

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART E REQUIREMENT**

OF

Applicant: Sharp Corporation, Mobile Communication B.U.
2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi,
Hiroshima 739-0192, Japan

Manufacturer: Sharp Corporation
1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka 590-8522, Japan

Product Name: Smart Phone

Report Number: ER/2018/90107

FCC ID: APYHRO00263

FCC Rule Part: §15.407, Cat: NII

Issue Date: Oct. 17, 2018

Date of Test: Sep. 04, 2018 ~ Oct. 11, 2018

Date of EUT Received: Sep. 04, 2018

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.

Tested By:

Marcus Tseng

Marcus Tseng / Sr. Engineer

Approved By:

CHUN-CHIEH CHEN

Chun Chieh Chen / Asst. Supervisor



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Revision History

Report Number	Revision	Description	Effectuated Page	Issue Date	Revised By
ER/2018/90107	Rev.00	Initial creation of document	All	Oct. 17, 2018	Violetta Tang

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1. GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Smart Phone
Hardware Version:	DVT
Software Version:	N/A
Power Supply:	3.85V from Rechargeable Li-ion Battery

WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5180~5240	4	17.28	OFDM
	5260~5320	4	16.95	
	5500~5700	11	17.05	
11n_HT / ac_VHT 20M	5180~5240	4	HT: 17.27 (Worst Case)	OFDM
	5260~5320	4	HT: 16.91 (Worst Case)	
	5500~5700	11	HT: 16.96 (Worst Case)	
11n_HT / ac_VHT 40M	5190~5230	2	HT: 17.27 (Worst Case)	OFDM
	5270~5310	2	HT: 16.97 (Worst Case)	
	5510~5670	5	HT: 17.15 (Worst Case)	
11ac VHT80M	5210	1	15.39	OFDM
	5290	1	15.33	
	5530~5610	2	17.45	
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 – 173.3Mbps 802.11 ac_40MHz: 13.5 – 400.0Mbps 802.11 ac_80MHz: 29.3 – 866.7Mbps		
Antenna Designation:		Inverted-F Antenna, 5150~5250MHz Gain: -1.6dBi (Main) / -5.5dBi (Aux) 5250~5350MHz Gain: -1.6dBi (Main) / -5.5dBi (Aux) 5470~5725MHz Gain: -1.2dBi (Main) / -3.4dBi (Aux)		

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

KDB 789033 D02 v02r01 General UNII Test Procedures New Rules

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, Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

(TAF code 0513)

FCC Registration Numbers are: 509634 / TW0001

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.

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.

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2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission

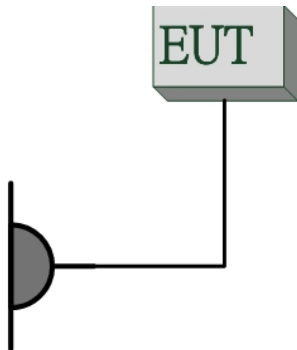


Fig. 2-2 Conducted (Antenna Port) Emission

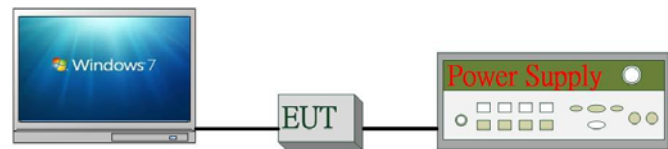


Fig. 2-2 AC Power Line Conducted Emission



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	DC Power Supply	Anritsu	E3640A	MY52410006	N/A	Unshielded
3.	Notebook	Lenovo	T440P	P0000564	Shielded	Unshielded

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3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	26 dB Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	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:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
Channel	Frequency
36	5180
40	5200
44	5220
48	5240

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
38	5190
46	5230

802.11ac VHT80 Mode	
channel	Frequency
42	5210

Operated band in 5250 MHz ~5350 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
channel	Frequency
52	5260
56	5280
60	5300
64	5320

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
54	5270
62	5310

802.11ac VHT80 Mode	
Channel	Frequency
58	5290

Operated band in 5470 MHz ~5725 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
Channel	Frequency
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Frequency
102	5510
110	5550
118	5590
126	5630
134	5670

802.11ac VHT80 Mode	
channel	Frequency
106	5530
122	5610

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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 prorammed.
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.

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	44	OFDM	6	2TX
802.11a	5260~5320	52 to 64	60	OFDM	6	2TX
802.11a	5500~5700	100 to 140	116	OFDM	6	2TX
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	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	MIMO

Note: The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for WLAN 5GHz Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

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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	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS8	MIMO
802.11ac_VHT80	5210	42	42	OFDM	MCS8	MIMO
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS8	MIMO
802.11ac_VHT80	5290	58	58	OFDM	MCS8	MIMO
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	2TX
802.11n_HT20				OFDM	MCS8	MIMO
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS8	MIMO
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS8	MIMO

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26dB 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(μV)	
	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

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100335	02/02/2018	02/01/2019
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/18/2018	05/17/2019

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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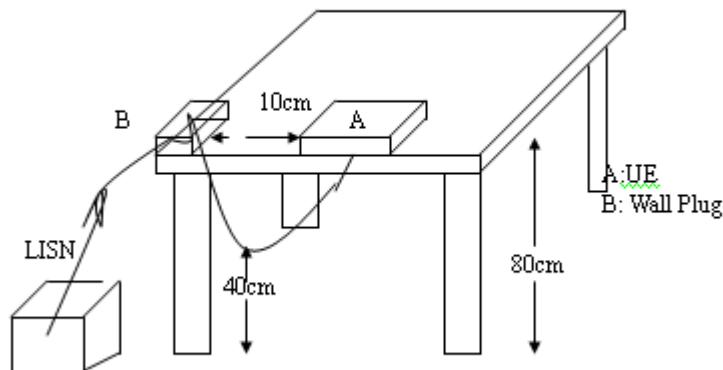
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6.4 Test SET-UP



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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AC POWER LINE CONDUCTED EMISSION TEST DATA

Site Conduction Room

Phase: **L1**

Temperature: 25 °C

Limit: FCC Class B Conduction(QP)

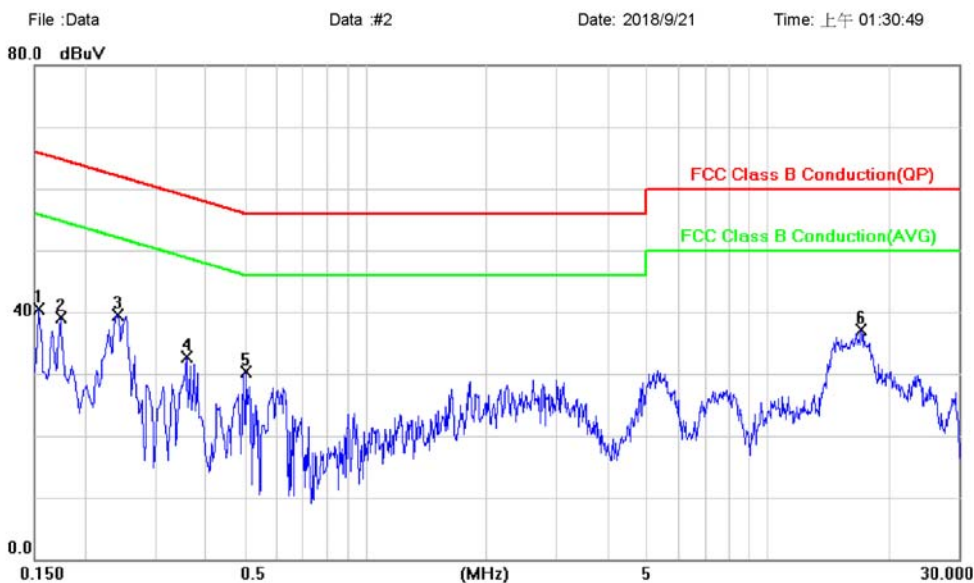
Power: AC 120V/60Hz

Humidity: 85 %

Mode: Operation

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	40.41	0.04	40.45	65.78	-25.33	peak	
2		0.1740	39.09	0.04	39.13	64.77	-25.64	peak	
3	*	0.2420	39.53	0.04	39.57	62.03	-22.46	peak	
4		0.3580	32.71	0.04	32.75	58.77	-26.02	peak	
5		0.5060	30.23	0.04	30.27	56.00	-25.73	peak	
6		17.1940	36.70	0.39	37.09	60.00	-22.91	peak	

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Site Conduction Room

Phase: **N**

Temperature: 25 °C

Limit: FCC Class B Conduction(QP)

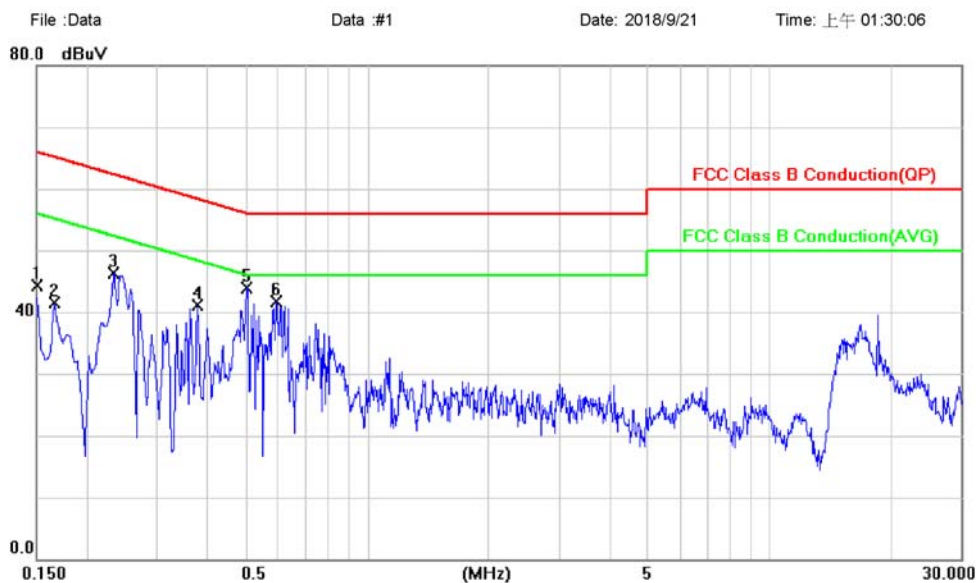
Power: AC 120V/60Hz

Humidity: 85 %

Mode: Operation

Note:

