

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.: KPL-W00, KPL-W09

Model Difference: For Marketing Purpose

FCC ID: QISKPL-W0X

IC: 6369A-KPLW0X

Report Number: E2/2017/C0005

FCC Rule Part: §15.407, Cat:NI

IC Rule: RSS-247 issue 2 Feb. 2017

Issue Date: Jan. 17, 2017

Date of Test: Dec. 05, 2017 ~ Jan. 10, 2018

Date of EUT Received: Dec. 05, 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:

Tiffany Kao

Tiffany Kao / Clerk

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Jim Chang / Asst. Manager



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Revision History

Report Number	Revision	Description	Issue Date
E2/2017/C0008	Rev.00	Initial creation of document	Jan. 17, 2018

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1 GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	HUAWEI MateBook	
Brand Name:	HUAWEI	
Model No.:	KPL-W00, KPL-W09	
Model Difference:	For Marketing Purpose	
Product SW/HW version:	2.3.0.7(C001) / C2B	
Radio SW/HW version:	Wi-Fi Component: 8265 / Wi-Fi Component: 20.0	
Test SW Version:	N/A	
RF power setting in TEST SW:	N/A	
Power Supply:	7.6Vdc from Rechargeable Li-ion Battery or 5Vdc / 9Vdc / 12Vdc / 15Vdc / 20V dc from AC/DC Adapter.	
	Battery:	Model No.: HB4593R1ECW, Supplier: HUAWEI
	Adapter:	Model No.: HW-200325UP0, Supplier: HUAWEI

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FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5150~5250	4	14.95	OFDM
	5250~5350	4	14.98	
	5470~5725	12	13.98	
	5725-5850	5	13.97	
11n_HT / ac_VHT 20M	5150~5250	4	HT: 14.98	OFDM
	5250~5350	4	HT: 14.98	
	5470~5725	12	HT: 13.99	
	5725-5850	5	HT: 13.97	
11n_HT / ac_VHT 40M	5150~5250	2	HT: 14.97	OFDM
	5250~5350	2	HT: 14.98	
	5470~5725	6	HT:13.98	
	5725-5850	2	HT: 13.96	
11ac VHT80M	5150~5250	1	13.94	OFDM
	5250~5350	1	11.98	
	5470~5725	3	13.99	
	5725-5850	1	13.94	
Antenna Designation:		PIFA Antenna, Main Antenna: 5150~5250MHz Peak Gain: 1.8dBi 5250~5350MHz Peak Gain: 1.8dBi 5470~5725MHz Peak Gain: 1.84dBi 5725~5850MHz Peak Gain: 1.84dBi Aux Antenna: 5150~5250MHz Peak Gain: -0.55dBi 5250~5350MHz Peak Gain: 1.34dBi 5470~5725MHz Peak Gain: 1.46dBi 5725~5850MHz Peak Gain: 1.46dBi		

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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	19.70	OFDM
	5260~5320	4	Avg.	14.98	
	5500~5580	5	Avg.	13.96	
	5660~5700	3	Avg.	13.98	
	5745~5825	5	Avg.	13.97	
11n_HT / ac_VHT 20M	5180~5240	4	EIRP	HT: 19.74	OFDM
	5260~5320	4	Avg.	HT: 14.98	
	5500~5580	5	Avg.	HT: 13.99	
	5660~5720	3	Avg.	HT: 13.98	
	5745~5825	5	Avg.	HT: 13.97	
11n_HT / ac_VHT 40M	5190~5230	2	EIRP	HT: 19.75	OFDM
	5270~5310	2	Avg.	HT: 14.98	
	5510~5550	2	Avg.	HT: 13.98	
	5670~5710	1	Avg.	HT: 13.98	
	5755~5795	2	Avg.	HT: 13.96	
11ac VHT80M	5210~5210	1	EIRP	18.66	OFDM
	5290~5290	1	Avg.	11.98	
	5530~5530	1	Avg.	13.95	
	5690~5775	1	Avg.	13.94	
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

KDB 789033 D02 v01r04 General UNII Test Procedures New Rules

KDB 644545 D03 v01 Guidance for IEEE 802.11ac

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 placed on a 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 30 MHz. 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 placed on a 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 2dB, and 10dB attenuator.

offset = RF cable loss (dB)+ attenuation factor(dB)=12(dB)

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission Configuration



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



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

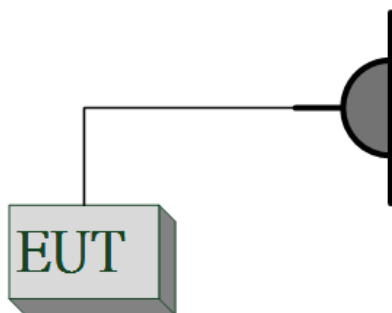


Table 2-1 Equipment Used in Tested System

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

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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

3 channels are provided for 802.11ac_VHT80

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	138	5690 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

Remark: The device will not operate in 5600~5650MHz band for IC.

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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 802.11n 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 Main mode yields the highest reading that generates the highest emission. Therefore, 802.11ac+SISO Main 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	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11a	5500~5720	100 to 140	100,116,140	OFDM	6	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
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	MAIN
802.11n_HT20				OFDM	MCS8	MAIN
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MAIN
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MAIN
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MAIN
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MAIN

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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	MAIN
802.11n_HT20				OFDM	MCS8	MAIN
802.11n_HT40	5510~5710	102 to 142	102,110,134	OFDM	MCS8	MAIN
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS8	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS8	MAIN
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS8	MAIN
802.11ac_VHT80	5775	155	155	OFDM	MCS8	MAIN

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	MAIN
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	MAIN
802.11n_HT40 802.11ac_VHT40	5190~5230	38 to 46	38,46	OFDM	MCS0	MAIN
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	MAIN
802.11n_HT40 802.11ac_VHT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MAIN
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN
802.11a	5500~5720	100 to 144	100,116,140,144	OFDM	6	MAIN
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	MAIN
802.11n_HT40 802.11ac_VHT40	5510~5710	102 to 142	102,110,134,142	OFDM	MCS0	MAIN
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS0	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20 802.11ac_VHT20				OFDM	MCS0	MAIN
802.11n_HT40 802.11ac_VHT40	5755~5795	151 to 159	151,159	OFDM	MCS0	MAIN
802.11ac_VHT80	5775	155	155	OFDM	MCS0	MAIN

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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 : Vertical)	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 : Horizontal)	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	12/24/2017	12/23/2018
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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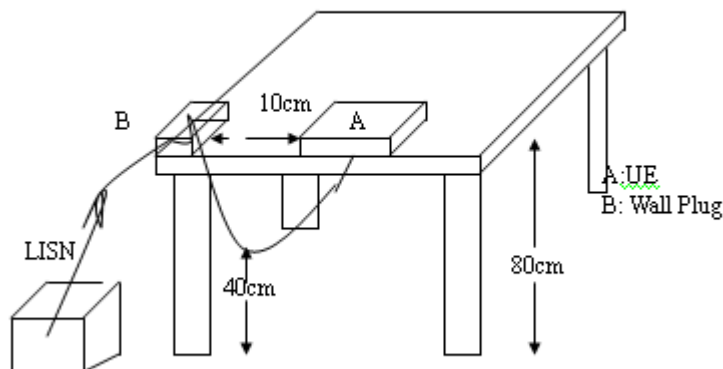
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6.4 Test SET-UP



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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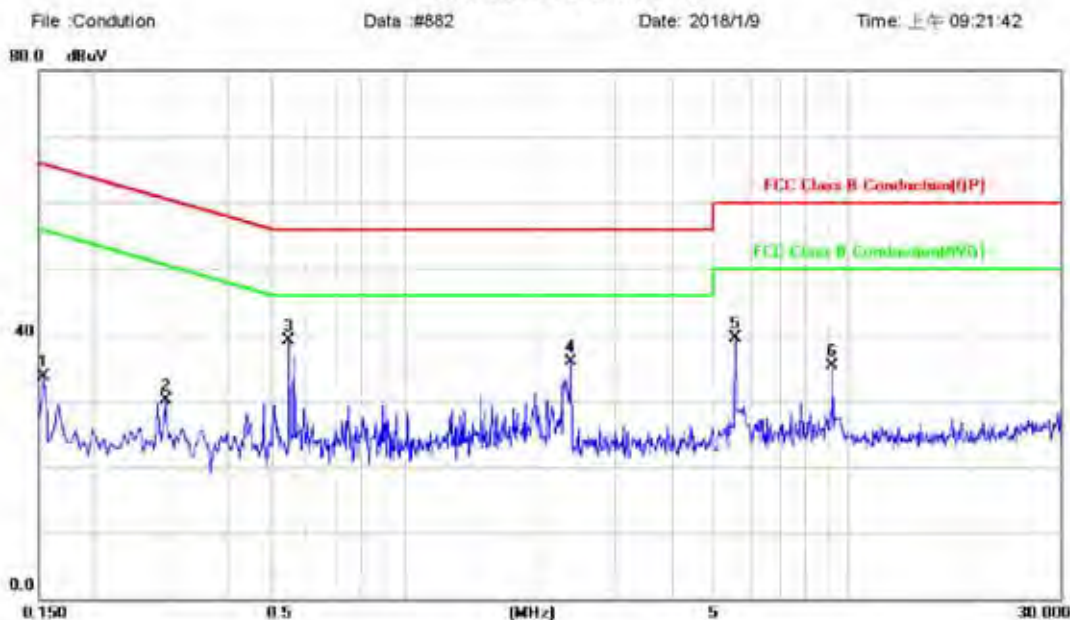
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AC POWER LINE CONDUCTED EMISSION TEST DATA

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

Site : Conduction Room Phase: **L1** Temperature: 21 °C
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 63 %
Mode:
Note:

Conducted Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1540	14.14	19.65	33.79	65.78	-31.99	peak	
2		0.2900	10.26	19.79	30.05	60.52	-30.47	peak	
3 *		0.5500	18.94	20.11	39.05	56.00	-16.95	peak	
4		2.3780	15.33	20.49	35.82	56.00	-20.18	peak	
5		5.5700	19.41	20.09	39.50	60.00	-20.50	peak	
6		9.2420	15.30	20.08	35.38	60.00	-24.62	peak	

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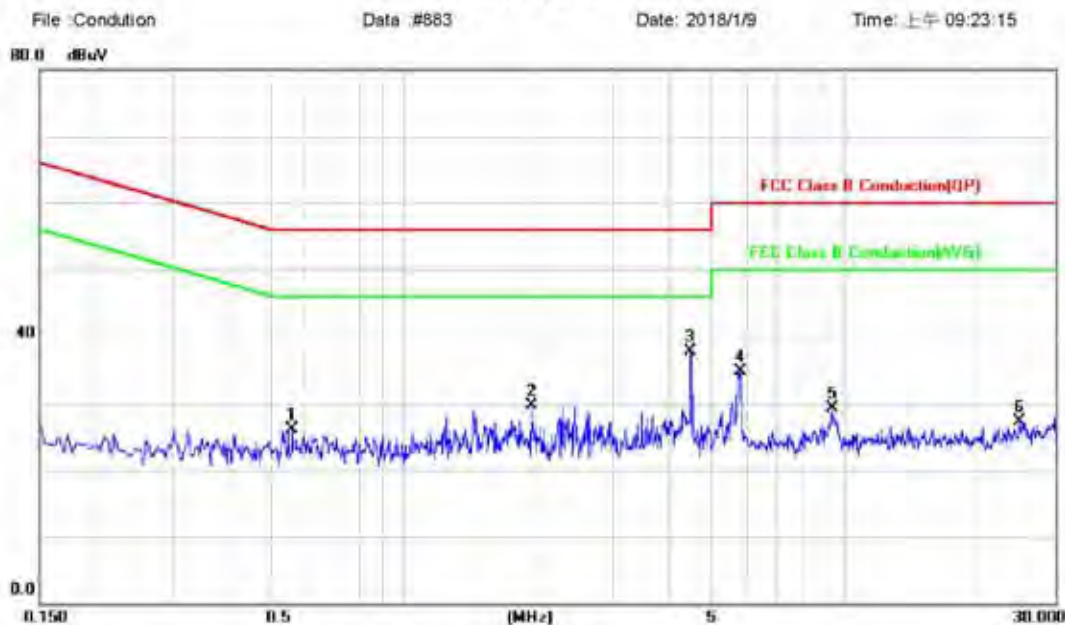
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Site: Conduction Room
Limit: FCC Class B Conduction(QP)
Mode:
Note:

Phase: **N**
Power: AC 120V/60Hz

Temperature: 21 ℃
Humidity: 63 %

Conducted Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.5620	6.18	19.96	26.14	56.00	-29.86	peak	
2		1.9580	9.32	20.39	29.71	56.00	-26.29	peak	
3 *		4.4900	17.62	20.03	37.65	56.00	-18.35	peak	
4		5.8060	14.83	19.95	34.78	60.00	-25.22	peak	
5		9.3660	9.39	19.94	29.33	60.00	-30.67	peak	
6		24.9780	7.05	20.25	27.30	60.00	-32.70	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
802.11a	94.91	0.23
802.11n_20	95.59	0.20
802.11ac_20	95.61	0.20
802.11n_40	84.33	0.74
802.11ac_40	84.48	0.73
802.11ac_80	84.01	0.76

$$\text{Duty Cycle Factor: } 10 * \log(1/0.9491) = 0.23$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.9559) = 0.2$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.9561) = 0.19$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.8433) = 0.74$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.8448) = 0.73$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.8401) = 0.76$$

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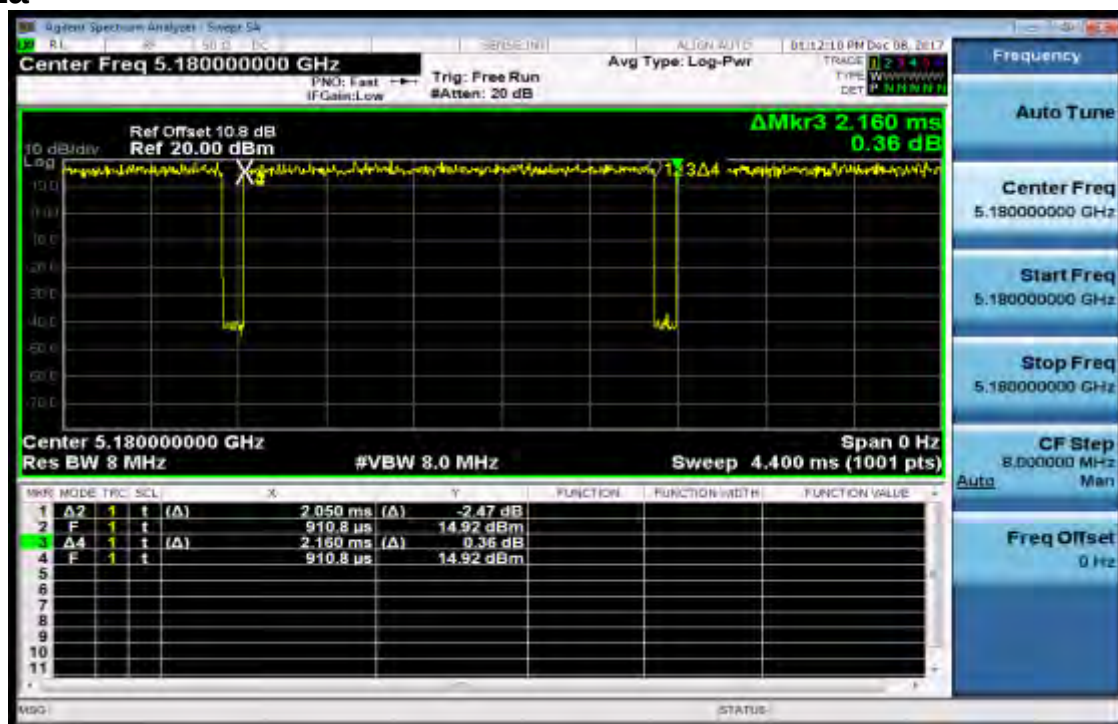
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DUTY CYCLE TEST SIGNAL Measurement Result

802.11a



802.11n HT20



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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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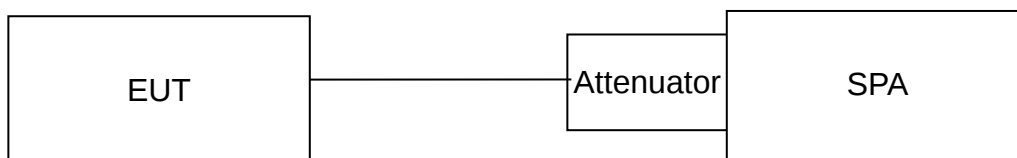
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8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equip-ment	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	12/24/2017	12/23/2018
DC Block	PASTERNAK	PE8210	RF29	12/24/2017	12/23/2018
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018
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	19.35	12.867	5180	19.21	12.835
5220	20.21	13.056	5220	20.67	13.153
5240	20.01	13.012	5240	19.21	12.835
5260	19.81	12.970	5260	20.37	13.090
5300	19.92	12.994	5300	19.38	12.874
5320	19.80	12.967	5320	19.47	12.893
5500	20.33	13.082	5500	20.07	13.025
5580	20.02	13.015	5580	20.50	13.118
5700	20.06	13.022	5700	19.69	12.943

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802.11a_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	13.28	11.231
5785	15.05	11.776
5825	16.33	12.129

802.11a_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	12.09	10.823
5785	15.15	11.804
5825	13.37	11.260

802.11n_HT20_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.47	13.111
5220	20.99	13.220
5240	20.25	13.064
5260	20.47	13.112
5300	20.35	13.086
5320	20.35	13.086
5500	20.99	13.220
5580	21.02	13.226
5700	21.23	13.269

802.11n_HT20_Aux1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.03	13.227
5220	19.58	12.918
5240	20.03	13.017
5260	21.02	13.225
5300	20.30	13.075
5320	20.99	13.219
5500	20.76	13.172
5580	20.55	13.128
5700	20.02	13.016

802.11n HT20_Main

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5720 (UNII-2C)	16.170	12.09
5720 (UNII-3)	5.090	7.07

802.11n HT20_Aux

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5720 (UNII-2C)	15.410	11.88
5720 (UNII-3)	4.860	6.87

802.11n_HT20_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	14.07	11.483
5785	11.03	10.426
5825	15.11	11.793

802.11n_HT20_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	13.90	11.430
5785	15.12	11.796
5825	15.11	11.793

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802.11n_HT40_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	43.87	16.422	5190	43.26	16.361
5230	42.56	16.290	5230	42.86	16.321
5270	42.28	16.261	5270	42.30	16.264
5310	45.11	16.543	5310	43.84	16.418
5510	42.62	16.296	5510	43.81	16.416
5550	43.57	16.392	5550	42.91	16.325
5670	45.08	16.539	5670	43.42	16.376

802.11n_HT40_Aux1

802.11n HT40_Main

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5710 (UNII-2C)	37.560	15.75
5710 (UNII-3)	4.750	6.77

802.11n HT40_Aux

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5710 (UNII-2C)	37.760	15.77
5710 (UNII-3)	4.770	6.79

802.11n_HT40_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	33.89	15.300	5755	31.41	14.971
5795	35.12	15.455	5795	35.05	15.447

802.11n_HT40_Aux1

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802.11ac_VHT80_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	79.44	19.000	5210	80.65	19.066
5290	80.03	19.032	5290	78.90	18.971
5530	78.97	18.974	5530	79.13	18.983
5610	80.67	19.067	5610	82.15	19.146

802.11ac_VHT80_Aux1

802.11ac VHT80_Main

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5690 (UNII-2C)	70.880	18.51
5690 (UNII-3)	3.990	6.01

802.11ac VHT80_Aux

Frequency (MHz)	26dB Bandwidth (MHz)	10 Log (B) (dB)
5690 (UNII-2C)	71.080	18.52
5690 (UNII-3)	4.000	6.02

802.11ac_VHT80_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	70.13	18.459	5775	73.86	18.684

802.11ac_VHT80_Aux1

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99% Bandwidth

802.11a_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	16.623	12.207	5180	16.609	12.203
5220	16.622	12.207	5220	16.616	12.205
5240	16.526	12.182	5240	16.561	12.191
5260	16.680	12.222	5260	16.603	12.202
5300	16.584	12.197	5300	16.568	12.193
5320	16.644	12.213	5320	16.661	12.217
5500	16.597	12.200	5500	16.616	12.205
5580	16.581	12.196	5580	16.572	12.194
5700	16.607	12.203	5700	16.584	12.197

802.11a_Aux1

802.11a_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.24	12.105	5745	16.01	12.044
5785	16.11	12.071	5785	16.08	12.063
5825	16.18	12.090	5825	16.04	12.052

802.11a_Aux1

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802.11n_HT20_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	17.756	12.493	5180	17.760	12.494
5220	17.782	12.500	5220	17.741	12.490
5240	17.734	12.488	5240	17.786	12.501
5260	17.771	12.497	5260	17.802	12.505
5300	17.813	12.507	5300	17.804	12.505
5320	17.773	12.498	5320	17.742	12.490
5500	17.757	12.494	5500	17.795	12.503
5580	17.755	12.493	5580	17.809	12.506
5700	17.744	12.491	5700	17.729	12.487

802.11n_HT20_Aux1

802.11n HT20_Main

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5720 (UNII-2C)	13.460	11.29
5720 (UNII-3)	4.240	6.27

802.11n HT20_Aux

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5720 (UNII-2C)	13.488	11.30
5720 (UNII-3)	4.249	6.28

802.11n_HT20_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.26	12.371	5745	17.08	12.324
5785	17.13	12.338	5785	17.34	12.390
5825	17.25	12.367	5825	17.43	12.413

802.11n_HT20_Aux1

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802.11n_HT40_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5190	35.997	15.563	5190	36.074	15.572
5230	36.059	15.570	5230	36.099	15.575
5270	36.047	15.569	5270	36.048	15.569
5310	36.086	15.573	5310	36.077	15.572
5510	36.077	15.572	5510	36.074	15.572
5550	36.027	15.566	5550	35.956	15.558
5670	36.066	15.571	5670	36.017	15.565

802.11n_HT40_Aux1

802.11n HT40_Main

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5710 (UNII-2C)	32.066	15.06
5710 (UNII-3)	4.054	6.08

802.11n HT40_Aux

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5710 (UNII-2C)	32.005	15.05
5710 (UNII-3)	4.046	6.07

802.11n_HT40_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)	Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.43	15.494	5755	35.75	15.533
5795	36.01	15.564	5795	35.58	15.512

802.11n_HT40_Aux1

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802.11ac_VHT80_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5210	74.987	18.750
5290	75.016	18.752
5530	74.931	18.747

802.11ac_VHT80_Aux1

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5210	75.145	18.759
5290	74.888	18.744
5530	74.923	18.746

802.11ac VHT80_Main

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5690 (UNII-2C)	70.984	18.51
5690 (UNII-3)	3.996	6.02

802.11ac VHT80_Aux

Frequency (MHz)	99% Bandwidth (MHz)	10 Log (B) (dB)
5690 (UNII-2C)	71.010	18.51
5690 (UNII-3)	3.997	6.02

802.11ac_VHT80_Main

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	70.33	18.471

802.11ac_VHT80_Aux1

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	68.98	18.387

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99% BW to prove that all signals in band I is no over band U-NII-1 & 3

802.11a_Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.13	< 5250
5745	5736.75	> 5725

802.11a_Aux1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.13	< 5250
5745	5736.78	> 5725

802.11n_HT20_Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.73	< 5250
5745	5736.12	> 5725

802.11n_HT20_Aux1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.79	< 5250
5745	5736.12	> 5725

802.11n_HT40_Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.05	< 5250
5755	5736.95	> 5725

802.11n_HT40_Aux1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.05	< 5250
5755	5736.90	> 5725

802.11ac_VHT80_Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5247.40	< 5250
5775	5737.20	> 5725

802.11n_HT80_Aux1

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5247.40	< 5250
5775	5737.50	> 5725

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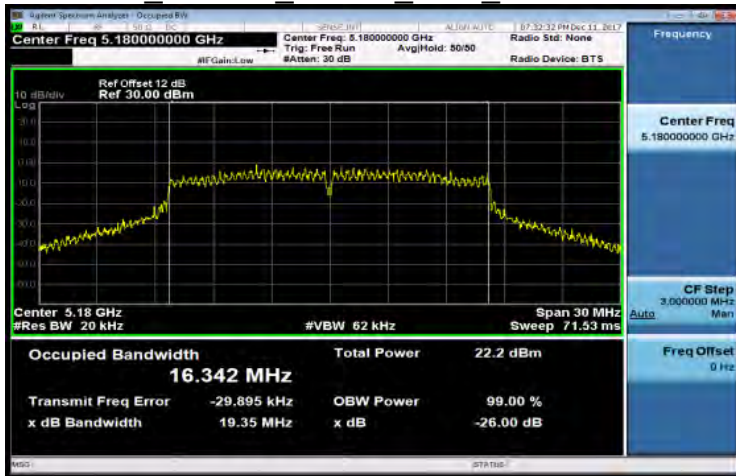
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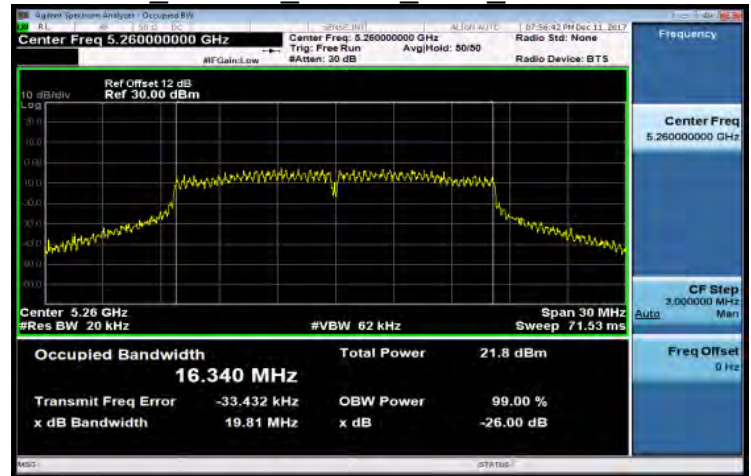
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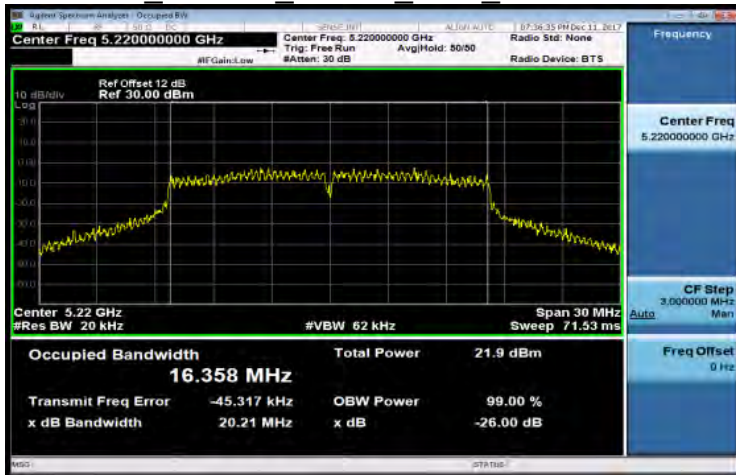
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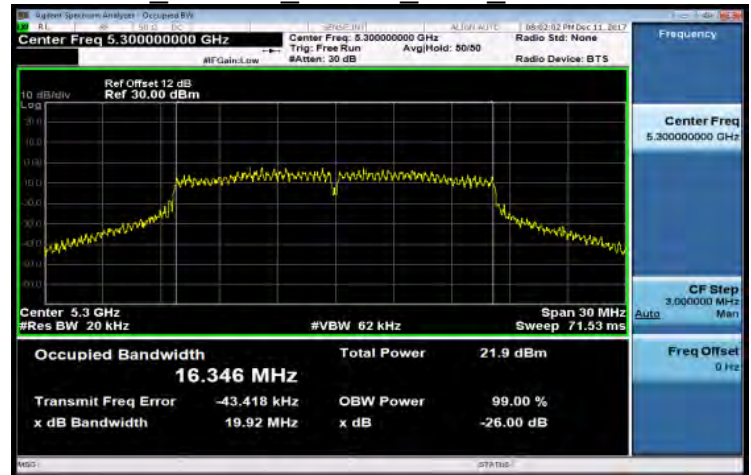
FCC 802.11a 20MHz Main 5260MHz



