



# RF TEST REPORT

**Applicant**      Xiaomi Communications Co., Ltd.  
**FCC ID**          2AFZZC95G  
**Product**        Mobile Phone  
**Brand**            POCO  
**Model**            22127PC95G  
**Report No.**      R2209A0822-R6  
**Issue Date**      November 21, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying

Approved by: Xu Kai

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**TA Technology (Shanghai) Co., Ltd.**

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## Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS

Date of Testing: October 9, 2022 ~ October 24, 2022  
Date of Sample Received: October 8, 2022

Note: PASS: The EUT complies with the essential requirements in the standard.  
FAIL: The EUT does not comply with the essential requirements in the standard.  
All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

**22127PC95G (Report No.: R2209A0822-R6) is a variant model of 2212ARNC4L (Report No.: R2209A0813-R7V1). There is only test Maximum output power, power of new variant are varied due to measurement uncertainty, and sample tolerance of the acceptance range, so they were not recorded in the report.**

**The detailed product change description please refers to the Difference Declaration Letter.**



## 1. Test Laboratory

### 1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

### 1.2. Test facility

#### **FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

#### **A2LA (Certificate Number: 3857.01)**

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

### 1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
Address: Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
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Fax: +86-021-50791141/2/3-8000  
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E-mail: [xukai@ta-shanghai.com](mailto:xukai@ta-shanghai.com)

## 2. General Description of Equipment under Test

### 2.1. Applicant and Manufacturer Information

<b>Applicant</b>	Xiaomi Communications Co., Ltd.
<b>Applicant address</b>	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
<b>Manufacturer</b>	Xiaomi Communications Co., Ltd.
<b>Manufacturer address</b>	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

### 2.2. General information

EUT Description		
Model	22127PC95G	
IMEI	Original (2212ARNC4L)	IMEI 1: 861591060034226 IMEI 2: 861591060034234
	Variant (22127PC95G)	IMEI 1: 868291060013345 IMEI 2: 868291060013352
Hardware Version	P1.1	
Software Version	MIUI 13	
Antenna Type	PIFA Antenna	
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)	
Antenna Gain	U-NII-1	0.2 dBi
	U-NII-2A	-0.2 dBi
	U-NII-2C	0.2 dBi
	U-NII-3	-0.5 dBi
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-2A:5250MHz -5350MHz U-NII-2C:5470MHz-5725MHz U-NII-3: 5725MHz -5850MHz	
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM	
Max. Output Power	15.91 dBm	
Testing temperature range:	-20 ° C to 50° C	
Operating temperature range:	0 ° C to 40 ° C	
Operating voltage range:	3.65 V to 4.20 V	
State DC voltage:	3.85 V	

## Note:

1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.
2. This device support automatically discontinue transmission, while the device is not transmitting any information, the device can automatically discontinue transmission and become standby mode for power saving. The device can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.
3. (a) Manufacturers implements security features in any digitally modulated devices capable of operating in any of the U-NII bands, so that third parties are not able to reprogram the device to operate outside the parameters for which the device was certified. The software prevents the user from operating the transmitter with operating frequencies, output power, modulation types or other radio frequency parameters outside those that were approved for the device. Manufacturers uses means including, but not limited to the use of a private network that allows only authenticated users to download software, electronic signatures in software or coding in hardware that is decoded by software to verify that new software can be legally loaded into a device to meet these requirements and must describe the methods in their application for equipment authorization.  
(b) Manufacturers take steps to ensure that DFS functionality cannot be disabled by the operator of the U-NII device.



### 3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**Test standards:**

**FCC CFR47 Part 15E (2021)** Unlicensed National Information Infrastructure Devices

**ANSI C63.10-2013**

**Reference standard:**

**KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

## 4. Test Configuration

### Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Mode	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0



**Wireless Technology and Frequency Range**

Wireless Technology		Bandwidth	Channel	Frequency	
Wi-Fi	U-NII-1	20 MHz	36	5180MHz	
			40	5200MHz	
			44	5220MHz	
			48	5240MHz	
		40 MHz	38	5190MHz	
			46	5230MHz	
		80 MHz	42	5210MHz	
		U-NII-2A	20 MHz	52	5260MHz
				56	5280MHz
	60			5300MHz	
	64			5320MHz	
	40 MHz		54	5270MHz	
			62	5310MHz	
	80 MHz		58	5290MHz	
	U-NII-2C		20 MHz	100	5500MHz
				104	5520MHz
		108		5540MHz	
		112		5560MHz	
		116		5580MHz	
		120		5600MHz	
		124		5620MHz	
		128		5640MHz	
		132		5660MHz	
		136		5680MHz	
		140		5700MHz	
		144		5720MHz	
		40 MHz		102	5510MHz
				110	5550MHz
			118	5590MHz	
			126	5630MHz	
			134	5670MHz	
		80 MHz	106	5530MHz	
122			5610MHz		
U-NII-3		20 MHz	144	5720MHz	
			149	5745MHz	
	153		5765MHz		
	157		5785MHz		



			161	5805MHz
			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
		80 MHz	155	5775MHz
Does this device support TPC Function? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Does this device support TDWR Band? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				

## 5. Test Case Results

### 5.1. Occupied Bandwidth

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

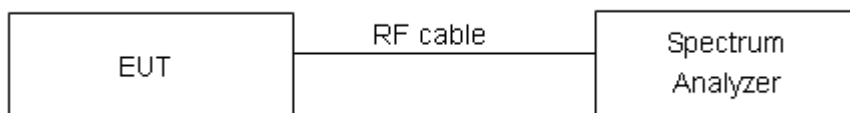
For U-NII-1/U-NII-2A/U-NII-2C, set RBW  $\approx$ 1% OCB kHz, VBW  $\geq$  3  $\times$  RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW  $\geq$  3  $\times$  RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

#### Test Setup



#### Limits

Rule FCC Part §15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936$  Hz.

**Test Results:****U-NII-1**

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.540	20.15	PASS
	5200	16.493	20.45	PASS
	5240	16.550	19.99	PASS
802.11n HT20	5180	17.623	20.59	PASS
	5200	17.617	20.46	PASS
	5240	17.634	20.50	PASS
802.11n HT40	5190	35.992	40.39	PASS
	5230	36.009	40.01	PASS
802.11ac VHT20	5180	17.611	20.34	PASS
	5200	17.580	20.47	PASS
	5240	17.605	20.48	PASS
802.11ac VHT40	5190	35.975	40.16	PASS
	5230	36.010	40.08	PASS
802.11ac VHT80	5210	75.242	79.83	PASS

**U-NII-2A**

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.506	20.17	PASS
	5300	16.504	20.28	PASS
	5320	16.546	20.10	PASS
802.11n HT20	5260	17.611	20.34	PASS
	5300	17.618	20.44	PASS
	5320	17.595	20.66	PASS
802.11n HT40	5270	35.942	40.30	PASS
	5310	36.025	40.05	PASS
802.11ac VHT20	5260	17.601	20.56	PASS
	5300	17.625	20.54	PASS
	5320	17.591	20.60	PASS
802.11ac VHT40	5270	35.926	40.01	PASS
	5310	36.009	40.49	PASS
802.11ac VHT80	5290	75.352	79.75	PASS



## U-NII-2C

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.511	19.98	PASS
	5520	16.529	20.29	PASS
	5600	16.530	20.96	PASS
	5680	16.518	20.33	PASS
	5700	16.531	20.06	PASS
	5720	16.479	20.20	PASS
802.11n HT20	5500	17.614	20.60	PASS
	5600	17.625	20.61	PASS
	5680	17.620	20.67	PASS
	5700	17.612	20.46	PASS
	5720	17.584	20.51	PASS
802.11n HT40	5510	36.003	40.40	PASS
	5590	36.008	40.16	PASS
	5670	35.985	40.26	PASS
802.11ac VHT20	5500	17.604	20.57	PASS
	5600	17.582	20.36	PASS
	5700	17.639	20.61	PASS
	5720	17.594	20.45	PASS
802.11ac VHT40	5510	35.957	40.09	PASS
	5590	35.955	40.06	PASS
	5670	35.966	39.79	PASS
802.11ac VHT80	5610	75.377	79.67	PASS



