TEST REPORT

Applicant:	Shenzhen Magic Vision Digital Technology Co., Ltd.
Address of Applicant:	5/F, building 2, new material port, Changyuan, Nanshan District, Shenzhen 518110, China
Manufacturer:	Sichuan Tianyi Comheart Telecom Co., Ltd.
Address of Manufacturer:	No. 198, Section 1, Xueshan Avenue, Dayi County, Chengdu, Sichuan, China

Equipment Under Test (EUT)

Product Name:	ECPN W6
Model No.:	W6
Trade Mark:	ECPN
FCC ID:	2AXSA-W6
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	November 24, 2020
Date of Test:	November 24, 2020- December 05, 2020
Date of report issued:	December 05, 2020
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo
Laboratory Manager

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

2 Version

Version No.	Date	Description
00	*December 05, 2020*	*Original*

Prepared By: ***Date:*** *December 05, 2020*

Project Engineer

Check By: ***Date:*** *December 05, 2020*

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407(a)(3)	Pass
Channel Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407(a)(3)	Pass
Band Edge	15.407(b)(4)	Pass
Spurious Emission	15.205/15.209/15.407(b)(4)	Pass
Frequency Stability	15.407(g)	Pass

Remarks：

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013.*

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	ECPN W6
Model No.:	W6
Serial No.:	8C0E60-D3BUS8COE600255A8
Hardware Version:	V1.0.0
Software Version:	V1.0.1
Test sample(s) ID:	GTS202010000093-1
Sample(s) Status:	Engineer sample
Operation Frequency:	802.11a/802.11n(HT20)/802.11ac(HT20)/802.11ax(HT20): 5745MHz ~ 5825MHz 802.11n(HT40)/802.11ac(HT40)/802.11ax(HT40): 5755MHz ~ 5795MHz 802.11ac(HT80)/802.11ax(HT80): 5775MHz
Channel numbers:	802.11a/802.11n(HT20)/ 802.11ac(HT20)/802.11ax(HT20): 5 802.11n(HT40)/ 802.11ac(HT40)/802.11ax(HT40): 2 802.11ac(HT80)/802.11ax(HT80): 1
Channel bandwidth:	802.11a/802.11n(HT20)/802.11ac(HT20)/802.11ax(HT20) : 20MHz 802.11n(HT40)/802.11ac(HT40)/802.11ax(HT40) : 40MHz 802.11ac(HT80)/802.11ax(HT80): 80MHz
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) MIMO: 802.11n/ac/ax SISO: 802.11a
Antenna Type:	Dipole
Antenna gain:	ANT0:5dBi, ANT1:5dBi,MIMO:5dBi
Power supply:	Adapter MODEL: TS-A018-120015An INPUT:AC 100-240V, 50/60Hz 0.6A OUTPUT:DC 12V, 1.5A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	163	5815MHz
165	5825MHz						

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**		
	802.11 a/n/ac/ax(HT20)	802.11 n/ac/ax(HT40)	802.11ac/ax(HT80)
Lowest channel	5745	5755	
Middle channel	5785		5775
Highest channel	5825	5795	

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6Mbps
802.11n(HT20)	6.5Mbps
802.11n(HT40)	13Mbps
802.11ac(HT20)	6.5Mbps
802.11ac(HT40)	13.5Mbps
802.11ac(HT80)	29.3Mbps
802.11ax(HT20)	8.6 Mbps
802.11ax(HT40)	17.2 Mbps
802.11ax(HT80)	36 Mbps
802.11ax(HT160)	/

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

● **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone,

Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 25 2020	June. 24 2021
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 25 2020	June. 24 2021
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 25 2020	June. 24 2021
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 25 2020	June. 24 2021
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 25 2020	June. 24 2021

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

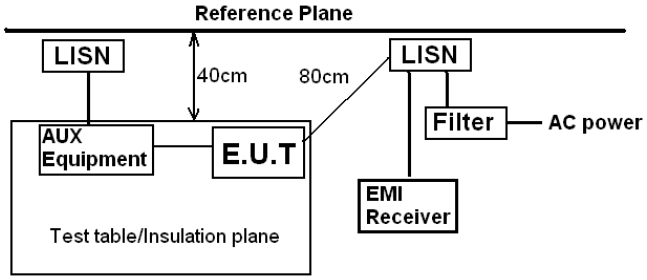
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

7 Test results and Measurement Data

7.1 Antenna requirement

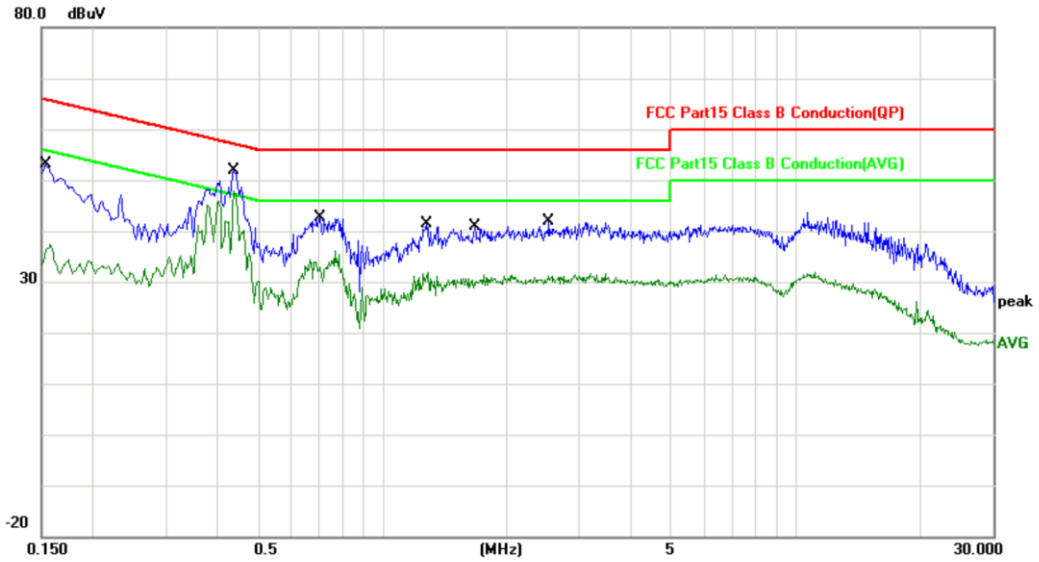
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: *An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.*	
E.U.T Antenna:	
The antennas are Dipole antenna, the best case gain of the antennas are 5dBi, reference to the appendix II for details	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1012mbar
Test voltage:	AC 120V, 60Hz
Test results:	Pass

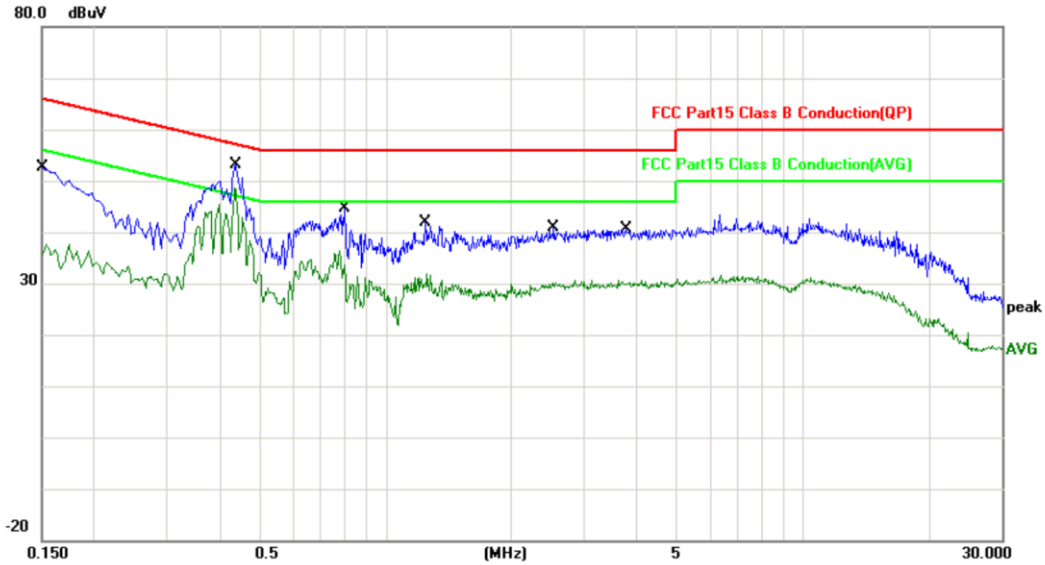
Remark: Both high and low voltages have been tested to show only the worst low voltage test data.

Measurement data
Line:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	31.31	19.50	50.81	65.78	-14.97	QP	
2		0.1540	16.90	19.50	36.40	55.78	-19.38	AVG	
3		0.4380	29.82	19.53	49.35	57.10	-7.75	QP	
4	*	0.4380	23.39	19.53	42.92	47.10	-4.18	AVG	
5		0.7100	20.02	19.56	39.58	56.00	-16.42	QP	
6		0.7100	13.70	19.56	33.26	46.00	-12.74	AVG	
7		1.2820	15.94	19.73	35.67	56.00	-20.33	QP	
8		1.2820	9.26	19.73	28.99	46.00	-17.01	AVG	
9		1.6780	15.35	19.91	35.26	56.00	-20.74	QP	
10		1.6780	9.68	19.91	29.59	46.00	-16.41	AVG	
11		2.5300	15.96	20.41	36.37	56.00	-19.63	QP	
12		2.5300	10.26	20.41	30.67	46.00	-15.33	AVG	

Neutral:

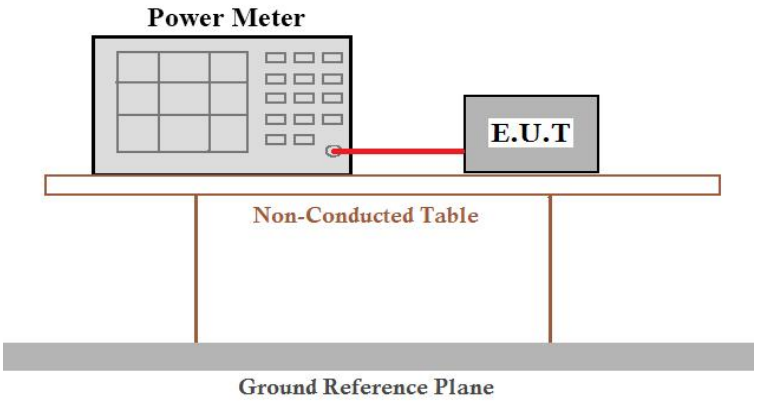


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	29.06	19.70	48.76	66.00	-17.24	QP	
2		0.1500	15.82	19.70	35.52	56.00	-20.48	AVG	
3		0.4380	30.03	19.73	49.76	57.10	-7.34	QP	
4	*	0.4380	23.68	19.73	43.41	47.10	-3.69	AVG	
5		0.7980	16.89	19.81	36.70	56.00	-19.30	QP	
6		0.7980	10.29	19.81	30.10	46.00	-15.90	AVG	
7		1.2460	13.72	19.97	33.69	56.00	-22.31	QP	
8		1.2460	8.44	19.97	28.41	46.00	-17.59	AVG	
9		2.5380	14.63	20.58	35.21	56.00	-20.79	QP	
10		2.5380	8.57	20.58	29.15	46.00	-16.85	AVG	
11		3.7620	14.96	20.27	35.23	56.00	-20.77	QP	
12		3.7620	9.37	20.27	29.64	46.00	-16.36	AVG	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both *limits and measurement with the average detector receiver is unnecessary.*

7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 E Section 15.407(a)(3)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

ANT 0:

Test CH	Peak Output Power (dBm)						Limit(dBm)	Result
	802.11a	802.11n (HT20)	802.11ax (HT20)	802.11n (HT40)	802.11ax (HT40)	802.11ax (HT80)		
Lowest	21.36	23.46	23.58	24.61	23.61	---	30.00	Pass
Middle	21.54	23.21	22.89	---	---	24.62		
Highest	21.68	23.45	21.65	24.39	23.68	---		

ANT 1:

Test CH	Peak Output Power (dBm)						Limit(dBm)	Result
	802.11a	802.11n (HT20)	802.11ax (HT20)	802.11n (HT40)	802.11ax (HT40)	802.11ax (HT80)		
Lowest	21.36	23.19	23.61	24.22	23.51	---	30.00	Pass
Middle	21.54	23.42	23.08	---	---	24.19		
Highest	21.68	23.51	21.82	24.34	23.82	---		

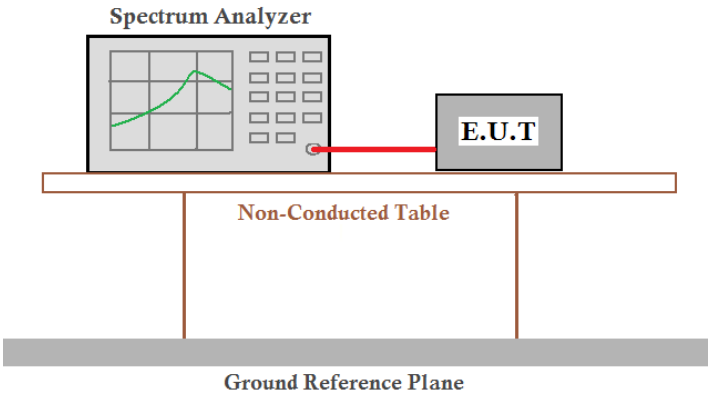
Remark: “---“is not applicable

MIMO:

Test mode	Channel	ANT 0 power (dBm)	ANT 1 power (dBm)	MIMO power (dBm)	Limit (dBm)	Result
802.11n(HT20)	Lowest	23.46	23.19	26.34	30	Pass
	Middle	23.21	23.42	26.33		
	Highest	23.45	23.51	26.49		
802.11ax(HT20)	Lowest	23.58	23.61	26.61		
	Middle	22.89	23.08	26.00		
	Highest	21.65	21.82	24.75		
802.11n(HT40)	Lowest	24.61	24.22	27.43		
	Highest	24.39	24.34	27.38		
802.11ax(HT40	Lowest	23.61	23.51	26.57		
	Highest	23.68	23.82	26.76		
802.11ax(HT80)	Middle	24.62	24.19	27.42		

