ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Applicant:	Quanta Computer Inc. No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City 33377, Taiwan
Product Name:	Clover Flex
Brand Name:	clover
Model No.:	C403
Model Difference:	N/A
FCC ID:	HFS-C403U
IC:	1787B-C403U
Report Number:	T190816W02-RP2
FCC Rule Part:	§15.407, Cat: NII
IC Rule:	RSS-247 issue 2 Feb. 2017
Issue Date:	Sep. 09, 2019
Date of Test:	Aug. 16, 2019 ~ Aug. 23, 2019
Date of EUT Received:	Aug. 16, 2019
Issued by	Compliance Certification Services Inc.Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) service@ccsrf.com

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.
The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Tested By: Hone Hsieh

Hone Hsieh / Engineer

Approved By: Kevin Tsai

Kevin Tsai / Deputy Manager

Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
T190816W02-RP2	Rev.00	Initial creation of document	All	Aug. 30, 2019	Elle Chang
T190816W02-RP2	Rev.01	Update the information	10	Sep. 09, 2019	Elle Chang

Contents

1 GENERAL INFORMATION

1.1 Product Description

General:

Product Name:	Clover Flex	
Brand Name:	clover	
Model No.:	C403	
Model Difference:	N/A	
Product SW/HW version:	N/A / N/A	
Radio SW/HW version:	N/A / N/A	
Test SW Version:	N/A	
RF power setting in TEST SW:	N/A	
Micro Hub:	Model No.: H400, Supplier: clover	
Docking:	Model No.: K400, Supplier: clover	
Power Supply:	7.6V from Li-ion Polymer rechargeable battery or 12V from Adapter	
	Battery:	Model No.: CA355772HV_POS5, Supplier: CosMX Battery Co., Ltd.
	Adapter:	Model No.: FSP040-RHBN3, Supplier: FSP

FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5150~5250	4	12.76	OFDM
	5250~5350	4	16.34	
	5470~5725	12	16.48	
	5725~5850	5	16.39	
11n_HT / ac_VHT 20M	5150~5250	4	HT: 13.59	OFDM
	5250~5350	4	HT: 17.50	
	5470~5725	12	HT: 17.45	
	5725~5850	5	HT: 17.46	
11n_HT / ac_VHT 40M	5150~5250	2	HT: 16.46	OFDM
	5250~5350	2	HT: 16.47	
	5470~5725	6	HT: 16.49	
	5725~5850	2	HT: 16.44	
11ac VHT80M	5150~5250	1	15.48	OFDM
	5250~5350	1	15.33	
	5470~5725	3	15.49	
	5725~5850	1	15.29	
Antenna Designation:	PIFA Antenna, P/N: DQ60AYF0002, Supplier: SAA, 5150~5250MHz Peak Gain: 2.24dBi 5250~5350MHz Peak Gain: 2.3dBi 5470~5725MHz Peak Gain: 3.97dBi 5725~5850MHz Peak Gain: 3.97dBi			

IC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm) (Worst Case)	Modulation Technology
11a	5150~5250	4	EIRP	15.00	OFDM
	5250~5350	4	Avg.	16.34	
	5470~5725	9	Avg.	16.48	
	5725-5850	5	Avg.	16.39	
11n_HT / ac_VHT 20M	5150~5250	4	EIRP	HT: 15.83	OFDM
	5250~5350	4	Avg.	HT: 17.50	
	5470~5725	9	Avg.	HT: 17.45	
	5725-5850	5	Avg.	HT: 17.46	
11n_HT / ac_VHT 40M	5150~5250	2	EIRP	HT: 18.70	OFDM
	5250~5350	2	Avg.	HT: 16.47	
	5470~5725	5	Avg.	HT: 16.49	
	5725-5850	2	Avg.	HT: 16.44	
11ac VHT80M	5150~5250	1	EIRP	17.72	OFDM
	5250~5350	1	Avg.	15.33	
	5470~5725	2	Avg.	15.49	
	5725-5850	1	Avg.	15.29	
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 – 72.2Mbps 802.11 n_40MHz: 13.5 - 150.0Mbps 802.11 ac_20MHz: 6.5 –86.7Mbps 802.11 ac_40MHz: 13.5 -200.0Mbps 802.11 ac_80MHz: 29.3 – 433.3Mbps			

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. issue 5 Apr. 2018

ANSI C63.10:2013

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

1.3 Test Facility

Compliance Certification Services Inc. Wugu Lab. No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.) (TAF code 1309)

FCC Designation number: TW1309

Canada Registration Number: 2324G

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.

2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

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

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

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

2.3.2 Radiated Emissions

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

2.4 Measurement Results Explanation

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.

2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission Configuration

Fig. 2-2 Conducted Emission Configuration

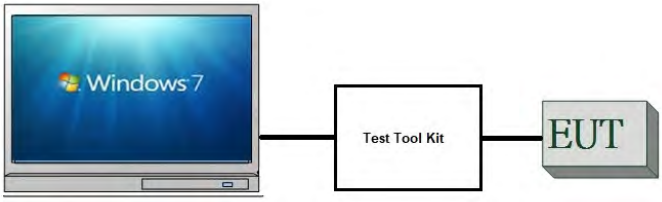


Fig 2-3 Conduction (AC Power Line) Configuration

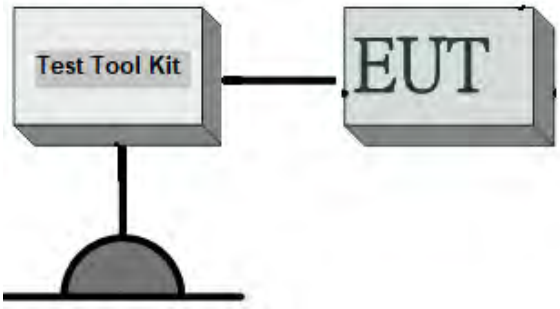


Table 2-1 Equipment Used in Tested System

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
2	Notebook	Lenovo	T420	S0012483	Shielded	Unshielded
3	Test Tool Kit	N/A	N/A	N/A	N/A	N/A

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 §6.7	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 §6.8	Antenna Requirement	Compliant

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

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
Channel	Freq (MHz)
102	5510
110	5550
118	5590
126	5630
134	5670
142	5710

802.11ac VHT80 Mode	
Channel	Freq (MHz)
106	5530
122	5610
138	5690

Operated band in 5745 MHz ~5850 MHz:

802.11a / n HT20 Mode, 802.11ac VHT20 Mode	
Channel	Freq (MHz)
149	5745
153	5765
157	5785
161	5805

802.11 n HT40 Mode, 802.11ac VHT40 Mode	
channel	Freq (MHz)
151	5755
159	5795

802.11ac VHT80 Mode	
channel	Freq (MHz)
155	5775

Note: Operating at 5600~5650MHz is prohibited in Canada.

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. The gevin UE is pre-scanned among below modes.

Modulation	Transmission Chain				Multiple Transmission Spatial
☑ 802.11 a	☑ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ 2TX
☑ 802.11 n	☑ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ MIMO
☑ 802.11 ac	☑ Ch0	☐ Ch1	☐ Ch2	☐ Ch3	☐ MIMO

Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

AC POWER LINE CONDUCTED EMISSION TEST:

Test Condition	AC Power line conducted emission for line and neutral
Worst Case	Operation in normal mode

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	MAIN
802.11a	5260~5320	52 to 64	60	OFDM	6	MAIN
802.11a	5500~5720	100 to 144	116	OFDM	6	MAIN
802.11a	5745~5825	149 to 165	157	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	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS0	MAIN
802.11ac_VHT80	5775	155	155	OFDM	MCS0	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 H 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				OFDM	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	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				OFDM	MCS0	MAIN
802.11n_HT40	5755~5795	151 to 159	151,159	OFDM	MCS0	MAIN
802.11ac_VHT80	5775	155	155	OFDM	MCS0	MAIN

5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575 dB
26dB & 6dB Emission Bandwidth	+/- 147.256 Hz
The Maximum Output Power	+/- 1.924 dB
Peak Power Spectral Density	+/- 2.038 dB
Frequency Stability	+/- 147.256 Hz
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12 dB
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68 dB
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18 dB
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47 dB
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81 dB
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87 dB

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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.		

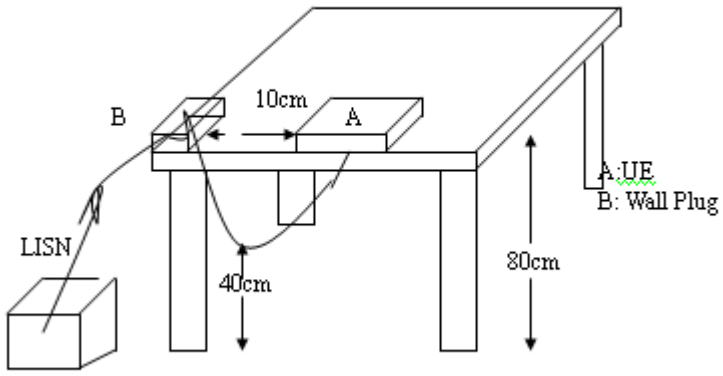
6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
CABLE	EMCI	CFD300-NL	CERF	06/27/2019	06/26/2020
EMI Test Receiver	R&S	ESCI	101203	10/29/2018	10/28/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	01/31/2019	01/30/2020
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2019	02/12/2020
Software	EZ-EMC(CCS-3A1-CE)				

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.

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.

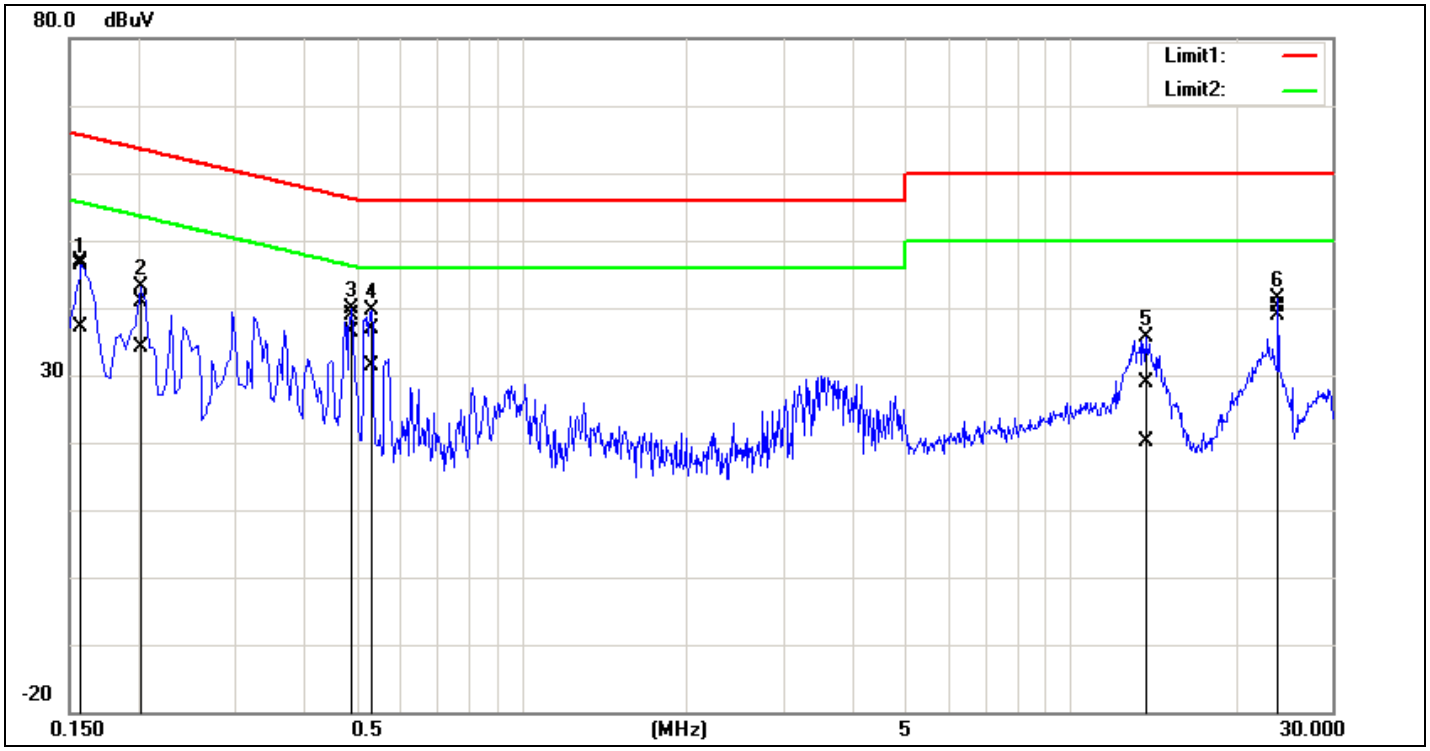
6.6 Measurement Result

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

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

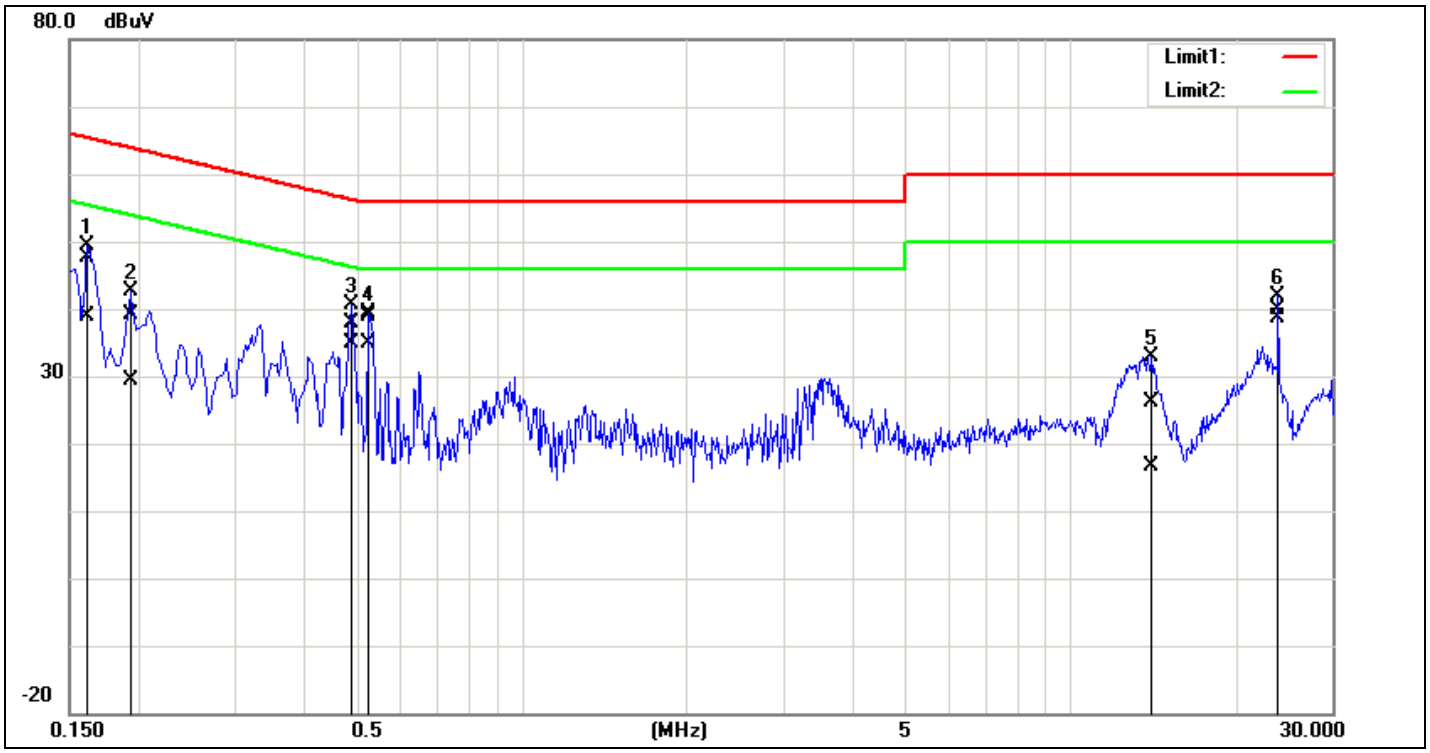
AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	**Operation**	**Date:**	**2019/8/23**
Line:	**L1**	**Temp.(℃)/Hum.(%):**	**25.3(℃)/65%**
Test Voltage:	**AC 120V/60Hz**	**Test By:**	**Henry**
Job No.:	**T190816W02**		



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	36.66	26.98	10.14	46.80	37.12	65.56	55.57	-18.76	-18.45	Pass
2	0.2020	30.87	24.06	10.13	41.00	34.19	63.52	53.53	-22.52	-19.34	Pass
3*	0.4900	28.72	26.23	10.14	38.86	36.37	56.17	46.17	-17.31	-9.80	Pass
4	0.5340	26.84	21.35	10.14	36.98	31.49	56.00	46.00	-19.02	-14.51	Pass
5	13.7220	18.52	9.83	10.36	28.88	20.19	60.00	50.00	-31.12	-29.81	Pass
6	23.9260	29.76	28.49	10.28	40.04	38.77	60.00	50.00	-19.96	-11.23	Pass

Description:	**Operation**	**Date:**	**2019/8/23**
Line:	**N**	**Temp.(℃)/Hum.(%):**	**25.3(℃)/65%**
Test Voltage:	**AC 120V/60Hz**	**Test By:**	**Henry**
Job No.:	**T190816W02**		



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	37.63	28.97	10.02	47.65	38.99	65.36	55.36	-17.71	-16.37	Pass
2	0.1940	29.16	19.40	10.02	39.18	29.42	63.86	53.86	-24.68	-24.44	Pass
3	0.4900	27.79	24.84	10.03	37.82	34.87	56.17	46.17	-18.35	-11.30	Pass
4*	0.5265	28.73	24.78	10.03	38.76	34.81	56.00	46.00	-17.24	-11.19	Pass
5	14.0900	15.91	6.33	10.25	26.16	16.58	60.00	50.00	-33.84	-33.42	Pass
6	23.9260	29.51	28.36	10.36	39.87	38.72	60.00	50.00	-20.13	-11.28	Pass

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:

Duty Cycle = Ton / (Ton+Toff)

Measurement Procedure:

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

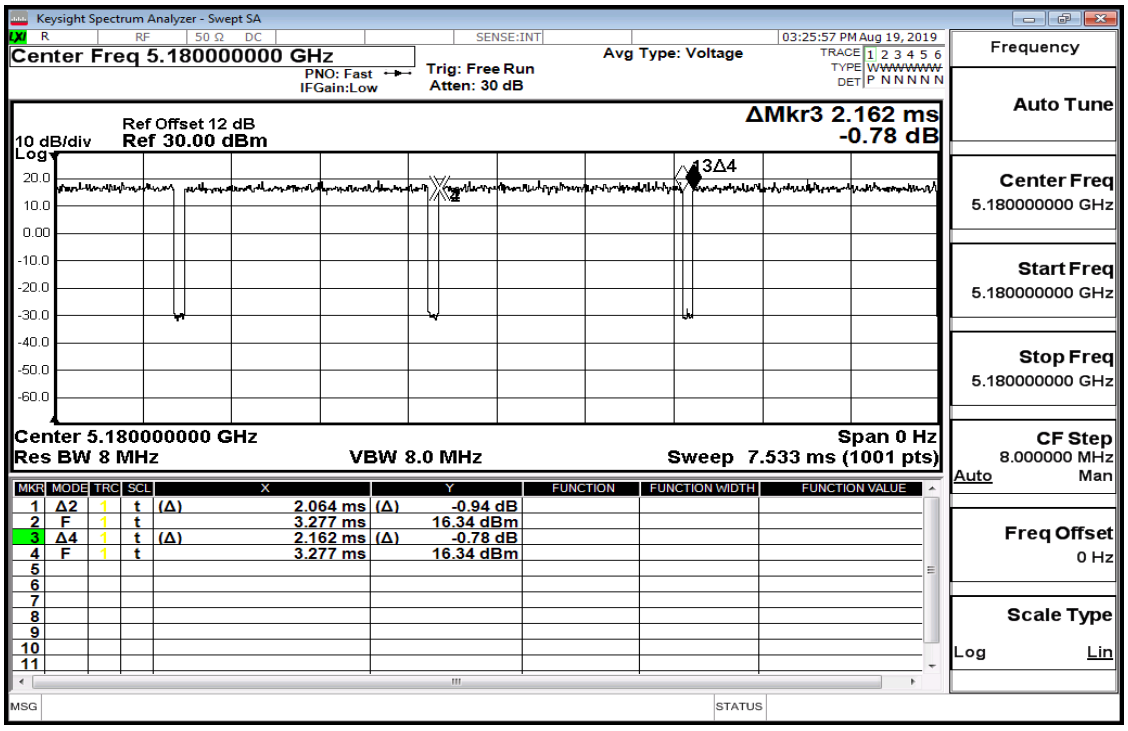
Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	95.47	0.20	0.48	1.00
802.11n_20	94.82	0.23	0.52	1.00
802.11ac_20	95.31	0.21	0.52	1.00
802.11n_40	90.91	0.41	1.05	2.00
802.11ac_40	90.91	0.41	1.05	2.00
802.11ac_80	83.45	0.79	2.16	3.00

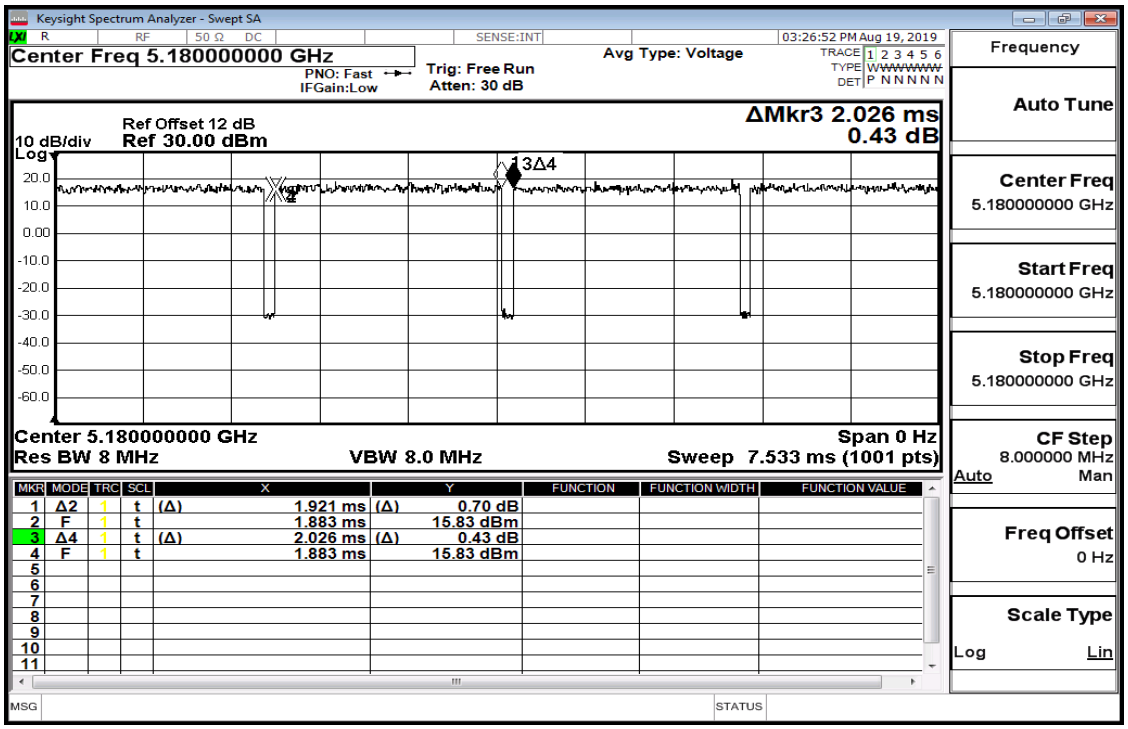
Duty Cycle Factor: 10 * log(1/0.9547) = 0.2
Duty Cycle Factor: 10 * log(1/0.9482) = 0.23
Duty Cycle Factor: 10 * log(1/0.9531) = 0.21
Duty Cycle Factor: 10 * log(1/0.9091) = 0.41
Duty Cycle Factor: 10 * log(1/0.9091) = 0.41
Duty Cycle Factor: 10 * log(1/0.8345) = 0.79

DUTY CYCLE TEST SIGNAL Measurement Result

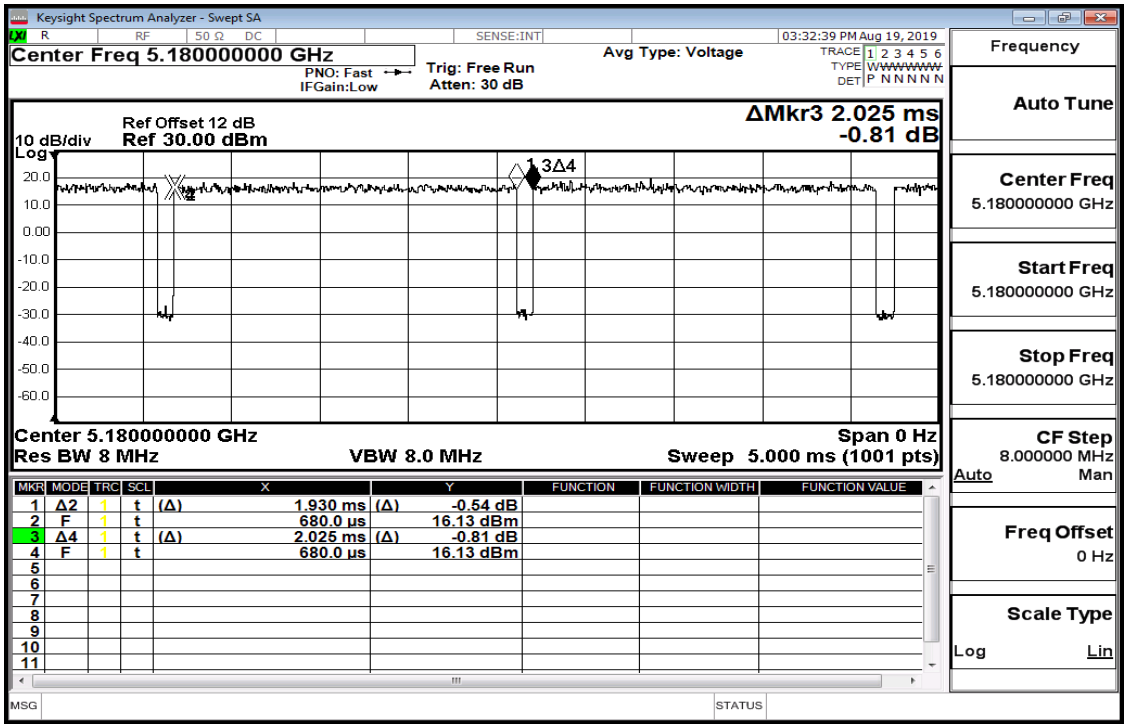
802.11a



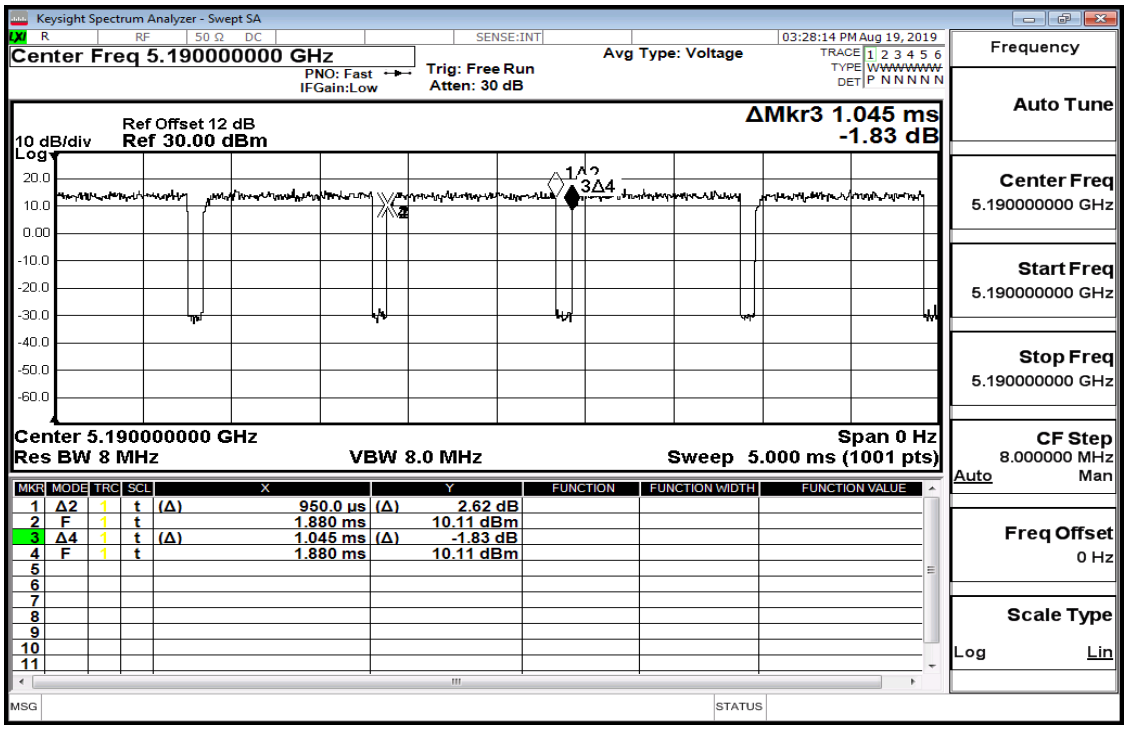
802.11n HT20



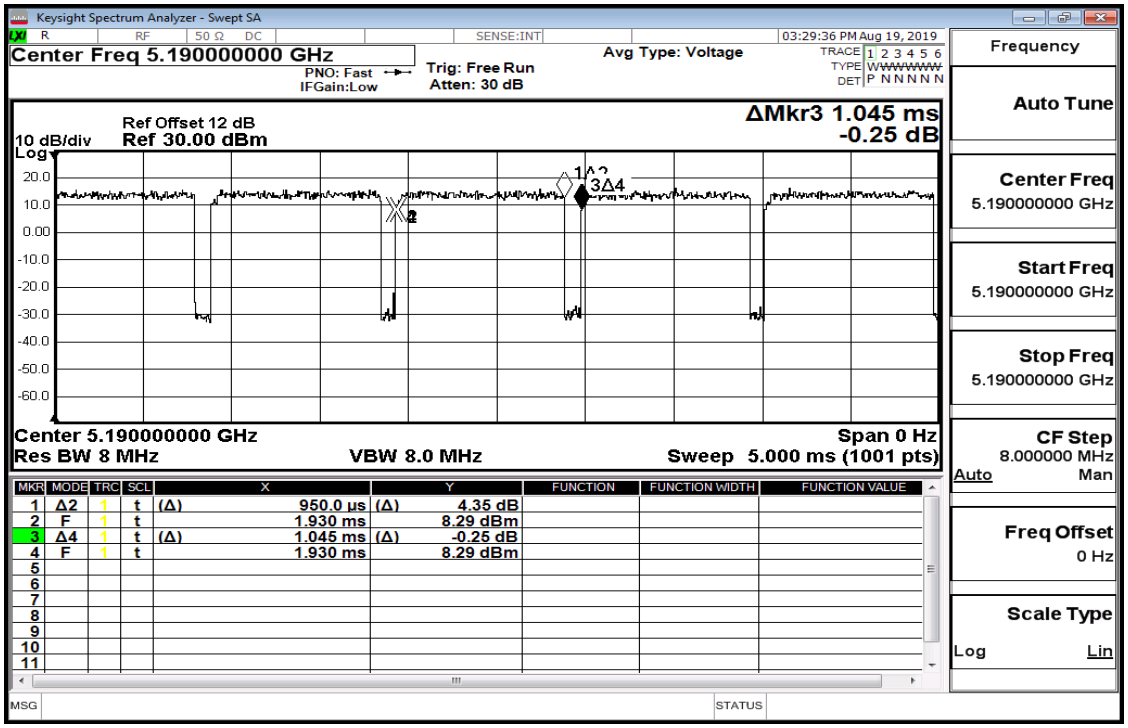
802.11ac VHT 20



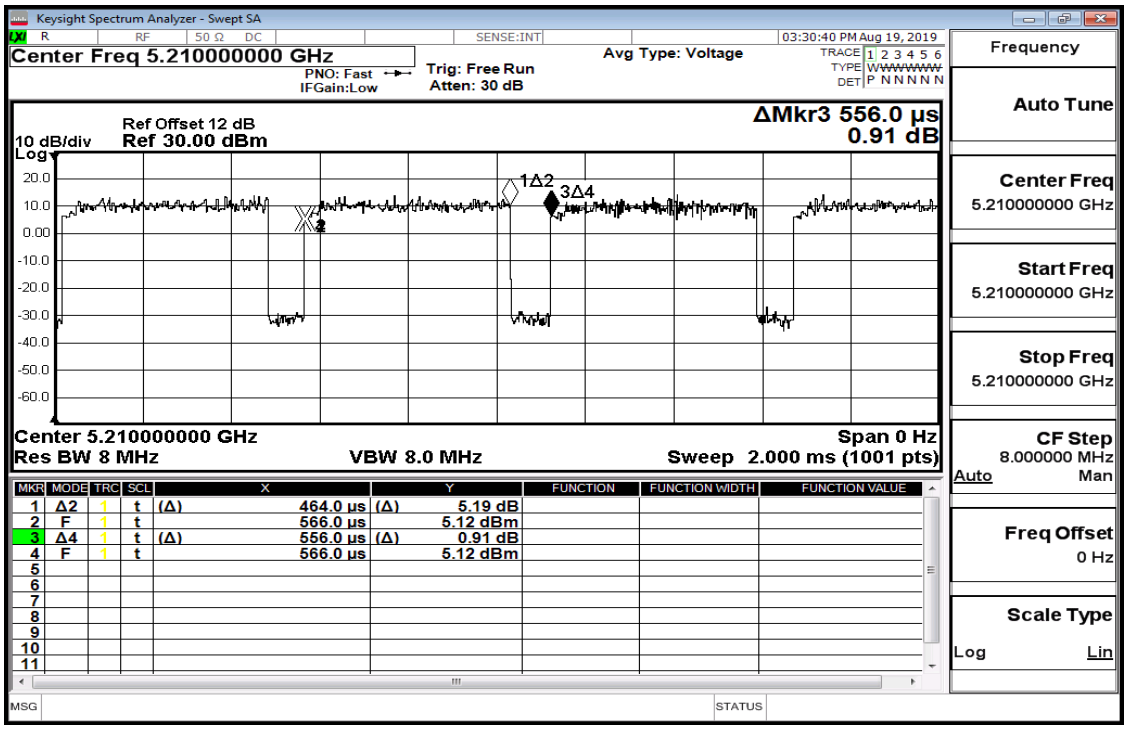
802.11n HT 40



802.11ac VHT 40



802.11 ac VHT 80



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

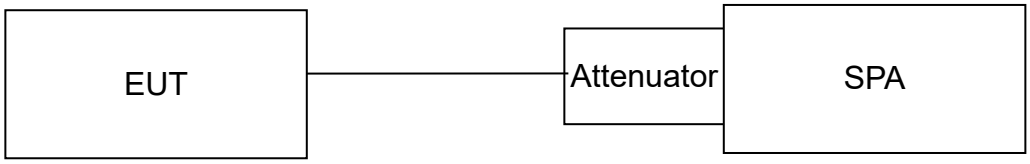
8.2 Measurement Procedure

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.

8.3 Measurement Equipment Used

Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Block	PASTERNACK	PE8210	RF256	02/26/2019	02/25/2020
Spectrum Analyzer	Agilent	N9010A	MY53400256	11/21/2018	11/20/2019
Thermostatic/Hrgrosatic Chamber	GWINSTEK	GTC-288MH-CC	TH160402	05/16/2019	05/15/2020
Attenuator	Marvelous	MVE2213-10	RF80	02/26/2019	02/25/2020

8.4 Test Set-up



8.5 Measurement Result

26dB and 6dB Bandwidth

802.11a_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	23.99	13.800
5220	23.79	13.764
5240	23.87	13.779
5260	24.51	13.893
5300	24.1	13.820
5320	24.31	13.858
5500	24.55	13.901
5580	23.35	13.683
5700	24.6	13.909
5720	23.57	13.724

802.11a_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	14.4	11.584
5785	15.36	11.864
5825	15.82	11.992

802.11n_HT20_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	24.2	13.838
5220	23.17	13.649
5240	22.51	13.524
5260	24.64	13.916
5300	25.33	14.036
5320	26.07	14.161
5500	24.61	13.911
5580	26.45	14.224
5700	26.95	14.306
5720	25.93	14.138

802.11n_HT20_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.56	12.445
5785	16.86	12.269
5825	17.29	12.378

802.11n _HT40_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	41.71	16.202
5230	41.44	16.174
5270	41.41	16.171
5310	41.11	16.139
5510	40.99	16.127
5550	**41.55**	16.186
5670	41.69	16.200
5710	40.77	16.103

802.11n_HT40_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.18	15.463
5795	35.36	15.485

802.11ac _VHT80_Ch0

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	82.25	19.151
5290	82.4	19.159
5530	82.98	19.190
5610	83.38	19.211
5690	83	19.191

802.11ac _VHT80_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	75.21	18.763

802.11a_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	16.755	12.241
5220	16.799	12.253
5240	16.679	12.222
5260	16.751	12.240
5300	16.773	12.246
5320	16.724	12.233
5500	16.794	12.252
5580	16.762	12.243
5700	16.778	12.247
5720	16.771	12.246

802.11a_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	16.4	12.148
5785	16.21	12.098
5825	16.33	12.130

802.11n_HT20_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	17.875	12.522
5220	17.866	12.520
5240	17.843	12.515
5260	17.902	12.529
5300	17.936	12.537
5320	17.975	12.547
5500	17.955	12.542
5580	17.98	12.548
5700	17.965	12.544
5720	17.956	12.542

802.11n_HT20_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	17.58	12.450
5785	17.51	12.433
5825	17.54	12.440

802.11n _HT40_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5190	36.107	15.576
5230	36.123	15.578
5270	36.113	15.577
5310	36.115	15.577
5510	36.15	15.581
5550	36.138	15.580
5670	36.144	15.580
5710	36.138	15.580

802.11n _HT40_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	36.31	15.600
5795	36.29	15.598

802.11ac _VHT80_Ch0

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5210	75.658	18.789
5290	75.659	18.789
5530	75.583	18.784
5610	75.559	18.783
5690	75.748	18.794

802.11ac _VHT80_Ch0

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5775	76.15	18.817

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

802.11a_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.35	< 5250
5745	5736.73	> 5725

802.11n_HT20_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.88	< 5250
5745	5736.12	> 5725