## U-NII-3

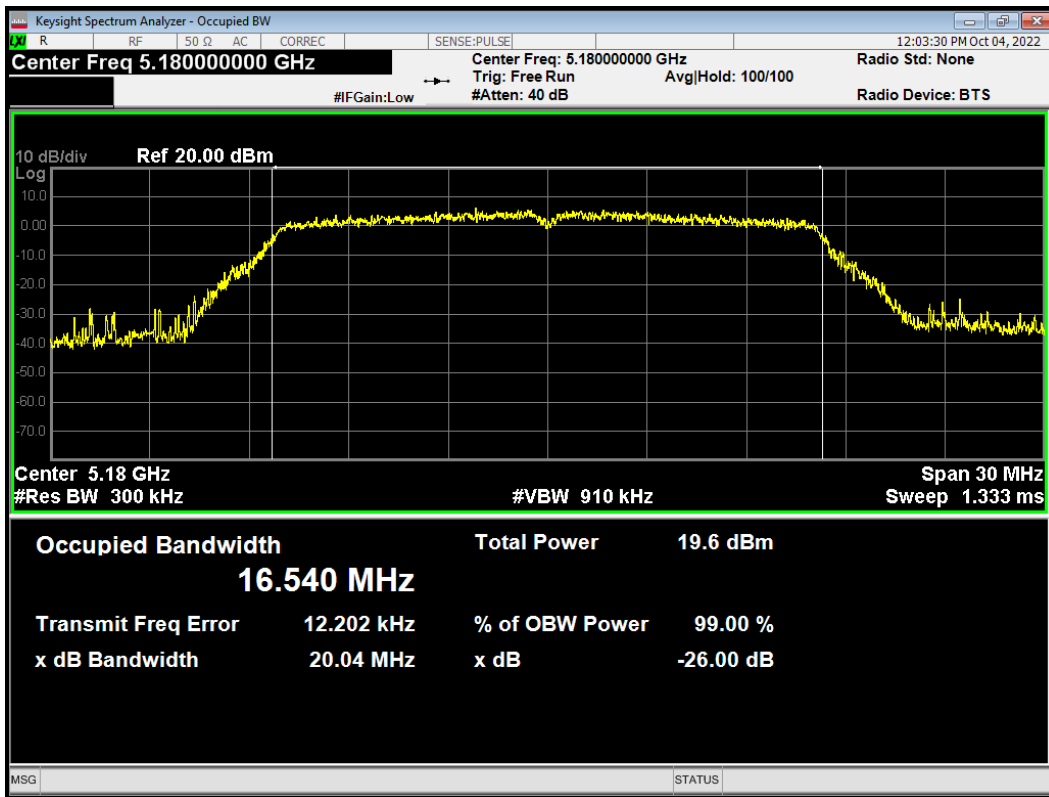
Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5720	16.543	15.12	500	PASS
	5745	16.591	15.44	500	PASS
	5785	16.506	15.07	500	PASS
	5825	16.560	15.02	500	PASS
802.11n HT20	5720	17.594	13.87	500	PASS
	5745	17.637	15.03	500	PASS
	5785	17.629	13.82	500	PASS
	5825	17.618	16.27	500	PASS
802.11n HT40	5755	36.006	35.10	500	PASS
	5795	36.005	35.10	500	PASS
802.11ac VHT20	5720	17.602	15.11	500	PASS
	5745	17.627	15.91	500	PASS
	5785	17.597	14.75	500	PASS
	5825	17.631	14.14	500	PASS
802.11ac VHT40	5755	35.987	32.63	500	PASS
	5795	35.974	35.09	500	PASS
802.11ac VHT80	5775	75.197	75.11	500	PASS



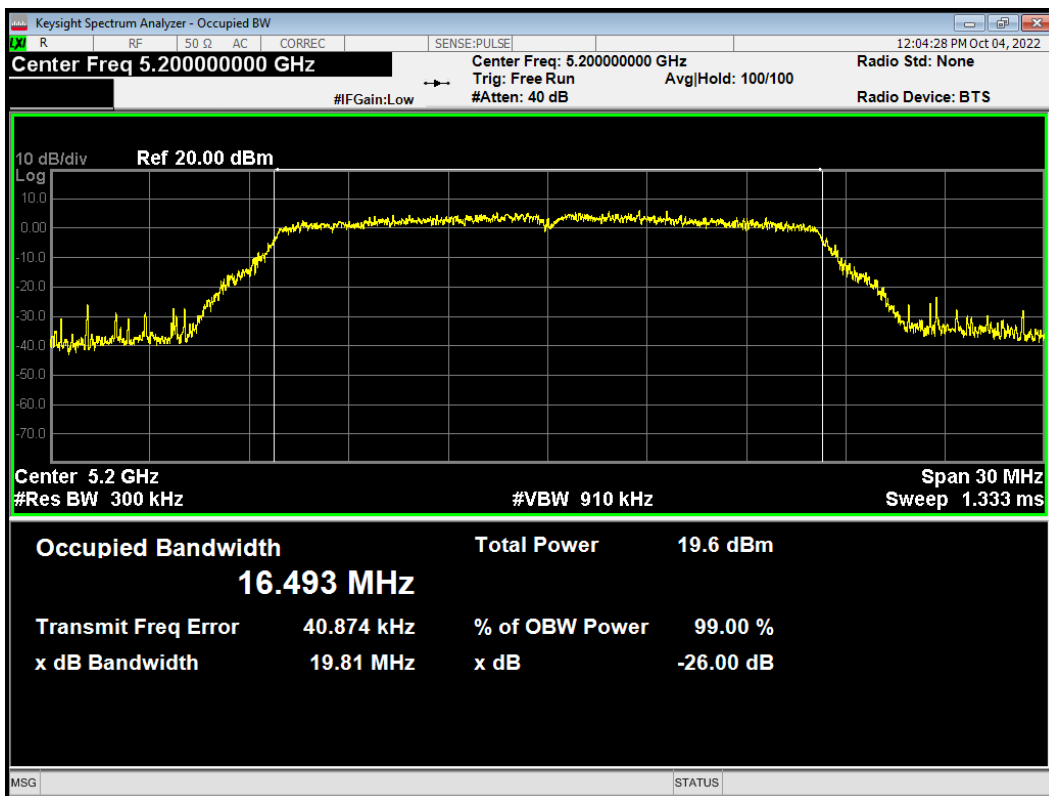
U-NII-1

99% bandwidth

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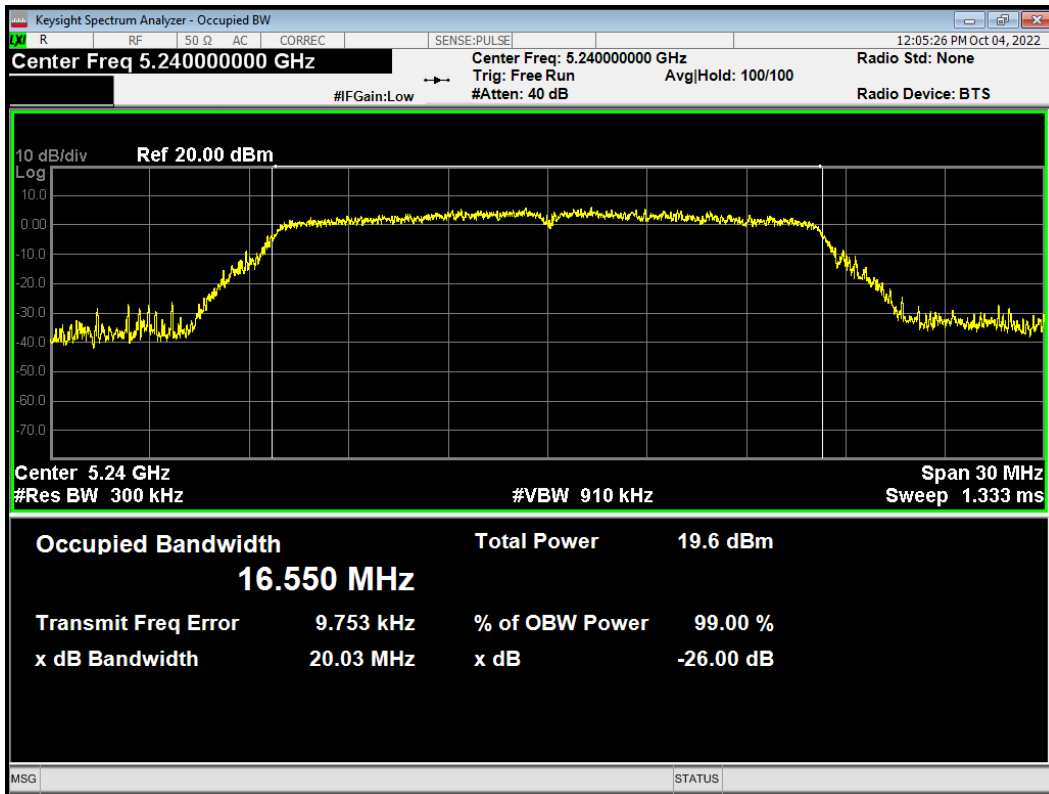


