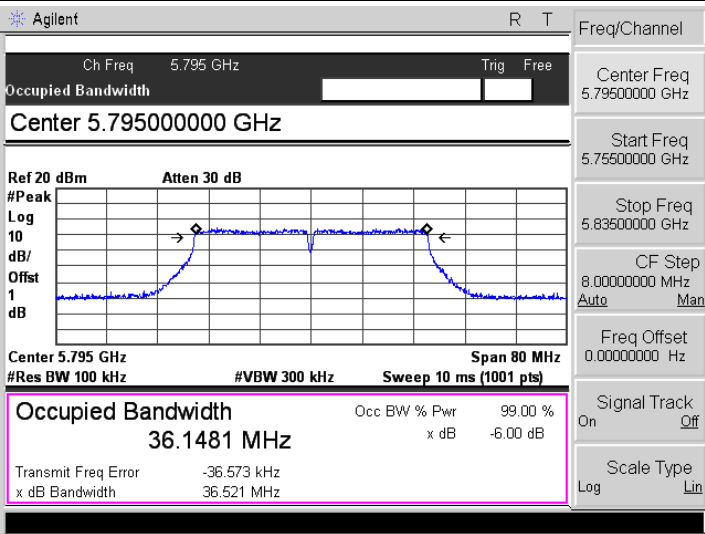
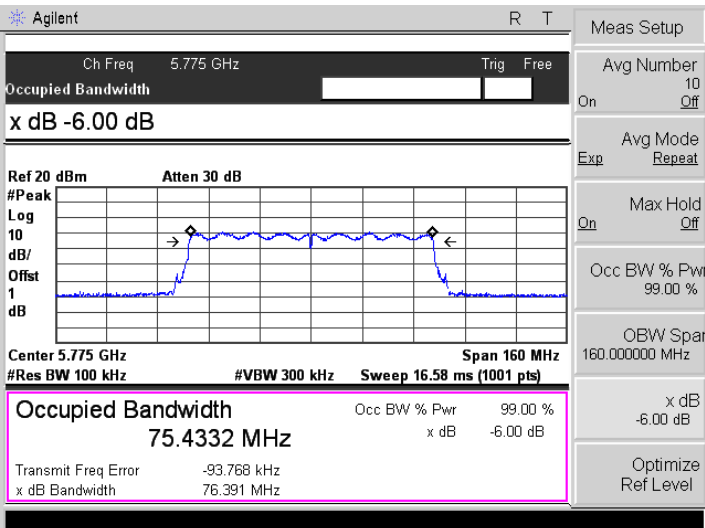
<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.19 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.19000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.19 GHz Span 80 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.2637 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 27.758 kHz x dB Bandwidth 42.728 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.19000000 GHz</p> <p>Start Freq 5.15000000 GHz</p> <p>Stop Freq 5.23000000 GHz</p> <p>CF Step 8.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.23 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Span 80.00000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.23 GHz Span 80 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.2808 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 39.875 kHz x dB Bandwidth 42.675 MHz</p> <p>Span</p> <p>Span 80.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.21 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>VBW 3.000000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.21 GHz Span 160 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 75.6010 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 213.010 kHz x dB Bandwidth 82.705 MHz</p> <p>BW/Avg</p> <p>Res BW 1.00000000 MHz Auto Man</p> <p>Video BW 3.00000000 MHz Auto Man</p> <p>VBW/RBW 10.00000 Auto Man</p> <p>Average 10 On Off</p> <p>Avg Type Video▶ Auto Man</p> <p>EMI Res BW None</p>

5725-5850MHz

6 dB Bandwidth

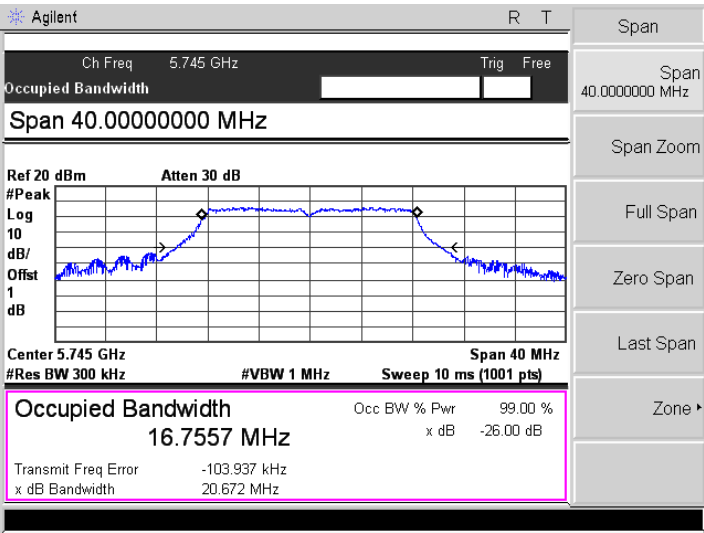
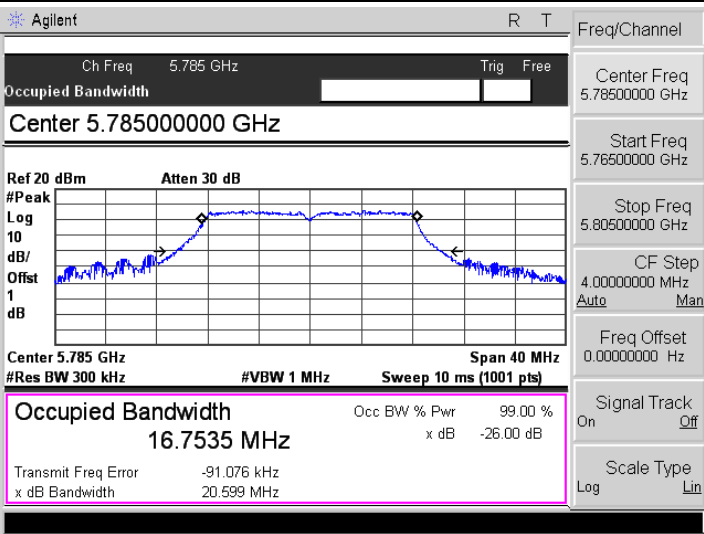
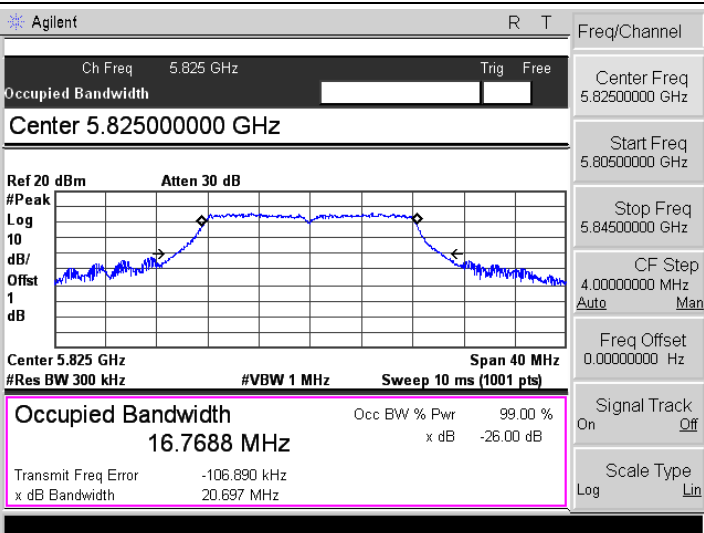
<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>x dB -6.00 dB</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.4166 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -58.651 kHz x dB Bandwidth 16.488 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold On Off</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 40.0000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.785000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.4148 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -60.332 kHz x dB Bandwidth 16.437 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.785000000 GHz</p> <p>Start Freq 5.785000000 GHz</p> <p>Stop Freq 5.805000000 GHz</p> <p>CF Step 4.000000000 MHz Auto Man</p> <p>Freq Offset 0.000000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>x dB -6.00 dB</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 16.4098 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -56.528 kHz x dB Bandwidth 16.479 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold On Off</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 40.0000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>