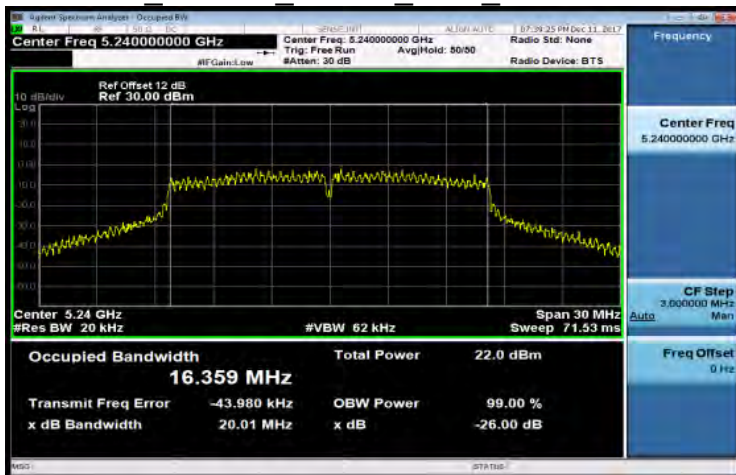
FCC 802.11a 20MHz Main 5220MHz



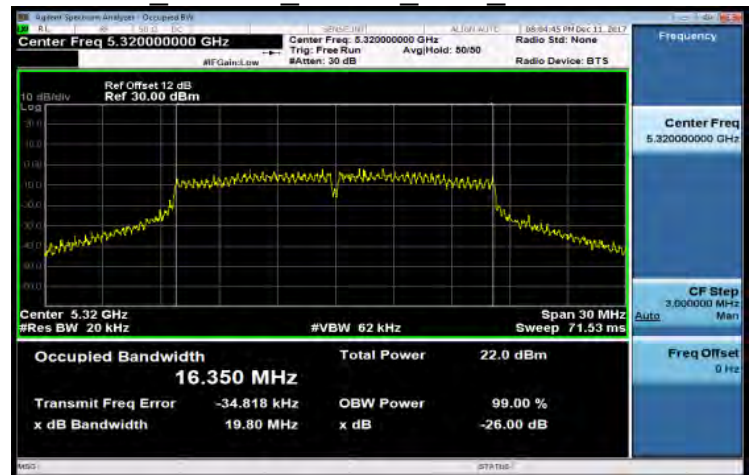
FCC 802.11a 20MHz Main 5300MHz



FCC 802.11a 20MHz Main 5240MHz



FCC 802.11a 20MHz Main 5320MHz



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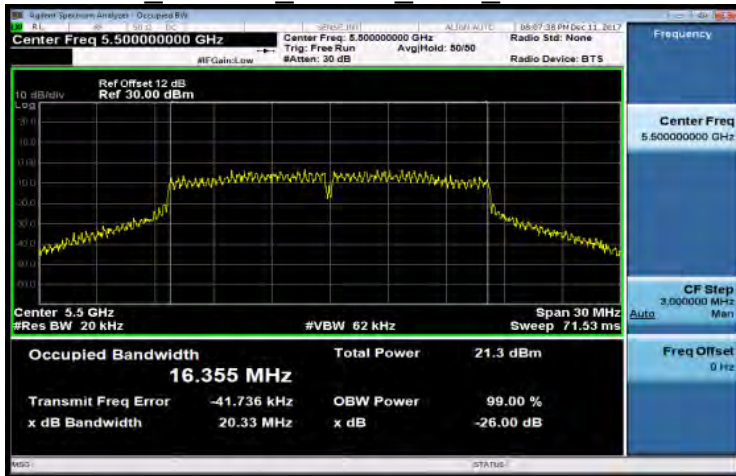
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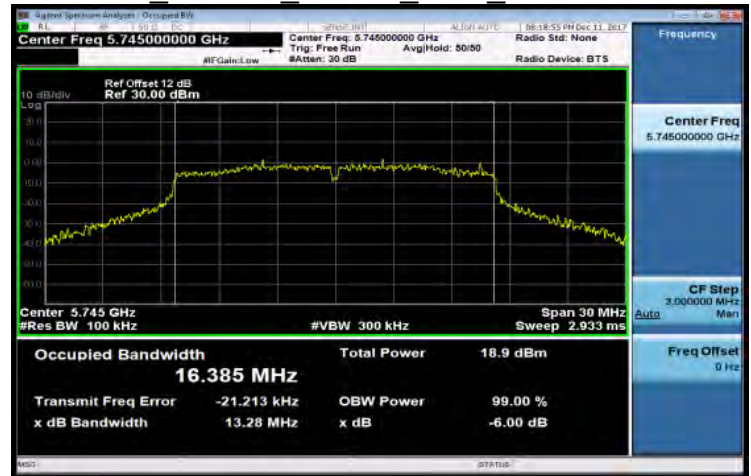
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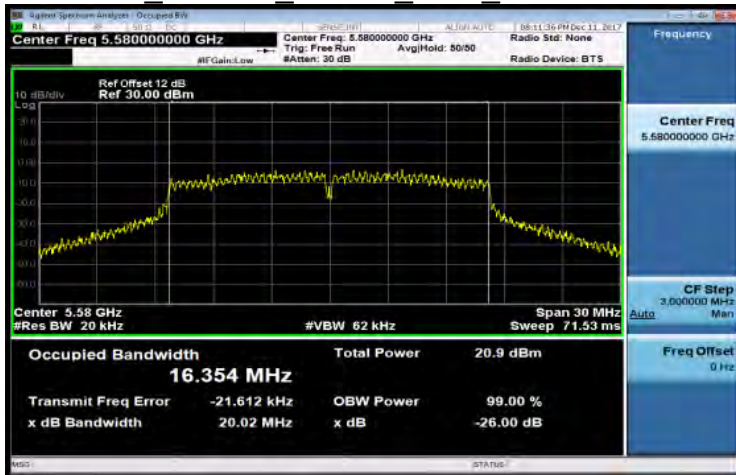
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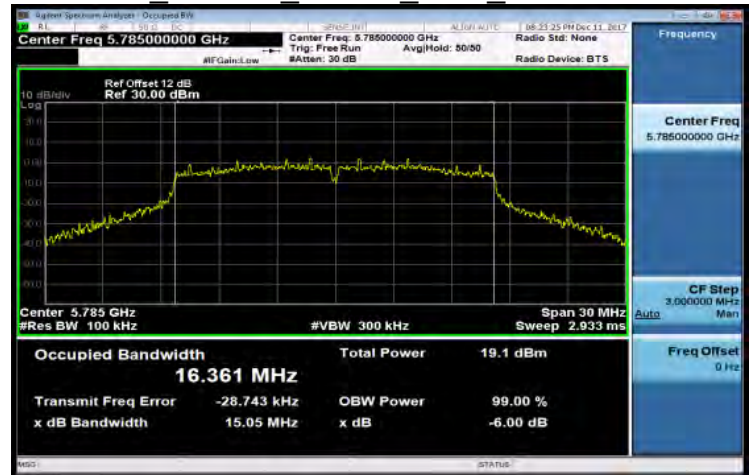
FCC 802.11a 20MHz Main 5745MHz



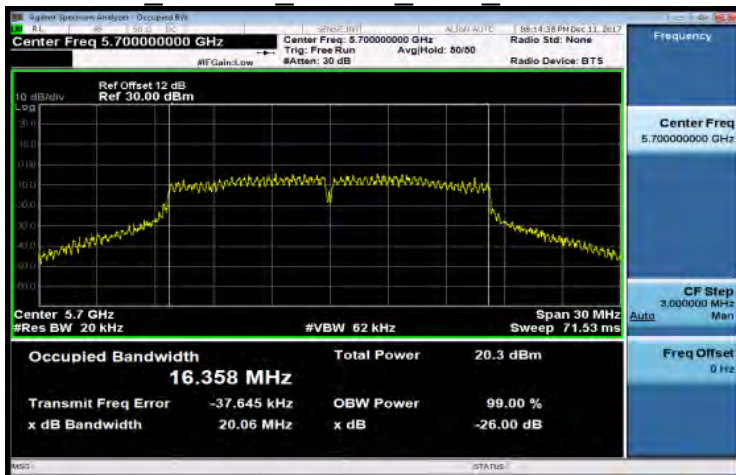
FCC 802.11a 20MHz Main 5580MHz



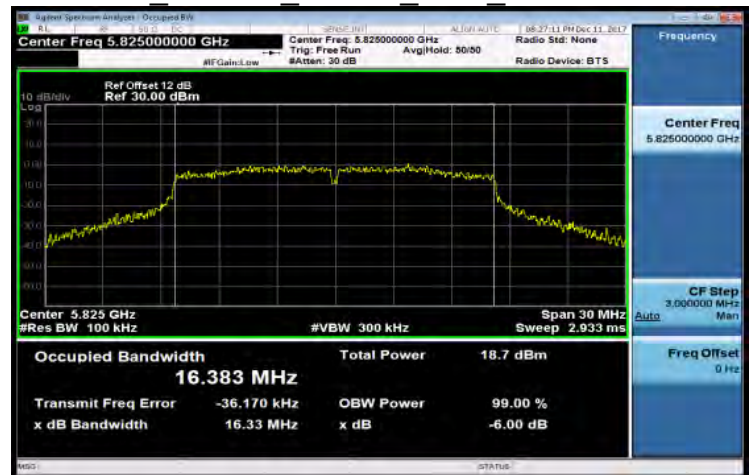
FCC 802.11a 20MHz Main 5785MHz



FCC 802.11a 20MHz Main 5700MHz



FCC 802.11a 20MHz Main 5825MHz

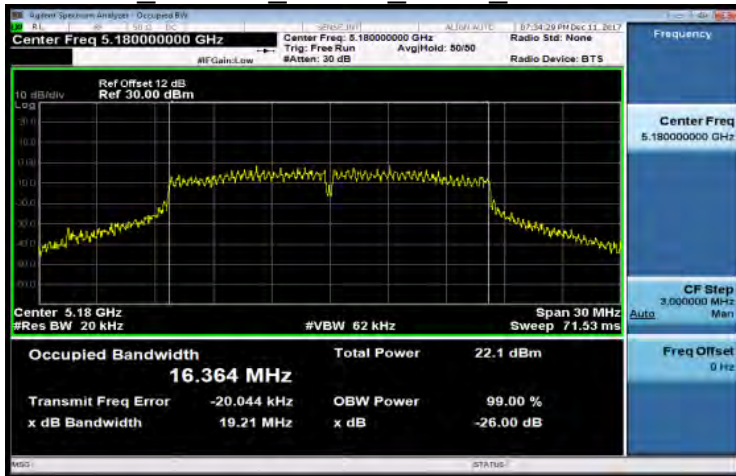


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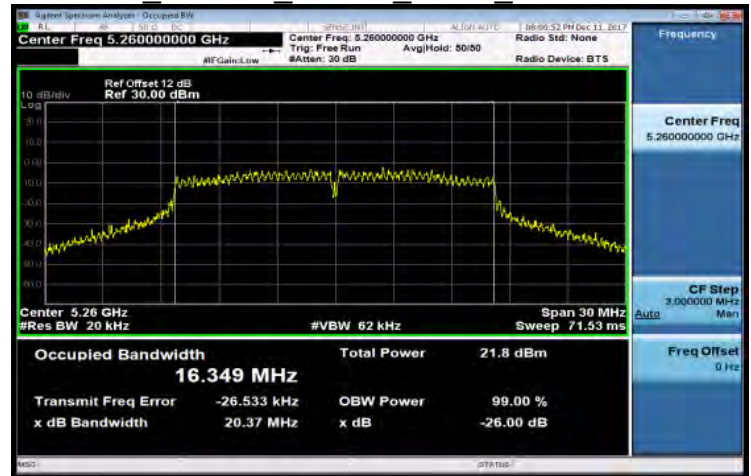
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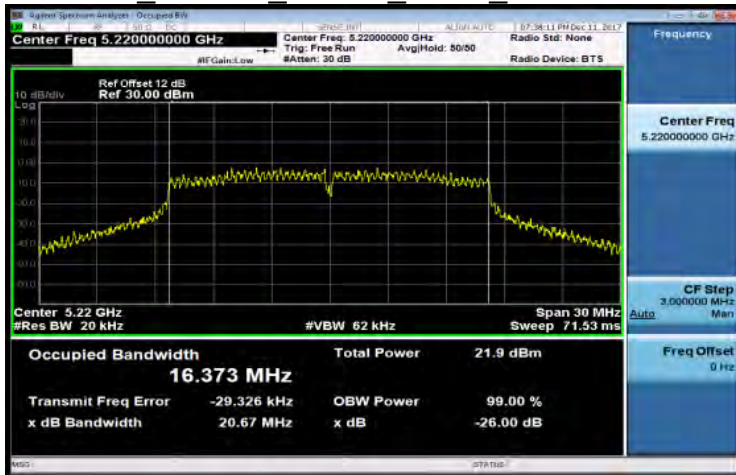
FCC 802.11a 20MHz AUX1 5180MHz



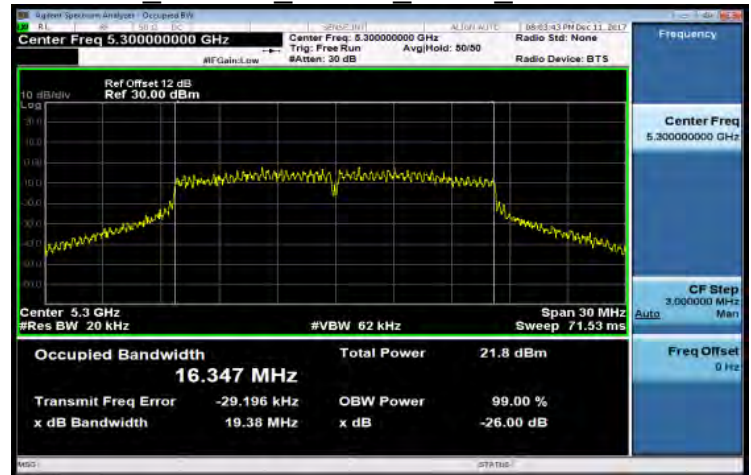
FCC 802.11a 20MHz AUX1 5260MHz



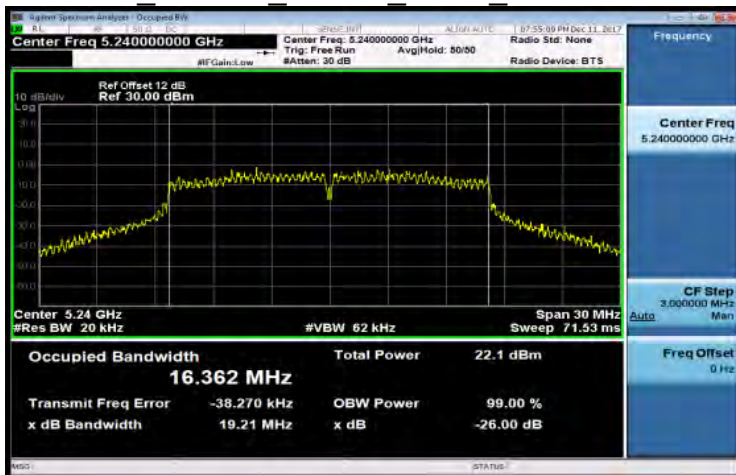
FCC 802.11a 20MHz AUX1 5220MHz



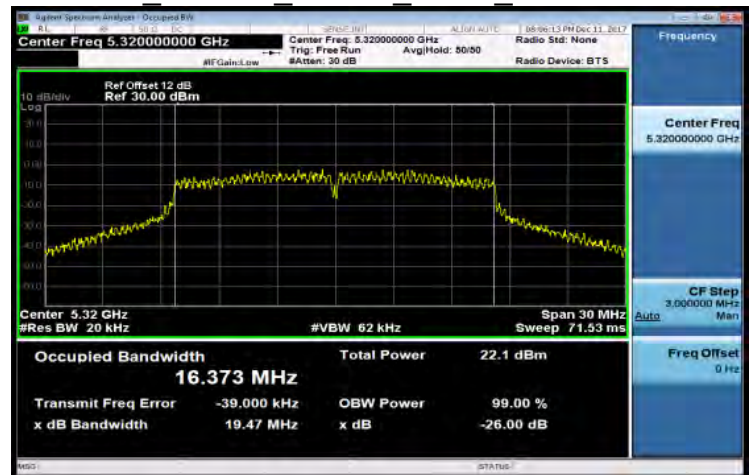
FCC 802.11a 20MHz AUX1 5300MHz



FCC 802.11a 20MHz AUX1 5240MHz



FCC 802.11a 20MHz AUX1 5320MHz



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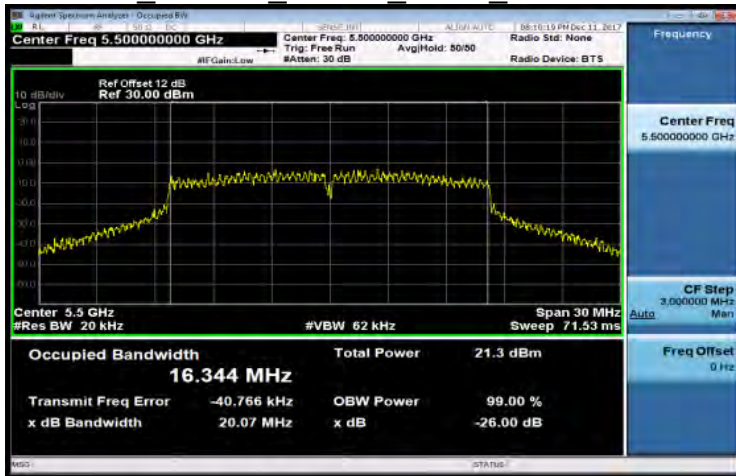
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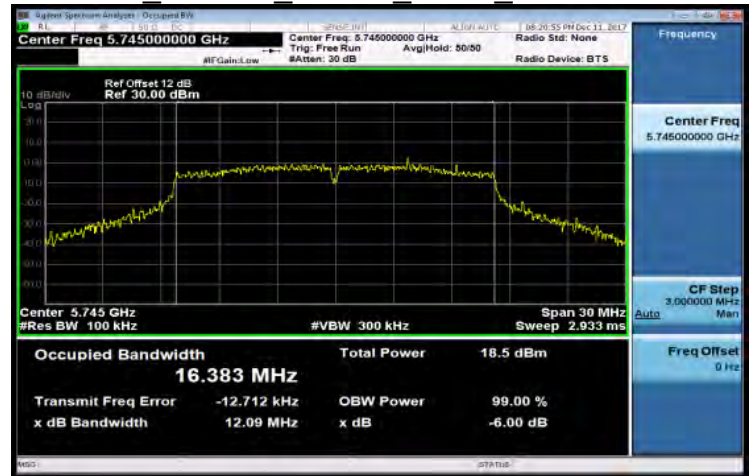
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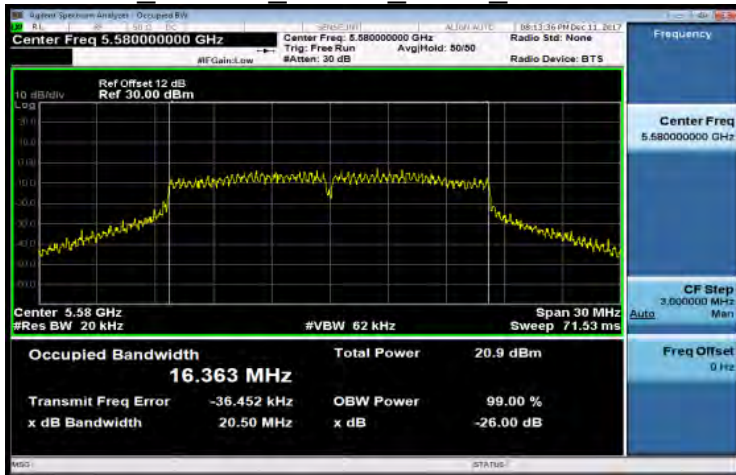
FCC 802.11a 20MHz AUX1 5500MHz



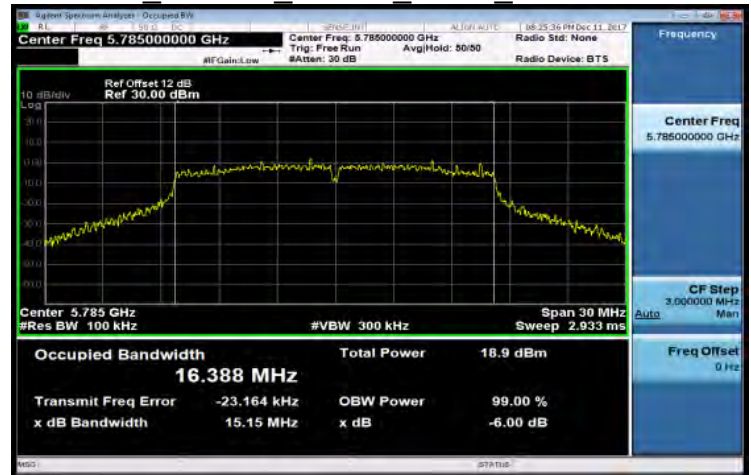
FCC 802.11a 20MHz AUX1 5745MHz



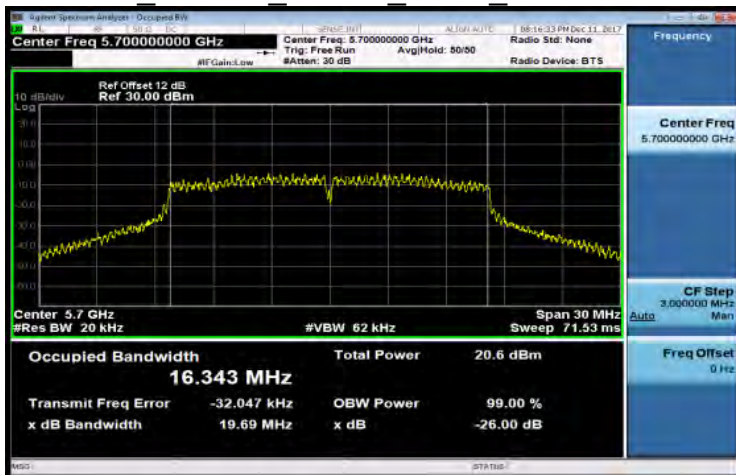
FCC 802.11a 20MHz AUX1 5580MHz



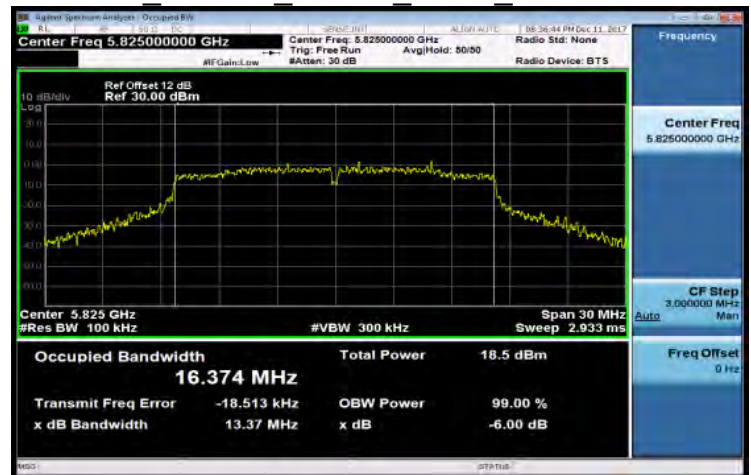
FCC 802.11a 20MHz AUX1 5785MHz



FCC 802.11a 20MHz AUX1 5700MHz



FCC 802.11a 20MHz AUX1 5825MHz



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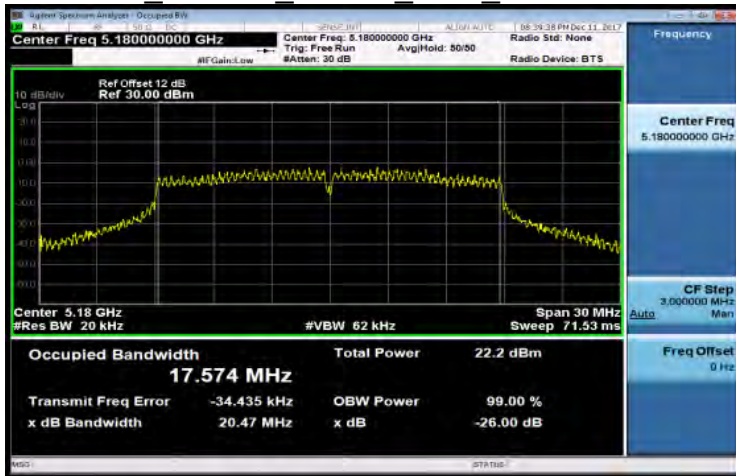
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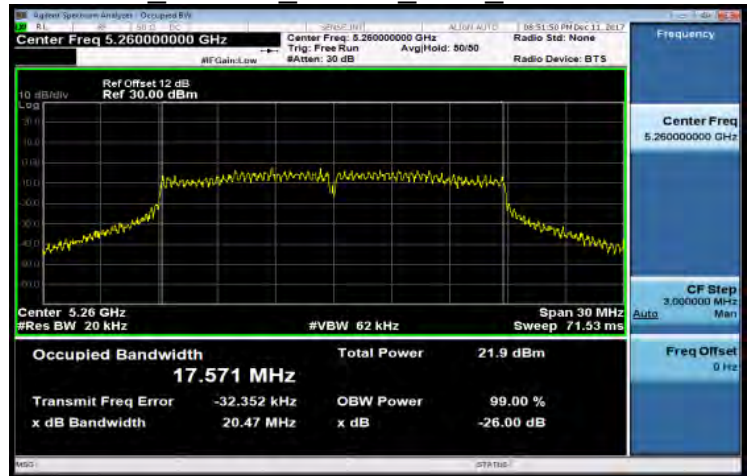
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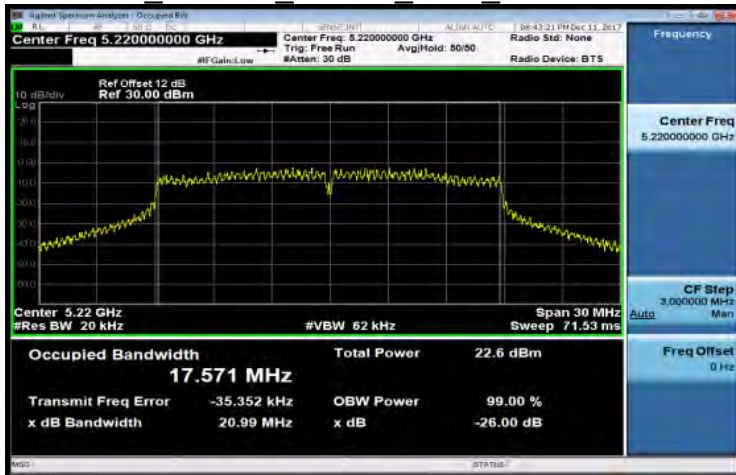
FCC 802.11n 20MHz Main 5180MHz



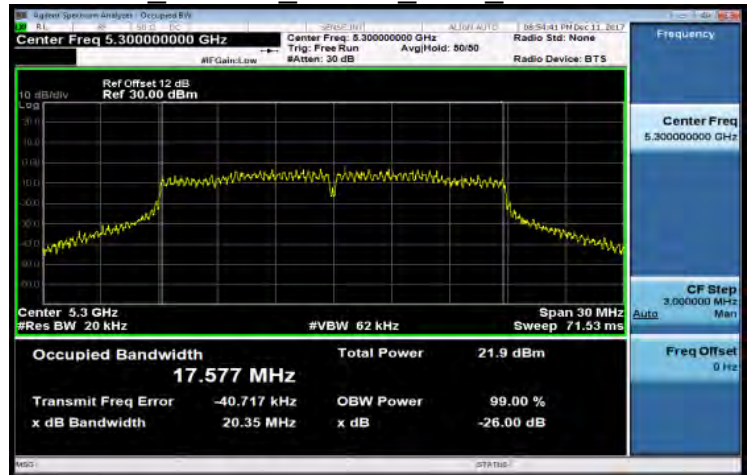
FCC 802.11n 20MHz Main 5260MHz



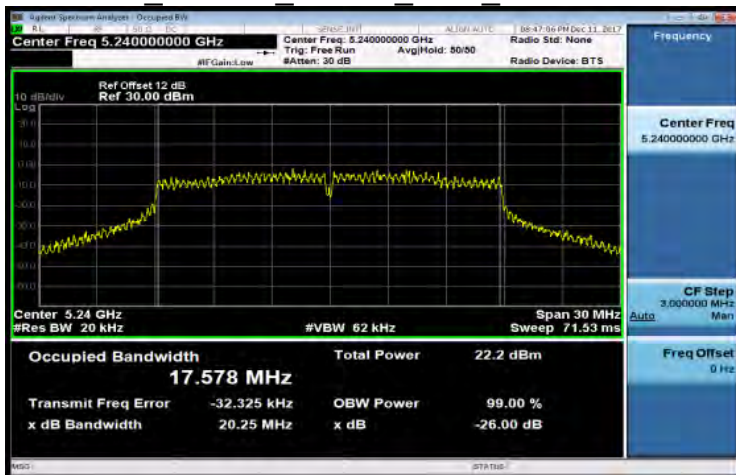
FCC 802.11n 20MHz Main 5220MHz



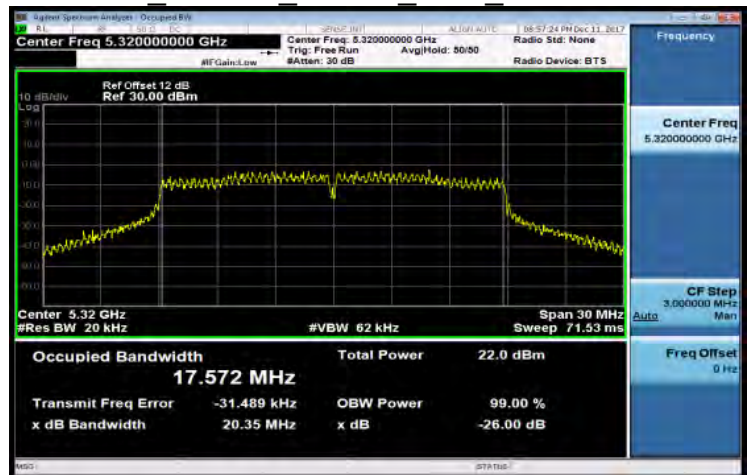
FCC 802.11n 20MHz Main 5300MHz



FCC 802.11n 20MHz Main 5240MHz



FCC 802.11n 20MHz Main 5320MHz



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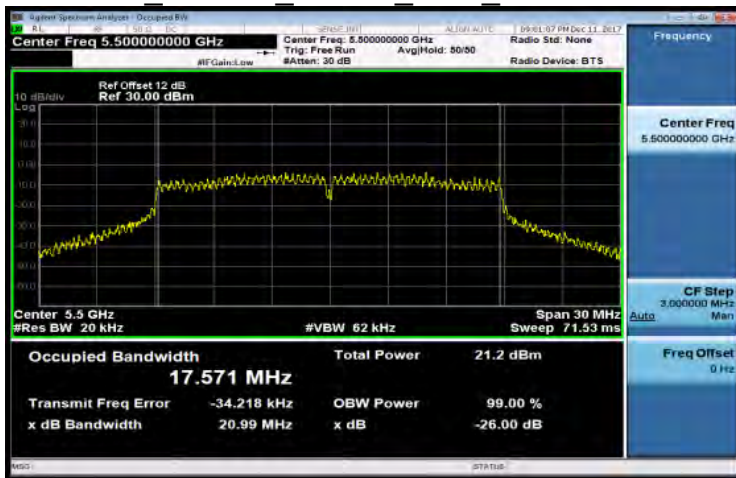
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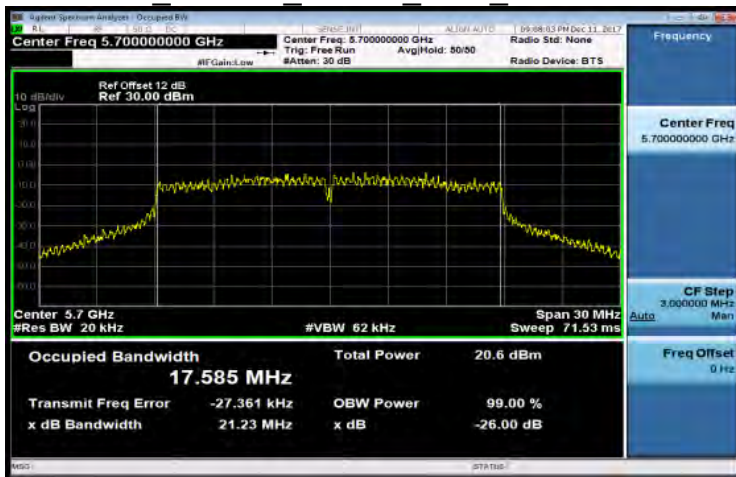
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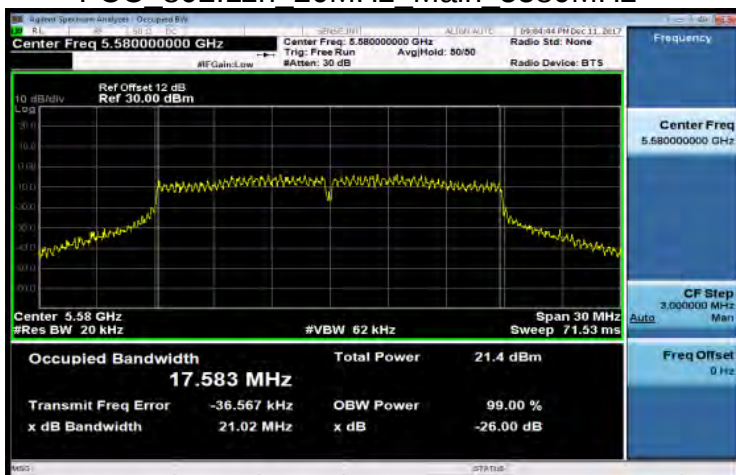
FCC 802.11n 20MHz Main 5720MHz



