

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E AND INDUSTRY CANADA RSS 247 REQUIREMENT

OF

**FCC Applicant:** Huawei Technologies Co., Ltd.  
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,  
Bantian, Longgang District, Shenzhen, 518129, China

**IC Applicant:** Huawei Technologies Co., Ltd.  
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,  
Bantian, Longgang District, Shenzhen, 518129 China (Peoples Republic  
Of)

**Product Name:** HUAWEI MateBook

**Brand Name:** HUAWEI

**Model No.:** MRC-W10, MRC-W50, MRC-W60

**Model Difference:** For Marketing Purpose

**FCC ID:** QISMRC-WX0

**IC:** 6369A-MRCWX0

**Report Number:** E2/2017/90142

**FCC Rule Part:** §15.407, Cat:NIJ

**IC Rule:** RSS-247 issue 2 Feb. 2017

**Issue Date:** Nov. 08, 2017

**Date of Test:** Sep. 26, 2017 ~ Nov. 08, 2017

**Date of EUT Received:** Sep. 26, 2017

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Prepared By:

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## Revision History

Report Number	Revision	Description	Issue Date
E2/2017/90142	Rev.00	Initial creation of document	Nov. 08, 2017

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# 1 GENERAL INFORMATION

## 1.1 Product Description

General:

Product Name:	HUAWEI MateBook	
Brand Name:	HUAWEI	
Model No.:	MRC-W10, MRC-W50, MRC-W60	
Model Difference:	For Marketing Purpose	
Product SW/HW version:	B2A / 0.52	
Radio SW/HW version:	Wi-Fi Component: 19.0 / Wi-Fi Component: 8265	
Test SW Version:	N/A	
RF power setting in TEST SW:	N/A	
Power Supply:	11.4Vdc from Rechargeable Li-ion Battery or 19Vdc from AD/DC Adapter	
	Battery:	Model No.: HB46K497ECW, Supplier: HUAWEI
	Adapter:	Model No.: HW-19034YYYY (Y=0-9,A-Z or blank), Supplier: HUAWEI

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**FCC WLAN 5GHz:**

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5150~5250	4	14.97	OFDM
	5250~5350	4	14.95	
	5470~5725	12	14.95	
	5725-5850	5	14.99	
11n_HT / ac_VHT 20M	5150~5250	4	HT: 14.95	OFDM
	5250~5350	4	HT: 14.99	
	5470~5725	12	HT: 14.99	
	5725-5850	5	HT: 14.95	
11n_HT / ac_VHT 40M	5150~5250	2	HT: 14.97	OFDM
	5250~5350	2	HT: 14.96	
	5470~5725	6	HT:14.96	
	5725-5850	2	HT: 14.94	
11ac VHT80M	5150~5250	1	13.87	OFDM
	5250~5350	1	11.94	
	5470~5725	2	14.89	
	5725-5850	1	14.82	
Antenna Designation:	PIFA Antenna, Main Antenna: 5150~5250MHz Peak Gain: 0.92dBi 5250~5350MHz Peak Gain: -1.24dBi 5470~5725MHz Peak Gain: -2.91dBi 5725~5850MHz Peak Gain: -1.73dBi  Aux Antenna: 5150~5250MHz Peak Gain: -1.38dBi 5250~5350MHz Peak Gain: -0.26dBi 5470~5725MHz Peak Gain: 0.94dBi 5725~5850MHz Peak Gain: 0.06dBi			

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**IC WLAN 5GHz:**

Wi-Fi	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm)	Modulation Technology
11a	5180~5240	4	EIRP	15.85	OFDM
	5260~5320	4	Avg.	14.95	
	5500~5580	5	Avg.	14.95	
	5660~5700	3	Avg.	13.96	
	5745~5825	5	Avg.	14.99	
11n_HT / ac_VHT 20M	5180~5240	4	EIRP	HT: 15.84	OFDM
	5260~5320	4	Avg.	HT: 14.99	
	5500~5580	5	Avg.	HT: 14.99	
	5660~5700	3	Avg.	HT: 13.94	
	5745~5825	5	Avg.	HT: 14.95	
11n_HT / ac_VHT 40M	5190~5230	2	EIRP	HT: 15.87	OFDM
	5270~5310	2	Avg.	HT: 14.96	
	5510~5550	2	Avg.	HT: 14.96	
	5670~5670	1	Avg.	HT: 14.91	
	5755~5795	2	Avg.	HT: 14.94	
11ac VHT80M	5210~5210	1	EIRP	14.73	OFDM
	5290~5290	1	Avg.	11.94	
	5530~5530	1	Avg.	13.95	
	5775~5775	1	Avg.	14.82	
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only			
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 - 300.0Mbps 802.11 ac_20MHz: 6.5 –144.4Mbps 802.11 ac_40MHz: 13.5 -300.0Mbps 802.11 ac_80MHz: 29.3 – 650Mbps			

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules

FCC KDB 662911 D01 Multiple Transmitter Output

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

RSS-247 issue 2 Feb. 2017

RSS-Gen issue4 Nov. 2014

ANSI C63.10:2013

Note: All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803. (TAF code 0513)

FCC Registration Numbers are: 735305 / TW0002

Canada Registration Number: 4620A-5

## 1.4 Special Accessories

There are no special accessories used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 1.5dB, and 10dB attenuator.  

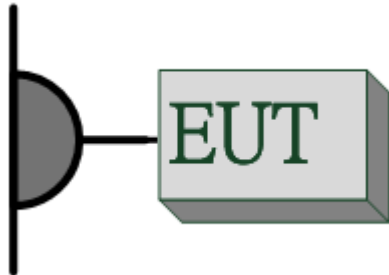
$$\text{offset} = \text{RF cable loss (dB)} + \text{attenuation factor(dB)} = 11.5(\text{dB})$$

## 2.5 Configuration of Tested System

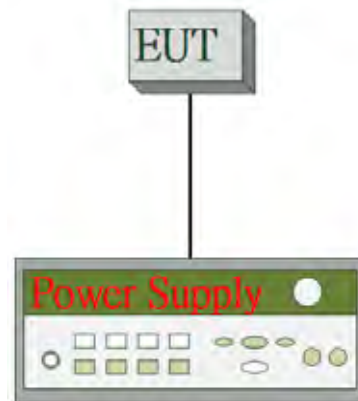
**Fig. 2-1 Radiated Emission Configuration**



**Fig. 2-2 Conducted Emission (AC Power Line) Configuration**



**Fig.2-3 Conducted Emission (Antenna Port) Configuration**



**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2	DC Power Supply	Agilent	E3640A	MY53140006	N/A	Un-Shielded

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### 3 SUMMARY OF TEST RESULT

FCC Rules	IC Rules	Description Of Test	Result
§15.207	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	RSS-247 §6.2.1~ 4 (1) RSS-Gen §6.6	26 dB & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Maximum Conducted Output Power	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Power Spectral Density	Compliant
§15.407(b)	RSS-247 §6.2.1~ 4 (2)	Undesirable Radiated Emissions	Compliant
§15.407(c)	RSS-247 §6.4	Transmission in case of Absence of Information	Compliant
§15.407(g)	RSS-Gen §6.11	Frequency Stability	Compliant
§15.203 §15.407(a)	RSS- Gen §6.7 RSS- Gen §8.3	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY
42	5210 MHz

Operated band in 5250 MHz ~5350 MHz:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY
58	5290 MHz

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Operated band in 5470 MHz ~5725 MHz:

11 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

5 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

2 channels are provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz

Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY
155	5775 MHz

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#### 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.
4. The given UE is pre-scanned among 802.11n and ac modes, and 802.11ac yields the highest reading that generates the highest emission.
5. The given UE is pre-scanned among SISO Main, SISO Aux and MIMO modes, and SISO Aux mode yields the highest reading that generates the highest emission. Therefore, 802.11ac+SISO Aux as the mode of radiated test configuration is chosen to carry out the relevantly mandatory test items.

#### RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	AUX
802.11ac_VHT80	5210	42	42	OFDM	MCS8	AUX
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	AUX
802.11ac_VHT80	5290	58	58	OFDM	MCS8	AUX
802.11a	5500~5720	100 to 140	100,116,140	OFDM	6	AUX
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS8	AUX
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	AUX
802.11ac_VHT80	5775	155	155	OFDM	MCS8	AUX
RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	AUX
802.11ac_VHT20				OFDM	MCS8	AUX
802.11ac_VHT40	5190~5230	38 to 46	38,46	OFDM	MCS8	AUX
802.11ac_VHT80	5210	42	42	OFDM	MCS8	AUX
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	AUX
802.11ac_VHT20				OFDM	MCS8	AUX
802.11ac_VHT40	5270~5310	54 to 62	54,62	OFDM	MCS8	AUX
802.11ac_VHT80	5290	58	58	OFDM	MCS8	AUX

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MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5500~5720	100 to 144	100,116,140	OFDM	6	AUX
802.11ac_VHT20				OFDM	MCS8	AUX
802.11ac_VHT40	5510~5710	102 to 142	102,110,134	OFDM	MCS8	AUX
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	AUX
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	AUX
802.11ac_VHT20				OFDM	MCS8	AUX
802.11ac_VHT40	5755~5795	151 to 159	151,159	OFDM	MCS8	AUX
802.11ac_VHT80	5775	155	155	OFDM	MCS8	AUX

**Note:**

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11a/n/ac WLAN Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

**ANTENNA PORT CONDUCTED MEASUREMENT:**

CONDUCTED TEST						
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	AUX
802.11ac_HT20 802.11ac_VHT20				OFDM	MCS0	AUX
802.11ac_HT40 802.11ac_VHT40	5190~5230	38 to 46	38,46	OFDM	MCS0	AUX
802.11ac_VHT80	5210	42	42	OFDM	MCS0	AUX
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	AUX
802.11ac_HT20 802.11ac_VHT20				OFDM	MCS0	AUX
802.11ac_HT40 802.11ac_VHT40	5270~5310	54 to 62	54,62	OFDM	MCS0	AUX
802.11ac_VHT80	5290	58	58	OFDM	MCS0	AUX
802.11a	5500~5720	100 to 144	100,116,140,144	OFDM	6	AUX
802.11ac_HT20 802.11ac_VHT20				OFDM	MCS0	AUX
802.11ac_HT40 802.11ac_VHT40	5510~5710	102 to 142	102,110,134,142	OFDM	MCS0	AUX
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	AUX
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	AUX
802.11ac_HT20 802.11ac_VHT20				OFDM	MCS0	AUX
802.11ac_HT40 802.11ac_VHT40	5755~5795	151 to 159	151,159	OFDM	MCS0	AUX
802.11ac_VHT80	5775	155	155	OFDM	MCS0	AUX

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26dB & 6dB Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 0.96 dB
Peak Power Spectral Density Measurement	+/- 1.67 dB
Frequency Stability	+/- 123.36 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : <b>Vertical</b> )	9kHz-30MHz: +/-2.87dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	9kHz-30MHz: +/-2.87dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 6 CONDUCTED EMISSION TEST

### 6.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI 7	100950	12/08/2016	12/07/2017
Coaxial Cables	N/A	N30N30-1042-1 50cm	N/A	08/30/2017	08/29/2018
LISN	Schwarzbeck	NSLK 8127	8127-648	06/18/2017	06/17/2018
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

### 6.3 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz power source.

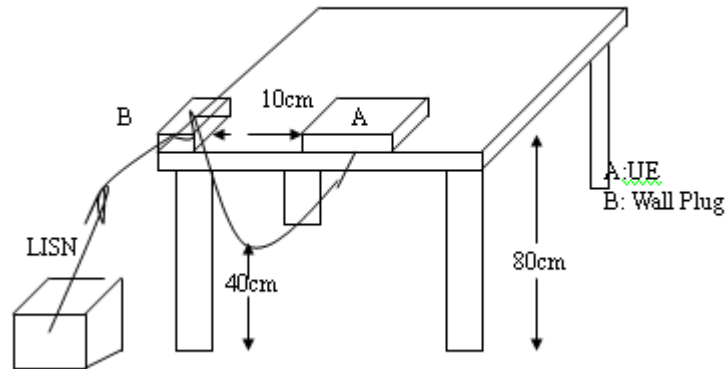
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## 6.4 Test SET-UP



## 6.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed.

## 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit

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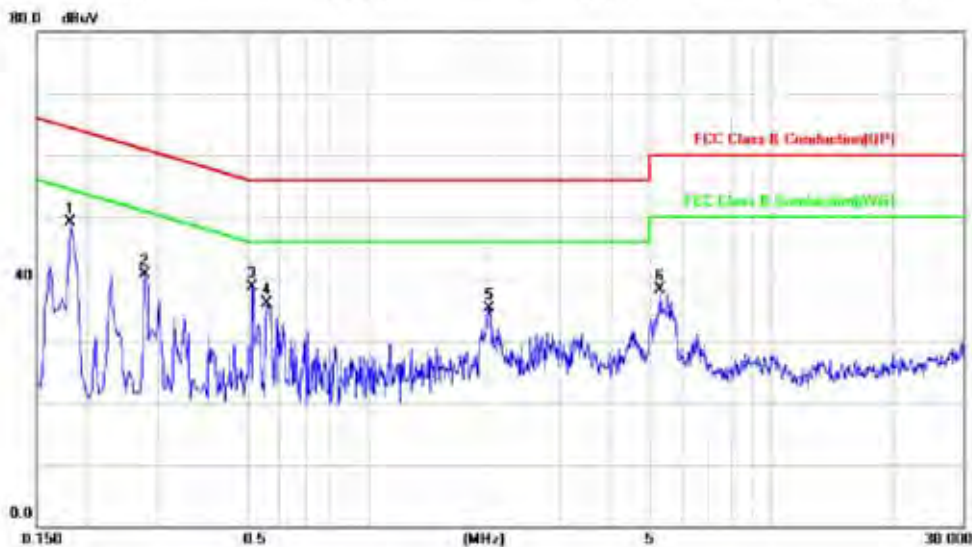
## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode	Test By:	Jerry
-----------------	----------------	----------	-------

Site : Conduction Room	Phase: <b>L1</b>	Temperature: 25 °C
Limit: FCC Class B Conduction(QP)	Power: AC 120V/60Hz	Humidity: 65 %
Mode:		
Note:		

### Conducted Emission

File :Conduction      Data :#814      Date: 2017/11/2      Time: 上午 08:52:04



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1820	29.42	19.69	49.11	64.39	-15.28	peak	
2		0.2760	20.96	19.82	40.78	60.88	-20.10	peak	
3		0.5180	18.60	20.17	38.77	58.00	-17.23	peak	
4		0.5620	16.04	20.15	36.19	56.00	-19.81	peak	
5		2.0100	14.68	20.65	35.33	56.00	-20.67	peak	
6		5.3060	17.91	20.30	38.21	60.00	-21.79	peak	

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## 7 DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

### Formula:

$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

### Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

Duty Cycle:

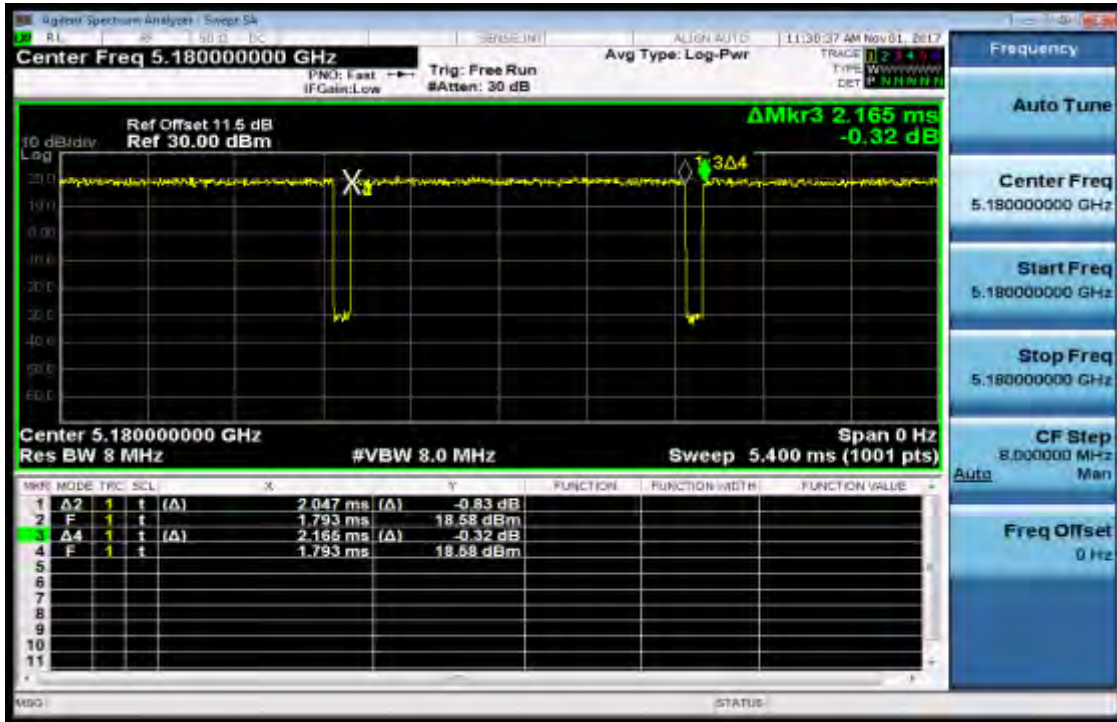
Mode	Duty Cycle (%)	Duty Factor (dB) =10*log ( 1/Duty Cycle )
802.11a	94.60	0.24
802.11n_20	95.40	0.20
802.11ac_20	95.50	0.20
802.11n_40	84.30	0.74
802.11ac_40	84.40	0.74
802.11ac_80	84.20	0.75

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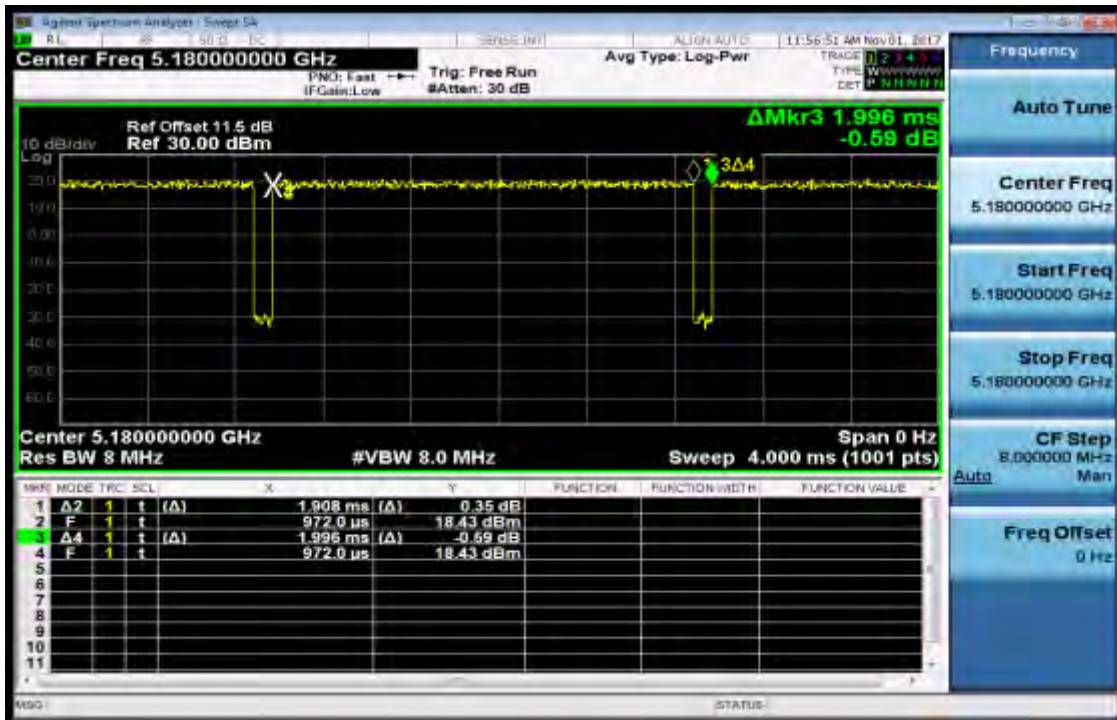
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## DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



## 802.11n HT20



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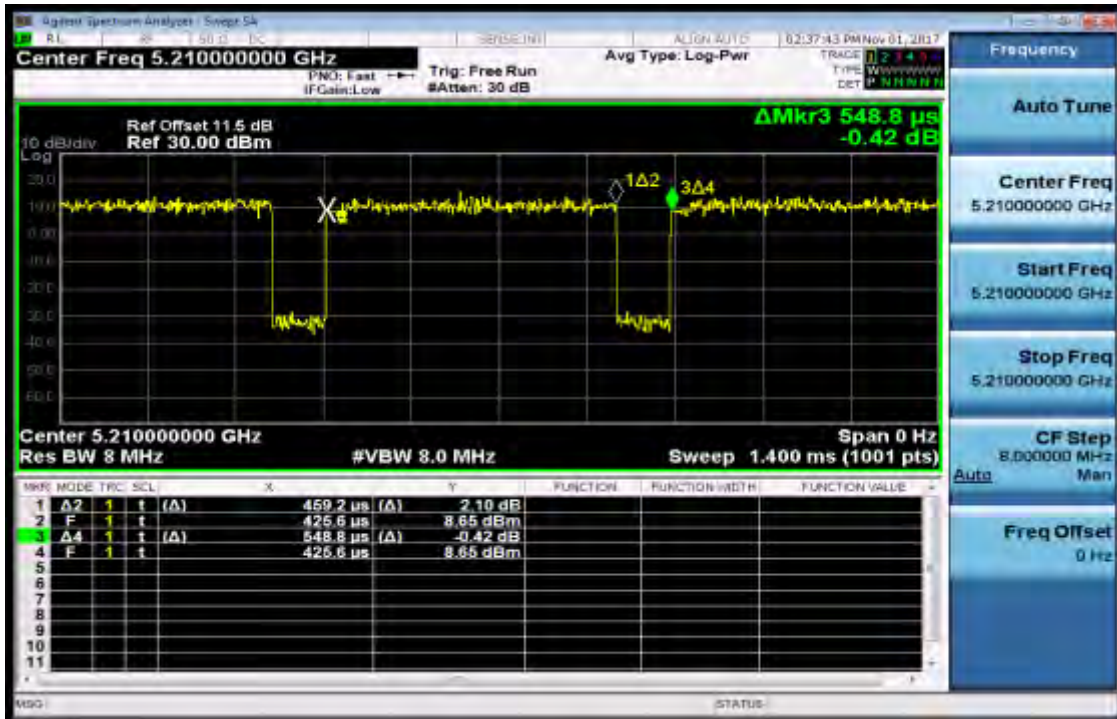
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### 802.11n HT 40



### 802.11 ac VHT 80



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## 8 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

### 8.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
  - a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto, Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
  - b. Mark the peak frequency and -26dB (upper and lower) frequency.
4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
5. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
  - a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto
  - b. Mark the peak frequency and -6dB (upper and lower) frequency.
6. Repeat above procedures until all test default channel measured were complete.