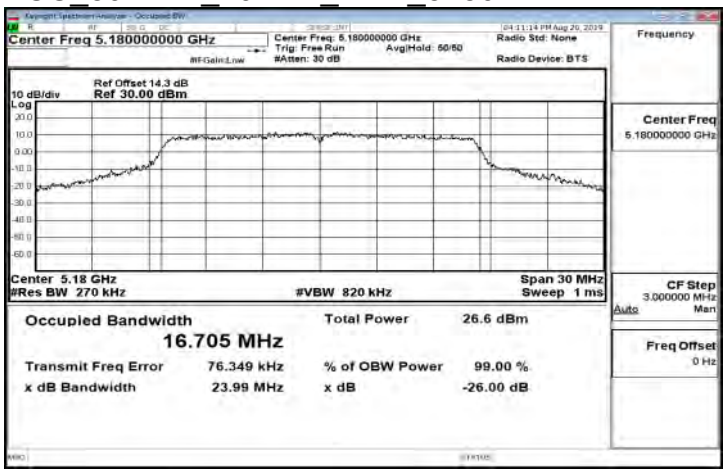
802.11n _HT40_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5248.12	< 5250
5755	5736.93	> 5725

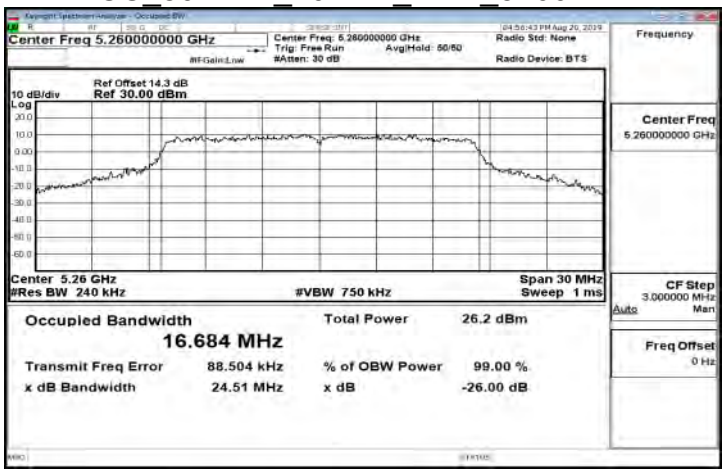
802.11ac _VHT80_Ch0

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5210	5247.83	< 5250
5775	5737.25	> 5725

FCC_802.11a_20MHz_Main_5180MHz



FCC_802.11a_20MHz_Main_5260MHz



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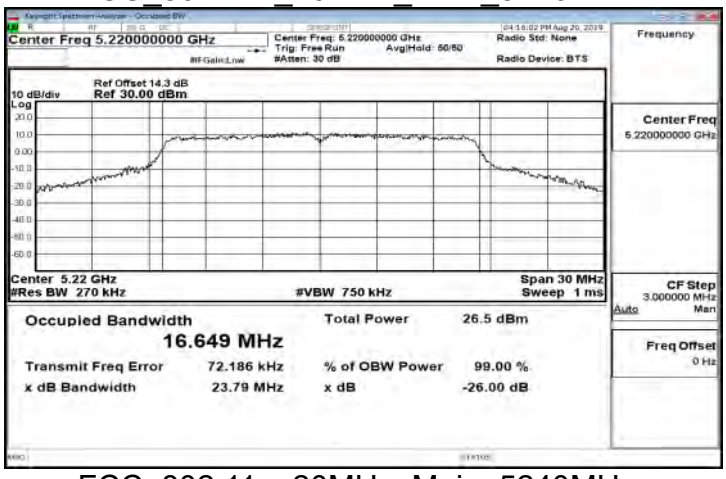
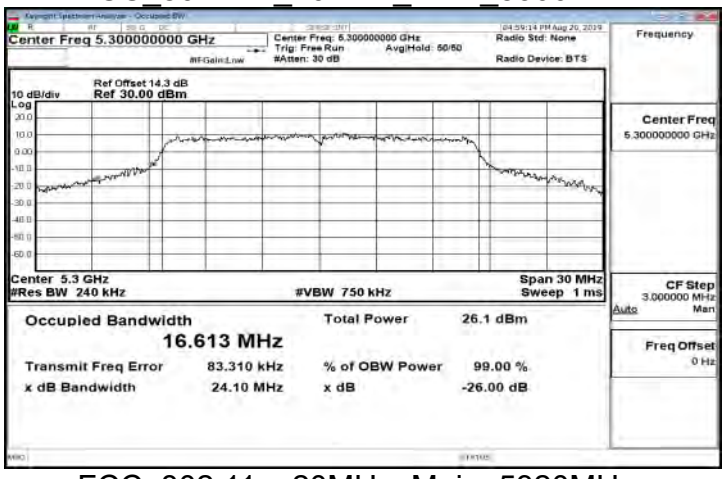
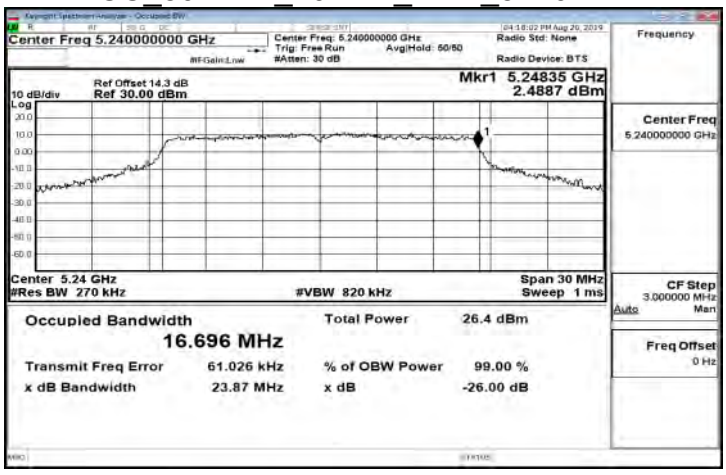


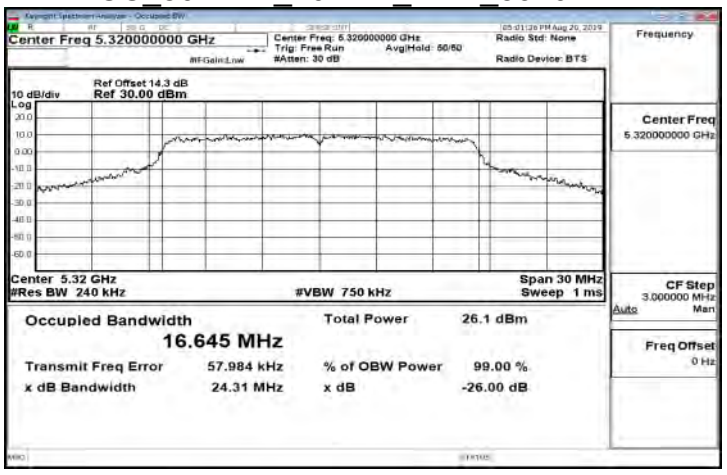
FCC_802.11a_20MHz_Main_5300MHz



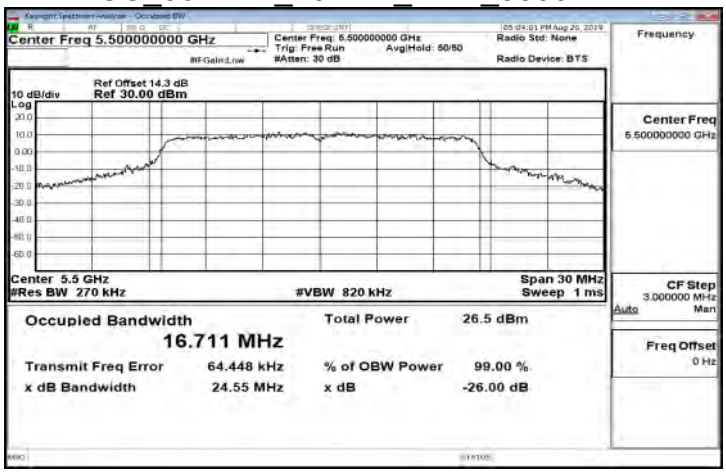
FCC_802.11a_20MHz_Main_5240MHz



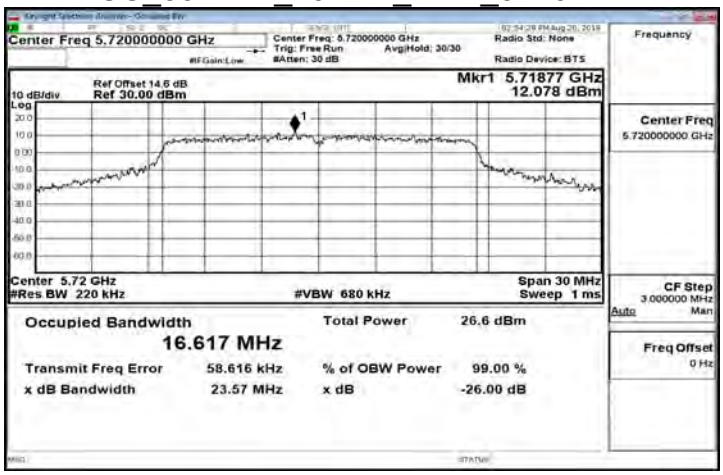
FCC_802.11a_20MHz_Main_5320MHz



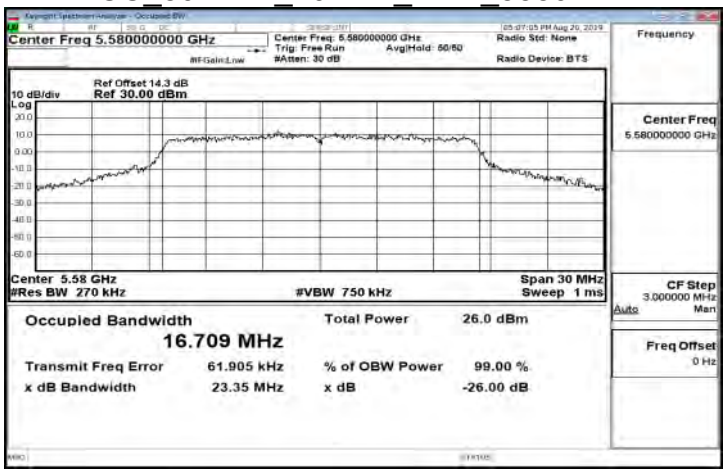
FCC_802.11a_20MHz_Main_5500MHz



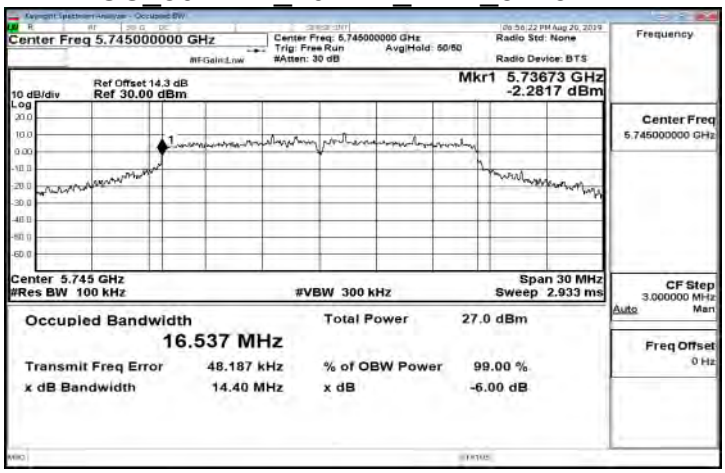
FCC_802.11a_20MHz_Main_5720MHz



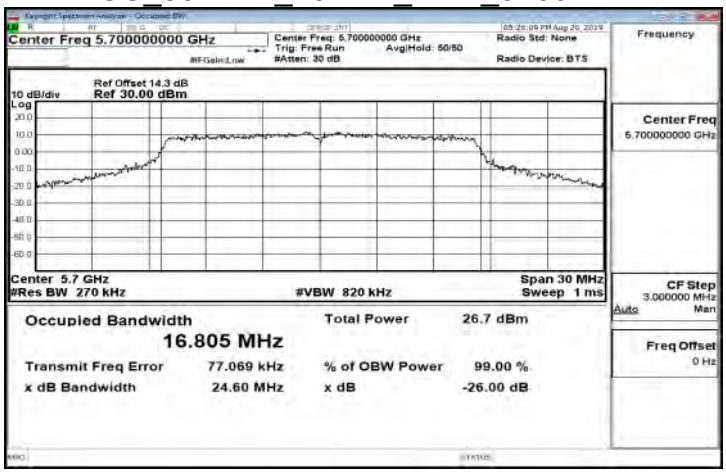
FCC_802.11a_20MHz_Main_5580MHz



FCC_802.11a_20MHz_Main_5745MHz



FCC_802.11a_20MHz_Main_5700MHz



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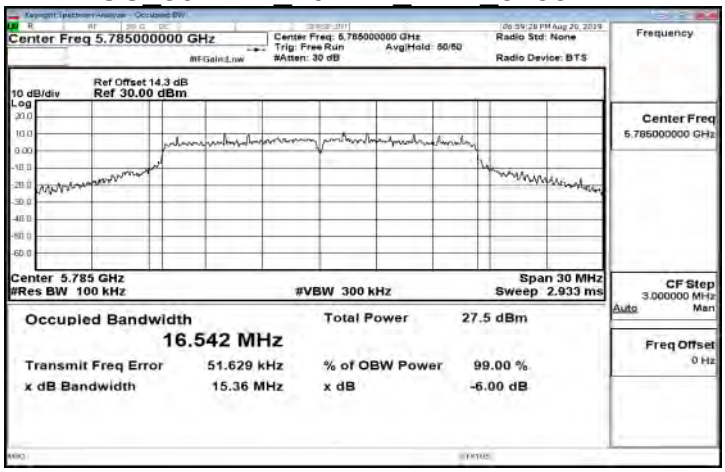
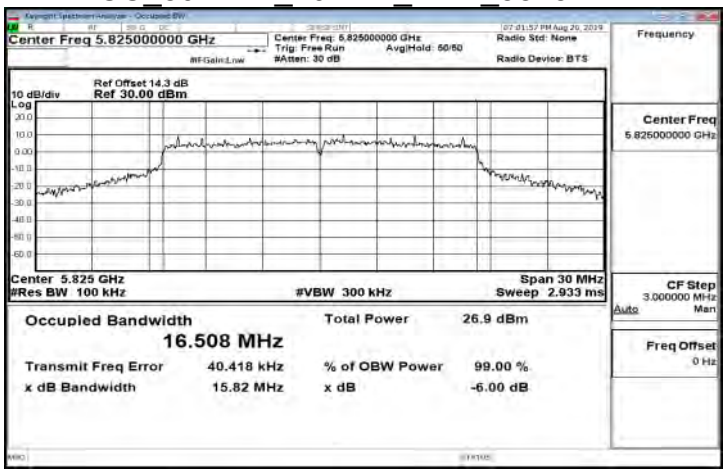
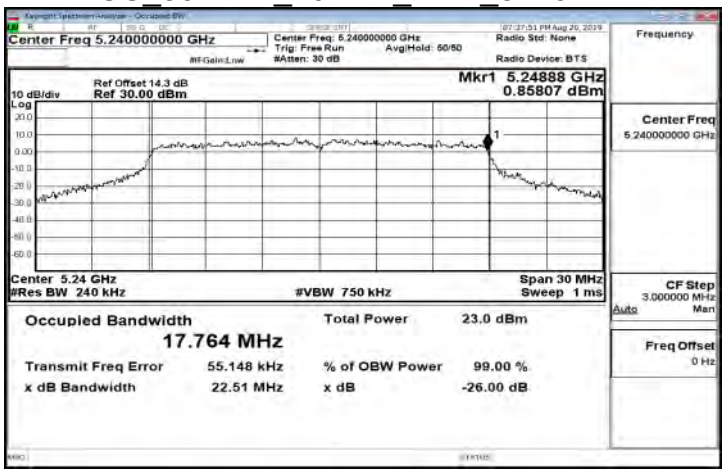


