

FCC Test Report

Client Name : Autel Intelligent Tech. Corp., Ltd.

Address : 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili,
Nanshan, Shenzhen, China

Product Name : Maxisys Intelligent ADAS IA800 Camera & Adaptor Kit

Date : Nov. 13, 2020



Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : Autel Intelligent Tech. Corp., Ltd.
Manufacturer : Autel Intelligent Tech. Corp., Ltd.
Product Name : Maxisys Intelligent ADAS IA800 Camera & Adaptor Kit
Model No. : AUTEL-CSC0500/06
Trade Mark : AUTEL
Rating(s) : Input: DC 24V, 6A (via adapter input: AC 100~240V, 50/60Hz, 2.5A)

Test Standard(s) : **FCC Part15 Subpart E, Paragraph 15.407**
ANSI C63.10: 2013,

Test Method(s) : **KDB 789033 D02 General UNII Test Procedures New Rules v02r01**
KDB 662911 D01 Multiple Transmitter Output v02r01

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart E requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt

Sept. 23, 2020

Date of Test

Sept. 23~Nov. 06, 2020

Prepared By

Yilia Zhong

(Engineer / Yilia Zhong)

Reviewer

Bibo Zhang

(Supervisor / Bibo Zhang)

Approved & Authorized Signer

Kingkong Jin

(Manager / Kingkong Jin)

1. General Information

1.1. Client Information

Applicant	:	Autel Intelligent Tech. Corp., Ltd.
Address	:	7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen, China
Manufacturer	:	Autel Intelligent Tech. Corp., Ltd.
Address	:	7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen, China
Factory1	:	Autel Intelligent Technology Corp., Ltd. Guangming Branch
Address	:	7F&6F, East Wing, Building 2, and 6F of Electronical Building, Yanxiang Industrial Zone, Gaoxin Rd, Dongzhou Community of Guangming New District, Shenzhen
Factory2	:	AUTEL VIETNAM COMPANY LIMITED
Address	:	4th Floor, Factory#6, Land#CN1, An Duong Industrial Zone, Hong Phong Township, An Duong County, Hai Phong, Viet Nam

1.2. Description of Device (EUT)

Product Name	:	Maxisys Intelligent ADAS IA800 Camera & Adaptor Kit
Model No.	:	AUTEL-CSC0500/06
Trade Mark	:	AUTEL
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Product Description	Operation Frequency:	WiFi 2.4G: 802.11g/ n(HT20) 2412-2462MHz WiFi 5.1G: 5180MHz~5240MHz WiFi 5.8G: 5745MHz~5825MHz
	Number of Channel:	WiFi 2.4G: 11 Channels for 802.11g/ n(HT20) WiFi 5.1G: 4 Channels for 802.11a 4 Channels for 802.11n(HT20) 4 Channels for 802.11ac(HT20) 2 Channels for 802.11n(HT40) 2 Channels for 802.11ac(HT40) 1 Channels for 802.11ac(HT80) WiFi 5.8G: 5 Channels for 802.11a 5 Channels for 802.11n(HT20) 5 Channels for 802.11ac(HT20) 2 Channels for 802.11n(HT40)

		2 Channels for 802.11ac(HT40) 1 Channels for 802.11ac(HT80)
	Modulation Type:	WiFi 2.4G: 802.11g/n OFDM WiFi 5.1G: OFDM with BPSK/QPSK/16QAM/64QAM/256QAM WiFi 5.8G: OFDM with BPSK/QPSK/16QAM/64QAM/256QAM
	Antenna Type:	PIFA Antenna
	Antenna Gain(Peak):	WiFi 2.4G: ANT A & ANT B: 3.9 dBi WiFi 5.1G&WiFi 5.8G: ANT A & ANT B: 3.9 dBi
	Directional Gain:	WiFi 2.4G: 6.91 dBi WiFi 5.1G&WiFi 5.8G: 6.91 dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2) This report is for Wifi 5.8G module. 3) Only 802.11n(HT20), 802.11n(HT40), 802.11ac(HT20), 802.11ac(HT40), 802.11ac(HT80) support MIMO.		

1.3. Auxiliary Equipment Used During Test

Adapter	:	MODEL: EA11701F-240 INPUT: 100-240V~ 50/60Hz, 2.5A OUTPUT: DC 24V, 6.25A
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1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Mode	Test channel	Frequency (MHz)
OFDM(802.11a/n20/ac20)	CH 149	5745MHz
	CH 157	5785MHz
	CH 165	5825MHz
OFDM(802.11n40/ac40)	CH 151	5755MHz
	CH 159	5795MHz
OFDM(802.11ac80)	CH 155	5775MHz

Note:

1. The measurements are performed at the highest, middle, lowest available channels.
2. The EUT has been tested as an independent unit. And Continual Transmitting in maximum power.
3. For the relevant Conducted Measurement, the temporary antenna connector is used during the measurement. Antenna Connector Impedance: 50Ω, Cable Loss: 1.0 dB
4. The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is more than 98%

1.5. List of channels**802.11a/n20/ac20**

Channel	Freq. (MHz)	Channel	Freq. (MHz)
149	5745	153	5765
157	5785	161	5805
165	5825		

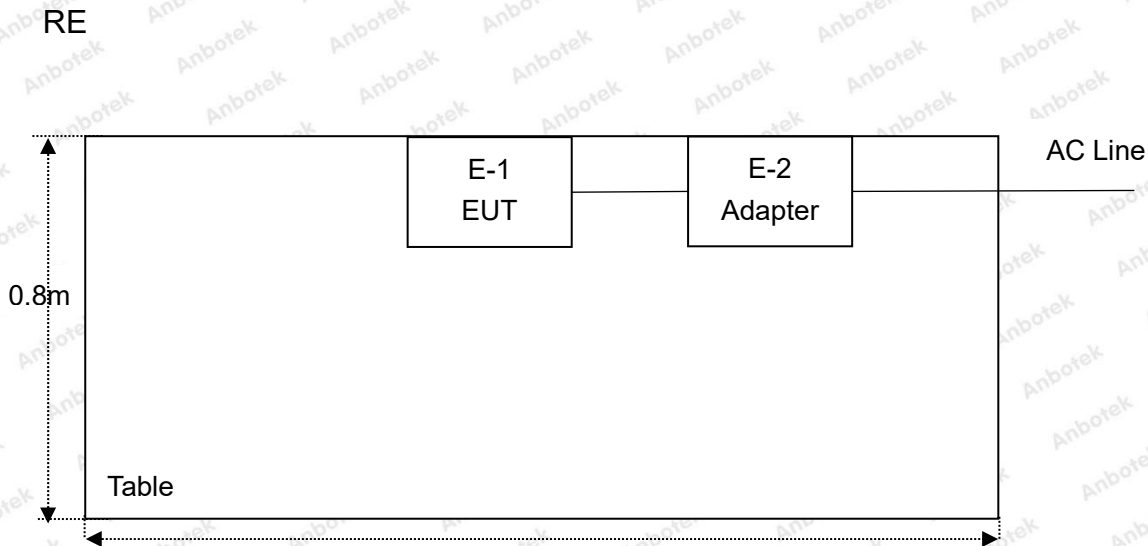
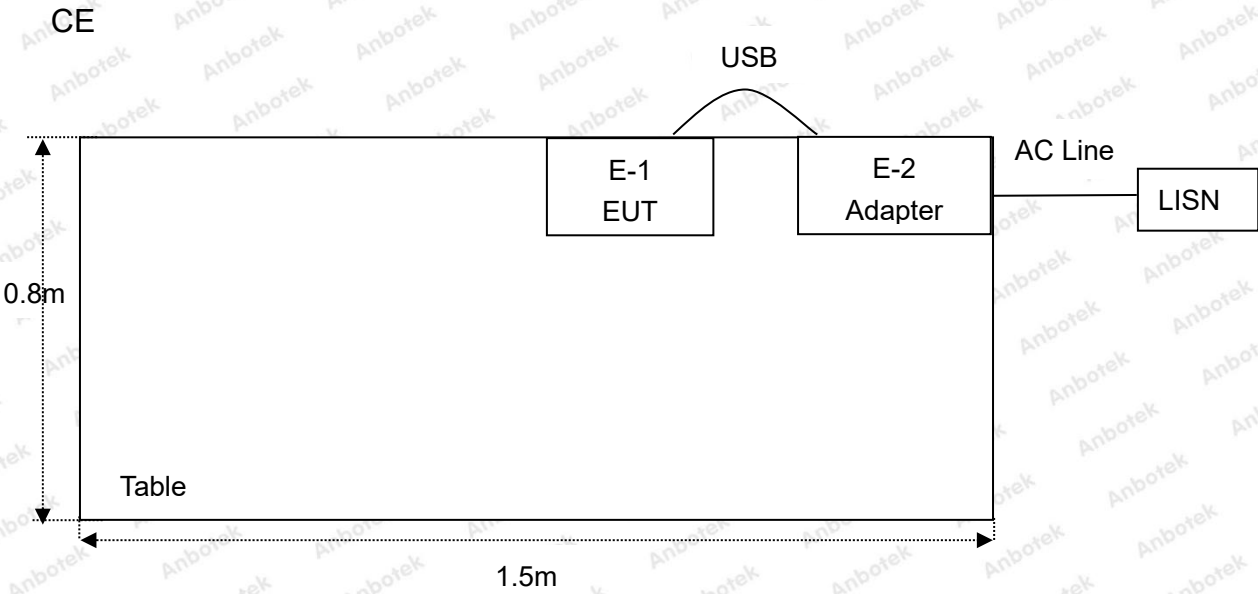
802.11n40/ac40

Channel	Freq. (MHz)	Channel	Freq. (MHz)
151	5755	159	5795

802.11ac80

Channel	Freq. (MHz)
155	5775

1.6. Description Of Test Setup



1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Oct. 26, 2020	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 26, 2020	1 Year
4.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 26, 2020	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 26, 2020	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 02, 2020	2 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 02, 2020	2 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 02, 2020	2 Year
10.	Horn Antenna	A-INFO	LB-180400- KF	J211060628	Nov. 02, 2020	2 Year
11.	Pre-amplifier	SONOMA	310N	186860	Oct. 26, 2020	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Oct. 26, 2020	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Oct. 26, 2020	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Oct. 26, 2020	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 26, 2020	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 26, 2020	1 Year
19.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 26, 2020	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80 B	N/A	Oct. 26, 2020	1 Year

1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

1.9. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotech Compliance Laboratory Limited, 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 our files. Registration No. 184111, September 30, 2020.

ISED-Registration No.: 8058A

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A, September 30, 2020.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

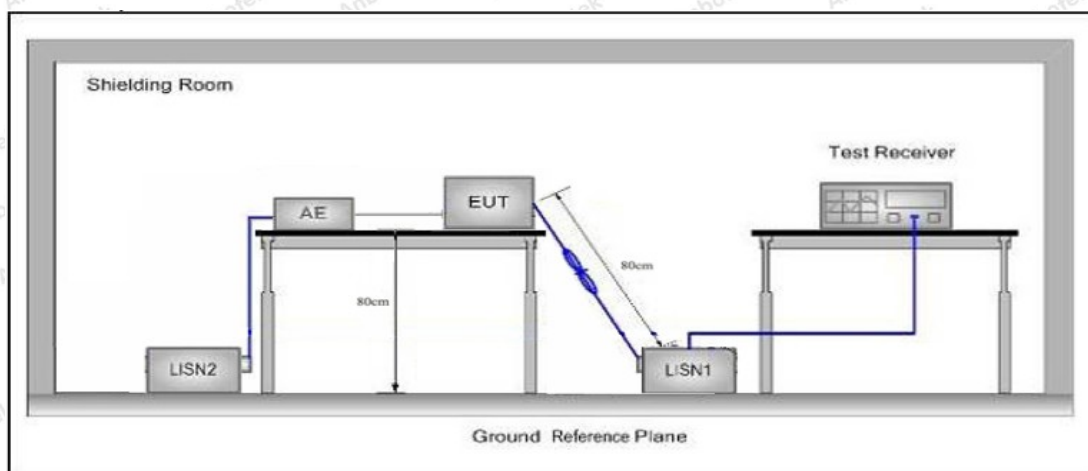
Standard	Test Type	Result
15.207 & 15.407	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS
15.407(b)	Band Edge	PASS
15.407(a)(5)&15.407(e)	Occupy Bandwidth	PASS
15.407(a)(3)	Maximum Conducted Output Power	PASS
15.407(a)(1)(3)	Peak Power Spectral Density	PASS
15.203	Antenna Requirement	PASS
15.407(g)	Frequency Stability	PASS

3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207&15.407		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

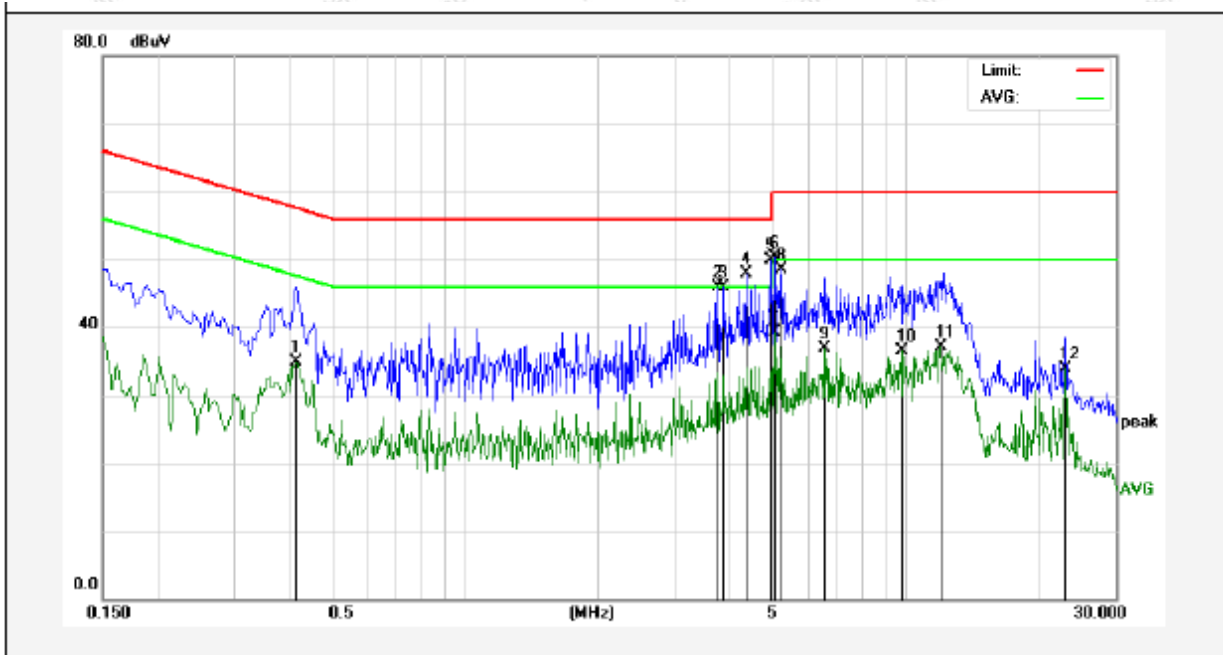
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

During the test, pre-scan all modes, and found the 802.11ac80 CH 155 for ANT A which is the worst case, only the worst case is recorded in the report.

Conducted Emission Test Data

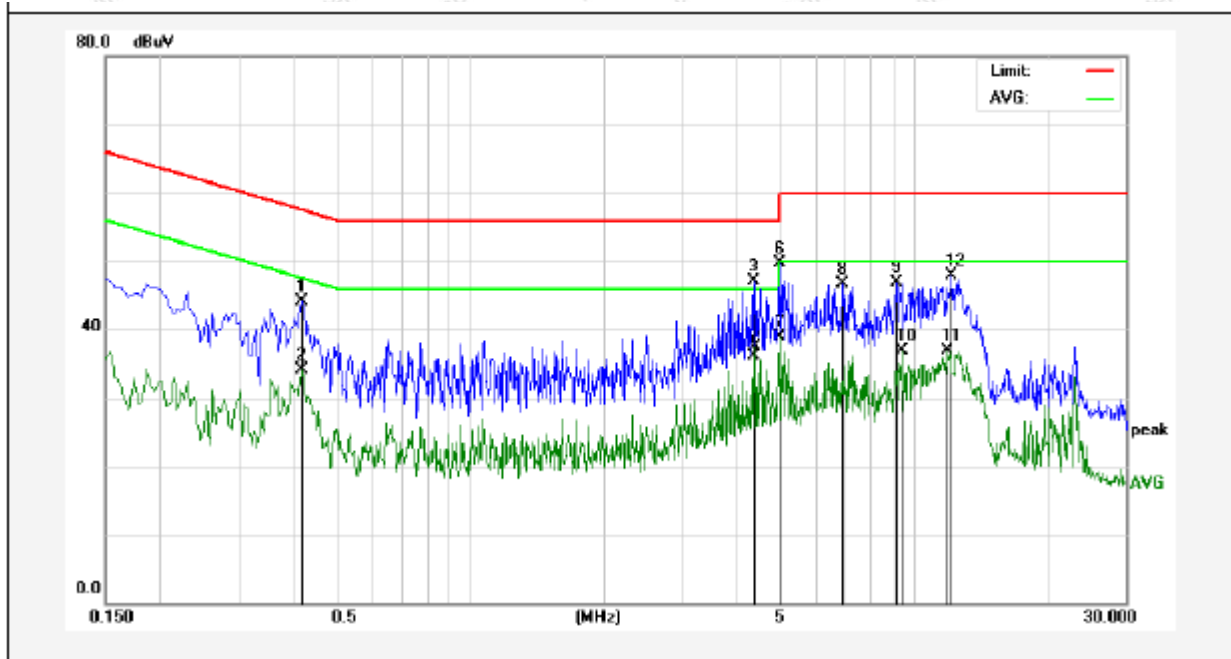
Test Site: 1# Shielded Room
 Operating Condition: 802.11ac80 CH 155
 Test Specification: AC 120V, 60Hz for adapter
 Comment: Live Line
 Tem.: 24.4°C Hum.: 57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.4140	14.90	19.94	34.84	47.57	-12.73	AVG	
2	3.7460	25.79	20.17	45.96	56.00	-10.04	QP	
3	3.8620	25.63	20.18	45.81	56.00	-10.19	QP	
4	4.3420	27.77	20.19	47.96	56.00	-8.04	QP	
5	4.9340	29.63	20.20	49.83	56.00	-6.17	QP	
6	5.0500	30.19	20.21	50.40	60.00	-9.60	QP	
7	5.0500	19.04	20.21	39.25	50.00	-10.75	AVG	
8	5.2340	28.31	20.21	48.52	60.00	-11.48	QP	
9	6.5380	16.63	20.25	36.88	50.00	-13.12	AVG	
10	9.8060	16.14	20.33	36.47	50.00	-13.53	AVG	
11	11.9460	16.73	20.31	37.04	50.00	-12.96	AVG	
12	23.1299	13.60	20.30	33.90	50.00	-16.10	AVG	

Conducted Emission Test Data

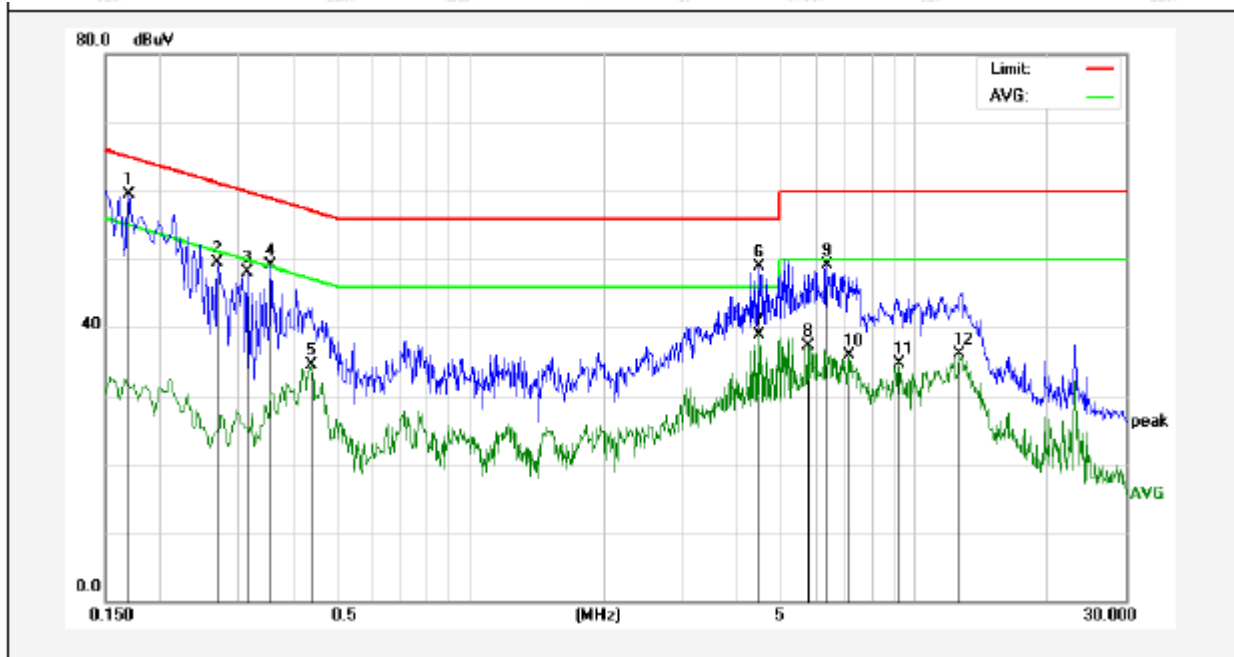
Test Site: 1# Shielded Room
Operating Condition: 802.11ac80 CH 155
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.: 24.4°C Hum.: 57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.4180	24.23	19.94	44.17	57.49	-13.32	QP	
2	0.4180	14.11	19.94	34.05	47.49	-13.44	AVG	
3	4.3380	26.91	20.19	47.10	56.00	-8.90	QP	
4	4.3380	15.88	20.19	36.07	46.00	-9.93	AVG	
5	4.3980	17.24	20.19	37.43	46.00	-8.57	AVG	
6	4.9940	29.42	20.21	49.63	56.00	-6.37	QP	
7	4.9940	18.78	20.21	38.99	46.00	-7.01	AVG	
8	6.8940	26.54	20.26	46.80	60.00	-13.20	QP	
9	9.1540	26.52	20.32	46.84	60.00	-13.16	QP	
10	9.3900	16.59	20.32	36.91	50.00	-13.09	AVG	
11	11.8860	16.63	20.31	36.94	50.00	-13.06	AVG	
12	12.1820	27.58	20.31	47.89	60.00	-12.11	QP	

Conducted Emission Test Data

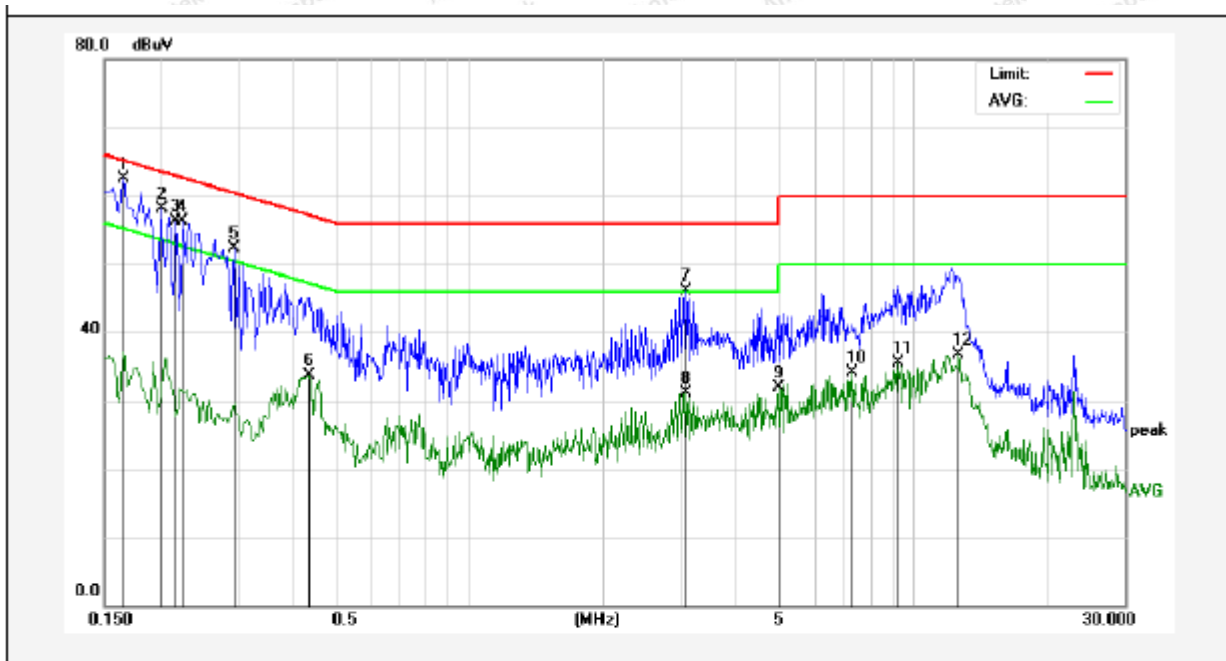
Test Site: 1# Shielded Room
 Operating Condition: 802.11ac80 CH 155
 Test Specification: AC 240V, 60Hz for adapter
 Comment: Live Line
 Tem.: 24.4°C Hum.: 57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1700	39.65	19.90	59.55	64.96	-5.41	QP	
2	0.2700	29.61	19.89	49.50	61.12	-11.62	QP	
3	0.3140	28.13	19.90	48.03	59.86	-11.83	QP	
4	0.3540	29.12	19.91	49.03	58.87	-9.84	QP	
5	0.4380	14.47	19.95	34.42	47.10	-12.68	AVG	
6	4.4580	28.70	20.19	48.89	56.00	-7.11	QP	
7	4.4580	18.81	20.19	39.00	46.00	-7.00	AVG	
8	5.7660	17.06	20.23	37.29	50.00	-12.71	AVG	
9	6.3620	28.87	20.24	49.11	60.00	-10.89	QP	
10	7.1340	15.74	20.26	36.00	50.00	-14.00	AVG	
11	9.2700	14.43	20.32	34.75	50.00	-15.25	AVG	
12	12.6020	15.89	20.30	36.19	50.00	-13.81	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
 Operating Condition: 802.11ac80 CH 155
 Test Specification: AC 240V, 60Hz for adapter
 Comment: Neutral Line
 Tem.: 24.4°C Hum.: 57%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1660	42.57	19.90	61.47	65.15	-3.68	QP	
2	0.2020	38.13	19.90	58.03	63.52	-5.49	QP	
3	0.2180	36.39	19.90	56.29	62.89	-6.60	QP	
4	0.2260	36.49	19.89	56.38	62.59	-6.21	QP	
5	0.2940	32.40	19.89	52.29	60.41	-8.12	QP	
6	0.4340	13.80	19.95	33.75	47.18	-13.43	AVG	
7	3.0900	25.97	20.16	46.13	56.00	-9.87	QP	
8	3.0900	10.96	20.16	31.12	46.00	-14.88	AVG	
9	4.9940	11.78	20.21	31.99	46.00	-14.01	AVG	
10	7.3100	13.81	20.27	34.08	50.00	-15.92	AVG	
11	9.2140	15.15	20.32	35.47	50.00	-14.53	AVG	
12	12.6580	16.35	20.30	36.65	50.00	-13.35	AVG	

4. Radiation Spurious Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209, 15.205 and 15.407				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	68.2	Peak	3

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

(3)Above 1GHz limit: $E[dBuV/m] = EIRP[dBm] + 95.2 = 68.2 \text{ dBuV/m}$, for $EIPR[dBm] = -27 \text{ dBm}$.

4.2. Test Setup

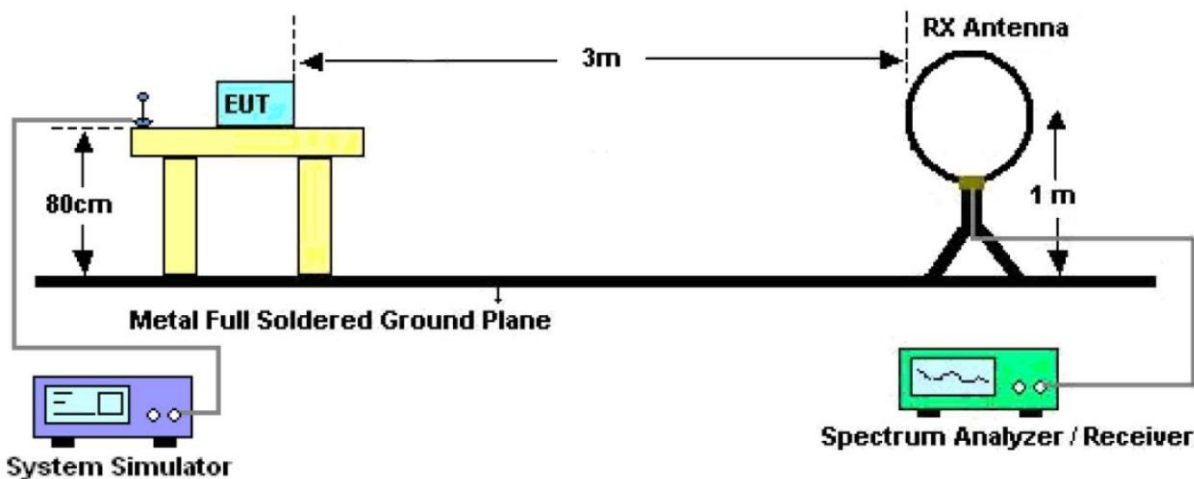


Figure 1. Below 30MHz

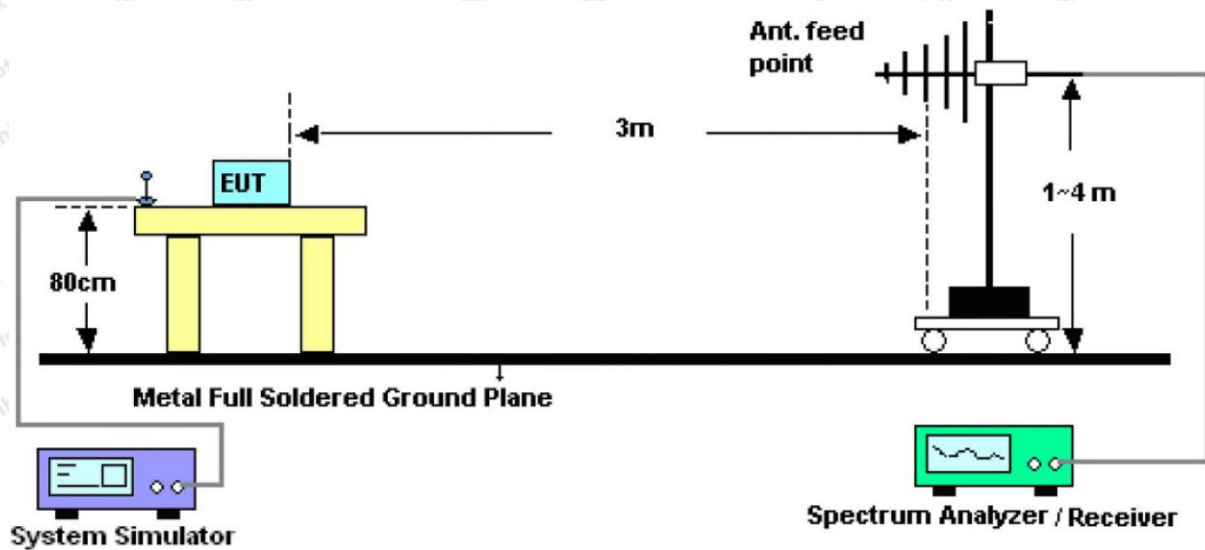


Figure 2. 30MHz to 1GHz

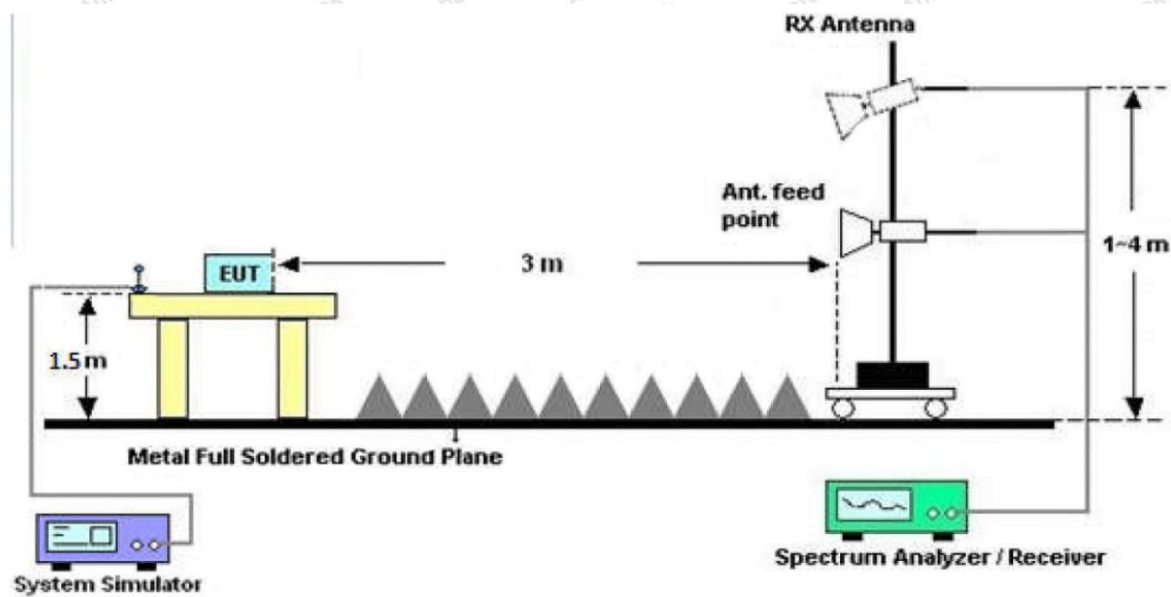


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

Shenzhen Anbotek Compliance Laboratory Limited

Code:AB-RF-05-a

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com

Hotline
400-003-0500
www.anbotek.com

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW = 1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW = 30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW = 300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

.

For above 1GHz, Set the spectrum analyzer as:

RBW = 1MHz, VBW = 1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW = 1MHz, VBW = 10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

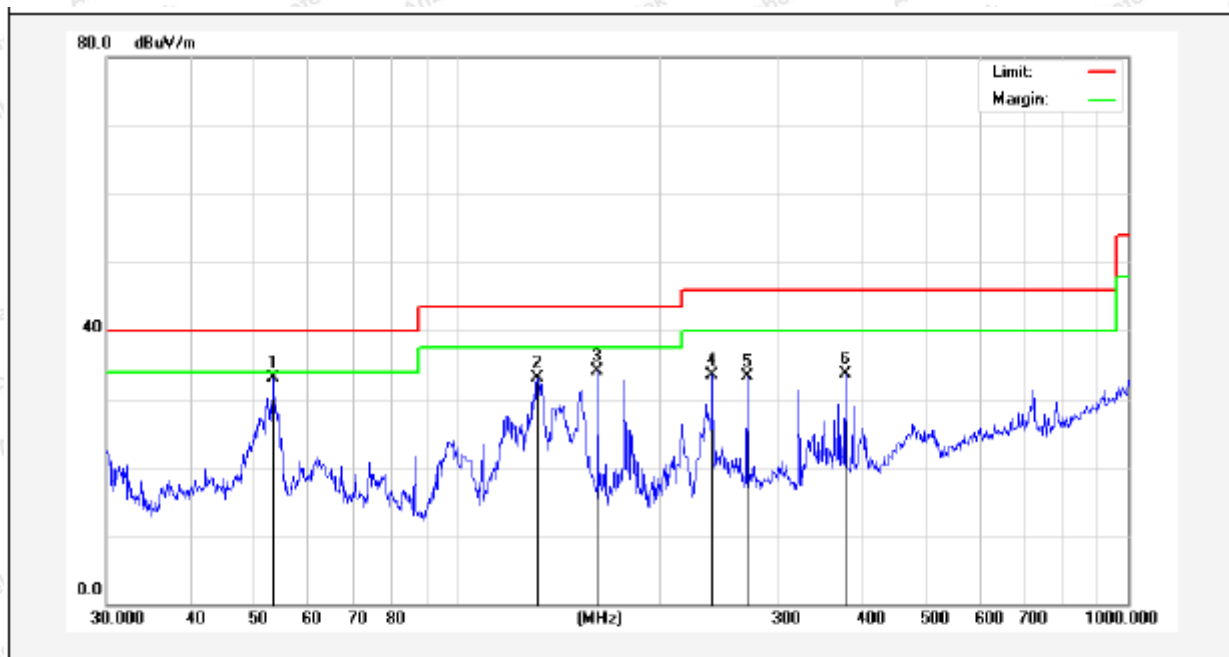
PASS

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all modes, and found the 802.11ac80 CH 155 for ANT A which is the worst case, only the worst case is recorded in the report.