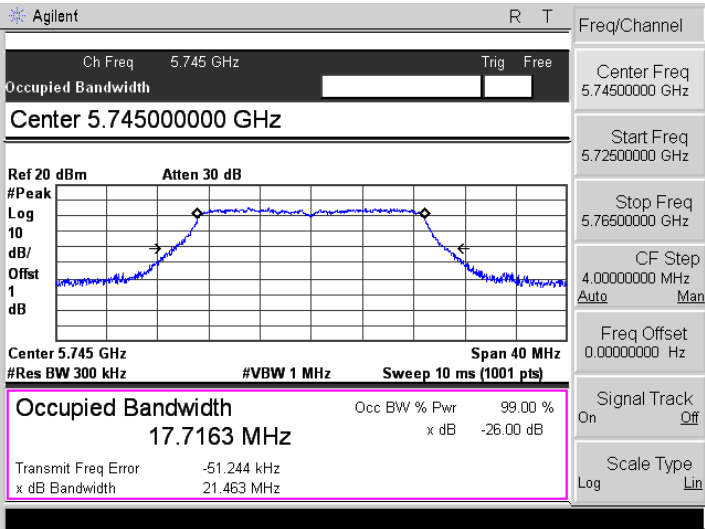
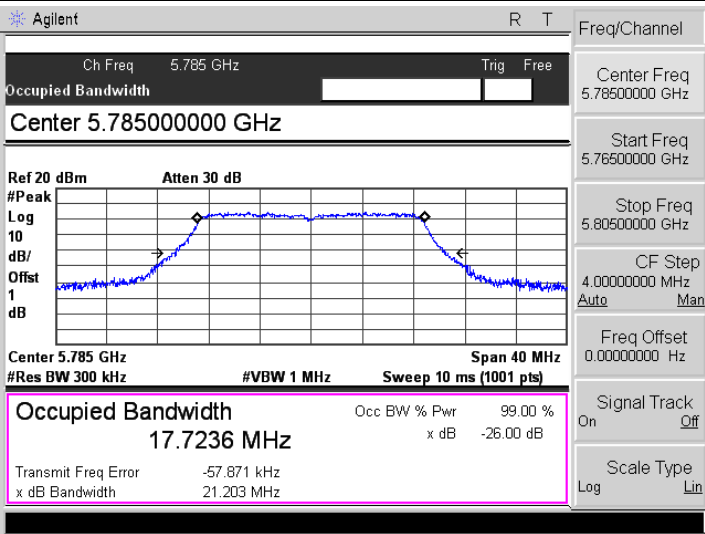
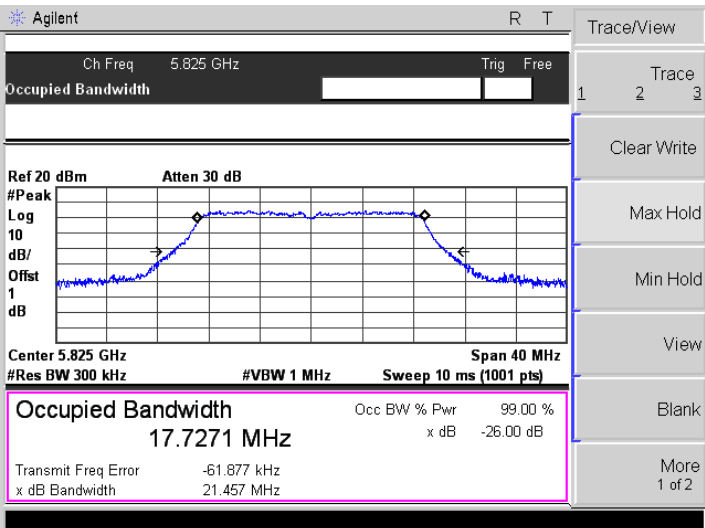
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.74500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Ofst 1</p> <p>dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.5589 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -43.238 kHz</p> <p>x dB Bandwidth 17.632 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.78500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Ofst 1</p> <p>dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.5351 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -20.282 kHz</p> <p>x dB Bandwidth 17.643 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.82500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/</p> <p>Ofst 1</p> <p>dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.5631 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -46.715 kHz</p> <p>x dB Bandwidth 17.646 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Exp Repeat</p> <p>Max Hold On Off</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 40.00000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>

<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.755 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>x dB -6.00 dB</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.755 GHz Span 80 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.1306 MHz</b></p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -58.166 kHz</p> <p>x dB Bandwidth 36.514 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold Off On</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 80.000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.795 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.79500000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.795 GHz Span 80 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 36.1481 MHz</b></p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -36.573 kHz</p> <p>x dB Bandwidth 36.521 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.79500000 GHz</p> <p>Start Freq 5.75500000 GHz</p> <p>Stop Freq 5.83500000 GHz</p> <p>CF Step 8.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.775 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>x dB -6.00 dB</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.775 GHz Span 160 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 16.58 ms (1001 pts)</p> <p><b>Occupied Bandwidth 75.4332 MHz</b></p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -6.00 dB</p> <p>Transmit Freq Error -93.768 kHz</p> <p>x dB Bandwidth 76.391 MHz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Repeat Exp</p> <p>Max Hold Off On</p> <p>Occ BW % Pwr 99.00 %</p> <p>OBW Spar 160.000000 MHz</p> <p>x dB -6.00 dB</p> <p>Optimize Ref Level</p>



99 % Bandwidth

<p>802.11a-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Span 40.00000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 16.7557 MHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -103.937 kHz</p> <p>x dB Bandwidth 20.672 MHz</p> <p>Span 40.00000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11a-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.785000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 16.7535 MHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -91.076 kHz</p> <p>x dB Bandwidth 20.599 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.785000000 GHz</p> <p>Start Freq 5.765000000 GHz</p> <p>Stop Freq 5.805000000 GHz</p> <p>CF Step 4.000000000 MHz Auto Man</p> <p>Freq Offset 0.000000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 5.825000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 16.7688 MHz</b> Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -106.890 kHz</p> <p>x dB Bandwidth 20.697 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.825000000 GHz</p> <p>Start Freq 5.805000000 GHz</p> <p>Stop Freq 5.845000000 GHz</p> <p>CF Step 4.000000000 MHz Auto Man</p> <p>Freq Offset 0.000000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.74500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7163 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -51.244 kHz x dB Bandwidth 21.463 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.78500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7236 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -57.871 kHz x dB Bandwidth 21.203 MHz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 5.825 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Ofst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.7271 MHz Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -61.877 kHz x dB Bandwidth 21.457 MHz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>