OBW 802.11a 5200MHz

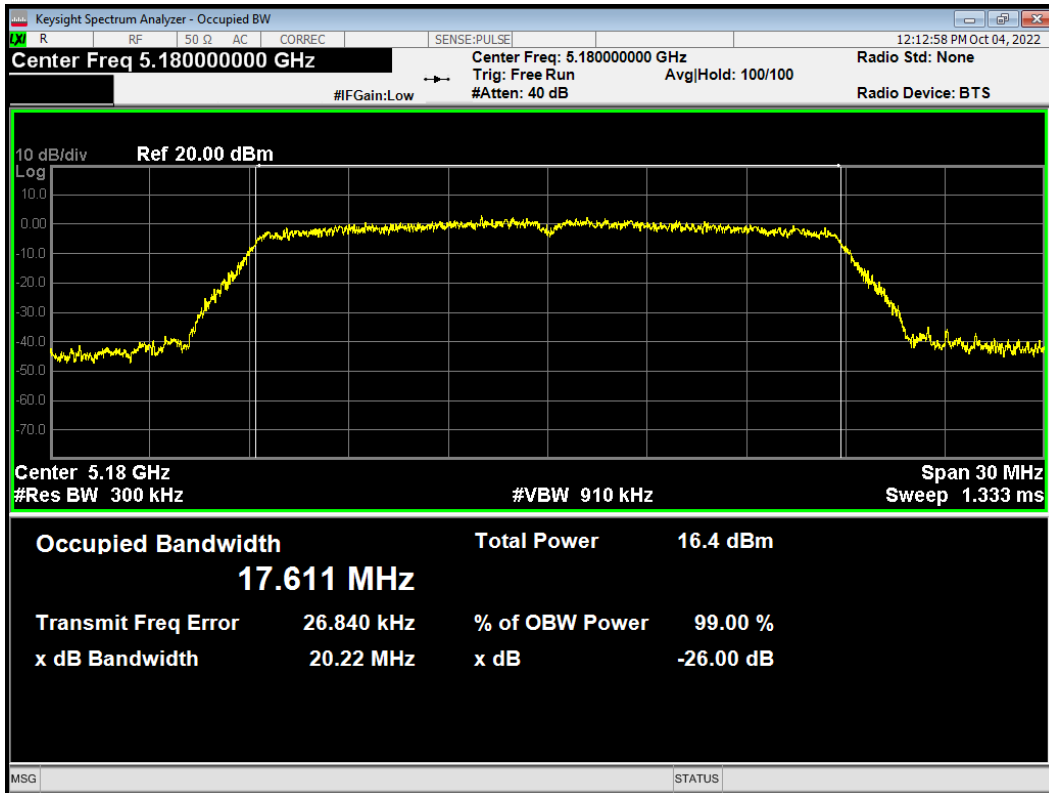




OBW 802.11a 5240MHz

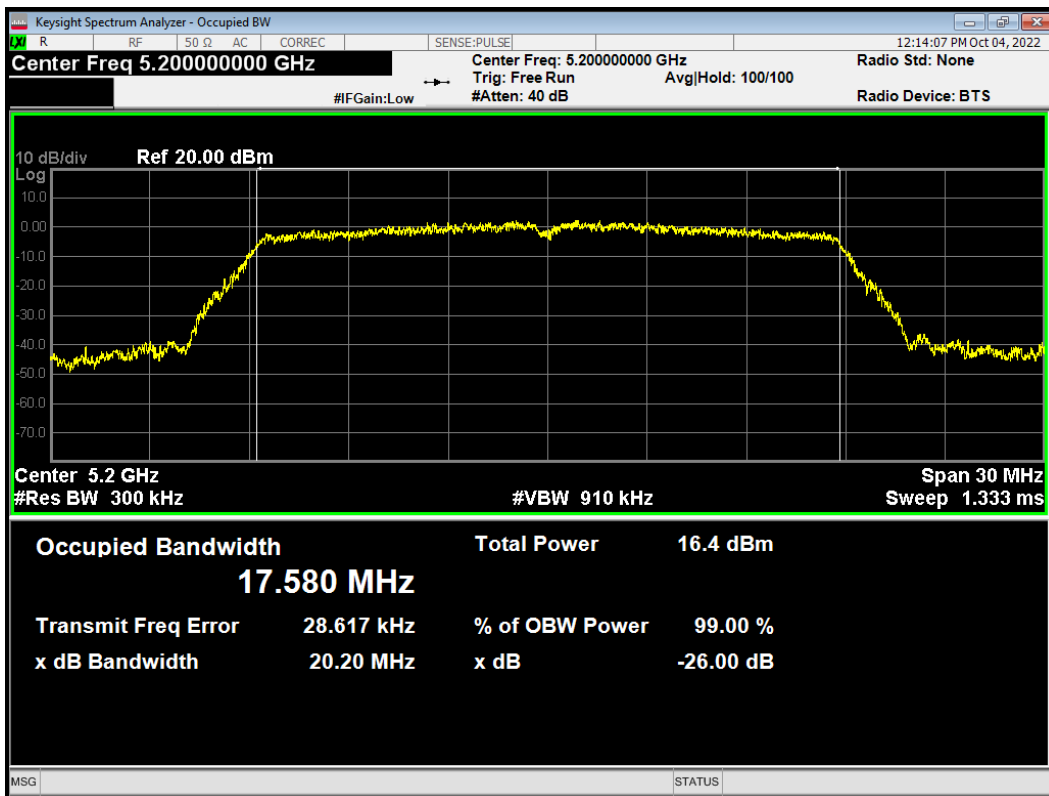


OBW 802.11ac (VHT20) 5180MHz

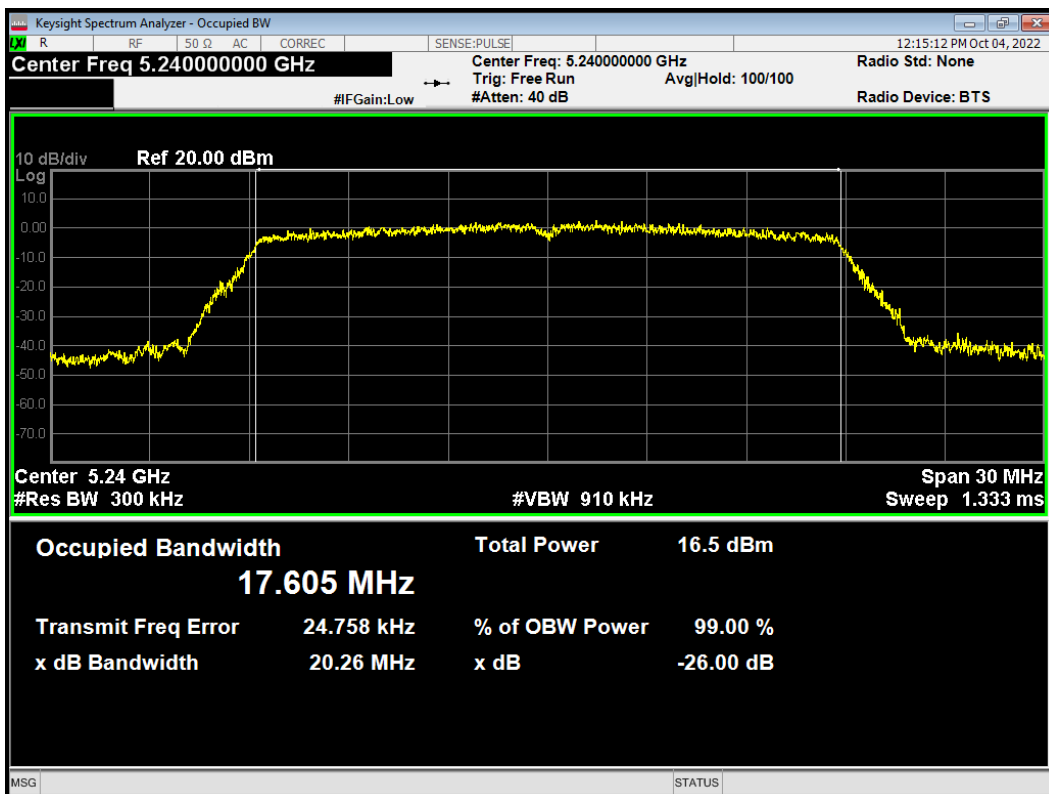




OBW 802.11ac (VHT20) 5200MHz

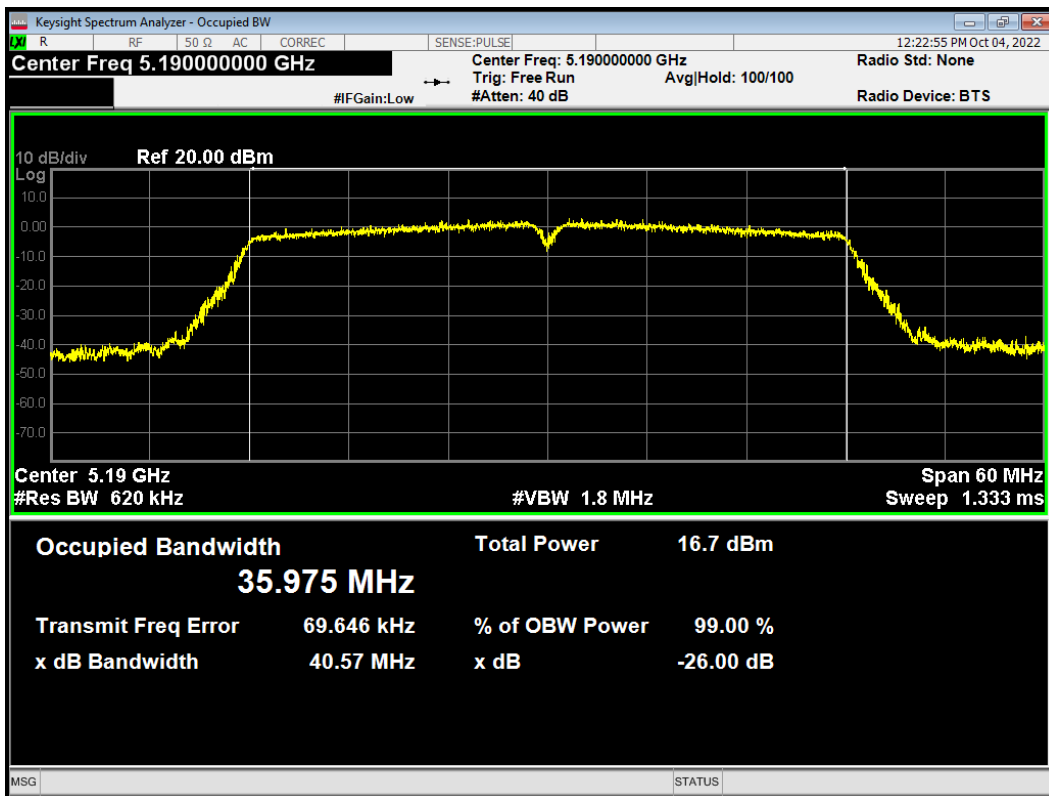