Test Results (30~1000MHz)

Test Mode: 802.11ac80 CH 155
Power Source: AC 120V, 60Hz for adapter
Polarization: Vertical
Temp.(°C)/Hum.(%RH): 23.7°C/50%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	53.1313	48.92	-15.90	33.02	40.00	-6.98	QP	100	0	
2	131.7577	52.52	-19.51	33.01	43.50	-10.49	QP	100	360	
3	162.0414	53.50	-19.31	34.19	43.50	-9.31	QP	100	0	
4	239.9874	49.15	-15.66	33.49	46.00	-12.51	QP	100	360	
5	270.3748	47.88	-14.50	33.38	46.00	-12.62	QP	100	0	
6	378.5843	45.25	-11.59	33.66	46.00	-12.34	QP	100	360	

Report No.: 18220WC00140803

FCC ID: WQ8IA800-CAM

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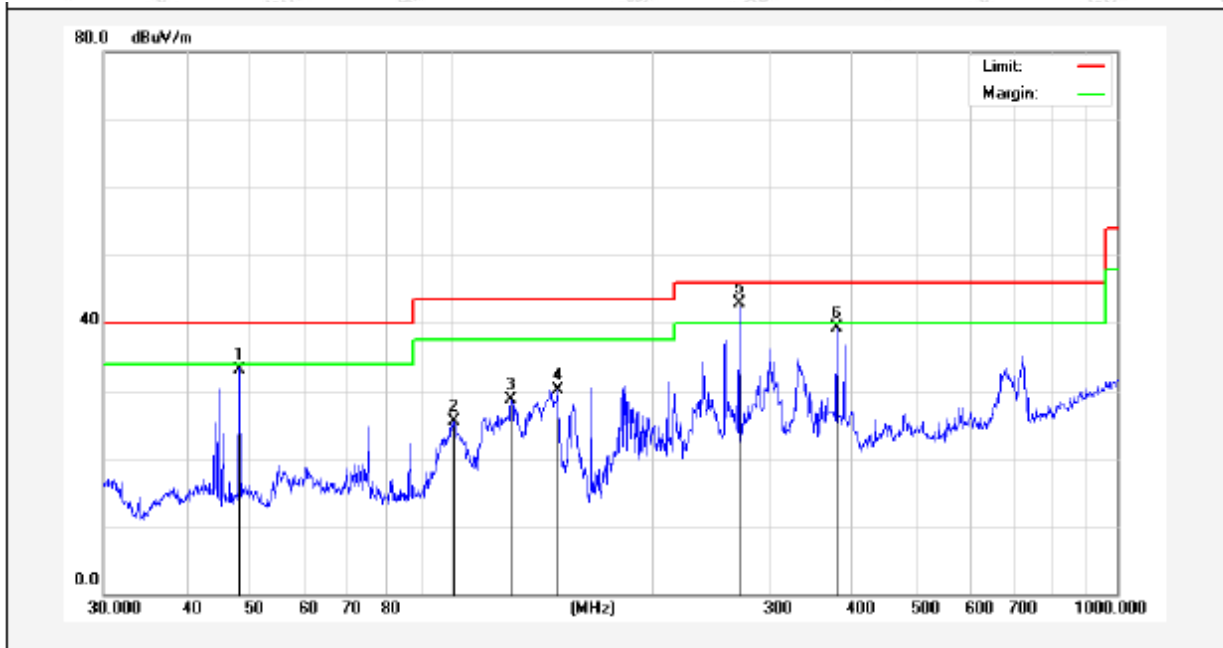
Test Results (30~1000MHz)

Test Mode: 802.11ac80 CH 155

Power Source: AC 120V, 60Hz for adapter

Polarization: Horizontal

Temp.(°C)/Hum.(%RH): 23.7°C/50%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	47.9940	47.81	-14.61	33.20	40.00	-6.80	QP	100	0	
2	100.9339	45.11	-19.54	25.57	43.50	-17.93	QP	100	360	
3	122.8340	50.19	-21.50	28.69	43.50	-14.81	QP	100	0	
4	144.3348	50.89	-20.83	30.06	43.50	-13.44	QP	100	360	
5	270.0048	59.89	-17.02	42.87	46.00	-3.13	QP	100	0	
6	378.5843	52.29	-12.99	39.30	46.00	-6.70	QP	100	360	

Test Results (Above 1000MHz)

ANT A:

Test mode:	IEEE 802.11n(HT20)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	41.20	31.98	17.08	33.91	56.35	68.20	-11.85	V
17235.00	39.85	32.65	20.03	34.85	57.68	68.20	-10.52	V
11490.00	39.40	31.98	17.08	33.91	54.55	68.20	-13.65	H
17235.00	41.00	32.65	20.03	34.85	58.83	68.20	-9.37	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	28.26	31.98	17.08	33.91	43.41	54.00	-10.59	V
17235.00	27.76	32.65	20.03	34.85	45.59	54.00	-8.41	V
11490.00	28.72	31.98	17.08	33.91	43.87	54.00	-10.13	H
17235.00	29.88	32.65	20.03	34.85	47.71	54.00	-6.29	H

Test mode:	IEEE 802.11n(HT20)	Test channel:	Mid CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	40.89	32.44	17.18	33.91	56.60	68.20	-11.60	V
17355.00	39.16	32.78	20.12	34.86	57.20	68.20	-11.00	V
11570.00	39.35	32.44	17.18	33.91	55.06	68.20	-13.14	H
17355.00	39.58	32.78	20.12	34.86	57.62	68.20	-10.58	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	29.85	32.44	17.18	33.91	45.56	54.00	-8.44	V
17355.00	29.08	32.78	20.12	34.86	47.12	54.00	-6.88	V
11570.00	29.37	32.44	17.18	33.91	45.08	54.00	-8.92	H
17355.00	29.74	32.78	20.12	34.86	47.78	54.00	-6.22	H

Test mode:	IEEE 802.11n(HT20)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Pol.
11650.00	40.90	32.59	18.02	33.92	57.59	68.20	-10.61	V
17475.00	40.28	32.87	20.15	34.88	58.42	68.20	-9.78	V
11650.00	40.71	32.59	18.02	33.92	57.40	68.20	-10.80	H
17475.00	41.89	32.87	20.15	34.88	60.03	68.20	-8.17	H

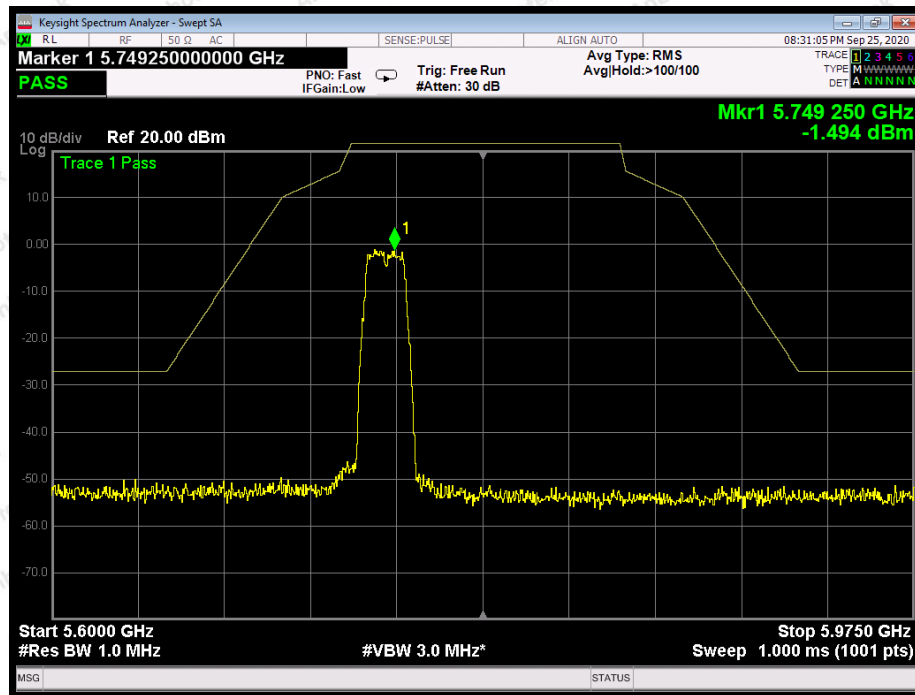
Average value:

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Pol.
11650.00	28.75	32.59	18.02	33.92	45.44	54.00	-8.56	V
17475.00	27.99	32.87	20.15	34.88	46.13	54.00	-7.87	V
11650.00	28.31	32.59	18.02	33.92	45.00	54.00	-9.00	H
17475.00	29.56	32.87	20.15	34.88	47.70	54.00	-6.30	H

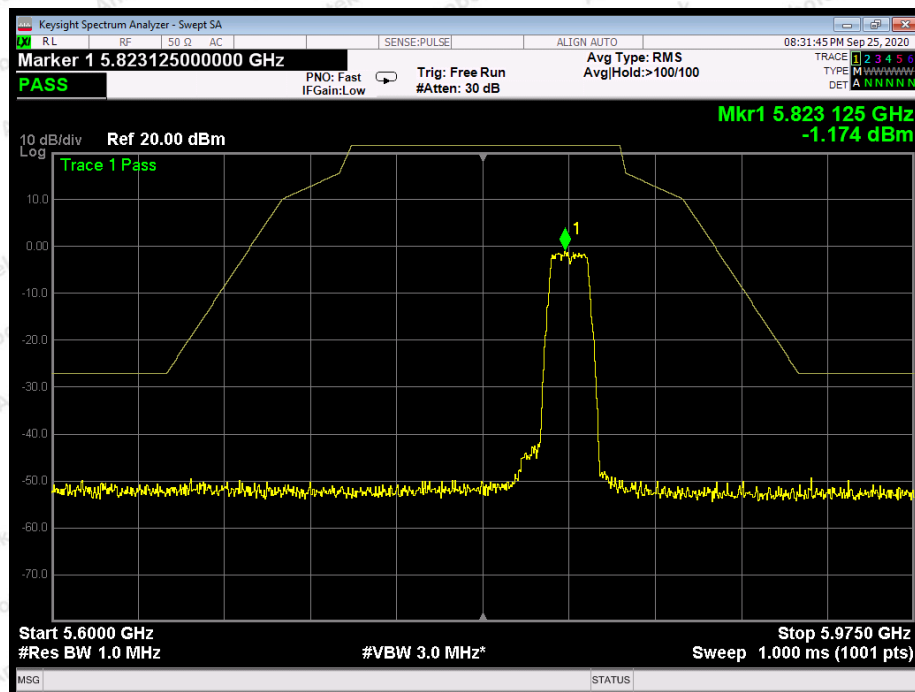
Remark:

1. During the test, pre-scan the 802.11a,n(HT20),ac(HT20),n(HT40),ac(HT40),ac(HT80) mode, and found the 802.11n(HT20) mode is worse case , the report only record this mode.
2. Final Level =Receiver Read level + Antenna Factor + Cable Loss–Preamplifier Factor

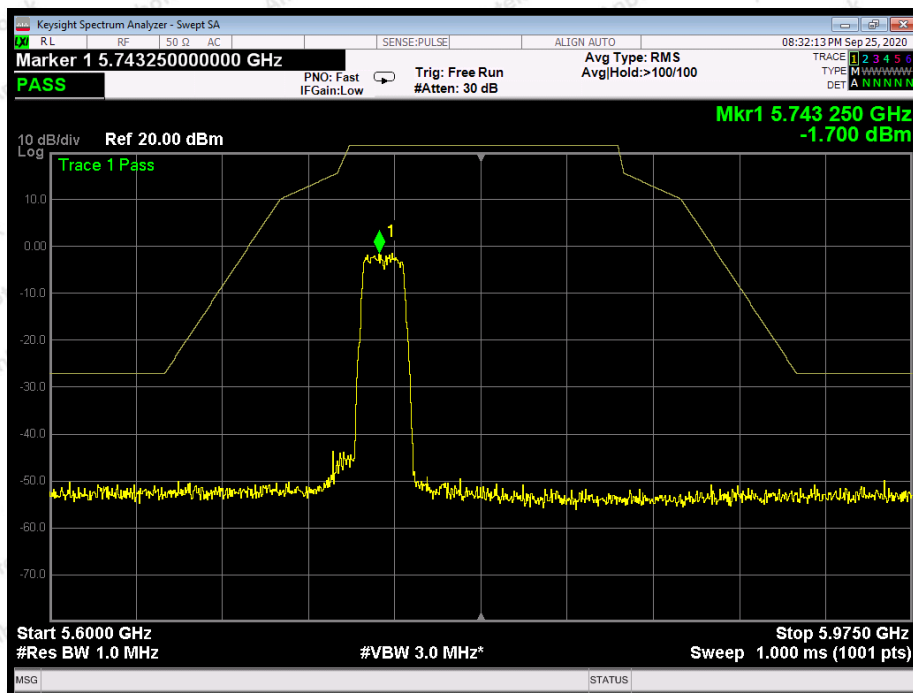
Band Edge test:



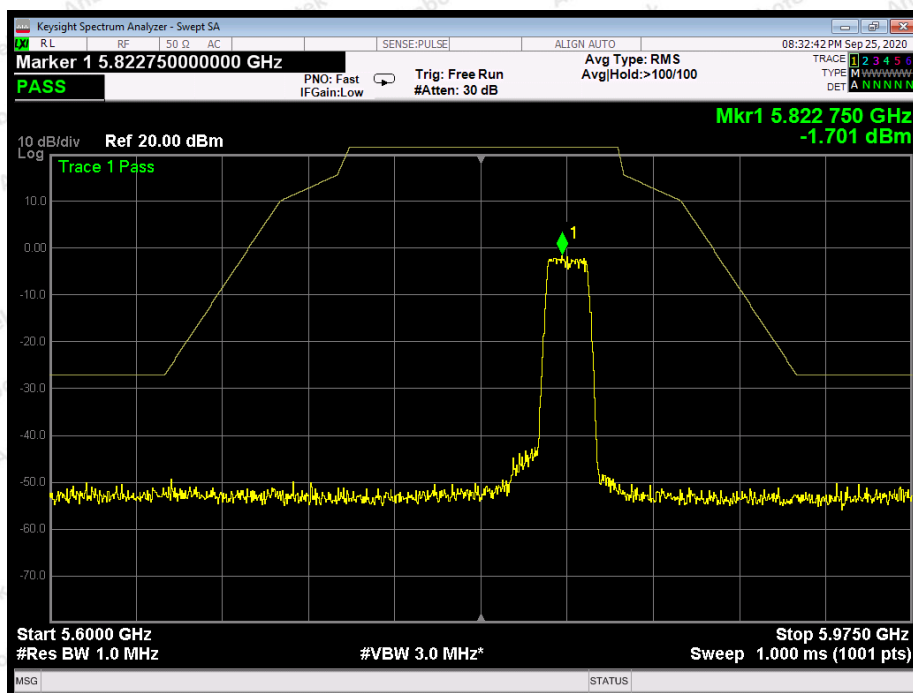
802.11a: Band Edge, Left Side



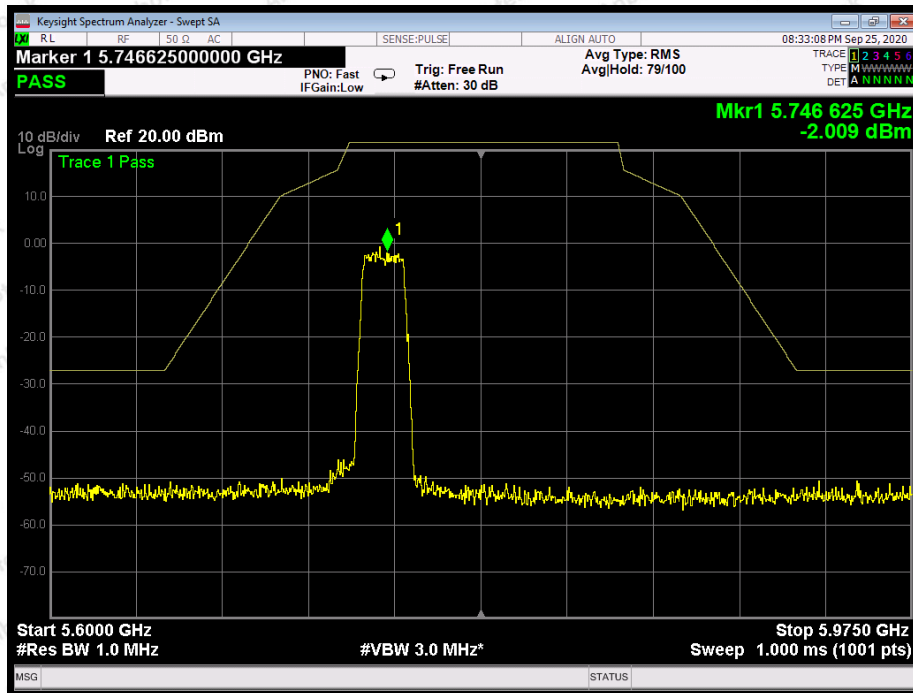
802.11a: Band Edge, Right Side



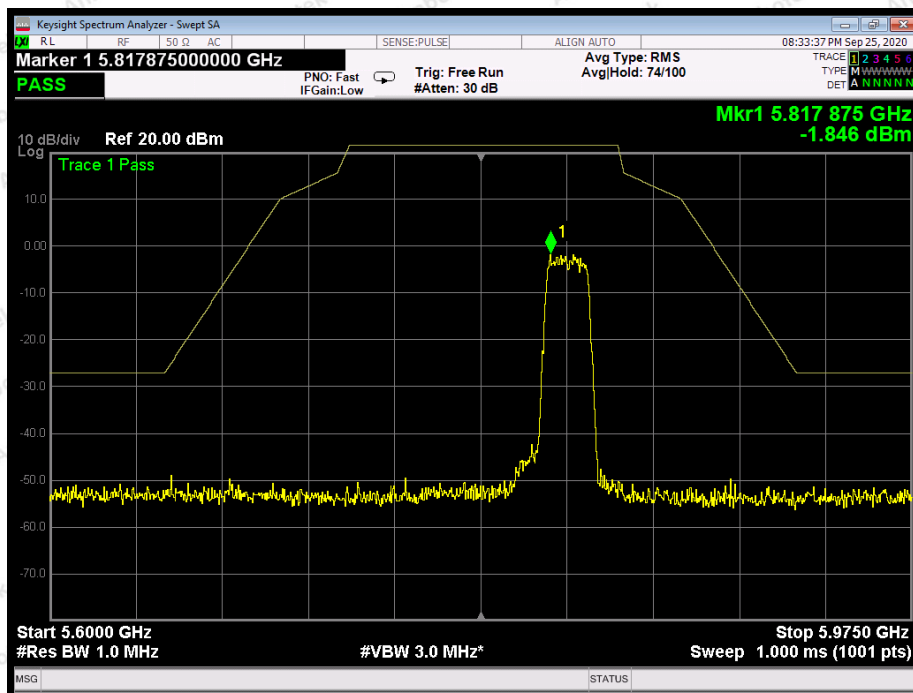
802.11n(20): Band Edge, Left Side



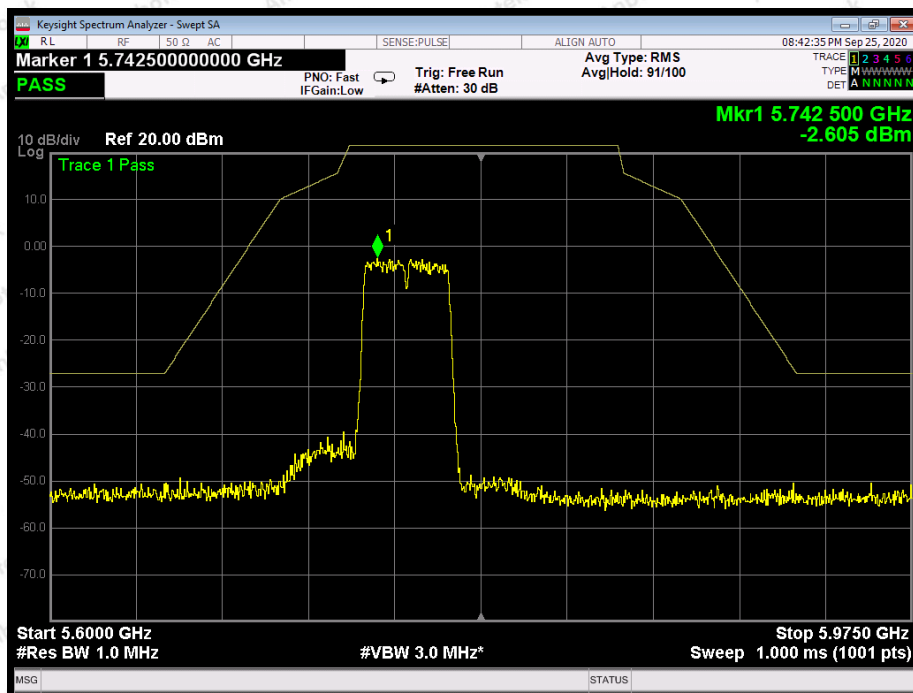
802.11n(20): Band Edge, Right Side



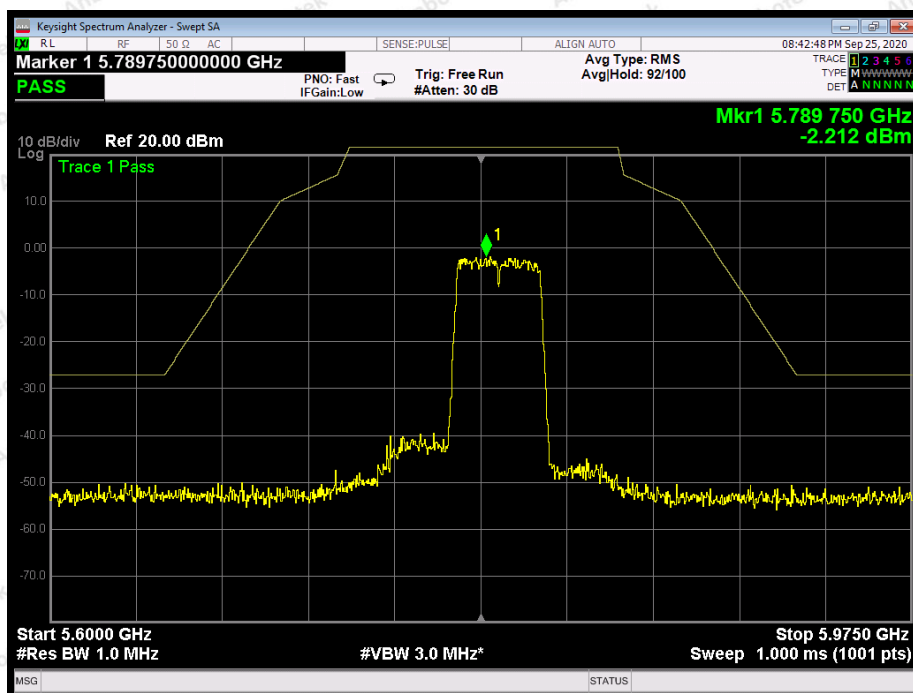
802.11ac(20): Band Edge, Left Side



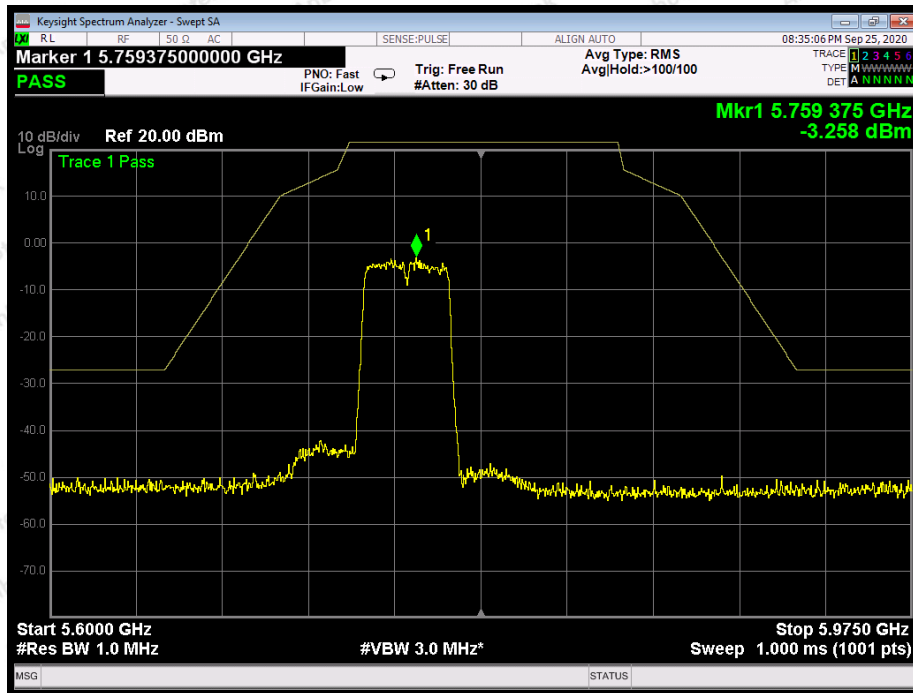
802.11ac(20): Band Edge, Right Side



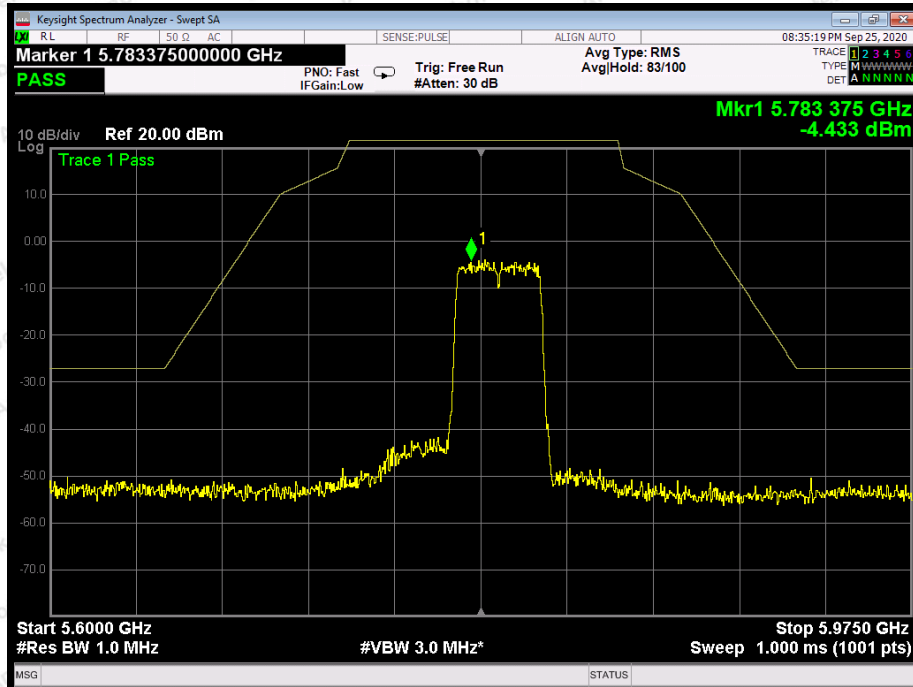
802.11n(40): Band Edge, Left Side



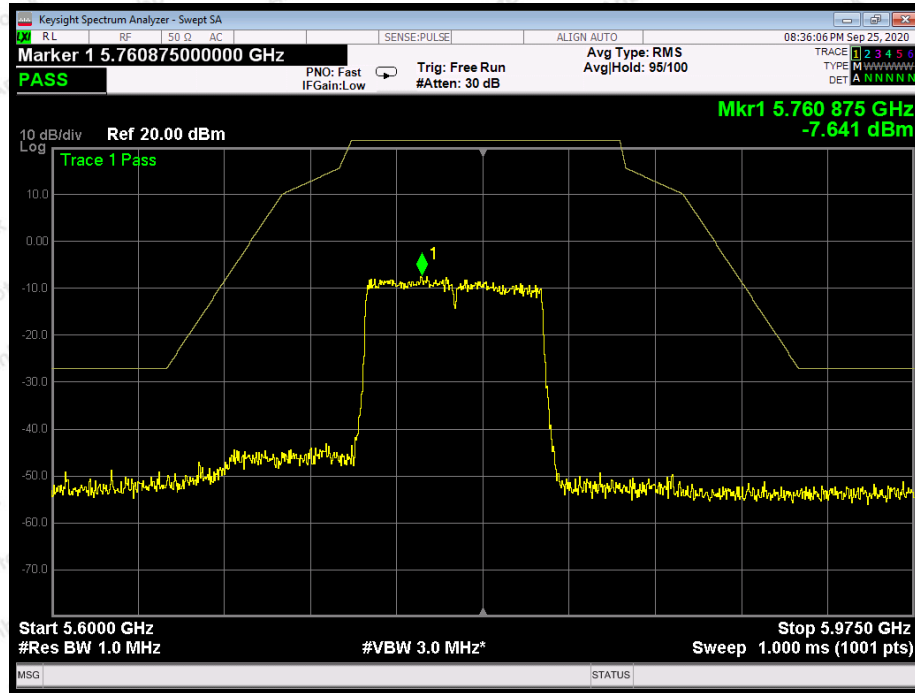
802.11n(40): Band Edge, Right Side



802.11ac(40): Band Edge, Left Side



802.11ac(40): Band Edge, Right Side



802.11ac(80): Band Edge



Test Results (Above 1000MHz)

ANT B:

Test mode:	IEEE 802.11n(HT20)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	41.39	31.98	17.08	33.91	56.54	68.20	-11.66	V
17235.00	41.32	32.65	20.03	34.85	59.15	68.20	-9.05	V
11490.00	40.97	31.98	17.08	33.91	56.12	68.20	-12.08	H
17235.00	40.41	32.65	20.03	34.85	58.24	68.20	-9.96	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	29.87	31.98	17.08	33.91	45.02	54.00	-8.98	V
17235.00	29.97	32.65	20.03	34.85	47.80	54.00	-6.20	V
11490.00	29.04	31.98	17.08	33.91	44.19	54.00	-9.81	H
17235.00	27.50	32.65	20.03	34.85	45.33	54.00	-8.67	H

Test mode:	IEEE 802.11n(HT20)	Test channel:	Mid CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	40.74	32.44	17.18	33.91	56.45	68.20	-11.75	V
17355.00	41.64	32.78	20.12	34.86	59.68	68.20	-8.52	V
11570.00	41.54	32.44	17.18	33.91	57.25	68.20	-10.95	H
17355.00	40.35	32.78	20.12	34.86	58.39	68.20	-9.81	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	29.56	32.44	17.18	33.91	45.27	54.00	-8.73	V
17355.00	28.52	32.78	20.12	34.86	46.56	54.00	-7.44	V
11570.00	27.65	32.44	17.18	33.91	43.36	54.00	-10.64	H
17355.00	27.98	32.78	20.12	34.86	46.02	54.00	-7.98	H

Test mode:	IEEE 802.11n(HT20)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Pol.
11650.00	41.51	32.59	18.02	33.92	58.20	68.20	-10.00	V
17475.00	41.97	32.87	20.15	34.88	60.11	68.20	-8.09	V
11650.00	41.90	32.59	18.02	33.92	58.59	68.20	-9.61	H
17475.00	39.55	32.87	20.15	34.88	57.69	68.20	-10.51	H

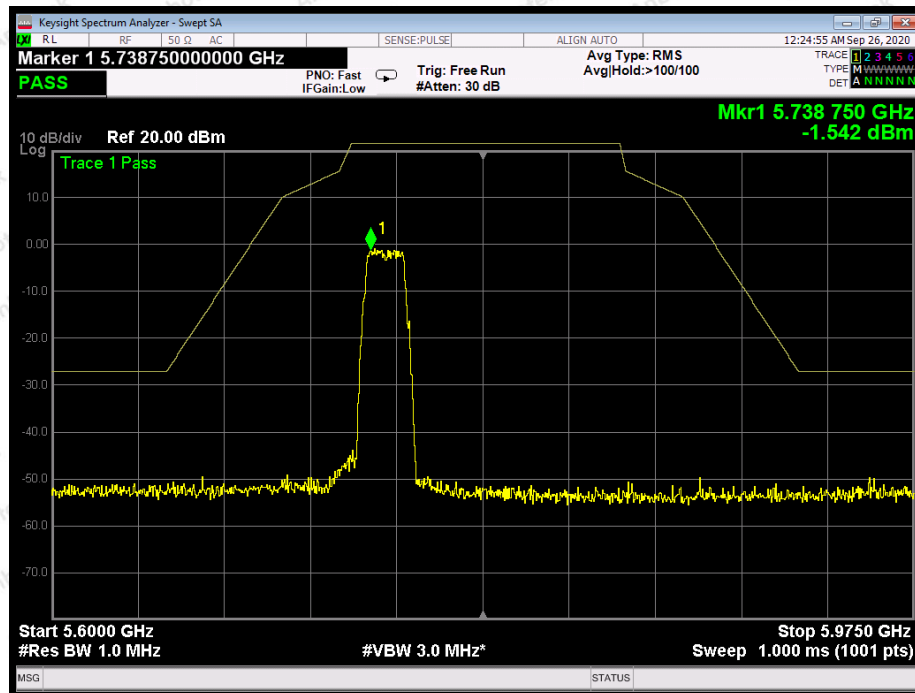
Average value:

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Pol.
11650.00	29.86	32.59	18.02	33.92	46.55	54.00	-7.45	V
17475.00	28.95	32.87	20.15	34.88	47.09	54.00	-6.91	V
11650.00	29.41	32.59	18.02	33.92	46.10	54.00	-7.90	H
17475.00	28.47	32.87	20.15	34.88	46.61	54.00	-7.39	H

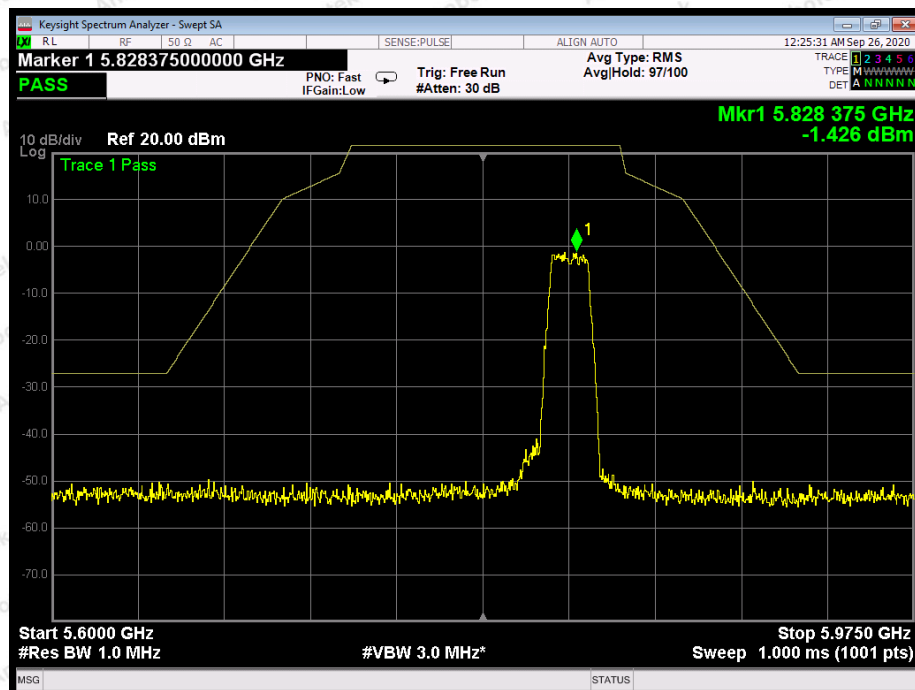
Remark:

1. During the test, pre-scan the 802.11a,n(HT20),ac(HT20),n(HT40),ac(HT40),ac(HT80) mode, and found the 802.11n(HT20) mode is worse case, the report only record this mode.
2. Final Level =Receiver Read level + Antenna Factor + Cable Loss–Preamplifier Factor

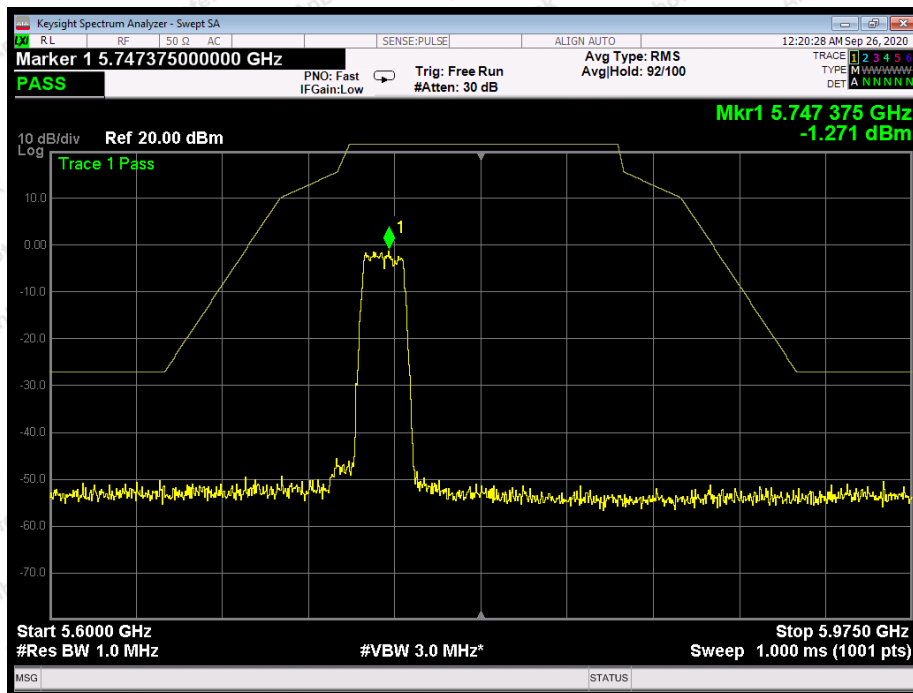
Band Edge test:



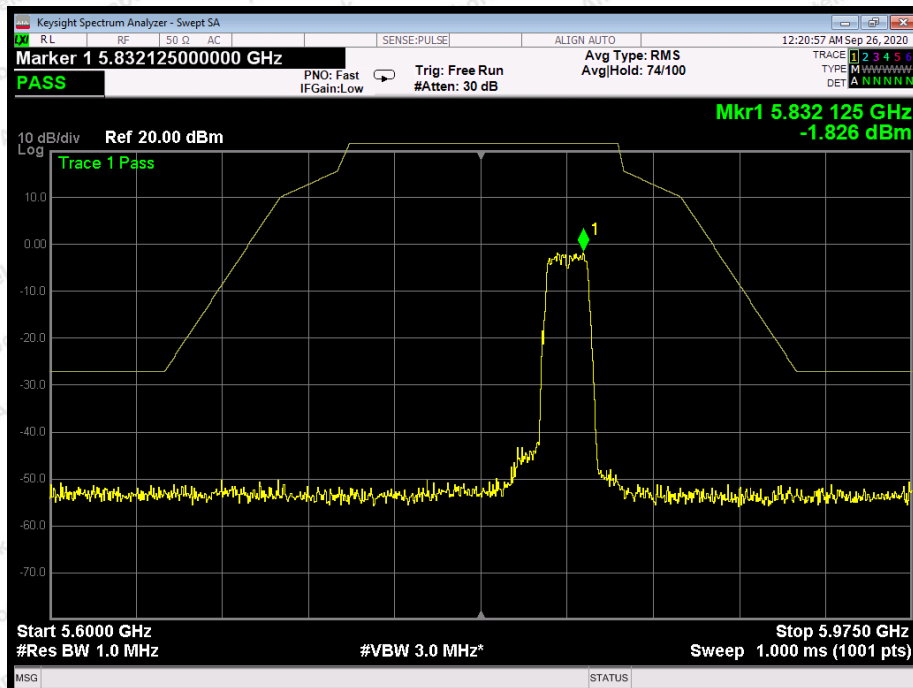
802.11a: Band Edge, Left Side



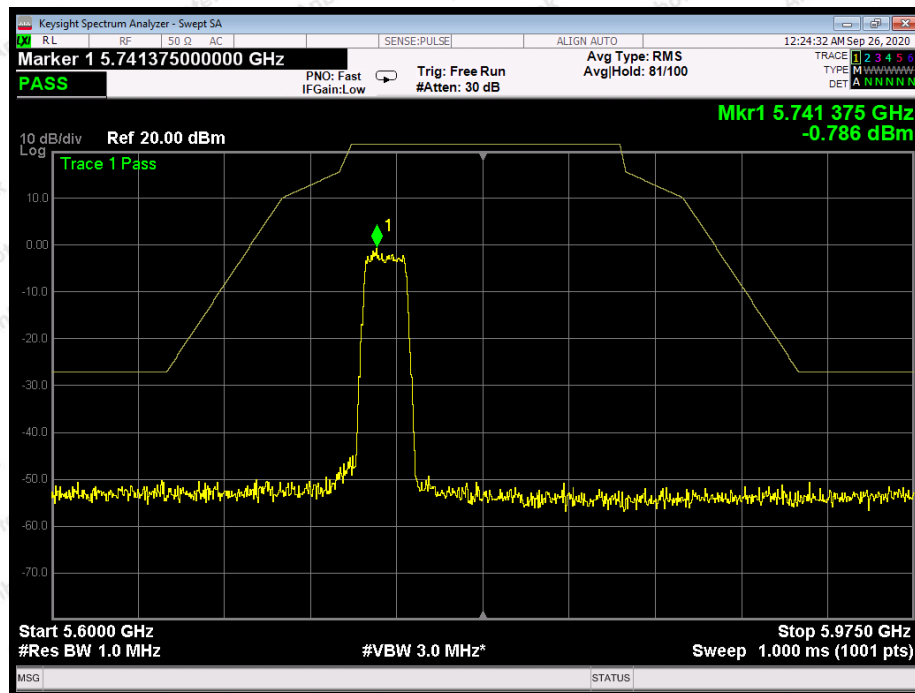
802.11a: Band Edge, Right Side



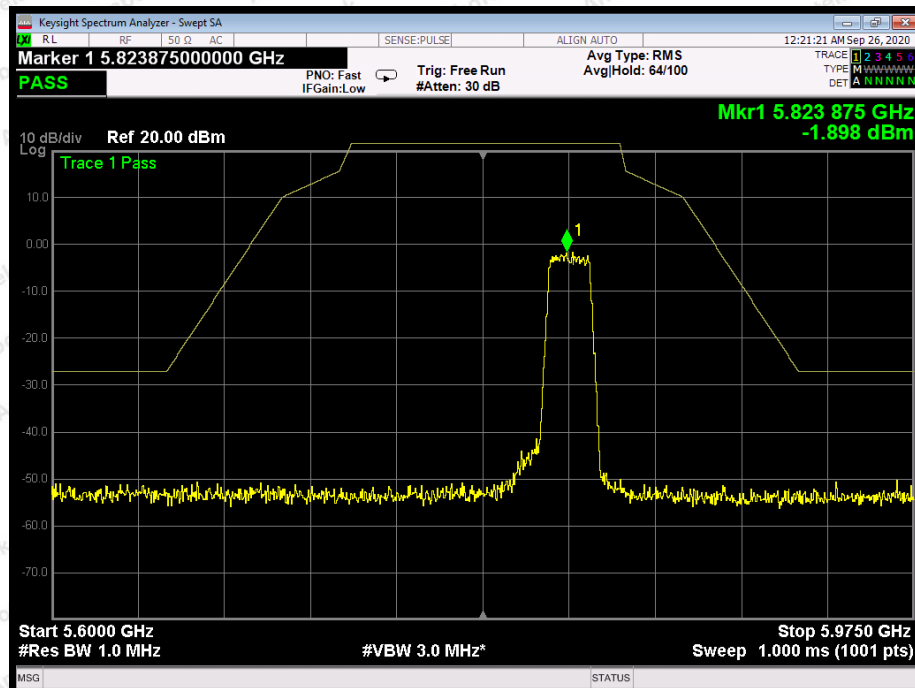
802.11n(20): Band Edge, Left Side



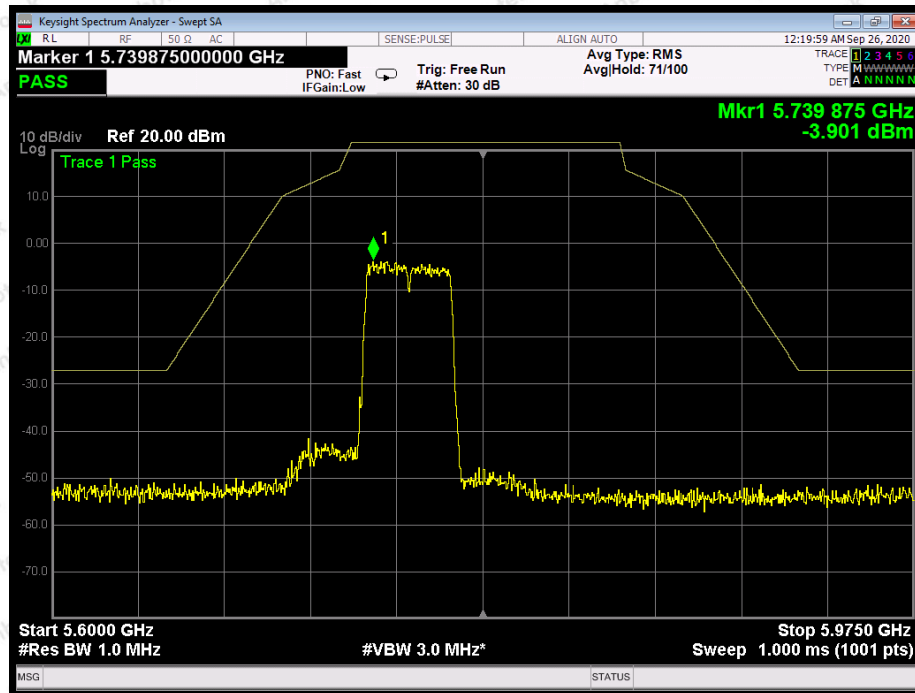
802.11n(20): Band Edge, Right Side



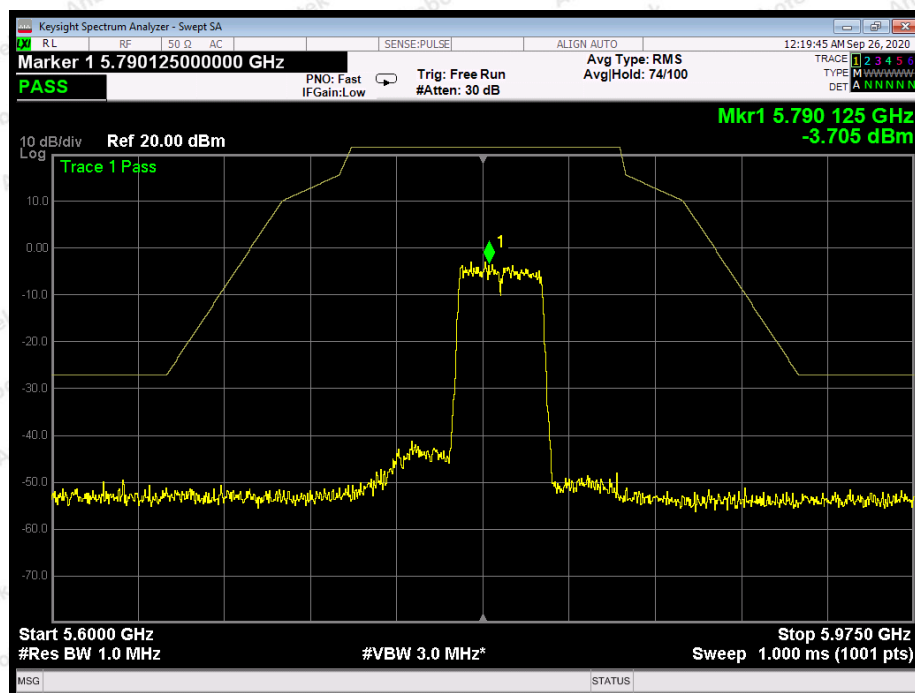
802.11ac(20): Band Edge, Left Side



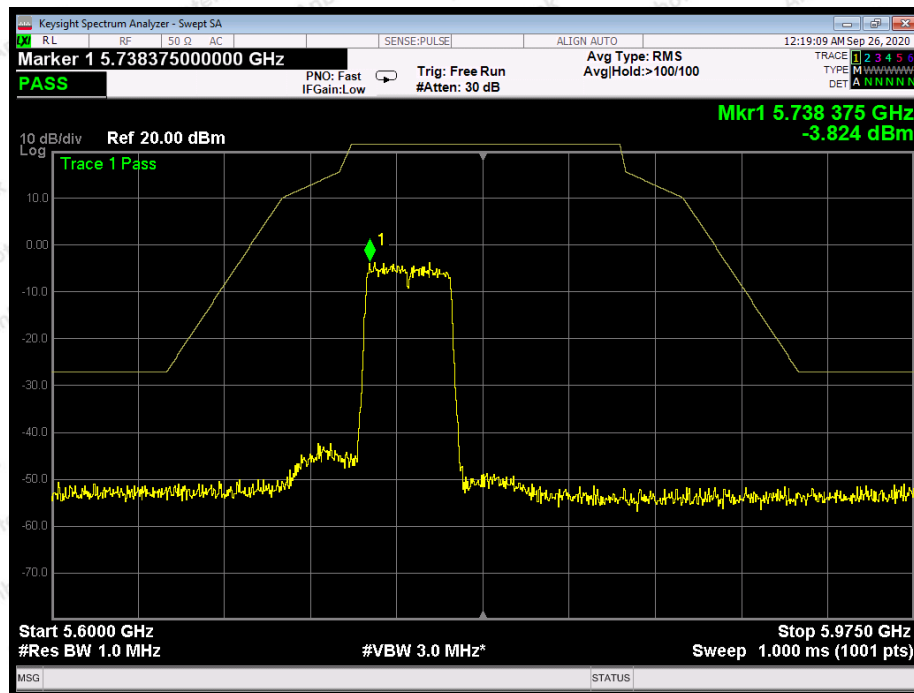
802.11ac(20): Band Edge, Right Side



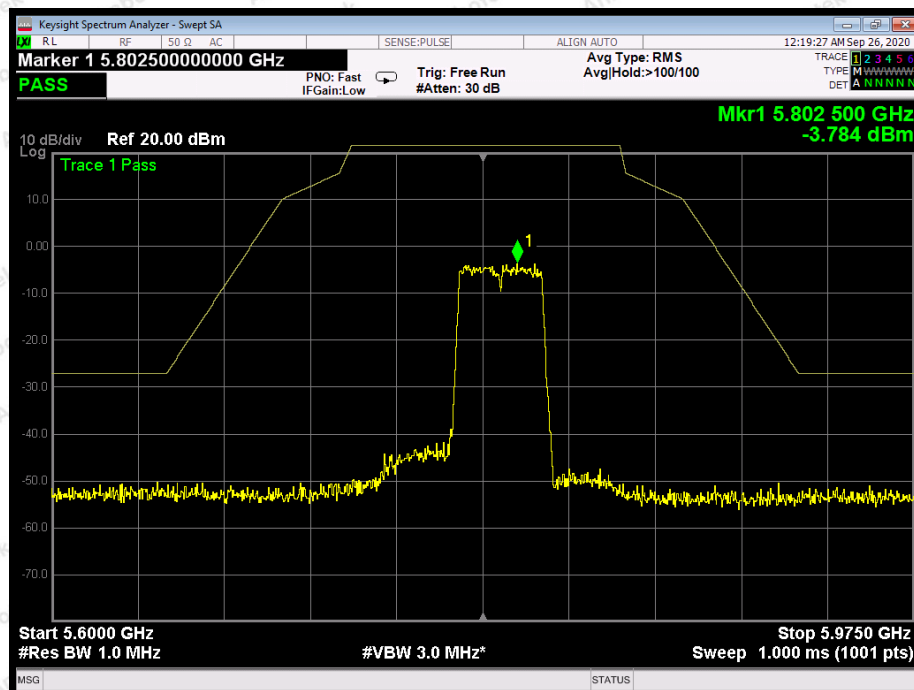
802.11n(40): Band Edge, Left Side



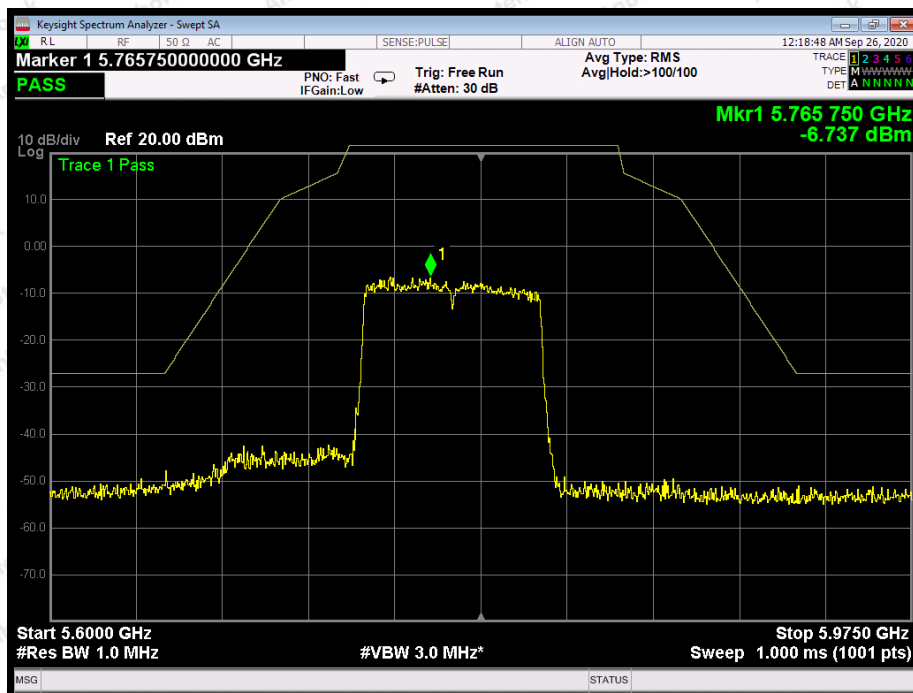
802.11n(40): Band Edge, Right Side



802.11ac(40): Band Edge, Left Side



802.11ac(40): Band Edge, Right Side



802.11ac(80): Band Edge

Test Results (Above 1000MHz)

ANT A+B:

Test mode:	IEEE 802.11n(HT20)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	41.26	31.98	17.08	33.91	56.41	68.20	-11.79	V
17235.00	39.39	32.65	20.03	34.85	57.22	68.20	-10.98	V
11490.00	39.05	31.98	17.08	33.91	54.20	68.20	-14.00	H
17235.00	39.38	32.65	20.03	34.85	57.21	68.20	-10.99	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	28.76	31.98	17.08	33.91	43.91	54.00	-10.09	V
17235.00	28.89	32.65	20.03	34.85	46.72	54.00	-7.28	V
11490.00	27.97	31.98	17.08	33.91	43.12	54.00	-10.88	H
17235.00	29.34	32.65	20.03	34.85	47.17	54.00	-6.83	H
Test mode:	IEEE 802.11n(HT20)			Test channel:	Mid CH			

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	39.83	32.44	17.18	33.91	55.54	68.20	-12.66	V
17355.00	41.42	32.78	20.12	34.86	59.46	68.20	-8.74	V
11570.00	39.56	32.44	17.18	33.91	55.27	68.20	-12.93	H
17355.00	41.75	32.78	20.12	34.86	59.79	68.20	-8.41	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	28.09	32.44	17.18	33.91	43.80	54.00	-10.20	V
17355.00	28.09	32.78	20.12	34.86	46.13	54.00	-7.87	V
11570.00	28.48	32.44	17.18	33.91	44.19	54.00	-9.81	H
17355.00	28.59	32.78	20.12	34.86	46.63	54.00	-7.37	H

Test mode:	IEEE 802.11n(HT20)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11650.00	39.48	32.59	18.02	33.92	56.17	68.20	-12.03	V
17475.00	39.96	32.87	20.15	34.88	58.10	68.20	-10.10	V
11650.00	39.60	32.59	18.02	33.92	56.29	68.20	-11.91	H
17475.00	40.39	32.87	20.15	34.88	58.53	68.20	-9.67	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11650.00	29.01	32.59	18.02	33.92	45.70	54.00	-8.30	V
17475.00	28.99	32.87	20.15	34.88	47.13	54.00	-6.87	V
11650.00	27.20	32.59	18.02	33.92	43.89	54.00	-10.11	H
17475.00	29.45	32.87	20.15	34.88	47.59	54.00	-6.41	H

Test mode:	IEEE 802.11ac(HT20)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	39.38	31.98	17.08	33.91	54.53	68.20	-13.67	V
17235.00	41.79	32.65	20.03	34.85	59.62	68.20	-8.58	V
11490.00	39.29	31.98	17.08	33.91	54.44	68.20	-13.76	H
17235.00	39.26	32.65	20.03	34.85	57.09	68.20	-11.11	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11490.00	27.16	31.98	17.08	33.91	42.31	54.00	-11.69	V
17235.00	29.01	32.65	20.03	34.85	46.84	54.00	-7.16	V
11490.00	29.81	31.98	17.08	33.91	44.96	54.00	-9.04	H
17235.00	27.46	32.65	20.03	34.85	45.29	54.00	-8.71	H

Test mode:	IEEE 802.11ac(HT20)	Test channel:	Mid CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	40.82	32.44	17.18	33.91	56.53	68.20	-11.67	V
17355.00	39.39	32.78	20.12	34.86	57.43	68.20	-10.77	V
11570.00	40.15	32.44	17.18	33.91	55.86	68.20	-12.34	H
17355.00	41.34	32.78	20.12	34.86	59.38	68.20	-8.82	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11570.00	28.84	32.44	17.18	33.91	44.55	54.00	-9.45	V
17355.00	29.57	32.78	20.12	34.86	47.61	54.00	-6.39	V
11570.00	28.95	32.44	17.18	33.91	44.66	54.00	-9.34	H
17355.00	28.06	32.78	20.12	34.86	46.10	54.00	-7.90	H

Test mode:	IEEE 802.11ac(HT20)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11650.00	40.10	32.59	18.02	33.92	56.79	68.20	-11.41	V
17475.00	41.14	32.87	20.15	34.88	59.28	68.20	-8.92	V
11650.00	41.03	32.59	18.02	33.92	57.72	68.20	-10.48	H
17475.00	41.69	32.87	20.15	34.88	59.83	68.20	-8.37	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11650.00	29.60	32.59	18.02	33.92	46.29	54.00	-7.71	V
17475.00	28.43	32.87	20.15	34.88	46.57	54.00	-7.43	V
11650.00	28.42	32.59	18.02	33.92	45.11	54.00	-8.89	H
17475.00	29.33	32.87	20.15	34.88	47.47	54.00	-6.53	H

Test mode:	IEEE 802.11n(HT40)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11510.00	41.28	31.98	17.08	33.91	56.43	68.20	-11.77	V
17265.00	41.46	32.65	20.03	34.85	59.29	68.20	-8.91	V
11510.00	40.97	31.98	17.08	33.91	56.12	68.20	-12.08	H
17265.00	41.19	32.65	20.03	34.85	59.02	68.20	-9.18	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11510.00	27.91	31.98	17.08	33.91	43.06	54.00	-10.94	V
17265.00	27.06	32.65	20.03	34.85	44.89	54.00	-9.11	V
11510.00	27.23	31.98	17.08	33.91	42.38	54.00	-11.62	H
17265.00	29.05	32.65	20.03	34.85	46.88	54.00	-7.12	H

Test mode:	IEEE 802.11n(HT40)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11590.00	39.63	32.59	18.02	33.92	56.32	68.20	-11.88	V
17385.00	41.07	32.87	20.15	34.88	59.21	68.20	-8.99	V
11590.00	39.38	32.59	18.02	33.92	56.07	68.20	-12.13	H
17385.00	41.60	32.87	20.15	34.88	59.74	68.20	-8.46	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11590.00	29.65	32.59	18.02	33.92	46.34	54.00	-7.66	V
17385.00	29.27	32.87	20.15	34.88	47.41	54.00	-6.59	V
11590.00	29.37	32.59	18.02	33.92	46.06	54.00	-7.94	H
17385.00	27.44	32.78	20.12	34.86	45.48	54.00	-8.52	H

Test mode:	IEEE 802.11ac(HT40)	Test channel:	Low CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11510.00	41.65	31.98	17.08	33.91	56.80	68.20	-11.40	V
17265.00	39.43	32.65	20.03	34.85	57.26	68.20	-10.94	V
11510.00	40.68	31.98	17.08	33.91	55.83	68.20	-12.37	H
17265.00	41.12	32.65	20.03	34.85	58.95	68.20	-9.25	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11510.00	27.49	31.98	17.08	33.91	42.64	54.00	-11.36	V
17265.00	28.93	32.65	20.03	34.85	46.76	54.00	-7.24	V
11510.00	27.69	31.98	17.08	33.91	42.84	54.00	-11.16	H
17265.00	27.06	32.65	20.03	34.85	44.89	54.00	-9.11	H

Test mode:	IEEE 802.11ac(HT40)	Test channel:	High CH
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11590.00	41.64	32.59	18.02	33.92	58.33	68.20	-9.87	V
17385.00	41.64	32.87	20.15	34.88	59.78	68.20	-8.42	V
11590.00	40.14	32.59	18.02	33.92	56.83	68.20	-11.37	H
17385.00	39.78	32.87	20.15	34.88	57.92	68.20	-10.28	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11590.00	28.31	32.59	18.02	33.92	45.00	54.00	-9.00	V
17385.00	29.61	32.87	20.15	34.88	47.75	54.00	-6.25	V
11590.00	27.24	32.59	18.02	33.92	43.93	54.00	-10.07	H
17385.00	27.49	32.78	20.12	34.86	45.53	54.00	-8.47	H

Test mode:	IEEE 802.11ac(HT80)	Test channel:	
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11550.00	40.46	32.44	17.18	33.91	56.17	68.20	-12.03	V
17325.00	39.42	32.78	20.12	34.86	57.46	68.20	-10.74	V
11550.00	40.62	32.44	17.18	33.91	56.33	68.20	-11.87	H
17325.00	40.24	32.78	20.12	34.86	58.28	68.20	-9.92	H

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Pol.
11550.00	27.14	32.44	17.18	33.91	42.85	54.00	-11.15	V
17325.00	27.15	32.78	20.12	34.86	45.19	54.00	-8.81	V
11550.00	28.86	32.44	17.18	33.91	44.57	54.00	-9.43	H
17325.00	27.30	32.78	20.12	34.86	45.34	54.00	-8.66	H

Note:

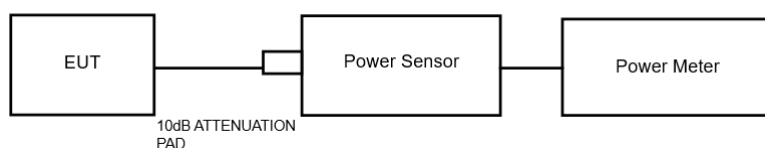
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Pre-amplifier Factor

5. Maximum Peak Output Power Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407 (a) (3)
Test Limit	30dBm

5.2. Test Setup



5.3. Test Procedure

1. The Transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

5.4. Test Data

Test Item	:	Max. peak output power
Test Voltage	:	AC 120V, 60Hz for adapter
Test Result	:	PASS

Test Mode	:	CH Low ~ CH High
Temperature	:	24℃
Humidity	:	55%RH

ANT A:

Mode	Channel Frequency (MHz)	Peak Power output (dBm)	Correctional Limit (dBm)	Results
802.11a	5745	14.73	30	PASS
	5785	14.92	30	PASS
	5825	14.60	30	PASS
802.11n20	5745	13.31	30	PASS
	5785	13.36	30	PASS
	5825	14.56	30	PASS
802.11ac20	5745	14.04	30	PASS
	5785	14.54	30	PASS
	5825	13.79	30	PASS
802.11n40	5755	14.80	30	PASS
	5795	14.59	30	PASS
802.11ac40	5755	14.67	30	PASS
	5795	14.84	30	PASS
802.11ac80	5775	15.02	30	PASS

ANT B:

Mode	Channel Frequency (MHz)	Peak Power output (dBm)	Correctional Limit (dBm)	Results
802.11a	5745	12.62	30	PASS
	5785	12.58	30	PASS
	5825	12.00	30	PASS
802.11n20	5745	11.92	30	PASS
	5785	12.30	30	PASS
	5825	11.97	30	PASS
802.11ac20	5745	11.85	30	PASS
	5785	12.06	30	PASS
	5825	11.58	30	PASS
802.11n40	5755	13.75	30	PASS
	5795	13.58	30	PASS
802.11ac40	5755	12.52	30	PASS
	5795	12.63	30	PASS
802.11ac80	5775	12.19	30	PASS

ANT A+B:

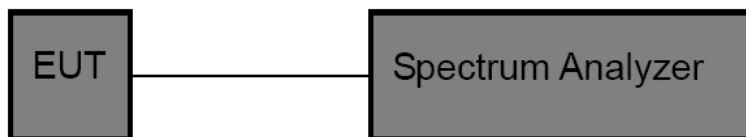
Mode	Channel Frequency (MHz)	Peak Power output (dBm)	Correctional Limit (dBm)	Results
802.11n20	5745	15.68	29.09	PASS
	5785	15.87	29.09	PASS
	5825	16.47	29.09	PASS
802.11ac20	5745	16.09	29.09	PASS
	5785	16.48	29.09	PASS
	5825	15.83	29.09	PASS
802.11n40	5755	17.32	29.09	PASS
	5795	17.12	29.09	PASS
802.11ac40	5755	16.74	29.09	PASS
	5795	16.88	29.09	PASS
802.11ac80	5775	16.84	29.09	PASS

6. Occupy Bandwidth Test

6.1. Test Standard

Test Standard	FCC Part15 C Section 15.407 (a)(5)&15.407(e)
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6.2. Test Setup



6.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as:

26 dB & 99% bandwidth

RBW = approximately 1% of the emission bandwidth;

Set the VBW > RBW;

Detector= Peak

Trace mode= Max hold.

Sweep- auto couple.

6 dB bandwidth

RBW = 100kHz;

Set the video bandwidth (VBW) ≥ 3 RBW;

Detector= Peak

Trace mode= Max hold.

Sweep- auto couple.

4. Measure the maximum width of the emission that is 26dB /6dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer.

5. Repeat until all the rest channels are investigated.

6.4. Test Data

Test Item : 6dB &26dB BW
 Test Voltage : AC 120V, 60Hz for adapter
 Test Result : PASS

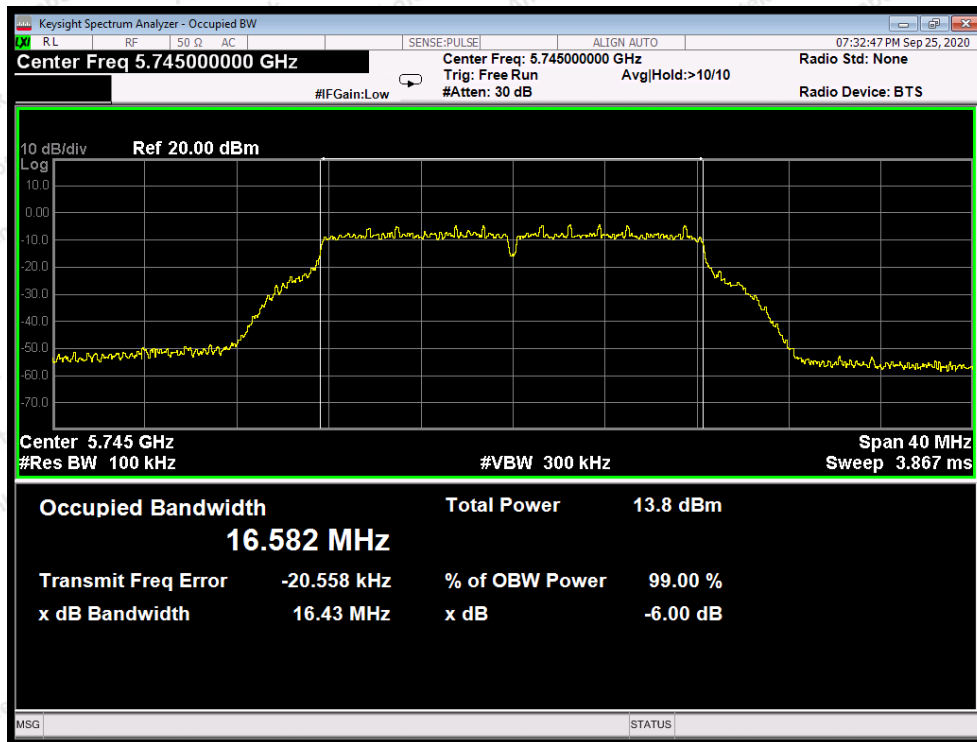
Test Mode : CH Low ~ CH High
 Temperature : 24℃
 Humidity : 55%RH

ANT A:

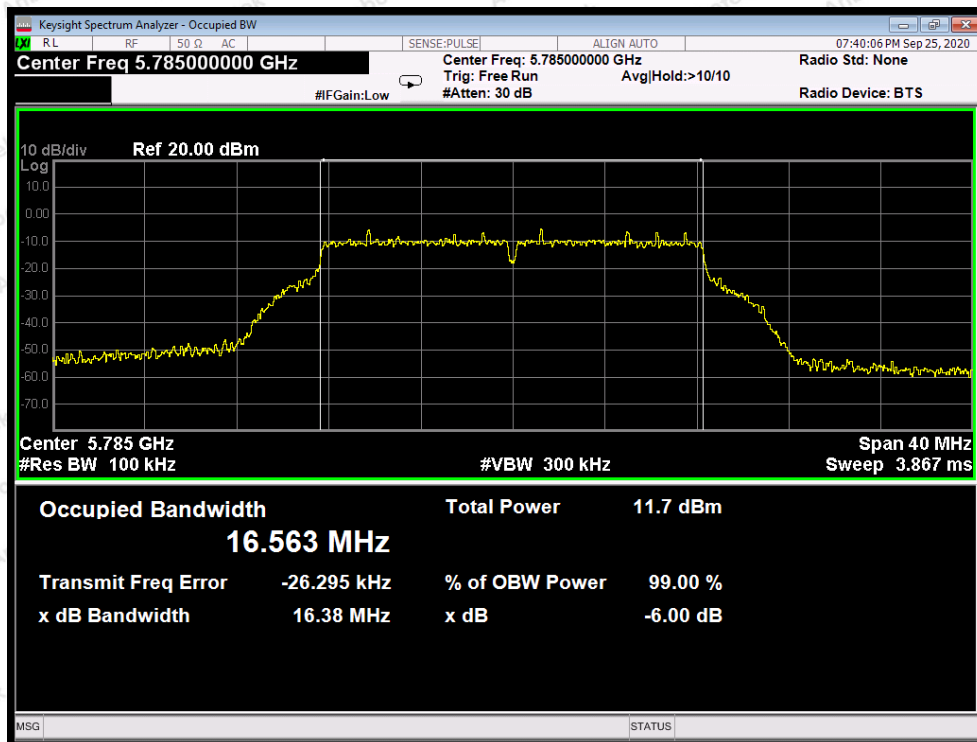
Mode	Channel Frequency (MHz)	6dB BW(MHz)	Limit	Results
802.11a	5745	16.43	>0.5MHz	PASS
	5785	16.38		PASS
	5825	16.38		PASS
802.11n20	5745	17.61		PASS
	5785	17.61		PASS
	5825	17.64		PASS
802.11ac20	5745	17.67		PASS
	5785	17.62		PASS
	5825	17.55		PASS
802.11n40	5755	36.42		PASS
	5795	36.35		PASS
802.11ac40	5755	36.30		PASS
	5795	36.09		PASS
802.11ac80	5775	76.01		PASS

Mode	Channel Frequency (MHz)	26dB BW(MHz)	99% Bandwidth (MHz)
802.11a	5745	21.65	16.876
	5785	21.53	16.902
	5825	21.63	16.965
802.11n20	5745	21.71	17.962
	5785	21.68	18.012
	5825	21.89	18.000
802.11ac20	5745	21.68	17.911
	5785	21.50	17.914
	5825	21.82	17.887
802.11n40	5755	40.05	36.415
	5795	36.332	39.75
802.11ac40	5755	39.77	36.384
	5795	39.50	36.332
802.11ac80	5775	81.16	75.870