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1500	44.36	0.04	44.40	66.00	-21.60	peak	
2		0.1660	41.48	0.04	41.52	65.16	-23.64	peak	
3		0.2340	46.29	0.04	46.33	62.31	-15.98	peak	
4		0.3780	40.97	0.04	41.01	58.32	-17.31	peak	
5	*	0.5020	43.96	0.04	44.00	56.00	-12.00	peak	
6		0.5940	41.66	0.04	41.70	56.00	-14.30	peak	

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7. DUTY CYCLE TEST SIGNAL

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

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

Formula:

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

Measurement Procedure:

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

Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	98.37	0.07	0.49	1.00
802.11n_20	98.25	0.08	0.53	1.00
802.11n_40	96.19	0.17	1.08	2.00
802.11ac_80	86.50	0.63	2.19	3.00

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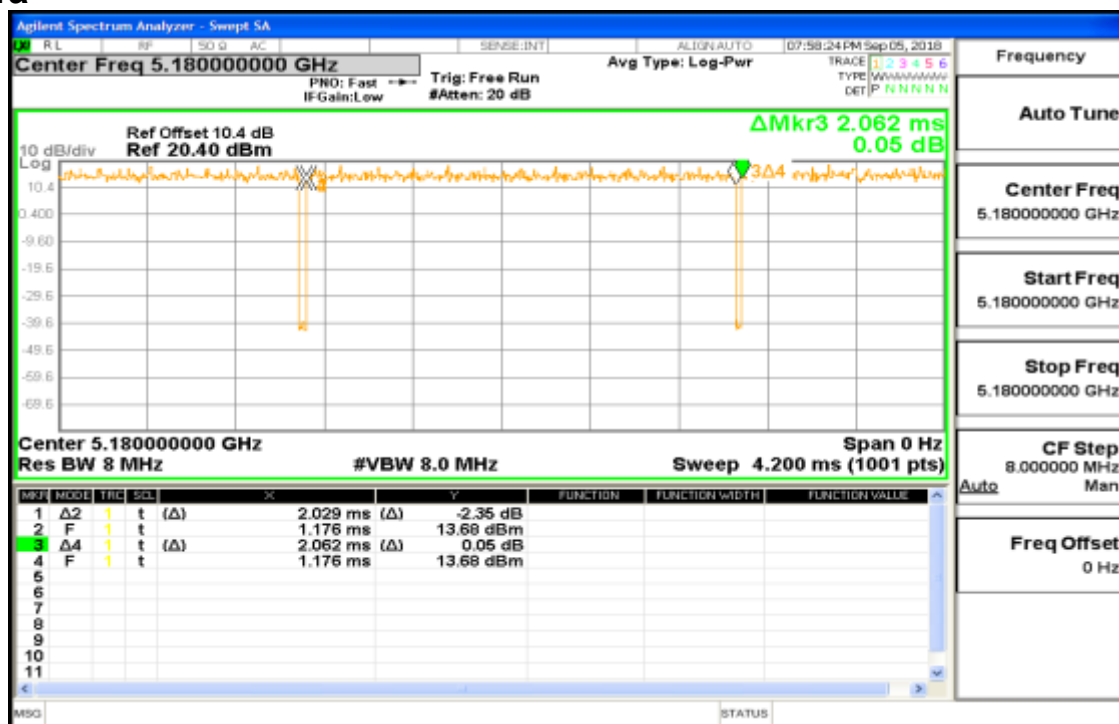
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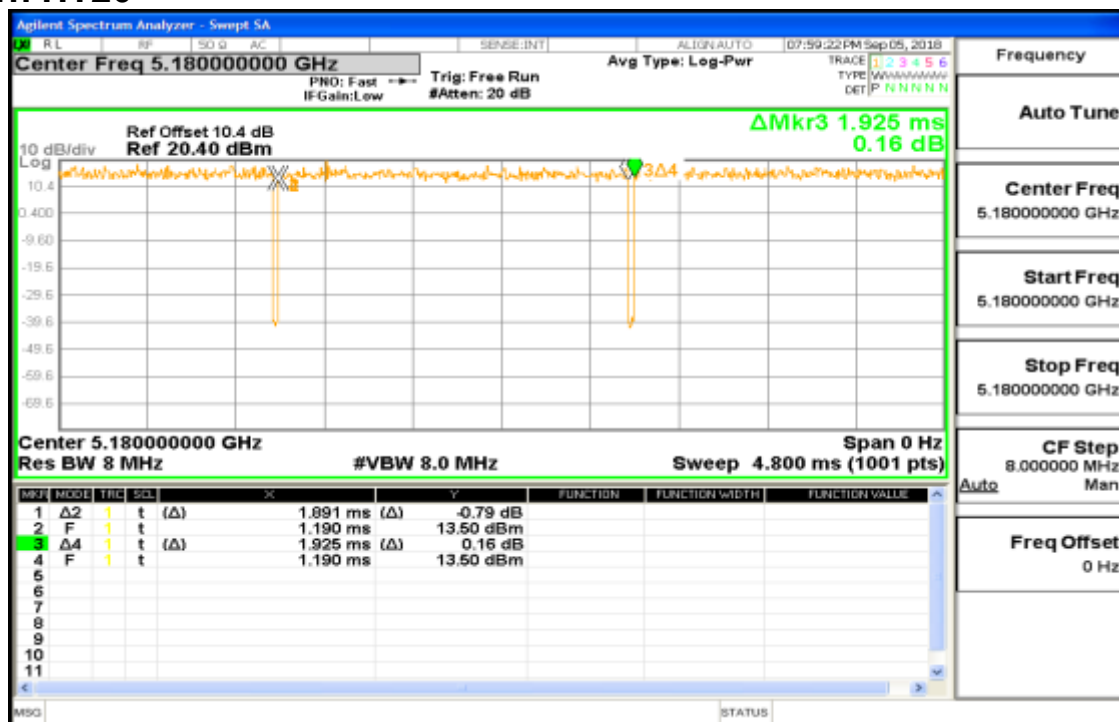
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DUTY CYCLE TEST SIGNAL Measurement Result 802.11a



802.11n HT20



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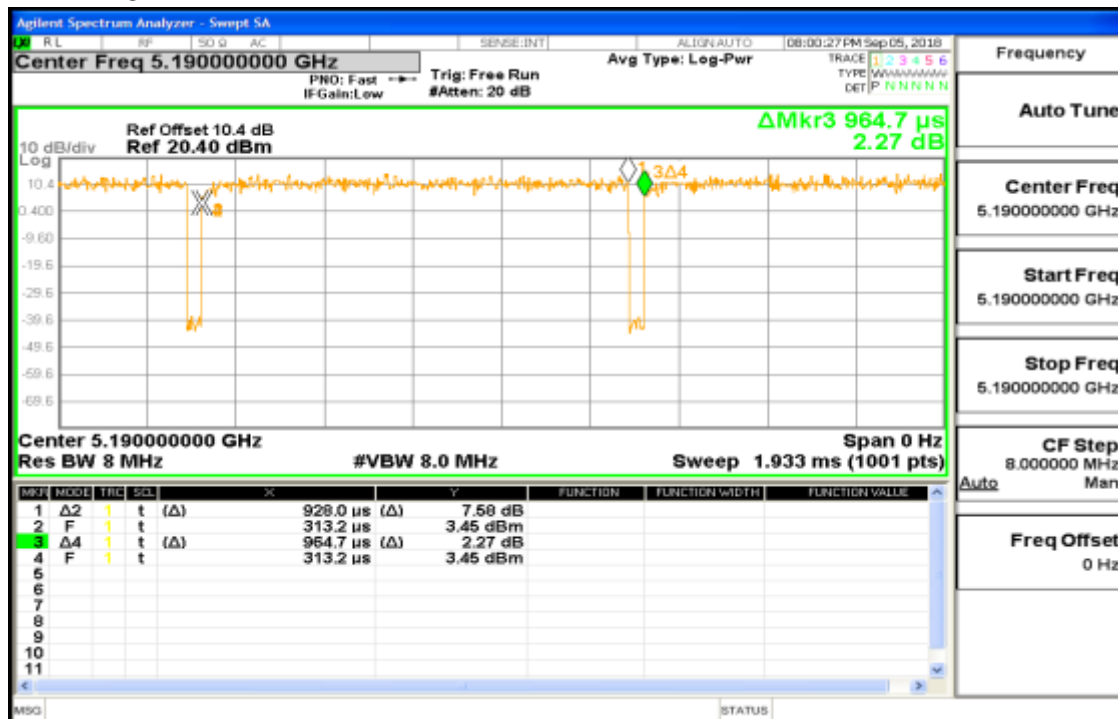
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802.11n HT 40



802.11 ac VHT 80



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8. 26DB 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

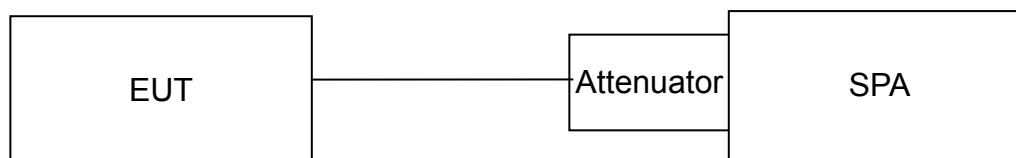
8.2 Measurement Procedure

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. Repeat above procedures until all test default channel measured were complete.