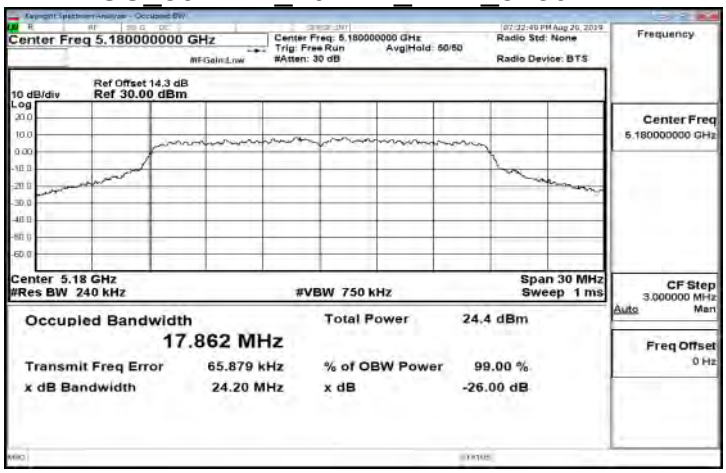
FCC_802.11a_20MHz_Main_5825MHz



FCC_802.11n_20MHz_Main_5240MHz

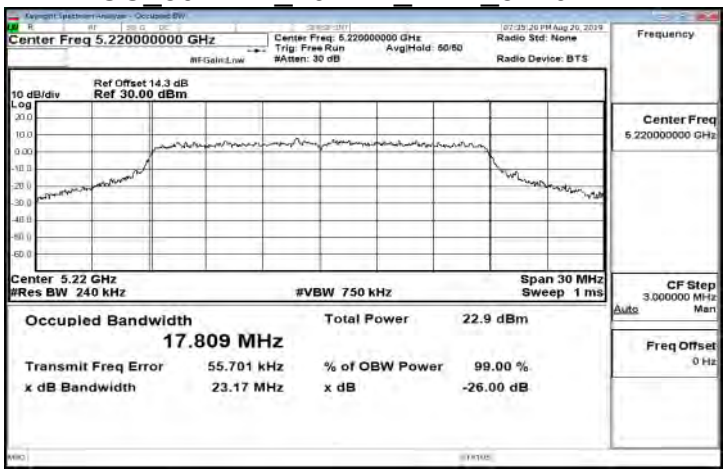


FCC_802.11n_20MHz_Main_5180MHz



FCC_802.11n_20MHz_Main_5260MHz

FCC_802.11n_20MHz_Main_5220MHz

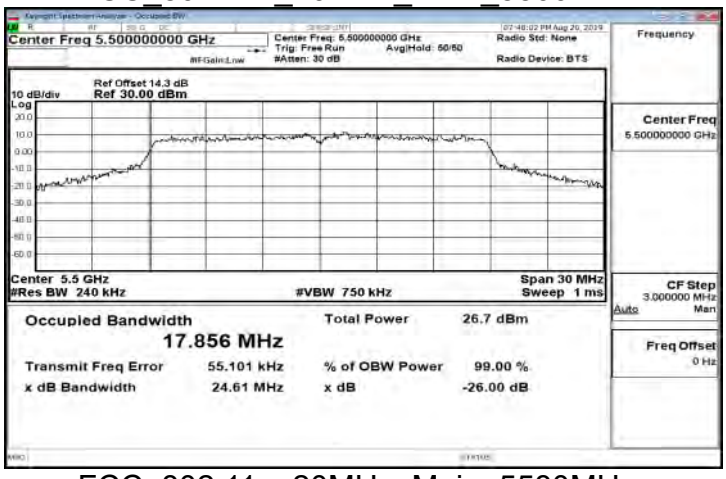


FCC_802.11n_20MHz_Main_5300MHz

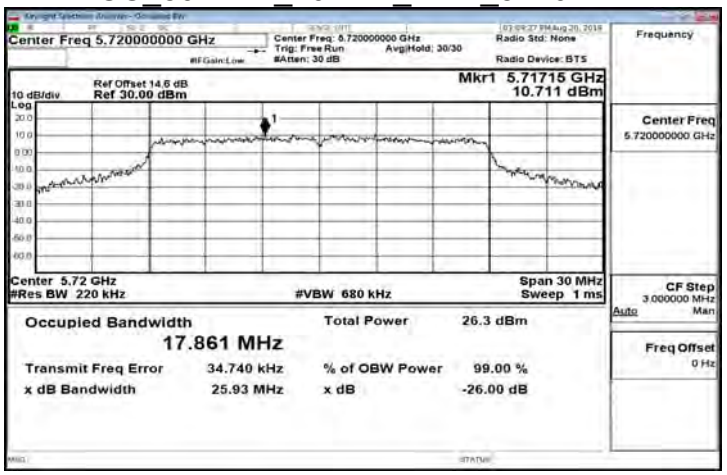
FCC_802.11n_20MHz_Main_5320MHz

FCC_802.11n_20MHz_Main_5700MHz

FCC_802.11n_20MHz_Main_5500MHz

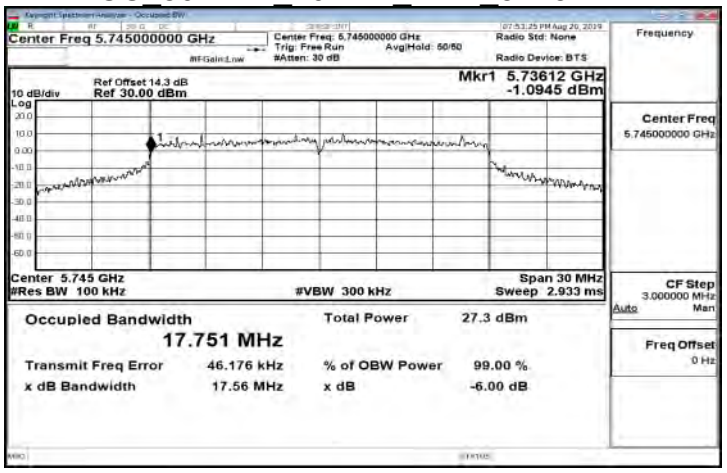


FCC_802.11n_20MHz_Main_5720MHz

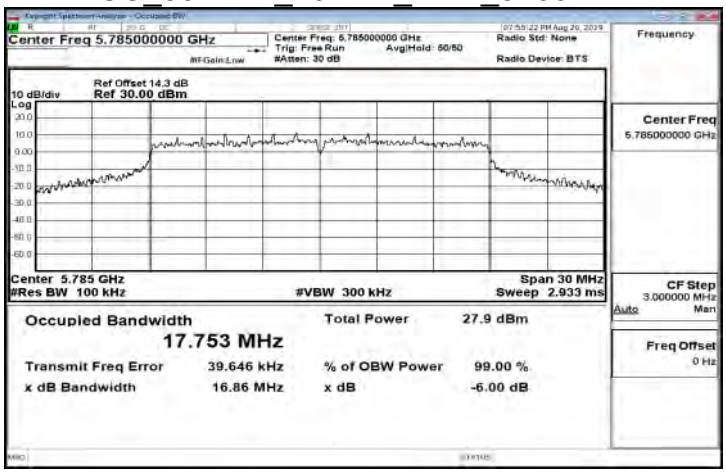


FCC_802.11n_20MHz_Main_5580MHz

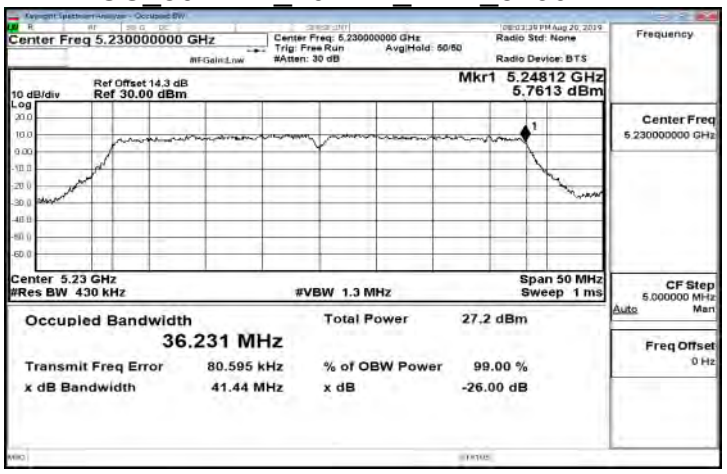
FCC_802.11n_20MHz_Main_5745MHz



FCC_802.11n_20MHz_Main_5785MHz

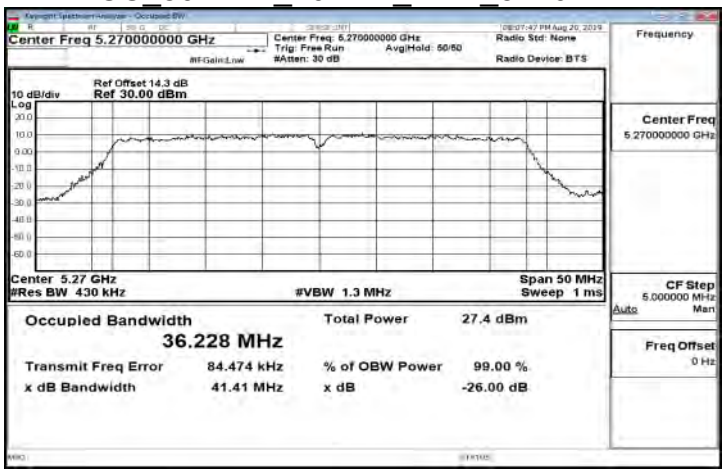


FCC_802.11n_40MHz_Main_5230MHz



FCC_802.11n_20MHz_Main_5825MHz

FCC_802.11n_40MHz_Main_5270MHz



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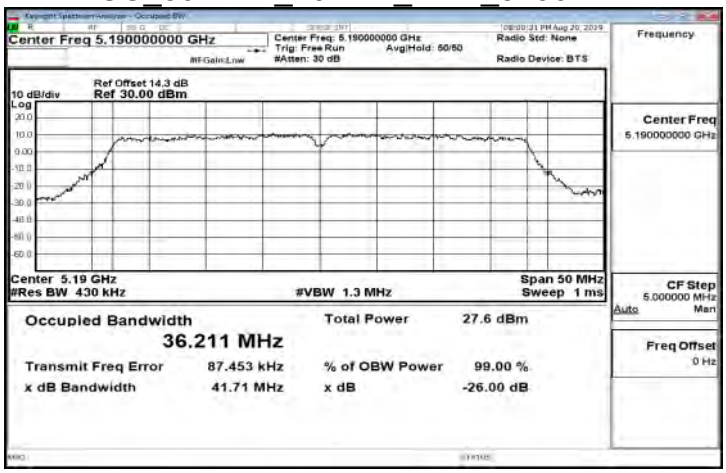
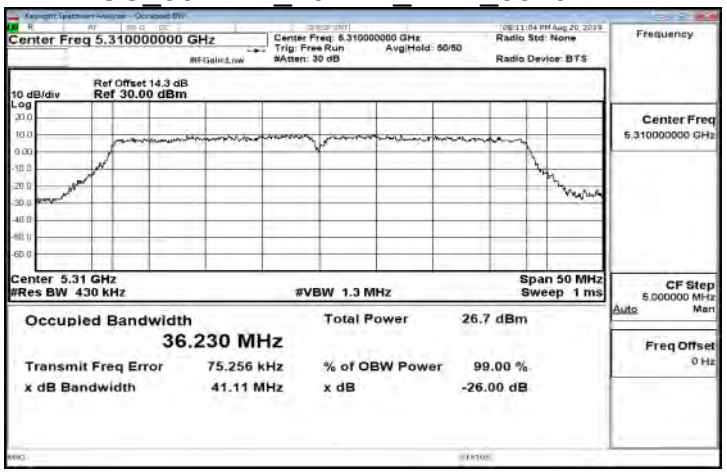
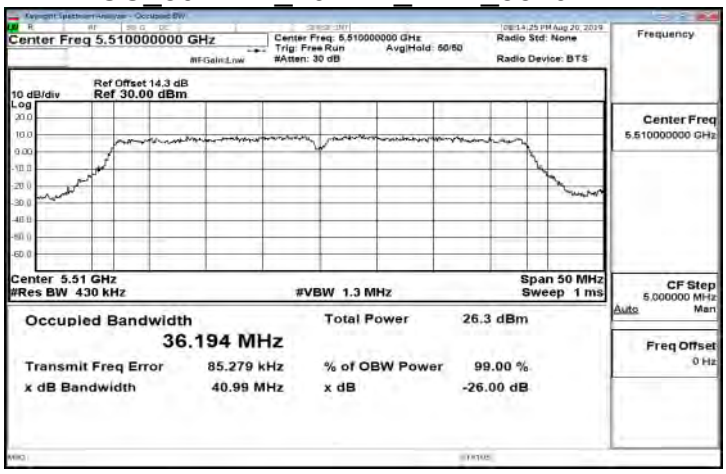


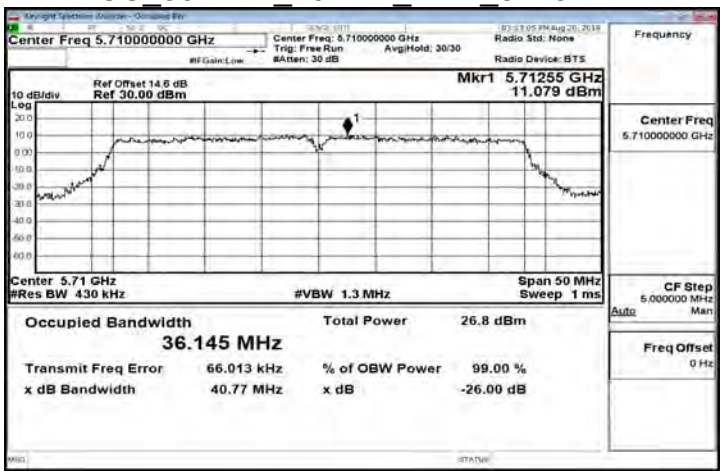
FCC_802.11n_40MHz_Main_5310MHz



FCC_802.11n_40MHz_Main_5510MHz



FCC_802.11n_40MHz_Main_5710MHz



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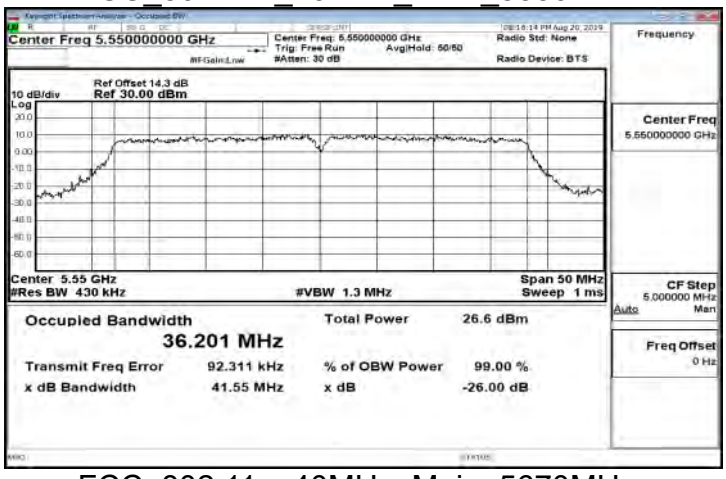
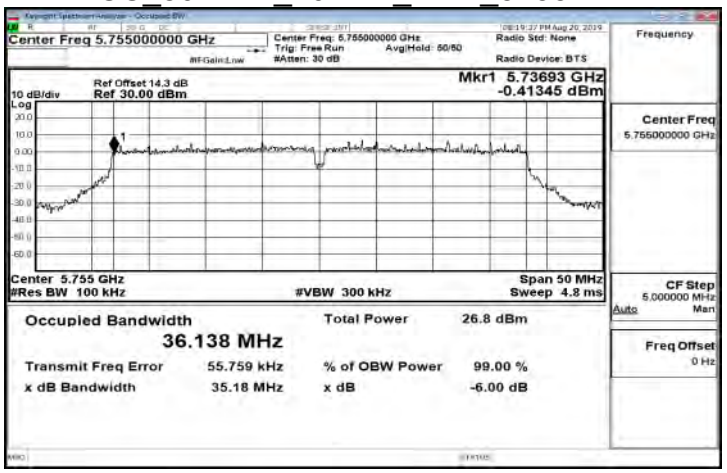
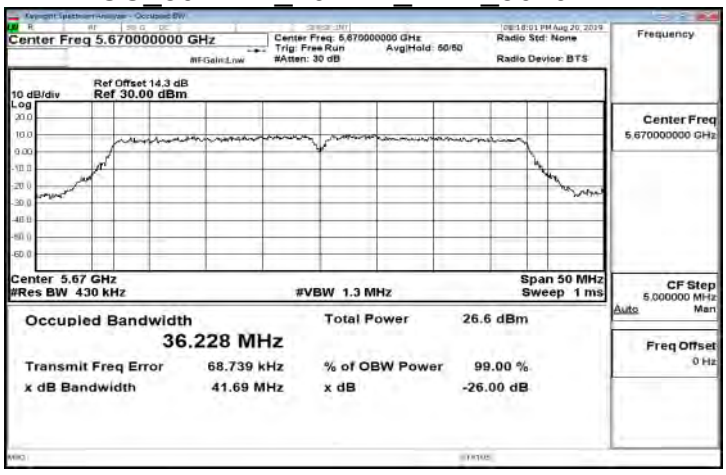