Note: transmit signals are completely un*correlated*,
Directional gain=10 x log [($10^{5/10}$ + $10^{5/10}$)/2]=5dBi

7.4 Channel Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(e)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)					6dB Occupied Bandwidth (MHz)				
		802.11a	802.11n(HT20)		802.11ax(HT20)		802.11a	802.11n(HT20)		802.11ax(HT20)	
		ANT 0	ANT 0	ANT 1	ANT 0	ANT 1	ANT 0	ANT 0	ANT 1	ANT 0	ANT 1
149	5745	17.357	18.212	18.093	18.367	18.145	16.440	17.680	17.720	17.640	17.680
157	5785	17.487	18.260	18.146	19.184	19.281	16.440	17.680	17.680	18.840	18.760
165	5825	17.376	18.230	18.100	19.189	19.266	16.440	17.640	17.680	19.000	18.960

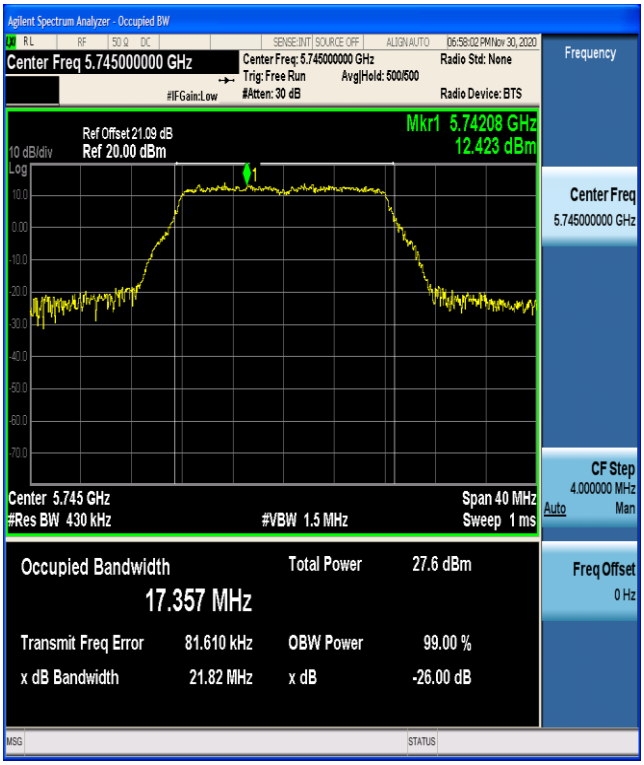
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)				6dB Occupied Bandwidth (MHz)			
		802.11n(HT40)		802.11ax(HT40)		802.11n(HT40)		802.11ax(HT40)	
		ANT 0	ANT 1	ANT 0	ANT 1	ANT 0	ANT 1	ANT 0	ANT 1
151	5755	36.545	36.729	36.701	36.563	36.160	36.560	36.400	36.480
159	5795	36.530	36.776	37.724	37.704	36.240	36.480	37.440	37.840

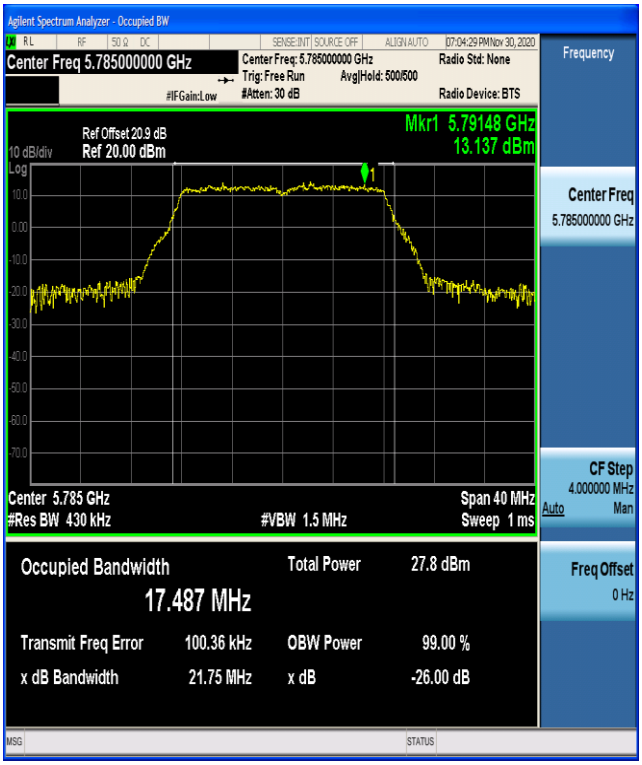
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		6dB Occupied Bandwidth (MHz)	
		802.11ax(HT80)		802.11ax(HT80)	
		ANT 0	ANT 1	ANT 0	ANT 1
155	5775	77.178	77.310	76.800	76.160

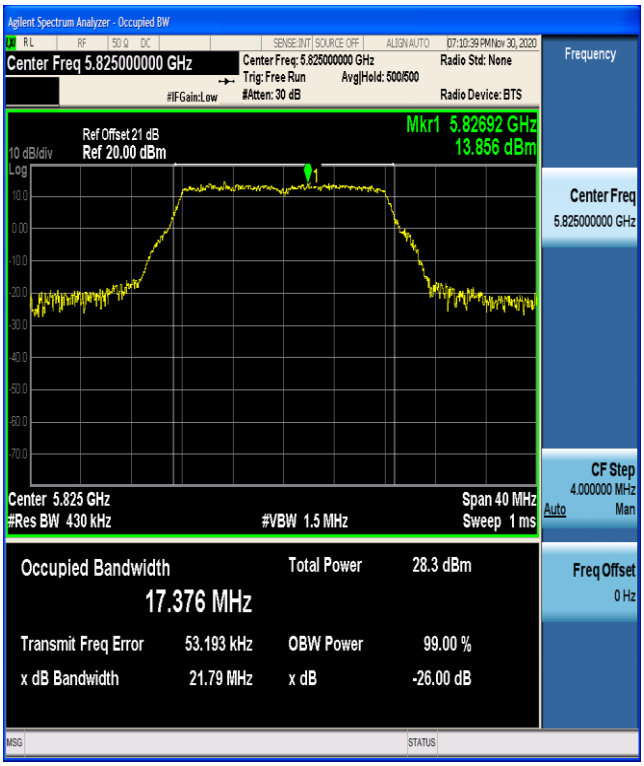
Test plot as follows:

99% Occupied Bandwidth

802.11a







802.11n(HT20)

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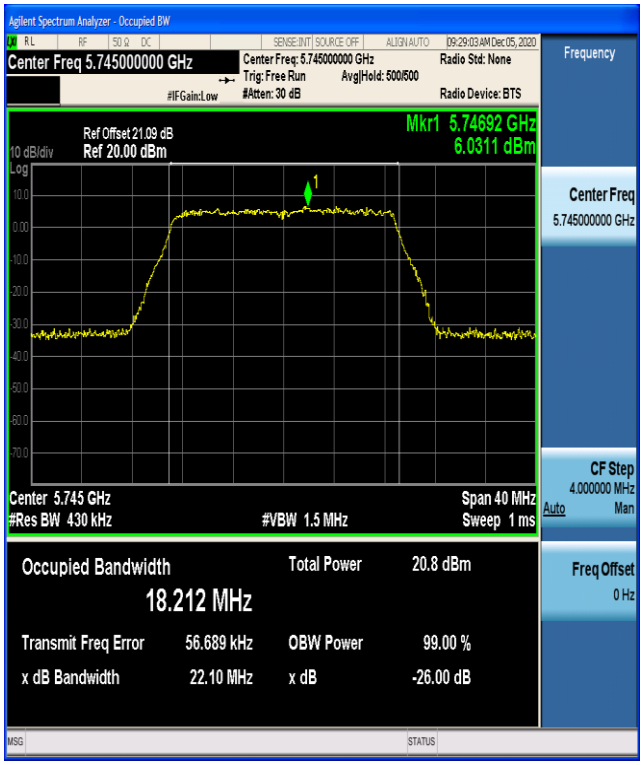

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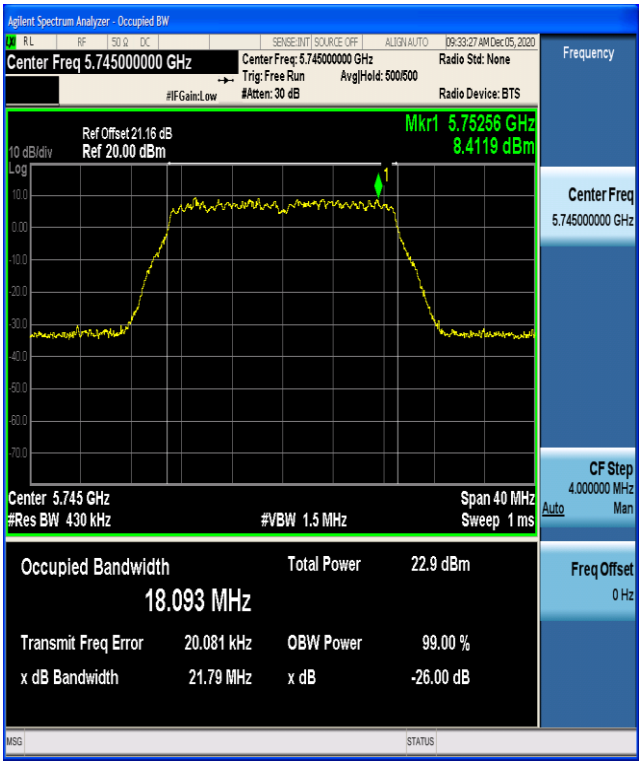

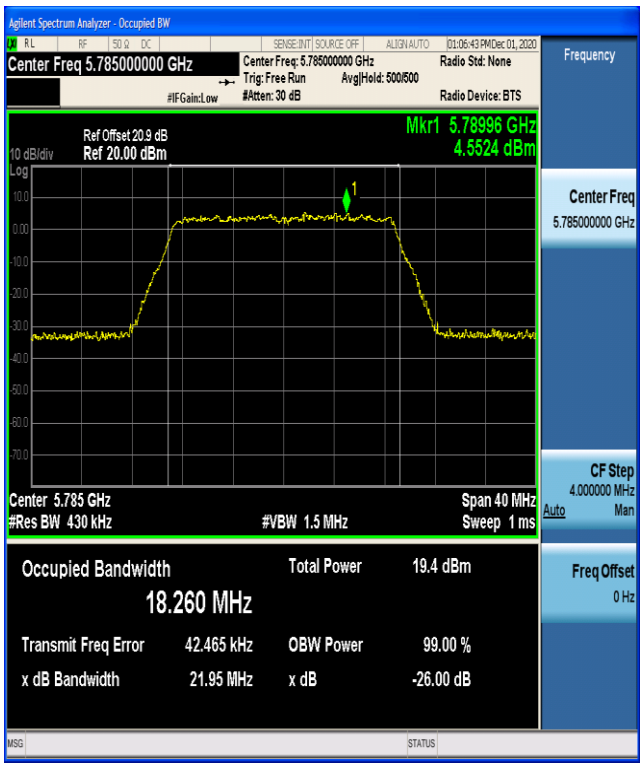

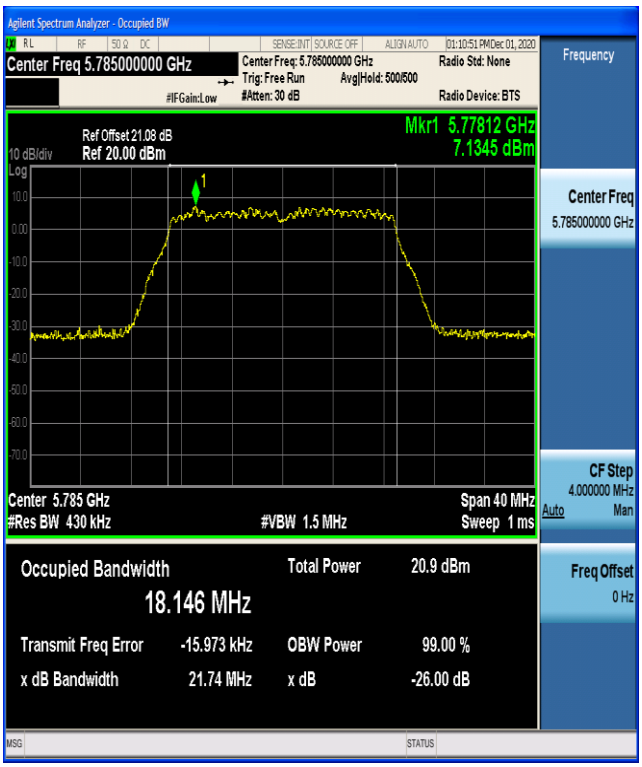

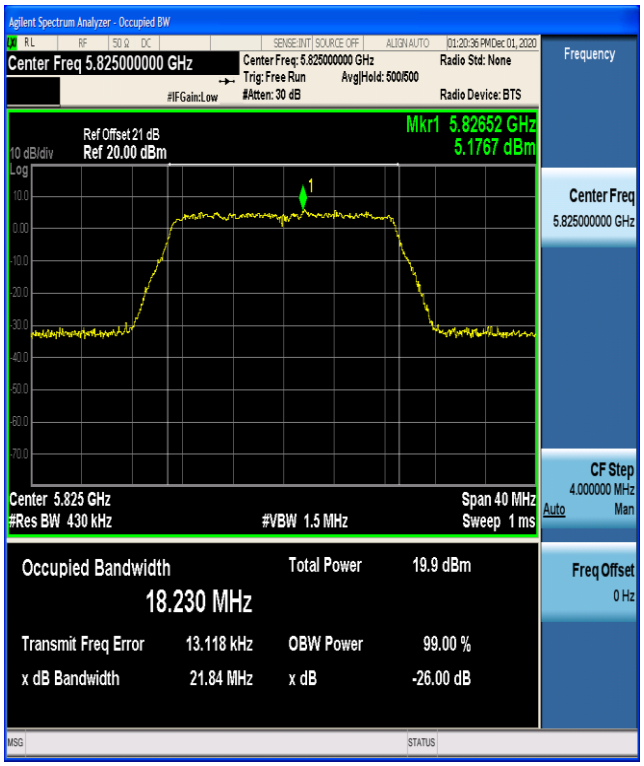

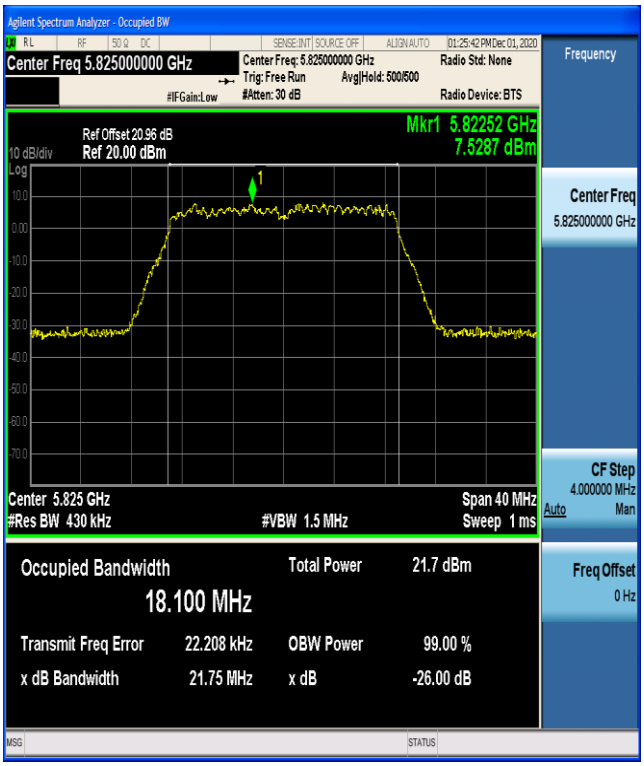

802.11n(HT40)