FCC 802.11n 20MHz Main 5700MHz



FCC 802.11n 20MHz Main 5580MHz



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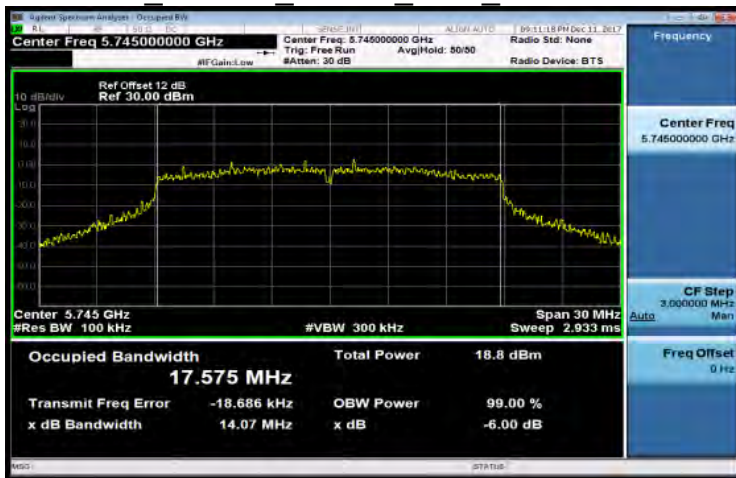
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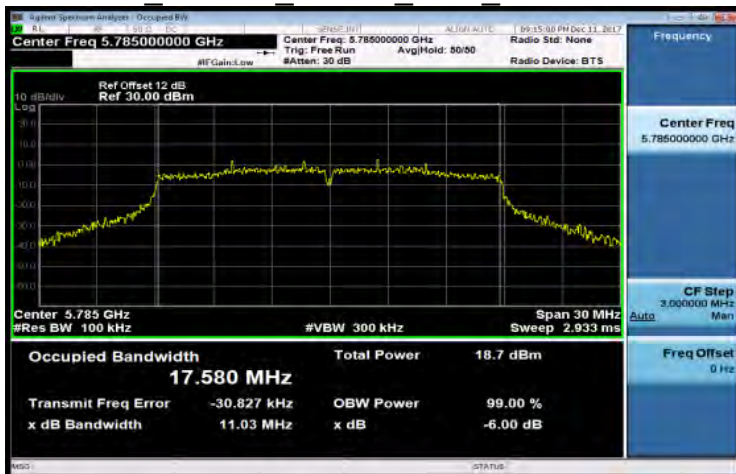
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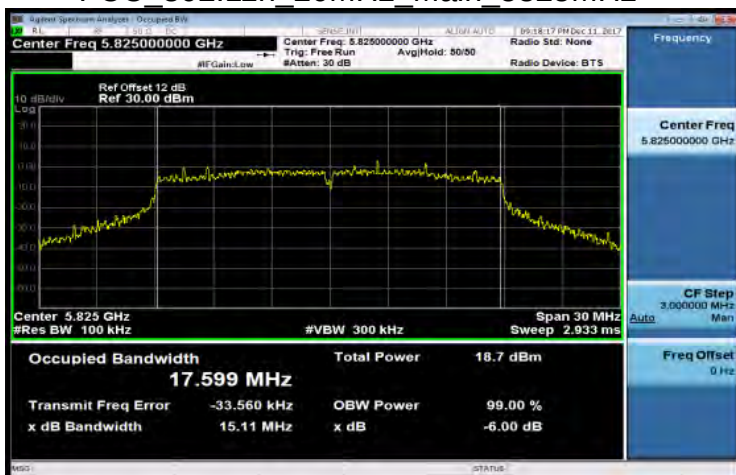
FCC 802.11n 20MHz Main 5745MHz



FCC 802.11n 20MHz Main 5785MHz



FCC 802.11n 20MHz Main 5825MHz



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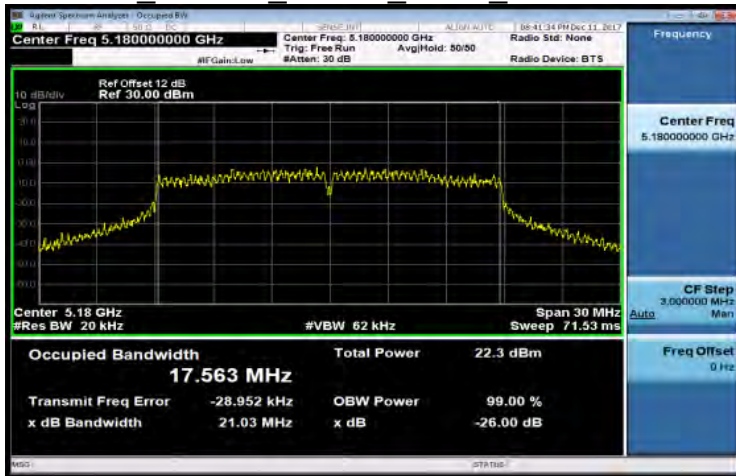
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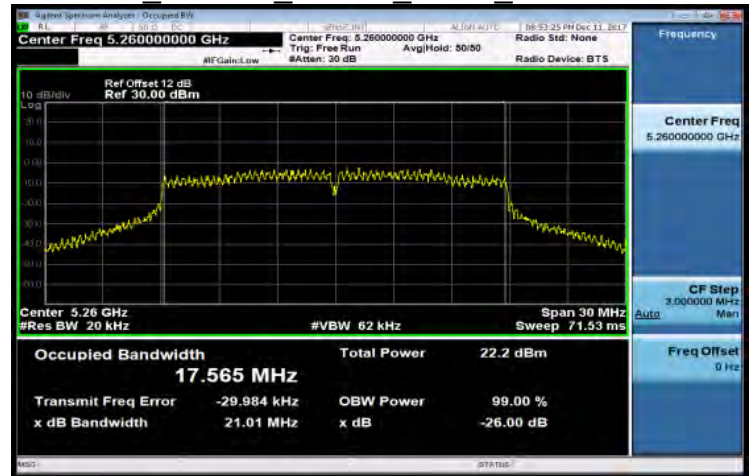
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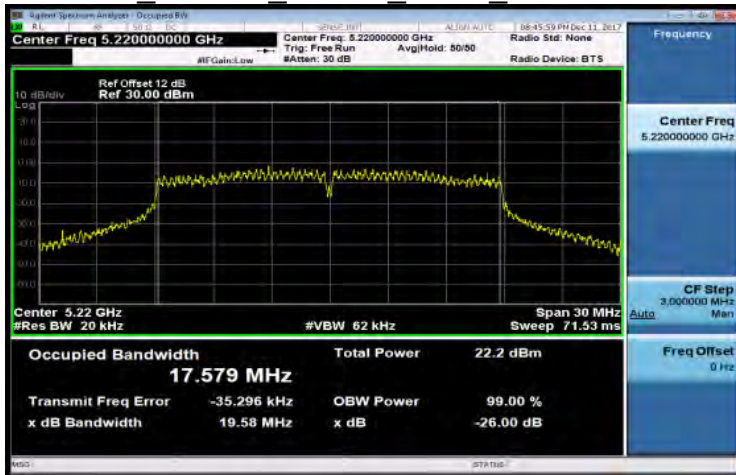
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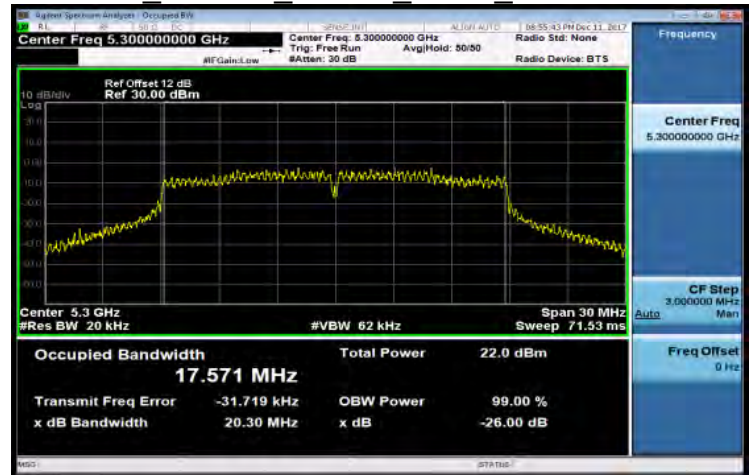
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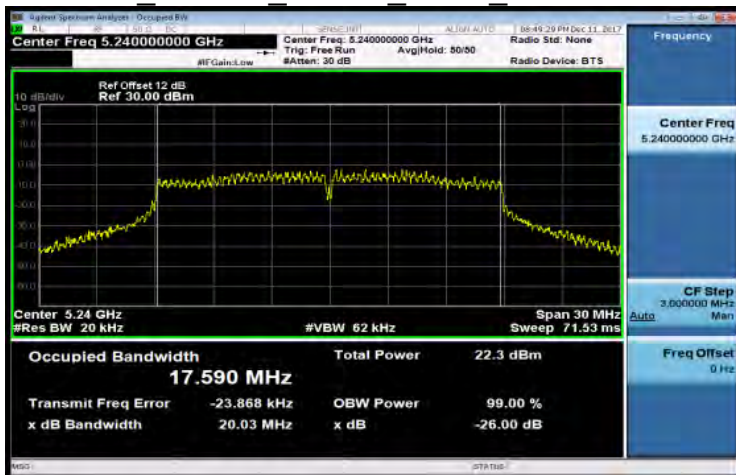
FCC 802.11n 20MHz AUX1 5220MHz



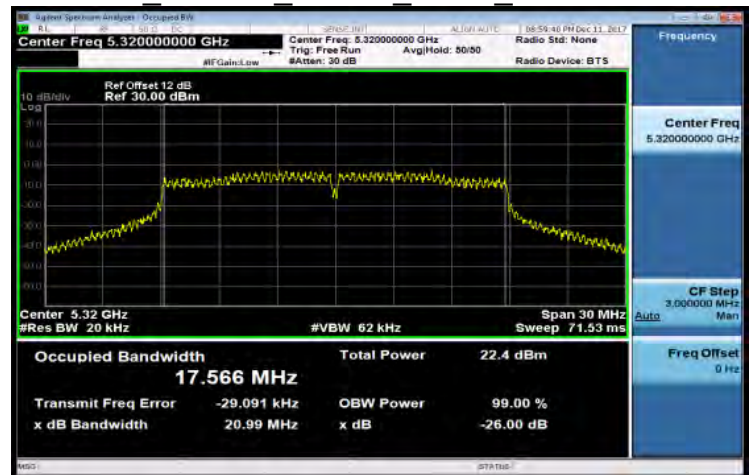
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FCC 802.11n 20MHz AUX1 5240MHz



FCC 802.11n 20MHz AUX1 5320MHz

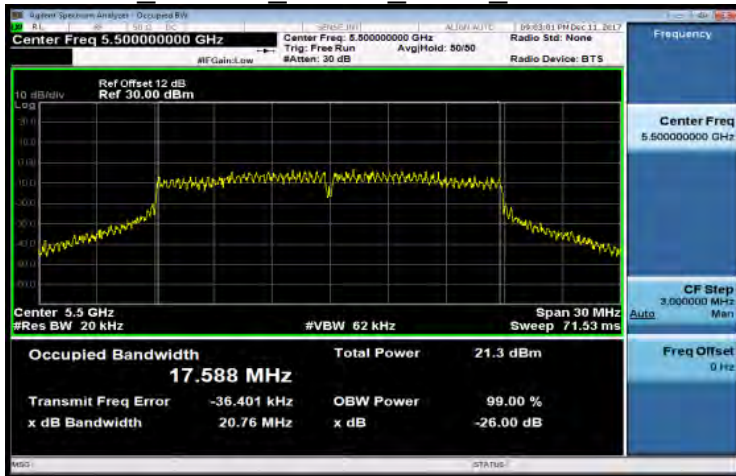


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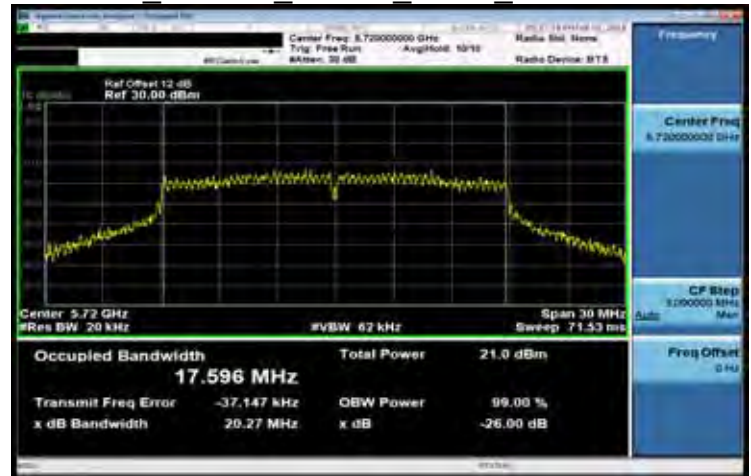
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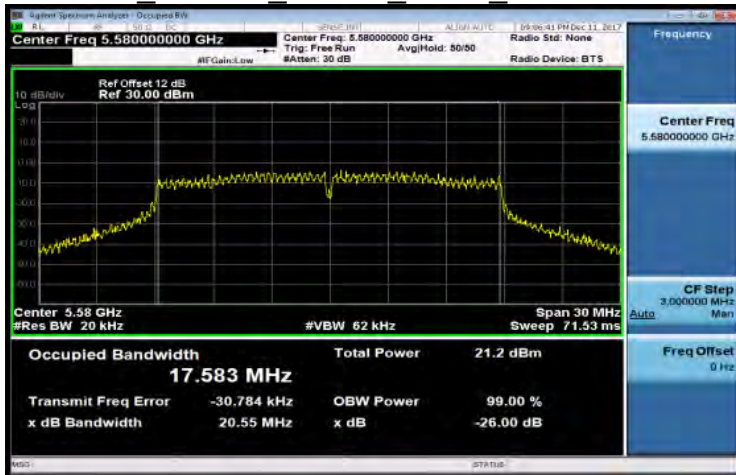
FCC 802.11n 20MHz AUX1 5500MHz



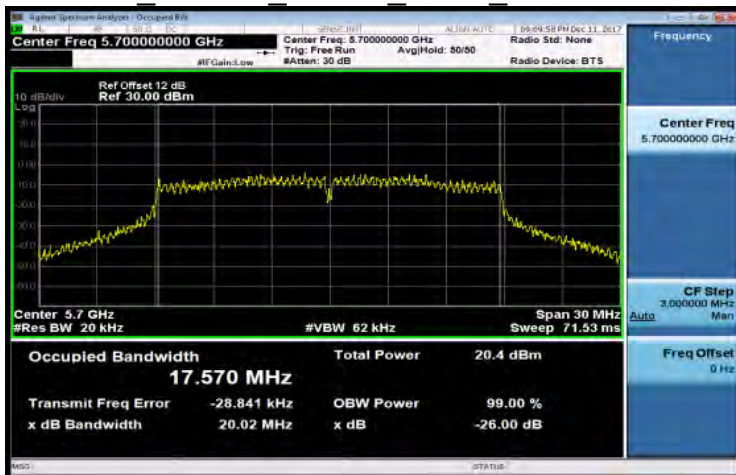
FCC 802.11n 20MHz AUX1 5720MHz



FCC 802.11n 20MHz AUX1 5580MHz



FCC 802.11n 20MHz AUX1 5700MHz



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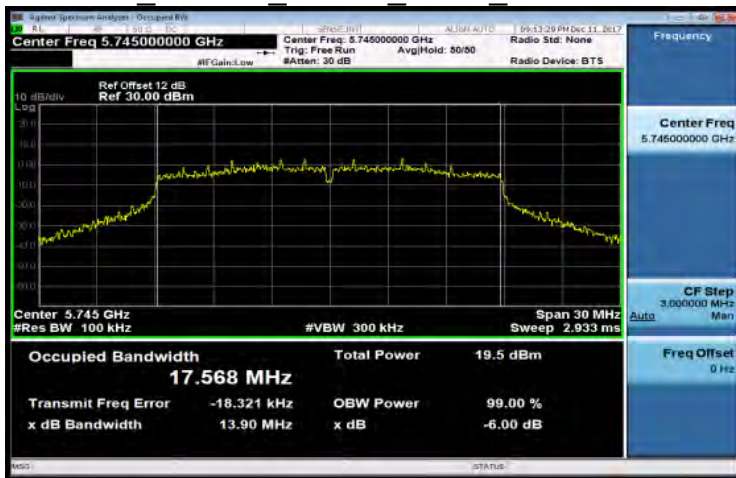
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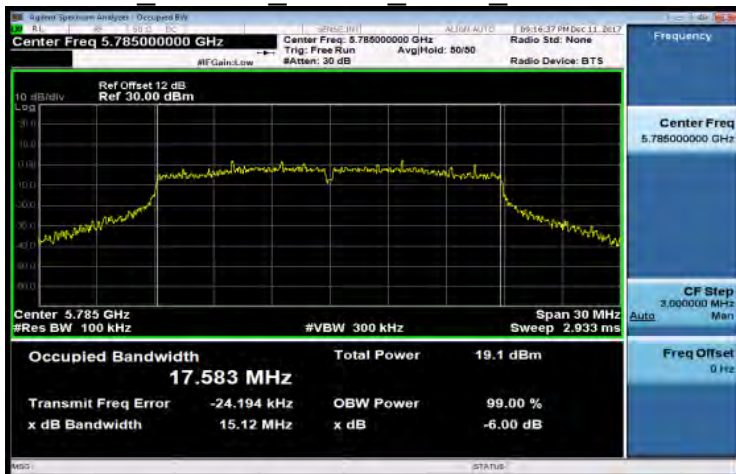
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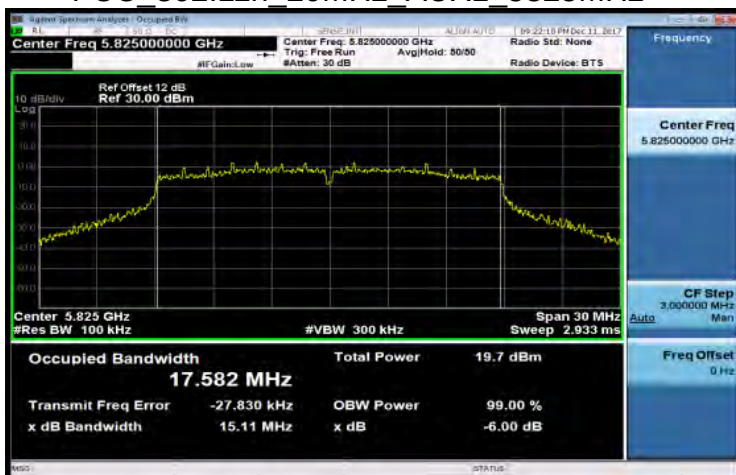
FCC 802.11n 20MHz AUX1 5745MHz



FCC 802.11n 20MHz AUX1 5785MHz



FCC 802.11n 20MHz AUX1 5825MHz



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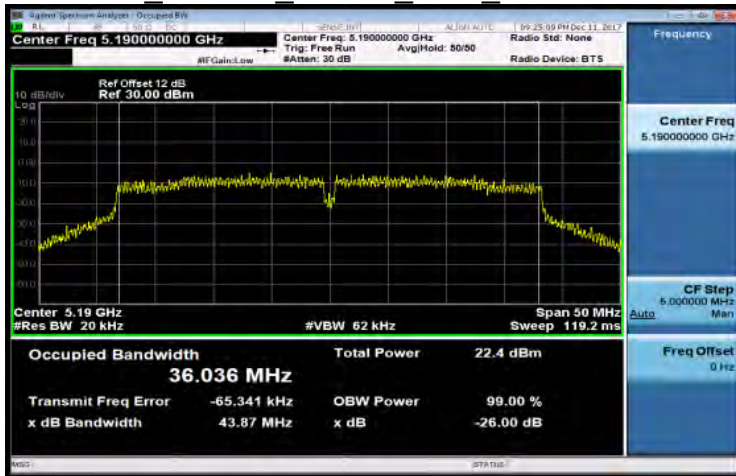
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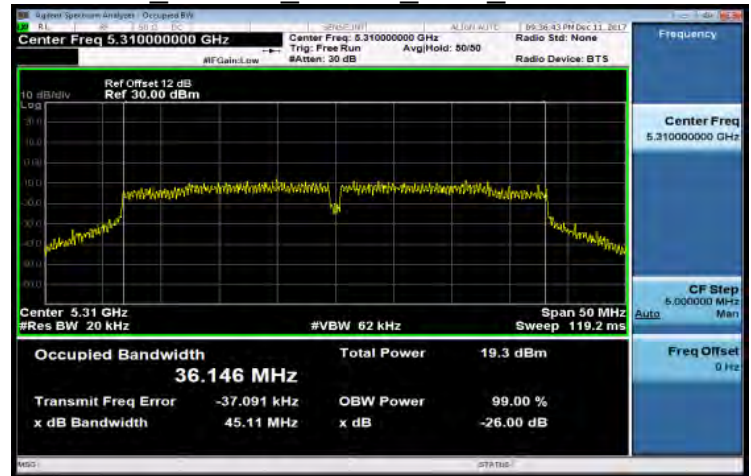
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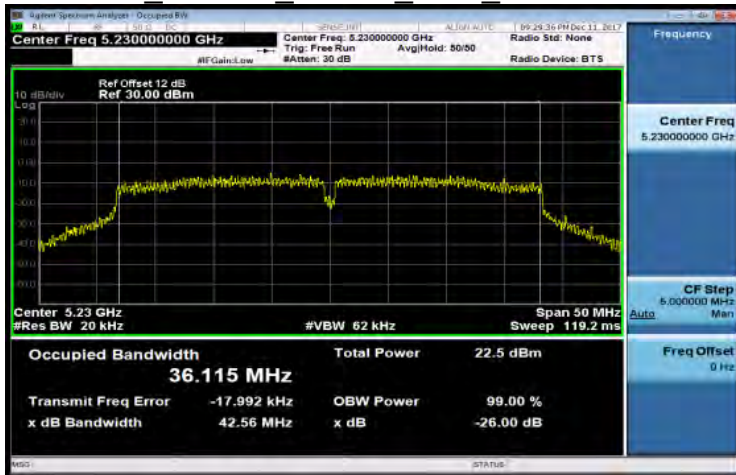
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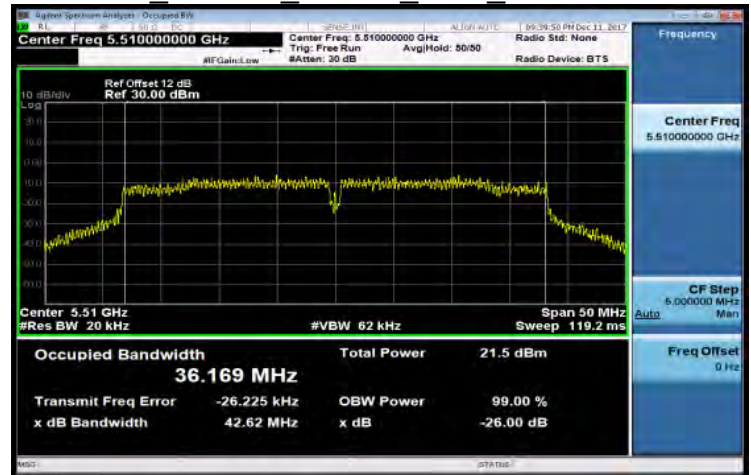
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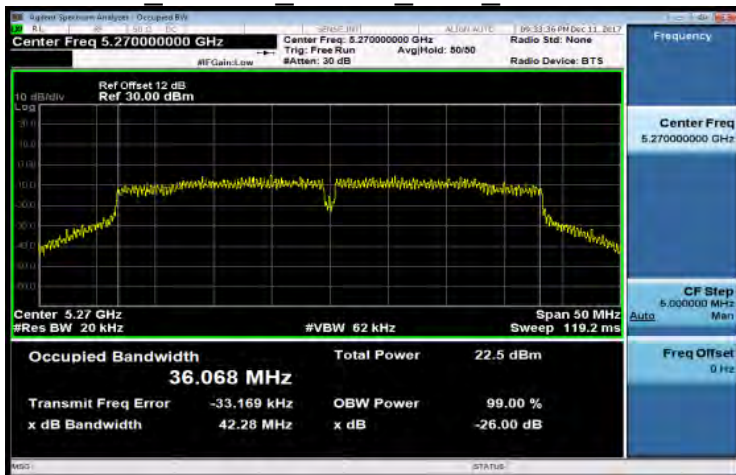
FCC 802.11n 40MHz Main 5230MHz



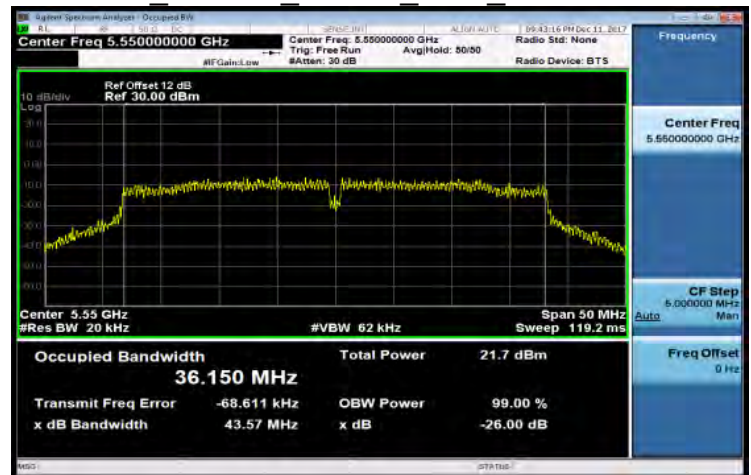
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FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5550MHz