<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	

## APPENDIX C

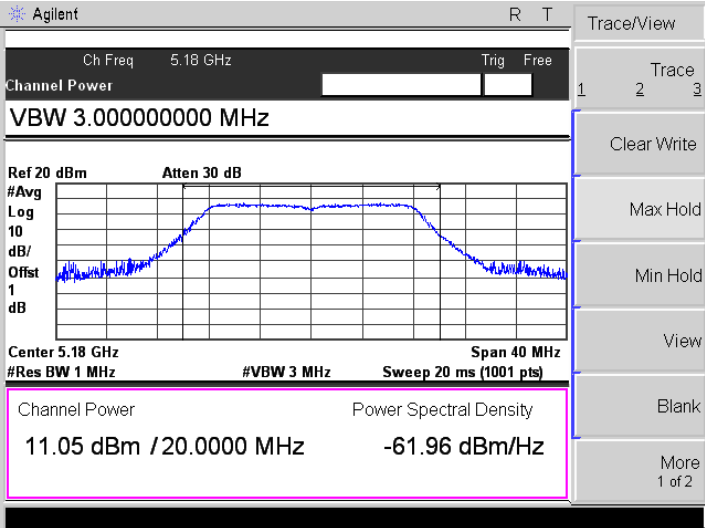
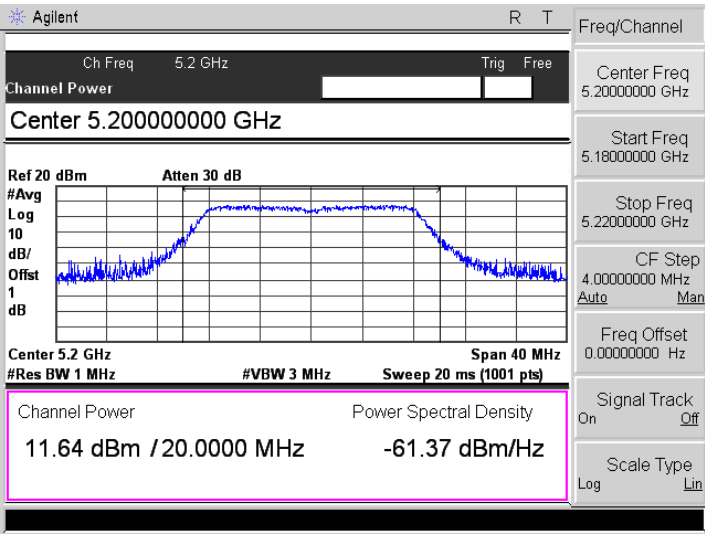
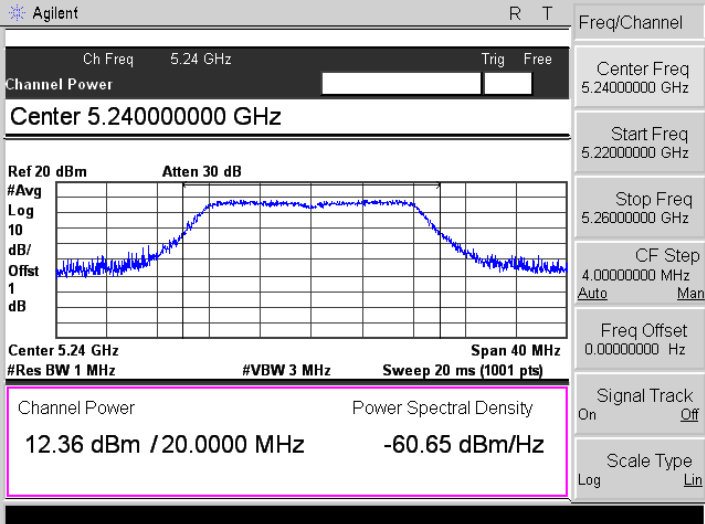
### Maximum Conducted Output Power

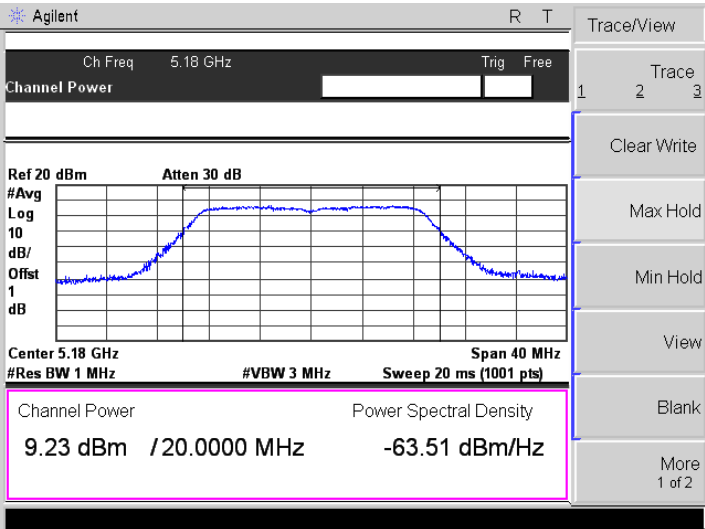
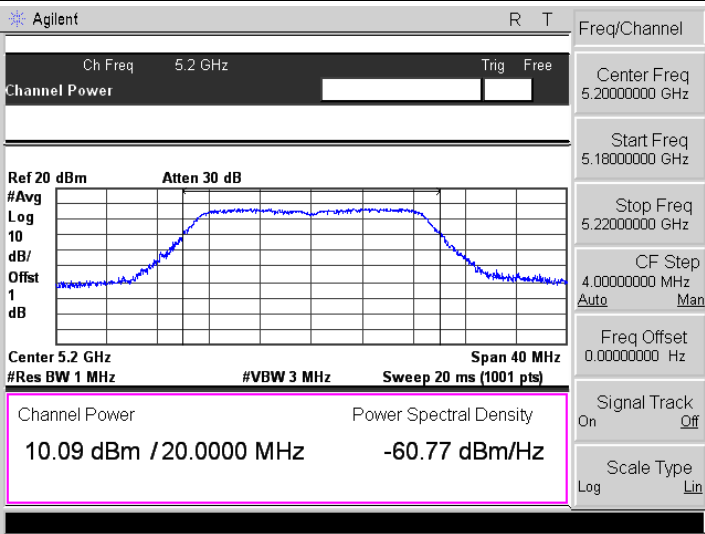
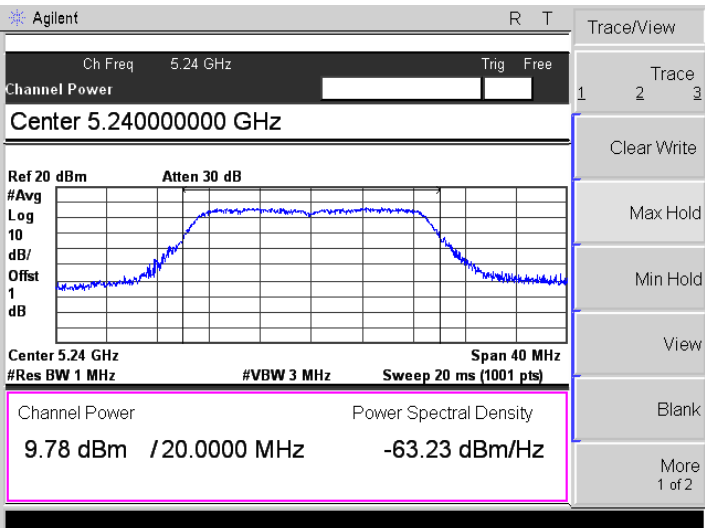
U-NII-1:5150-5250MHz					
Test mode	Frequency MHz	Output Power dBm		Total dBm	Limit dBm
		ANT A	ANT B		
802.11a	5180	11.05	11.03	/	23.98
	5200	11.64	11.81	/	23.98
	5240	12.36	12.68	/	23.98
802.11n-HT20	5180	9.23	10.36	12.84	23.98
	5200	10.09	9.83	12.97	23.98
	5240	9.78	11.40	13.68	23.98
802.11n-HT40	5190	9.87	9.04	12.49	23.98
	5230	10.91	10.43	13.69	23.98
802.11ac VH80	5210	9.33	8.73	12.05	23.98

