

TEST REPORT

FCC ID: 2AYJG-YOGAED1000

Product: Notebook

Model No.: Yoga ED1000

Additional Model No.: ED2000, ED3000, NQ14

Trade Mark: TECNOMASTER

Report No.: TCT201215E062

Issued Date: Dec. 29, 2020

Issued for:

PLAZA LAMA S.A.

**AVE. 27 DE FEBRERO ESQ. W. CHURCHILL BELLA VISTA, SANTO
DOMINGO, Dominican Republic**

Issued By:

Shenzhen Tongce Testing Lab.

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Appendix A: Test Result of Conducted Test

Appendix B: Photographs of Test Setup

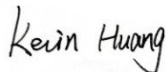
Appendix C: Photographs of EUT

1. Test Certification

Product:	Notebook
Model No.:	Yoga ED1000
Additional Model No.:	ED2000, ED3000, NQ14
Trade Mark:	TECNOMASTER
Applicant:	PLAZA LAMA S.A.
Address:	AVE. 27 DE FEBRERO ESQ. W. CHURCHILL BELLA VISTA, SANTO DOMINGO, Dominican Republic
Manufacturer:	SHENZHEN SOUTH DIGITAL LIMITED
Address:	4th-5th Floor, Room 101, Building 1, No.164 Hao'er Jiashitai Industrial Park, Fengtang Rd., Peace Community, Fuhai Street, Bao'an District, Shenzhen, 518033 Guangdong, P.R. China
Date of Test:	Dec. 16, 2020 – Dec. 28, 2020
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2016 KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:



Kevin Huang

Date:

Dec. 28, 2020

Reviewed By:



Beryl Zhao

Date:

Dec. 29, 2020

Approved By:



Tomsin

Date:

Dec. 29, 2020

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(a)	PASS
26dB Emission Bandwidth& 99% Occupied Bandwidth	§15.407(a)	PASS
Power Spectral Density	§15.407(a)	PASS
Restricted Bands around fundamental frequency	§15.407(a)	PASS
Radiated Emission	§15.407(a)	PASS
Frequency Stability	§15.407(g)	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. EUT Description

Product:	Notebook
Model No.:	Yoga ED1000
Additional Model No.:	ED2000, ED3000, NQ14
Trade Mark:	TECNOMASTER
Operation Frequency:	Band 3: 5745 MHz -5825 MHz
Channel Bandwidth:	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz
Modulation Technology:	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK
Antenna Type:	Internal Antenna
Antenna Gain:	2.2dBi
Power Supply:	Rechargeable Li-polymer battery DC 7.6V
AC adapter:	Adapter Information: Model: JHD-AP024U-120200BA-A Input: AC 100-240V, 50/60Hz, 0.55A Output: DC 12V, 2000mA
Remark:	All models above are identical in interior structure, electrical circuits and components, and just model colors and OS are different for the marketing requirement.

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

Test Frequency each of channel

Band 3

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745	151	5755	155	5775
157	5785	159	5795		
165	5825				

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.

4. General Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 100%)
The sample was placed 0.8m/1.5m for blow/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

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	6 Mbps
802.11n(HT20)	6.5 Mbps
802.11n(HT40)	13.5 Mbps
802.11ac(VHT20)	6.5 Mbps
802.11ac(VHT40)	13.5 Mbps
802.11ac(VHT80)	29.3 Mbps
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

5. Facilities and Accreditations

5.1. Facilities

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

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

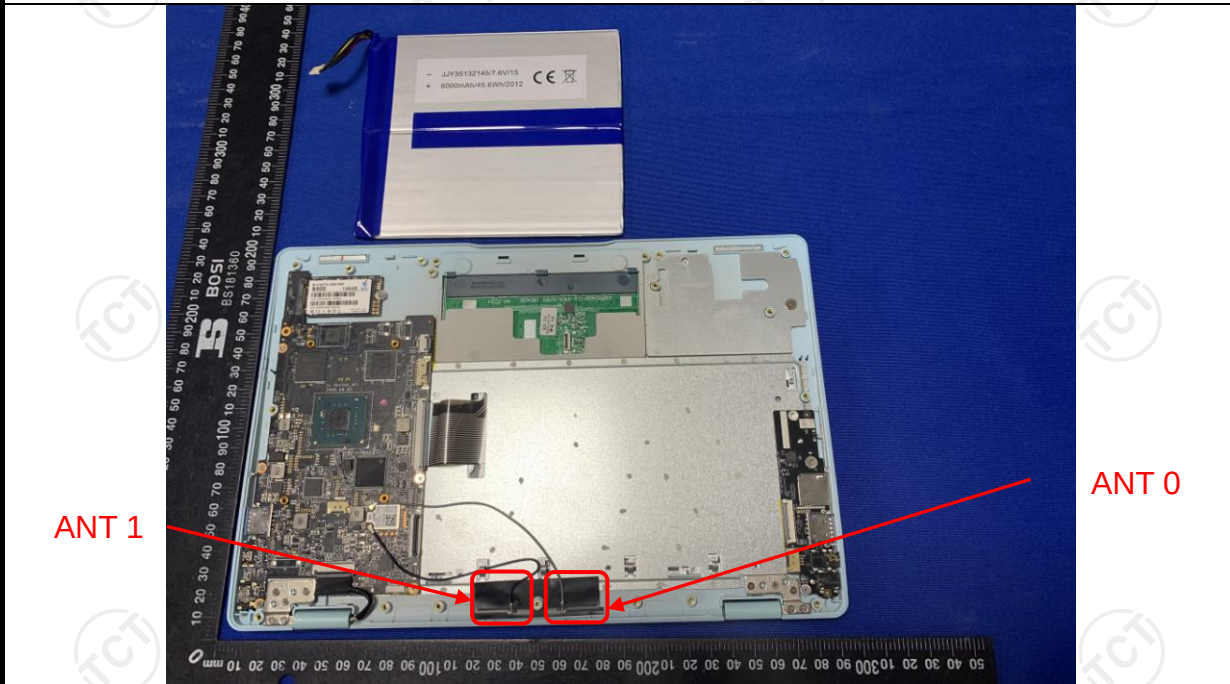
5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^{\circ}\text{C}$
7	Humidity	$\pm 1.0\%$

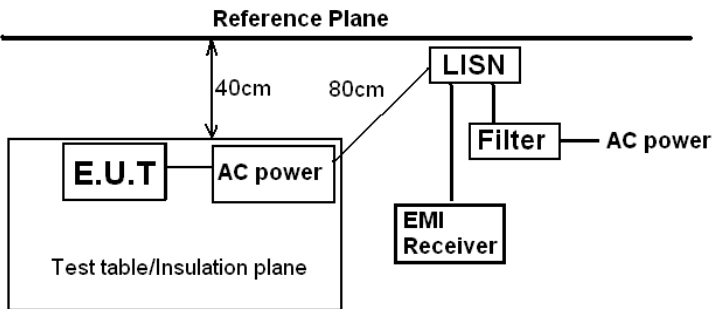
6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
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 WIFI antennas are internal antennas, and the best case gains of the both antennas are 2.2dBi.	
	

6.2. Conducted Emission

6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	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
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													
Test Setup:	Reference Plane  Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Tx Mode														
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 Result:	PASS														

6.2.2. Test Instruments

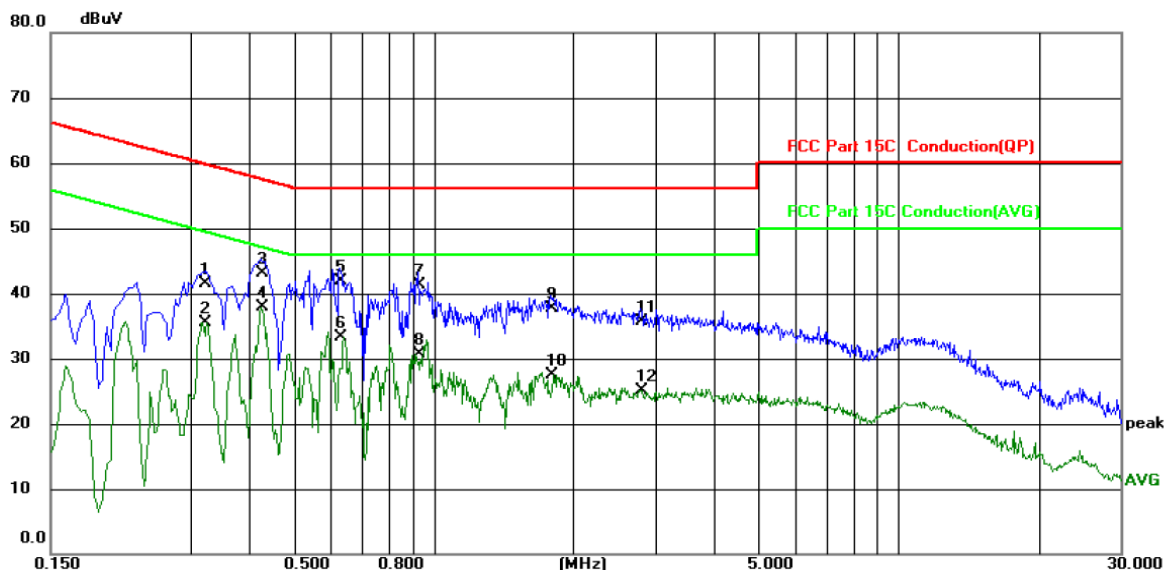
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101402	Jul. 27, 2021
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2021
Line-5	TCT	CE-05	N/A	Sep. 02, 2021
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **L1** Temperature: 25 (C)
Limit: FCC Part 15C Conduction(QP) Power: AC120V/60Hz Humidity: 55 %RH

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.3220	31.33	10.12	41.45	59.66	-18.21	QP	
2		0.3220	25.47	10.12	35.59	49.66	-14.07	AVG	
3		0.4260	33.07	10.13	43.20	57.33	-14.13	QP	
4	*	0.4260	27.77	10.13	37.90	47.33	-9.43	AVG	
5		0.6300	31.71	10.14	41.85	56.00	-14.15	QP	
6		0.6300	23.12	10.14	33.26	46.00	-12.74	AVG	
7		0.9260	31.04	10.17	41.21	56.00	-14.79	QP	
8		0.9260	20.63	10.17	30.80	46.00	-15.20	AVG	
9		1.7820	27.56	10.23	37.79	56.00	-18.21	QP	
10		1.7820	17.31	10.23	27.54	46.00	-18.46	AVG	
11		2.7860	25.50	10.29	35.79	56.00	-20.21	QP	
12		2.7860	14.78	10.29	25.07	46.00	-20.93	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

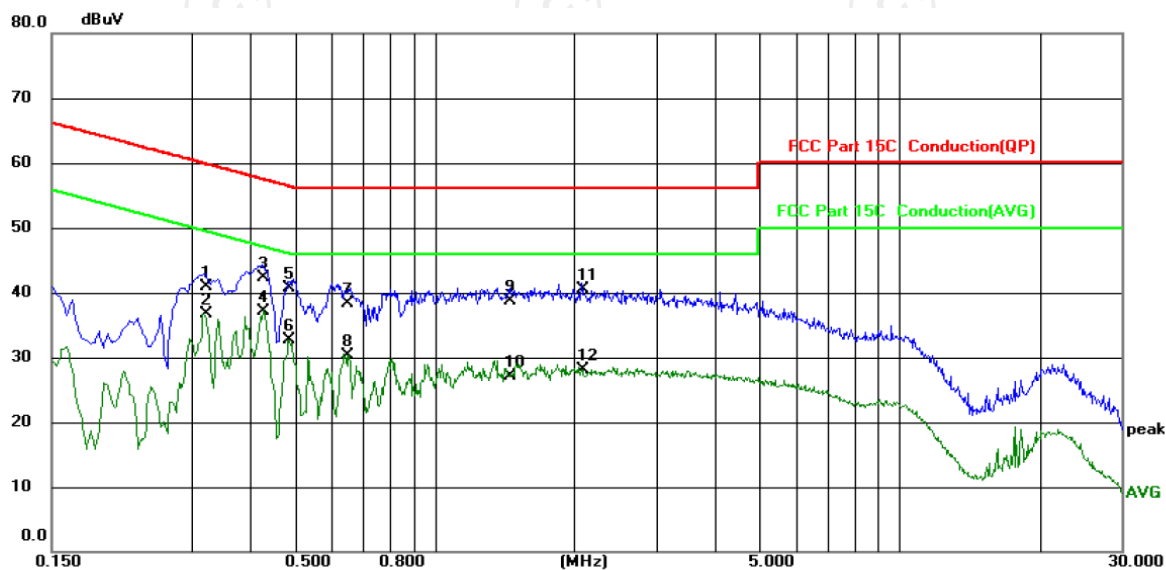
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **N** Temperature: 25 (C)
 Limit: FCC Part 15C Conduction(QP) Power: AC120V/60Hz Humidity: 55 %RH

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.3220	30.87	10.09	40.96	59.66	-18.70	QP	
2		0.3220	26.60	10.09	36.69	49.66	-12.97	AVG	
3		0.4260	32.12	10.10	42.22	57.33	-15.11	QP	
4	*	0.4260	27.10	10.10	37.20	47.33	-10.13	AVG	
5		0.4860	30.67	10.10	40.77	56.24	-15.47	QP	
6		0.4860	22.61	10.10	32.71	46.24	-13.53	AVG	
7		0.6500	28.13	10.11	38.24	56.00	-17.76	QP	
8		0.6500	20.26	10.11	30.37	46.00	-15.63	AVG	
9		1.4500	28.60	10.16	38.76	56.00	-17.24	QP	
10		1.4500	17.04	10.16	27.20	46.00	-18.80	AVG	
11		2.0660	30.35	10.18	40.53	56.00	-15.47	QP	
12		2.0660	18.00	10.18	28.18	46.00	-17.82	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

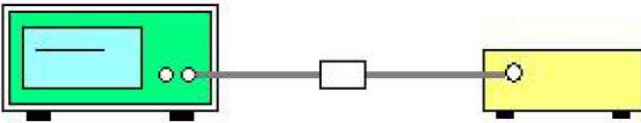
Q.P. =Quasi-Peak

AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

6.3. Maximum Conducted Output Power

6.3.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)										
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E										
Limit:	<table border="1"> <thead> <tr> <th>Frequency Band (MHz)</th><th>Limit</th></tr> </thead> <tbody> <tr> <td>5180 - 5240</td><td>24dBm(250mW) for client device</td></tr> <tr> <td>5260 - 5320</td><td>24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz</td></tr> <tr> <td>5470 - 5725</td><td>24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz</td></tr> <tr> <td>5745 - 5825</td><td>30dBm(1W)</td></tr> </tbody> </table>	Frequency Band (MHz)	Limit	5180 - 5240	24dBm(250mW) for client device	5260 - 5320	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	5470 - 5725	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	5745 - 5825	30dBm(1W)
Frequency Band (MHz)	Limit										
5180 - 5240	24dBm(250mW) for client device										
5260 - 5320	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz										
5470 - 5725	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz										
5745 - 5825	30dBm(1W)										
Test Setup:	 Power meter EUT										
Test Mode:	Transmitting mode with modulation										
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report.										
Test Result:	PASS										
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power										

6.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
Power Meter	Agilent	E4418B	GB43312526	Sep. 02, 2021
Power Sensor	Agilent	E9301A	MY41497725	Sep. 02, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Configuration Band 3 (5745 - 5825 MHz) / Antenna 0+Antenna 1

Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
		ANT 0	ANT 1	Total		
11a	CH149	8.324	9.517	/	30	PASS
11a	CH157	9.229	9.115	/	30	PASS
11a	CH165	8.911	9.672	/	30	PASS
11n(HT20)	CH149	9.383	9.115	12.261	30	PASS
11n(HT20)	CH157	9.430	9.315	12.383	30	PASS
11n(HT20)	CH165	9.821	9.631	12.737	30	PASS
11n(HT40)	CH151	9.482	9.764	12.636	30	PASS
11n(HT40)	CH159	10.124	10.042	13.093	30	PASS
11ac(VHT20)	CH149	9.188	9.159	12.184	30	PASS
11ac(VHT20)	CH157	9.588	8.618	12.140	30	PASS
11ac(VHT20)	CH165	9.300	9.214	12.268	30	PASS
11ac(VHT40)	CH151	10.008	9.596	12.817	30	PASS
11ac(VHT40)	CH159	10.057	10.229	13.154	30	PASS
11ac(VHT80)	CH155	8.596	8.442	11.530	30	PASS

6.4. 6dB Emission Bandwidth

6.4.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	>500kHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

6.4.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.5. 26dB Bandwidth and 99% Occupied Bandwidth

6.5.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D
Limit:	No restriction limits
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

6.5.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.6. Power Spectral Density

6.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	$\leq 11.00\text{dBm/MHz}$ for Band 1 5150MHz-5250MHz(client device) $\leq 11.00\text{dBm/MHz}$ for Band 2A&2C 5250-5350&5470-5725 $\leq 30.00\text{dBm/500KHz}$ for Band 3 5725MHz-5850MHz The e.i.r.p spectral density for Band 1 5150MHz – 5250 MHz should not exceed 10dBm/MHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

6.6.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	N/A	Sep. 02, 2021
Combiner Box	Ascentest	AT890-RFB	N/A	Sep. 02, 2021

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Configuration Band 3(5745-5825MHz) / Antenna 0+Antenna 1

Mode	Test channel	Power Spectral Density			Limit (dBm/500kHz)	Result
		ANT 0	ANT 1	Total		
11a	CH149	-3.665	-3.176	/	30	PASS
11a	CH157	-4.563	-4.334	/	30	PASS
11a	CH165	-4.262	-4.055	/	30	PASS
11n(HT20)	CH149	-4.457	-4.685	-1.559	30	PASS
11n(HT20)	CH157	-4.366	-4.642	-1.492	30	PASS
11n(HT20)	CH165	-3.779	-3.804	-0.781	30	PASS
11n(HT40)	CH151	-6.775	-7.132	-3.940	30	PASS
11n(HT40)	CH159	-6.570	-6.419	-3.484	30	PASS
11ac(VHT20)	CH149	-4.297	-4.452	-1.364	30	PASS
11ac(VHT20)	CH157	-4.054	-4.613	-1.314	30	PASS
11ac(VHT20)	CH165	-3.700	-4.227	-0.945	30	PASS
11ac(VHT40)	CH151	-6.809	-7.061	-3.923	30	PASS
11ac(VHT40)	CH159	-6.787	-6.574	-3.669	30	PASS
11ac(VHT80)	CH155	-10.470	-10.998	-7.716	30	PASS

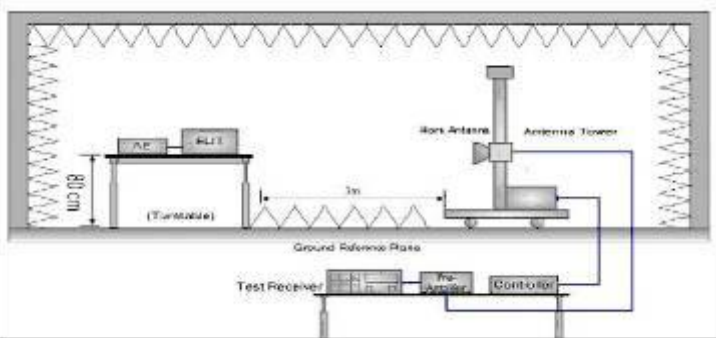
Note: 1. All antennas have the same gain. $G_{ANT}=2.2\text{dBi}$, Array Gain= $10\log(N_{ANT})=3.01\text{dBi}$

Directional Gain= $G_{ANT} + \text{Array Gain}=5.21\text{dBi}$, $5.21\text{dBi} < 6\text{dBi}$ so limit=30dBm/500KHz

2. The total PSD method used the sum spectra maxima across the outputs.

6.7. Band edge

6.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10 2013
Limit:	For Band 1&2A&2C: $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 68.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -27\text{dBm}$ For Band 3(5715-5725MHz&5850-5860MHz): $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 78.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -17\text{dBm}$; For Band 3(other un-restricted band): $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 68.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -27\text{dBm}$
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak,

	quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS

6.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHWARZ	ESIB7	100197	Jul. 27, 2021
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ40	200061	Sep. 11, 2021
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2021
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 02, 2021
Pre-amplifier	HP	8447D	2727A05017	Sep. 02, 2021
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 05, 2022
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 04, 2022
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 02, 2021
Line-4	TCT	RE-high-04	N/A	Sep. 02, 2021
Line-8	TCT	RE-01	N/A	Jul. 27, 2021
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.7.3. Test Data

802.11 a	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	42.57	5.82	48.39	68.2	/	-19.81	H
		5725	40.24	5.82	46.06	68.2	/	-22.14	V
	Highest	5850	37.13	6.52	43.65	68.2	/	-24.55	H
		5850	40.65	6.52	47.17	68.2	/	-21.03	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

802.11 n HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	42.22	8.21	50.43	68.2	/	-17.77	H
		5725	40.48	8.21	48.69	68.2	/	-19.51	V
	Highest	5850	38.11	8.87	46.98	68.2	/	-21.22	H
		5850	40.83	8.87	49.70	68.2	/	-18.50	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

802.11 n HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	42.33	5.82	48.15	68.2	/	-20.05	H
		5725	40.69	5.82	46.51	68.2	/	-21.69	V
	Highest	5850	37.86	6.52	44.38	68.2	/	-23.82	H
		5850	41.40	6.52	47.92	68.2	/	-20.28	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

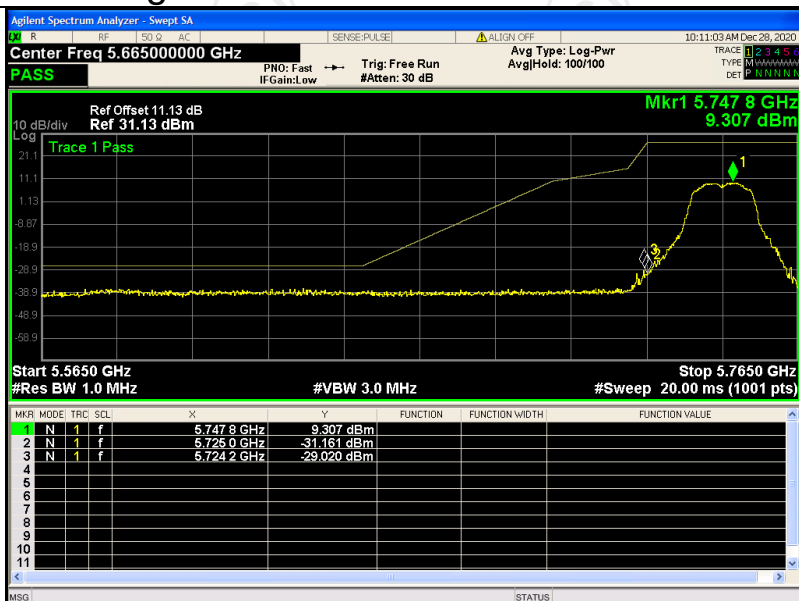
802.11 ac HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	42.14	8.21	50.35	68.2	/	-17.85	H
		5725	40.55	8.21	48.76	68.2	/	-19.44	V
	Highest	5850	38.67	8.87	47.54	68.2	/	-20.66	H
		5850	40.49	8.87	49.36	68.2	/	-18.84	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

802.11 ac HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	41.64	5.82	47.46	68.2	/	-20.74	H
		5725	39.72	5.82	45.54	68.2	/	-22.66	V
	Highest	5850	37.96	6.52	44.48	68.2	/	-23.72	H
		5850	40.80	6.52	47.32	68.2	/	-20.88	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

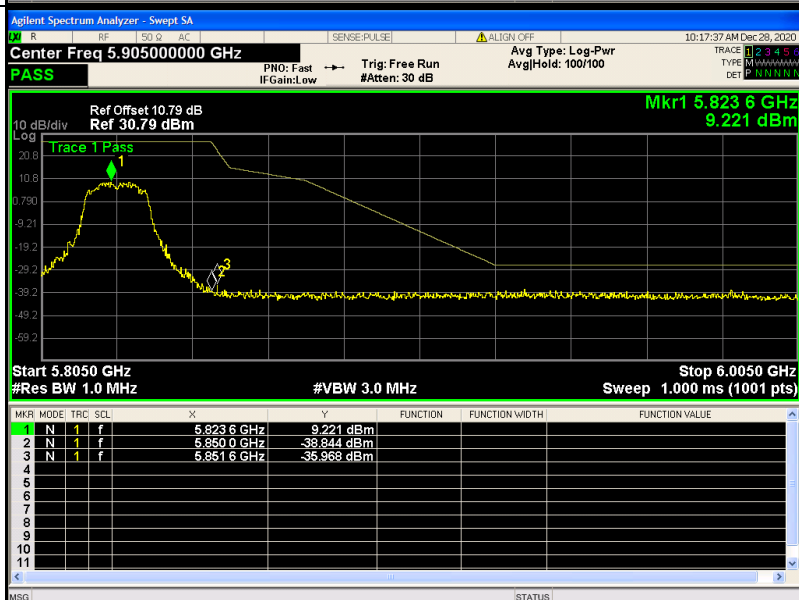
802.11 ac HT80	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 3	Lowest	5725	42.27	5.82	48.09	68.2	/	-20.11	H
		5725	40.33	5.82	46.15	68.2	/	-22.05	V
	Highest	5850	38.59	6.52	45.11	68.2	/	-23.09	H
		5850	41.18	6.52	47.70	68.2	/	-20.50	V
Remark: Factor(dB)=Ant. Factor + Cable Loss-Amp. Factor									