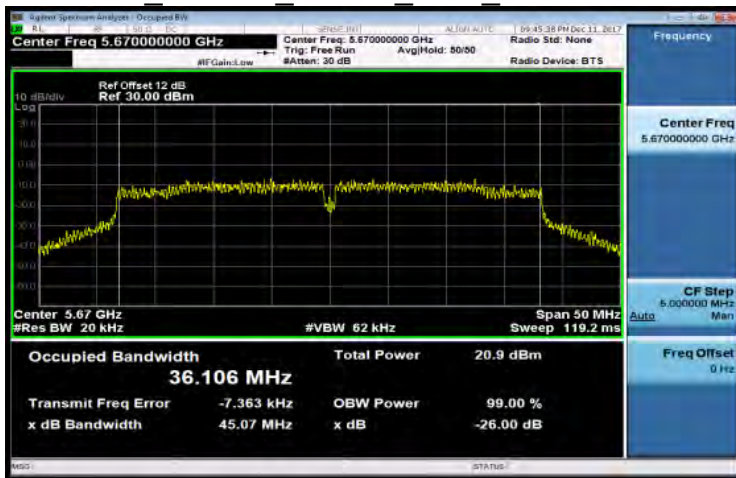


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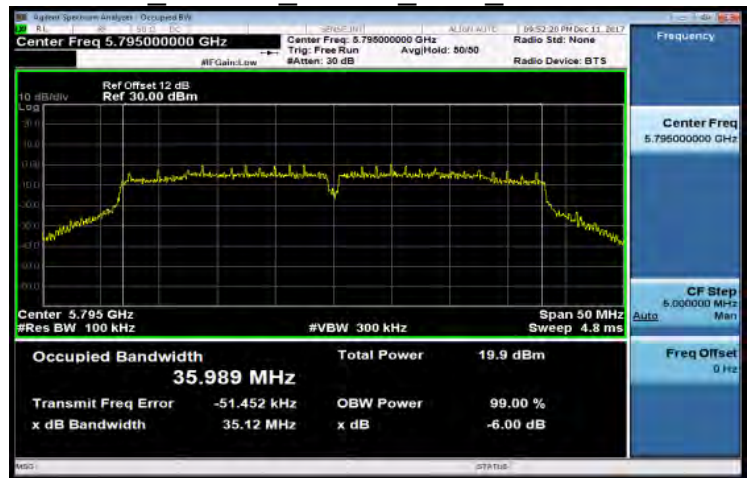
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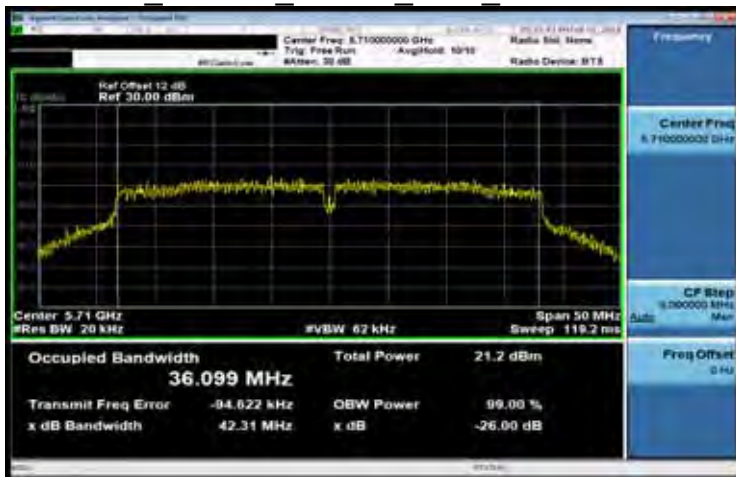
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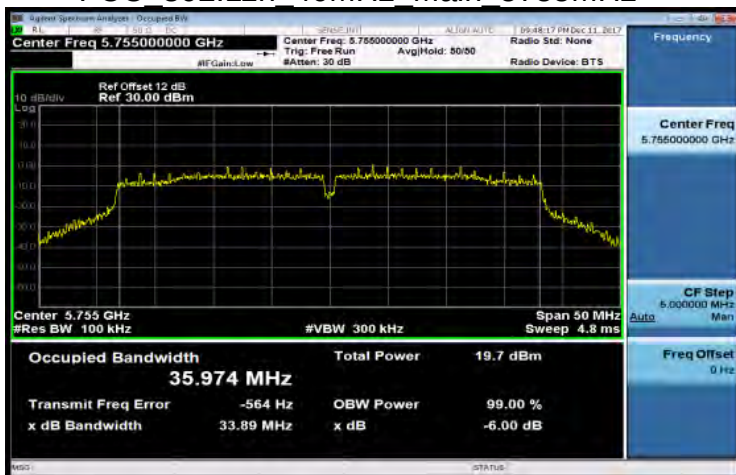
FCC 802.11n 40MHz Main 5795MHz



FCC 802.11n 40MHz Main 5710MHz



FCC 802.11n 40MHz Main 5755MHz



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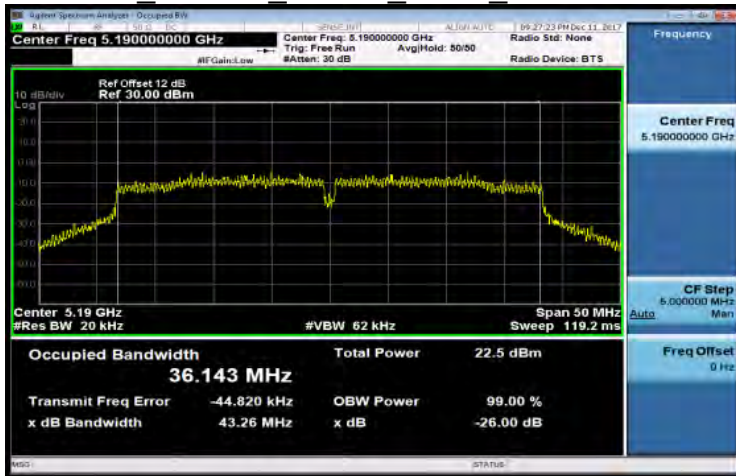
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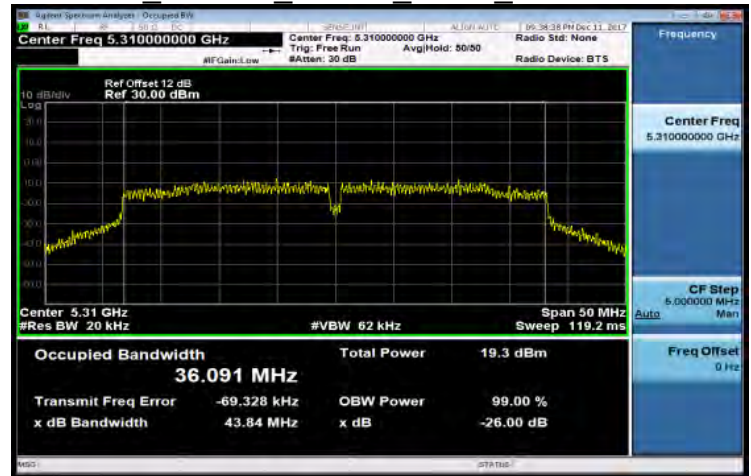
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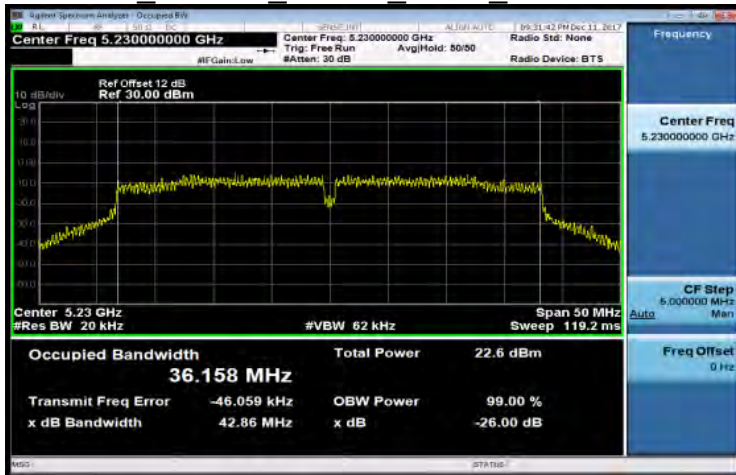
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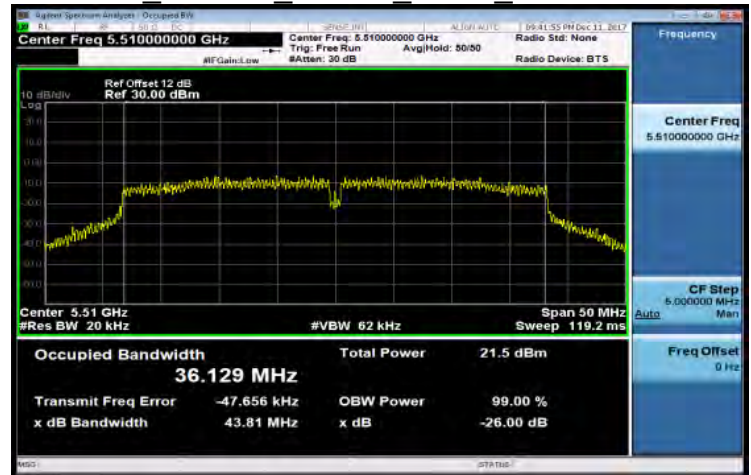
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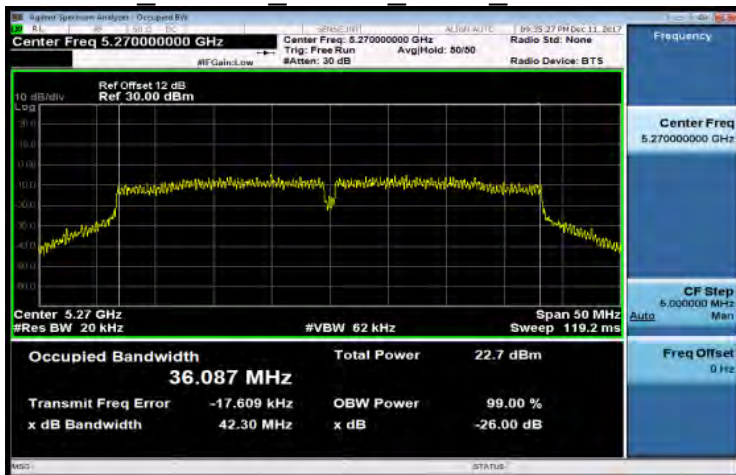
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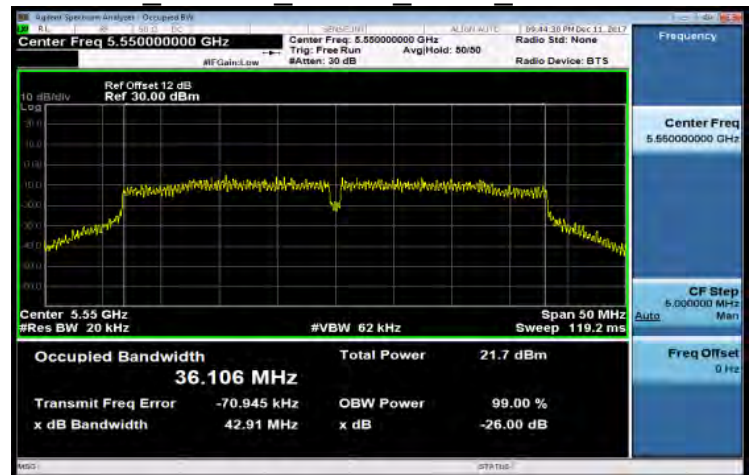
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FCC 802.11n 40MHz AUX1 5270MHz



FCC 802.11n 40MHz AUX1 5550MHz



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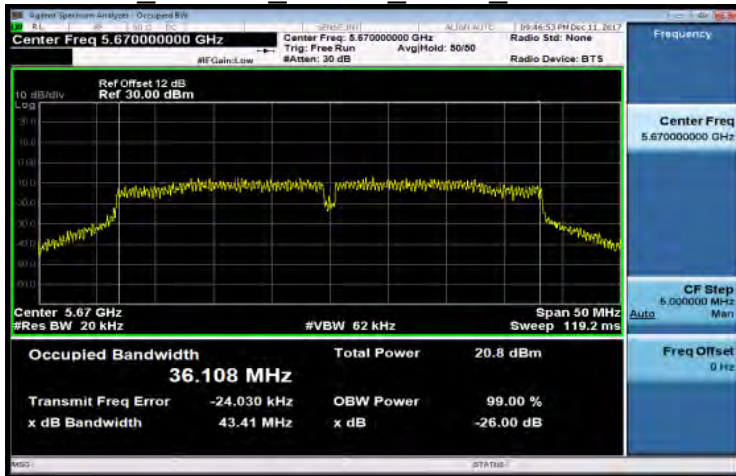
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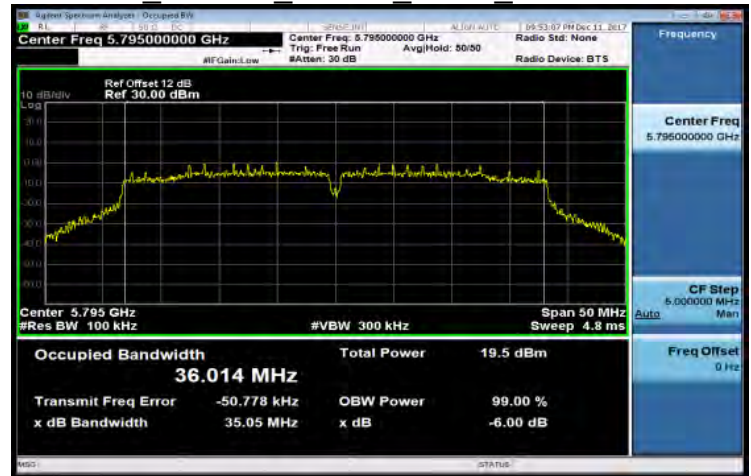
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FCC 802.11n 40MHz AUX1 5670MHz



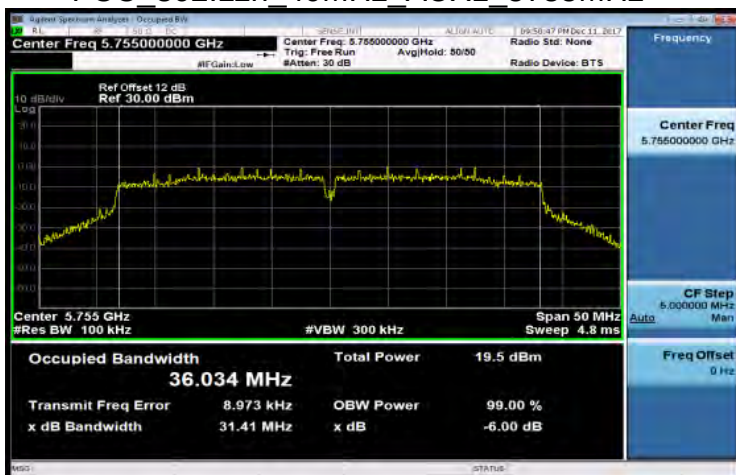
FCC 802.11n 40MHz AUX1 5795MHz



FCC 802.11n 40MHz AUX1 5710MHz



FCC 802.11n 40MHz AUX1 5755MHz



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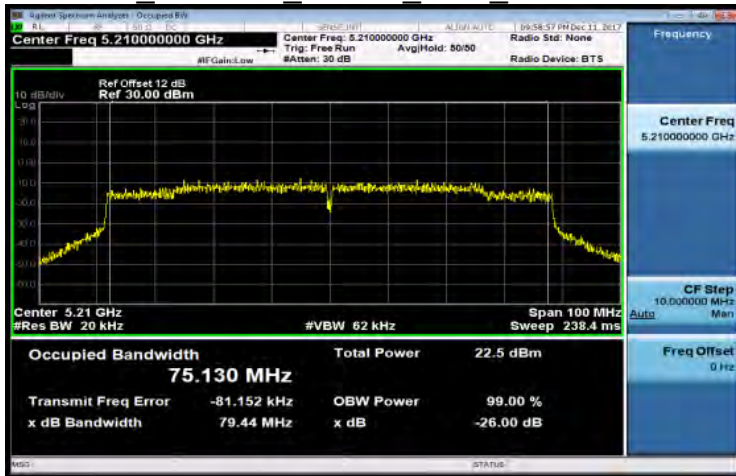
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f (886-2) 2298-0488

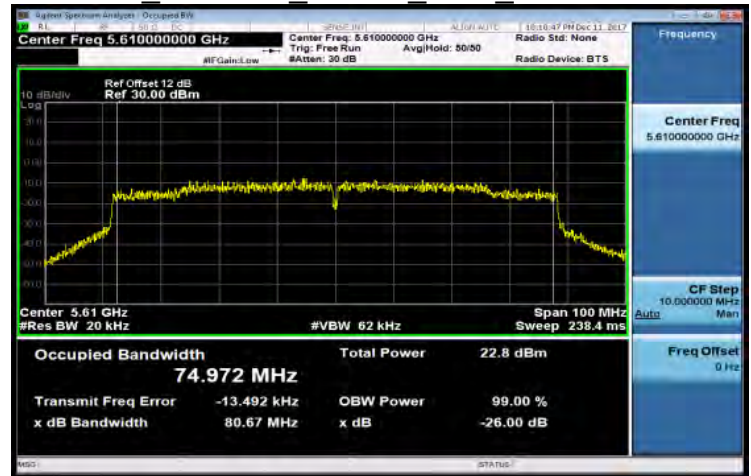
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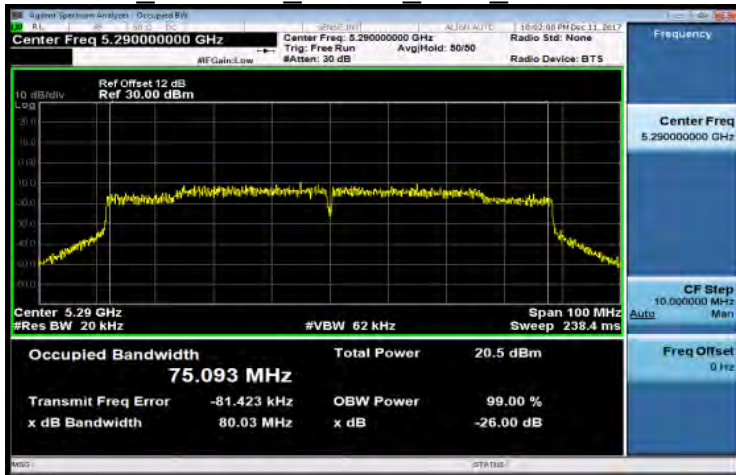
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FCC 802.11ac 80MHz Main 5610MHz



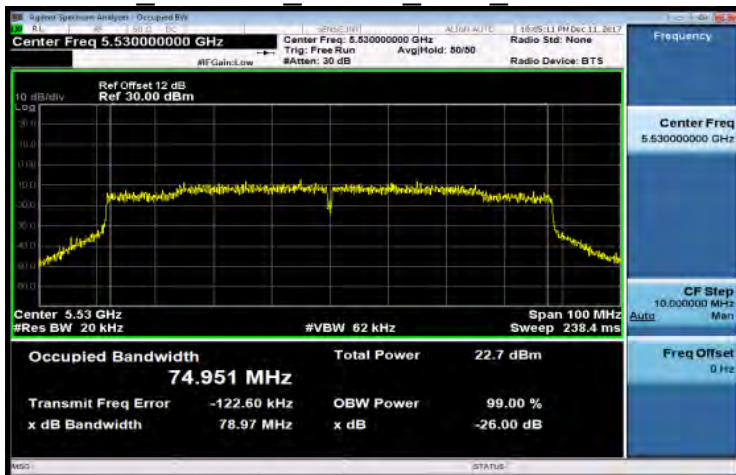
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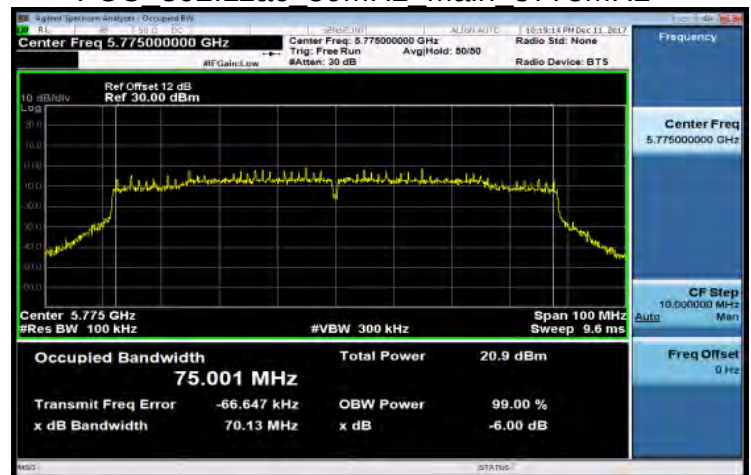
FCC 802.11ac 80MHz Main 5690MHz



FCC 802.11ac 80MHz Main 5530MHz



FCC 802.11ac 80MHz Main 5775MHz

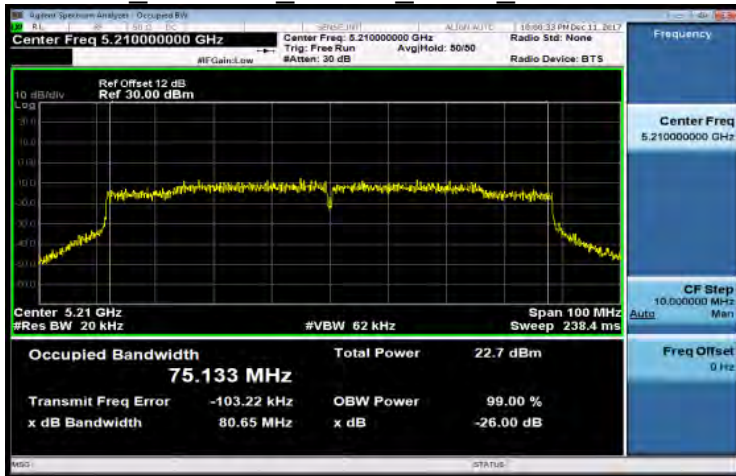


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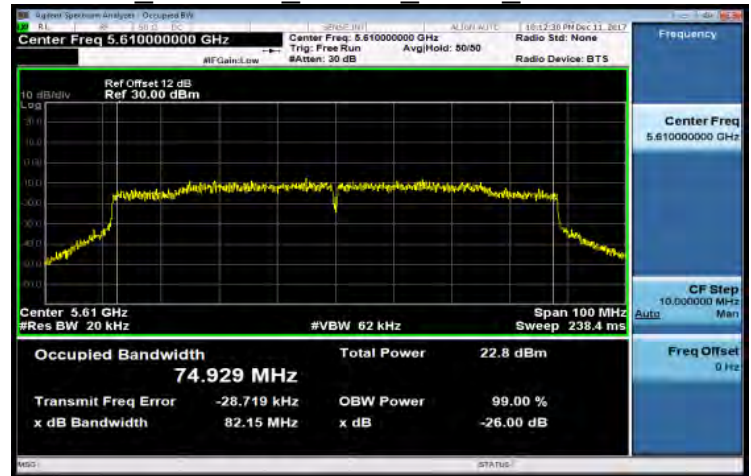
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FCC 802.11ac 80MHz AUX1 5210MHz



FCC 802.11ac 80MHz AUX1 5610MHz



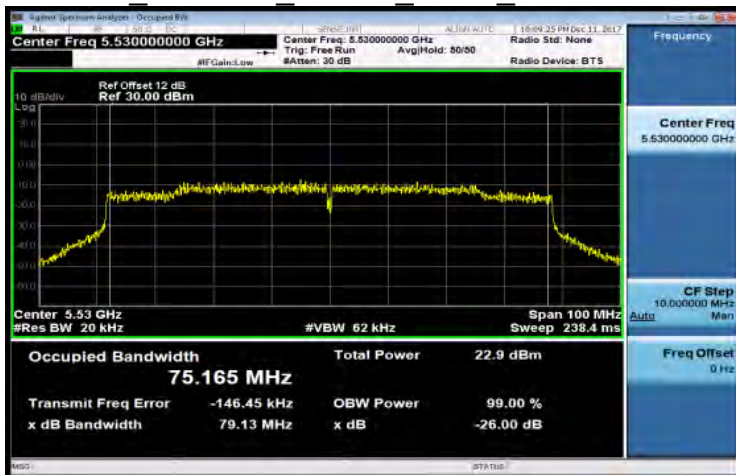
FCC 802.11ac 80MHz AUX1 5290MHz



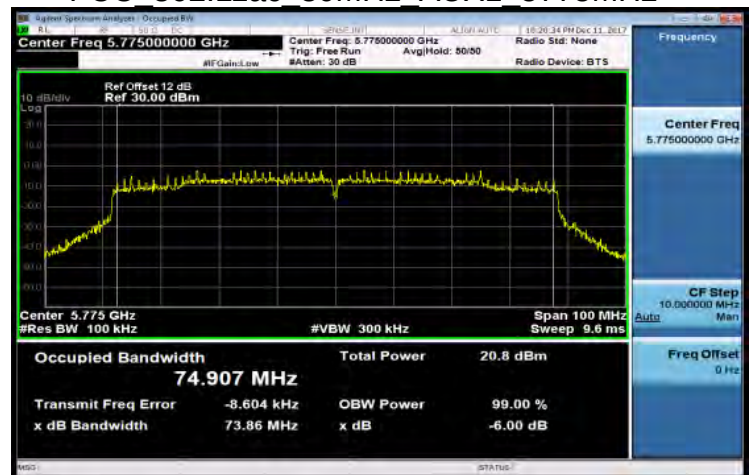
FCC 802.11ac 80MHz AUX1 5690MHz



FCC 802.11ac 80MHz AUX1 5530MHz



FCC 802.11ac 80MHz AUX1 5775MHz



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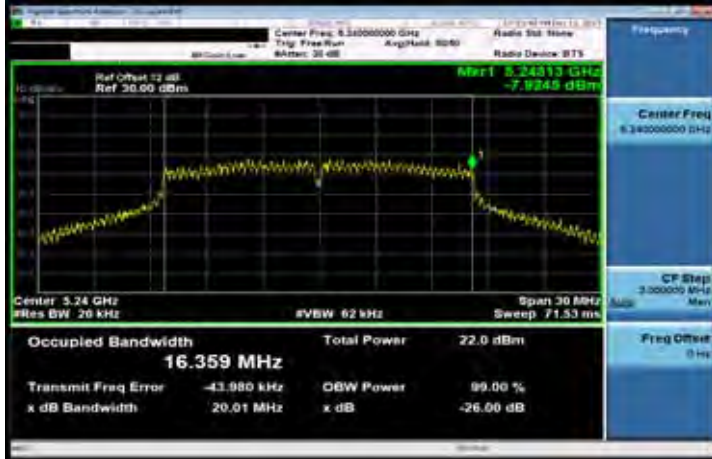
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99% BW to prove that all signals in band I is no over band U-NII-1

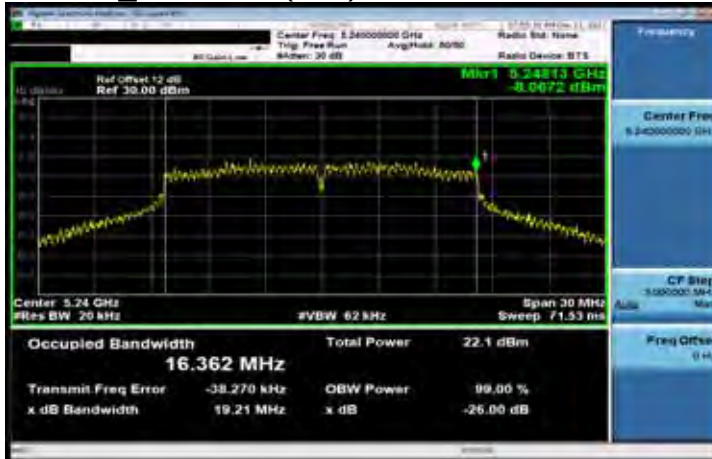
802.11a_5240MHz (Main)



802.11n_20MHz_5240MHz (Aux)



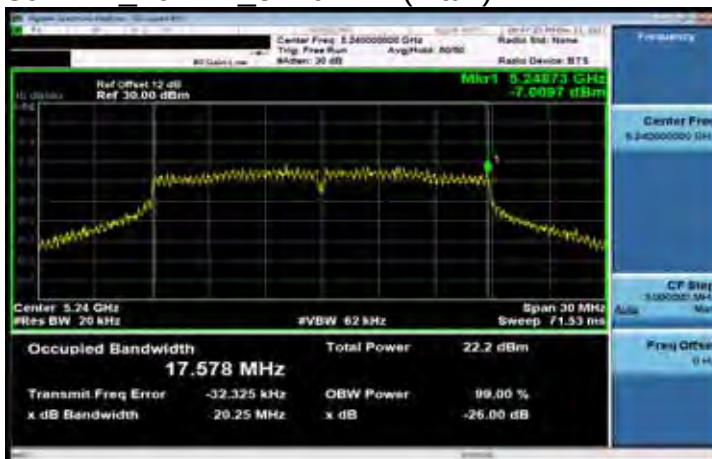
802.11a_5240MHz (Aux)



802.11n_40MHz_5230MHz (Main)



802.11n_20MHz_5240MHz (Main)



802.11n_40MHz_5230MHz (Aux)



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802.11n 80MHz 5210MHz (Main)



802.11n 80MHz 5210MHz (Aux)



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802.11a_5745MHz (Main)



802.11n_20MHz_5745MHz (Aux)



802.11a_5745MHz (Aux)



802.11n_40MHz_5775MHz (Main)



802.11n_20MHz_5745MHz (Main)



802.11n_40MHz_5775MHz (Aux)



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802.11n 80MHz 5775MHz (Main)



802.11n 80MHz 5775MHz (Aux)



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For 99%, IC 802.11a 20MHz Main 5180MHz



IC 802.11a 20MHz Main 5260MHz



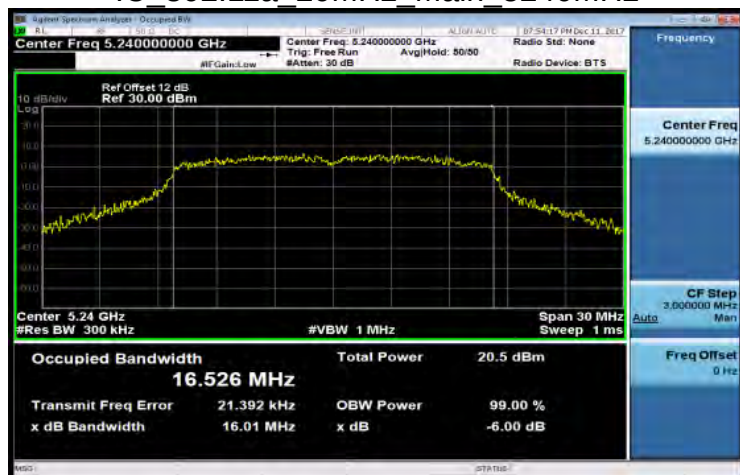
IC 802.11a 20MHz Main 5220MHz



IC 802.11a 20MHz Main 5300MHz



IC 802.11a 20MHz Main 5240MHz



IC 802.11a 20MHz Main 5320MHz

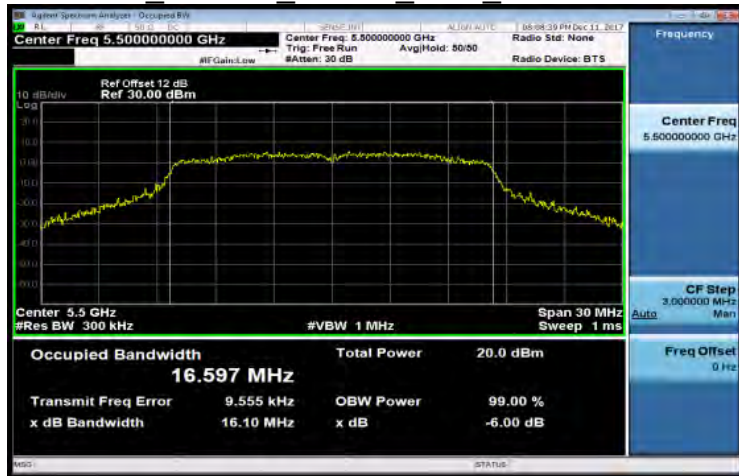


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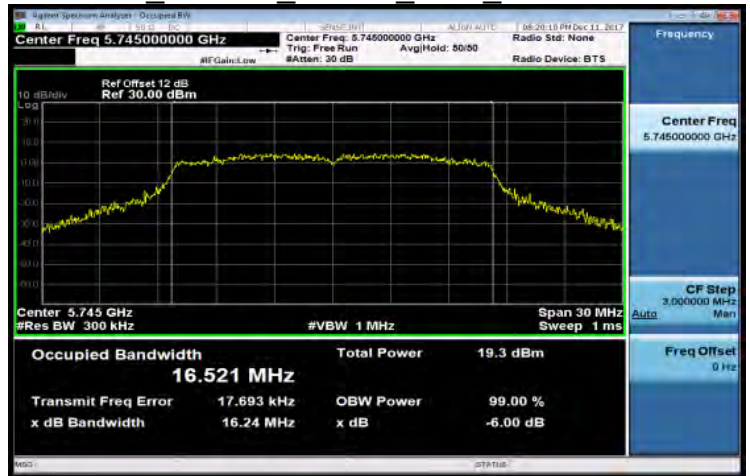
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IC 802.11a 20MHz Main 5500MHz