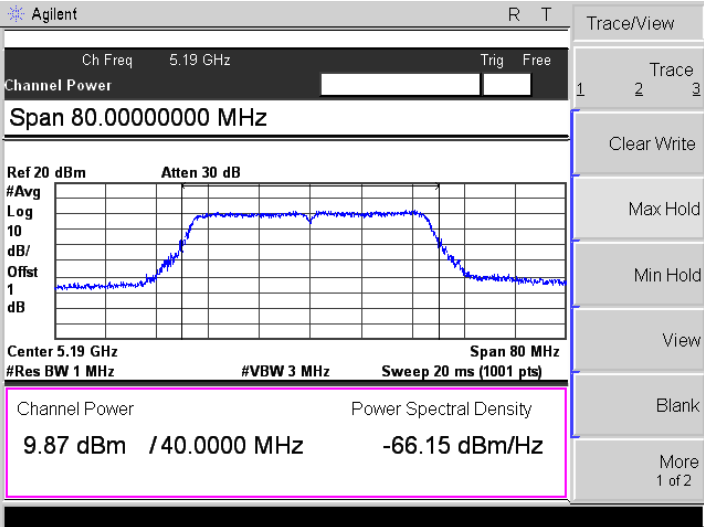
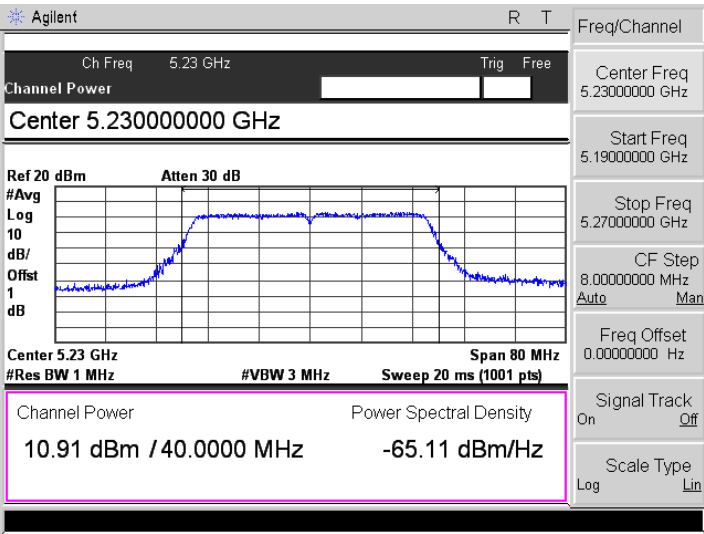
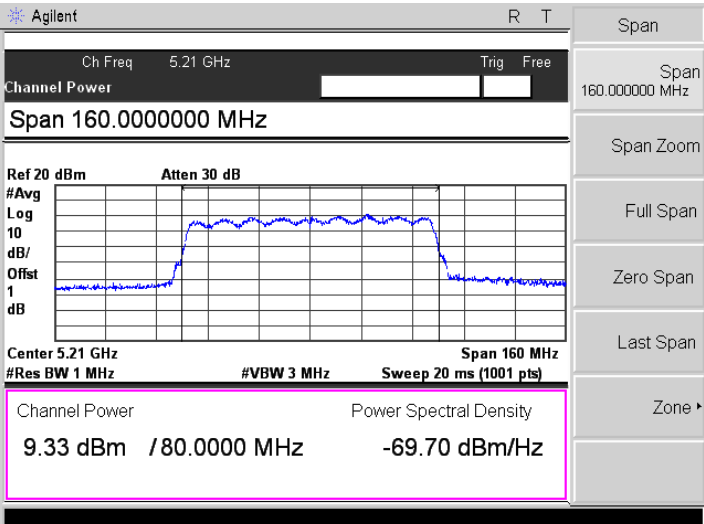
U-NII-3: 5725-5850MHz					
Test mode	Frequency MHz	Output Power dBm		Total dBm	Limit dBm
		ANT A	ANT B		
802.11a	5745	11.19	11.51	/	5745
	5785	11.86	11.18	/	5785
	5825	11.94	11.02	/	5825
802.11n-HT20	5745	10.04	10.58	13.33	5745
	5785	10.94	10.40	13.69	5785
	5825	10.33	9.68	13.03	5825
802.11n-HT40	5755	9.53	9.71	12.63	5755
	5795	9.32	9.30	12.32	5795
802.11ac VH80	5775	8.27	8.56	11.43	5775