8.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY57120290	02/14/2018	02/13/2019
DC Power Supply	Anritsu	E3640A	MY52410006	11/28/2017	11/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/18/2018	05/17/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2018	01/01/2019
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2018	01/01/2019
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2018	01/01/2019
Notebook	Lenovo	T440P	P0000564	N/A	N/A

8.4 Test Set-up



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8.5 Measurement Result

26dB Bandwidth

802.11a_CH0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	19.28	12.851
5220	20.40	13.097
5240	19.01	12.789
5260	19.29	12.853
5300	21.02	13.226
5320	18.75	12.730
5500	19.04	12.797
5580	19.24	12.842
5700	21.50	13.324

802.11a_CH1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.53	13.330
5220	21.37	13.298
5240	21.61	13.346
5260	21.61	13.346
5300	21.41	13.307
5320	20.84	13.190
5500	21.39	13.302
5580	20.29	13.073
5700	21.91	13.407

802.11n_HT20_CH0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	20.07	13.025
5220	20.96	13.214
5240	22.65	13.551
5260	19.96	13.002
5300	20.31	13.077
5320	20.27	13.069
5500	20.28	13.071
5580	22.26	13.475
5700	22.87	13.593

802.11n_HT20_CH1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.45	13.513
5220	21.97	13.418
5240	22.38	13.498
5260	22.23	13.470
5300	22.95	13.607
5320	22.31	13.484
5500	22.36	13.494
5580	22.25	13.474
5700	22.64	13.548

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802.11n_HT40_CH0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.85	16.217
5230	39.17	15.930
5270	39.18	15.931
5310	39.17	15.930
5510	39.25	15.938
5550	42.16	16.249
5670	39.05	15.916

802.11n_HT40_CH1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	42.02	16.235
5230	42.04	16.237
5270	42.03	16.236
5310	42.20	16.253
5510	41.21	16.150
5550	41.41	16.171
5670	42.01	16.234

802.11ac_VHT80_CH0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	79.15	18.985
5290	85.26	19.307
5530	84.76	19.282
5610	84.77	19.282

802.11ac_VHT80_CH1

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	84.92	19.290
5290	85.03	19.296
5530	83.72	19.228
5610	85.14	19.301

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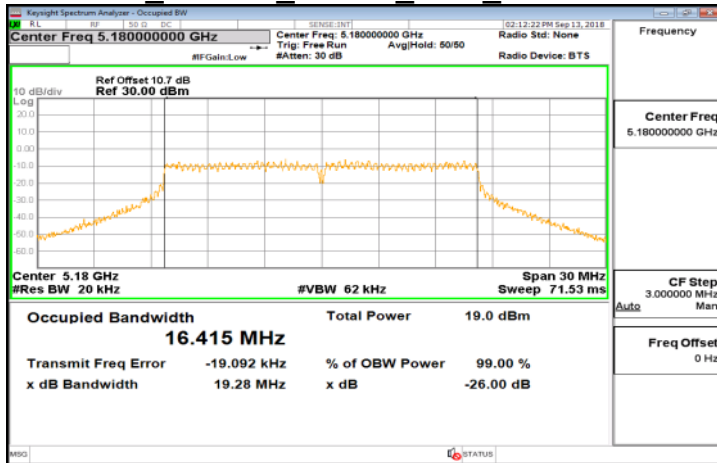
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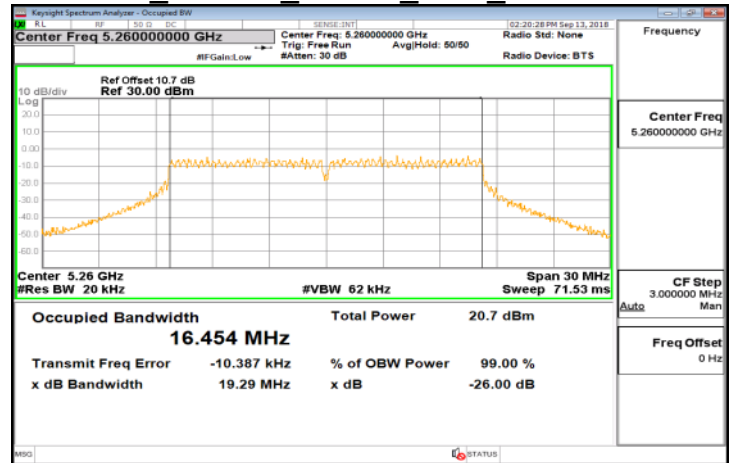
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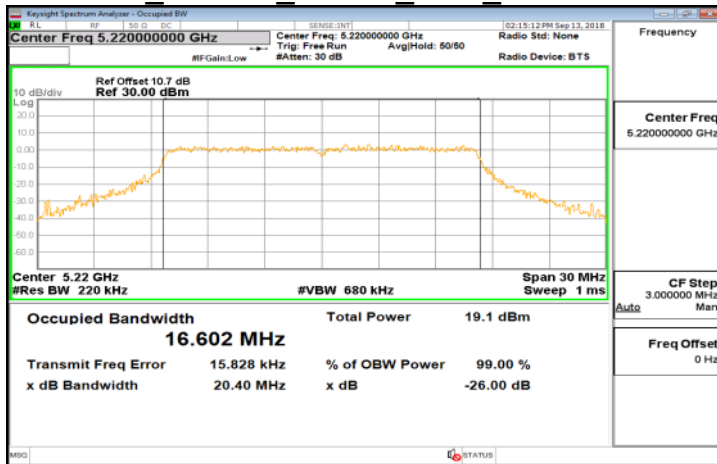
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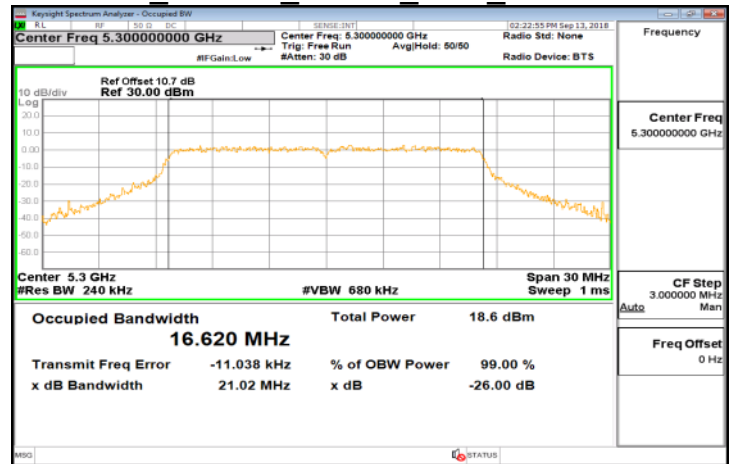
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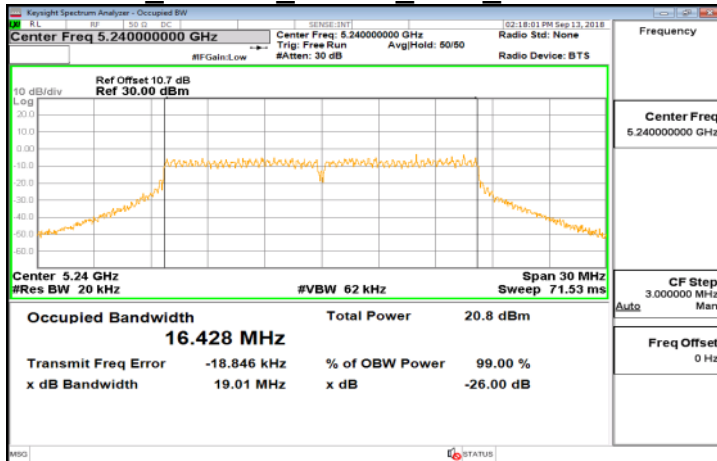
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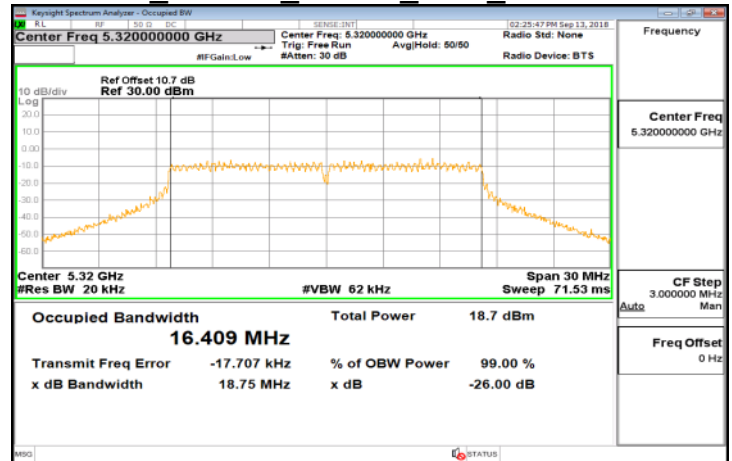
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FCC 802.11a 20MHz Main 5240MHz