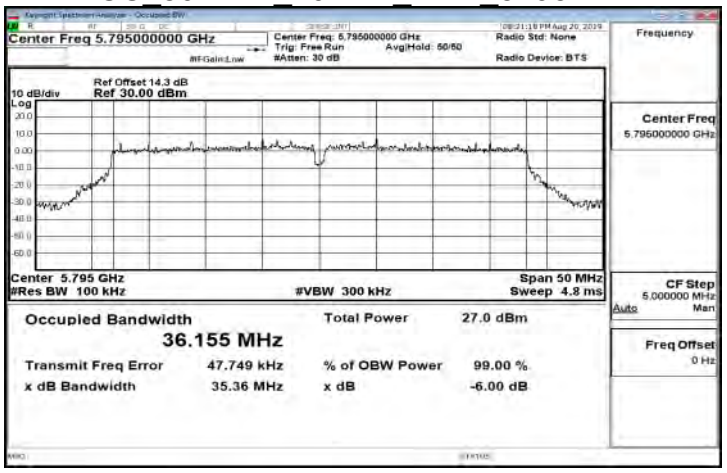
FCC_802.11n_40MHz_Main_5755MHz



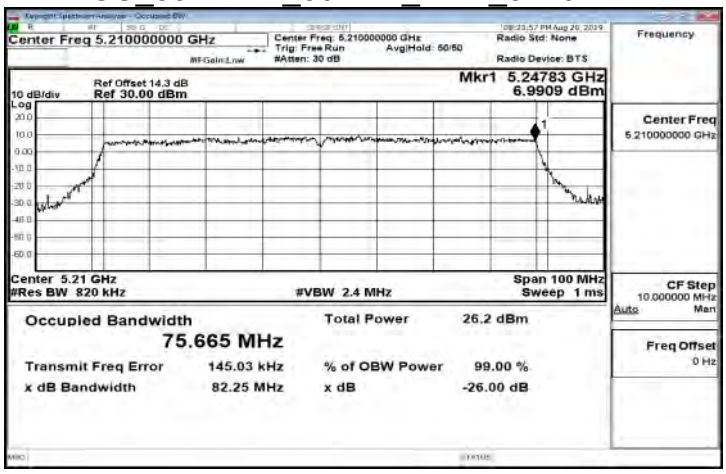
FCC_802.11n_40MHz_Main_5670MHz



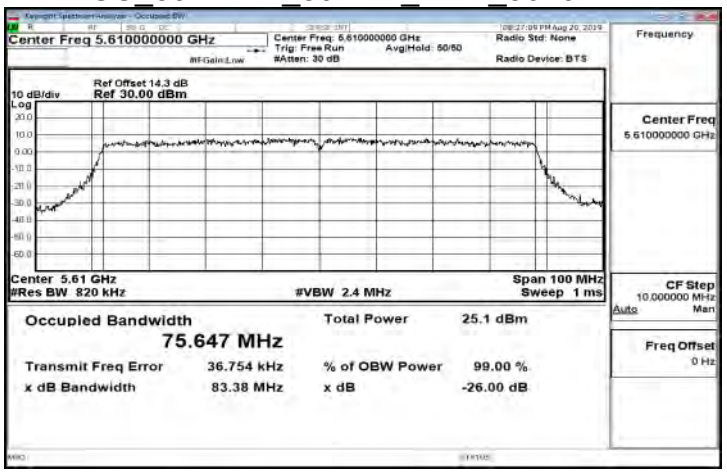
FCC_802.11n_40MHz_Main_5795MHz



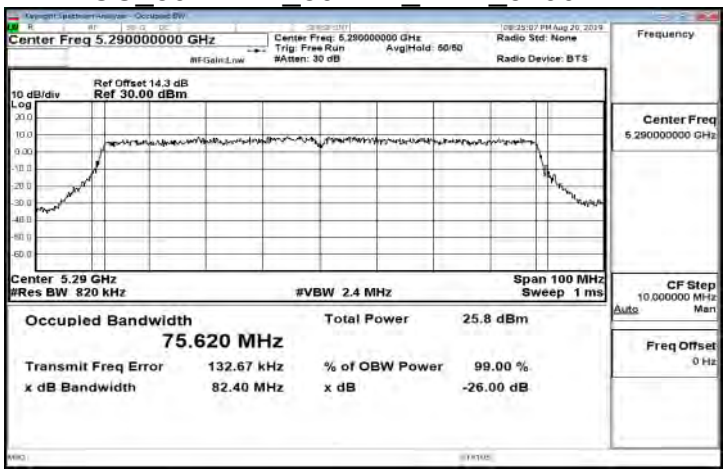
FCC_802.11ac_80MHz_Main_5210MHz



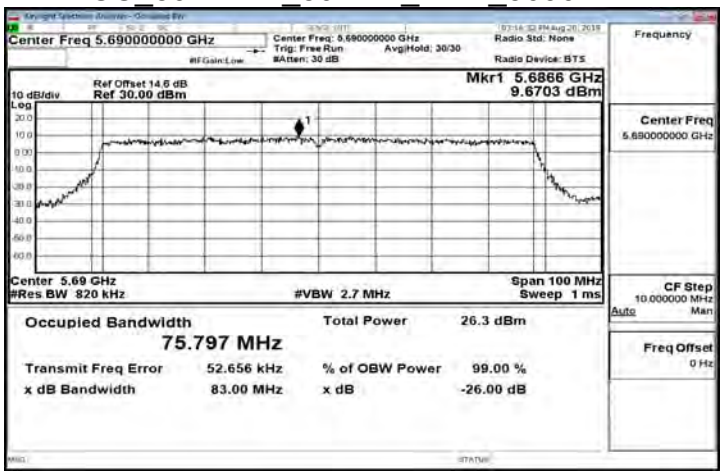
FCC_802.11ac_80MHz_Main_5610MHz



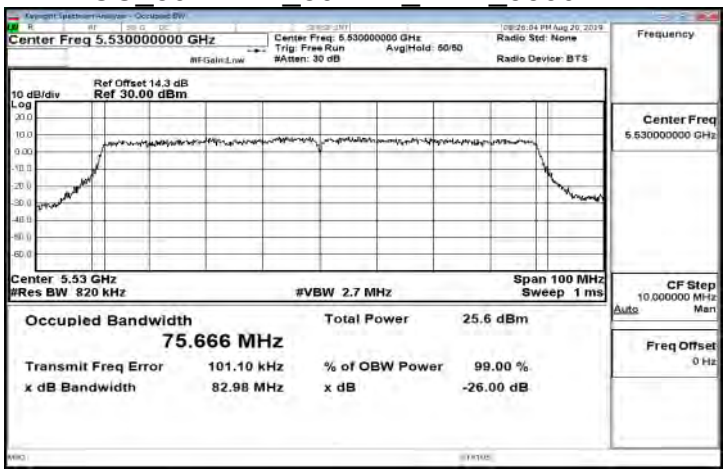
FCC_802.11ac_80MHz_Main_5290MHz



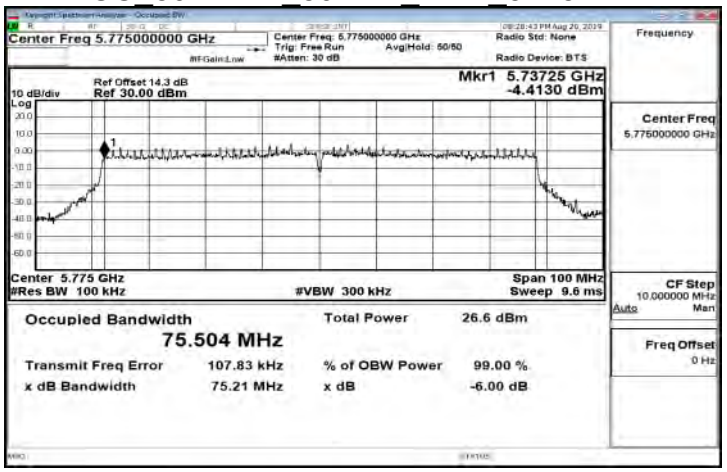
FCC_802.11ac_80MHz_Main_5690MHz



FCC_802.11ac_80MHz_Main_5530MHz

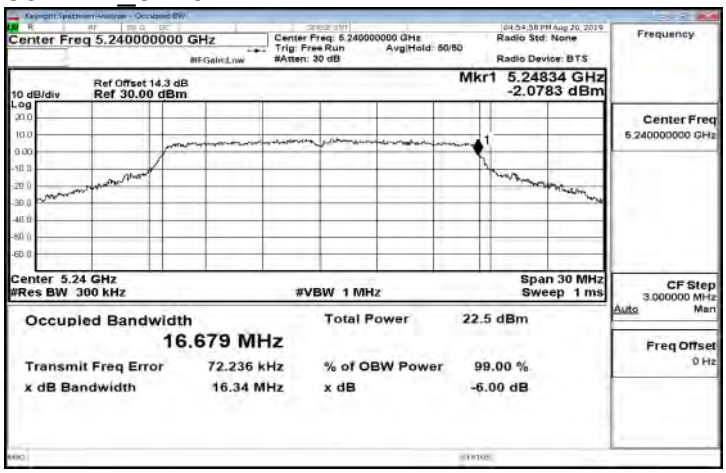


FCC_802.11ac_80MHz_Main_5775MHz

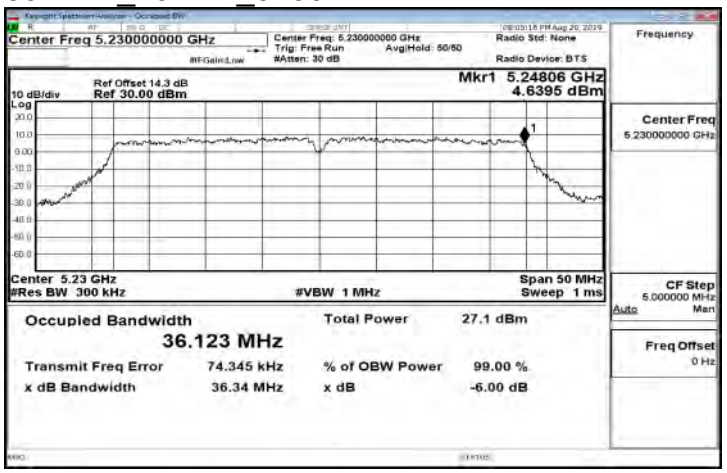


99% BW to prove that all signals in band I is no over band U-NII-1

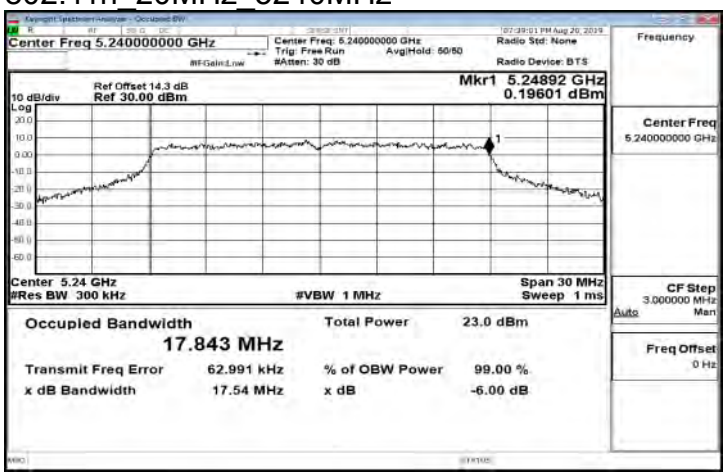
802.11a_5240MHz



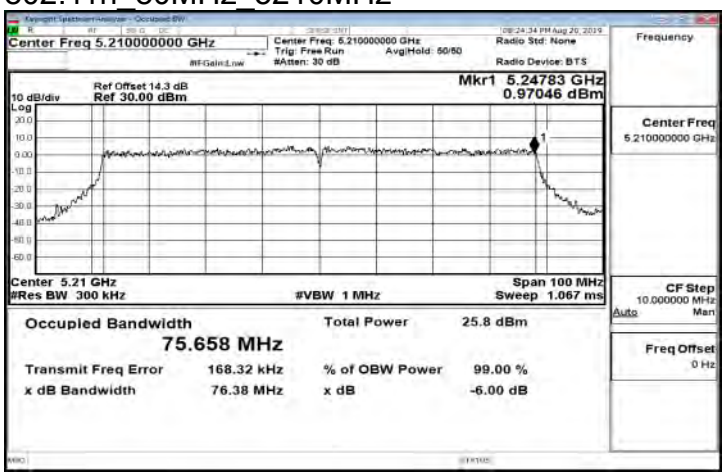
802.11n_40MHz_5230MHz



802.11n_20MHz_5240MHz

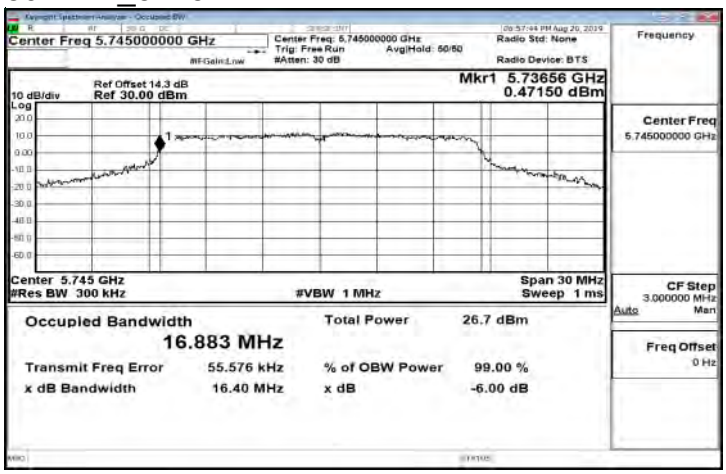


802.11n_80MHz_5210MHz

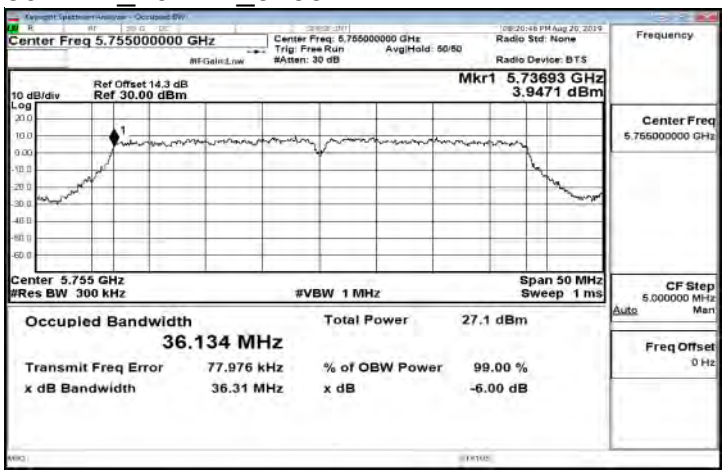


99% BW to prove that all signals in band I is no over band U-NII-3

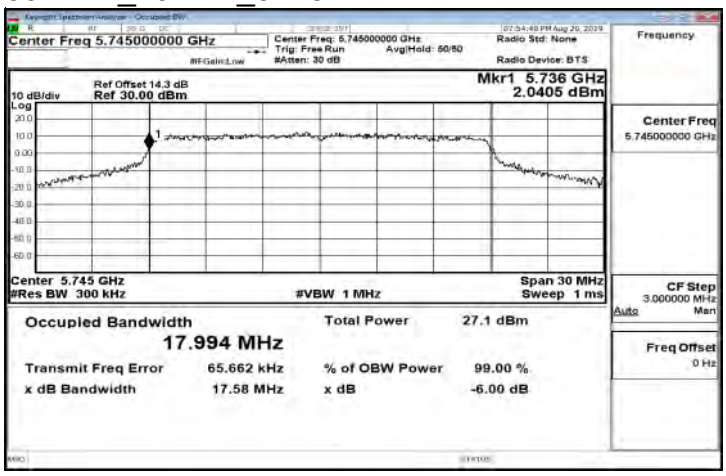
802.11a_5745MHz



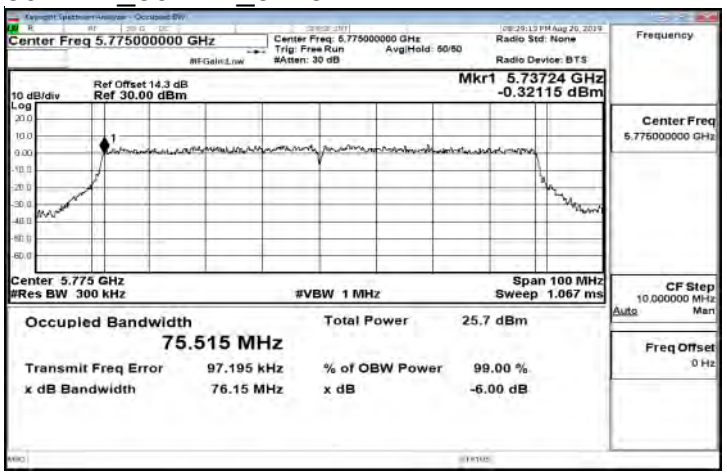
802.11n_40MHz_5755MHz



802.11n_20MHz_5745MHz

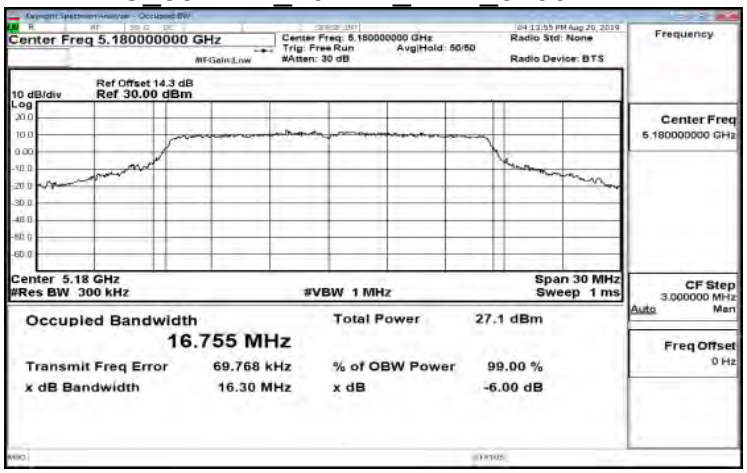


802.11n_80MHz_5775MHz

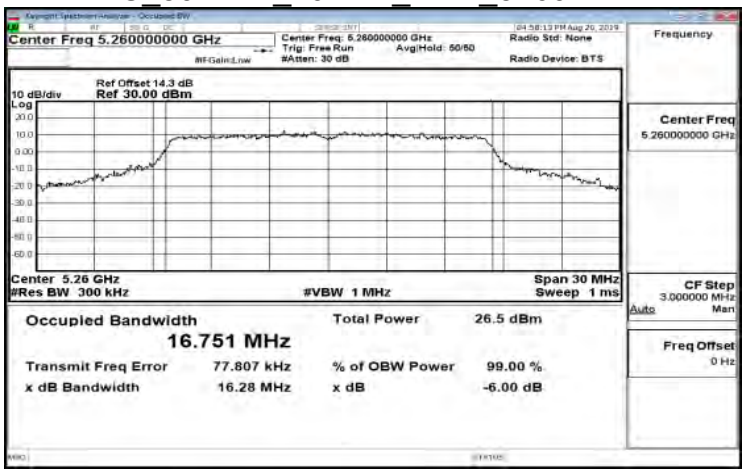


For 99%,

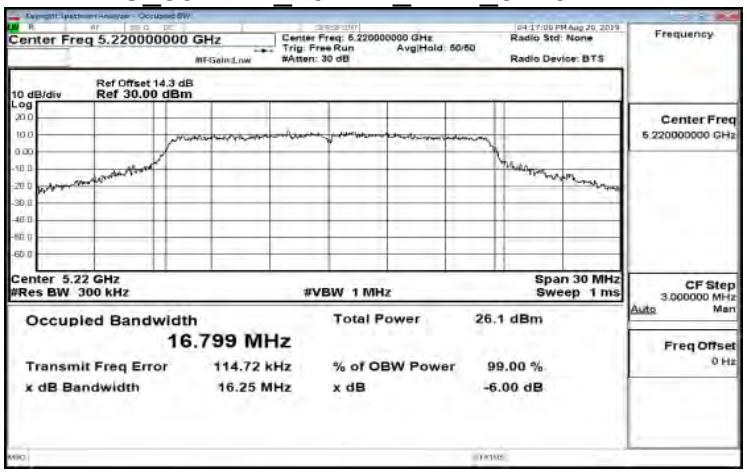
IC_802.11a_20MHz_Main_5180MHz



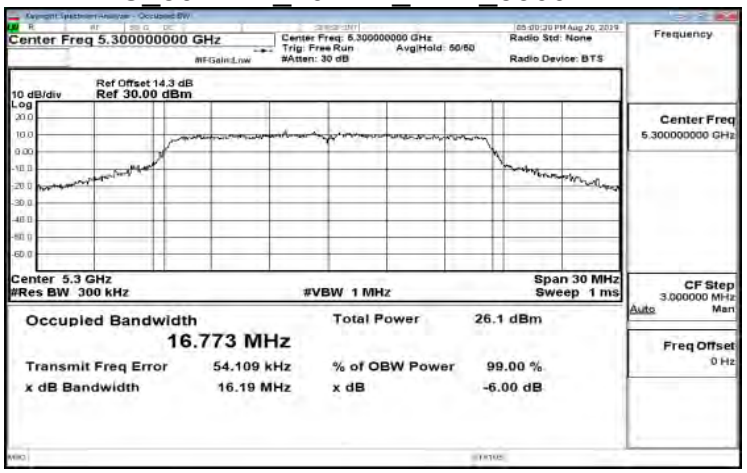
IC_802.11a_20MHz_Main_5260MHz



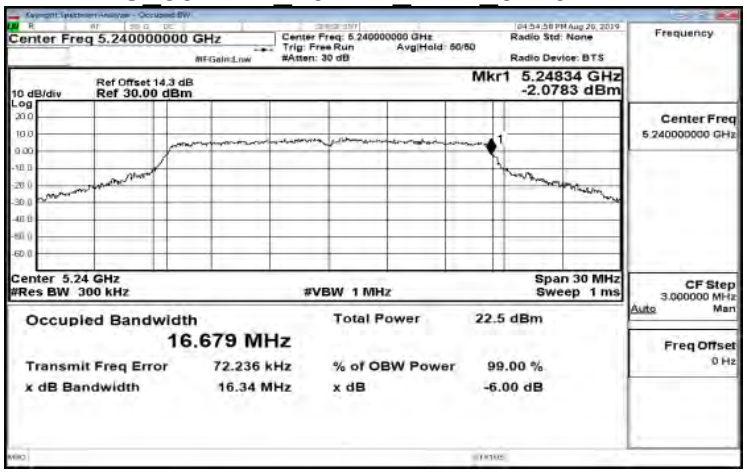
IC_802.11a_20MHz_Main_5220MHz



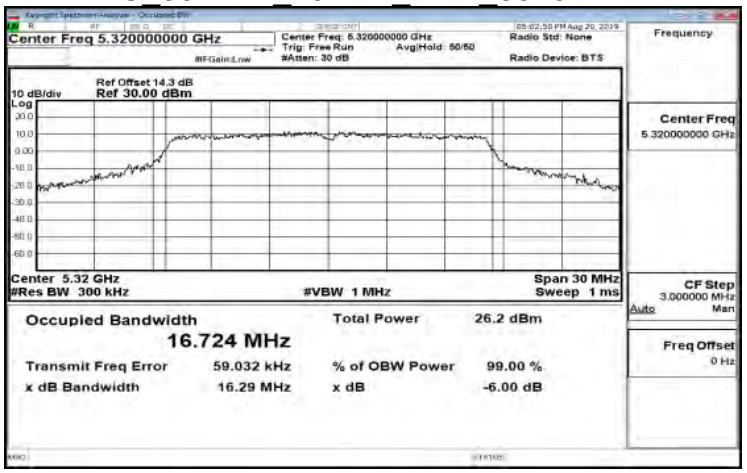
IC_802.11a_20MHz_Main_5300MHz



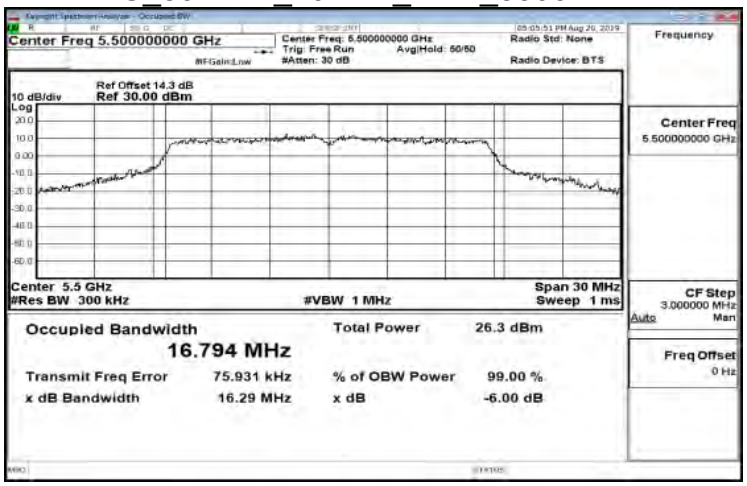
IC_802.11a_20MHz_Main_5240MHz



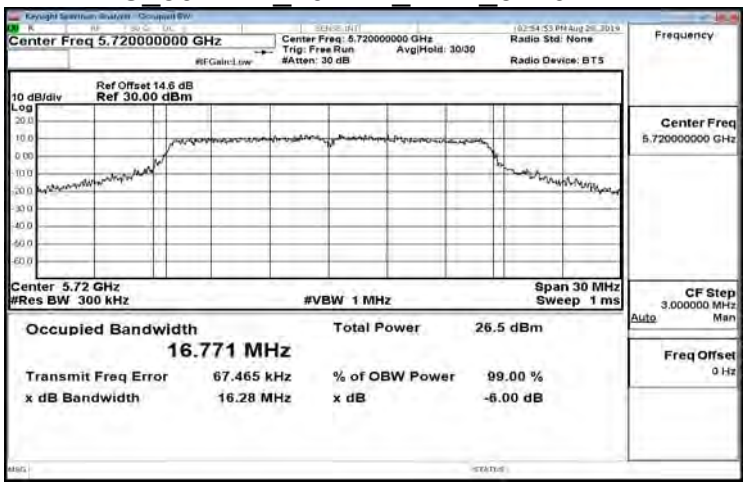
IC_802.11a_20MHz_Main_5320MHz



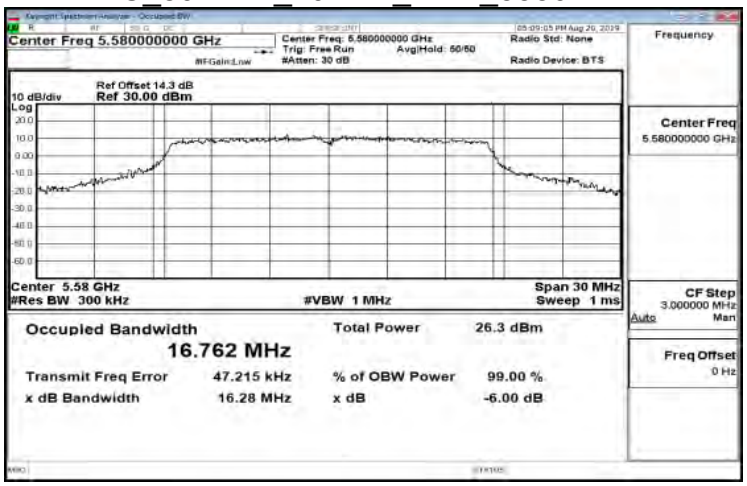
IC_802.11a_20MHz_Main_5500MHz



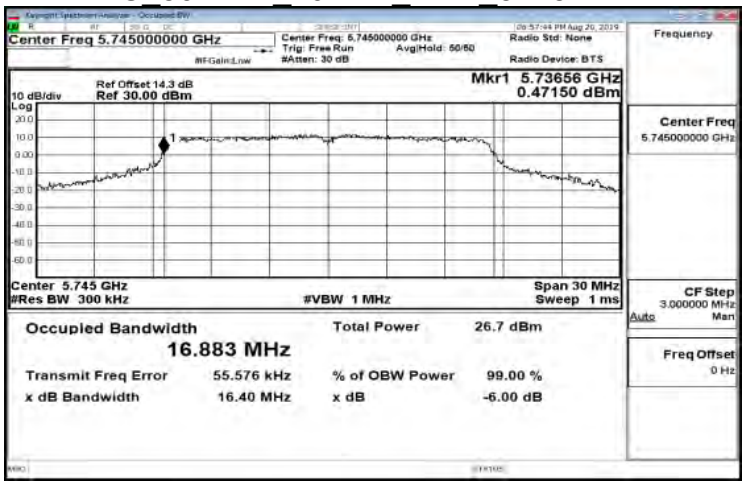
IC_802.11a_20MHz_Main_5720MHz



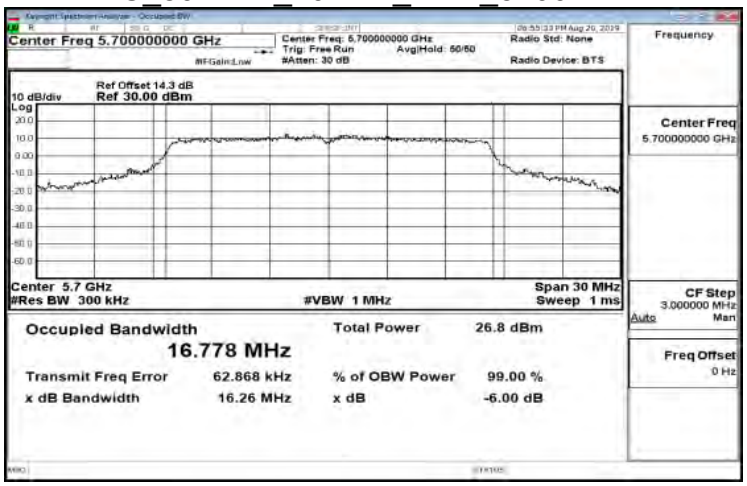
IC_802.11a_20MHz_Main_5580MHz



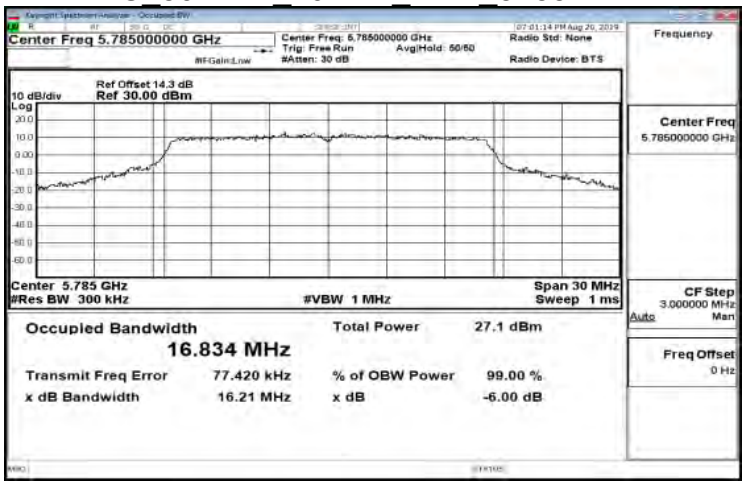
IC_802.11a_20MHz_Main_5745MHz



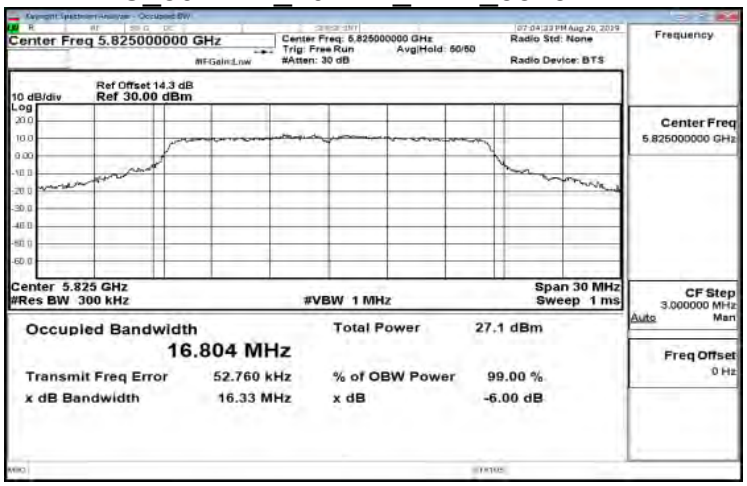
IC_802.11a_20MHz_Main_5700MHz



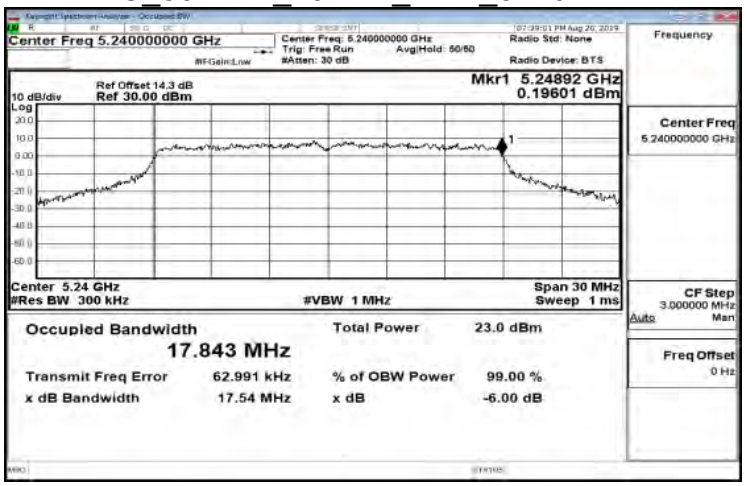
IC_802.11a_20MHz_Main_5785MHz



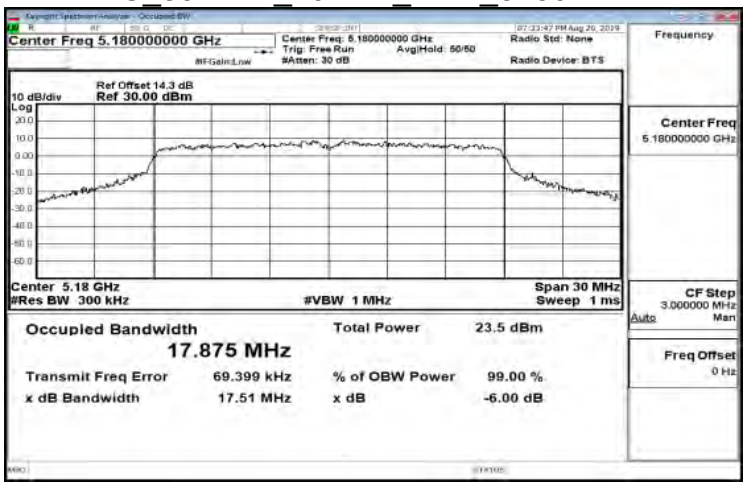
IC_802.11a_20MHz_Main_5825MHz



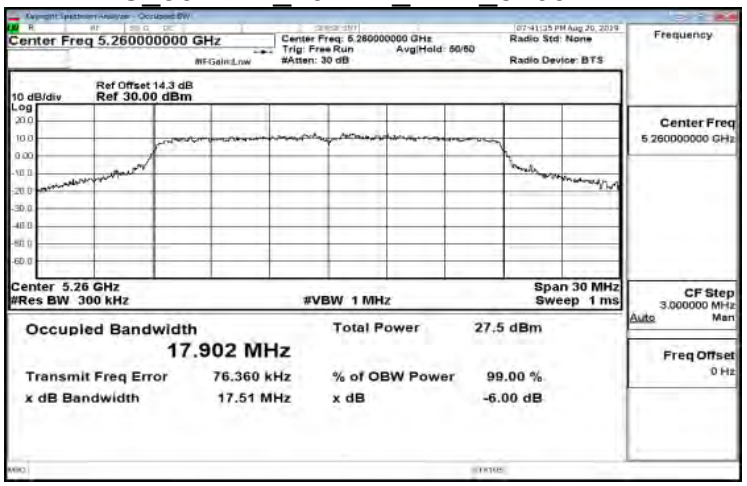
IC_802.11n_20MHz_Main_5240MHz



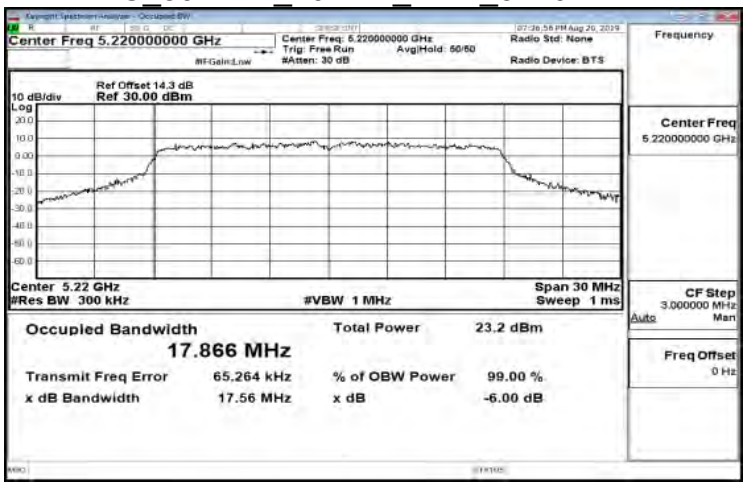
IC_802.11n_20MHz_Main_5180MHz



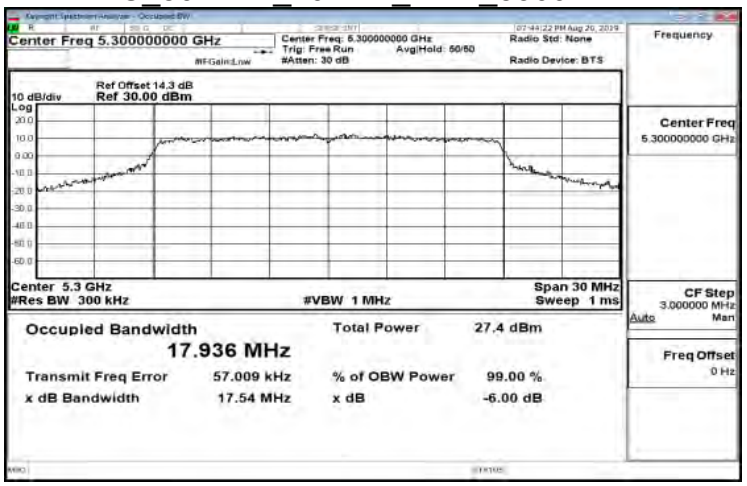
IC_802.11n_20MHz_Main_5260MHz



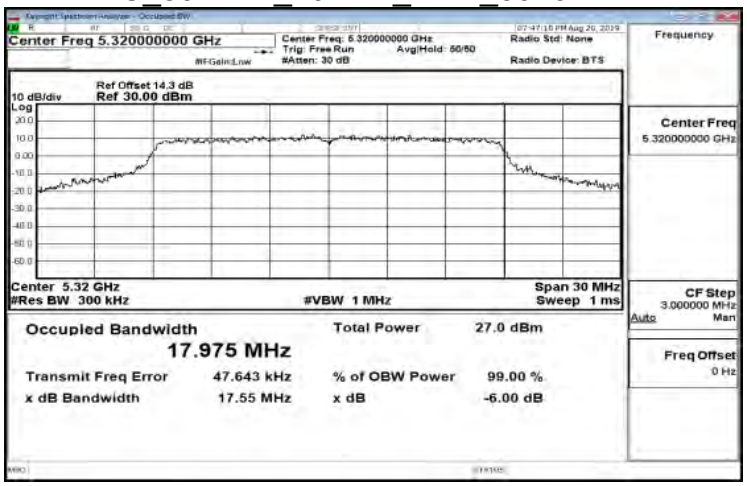
IC_802.11n_20MHz_Main_5220MHz



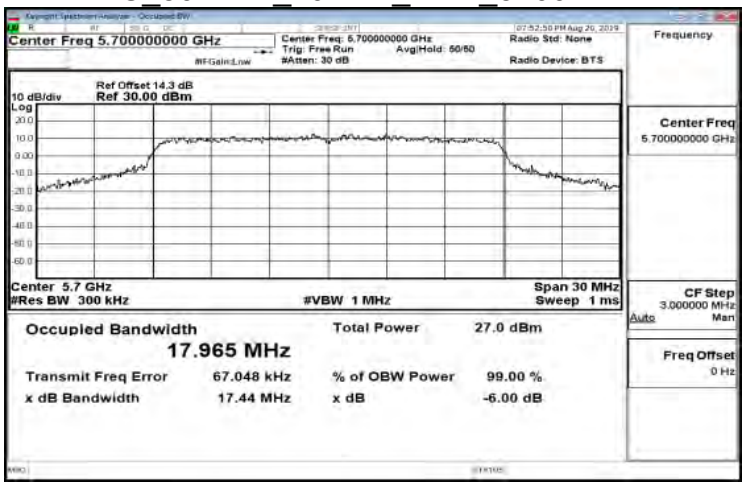
IC_802.11n_20MHz_Main_5300MHz



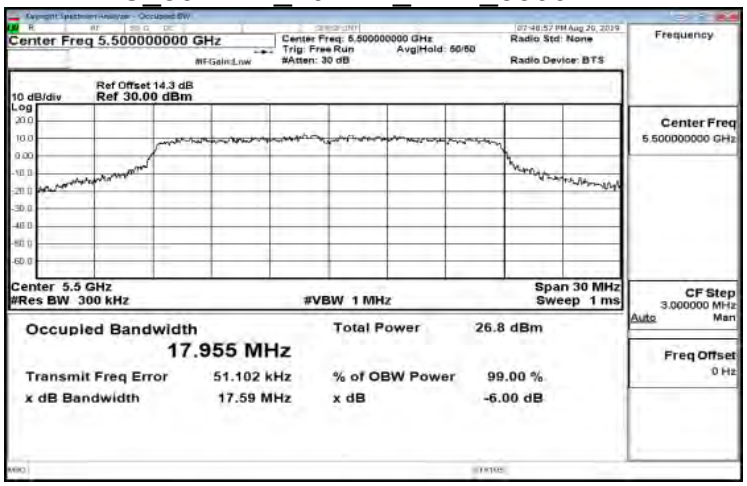
IC_802.11n_20MHz_Main_5320MHz



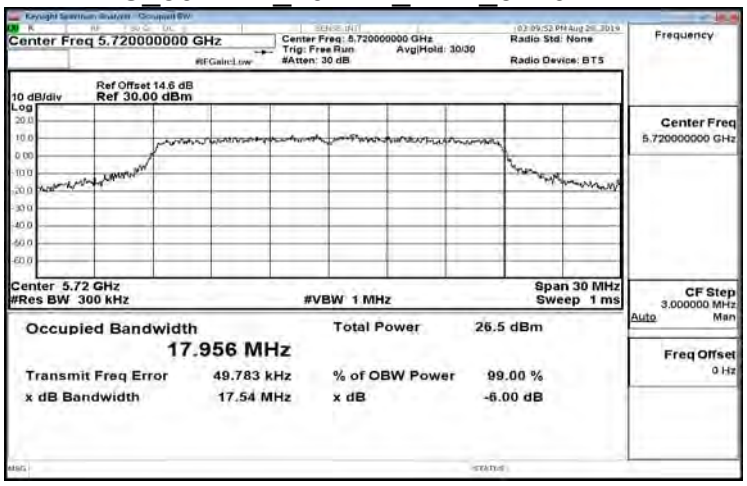
IC_802.11n_20MHz_Main_5700MHz



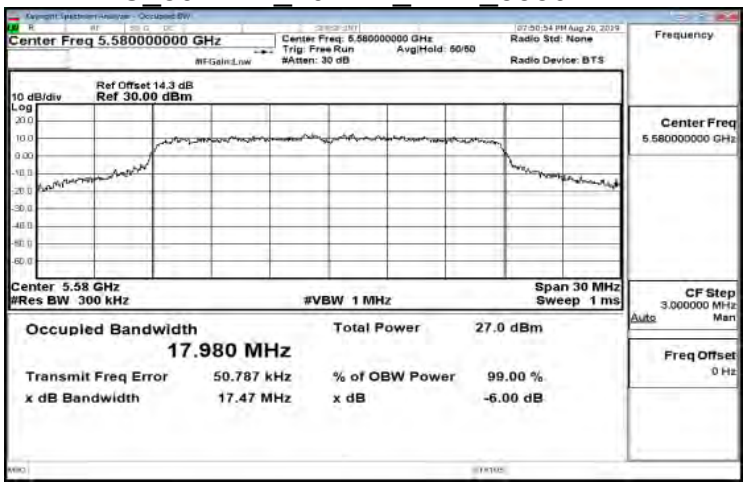
IC_802.11n_20MHz_Main_5500MHz



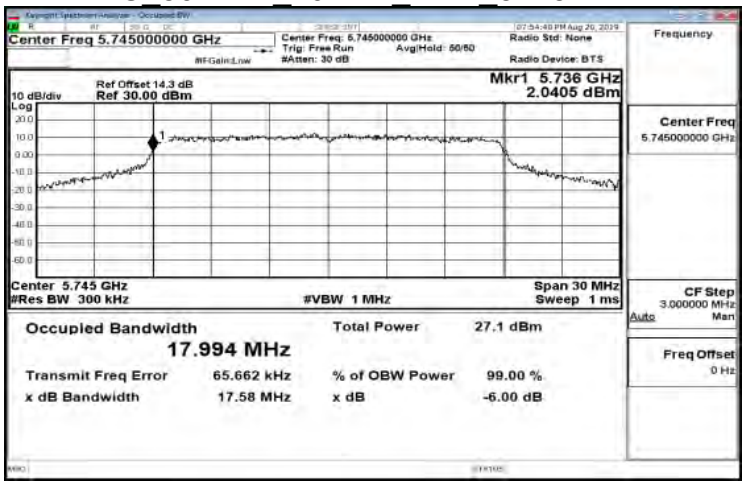
IC_802.11n_20MHz_Main_5720MHz



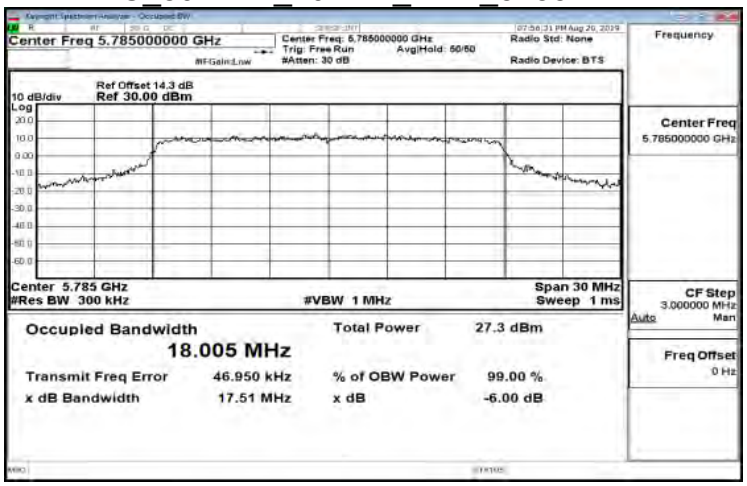
IC_802.11n_20MHz_Main_5580MHz



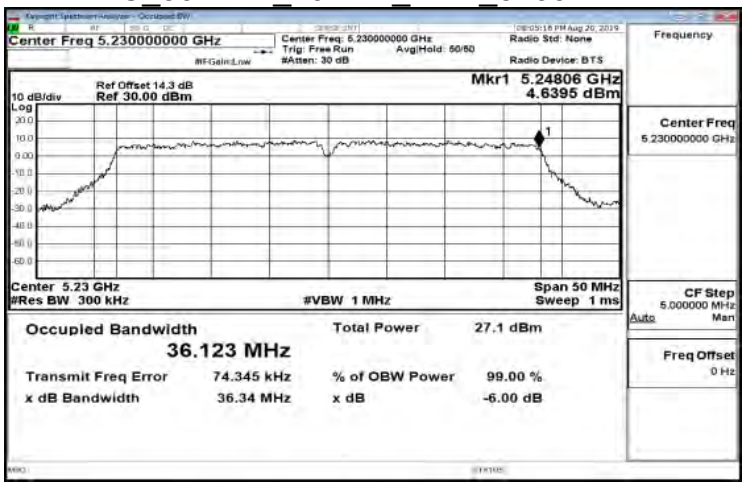
IC_802.11n_20MHz_Main_5745MHz



IC_802.11n_20MHz_Main_5785MHz

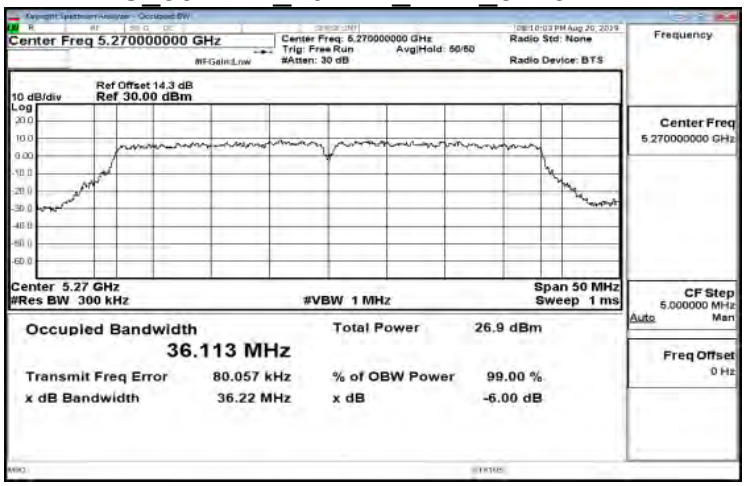


IC_802.11n_40MHz_Main_5230MHz

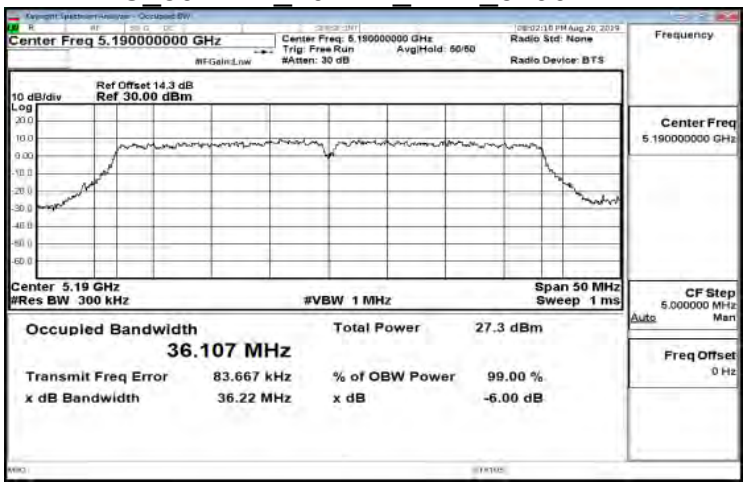


IC_802.11n_20MHz_Main_5825MHz

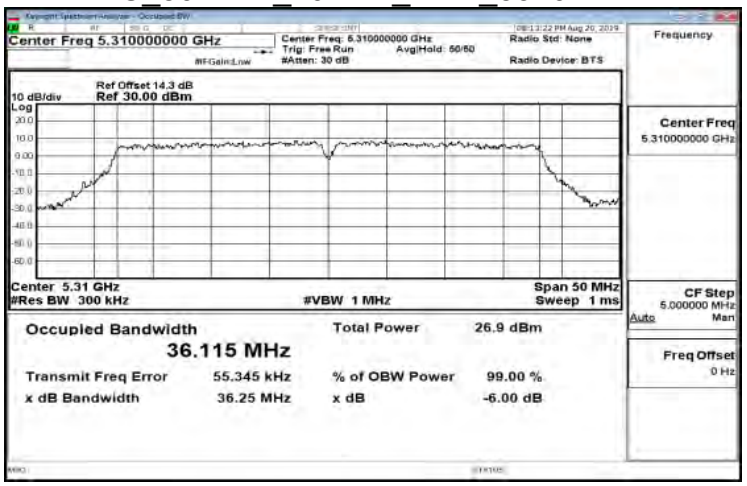
IC_802.11n_40MHz_Main_5270MHz



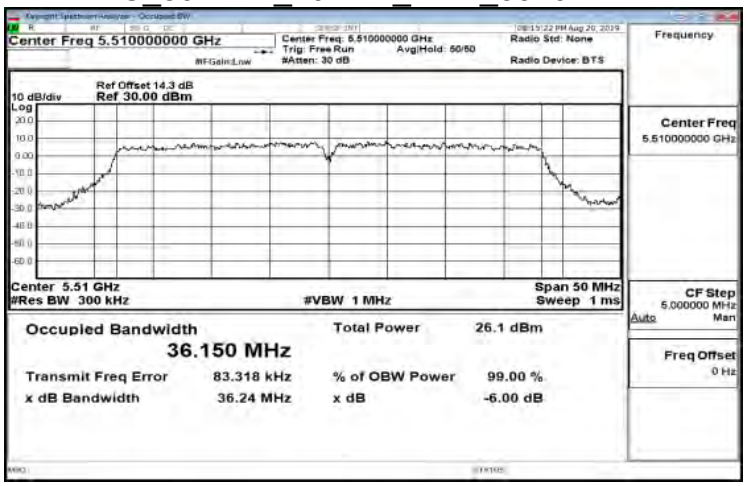
IC_802.11n_40MHz_Main_5190MHz



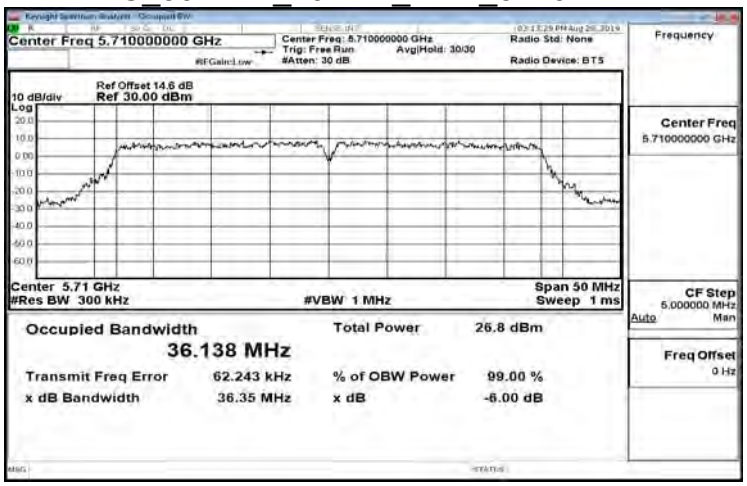
IC_802.11n_40MHz_Main_5310MHz



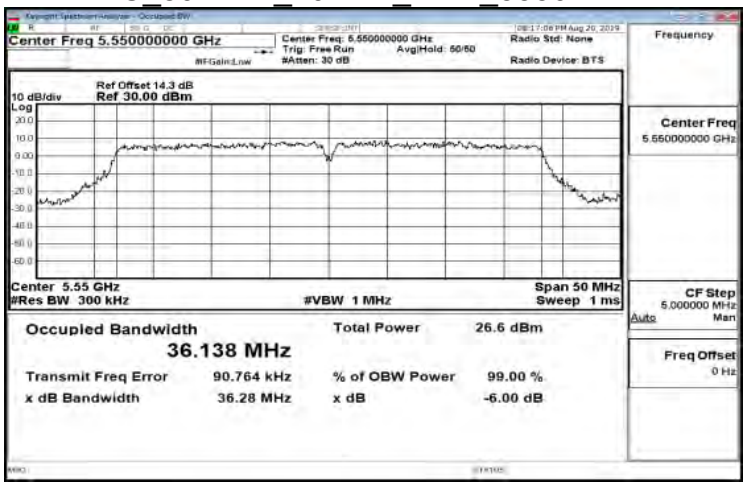
IC_802.11n_40MHz_Main_5510MHz



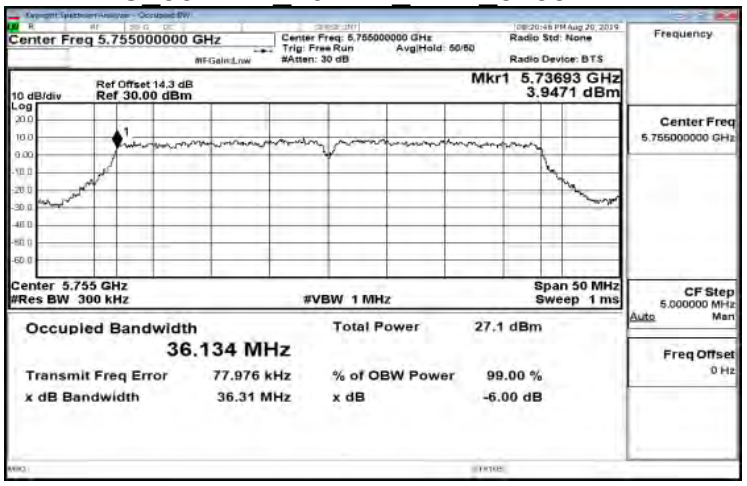
IC_802.11n_40MHz_Main_5710MHz



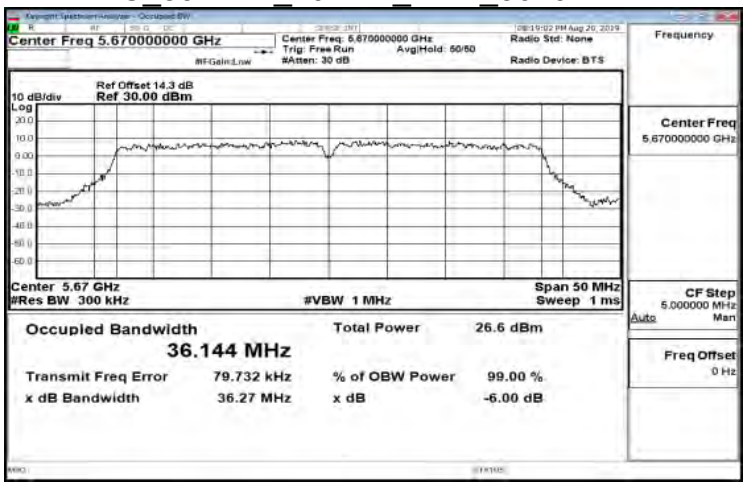
IC_802.11n_40MHz_Main_5550MHz



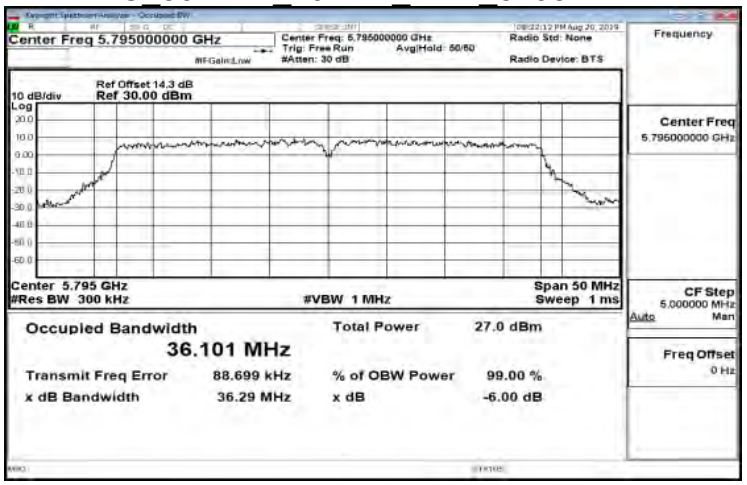