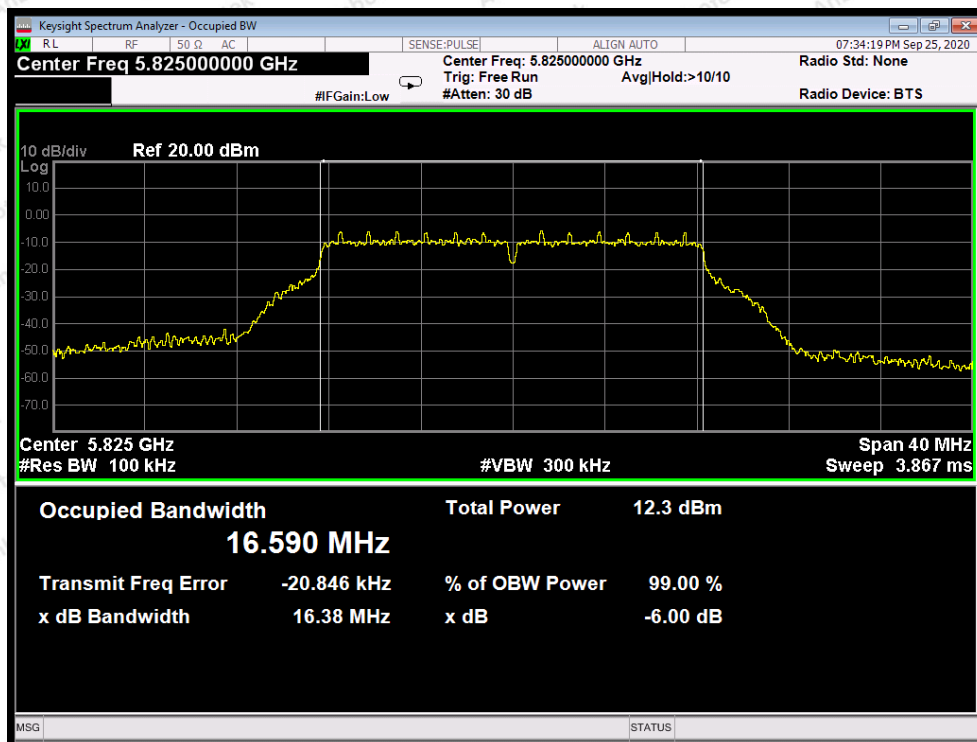
6dB Bandwidth



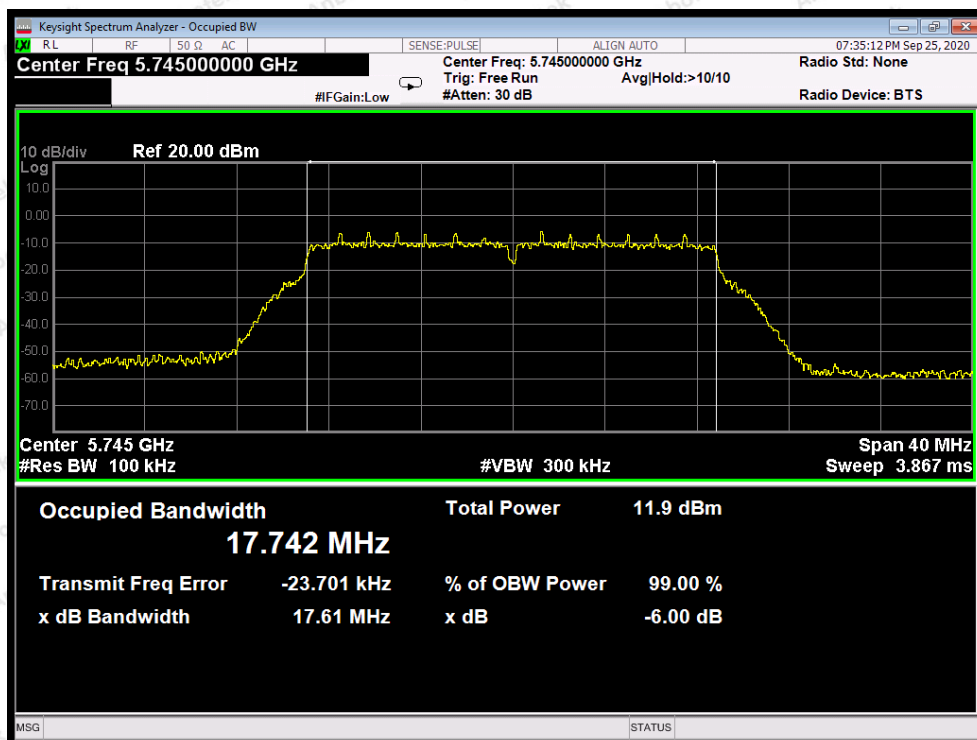
Test Mode: 802.11a--Low



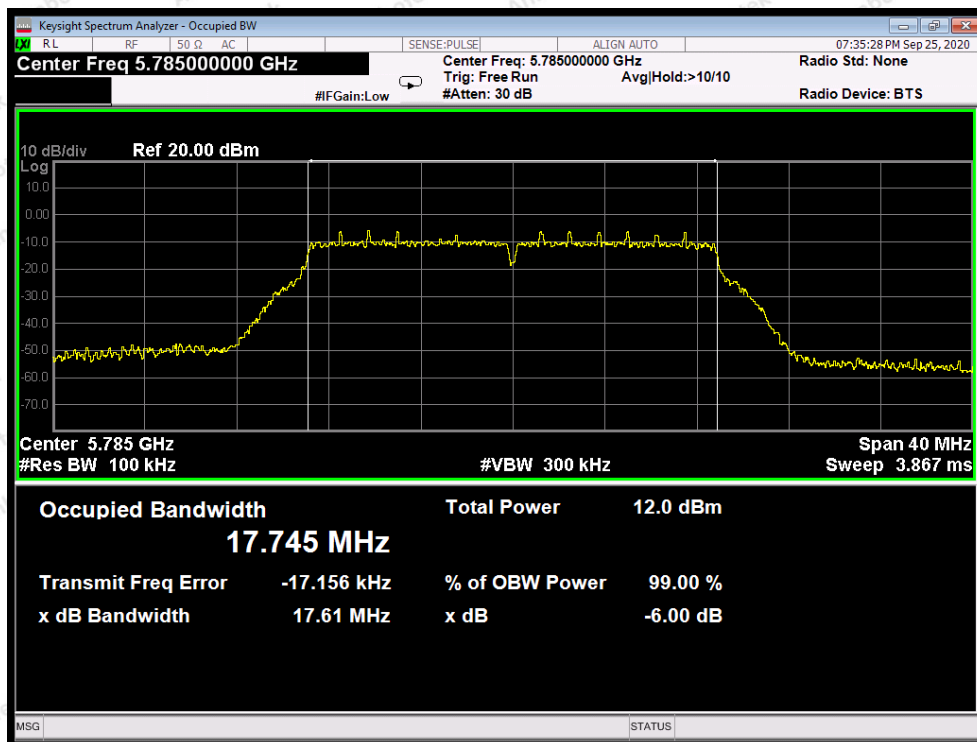
Test Mode: 802.11a---Middle



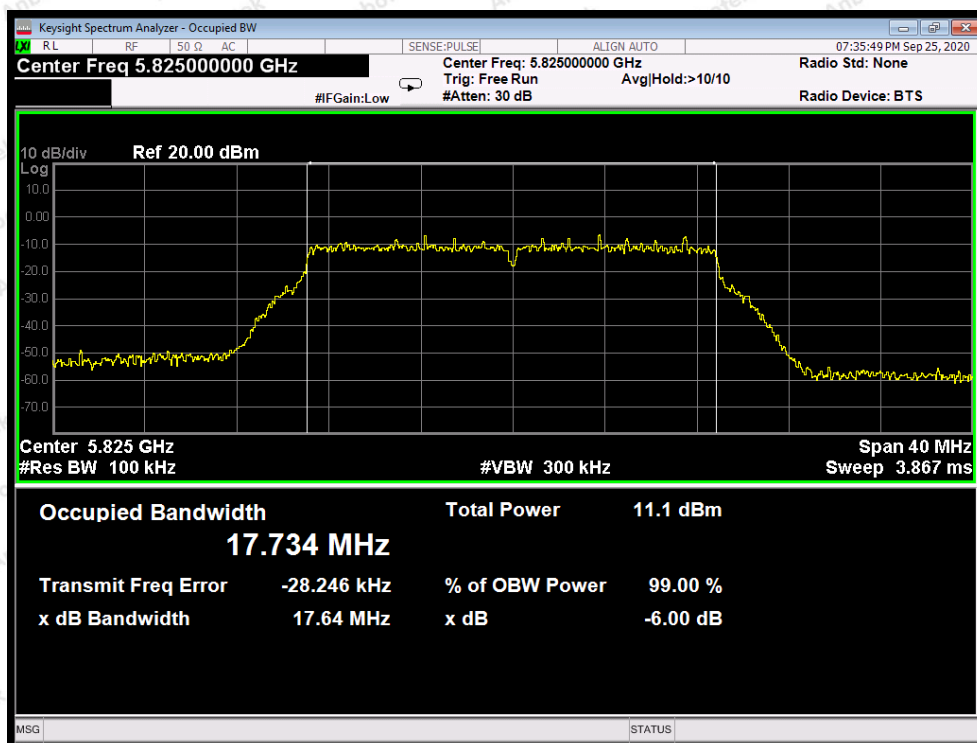
Test Mode: 802.11a---High



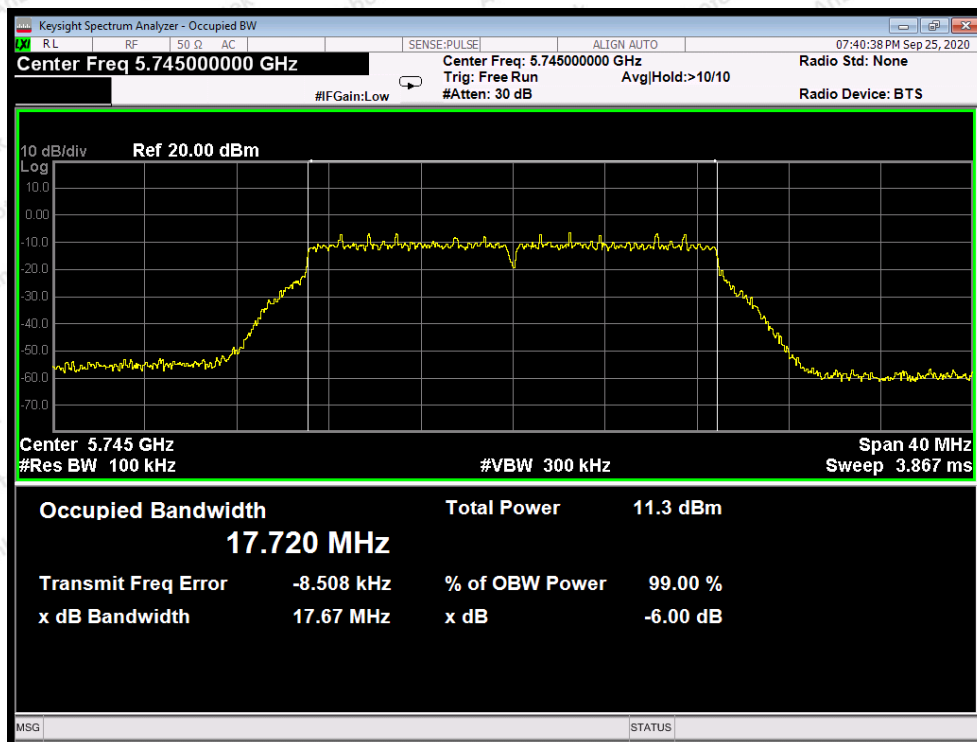
Test Mode: 802.11n20---Low



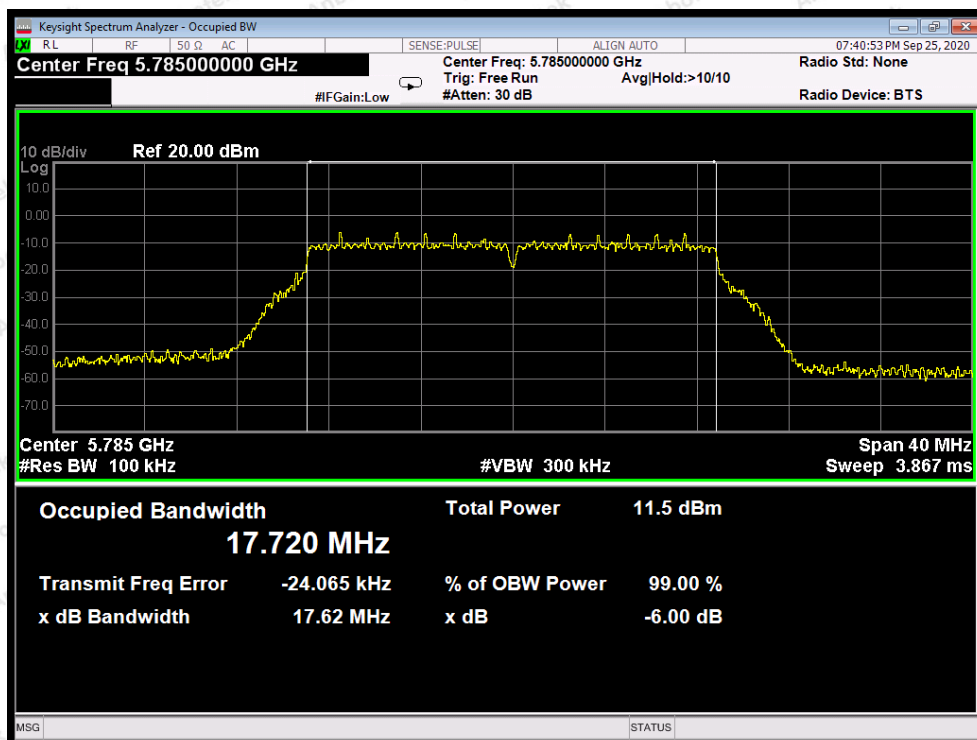
Test Mode: 802.11n20---Middle



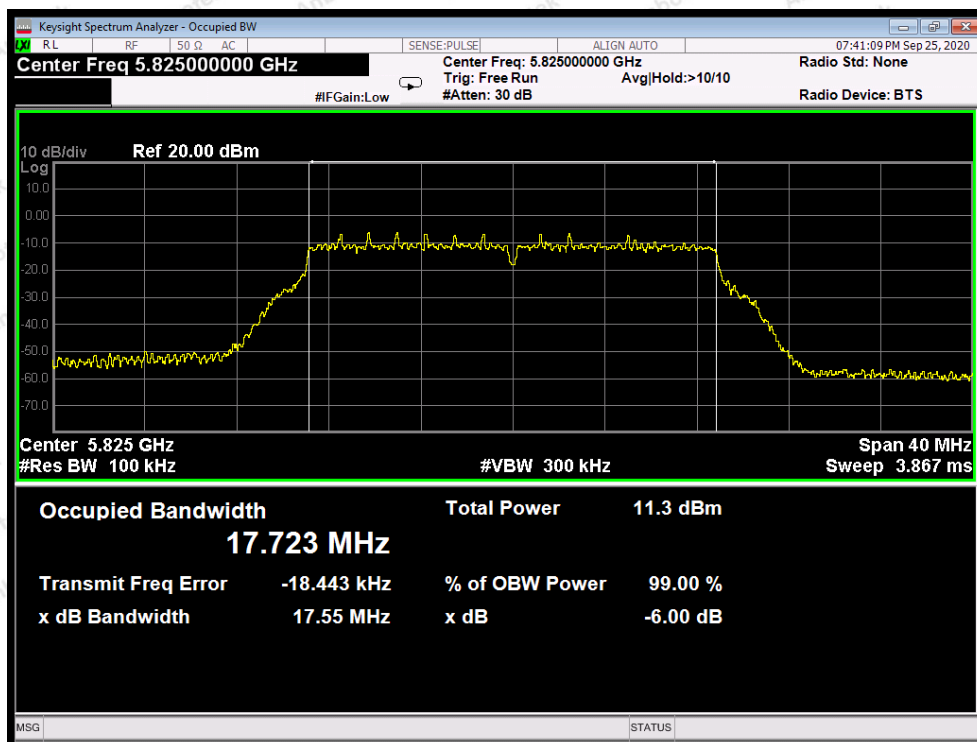
Test Mode: 802.11n20---High



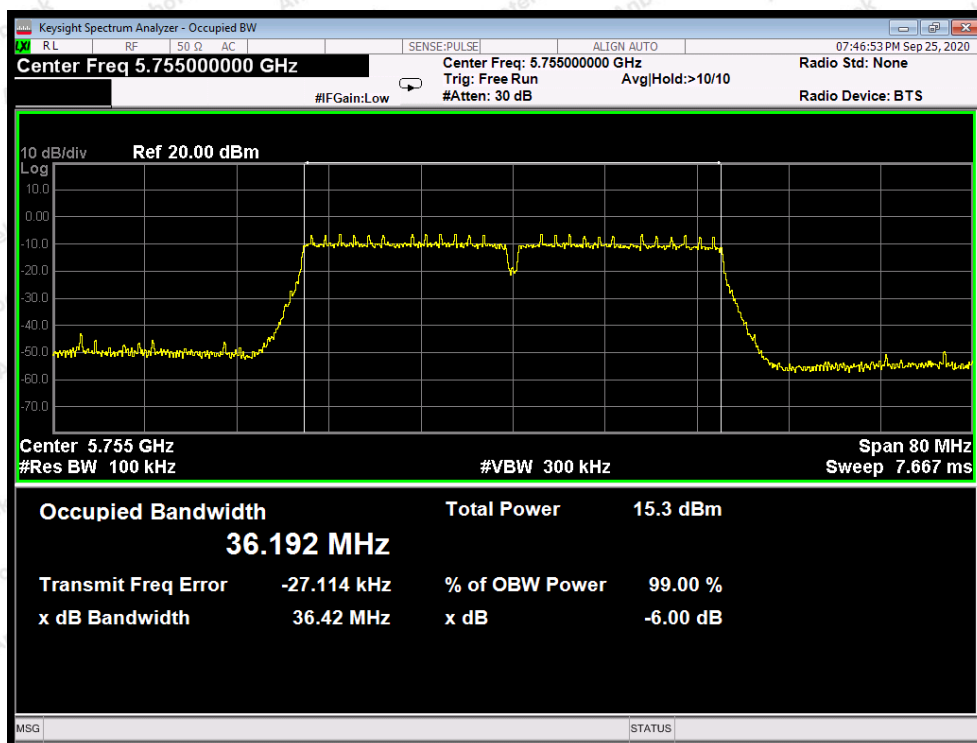
Test Mode: 802.11ac20--Low



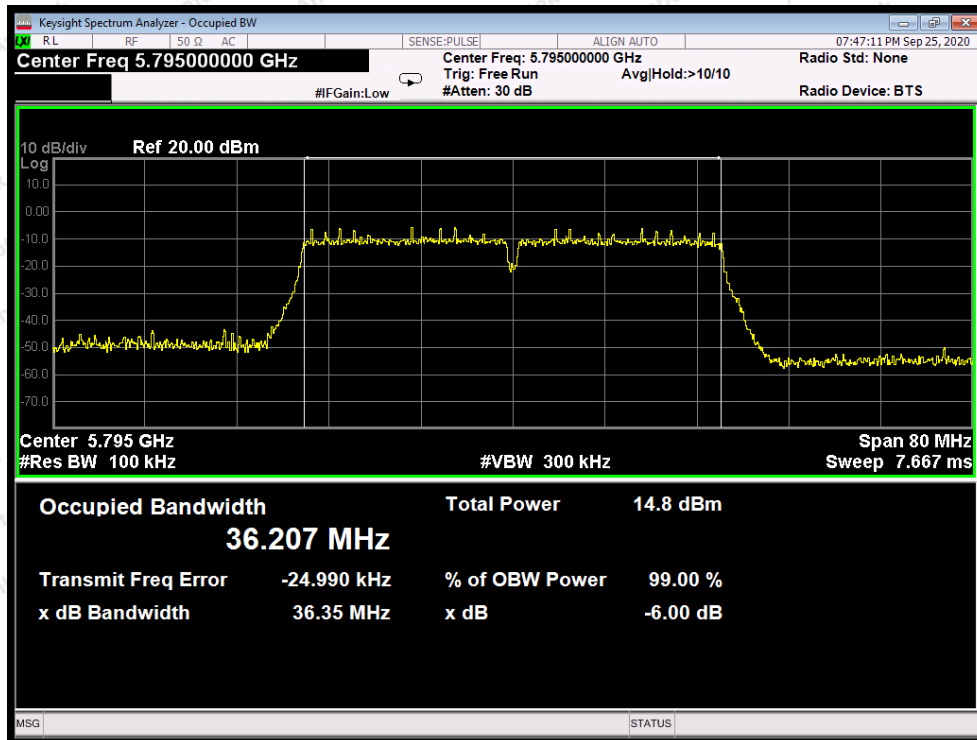
Test Mode: 802.11ac20---Middle



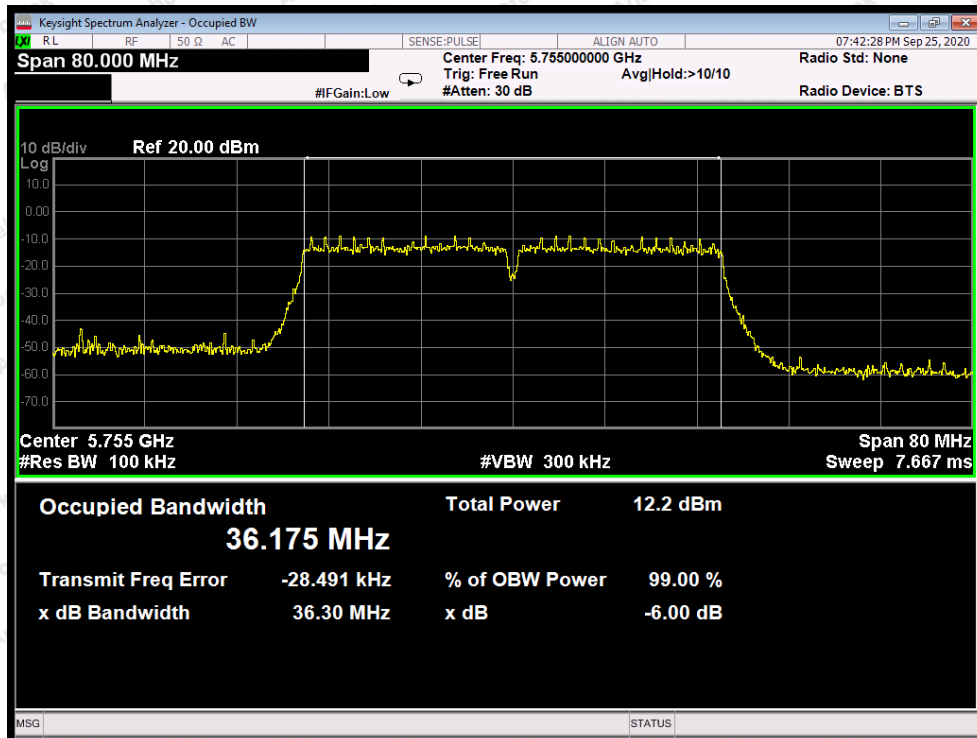
Test Mode: 802.11ac20---High



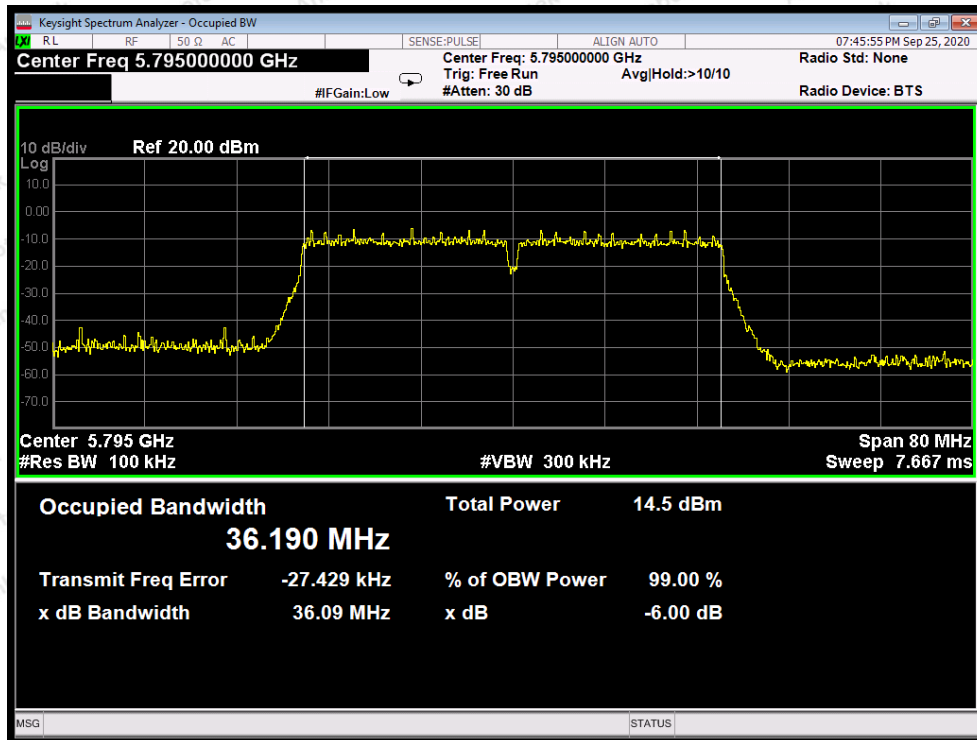
Test Mode: 802.11n40---Low



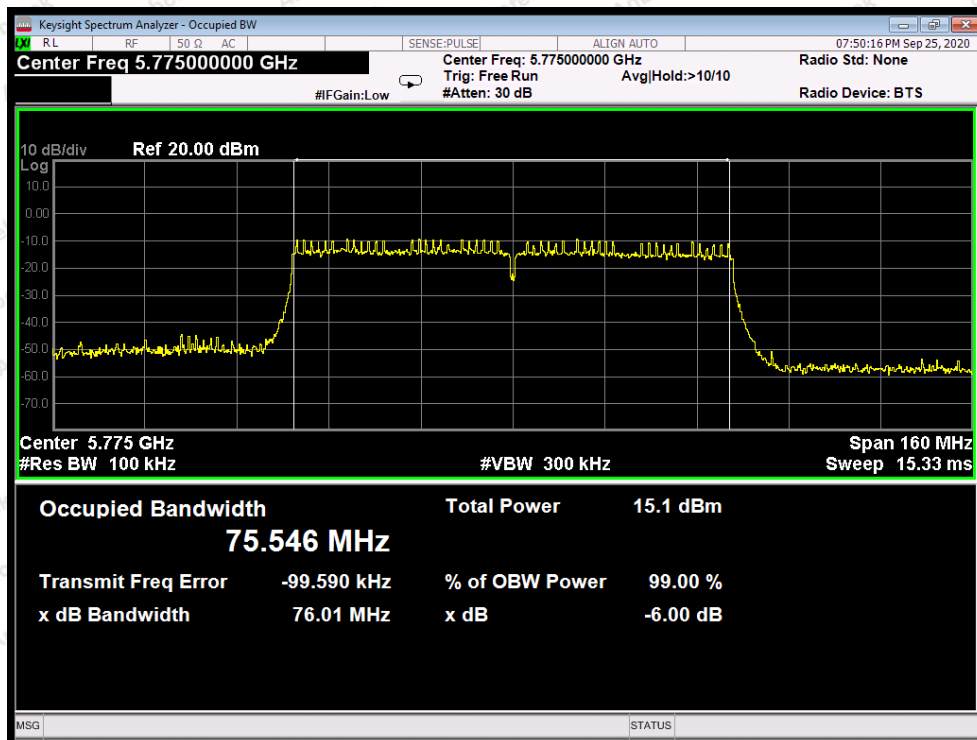
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low