Band 3 Band-edge for RF Conducted Emissions

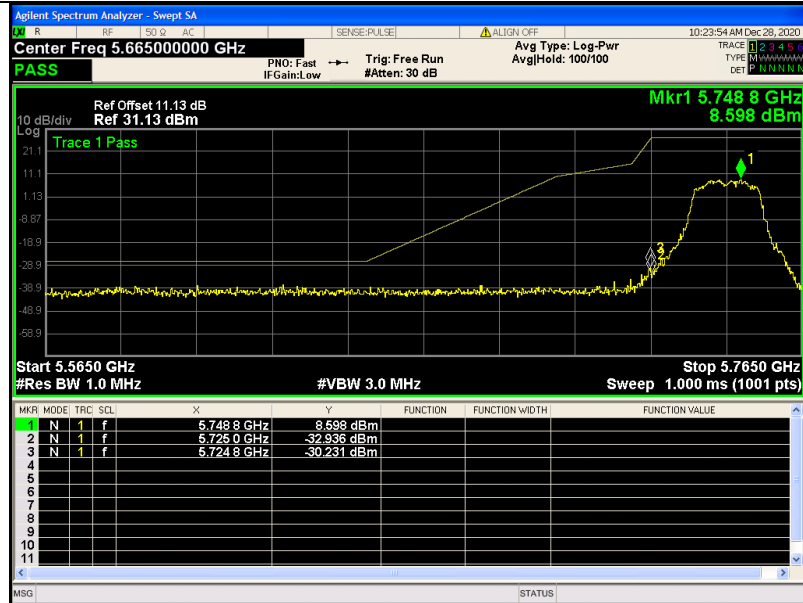
802.11a
/LCH



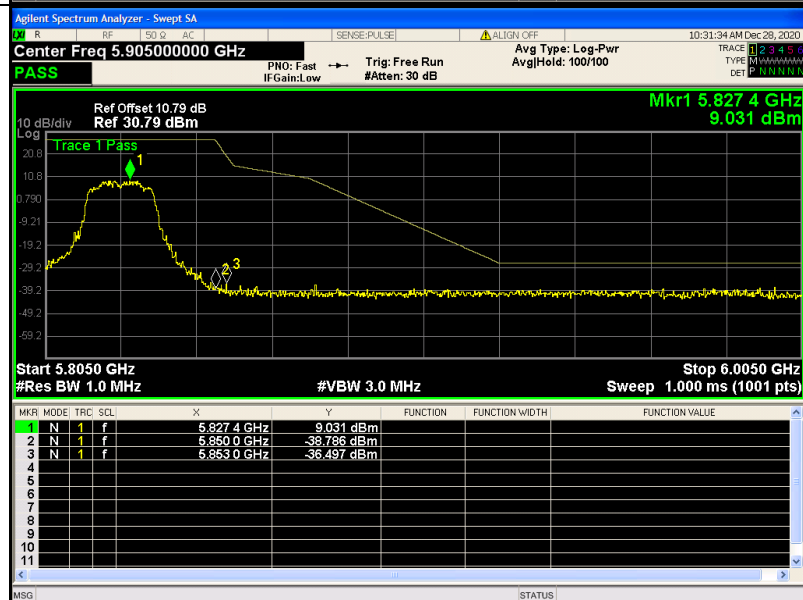
802.11a
/HCH



802.11n
HT20/LCH

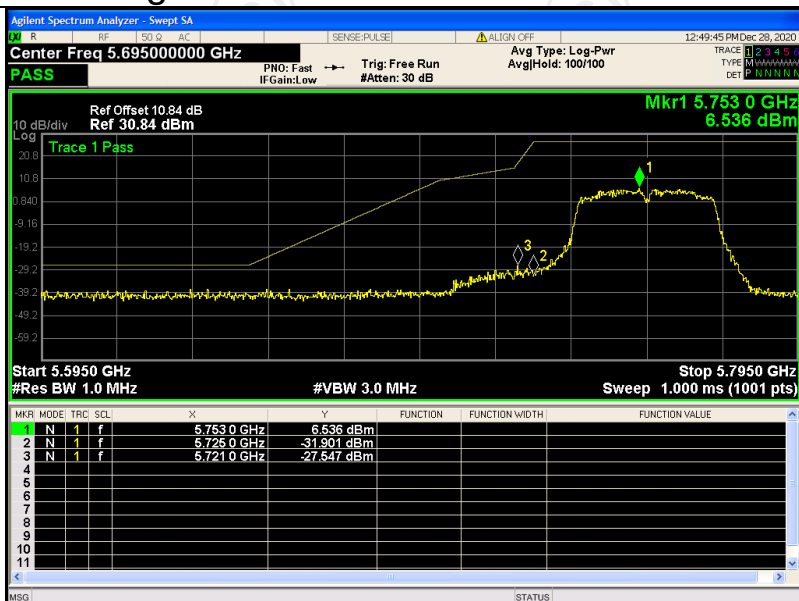


802.11n
HT20/HCH

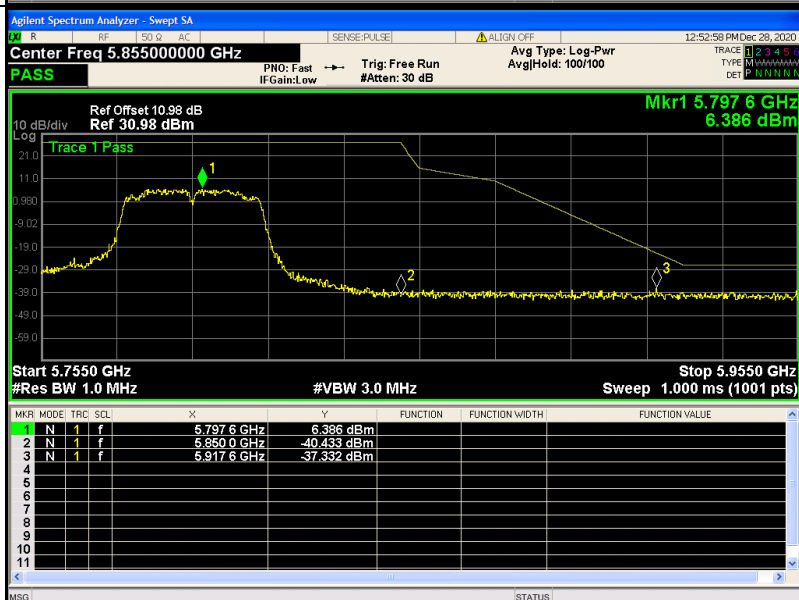


Band 3 Band-edge for RF Conducted Emissions

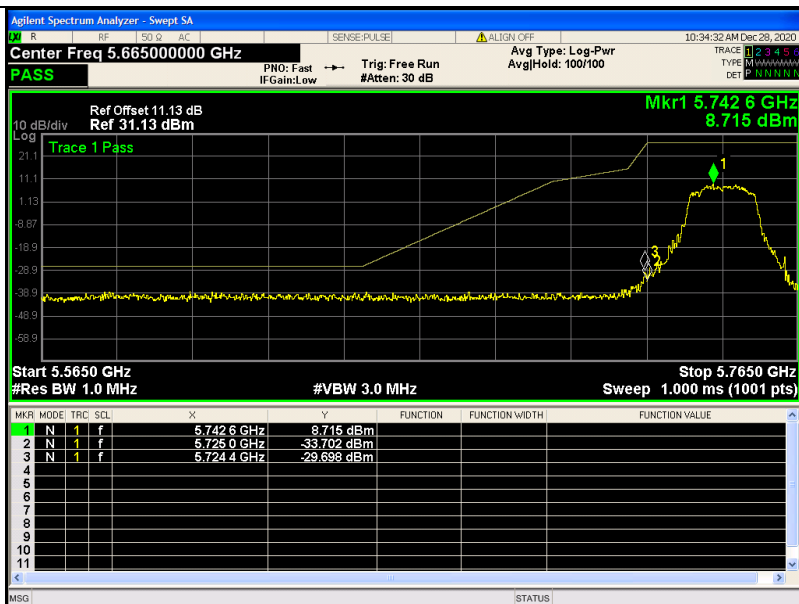
802.11n
HT40/LCH



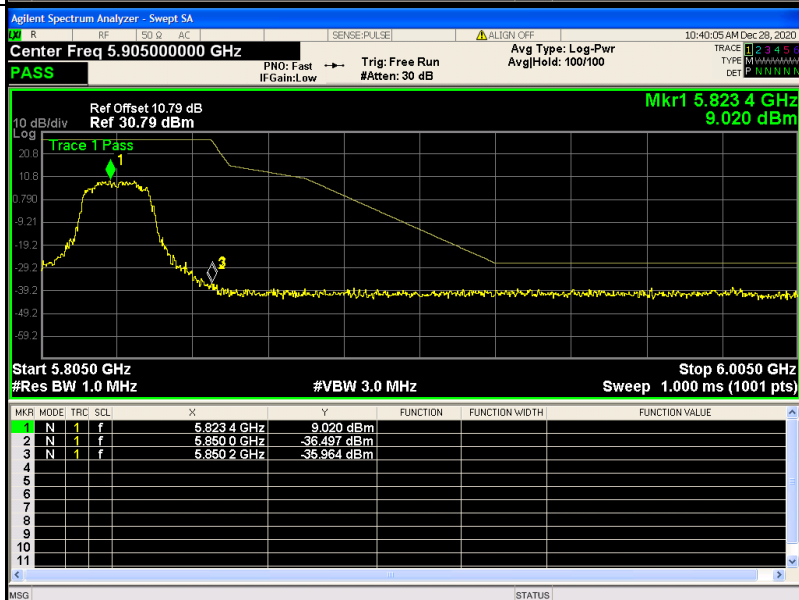
802.11n
HT40/HCH



802.11ac
HT20/LCH

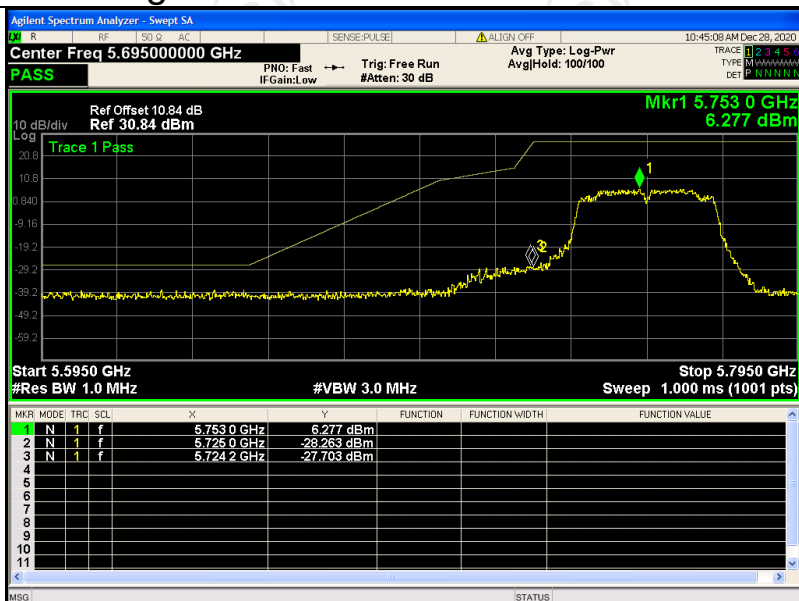


802.11ac
HT20/HCH

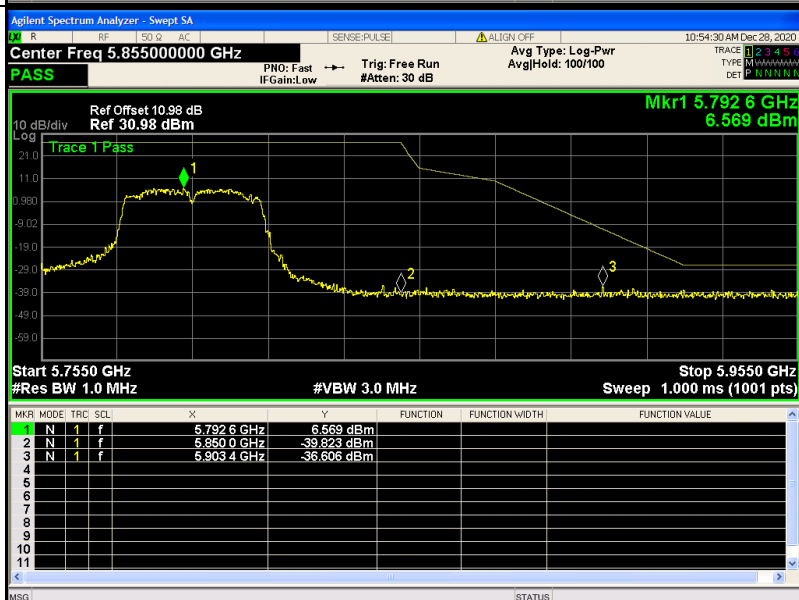


Band 3 Band-edge for RF Conducted Emissions

802.11ac
HT40/LCH



802.11ac
HT40/HCH



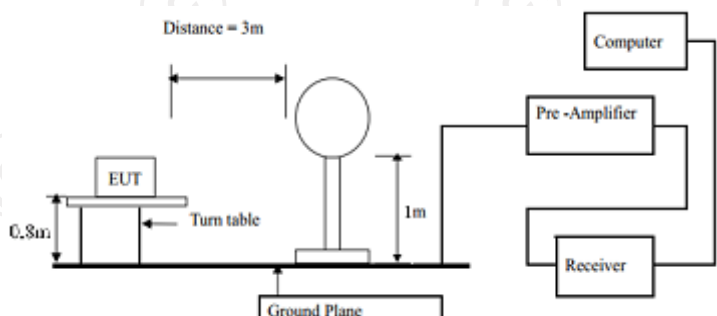
Band 3 Band-edge for RF Conducted Emissions

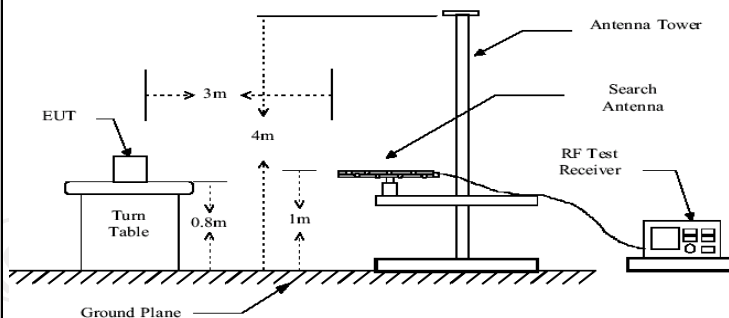
802.11ac 80



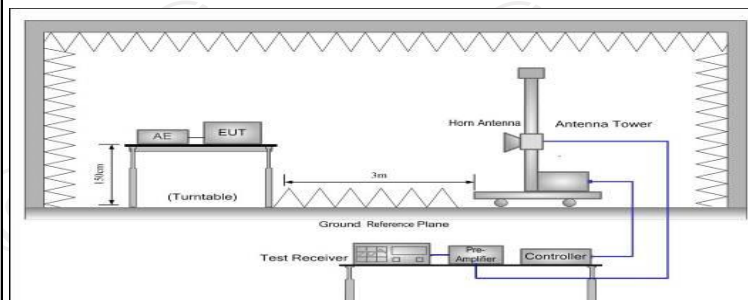
6.8. Unwanted Emission

6.8.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205				
Test Method:	KDB 789033 D02 v02r01				
Frequency Range:	9kHz to 40GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Transmitting mode with modulation				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:	Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,				
	Frequency	Field Strength (microvolts/meter)		Measurement Distance (meters)	
	0.009-0.490	2400/F(KHz)		300	
	0.490-1.705	24000/F(KHz)		30	
	1.705-30	30		30	
	30-88	100		3	
	88-216	150		3	
	216-960	200		3	
	Above 960	500		3	
	Frequency	Limit (dBuV/m @3m)		Detector	
Above 1G	74.0		Peak		
	54.0		Average		
Test setup:	For radiated emissions below 30MHz				
					
	30MHz to 1GHz				



Above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test results:

PASS

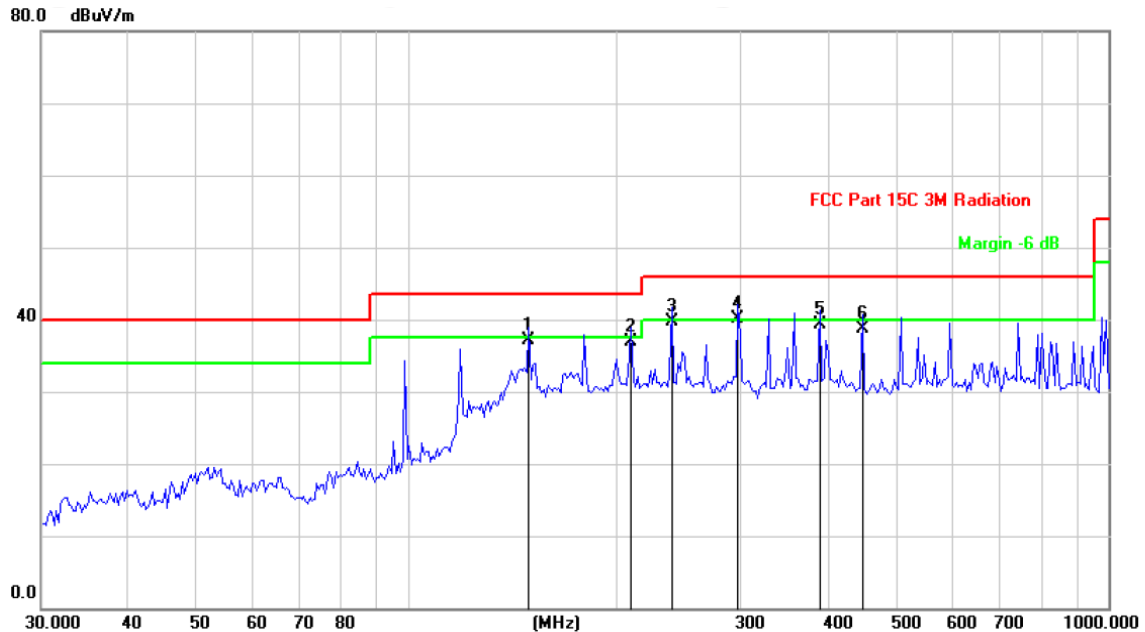
6.8.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESIB7	100197	Jul. 27, 2021
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ40	200061	Sep. 11, 2021
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 02, 2021
Pre-amplifier	HP	8447D	2727A05017	Sep. 02, 2021
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 05, 2022
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 04, 2022
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 04, 2022
Antenna Mast	Keleto	RE-AM	N/A	N/A
Line-4	TCT	RE-high-04	N/A	Sep. 02, 2021
Line-8	TCT	RE-01	N/A	Jul. 27, 2021
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

6.8.3. Test Data

Please refer to following diagram for individual
Below 1GHz

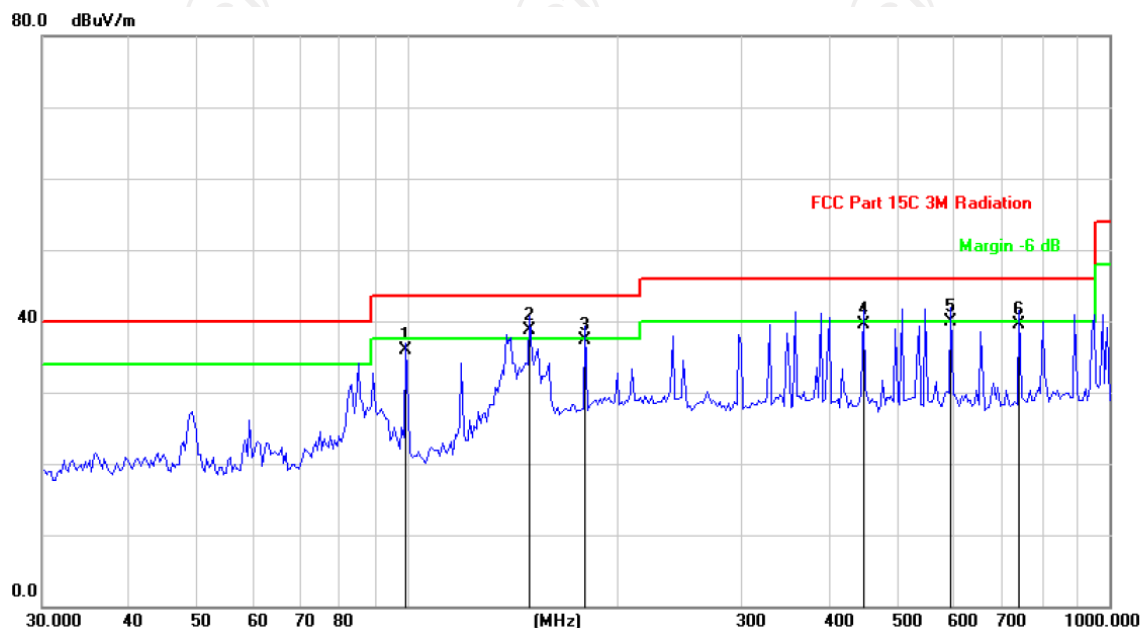
Horizontal:



Site: Polarization: **Horizontal** Temperature: 25
Limit: FCC Part 15C 3M Radiation Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		148.9173	52.49	-15.47	37.02	43.50	-6.48	QP
2		208.6579	50.13	-13.23	36.90	43.50	-6.60	QP
3		238.4626	52.12	-12.49	39.63	46.00	-6.37	QP
4	*	296.5022	50.59	-10.46	40.13	46.00	-5.87	QP
5		387.2565	48.83	-9.58	39.25	46.00	-6.75	QP
6		445.6931	47.69	-8.97	38.72	46.00	-7.28	QP

Vertical:



Site: Polarization: **Vertical** Temperature: 25
Limit: FCC Part 15C 3M Radiation Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		99.0690	49.23	-13.32	35.91	43.50	-7.59	QP
2	*	148.9173	54.14	-15.47	38.67	43.50	-4.83	QP
3		178.7697	51.59	-14.22	37.37	43.50	-6.13	QP
4		445.6931	48.40	-8.97	39.43	46.00	-6.57	QP
5		594.5143	46.10	-6.20	39.90	46.00	-6.10	QP
6		744.4265	45.08	-5.61	39.47	46.00	-6.53	QP

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40) 802.11ac(VHT80), and the worst case Mode (highest channel and 802.11ac(VHT40) in MIMO mode) was submitted only.

Modulation Type: Band 3									
11a(HT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	40.28	---	8.09	48.37	---	74	54	-5.63
17235	H	38.63	---	9.67	48.30	---	74	54	-5.70
---	H	---	---	---	---	---	---	---	---
11490	V	40.75	---	8.09	48.84	---	74	54	-5.16
17235	V	37.59	---	9.67	47.26	---	74	54	-6.74
---	V	---	---	---	---	---	---	---	---

11a(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	40.96	---	8.1	49.06	---	74	54	-4.94
17355	H	37.7	---	9.65	47.35	---	74	54	-6.65
---	H	---	---	---	---	---	---	---	---
11570	V	40.23	---	8.1	48.33	---	74	54	-5.67
17355	V	37.51	---	9.65	47.16	---	74	54	-6.84
---	V	---	---	---	---	---	---	---	---

11a(HT20) CH161: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	41.37	---	8.12	49.49	---	74	54	-4.51
17475	H	40.45	---	9.62	50.07	---	74	54	-3.93
---	H	---	---	---	---	---	---	---	---
11650	V	41.84	---	8.12	49.96	---	74	54	-4.04
17475	V	40.59	---	9.62	50.21	---	74	54	-3.79
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH151: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	41.81	---	8.09	49.90	---	74	54	-4.10
17265	H	37.33	---	9.67	47.00	---	74	54	-7.00
---	H	---	---	---	---	---	---	---	---
11510	V	41.46	---	8.09	49.55	---	74	54	-4.45
17265	V	37.60	---	9.67	47.27	---	74	54	-6.73
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	41.41	---	8.10	49.51	---	74	54	-4.49
17355	H	38.25	---	9.65	47.9	---	74	54	-6.10
---	H	---	---	---	---	---	---	---	---
11570	V	40.68	---	8.10	48.78	---	74	54	-5.22
17355	V	40.39	---	9.65	50.04	---	74	54	-3.96
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	40.52	---	8.12	48.64	---	74	54	-5.36
17475	H	39.69	---	9.62	49.31	---	74	54	-4.69
---	H	---	---	---	---	---	---	---	---
11650	V	40.43	---	8.12	48.55	---	74	54	-5.45
17475	V	39.37	---	9.62	48.99	---	74	54	-5.01
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	42.22	---	8.09	50.31	---	74	54	-3.69
17265	H	40.64	---	9.67	50.31	---	74	54	-3.69
---	H	---	---	---	---	---	---	---	---
11510	V	42.91	---	8.09	51.00	---	74	54	-3.00
17265	V	39.16	---	9.67	48.83	---	74	54	-5.17
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	41.77	---	8.1	49.87	---	74	54	-4.13
17385	H	39.53	---	9.65	49.18	---	74	54	-4.82
---	H	---	---	---	---	---	---	---	---
11590	V	41.95	---	8.1	50.05	---	74	54	-3.95
17385	V	39.39	---	9.65	49.04	---	74	54	-4.96
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	42.44	---	8.09	50.53	---	74	54	-3.47
17235	H	39.26	---	9.67	48.93	---	74	54	-5.07
---	H	---	---	---	---	---	---	---	---
11490	V	41.31	---	8.09	49.40	---	74	54	-4.60
17235	V	38.58	---	9.67	48.25	---	74	54	-5.75
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	40.64	---	8.10	48.74	---	74	54	-5.26
17355	H	38.72	---	9.65	48.37	---	74	54	-5.63
---	H	---	---	---	---	---	---	---	---
11570	V	39.45	---	8.10	47.55	---	74	54	-6.45
17355	V	38.53	---	9.65	48.18	---	74	54	-5.82
---	V	---	---	---	---	---	---	---	---

11ac(VHT20) CH165: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	41.21	---	8.12	49.33	---	74	54	-4.67
17475	H	40.38	---	9.62	50.00	---	74	54	-4.00
---	H	---	---	---	---	---	---	---	---
11650	V	41.46	---	8.12	49.58	---	74	54	-4.42
17475	V	37.7	---	9.62	47.32	---	74	54	-6.68
---	V	---	---	---	---	---	---	---	---

11ac(VHT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	41.55	---	8.09	49.64	---	74	54	-4.36
17265	H	39.41	---	9.67	49.08	---	74	54	-4.92
---	H	---	---	---	---	---	---	---	---
11510	V	42.89	---	8.09	50.98	---	74	54	-3.02
17265	V	39.13	---	9.67	48.80	---	74	54	-5.20
---	V	---	---	---	---	---	---	---	---

11ac(VHT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	41.66	---	8.10	49.76	---	74	54	-4.24
17385	H	39.97	---	9.65	49.62	---	74	54	-4.38
---	H	---	---	---	---	---	---	---	---
11590	V	42.5	---	8.10	50.60	---	74	54	-3.40
17385	V	40.34	---	9.65	49.99	---	74	54	-4.01
---	V	---	---	---	---	---	---	---	---

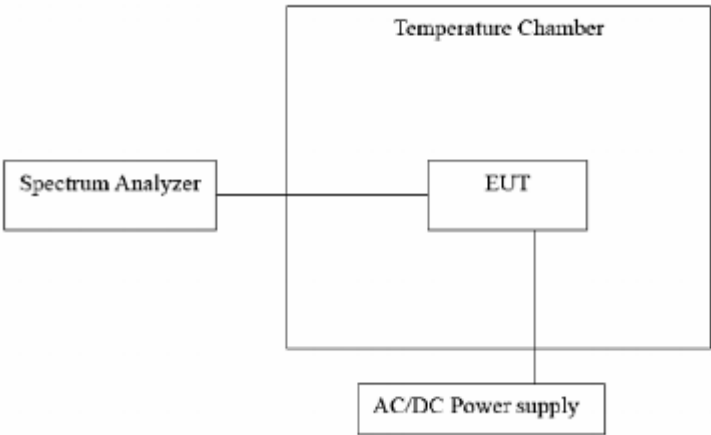
11ac(VHT80) CH155: 5775MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11550	H	41.40	---	8.09	49.49	---	74	54	-4.51
17325	H	37.24	---	9.67	46.91	---	74	54	-7.09
---	H	---	---	---	---	---	---	---	---
11550	V	42.39	---	8.09	50.48	---	74	54	-3.52
17325	V	39.77	---	9.67	49.44	---	74	54	-4.56
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

6.9. Frequency Stability Measurement

6.9.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g)
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 45 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] subgraph TC [Temperature Chamber] EUT end EUT --- P[AC/DC Power supply] </pre>
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Pre-scan was performed at all models(11a,11n,11ac), the worst case (11ac) was found and test data was shown in this report.