ANT A

5150-5250MHz

<p>802.11a-Low</p>	
<p>802.11a-Middle</p>	
<p>802.11a-High</p>	

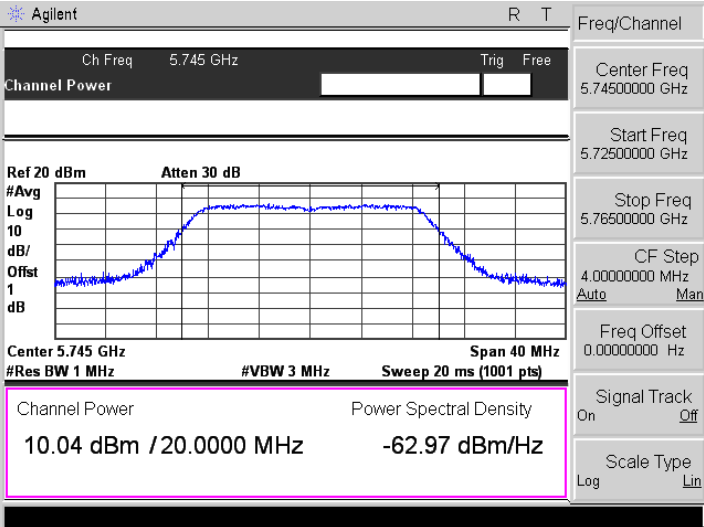
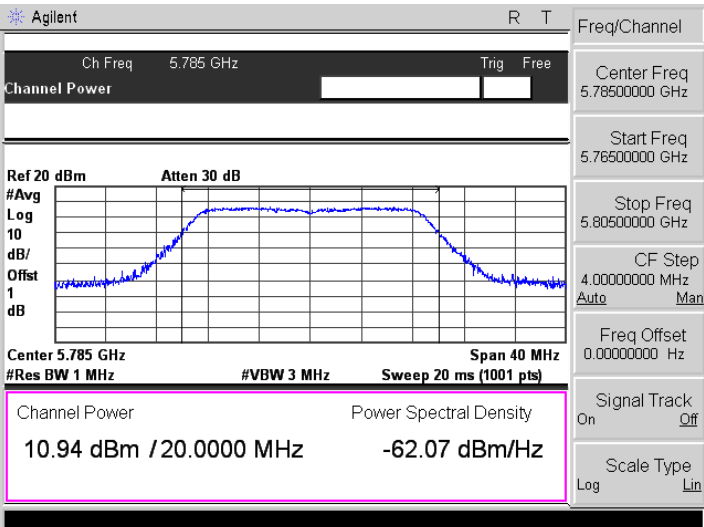
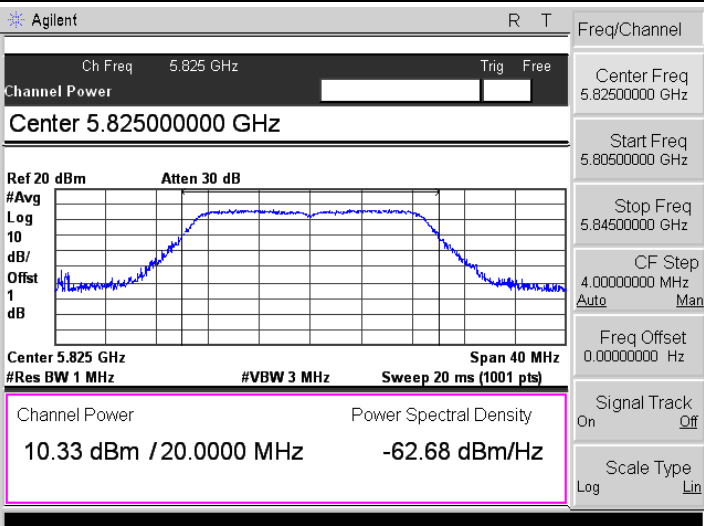
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.18 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.18 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <table border="1"> <tr> <td>Channel Power</td> <td>Power Spectral Density</td> </tr> <tr> <td>9.23 dBm / 20.0000 MHz</td> <td>-63.51 dBm/Hz</td> </tr> </table> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>	Channel Power	Power Spectral Density	9.23 dBm / 20.0000 MHz	-63.51 dBm/Hz
Channel Power	Power Spectral Density				
9.23 dBm / 20.0000 MHz	-63.51 dBm/Hz				
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.2 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.2 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <table border="1"> <tr> <td>Channel Power</td> <td>Power Spectral Density</td> </tr> <tr> <td>10.09 dBm / 20.0000 MHz</td> <td>-60.77 dBm/Hz</td> </tr> </table> <p>Freq/Channel</p> <p>Center Freq 5.20000000 GHz</p> <p>Start Freq 5.18000000 GHz</p> <p>Stop Freq 5.22000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>	Channel Power	Power Spectral Density	10.09 dBm / 20.0000 MHz	-60.77 dBm/Hz
Channel Power	Power Spectral Density				
10.09 dBm / 20.0000 MHz	-60.77 dBm/Hz				
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.24 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.240000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.24 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <table border="1"> <tr> <td>Channel Power</td> <td>Power Spectral Density</td> </tr> <tr> <td>9.78 dBm / 20.0000 MHz</td> <td>-63.23 dBm/Hz</td> </tr> </table> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>	Channel Power	Power Spectral Density	9.78 dBm / 20.0000 MHz	-63.23 dBm/Hz
Channel Power	Power Spectral Density				
9.78 dBm / 20.0000 MHz	-63.23 dBm/Hz				

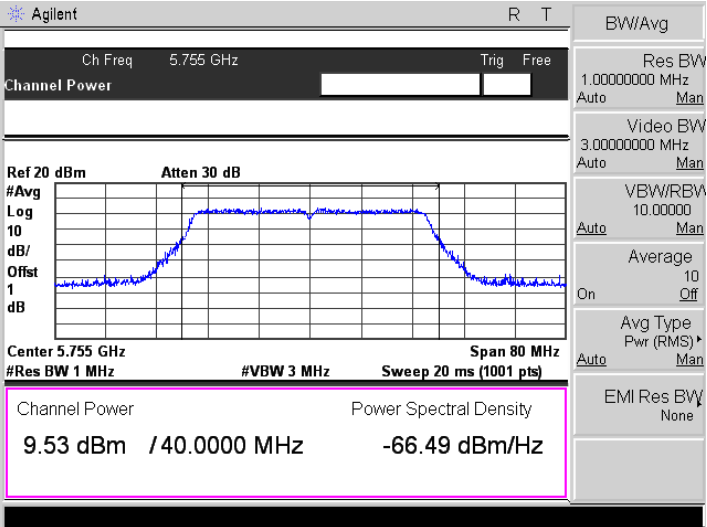
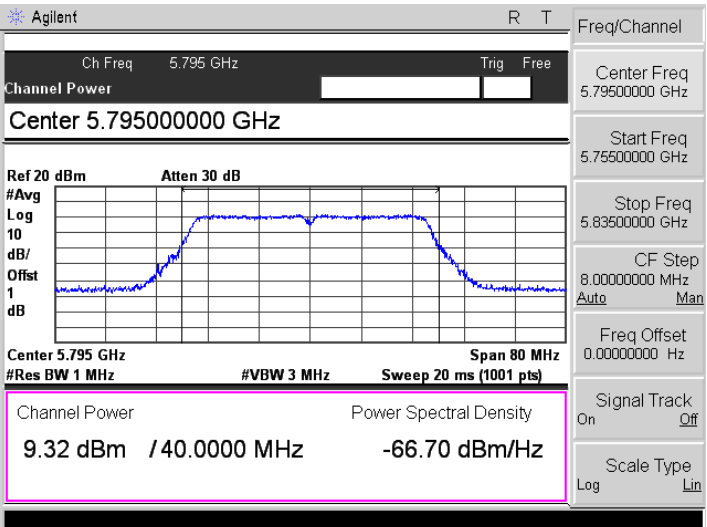
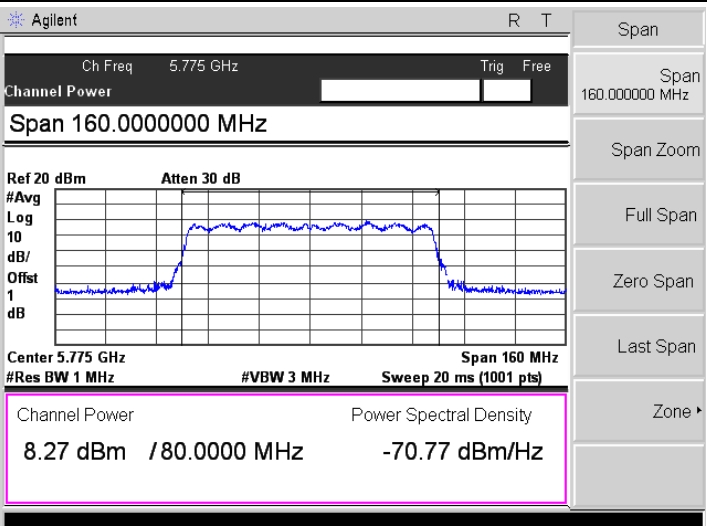
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<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	