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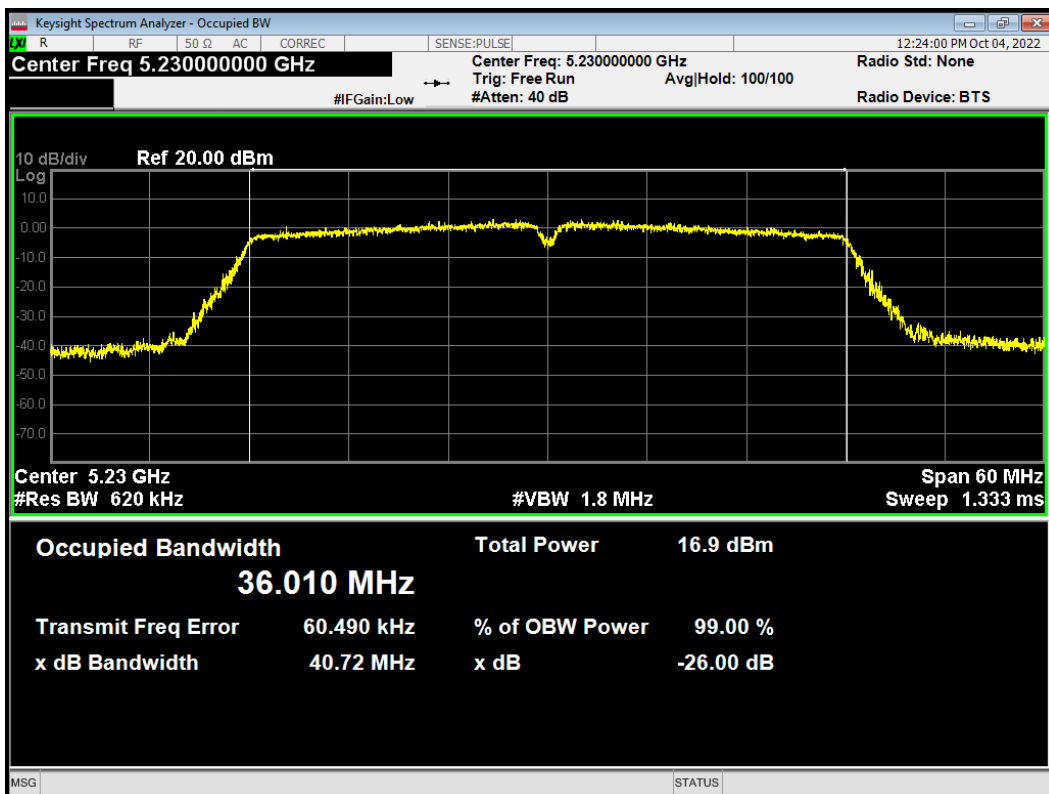




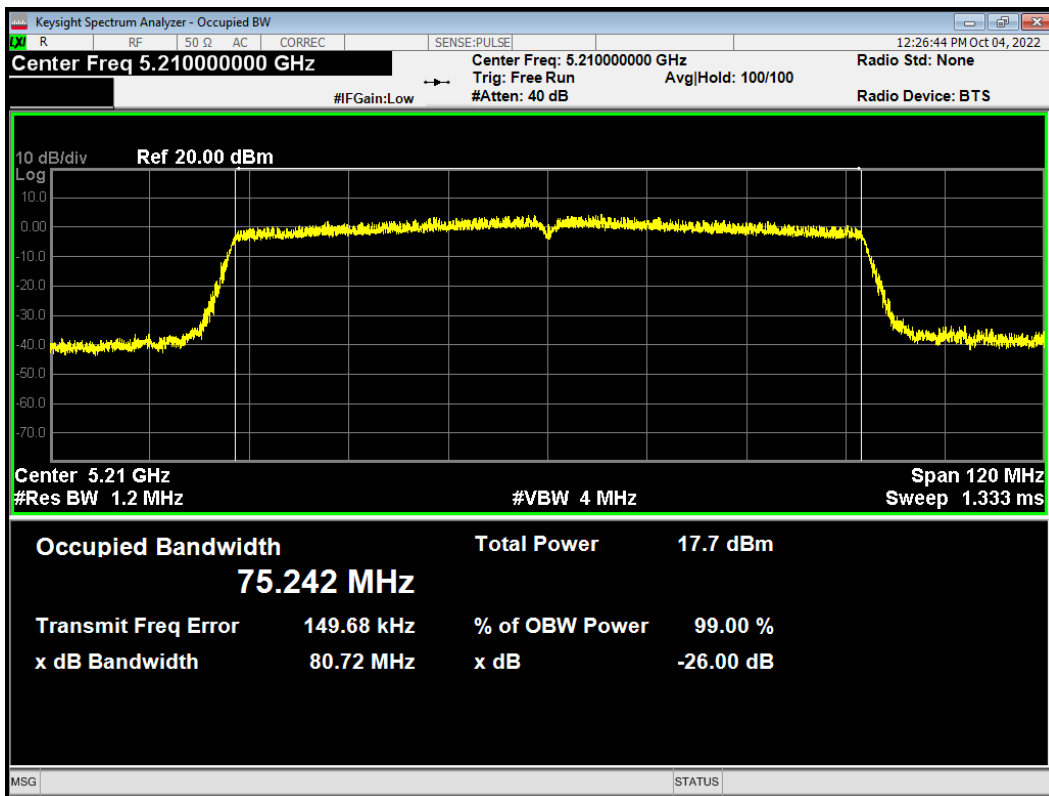
OBW 802.11ac (VHT40) 5190MHz



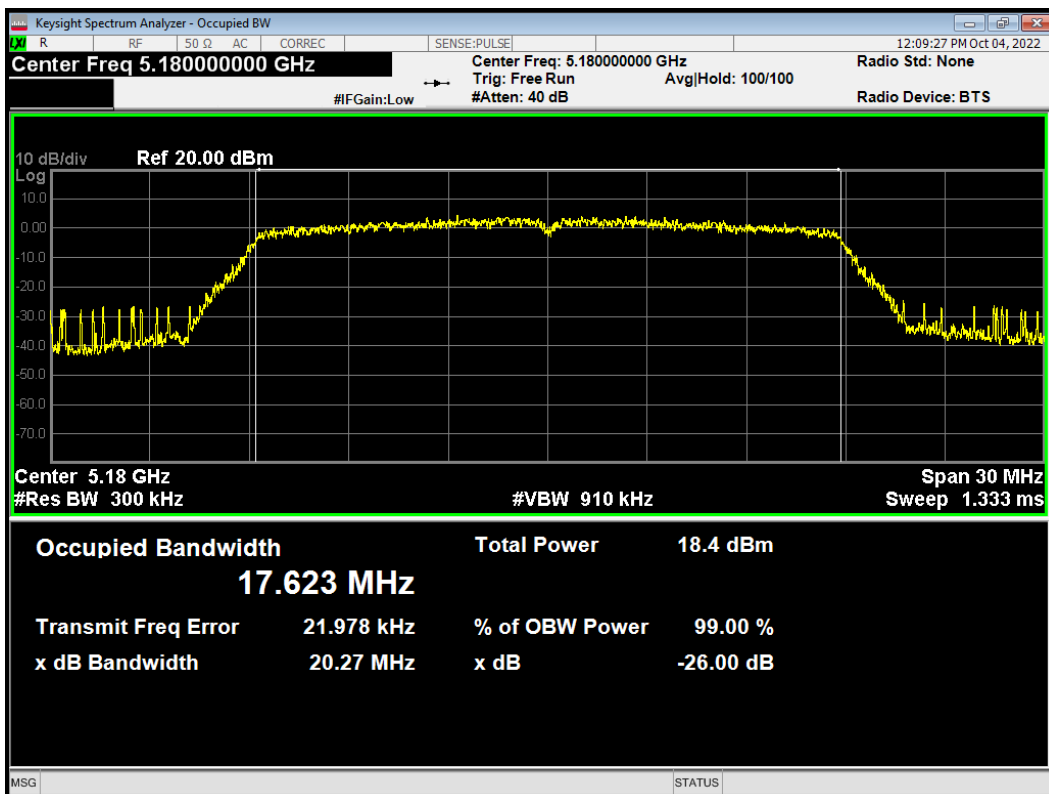
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OBW 802.11ac (VHT80) 5210MHz