FCC 802.11a 20MHz Main 5320MHz

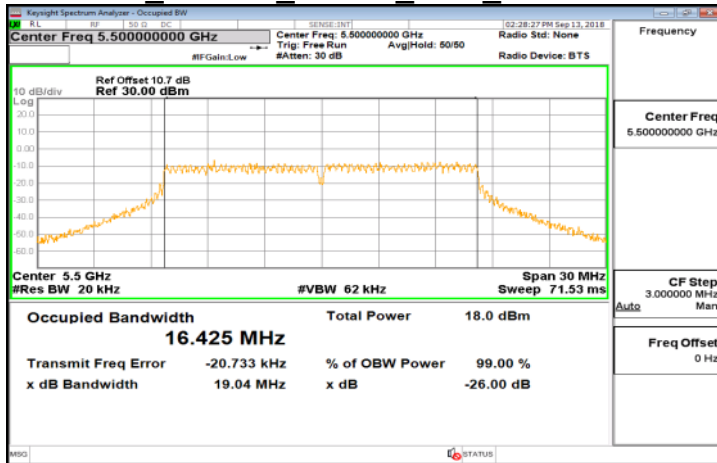


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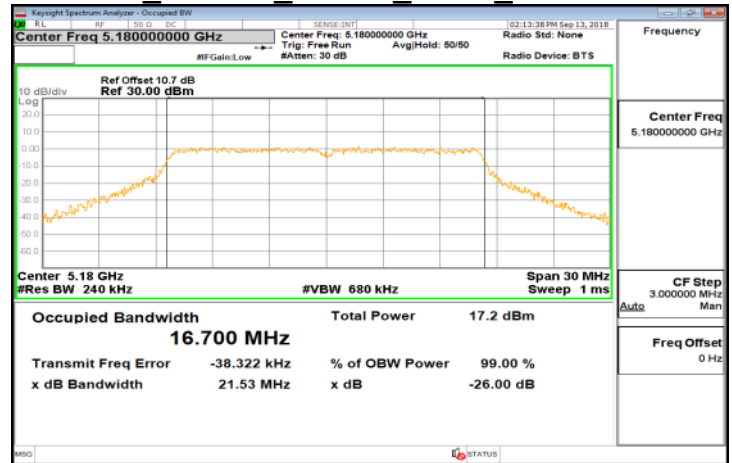
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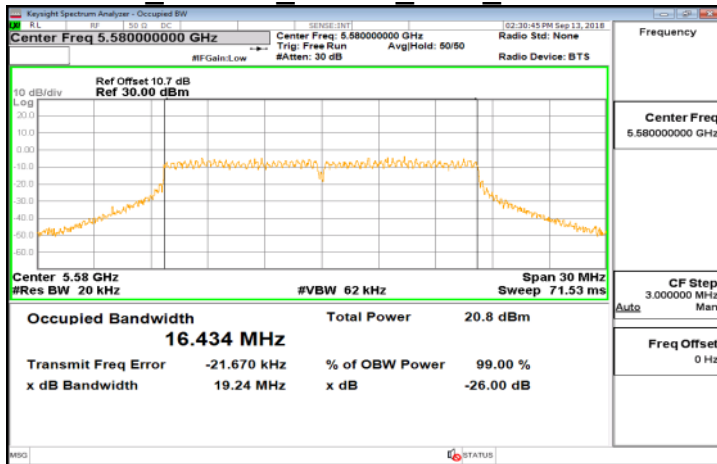
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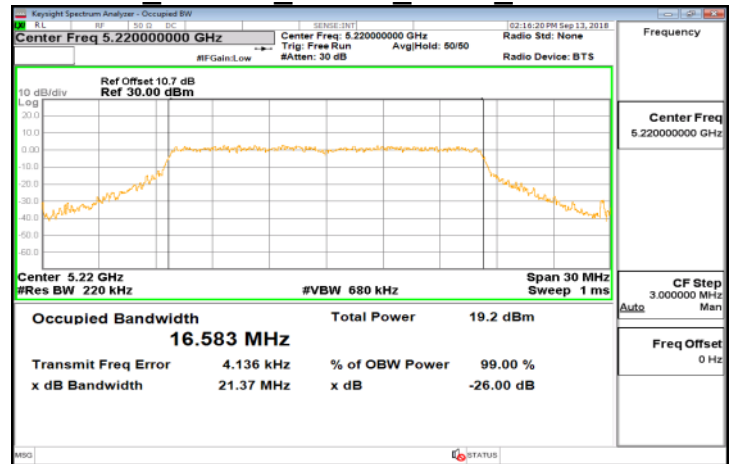
FCC 802.11a 20MHz AUX1 5180MHz