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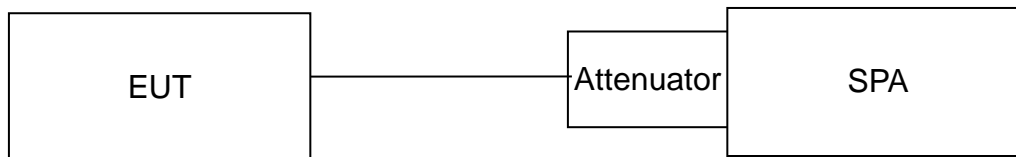
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### 8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

### 8.4 Test Set-up



### 8.5 Measurement Result

#### 26dB and 6dB Bandwidth

802.11a\_Main

802.11a\_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.16	13.456	5180	19.45	12.888
5220	22.25	13.473	5220	22.97	13.612
5240	22.85	13.589	5240	22.15	13.454
5260	22.13	13.450	5260	22.58	13.537
5300	22.45	13.512	5300	23.06	13.629
5320	22.45	13.512	5320	22.65	13.551
5500	22.49	13.520	5500	22.13	13.450
5580	22.36	13.495	5580	22.81	13.581
5700	23.07	13.630	5700	22.66	13.552

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802.11a\_Main

802.11a\_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.35	12.135	5745	15.10	11.790
5785	16.39	12.146	5785	12.88	11.099
5825	15.05	11.775	5825	13.59	11.332

802.11n\_HT20\_Main

802.11n\_HT20\_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	23.02	13.621	5180	23.24	13.662
5220	22.45	13.512	5220	22.77	13.573
5240	22.91	13.600	5240	21.67	13.359
5260	21.36	13.296	5260	22.85	13.590
5300	22.82	13.583	5300	22.88	13.594
5320	22.43	13.508	5320	23.73	13.752
5500	24.92	13.965	5500	22.88	13.595
5580	23.21	13.657	5580	23.15	13.645
5700	22.29	13.481	5700	23.08	13.633

802.11n\_HT20\_Main

802.11n\_HT20\_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	15.91	12.017	5745	15.10	11.790
5785	12.93	11.116	5785	14.98	11.755
5825	17.22	12.360	5825	14.94	11.744

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802.11n\_HT40\_Main

802.11n\_HT40\_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	44.74	16.507	5190	44.28	16.462
5230	44.54	16.488	5230	44.60	16.493
5270	44.44	16.478	5270	44.72	16.505
5310	36.08	15.573	5310	35.86	15.546
5510	44.97	16.529	5510	45.26	16.557
5550	<b>44.64</b>	16.497	5550	<b>44.41</b>	16.475
5670	44.08	16.442	5670	44.74	16.507

802.11n\_HT40\_Main

802.11n\_HT40\_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	33.86	15.297	5755	30.15	14.792
5795	30.47	14.839	5795	31.35	14.962

802.11ac\_VHT80\_Main

802.11ac\_VHT80\_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	81.71	19.123	5210	86.27	19.358
5290	83.69	19.227	5290	84.01	19.243
5530	84.95	19.292	5530	83.44	19.214
5610	84.06	19.246	5610	83.69	19.227

802.11ac\_VHT80\_Main

802.11ac\_VHT80\_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	61.31	17.875	5775	62.73	17.975

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**99% Bandwidth**
**802.11a\_Main**
**802.11a\_Aux1**

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	16.522	12.181	5180	16.577	12.195
5220	16.521	12.180	5220	16.543	12.186
5240	16.542	12.186	5240	16.565	12.192
5260	16.510	12.177	5260	16.526	12.182
5300	16.562	12.191	5300	16.563	12.191
5320	16.715	12.231	5320	16.499	12.175
5500	16.683	12.223	5500	16.571	12.193
5580	16.515	12.179	5580	16.525	12.181
5700	16.557	12.190	5700	16.574	12.194

**802.11a\_Main**
**802.11a\_Aux1**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	15.79	11.984	5745	15.86	12.004
5785	15.90	12.014	5785	15.83	11.995
5825	15.99	12.038	5825	16.15	12.083

**802.11n\_HT20\_Main**
**802.11n\_HT20\_Aux1**

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	17.717	12.484	5180	17.702	12.480
5220	17.690	12.477	5220	17.758	12.494
5240	17.669	12.472	5240	17.743	12.490
5260	17.701	12.480	5260	17.702	12.480
5300	17.737	12.489	5300	17.709	12.482
5320	17.692	12.478	5320	17.714	12.483
5500	17.687	12.477	5500	17.713	12.483
5580	17.709	12.482	5580	17.651	12.468
5700	17.721	12.485	5700	17.771	12.497

**802.11n\_HT20\_Main**
**802.11n\_HT20\_Aux1**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.22	12.360	5745	17.06	12.321
5785	17.35	12.393	5785	17.00	12.305
5825	17.06	12.320	5825	17.10	12.330

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## 802.11n\_HT40\_Main

## 802.11n\_HT40\_Aux1

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5190	35.980	15.561	5190	36.031	15.567
5230	36.045	15.568	5230	35.997	15.563
5270	36.076	15.572	5270	36.015	15.565
5310	36.075	15.572	5310	36.046	15.569
5510	36.004	15.564	5510	36.074	15.572
5550	36.082	15.573	5550	36.045	15.568
5670	36.058	15.570	5670	35.998	15.563

## 802.11n\_HT40\_Main

## 802.11n\_HT40\_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.20	15.465	5755	35.76	15.534
5795	35.58	15.512	5795	35.83	15.543

## 802.11ac\_VHT80\_Main

## 802.11ac\_VHT80\_Aux1

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5210	74.968	18.749	5210	74.946	18.747
5290	75.013	18.751	5290	74.979	18.749
5530	74.887	18.744	5530	74.911	18.745

## 802.11ac\_VHT80\_Main

## 802.11ac\_VHT80\_Aux1

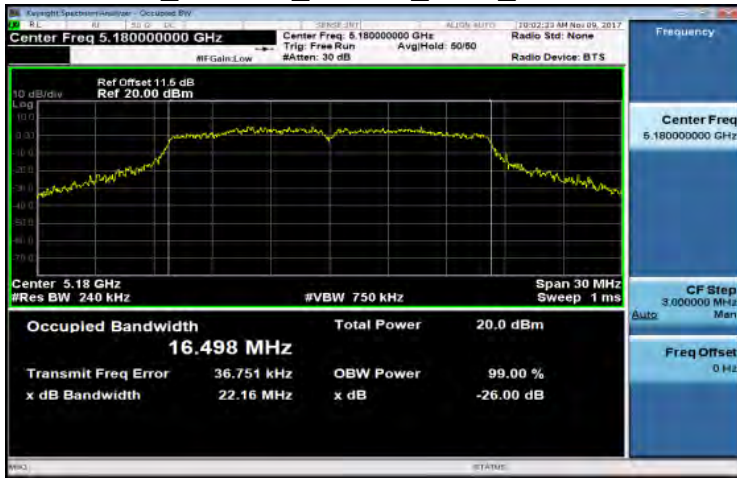
Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	73.85	18.684	5775	72.63	18.611

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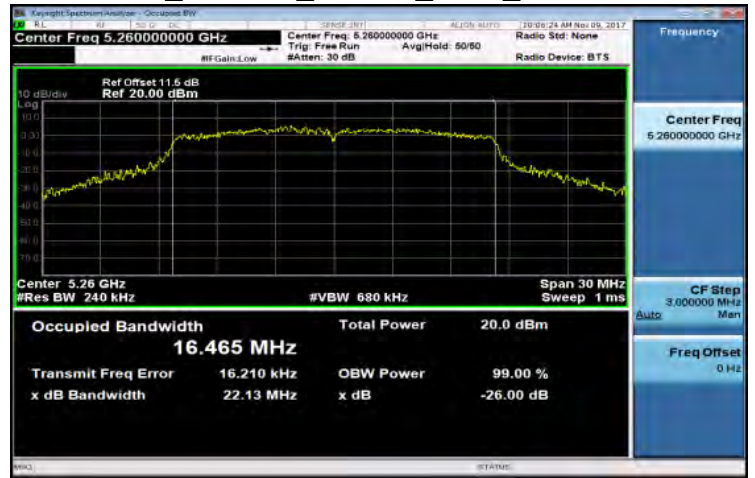
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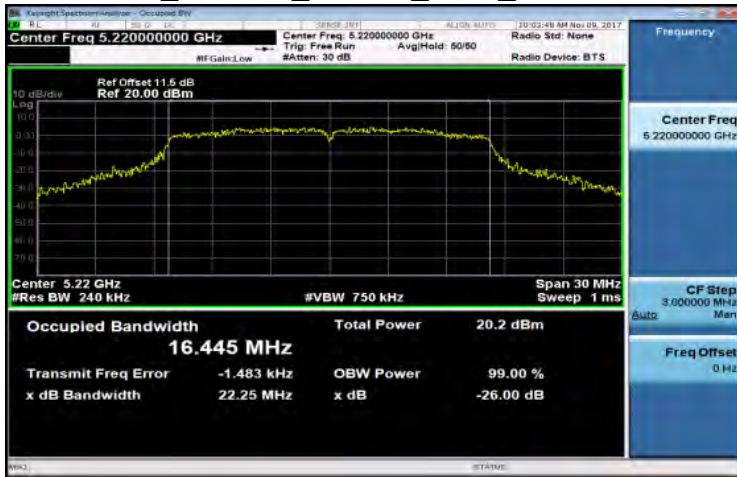
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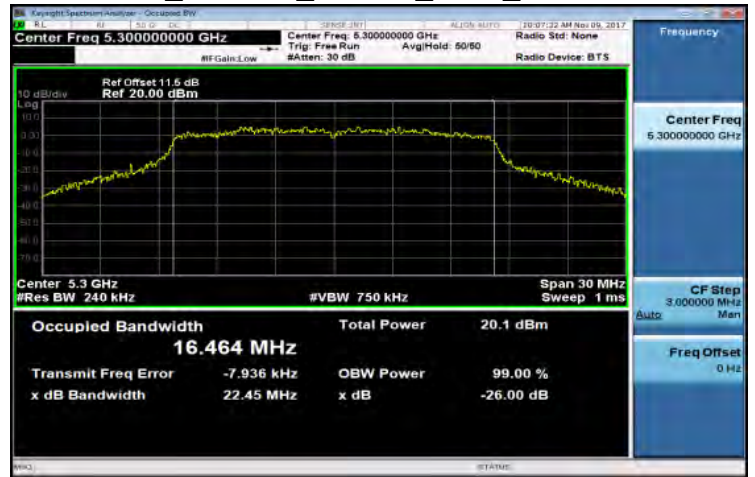
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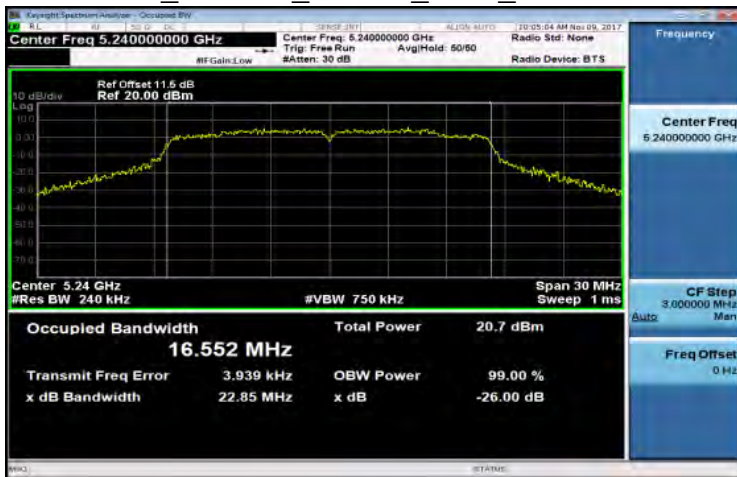
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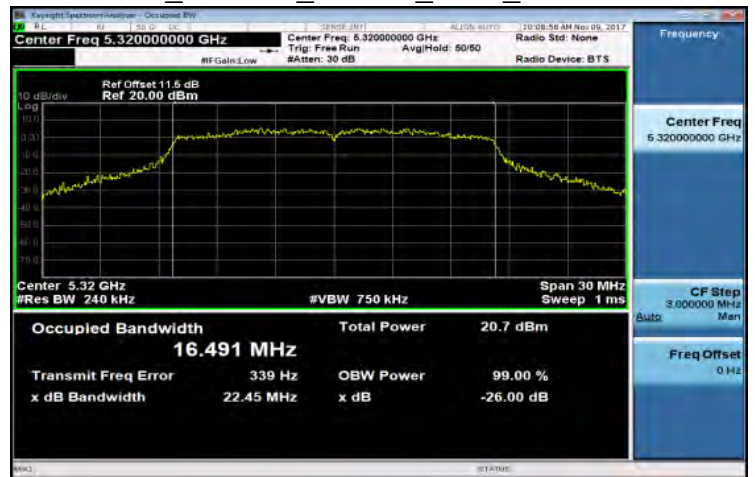
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FCC\_802.11a\_20MHz\_Main\_5240MHz



FCC\_802.11a\_20MHz\_Main\_5320MHz

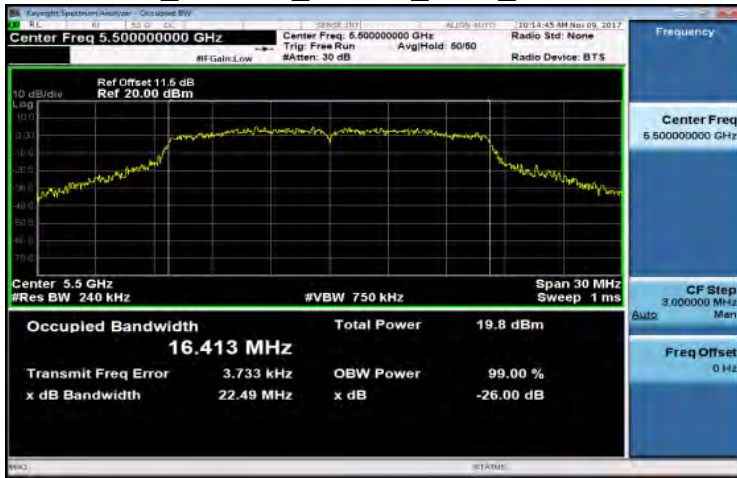


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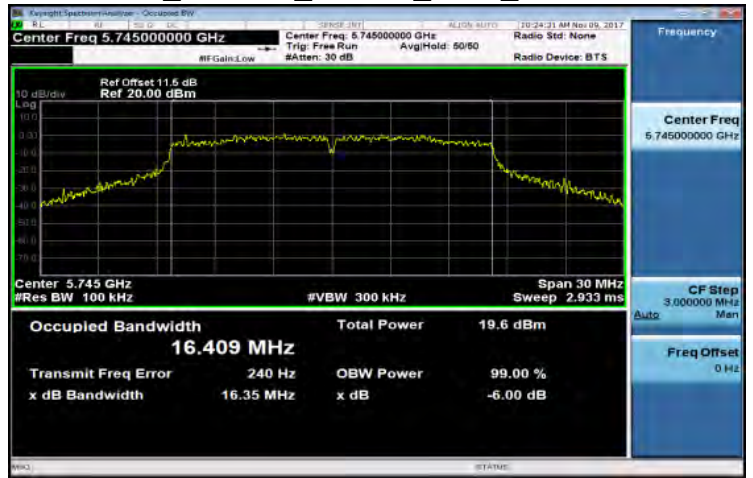
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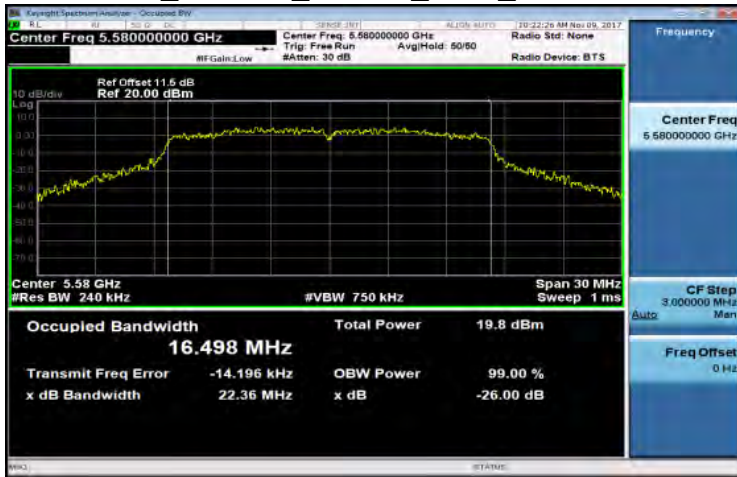
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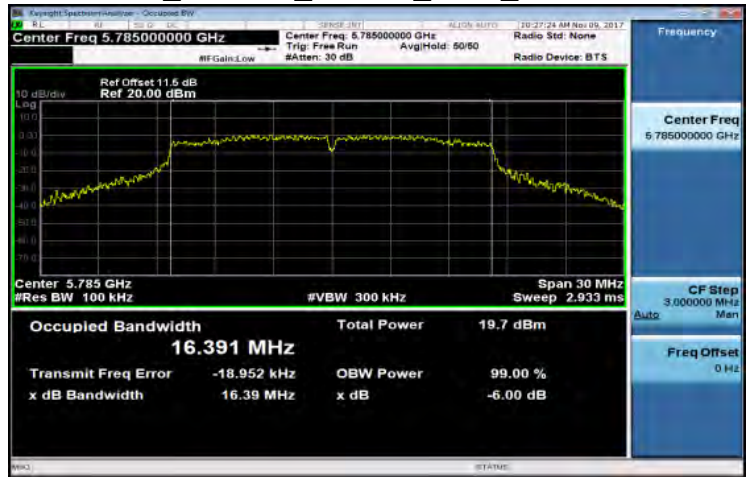
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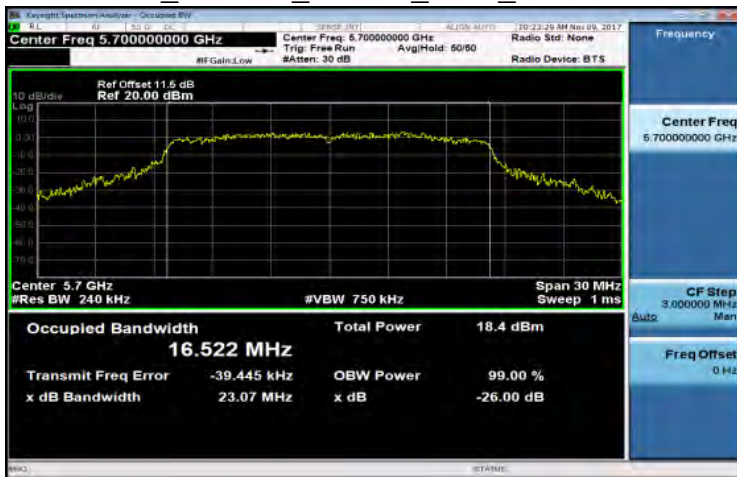
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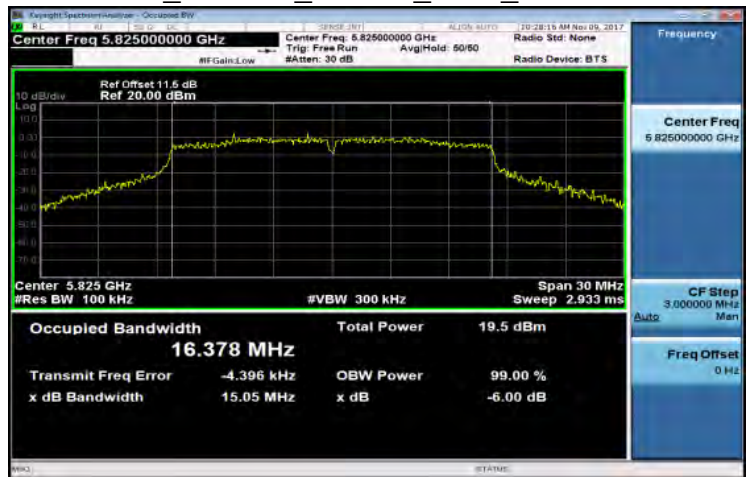
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FCC\_802.11a\_20MHz\_Main\_5700MHz



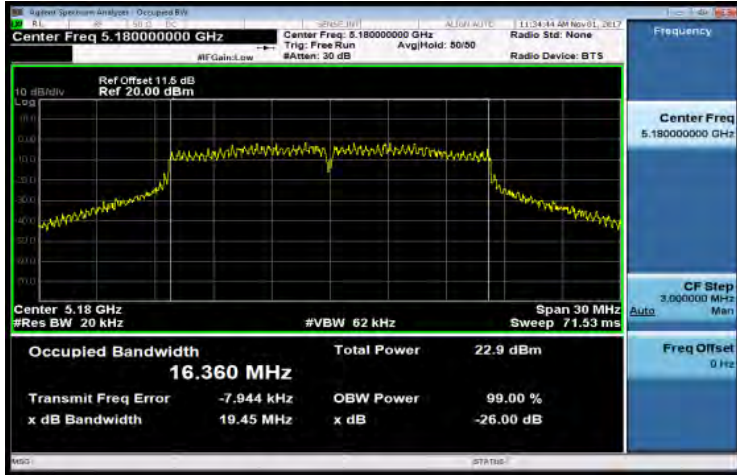
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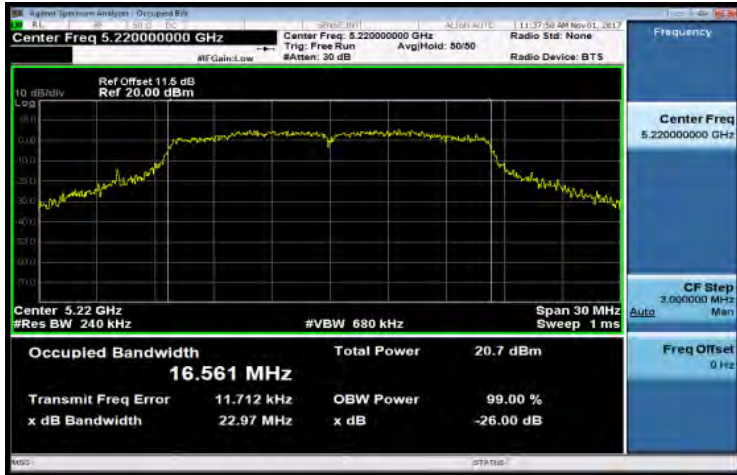
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FCC\_802.11a\_20MHz\_AUX1\_5260MHz



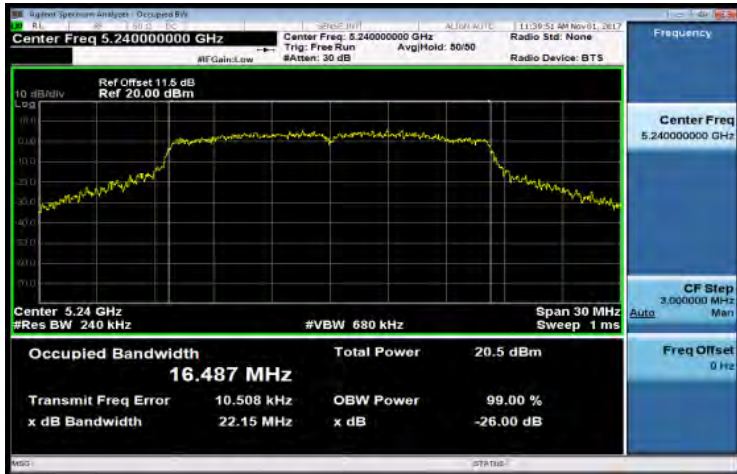
FCC\_802.11a\_20MHz\_AUX1\_5220MHz



FCC\_802.11a\_20MHz\_AUX1\_5300MHz



FCC\_802.11a\_20MHz\_AUX1\_5240MHz



FCC\_802.11a\_20MHz\_AUX1\_5320MHz

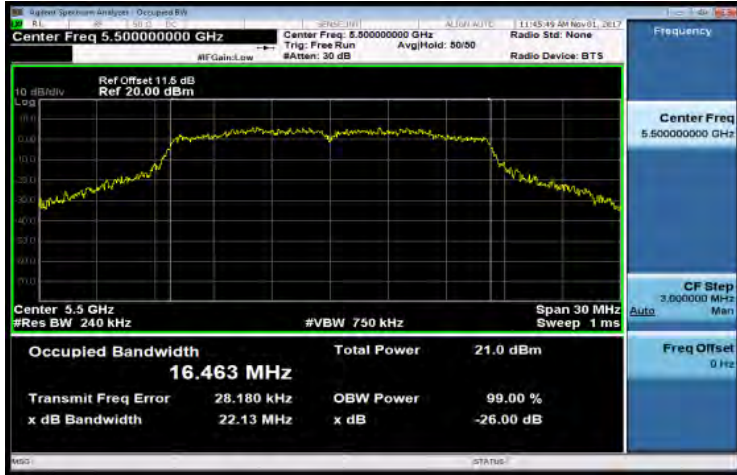


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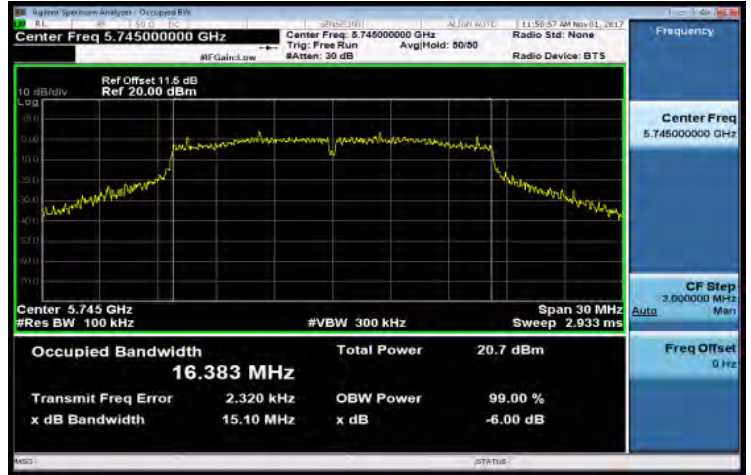
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FCC\_802.11a\_20MHz\_AUX1\_5500MHz



FCC\_802.11a\_20MHz\_AUX1\_5745MHz



FCC\_802.11a\_20MHz\_AUX1\_5580MHz



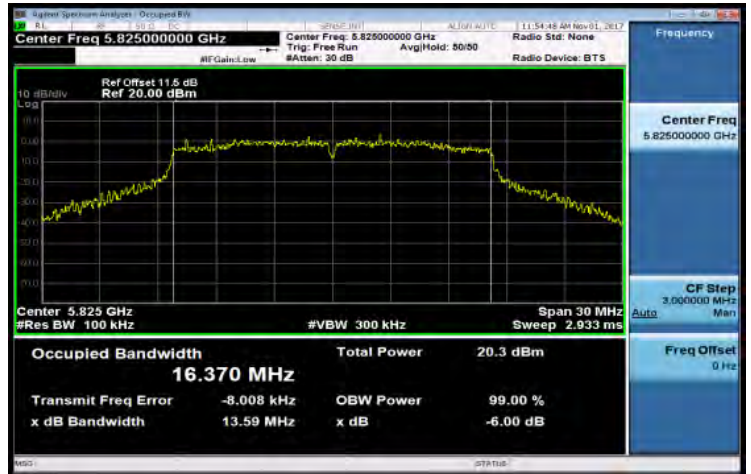
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FCC\_802.11a\_20MHz\_AUX1\_5700MHz



FCC\_802.11a\_20MHz\_AUX1\_5825MHz



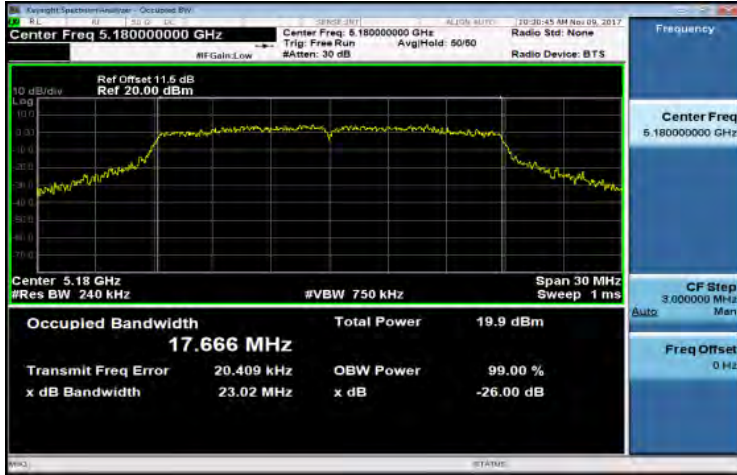
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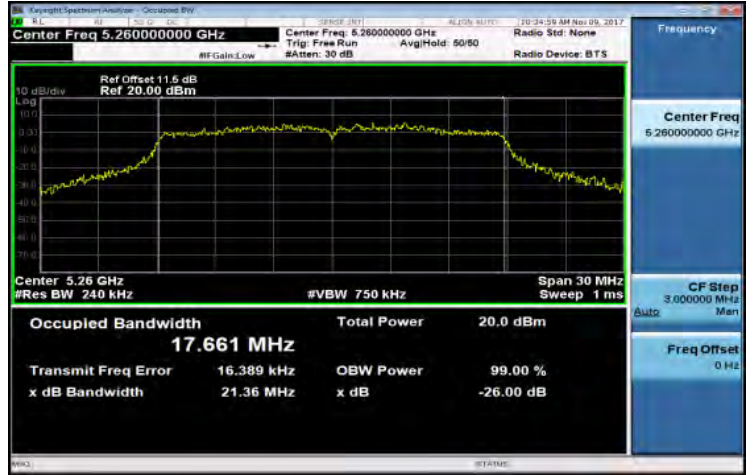
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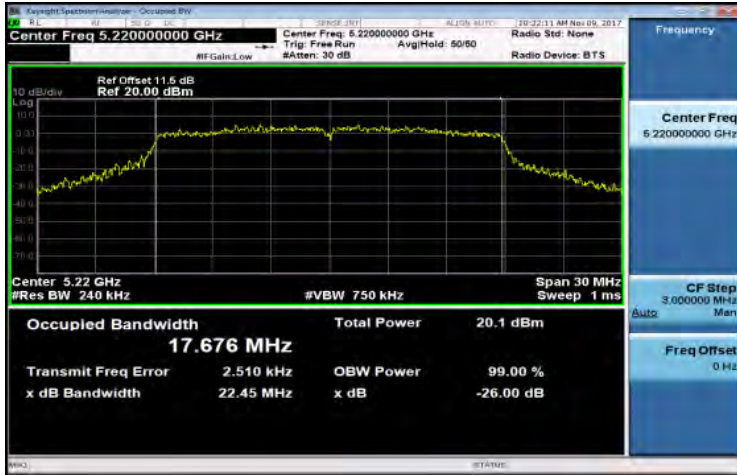
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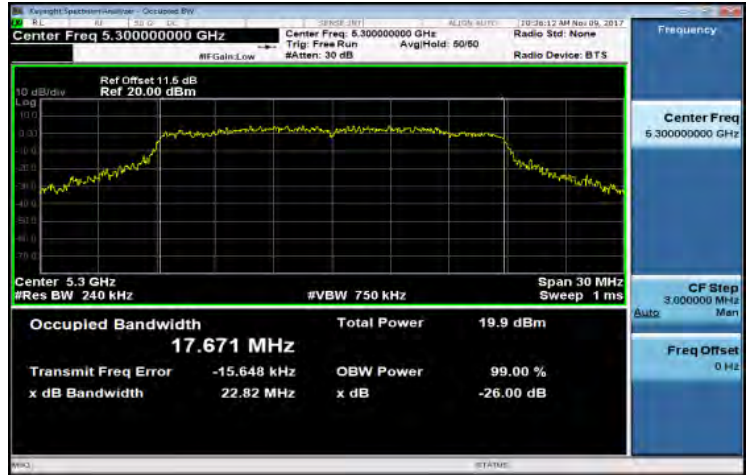
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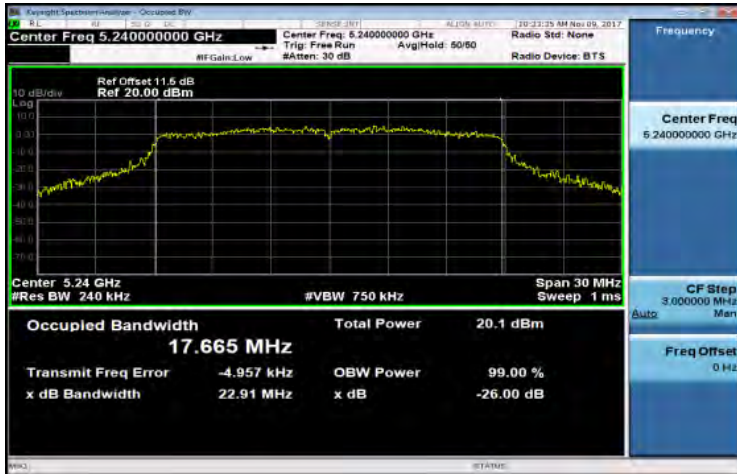
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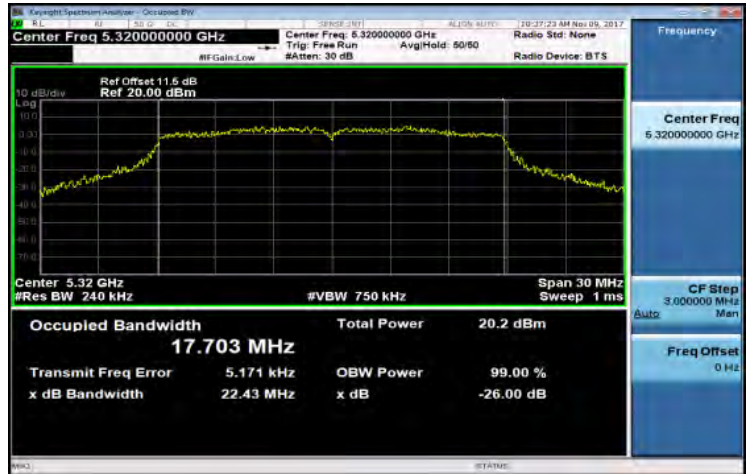
FCC\_802.11n\_20MHz\_Main\_5300MHz