Test plots as follows:

Test mode:		802.11ac(VHT20)	Frequency(MHz):	5745
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5745.0010	1000	PASS
35		5745.0047	4700	PASS
25		5744.9965	-3500	PASS
15		5744.9984	-1600	PASS
5		5745.0019	1900	PASS
0		5745.0056	5600	PASS
20	9.6	5745.0023	2300	PASS
	7.6	5745.0019	1900	PASS
	6.6	5745.0053	5300	PASS

Test mode:		802.11ac(VHT20)	Frequency(MHz):	5785
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5785.0060	6000	PASS
35		5785.0071	7100	PASS
25		5785.0056	5600	PASS
15		5785.0067	6700	PASS
5		5785.0049	4900	PASS
0		5785.0044	4400	PASS
20	9.6	5785.0028	2800	PASS
	7.6	5785.0051	5100	PASS
	6.6	5784.9989	-1100	PASS

Test mode:		802.11ac(VHT20)	Frequency(MHz):	5825
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5824.9997	-300	PASS
35		5825.0052	5200	PASS
25		5824.9983	-1700	PASS
15		5824.9997	-300	PASS
5		5825.0012	1200	PASS
0		5825.0024	2400	PASS
20	9.6	5825.0030	3000	PASS
	7.6	5824.9997	-300	PASS
	6.6	5825.0019	1900	PASS

Test mode:		802.11ac(VHT40)	Frequency(MHz):	5755
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5754.9920	-8000	PASS
35		5755.0067	6700	PASS
25		5755.0036	3600	PASS
15		5755.0015	1500	PASS
5		5755.0029	2900	PASS
0		5755.0030	3000	PASS
20	9.6	5755.0029	2900	PASS
	7.6	5755.0016	1600	PASS
	6.6	5755.0027	2700	PASS

Test mode:		802.11ac(VHT40)	Frequency(MHz):	5795
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5794.9980	-2000	PASS
35		5794.9966	-3400	PASS
25		5795.0024	2400	PASS
15		5795.0039	3900	PASS
5		5795.0020	2000	PASS
0		5795.0041	4100	PASS
20	9.6	5795.0018	1800	PASS
	7.6	5794.9985	-1500	PASS
	6.6	5795.0052	5200	PASS

Test mode:		802.11ac(VHT80)	Frequency(MHz):	5775
Temperature (°C)	Voltage(VDC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	7.6V	5774.9860	-14000	PASS
35		5775.0044	4400	PASS
25		5775.0078	7800	PASS
15		5774.9951	-4900	PASS
5		5774.9925	-7500	PASS
0		5774.9909	-9900	PASS
20	9.6	5775.0083	8300	PASS
	7.6	5775.0047	4700	PASS
	6.6	5775.0018	1800	PASS

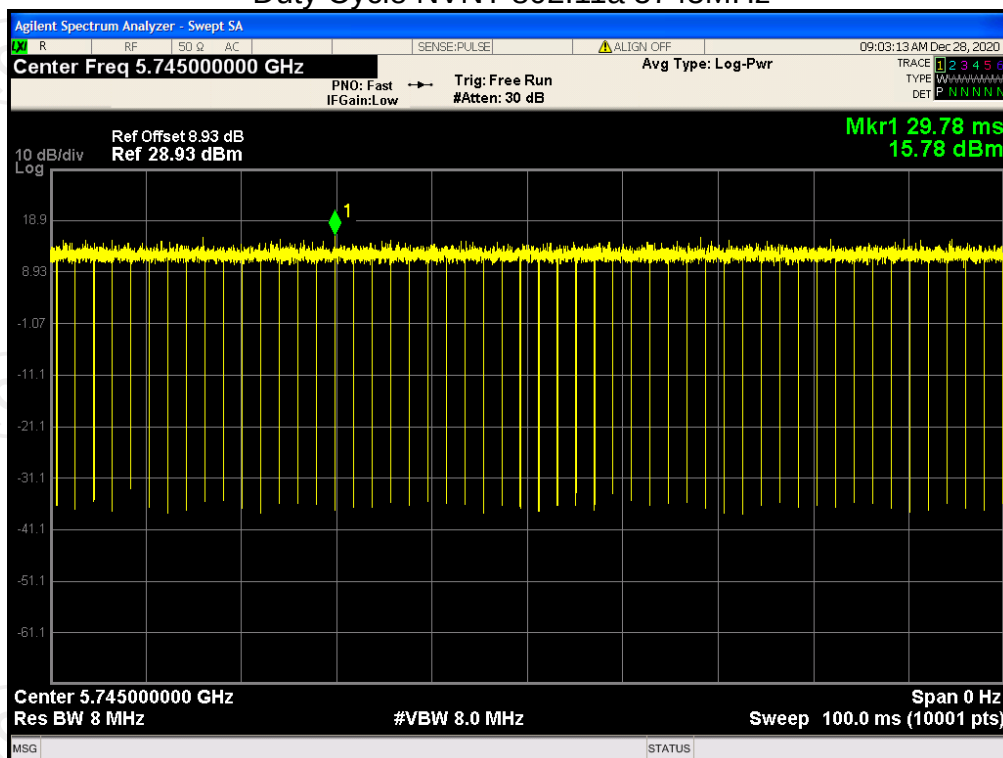
Appendix A: Test Result of Conducted Test

ANT 0

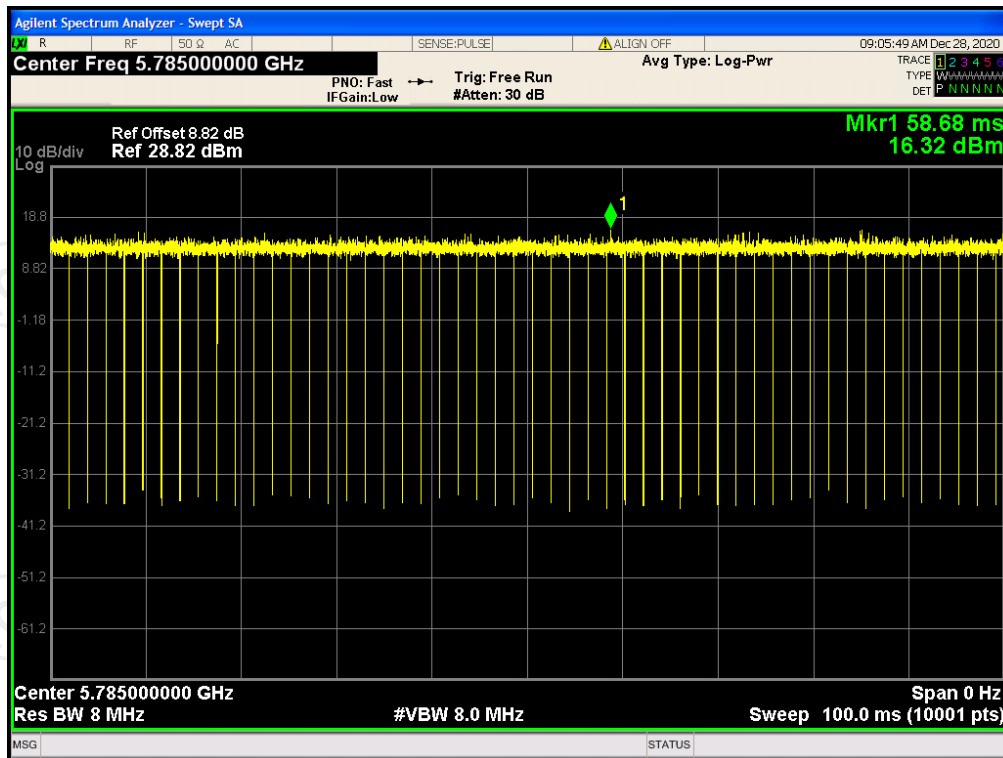
Duty Cycle

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	802.11a	5745	100	0
NVNT	802.11a	5785	100	0
NVNT	802.11a	5825	100	0
NVNT	802.11ac20	5745	100	0
NVNT	802.11ac20	5785	100	0
NVNT	802.11ac20	5825	100	0
NVNT	802.11ac40	5755	100	0
NVNT	802.11ac40	5795	100	0
NVNT	802.11ac80	5775	100	0
NVNT	802.11n(HT20)	5745	100	0
NVNT	802.11n(HT20)	5785	100	0
NVNT	802.11n(HT20)	5825	100	0
NVNT	802.11n(HT40)	5755	100	0
NVNT	802.11n(HT40)	5795	100	0