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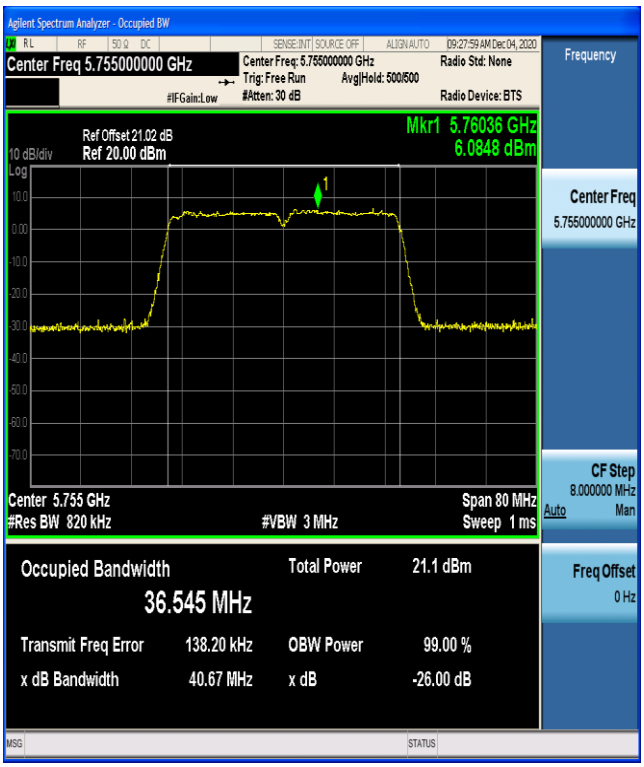

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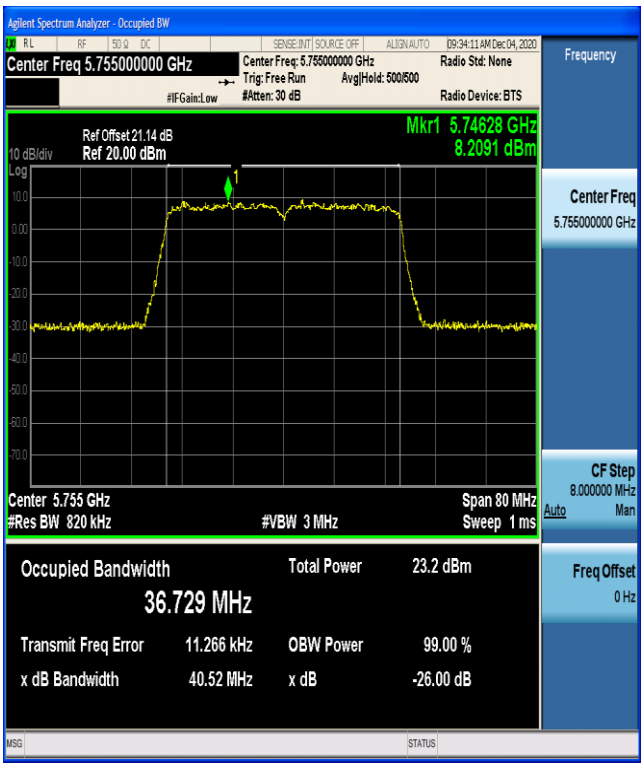

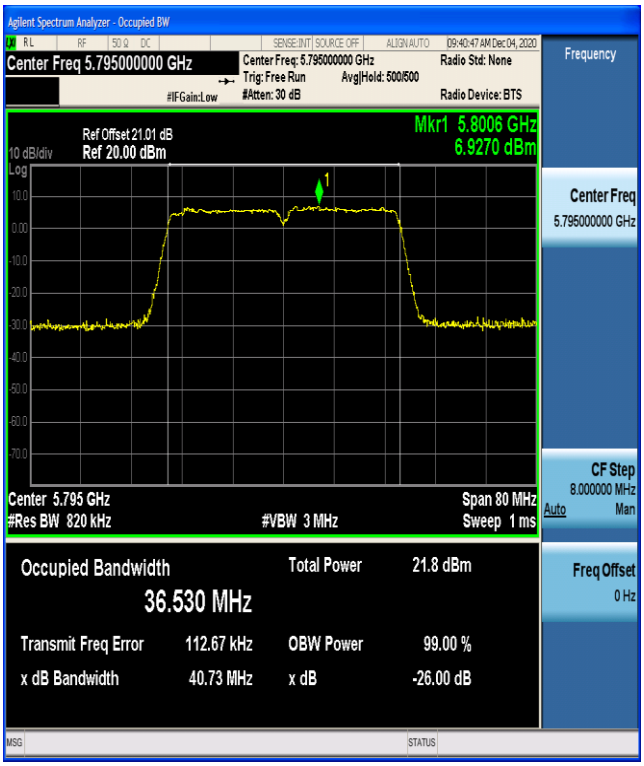

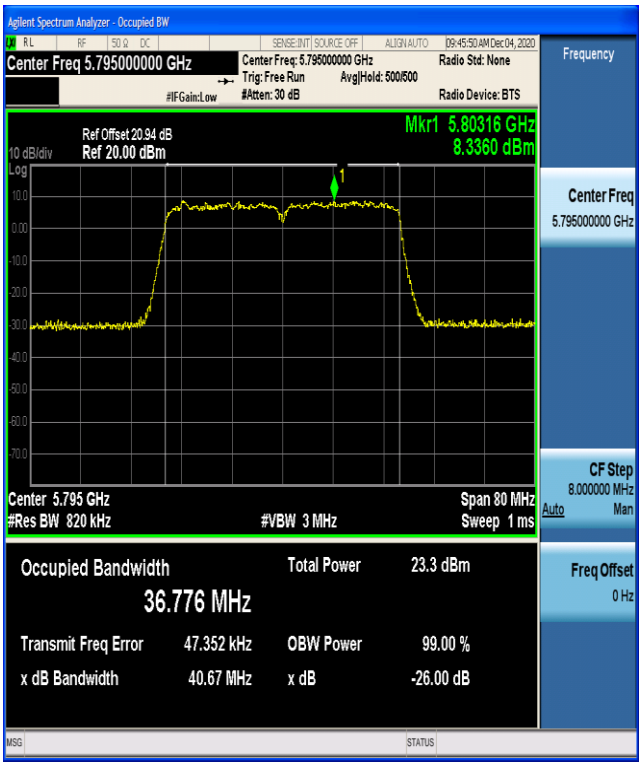

802.11ax(HT20)

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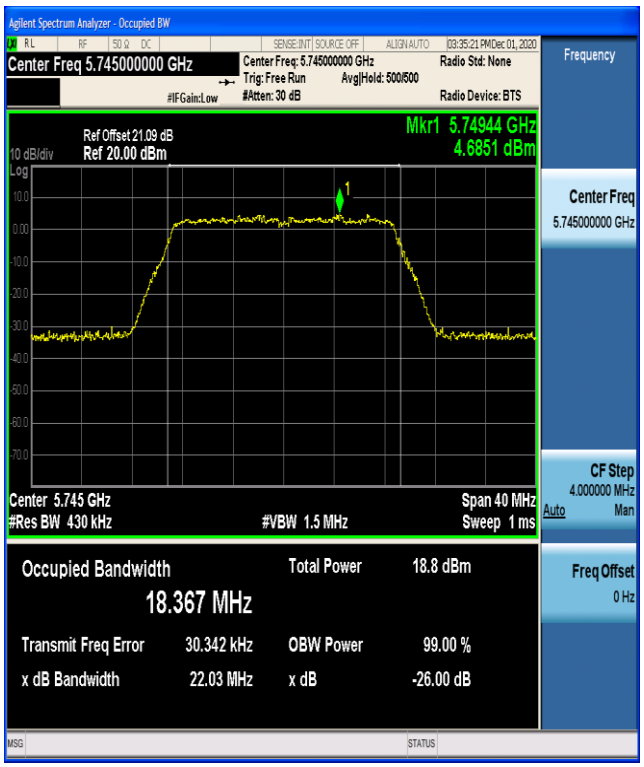

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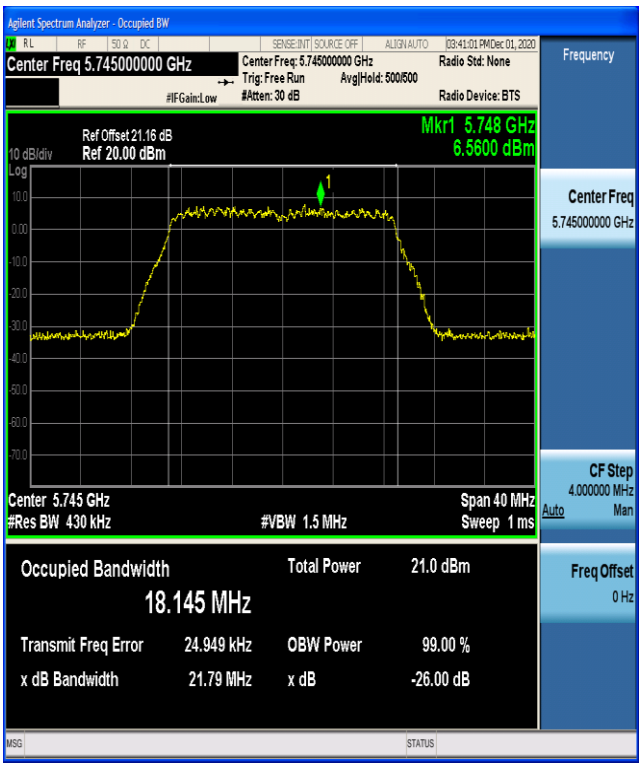
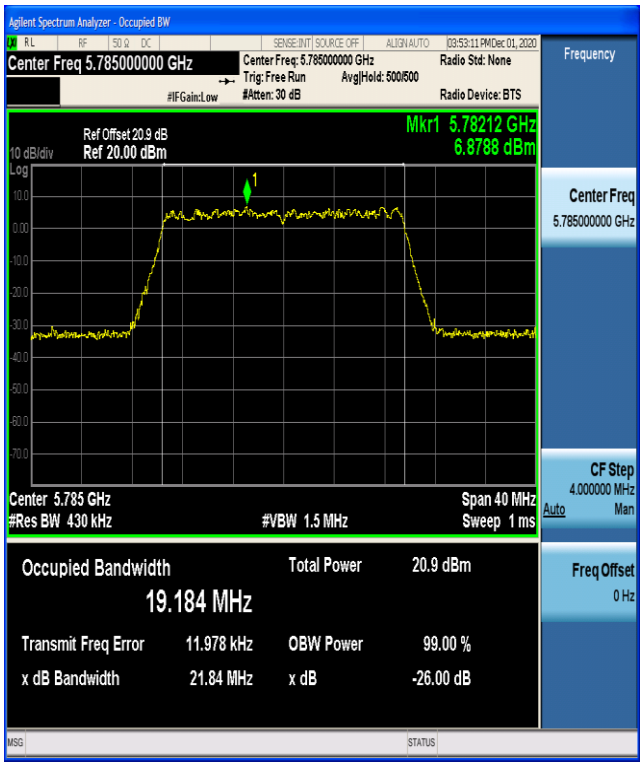
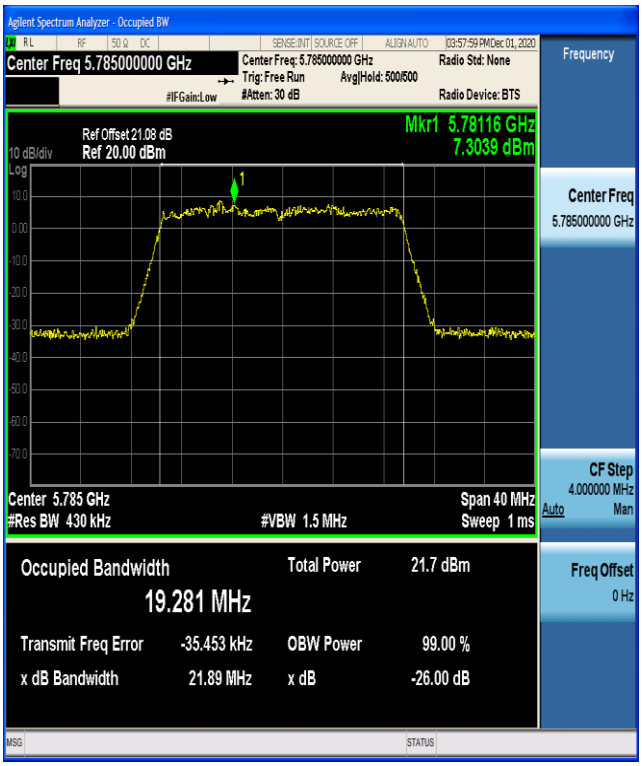
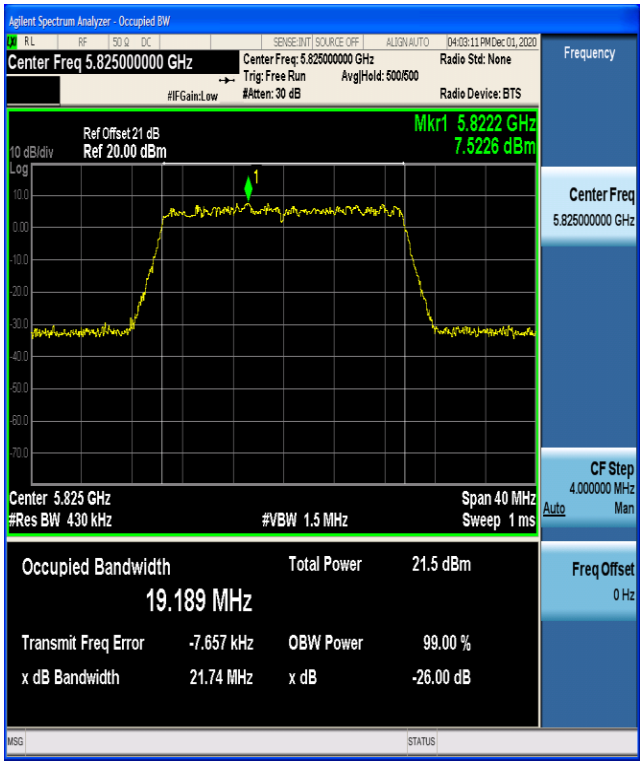
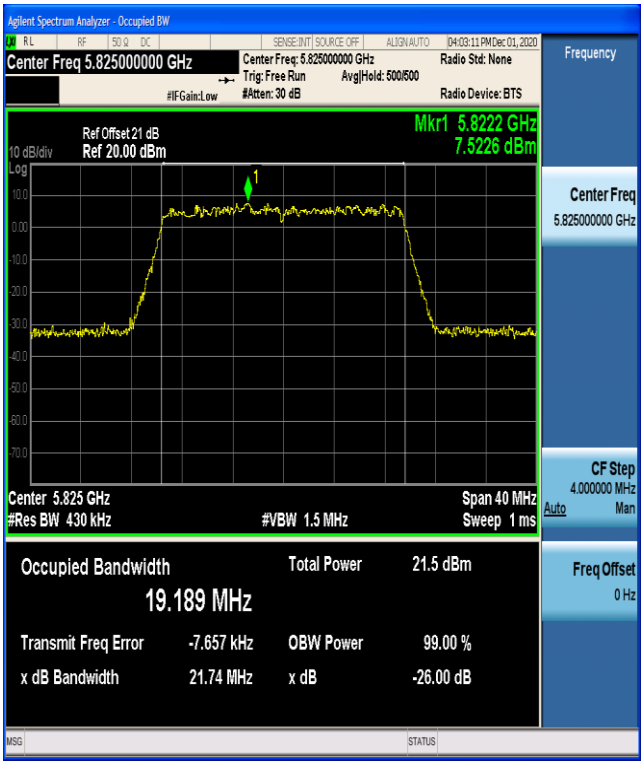



Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.785000000 GHz
Center Freq: 5.785000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 20.9 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.78212 GHz
6.8788 dBm
Center 5.785 GHz
#Res BW 430 kHz
#VBW 1.5 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
19.184 MHz
Total Power 20.9 dBm
Transmit Freq Error 11.978 kHz
OBW Power 99.00 %
x dB Bandwidth 21.84 MHz
x dB -26.00 dB
Frequency
Center Freq
5.785000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz

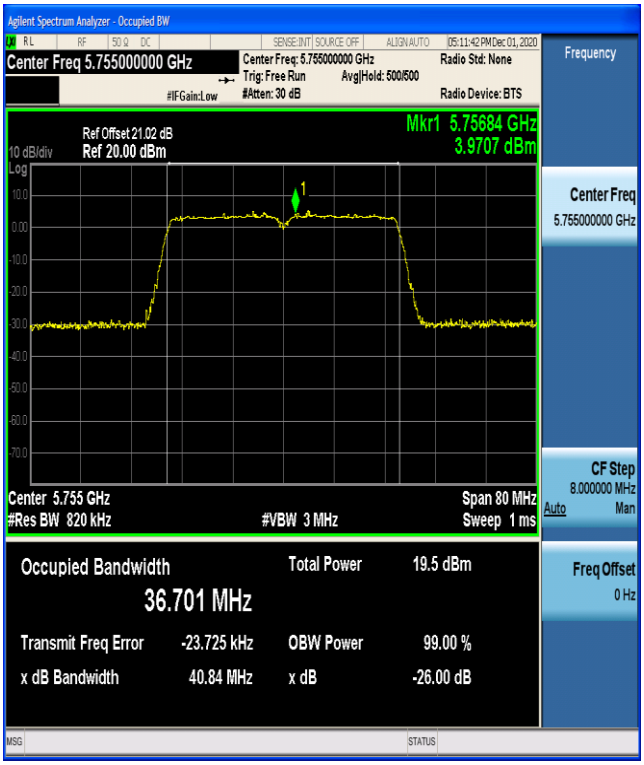

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.785000000 GHz
Center Freq: 5.785000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 21.08 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.78116 GHz
7.3039 dBm
Center 5.785 GHz
#Res BW 430 kHz
#VBW 1.5 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
19.281 MHz
Total Power 21.7 dBm
Transmit Freq Error -35.453 kHz
OBW Power 99.00 %
x dB Bandwidth 21.89 MHz
x dB -26.00 dB
Frequency
Center Freq
5.785000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.825000000 GHz
Center Freq: 5.825000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 21 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.8222 GHz
7.5226 dBm
Center 5.825 GHz
#Res BW 430 kHz
#VBW 1.5 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
19.189 MHz
Total Power 21.5 dBm
Transmit Freq Error -7.657 kHz
OBW Power 99.00 %
x dB Bandwidth 21.74 MHz
x dB -26.00 dB
Frequency
Center Freq
5.825000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.825000000 GHz
Center Freq: 5.825000000 GHz
Trig: Free Run
Avg|Hold: 500/500
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 21 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.8222 GHz
7.5226 dBm
Center 5.825 GHz
#Res BW 430 kHz
#VBW 1.5 MHz
Span 40 MHz
Sweep 1 ms
Occupied Bandwidth
19.189 MHz
Total Power 21.5 dBm
Transmit Freq Error -7.657 kHz
OBW Power 99.00 %
x dB Bandwidth 21.74 MHz
x dB -26.00 dB
Frequency
Center Freq
5.825000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz

802.11ax(HT40)

ANT0



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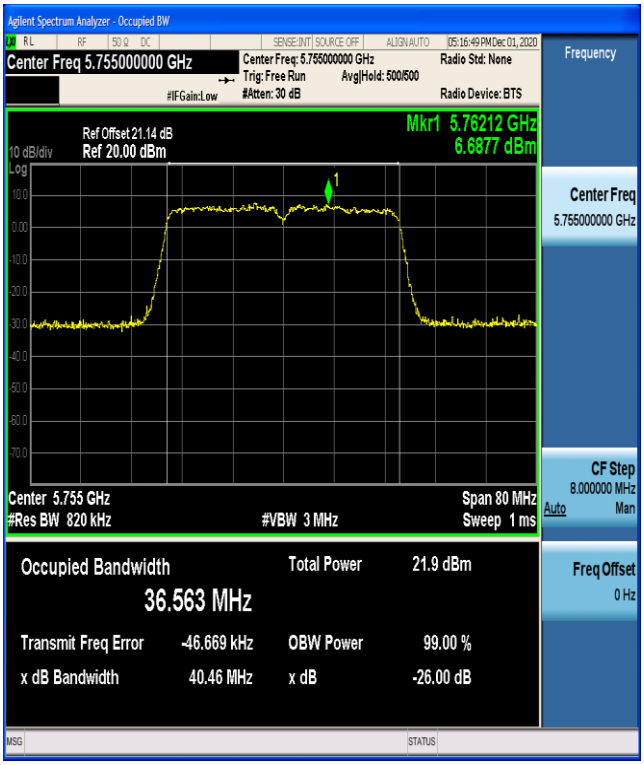

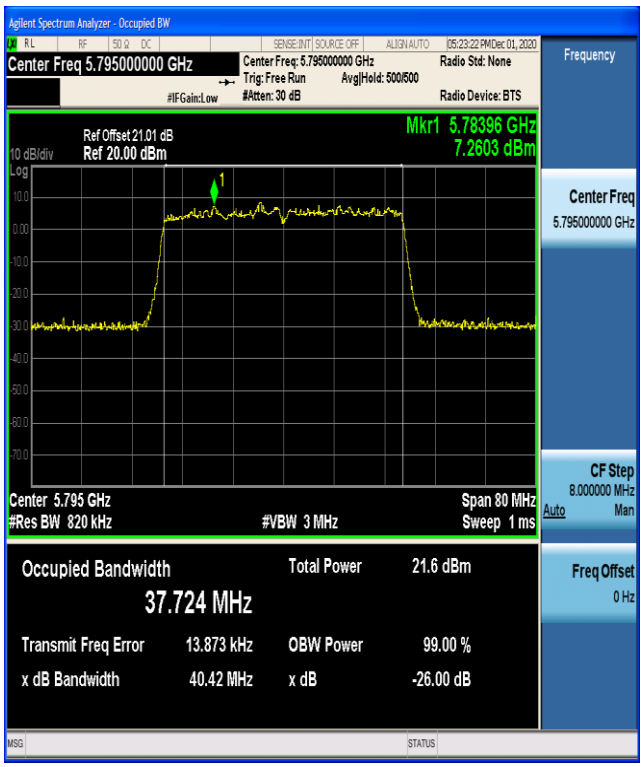

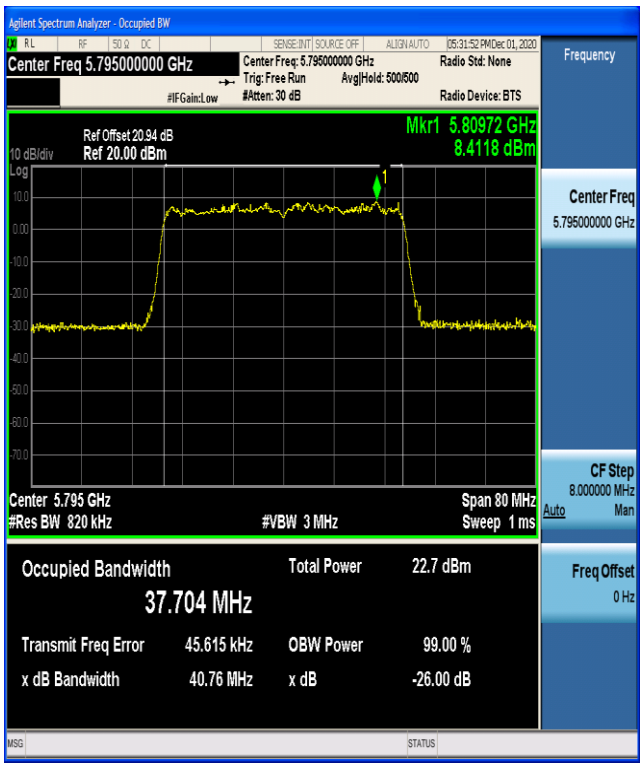

802.11ax(HT80)

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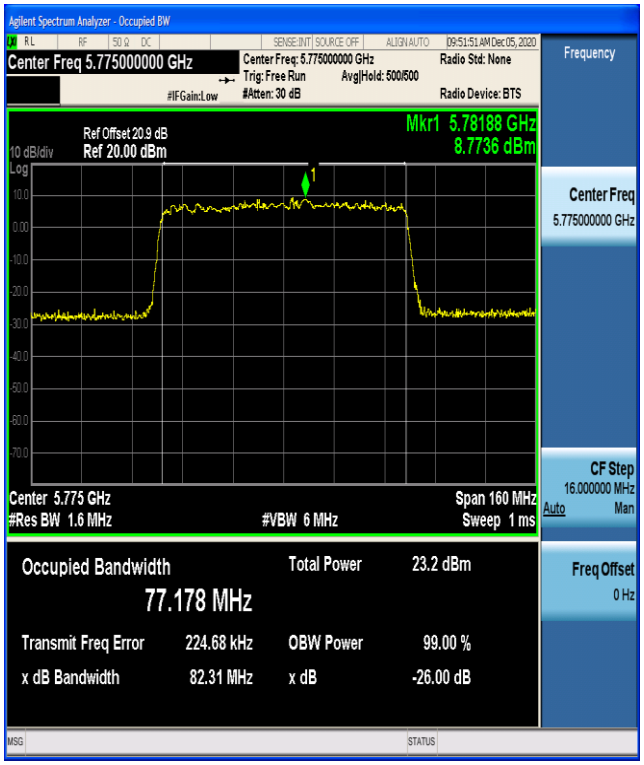