FCC\_802.11n\_20MHz\_Main\_5240MHz



FCC\_802.11n\_20MHz\_Main\_5320MHz

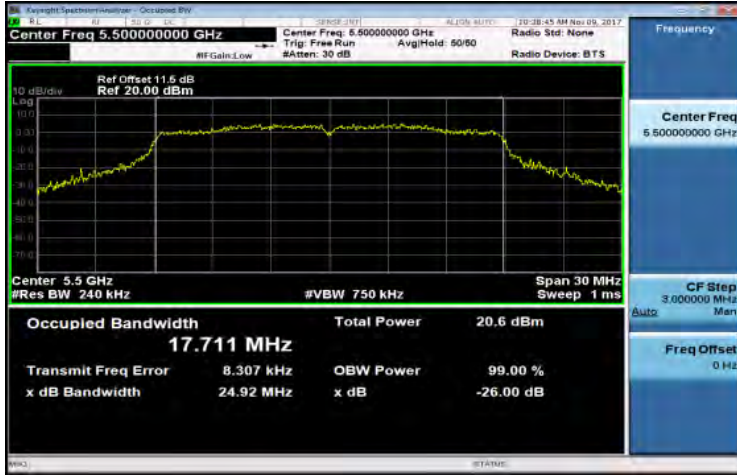


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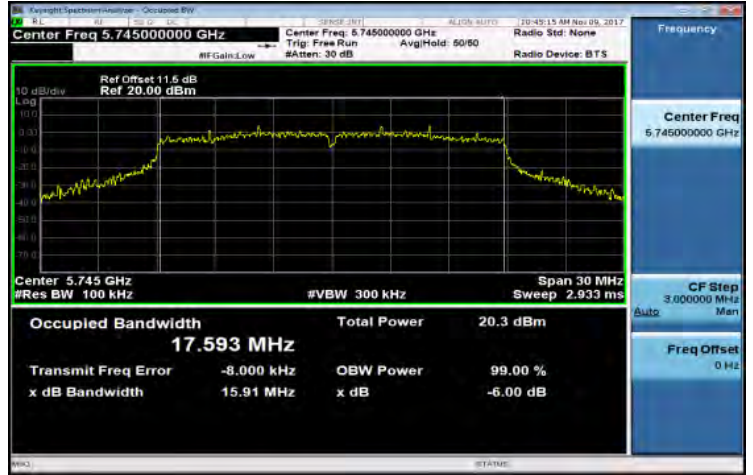
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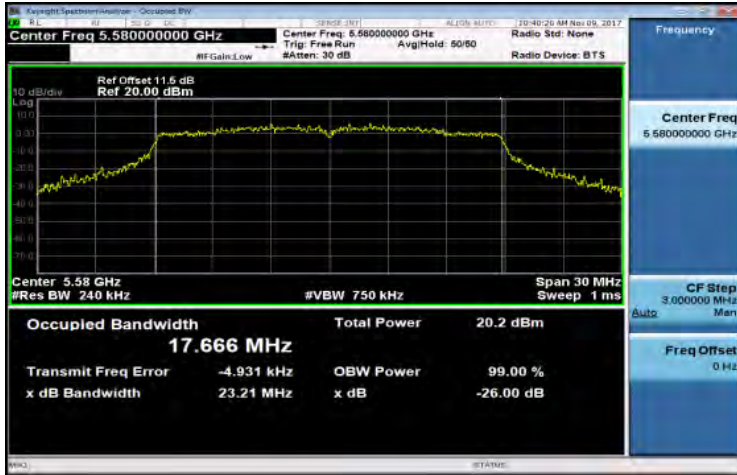
FCC\_802.11n\_20MHz\_Main\_5500MHz



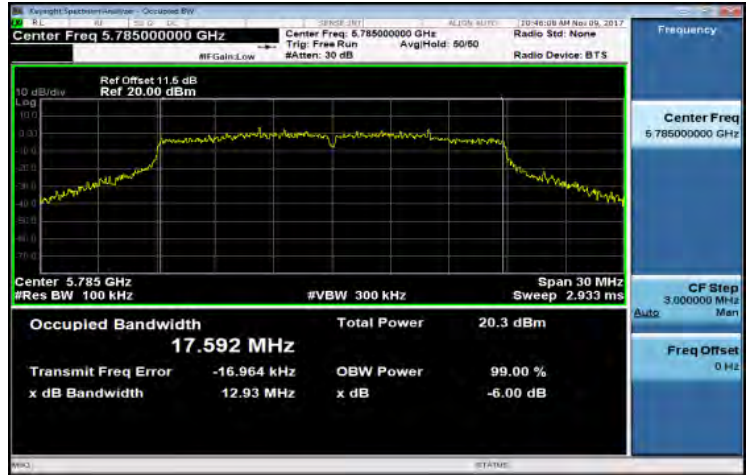
FCC\_802.11n\_20MHz\_Main\_5745MHz



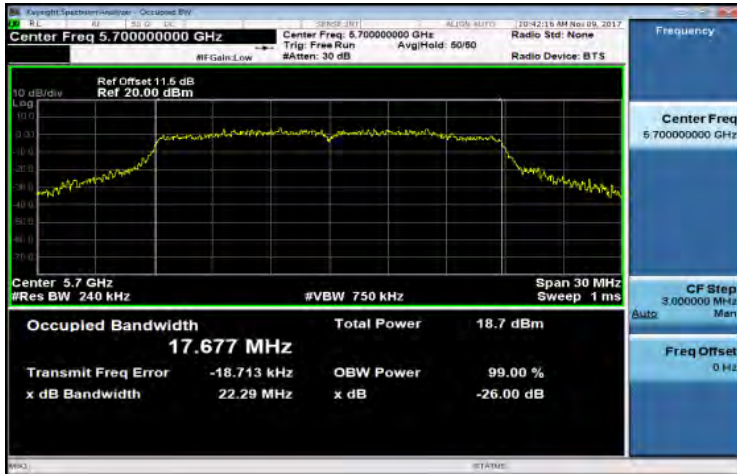
FCC\_802.11n\_20MHz\_Main\_5580MHz



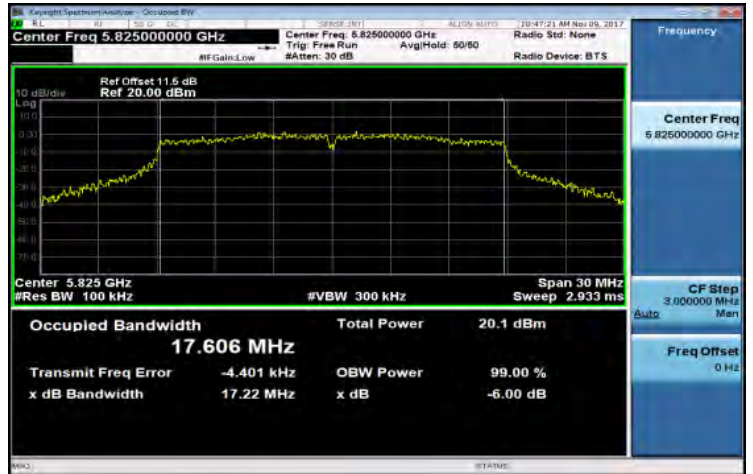
FCC\_802.11n\_20MHz\_Main\_5785MHz



FCC\_802.11n\_20MHz\_Main\_5700MHz



FCC\_802.11n\_20MHz\_Main\_5825MHz



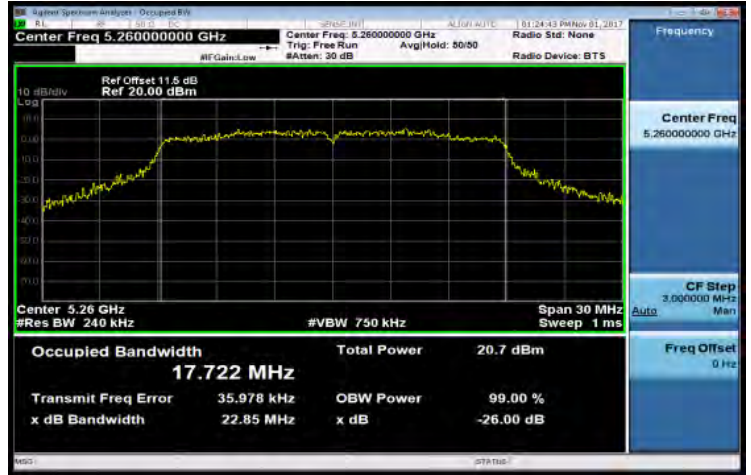
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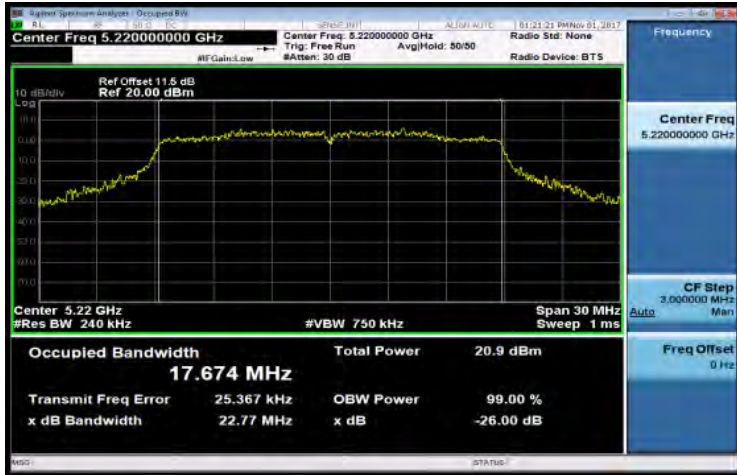
FCC\_802.11n\_20MHz\_AUX1\_5180MHz



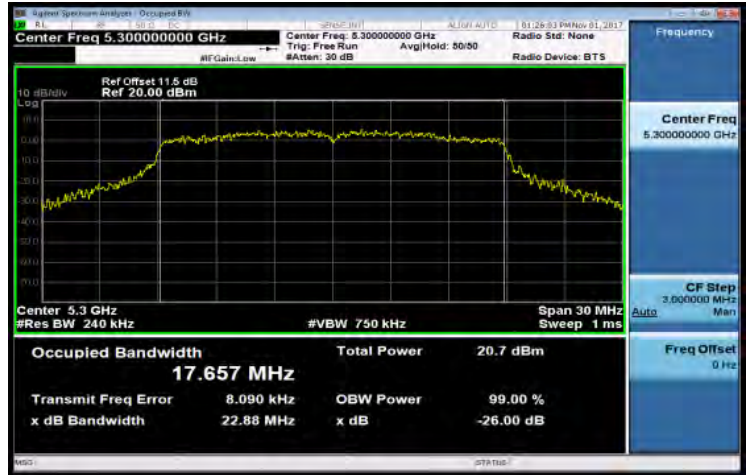
FCC\_802.11n\_20MHz\_AUX1\_5260MHz



FCC\_802.11n\_20MHz\_AUX1\_5220MHz



FCC\_802.11n\_20MHz\_AUX1\_5300MHz



FCC\_802.11n\_20MHz\_AUX1\_5240MHz



FCC\_802.11n\_20MHz\_AUX1\_5320MHz



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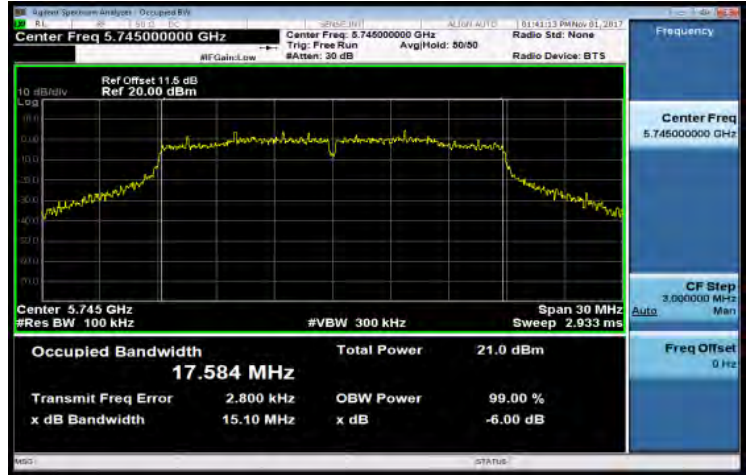
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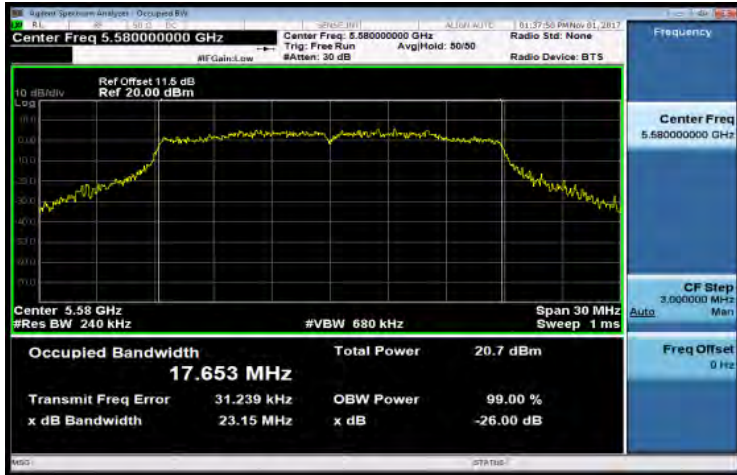
FCC\_802.11n\_20MHz\_AUX1\_5500MHz



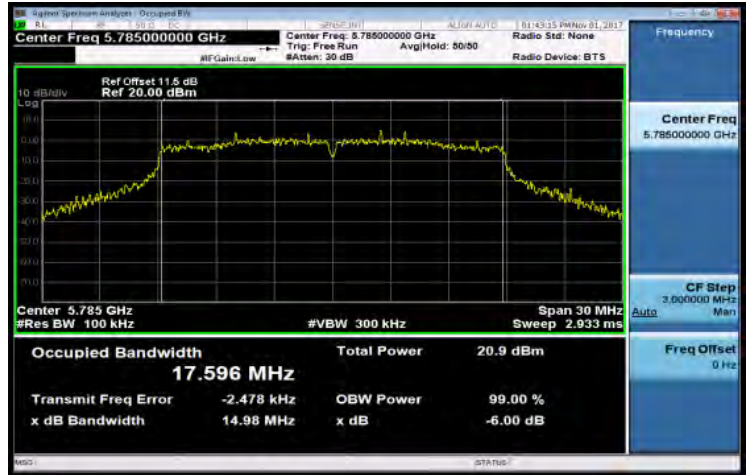
FCC\_802.11n\_20MHz\_AUX1\_5745MHz



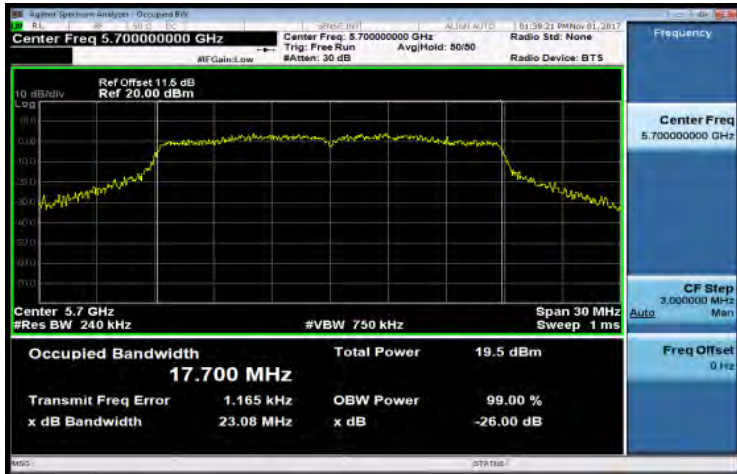
FCC\_802.11n\_20MHz\_AUX1\_5580MHz



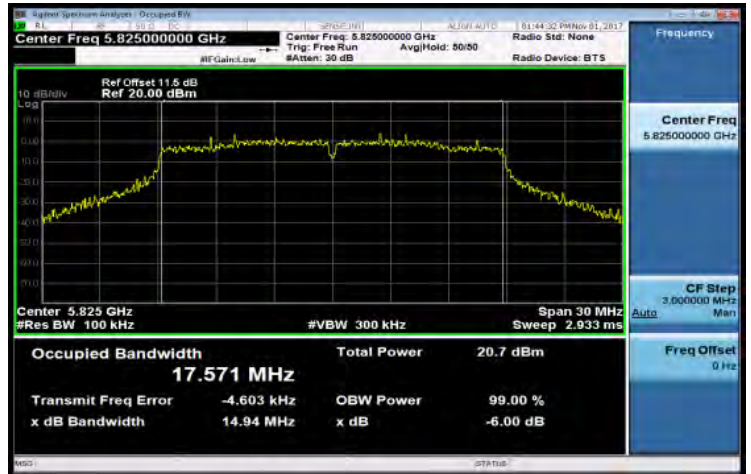
FCC\_802.11n\_20MHz\_AUX1\_5785MHz



FCC\_802.11n\_20MHz\_AUX1\_5700MHz



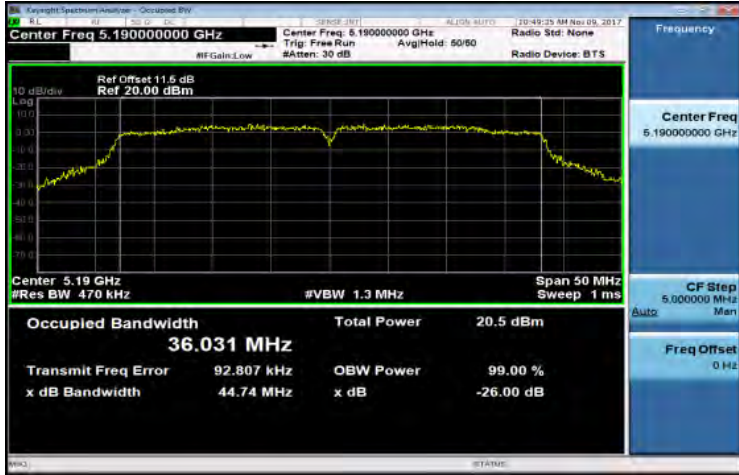
FCC\_802.11n\_20MHz\_AUX1\_5825MHz



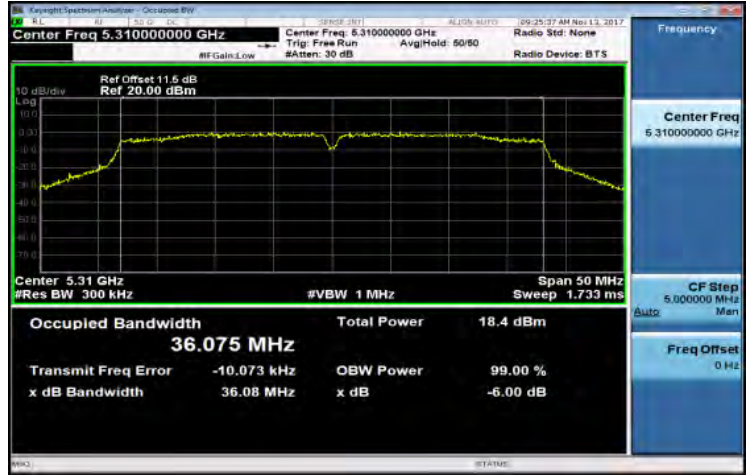
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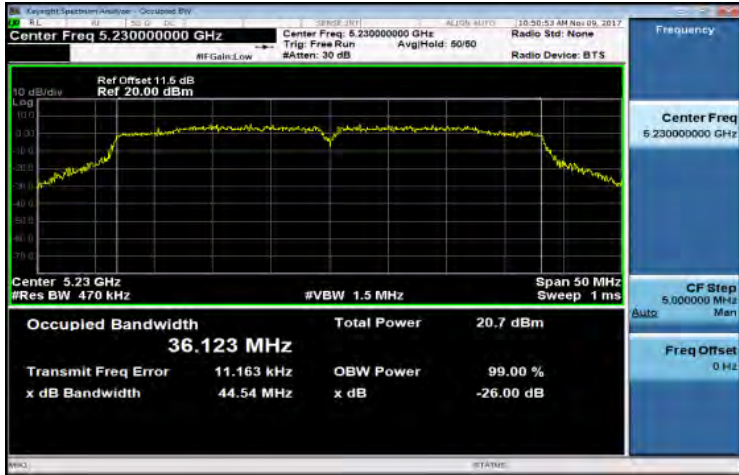
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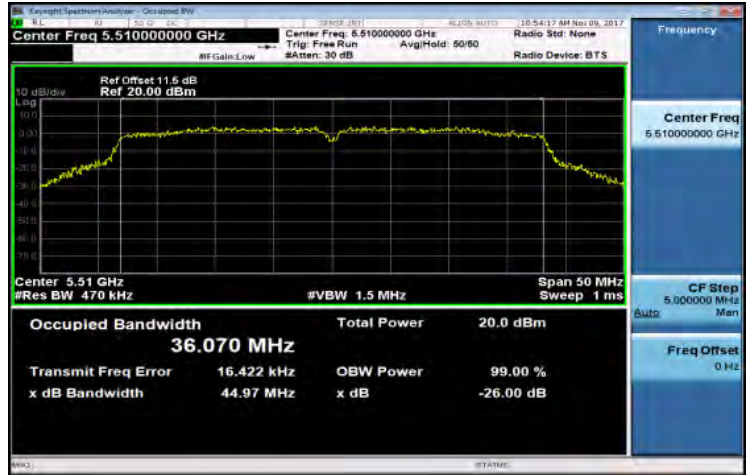
FCC\_802.11n\_40MHz\_Main\_5310MHz