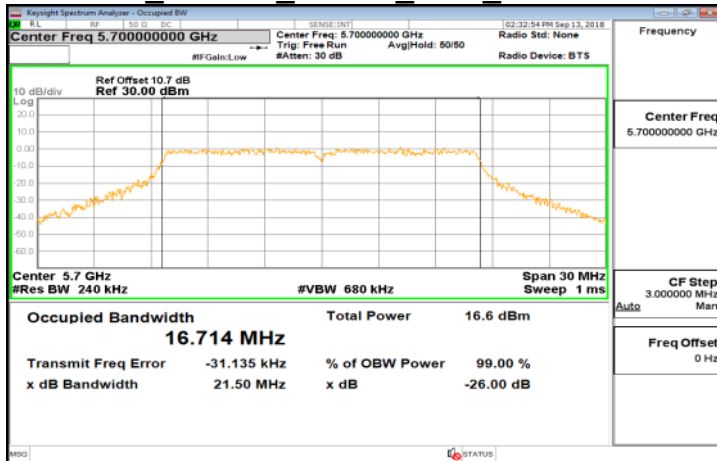
FCC 802.11a 20MHz Main 5580MHz



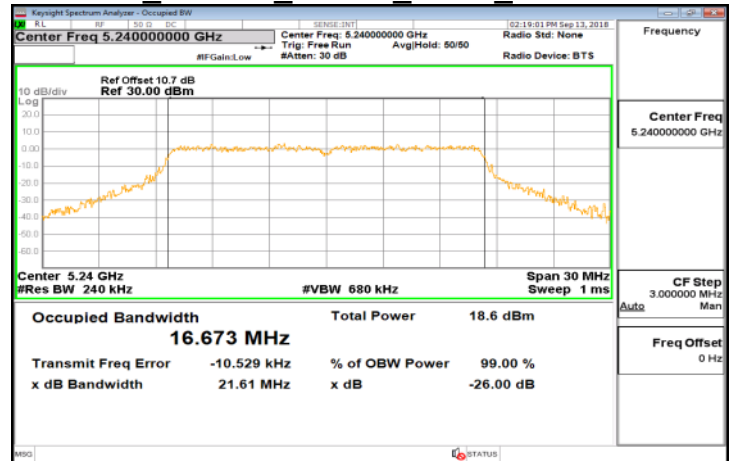
FCC 802.11a 20MHz AUX1 5220MHz



FCC 802.11a 20MHz Main 5700MHz



FCC 802.11a 20MHz AUX1 5240MHz



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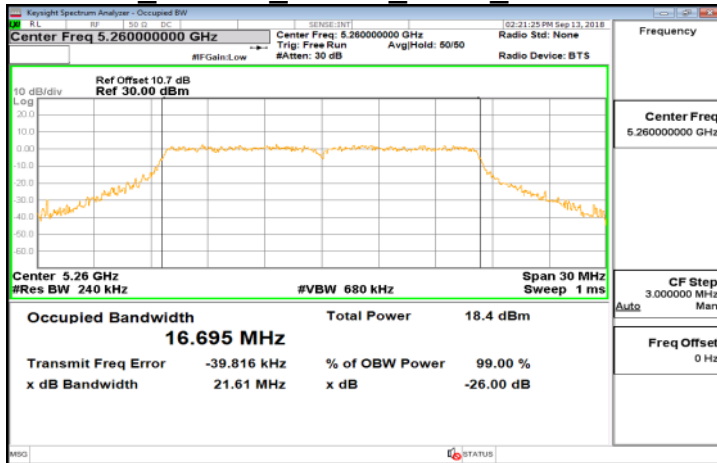
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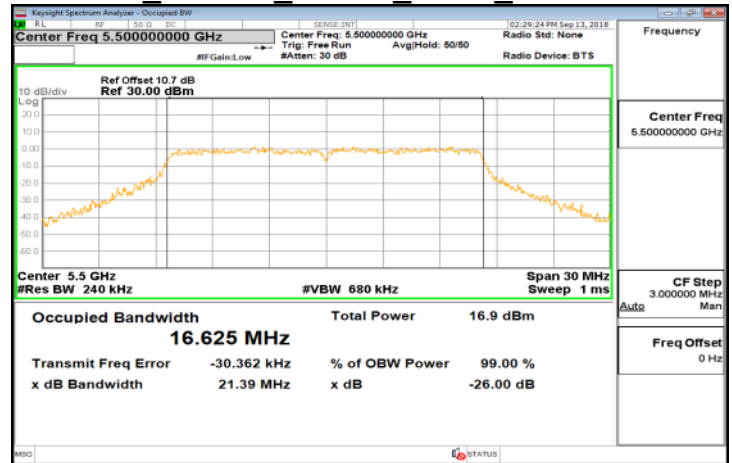
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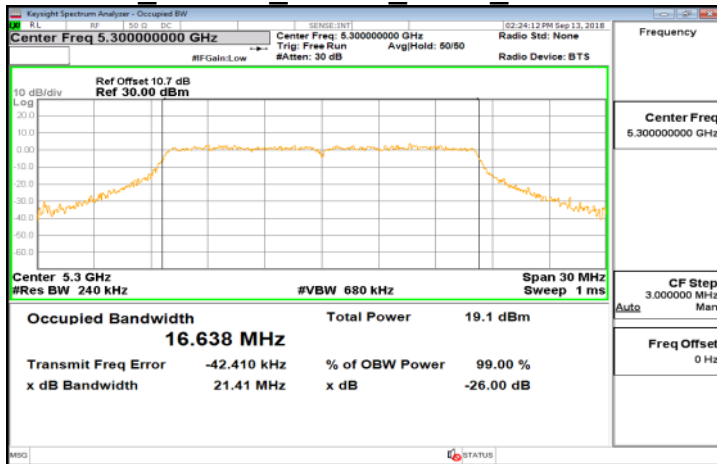
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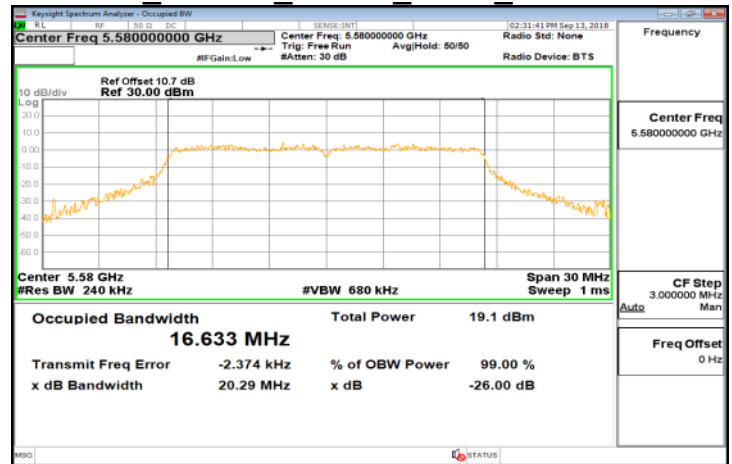
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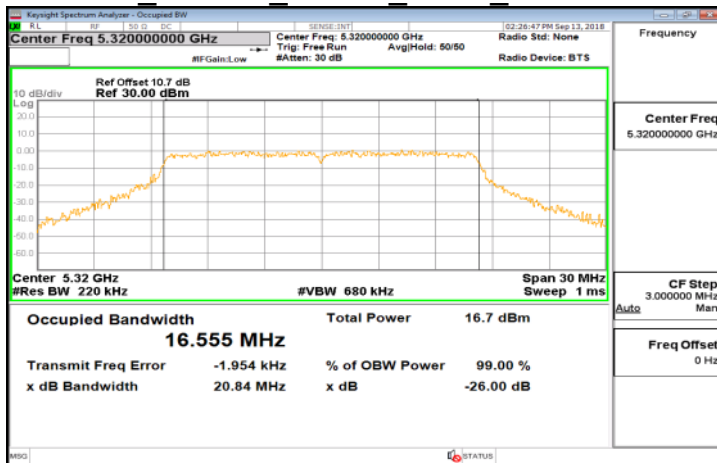
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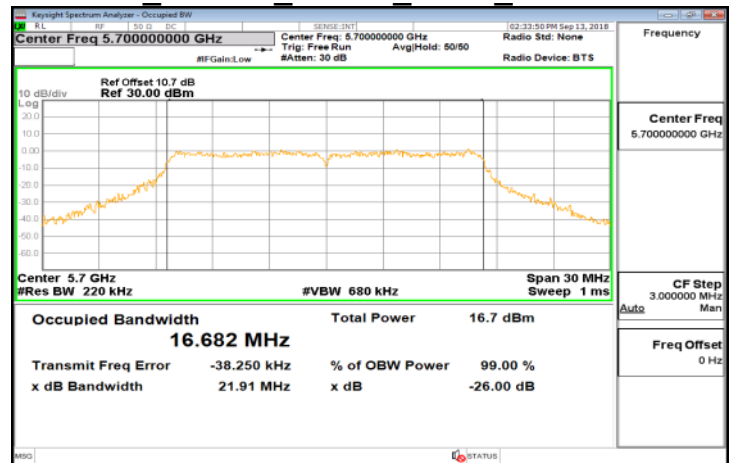
FCC 802.11a 20MHz AUX1 5580MHz



FCC 802.11a 20MHz AUX1 5320MHz



FCC 802.11a 20MHz AUX1 5700MHz

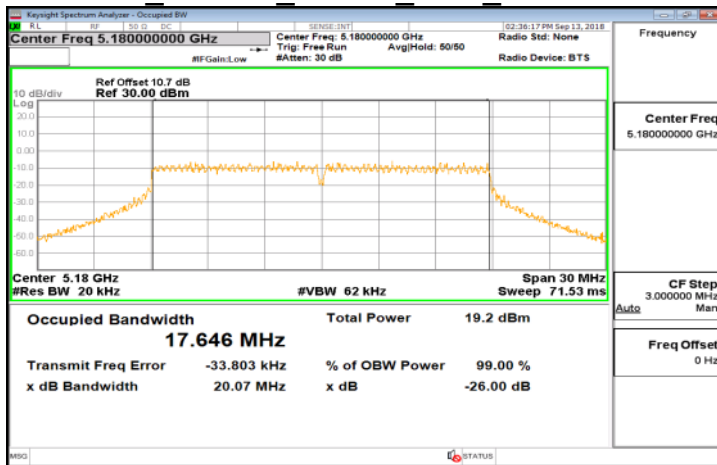


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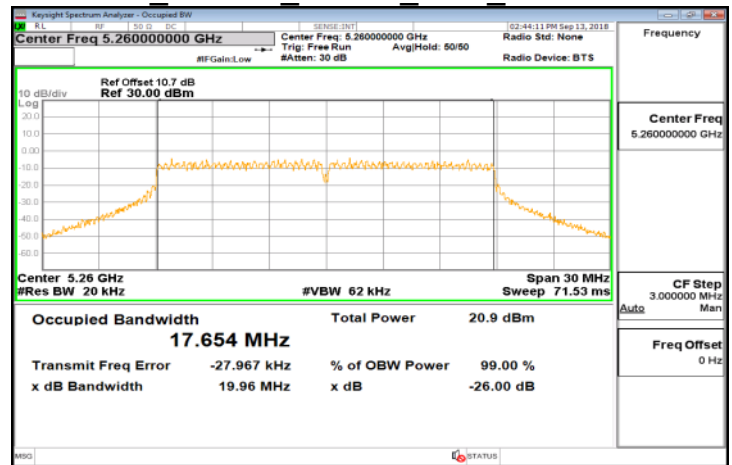
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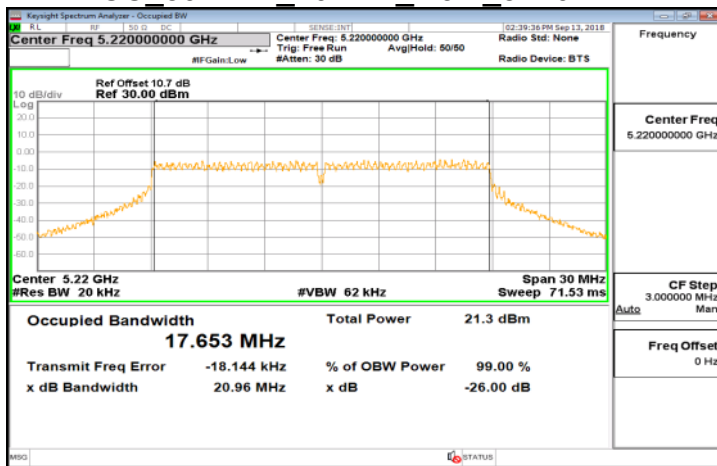
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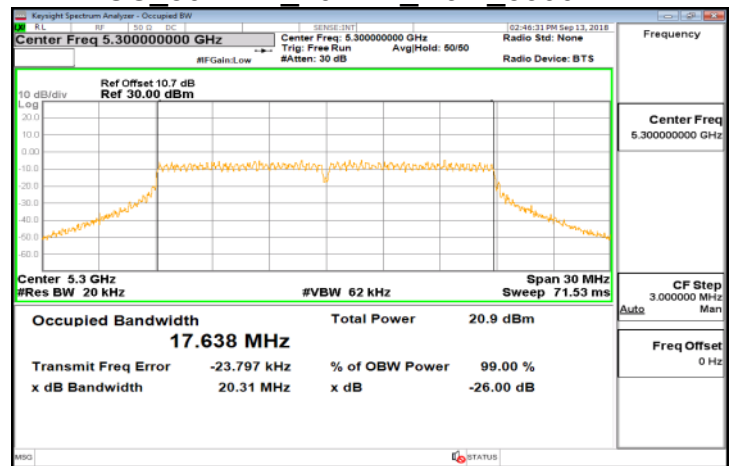
FCC 802.11n 20MHz Main 5260MHz



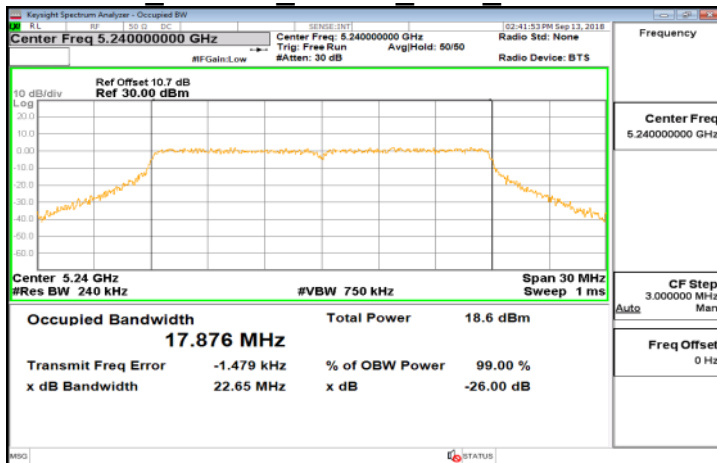
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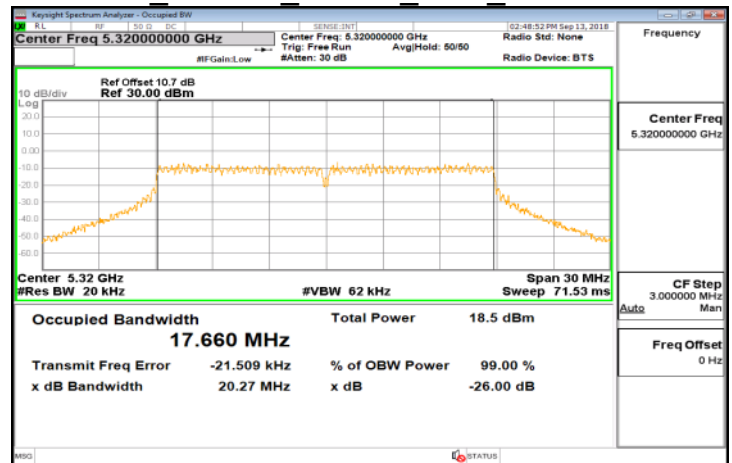
FCC 802.11n 20MHz Main 5300MHz