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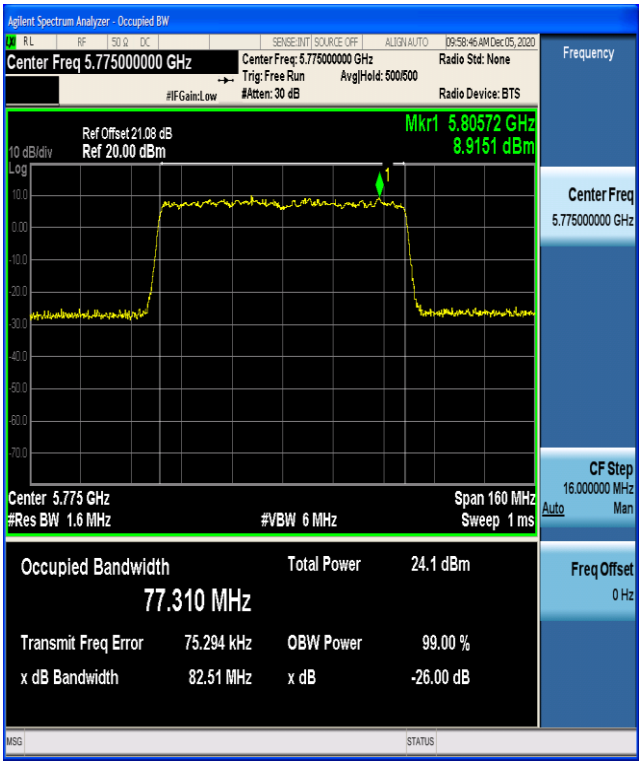
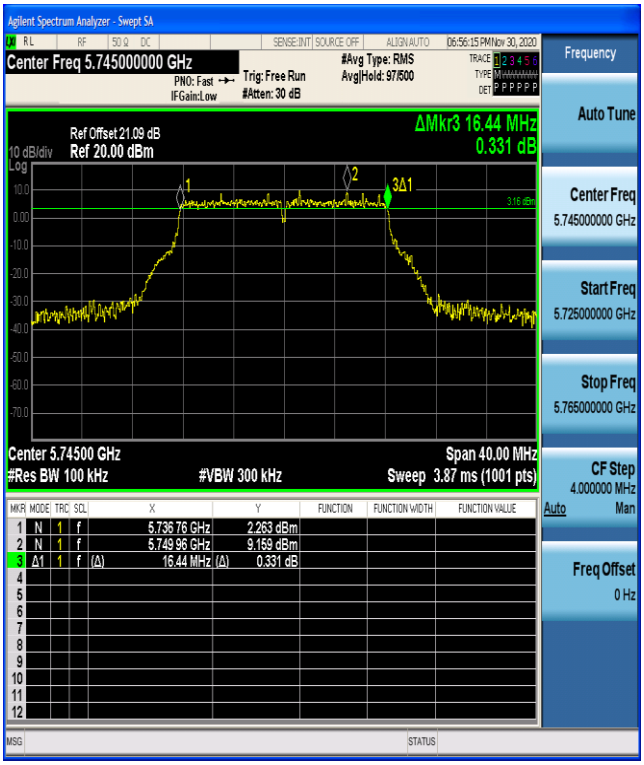
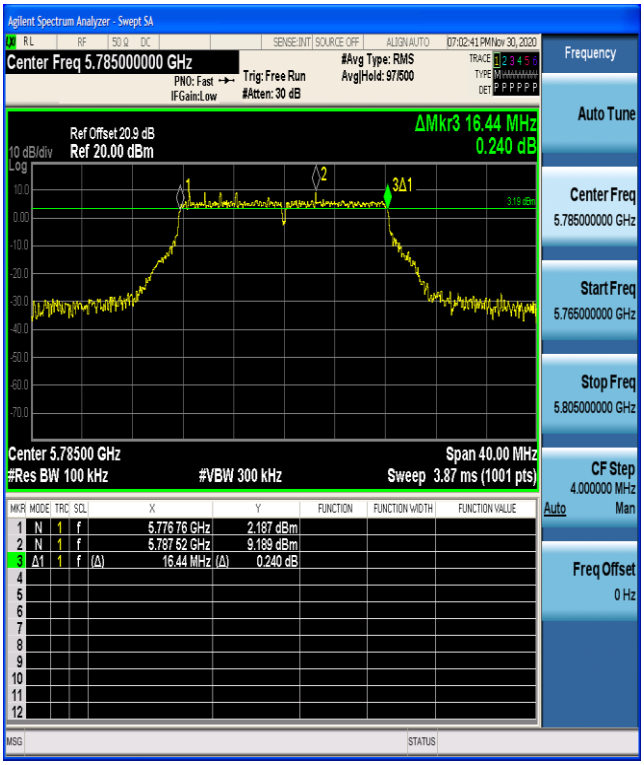
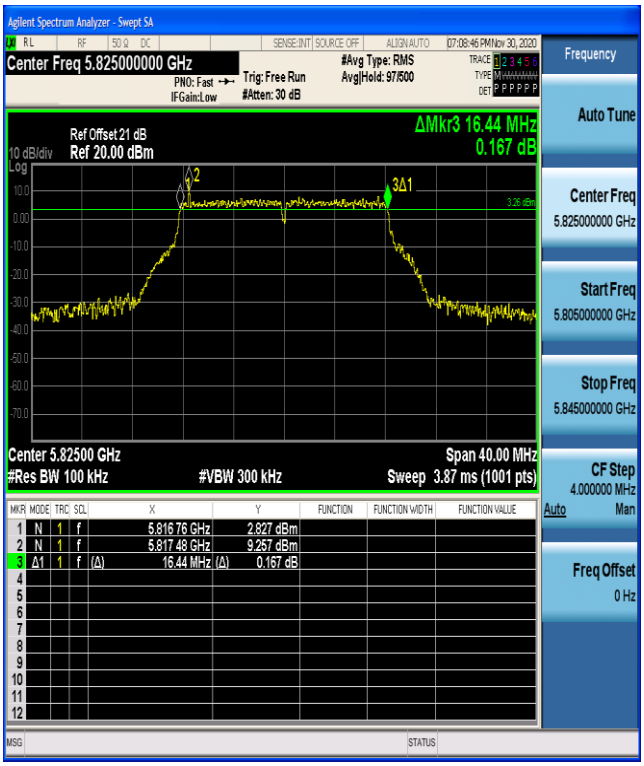


6dB Occupied Bandwidth

802.11a







802.11n(HT20)

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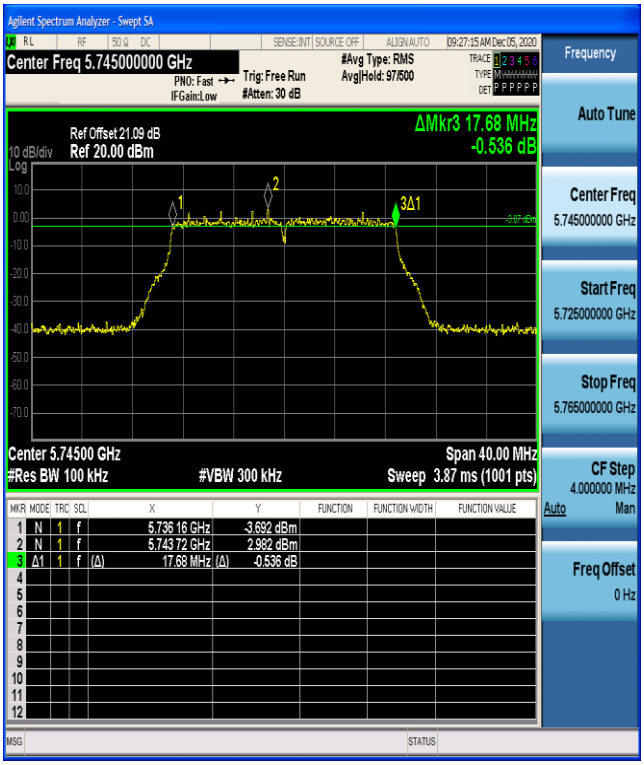

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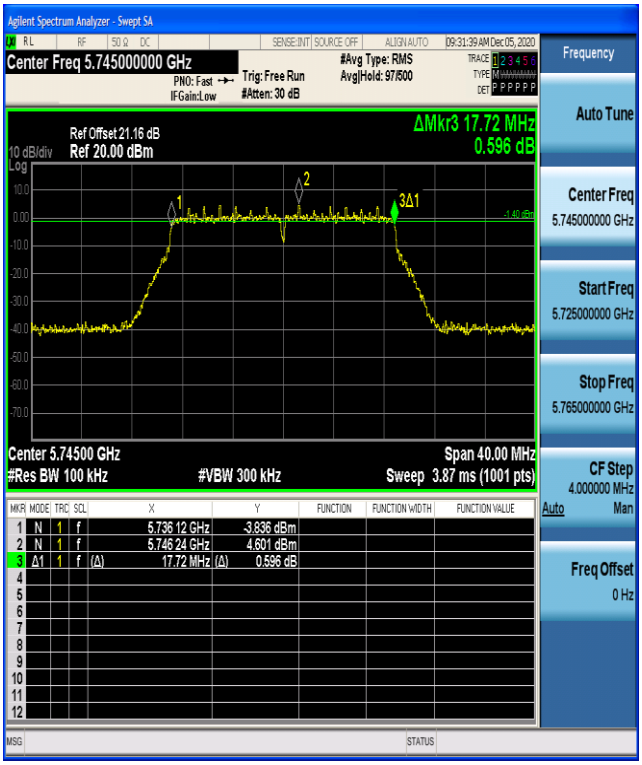

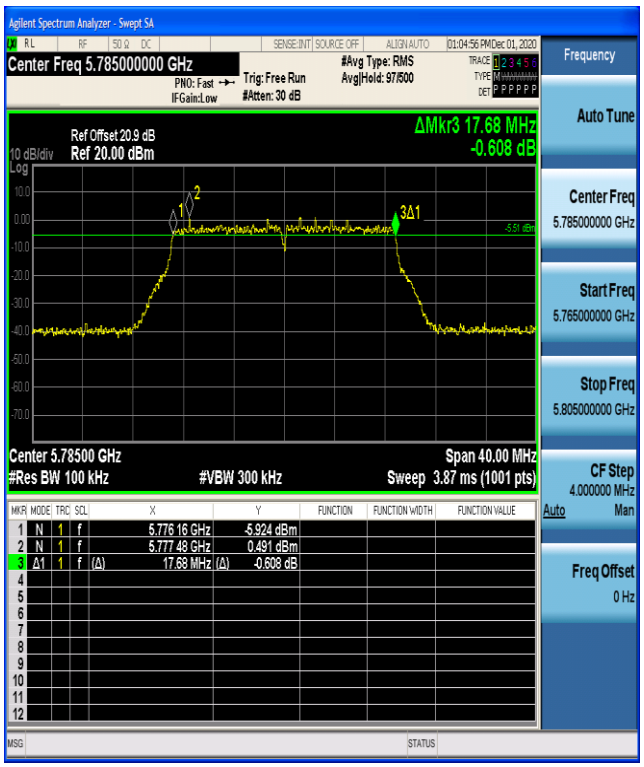

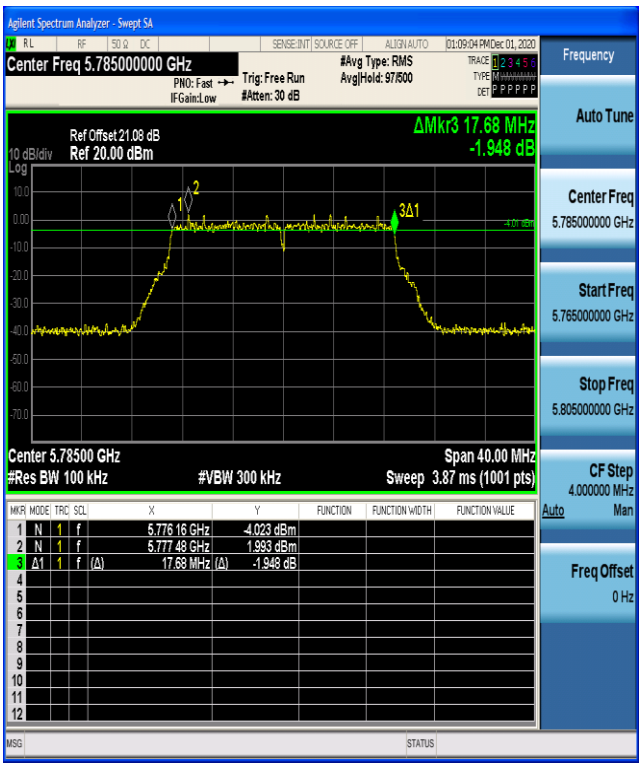

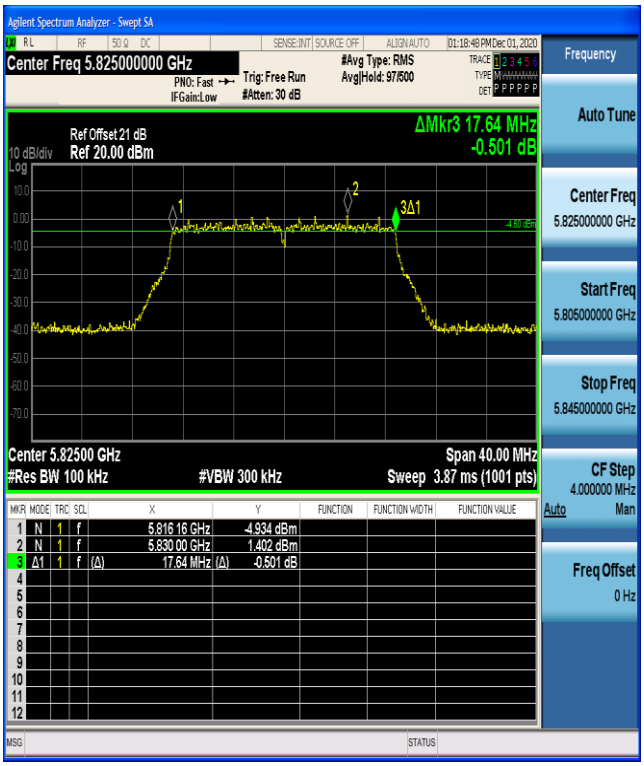

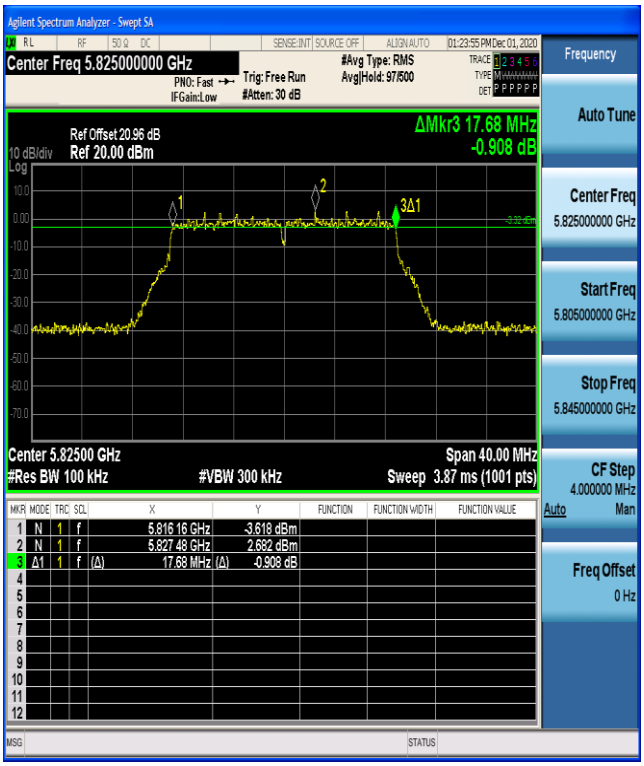

802.11n(HT40)