IC_802.11n_40MHz_Main_5755MHz



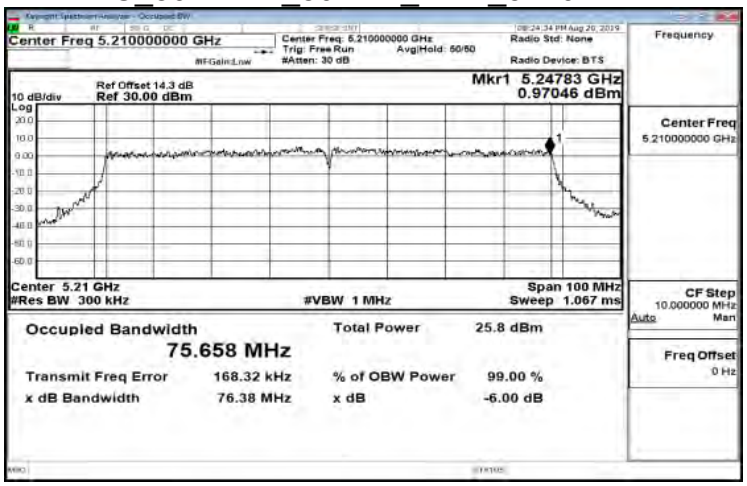
IC_802.11n_40MHz_Main_5670MHz



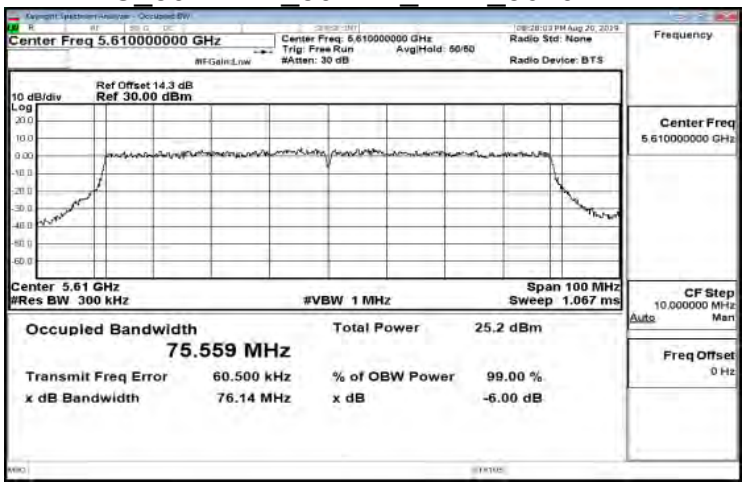
IC_802.11n_40MHz_Main_5795MHz



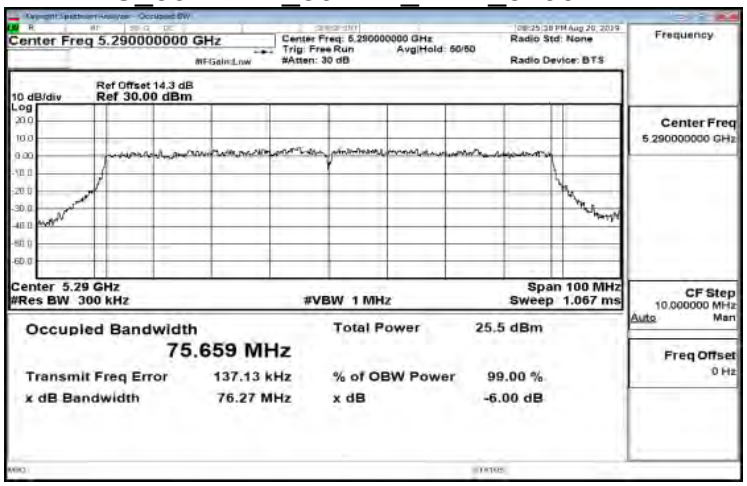
IC_802.11ac_80MHz_Main_5210MHz



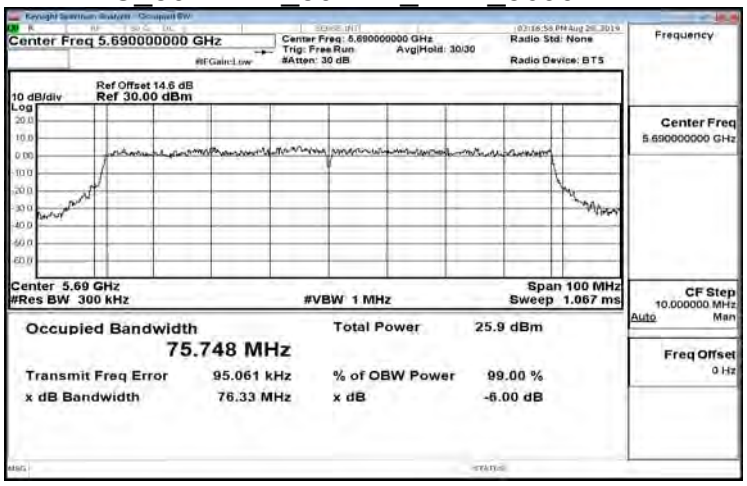
IC_802.11ac_80MHz_Main_5610MHz



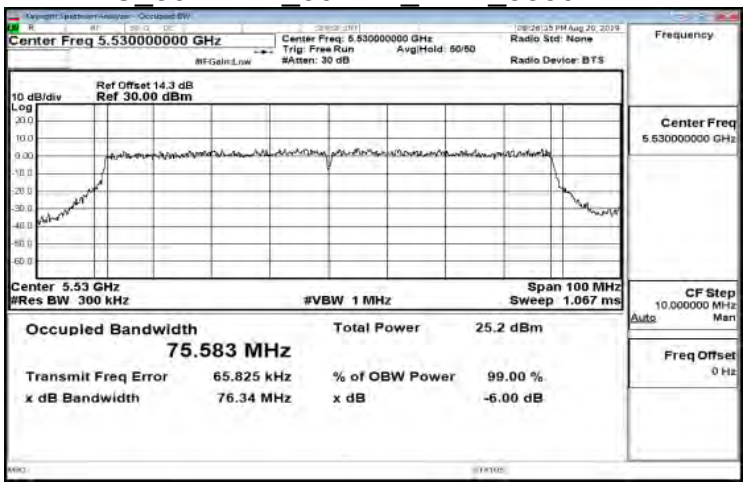
IC_802.11ac_80MHz_Main_5290MHz



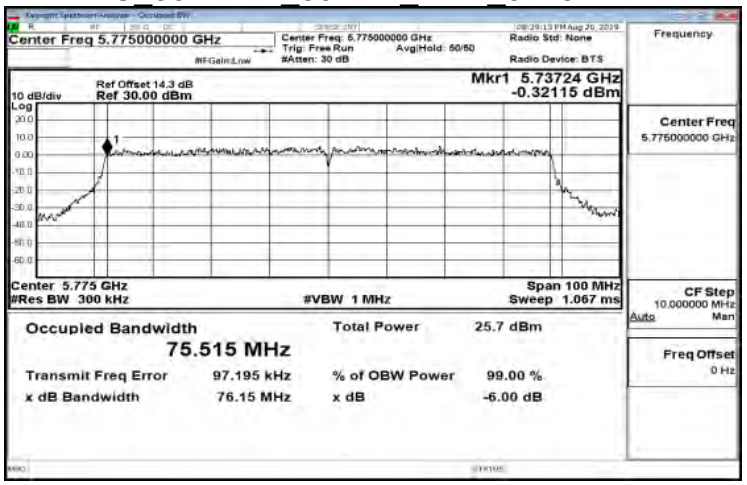
IC_802.11ac_80MHz_Main_5690MHz



IC_802.11ac_80MHz_Main_5530MHz



IC_802.11ac_80MHz_Main_5775MHz



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 Acess 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 Maximum Power Spectral Density shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.

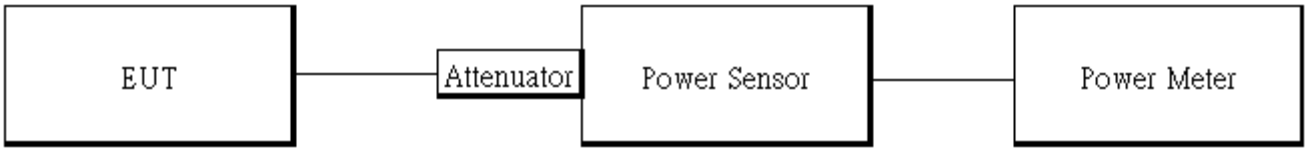
9.2 Measurement Procedure

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

9.3 Measurement Equipment Used

Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1242004	10/23/2018	10/22/2019
Power Sensor	Anritsu	MA2411B	1207365	10/23/2018	10/22/2019
Power Sensor	Anritsu	MA2411B	1207368	10/24/2018	10/23/2019
Attenuator	Marvelous	MVE2213-10	RF80	02/26/2019	02/25/2020
DC Block	PASTERNACK	PE8210	RF256	02/26/2019	02/25/2020
Spectrum Analyzer	Agilent	N9010A	MY53400256	11/21/2018	11/20/2019
Thermostatic/Hrgrosatic Chamber	GWINSTEK	GTC-288MH-CC	TH160402	05/16/2019	05/15/2020

9.4 Test Set-up



9.5 Measurement Result

Conducted output power (FCC)

802.11a_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	**12.76**	18.886	23.98	PASS
44	5220	6	12.54	17.953	23.98	PASS
48	5240	6	12.72	18.713	23.98	PASS
52	5260	6	**16.34**	43.066	23.98 or 11+10log(B) = 24.89	PASS
60	5300	6	16.31	42.769	23.98 or 11+10log(B) = 24.82	PASS
64	5320	6	16.25	42.183	23.98 or 11+10log(B) = 24.86	PASS
100	5500	6	16.42	43.867	23.98 or 11+10log(B) = 24.90	PASS
116	5580	6	16.46	44.272	23.98 or 11+10log(B) = 24.68	PASS
140	5700	6	**16.48**	44.477	23.98 or 11+10log(B) = 24.91	PASS
144	5720(U-NII 2C)	6	14.91	30.95	23.98 or 11+10log(B) = 24.72	PASS
144	5720 (U-NII 3)	6	10.97	12.51	30	PASS
149	5745	6	16.37	43.364	30	PASS
157	5785	6	**16.39**	43.565	30	PASS
165	5825	6	16.35	43.165	30	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	**13.59**	22.861	23.98	PASS
44	5220	MCS0	13.42	21.984	23.98	PASS
48	5240	MCS0	13.46	22.187	23.98	PASS
52	5260	MCS0	17.43	55.348	23.98 or 11+10log(B) = 24.92	PASS
60	5300	MCS0	**17.50**	56.247	23.98 or 11+10log(B) = 25.04	PASS
64	5320	MCS0	17.24	52.979	23.98 or 11+10log(B) = 25.16	PASS
100	5500	MCS0	17.40	54.967	23.98 or 11+10log(B) = 24.91	PASS
116	5580	MCS0	17.37	54.588	23.98 or 11+10log(B) = 25.22	PASS
140	5700	MCS0	**17.45**	55.603	23.98 or 11+10log(B) = 25.31	PASS
144	5720(U-NII 2C)	MCS0	15.32	34.02	23.98 or 11+10log(B) = 25.14	PASS
144	5720 (U-NII 3)	MCS0	11.78	15.08	30	PASS
149	5745	MCS0	17.32	53.963	30	PASS
157	5785	MCS0	**17.46**	55.731	30	PASS
165	5825	MCS0	17.39	54.840	30	PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	16.45	44.197	23.98	PASS
46	5230	MCS0	**16.46**	44.298	23.98	PASS
54	5270	MCS0	16.42	43.892	23.98 or 11+10log(B) = 27.17	PASS
62	5310	MCS0	**16.47**	44.401	23.98 or 11+10log(B) = 27.14	PASS
102	5510	MCS0	16.23	42.013	23.98 or 11+10log(B) = 27.13	PASS
110	5550	MCS0	**16.49**	44.605	23.98 or 11+10log(B) = 27.19	PASS
134	5670	MCS0	16.23	42.013	23.98 or 11+10log(B) = 27.20	PASS
142	5710(U-NII 2C)	MCS0	15.87	38.62	23.98 or 11+10log(B) = 27.10	PASS
142	5710 (U-NII 3)	MCS0	7.69	5.88	30	PASS
151	5755	MCS0	16.29	42.598	30	PASS
159	5795	MCS0	**16.44**	44.095	30	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	**15.48**	35.284	23.98	PASS
58	5290	MCS0	**15.33**	34.086	23.98 or 11+10log(B) = 30.16	PASS
106	5530	MCS0	**15.49**	35.365	23.98 or 11+10log(B) = 30.19	PASS
122	5610	MCS0	15.10	32.328	23.98 or 11+10log(B) = 30.21	PASS