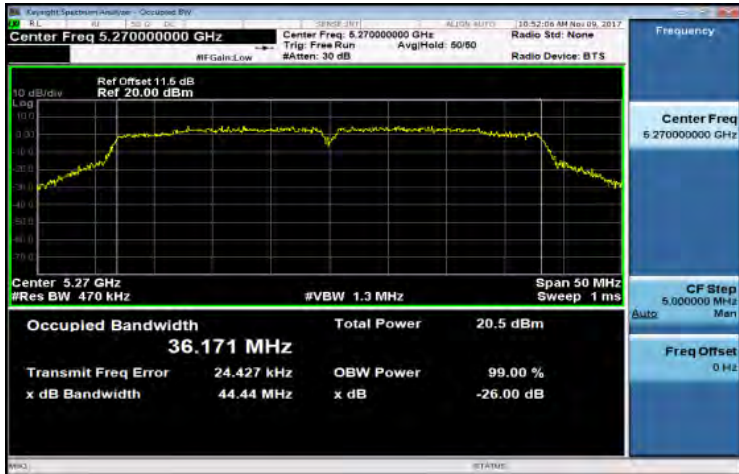
FCC\_802.11n\_40MHz\_Main\_5230MHz



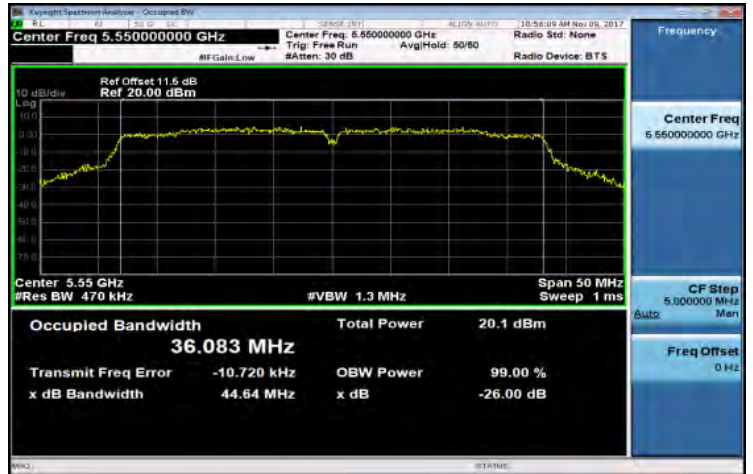
FCC\_802.11n\_40MHz\_Main\_5510MHz



FCC\_802.11n\_40MHz\_Main\_5270MHz



FCC\_802.11n\_40MHz\_Main\_5550MHz

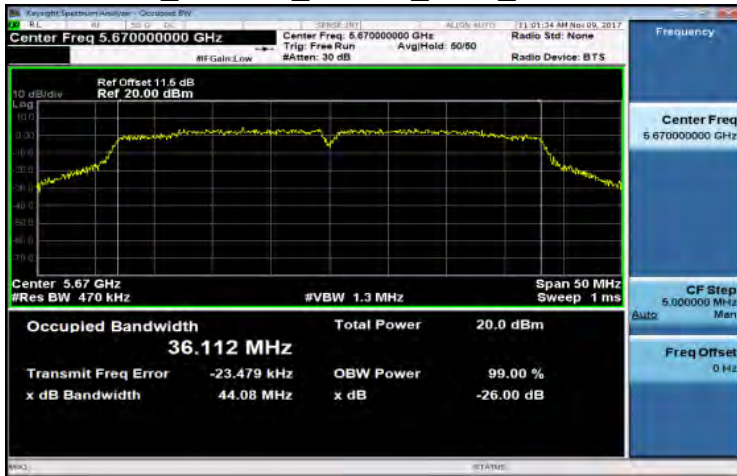


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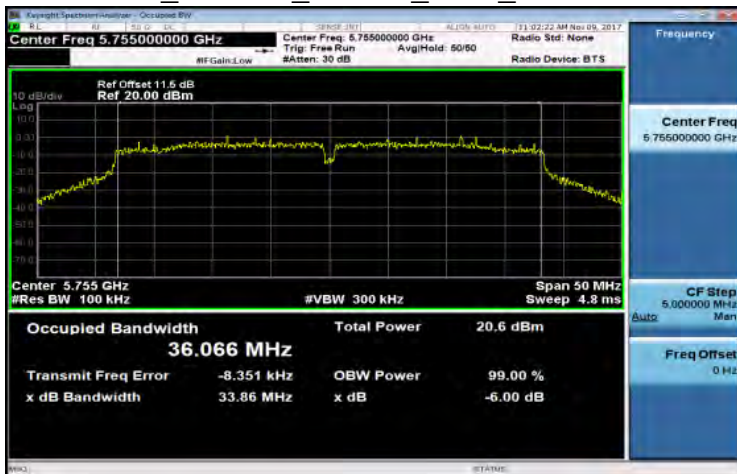
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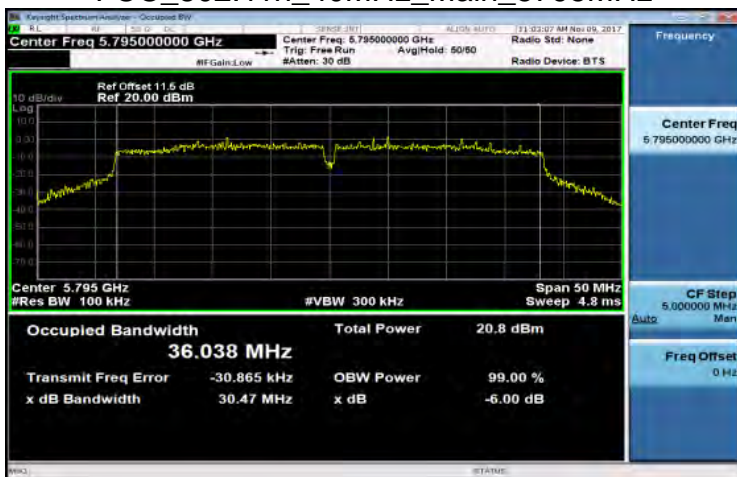
FCC\_802.11n\_40MHz\_Main\_5670MHz



FCC\_802.11n\_40MHz\_Main\_5755MHz



FCC\_802.11n\_40MHz\_Main\_5795MHz



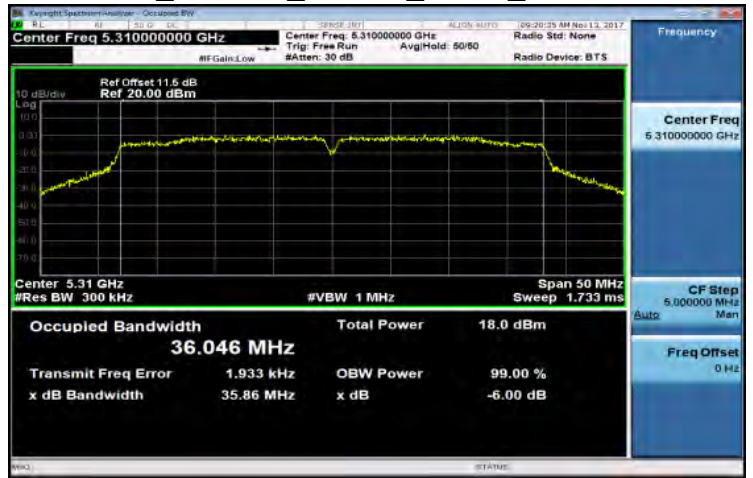
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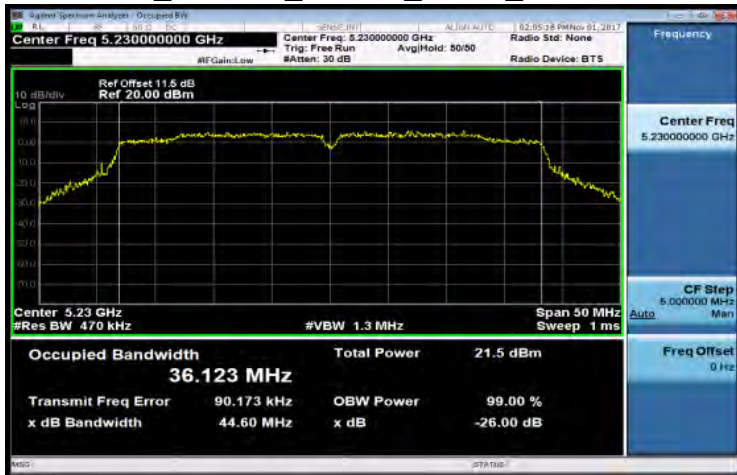
FCC\_802.11n\_40MHz\_AUX1\_5190MHz



FCC\_802.11n\_40MHz\_AUX1\_5310MHz



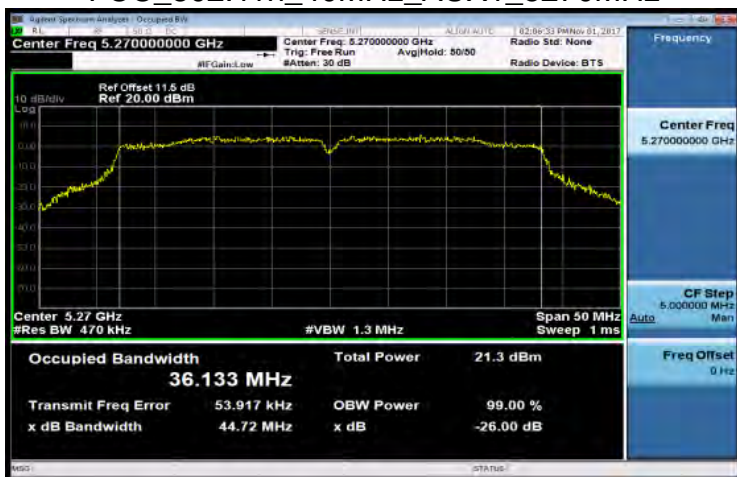
FCC\_802.11n\_40MHz\_AUX1\_5230MHz



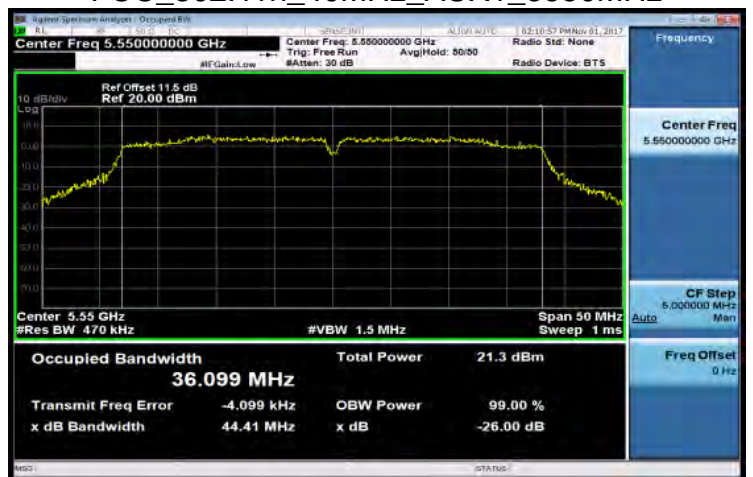
FCC\_802.11n\_40MHz\_AUX1\_5510MHz



FCC\_802.11n\_40MHz\_AUX1\_5270MHz



FCC\_802.11n\_40MHz\_AUX1\_5550MHz



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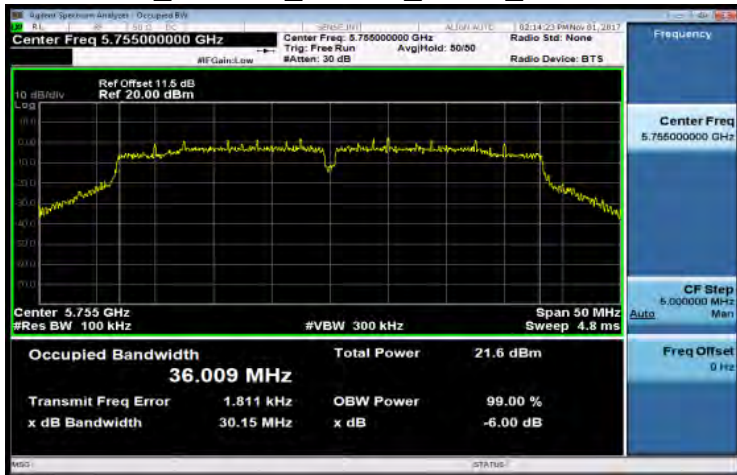
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FCC\_802.11n\_40MHz\_AUX1\_5670MHz



FCC\_802.11n\_40MHz\_AUX1\_5755MHz



FCC\_802.11n\_40MHz\_AUX1\_5795MHz



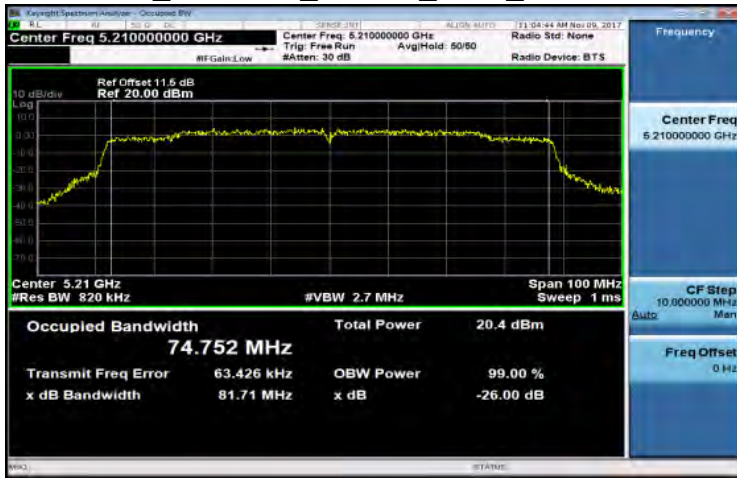
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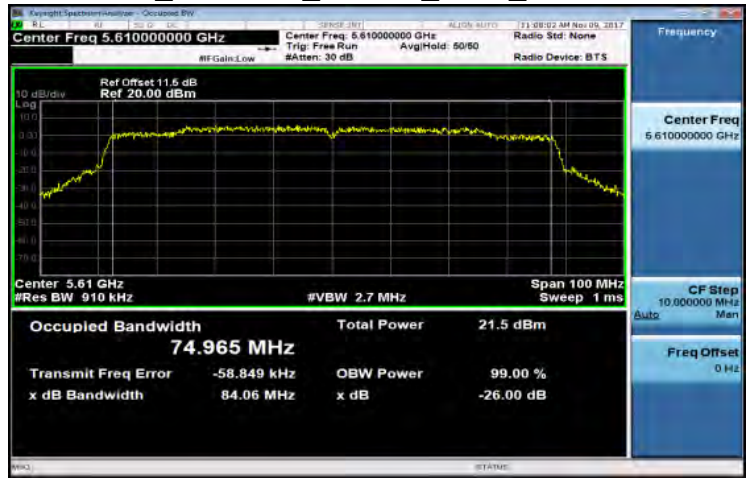
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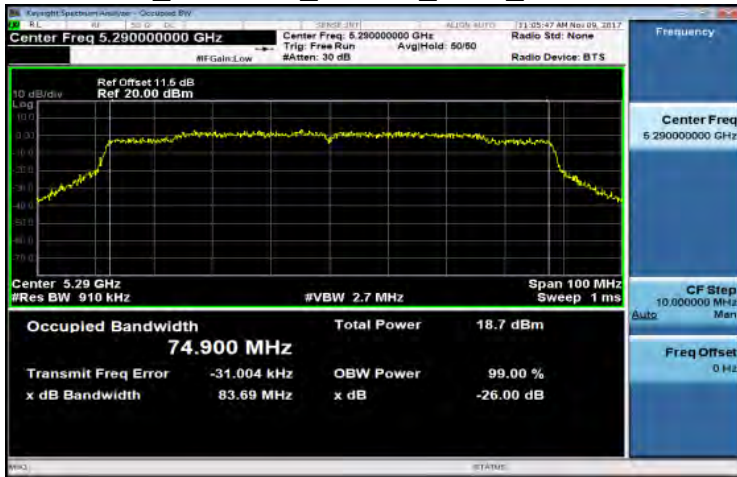
FCC\_802.11ac\_80MHz\_Main\_5210MHz



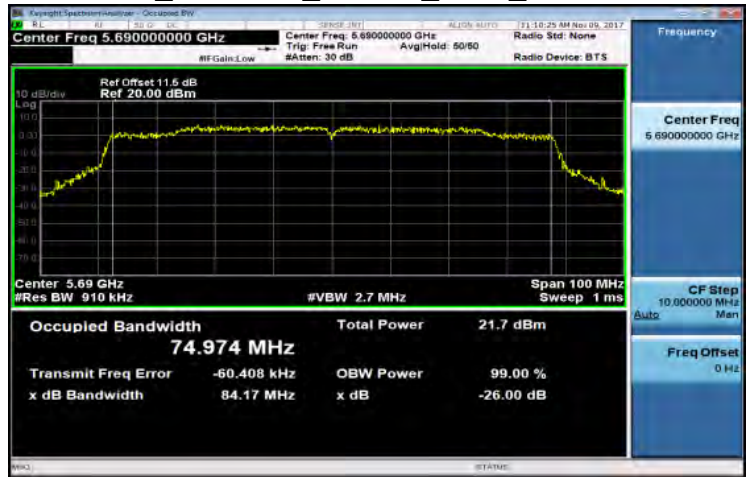
FCC\_802.11ac\_80MHz\_Main\_5610MHz



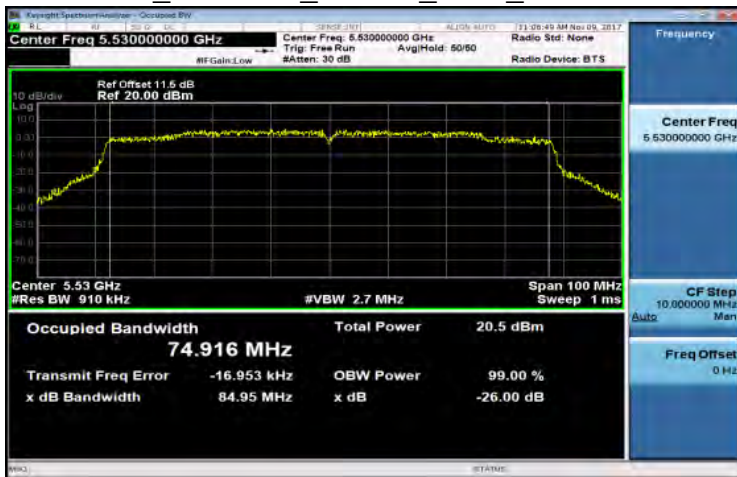
FCC\_802.11ac\_80MHz\_Main\_5290MHz



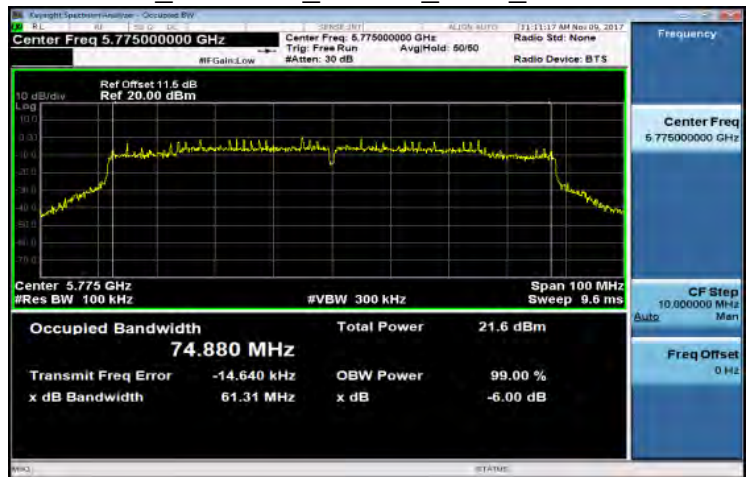
FCC\_802.11ac\_80MHz\_Main\_5690MHz



FCC\_802.11ac\_80MHz\_Main\_5530MHz



FCC\_802.11ac\_80MHz\_Main\_5775MHz



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FCC\_802.11ac\_80MHz\_AUX1\_5210MHz



FCC\_802.11ac\_80MHz\_AUX1\_5610MHz



FCC\_802.11ac\_80MHz\_AUX1\_5290MHz



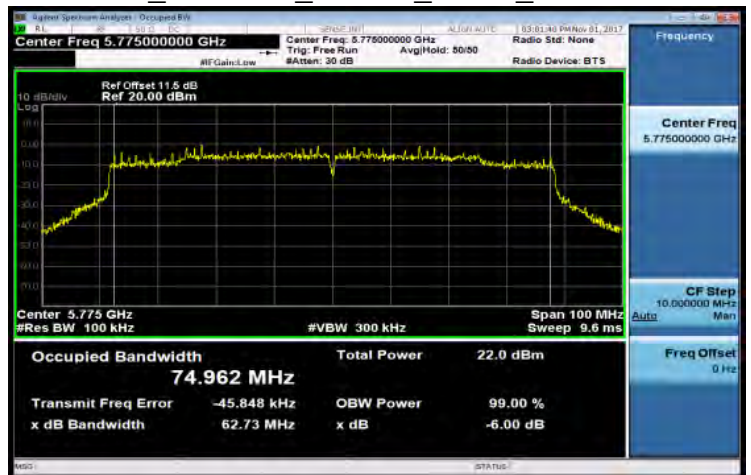
FCC\_802.11ac\_80MHz\_AUX1\_5690MHz



FCC\_802.11ac\_80MHz\_AUX1\_5530MHz



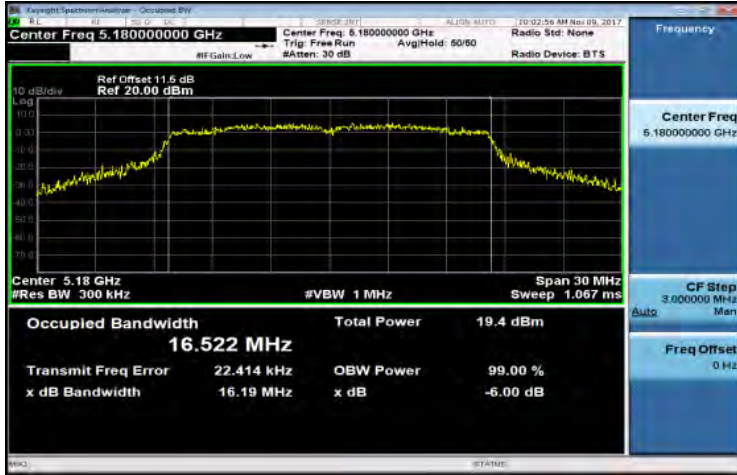
FCC\_802.11ac\_80MHz\_AUX1\_5775MHz



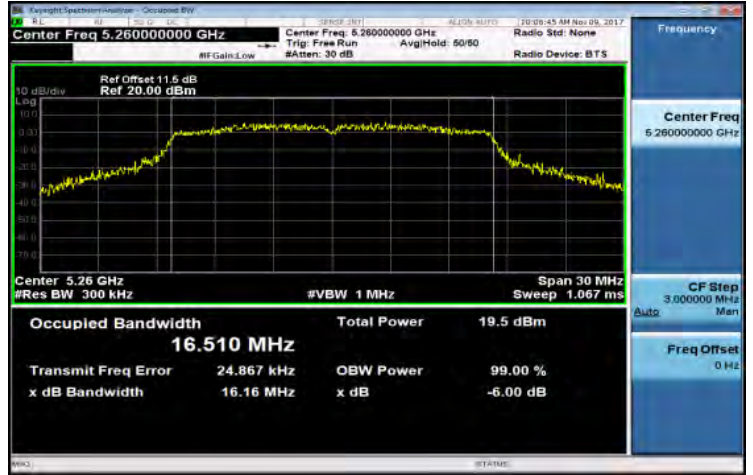
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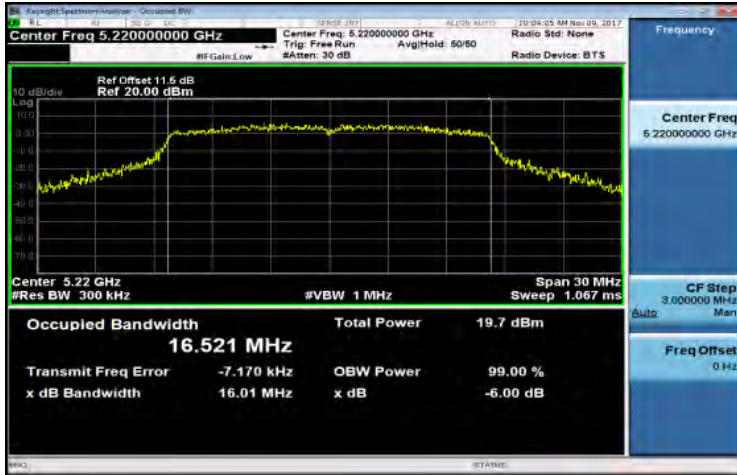
For 99%, IC\_802.11a\_20MHz\_Main\_5180MHz



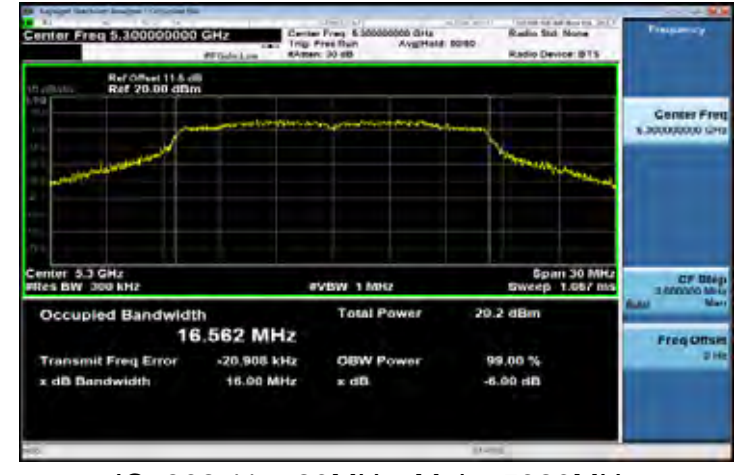
IC\_802.11a\_20MHz\_Main\_5260MHz



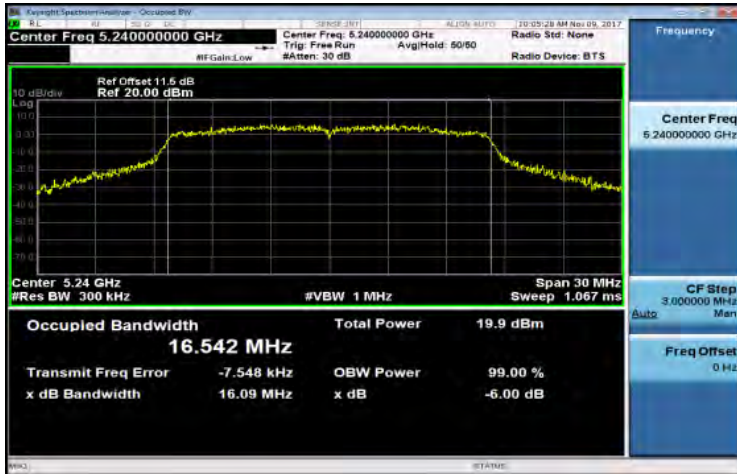
IC\_802.11a\_20MHz\_Main\_5220MHz



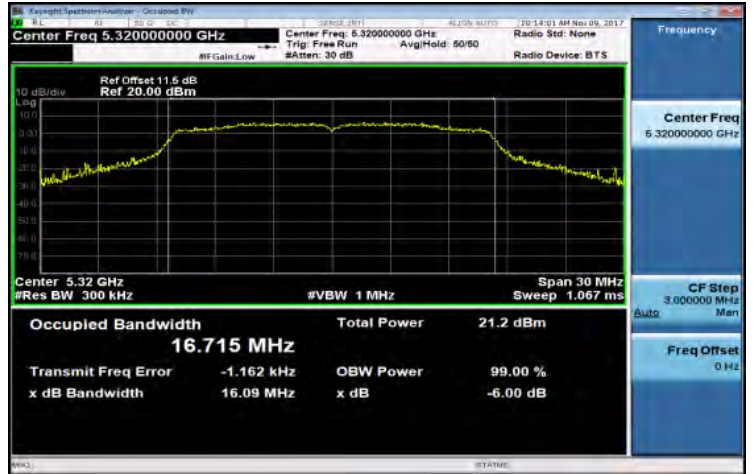
IC\_802.11a\_20MHz\_Main\_5300MHz



IC\_802.11a\_20MHz\_Main\_5240MHz



IC\_802.11a\_20MHz\_Main\_5320MHz

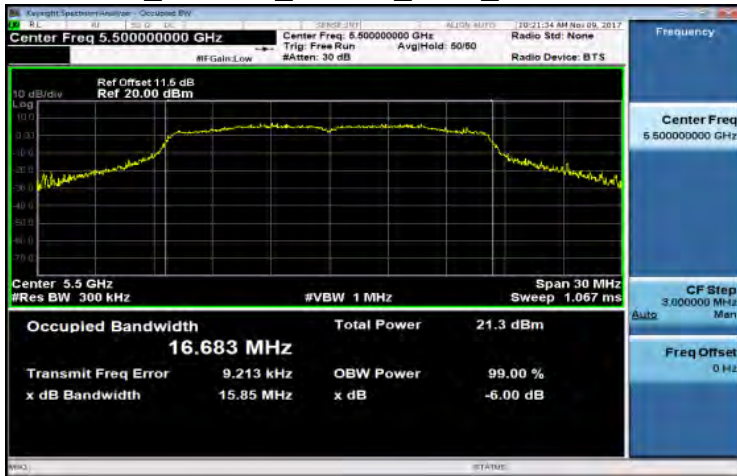


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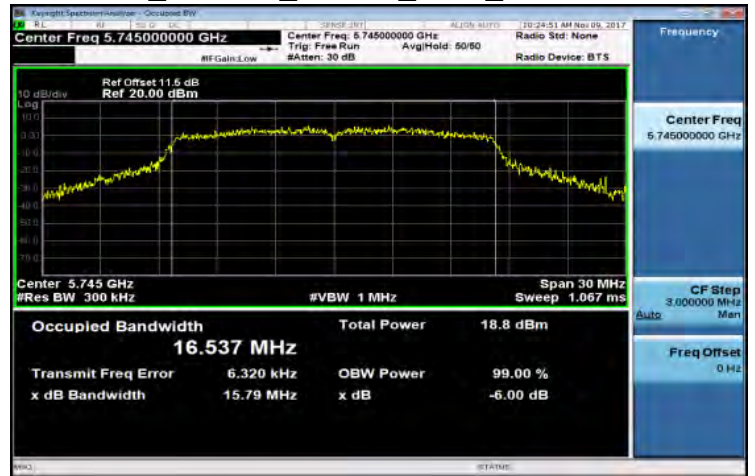
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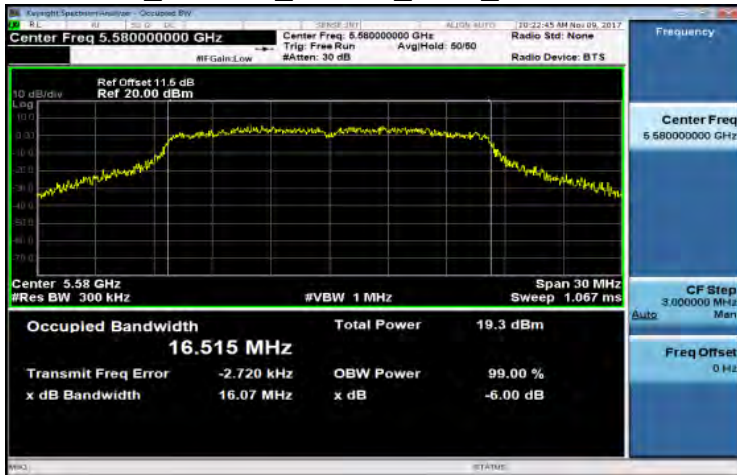
IC\_802.11a\_20MHz\_Main\_5500MHz