FCC 802.11n 20MHz Main 5240MHz



FCC 802.11n 20MHz Main 5320MHz

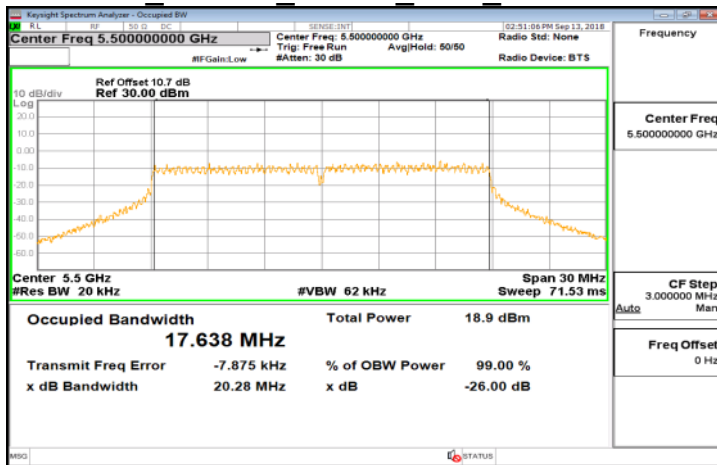


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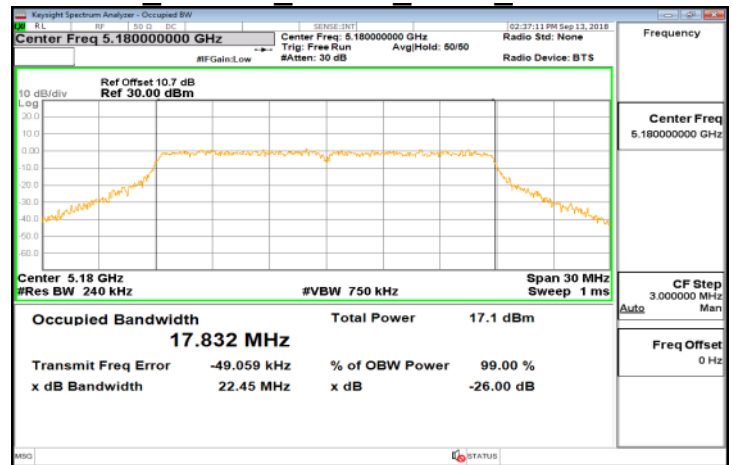
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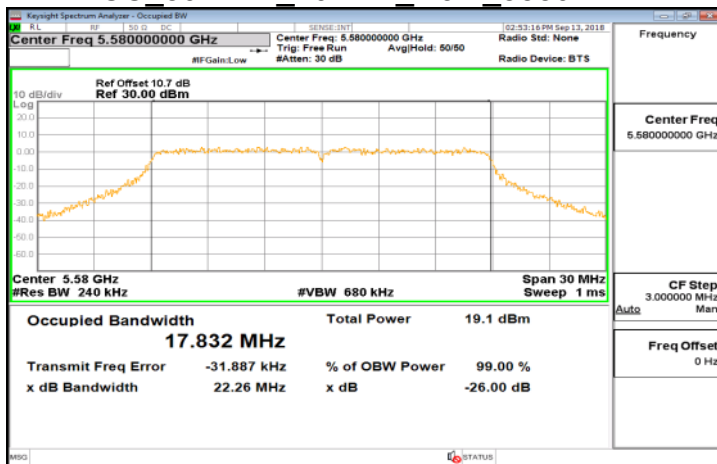
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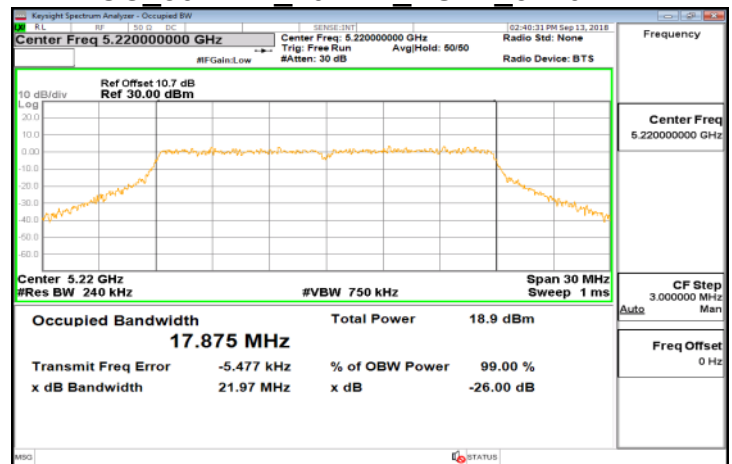
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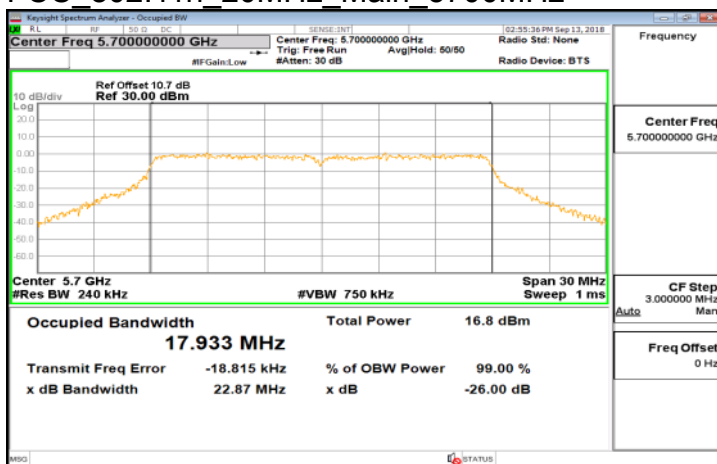
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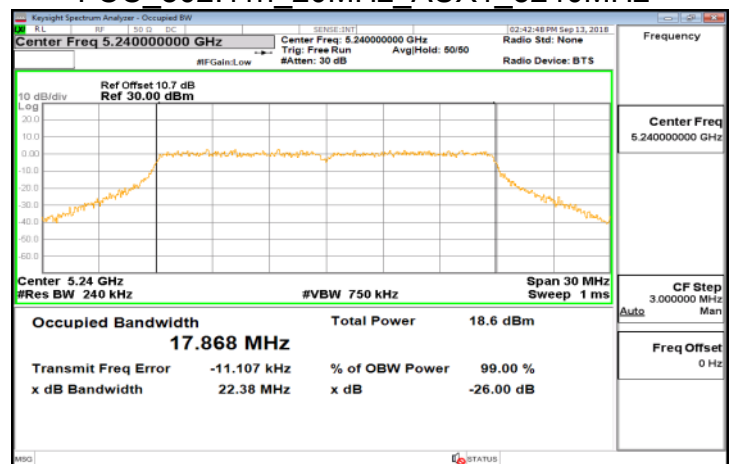
FCC 802.11n 20MHz AUX1 5220MHz