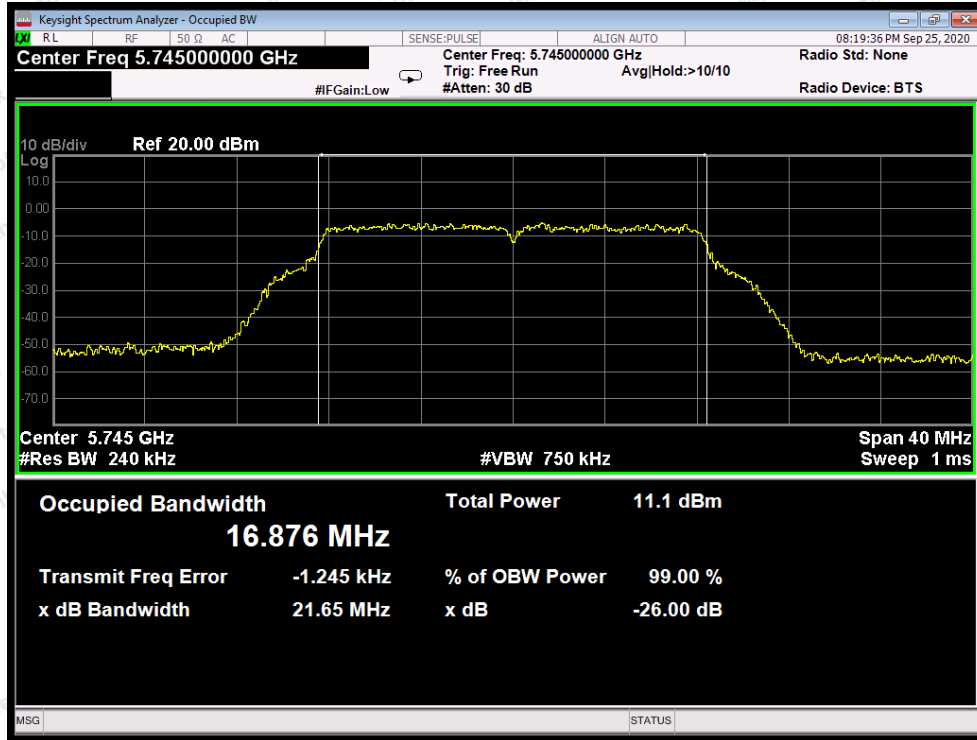


Test Mode: 802.11ac40---High

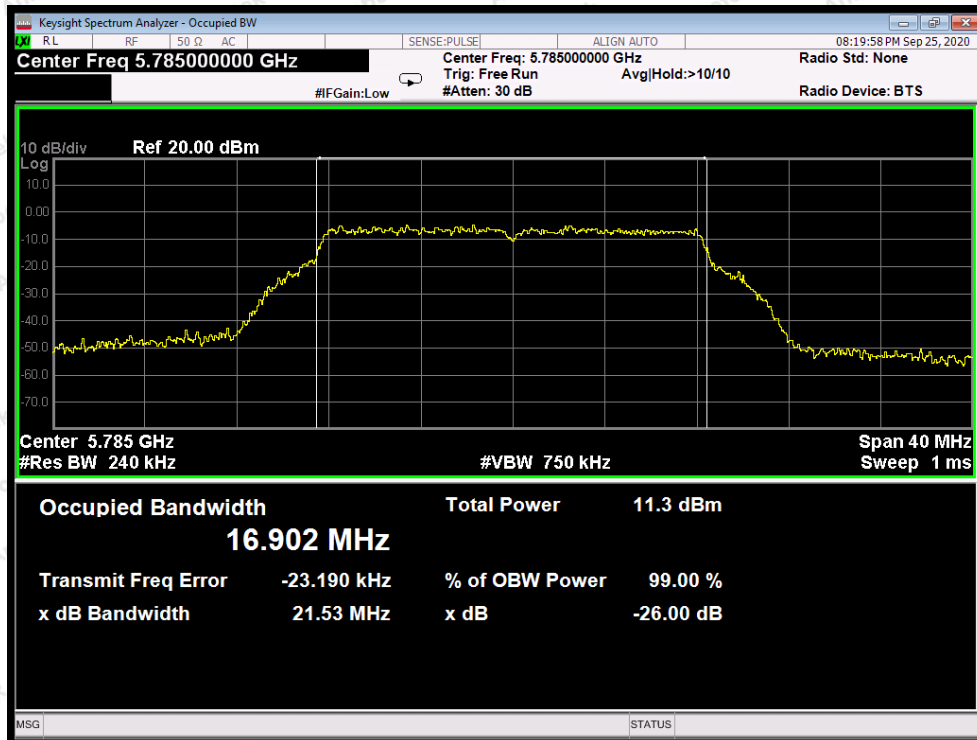


Test Mode: 802.11ac80

26dB & 99% Bandwidth

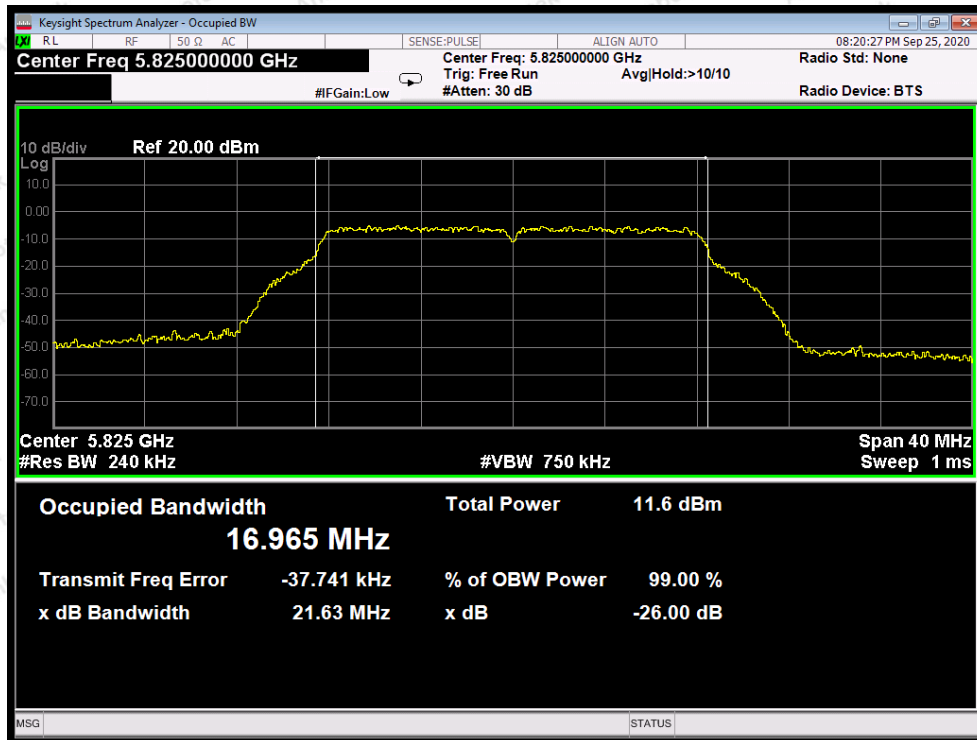


Test Mode: 802.11a--Low

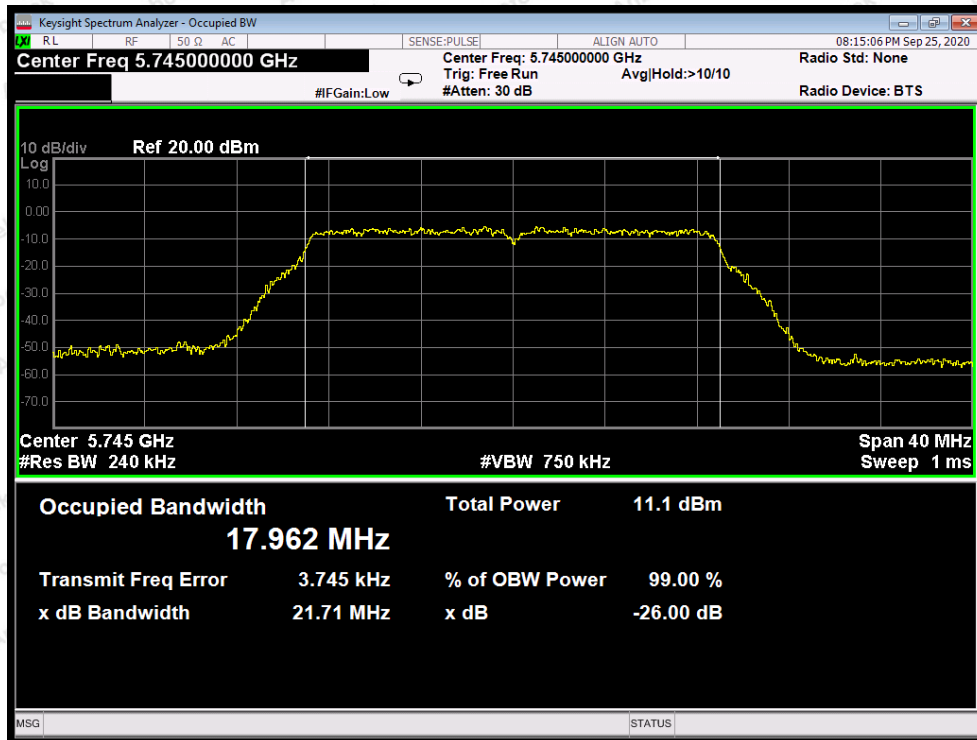


Test Mode: 802.11a---Middle



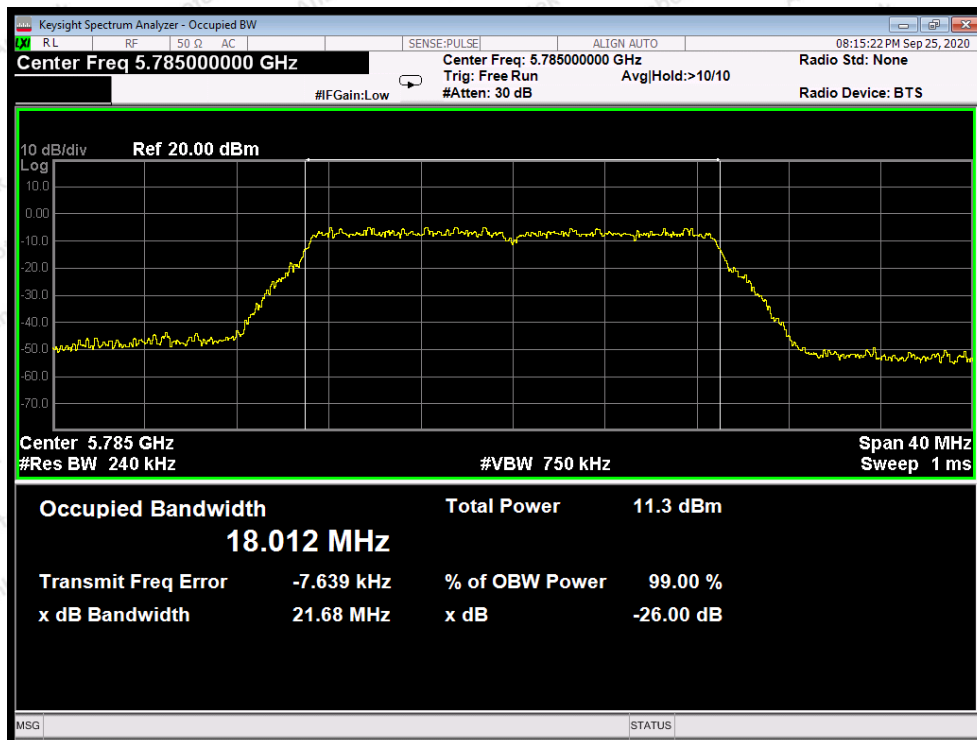


Test Mode: 802.11a---High

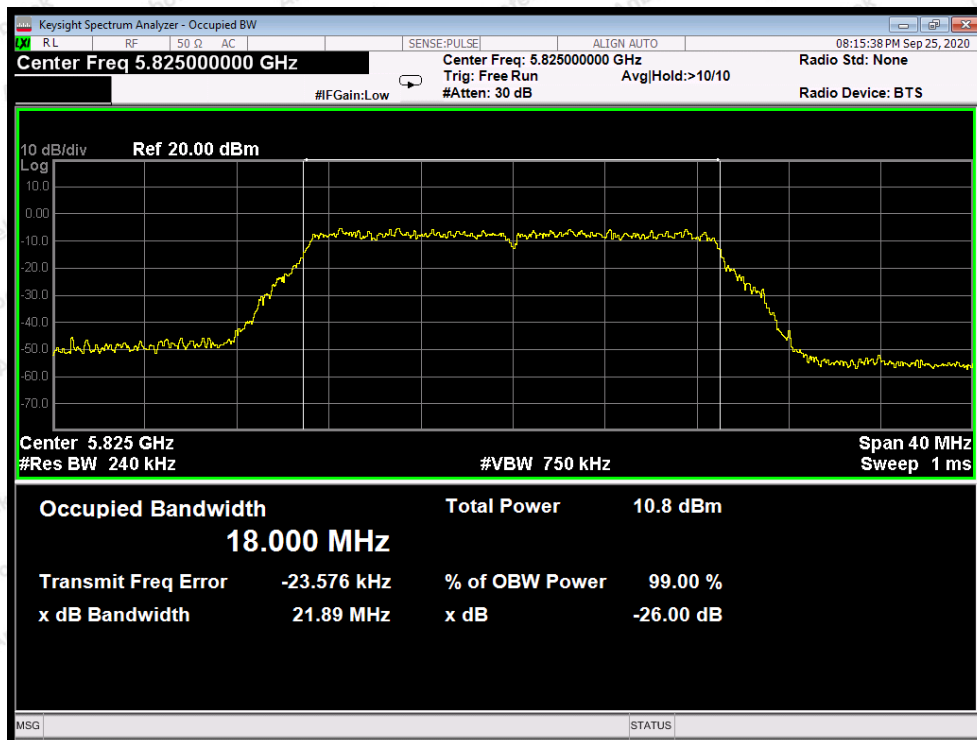


Test Mode: 802.11n20---Low

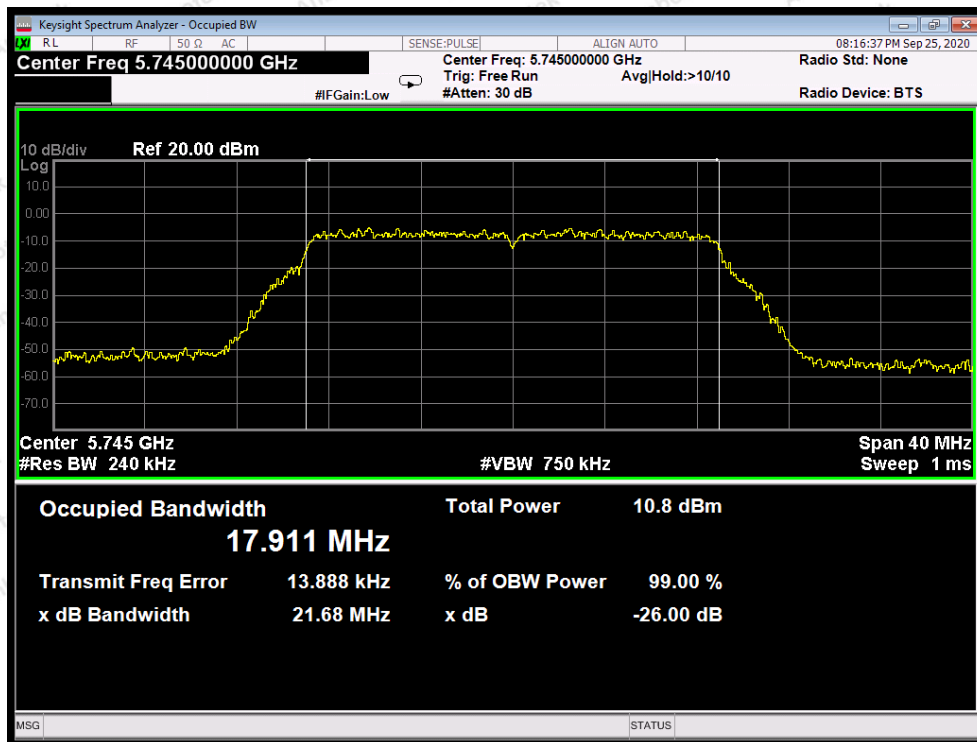




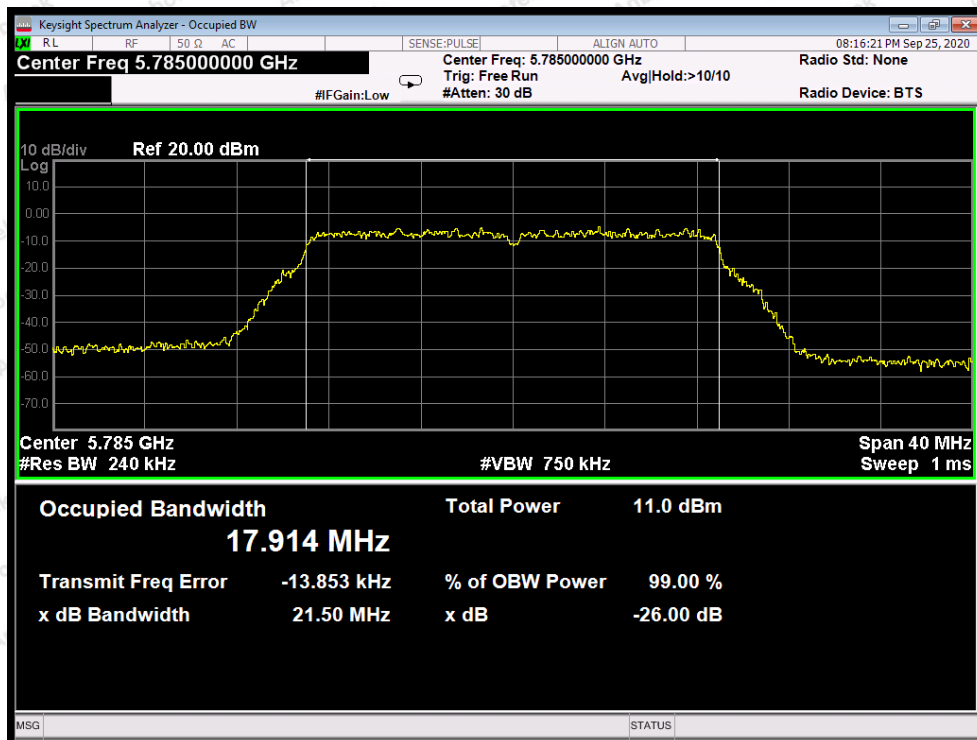
Test Mode: 802.11n20---Middle



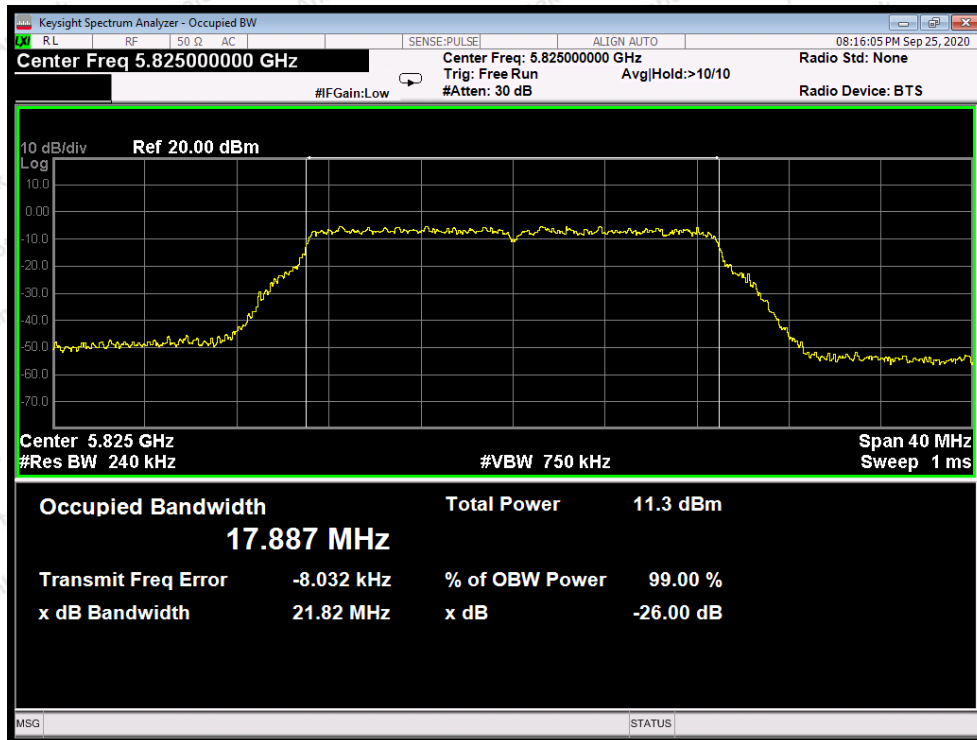
Test Mode: 802.11n20---High



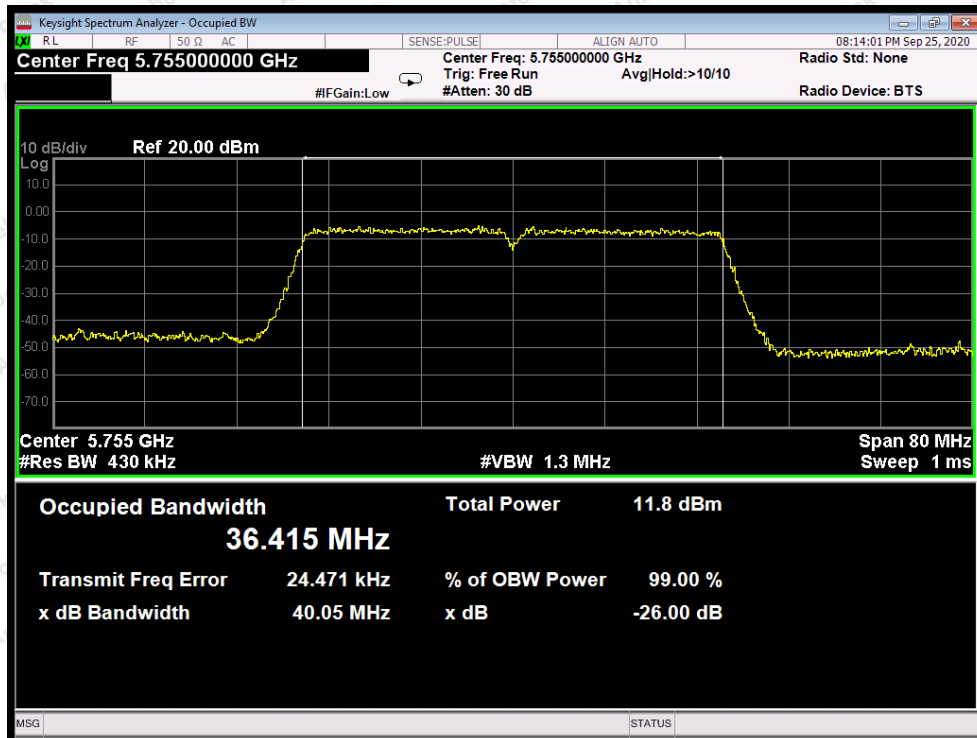
Test Mode: 802.11ac20--Low



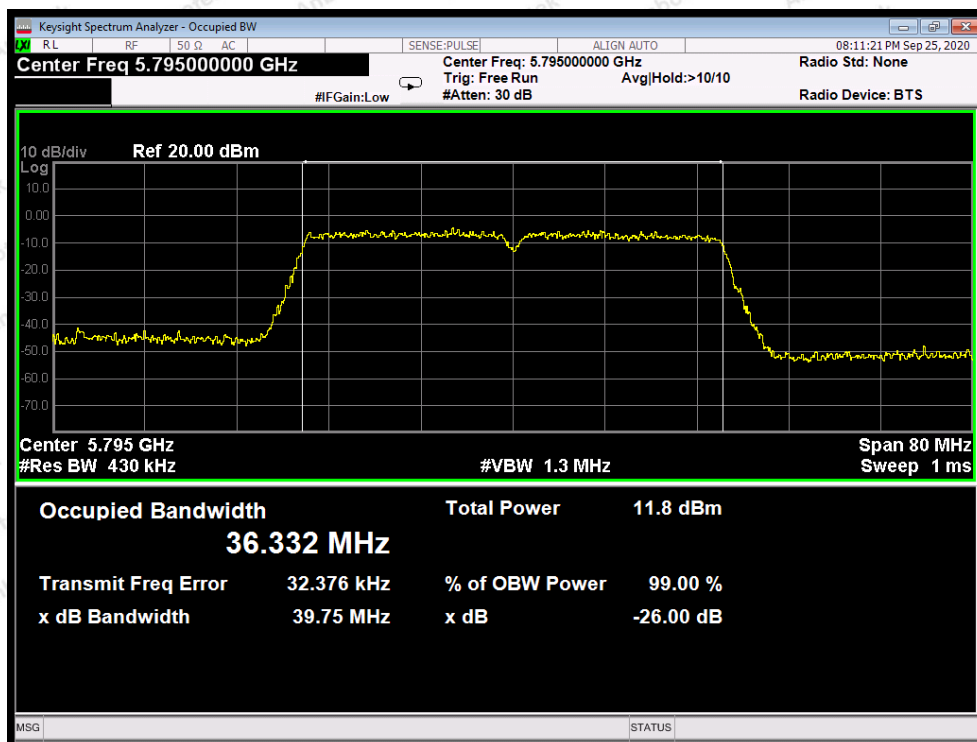
Test Mode: 802.11ac20---Middle



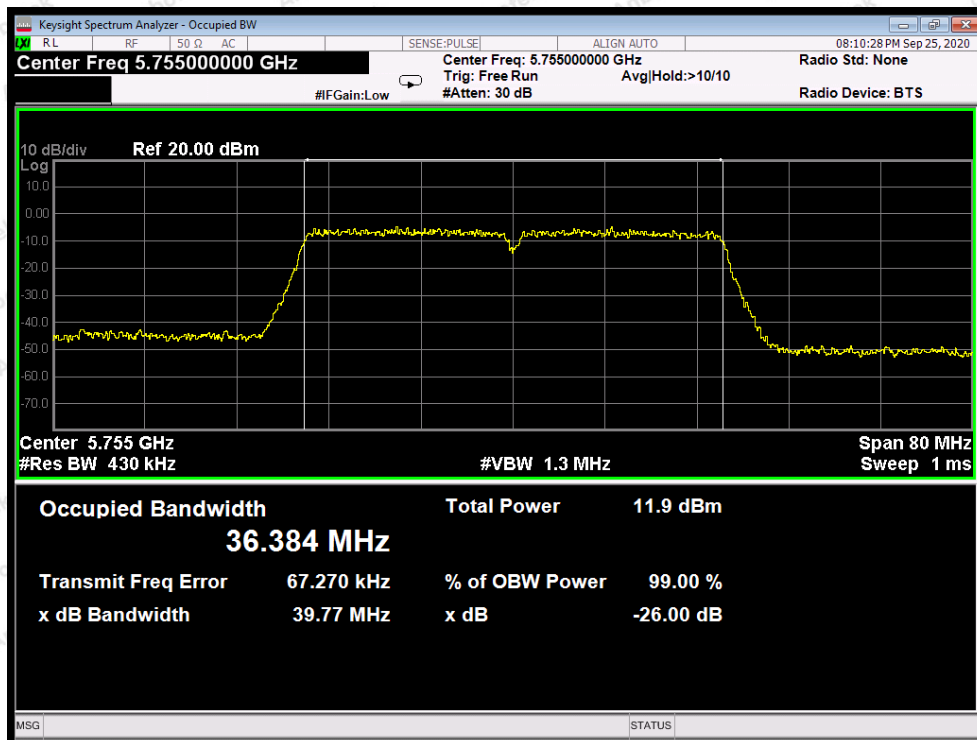
Test Mode: 802.11ac20---High



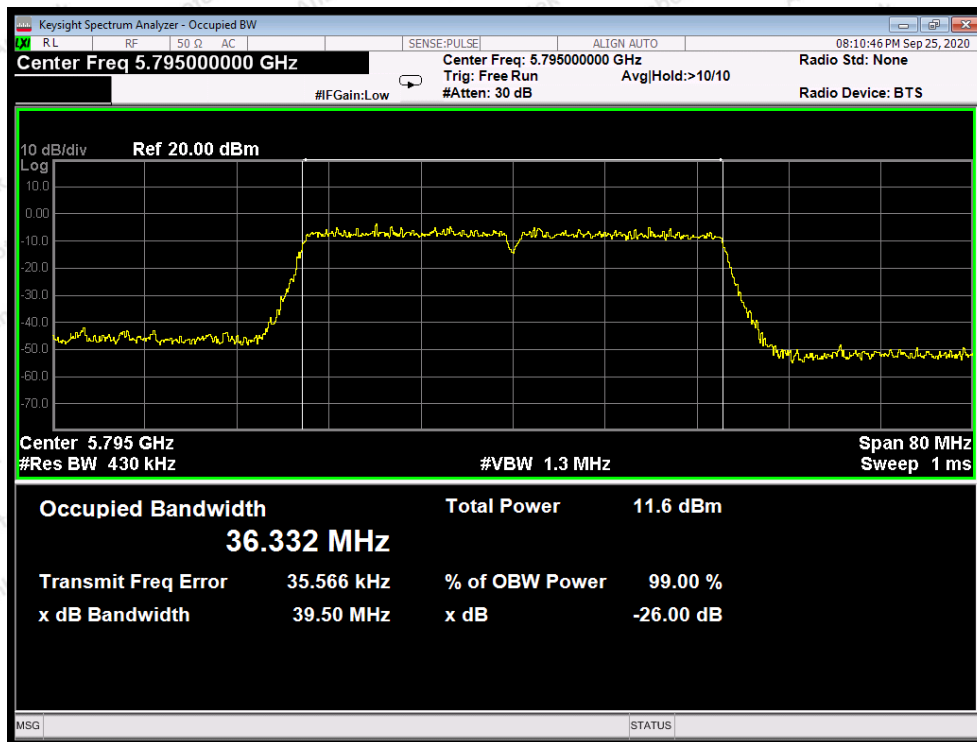
Test Mode: 802.11n40---Low



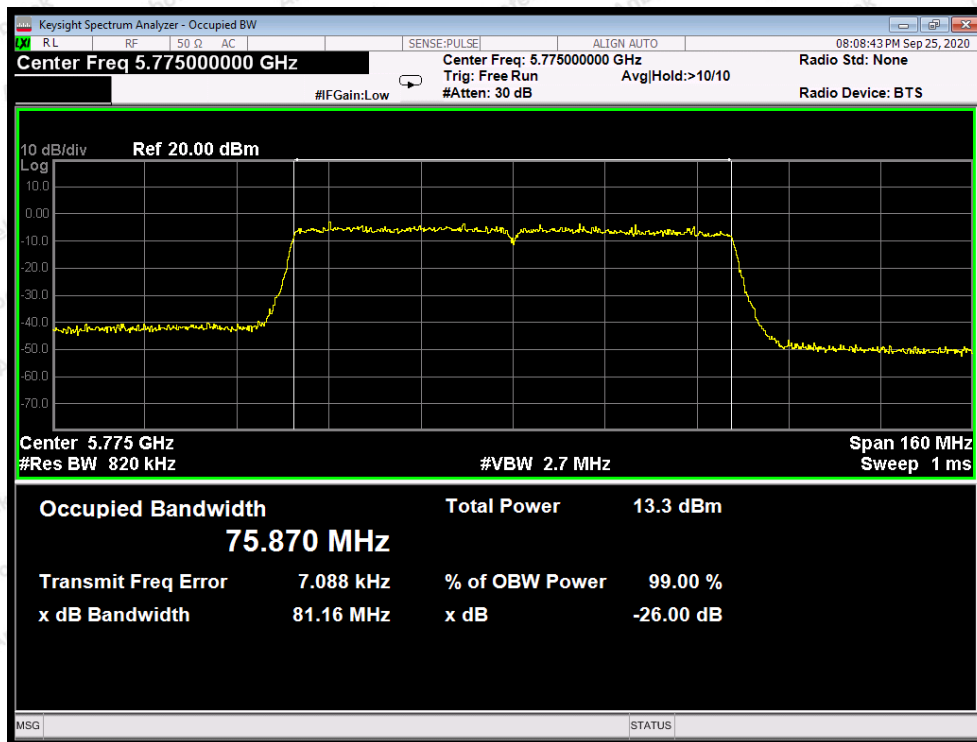
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low



Test Mode: 802.11ac40---High



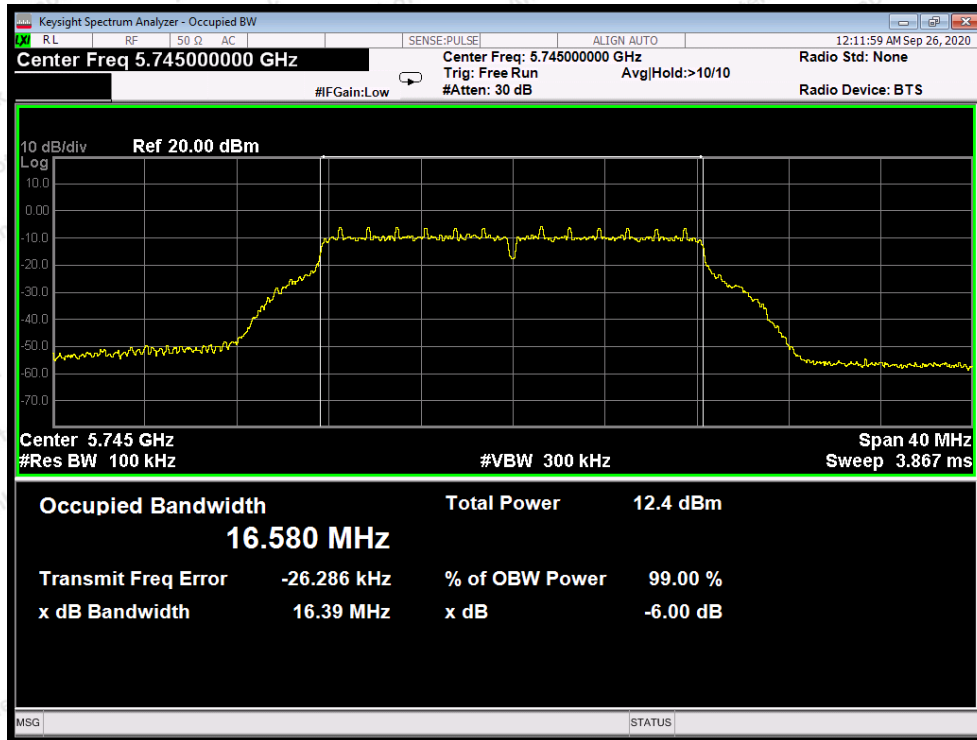
Test Mode: 802.11ac80

ANT B:

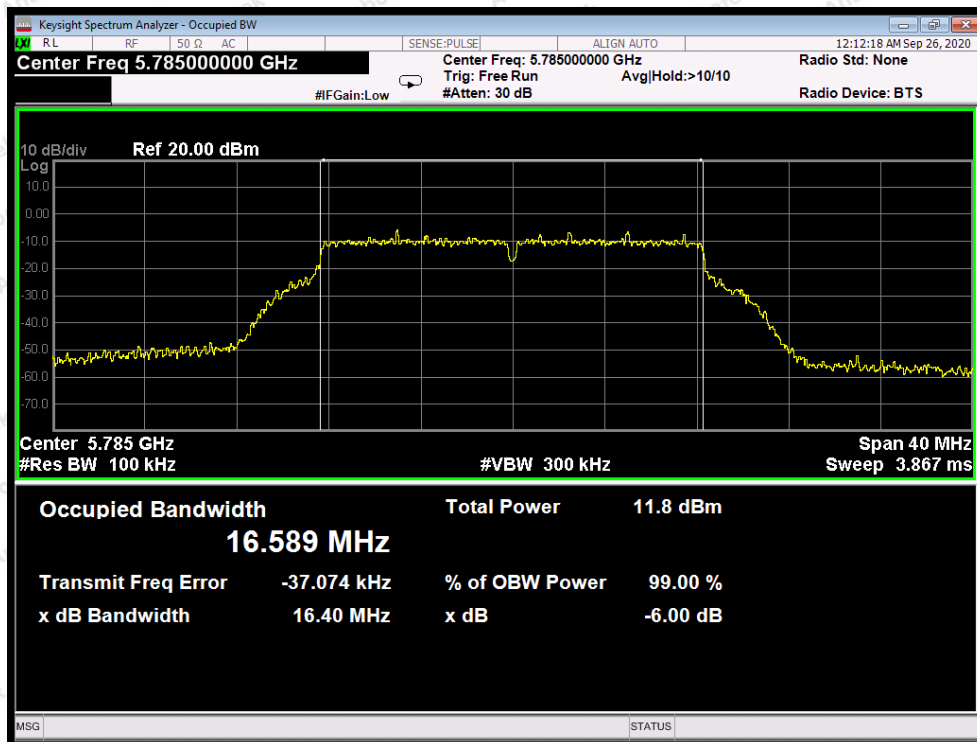
Mode	Channel Frequency (MHz)	6dB BW(MHz)	Limit	Results
802.11a	5745	16.39	>0.5MHz	PASS
	5785	16.40		PASS
	5825	16.38		PASS
802.11n20	5745	17.61		PASS
	5785	17.60		PASS
	5825	17.64		PASS
802.11ac20	5745	17.63		PASS
	5785	17.66		PASS
	5825	17.64		PASS
802.11n40	5755	36.38		PASS
	5795	35.78		PASS
802.11ac40	5755	36.09		PASS
	5795	36.34		PASS
802.11ac80	5775	75.74		PASS

Mode	Channel Frequency (MHz)	26dB BW(MHz)	99% Bandwidth (MHz)
802.11a	5745	21.73	17.019
	5785	21.50	16.869
	5825	21.45	16.957
802.11n20	5745	21.60	17.973
	5785	21.73	18.020
	5825	21.67	17.975
802.11ac20	5745	21.55	17.890
	5785	21.56	17.879
	5825	21.34	17.883
802.11n40	5755	39.96	36.369
	5795	40.16	36.328
802.11ac40	5755	39.55	36.351
	5795	39.80	36.362
802.11ac80	5775	81.73	75.873