IC 802.11a 20MHz Main 5745MHz



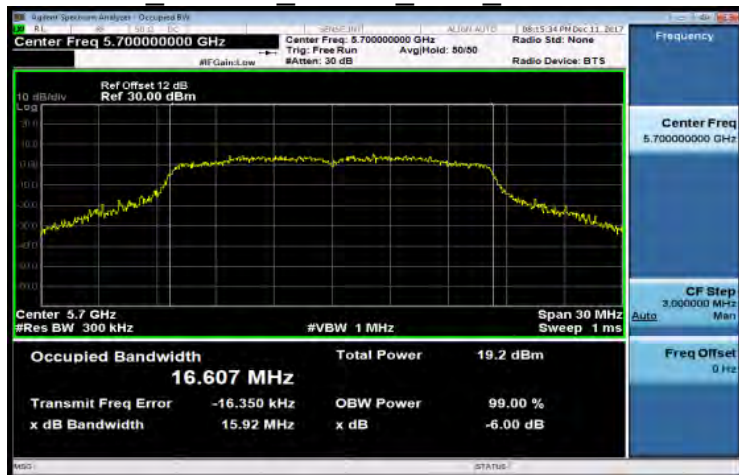
IC 802.11a 20MHz Main 5580MHz



IC 802.11a 20MHz Main 5785MHz



IC 802.11a 20MHz Main 5700MHz



IC 802.11a 20MHz Main 5825MHz



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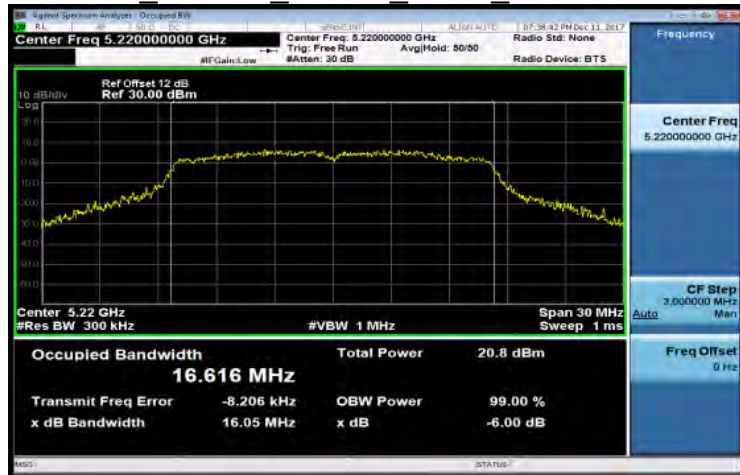
IC 802.11a 20MHz AUX1 5180MHz



IC 802.11a 20MHz AUX1 5260MHz



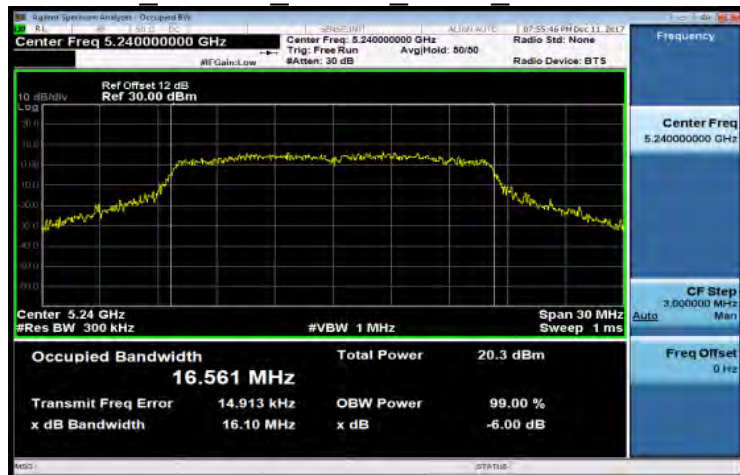
IC 802.11a 20MHz AUX1 5220MHz



IC 802.11a 20MHz AUX1 5300MHz



IC 802.11a 20MHz AUX1 5240MHz



IC 802.11a 20MHz AUX1 5320MHz

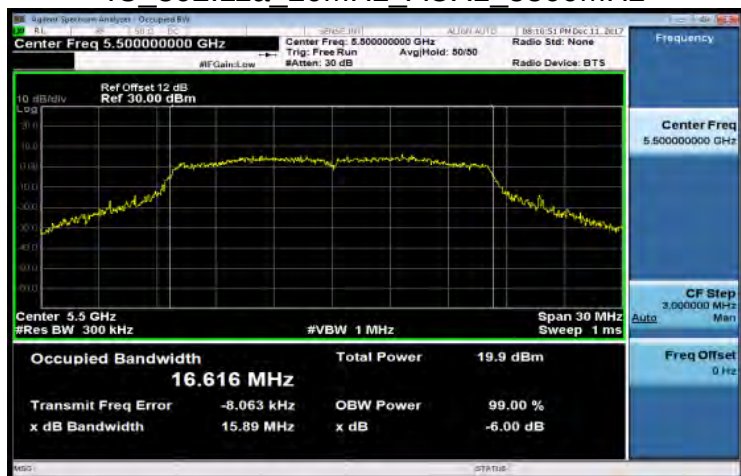


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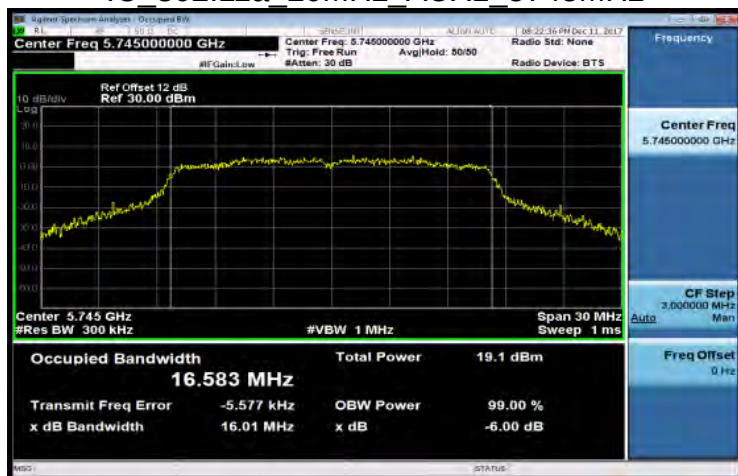
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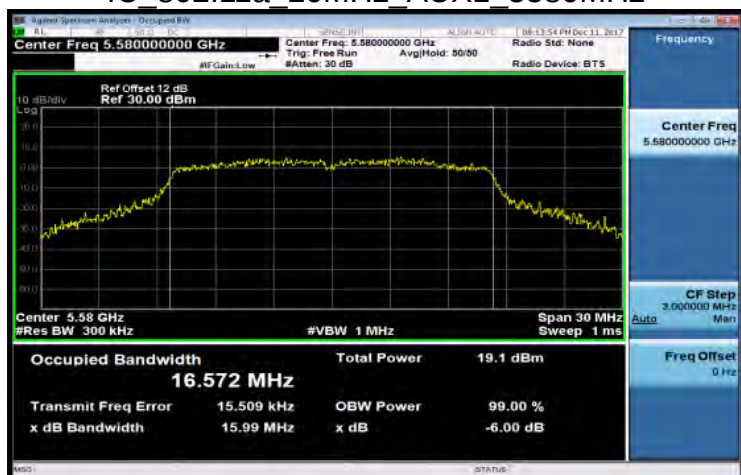
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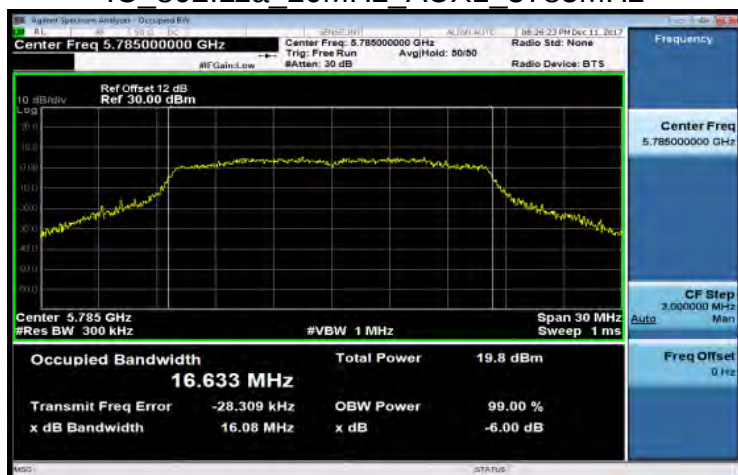
IC 802.11a 20MHz AUX1 5745MHz



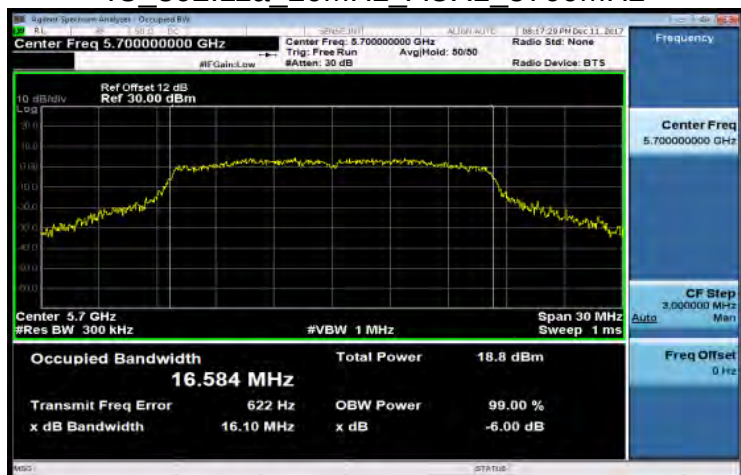
IC 802.11a 20MHz AUX1 5580MHz



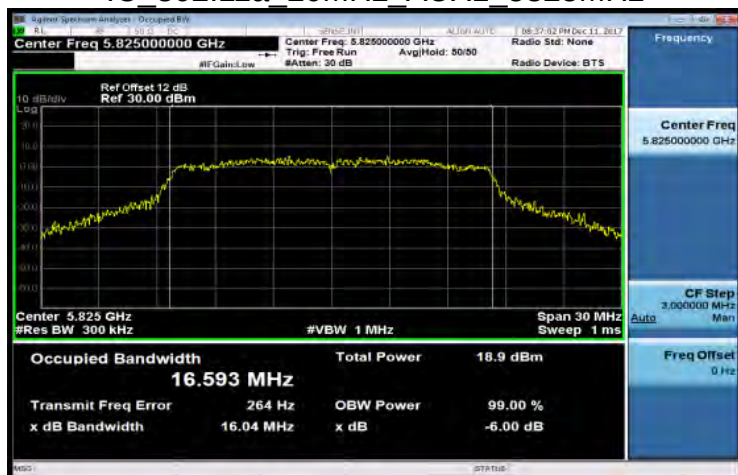
IC 802.11a 20MHz AUX1 5785MHz



IC 802.11a 20MHz AUX1 5700MHz



IC 802.11a 20MHz AUX1 5825MHz



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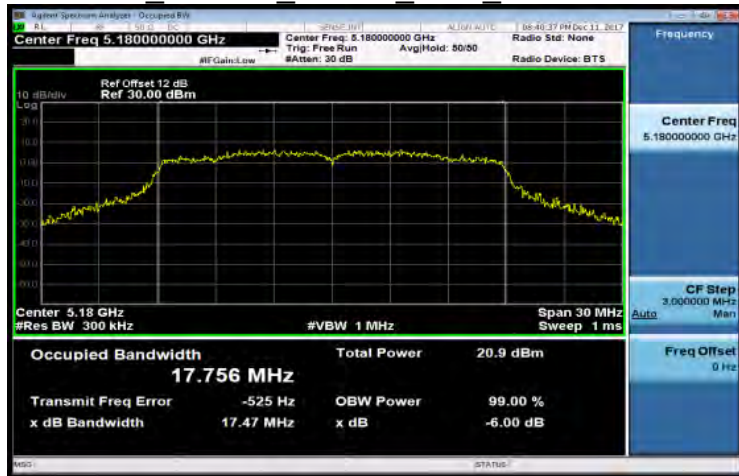
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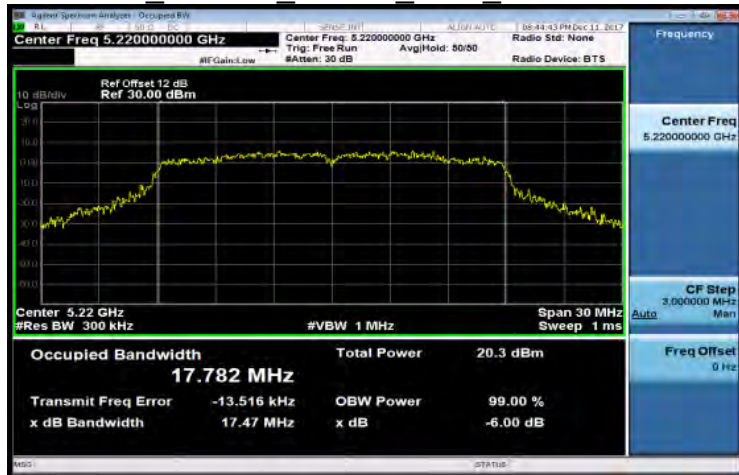
IC 802.11n 20MHz Main 5180MHz



IC 802.11n 20MHz Main 5260MHz



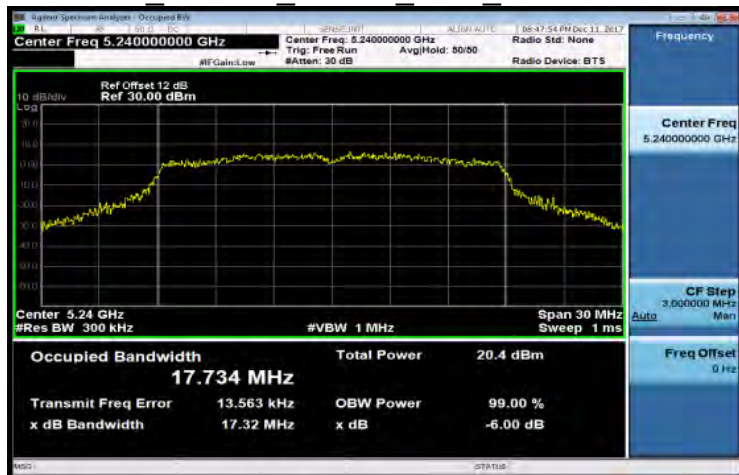
IC 802.11n 20MHz Main 5220MHz



IC 802.11n 20MHz Main 5300MHz



IC 802.11n 20MHz Main 5240MHz



IC 802.11n 20MHz Main 5320MHz



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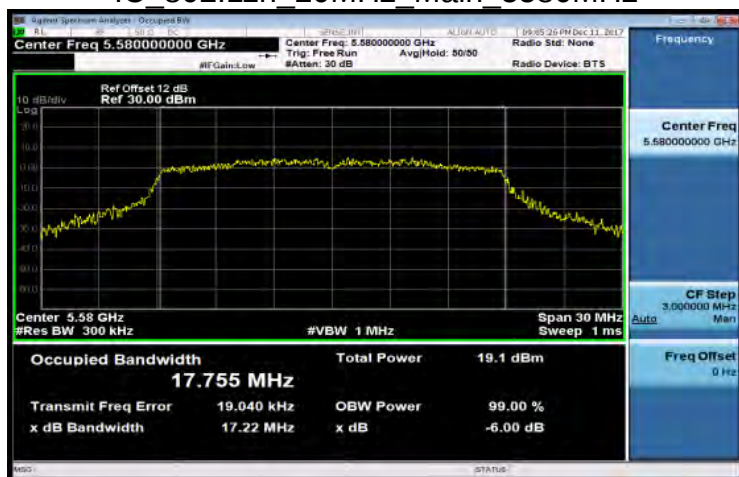
IC 802.11n 20MHz Main 5500MHz



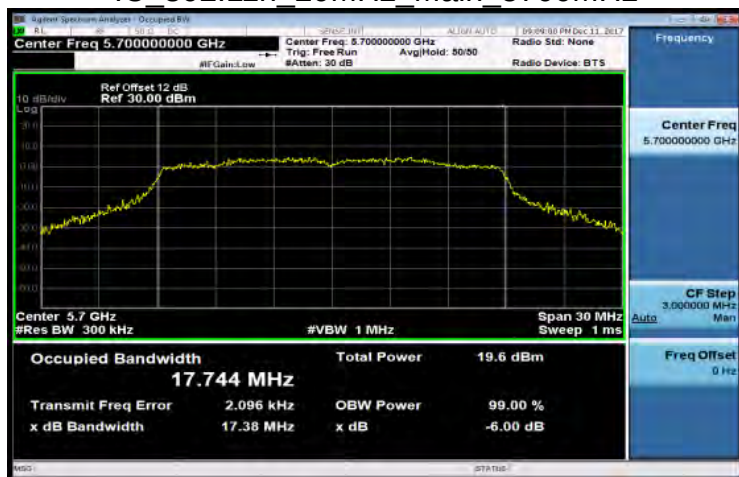
IC 802.11n 20MHz Main 5720MHz



IC 802.11n 20MHz Main 5580MHz



IC 802.11n 20MHz Main 5700MHz



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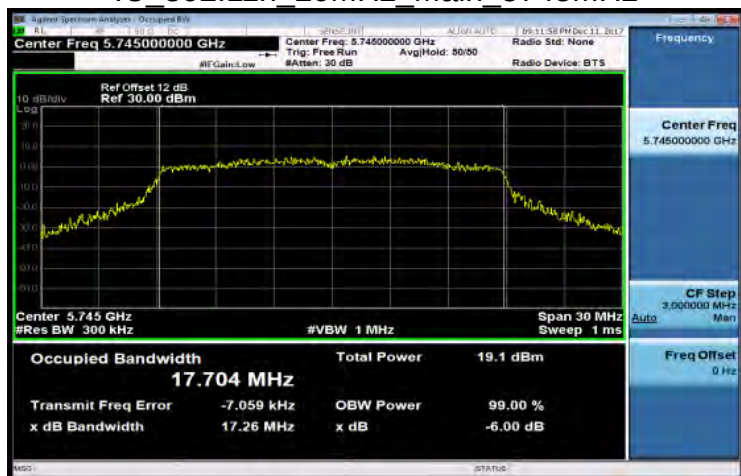
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IC 802.11n 20MHz Main 5745MHz



IC 802.11n 20MHz Main 5785MHz



IC 802.11n 20MHz Main 5825MHz

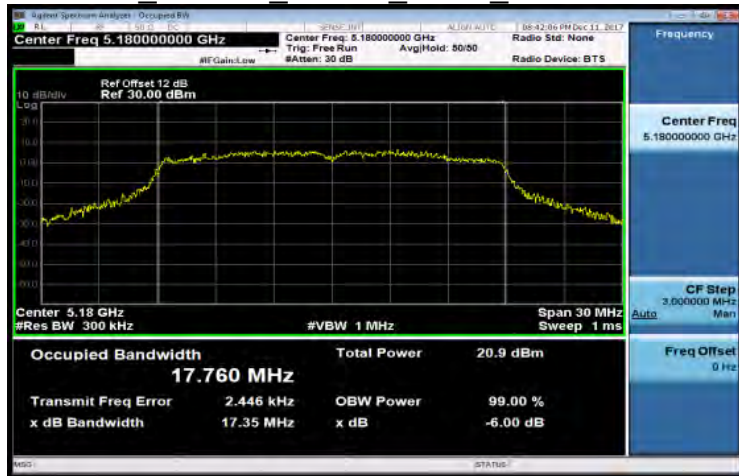


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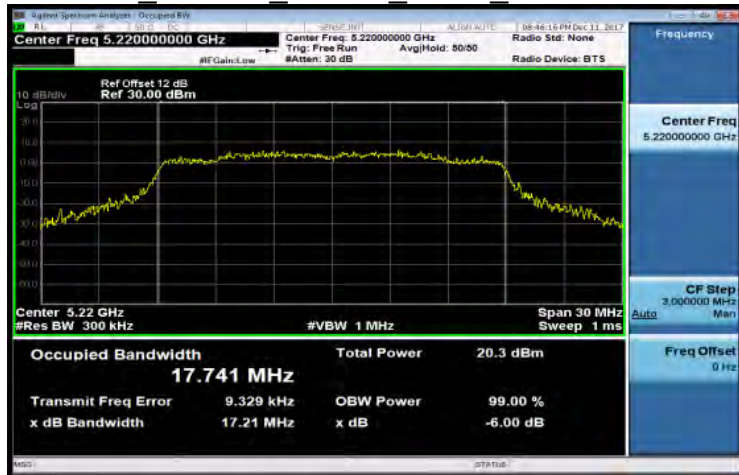
IC 802.11n 20MHz AUX1 5180MHz



IC 802.11n 20MHz AUX1 5260MHz



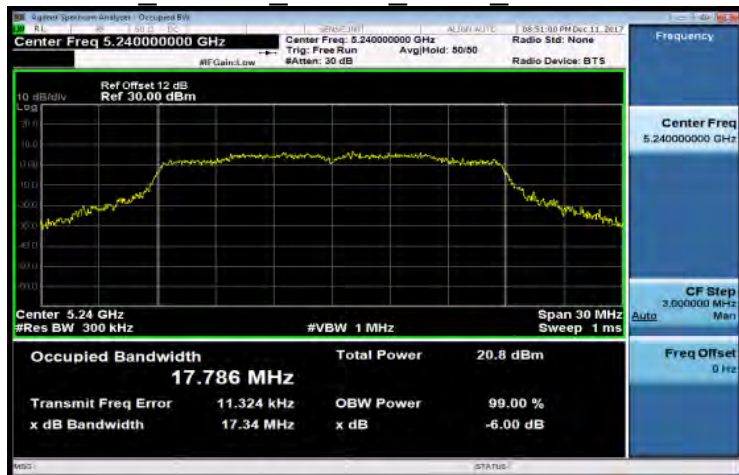
IC 802.11n 20MHz AUX1 5220MHz



IC 802.11n 20MHz AUX1 5300MHz



IC 802.11n 20MHz AUX1 5240MHz



IC 802.11n 20MHz AUX1 5320MHz

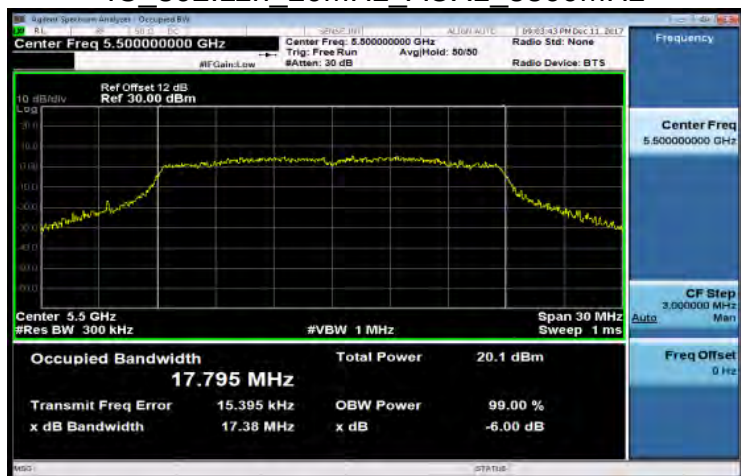


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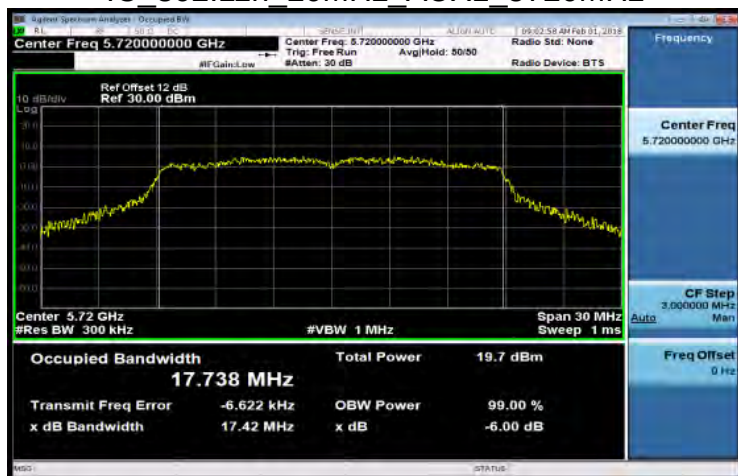
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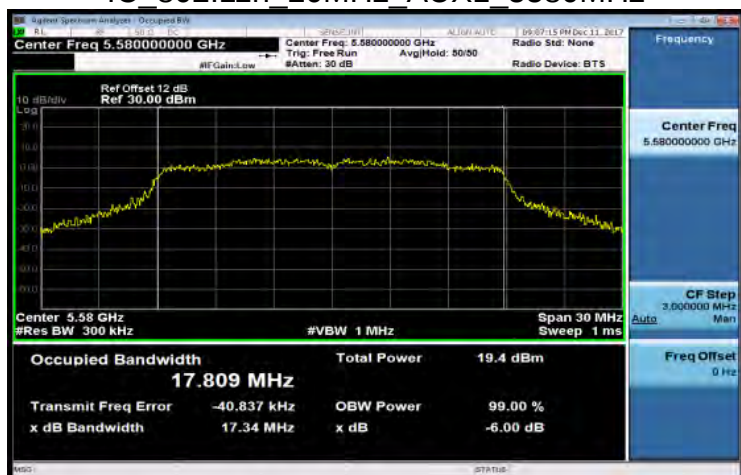
IC 802.11n 20MHz AUX1 5500MHz



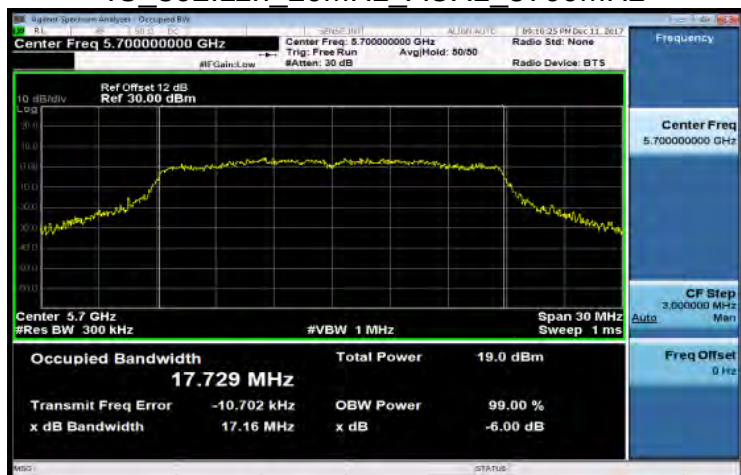
IC 802.11n 20MHz AUX1 5720MHz



IC 802.11n 20MHz AUX1 5580MHz



IC 802.11n 20MHz AUX1 5700MHz



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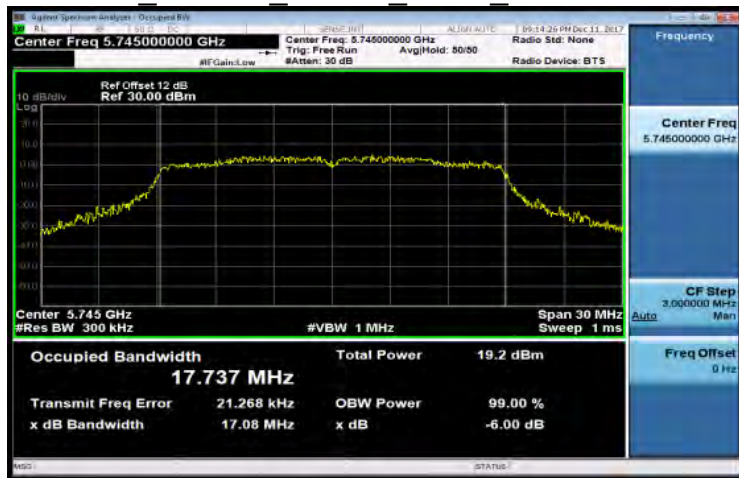
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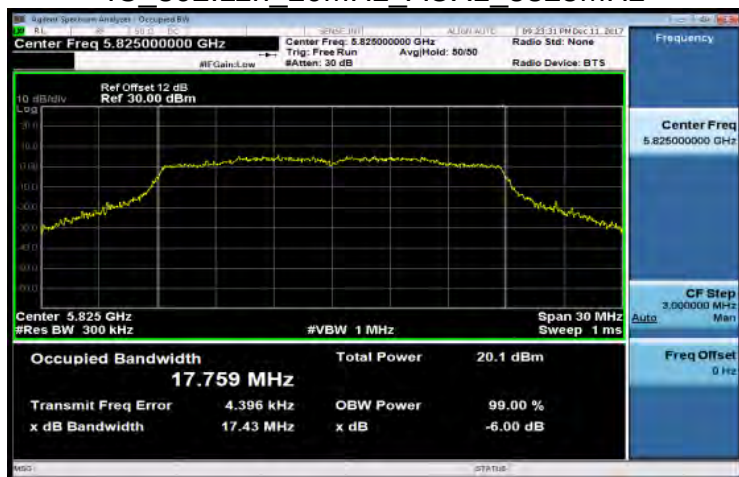
IC 802.11n 20MHz AUX1 5745MHz