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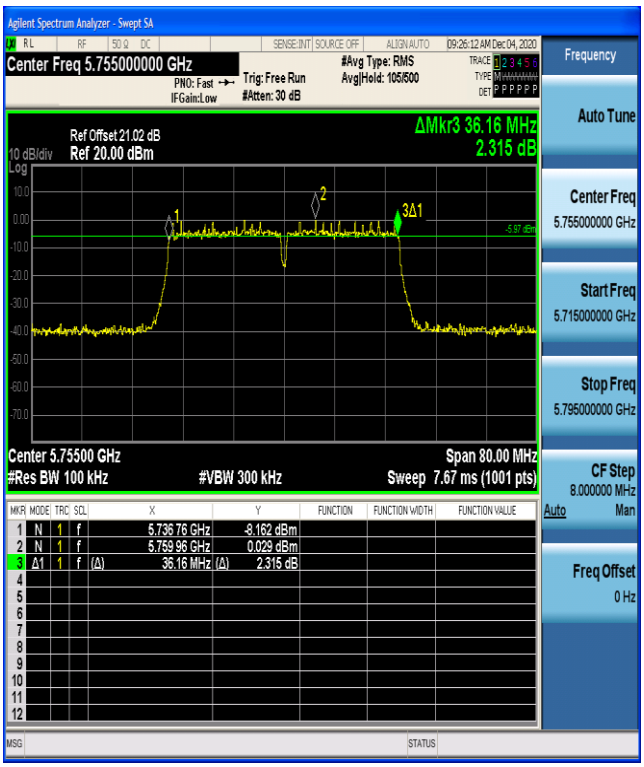

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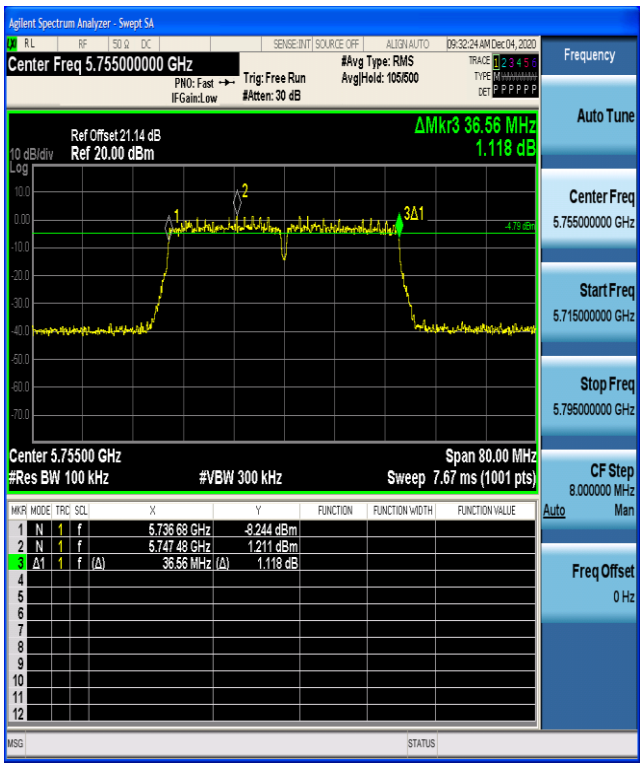

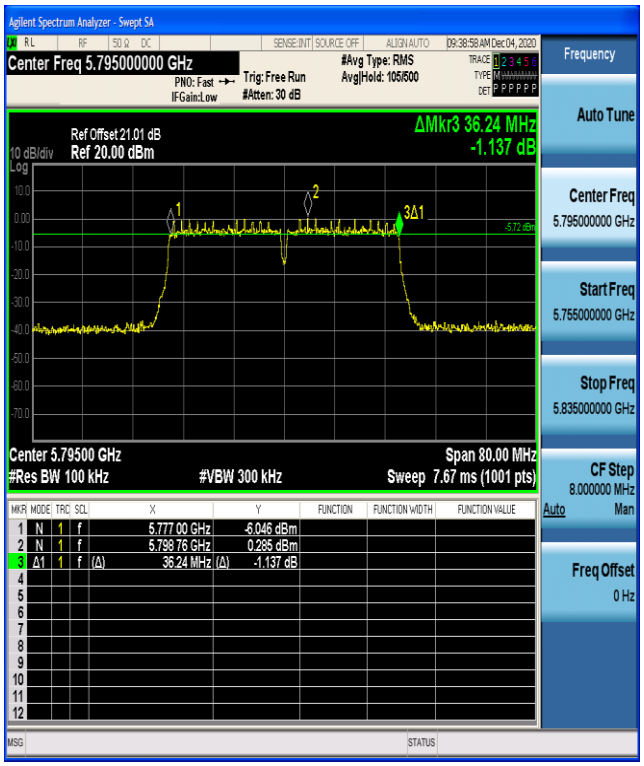

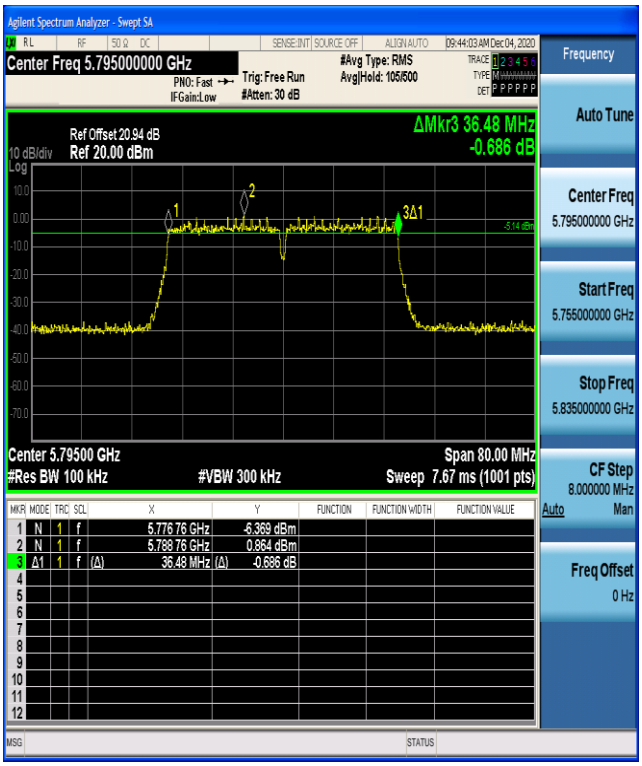

802.11ax(HT20)

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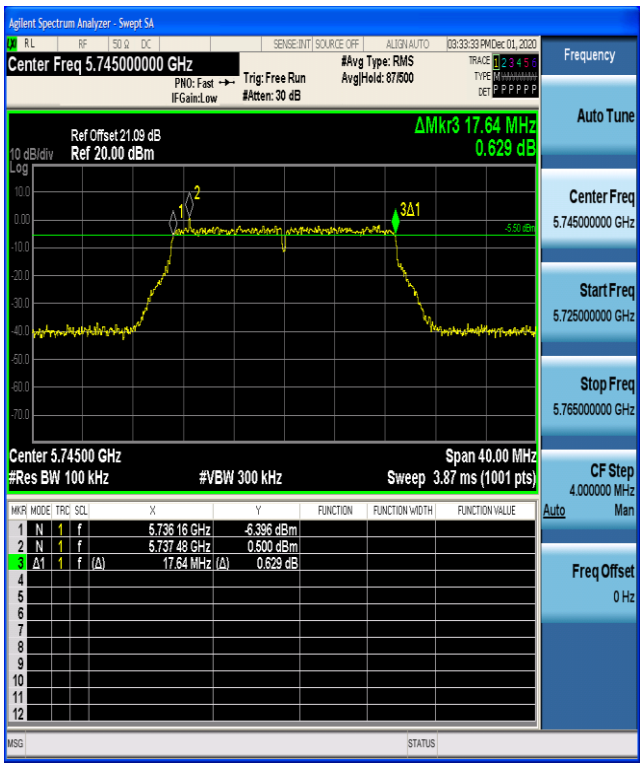

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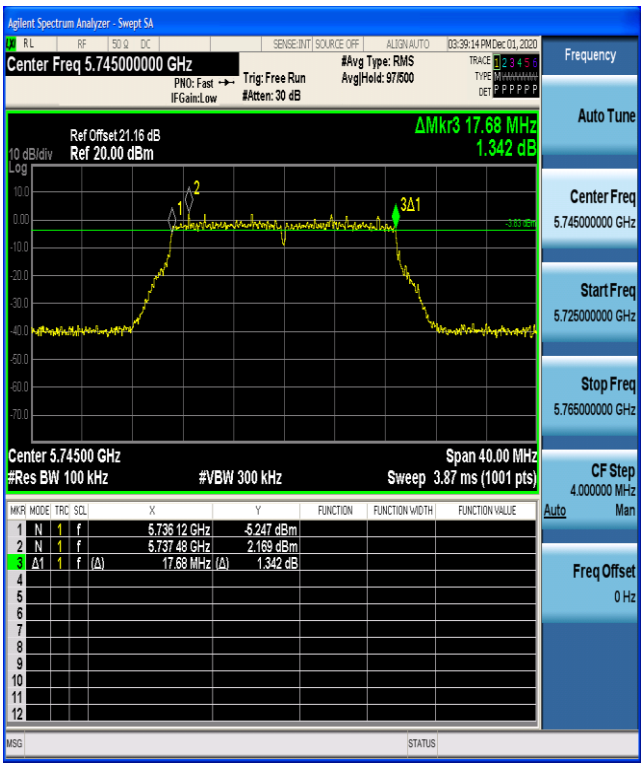
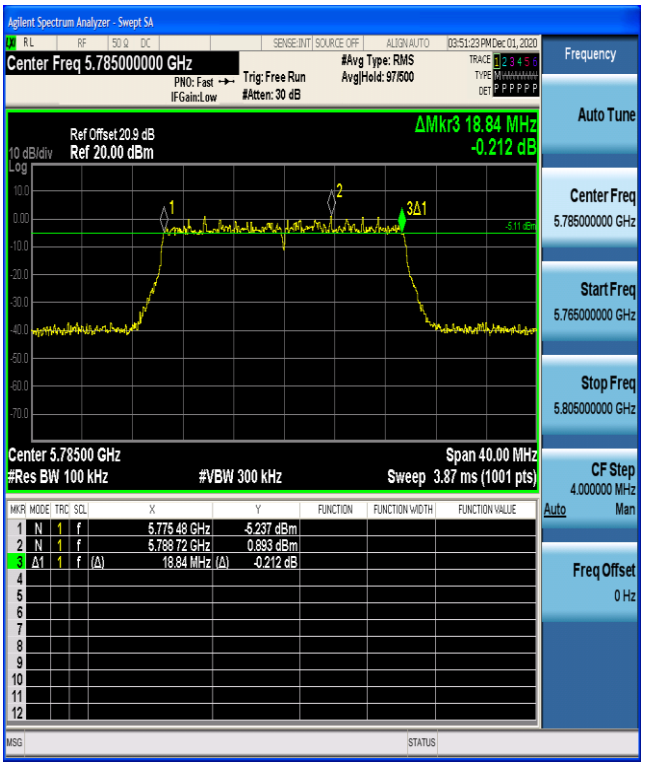
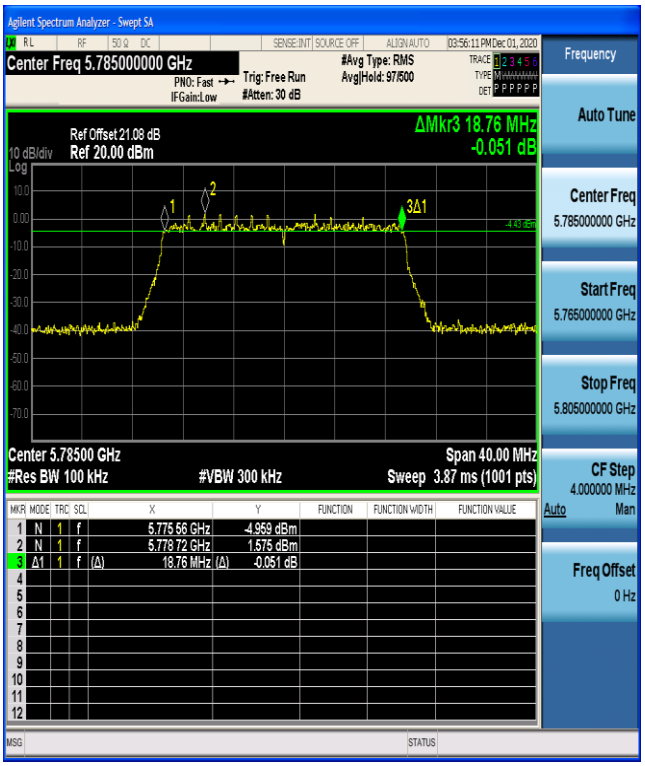
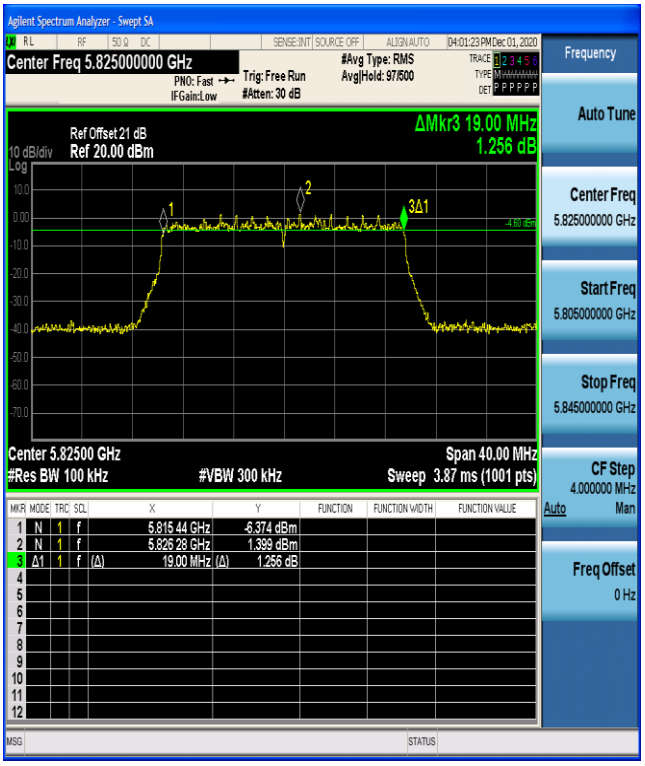
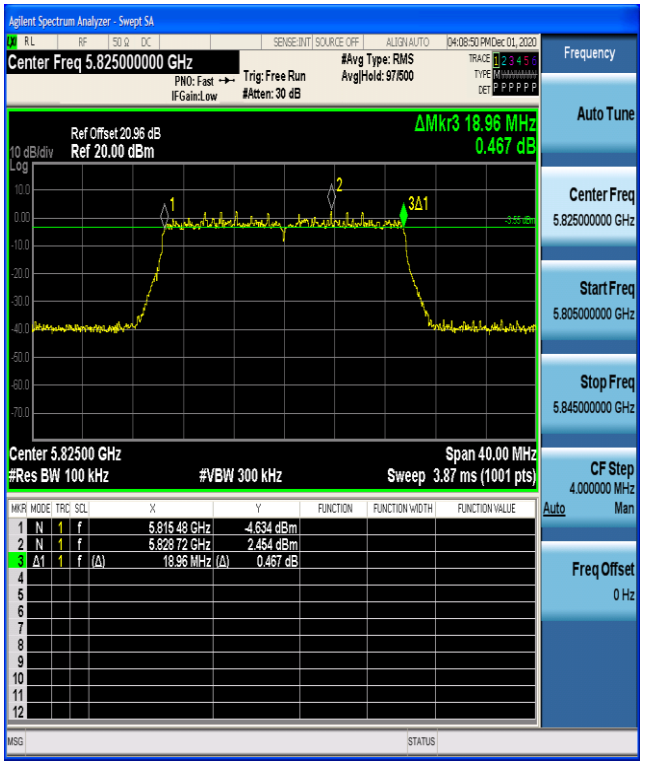