5725-5850MHz

<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Channel Power</p> <p>VBW 3.00000000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offset 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.19 dBm / 20.0000 MHz -61.82 dBm/Hz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offset 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.86 dBm / 20.0000 MHz -61.15 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offset 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.94 dBm / 20.0000 MHz -61.07 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.82500000 GHz</p> <p>Start Freq 5.80500000 GHz</p> <p>Stop Freq 5.84500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>



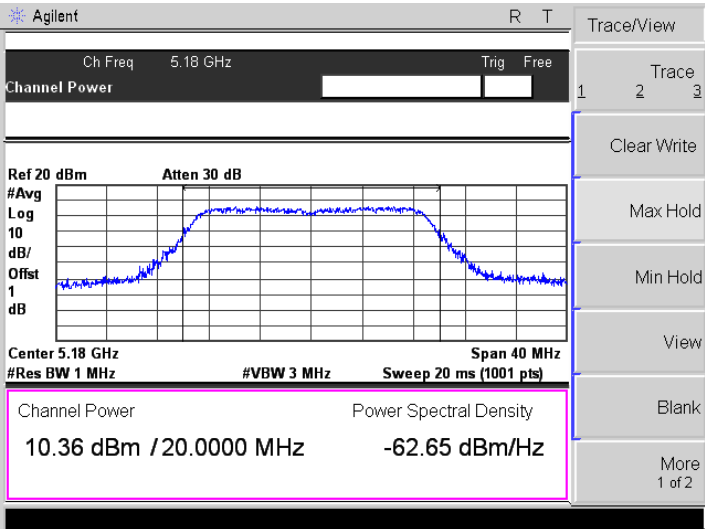
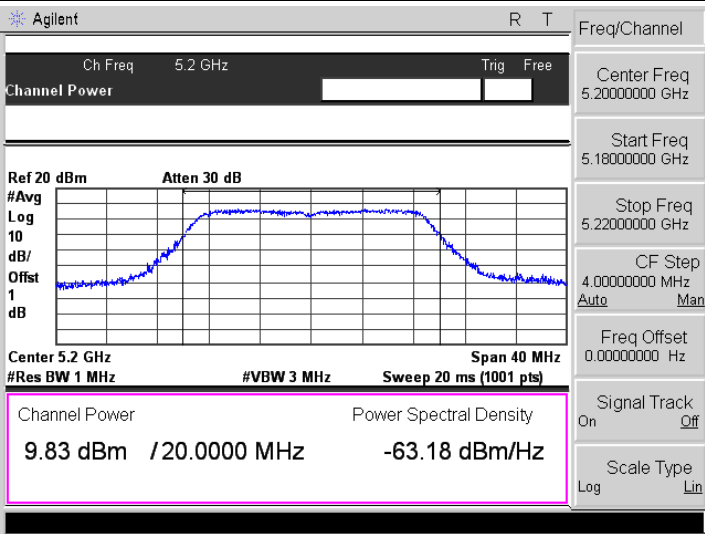
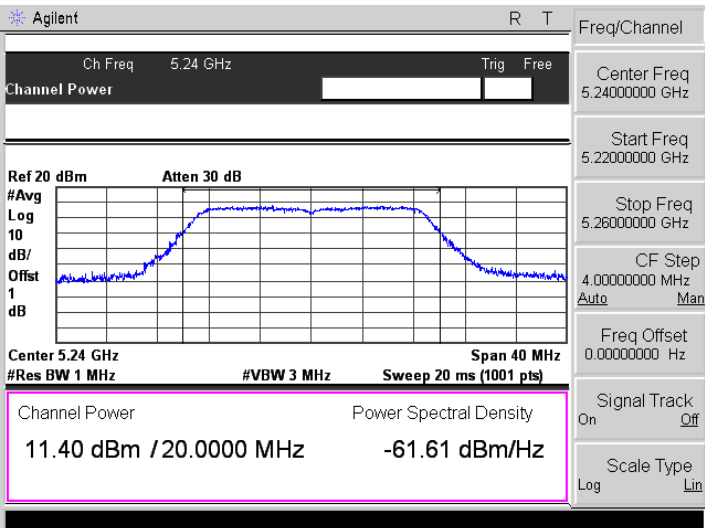
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>10.04 dBm / 20.0000 MHz -62.97 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>10.94 dBm / 20.0000 MHz -62.07 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.825000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>10.33 dBm / 20.0000 MHz -62.68 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.82500000 GHz</p> <p>Start Freq 5.80500000 GHz</p> <p>Stop Freq 5.84500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

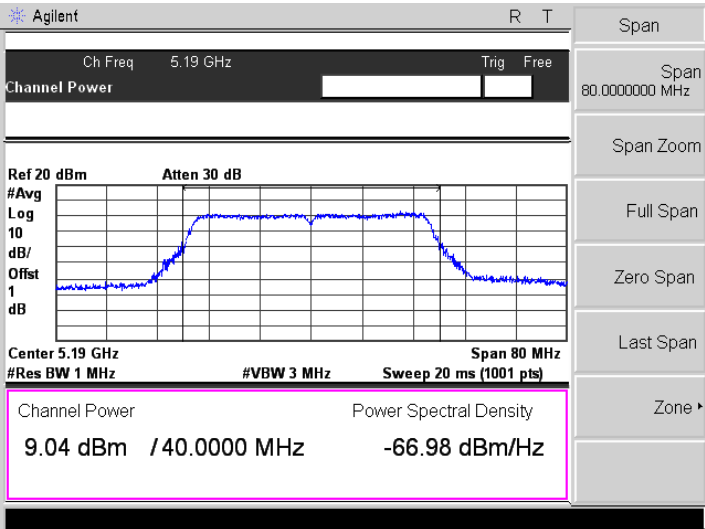
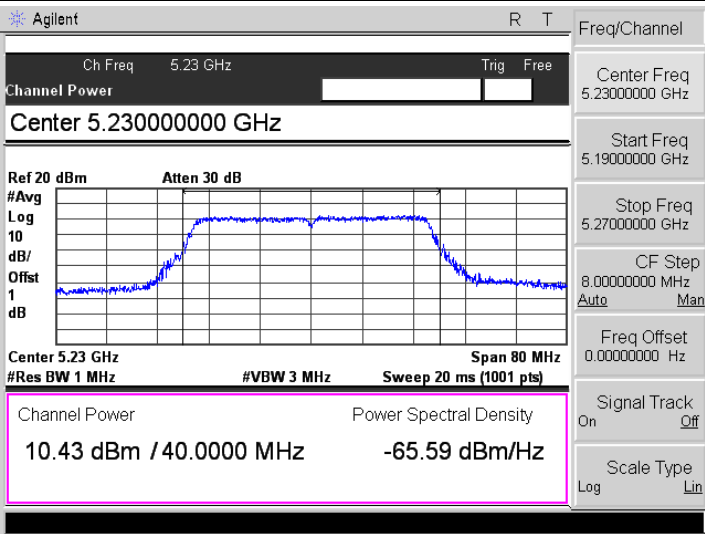
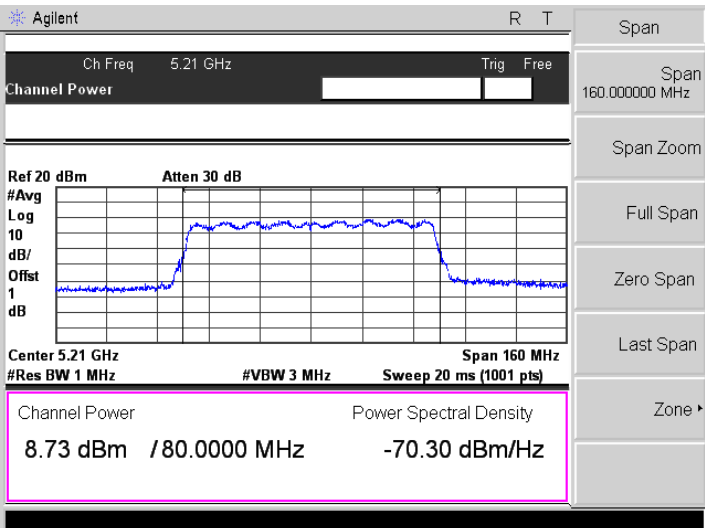
<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.755 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.755 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>9.53 dBm / 40.0000 MHz -66.49 dBm/Hz</p> <p>BW/Avg</p> <p>Res BW 1.00000000 MHz Auto Man</p> <p>Video BW 3.00000000 MHz Auto Man</p> <p>VBW/RBW 10.00000 Auto Man</p> <p>Average 10 On Off</p> <p>Avg Type Pwr (RMS) Auto Man</p> <p>EMI Res BW None</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.795 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.79500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.795 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>9.32 dBm / 40.0000 MHz -66.70 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.79500000 GHz</p> <p>Start Freq 5.75500000 GHz</p> <p>Stop Freq 5.83500000 GHz</p> <p>CF Step 8.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.775 GHz Trig Free</p> <p>Channel Power</p> <p>Span 160.0000000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.775 GHz Span 160 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>8.27 dBm / 80.0000 MHz -70.77 dBm/Hz</p> <p>Span</p> <p>Span 160.0000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone</p>