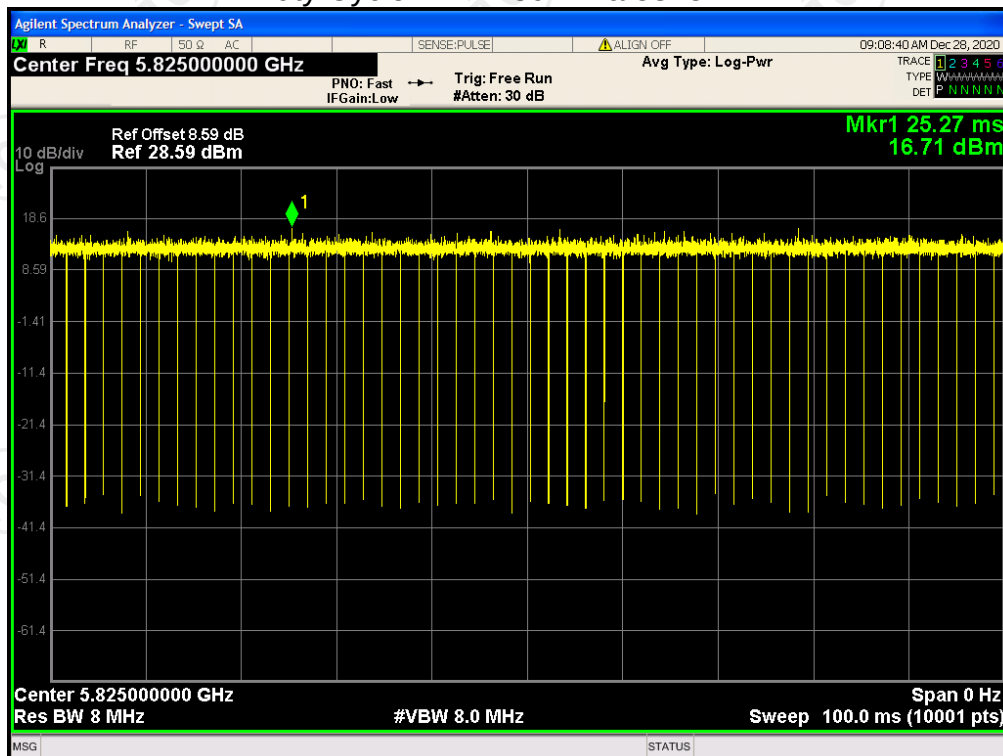
Duty Cycle NVNT 802.11a 5745MHz



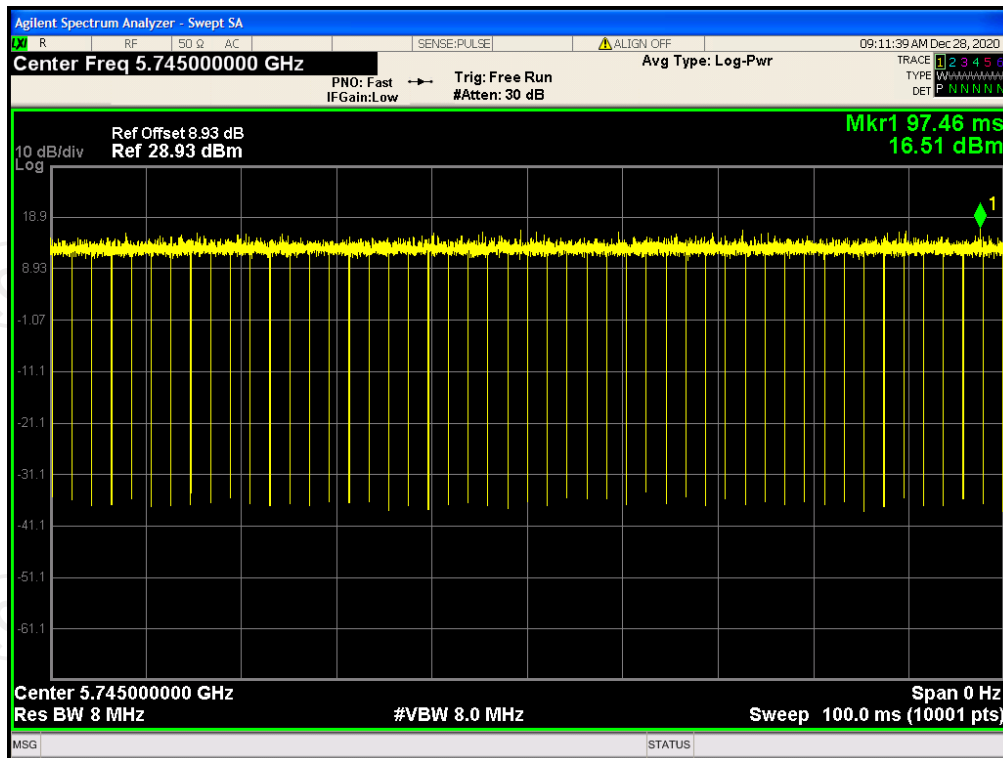
Duty Cycle NVNT 802.11a 5785MHz



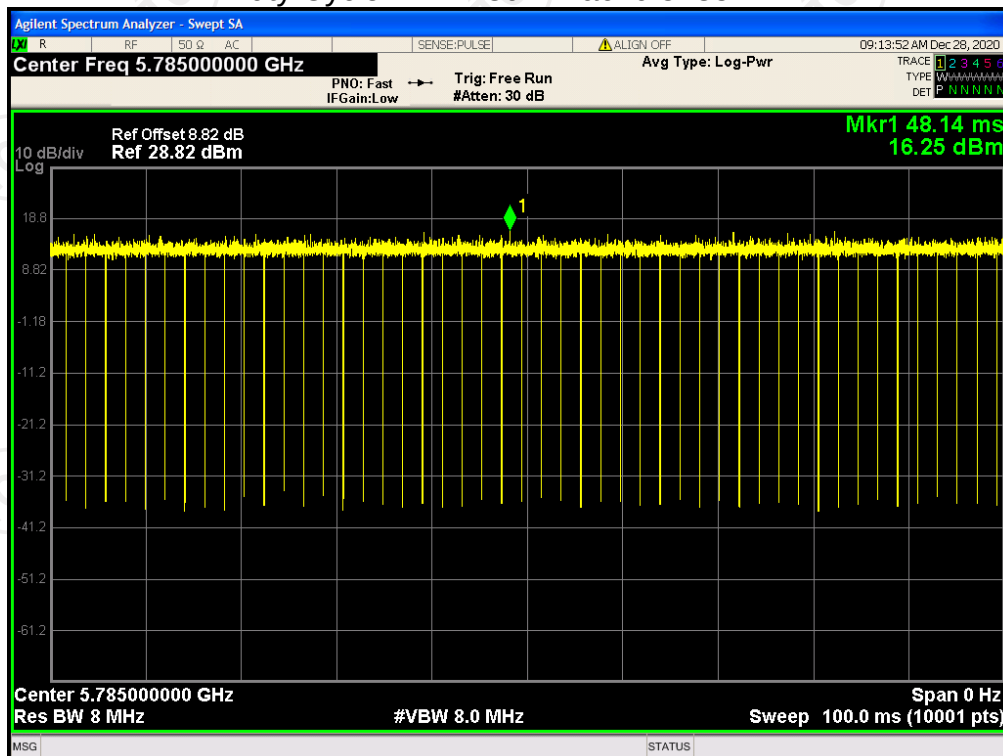
Duty Cycle NVNT 802.11a 5825MHz



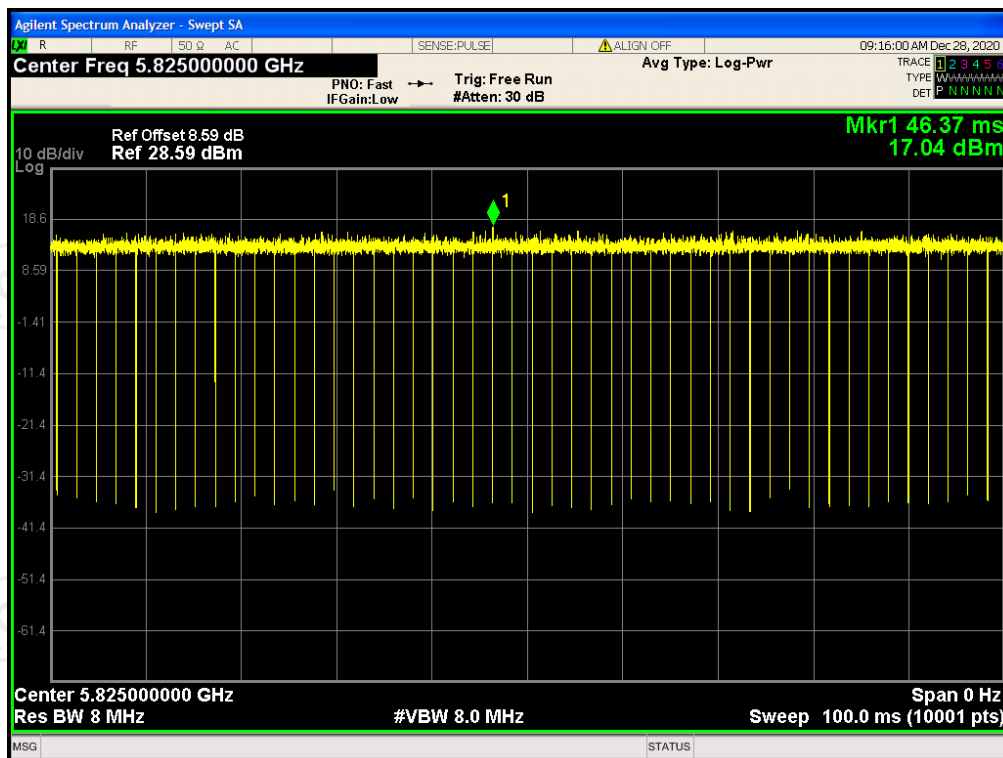
Duty Cycle NVNT 802.11ac20 5745MHz



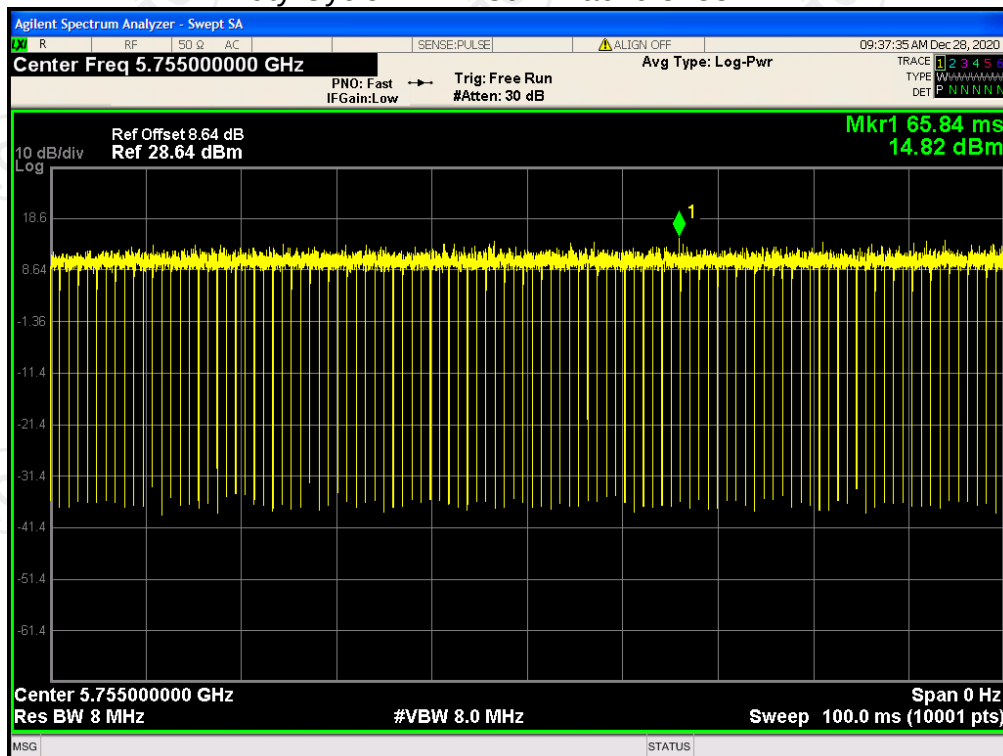
Duty Cycle NVNT 802.11ac20 5785MHz



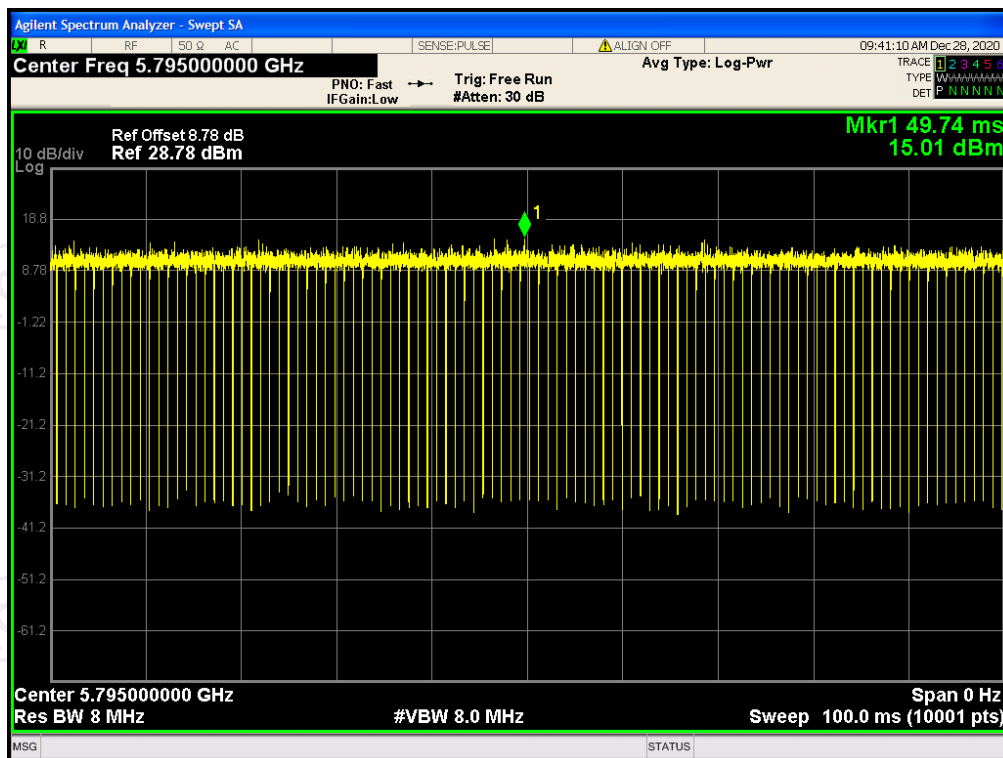
Duty Cycle NVNT 802.11ac20 5825MHz



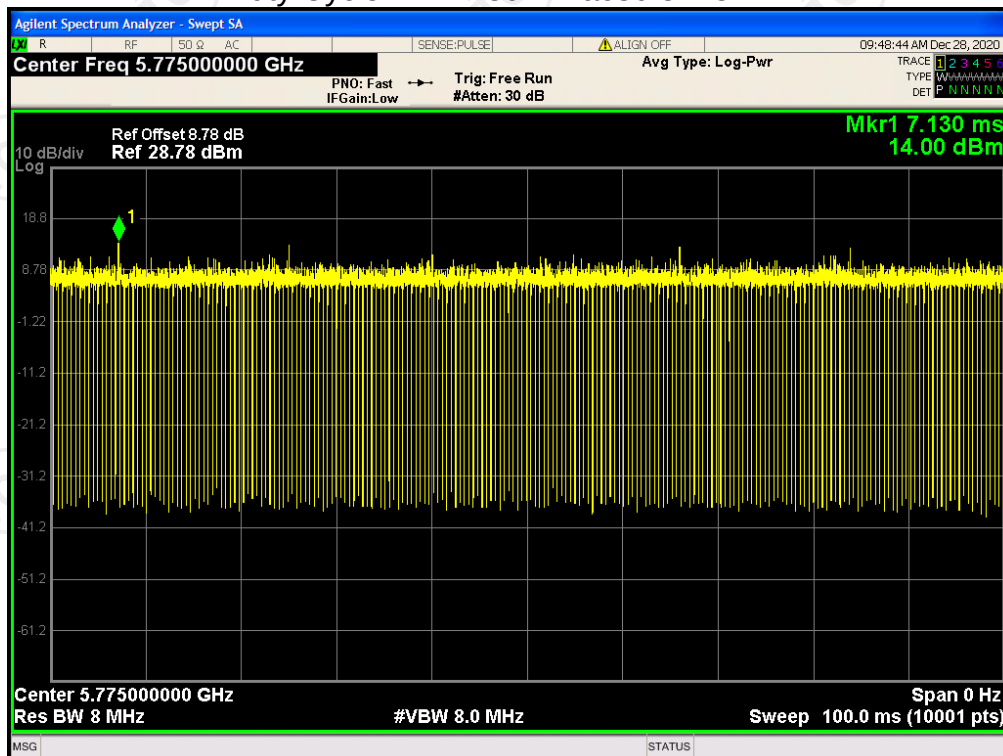
Duty Cycle NVNT 802.11ac40 5755MHz



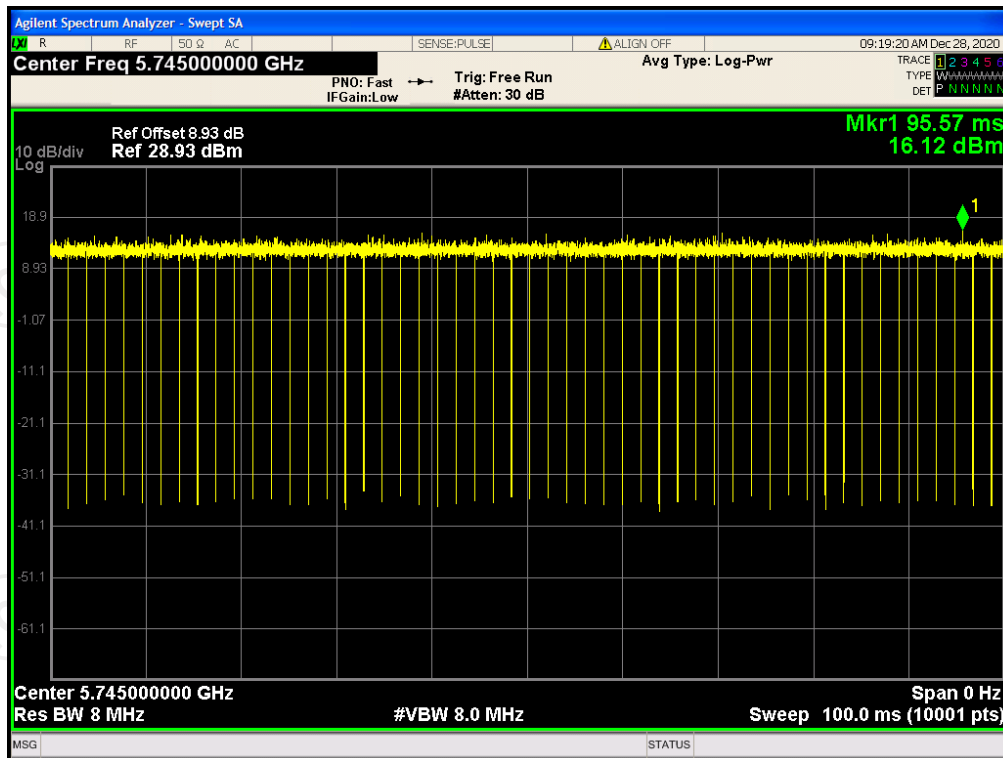
Duty Cycle NVNT 802.11ac40 5795MHz



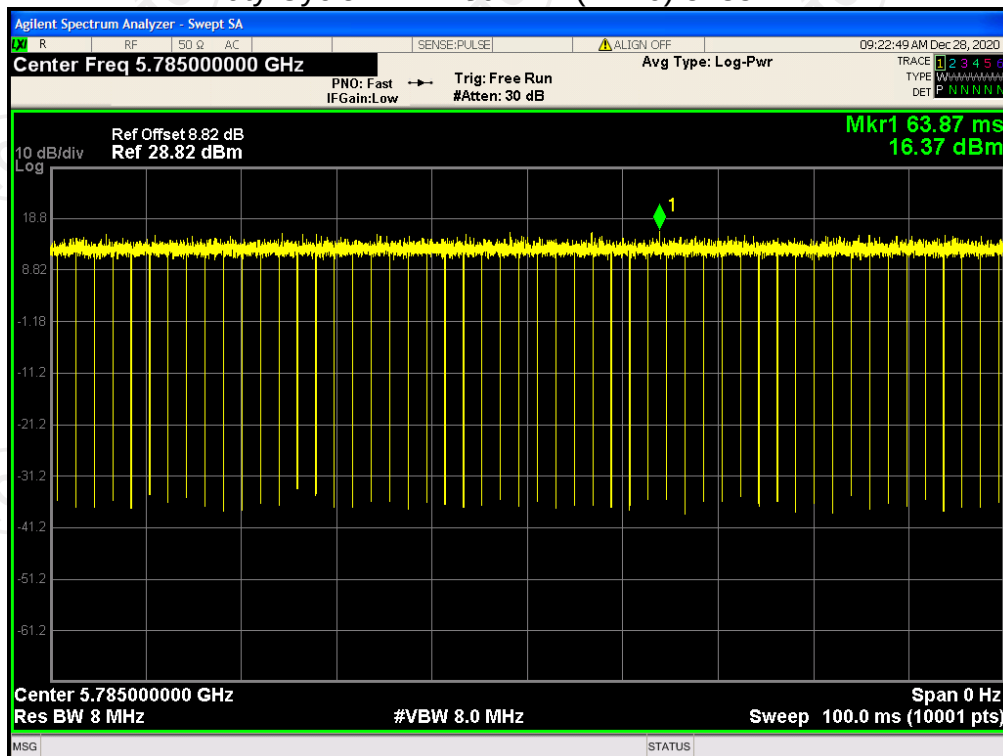
Duty Cycle NVNT 802.11ac80 5775MHz



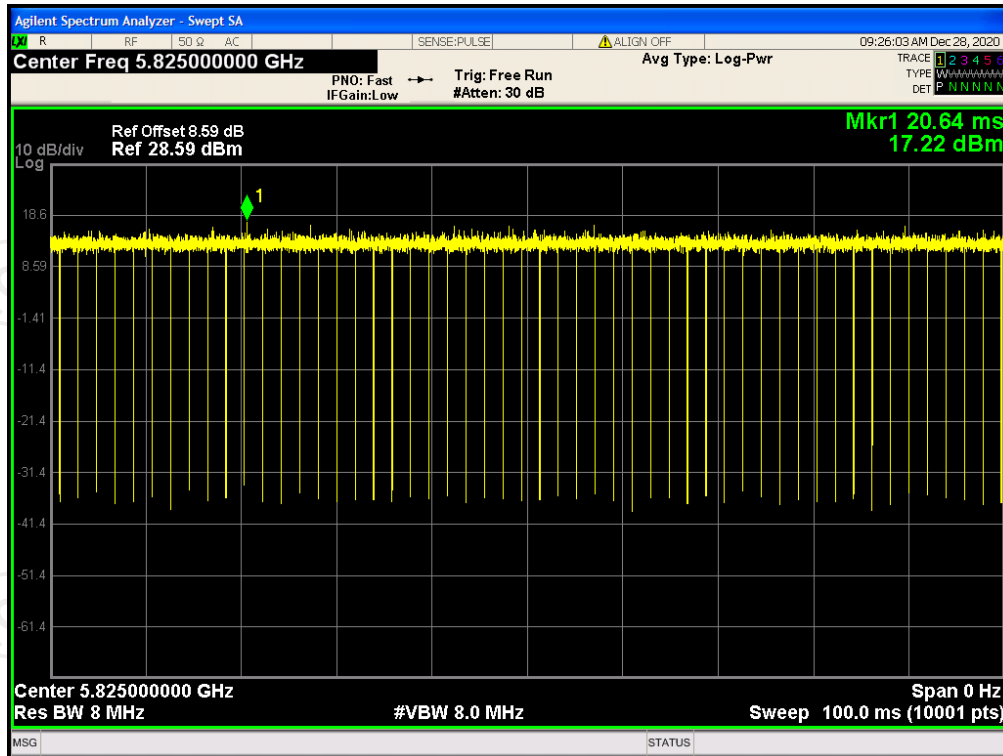
Duty Cycle NVNT 802.11n(HT20) 5745MHz



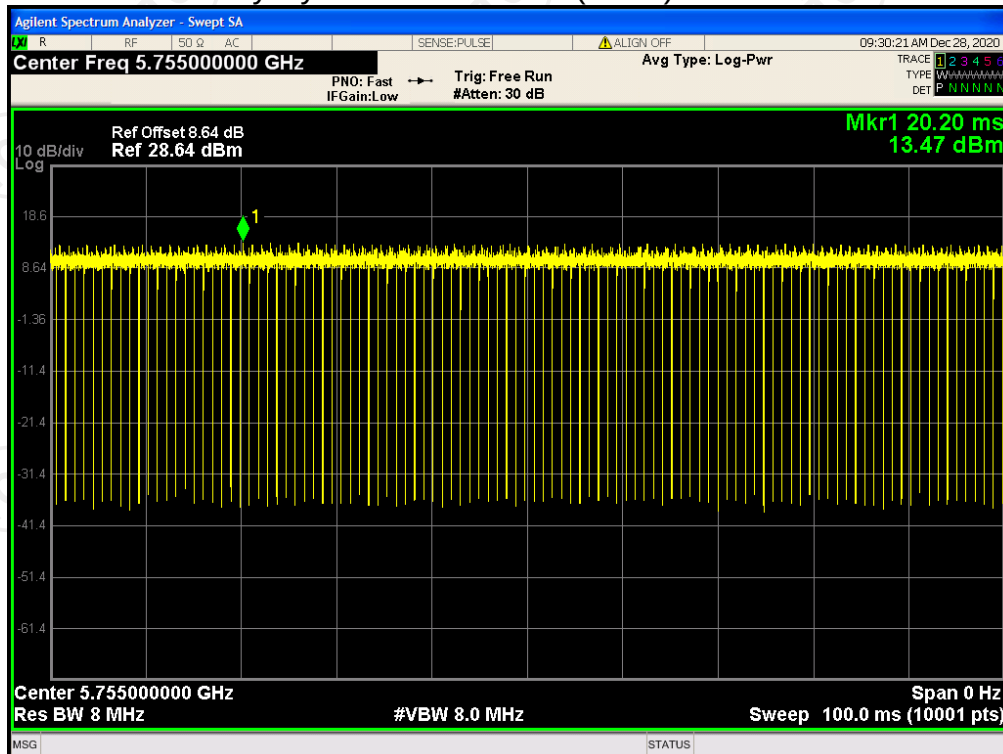
Duty Cycle NVNT 802.11n(HT20) 5785MHz



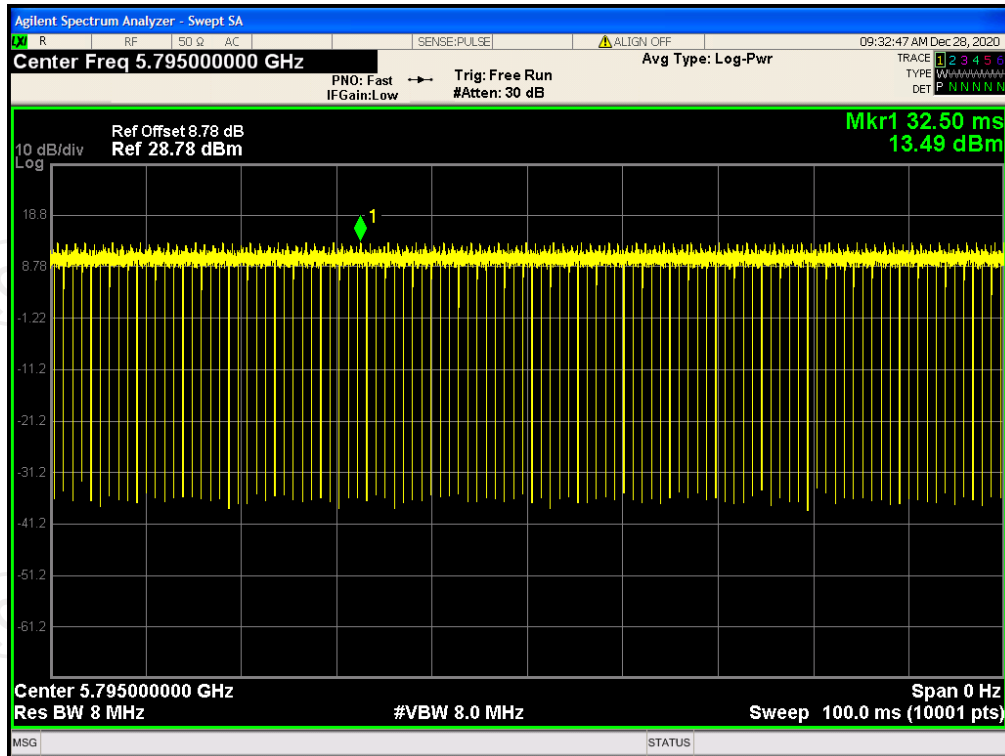
Duty Cycle NVNT 802.11n(HT20) 5825MHz



Duty Cycle NVNT 802.11n(HT40) 5755MHz



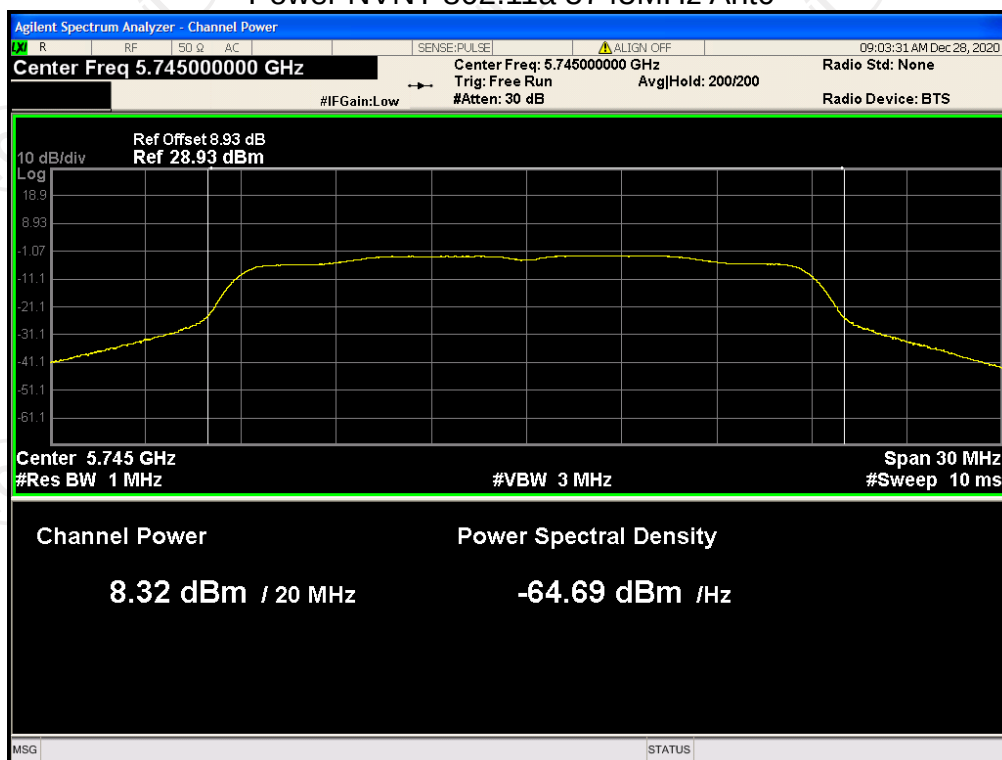
Duty Cycle NVNT 802.11n(HT40) 5795MHz



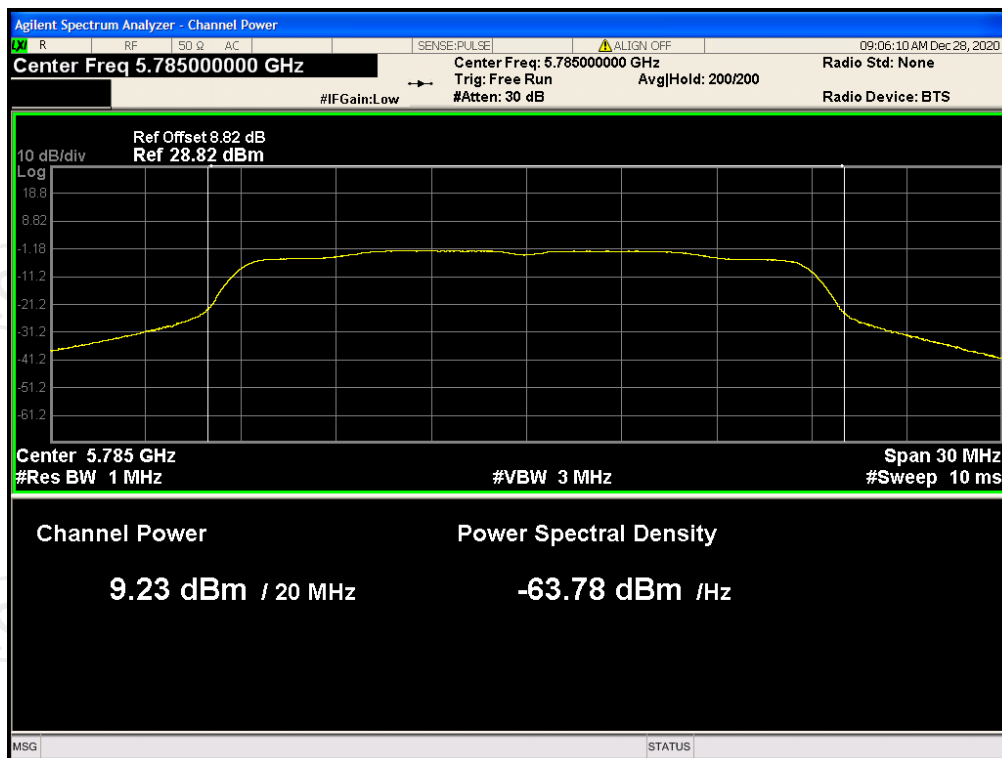
Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	802.11a	5745	Ant0	8.324	0	8.324	30	Pass
NVNT	802.11a	5785	Ant0	9.229	0	9.229	30	Pass
NVNT	802.11a	5825	Ant0	8.911	0	8.911	30	Pass
NVNT	802.11ac20	5745	Ant0	9.188	0	9.188	30	Pass
NVNT	802.11ac20	5785	Ant0	9.588	0	9.588	30	Pass
NVNT	802.11ac20	5825	Ant0	9.300	0	9.300	30	Pass
NVNT	802.11ac40	5755	Ant0	10.008	0	10.008	30	Pass
NVNT	802.11ac40	5795	Ant0	10.057	0	10.057	30	Pass
NVNT	802.11ac80	5775	Ant0	8.596	0	8.596	30	Pass
NVNT	802.11n(HT20)	5745	Ant0	9.383	0	9.383	30	Pass
NVNT	802.11n(HT20)	5785	Ant0	9.430	0	9.430	30	Pass
NVNT	802.11n(HT20)	5825	Ant0	9.821	0	9.821	30	Pass
NVNT	802.11n(HT40)	5755	Ant0	9.482	0	9.482	30	Pass
NVNT	802.11n(HT40)	5795	Ant0	10.124	0	10.124	30	Pass