Agilent Spectrum Analyzer - Swept SA
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 97/500
03:51:23 PM Dec 01, 2020
Ref Offset 20.9 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 18.84 MHz
-0.212 dB
Center 5.78500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.87 ms (1001 pts)
1 N 1 f 5.775 48 GHz -5.237 dBm
2 N 1 f 5.788 72 GHz 0.893 dBm
3 Δ1 1 f (Δ) 18.84 MHz (Δ) -0.212 dB
Frequency
Auto Tune
Center Freq 5.785000000 GHz
Start Freq 5.765000000 GHz
Stop Freq 5.805000000 GHz
CF Step 4.000000 MHz
Auto Man
Freq Offset 0 Hz

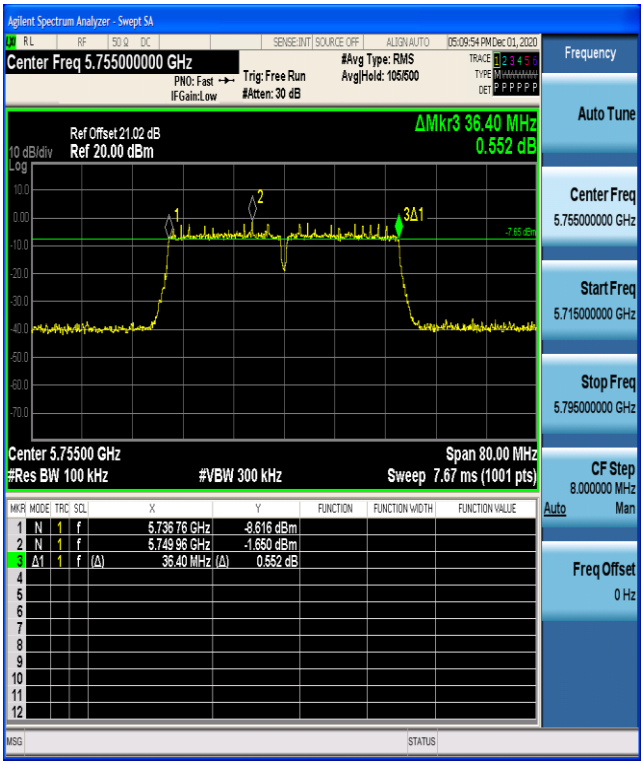

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.785000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 97/500
03:56:11 PM Dec 01, 2020
Ref Offset 21.08 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 18.76 MHz
-0.051 dB
Center 5.78500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.87 ms (1001 pts)
1 N 1 f 5.775 56 GHz -4.959 dBm
2 N 1 f 5.778 72 GHz 1.575 dBm
3 Δ1 1 f (Δ) 18.76 MHz (Δ) -0.051 dB
Frequency
Auto Tune
Center Freq 5.785000000 GHz
Start Freq 5.765000000 GHz
Stop Freq 5.805000000 GHz
CF Step 4.000000 MHz
Auto Man
Freq Offset 0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 97/500
04:01:23 PM Dec 01, 2020
Ref Offset 21 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 19.00 MHz
1.256 dB
Center 5.82500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.87 ms (1001 pts)
1 N 1 f 5.815 44 GHz -6.374 dBm
2 N 1 f 5.826 28 GHz 1.399 dBm
3 Δ1 1 f (Δ) 19.00 MHz (Δ) 1.256 dB
Frequency
Auto Tune
Center Freq 5.825000000 GHz
Start Freq 5.805000000 GHz
Stop Freq 5.845000000 GHz
CF Step 4.000000 MHz
Auto Man
Freq Offset 0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 97/500
04:08:50 PM Dec 01, 2020
Ref Offset 20.96 dB
10 dB/div Ref 20.00 dBm
ΔMkr3 18.96 MHz
0.467 dB
Center 5.82500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40.00 MHz
Sweep 3.87 ms (1001 pts)
1 N 1 f 5.815 48 GHz -4.634 dBm
2 N 1 f 5.828 72 GHz 2.454 dBm
3 Δ1 1 f (Δ) 18.96 MHz (Δ) 0.467 dB
Frequency
Auto Tune
Center Freq 5.825000000 GHz
Start Freq 5.805000000 GHz
Stop Freq 5.845000000 GHz
CF Step 4.000000 MHz
Auto Man
Freq Offset 0 Hz

802.11ax(HT40)

ANT0



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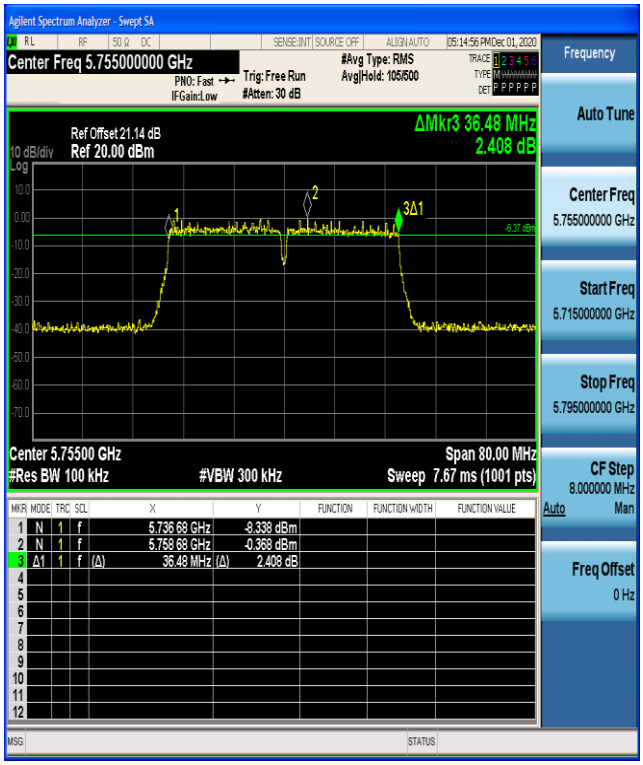
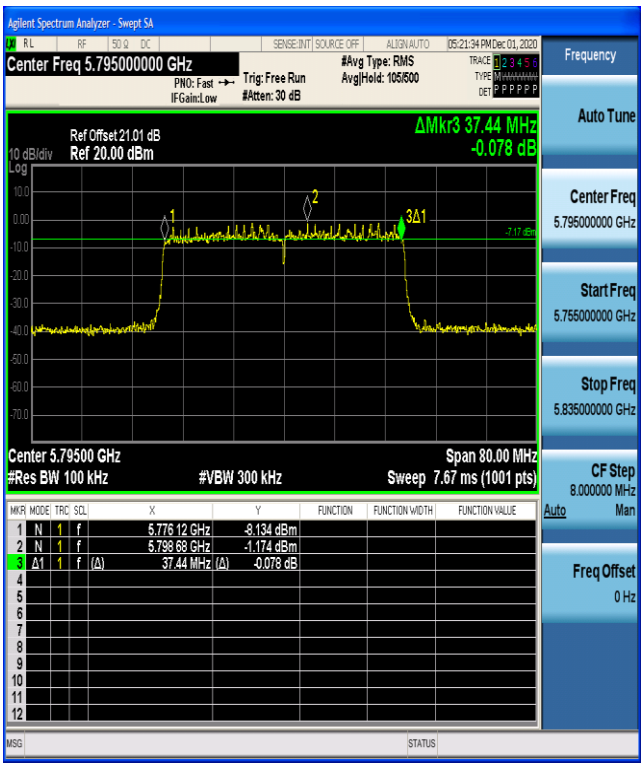
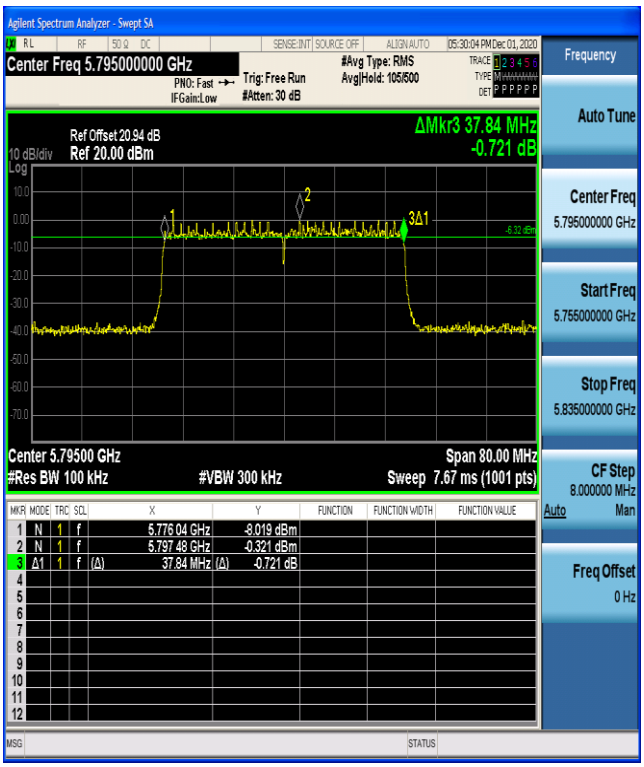
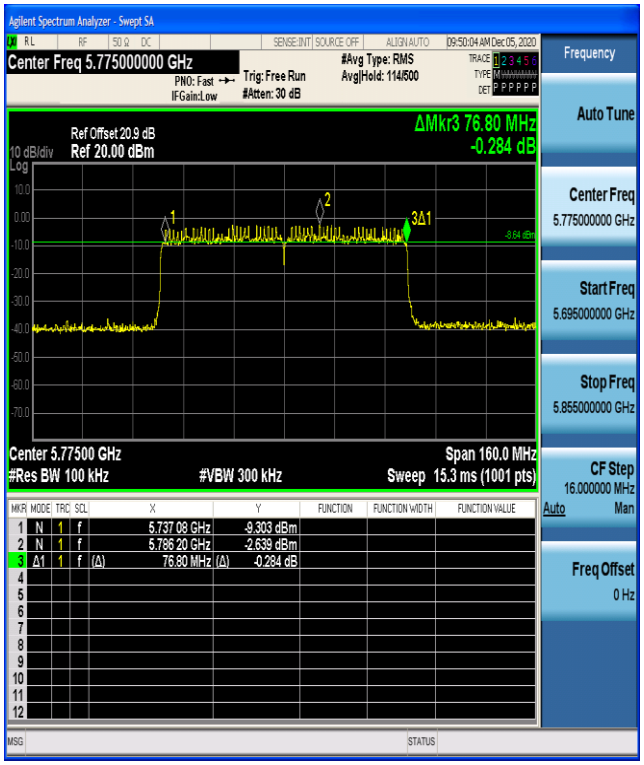






802.11ax(HT80)

ANT0



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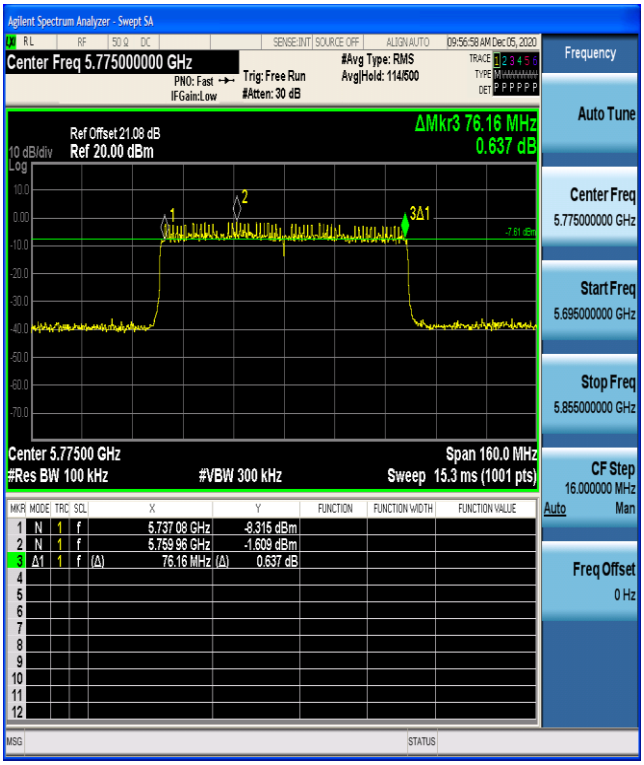
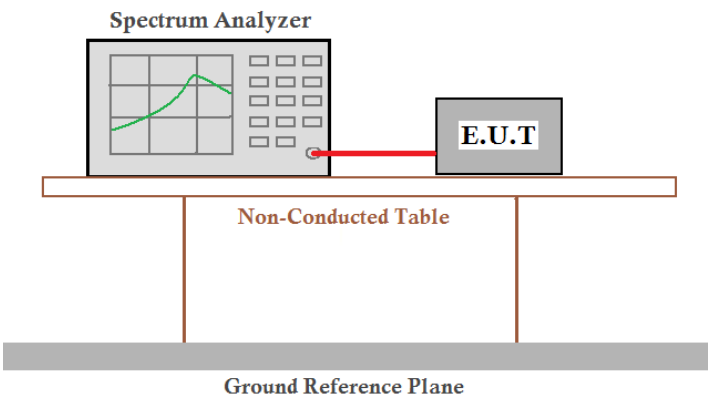