**ANT B**

**5150-5250MHz**

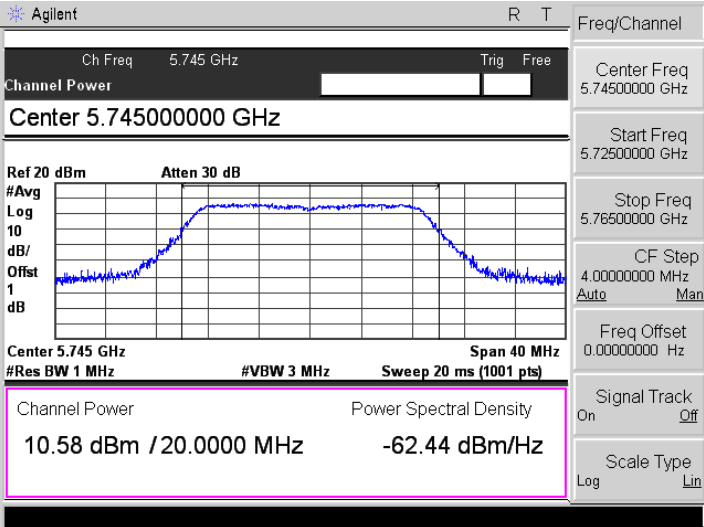
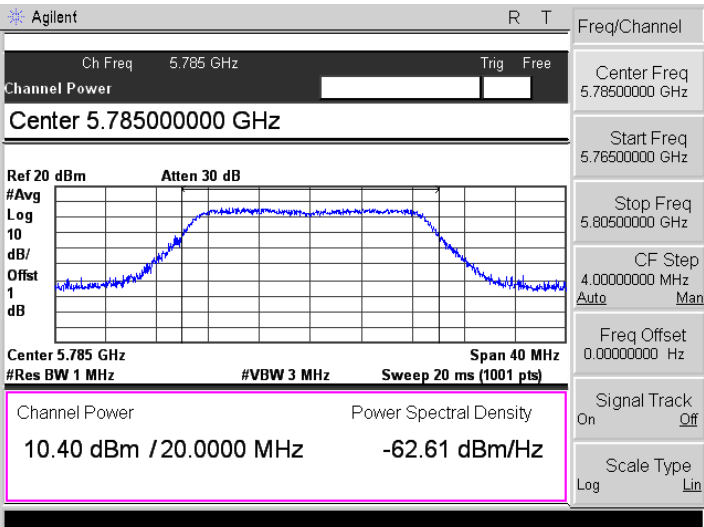
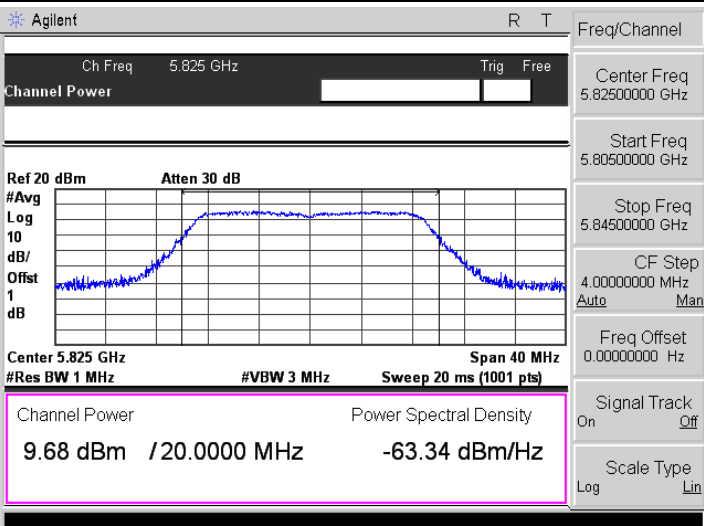
<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ch Freq 5.18 GHz Trig Free</p> <p>Channel Power <input type="text"/> <input type="text"/></p> <p><b>Center 5.18000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.18 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>11.03 dBm / 20.0000 MHz -61.98 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 5.18000000 GHz</p> <p>Start Freq 5.16000000 GHz</p> <p>Stop Freq 5.20000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 5.2 GHz Trig Free</p> <p>Channel Power <input type="text"/> <input type="text"/></p> <p><b>Center 5.20000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.2 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>11.81 dBm / 20.0000 MHz -61.20 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 5.20000000 GHz</p> <p>Start Freq 5.18000000 GHz</p> <p>Stop Freq 5.22000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ch Freq 5.24 GHz Trig Free</p> <p>Channel Power <input type="text"/> <input type="text"/></p> <p><b>Center 5.24000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.24 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>12.68 dBm / 20.0000 MHz -60.33 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 5.24000000 GHz</p> <p>Start Freq 5.22000000 GHz</p> <p>Stop Freq 5.26000000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