FCC 802.11n 20MHz Main 5700MHz



FCC 802.11n 20MHz AUX1 5240MHz



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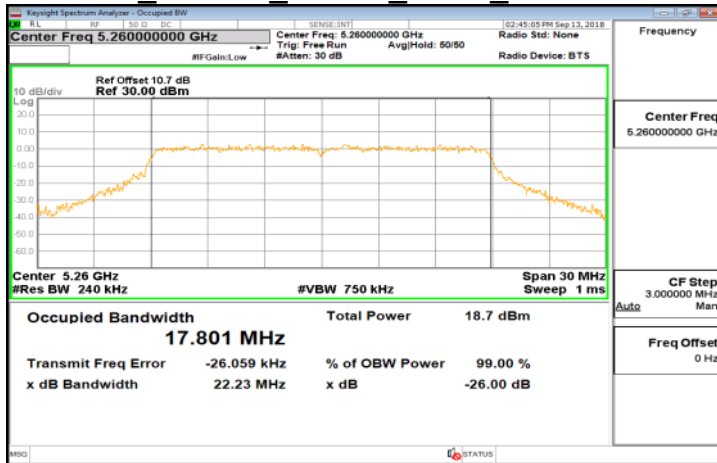
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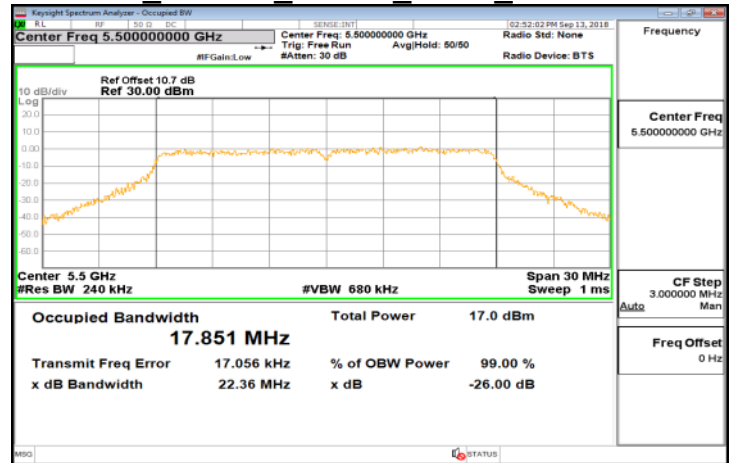
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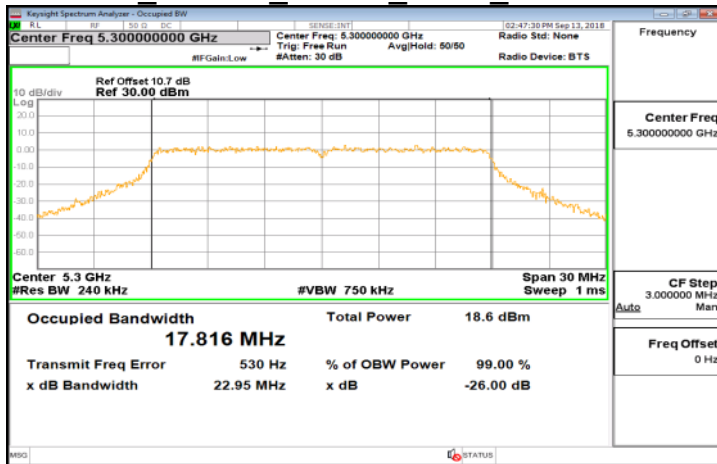
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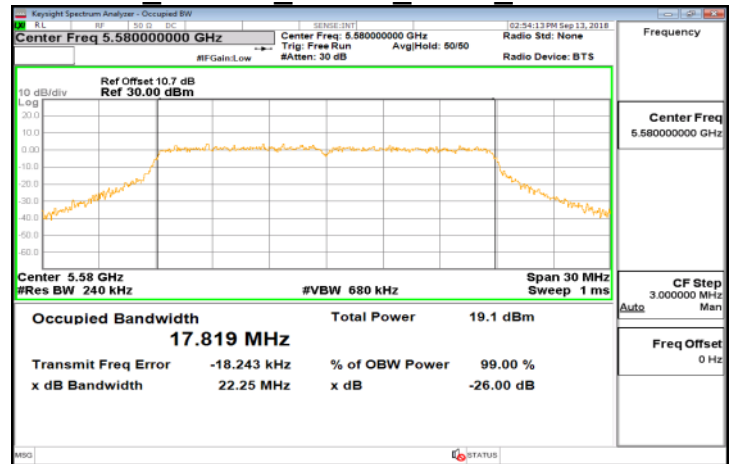
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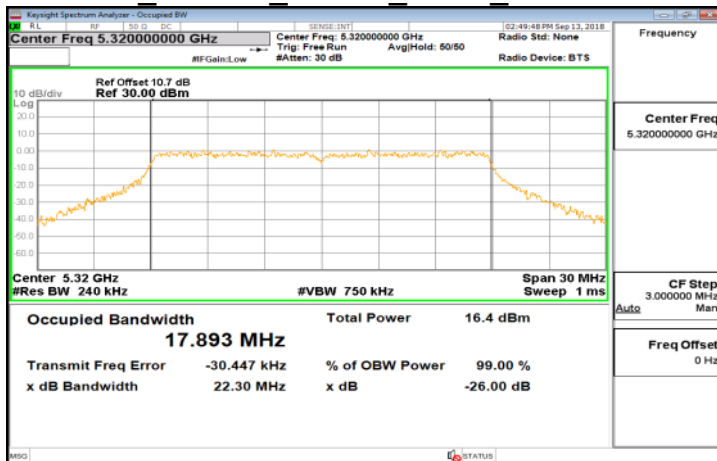
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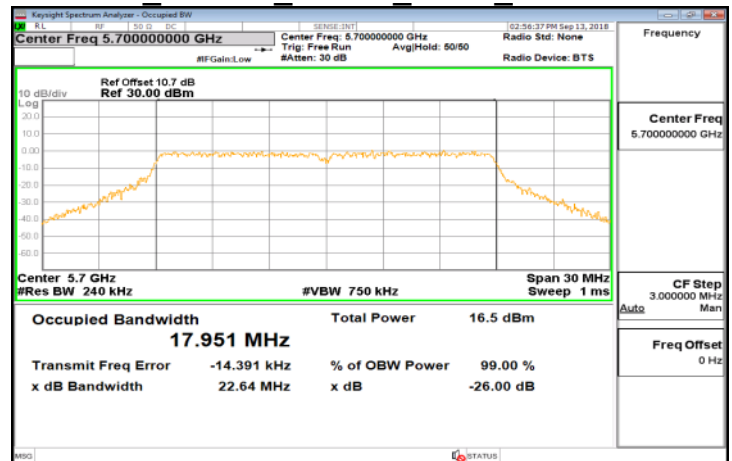
FCC 802.11n 20MHz AUX1 5580MHz



FCC 802.11n 20MHz AUX1 5320MHz



FCC 802.11n 20MHz AUX1 5700MHz

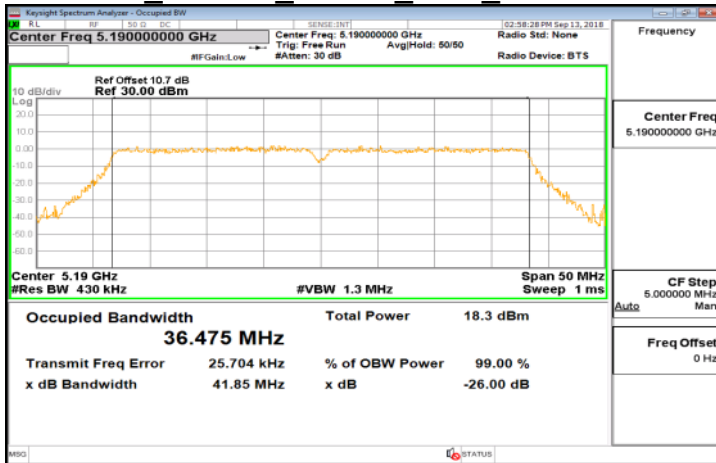


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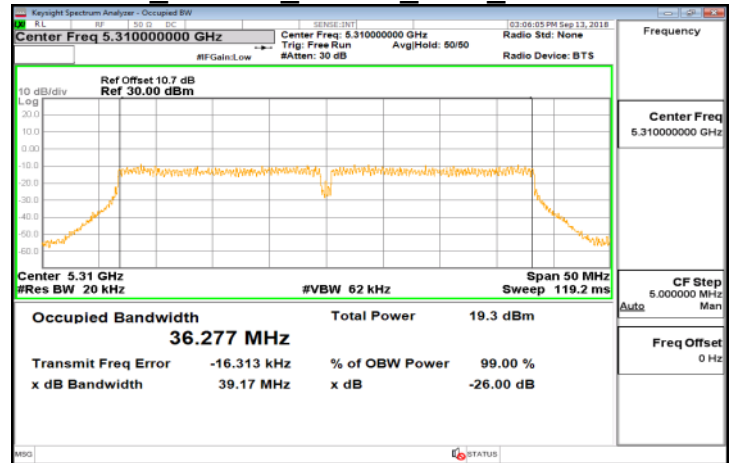
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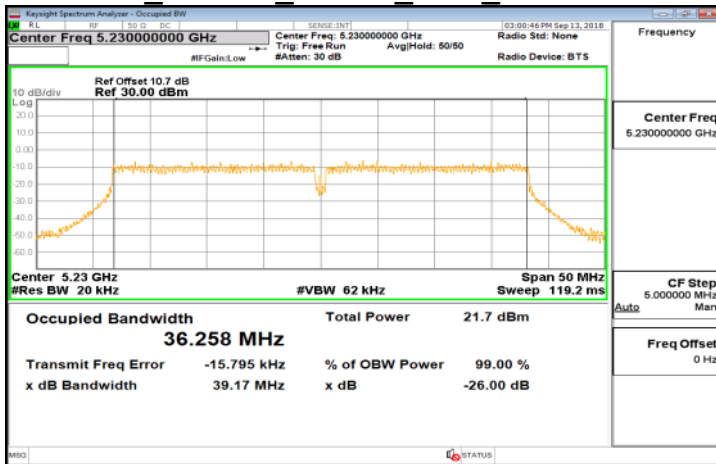
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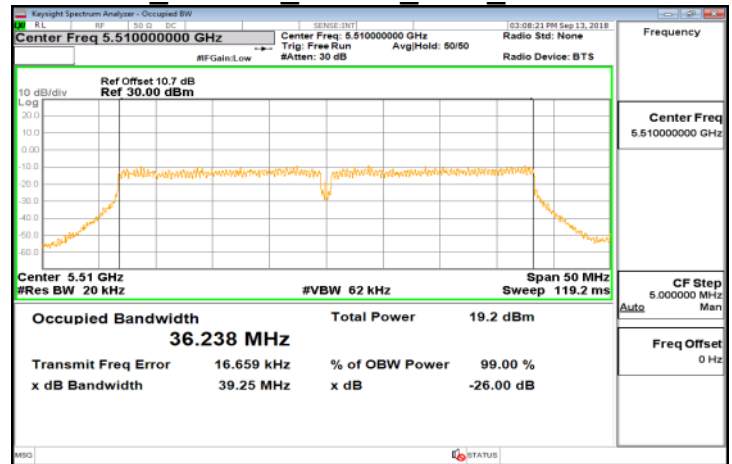
FCC 802.11n 40MHz Main 5310MHz