138	5690(U-NII 2C)	MCS0	15.13	32.60	23.98 or 11+10log(B) = 30.19	PASS
138	5690 (U-NII 3)	MCS0	4.42	2.77	30	PASS
155	5775	MCS0	**15.29**	33.773	30	PASS

Conducted output power (IC)

802.11a_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	**16.34**	**43.066**	23.98 or 11+10log(B) = 23.24	PASS
60	5300	16.31	42.769	23.98 or 11+10log(B) = 23.25	PASS
64	5320	16.25	42.183	23.98 or 11+10log(B) = 23.23	PASS
100	5500	16.42	43.867	23.98 or 11+10log(B) = 23.25	PASS
116	5580	**16.46**	**44.272**	23.98 or 11+10log(B) = 23.24	PASS
140	5700	**16.48**	**44.477**	23.98 or 11+10log(B) = 23.25	PASS
144	5720(U-NII 2C)	14.91	30.952	23.98 or 11+11log(B) = 23.25	PASS
144	5720 (U-NII 3)	10.97	12.512	30	PASS
149	5745	16.37	43.364	30	PASS
157	5785	**16.39**	**43.565**	30	PASS
165	5825	16.35	43.165	30	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	17.43	55.348	23.98 or 11+10log(B) = 23.53	PASS
60	5300	**17.50**	**56.247**	23.98 or 11+10log(B) = 23.54	PASS
64	5320	17.24	52.979	23.98 or 11+10log(B) = 23.55	PASS
100	5500	**17.40**	**54.967**	23.98 or 11+10log(B) = 23.54	PASS
116	5580	17.37	54.588	23.98 or 11+10log(B) = 23.55	PASS
140	5700	**17.45**	**55.603**	23.98 or 11+10log(B) = 23.54	PASS
144	5720(U-NII 2C)	15.32	34.019	23.98 or 11+11log(B) = 23.54	PASS
144	5720 (U-NII 3)	11.78	15.083	30	PASS
149	5745	17.32	53.963	30	PASS
157	5785	**17.46**	**55.731**	30	PASS
165	5825	17.39	54.840	30	PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	16.42	43.892	23.98 or 11+10log(B) = 26.58	PASS
62	5310	**16.47**	**44.401**	23.98 or 11+10log(B) = 26.58	PASS
102	5510	16.23	42.013	23.98 or 11+10log(B) = 26.58	PASS
110	5550	**16.49**	**44.605**	23.98 or 11+10log(B) = 26.58	PASS
134	5670	**16.23**	**42.013**	23.98 or 11+10log(B) = 26.58	PASS
142	5710(U-NII 2C)	15.87	38.625	23.98 or 11+11log(B) = 26.58	PASS
142	5710 (U-NII 3)	7.69	5.878	30	PASS
151	5755	16.29	42.598	30	PASS
159	5795	**16.44**	**44.095**	30	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
58	5290	**15.33**	**34.086**	23.98 or 11+10log(B) = 29.79	PASS
106	5530	**15.49**	**35.365**	23.98 or 11+10log(B) = 29.78	PASS
138	5690(U-NII 2C)	**15.13**	**32.595**	23.98 or 11+12log(B) = 29.79	PASS
138	5690 (U-NII 3)	4.42	2.770	30	PASS
155	5775	**15.29**	**33.773**	30	PASS

EIRP

802.11a_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	**12.76**	2.240	**15.00**	**31.632**	23.01	or 10+10log(B)=	22.24	PASS
44	5220	12.54	2.240	14.78	30.070	23.01	or 10+10log(B)=	22.25	PASS
48	5240	12.72	2.240	14.96	31.342	23.01	or 10+10log(B)=	22.22	PASS
52	5260	**16.34**	2.300	**18.64**	**73.136**	30	or 17+10log(B)=	29.24	PASS
60	5300	16.31	2.300	18.61	72.633	30	or 17+10log(B)=	29.25	PASS
64	5320	16.25	2.300	18.55	71.636	30	or 17+10log(B)=	29.23	PASS
100	5500	16.42	3.640	20.06	101.422	30	or 17+10log(B)=	29.25	PASS
116	5580	**16.46**	3.640	**20.10**	**102.361**	30	or 17+10log(B)=	29.24	PASS
140	5700	**16.48**	3.640	**20.12**	**102.833**	30	or 17+10log(B)=	29.25	PASS

802.11n_HT20_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
36	5180	**13.59**	2.240	**15.83**	**38.291**	23.01	or 10+10log(B)=	22.52	PASS
44	5220	13.42	2.240	15.66	36.821	23.01	or 10+10log(B)=	22.52	PASS
48	5240	13.46	2.240	15.70	37.162	23.01	or 10+10log(B)=	22.51	PASS
52	5260	17.43	2.300	19.73	93.994	30	or 17+10log(B)=	29.53	PASS
60	5300	**17.50**	2.300	**19.80**	**95.521**	30	or 17+10log(B)=	29.54	PASS
64	5320	17.24	2.300	19.54	89.970	30	or 17+10log(B)=	29.55	PASS
100	5500	**17.40**	3.640	**21.04**	**127.087**	30	or 17+10log(B)=	29.54	PASS
116	5580	17.37	3.640	21.01	126.212	30	or 17+10log(B)=	29.55	PASS
140	5700	**17.45**	3.640	**21.09**	**128.558**	30	or 17+10log(B)=	29.54	PASS

802.11n_HT40_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	16.45	2.240	18.69	74.027	23.01	or 10+10log(B)=	25.58	PASS
46	5230	**16.46**	2.240	**18.70**	**74.197**	23.01	or 10+10log(B)=	25.58	PASS