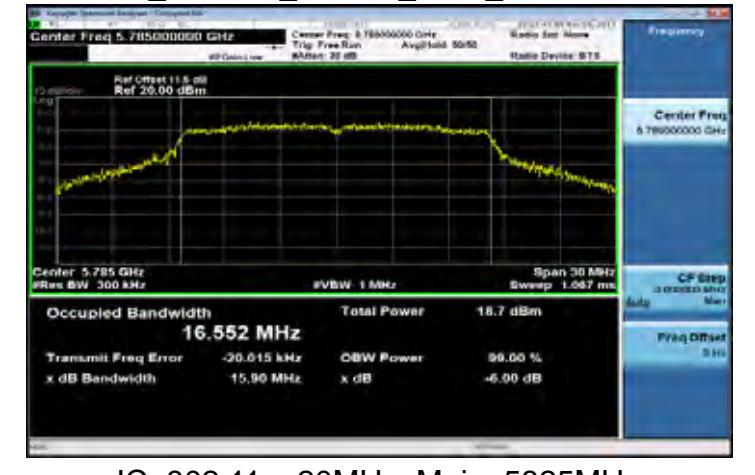
IC\_802.11a\_20MHz\_Main\_5745MHz



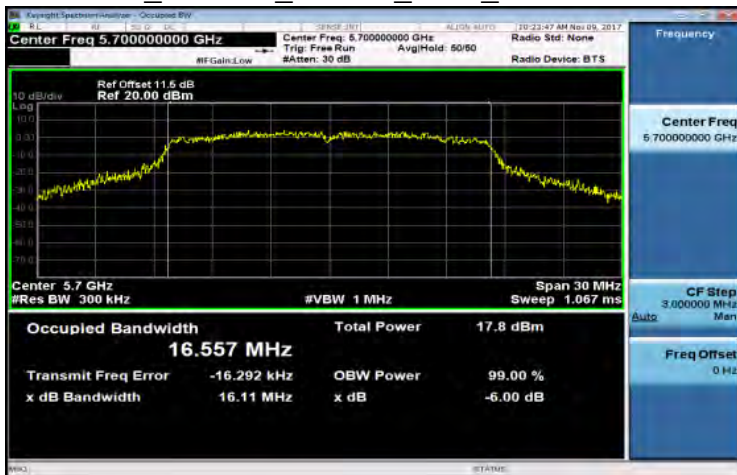
IC\_802.11a\_20MHz\_Main\_5580MHz



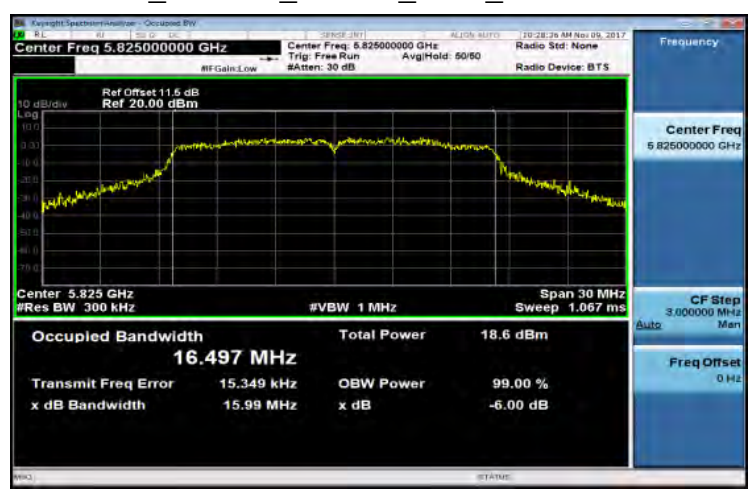
IC\_802.11a\_20MHz\_Main\_5785MHz



IC\_802.11a\_20MHz\_Main\_5700MHz



IC\_802.11a\_20MHz\_Main\_5825MHz

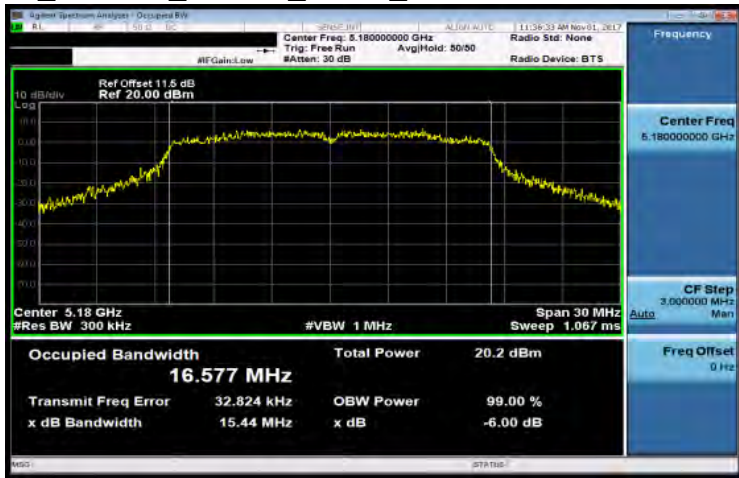


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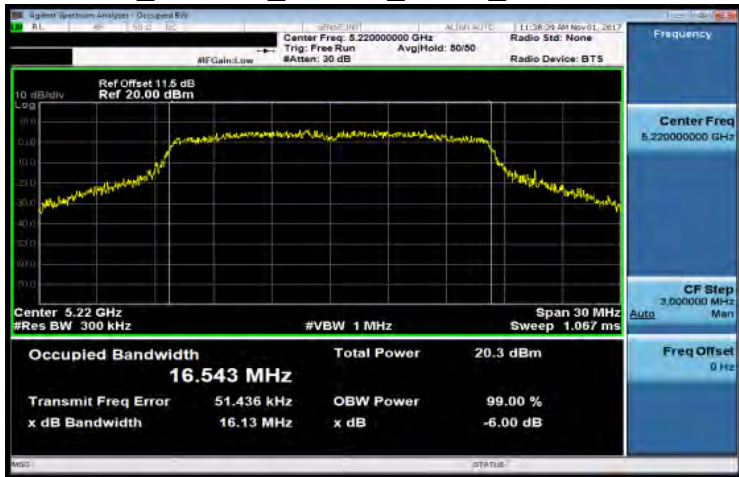
IC\_802.11a\_20MHz\_AUX1\_5180MHz



IC\_802.11a\_20MHz\_AUX1\_5260MHz



IC\_802.11a\_20MHz\_AUX1\_5220MHz



IC\_802.11a\_20MHz\_AUX1\_5300MHz



IC\_802.11a\_20MHz\_AUX1\_5240MHz



IC\_802.11a\_20MHz\_AUX1\_5320MHz

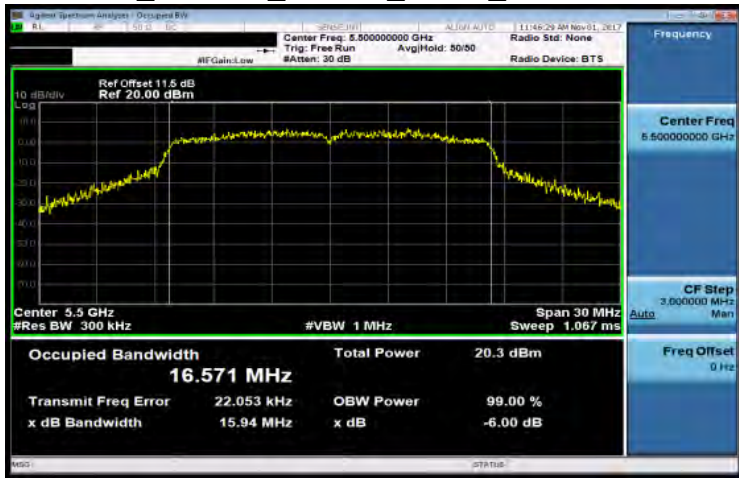


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IC\_802.11a\_20MHz\_AUX1\_5500MHz



IC\_802.11a\_20MHz\_AUX1\_5745MHz



IC\_802.11a\_20MHz\_AUX1\_5580MHz



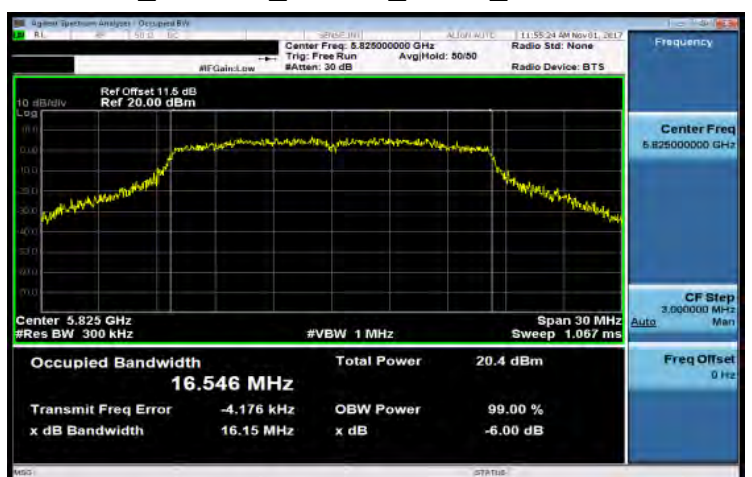
IC\_802.11a\_20MHz\_AUX1\_5785MHz



IC\_802.11a\_20MHz\_AUX1\_5700MHz



IC\_802.11a\_20MHz\_AUX1\_5825MHz

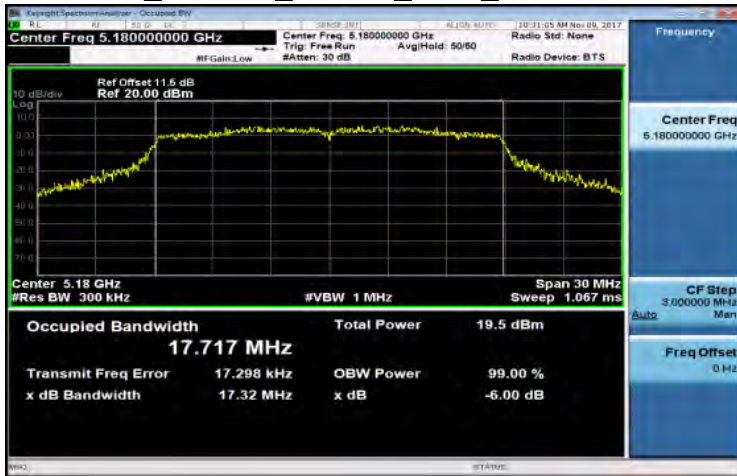


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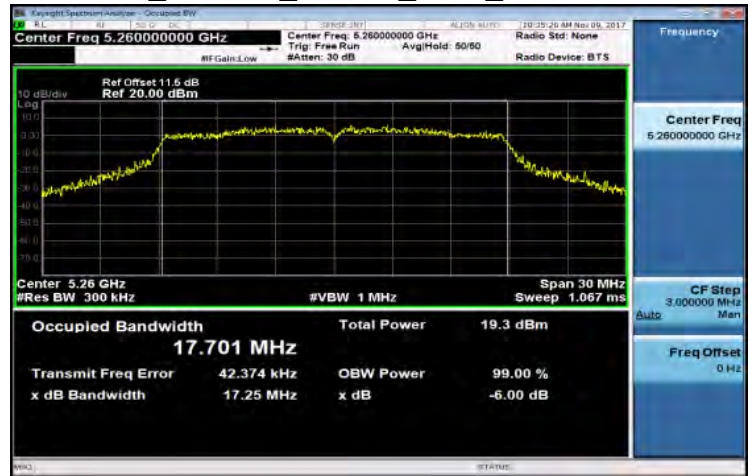
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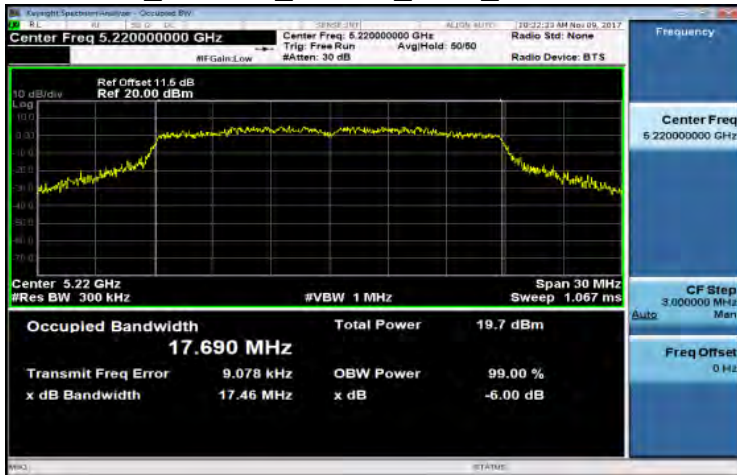
IC\_802.11n\_20MHz\_Main\_5180MHz



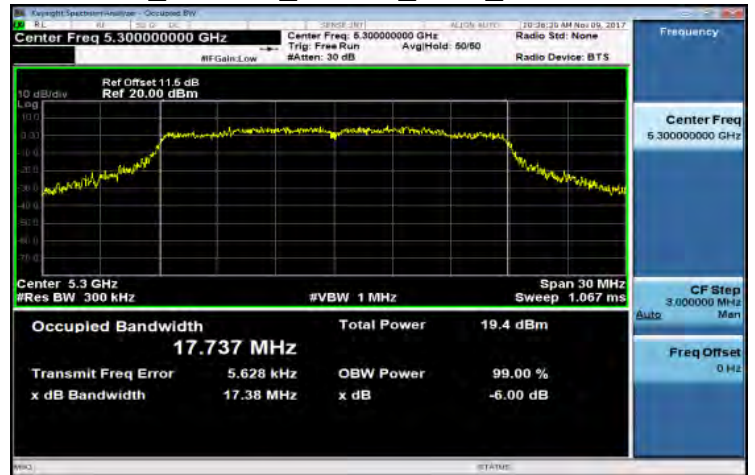
IC\_802.11n\_20MHz\_Main\_5260MHz



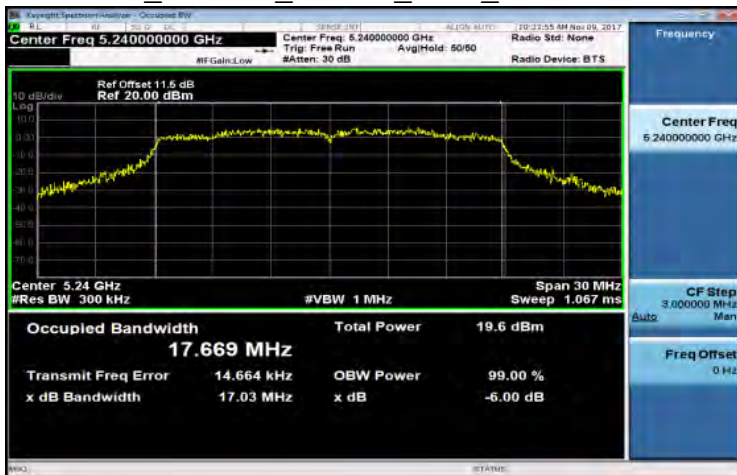
IC\_802.11n\_20MHz\_Main\_5220MHz



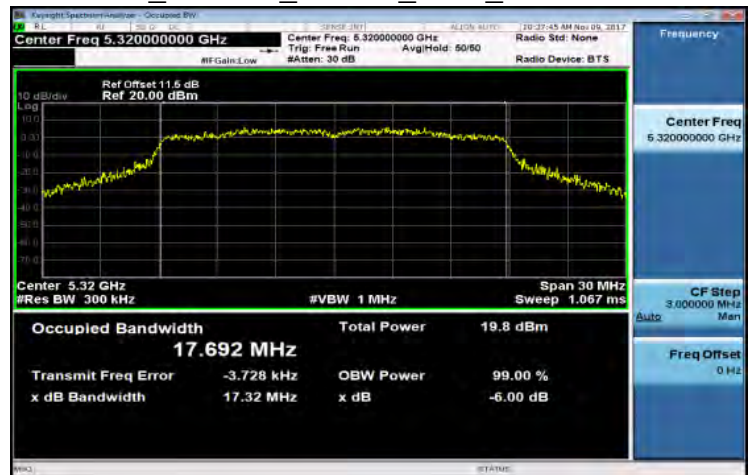
IC\_802.11n\_20MHz\_Main\_5300MHz



IC\_802.11n\_20MHz\_Main\_5240MHz



IC\_802.11n\_20MHz\_Main\_5320MHz

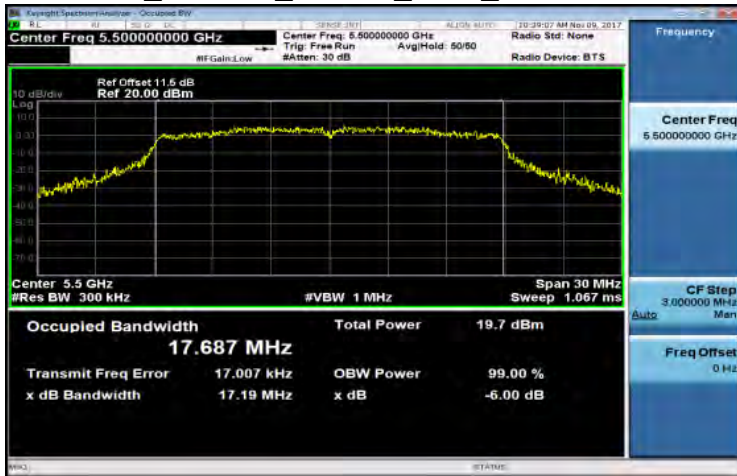


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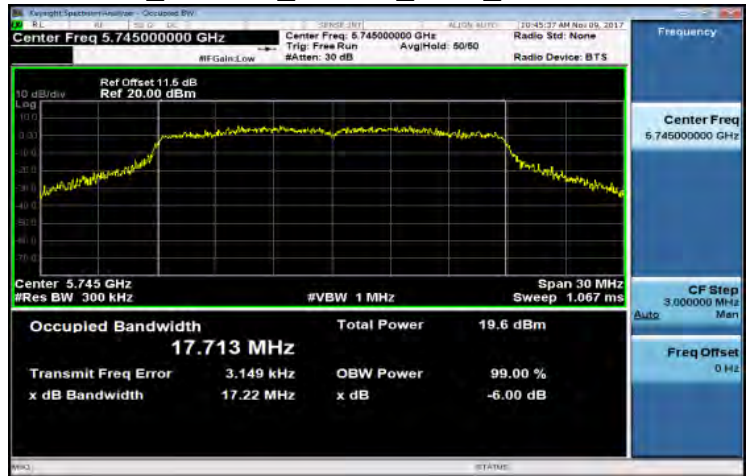
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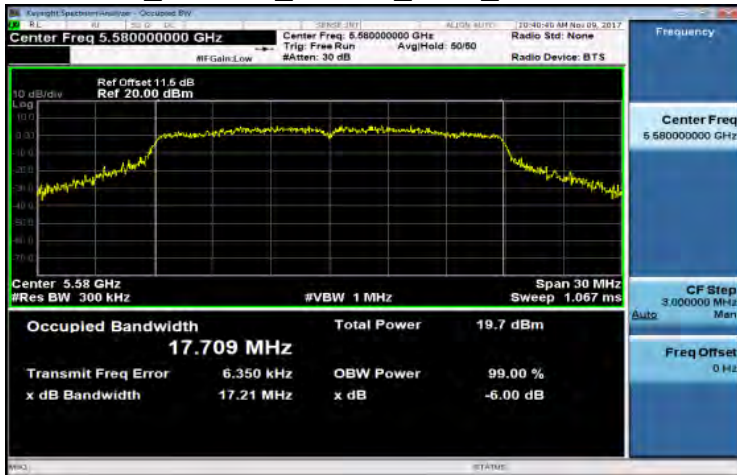
IC\_802.11n\_20MHz\_Main\_5500MHz



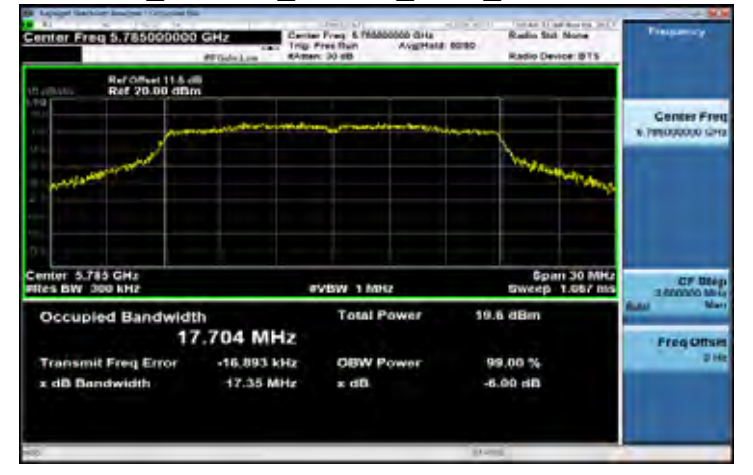
IC\_802.11n\_20MHz\_Main\_5745MHz



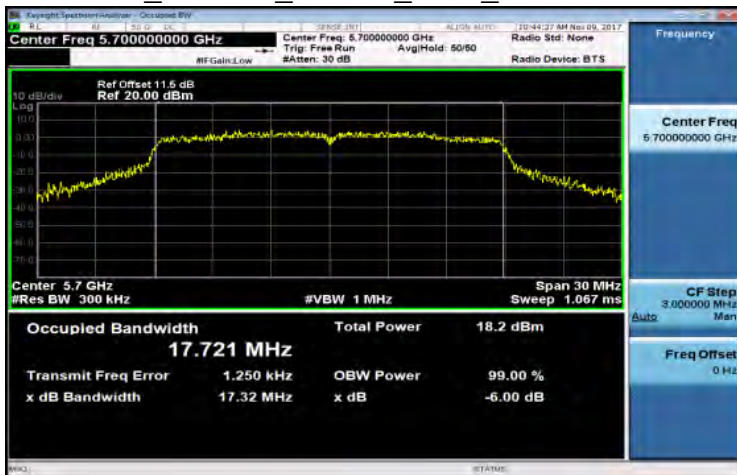
IC\_802.11n\_20MHz\_Main\_5580MHz



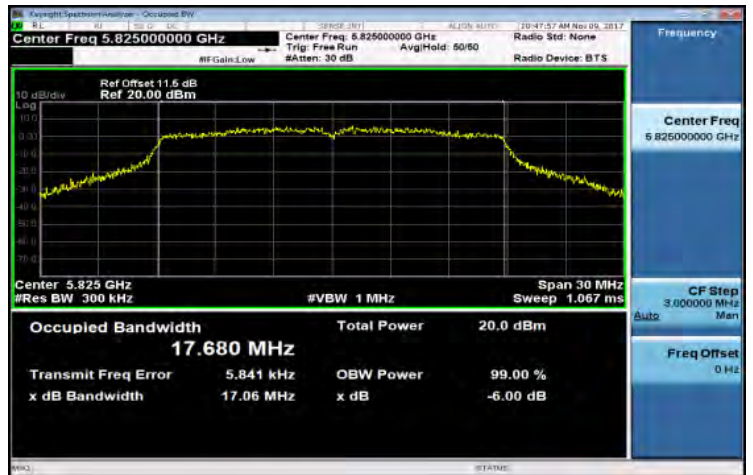
IC\_802.11n\_20MHz\_Main\_5785MHz



IC\_802.11n\_20MHz\_Main\_5700MHz



IC\_802.11n\_20MHz\_Main\_5825MHz



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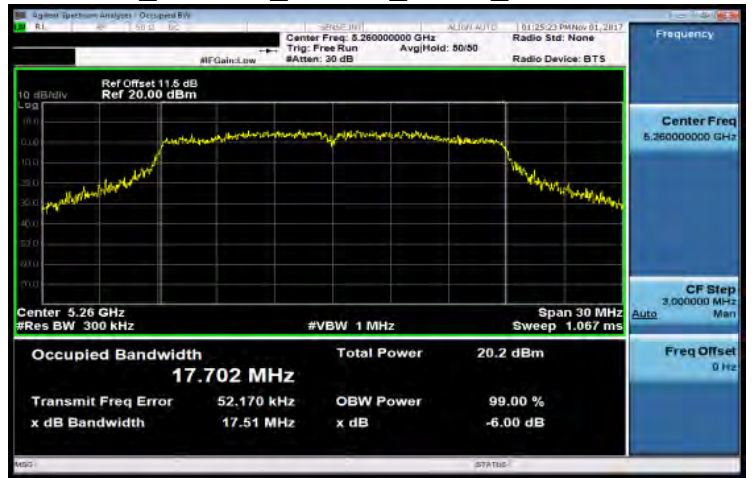
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IC\_802.11n\_20MHz\_AUX1\_5180MHz