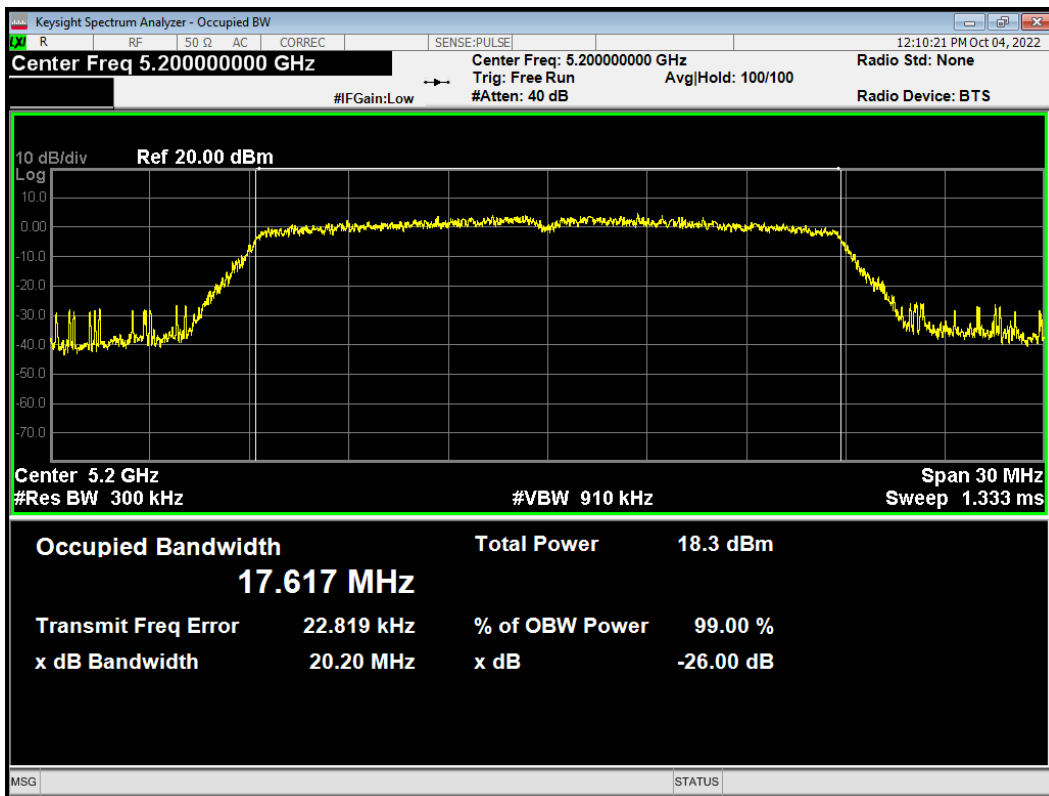


OBW 802.11n (HT20) 5180MHz

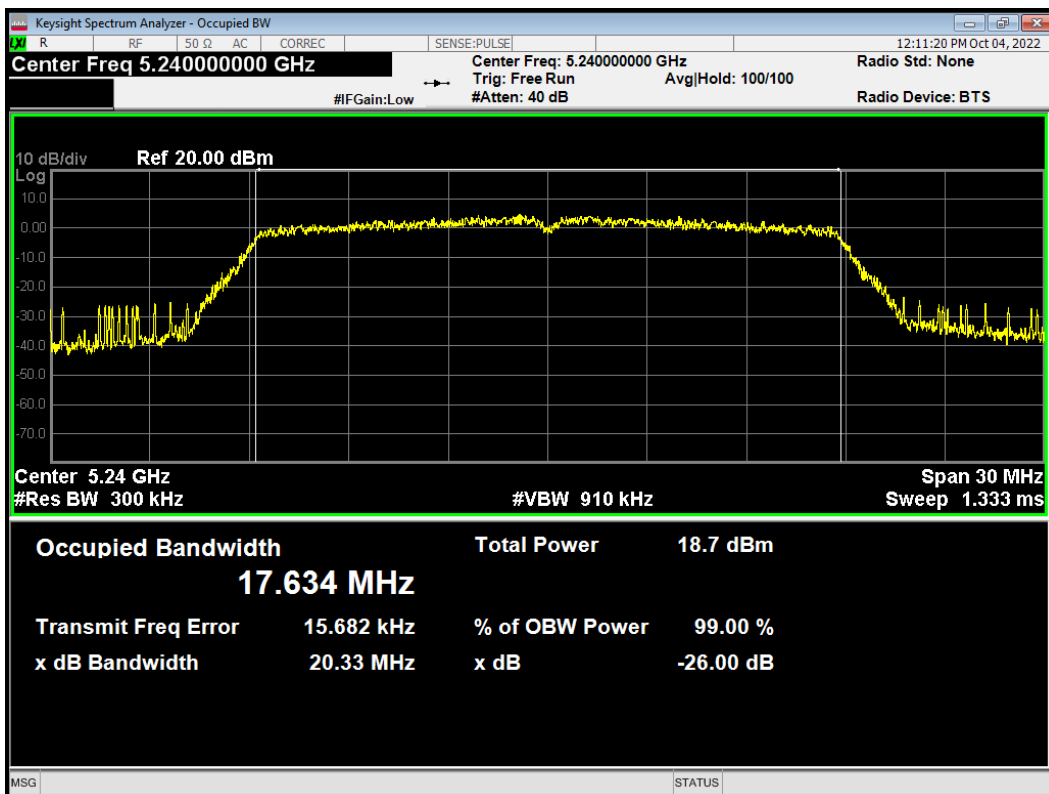




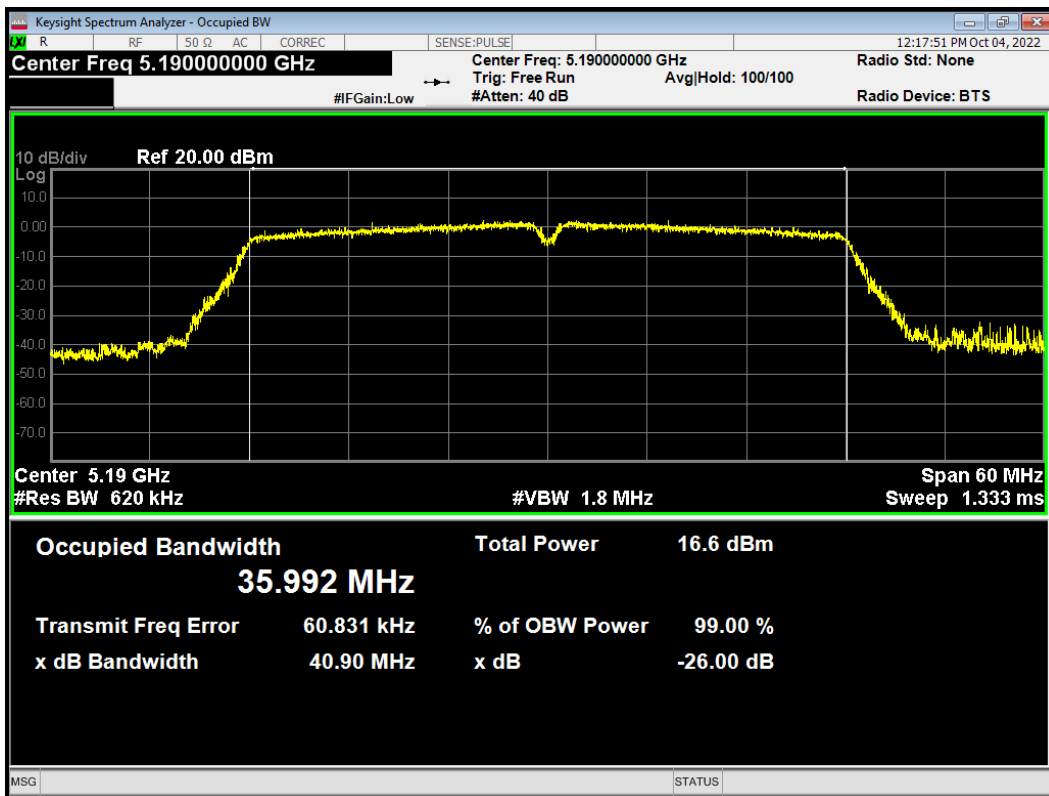
OBW 802.11n (HT20) 5200MHz



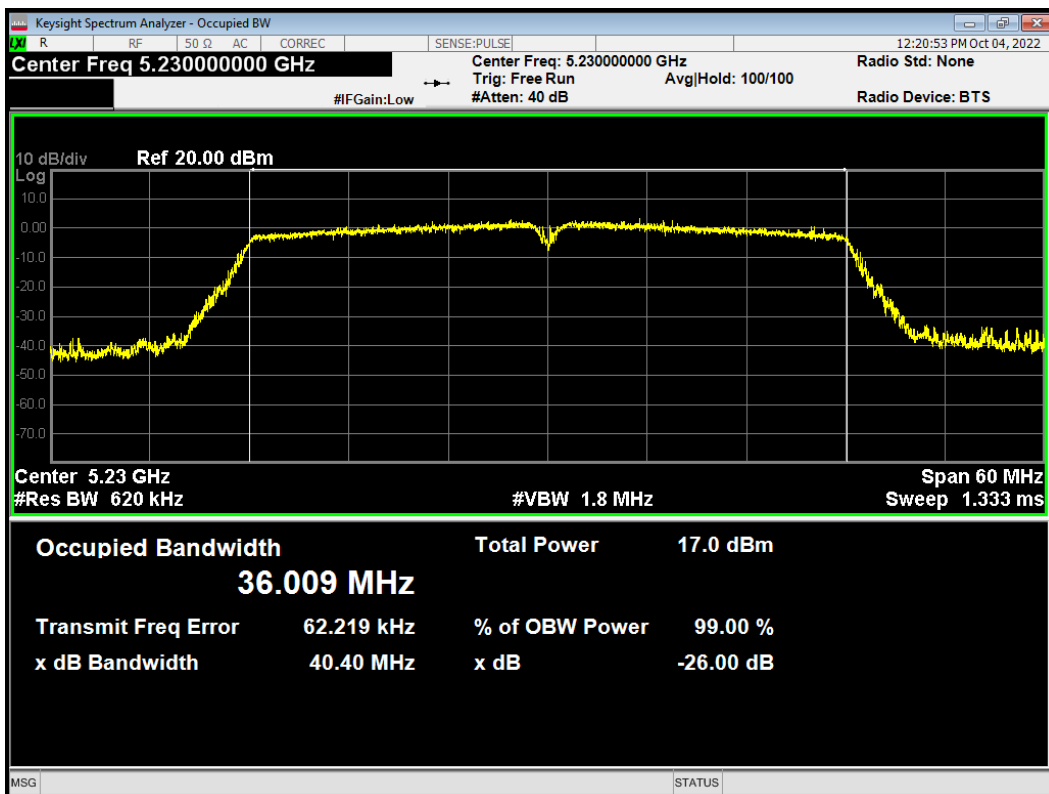
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OBW 802.11n (HT40) 5190MHz