6dB Bandwidth

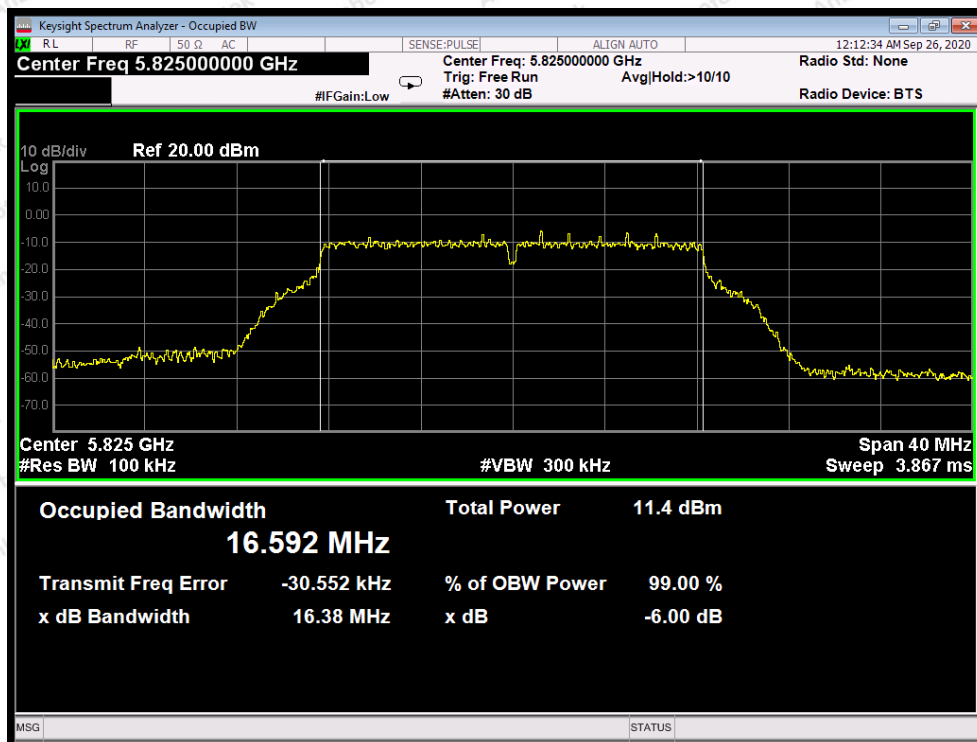


Test Mode: 802.11a--Low

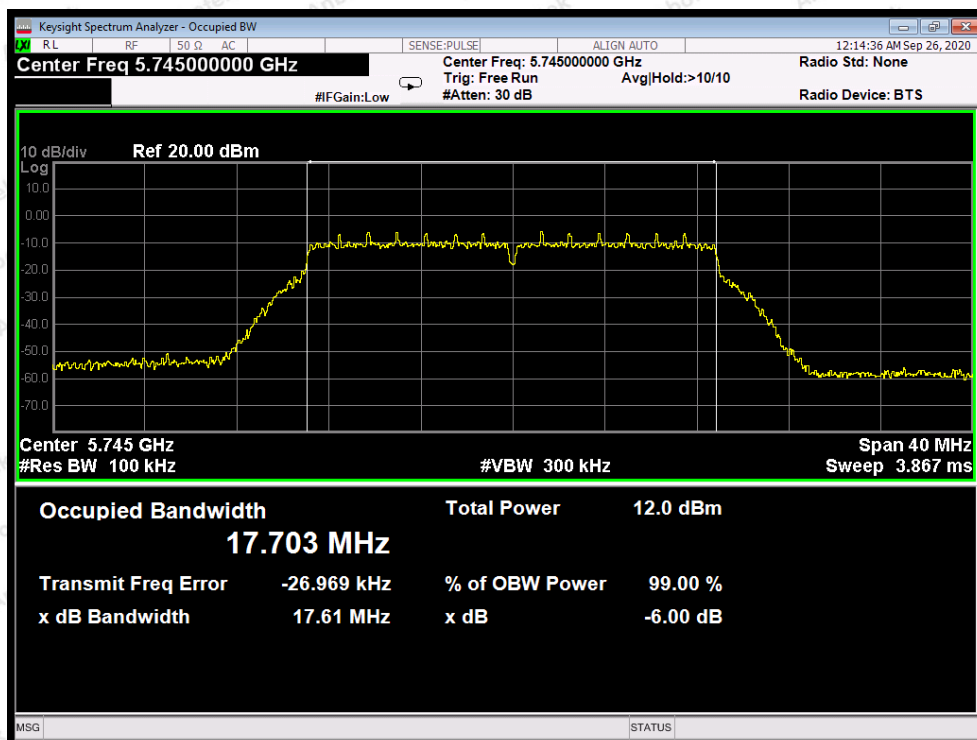


Test Mode: 802.11a---Middle



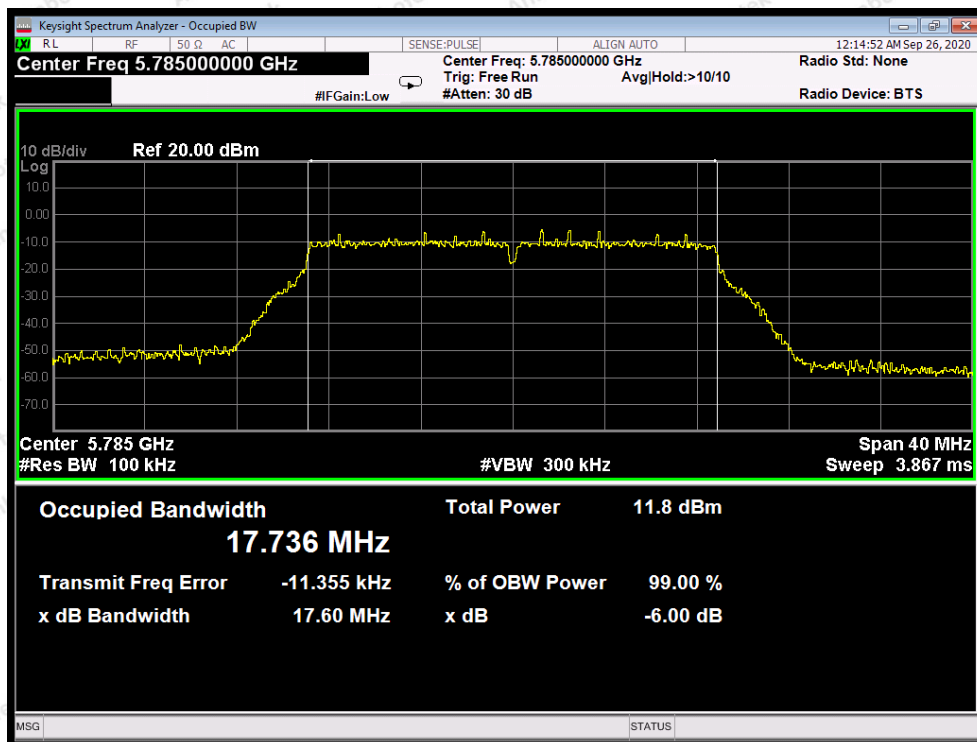


Test Mode: 802.11a---High

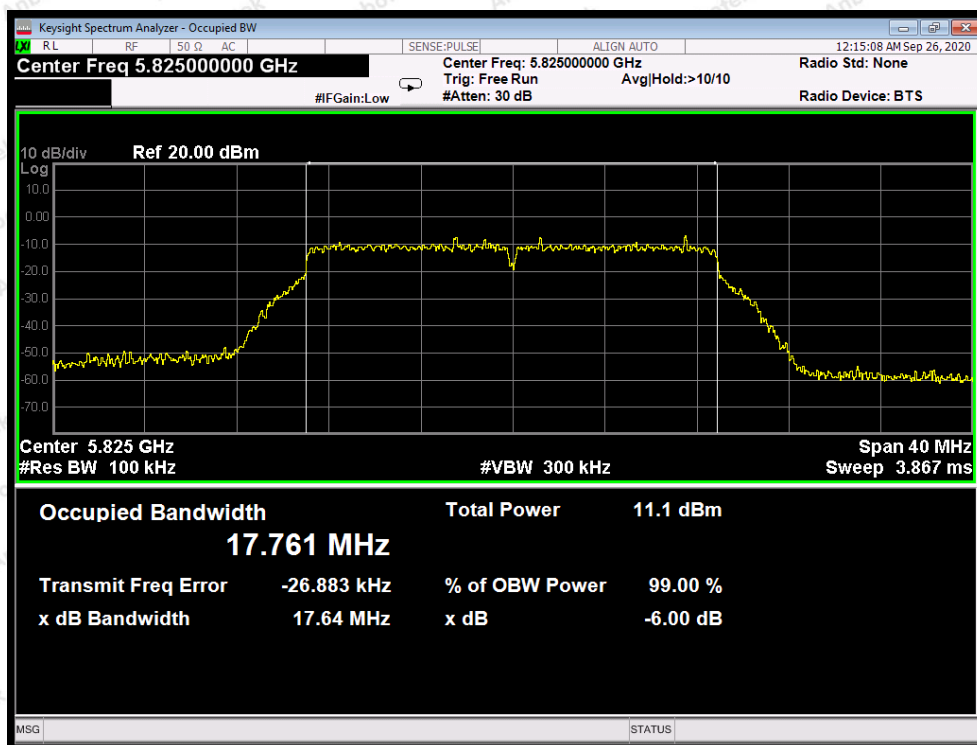


Test Mode: 802.11n20---Low

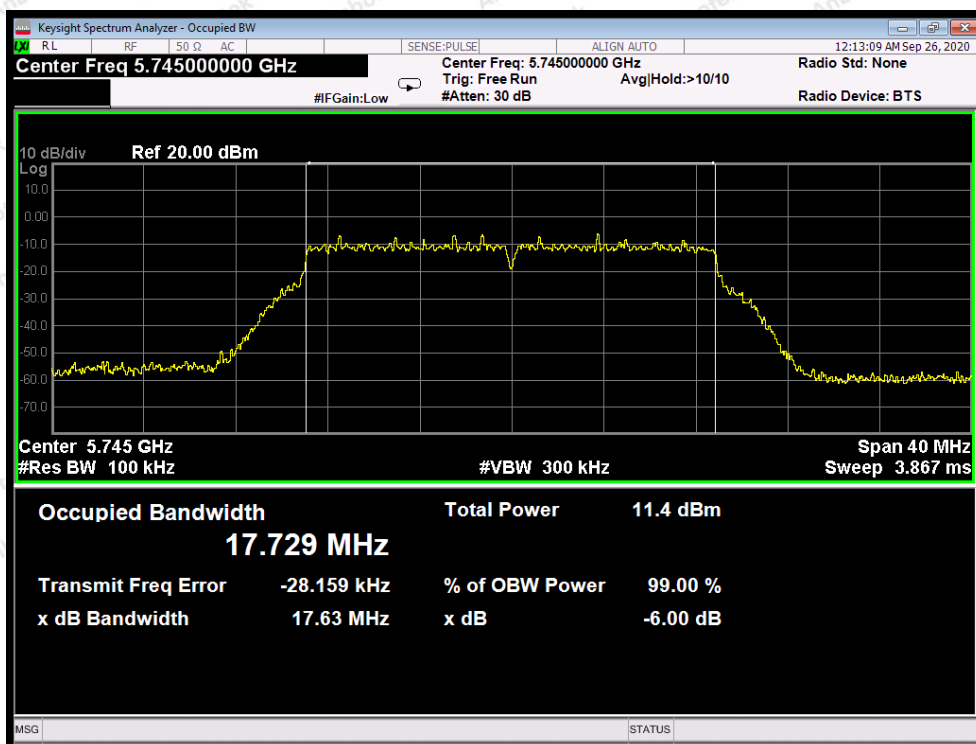




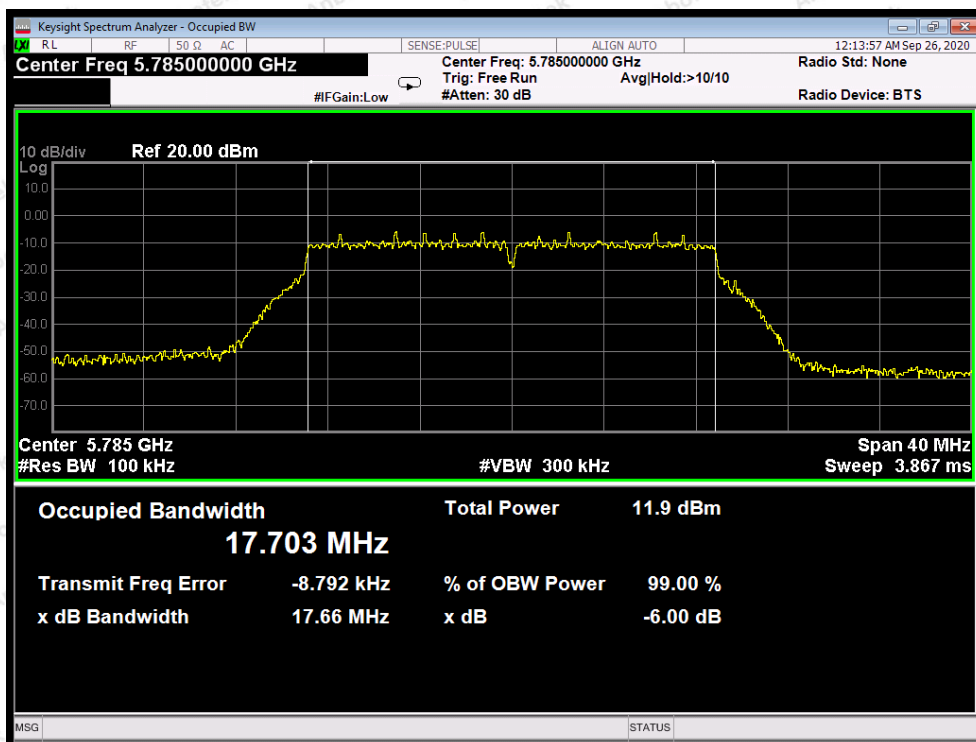
Test Mode: 802.11n20---Middle



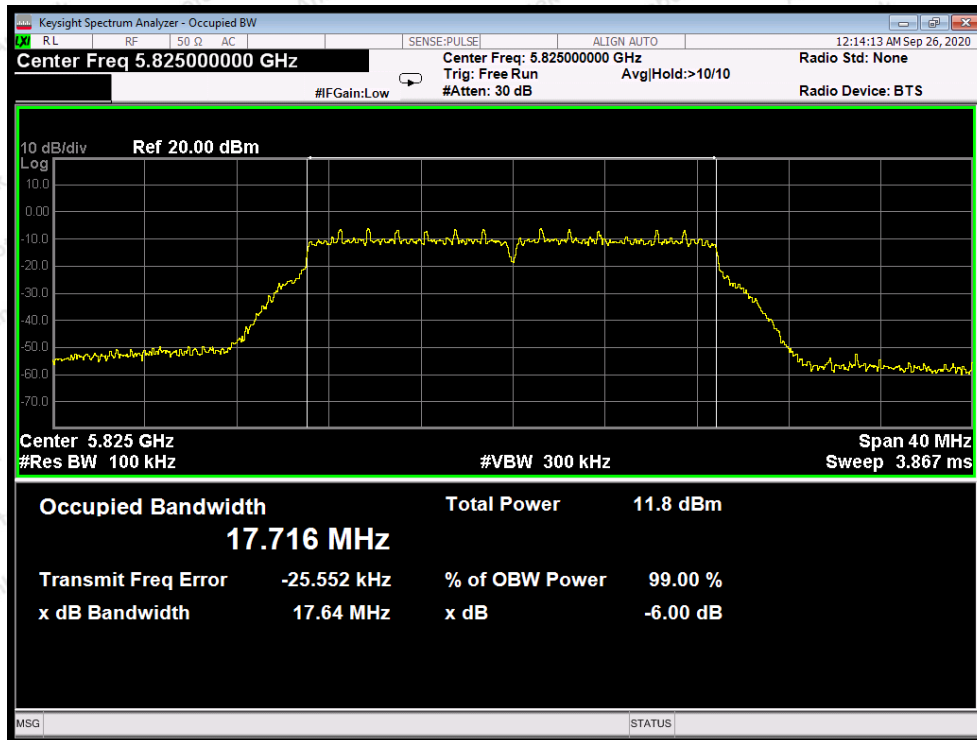
Test Mode: 802.11n20---High



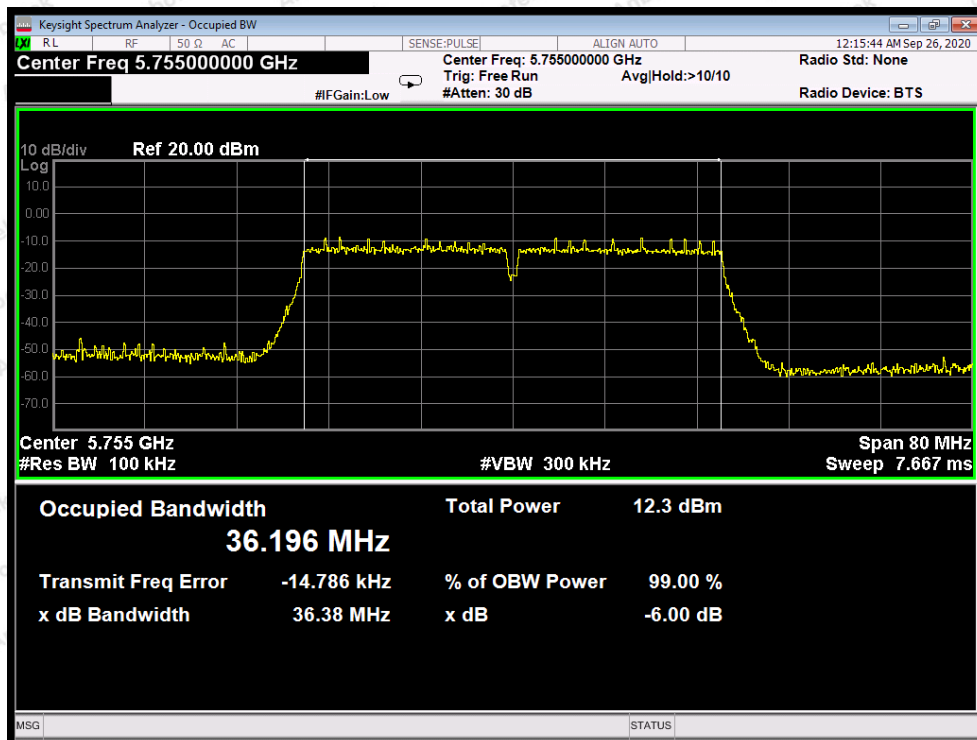
Test Mode: 802.11ac20--Low



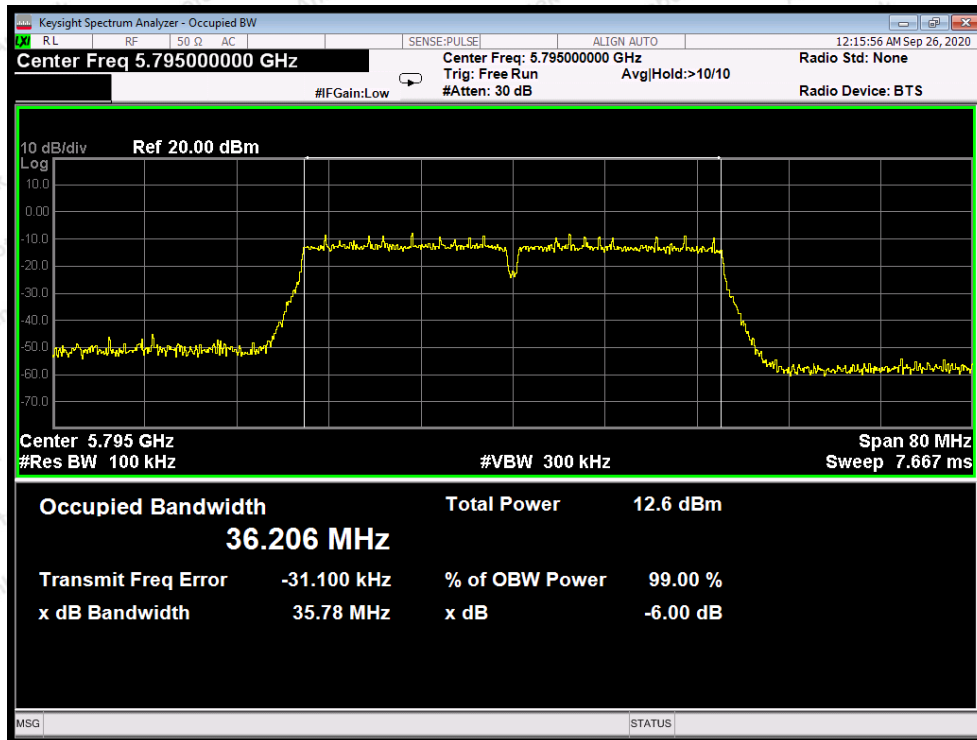
Test Mode: 802.11ac20---Middle



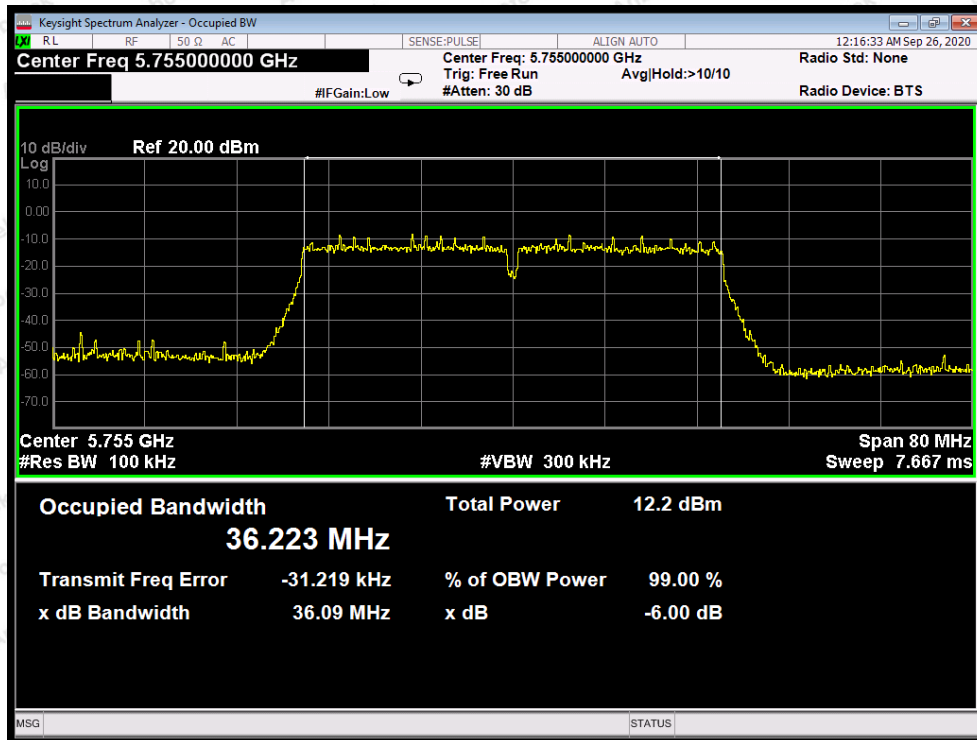
Test Mode: 802.11ac20---High



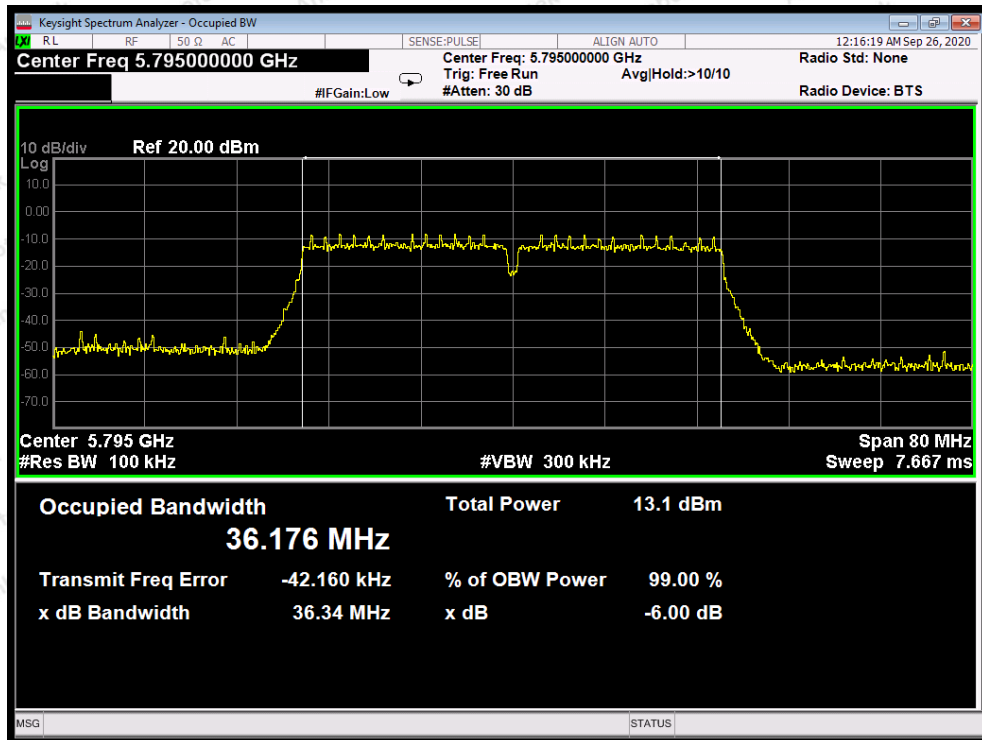
Test Mode: 802.11n40---Low



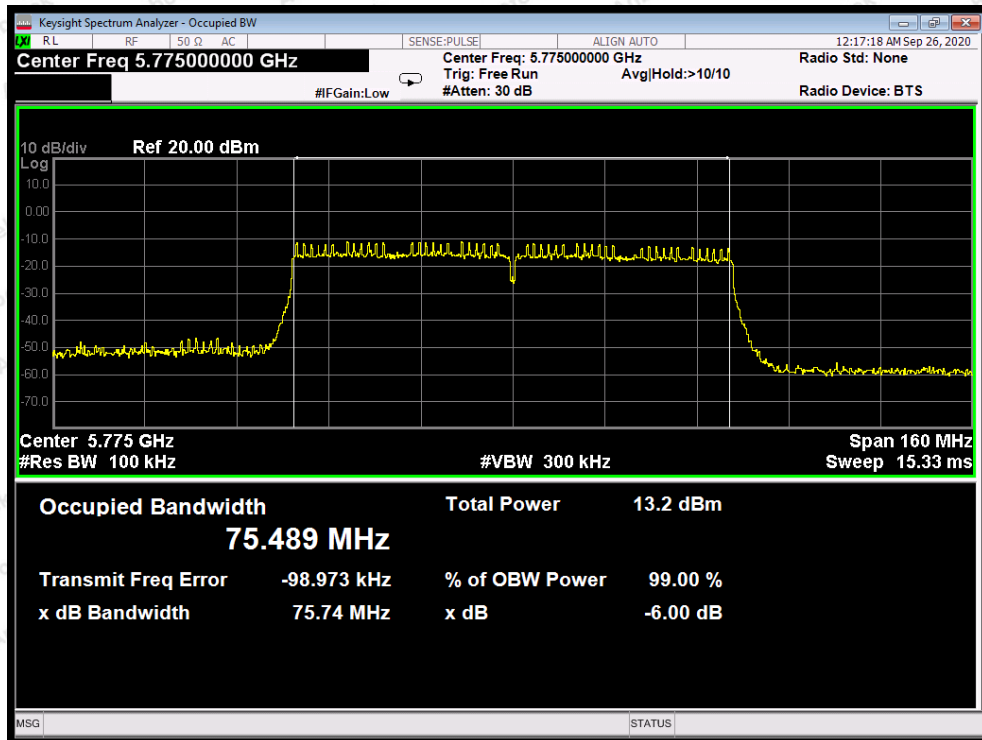
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low