54	5270	16.42	2.300	18.72	74.540	30	or 17+10log(B)=	32.58	PASS
62	5310	**16.47**	2.300	**18.77**	**75.403**	30	or 17+10log(B)=	32.58	PASS
102	5510	16.23	3.640	19.87	97.138	30	or 17+10log(B)=	32.58	PASS
110	5550	**16.49**	3.640	**20.13**	**103.131**	30	or 17+10log(B)=	32.58	PASS
134	5670	**16.23**	3.640	**19.87**	**97.138**	30	or 17+10log(B)=	32.58	PASS

802.11ac_VHT80_Ch0

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	**15.48**	2.240	**17.72**	**59.098**	23.01 or 10+10log(B)= 28.79	PASS
58	5290	**15.33**	2.300	**17.63**	**57.886**	30 or 17+10log(B)= 35.79	PASS
106	5530	**15.49**	3.640	**19.13**	**81.766**	30 or 17+10log(B)= 35.78	PASS

10 MAXIMUM 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 Maximum Power Spectral Density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

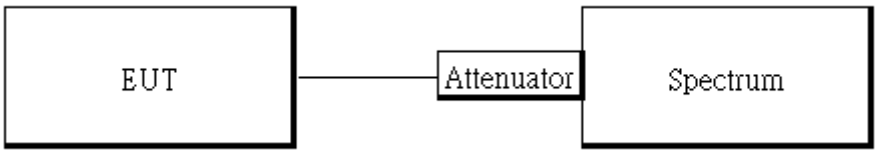
10.2 Measurement Procedure

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≥ 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. User 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.

10.3 Measurement Equipment Used

Conducted Room					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
DC Block	PASTERNACK	PE8210	RF256	02/26/2019	02/25/2020
Spectrum Analyzer	Agilent	N9010A	MY53400256	11/21/2018	11/20/2019
Thermostatic/Hrgrosatic Chamber	GWINSTEK	GTC-288MH-CC	TH160402	05/16/2019	05/15/2020
Attenuator	Marvelous	MVE2213-10	RF80	02/26/2019	02/25/2020

10.4 Test Set-up



10.5 Measurement Result

POWER DENSITY 802.11a MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180.00	6.57	0.20	6.77	11	-4.23
5220.00	6.16	0.20	6.36	11	-4.64
5240.00	5.95	0.20	6.15	11	-4.85
5260.00	9.93	0.20	10.13	11	-0.87
5300.00	9.74	0.20	9.94	11	-1.06
5320.00	9.61	0.20	9.81	11	-1.19
5500.00	9.64	0.20	9.84	11	-1.16
5580.00	9.54	0.20	9.74	11	-1.26
5700.00	10.55	0.20	10.75	11	-0.25
5720 (U-NII 2C)	10.55	0.20	10.75	11	-0.25
5720 (U-NII 3)	6.67	0.20	6.88	30	-23.12
5745.00	7.11	0.20	7.31	30	-22.69
5785.00	7.45	0.20	7.65	30	-22.35
5825.00	6.93	0.20	7.13	30	-22.87

POWER DENSITY 802.11n HT20 MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	6.84	0.23	7.07	11	-3.93
5220	6.52	0.23	6.75	11	-4.25
5240	6.84	0.23	7.07	11	-3.93
5260	10.72	0.23	10.95	11	-0.05
5300	10.21	0.23	10.44	11	-0.56
5320	10.03	0.23	10.26	11	-0.74
5500	9.79	0.23	10.02	11	-0.98
5580	9.94	0.23	10.17	11	-0.83
5700	10.38	0.23	10.61	11	-0.39
5720 (U-NII 2C)	10.67	0.23	10.90	11	-0.10
5720 (U-NII 3)	6.50	0.23	6.73	30	-23.27
5745	7.32	0.23	7.55	30	-22.45
5785	7.99	0.23	8.22	30	-21.78
5825	7.23	0.23	7.46	30	-22.54

POWER DENSITY 802.11n HT40 MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	6.72	0.41	7.13	11	-3.87
5230	6.41	0.41	6.82	11	-4.18
5270	6.34	0.41	6.75	11	-4.25
5310	6.23	0.41	6.64	11	-4.36
5510	6.05	0.41	6.46	11	-4.54
5550	6.3	0.41	6.71	11	-4.29
5670	6.41	0.41	6.82	11	-4.18
5710 (U-NII 2C)	7.21	0.41	7.62	11	-3.38
5710 (U-NII 3)	2.44	0.41	2.85	30	-27.15
5755	3.93	0.41	4.34	30	-25.66
5795	3.78	0.41	4.19	30	-25.81

POWER DENSITY 802.11ac VHT80 MODE					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	2.21	0.79	3.00	11	-8.00
5290	2.18	0.79	2.97	11	-8.03
5530	1.53	0.79	2.32	11	-8.68
5610	1.50	0.79	2.29	11	-8.71
5690 (U-NII 2C)	2.33	0.79	3.11	11	-7.89
5690 (U-NII 3)	-2.16	0.79	-1.37	30	-31.37
5775	-0.11	0.79	0.68	30	-29.32

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	6.77	2.24	9.01	10	-0.99
5220	6.36	2.24	8.60	10	-1.40
5240	6.15	2.24	8.39	10	-1.61

EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	7.07	2.24	9.31	10	-0.69
5220	6.75	2.24	8.99	10	-1.01
5240	7.07	2.24	9.31	10	-0.69

EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	7.13	2.24	9.37	10	-0.63
5220	6.82	2.24	9.06	10	-0.94

EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5210	3.00	2.24	5.24	10	-4.76

Note:
Cable Loss= 14.3 dB