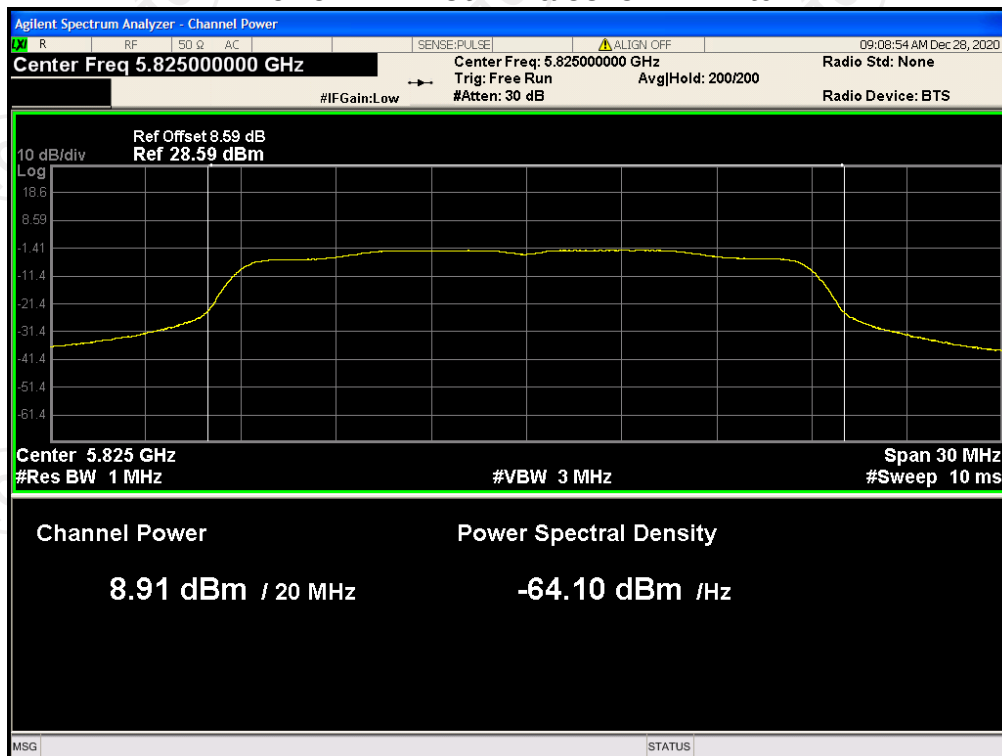
Power NVNT 802.11a 5745MHz Ant0



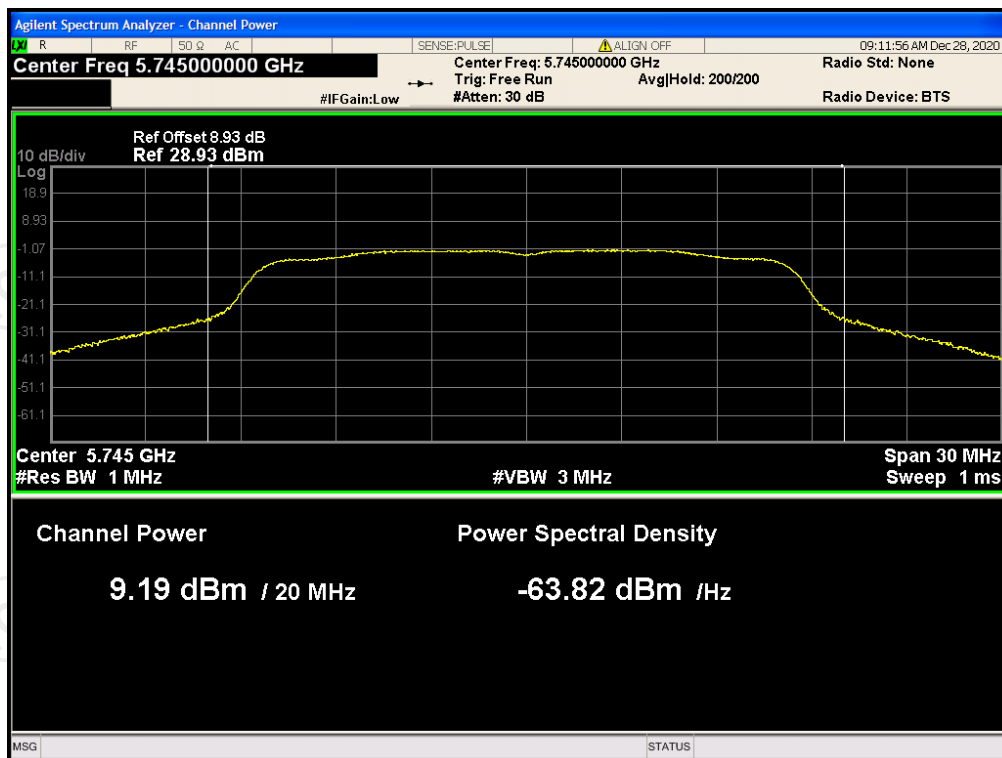
Power NVNT 802.11a 5785MHz Ant0



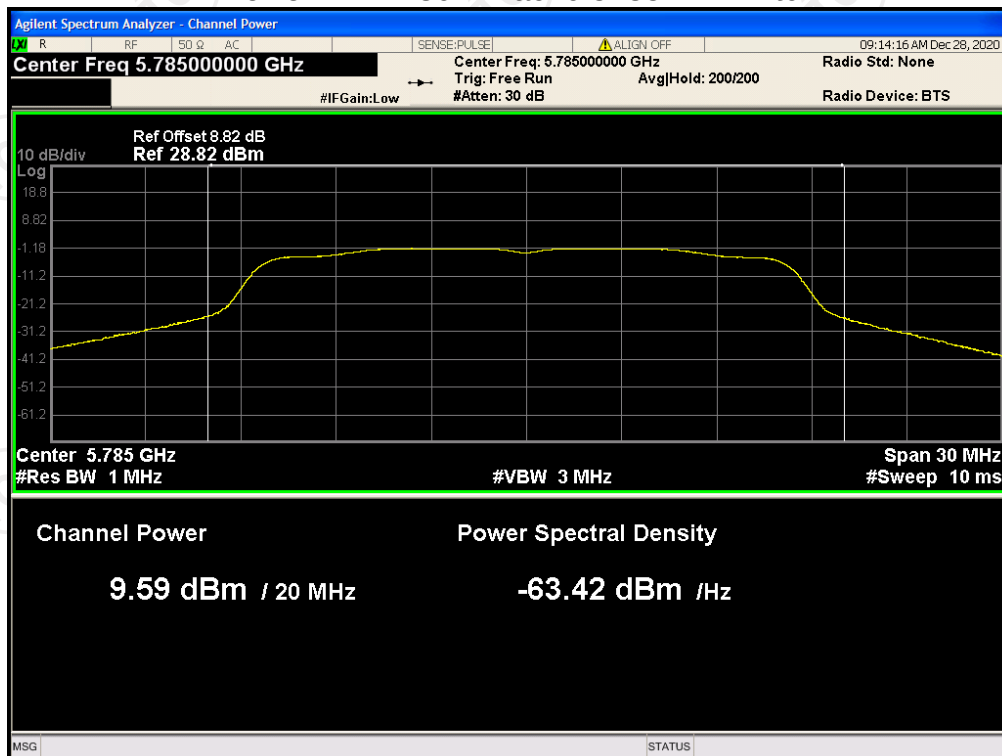
Power NVNT 802.11a 5825MHz Ant0



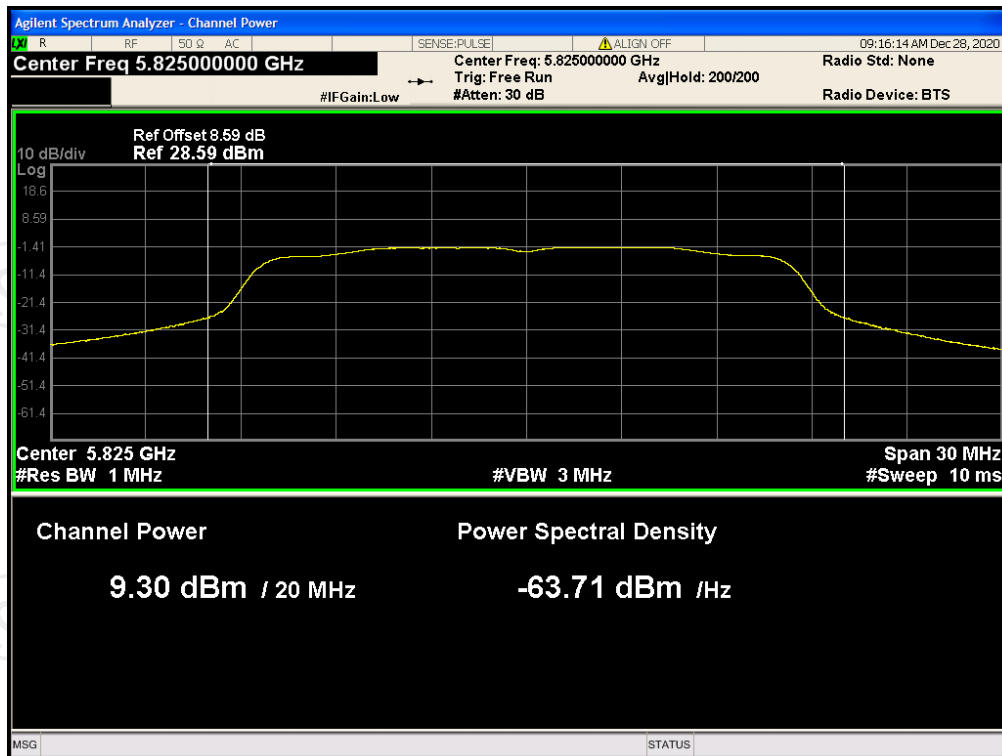
Power NVNT 802.11ac20 5745MHz Ant0



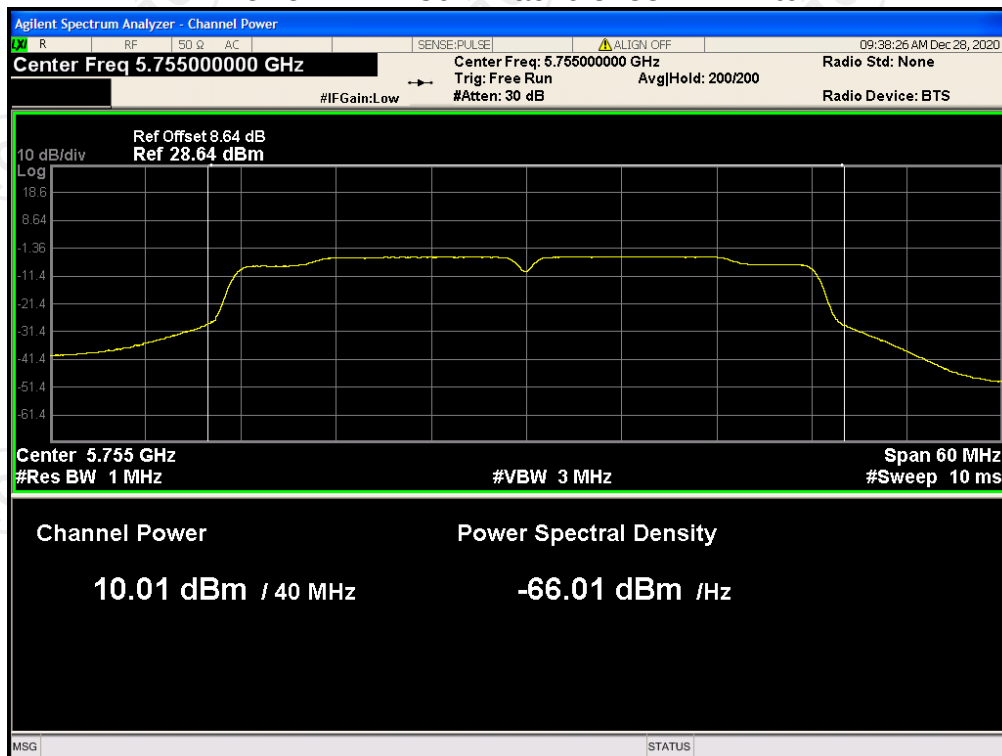
Power NVNT 802.11ac20 5785MHz Ant0



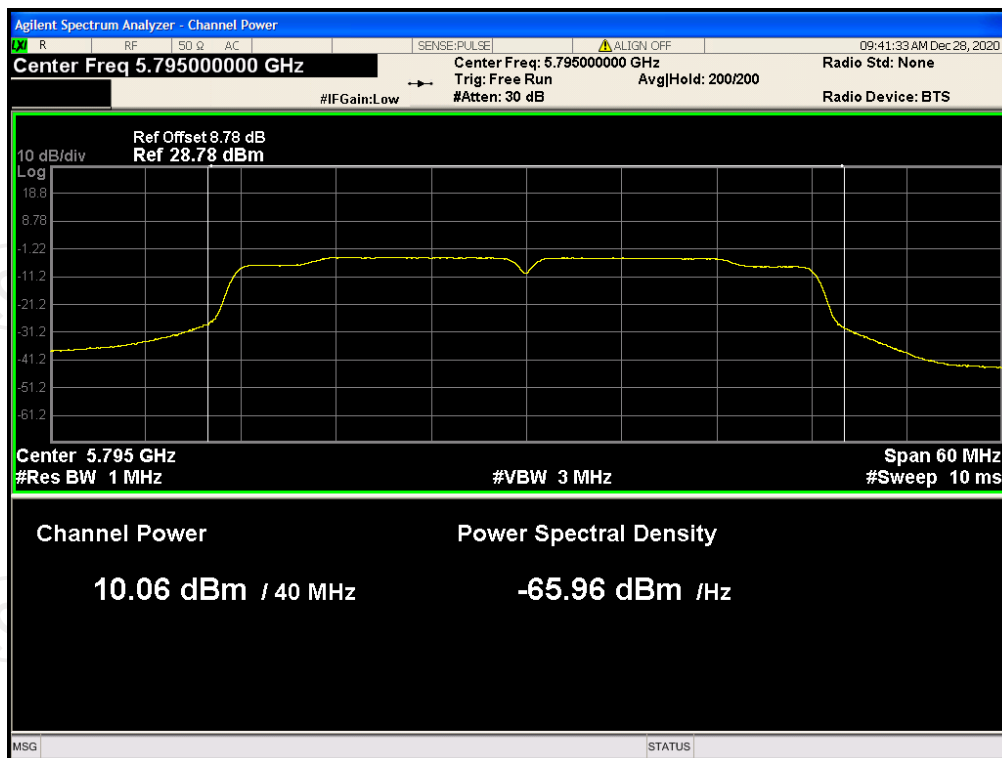
Power NVNT 802.11ac20 5825MHz Ant0



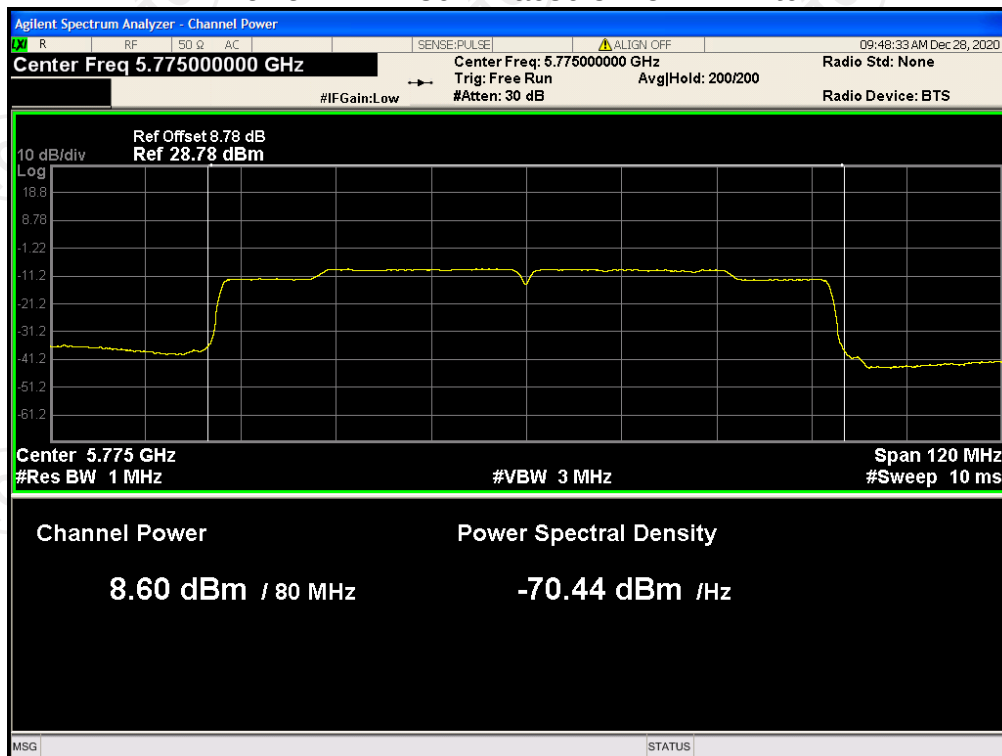
Power NVNT 802.11ac40 5755MHz Ant0



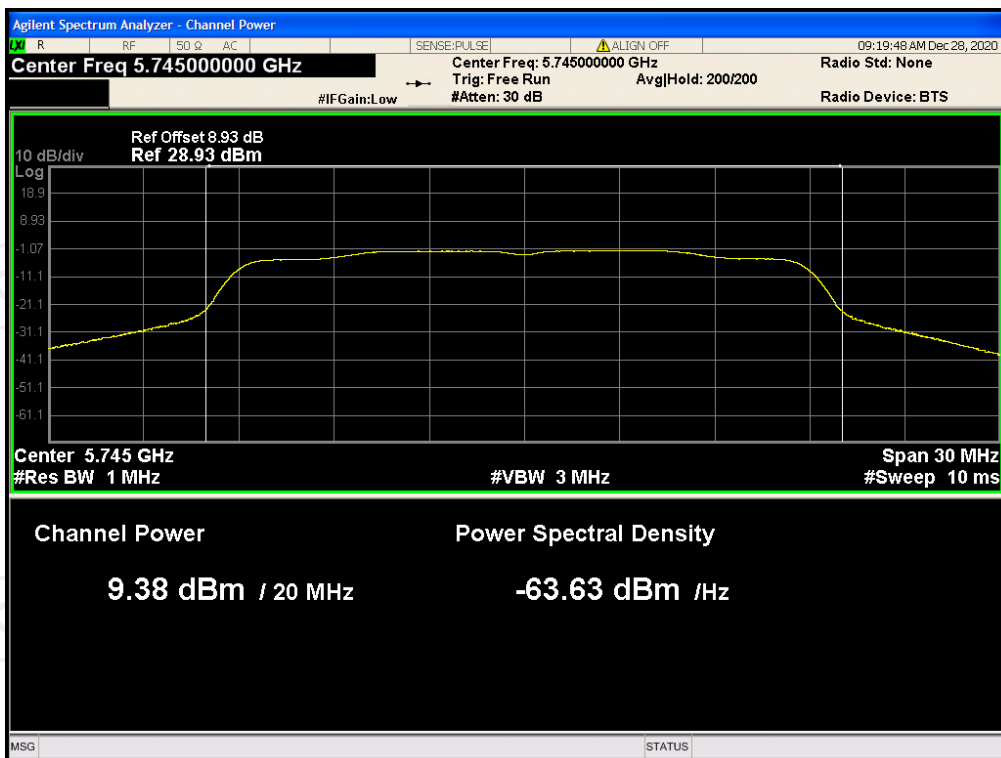
Power NVNT 802.11ac40 5795MHz Ant0



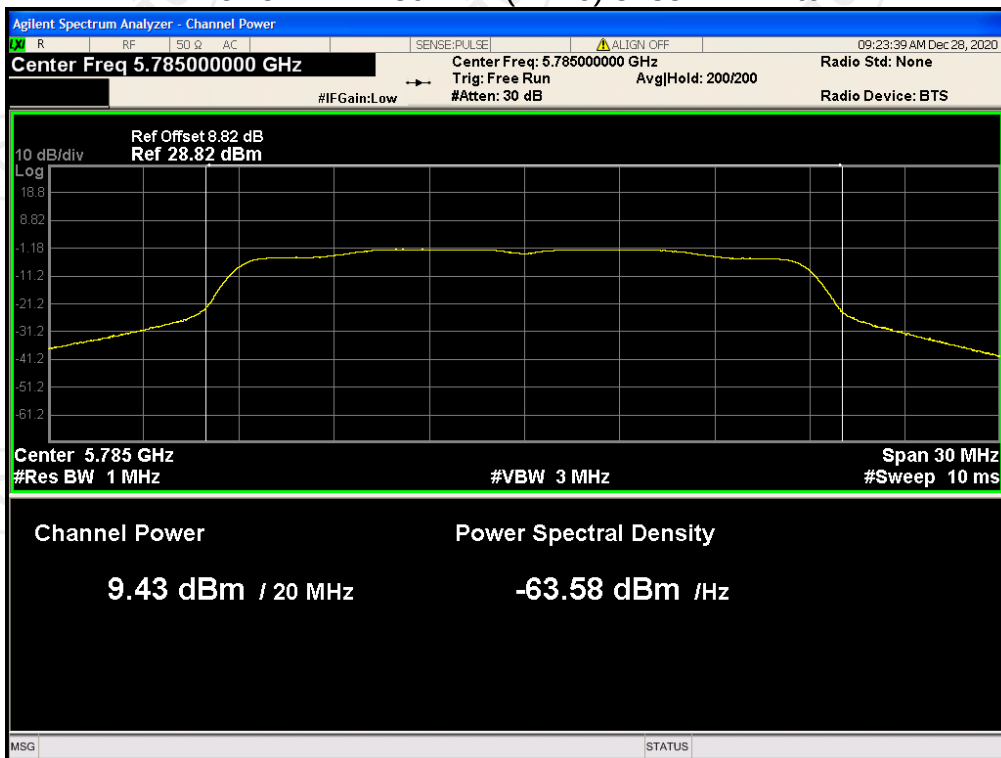
Power NVNT 802.11ac80 5775MHz Ant0



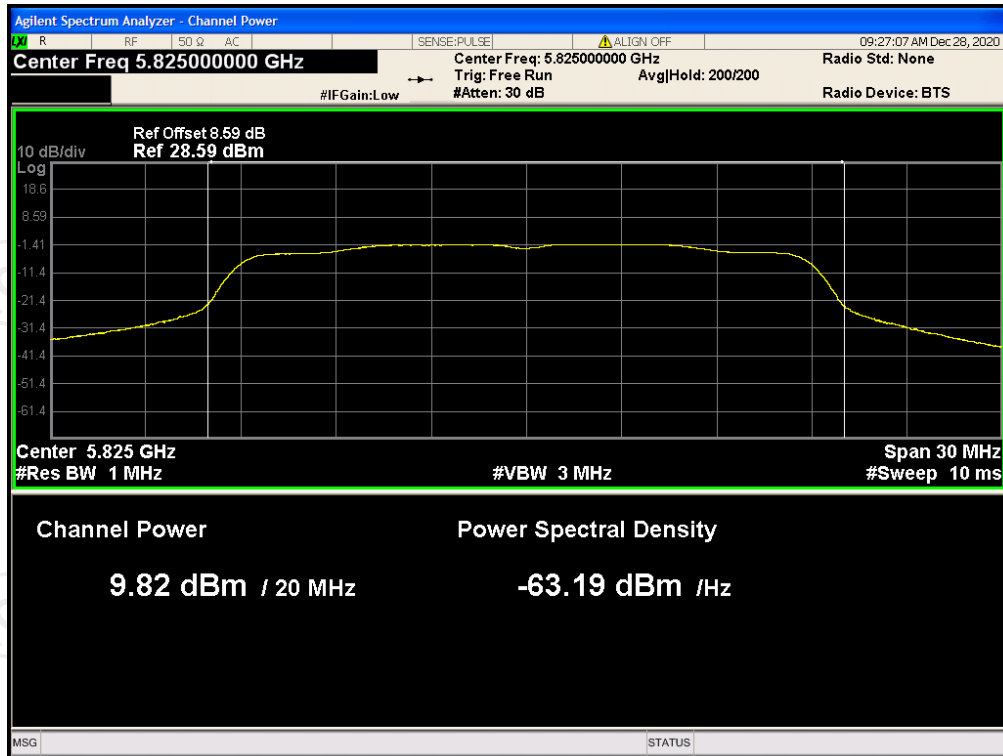
Power NVNT 802.11n(HT20) 5745MHz Ant0



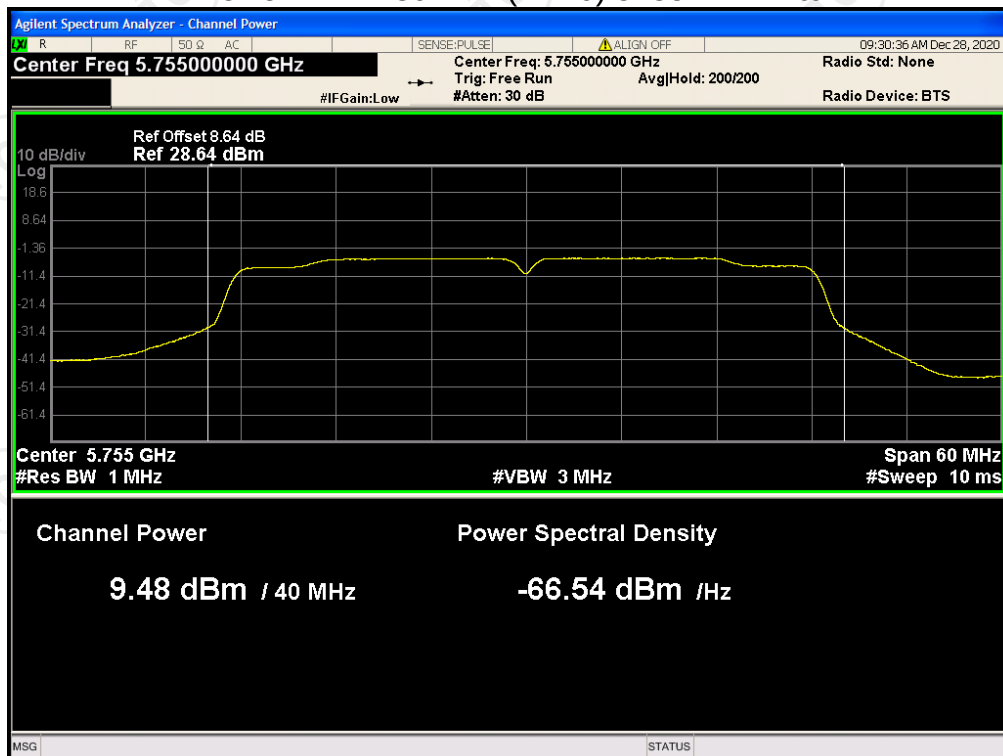
Power NVNT 802.11n(HT20) 5785MHz Ant0



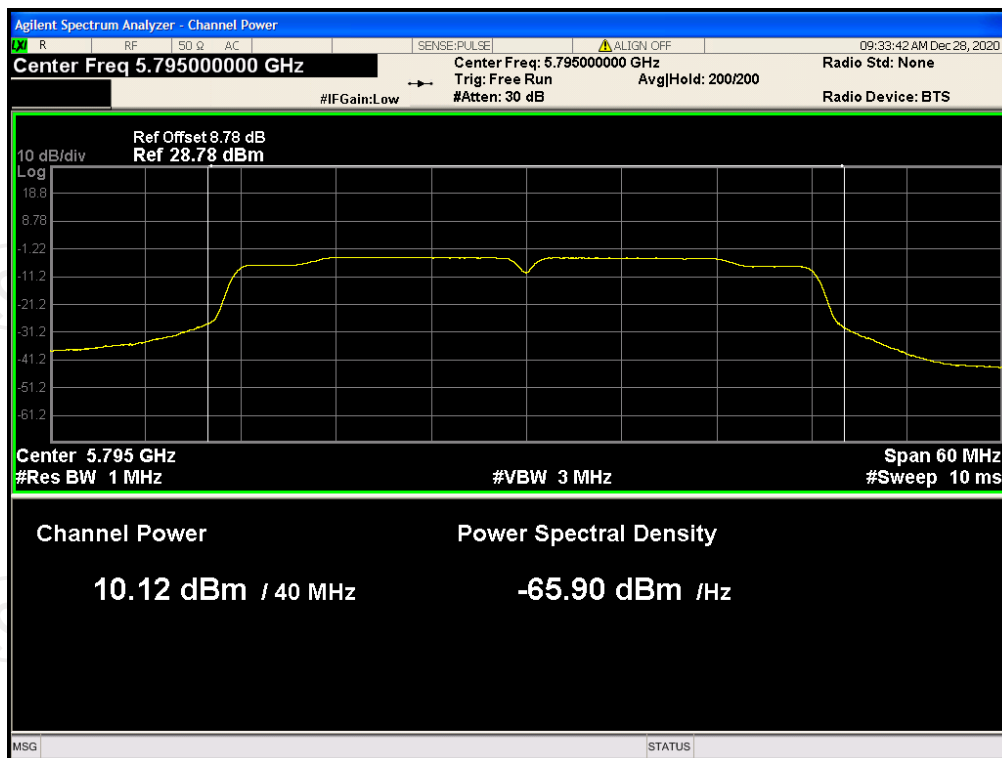
Power NVNT 802.11n(HT20) 5825MHz Ant0



Power NVNT 802.11n(HT40) 5755MHz Ant0



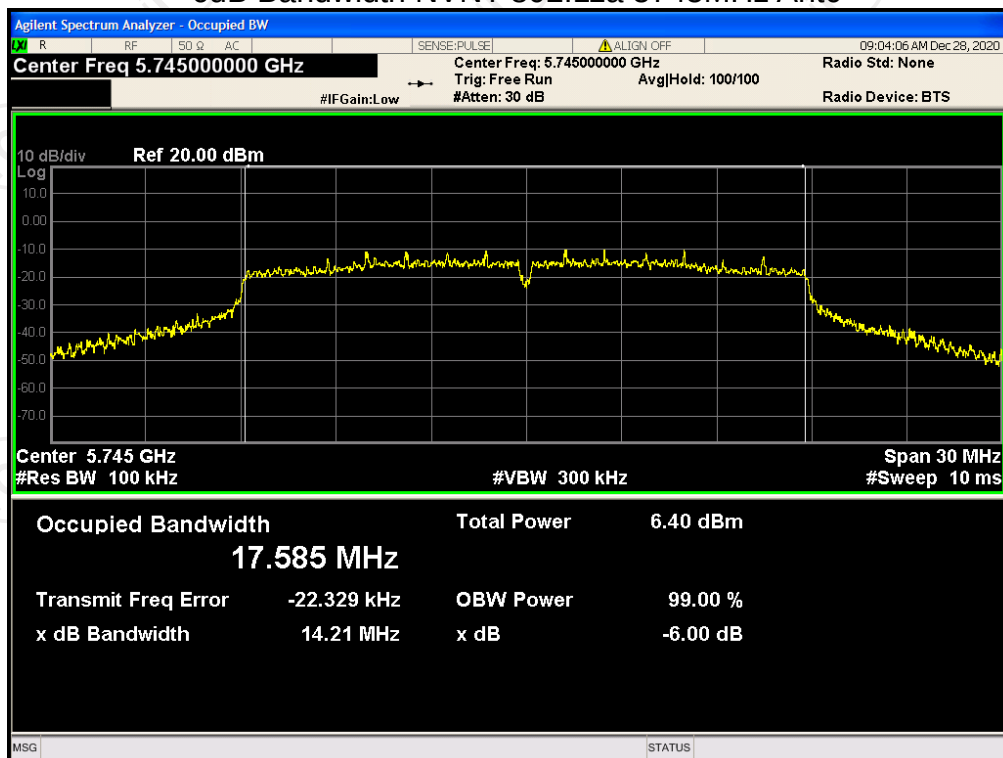
Power NVNT 802.11n(HT40) 5795MHz Ant0



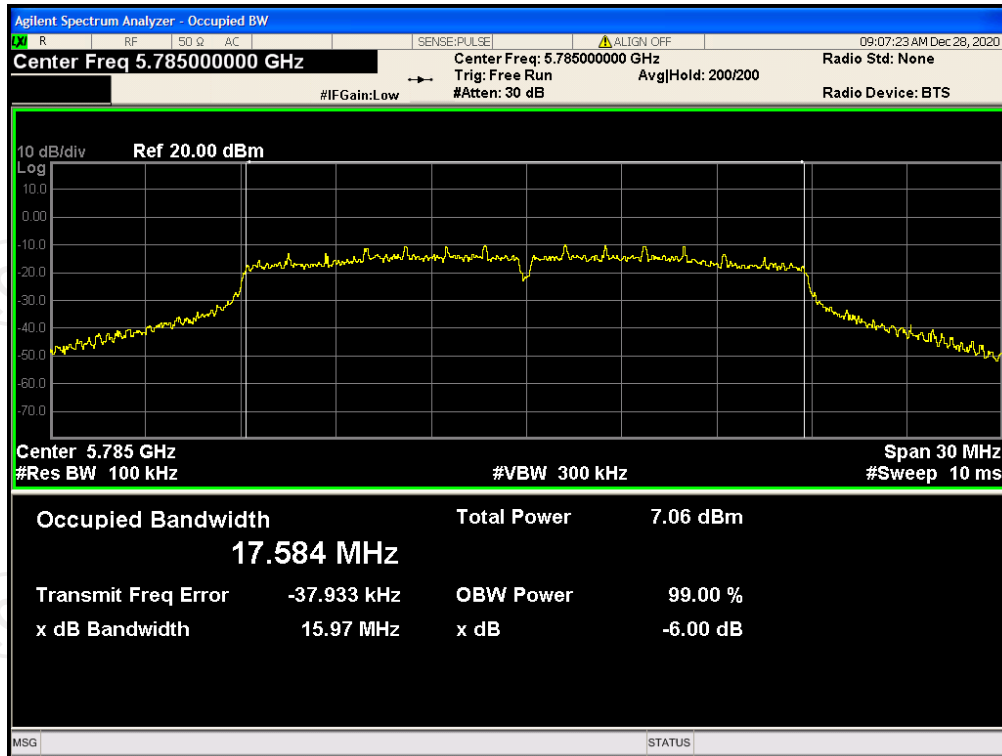
-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	802.11a	5745	Ant0	14.2063	0.5	Pass
NVNT	802.11a	5785	Ant0	15.9675	0.5	Pass
NVNT	802.11a	5825	Ant0	15.0832	0.5	Pass
NVNT	802.11ac20	5745	Ant0	15.1400	0.5	Pass
NVNT	802.11ac20	5785	Ant0	15.4442	0.5	Pass
NVNT	802.11ac20	5825	Ant0	15.1256	0.5	Pass
NVNT	802.11ac40	5755	Ant0	35.0752	0.5	Pass
NVNT	802.11ac40	5795	Ant0	35.1168	0.5	Pass
NVNT	802.11ac80	5775	Ant0	75.2512	0.5	Pass
NVNT	802.11n(HT20)	5745	Ant0	15.1154	0.5	Pass
NVNT	802.11n(HT20)	5785	Ant0	15.3547	0.5	Pass
NVNT	802.11n(HT20)	5825	Ant0	15.1216	0.5	Pass
NVNT	802.11n(HT40)	5755	Ant0	35.1175	0.5	Pass
NVNT	802.11n(HT40)	5795	Ant0	35.1173	0.5	Pass

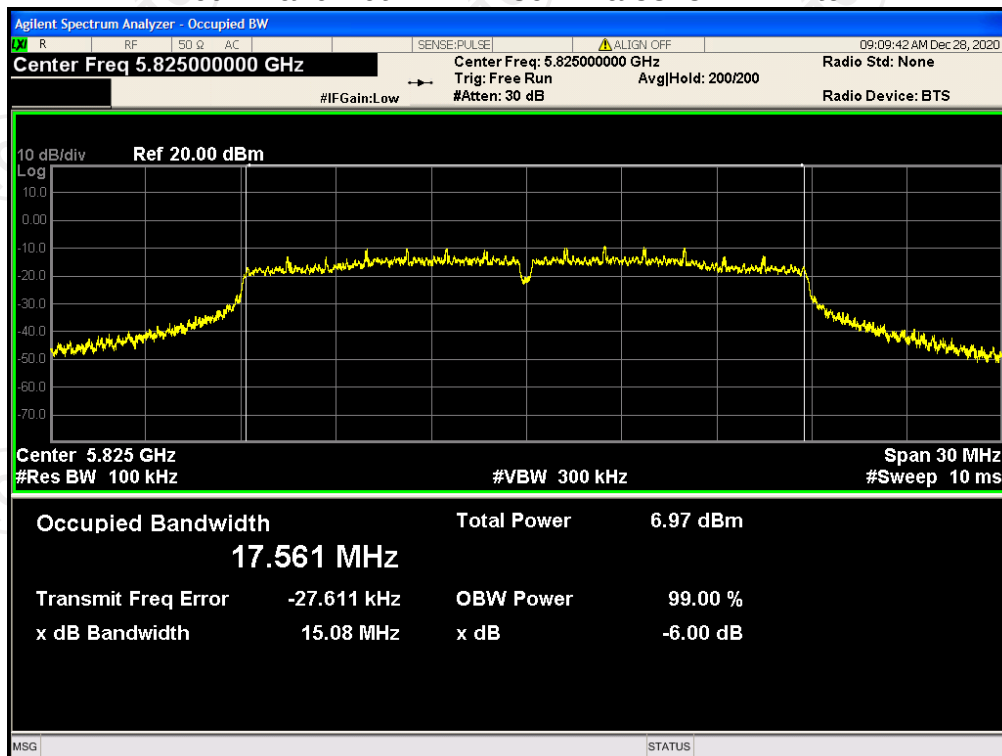
-6dB Bandwidth NVNT 802.11a 5745MHz Ant0