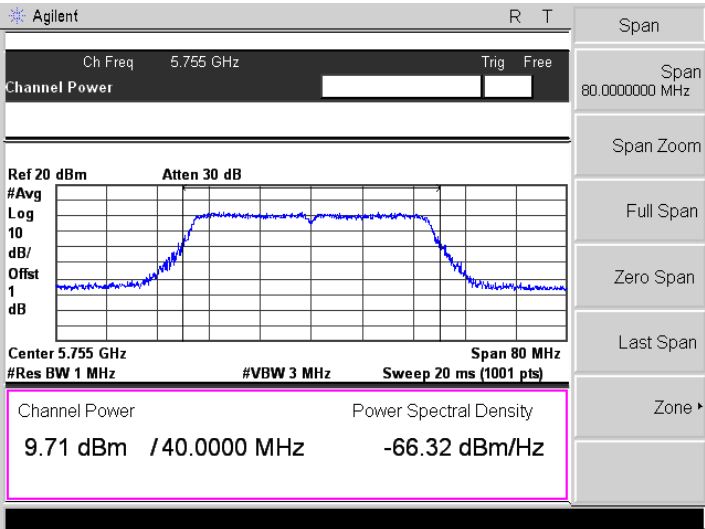
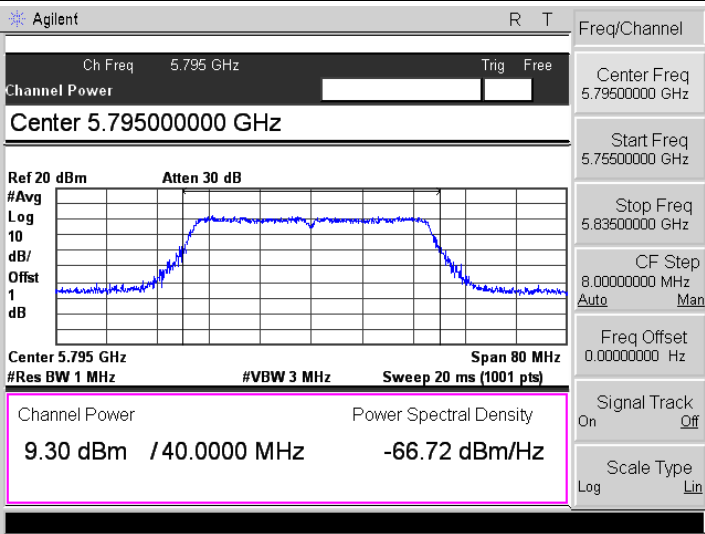
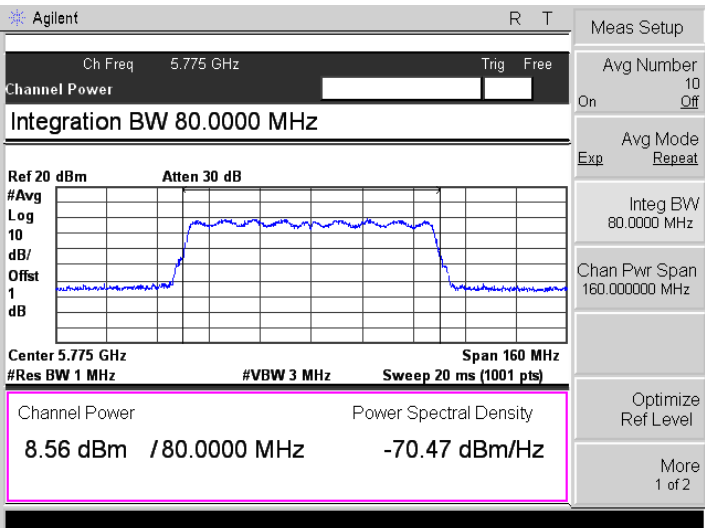
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<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-High</p>	
<p>802.11ac-HT80</p>	

5725-5850MHz

<p>802.11a-Low</p>	<p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.74500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.51 dBm / 20.0000 MHz -61.50 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.78500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.18 dBm / 20.0000 MHz -61.83 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11a-High</p>	<p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.82500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.02 dBm / 20.0000 MHz -61.99 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.82500000 GHz</p> <p>Start Freq 5.80500000 GHz</p> <p>Stop Freq 5.84500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.745 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.74500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.745 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>10.58 dBm / 20.0000 MHz -62.44 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.74500000 GHz</p> <p>Start Freq 5.72500000 GHz</p> <p>Stop Freq 5.76500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 5.785 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.78500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.785 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>10.40 dBm / 20.0000 MHz -62.61 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.78500000 GHz</p> <p>Start Freq 5.76500000 GHz</p> <p>Stop Freq 5.80500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.825 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.82500000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 5.825 GHz Span 40 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>9.68 dBm / 20.0000 MHz -63.34 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.82500000 GHz</p> <p>Start Freq 5.80500000 GHz</p> <p>Stop Freq 5.84500000 GHz</p> <p>CF Step 4.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 5.755 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.755 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>9.71 dBm / 40.0000 MHz -66.32 dBm/Hz</p> <p>Span 80.0000000 MHz</p> <p>Span Zoom</p> <p>Full Span</p> <p>Zero Span</p> <p>Last Span</p> <p>Zone ▶</p>
<p>802.11n-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 5.795 GHz Trig Free</p> <p>Channel Power</p> <p>Center 5.795000000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.795 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>9.30 dBm / 40.0000 MHz -66.72 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 5.79500000 GHz</p> <p>Start Freq 5.75500000 GHz</p> <p>Stop Freq 5.83500000 GHz</p> <p>CF Step 8.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11ac-HT80</p>	 <p>Agilent R T</p> <p>Ch Freq 5.775 GHz Trig Free</p> <p>Channel Power</p> <p>Integration BW 80.0000 MHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 5.775 GHz Span 160 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (1001 pts)</p> <p>Channel Power Power Spectral Density</p> <p>8.56 dBm / 80.0000 MHz -70.47 dBm/Hz</p> <p>Meas Setup</p> <p>Avg Number 10 On Off</p> <p>Avg Mode Exp Repeat</p> <p>Integ BW 80.0000 MHz</p> <p>Chan Pwr Span 160.000000 MHz</p> <p>Optimize Ref Level</p> <p>More 1 of 2</p>



## APPENDIX D

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### Frequency Stability

<b>U-NII-1:5150-5250MHz worst case at 802.11a middle channel</b>				
Voltage(%)	Power(VDC)	TEMP( °C)	Freq.Dev(Hz)	Deviation
100%	5.0	-30	1593	0.3063
100%		-20	1593	0.3063
100%		-10	1581	0.3041
100%		0	1595	0.3067
100%		+10	1580	0.3039
100%		+20	1582	0.3042
100%		+30	1593	0.3063
100%		+40	1591	0.3059
100%		+50	1589	0.3055
Low Battery power		5.50	+20	1593
High Battery power	4.50	+20	1593	0.3063

<b>U-NII-1:5725-5850MHz worst case at 802.11a middle channel</b>				
Voltage(%)	Power(VDC)	TEMP( °C)	Freq.Dev(Hz)	Deviation
100%	5.0	-30	1585	0.2745
100%		-20	1597	0.2765
100%		-10	1581	0.2737
100%		0	1588	0.2750
100%		+10	1589	0.2751
100%		+20	1585	0.2745
100%		+30	1598	0.2767
100%		+40	1588	0.2750
100%		+50	1582	0.2739
Low Battery power		5.50	+20	1585
High Battery power	4.50	+20	1597	0.2765

## **APPENDIX PHOTOGRAPHS**

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**Please refer to “ANNEX”**

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