IC 802.11n 20MHz AUX1 5785MHz



IC 802.11n 20MHz AUX1 5825MHz



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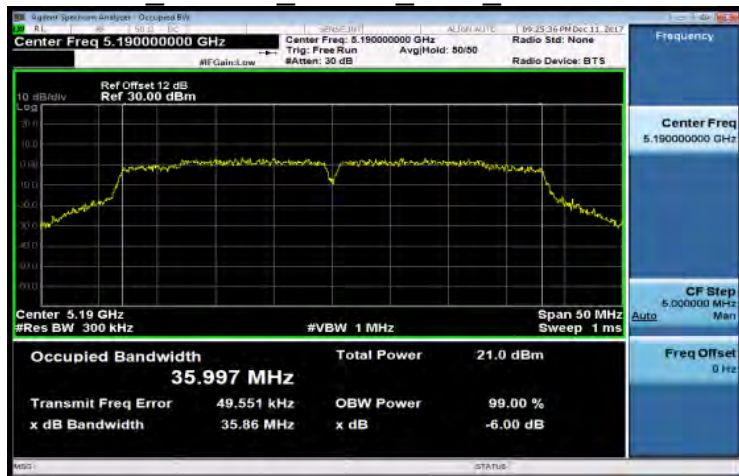
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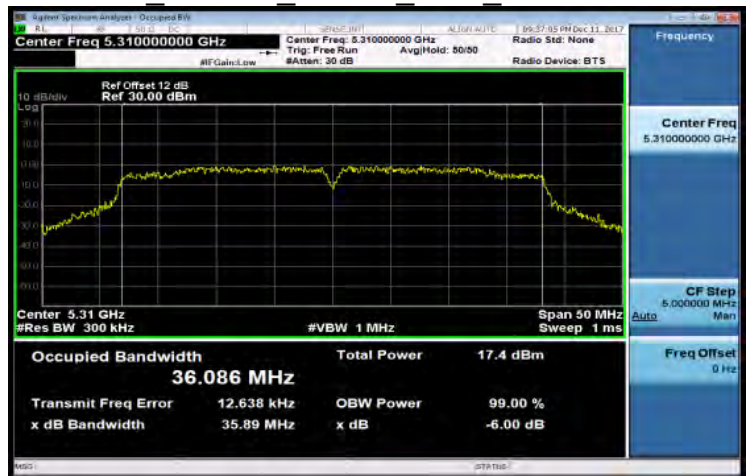
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IC 802.11n 40MHz Main 5190MHz



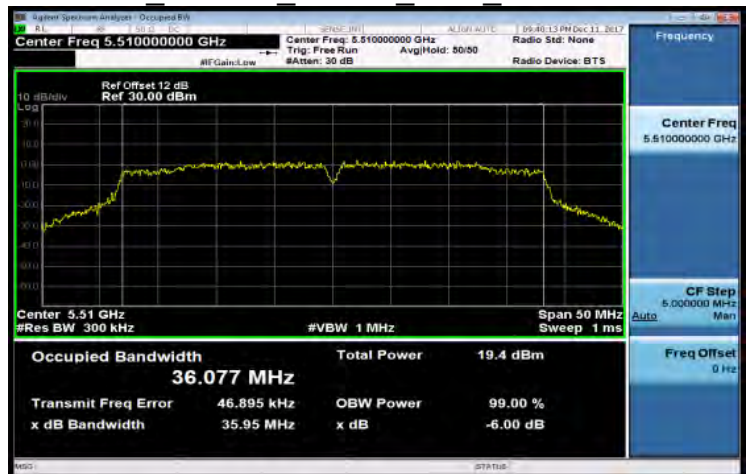
IC 802.11n 40MHz Main 5310MHz



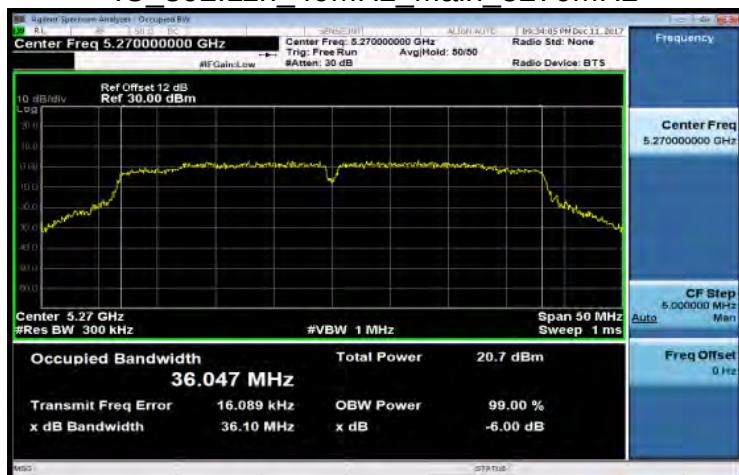
IC 802.11n 40MHz Main 5230MHz



IC 802.11n 40MHz Main 5510MHz



IC 802.11n 40MHz Main 5270MHz



IC 802.11n 40MHz Main 5550MHz

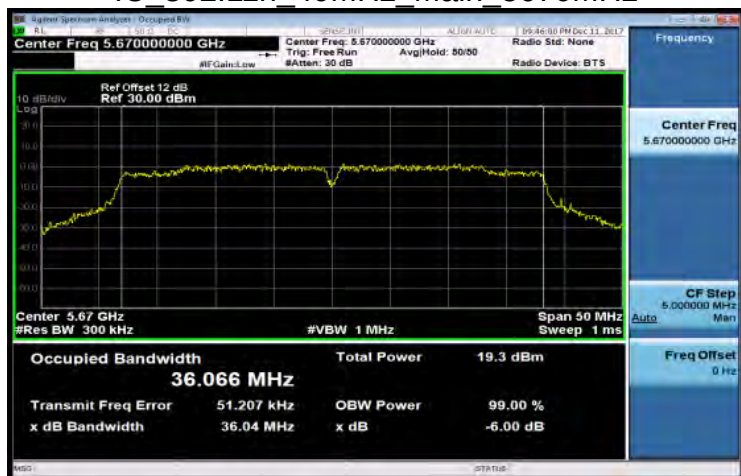


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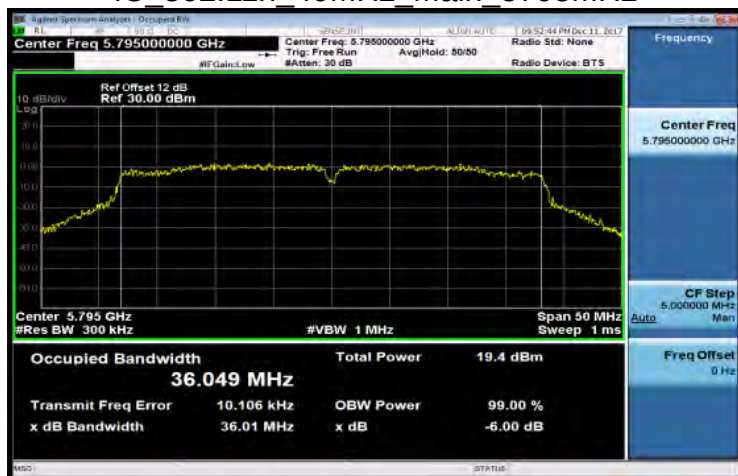
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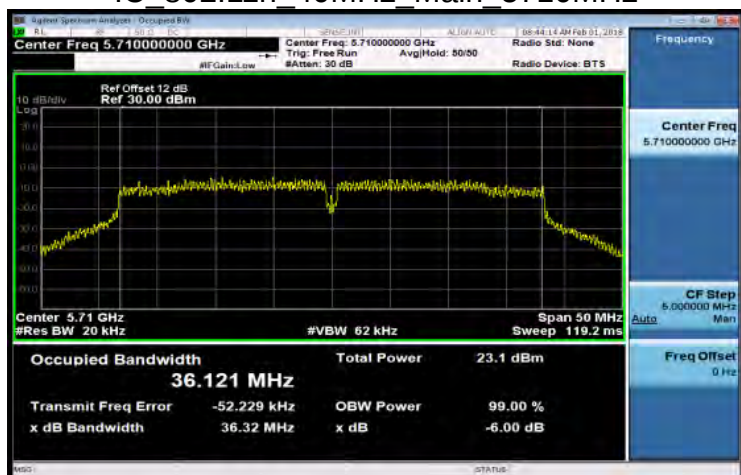
IC 802.11n 40MHz Main 5670MHz



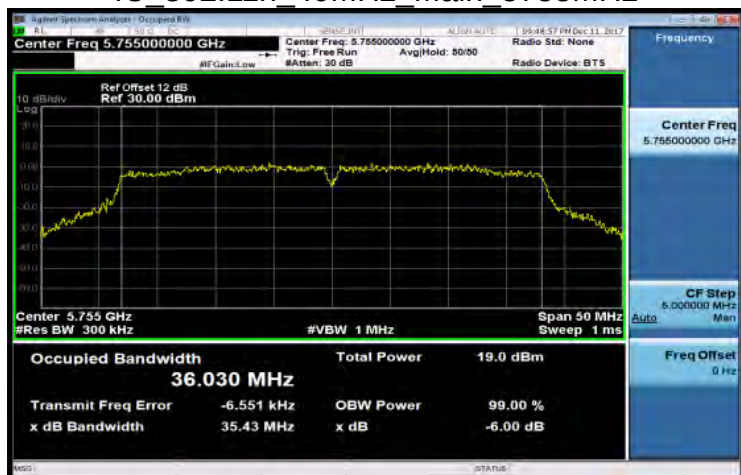
IC 802.11n 40MHz Main 5795MHz



IC 802.11n 40MHz Main 5710MHz



IC 802.11n 40MHz Main 5755MHz



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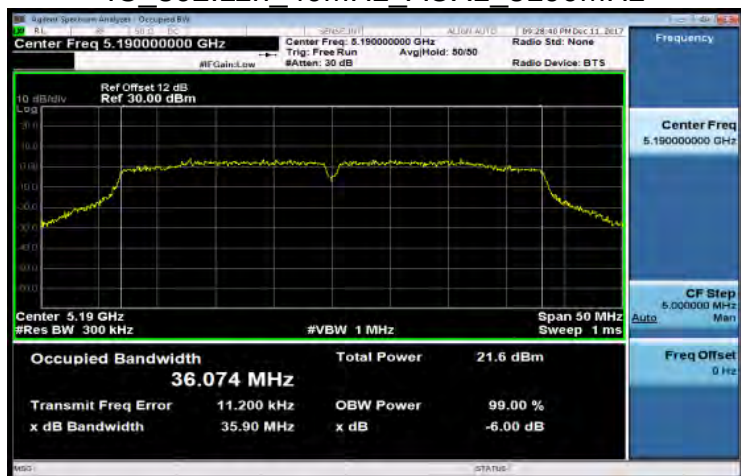
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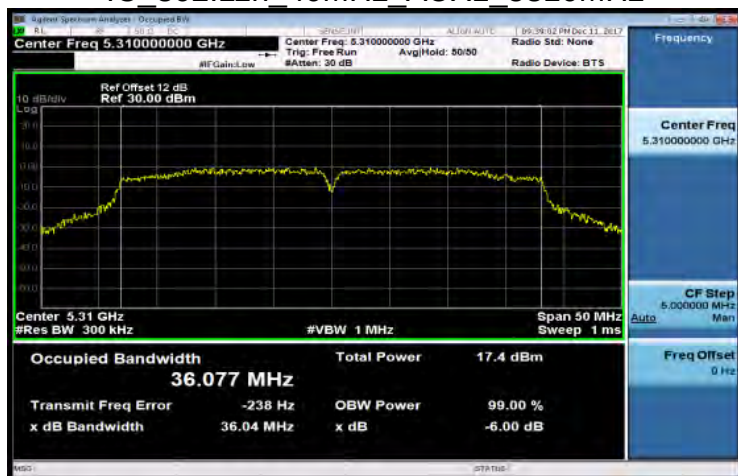
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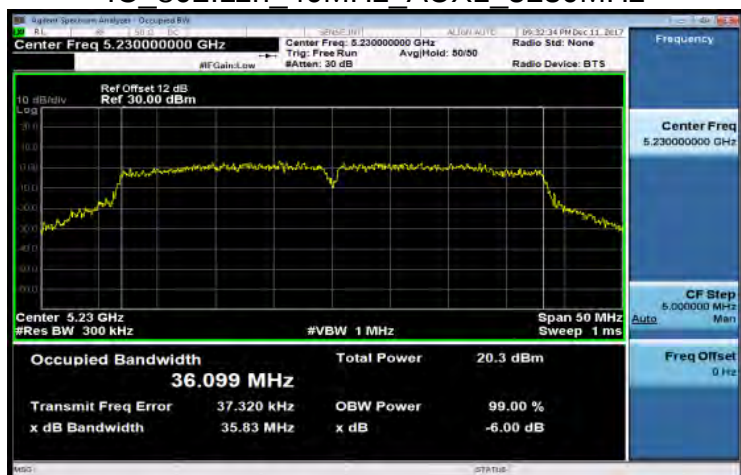
IC 802.11n 40MHz AUX1 5190MHz



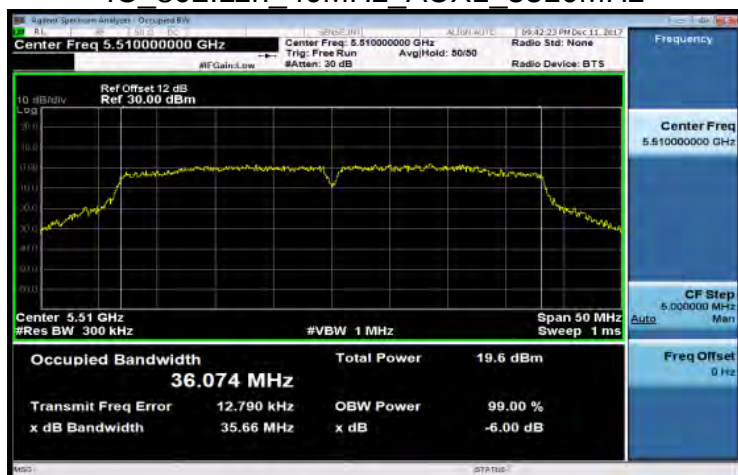
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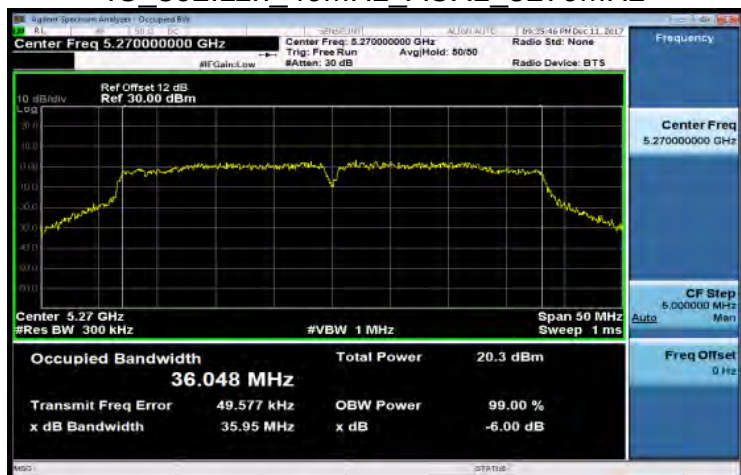
IC 802.11n 40MHz AUX1 5230MHz



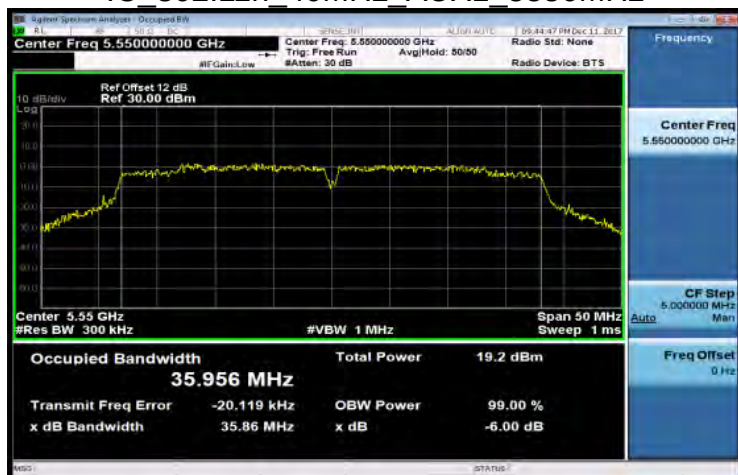
IC 802.11n 40MHz AUX1 5510MHz



IC 802.11n 40MHz AUX1 5270MHz



IC 802.11n 40MHz AUX1 5550MHz



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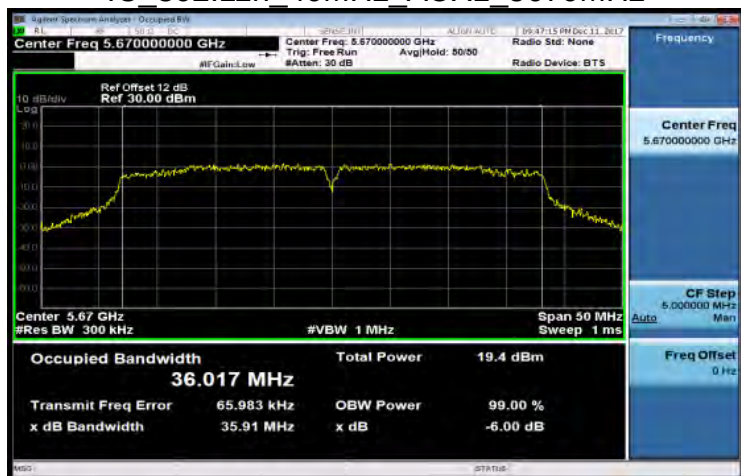
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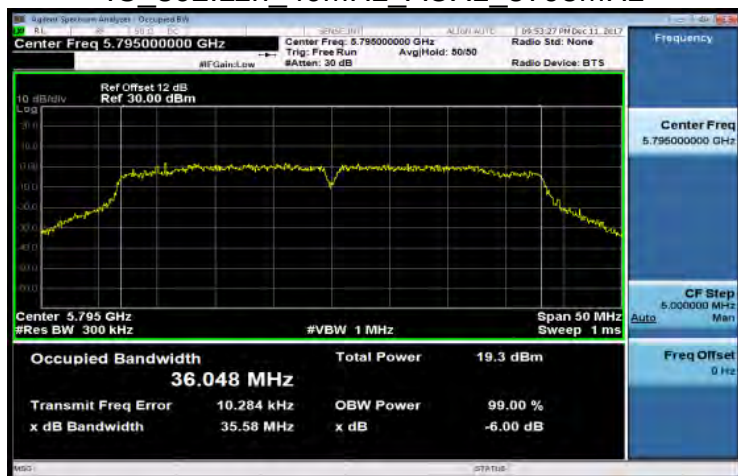
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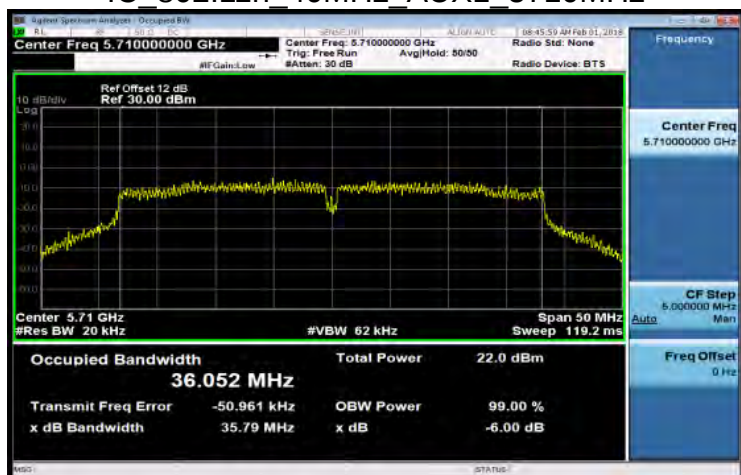
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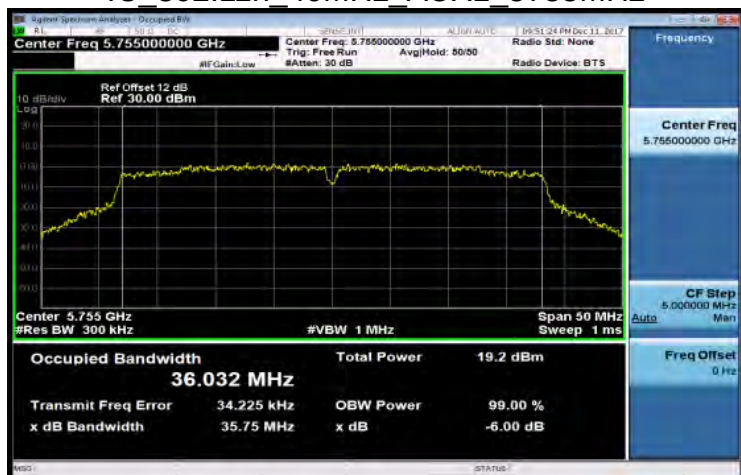
IC 802.11n 40MHz AUX1 5795MHz



IC 802.11n 40MHz AUX1 5710MHz



IC 802.11n 40MHz AUX1 5755MHz



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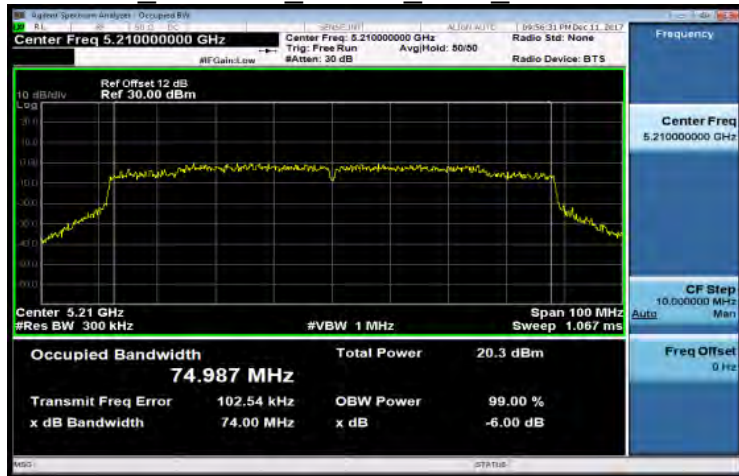
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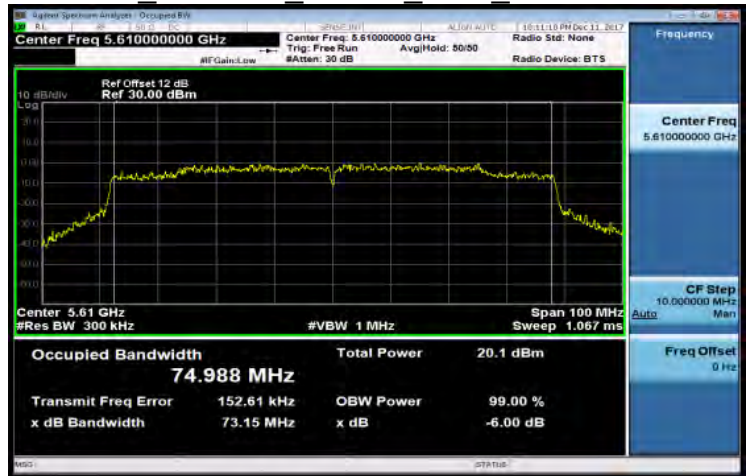
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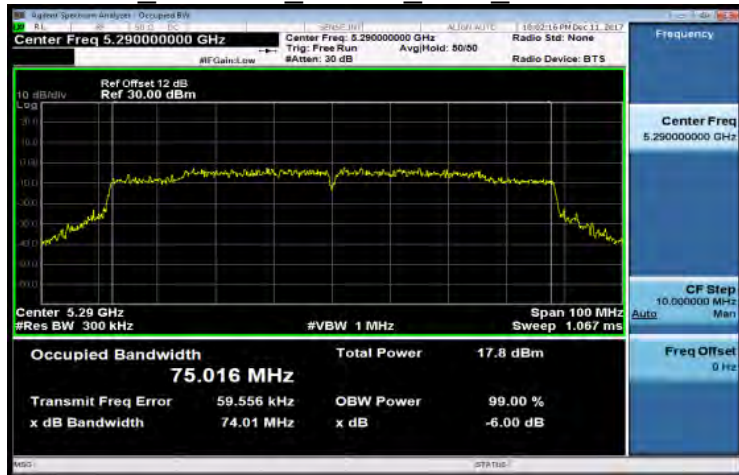
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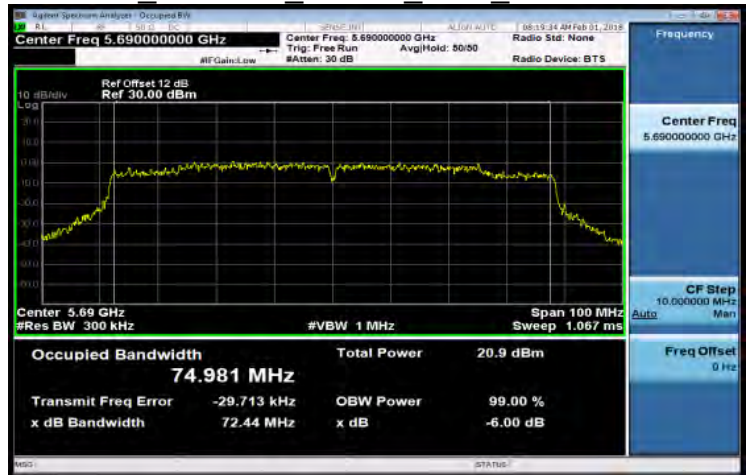
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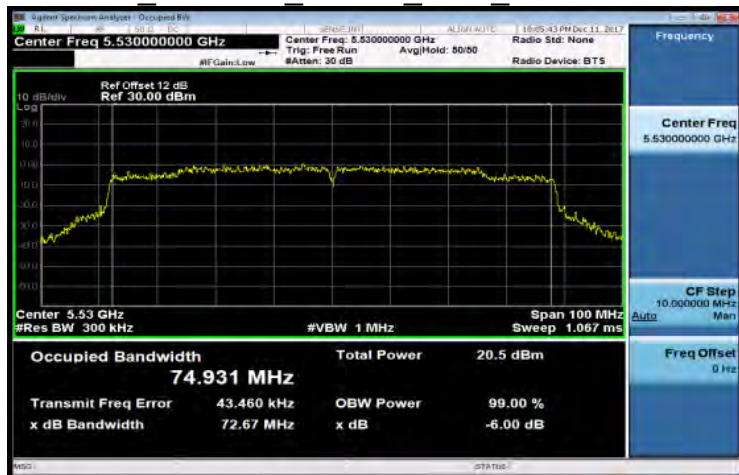
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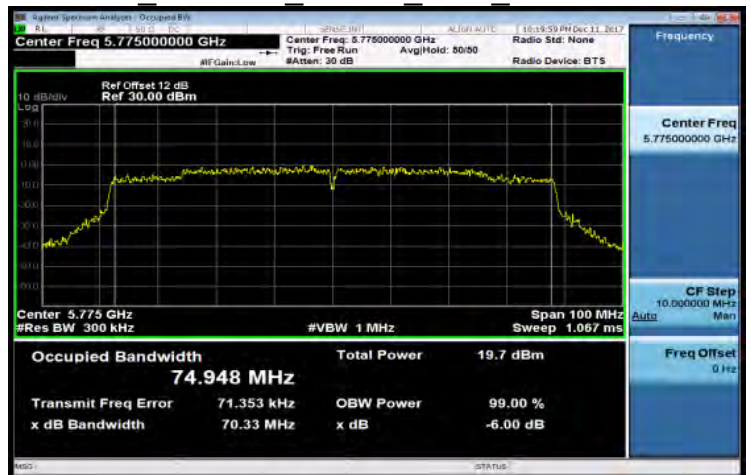
IC 802.11ac 80MHz Main 5690MHz