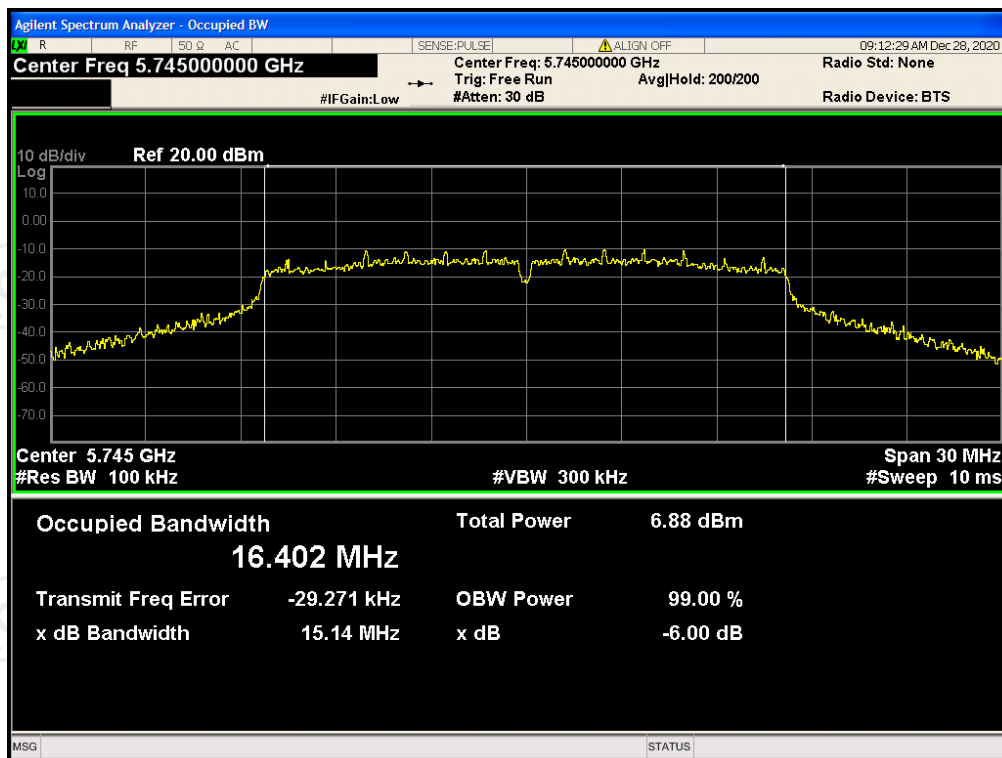
-6dB Bandwidth NVNT 802.11a 5785MHz Ant0



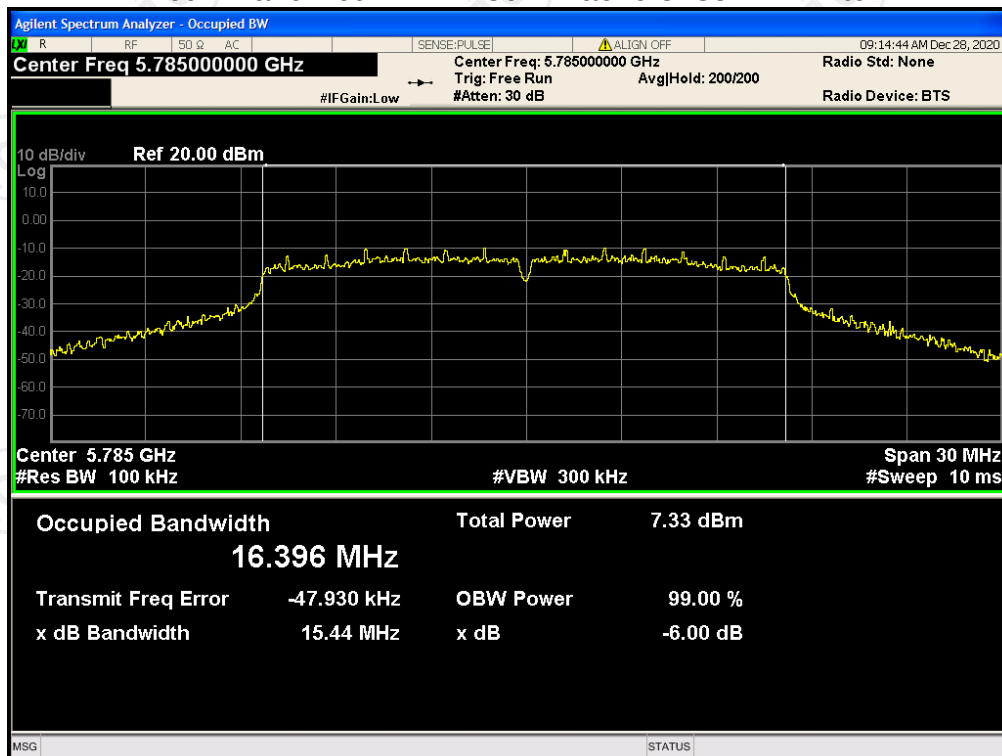
-6dB Bandwidth NVNT 802.11a 5825MHz Ant0



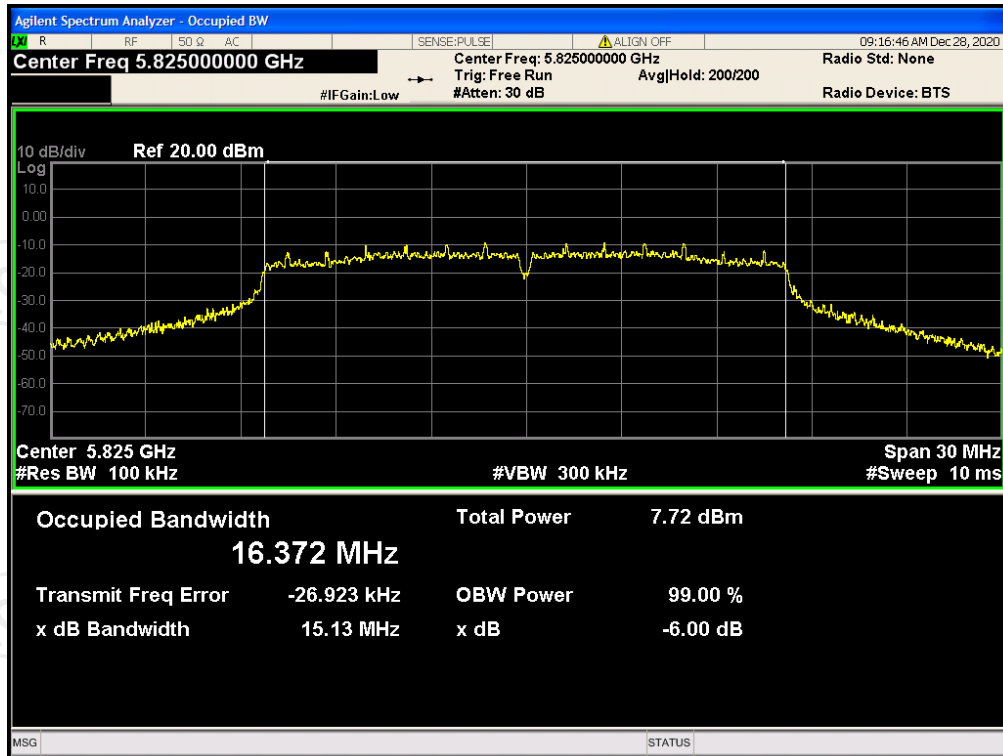
-6dB Bandwidth NVNT 802.11ac20 5745MHz Ant0



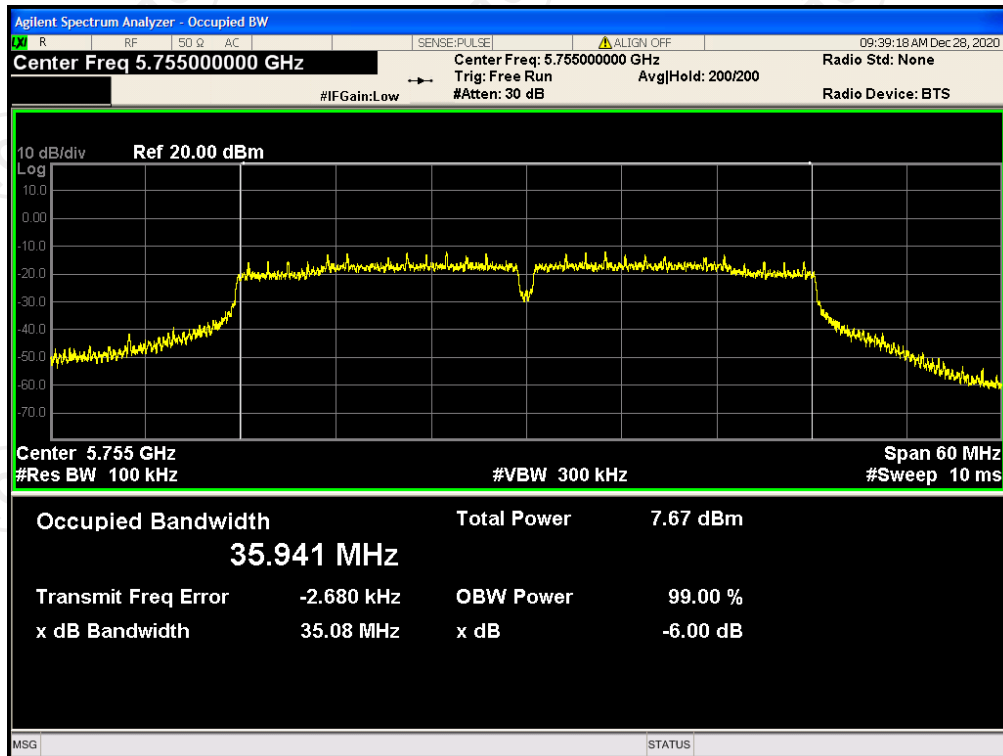
-6dB Bandwidth NVNT 802.11ac20 5785MHz Ant0



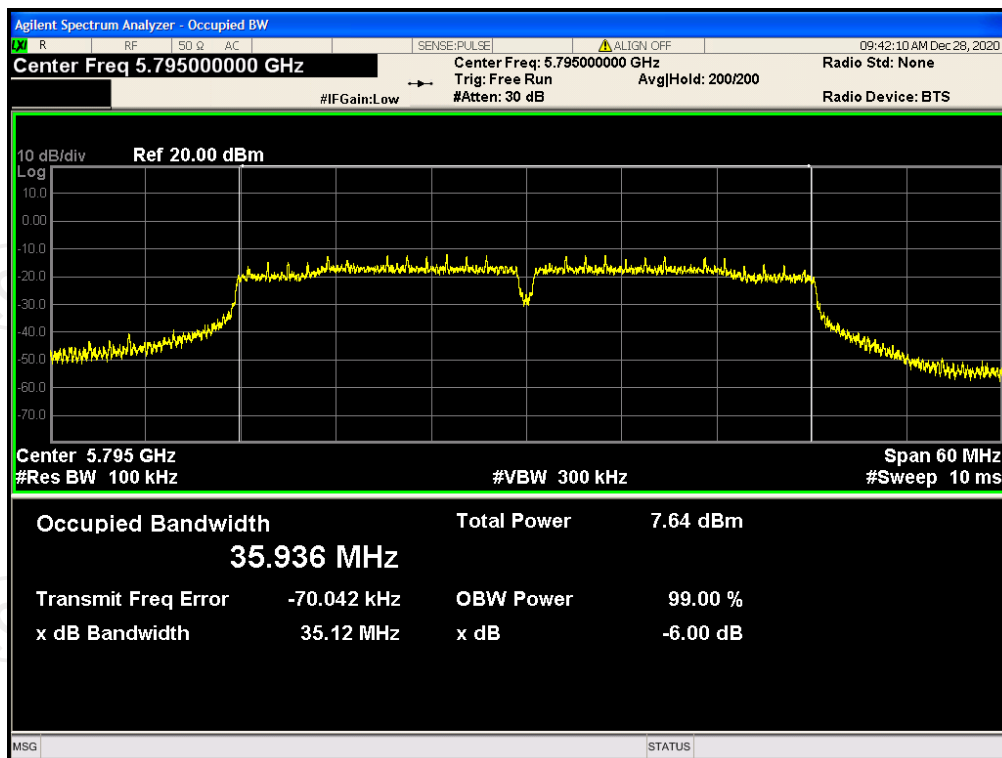
-6dB Bandwidth NVNT 802.11ac20 5825MHz Ant0



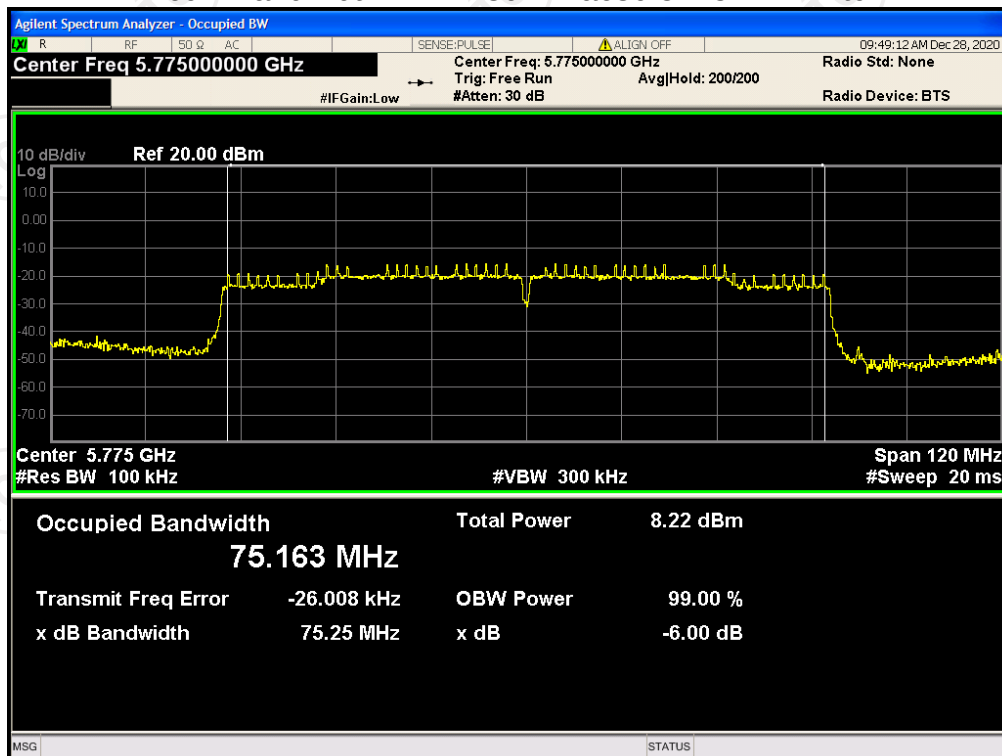
-6dB Bandwidth NVNT 802.11ac40 5755MHz Ant0



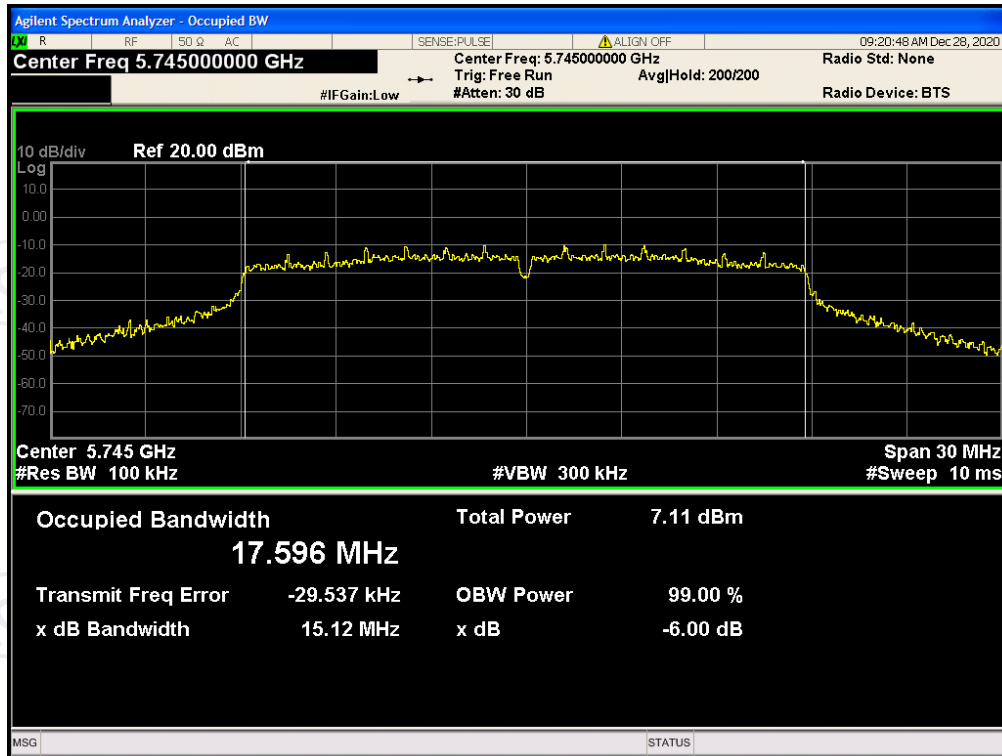
-6dB Bandwidth NVNT 802.11ac40 5795MHz Ant0



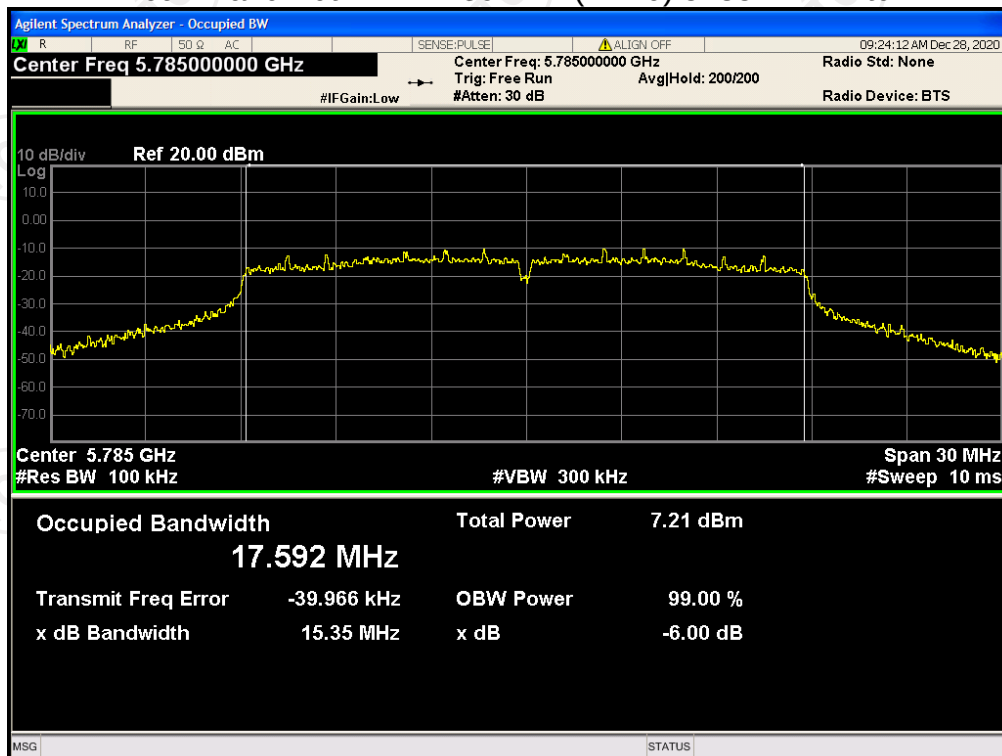
-6dB Bandwidth NVNT 802.11ac80 5775MHz Ant0



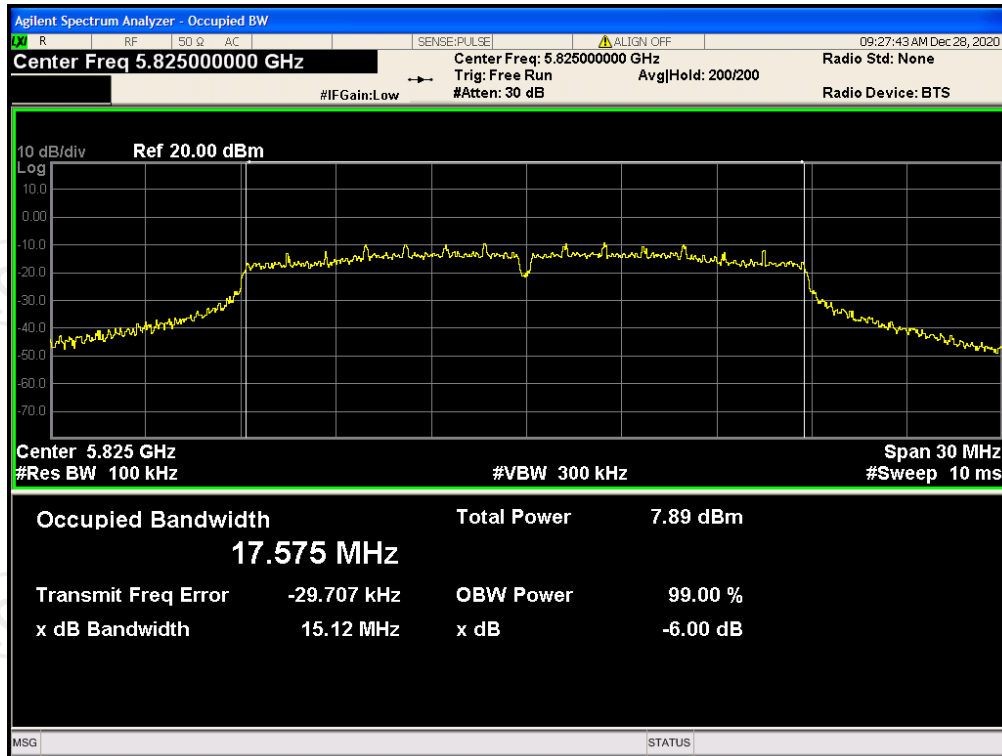
-6dB Bandwidth NVNT 802.11n(HT20) 5745MHz Ant0



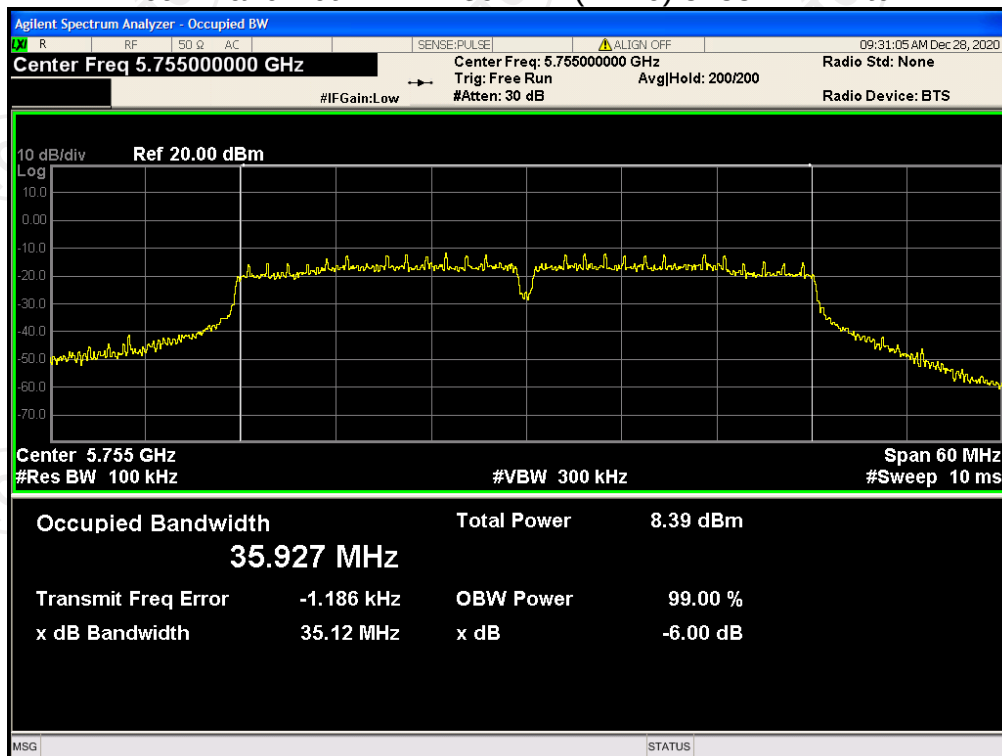
-6dB Bandwidth NVNT 802.11n(HT20) 5785MHz Ant0



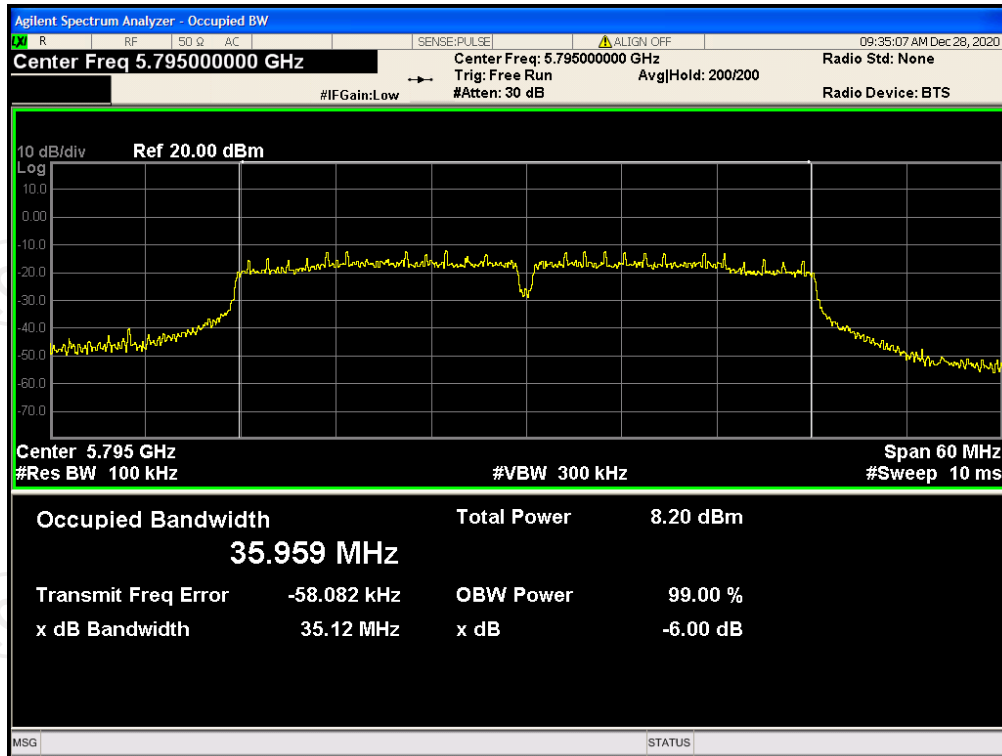
-6dB Bandwidth NVNT 802.11n(HT20) 5825MHz Ant0