IC\_802.11n\_20MHz\_AUX1\_5260MHz



IC\_802.11n\_20MHz\_AUX1\_5220MHz



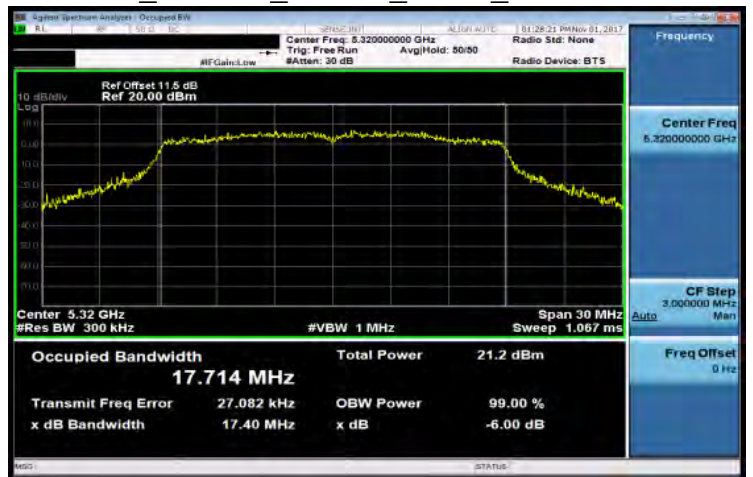
IC\_802.11n\_20MHz\_AUX1\_5300MHz



IC\_802.11n\_20MHz\_AUX1\_5240MHz



IC\_802.11n\_20MHz\_AUX1\_5320MHz



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IC\_802.11n\_20MHz\_AUX1\_5500MHz



IC\_802.11n\_20MHz\_AUX1\_5745MHz



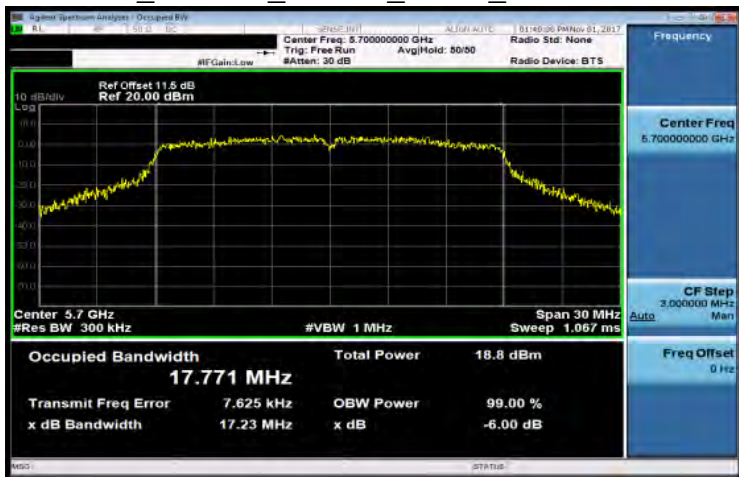
IC\_802.11n\_20MHz\_AUX1\_5580MHz



IC\_802.11n\_20MHz\_AUX1\_5785MHz



IC\_802.11n\_20MHz\_AUX1\_5700MHz



IC\_802.11n\_20MHz\_AUX1\_5825MHz

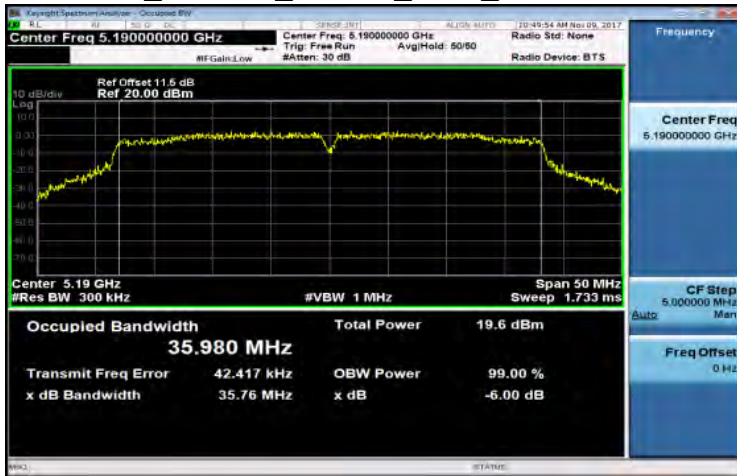


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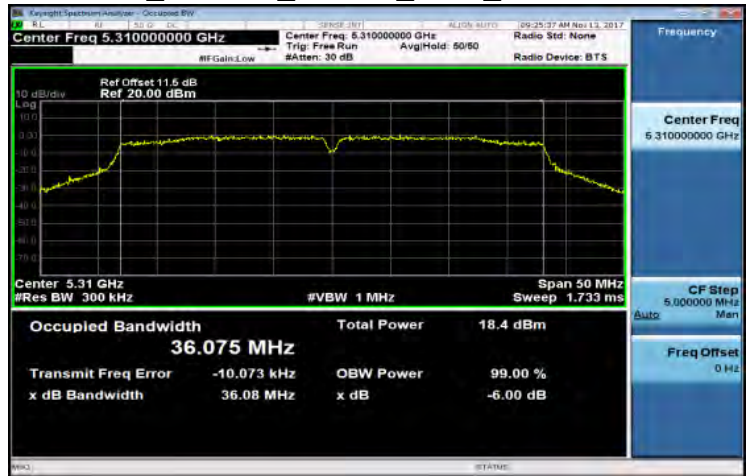
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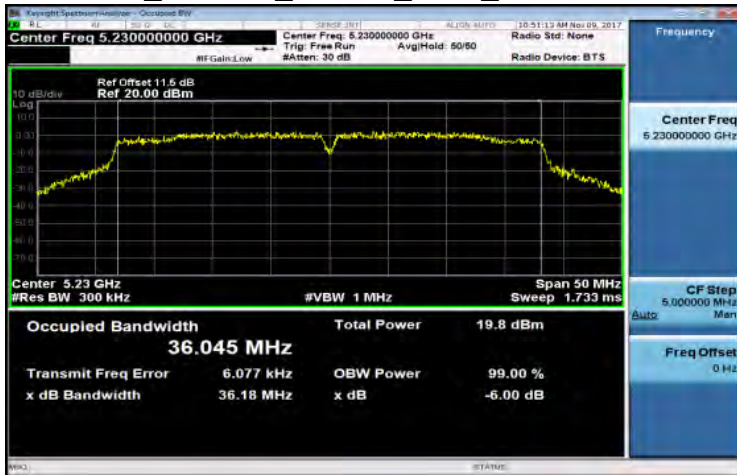
IC\_802.11n\_40MHz\_Main\_5190MHz



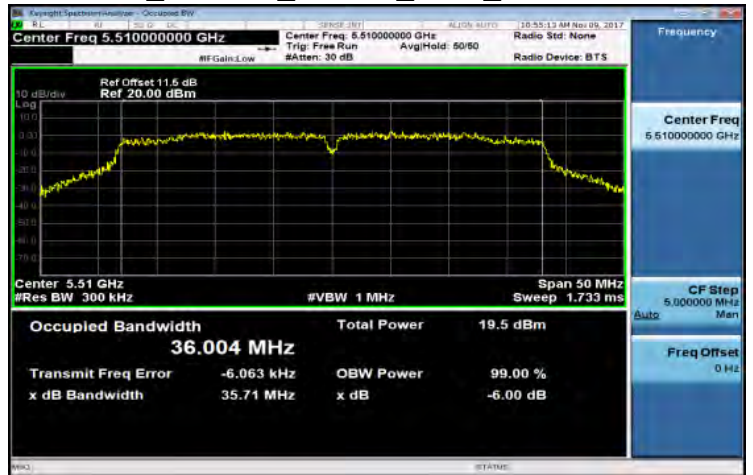
IC\_802.11n\_40MHz\_Main\_5310MHz



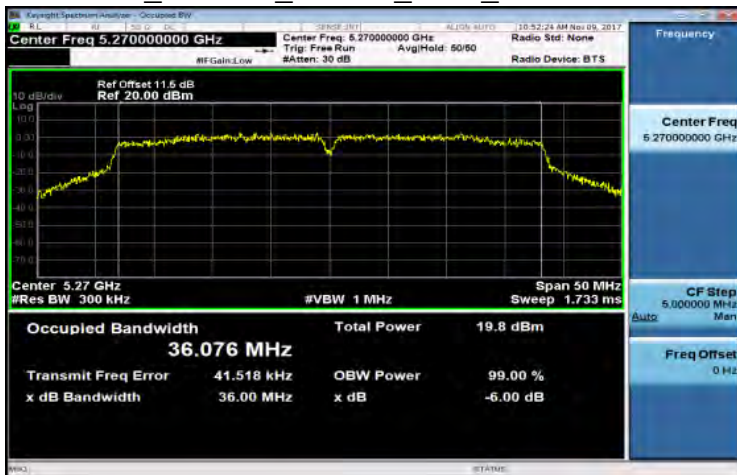
IC\_802.11n\_40MHz\_Main\_5230MHz



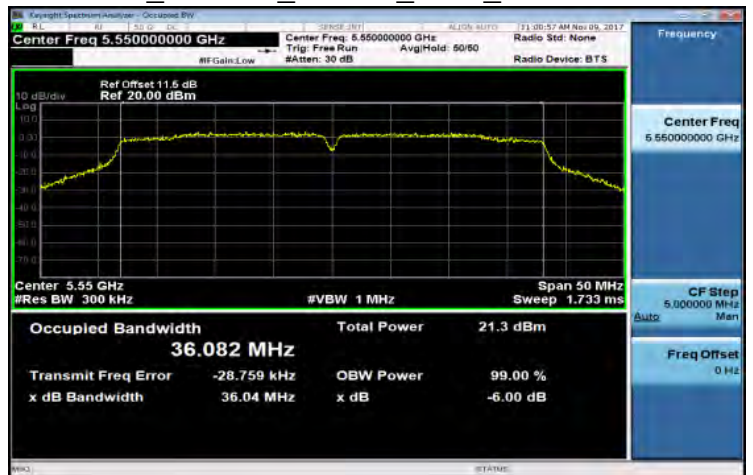
IC\_802.11n\_40MHz\_Main\_5510MHz



IC\_802.11n\_40MHz\_Main\_5270MHz



IC\_802.11n\_40MHz\_Main\_5550MHz

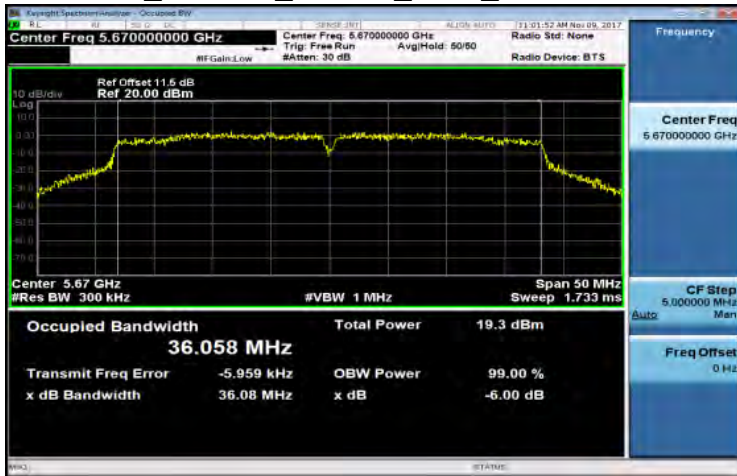


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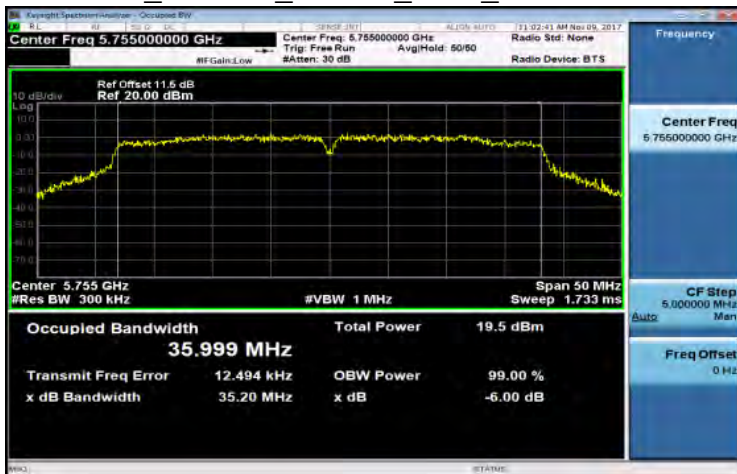
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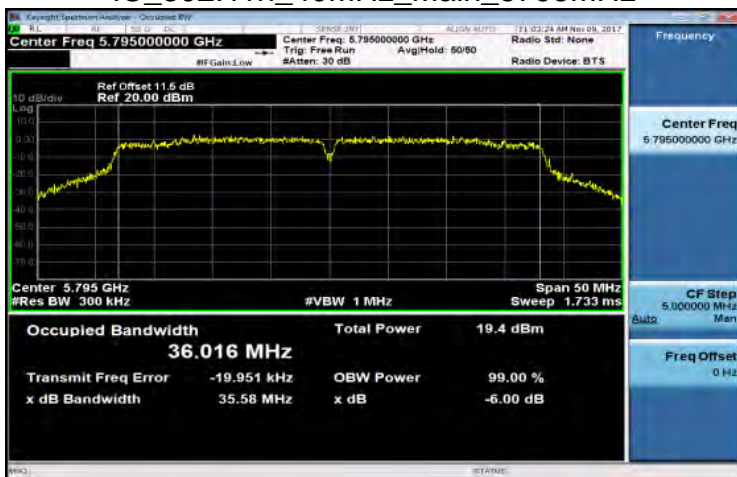
IC\_802.11n\_40MHz\_Main\_5670MHz



IC\_802.11n\_40MHz\_Main\_5755MHz



IC\_802.11n\_40MHz\_Main\_5795MHz



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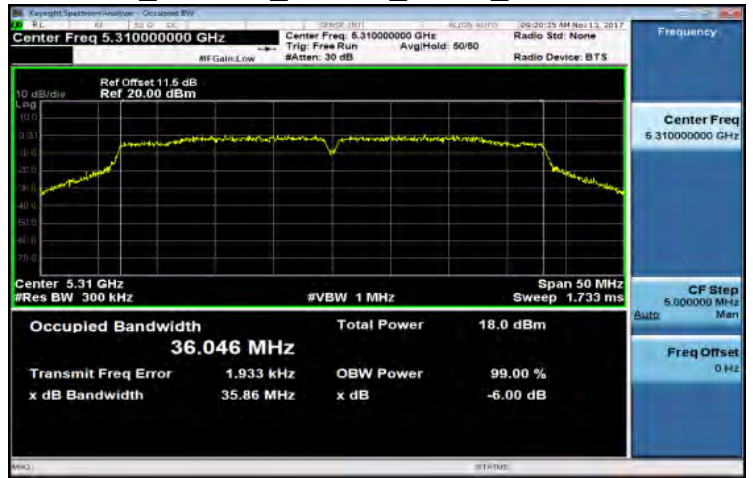
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IC\_802.11n\_40MHz\_AUX1\_5190MHz



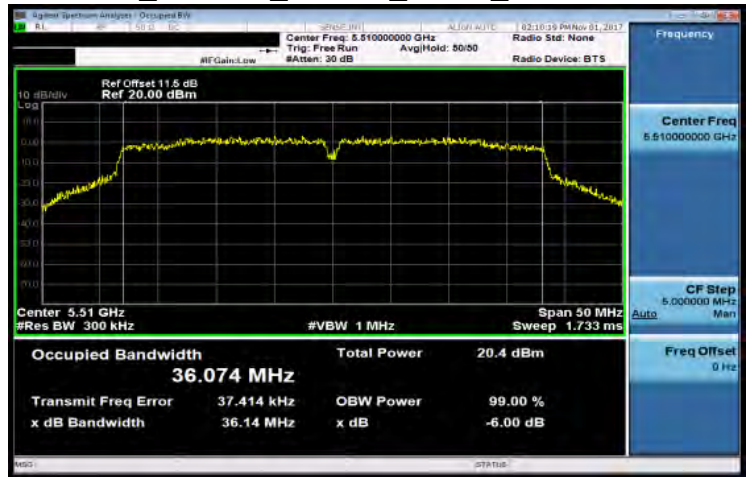
IC\_802.11n\_40MHz\_AUX1\_5310MHz



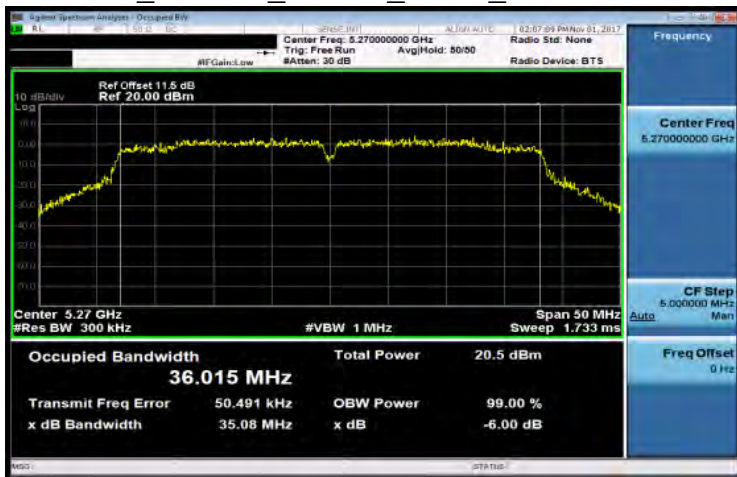
IC\_802.11n\_40MHz\_AUX1\_5230MHz



IC\_802.11n\_40MHz\_AUX1\_5510MHz



IC\_802.11n\_40MHz\_AUX1\_5270MHz



IC\_802.11n\_40MHz\_AUX1\_5550MHz



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IC\_802.11n\_40MHz\_AUX1\_5670MHz



IC\_802.11n\_40MHz\_AUX1\_5755MHz



IC\_802.11n\_40MHz\_AUX1\_5795MHz

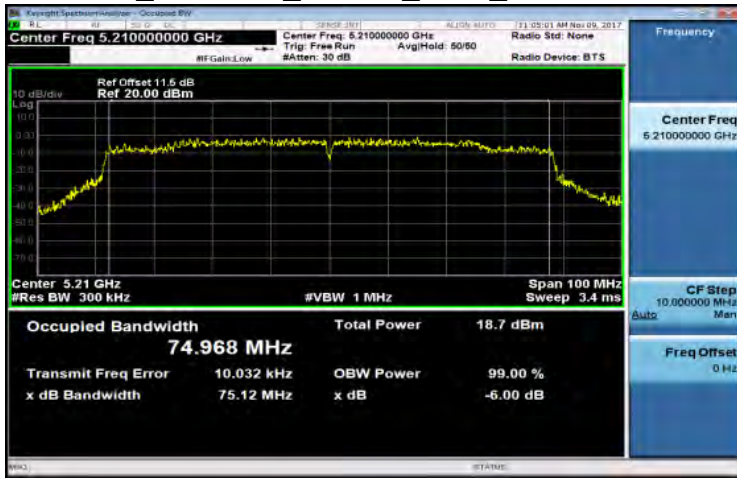


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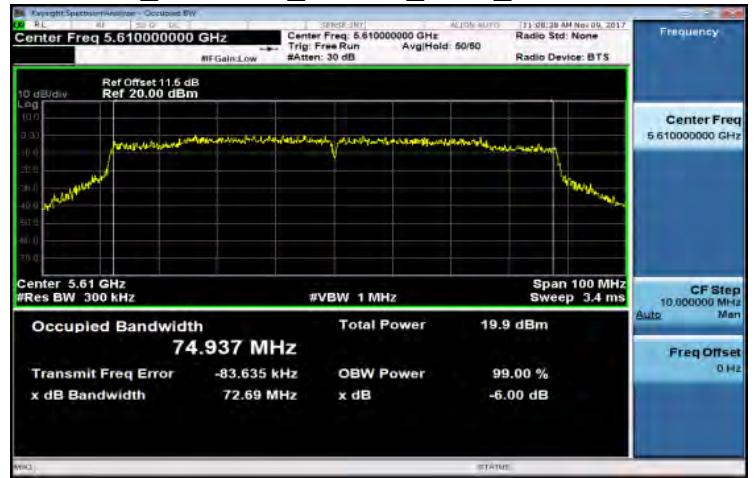
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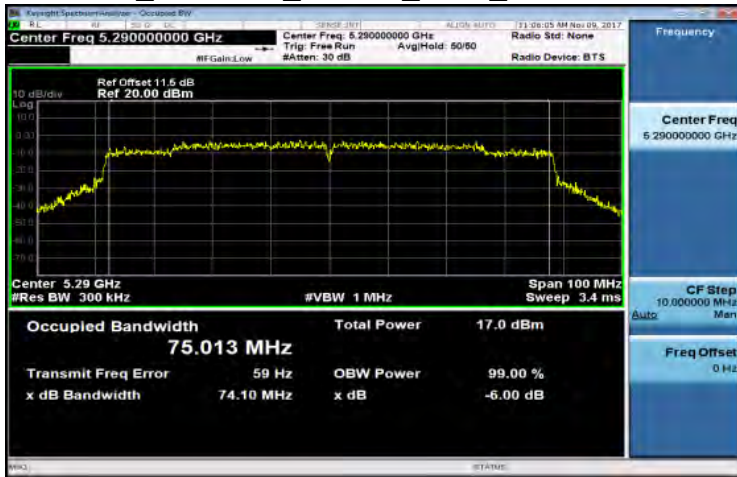
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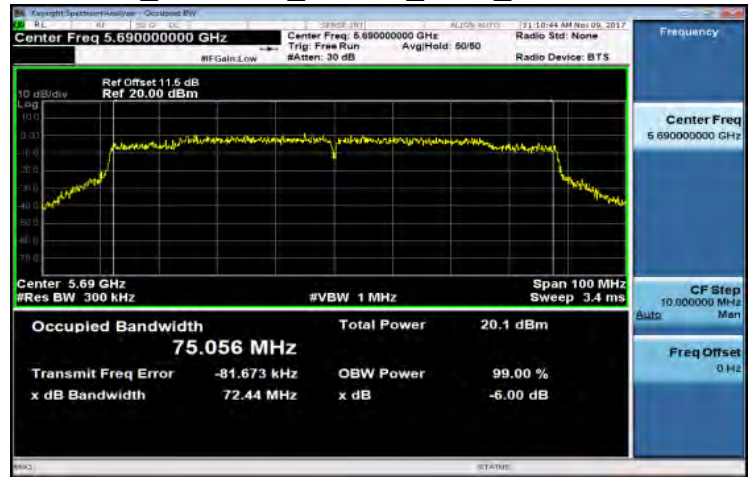
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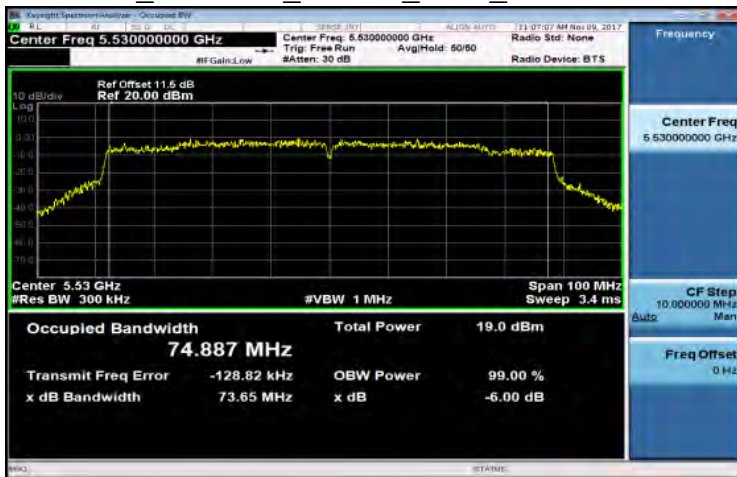
IC\_802.11ac\_80MHz\_Main\_5290MHz



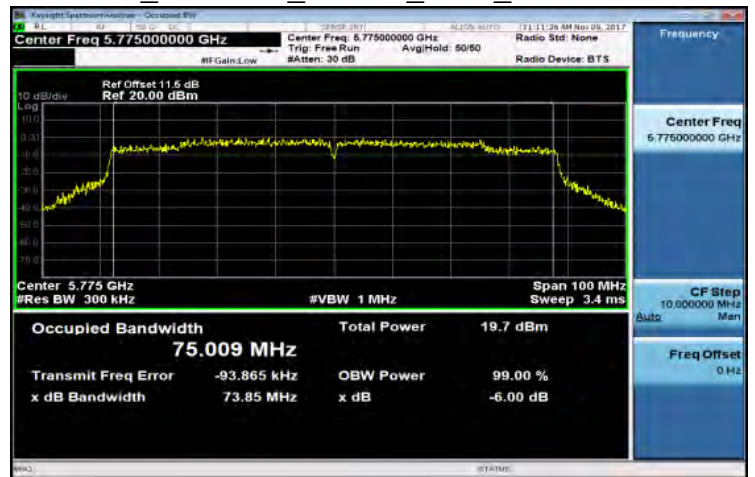
IC\_802.11ac\_80MHz\_Main\_5690MHz



IC\_802.11ac\_80MHz\_Main\_5530MHz



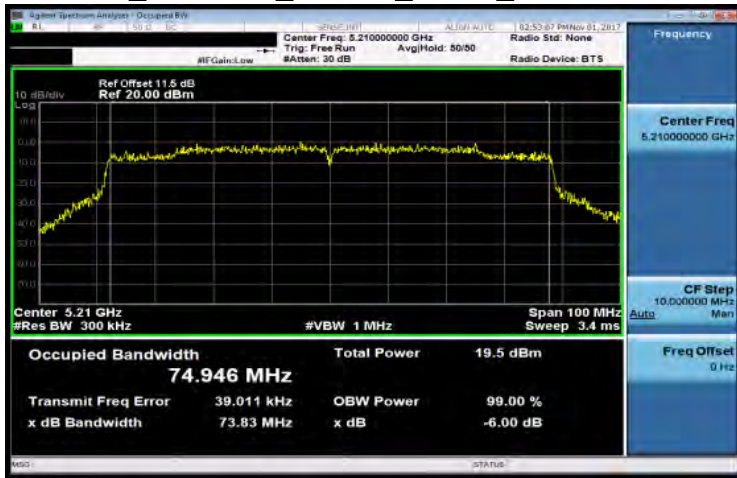
IC\_802.11ac\_80MHz\_Main\_5775MHz



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IC\_802.11ac\_80MHz\_AUX1\_5210MHz



IC\_802.11ac\_80MHz\_AUX1\_5610MHz



IC\_802.11ac\_80MHz\_AUX1\_5290MHz



IC\_802.11ac\_80MHz\_AUX1\_5690MHz



IC\_802.11ac\_80MHz\_AUX1\_5530MHz



IC\_802.11ac\_80MHz\_AUX1\_5775MHz



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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

#### FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Mater device )	1 Watt(30dBm)
		Fixed point-to-point Access Ponit	1 Watt(30dBm)
	√	Mobile and portable clinet device	250mW(23.98dBm)
U-NII-2A	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	√		1 Watt(30dBm)

#### IC

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP shall not exceed 200 mW or 10 + 10 log <sub>10</sub> B, dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log <sub>10</sub> B EIRP shall not exceed 1.0 W or 17 + 10 log <sub>10</sub> B, dBm
5470-5600 MHz and 5650-5725 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log <sub>10</sub> B EIRP shall not exceed 1.0 W or 17 + 10 log <sub>10</sub> B, dBm
5725~5850 MHz	Conducted output power shall not exceed 1 W

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.