IC 802.11ac 80MHz Main 5530MHz



IC 802.11ac 80MHz Main 5775MHz



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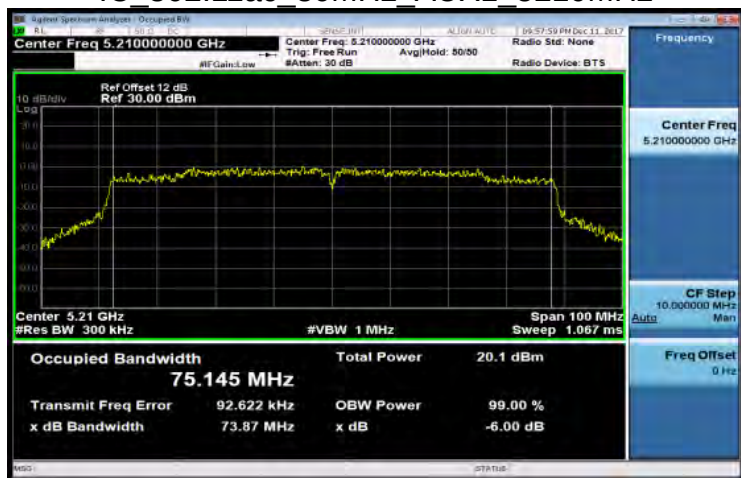
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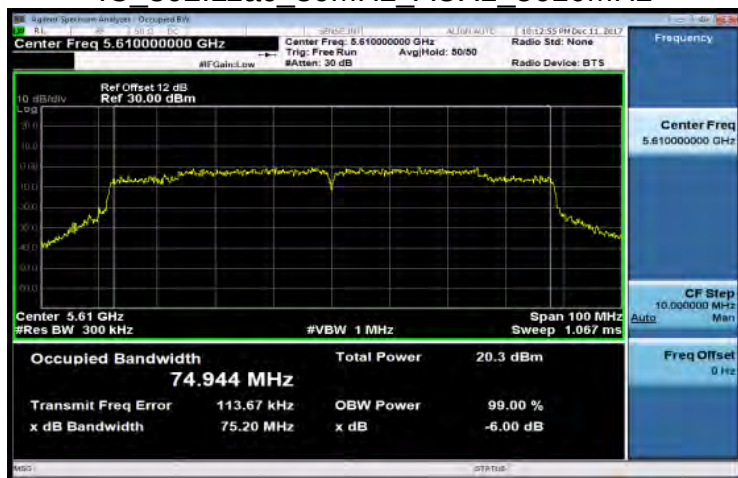
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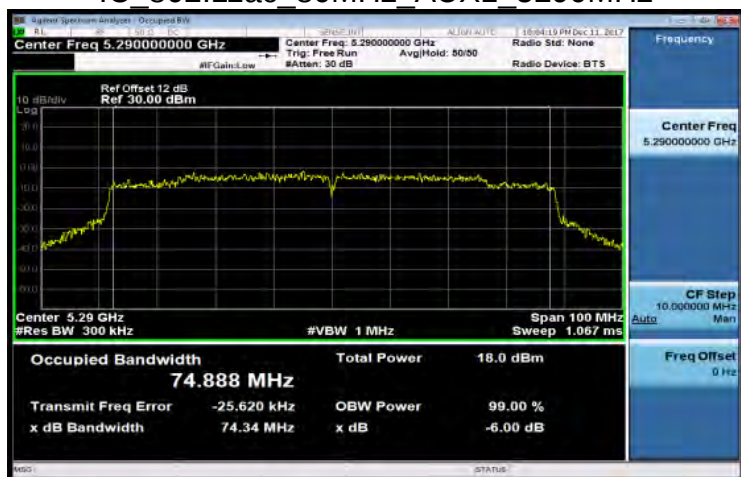
IC 802.11ac 80MHz AUX1 5210MHz



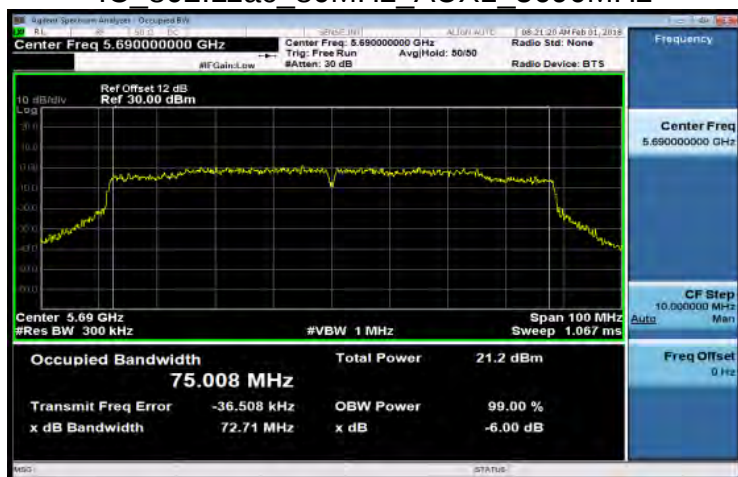
IC 802.11ac 80MHz AUX1 5610MHz



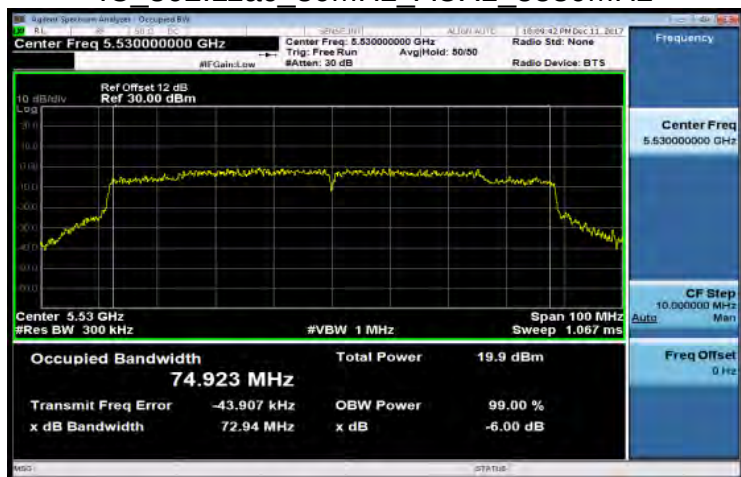
IC 802.11ac 80MHz AUX1 5290MHz



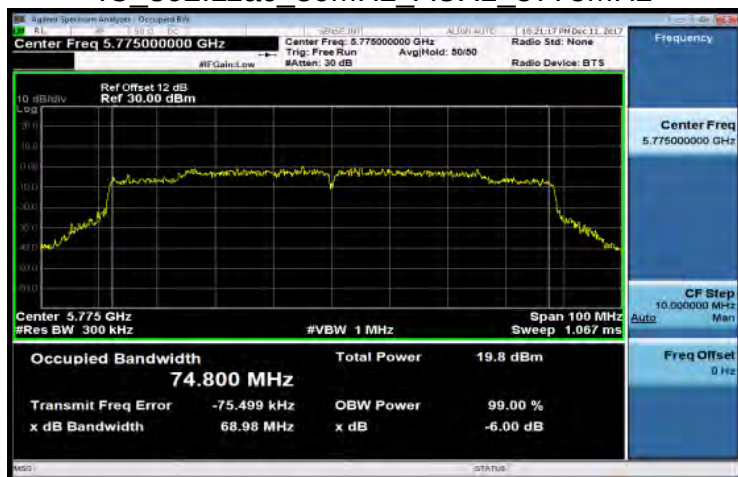
IC 802.11ac 80MHz AUX1 5690MHz



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 Acss 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 ₁₀ B, dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log ₁₀ B EIRP shall not exceed 1.0 W or 17 + 10 log ₁₀ B, dBm
5470-5600 MHz and 5650-5725 MHz	Conducted output power shall not exceed 250 mW or 11 +10 log ₁₀ B EIRP shall not exceed 1.0 W or 17 + 10 log ₁₀ 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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Note: 5.15-5.25G

Antenna1 Gain: 1.8 dBi

Antenna2 Gain: -0.55 dBi

Number Antenna: 2 pcs

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 4.81 dBi

Limit: 23.98dBm

Note: 5.25-5.35G

Antenna1 Gain: 1.8 dBi

Antenna2 Gain: 1.34 dBi

Number Antenna: 2 pcs

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 4.81 dBi

Limit: 23.98dBm

Note: 5.47-5.725G

Antenna1 Gain: 1.84 dBi

Antenna2 Gain: 1.46 dBi

Number Antenna: 2 pcs

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 4.85 dBi

Limit: 23.968dBm

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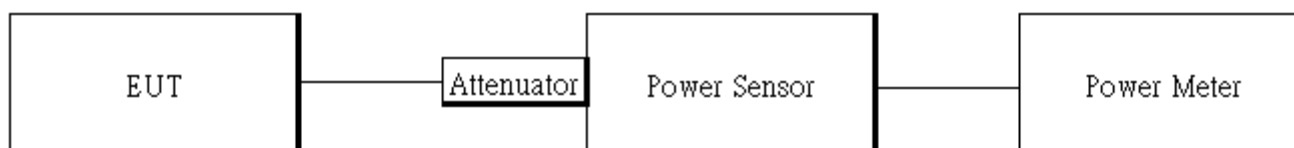
9.2 Measurement Procedure

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 $10 \log(1/\text{duty cycle})$.
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	12/24/2017	12/23/2018
DC Block	PASTERNAK	PE8210	RF29	12/24/2017	12/23/2018
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018
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	14.95	31.239	30	PASS
44	5220	6	14.94	31.167	30	PASS
48	5240	6	14.95	31.239	30	PASS
52	5260	6	14.97	31.383	23.98 or $11+10\log(B) = 23.97$	PASS
60	5300	6	14.98	31.456	23.98 or $11+10\log(B) = 23.99$	PASS
64	5320	6	14.96	31.311	23.98 or $11+10\log(B) = 23.97$	PASS
100	5500	6	13.96	24.871	23.98 or $11+10\log(B) = 24.08$	PASS
116	5580	6	13.94	24.757	23.98 or $11+10\log(B) = 24.01$	PASS
140	5700	6	13.98	24.986	23.98 or $11+10\log(B) = 24.02$	PASS
149	5745	6	13.97	24.929	30	PASS
157	5785	6	13.97	24.929	30	PASS
165	5825	6	13.94	24.757	30	PASS

802.11a_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	14.90	30.882	30	PASS
44	5220	6	14.89	30.811	30	PASS
48	5240	6	14.92	31.024	30	PASS
52	5260	6	14.91	30.953	23.98 or $11+10\log(B) = 24.09$	PASS
60	5300	6	14.95	31.239	23.98 or $11+10\log(B) = 23.87$	PASS
64	5320	6	14.92	31.024	23.98 or $11+10\log(B) = 23.89$	PASS
100	5500	6	13.91	24.587	23.98 or $11+10\log(B) = 24.03$	PASS
116	5580	6	13.88	24.417	23.98 or $11+10\log(B) = 24.12$	PASS
140	5700	6	13.95	24.814	23.98 or $11+10\log(B) = 23.94$	PASS
149	5745	6	13.90	24.530	30	PASS
157	5785	6	13.89	24.474	30	PASS
165	5825	6	13.86	24.305	30	PASS

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802.11a_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
			CH 0	CH 1					
36	5180	6	11.75	11.56	14.89	29.284	30		PASS
44	5220	6	11.69	11.58	14.87	29.145	30		PASS
48	5240	6	11.71	11.59	14.89	29.246	30		PASS
52	5260	6	11.74	11.61	14.91	29.416	23.98	or 11+10log(B) = 23.97	PASS
60	5300	6	11.89	11.46	14.92	29.448	23.98	or 11+10log(B) = 23.87	PASS
64	5320	6	11.88	11.44	14.90	29.349	23.98	or 11+10log(B) = 23.89	PASS
100	5500	6	10.91	10.46	13.93	23.448	23.98	or 11+10log(B) = 24.03	PASS
116	5580	6	10.84	10.48	13.90	23.303	23.98	or 11+10log(B) = 24.01	PASS
140	5700	6	10.85	10.59	13.96	23.617	23.98	or 11+10log(B) = 23.94	PASS
149	5745	6	10.83	10.53	13.92	23.404	30		PASS
157	5785	6	10.83	10.54	13.92	23.430	30		PASS
165	5825	6	10.78	10.58	13.92	23.396	30		PASS

802.11n_HT20_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	14.98	31.447	30		PASS
44	5220	MCS0	14.96	31.303	30		PASS
48	5240	MCS0	14.94	31.159	30		PASS
52	5260	MCS0	14.97	31.375	23.98	or 11+10log(B) = 24.11	PASS
60	5300	MCS0	14.97	31.375	23.98	or 11+10log(B) = 24.09	PASS
64	5320	MCS0	14.98	31.447	23.98	or 11+10log(B) = 24.09	PASS
100	5500	MCS0	13.99	25.037	23.98	or 11+10log(B) = 24.22	PASS
116	5580	MCS0	13.94	24.750	23.98	or 11+10log(B) = 24.23	PASS
140	5700	MCS0	13.98	24.979	23.98	or 11+10log(B) = 24.27	PASS
144	5720 (band 3)	MCS0	12.74	18.775	23.98	or 11+10log(B) = 23.09	PASS
144	5720 (band 4)	MCS0	1.38	1.376	23.98	or 11+10log(B) = 18.07	PASS
149	5745	MCS0	13.97	24.922	30		PASS
157	5785	MCS0	13.97	24.922	30		PASS
165	5825	MCS0	13.96	24.865	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	14.95	31.231	30	PASS
44	5220	MCS0	14.91	30.944	30	PASS
48	5240	MCS0	14.88	30.731	30	PASS
52	5260	MCS0	14.92	31.016	23.98 or $11+10\log(B) = 24.23$	PASS
60	5300	MCS0	14.93	31.087	23.98 or $11+10\log(B) = 24.07$	PASS
64	5320	MCS0	14.94	31.159	23.98 or $11+10\log(B) = 24.22$	PASS
100	5500	MCS0	13.95	24.807	23.98 or $11+10\log(B) = 24.17$	PASS
116	5580	MCS0	13.91	24.580	23.98 or $11+10\log(B) = 24.13$	PASS
140	5700	MCS0	13.94	24.750	23.98 or $11+10\log(B) = 24.02$	PASS
144	5720 (band 3)	MCS0	12.71	18.646	23.98 or $11+10\log(B) = 22.88$	PASS
144	5720 (band 4)	MCS0	1.38	1.376	23.98 or $11+10\log(B) = 17.86$	PASS
149	5745	MCS0	13.94	24.750	30	PASS
157	5785	MCS0	13.92	24.637	30	PASS
165	5825	MCS0	13.93	24.693	30	PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
36	5180	MCS8	11.74	11.66	14.91	29.583	30	PASS
44	5220	MCS8	11.74	11.63	14.89	29.483	30	PASS
48	5240	MCS8	11.77	11.67	14.93	29.721	30	PASS
52	5260	MCS8	11.74	11.62	14.89	29.449	23.98 or $11+10\log(B) = 24.11$	PASS
60	5300	MCS8	11.94	11.47	14.92	29.660	23.98 or $11+10\log(B) = 24.07$	PASS
64	5320	MCS8	11.96	11.51	14.95	29.862	23.98 or $11+10\log(B) = 24.09$	PASS
100	5500	MCS8	10.89	10.51	13.91	23.520	23.98 or $11+10\log(B) = 24.17$	PASS
116	5580	MCS8	10.88	10.54	13.92	23.570	23.98 or $11+10\log(B) = 24.13$	PASS
140	5700	MCS8	10.79	10.63	13.92	23.556	23.98 or $11+10\log(B) = 24.02$	PASS
144	5720 (band 3)	MCS8	9.68	9.33	12.71	17.860	23.98 or $11+10\log(B) = 17.86$	PASS
144	5720 (band 4)	MCS8	1.189	1.189	4.40	2.630	23.98 or $11+11\log(B) = 11.00$	PASS
149	5745	MCS8	10.91	10.54	13.94	23.655	30	PASS
157	5785	MCS8	10.89	10.56	13.93	23.651	30	PASS
165	5825	MCS8	10.79	10.64	13.92	23.583	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	14.94	31.153	30	PASS
44	5220	MCS0	14.91	30.939	30	PASS
48	5240	MCS0	14.88	30.726	30	PASS
52	5260	MCS0	14.91	30.939	23.98 or $11+10\log(B) = 24.11$	PASS
60	5300	MCS0	14.90	30.868	23.98 or $11+10\log(B) = 24.09$	PASS
64	5320	MCS0	14.92	31.010	23.98 or $11+10\log(B) = 24.09$	PASS
100	5500	MCS0	13.94	24.746	23.98 or $11+10\log(B) = 24.22$	PASS
116	5580	MCS0	13.89	24.463	23.98 or $11+10\log(B) = 24.23$	PASS
140	5700	MCS0	13.92	24.632	23.98 or $11+10\log(B) = 24.27$	PASS
144	5720 (band 3)	MCS0	12.70	18.600	23.98 or $11+10\log(B) = 23.09$	PASS
144	5720 (band 4)	MCS0	1.38	1.375	23.98 or $11+10\log(B) = 18.07$	PASS
149	5745	MCS0	13.91	24.575	30	PASS
157	5785	MCS0	13.93	24.689	30	PASS
165	5825	MCS0	13.93	24.689	30	PASS

802.11ac_VHT20_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	14.92	31.010	30	PASS
44	5220	MCS0	14.88	30.726	30	PASS
48	5240	MCS0	14.84	30.444	30	PASS
52	5260	MCS0	14.89	30.797	23.98 or $11+10\log(B) = 24.23$	PASS
60	5300	MCS0	14.88	30.726	23.98 or $11+10\log(B) = 24.07$	PASS
64	5320	MCS0	14.91	30.939	23.98 or $11+10\log(B) = 24.22$	PASS
100	5500	MCS0	13.90	24.519	23.98 or $11+10\log(B) = 24.17$	PASS
116	5580	MCS0	13.88	24.406	23.98 or $11+10\log(B) = 24.13$	PASS
140	5700	MCS0	13.91	24.575	23.98 or $11+10\log(B) = 24.02$	PASS
144	5720 (band 3)	MCS0	12.66	18.429	23.98 or $11+10\log(B) = 22.88$	PASS
144	5720 (band 4)	MCS0	1.38	1.375	23.98 or $11+10\log(B) = 17.86$	PASS
149	5745	MCS0	13.88	24.406	30	PASS
157	5785	MCS0	13.89	24.463	30	PASS
165	5825	MCS0	13.87	24.350	30	PASS

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802.11ac_VHT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
			CH 0	CH 1					
36	5180	MCS8	11.74	11.64	14.90	29.516	30		PASS
44	5220	MCS8	11.76	11.58	14.88	29.385	30		PASS
48	5240	MCS8	11.73	11.56	14.85	29.215	30		PASS
52	5260	MCS8	11.86	11.5	14.89	29.472	23.98	or 11+10log(B) = 24.11	PASS
60	5300	MCS8	11.93	11.35	14.85	29.241	23.98	or 11+10log(B) = 24.07	PASS
64	5320	MCS8	11.95	11.38	14.88	29.408	23.98	or 11+10log(B) = 24.09	PASS
100	5500	MCS8	10.87	10.44	13.87	23.284	23.98	or 11+10log(B) = 24.17	PASS
116	5580	MCS8	10.83	10.42	13.84	23.121	23.98	or 11+10log(B) = 24.13	PASS
140	5700	MCS8	10.75	10.58	13.87	23.314	23.98	or 11+10log(B) = 24.02	PASS
144	5720 (band 3)	MCS8	9.53	9.35	12.65	17.584	23.98	or 11+10log(B) = 17.86	PASS
144	5720 (band 4)	MCS8	1.189	1.189	4.39	2.630	23.98	or 11+10log(B) = 11.00	PASS
149	5745	MCS8	10.83	10.46	13.85	23.223	30		PASS
157	5785	MCS8	10.82	10.56	13.90	23.454	30		PASS
165	5825	MCS8	10.71	10.62	13.87	23.311	30		PASS

802.11n_HT40_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
38	5190	MCS0	14.97	31.407	30		PASS
46	5230	MCS0	14.96	31.335	30		PASS
54	5270	MCS0	14.98	31.479	23.98	or 11+10log(B) = 27.26	PASS
62	5310	MCS0	11.97	15.741	23.98	or 11+10log(B) = 27.54	PASS
102	5510	MCS0	13.98	25.005	23.98	or 11+10log(B) = 27.30	PASS
110	5550	MCS0	13.95	24.833	23.98	or 11+10log(B) = 27.39	PASS
134	5670	MCS0	13.98	25.005	23.98	or 11+10log(B) = 27.54	PASS
142	5710 (band 2)	MCS0	13.41	21.929	23.98	or 11+10log(B) = 26.75	PASS
142	5710 (band 4)	MCS0	1.26	1.336	23.98	or 11+10log(B) = 17.77	PASS
151	5755	MCS0	13.96	24.890	30		PASS
159	5795	MCS0	13.93	24.719	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	14.93	31.119	30		PASS
46	5230	MCS0	14.92	31.048	30		PASS
54	5270	MCS0	14.90	30.905	23.98	or $11+10\log(B) = 27.26$	PASS
62	5310	MCS0	11.91	15.525	23.98	or $11+10\log(B) = 27.42$	PASS
102	5510	MCS0	13.95	24.833	23.98	or $11+10\log(B) = 27.42$	PASS
110	5550	MCS0	13.92	24.662	23.98	or $11+10\log(B) = 27.33$	PASS
134	5670	MCS0	13.95	24.833	23.98	or $11+10\log(B) = 27.38$	PASS
142	5710 (band 2)	MCS0	13.38	21.778	23.98	or $11+10\log(B) = 26.77$	PASS
142	5710 (band 4)	MCS0	1.26	1.336	23.98	or $11+10\log(B) = 17.79$	PASS
151	5755	MCS0	13.93	24.719	30		PASS
159	5795	MCS0	13.90	24.549	30		PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS8	11.23	11.14	14.94	26.276	30	PASS
46	5230	MCS8	11.22	11.11	14.92	26.156	30	PASS
54	5270	MCS8	11.32	11.02	14.92	26.199	23.98 or $11+10\log(B) = 27.26$	PASS
62	5310	MCS8	8.54	7.77	11.92	13.129	23.98 or $11+10\log(B) = 27.42$	PASS
102	5510	MCS8	10.32	10.03	13.93	20.834	23.98 or $11+10\log(B) = 27.30$	PASS
110	5550	MCS8	10.31	10.02	13.92	20.786	23.98 or $11+10\log(B) = 27.33$	PASS
134	5670	MCS8	10.27	10.06	13.92	20.781	23.98 or $11+10\log(B) = 27.38$	PASS
142	5710 (band 2)	MCS8	9.772	9.502	13.39	18.405	23.98 or $11+10\log(B) = 26.75$	PASS
142	5710 (band 4)	MCS8	0.517	0.517	4.27	2.253	23.98 or $11+10\log(B) = 17.77$	PASS
151	5755	MCS8	10.32	10.04	13.93	20.857	30	PASS
159	5795	MCS8	10.27	10.02	13.90	20.688	30	PASS

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802.11ac_VHT40_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.91	30.993	30	PASS
46	5230	MCS0	14.89	30.851	30	PASS
54	5270	MCS0	14.92	31.065	23.98 or $11+10\log(B) = 27.26$	PASS
62	5310	MCS0	11.91	15.533	23.98 or $11+10\log(B) = 27.54$	PASS
102	5510	MCS0	13.89	24.506	23.98 or $11+10\log(B) = 27.30$	PASS
110	5550	MCS0	13.92	24.675	23.98 or $11+10\log(B) = 27.39$	PASS
134	5670	MCS0	13.94	24.789	23.98 or $11+10\log(B) = 27.54$	PASS
142	5710 (band 2)	MCS0	13.38	21.790	23.98 or $11+10\log(B) = 26.75$	PASS
142	5710 (band 4)	MCS0	1.25	1.333	23.98 or $11+10\log(B) = 17.77$	PASS
151	5755	MCS0	13.92	24.675	30	PASS
159	5795	MCS0	13.89	24.506	30	PASS

802.11ac_VHT40_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	14.88	30.780	30	PASS
46	5230	MCS0	14.87	30.709	30	PASS
54	5270	MCS0	14.90	30.922	23.98 or $11+10\log(B) = 27.26$	PASS
62	5310	MCS0	11.86	15.356	23.98 or $11+10\log(B) = 27.42$	PASS
102	5510	MCS0	13.85	24.281	23.98 or $11+10\log(B) = 27.42$	PASS
110	5550	MCS0	13.86	24.337	23.98 or $11+10\log(B) = 27.33$	PASS
134	5670	MCS0	13.90	24.562	23.98 or $11+10\log(B) = 27.38$	PASS
142	5710 (band 2)	MCS0	13.35	21.650	23.98 or $11+10\log(B) = 26.77$	PASS
142	5710 (band 4)	MCS0	1.25	1.333	23.98 or $11+10\log(B) = 17.79$	PASS
151	5755	MCS0	13.89	24.506	30	PASS
159	5795	MCS0	13.86	24.337	30	PASS

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802.11ac_VHT40_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS8	11.2	11.08	14.88	26.006	30	PASS
46	5230	MCS8	11.19	11.04	14.86	25.858	30	PASS
54	5270	MCS8	11.24	11.06	14.89	26.069	23.98 or $11+10\log(B) = 27.26$	PASS
62	5310	MCS8	8.48	7.75	11.87	13.004	23.98 or $11+10\log(B) = 27.42$	PASS
102	5510	MCS8	10.27	9.92	13.84	20.459	23.98 or $11+10\log(B) = 27.30$	PASS
110	5550	MCS8	10.28	10.04	13.90	20.758	23.98 or $11+10\log(B) = 27.33$	PASS
134	5670	MCS8	10.31	10.03	13.92	20.809	23.98 or $11+10\log(B) = 27.38$	PASS
142	5710 (band 2)	MCS8	9.752	9.482	13.36	18.321	23.98 or $11+10\log(B) = 26.75$	PASS
142	5710 (band 4)	MCS8	0.517	0.517	4.26	2.253	23.98 or $11+10\log(B) = 17.77$	PASS
151	5755	MCS8	10.27	10.03	13.89	20.711	30	PASS
159	5795	MCS8	10.14	10.06	13.84	20.467	30	PASS

802.11ac_VHT80_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	13.94	24.755	30	PASS
58	5290	MCS0	11.98	15.764	23.98 or $11+10\log(B) = 30.03$	PASS
106	5530	MCS0	13.95	24.813	23.98 or $11+10\log(B) = 29.97$	PASS
122	5610	MCS0	13.99	25.042	23.98 or $11+10\log(B) = 30.07$	PASS
138	5690 (band 2)	MCS0	13.67	23.274	23.98 or $11+10\log(B) = 29.50$	PASS
138	5690 (band 4)	MCS0	0.99	1.257	23.98 or $11+10\log(B) = 17.01$	PASS
155	5775	MCS0	13.94	24.755	30	PASS

802.11ac_VHT80_Aux1

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	13.92	24.642	30	PASS
58	5290	MCS0	11.95	15.656	23.98 or $11+10\log(B) = 29.97$	PASS
106	5530	MCS0	13.90	24.529	23.98 or $11+10\log(B) = 29.98$	PASS
122	5610	MCS0	13.97	24.927	23.98 or $11+10\log(B) = 30.15$	PASS
138	5690 (band 2)	MCS0	13.65	23.156	23.98 or $11+10\log(B) = 29.52$	PASS
138	5690 (band 4)	MCS0	0.99	1.257	23.98 or $11+10\log(B) = 17.02$	PASS
155	5775	MCS0	13.84	24.192	30	PASS

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802.11ac_VHT80_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
42	5210	MCS8	9.91	10.25	13.85	20.387	30	PASS
58	5290	MCS8	8.25	8.08	11.93	13.110	23.98 or $11+10\log(B) = 29.97$	PASS
106	5530	MCS8	10.16	9.98	13.84	20.329	23.98 or $11+10\log(B) = 29.97$	PASS
122	5610	MCS8	10.37	9.81	13.87	20.461	23.98 or $11+10\log(B) = 30.07$	PASS
138	5690 (band 4)	MCS8	10.162	9.532	13.63	19.358	23.98 or $11+11\log(B) = 29.52$	PASS
138	5690 (band 4)	MCS8	0.237	0.237	4.00	2.112	23.98 or $11+12\log(B) = 11.00$	PASS
155	5775	MCS8	10.43	9.79	13.89	20.569	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	14.97	31.383	23.98 or $11+10\log(B) = 23.22$	PASS
60	5300	14.98	31.456	23.98 or $11+10\log(B) = 23.20$	PASS
64	5320	14.96	31.311	23.98 or $11+10\log(B) = 23.21$	PASS
100	5500	13.96	24.871	23.98 or $11+10\log(B) = 23.20$	PASS
116	5580	13.94	24.757	23.98 or $11+10\log(B) = 23.20$	PASS
140	5700	13.98	24.986	23.98 or $11+10\log(B) = 23.20$	PASS
149	5745	13.97	24.929	30	PASS
157	5785	13.97	24.929	30	PASS
165	5825	13.94	24.757	30	PASS

802.11a_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.91	30.953	23.98 or $11+10\log(B) = 23.20$	PASS
60	5300	14.95	31.239	23.98 or $11+10\log(B) = 23.19$	PASS
64	5320	14.92	31.024	23.98 or $11+10\log(B) = 23.22$	PASS
100	5500	13.91	24.587	23.98 or $11+10\log(B) = 23.21$	PASS
116	5580	13.88	24.417	23.98 or $11+10\log(B) = 23.19$	PASS
140	5700	13.95	24.814	23.98 or $11+10\log(B) = 23.20$	PASS
149	5745	13.90	24.530	30	PASS
157	5785	13.89	24.474	30	PASS
165	5825	13.86	24.305	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	11.7	11.6	14.69	29.416	23.98 or $11+10\log(B) = 23.20$	PASS
60	5300	11.9	11.5	14.69	29.448	23.98 or $11+10\log(B) = 23.19$	PASS
64	5320	11.9	11.4	14.68	29.349	23.98 or $11+10\log(B) = 23.21$	PASS
100	5500	10.9	10.5	13.70	23.448	23.98 or $11+10\log(B) = 23.20$	PASS
116	5580	10.8	10.5	13.67	23.303	23.98 or $11+10\log(B) = 23.19$	PASS
140	5700	10.9	10.6	13.73	23.617	23.98 or $11+10\log(B) = 23.20$	PASS
149	5745	10.8	10.5	13.69	23.404	30	PASS
157	5785	10.8	10.5	13.70	23.430	30	PASS
165	5825	10.8	10.6	13.69	23.396	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	14.97	31.375	23.98 or $11+10\log(B) = 23.50$	PASS
60	5300	14.97	31.375	23.98 or $11+10\log(B) = 23.51$	PASS
64	5320	14.98	31.447	23.98 or $11+10\log(B) = 23.50$	PASS
100	5500	13.99	25.037	23.98 or $11+10\log(B) = 23.49$	PASS
116	5580	13.94	24.750	23.98 or $11+10\log(B) = 23.49$	PASS
140	5700	13.98	24.979	23.98 or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	12.54	17.947	23.98 or $11+10\log(B) = 22.29$	PASS
144	5720 (band 4)	1.189	1.315	23.98 or $11+10\log(B) = 17.27$	PASS
149	5745	13.97	24.922	30	PASS
157	5785	13.97	24.922	30	PASS
165	5825	13.96	24.865	30	PASS