-6dB Bandwidth NVNT 802.11n(HT40) 5755MHz Ant0



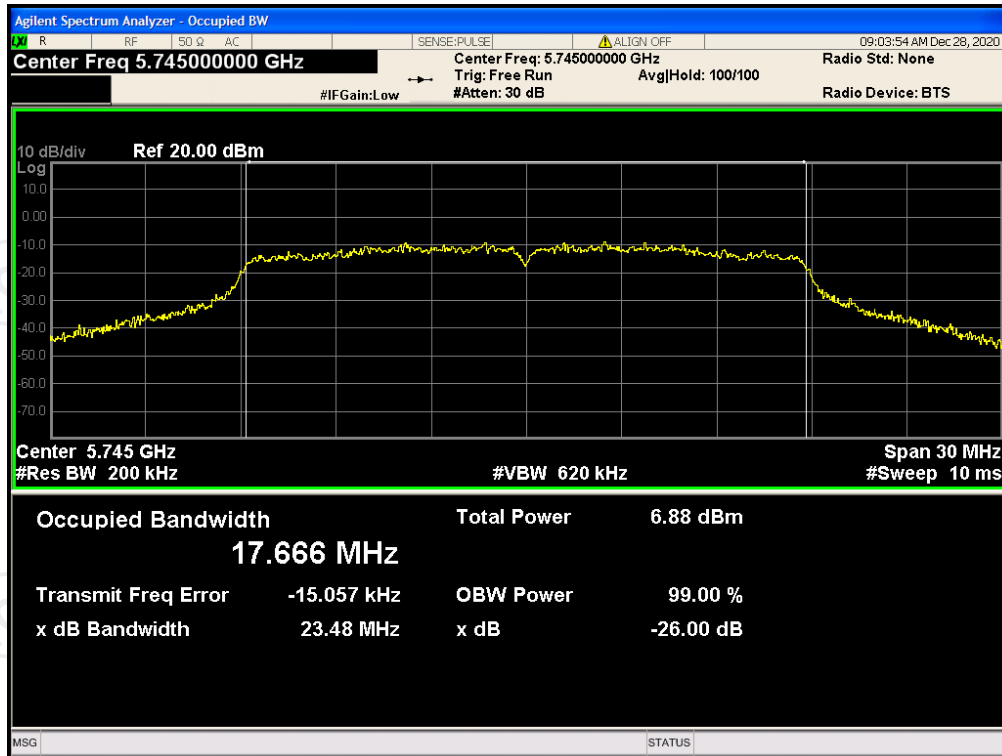
-6dB Bandwidth NVNT 802.11n(HT40) 5795MHz Ant0



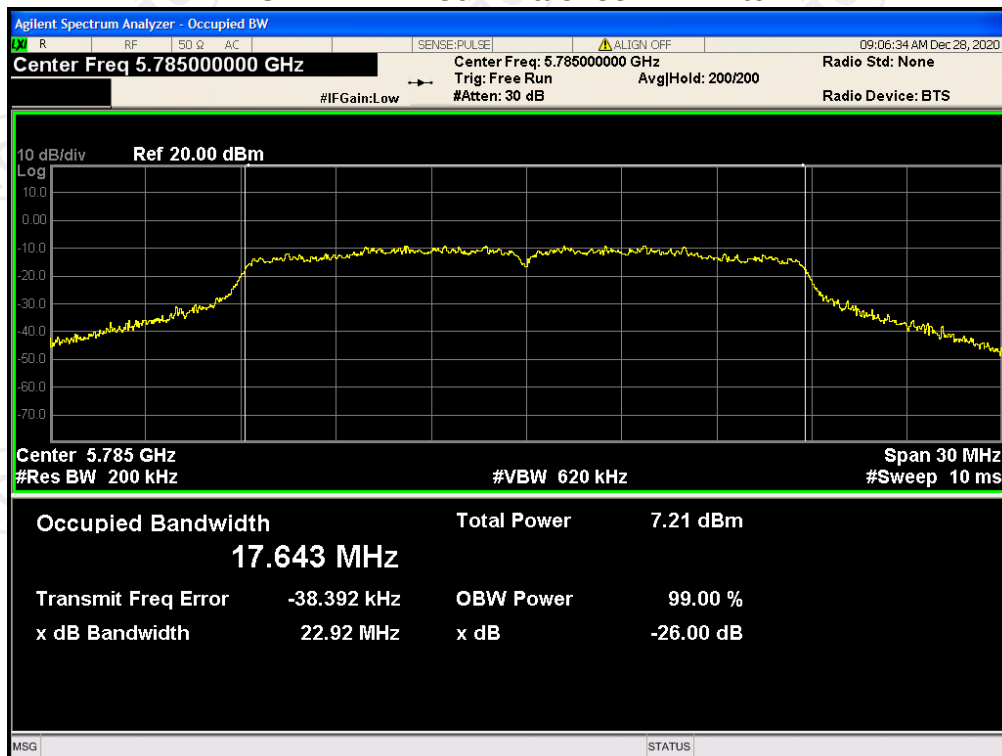
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	802.11a	5745	Ant0	17.6657	23.4813	0.5	Pass
NVNT	802.11a	5785	Ant0	17.6434	22.9172	0.5	Pass
NVNT	802.11a	5825	Ant0	17.6225	22.5948	0.5	Pass
NVNT	802.11ac20	5745	Ant0	16.5173	23.8284	0.5	Pass
NVNT	802.11ac20	5785	Ant0	16.5343	23.8976	0.5	Pass
NVNT	802.11ac20	5825	Ant0	16.4776	22.7032	0.5	Pass
NVNT	802.11ac40	5755	Ant0	36.0786	43.2433	0.5	Pass
NVNT	802.11ac40	5795	Ant0	36.1205	43.7234	0.5	Pass
NVNT	802.11ac80	5775	Ant0	75.3862	100.8385	0.5	Pass
NVNT	802.11n(HT20)	5745	Ant0	17.6917	23.9605	0.5	Pass
NVNT	802.11n(HT20)	5785	Ant0	17.6438	23.2244	0.5	Pass
NVNT	802.11n(HT20)	5825	Ant0	17.6244	22.967	0.5	Pass
NVNT	802.11n(HT40)	5755	Ant0	36.1659	44.1467	0.5	Pass
NVNT	802.11n(HT40)	5795	Ant0	36.1787	43.8686	0.5	Pass