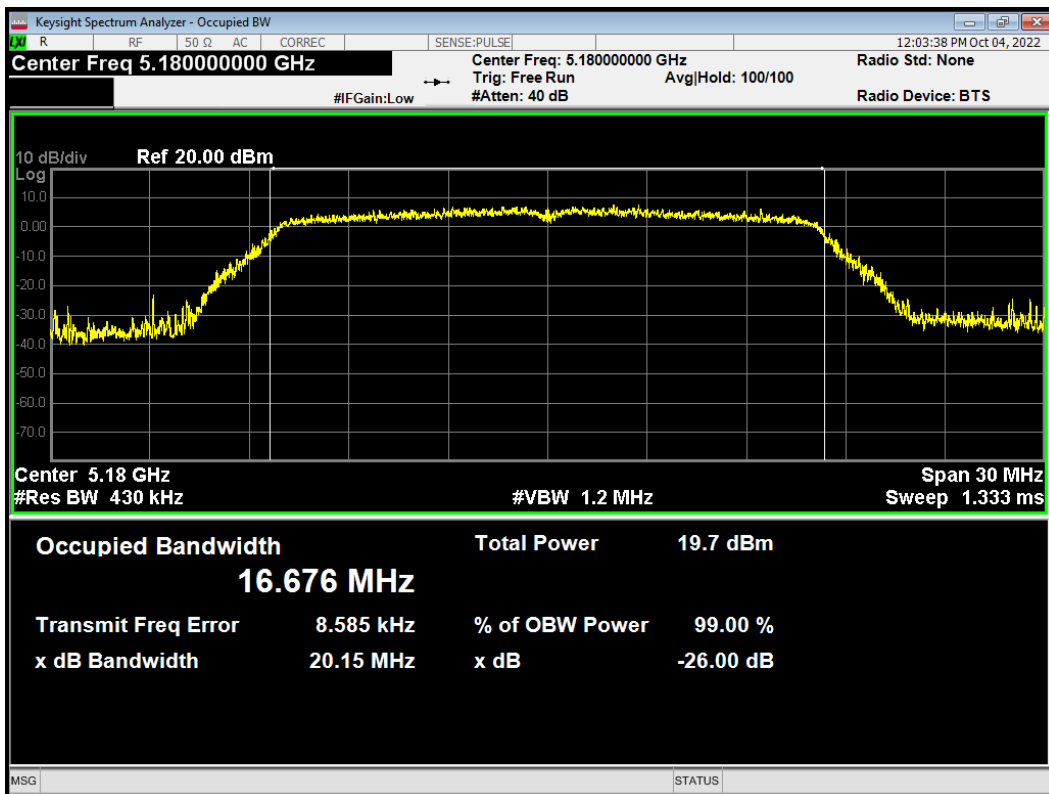
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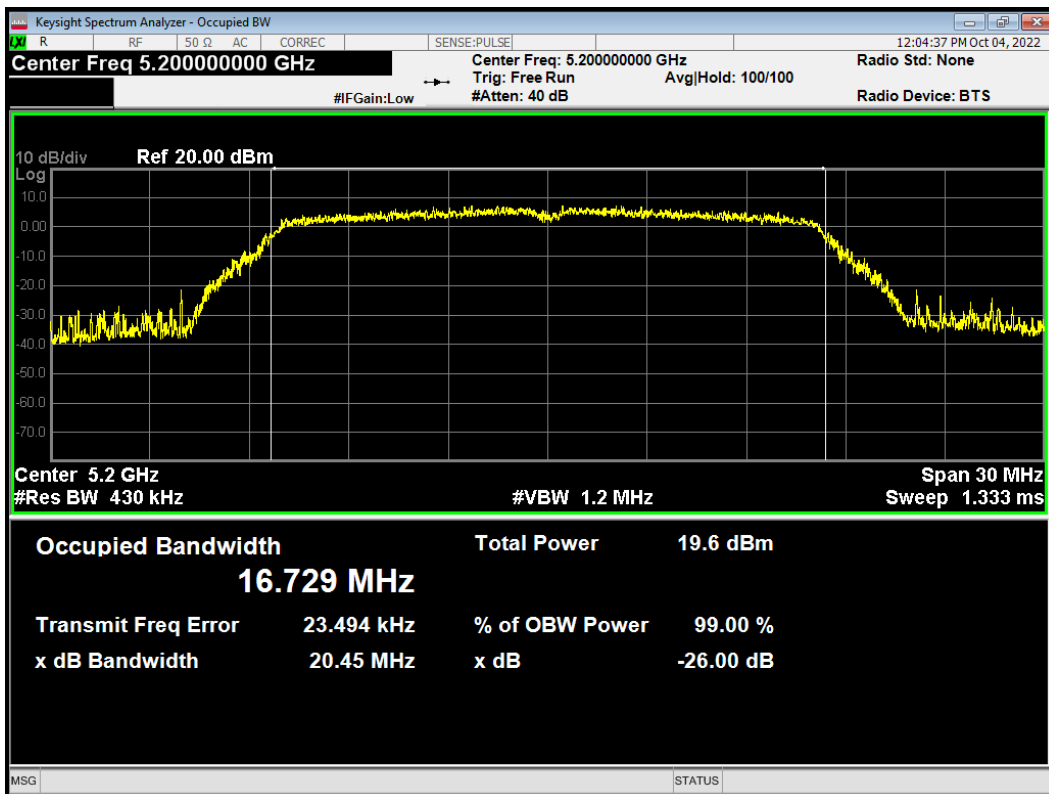