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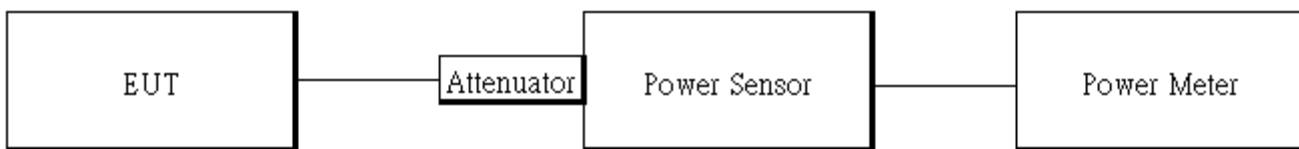
### 9.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add 10 log(1/duty cycle).
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

### 9.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2496A	1326001	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315048	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315049	06/23/2017	06/22/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

### 9.4 Test Set-up



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## 9.5 Measurement Result

### Conducted output power (FCC)

#### 802.11a\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	14.93	31.125	23.98	PASS
44	5220	6	14.86	30.627	23.98	PASS
48	5240	6	14.86	30.627	23.98	PASS
52	5260	6	14.92	31.053	23.98 or $11+10\log(B) = 24.45$	PASS
60	5300	6	14.85	30.557	23.98 or $11+10\log(B) = 24.51$	PASS
64	5320	6	14.86	30.627	23.98 or $11+10\log(B) = 24.51$	PASS
100	5500	6	14.93	31.125	23.98 or $11+10\log(B) = 24.52$	PASS
116	5580	6	14.89	30.840	23.98 or $11+10\log(B) = 24.49$	PASS
140	5700	6	13.95	24.838	23.98 or $11+10\log(B) = 24.63$	PASS
149	5745	6	14.92	31.053	30	PASS
157	5785	6	14.96	31.341	30	PASS
165	5825	6	14.87	30.698	30	PASS

#### 802.11a\_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	14.97	31.413	23.98	PASS
44	5220	6	14.96	31.341	23.98	PASS
48	5240	6	14.90	30.911	23.98	PASS
52	5260	6	14.95	31.269	23.98 or $11+10\log(B) = 24.54$	PASS
60	5300	6	14.89	30.840	23.98 or $11+10\log(B) = 24.63$	PASS
64	5320	6	14.95	31.269	23.98 or $11+10\log(B) = 24.55$	PASS
100	5500	6	14.95	31.269	23.98 or $11+10\log(B) = 24.45$	PASS
116	5580	6	14.93	31.125	23.98 or $11+10\log(B) = 24.58$	PASS
140	5700	6	13.96	24.895	23.98 or $11+10\log(B) = 24.55$	PASS
149	5745	6	14.95	31.269	30	PASS
157	5785	6	14.99	31.558	30	PASS
165	5825	6	14.96	31.341	30	PASS

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**802.11a\_MIMO**

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)		RESULT
			CH 0	CH 1				
36	5180	6	12.08	11.19	14.91		23.98	PASS
44	5220	6	11.88	11.51	<b>14.95</b>		23.98	PASS
48	5240	6	11.91	11.35	<b>14.89</b>		23.98	PASS
52	5260	6	11.82	11.13	14.74	23.98	or 11+10log(B) = 24.45	PASS
60	5300	6	12.03	11.16	<b>14.87</b>	23.98	or 11+10log(B) = 24.51	PASS
64	5320	6	11.91	11.14	14.79	23.98	or 11+10log(B) = 24.51	PASS
100	5500	6	11.82	10.97	14.67	23.98	or 11+10log(B) = 24.45	PASS
116	5580	6	11.9	11.24	<b>14.83</b>	23.98	or 11+10log(B) = 24.49	PASS
140	5700	6	10.81	10.43	13.88	23.98	or 11+10log(B) = 24.55	PASS
149	5745	6	11.97	11.19	14.85		30	PASS
157	5785	6	11.79	11.33	14.82		30	PASS
165	5825	6	12.01	11.24	<b>14.89</b>		30	PASS

**802.11n\_HT20\_Main**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	14.92	31.078		23.98	PASS
44	5220	MCS0	14.91	31.006		23.98	PASS
48	5240	MCS0	14.89	30.864		23.98	PASS
52	5260	MCS0	14.82	30.370	23.98	or 11+10log(B) = 24.30	PASS
60	5300	MCS0	14.90	30.935	23.98	or 11+10log(B) = 24.58	PASS
64	5320	MCS0	14.93	31.150	23.98	or 11+10log(B) = 24.51	PASS
100	5500	MCS0	14.92	31.078	23.98	or 11+10log(B) = 24.97	PASS
116	5580	MCS0	14.89	30.864	23.98	or 11+10log(B) = 24.66	PASS
140	5700	MCS0	13.92	24.686	23.98	or 11+10log(B) = 24.48	PASS
149	5745	MCS0	14.84	30.511		30	PASS
157	5785	MCS0	14.88	30.793		30	PASS
165	5825	MCS0	14.89	30.864		30	PASS

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## 802.11n\_HT20\_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	<b>14.95</b>	31.293	23.98	PASS
44	5220	MCS0	14.94	31.221	23.98	PASS
48	5240	MCS0	14.92	31.078	23.98	PASS
52	5260	MCS0	14.92	31.078	23.98 or 11+10log(B) = 24.59	PASS
60	5300	MCS0	14.92	31.078	23.98 or 11+10log(B) = 24.59	PASS
64	5320	MCS0	<b>14.99</b>	31.583	23.98 or 11+10log(B) = 24.75	PASS
100	5500	MCS0	<b>14.99</b>	31.583	23.98 or 11+10log(B) = 24.60	PASS
116	5580	MCS0	14.94	31.221	23.98 or 11+10log(B) = 24.64	PASS
140	5700	MCS0	13.94	24.800	23.98 or 11+10log(B) = 24.63	PASS
149	5745	MCS0	<b>14.95</b>	31.293	30	PASS
157	5785	MCS0	14.92	31.078	30	PASS
165	5825	MCS0	14.92	31.078	30	PASS

## 802.11n\_HT20\_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1			
36	5180	MCS8	12.14	11.15	14.89	23.98	PASS
44	5220	MCS8	12.06	11.35	<b>14.93</b>	23.98	PASS
48	5240	MCS8	11.91	11.28	<b>14.82</b>	23.98	PASS
52	5260	MCS8	11.91	11.12	14.75	23.98 or 11+10log(B) = 24.30	PASS
60	5300	MCS8	11.93	11.12	14.76	23.98 or 11+10log(B) = 24.58	PASS
64	5320	MCS8	12.01	11.12	14.80	23.98 or 11+10log(B) = 24.51	PASS
100	5500	MCS8	12.06	11.15	<b>14.84</b>	23.98 or 11+10log(B) = 24.60	PASS
116	5580	MCS8	11.68	11.12	<b>14.62</b>	23.98 or 11+10log(B) = 24.64	PASS
140	5700	MCS8	10.94	10.47	13.93	23.98 or 11+10log(B) = 24.48	PASS
149	5745	MCS8	11.92	11.13	14.76	30	PASS
157	5785	MCS8	11.96	11.32	<b>14.87</b>	30	PASS
165	5825	MCS8	11.87	11.01	14.68	30	PASS

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**802.11ac\_VHT20\_Main**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	14.88	30.761	23.98	PASS
44	5220	MCS0	14.89	30.832	23.98	PASS
48	5240	MCS0	14.82	30.339	23.98	PASS
52	5260	MCS0	14.87	30.690	23.98 or $11+10\log(B) = 24.77$	PASS
60	5300	MCS0	14.82	30.339	23.98 or $11+10\log(B) = 24.69$	PASS
64	5320	MCS0	14.91	30.974	23.98 or $11+10\log(B) = 24.54$	PASS
100	5500	MCS0	14.85	30.549	23.98 or $11+10\log(B) = 24.37$	PASS
116	5580	MCS0	14.89	30.832	23.98 or $11+10\log(B) = 24.83$	PASS
140	5700	MCS0	13.81	24.043	23.98 or $11+10\log(B) = 24.42$	PASS
149	5745	MCS0	14.88	30.761	30	PASS
157	5785	MCS0	14.89	30.832	30	PASS
165	5825	MCS0	14.82	30.339	30	PASS

**802.11ac\_VHT20\_Aux1**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	<b>14.92</b>	31.045	23.98	PASS
44	5220	MCS0	<b>14.92</b>	31.045	23.98	PASS
48	5240	MCS0	14.88	30.761	23.98	PASS
52	5260	MCS0	14.91	30.974	23.98 or $11+10\log(B) = 24.22$	PASS
60	5300	MCS0	14.89	30.832	23.98 or $11+10\log(B) = 24.12$	PASS
64	5320	MCS0	<b>14.95</b>	31.261	23.98 or $11+10\log(B) = 24.07$	PASS
100	5500	MCS0	<b>14.94</b>	31.189	23.98 or $11+10\log(B) = 24.21$	PASS
116	5580	MCS0	14.92	31.045	23.98 or $11+10\log(B) = 24.06$	PASS
140	5700	MCS0	13.84	24.210	23.98 or $11+10\log(B) = 24.16$	PASS
149	5745	MCS0	<b>14.92</b>	31.045	30	PASS
157	5785	MCS0	14.91	30.974	30	PASS
165	5825	MCS0	14.89	30.832	30	PASS

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**802.11ac\_VHT20\_MIMO**

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1			
36	5180	MCS8	12.1	11.09	14.83	23.98	PASS
44	5220	MCS8	11.98	11.33	<b>14.88</b>	23.98	PASS
48	5240	MCS8	11.81	11.12	<b>14.69</b>	23.98	PASS
52	5260	MCS8	11.82	11.03	14.65	23.98 or $11+10\log(B) = 24.30$	PASS
60	5300	MCS8	11.8	11.12	14.68	23.98 or $11+10\log(B) = 24.58$	PASS
64	5320	MCS8	11.91	11.08	14.73	23.98 or $11+10\log(B) = 24.51$	PASS
100	5500	MCS8	11.97	11.06	<b>14.75</b>	23.98 or $11+10\log(B) = 24.60$	PASS
116	5580	MCS8	11.62	10.97	<b>14.52</b>	23.98 or $11+10\log(B) = 24.64$	PASS
140	5700	MCS8	10.85	10.51	13.89	23.98 or $11+10\log(B) = 24.48$	PASS
149	5745	MCS8	11.83	11.1	14.69	30	PASS
157	5785	MCS8	11.93	11.27	<b>14.82</b>	30	PASS
165	5825	MCS8	11.79	10.96	14.61	30	PASS

**802.11n\_HT40\_Main**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.95	31.273	23.98	PASS
46	5230	MCS0	14.88	30.773	23.98	PASS
54	5270	MCS0	14.92	31.058	23.98 or $11+10\log(B) = 27.48$	PASS
62	5310	MCS0	11.87	15.388	23.98 or $11+10\log(B) = 26.57$	PASS
102	5510	MCS0	14.89	30.844	23.98 or $11+10\log(B) = 27.53$	PASS
110	5550	MCS0	14.92	31.058	23.98 or $11+10\log(B) = 27.50$	PASS
134	5670	MCS0	14.86	30.632	23.98 or $11+10\log(B) = 27.44$	PASS
151	5755	MCS0	14.85	30.561	30	PASS
159	5795	MCS0	14.86	30.632	30	PASS

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**802.11n\_HT40\_Aux1**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.97	31.418	23.98	PASS
46	5230	MCS0	14.93	31.130	23.98	PASS
54	5270	MCS0	14.96	31.345	23.98 or $11+10\log(B) = 27.50$	PASS
62	5310	MCS0	11.97	15.746	23.98 or $11+10\log(B) = 26.55$	PASS
102	5510	MCS0	14.95	31.273	23.98 or $11+10\log(B) = 27.56$	PASS
110	5550	MCS0	14.96	31.345	23.98 or $11+10\log(B) = 27.48$	PASS
134	5670	MCS0	14.91	30.986	23.98 or $11+10\log(B) = 27.51$	PASS
151	5755	MCS0	14.94	31.201	30	PASS
159	5795	MCS0	14.90	30.915	30	PASS

**802.11n\_HT40\_MIMO**

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1			
38	5190	MCS8	11.55	10.43	14.78	23.98	PASS
46	5230	MCS8	11.39	10.91	<b>14.91</b>	23.98	PASS
54	5270	MCS8	11.34	10.57	<b>14.72</b>	23.98 or $11+10\log(B) = 27.48$	PASS
62	5310	MCS8	8.23	8.11	11.92	23.98 or $11+10\log(B) = 26.55$	PASS
102	5510	MCS8	11.39	10.37	14.66	23.98 or $11+10\log(B) = 27.53$	PASS
110	5550	MCS8	11.43	10.62	14.80	23.98 or $11+10\log(B) = 27.48$	PASS
134	5670	MCS8	11.21	11.08	<b>14.90</b>	23.98 or $11+10\log(B) = 27.44$	PASS
151	5755	MCS8	11.36	10.74	<b>14.81</b>	30	PASS
159	5795	MCS8	11.31	10.66	14.75	30	PASS

**802.11ac\_VHT40\_Main**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.89	30.808	23.98	PASS
46	5230	MCS0	14.82	30.315	23.98	PASS
54	5270	MCS0	14.85	30.525	23.98 or $11+10\log(B) = 27.41$	PASS
62	5310	MCS0	11.83	15.229	23.98 or $11+10\log(B) = 27.54$	PASS
102	5510	MCS0	14.83	30.385	23.98 or $11+10\log(B) = 27.57$	PASS
110	5550	MCS0	14.78	30.037	23.98 or $11+10\log(B) = 27.44$	PASS
134	5670	MCS0	14.84	30.455	23.98 or $11+10\log(B) = 27.46$	PASS
151	5755	MCS0	14.78	30.037	30	PASS
159	5795	MCS0	14.82	30.315	30	PASS

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**802.11ac\_VHT40\_Aux1**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	<b>14.92</b>	31.021	23.98	PASS
46	5230	MCS0	14.86	30.595	23.98	PASS
54	5270	MCS0	<b>14.92</b>	31.021	23.98 or $11+10\log(B) = 27.19$	PASS
62	5310	MCS0	11.95	15.655	23.98 or $11+10\log(B) = 27.28$	PASS
102	5510	MCS0	<b>14.90</b>	30.879	23.98 or $11+10\log(B) = 27.25$	PASS
110	5550	MCS0	14.88	30.737	23.98 or $11+10\log(B) = 27.26$	PASS
134	5670	MCS0	14.89	30.808	23.98 or $11+10\log(B) = 27.13$	PASS
151	5755	MCS0	<b>14.92</b>	31.021	30	PASS
159	5795	MCS0	14.88	30.737	30	PASS

**802.11ac\_VHT40\_MIMO**

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1			
38	5190	MCS8	11.47	10.26	14.65	23.98	PASS
46	5230	MCS8	11.33	10.81	<b>14.82</b>	23.98	PASS
54	5270	MCS8	11.33	10.54	<b>14.70</b>	23.98 or $11+10\log(B) = 27.48$	PASS
62	5310	MCS8	8.19	8.13	11.91	23.98 or $11+10\log(B) = 26.55$	PASS
102	5510	MCS8	11.26	10.27	14.54	23.98 or $11+10\log(B) = 27.53$	PASS
110	5550	MCS8	11.39	10.54	14.73	23.98 or $11+10\log(B) = 27.48$	PASS
134	5670	MCS8	11.21	11.03	<b>14.87</b>	23.98 or $11+10\log(B) = 27.44$	PASS
151	5755	MCS8	11.28	10.7	<b>14.75</b>	30	PASS
159	5795	MCS8	11.28	10.7	<b>14.75</b>	30	PASS

**802.11ac\_VHT80\_Main**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	13.81	24.026	23.98	PASS
58	5290	MCS0	11.81	15.160	23.98 or $11+10\log(B) = 30.23$	PASS
106	5530	MCS0	13.87	24.361	23.98 or $11+10\log(B) = 30.29$	PASS
122	5610	MCS0	14.82	30.317	23.98 or $11+10\log(B) = 30.25$	PASS
155	5775	MCS0	14.77	29.970	30	PASS

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**802.11ac\_VHT80\_Aux1**

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	<b>13.87</b>	24.361	23.98	PASS
58	5290	MCS0	<b>11.94</b>	15.620	23.98 or $11+10\log(B) = 30.24$	PASS
106	5530	MCS0	13.95	24.813	23.98 or $11+10\log(B) = 30.21$	PASS
122	5610	MCS0	<b>14.89</b>	30.810	23.98 or $11+10\log(B) = 30.23$	PASS
155	5775	MCS0	<b>14.82</b>	30.317	30	PASS

**802.11ac\_VHT80\_MIMO**

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1			
42	5210	MCS8	9.97	10.12	<b>13.80</b>	23.98	PASS
58	5290	MCS8	8.12	8.21	<b>11.92</b>	23.98 or $11+10\log(B) = 30.23$	PASS
106	5530	MCS8	9.96	10.14	13.81	23.98 or $11+10\log(B) = 30.21$	PASS
122	5610	MCS8	10.92	11.32	<b>14.88</b>	23.98 or $11+10\log(B) = 30.23$	PASS
155	5775	MCS8	11.16	10.85	<b>14.76</b>	30	PASS

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**Conducted output power (IC)**
**802.11a\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	<b>14.92</b>	<b>31.053</b>	23.98 or $11+10\log(B) = 23.18$	PASS
60	5300	14.85	30.557	23.98 or $11+10\log(B) = 23.19$	PASS
64	5320	14.86	30.627	23.98 or $11+10\log(B) = 23.23$	PASS
100	5500	<b>14.93</b>	<b>31.125</b>	23.98 or $11+10\log(B) = 23.22$	PASS
116	5580	14.89	30.840	23.98 or $11+10\log(B) = 23.18$	PASS
140	5700	<b>13.95</b>	<b>24.838</b>	23.98 or $11+10\log(B) = 23.19$	PASS
149	5745	14.92	31.053	30	PASS
157	5785	<b>14.96</b>	<b>31.341</b>	30	PASS
165	5825	14.87	30.698	30	PASS

**802.11a\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	<b>14.95</b>	<b>31.269</b>	23.98 or $11+10\log(B) = 23.18$	PASS
60	5300	14.89	30.840	23.98 or $11+10\log(B) = 23.19$	PASS
64	5320	<b>14.95</b>	<b>31.269</b>	23.98 or $11+10\log(B) = 23.17$	PASS
100	5500	<b>14.95</b>	<b>31.269</b>	23.98 or $11+10\log(B) = 23.19$	PASS
116	5580	14.93	31.125	23.98 or $11+10\log(B) = 23.18$	PASS
140	5700	<b>13.96</b>	<b>24.895</b>	23.98 or $11+10\log(B) = 23.19$	PASS
149	5745	14.95	31.269	30	PASS
157	5785	<b>14.99</b>	<b>31.558</b>	30	PASS
165	5825	14.96	31.341	30	PASS

**802.11a\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
52	5260	11.82	11.13	14.50	28.177	23.98 or $11+10\log(B) = 23.18$	PASS
60	5300	12.03	11.16	<b>14.63</b>	<b>29.021</b>	23.98 or $11+10\log(B) = 23.19$	PASS
64	5320	11.91	11.14	14.55	28.526	23.98 or $11+10\log(B) = 23.17$	PASS
100	5500	11.82	10.97	14.43	27.708	23.98 or $11+10\log(B) = 23.19$	PASS
116	5580	11.9	11.24	<b>14.59</b>	<b>28.793</b>	23.98 or $11+10\log(B) = 23.18$	PASS
140	5700	10.81	10.43	<b>13.63</b>	<b>23.091</b>	23.98 or $11+10\log(B) = 23.19$	PASS
149	5745	11.97	11.19	14.61	28.892	30	PASS
157	5785	11.79	11.33	14.58	28.684	30	PASS
165	5825	12.01	11.24	<b>14.65</b>	<b>29.190</b>	30	PASS

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**802.11n\_HT20\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.82	30.370	23.98 or 11+10log(B) = 23.48	PASS
60	5300	14.90	30.935	23.98 or 11+10log(B) = 23.49	PASS
64	5320	<b>14.93</b>	<b>31.150</b>	23.98 or 11+10log(B) = 23.48	PASS
100	5500	<b>14.92</b>	<b>31.078</b>	23.98 or 11+10log(B) = 23.48	PASS
116	5580	14.89	30.864	23.98 or 11+10log(B) = 23.48	PASS
140	5700	<b>13.92</b>	<b>24.686</b>	23.98 or 11+10log(B) = 23.48	PASS
149	5745	14.84	30.511	30	PASS
157	5785	14.88	30.793	30	PASS
165	5825	<b>14.89</b>	<b>30.864</b>	30	PASS

**802.11n\_HT20\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.92	31.078	23.98 or 11+10log(B) = 23.48	PASS
60	5300	14.92	31.078	23.98 or 11+10log(B) = 23.48	PASS
64	5320	14.99	31.583	23.98 or 11+10log(B) = 23.48	PASS
100	5500	14.99	31.583	23.98 or 11+10log(B) = 23.48	PASS
116	5580	14.94	31.221	23.98 or 11+10log(B) = 23.47	PASS
140	5700	13.94	24.800	23.98 or 11+10log(B) = 23.50	PASS
149	5745	14.95	31.293	30	PASS
157	5785	14.92	31.078	30	PASS
165	5825	14.92	31.078	30	PASS

**802.11n\_HT20\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
52	5260	11.91	11.12	14.54	28.466	23.98 or 11+10log(B) = 23.48	PASS
60	5300	11.93	11.12	14.55	28.537	23.98 or 11+10log(B) = 23.48	PASS
64	5320	12.01	11.12	<b>14.60</b>	<b>28.827</b>	23.98 or 11+10log(B) = 23.48	PASS
100	5500	12.06	11.15	<b>14.64</b>	<b>29.101</b>	23.98 or 11+10log(B) = 23.48	PASS
116	5580	11.68	11.12	14.42	27.665	23.98 or 11+10log(B) = 23.47	PASS
140	5700	10.94	10.47	<b>13.72</b>	<b>23.559</b>	23.98 or 11+10log(B) = 23.48	PASS
149	5745	11.92	11.13	14.55	28.531	30	PASS
157	5785	11.96	11.32	<b>14.66</b>	<b>29.256</b>	30	PASS
165	5825	11.87	11.01	14.47	28.000	30	PASS

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**802.11ac\_VHT20\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.87	30.690	23.98 or $11+10\log(B) = 23.49$	PASS
60	5300	14.82	30.339	23.98 or $11+10\log(B) = 23.48$	PASS
64	5320	<b>14.91</b>	<b>30.974</b>	23.98 or $11+10\log(B) = 23.48$	PASS
100	5500	14.85	30.549	23.98 or $11+10\log(B) = 23.49$	PASS
116	5580	<b>14.89</b>	<b>30.832</b>	23.98 or $11+10\log(B) = 23.49$	PASS
140	5700	<b>13.81</b>	<b>24.043</b>	23.98 or $11+10\log(B) = 23.48$	PASS
149	5745	14.88	30.761	30	PASS
157	5785	<b>14.89</b>	<b>30.832</b>	30	PASS
165	5825	14.82	30.339	30	PASS

**802.11ac\_VHT20\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.91	30.974	23.98 or $11+10\log(B) = 23.49$	PASS
60	5300	14.89	30.832	23.98 or $11+10\log(B) = 23.48$	PASS
64	5320	<b>14.95</b>	<b>31.261</b>	23.98 or $11+10\log(B) = 23.48$	PASS
100	5500	<b>14.94</b>	<b>31.189</b>	23.98 or $11+10\log(B) = 23.49$	PASS
116	5580	14.92	31.045	23.98 or $11+10\log(B) = 23.48$	PASS
140	5700	<b>13.84</b>	<b>24.210</b>	23.98 or $11+10\log(B) = 23.48$	PASS
149	5745	<b>14.92</b>	<b>31.045</b>	30	PASS
157	5785	14.91	30.974	30	PASS
165	5825	14.89	30.832	30	PASS

**802.11ac\_VHT20\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
52	5260	11.82	11.03	14.45	27.882	23.98 or $11+10\log(B) = 23.48$	PASS
60	5300	11.8	11.12	14.48	28.078	23.98 or $11+10\log(B) = 23.48$	PASS
64	5320	11.91	11.08	14.53	28.347	23.98 or $11+10\log(B) = 23.48$	PASS
100	5500	11.97	11.06	14.55	28.504	23.98 or $11+10\log(B) = 23.48$	PASS
116	5580	11.62	10.97	14.32	27.024	23.98 or $11+10\log(B) = 23.47$	PASS
140	5700	10.85	10.51	13.69	23.408	23.98 or $11+10\log(B) = 23.48$	PASS
149	5745	11.83	11.1	14.49	28.123	30	PASS
157	5785	11.93	11.27	14.62	28.992	30	PASS
165	5825	11.79	10.96	14.41	27.575	30	PASS

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**802.11n\_HT40\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	<b>14.92</b>	<b>31.058</b>	23.98 or 11+10log(B) = 26.57	PASS
62	5310	11.87	15.388	23.98 or 11+10log(B) = 26.57	PASS
102	5510	14.89	30.844	23.98 or 11+10log(B) = 26.56	PASS
110	5550	<b>14.92</b>	<b>31.058</b>	23.98 or 11+10log(B) = 26.57	PASS
134	5670	<b>14.86</b>	<b>30.632</b>	23.98 or 11+10log(B) = 26.57	PASS
151	5755	14.85	30.561	30	PASS
159	5795	<b>14.86</b>	<b>30.632</b>	30	PASS