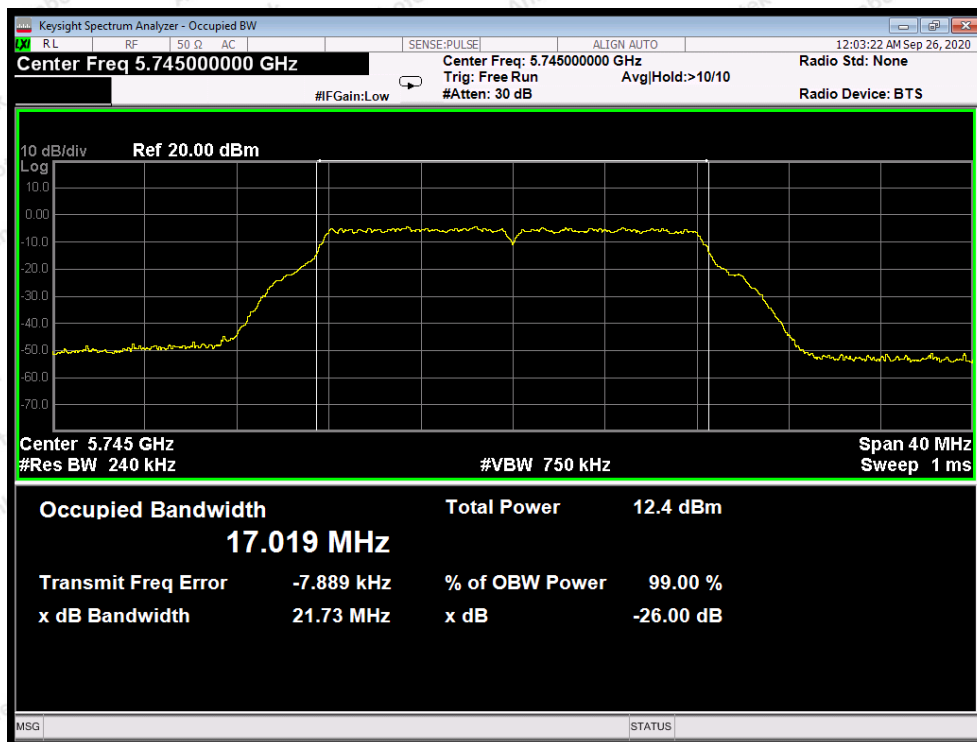
Test Mode: 802.11ac40---High



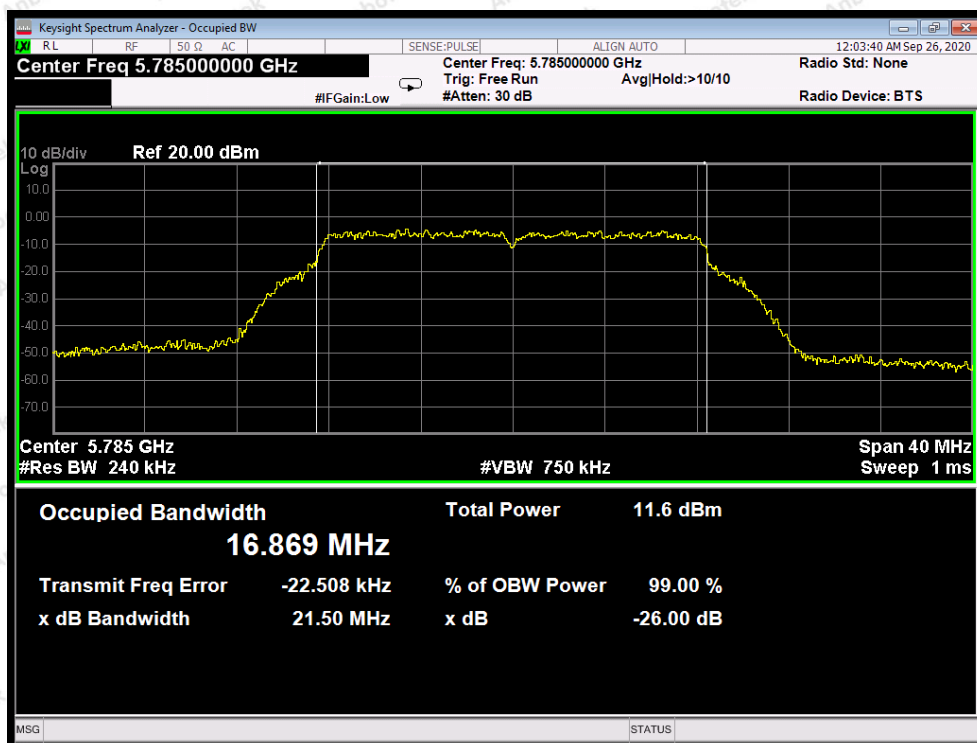
Test Mode: 802.11ac80



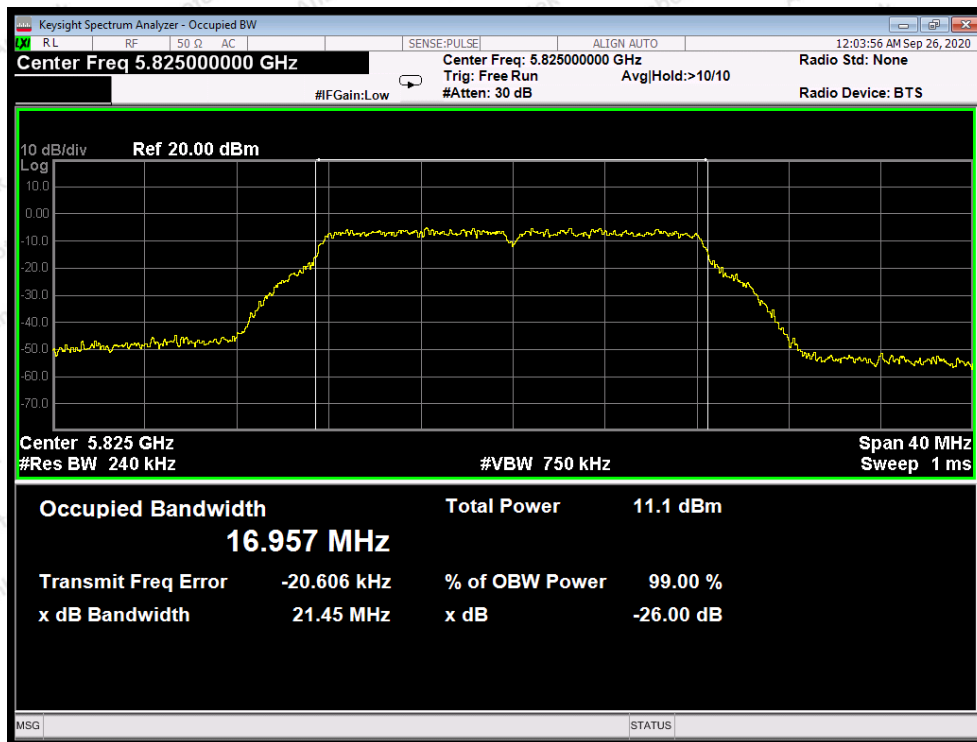
26dB & 99% Bandwidth



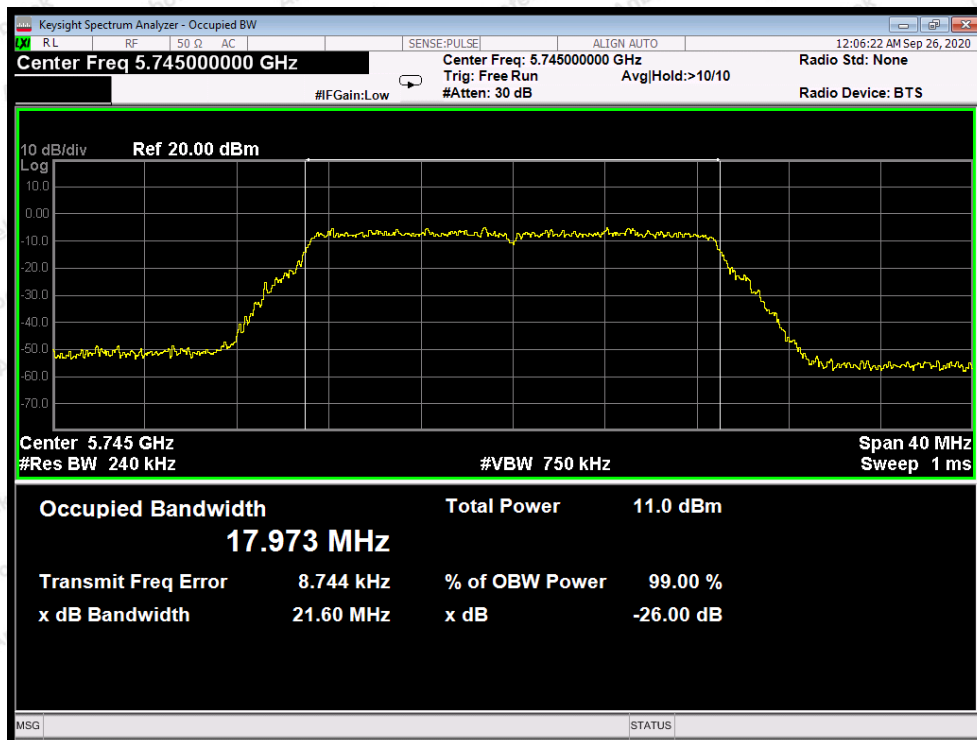
Test Mode: 802.11a--Low



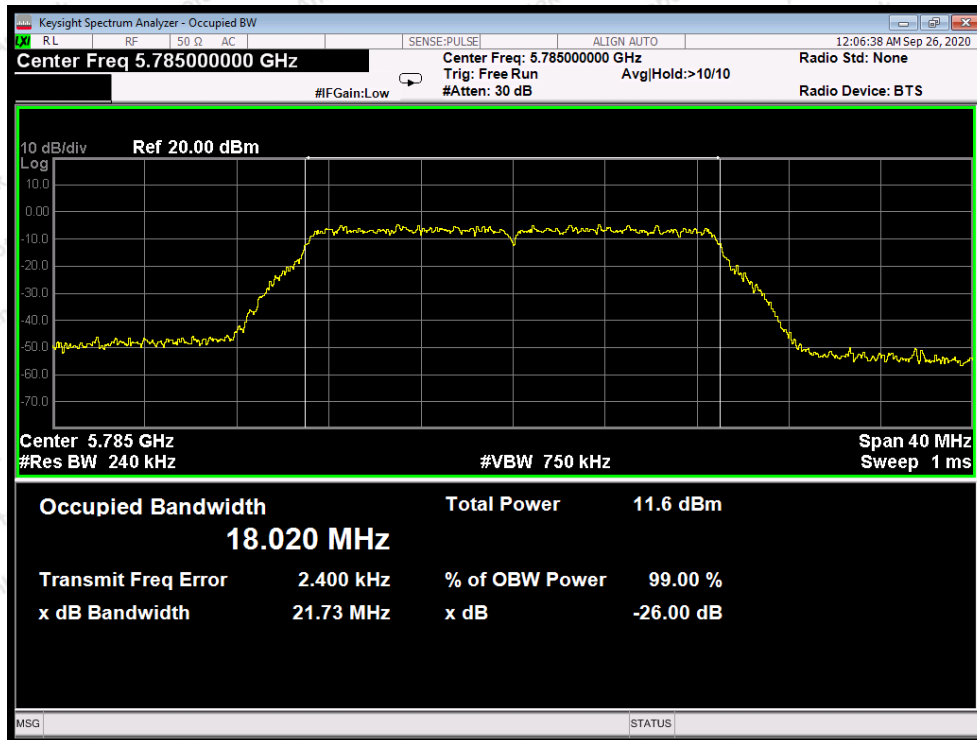
Test Mode: 802.11a---Middle



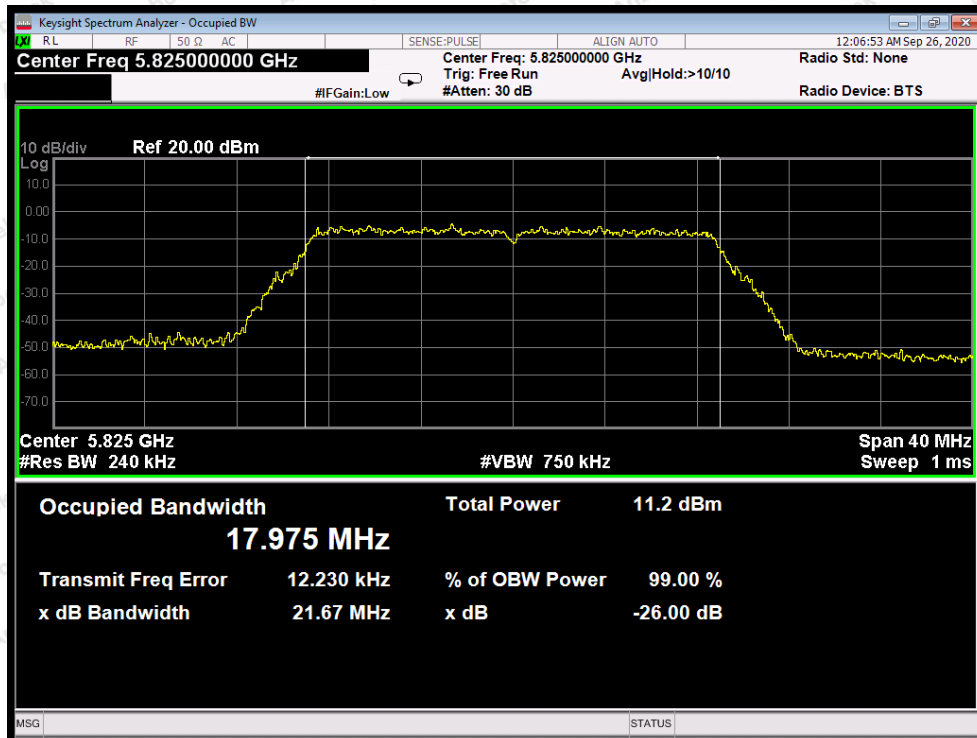
Test Mode: 802.11a---High



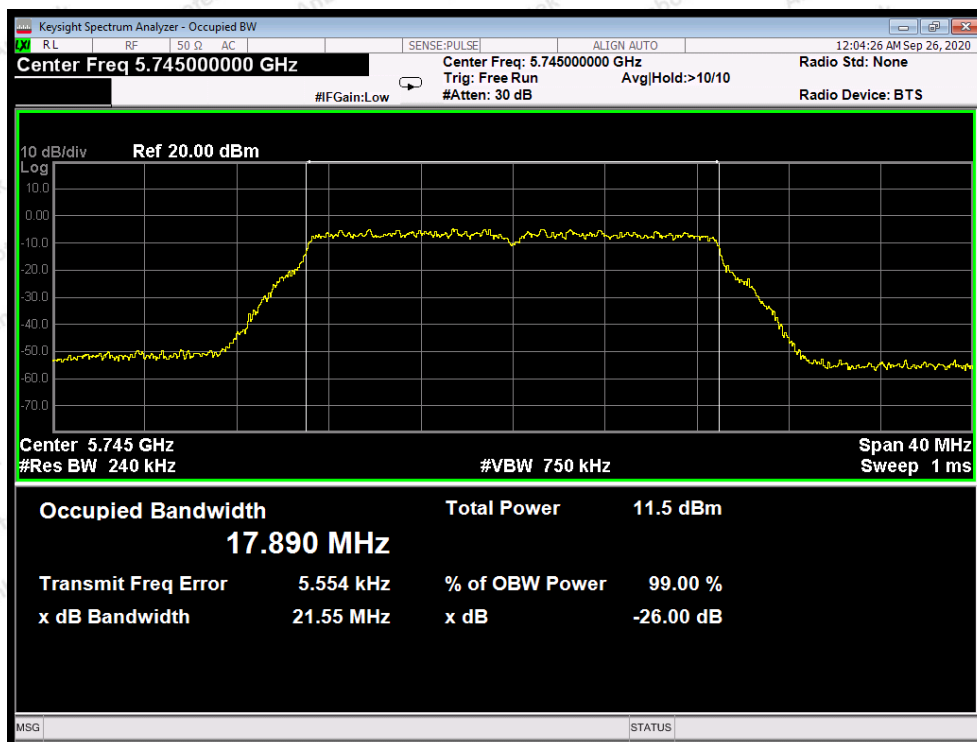
Test Mode: 802.11n20---Low



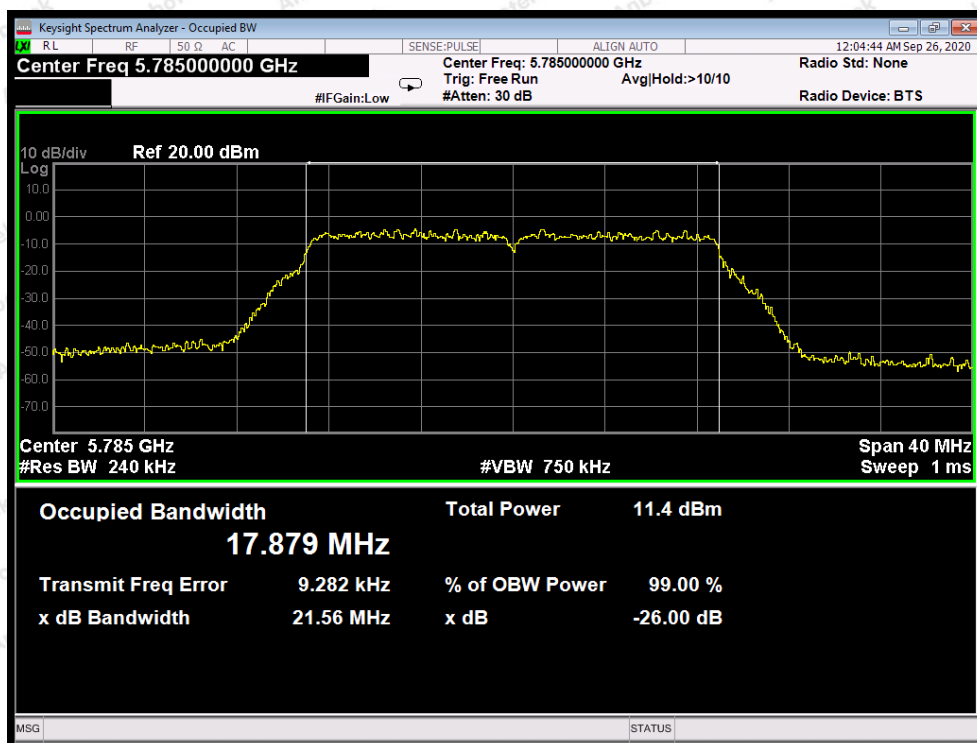
Test Mode: 802.11n20---Middle



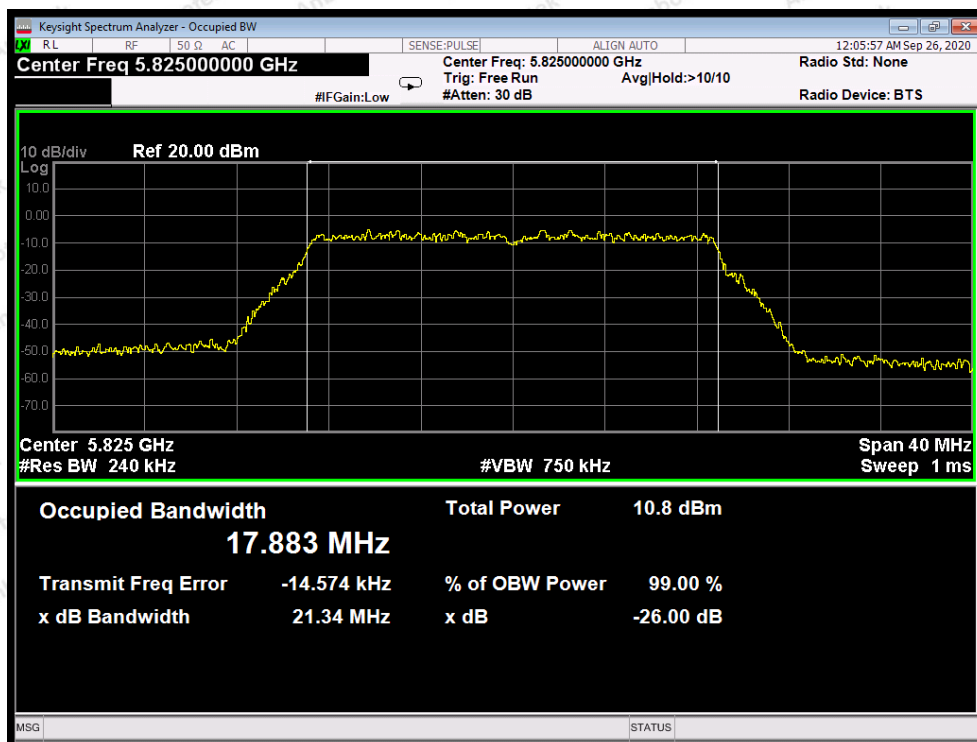
Test Mode: 802.11n20---High



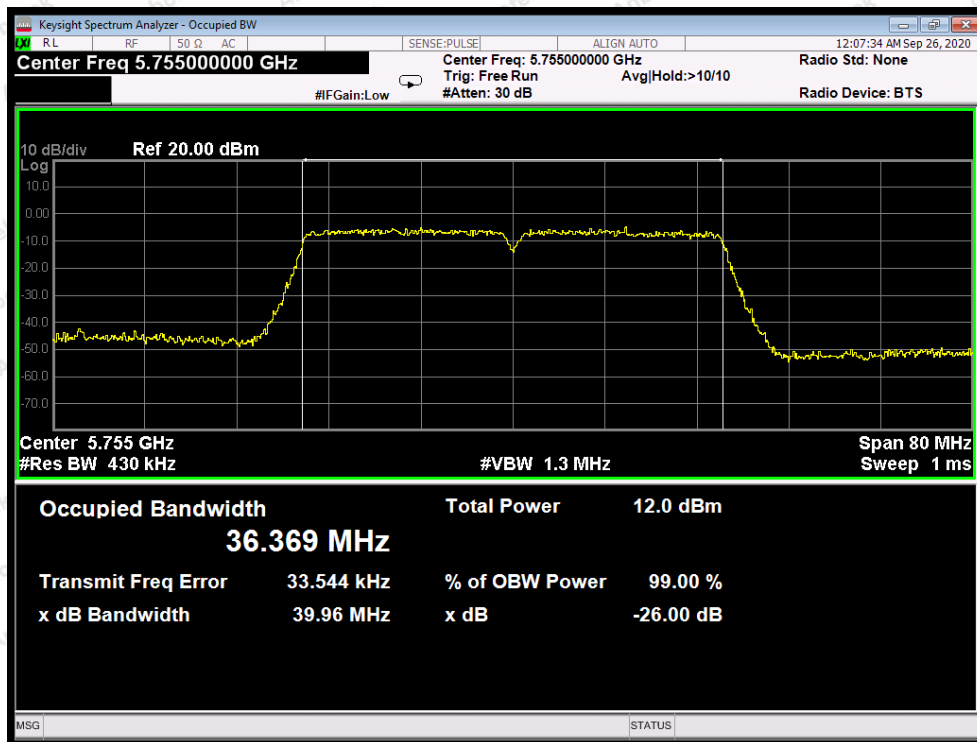
Test Mode: 802.11ac20--Low



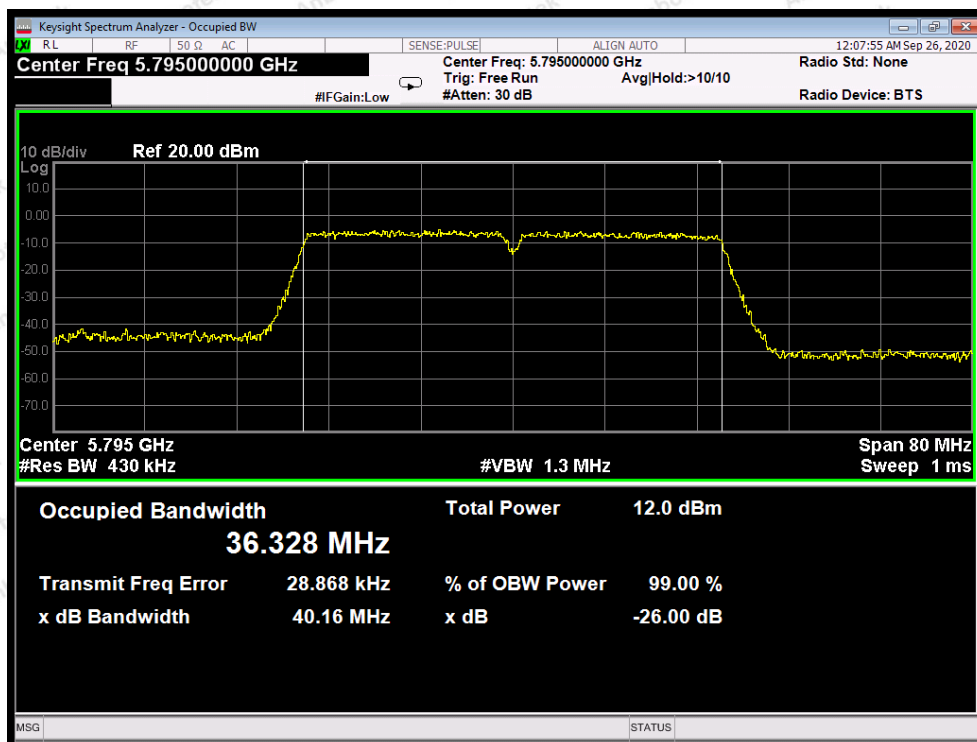
Test Mode: 802.11ac20---Middle



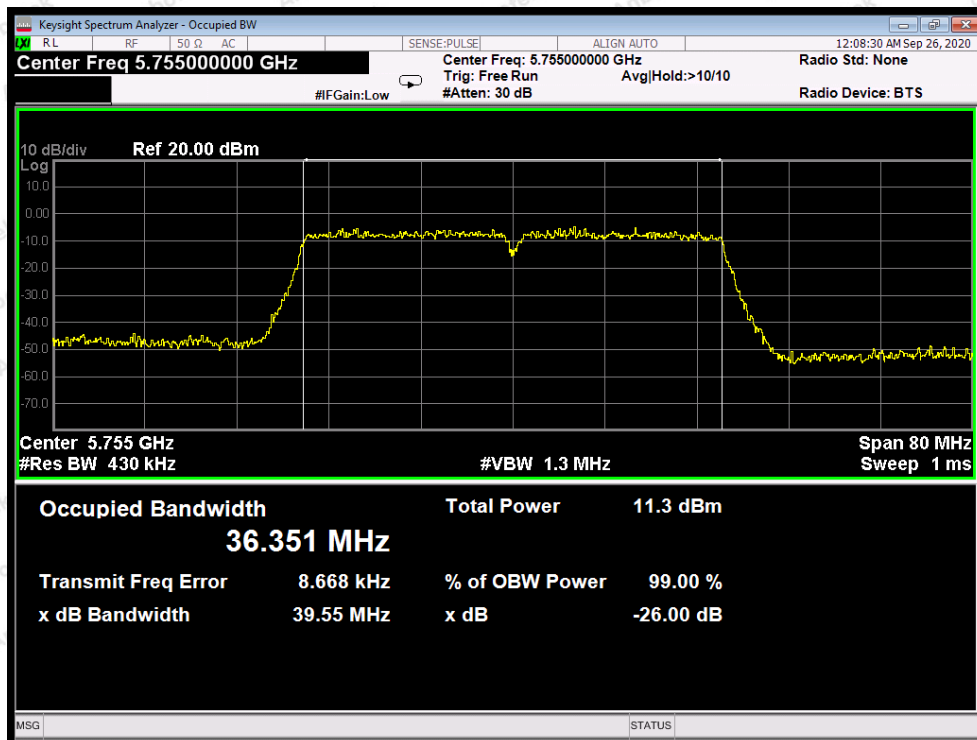
Test Mode: 802.11ac20---High



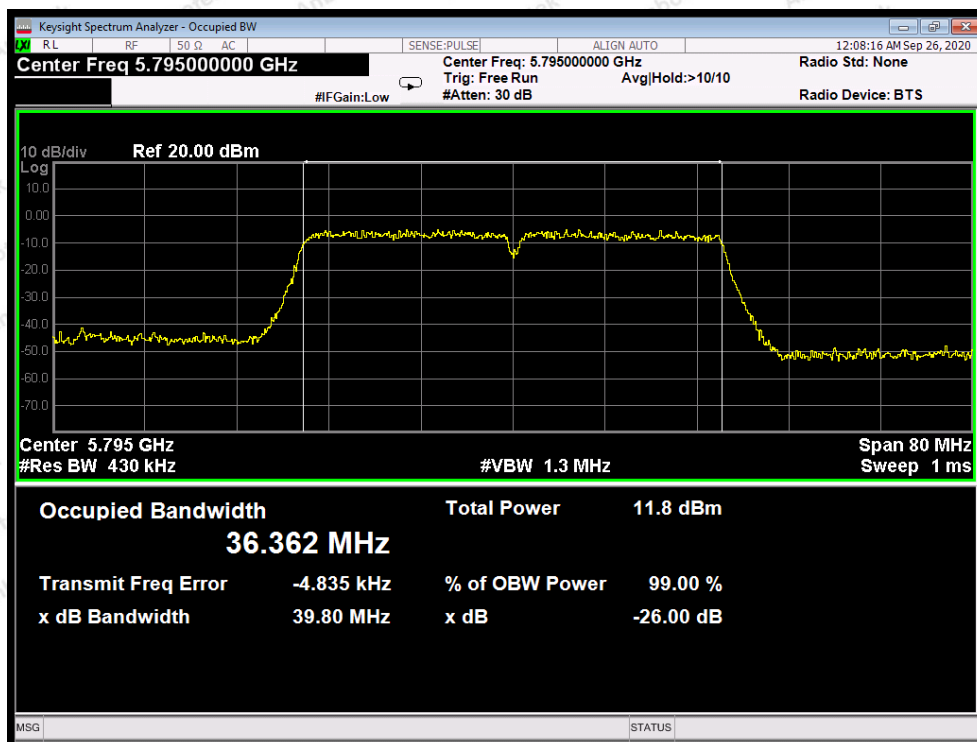
Test Mode: 802.11n40---Low



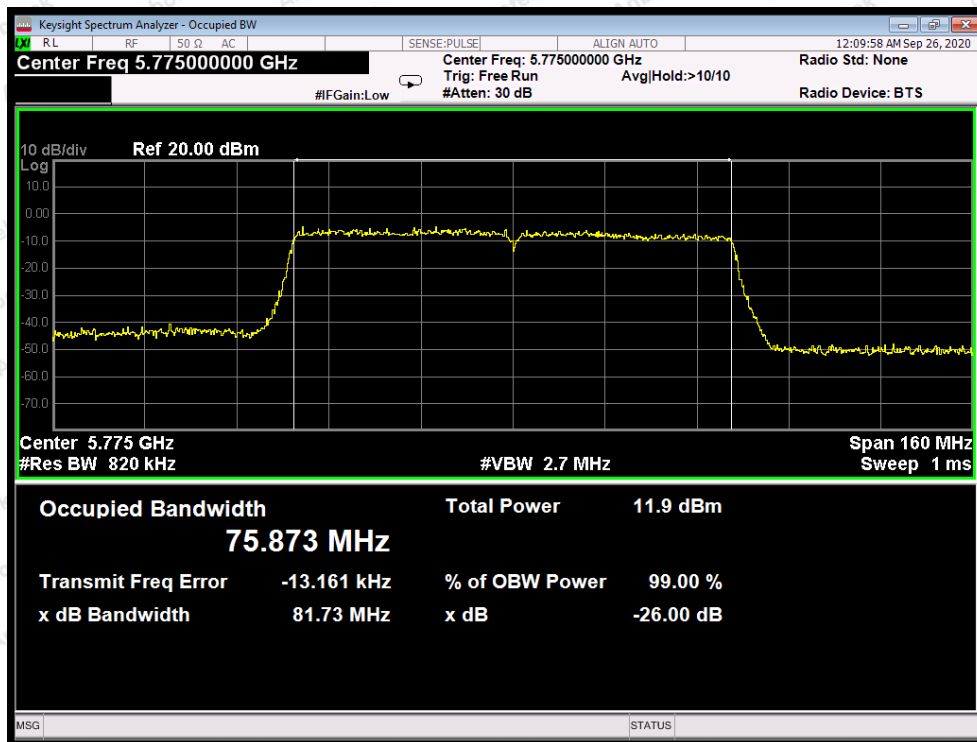
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low



Test Mode: 802.11ac40---High



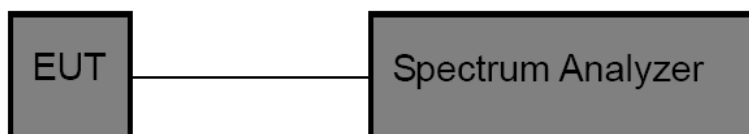
Test Mode: 802.11ac80

7. Power Spectral Density Test

7.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407 (a) (3)
Test Limit	30 dBm/500KHz

7.2. Test Setup



7.3. Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz).

1. The EUT is directly connected to the spectrum analyzer;
2. Set RBW =510KHz;
3. Set VBW $\geq$ 3 RBW=2MHz;
3. Set the span to encompass the entire emissions bandwidth (EBW) of the signal;
5. Detector=RMS;
6. Sweep time= auto couple;
7. Trace mode=max. hold;

7.4. Test Data

Test Item : Power Spectral Density
 Test Voltage : AC 240V, 60Hz for adapter
 Test Result : PASS

Test Mode : CH Low ~ CH High
 Temperature : 24℃
 Humidity : 55%RH

ANT A:

Mode	Channel Frequency (MHz)	Test Power Spectral Density (dBm/510KHz)	Final Power Spectral Density (dBm/500KHz)	Limit	Results
802.11a	5745	0.137	0.051	30	PASS
	5785	-0.406	-0.492	30	PASS
	5825	-0.371	-0.457	30	PASS
802.11n20	5745	-0.835	-0.921	30	PASS
	5785	-0.804	-0.89	30	PASS
	5825	-0.685	-0.771	30	PASS
802.11ac20	5745	-0.327	-0.413	30	PASS
	5785	-0.485	-0.571	30	PASS
	5825	-0.317	-0.403	30	PASS
802.11n40	5755	-3.157	-3.243	30	PASS
	5795	-2.326	-2.412	30	PASS
802.11ac40	5755	-3.362	-3.448	30	PASS
	5795	-2.637	-2.723	30	PASS
802.11ac80	5775	-5.880	-5.966	30	PASS

Remark: Final Power Spectral Density=Test Power Spectral Density+10log10(500/510)

ANT B:

Mode	Channel Frequency (MHz)	Test Power Spectral Density (dBm/510KHz)	Final Power Spectral Density (dBm/500KHz)	Limit	Results
802.11a	5745	-3.444	-3.53	30	PASS
	5785	-3.063	-3.149	30	PASS
	5825	-3.349	-3.435	30	PASS
802.11n20	5745	-2.884	-2.97	30	PASS
	5785	-2.221	-2.307	30	PASS

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	5825	-1.699	-1.785	30	PASS
802.11ac20	5745	-2.710	-2.796	30	PASS
	5785	-3.468	-3.554	30	PASS
	5825	-2.237	-2.323	30	PASS
802.11n40	5755	-5.348	-5.434	30	PASS
	5795	-3.154	-3.24	30	PASS
802.11ac40	5755	-2.542	-2.628	30	PASS
	5795	-2.304	-2.39	30	PASS
802.11ac80	5775	-6.068	-6.154	30	PASS

Remark: Final Power Spectral Density=Test Power Spectral Density+10log10(500/510)

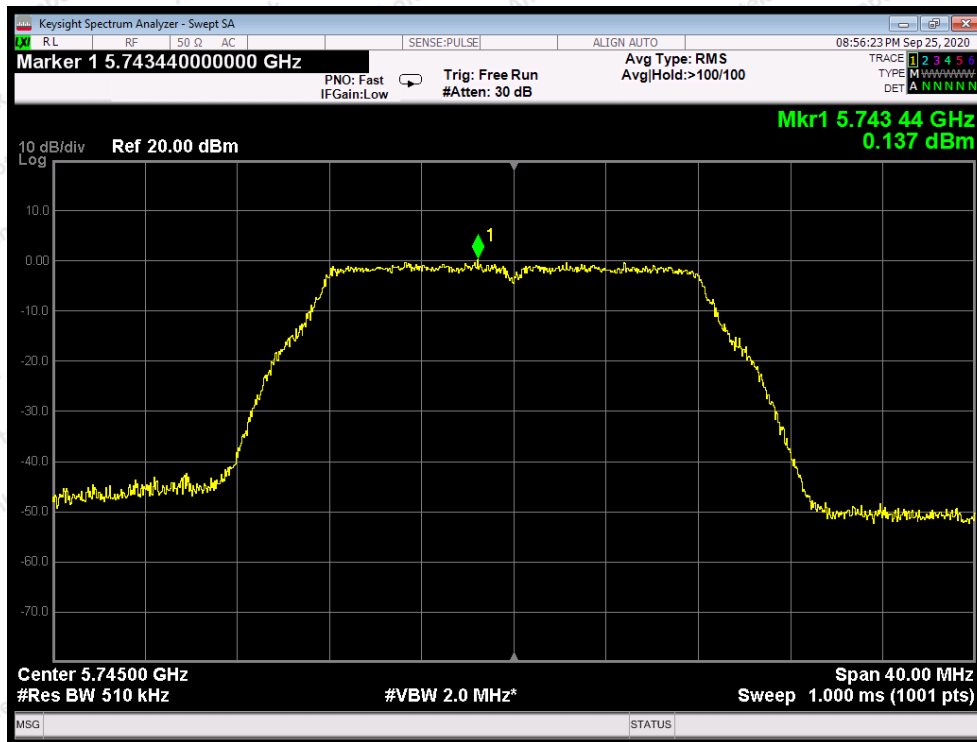
ANT A+B:

Mode	Channel Frequency (MHz)	Final Power Spectral Density (dBm/510KHz)	Final Power Spectral Density (dBm/500KHz)	Limit	Results
802.11n20	5745	1.271	1.185	29.09	PASS
	5785	1.555	1.469	29.09	PASS
	5825	1.848	1.762	29.09	PASS
802.11ac20	5745	1.653	1.567	29.09	PASS
	5785	1.285	1.199	29.09	PASS
	5825	1.839	1.753	29.09	PASS
802.11n40	5755	-1.105	-1.191	29.09	PASS
	5795	0.290	0.204	29.09	PASS
802.11ac40	5755	0.078	-0.008	29.09	PASS
	5795	0.543	0.457	29.09	PASS
802.11ac80	5775	-2.963	-3.049	29.09	PASS

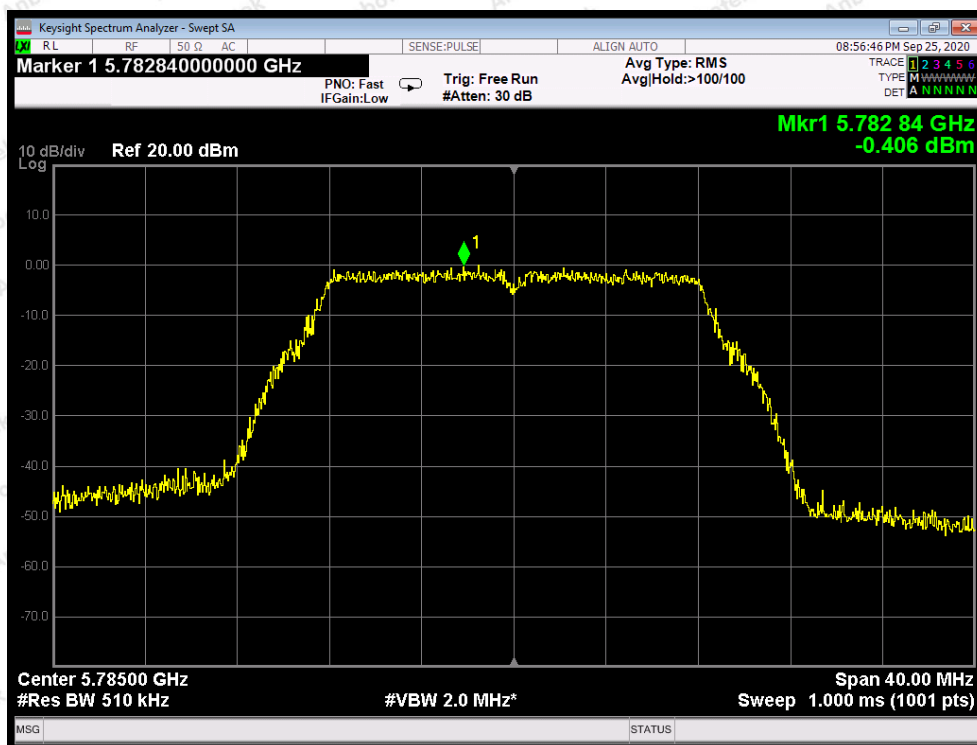
Remark: Final Power Spectral Density=Test Power Spectral Density+10log10(500/510)



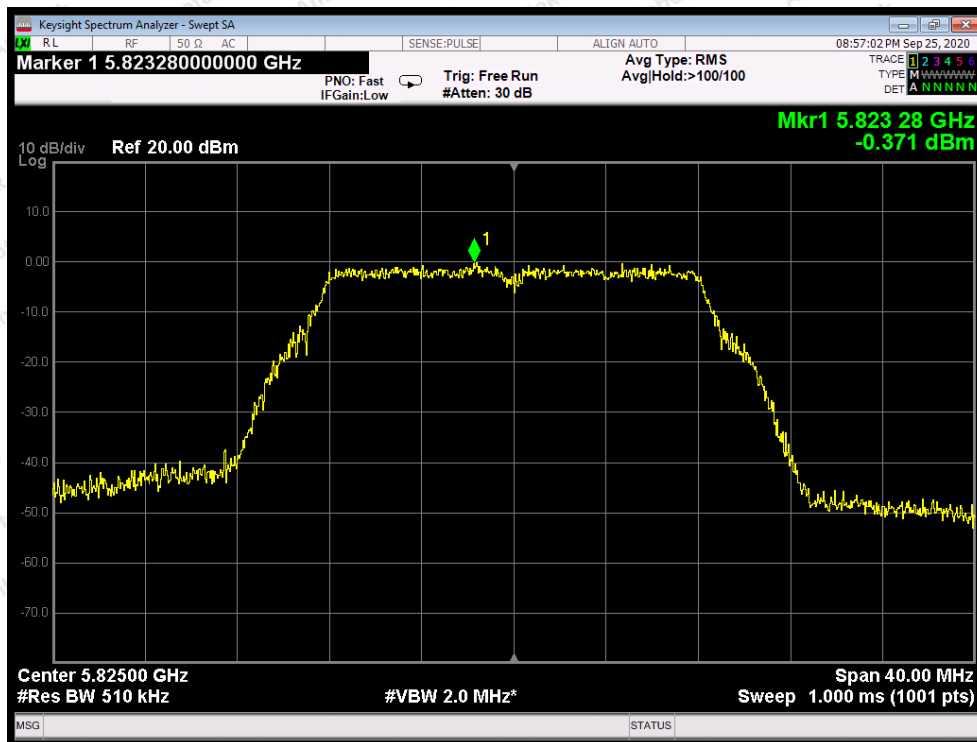
ANT A



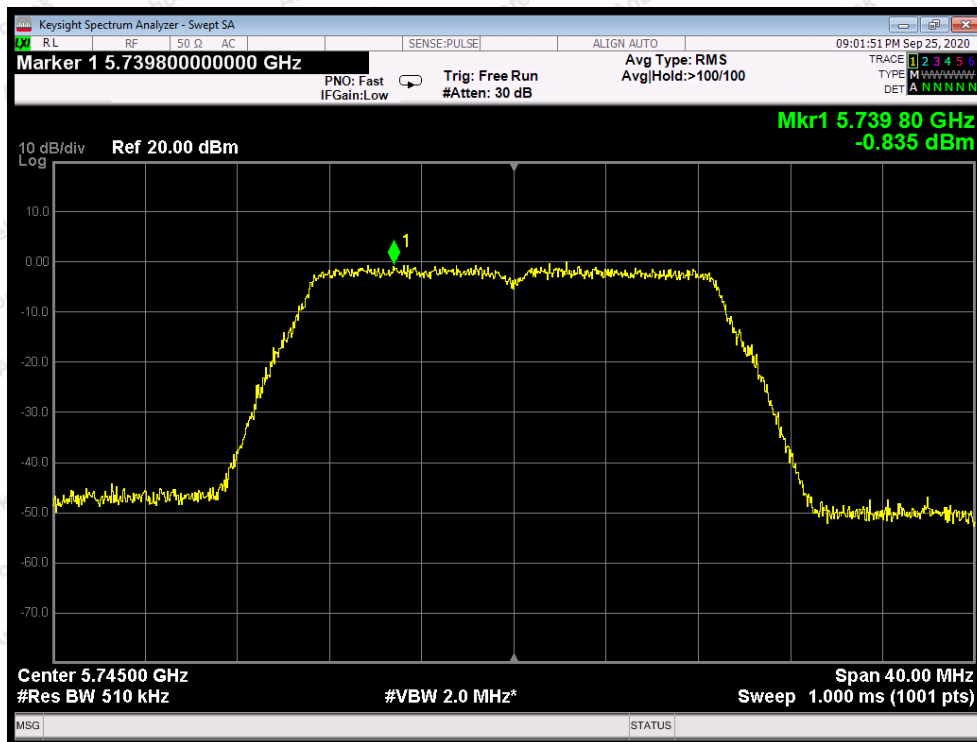
Test Mode: 802.11a--Low



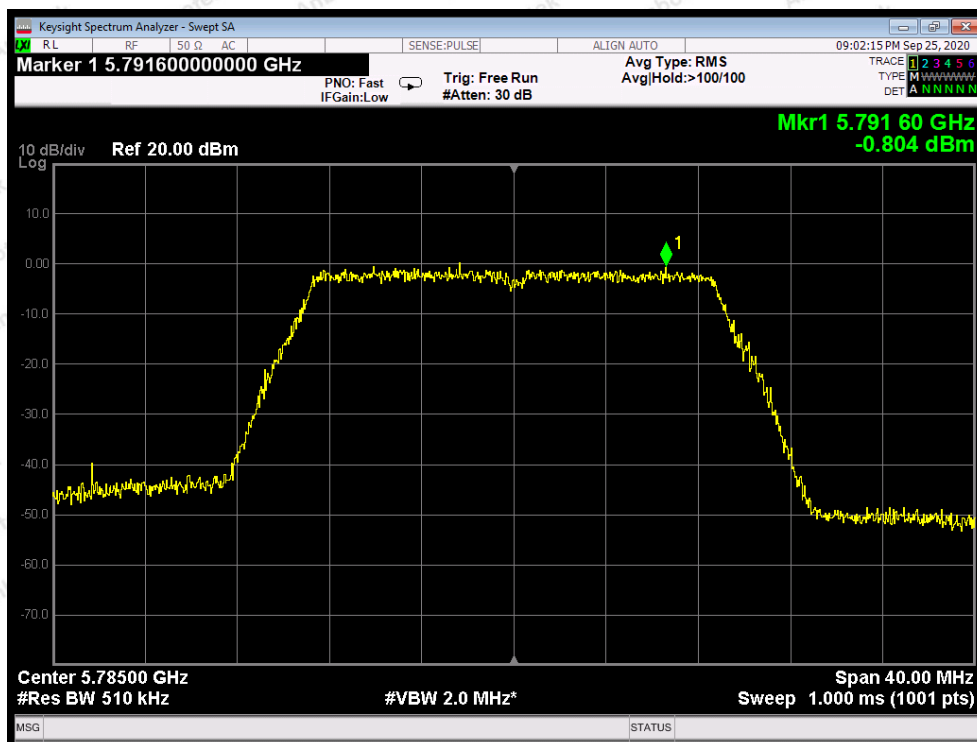
Test Mode: 802.11a---Middle



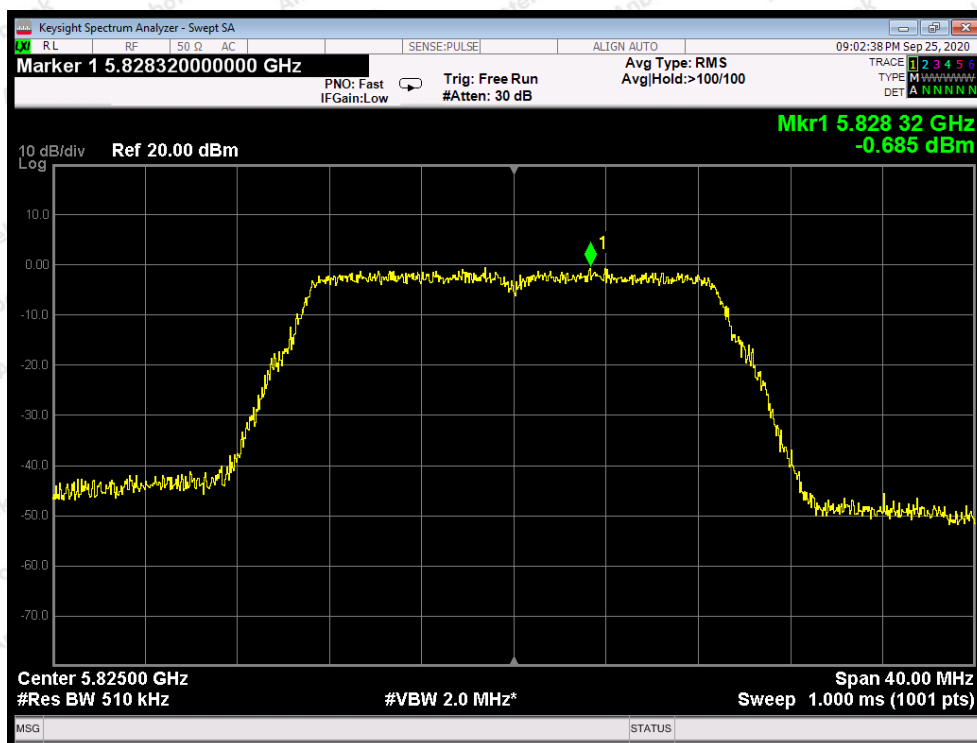
Test Mode: 802.11a---High



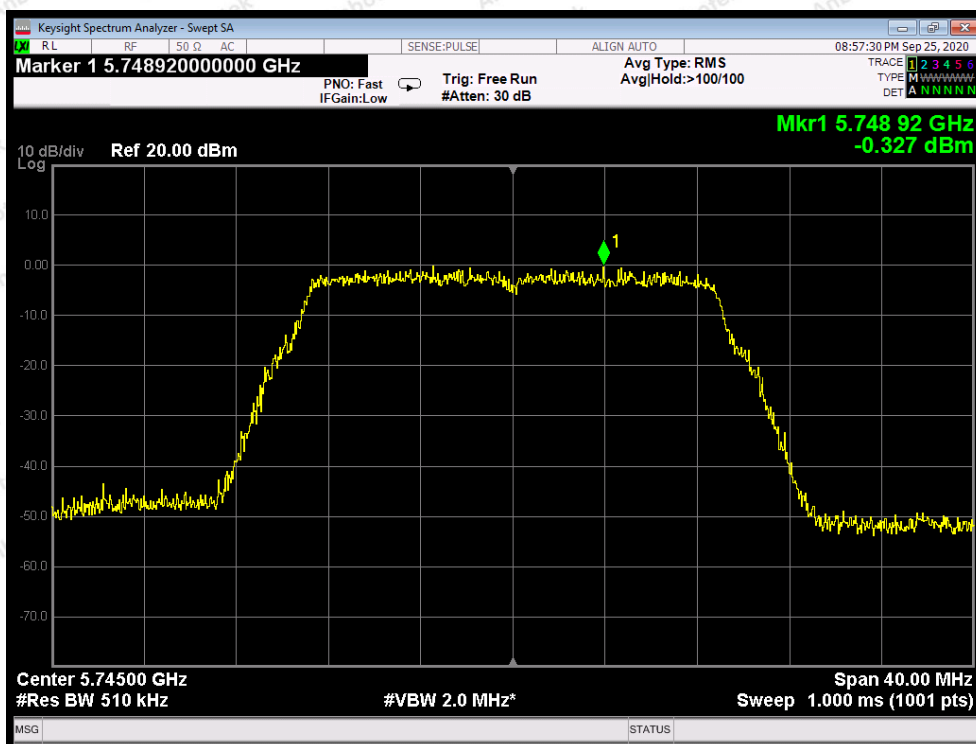
Test Mode: 802.11n20---Low



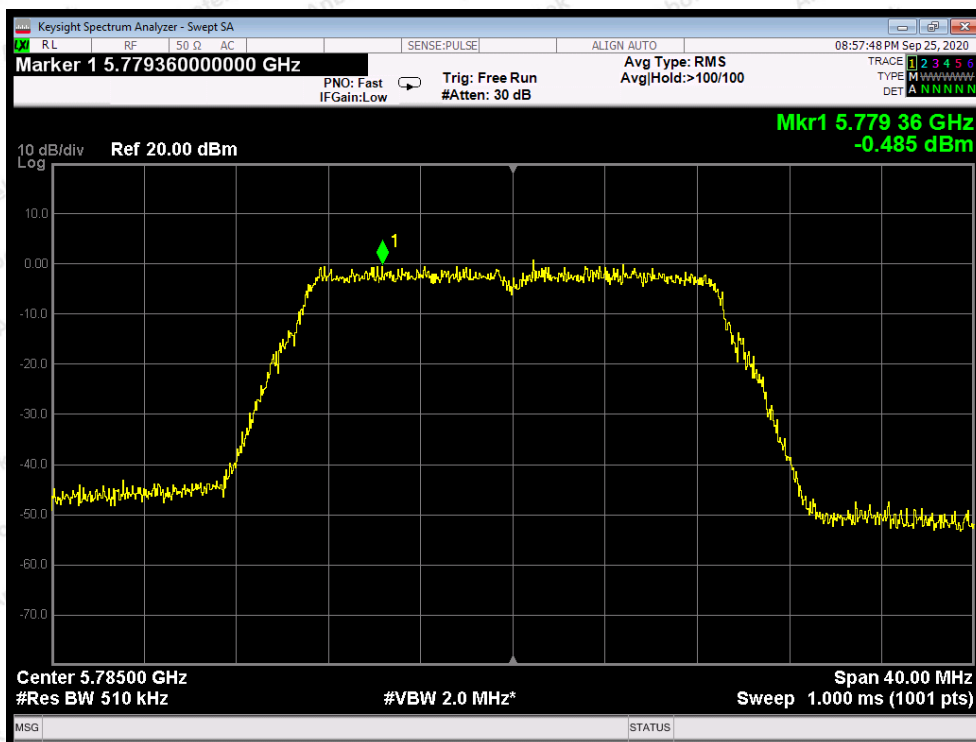
Test Mode: 802.11n20---Middle



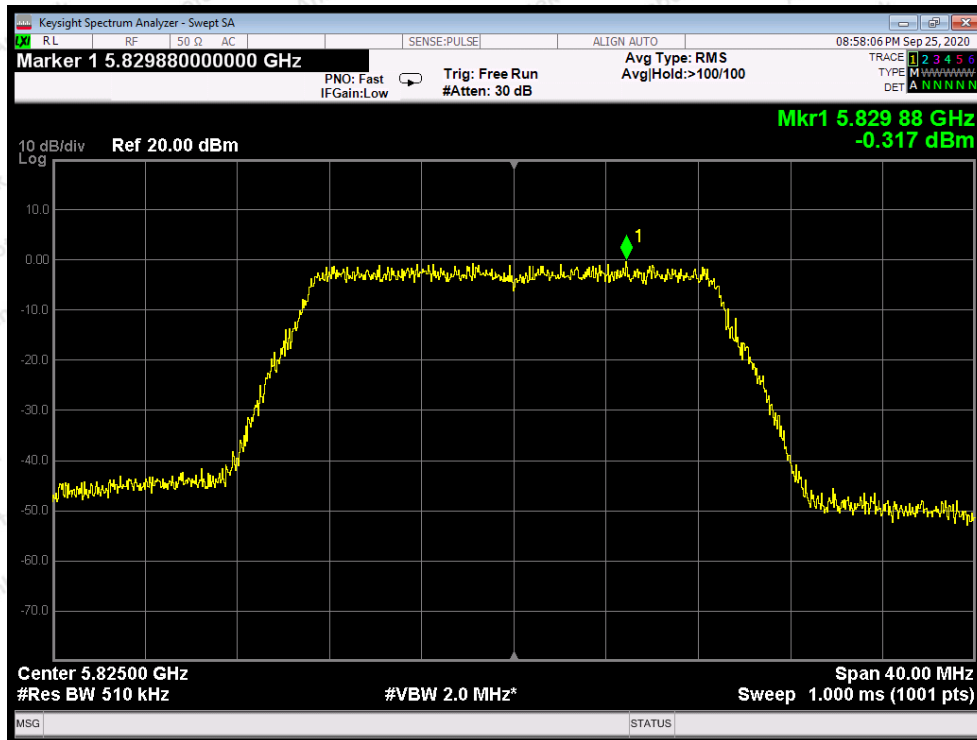
Test Mode: 802.11n20---High



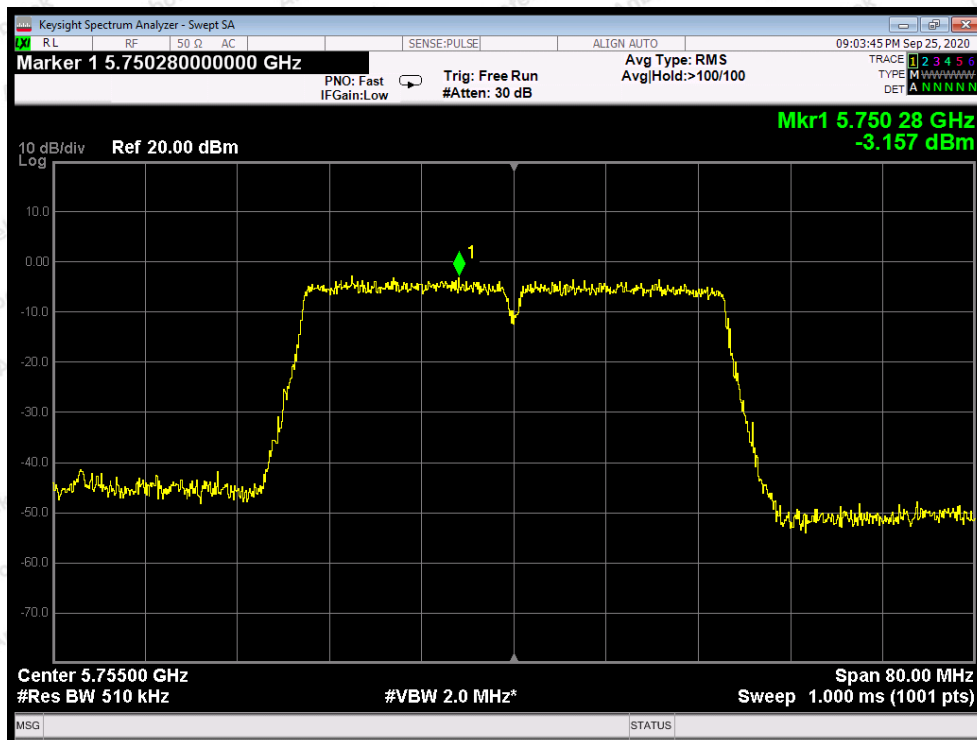
Test Mode: 802.11ac20--Low



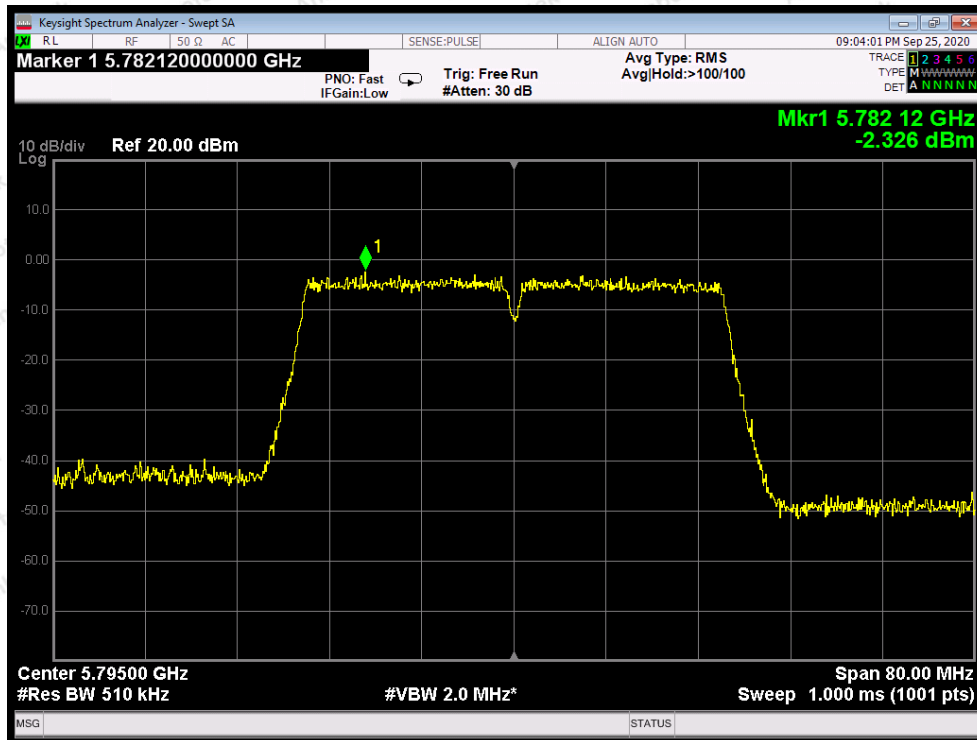
Test Mode: 802.11ac20---Middle



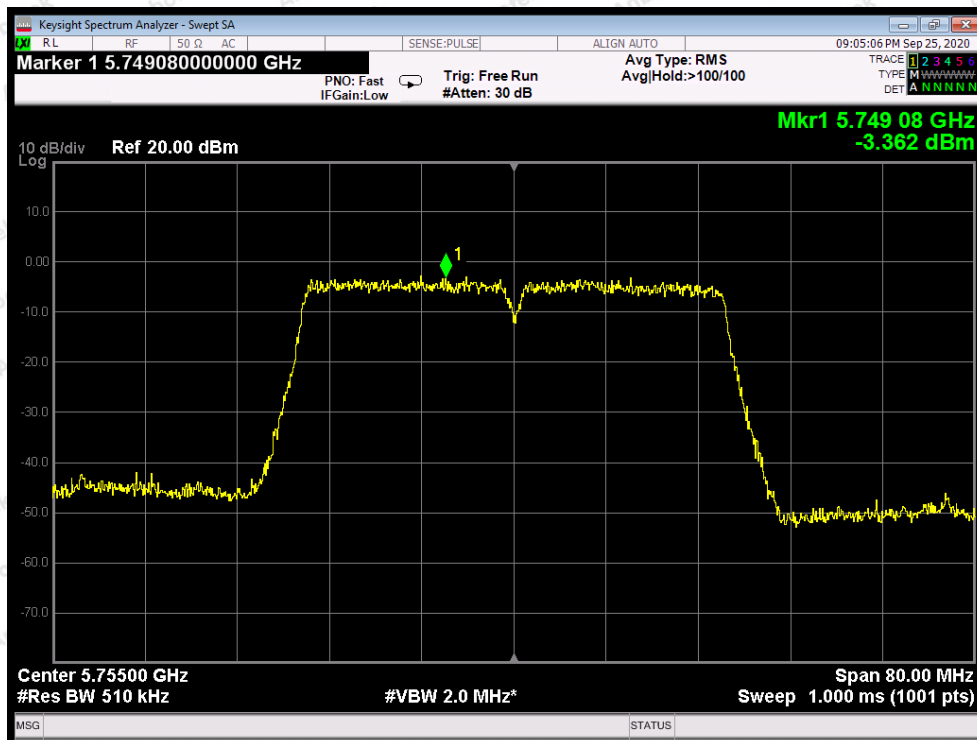
Test Mode: 802.11ac20---High



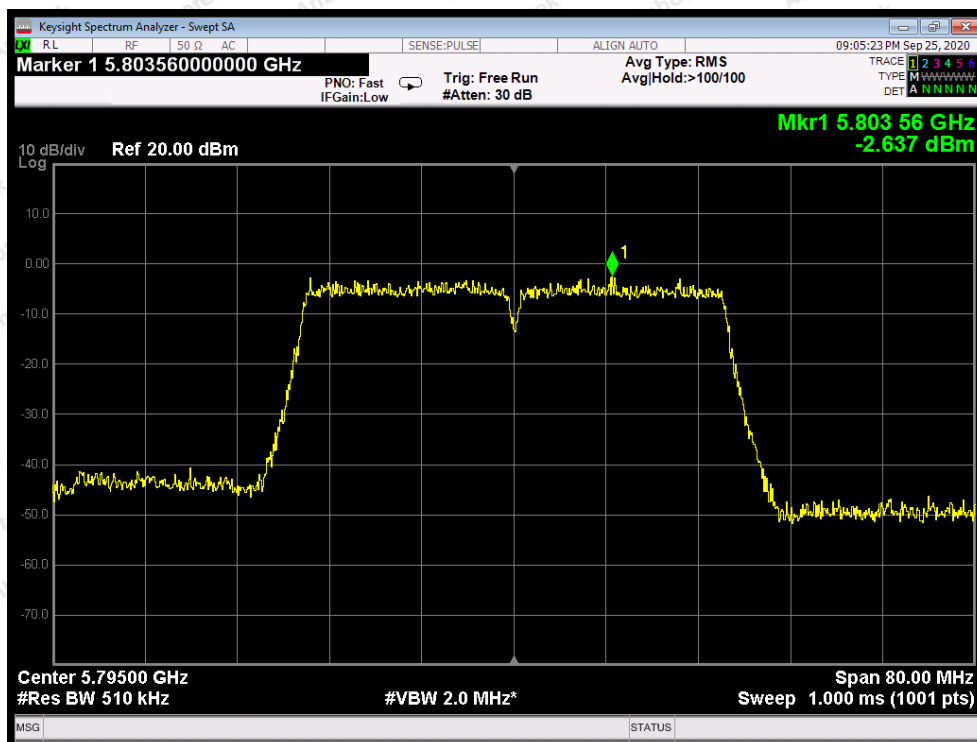
Test Mode: 802.11n40---Low



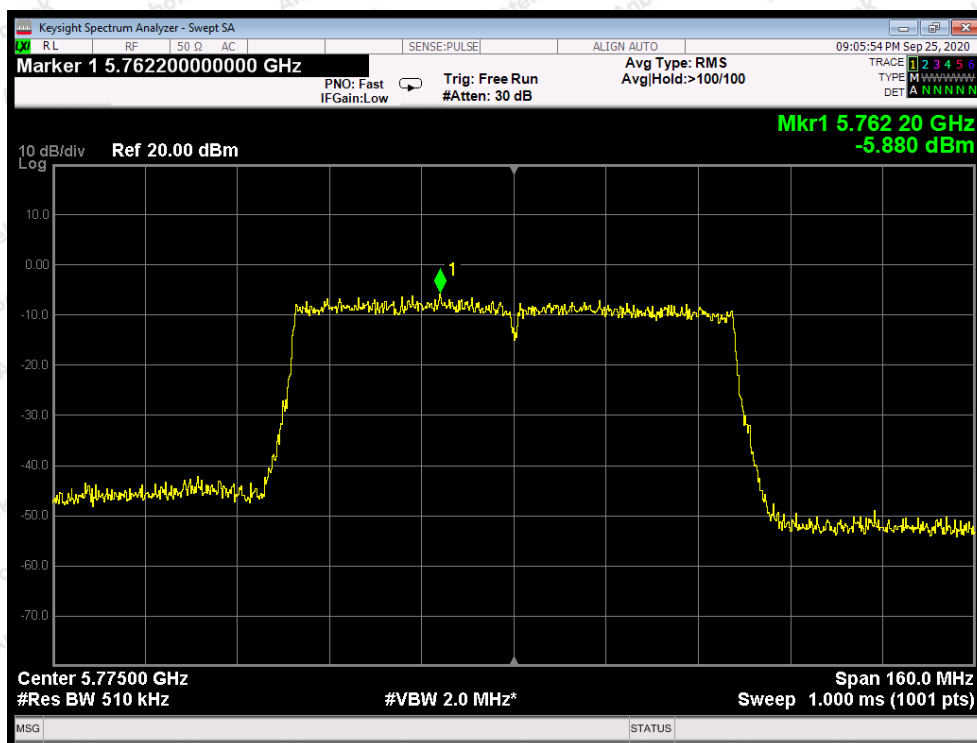
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low