7.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407(a)(3)
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	30dBm/500kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

ANT 0:

Test CH	Power Spectral Density (dBm/500kHz)						Limit (dBm/500kHz)	Result
	802.11a	802.11n (HT20)	802.11ax (HT20)	802.11n (HT40)	802.11ax (HT40)	802.11ax (HT80)		
Lowest	15.31	7.94	6.71	5.42	3.50	---	30.00	Pass
Middle	15.03	7.83	7.69	---	---	3.03		
Highest	15.81	7.22	9.02	5.85	6.01	---		

ANT 1:

Test CH	Power Spectral Density (dBm/500kHz)						Limit (dBm/500kHz)	Result
	802.11a	802.11n (HT20)	802.11ax (HT20)	802.11n (HT40)	802.11ax (HT40)	802.11ax (HT80)		
Lowest	15.31	10.21	7.77	7.48	4.74	---	30.00	Pass
Middle	15.03	8.36	10.16	---	---	4.16		
Highest	15.81	8.51	9.18	8.09	6.69	---		

Remark: “---“is not applicable

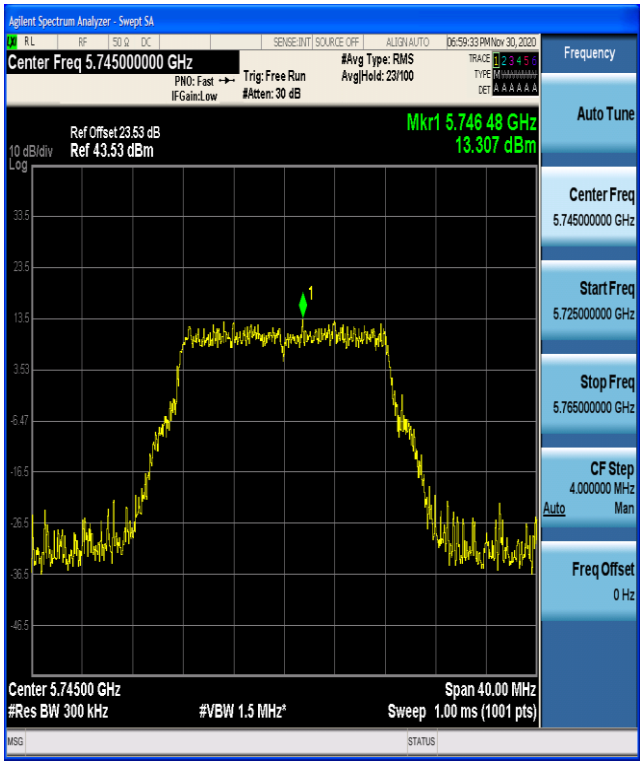
MIMO:

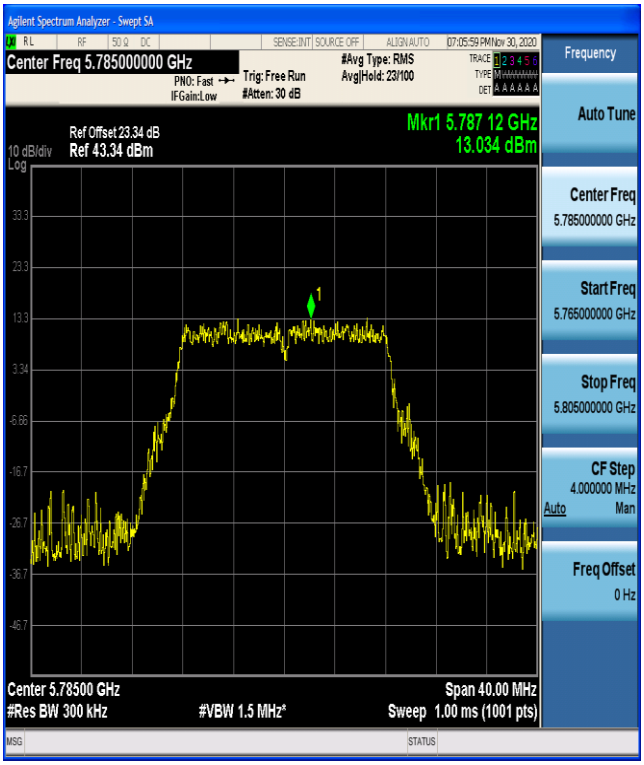
Test mode	Channel	ANT 0 power (dBm/500khz)	ANT 1 power (dBm/500kHz)	MIMO power (dBm/500kHz)	Limit dBm/500kHz	Result
802.11n(HT20)	Lowest	7.94	10.21	12.23	30	Pass
	Middle	7.83	8.36	11.11		
	Highest	7.22	8.51	10.92		
802.11ax(HT20)	Lowest	6.71	7.77	10.28		
	Middle	7.69	10.16	12.11		
	Highest	9.02	9.18	12.11		
802.11n(HT40)	Lowest	5.42	7.48	9.58		
	Highest	5.85	8.09	10.12		
802.11ax(HT40)	Lowest	3.50	4.74	7.17		
	Highest	6.01	6.69	9.37		
802.11ax(HT80)	Middle	3.03	4.16	6.64		

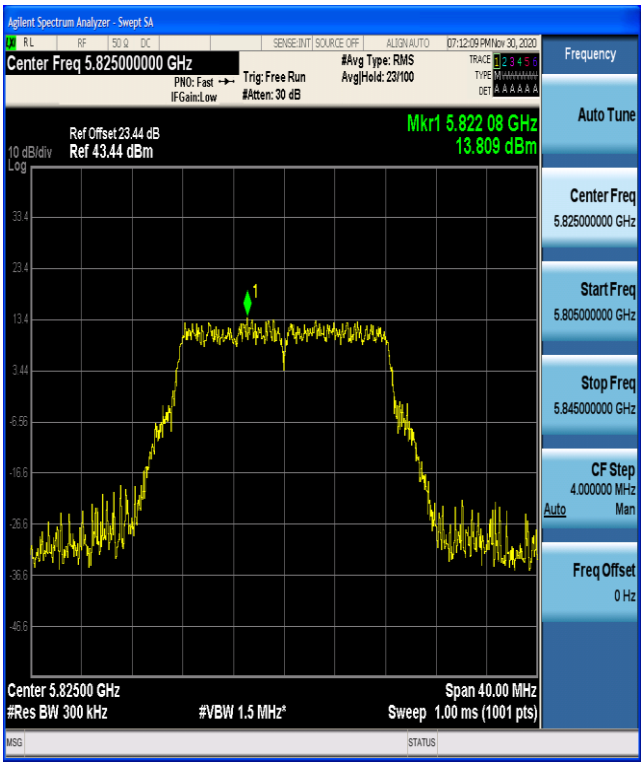
NOTE: PSD(dBm/500kHz)= PSD(dBm/300kHz)-10*LOG10(0.03)+10*LOG10(0.05)

Test plot as follows:

802.11a

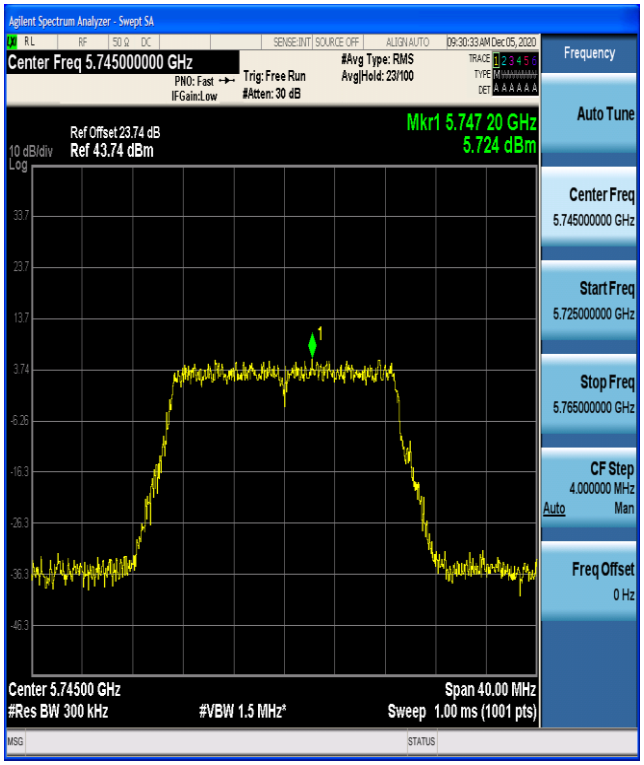
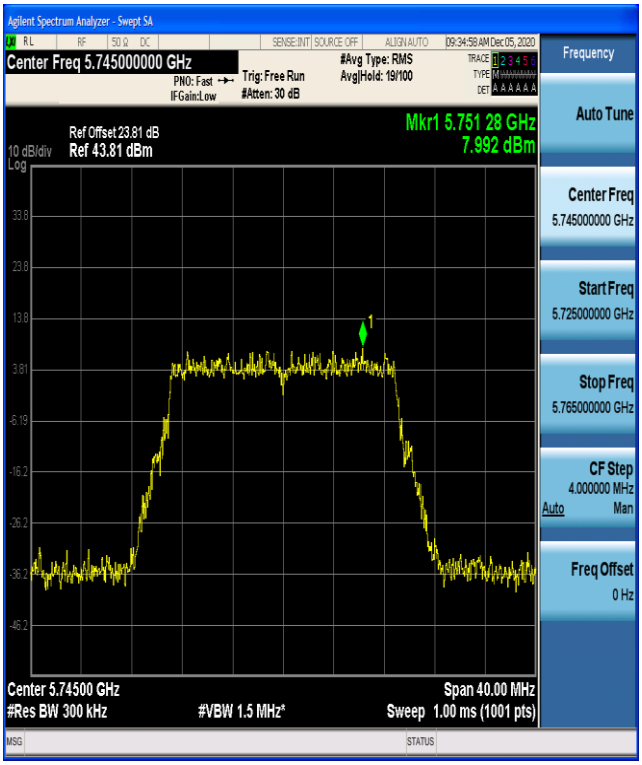
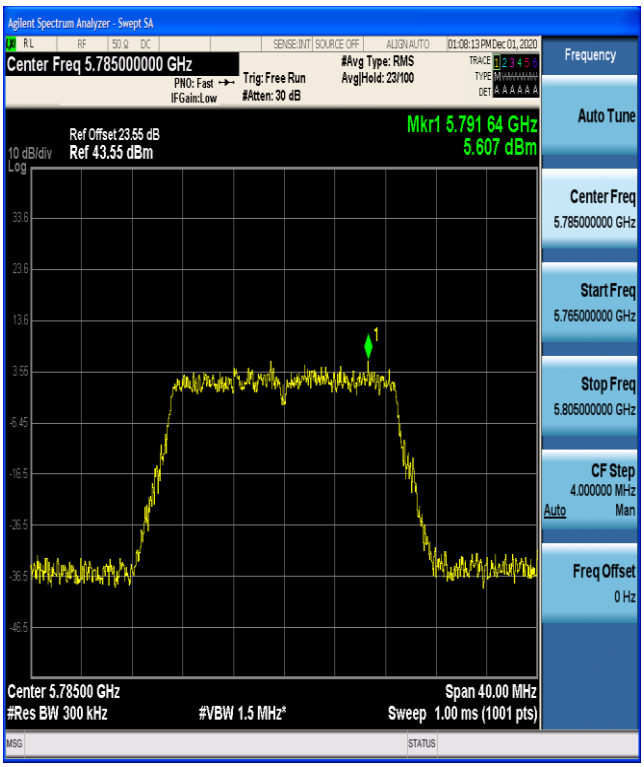
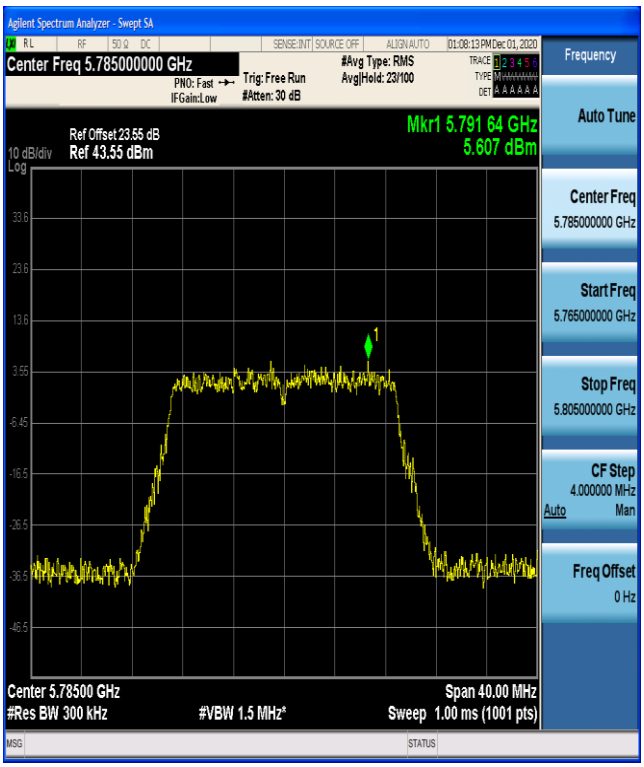






802.11n(HT20)

ANT0



ANT1