Minimum -26 dB bandwidth

-26dB Bandwidth 802.11a 5180MHz

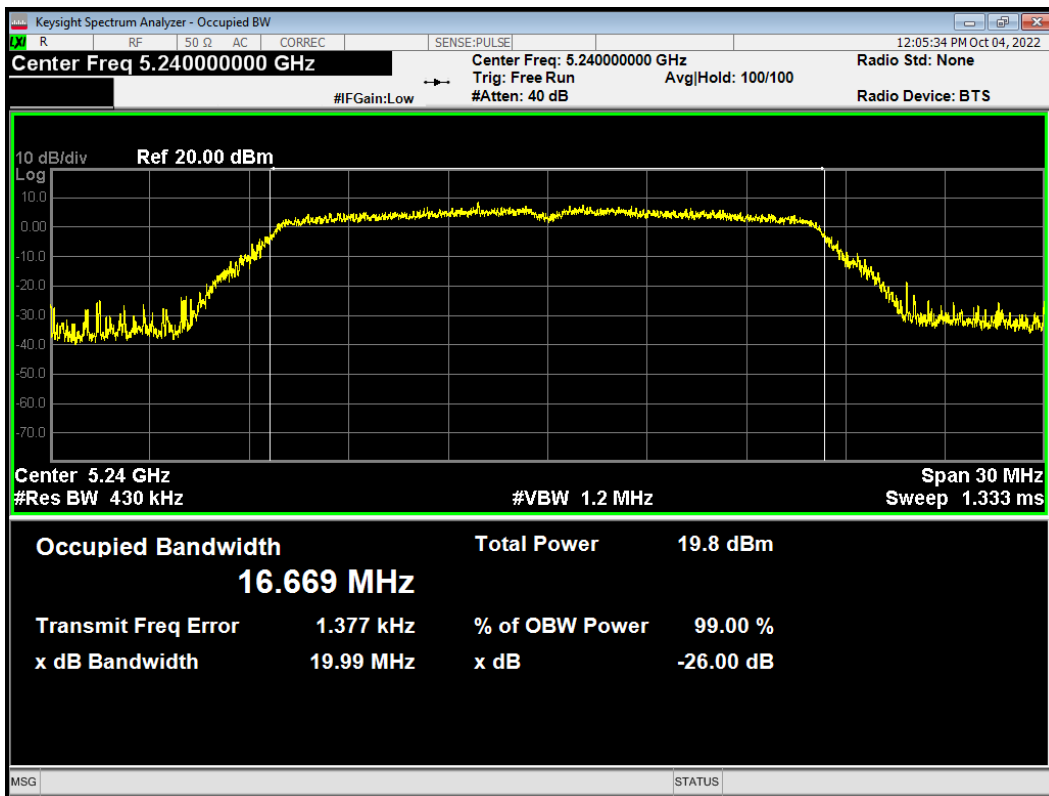


-26dB Bandwidth 802.11a 5200MHz

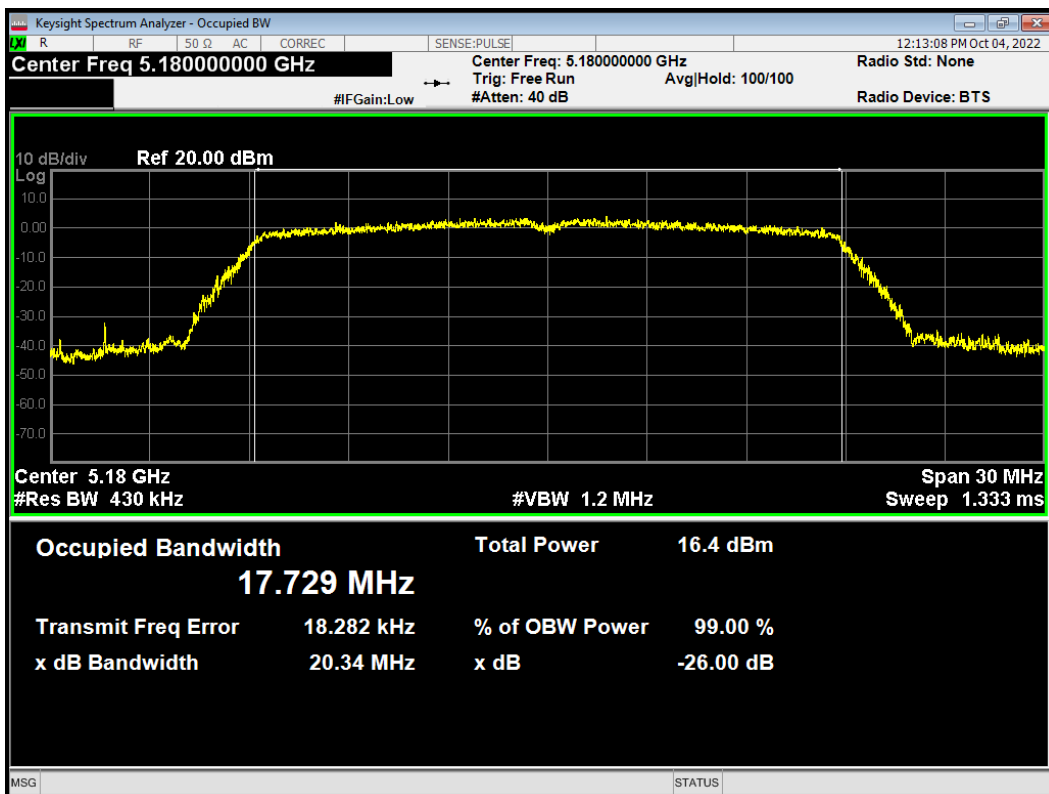




-26dB Bandwidth 802.11a 5240MHz

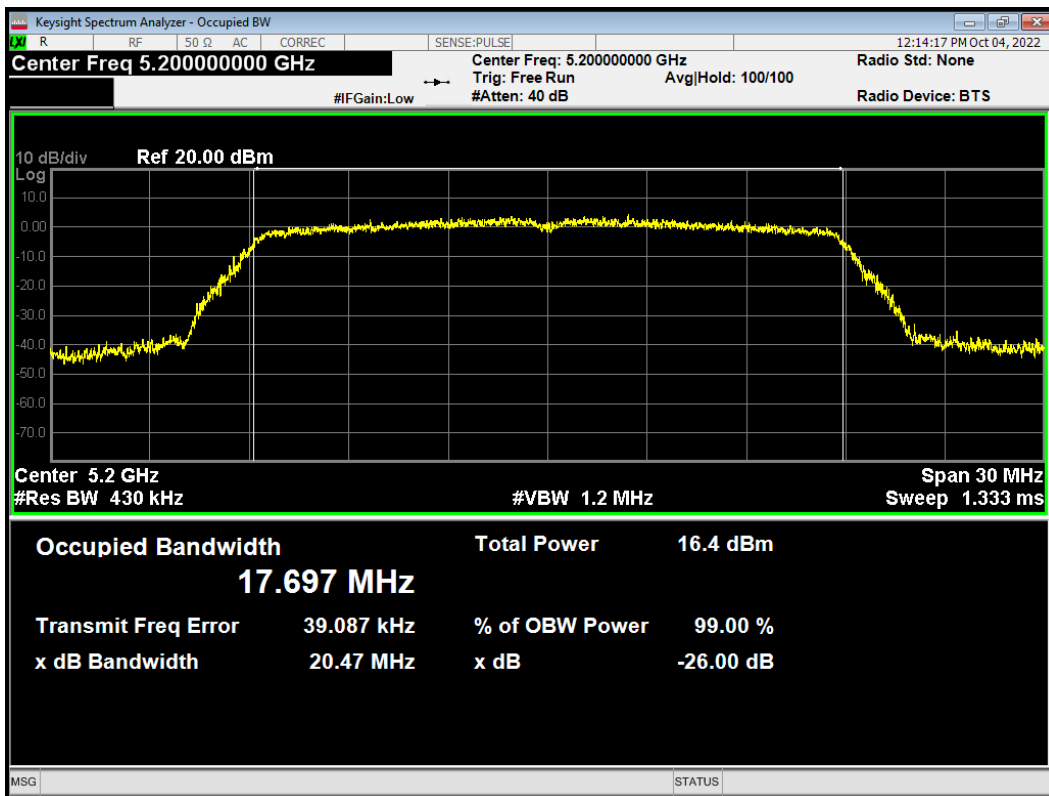


-26dB Bandwidth 802.11ac (VHT20) 5180MHz

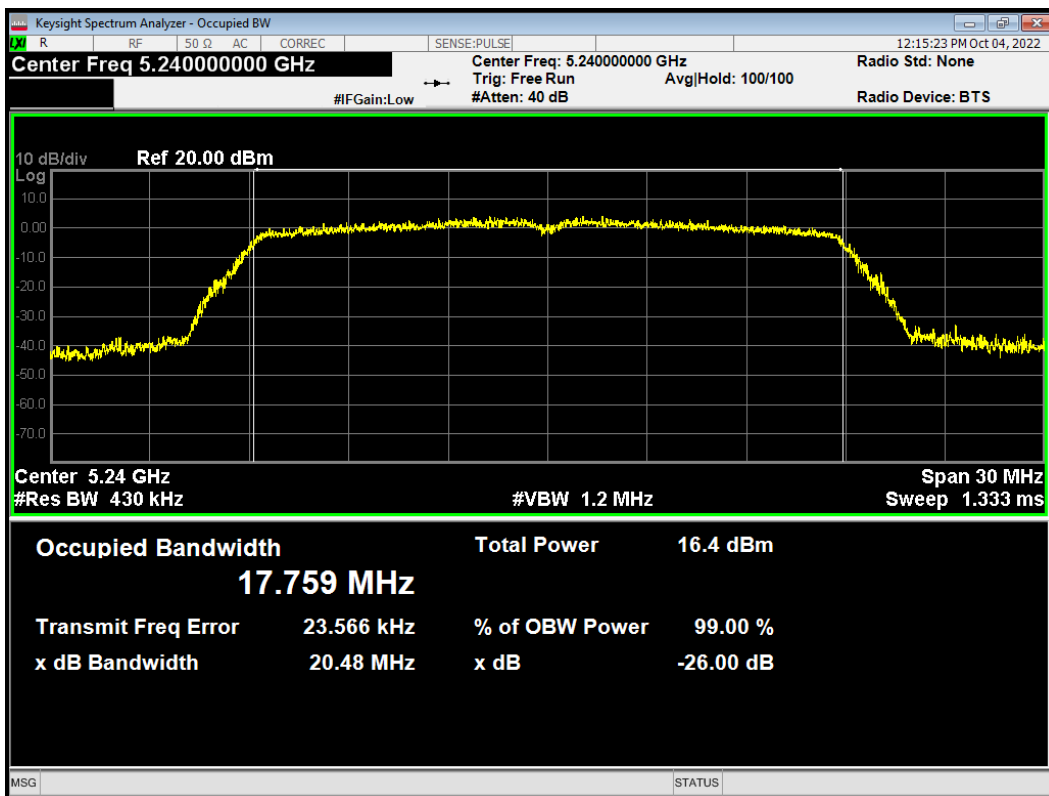




-26dB Bandwidth 802.11ac (VHT20) 5200MHz



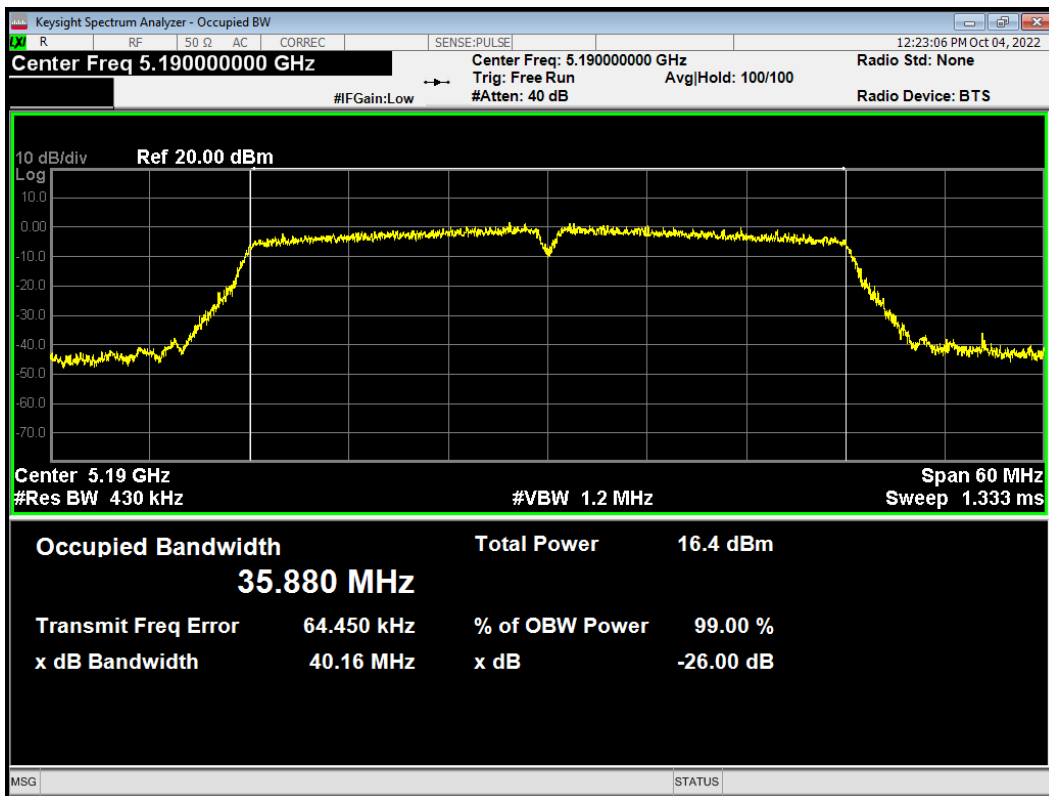
-26dB Bandwidth 802.11ac (VHT20) 5240MHz