**802.11n\_HT40\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	<b>14.96</b>	<b>31.345</b>	23.98 or 11+10log(B) = 26.56	PASS
62	5310	11.97	15.746	23.98 or 11+10log(B) = 26.57	PASS
102	5510	14.95	31.273	23.98 or 11+10log(B) = 26.57	PASS
110	5550	<b>14.96</b>	<b>31.345</b>	23.98 or 11+10log(B) = 26.57	PASS
134	5670	<b>14.91</b>	<b>30.986</b>	23.98 or 11+10log(B) = 26.56	PASS
151	5755	<b>14.94</b>	<b>31.201</b>	30	PASS
159	5795	14.90	30.915	30	PASS

**802.11n\_HT40\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
54	5270	11.34	10.57	<b>13.98</b>	<b>25.017</b>	23.98 or 11+10log(B) = 26.56	PASS
62	5310	8.23	8.11	11.18	13.124	23.98 or 11+10log(B) = 26.57	PASS
102	5510	11.39	10.37	13.92	24.661	23.98 or 11+10log(B) = 26.56	PASS
110	5550	11.43	10.62	<b>14.05</b>	<b>25.434</b>	23.98 or 11+10log(B) = 26.57	PASS
134	5670	11.21	11.08	<b>14.16</b>	<b>26.036</b>	23.98 or 11+10log(B) = 26.56	PASS
151	5755	11.36	10.74	<b>14.07</b>	<b>25.535</b>	30	PASS
159	5795	11.31	10.66	14.01	25.162	30	PASS

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**802.11ac\_VHT40\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	<b>14.85</b>	<b>30.525</b>	23.98 or 11+10log(B) = 26.57	PASS
62	5310	11.83	15.229	23.98 or 11+10log(B) = 26.56	PASS
102	5510	<b>14.83</b>	<b>30.385</b>	23.98 or 11+10log(B) = 26.57	PASS
110	5550	14.78	30.037	23.98 or 11+10log(B) = 26.57	PASS
134	5670	<b>14.84</b>	<b>30.455</b>	23.98 or 11+10log(B) = 26.57	PASS
151	5755	14.78	30.037	30	PASS
159	5795	<b>14.82</b>	<b>30.315</b>	30	PASS

**802.11ac\_VHT40\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	<b>14.92</b>	<b>31.021</b>	23.98 or 11+10log(B) = 26.57	PASS
62	5310	11.95	15.655	23.98 or 11+10log(B) = 26.56	PASS
102	5510	<b>14.90</b>	<b>30.879</b>	23.98 or 11+10log(B) = 26.58	PASS
110	5550	14.88	30.737	23.98 or 11+10log(B) = 26.58	PASS
134	5670	<b>14.89</b>	<b>30.808</b>	23.98 or 11+10log(B) = 26.57	PASS
151	5755	<b>14.92</b>	<b>31.021</b>	30	PASS
159	5795	14.88	30.737	30	PASS

**802.11ac\_VHT40\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
54	5270	11.33	10.54	<b>13.96</b>	<b>24.907</b>	23.98 or 11+10log(B) = 26.56	PASS
62	5310	8.19	8.13	11.17	13.093	23.98 or 11+10log(B) = 26.57	PASS
102	5510	11.26	10.27	13.80	24.007	23.98 or 11+10log(B) = 26.56	PASS
110	5550	11.39	10.54	<b>14.00</b>	<b>25.096</b>	23.98 or 11+10log(B) = 26.57	PASS
134	5670	11.21	11.03	<b>14.13</b>	<b>25.889</b>	23.98 or 11+10log(B) = 26.56	PASS
151	5755	11.28	10.7	<b>14.01</b>	<b>25.177</b>	30	PASS
159	5795	11.28	10.7	<b>14.01</b>	<b>25.177</b>	30	PASS

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**802.11ac\_VHT80\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
58	5290	11.81	15.160	23.98 or 11+10log(B) = 29.75	PASS
106	5530	13.87	24.361	23.98 or 11+10log(B) = 29.74	PASS
155	5775	14.77	29.970	30	PASS

**802.11ac\_VHT80\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
58	5290	11.94	15.620	23.98 or 11+10log(B) = 29.75	PASS
106	5530	13.95	24.813	23.98 or 11+10log(B) = 29.75	PASS
155	5775	14.82	30.317	30	PASS

**802.11ac\_VHT80\_MIMO**

CH	Frequency (MHz)	AVERAGE POWER		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
58	5290	8.12	8.21	11.18	13.109	23.98 or 11+10log(B) = 29.75	PASS
106	5530	9.96	10.14	13.06	20.236	23.98 or 11+10log(B) = 29.74	PASS
155	5775	11.16	10.85	14.02	25.224	30	PASS

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## EIRP

## 802.11a\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.93	0.920	15.85	38.469	23.01	or 10+10log(B)= 22.18	PASS
44	5220	14.86	0.920	15.78	37.854	23.01	or 10+10log(B)= 22.18	PASS
48	5240	14.86	0.920	15.78	37.854	23.01	or 10+10log(B)= 22.19	PASS
52	5260	14.92	-1.240	13.68	23.340	30	or 17+10log(B)= 29.18	PASS
60	5300	14.85	-1.240	13.61	22.967	30	or 17+10log(B)= 29.19	PASS
64	5320	14.86	-1.240	13.62	23.020	30	or 17+10log(B)= 29.23	PASS
100	5500	14.93	-2.910	12.02	15.926	30	or 17+10log(B)= 29.22	PASS
116	5580	14.89	-2.910	11.98	15.780	30	or 17+10log(B)= 29.18	PASS
140	5700	13.95	-2.910	11.04	12.709	30	or 17+10log(B)= 29.19	PASS

## 802.11a\_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.97	-1.380	13.59	22.862	23.01	or 10+10log(B)= 22.20	PASS
44	5220	14.96	-1.380	13.58	22.809	23.01	or 10+10log(B)= 22.19	PASS
48	5240	14.90	-1.380	13.52	22.496	23.01	or 10+10log(B)= 22.19	PASS
52	5260	14.95	-0.260	14.69	29.452	30	or 17+10log(B)= 29.18	PASS
60	5300	14.89	-0.260	14.63	29.048	30	or 17+10log(B)= 29.19	PASS
64	5320	14.95	-0.260	14.69	29.452	30	or 17+10log(B)= 29.17	PASS
100	5500	14.95	0.940	15.89	38.825	30	or 17+10log(B)= 29.19	PASS
116	5580	14.93	0.940	15.87	38.646	30	or 17+10log(B)= 29.18	PASS
140	5700	13.96	0.940	14.90	30.911	30	or 17+10log(B)= 29.19	PASS

## 802.11a\_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.91	0.920	15.83	38.275	23.01	or 10+10log(B)= 22.18	PASS
44	5220	14.95	0.920	15.87	38.640	23.01	or 10+10log(B)= 22.18	PASS
48	5240	14.89	0.920	15.81	38.110	23.01	or 10+10log(B)= 22.19	PASS
52	5260	14.74	-0.260	14.48	28.055	30	or 17+10log(B)= 29.18	PASS
60	5300	14.87	-0.260	14.61	28.894	30	or 17+10log(B)= 29.19	PASS
64	5320	14.79	-0.260	14.53	28.402	30	or 17+10log(B)= 29.17	PASS
100	5500	14.67	0.940	15.61	36.368	30	or 17+10log(B)= 29.19	PASS
116	5580	14.83	0.940	15.77	37.791	30	or 17+10log(B)= 29.18	PASS
140	5700	13.88	0.940	14.82	30.308	30	or 17+10log(B)= 29.19	PASS

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## 802.11n\_HT20\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.92	0.920	15.84	38.411	23.01	or 10+10log(B)= 22.48	PASS
44	5220	14.91	0.920	15.83	38.322	23.01	or 10+10log(B)= 22.48	PASS
48	5240	14.89	0.920	15.81	38.146	23.01	or 10+10log(B)= 22.47	PASS
52	5260	14.82	-1.240	13.58	22.827	30	or 17+10log(B)= 29.48	PASS
60	5300	14.90	-1.240	13.66	23.252	30	or 17+10log(B)= 29.49	PASS
64	5320	14.93	-1.240	13.69	23.413	30	or 17+10log(B)= 29.48	PASS
100	5500	14.92	-2.910	12.01	15.902	30	or 17+10log(B)= 29.48	PASS
116	5580	14.89	-2.910	11.98	15.793	30	or 17+10log(B)= 29.48	PASS
140	5700	13.92	-2.910	11.01	12.631	30	or 17+10log(B)= 29.48	PASS

## 802.11n\_HT20\_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.95	-1.380	13.57	22.775	23.01	or 10+10log(B)= 22.48	PASS
44	5220	14.94	-1.380	13.56	22.722	23.01	or 10+10log(B)= 22.49	PASS
48	5240	14.92	-1.380	13.54	22.618	23.01	or 10+10log(B)= 22.49	PASS
52	5260	14.92	-0.260	14.66	29.272	30	or 17+10log(B)= 29.48	PASS
60	5300	14.92	-0.260	14.66	29.272	30	or 17+10log(B)= 29.48	PASS
64	5320	14.99	-0.260	14.73	29.748	30	or 17+10log(B)= 29.48	PASS
100	5500	14.99	0.940	15.93	39.215	30	or 17+10log(B)= 29.48	PASS
116	5580	14.94	0.940	15.88	38.766	30	or 17+10log(B)= 29.47	PASS
140	5700	13.94	0.940	14.88	30.793	30	or 17+10log(B)= 29.50	PASS

## 802.11n\_HT20\_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.89	0.920	15.81	38.089	23.01	or 10+10log(B)= 22.48	PASS
44	5220	14.93	0.920	15.85	38.497	23.01	or 10+10log(B)= 22.48	PASS
48	5240	14.82	0.920	15.74	37.508	23.01	or 10+10log(B)= 22.47	PASS
52	5260	14.75	-0.260	14.49	28.104	30	or 17+10log(B)= 29.48	PASS
60	5300	14.76	-0.260	14.50	28.175	30	or 17+10log(B)= 29.48	PASS
64	5320	14.80	-0.260	14.54	28.461	30	or 17+10log(B)= 29.48	PASS
100	5500	14.84	0.940	15.78	37.876	30	or 17+10log(B)= 29.48	PASS
116	5580	14.62	0.940	15.56	36.007	30	or 17+10log(B)= 29.47	PASS
140	5700	13.93	0.940	14.87	30.663	30	or 17+10log(B)= 29.48	PASS

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## 802.11ac\_VHT20\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.88	0.920	15.80	38.019	23.01	or 10+10log(B)= 22.49	PASS
44	5220	<b>14.89</b>	0.920	<b>15.81</b>	<b>38.106</b>	23.01	or 10+10log(B)= 22.48	PASS
48	5240	14.82	0.920	15.74	37.497	23.01	or 10+10log(B)= 22.49	PASS
52	5260	14.87	-1.240	13.63	23.067	30	or 17+10log(B)= 29.49	PASS
60	5300	14.82	-1.240	13.58	22.803	30	or 17+10log(B)= 29.48	PASS
64	5320	<b>14.91</b>	-1.240	<b>13.67</b>	<b>23.281</b>	30	or 17+10log(B)= 29.48	PASS
100	5500	14.85	-2.910	11.94	15.631	30	or 17+10log(B)= 29.49	PASS
116	5580	<b>14.89</b>	-2.910	<b>11.98</b>	<b>15.776</b>	30	or 17+10log(B)= 29.49	PASS
140	5700	<b>13.81</b>	-2.910	<b>10.90</b>	<b>12.303</b>	30	or 17+10log(B)= 29.48	PASS

## 802.11ac\_VHT20\_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.92	-1.380	13.54	22.594	23.01	or 10+10log(B)= 22.49	PASS
44	5220	14.92	-1.380	13.54	22.594	23.01	or 10+10log(B)= 22.49	PASS
48	5240	14.88	-1.380	13.50	22.387	23.01	or 10+10log(B)= 22.48	PASS
52	5260	14.91	-0.260	14.65	29.174	30	or 17+10log(B)= 29.49	PASS
60	5300	14.89	-0.260	14.63	29.040	30	or 17+10log(B)= 29.48	PASS
64	5320	14.95	-0.260	14.69	29.444	30	or 17+10log(B)= 29.48	PASS
100	5500	14.94	0.940	15.88	38.725	30	or 17+10log(B)= 29.49	PASS
116	5580	14.92	0.940	15.86	38.548	30	or 17+10log(B)= 29.48	PASS
140	5700	13.84	0.940	14.78	30.061	30	or 17+10log(B)= 29.48	PASS

## 802.11ac\_VHT20\_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	14.83	0.920	15.75	37.623	23.01	or 10+10log(B)= 22.48	PASS
44	5220	14.88	0.920	15.80	37.996	23.01	or 10+10log(B)= 22.48	PASS
48	5240	14.69	0.920	15.61	36.383	23.01	or 10+10log(B)= 22.47	PASS
52	5260	14.65	-0.260	14.39	27.499	30	or 17+10log(B)= 29.48	PASS
60	5300	14.68	-0.260	14.42	27.692	30	or 17+10log(B)= 29.48	PASS
64	5320	14.73	-0.260	14.47	27.958	30	or 17+10log(B)= 29.48	PASS
100	5500	14.75	0.940	15.69	37.060	30	or 17+10log(B)= 29.48	PASS
116	5580	14.52	0.940	15.46	35.135	30	or 17+10log(B)= 29.47	PASS
140	5700	13.89	0.940	14.83	30.434	30	or 17+10log(B)= 29.48	PASS

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## 802.11n\_HT40\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	14.95	0.920	15.87	38.652	23.01	or 10+10log(B)=	25.56	PASS
46	5230	14.88	0.920	15.80	38.034	23.01	or 10+10log(B)=	25.57	PASS
54	5270	14.92	-1.240	13.68	23.344	30	or 17+10log(B)=	32.57	PASS
62	5310	11.87	-1.240	10.63	11.566	30	or 17+10log(B)=	32.57	PASS
102	5510	14.89	-2.910	11.98	15.782	30	or 17+10log(B)=	32.56	PASS
110	5550	14.92	-2.910	12.01	15.892	30	or 17+10log(B)=	32.57	PASS
134	5670	14.86	-2.910	11.95	15.674	30	or 17+10log(B)=	32.57	PASS

## 802.11n\_HT40\_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	14.97	-1.380	13.59	22.865	23.01	or 10+10log(B)=	25.57	PASS
46	5230	14.93	-1.380	13.55	22.655	23.01	or 10+10log(B)=	25.56	PASS
54	5270	14.96	-0.260	14.70	29.524	30	or 17+10log(B)=	32.56	PASS
62	5310	11.97	-0.260	11.71	14.831	30	or 17+10log(B)=	32.57	PASS
102	5510	14.95	0.940	15.89	38.830	30	or 17+10log(B)=	32.57	PASS
110	5550	14.96	0.940	15.90	38.920	30	or 17+10log(B)=	32.57	PASS
134	5670	14.91	0.940	15.85	38.474	30	or 17+10log(B)=	32.56	PASS

## 802.11n\_HT40\_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	14.78	0.920	15.70	37.137	23.01	or 10+10log(B)=	25.56	PASS
46	5230	14.91	0.920	15.83	38.271	23.01	or 10+10log(B)=	25.56	PASS
54	5270	14.72	-0.260	14.46	27.952	30	or 17+10log(B)=	32.56	PASS
62	5310	11.92	-0.260	11.66	14.664	30	or 17+10log(B)=	32.57	PASS
102	5510	14.66	0.940	15.60	36.324	30	or 17+10log(B)=	32.56	PASS
110	5550	14.80	0.940	15.74	37.462	30	or 17+10log(B)=	32.57	PASS
134	5670	14.90	0.940	15.84	38.349	30	or 17+10log(B)=	32.56	PASS

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## 802.11ac\_VHT40\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	14.89	0.920	15.81	38.077	23.01 or 10+10log(B)= 25.57	PASS
46	5230	14.82	0.920	15.74	37.468	23.01 or 10+10log(B)= 25.57	PASS
54	5270	14.85	-1.240	13.61	22.943	30 or 17+10log(B)= 32.57	PASS
62	5310	11.83	-1.240	10.59	11.446	30 or 17+10log(B)= 32.56	PASS
102	5510	14.83	-2.910	11.92	15.547	30 or 17+10log(B)= 32.57	PASS
110	5550	14.78	-2.910	11.87	15.369	30 or 17+10log(B)= 32.57	PASS
134	5670	14.84	-2.910	11.93	15.583	30 or 17+10log(B)= 32.57	PASS

## 802.11ac\_VHT40\_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	14.92	-1.380	13.54	22.577	23.01 or 10+10log(B)= 25.57	PASS
46	5230	14.86	-1.380	13.48	22.267	23.01 or 10+10log(B)= 25.57	PASS
54	5270	14.92	-0.260	14.66	29.218	30 or 17+10log(B)= 32.57	PASS
62	5310	11.95	-0.260	11.69	14.745	30 or 17+10log(B)= 32.56	PASS
102	5510	14.90	0.940	15.84	38.340	30 or 17+10log(B)= 32.58	PASS
110	5550	14.88	0.940	15.82	38.164	30 or 17+10log(B)= 32.58	PASS
134	5670	14.89	0.940	15.83	38.252	30 or 17+10log(B)= 32.57	PASS

## 802.11ac\_VHT40\_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	14.65	0.920	15.57	36.090	23.01 or 10+10log(B)= 25.56	PASS
46	5230	14.82	0.920	15.74	37.538	23.01 or 10+10log(B)= 25.56	PASS
54	5270	14.70	-0.260	14.44	27.796	30 or 17+10log(B)= 32.56	PASS
62	5310	11.91	-0.260	11.65	14.612	30 or 17+10log(B)= 32.57	PASS
102	5510	14.54	0.940	15.48	35.319	30 or 17+10log(B)= 32.56	PASS
110	5550	14.73	0.940	15.67	36.920	30 or 17+10log(B)= 32.57	PASS
134	5670	14.87	0.940	15.81	38.087	30 or 17+10log(B)= 32.56	PASS

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**802.11ac\_VHT80\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	13.81	0.920	14.73	29.695	23.01 or 10+10log(B)= 28.75	PASS
58	5290	11.81	-1.240	10.57	11.394	30 or 17+10log(B)= 35.75	PASS
106	5530	13.87	-2.910	10.96	12.465	30 or 17+10log(B)= 35.74	PASS

**802.11ac\_VHT80\_Aux1**

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	13.87	-1.380	12.49	17.729	23.01 or 10+10log(B)= 28.75	PASS
58	5290	11.94	-0.260	11.68	14.713	30 or 17+10log(B)= 35.75	PASS
106	5530	13.95	0.940	14.89	30.810	30 or 17+10log(B)= 35.75	PASS

**802.11ac\_VHT80\_MIMO**

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	13.80	0.920	14.72	29.668	23.01 or 10+10log(B)= 28.75	PASS
58	5290	11.92	-0.260	11.66	14.664	30 or 17+10log(B)= 35.75	PASS
106	5530	13.81	0.940	14.75	29.841	30 or 17+10log(B)= 35.74	PASS

**Note:**

SISO offset= 11.5 dB  
 MIMO offset= dB

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## 10 PEAK POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

#### FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Mater device )	17dBm/ MHz
		Fixed point-to-point Acss Ponit	
	√	Mobile and portable clinet device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

#### IC

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP spectral density 10 dBm / MHz
5250~5350 MHz	11dBm / MHz
5470-5600 MHz and 5650-5725 MHz	11dBm / MHz
5725~5850 MHz	30dBm / 500 kHz

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 10.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- For U-NII1, U-NII-2A, U-NII-2C Band:**  
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth,

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Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

**For U-NII-3 Band:**

Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

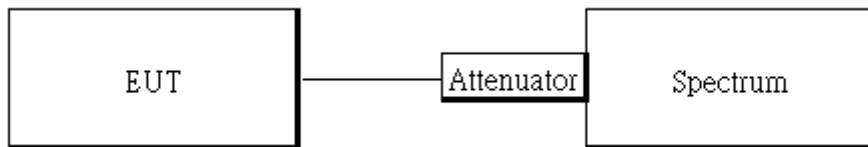
5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome

**10.3 Measurement Equipment Used**

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

**10.4 Test Set-up**



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## 10.5 Measurement Result

POWER DENSITY 802.11a MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	2.15	0.25	2.40	11	-8.60
5220	1.39	0.25	1.64	11	-9.36
5240	2.19	0.25	2.44	11	-8.56
5260	0.53	0.25	0.78	11	-10.22
5300	-0.25	0.25	0.00	11	-11.00
5320	2.52	0.25	2.77	11	-8.23
5500	2.43	0.25	2.68	11	-8.32
5580	1.30	0.25	1.55	11	-9.45
5700	1.73	0.25	1.98	11	-9.02
5745	8.82	0.25	8.82	30	-21.18
5785	9.22	0.25	9.22	30	-20.78
5825	8.68	0.25	8.68	30	-21.32
POWER DENSITY 802.11n HT20 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	2.73	0.20	2.93	11	-8.07
5220	2.82	0.20	3.02	11	-7.98
5240	1.05	0.20	1.25	11	-9.75
5260	3.02	0.20	3.22	11	-7.78
5300	2.20	0.20	2.40	11	-8.60
5320	1.71	0.20	1.91	11	-9.09
5500	2.82	0.20	3.02	11	-7.98
5580	3.46	0.20	3.66	11	-7.34
5700	0.36	0.20	0.56	11	-10.44
5745	9.11	0.20	9.11	30	-20.89
5785	8.83	0.20	8.83	30	-21.17
5825	9.38	0.20	9.38	30	-20.62
POWER DENSITY 802.11n HT40 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-5.1	0.74	-4.36	11	-15.36
5230	-4.93	0.74	-4.19	11	-15.19
5270	-7.76	0.74	-7.02	11	-18.02
5310	-11.16	0.74	-10.42	11	-21.42
5510	-3.34	0.74	-2.60	11	-13.60
5550	-4.56	0.74	-3.82	11	-14.82
5670	-7.15	0.74	-6.41	11	-17.41
5755	6.18	0.74	6.18	30	-23.82
5795	6.09	0.74	6.09	30	-23.91

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POWER DENSITY 802.11ac VHT80 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-7.64	0.77	-6.87	11	-17.87
5290	-10.43	0.77	-9.66	11	-20.66
5530	-8.67	0.77	-7.90	11	-18.90
5610	-8.33	0.77	-7.56	11	-18.56
5775	3.23	0.77	3.23	30	-26.77

EIRP spectral density 802.11n HT20 MODE						EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)	Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	2.93	0.92	3.85	10	-7.07	5180	-4.36	0.92	-3.44	10	-14.36
5220	3.02	0.92	3.94	10	-6.98	5220	-4.19	0.92	-3.27	10	-14.19
5240	1.25	0.92	2.17	10	-8.75						

EIRP spectral density 802.11ac VHT40 MODE						EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)	Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5190	0.73	0.92	1.65	10	-9.27	5210	-6.87	0.92	-5.95	10	-16.87
5230	0.73	0.92	1.65	10	-9.27						

**Note:**

SISO offset= 11.5 dB

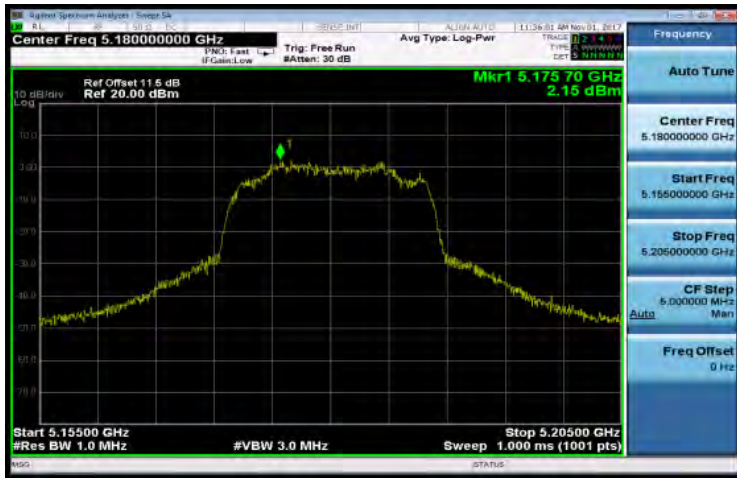
MIMO offset= dB

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802.11a\_20MHz\_5180MHz



802.11a\_20MHz\_5260MHz



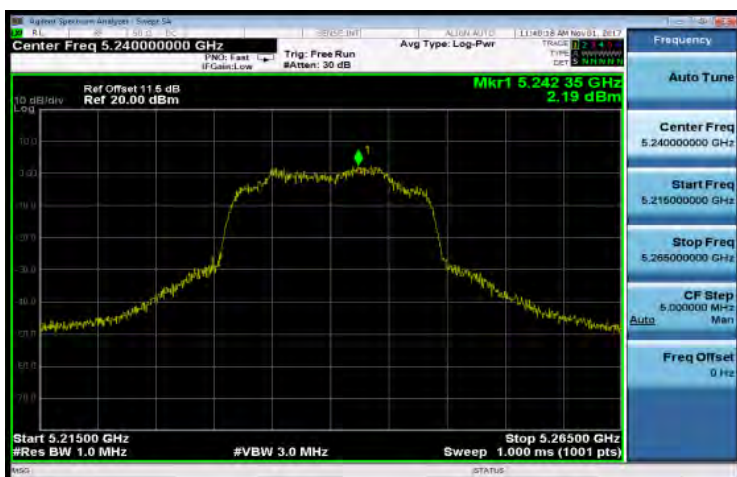
802.11a\_20MHz\_5220MHz



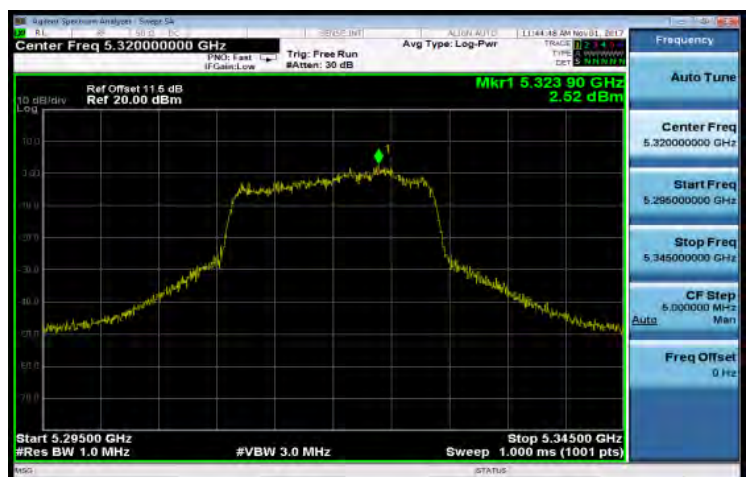
802.11a\_20MHz\_5300MHz



802.11a\_20MHz\_5240MHz



802.11a\_20MHz\_5320MHz



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