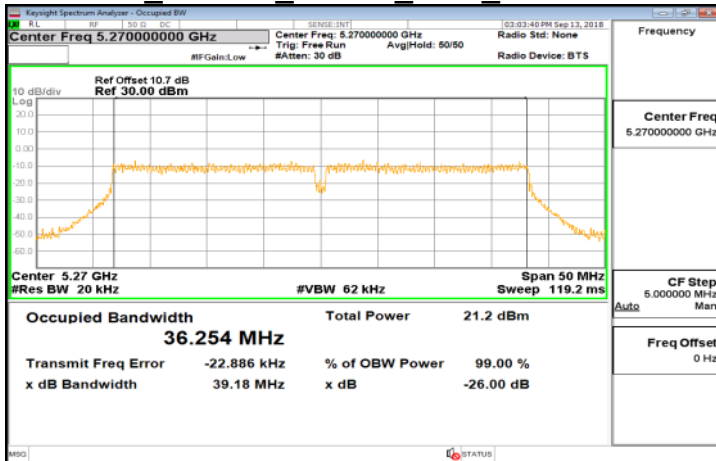
FCC 802.11n 40MHz Main 5230MHz



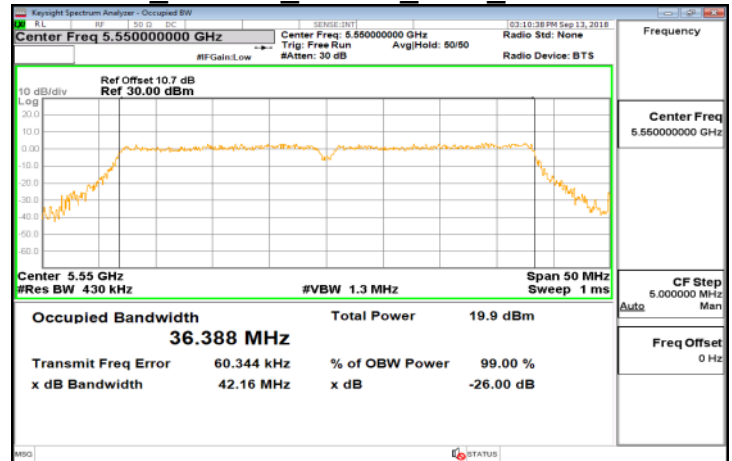
FCC 802.11n 40MHz Main 5510MHz



FCC 802.11n 40MHz Main 5270MHz



FCC 802.11n 40MHz Main 5550MHz

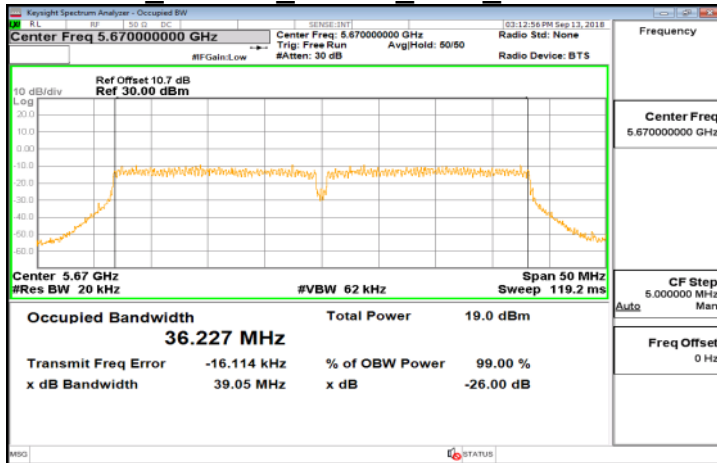


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

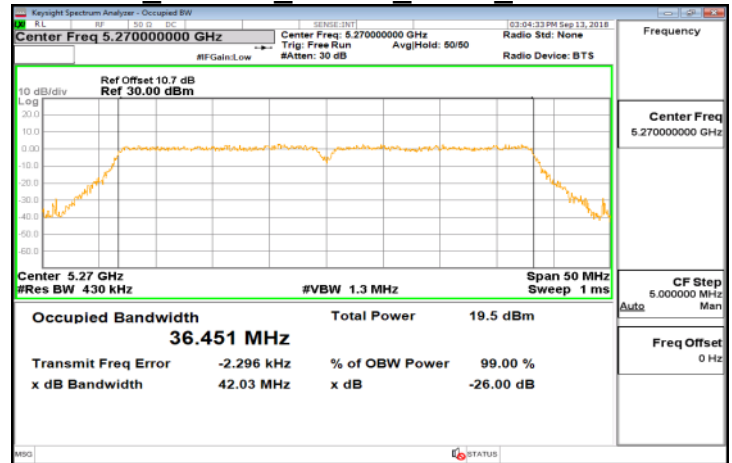
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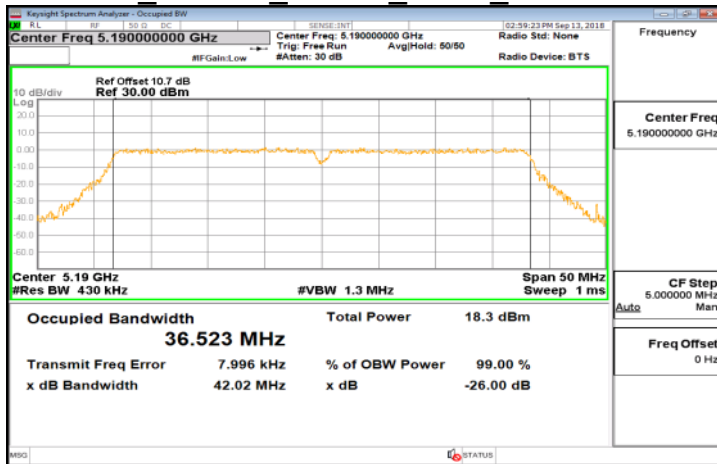
FCC 802.11n 40MHz Main 5670MHz



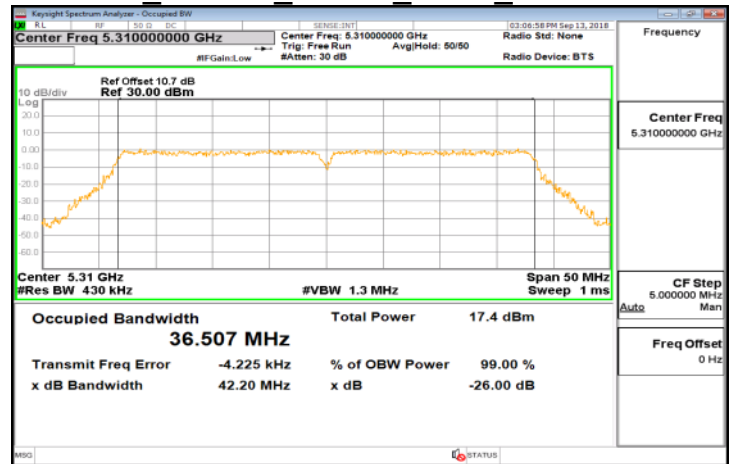
FCC 802.11n 40MHz AUX1 5270MHz



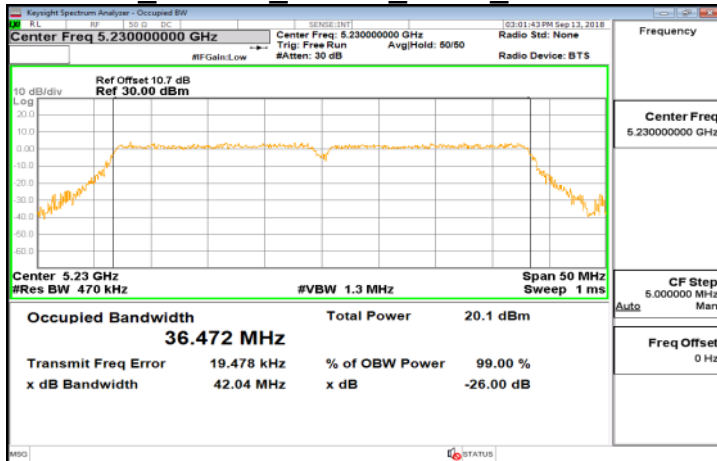
FCC 802.11n 40MHz AUX1 5190MHz



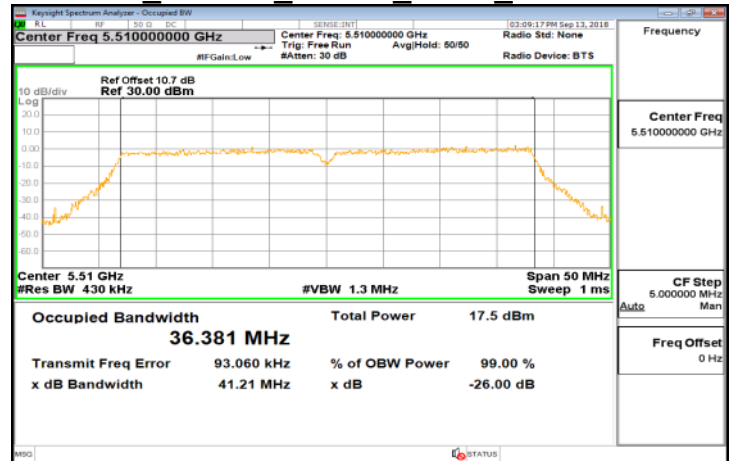
FCC 802.11n 40MHz AUX1 5310MHz



FCC 802.11n 40MHz AUX1 5230MHz



FCC 802.11n 40MHz AUX1 5510MHz



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