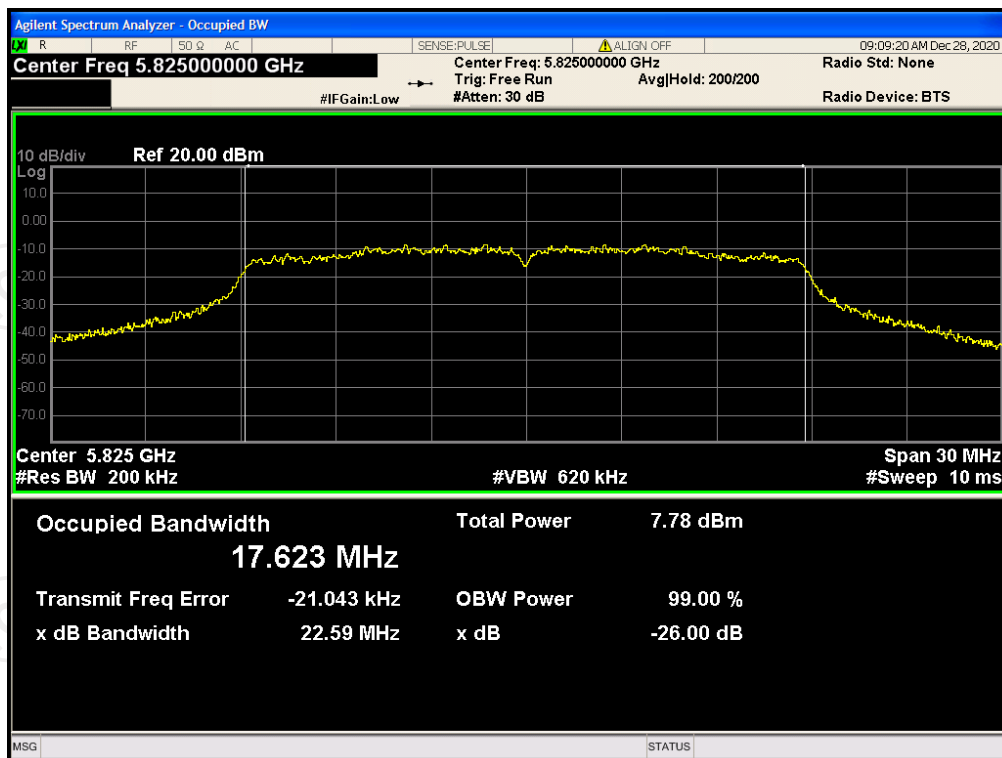
OBW NVNT 802.11a 5745MHz Ant0



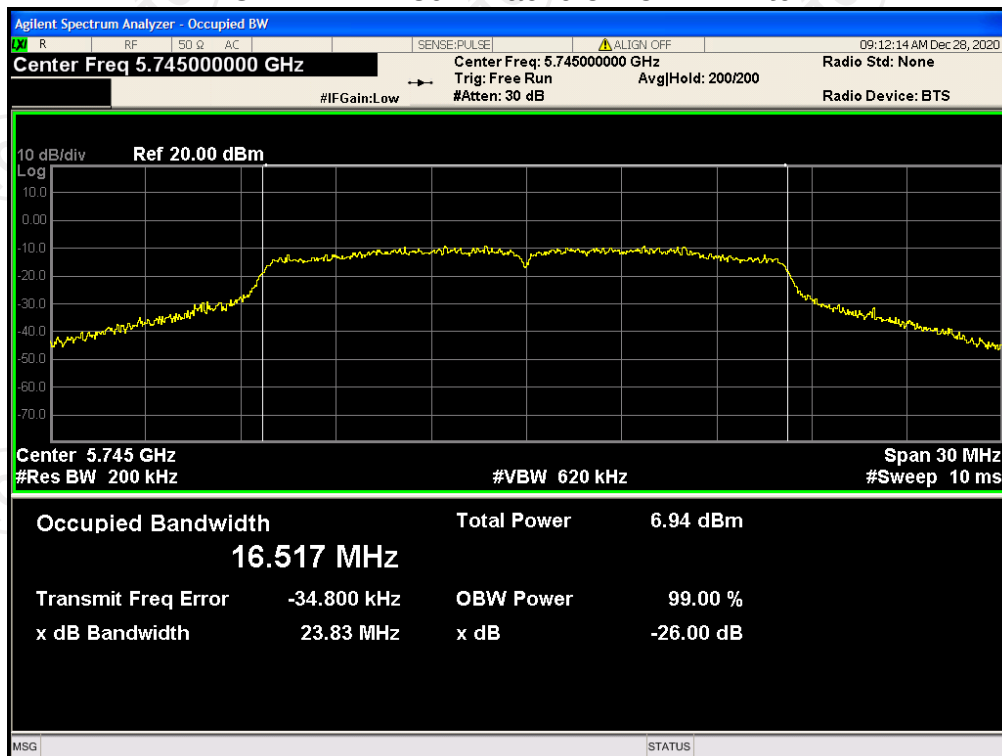
OBW NVNT 802.11a 5785MHz Ant0



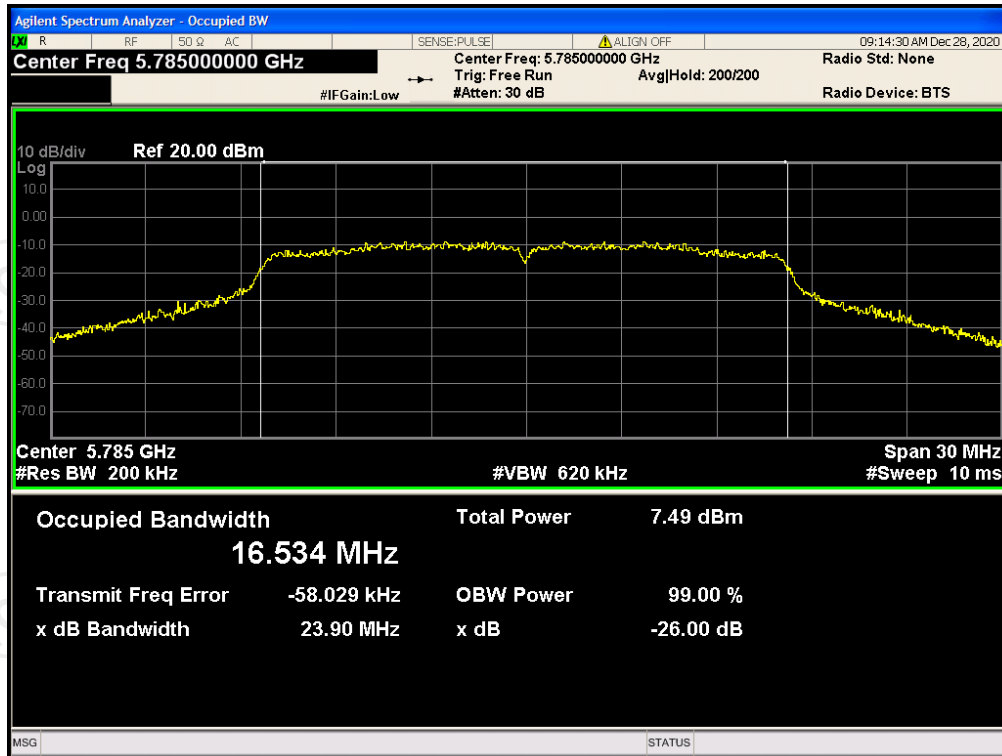
OBW NVNT 802.11a 5825MHz Ant0



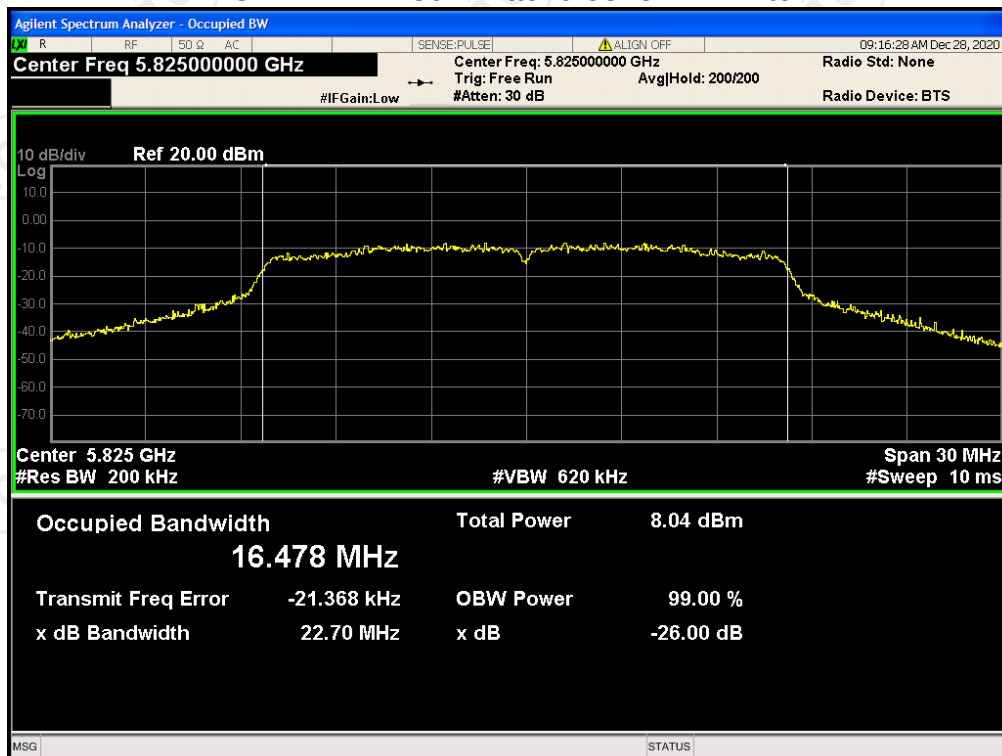
OBW NVNT 802.11ac20 5745MHz Ant0



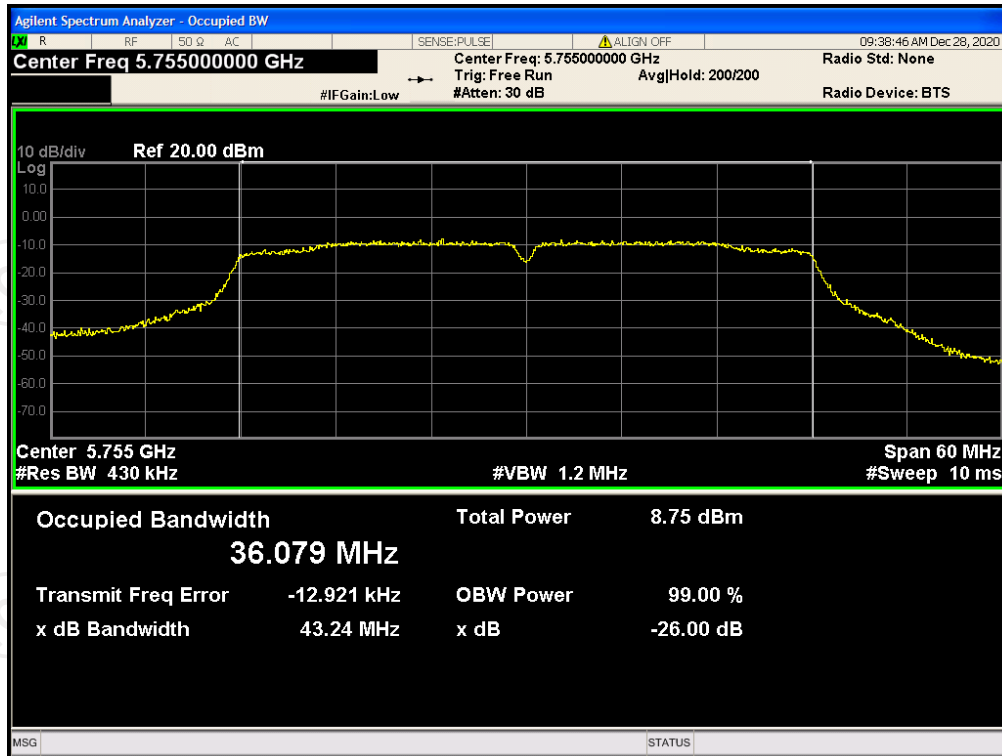
OBW NVNT 802.11ac20 5785MHz Ant0



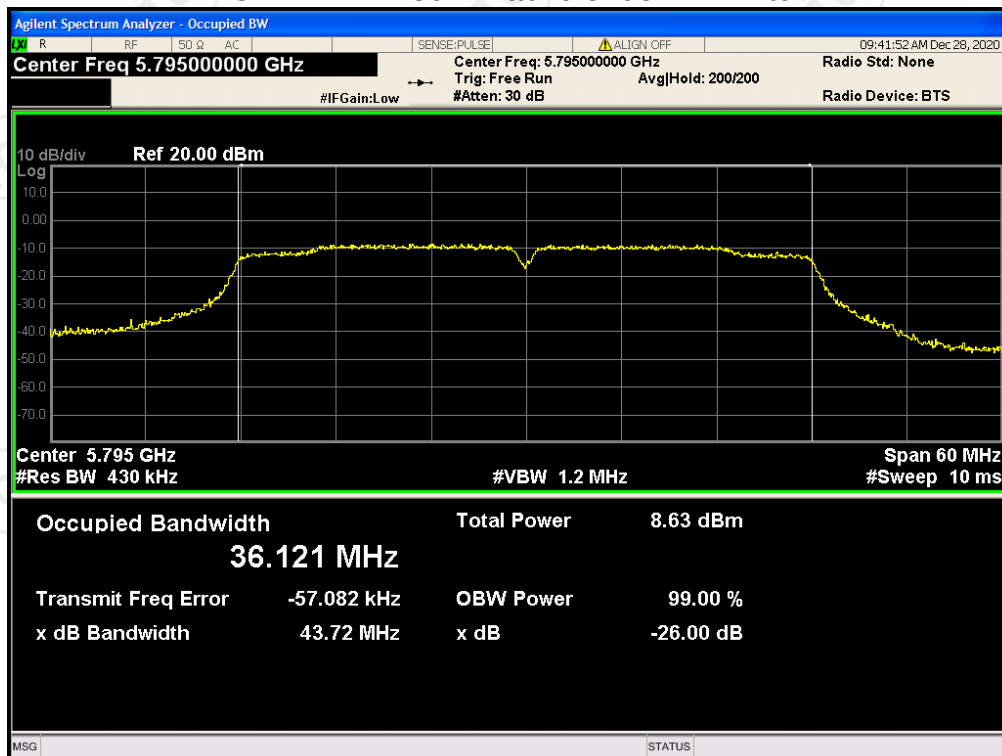
OBW NVNT 802.11ac20 5825MHz Ant0



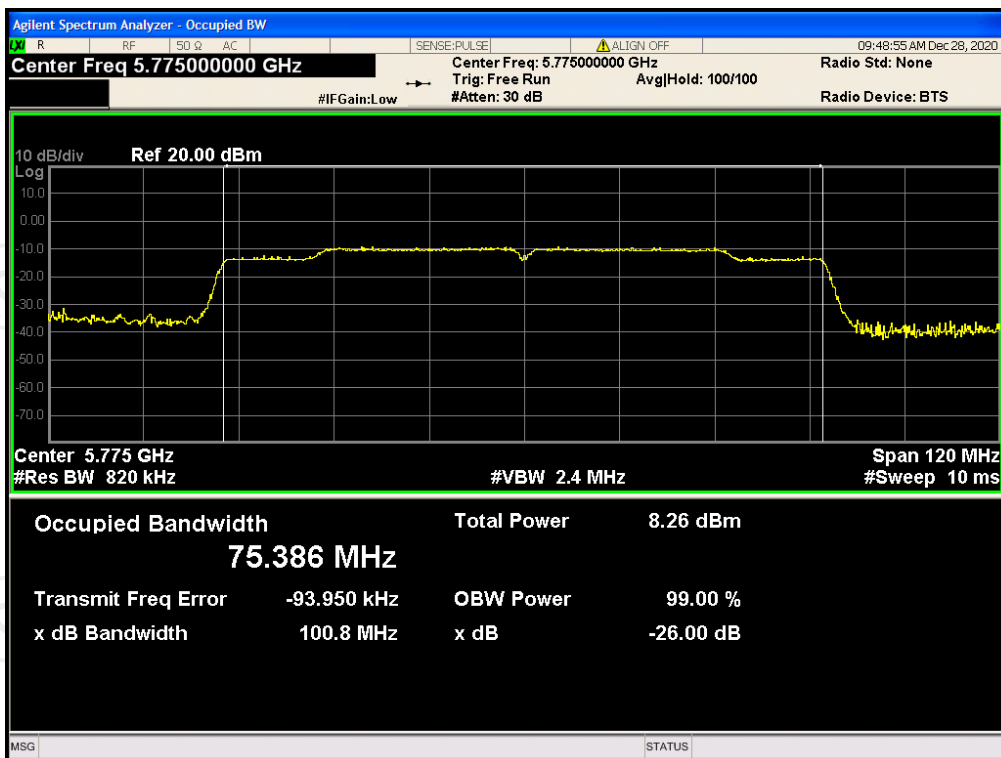
OBW NVNT 802.11ac40 5755MHz Ant0



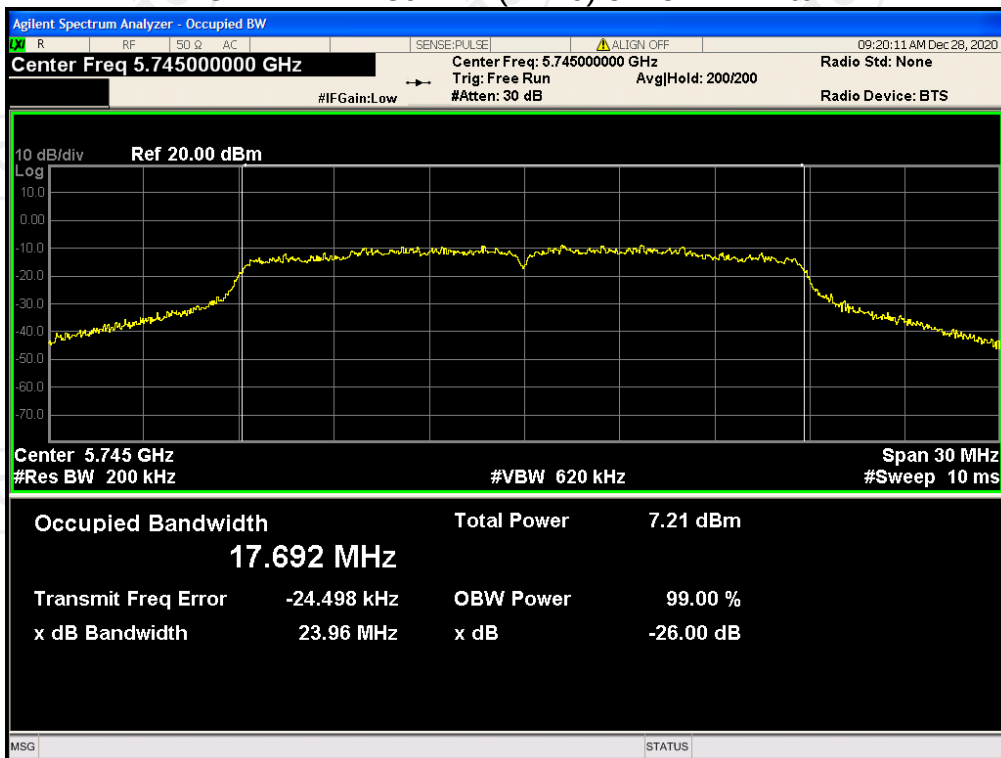
OBW NVNT 802.11ac40 5795MHz Ant0



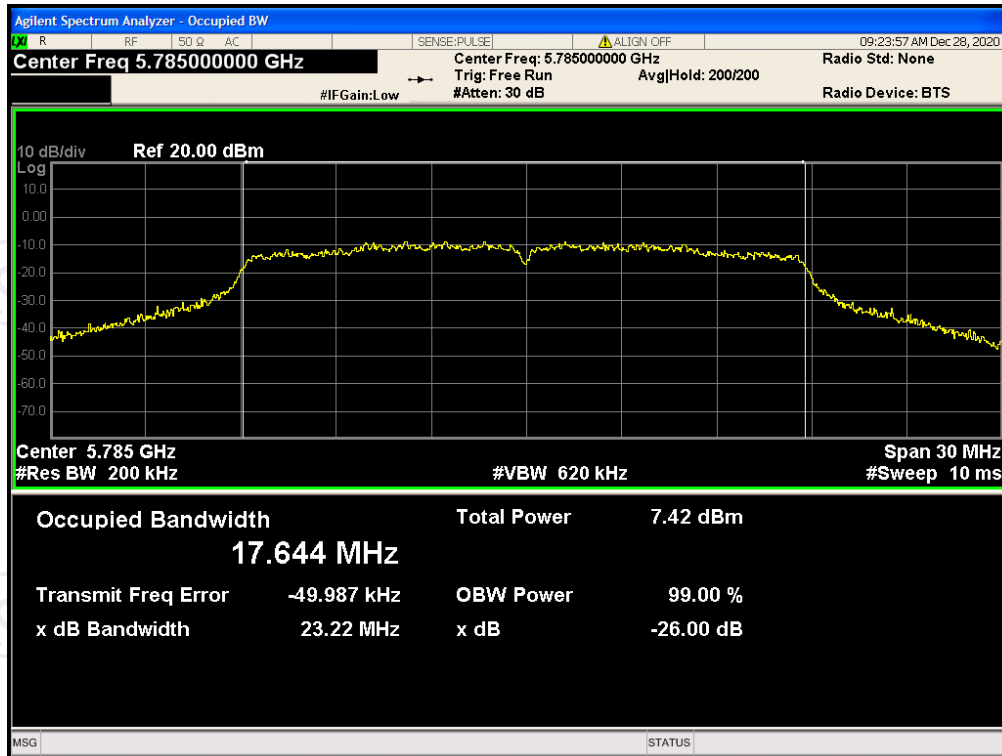
OBW NVNT 802.11ac80 5775MHz Ant0



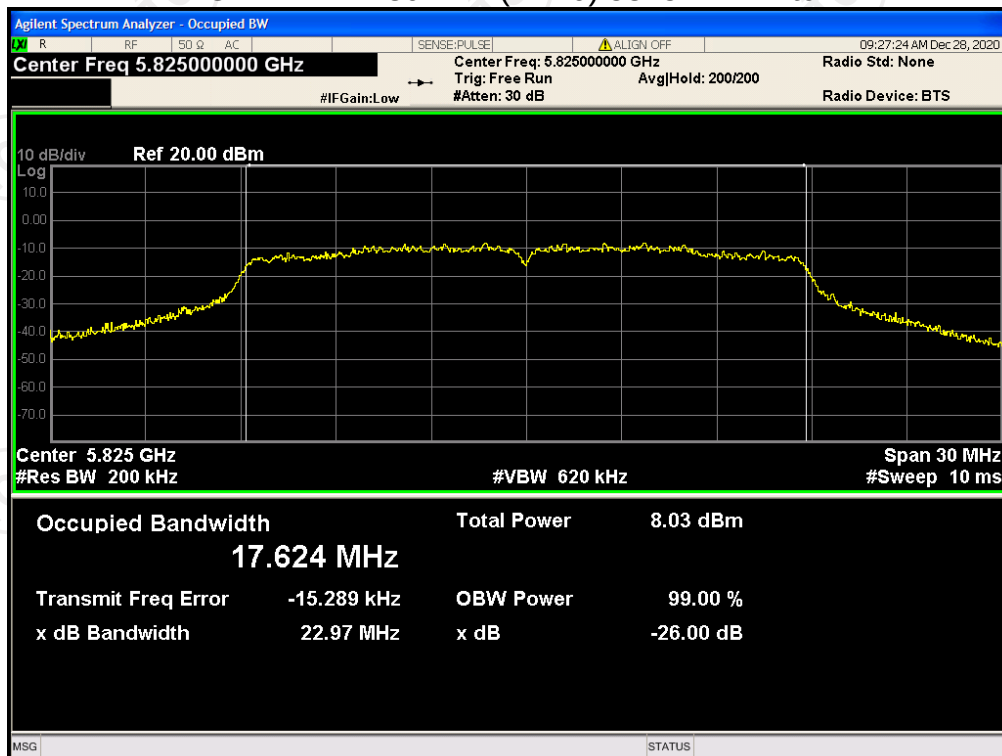
OBW NVNT 802.11n(HT20) 5745MHz Ant0



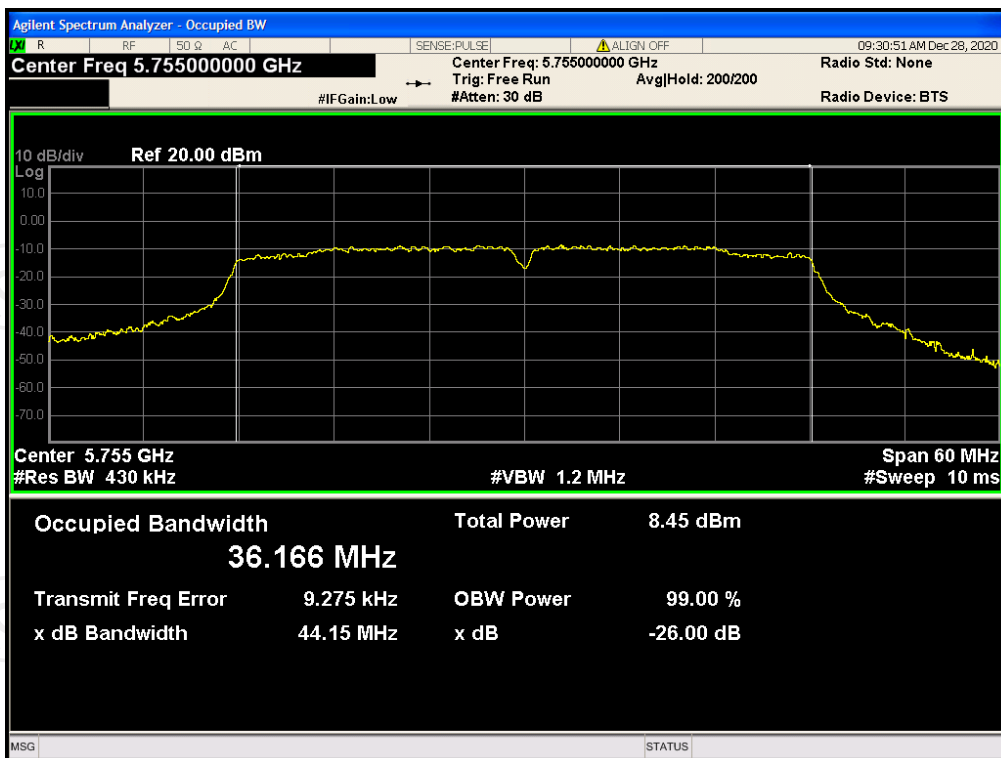
OBW NVNT 802.11n(HT20) 5785MHz Ant0



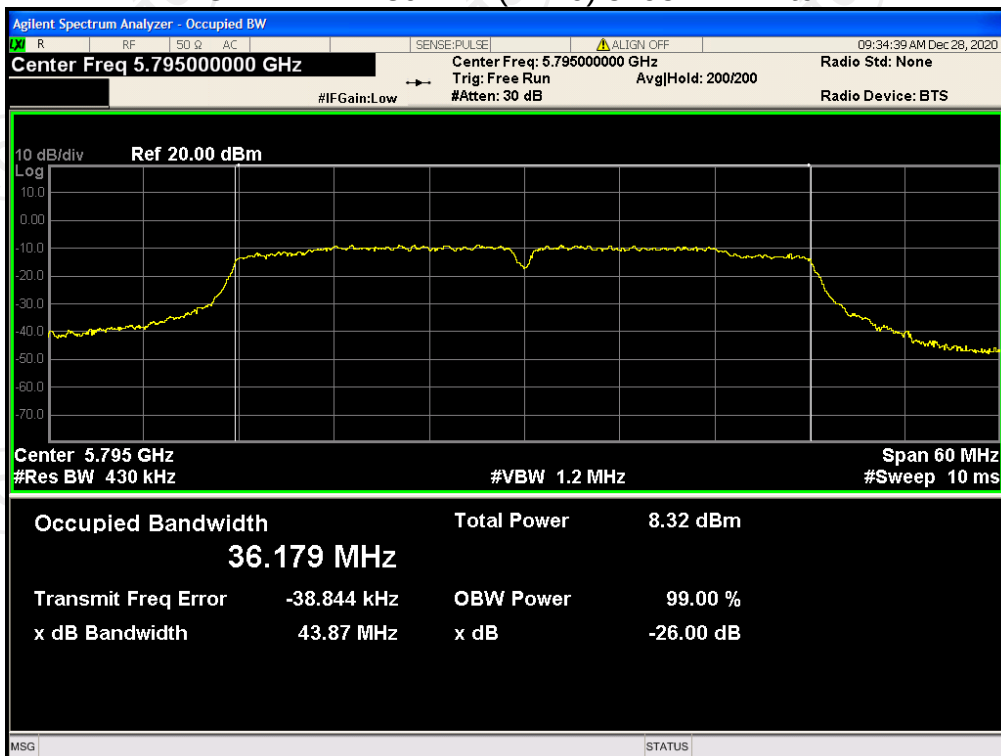
OBW NVNT 802.11n(HT20) 5825MHz Ant0



OBW NVNT 802.11n(HT40) 5755MHz Ant0



OBW NVNT 802.11n(HT40) 5795MHz Ant0



Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/510 KHz)	Max PSD (dBm/500 KHz)	Limit (dBm)	Verdict
NVNT	802.11a	5745	Ant0	-3.665	-3.751	30	Pass
NVNT	802.11a	5785	Ant0	-4.563	-4.649	30	Pass
NVNT	802.11a	5825	Ant0	-4.262	-4.348	30	Pass
NVNT	802.11ac20	5745	Ant0	-4.297	-4.383	30	Pass
NVNT	802.11ac20	5785	Ant0	-4.054	-4.140	30	Pass
NVNT	802.11ac20	5825	Ant0	-3.700	-3.786	30	Pass
NVNT	802.11ac40	5755	Ant0	-6.809	-6.895	30	Pass
NVNT	802.11ac40	5795	Ant0	-6.787	-6.873	30	Pass
NVNT	802.11ac80	5775	Ant0	-10.470	-10.556	30	Pass
NVNT	802.11n(HT20)	5745	Ant0	-4.457	-4.543	30	Pass
NVNT	802.11n(HT20)	5785	Ant0	-4.366	-4.452	30	Pass
NVNT	802.11n(HT20)	5825	Ant0	-3.779	-3.865	30	Pass
NVNT	802.11n(HT40)	5755	Ant0	-6.775	-6.861	30	Pass
NVNT	802.11n(HT40)	5795	Ant0	-6.570	-6.656	30	Pass

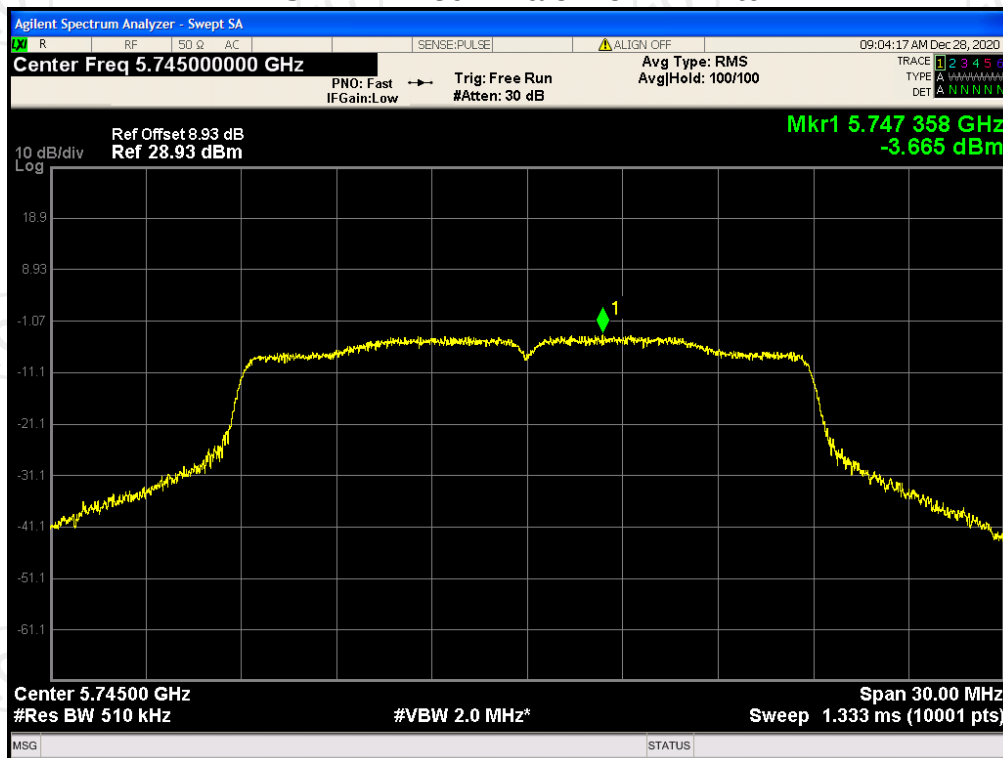
Note:

Compensate 10dB is for Exchange rate of RBW

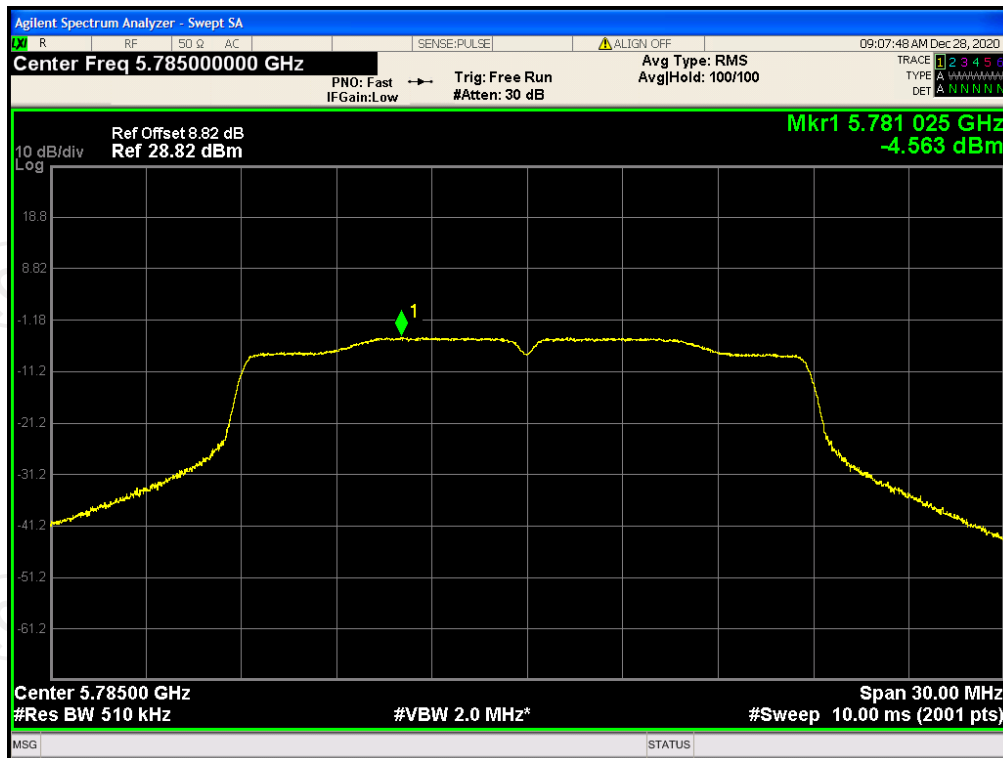
Exchange rate of RBW = $10 \cdot \log_{10}(500\text{KHz} / \text{RBW at measurement}) \approx -0.086[\text{dB}]$

where Reference bandwidth = 510 KHz

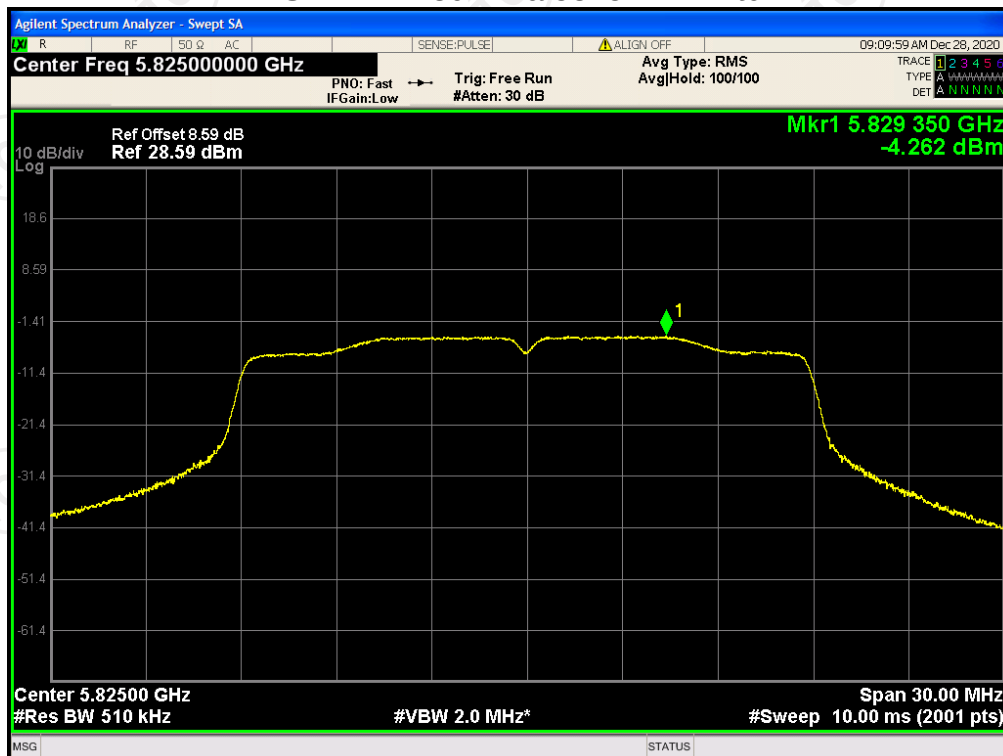
PSD NVNT 802.11a 5745MHz Ant0



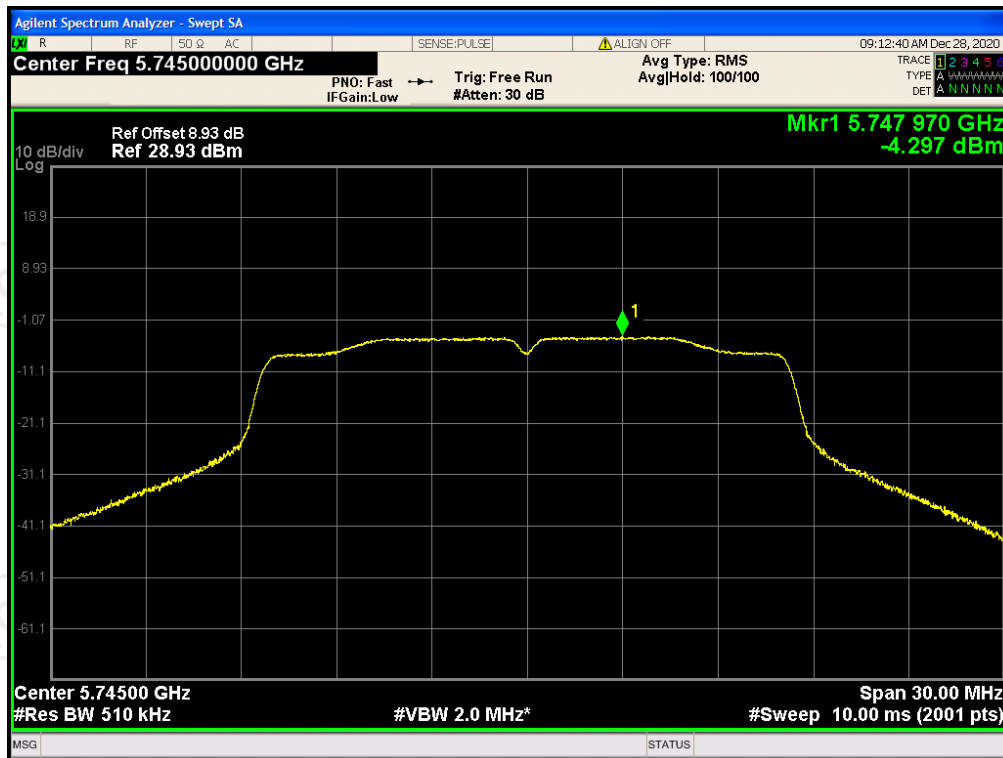
PSD NVNT 802.11a 5785MHz Ant0



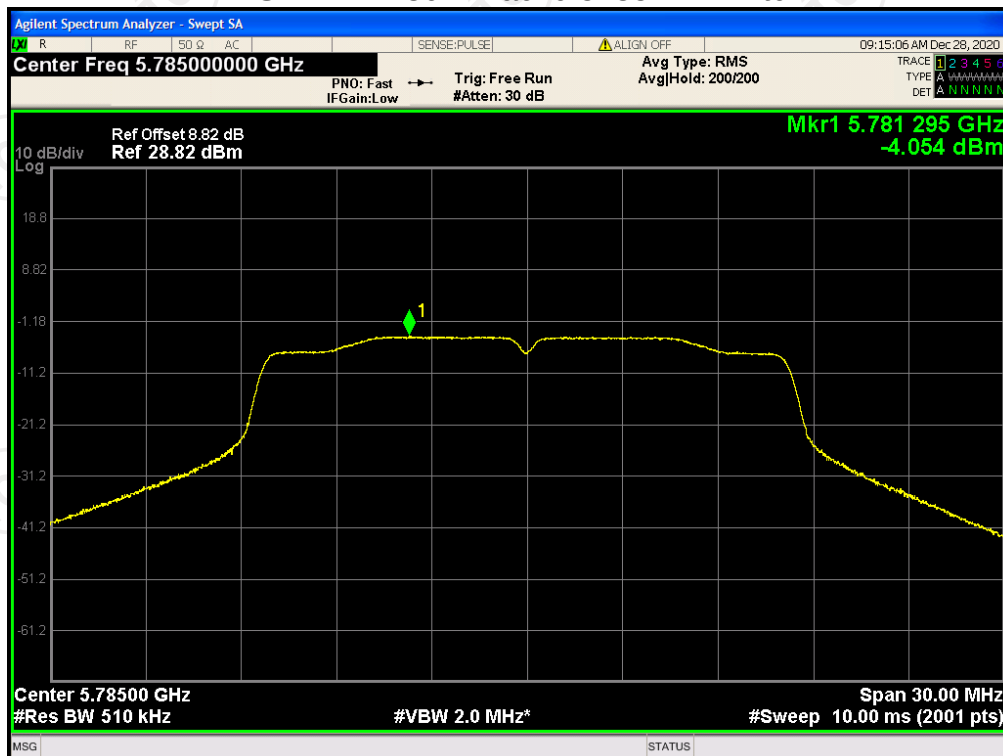
PSD NVNT 802.11a 5825MHz Ant0



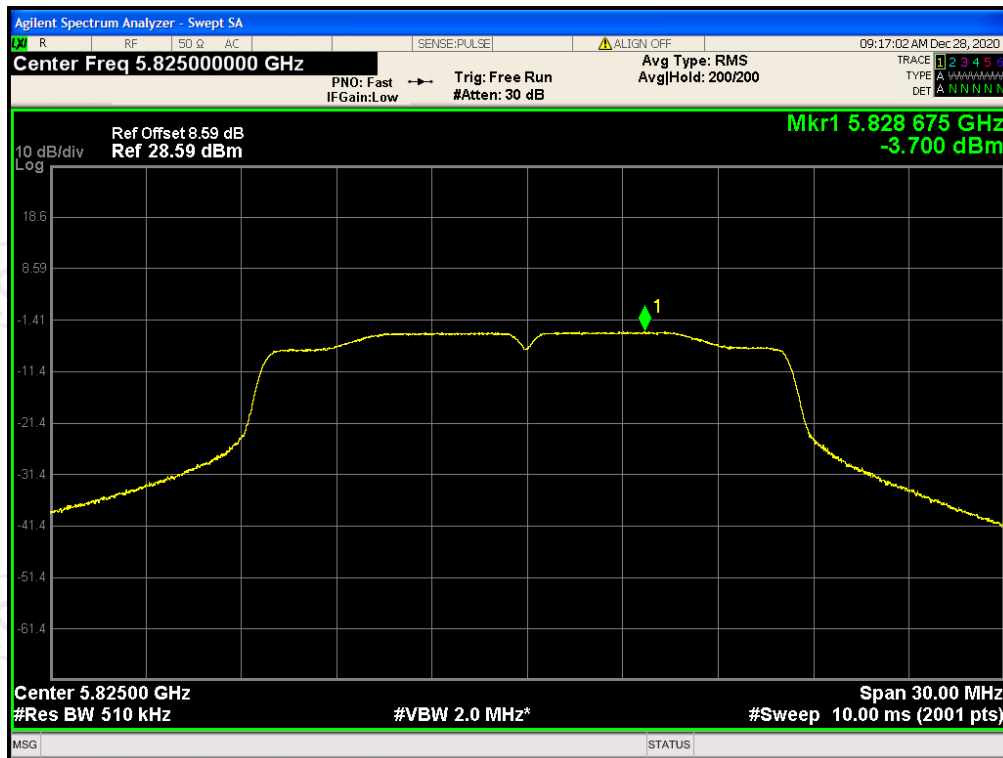
PSD NVNT 802.11ac20 5745MHz Ant0



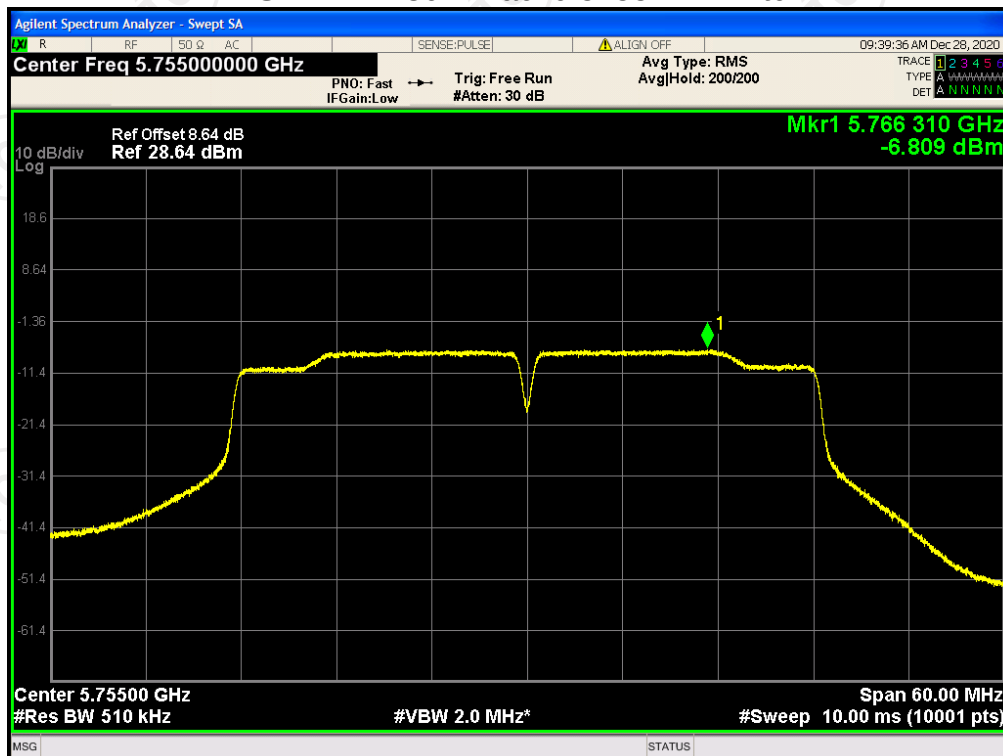
PSD NVNT 802.11ac20 5785MHz Ant0



PSD NVNT 802.11ac20 5825MHz Ant0



PSD NVNT 802.11ac40 5755MHz Ant0



PSD NVNT 802.11ac40 5795MHz Ant0