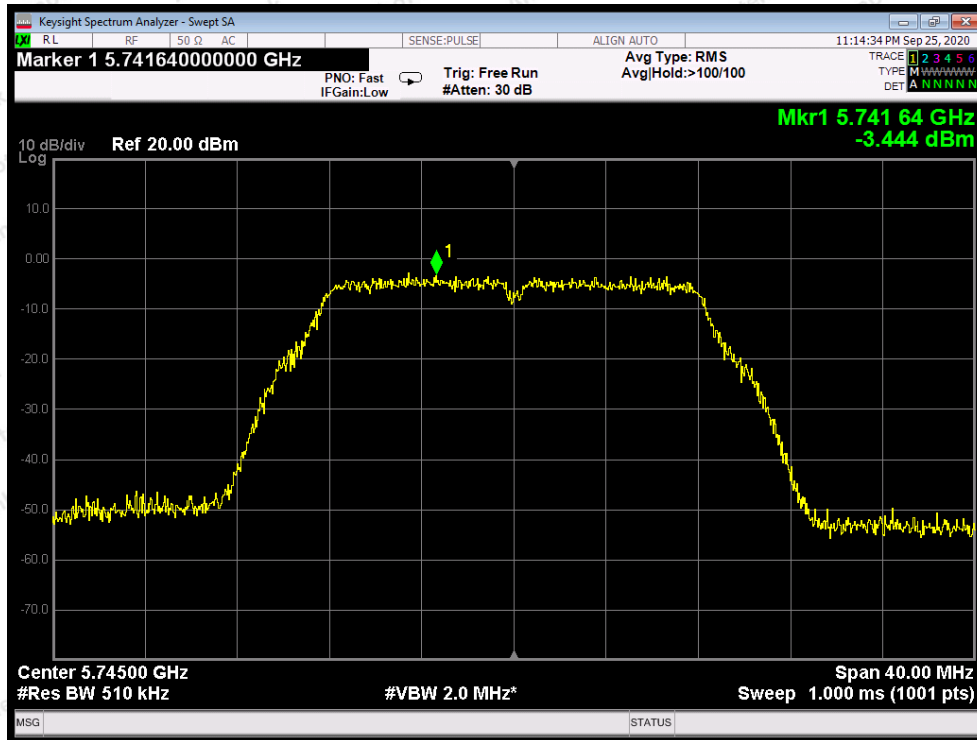


Test Mode: 802.11ac40---High

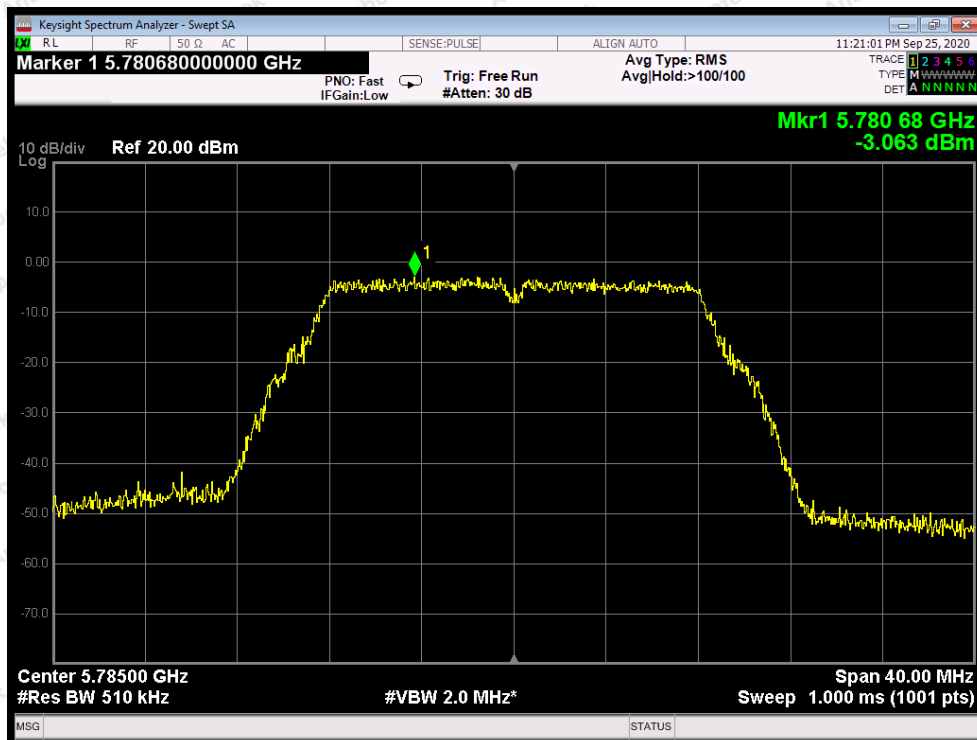


Test Mode: 802.11ac80

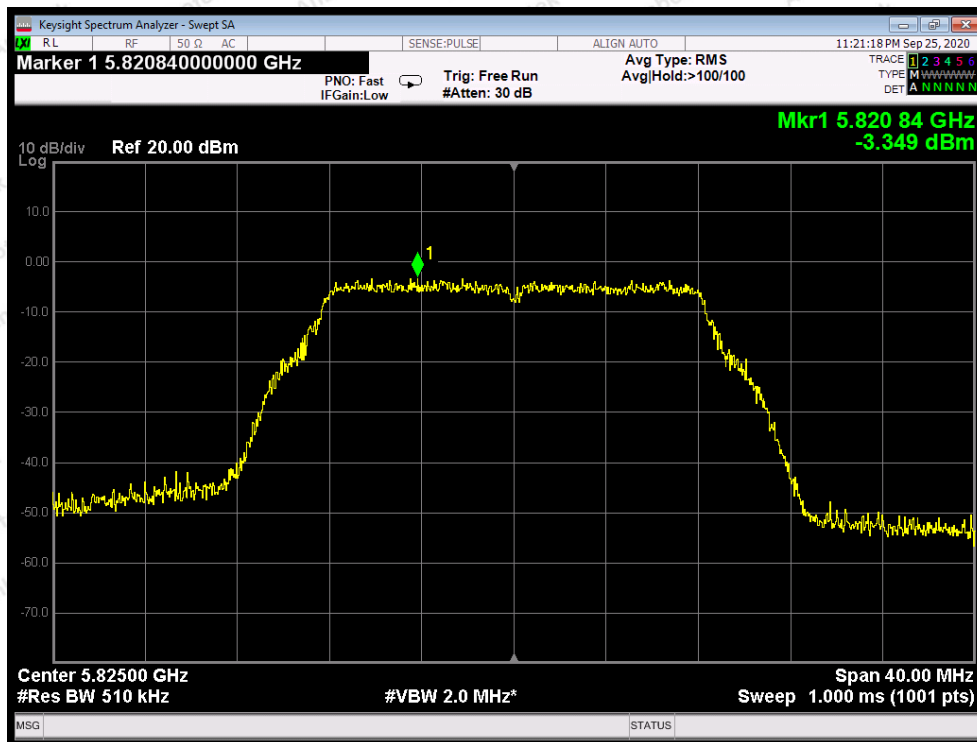
ANT B



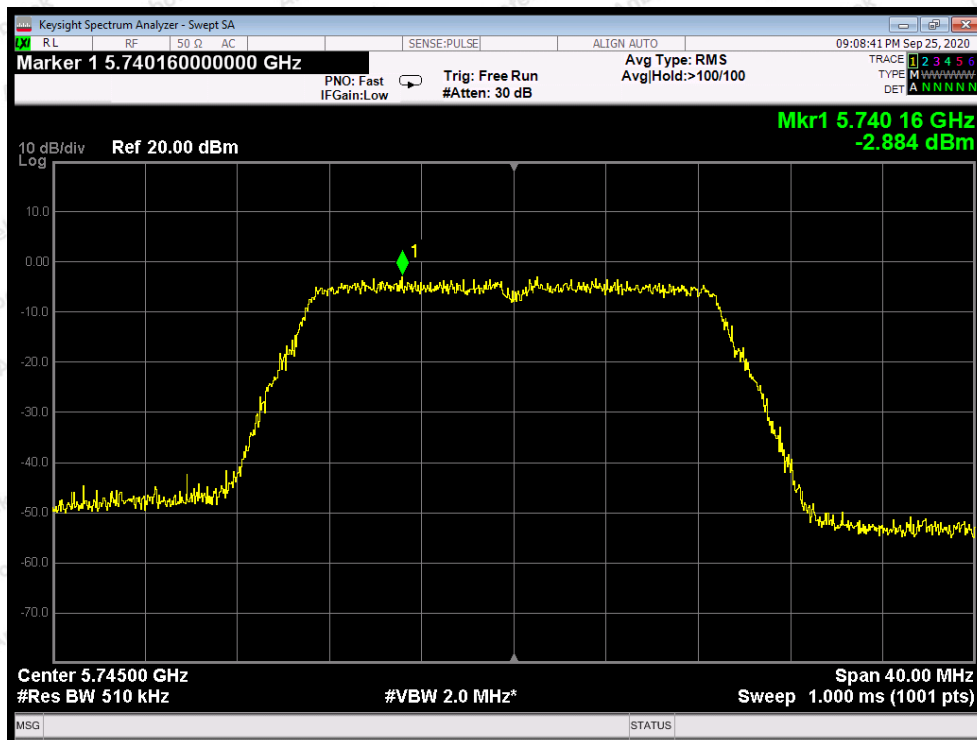
Test Mode: 802.11a--Low



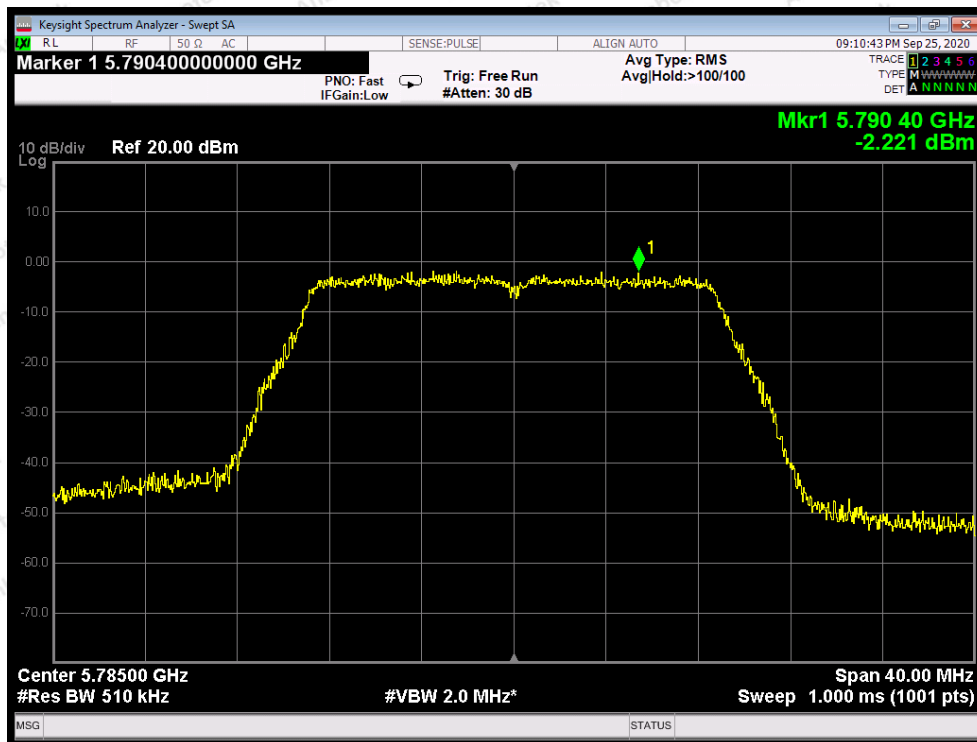
Test Mode: 802.11a---Middle



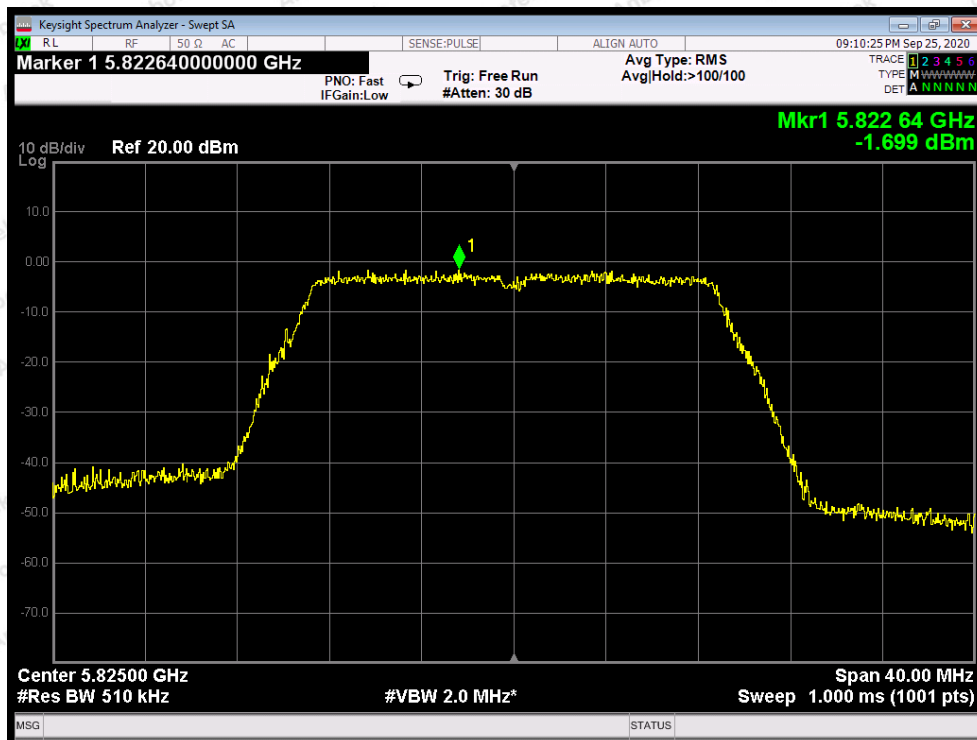
Test Mode: 802.11a---High



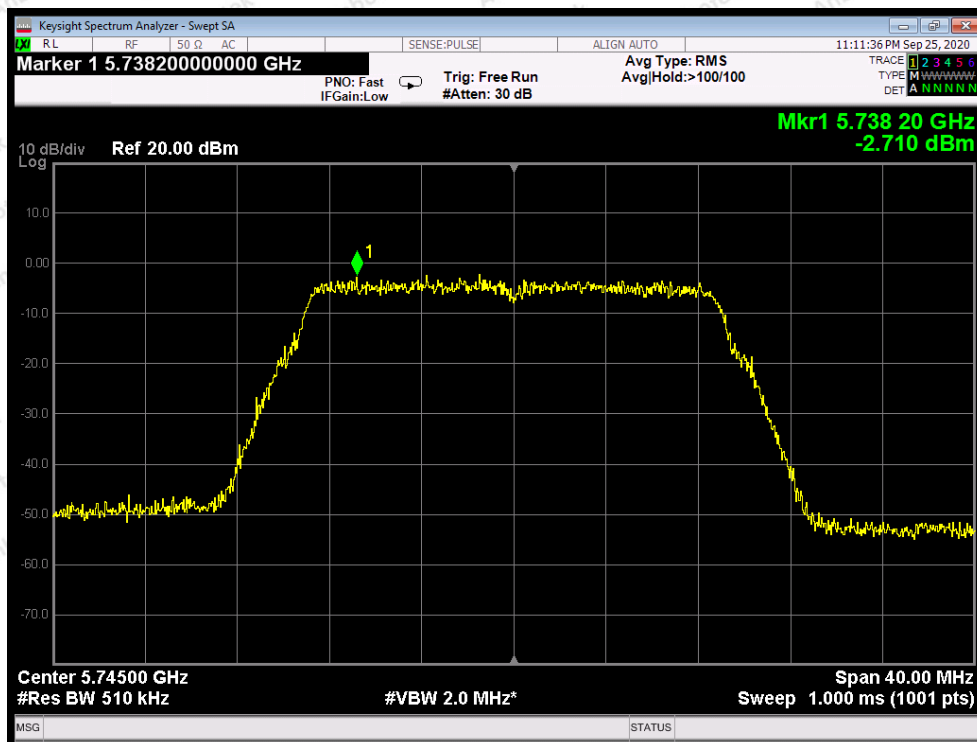
Test Mode: 802.11n20---Low



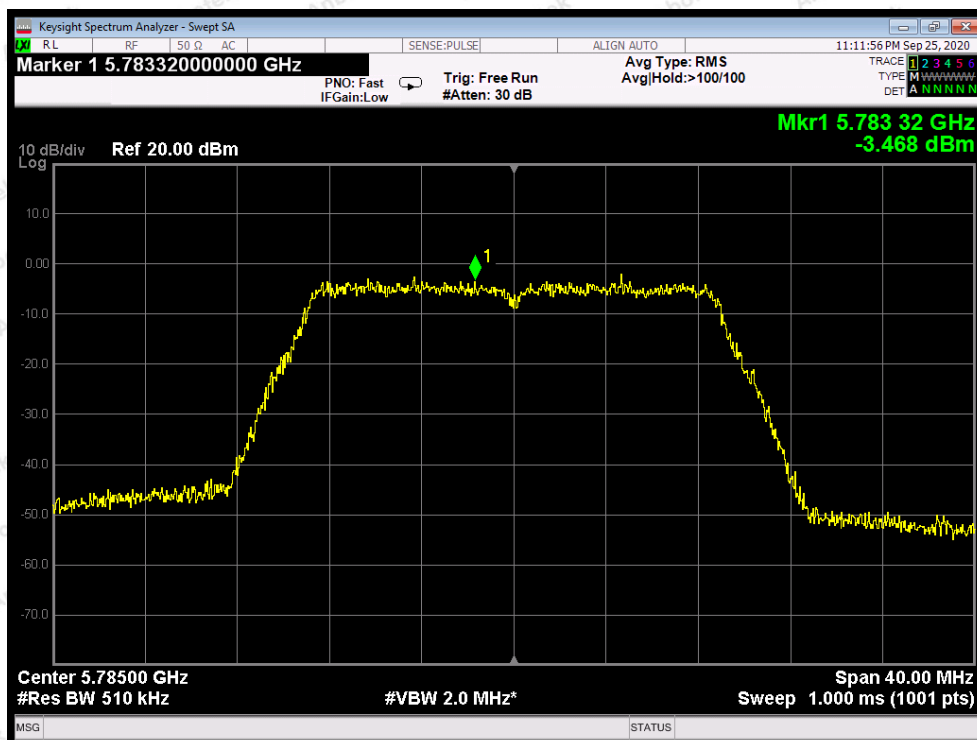
Test Mode: 802.11n20---Middle



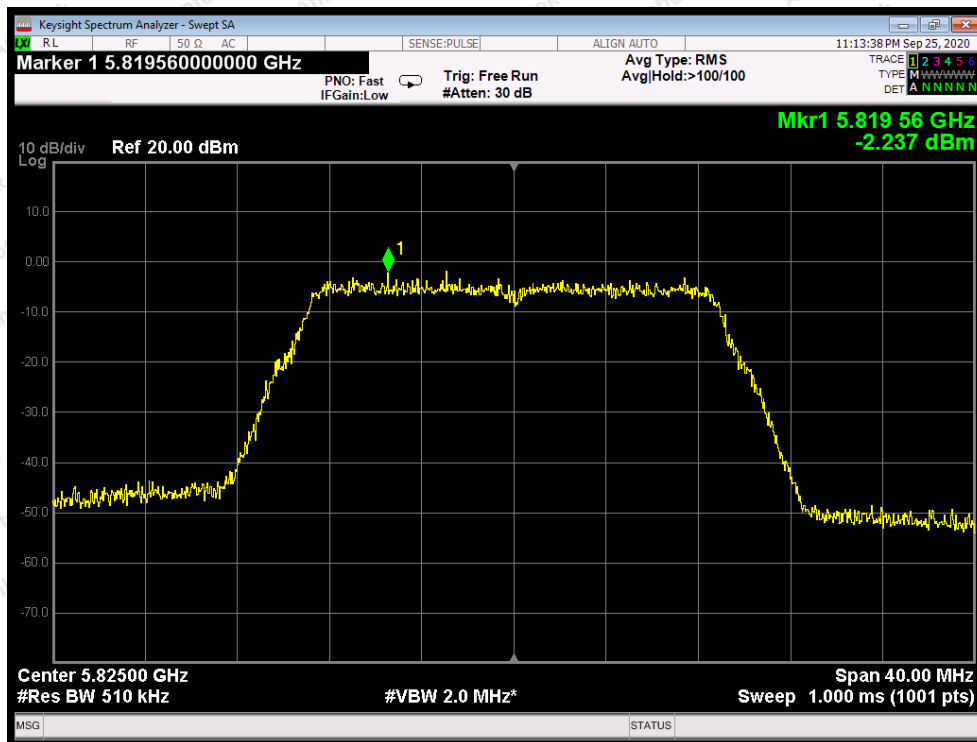
Test Mode: 802.11n20---High



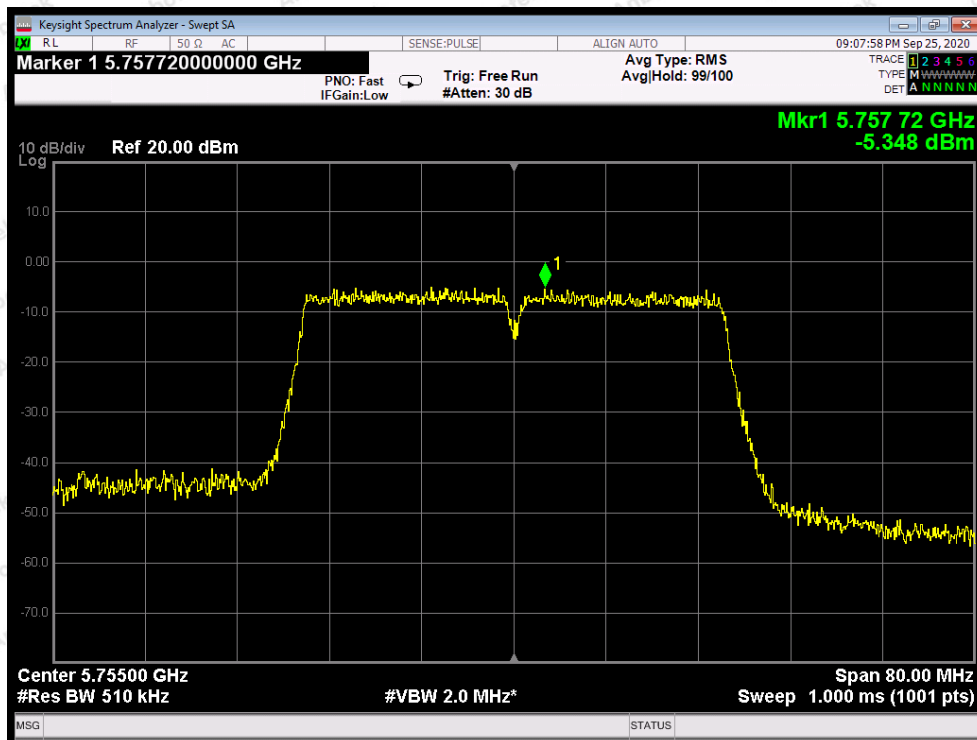
Test Mode: 802.11ac20--Low



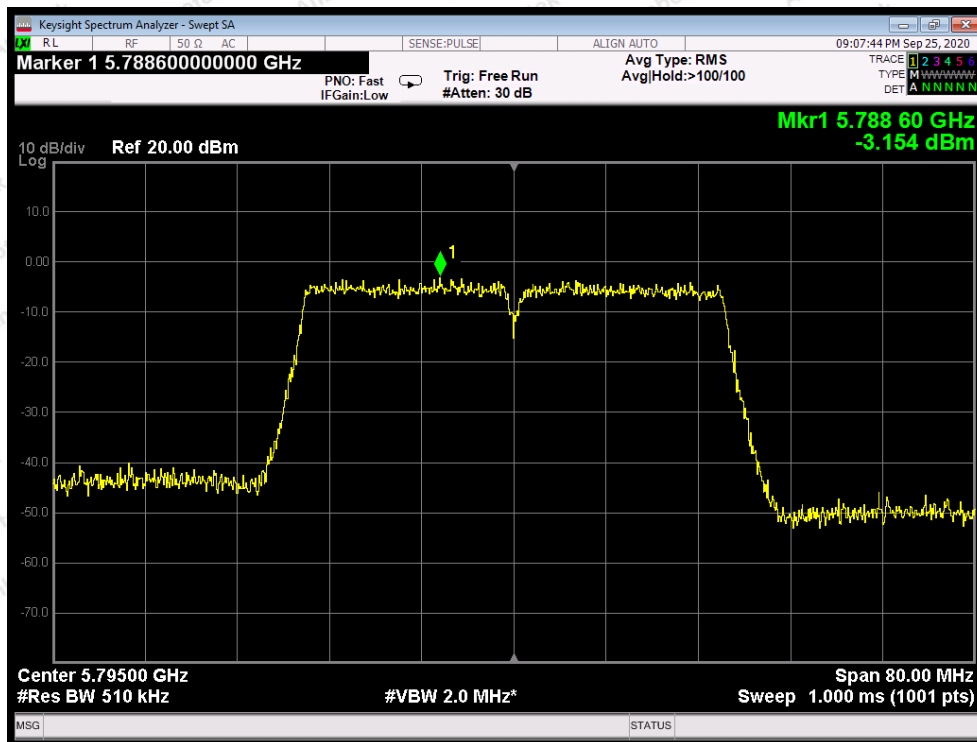
Test Mode: 802.11ac20---Middle



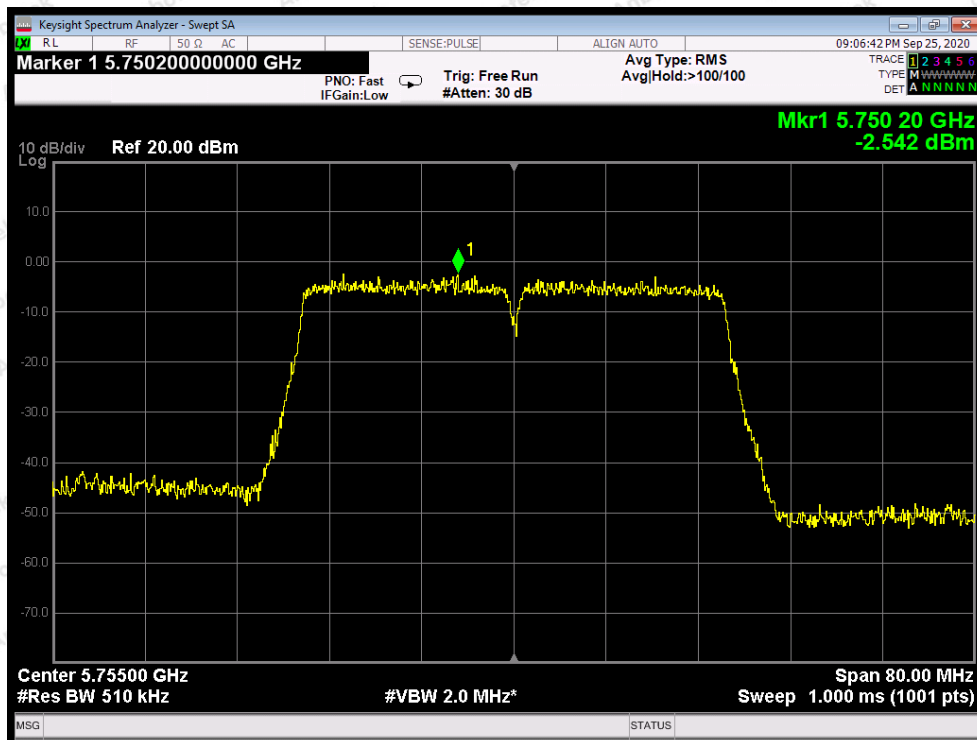
Test Mode: 802.11ac20---High



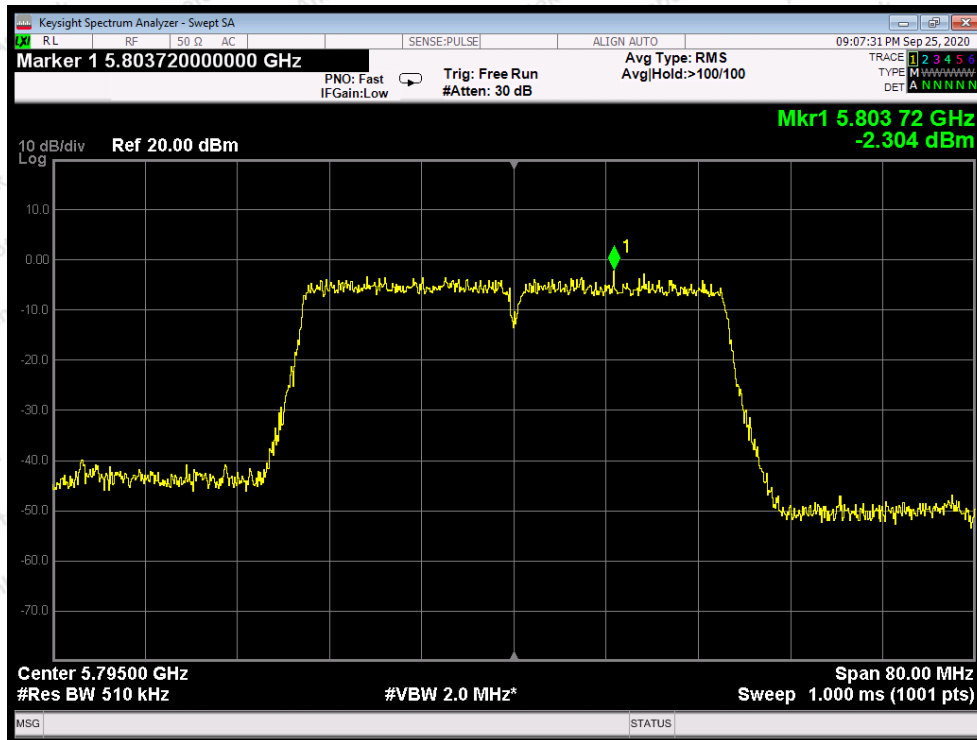
Test Mode: 802.11n40---Low



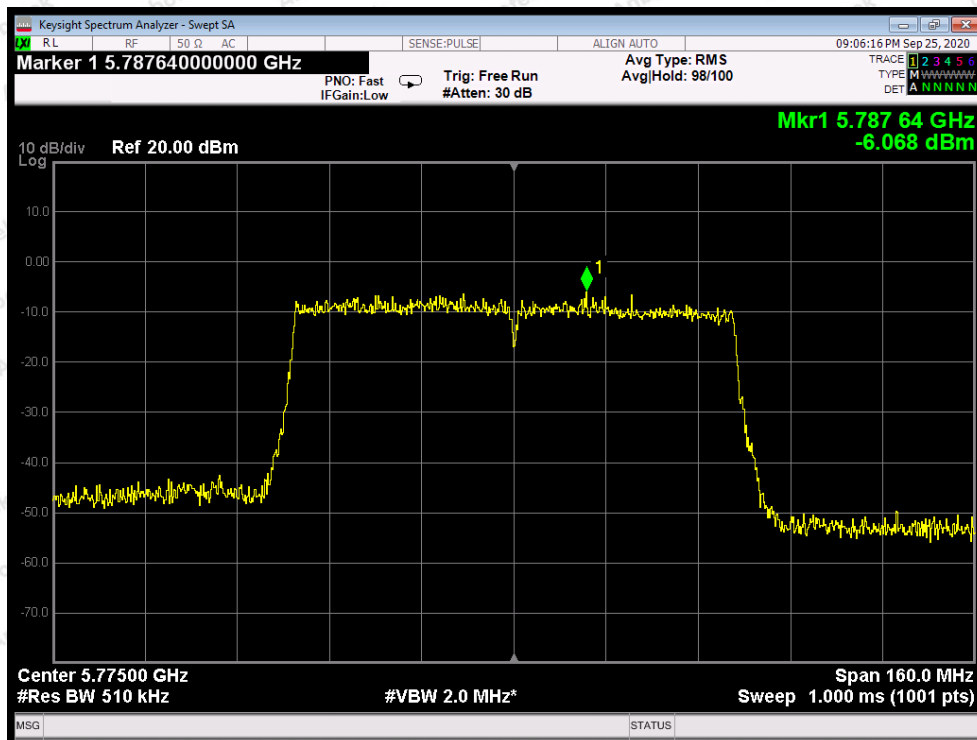
Test Mode: 802.11n40---High



Test Mode: 802.11ac40---Low



Test Mode: 802.11ac40---High



Test Mode: 802.11ac80

8. Antenna Requirement

8.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /15.407
Requirement	1) 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. 2) 15.407 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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

8.2. Antenna Connected Construction

The antenna is a PIFA Antenna which permanently attached, and the best case gain of the antenna is 3.9 dBi. It complies with the standard requirement.



9. Frequency Stability

According to the manufacturer, under any normal operating conditions, the working frequency of the product is in the range of 5725-5850MHz.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files for Test Setup Photos of the EUT.

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files for External Photos of the EUT.

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files for Internal Photos of the EUT.

----- End of Report -----