802.11n_HT20_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.92	31.016	23.98 or $11+10\log(B) = 23.50$	PASS
60	5300	14.93	31.087	23.98 or $11+10\log(B) = 23.51$	PASS
64	5320	14.94	31.159	23.98 or $11+10\log(B) = 23.49$	PASS
100	5500	13.95	24.807	23.98 or $11+10\log(B) = 23.50$	PASS
116	5580	13.91	24.580	23.98 or $11+10\log(B) = 23.51$	PASS
140	5700	13.94	24.750	23.98 or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	12.51	17.824	23.98 or $11+10\log(B) = 22.30$	PASS
144	5720 (band 4)	1.189	1.315	23.98 or $11+10\log(B) = 17.28$	PASS
149	5745	13.94	24.750	30	PASS
157	5785	13.92	24.637	30	PASS
165	5825	13.93	24.693	30	PASS

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802.11n_HT20_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
52	5260	11.74	11.6	14.69	29.449	23.98 or $11+10\log(B) = 23.50$	PASS
60	5300	11.94	11.5	14.72	29.660	23.98 or $11+10\log(B) = 23.51$	PASS
64	5320	11.96	11.5	14.75	29.862	23.98 or $11+10\log(B) = 23.49$	PASS
100	5500	10.89	10.5	13.71	23.520	23.98 or $11+10\log(B) = 23.49$	PASS
116	5580	10.88	10.5	13.72	23.570	23.98 or $11+10\log(B) = 23.49$	PASS
140	5700	10.79	10.6	13.72	23.556	23.98 or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	9.68	9.33	12.52	17.860	23.98 or $11+10\log(B) = 22.29$	PASS
144	5720 (band 4)	1.189	1.19	4.20	2.630	23.98 or $11+10\log(B) = 17.27$	PASS
149	5745	10.91	10.5	13.74	23.655	30	PASS
157	5785	10.89	10.6	13.74	23.651	30	PASS
165	5825	10.79	10.6	13.73	23.583	30	PASS

802.11ac_VHT20_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	14.91	30.939	23.98 or $11+10\log(B) = 23.50$	PASS
60	5300	14.90	30.868	23.98 or $11+10\log(B) = 23.51$	PASS
64	5320	14.92	31.010	23.98 or $11+10\log(B) = 23.50$	PASS
100	5500	13.94	24.746	23.98 or $11+10\log(B) = 23.49$	PASS
116	5580	13.89	24.463	23.98 or $11+10\log(B) = 23.49$	PASS
140	5700	13.92	24.632	23.98 or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	12.5	17.783	23.98 or $11+10\log(B) = 22.29$	PASS
144	5720 (band 4)	1.189	1.315	23.98 or $11+10\log(B) = 17.27$	PASS
149	5745	13.91	24.575	30	PASS
157	5785	13.93	24.689	30	PASS
165	5825	13.93	24.689	30	PASS

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802.11ac_VHT20_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
52	5260	14.89	30.797	23.98	or $11+10\log(B) = 23.50$	PASS
60	5300	14.88	30.726	23.98	or $11+10\log(B) = 23.51$	PASS
64	5320	14.91	30.939	23.98	or $11+10\log(B) = 23.49$	PASS
100	5500	13.90	24.519	23.98	or $11+10\log(B) = 23.50$	PASS
116	5580	13.88	24.406	23.98	or $11+10\log(B) = 23.51$	PASS
140	5700	13.91	24.575	23.98	or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	12.46	17.620	23.98	or $11+10\log(B) = 22.30$	PASS
144	5720 (band 4)	1.189	1.315	23.98	or $11+10\log(B) = 17.28$	PASS
149	5745	13.88	24.406	30		PASS
157	5785	13.89	24.463	30		PASS
165	5825	13.87	24.350	30		PASS

802.11ac_VHT20_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
		CH 0	CH 1					
52	5260	11.86	11.5	14.69	29.472	23.98	or $11+10\log(B) = 23.50$	PASS
60	5300	11.93	11.4	14.66	29.241	23.98	or $11+10\log(B) = 23.51$	PASS
64	5320	11.95	11.4	14.68	29.408	23.98	or $11+10\log(B) = 23.49$	PASS
100	5500	10.87	10.4	13.67	23.284	23.98	or $11+10\log(B) = 23.49$	PASS
116	5580	10.83	10.4	13.64	23.121	23.98	or $11+10\log(B) = 23.49$	PASS
140	5700	10.75	10.6	13.68	23.314	23.98	or $11+10\log(B) = 23.49$	PASS
144	5720 (band 3)	9.53	9.35	12.45	17.584	23.98	or $11+10\log(B) = 22.29$	PASS
144	5720 (band 4)	1.189	1.19	4.20	2.630	23.98	or $11+10\log(B) = 17.27$	PASS
149	5745	10.83	10.5	13.66	23.223	30		PASS
157	5785	10.82	10.6	13.70	23.454	30		PASS
165	5825	10.71	10.6	13.68	23.311	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	14.98	31.479	23.98 or 11+10log(B) = 26.57	PASS
62	5310	11.97	15.741	23.98 or 11+10log(B) = 26.57	PASS
102	5510	13.98	25.005	23.98 or 11+10log(B) = 26.57	PASS
110	5550	13.95	24.833	23.98 or 11+10log(B) = 26.57	PASS
134	5670	13.98	25.005	23.98 or 11+10log(B) = 26.57	PASS
142	5710 (band 3)	12.67	18.493	23.98 or 11+10log(B) = 26.06	PASS
142	5710 (band 4)	0.517	1.126	23.98 or 11+10log(B) = 17.08	PASS
151	5755	13.96	24.890	30	PASS
159	5795	13.93	24.719	30	PASS

802.11n_HT40_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	14.90	30.905	23.98 or 11+10log(B) = 26.57	PASS
62	5310	11.91	15.525	23.98 or 11+10log(B) = 26.57	PASS
102	5510	13.95	24.833	23.98 or 11+10log(B) = 26.57	PASS
110	5550	13.92	24.662	23.98 or 11+10log(B) = 26.56	PASS
134	5670	13.95	24.833	23.98 or 11+10log(B) = 26.57	PASS
142	5710 (band 3)	12.64	18.365	23.98 or 11+10log(B) = 26.05	PASS
142	5710 (band 4)	0.517	1.126	23.98 or 11+10log(B) = 17.07	PASS
151	5755	13.93	24.719	30	PASS
159	5795	13.90	24.549	30	PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
54	5270	11.32	11	14.18	26.199	23.98 or 11+10log(B) = 26.57	PASS
62	5310	8.54	7.77	11.18	13.129	23.98 or 11+10log(B) = 26.57	PASS
102	5510	10.32	10	13.19	20.834	23.98 or 11+10log(B) = 26.57	PASS
110	5550	10.31	10	13.18	20.786	23.98 or 11+10log(B) = 26.56	PASS
134	5670	10.27	10.1	13.18	20.781	23.98 or 11+10log(B) = 26.57	PASS
142	5710 (band 3)	9.772	9.5	12.65	18.405	23.98 or 11+10log(B) = 26.05	PASS
142	5710 (band 4)	0.517	0.52	3.53	2.253	23.98 or 11+10log(B) = 17.07	PASS
151	5755	10.32	10	13.19	20.857	30	PASS
159	5795	10.27	10	13.16	20.688	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	14.92	31.065	23.98 or $11+10\log(B) = 26.57$	PASS
62	5310	11.91	15.533	23.98 or $11+10\log(B) = 26.57$	PASS
102	5510	13.89	24.506	23.98 or $11+10\log(B) = 26.57$	PASS
110	5550	13.92	24.675	23.98 or $11+10\log(B) = 26.57$	PASS
134	5670	13.94	24.789	23.98 or $11+10\log(B) = 26.57$	PASS
142	5710 (band 3)	12.65	18.408	23.98 or $11+10\log(B) = 26.06$	PASS
142	5710 (band 4)	0.517	1.126	23.98 or $11+10\log(B) = 17.08$	PASS
151	5755	13.92	24.675	30	PASS
159	5795	13.89	24.506	30	PASS

802.11ac_VHT40_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	14.90	30.922	23.98 or $11+10\log(B) = 26.57$	PASS
62	5310	11.86	15.356	23.98 or $11+10\log(B) = 26.57$	PASS
102	5510	13.85	24.281	23.98 or $11+10\log(B) = 26.57$	PASS
110	5550	13.86	24.337	23.98 or $11+10\log(B) = 26.56$	PASS
134	5670	13.90	24.562	23.98 or $11+10\log(B) = 26.57$	PASS
142	5710 (band 3)	12.622	18.289	23.98 or $11+10\log(B) = 26.05$	PASS
142	5710 (band 4)	0.517	1.126	23.98 or $11+10\log(B) = 17.07$	PASS
151	5755	13.89	24.506	30	PASS
159	5795	13.86	24.337	30	PASS

802.11ac_VHT40_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
54	5270	11.24	11.1	14.16	26.069	23.98 or $11+10\log(B) = 26.57$	PASS
62	5310	8.48	7.75	11.14	13.004	23.98 or $11+10\log(B) = 26.57$	PASS
102	5510	10.27	9.92	13.11	20.459	23.98 or $11+10\log(B) = 26.57$	PASS
110	5550	10.28	10	13.17	20.758	23.98 or $11+10\log(B) = 26.56$	PASS
134	5670	10.31	10	13.18	20.809	23.98 or $11+10\log(B) = 26.57$	PASS
142	5710 (band 3)	9.752	9.48	12.63	18.321	23.98 or $11+10\log(B) = 26.05$	PASS
142	5710 (band 4)	0.517	0.52	3.53	2.253	23.98 or $11+10\log(B) = 17.07$	PASS
151	5755	10.27	10	13.16	20.711	30	PASS
159	5795	10.14	10.1	13.11	20.467	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	11.98	15.764	23.98 or 11+10log(B) = 29.75	PASS
106	5530	13.95	24.813	23.98 or 11+10log(B) = 29.75	PASS
138	5690 (band 3)	12.912	19.552	23.98 or 11+12log(B) = 29.51	PASS
138	5690 (band 4)	0.237	1.056	23.98 or 11+13log(B) = 17.02	PASS
155	5775	13.94	24.755	30	PASS

802.11ac_VHT80_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
58	5290	11.95	15.656	23.98 or 11+10log(B) = 29.74	PASS
106	5530	13.90	24.529	23.98 or 11+10log(B) = 29.75	PASS
138	5690 (band 3)	12.89	19.454	23.98 or 11+12log(B) = 29.51	PASS
138	5690 (band 4)	0.237	1.056	23.98 or 11+13log(B) = 17.02	PASS
155	5775	13.84	24.192	30	PASS

802.11ac_VHT80_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		CH 0	CH 1				
58	5290	8.25	8.08	11.18	13.110	23.98 or 11+10log(B) = 29.74	PASS
106	5530	10.16	9.98	13.08	20.329	23.98 or 11+10log(B) = 29.75	PASS
138	5690 (band 3)	10.16	9.53	12.87	19.358	23.98 or 11+12log(B) = 29.51	PASS
138	5690 (band 4)	0.237	0.24	3.25	2.112	23.98 or 11+13log(B) = 17.02	PASS
155	5775	10.43	9.79	13.13	20.569	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	14.95	1.800	16.75	47.282	23.01	or 10+10log(B)=	22.21	PASS
44	5220	14.94	1.800	16.74	47.174	23.01	or 10+10log(B)=	22.21	PASS
48	5240	14.95	1.800	16.75	47.282	23.01	or 10+10log(B)=	22.18	PASS
52	5260	14.97	1.800	16.77	47.501	30	or 17+10log(B)=	29.22	PASS
60	5300	14.98	1.800	16.78	47.610	30	or 17+10log(B)=	29.20	PASS
64	5320	14.96	1.800	16.76	47.391	30	or 17+10log(B)=	29.21	PASS
100	5500	13.96	1.840	15.80	37.993	30	or 17+10log(B)=	29.20	PASS
116	5580	13.94	1.840	15.78	37.818	30	or 17+10log(B)=	29.20	PASS
140	5700	13.98	1.840	15.82	38.168	30	or 17+10log(B)=	29.20	PASS

802.11a_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	14.90	-0.55	14.35	27.208	23.01	or 10+10log(B)=	22.20	PASS
44	5220	14.89	-0.55	14.34	27.146	23.01	or 10+10log(B)=	22.21	PASS
48	5240	14.92	-0.55	14.37	27.334	23.01	or 10+10log(B)=	22.19	PASS
52	5260	14.91	1.34	16.25	42.141	30	or 17+10log(B)=	29.20	PASS
60	5300	14.95	1.34	16.29	42.530	30	or 17+10log(B)=	29.19	PASS
64	5320	14.92	1.34	16.26	42.238	30	or 17+10log(B)=	29.22	PASS
100	5500	13.91	1.46	15.37	34.411	30	or 17+10log(B)=	29.21	PASS
116	5580	13.88	1.46	15.34	34.174	30	or 17+10log(B)=	29.19	PASS
140	5700	13.95	1.46	15.41	34.730	30	or 17+10log(B)=	29.20	PASS

802.11a_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	14.89	4.810	19.70	93.397	23.01	or 10+10log(B)=	22.20	PASS
44	5220	14.87	4.810	19.68	92.953	23.01	or 10+10log(B)=	22.21	PASS
48	5240	14.89	4.810	19.70	93.276	23.01	or 10+10log(B)=	22.18	PASS
52	5260	14.91	4.810	19.72	93.816	30	or 17+10log(B)=	29.20	PASS
60	5300	14.92	4.810	19.73	93.921	30	or 17+10log(B)=	29.19	PASS
64	5320	14.90	4.810	19.71	93.602	30	or 17+10log(B)=	29.21	PASS
100	5500	13.93	4.850	18.78	75.477	30	or 17+10log(B)=	29.20	PASS
116	5580	13.90	4.850	18.75	75.007	30	or 17+10log(B)=	29.19	PASS
140	5700	13.96	4.850	18.81	76.019	30	or 17+10log(B)=	29.20	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	14.98	1.800	16.78	47.597	23.01 or 10+10log(B)= 22.49	PASS
44	5220	14.96	1.800	16.76	47.379	23.01 or 10+10log(B)= 22.50	PASS
48	5240	14.94	1.800	16.74	47.161	23.01 or 10+10log(B)= 22.49	PASS
52	5260	14.97	1.800	16.77	47.488	30 or 17+10log(B)= 29.50	PASS
60	5300	14.97	1.800	16.77	47.488	30 or 17+10log(B)= 29.51	PASS
64	5320	14.98	1.800	16.78	47.597	30 or 17+10log(B)= 29.50	PASS
100	5500	13.99	1.840	15.83	38.246	30 or 17+10log(B)= 29.49	PASS
116	5580	13.94	1.840	15.78	37.808	30 or 17+10log(B)= 29.49	PASS
140	5700	13.98	1.840	15.82	38.158	30 or 17+10log(B)= 29.49	PASS
144	5720	12.54	1.840	14.38	27.416	30 or 17+10log(B)= 28.29	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	-0.55	14.40	27.516	23.01 or 10+10log(B)= 22.49	PASS
44	5220	14.91	-0.55	14.36	27.264	23.01 or 10+10log(B)= 22.49	PASS
48	5240	14.88	-0.55	14.33	27.076	23.01 or 10+10log(B)= 22.50	PASS
52	5260	14.92	1.34	16.26	42.226	30 or 17+10log(B)= 29.50	PASS
60	5300	14.93	1.34	16.27	42.324	30 or 17+10log(B)= 29.51	PASS
64	5320	14.94	1.34	16.28	42.421	30 or 17+10log(B)= 29.49	PASS
100	5500	13.95	1.46	15.41	34.720	30 or 17+10log(B)= 29.50	PASS
116	5580	13.91	1.46	15.37	34.402	30 or 17+10log(B)= 29.51	PASS
140	5700	13.94	1.46	15.40	34.640	30 or 17+10log(B)= 29.49	PASS
144	5720	12.51	1.46	13.97	24.946	30 or 17+10log(B)= 28.30	PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	14.91	4.810	19.72	93.676	23.01 or 10+10log(B)= 22.49	PASS
44	5220	14.89	4.810	19.70	93.357	23.01 or 10+10log(B)= 22.49	PASS
48	5240	14.93	4.810	19.74	94.111	23.01 or 10+10log(B)= 22.49	PASS
52	5260	14.89	4.810	19.70	93.251	30 or 17+10log(B)= 29.50	PASS
60	5300	14.92	4.810	19.73	93.918	30 or 17+10log(B)= 29.51	PASS
64	5320	14.95	4.810	19.76	94.557	30 or 17+10log(B)= 29.49	PASS
100	5500	13.91	4.850	18.76	75.167	30 or 17+10log(B)= 29.49	PASS
116	5580	13.92	4.850	18.77	75.326	30 or 17+10log(B)= 29.49	PASS
140	5700	13.92	4.850	18.77	75.281	30 or 17+10log(B)= 29.49	PASS
144	5720	12.52	4.850	17.37	54.576	30 or 17+10log(B)= 28.29	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	14.97	1.800	16.77	47.536	23.01 or 10+10log(B)= 25.56	PASS
46	5230	14.96	1.800	16.76	47.427	23.01 or 10+10log(B)= 25.57	PASS
54	5270	14.98	1.800	16.78	47.646	30 or 17+10log(B)= 32.57	PASS
62	5310	11.97	1.800	13.77	23.825	30 or 17+10log(B)= 32.57	PASS
102	5510	13.98	1.840	15.82	38.197	30 or 17+10log(B)= 32.57	PASS
110	5550	13.95	1.840	15.79	37.934	30 or 17+10log(B)= 32.57	PASS
134	5670	13.98	1.840	15.82	38.197	30 or 17+10log(B)= 32.57	PASS
142	5710	12.67	1.840	14.51	28.249	30 or 17+10log(B)= 32.06	PASS

802.11n_HT40_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	14.93	-0.55	14.38	27.417	23.01 or 10+10log(B)= 25.57	PASS
46	5230	14.92	-0.55	14.37	27.354	23.01 or 10+10log(B)= 25.57	PASS
54	5270	14.90	1.34	16.24	42.075	30 or 17+10log(B)= 32.57	PASS
62	5310	11.91	1.34	13.25	21.136	30 or 17+10log(B)= 32.57	PASS
102	5510	13.95	1.46	15.41	34.756	30 or 17+10log(B)= 32.57	PASS
110	5550	13.92	1.46	15.38	34.517	30 or 17+10log(B)= 32.56	PASS
134	5670	13.95	1.46	15.41	34.756	30 or 17+10log(B)= 32.57	PASS
142	5710	13.38	1.46	14.84	30.481	30 or 17+10log(B)= 32.05	PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	14.94	4.810	19.75	94.315	23.01 or 10+10log(B)= 25.56	PASS
46	5230	14.92	4.810	19.73	93.884	23.01 or 10+10log(B)= 25.57	PASS
54	5270	14.92	4.810	19.73	94.041	30 or 17+10log(B)= 32.57	PASS
62	5310	11.92	4.810	16.73	47.126	30 or 17+10log(B)= 32.57	PASS
102	5510	13.93	4.850	18.78	75.474	30 or 17+10log(B)= 32.57	PASS
110	5550	13.92	4.850	18.77	75.301	30 or 17+10log(B)= 32.56	PASS
134	5670	13.92	4.850	18.77	75.281	30 or 17+10log(B)= 32.57	PASS
142	5710	12.65	4.850	17.50	56.234	30 or 17+10log(B)= 32.05	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	13.94	1.800	15.74	37.469	23.01 or 10+10log(B)= 28.75	PASS
58	5290	11.98	1.800	13.78	23.860	30 or 17+10log(B)= 35.75	PASS
106	5530	13.95	1.840	15.79	37.903	30 or 17+10log(B)= 35.75	PASS
138	5690	12.91	1.840	14.75	29.868	30 or 17+10log(B)= 35.51	PASS

802.11ac_VHT80_Aux1

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	13.92	-0.55	13.37	21.711	23.01 or 10+10log(B)= 28.76	PASS
58	5290	11.95	1.34	13.29	21.314	30 or 17+10log(B)= 35.74	PASS
106	5530	13.90	1.46	15.36	34.330	30 or 17+10log(B)= 35.75	PASS
138	5690	12.89	1.46	14.35	27.227	30 or 17+10log(B)= 35.51	PASS

802.11ac_VHT80_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)		REQUIRED LIMIT (dBm)	RESULT
42	5210	13.85	4.810	18.66	73.457	23.01 or 10+10log(B)= 28.75	PASS
58	5290	11.93	4.810	16.74	47.237	30 or 17+10log(B)= 35.74	PASS
106	5530	13.84	4.850	18.69	73.926	30 or 17+10log(B)= 35.75	PASS
138	5690	12.87	4.850	17.72	59.156	30 or 17+10log(B)= 35.51	PASS

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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 Acess 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.

Note: 5.15-5.25G

Antenna1 Gain: 1.8 dBi

Antenna2 Gain: -0.55 dBi

Number Antenna: 2 pcs

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

Effective Legacy Gain (dBi) = 4.81 dBi

Limit: 11dBm

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10.2 Measurement Procedure

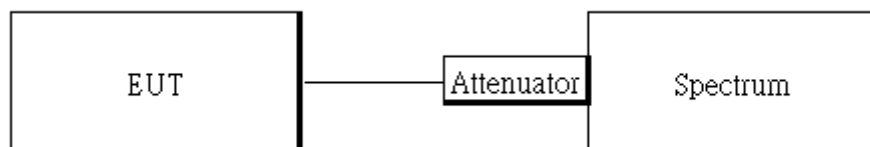
1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band:**
Set RBW=1MHz, VBW=3MHz, 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)
For U-NII-3 Band:
Set RBW=500 kHz, VBW $\geq$ 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	12/24/2017	12/23/2018
DC Block	PASTERNAK	PE8210	RF29	12/24/2017	12/23/2018
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018
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	1.65	0.23	1.88	17	-15.12
5220	0.51	0.23	0.74	17	-16.26
5240	-0.30	0.23	-0.07	17	-17.07
5260	2.68	0.23	2.91	11	-8.09
5300	1.71	0.23	1.94	11	-9.06
5320	0.88	0.23	1.11	11	-9.89
5500	-1.14	0.23	-0.91	11	-11.91
5580	-0.53	0.23	-0.30	11	-11.30
5700	-0.25	0.23	-0.02	11	-11.02
5745	7.17	0.23	7.17	30	-22.83
5785	6.89	0.23	6.89	30	-23.11
5825	6.43	0.23	6.43	30	-23.57

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	1.96	0.20	2.16	17	-14.84
5220	0.52	0.20	0.72	17	-16.28
5240	1.25	0.20	1.45	17	-15.55
5260	1.69	0.20	1.89	11	-9.11
5300	0.69	0.20	0.89	11	-10.11
5320	1.55	0.20	1.75	11	-9.25
5500	-0.98	0.20	-0.78	11	-11.78
5580	0.16	0.20	0.36	11	-10.64
5700	0.59	0.20	0.79	11	-10.21
5720 (band 4)	11.75	0.20	11.94	11	0.94
5720 (band 4)	9.42	0.20	9.62	11	-1.38
5745	7.42	0.20	7.42	30	-22.58
5785	7.90	0.20	7.90	30	-22.10
5825	7.02	0.20	7.02	30	-22.98

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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	-3.45	0.74	-2.71	17	-19.71
5230	-7.4	0.74	-6.66	17	-23.66
5270	-5.23	0.74	-4.49	11	-15.49
5310	-9.43	0.74	-8.69	11	-19.69
5510	-8.05	0.74	-7.31	11	-18.31
5550	-6.64	0.74	-5.90	11	-16.90
5670	-9.45	0.74	-8.71	11	-19.71
5710 (band 3)	9.49	0.74	10.23	11	-0.77
5710 (band 4)	4.21	0.73	4.94	11	-6.06
5755	2.92	0.74	2.92	30	-27.08
5795	3.34	0.74	3.34	30	-26.66

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	-6.51	0.76	-5.75	17	-22.75
5290	-11.16	0.76	-10.40	11	-21.40
5530	-8.62	0.76	-7.86	11	-18.86
5610	-8.76	0.76	-8.00	11	-19.00
5690 (band 3)	6.85	0.76	7.61	11	-3.39
5690 (band 4)	0.33	0.00	0.33	11	-10.68
5775	1.17	0.76	1.17	30	-28.83

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EIRP spectral density 802.11a MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	1.88	4.81	6.69	10	-8.12
5220	0.74	4.81	5.55	10	-9.26
5240	-0.07	4.81	4.74	10	-10.07

EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	2.16	4.81	6.97	10	-7.84
5220	0.72	4.81	5.53	10	-9.28
5240	1.45	4.81	6.26	10	-8.55

EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	-2.71	4.81	2.10	10	-12.71
5220	-6.66	4.81	-1.85	10	-16.66

EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5210	-5.75	4.81	-0.94	10	-15.75

Note:

MIMO offset= 12 dB

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802.11a_20MHz_5180MHz



802.11a_20MHz_5260MHz



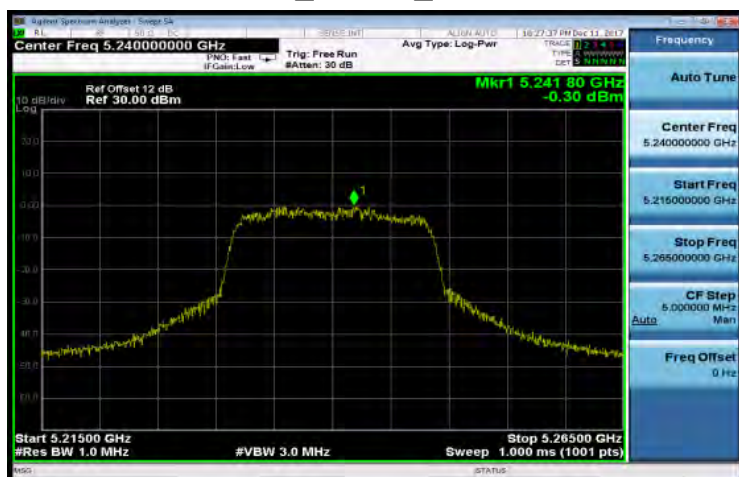
802.11a_20MHz_5220MHz



802.11a_20MHz_5300MHz



802.11a_20MHz_5240MHz



802.11a_20MHz_5320MHz



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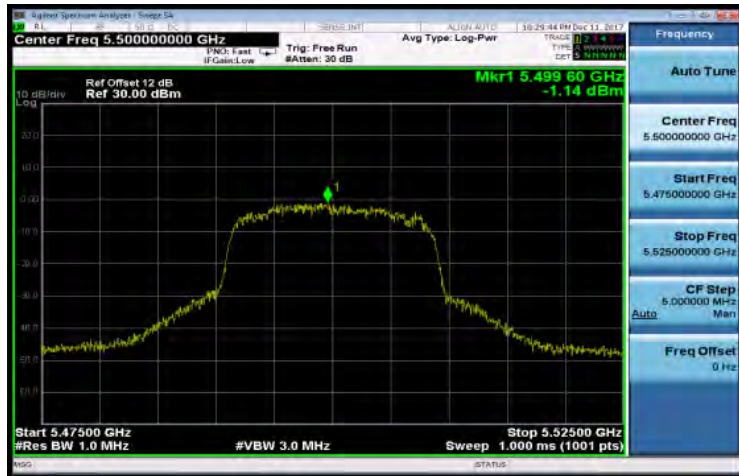
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802.11a_20MHz_5500MHz



802.11a_20MHz_5745MHz



802.11a_20MHz_5580MHz



802.11a_20MHz_5785MHz



802.11a_20MHz_5700MHz



802.11a_20MHz_5825MHz



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802.11n_20MHz_5180MHz



802.11n_20MHz_5260MHz



802.11n_20MHz_5220MHz



802.11n_20MHz_5300MHz



802.11n_20MHz_5240MHz



802.11n_20MHz_5320MHz



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802.11n_20MHz_5500MHz



802.11n_20MHz_5720MHz



802.11n_20MHz_5580MHz



802.11n_20MHz_5700MHz



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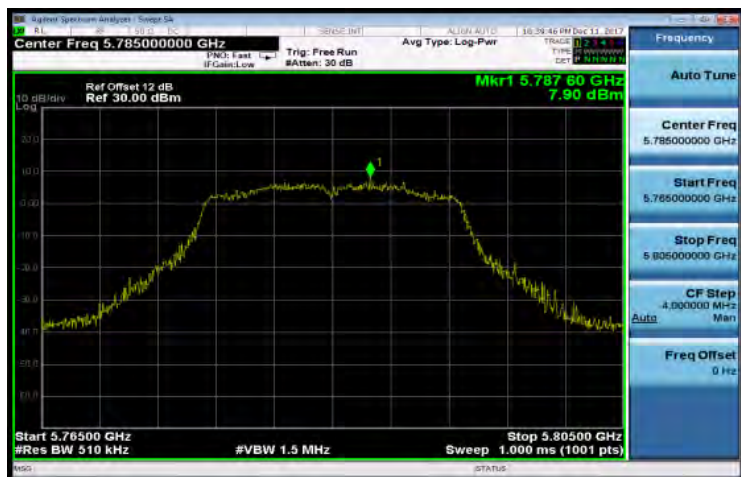
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802.11n_20MHz_5745MHz



802.11n_20MHz_5785MHz



802.11n_20MHz_5825MHz



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802.11n_40MHz_5190MHz



802.11n_40MHz_5310MHz



802.11n_40MHz_5230MHz



802.11n_40MHz_5510MHz



802.11n_40MHz_5270MHz



802.11n_40MHz_5550MHz



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802.11n_40MHz_5670MHz



802.11n_40MHz_5795MHz



802.11n_40MHz_5710MHz



802.11n_40MHz_5755MHz



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802.11ac_80MHz_5210MHz



802.11ac_80MHz_5610MHz



802.11ac_80MHz_5290MHz



802.11ac_80MHz_5690MHz



802.11ac_80MHz_5530MHz



802.11ac_80MHz_5775MHz



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