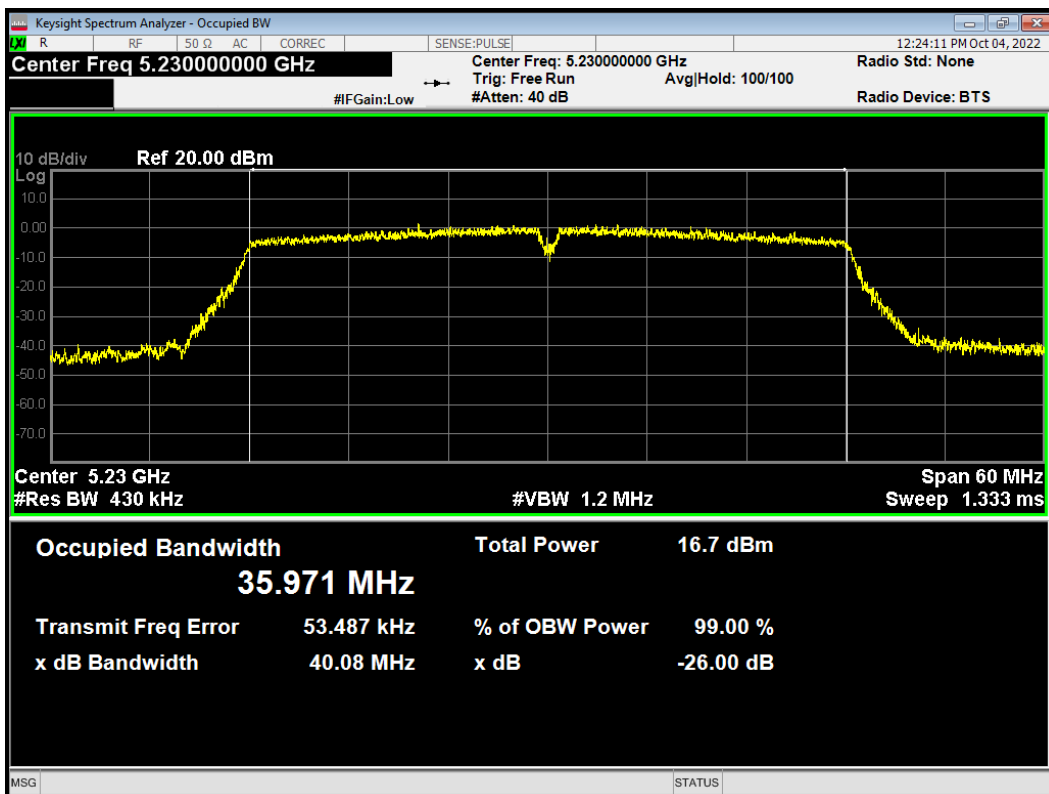




-26dB Bandwidth 802.11ac (VHT40) 5190MHz

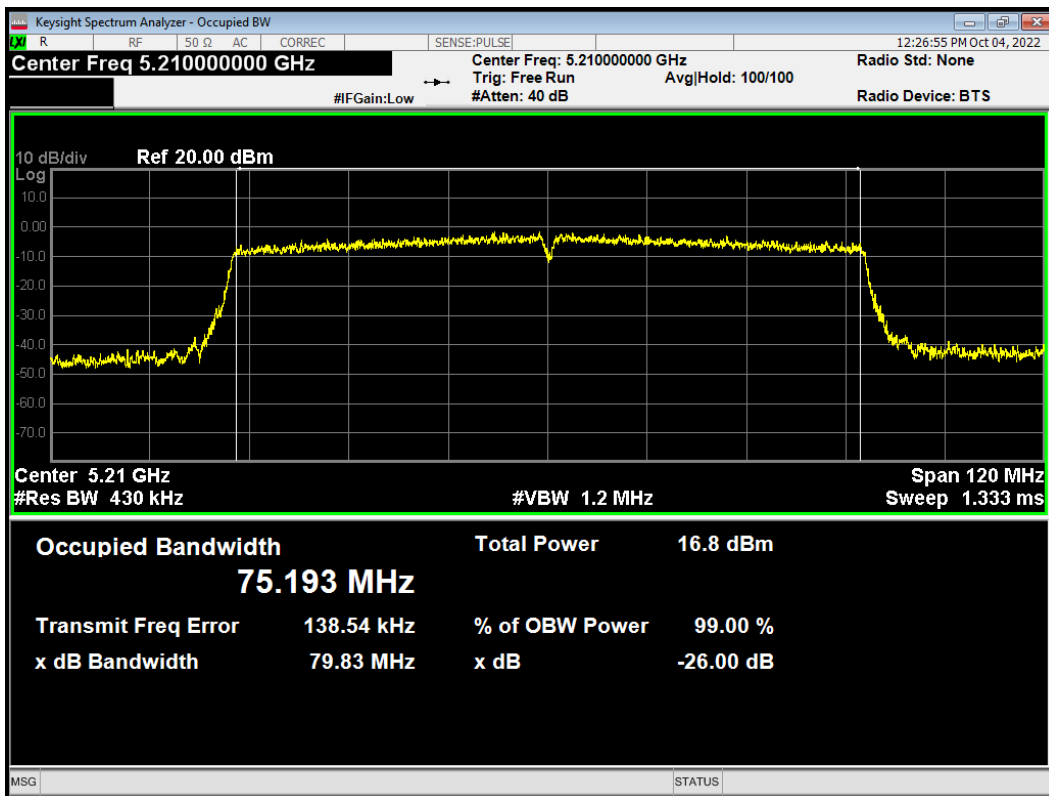


-26dB Bandwidth 802.11ac (VHT40) 5230MHz

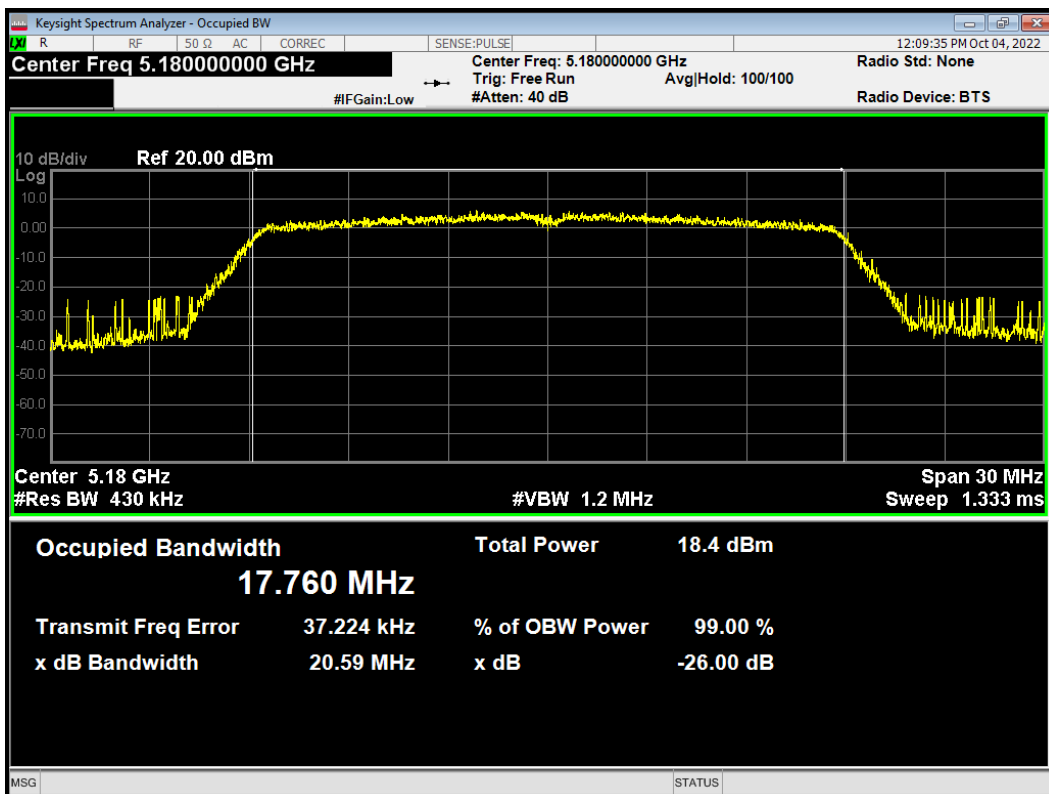




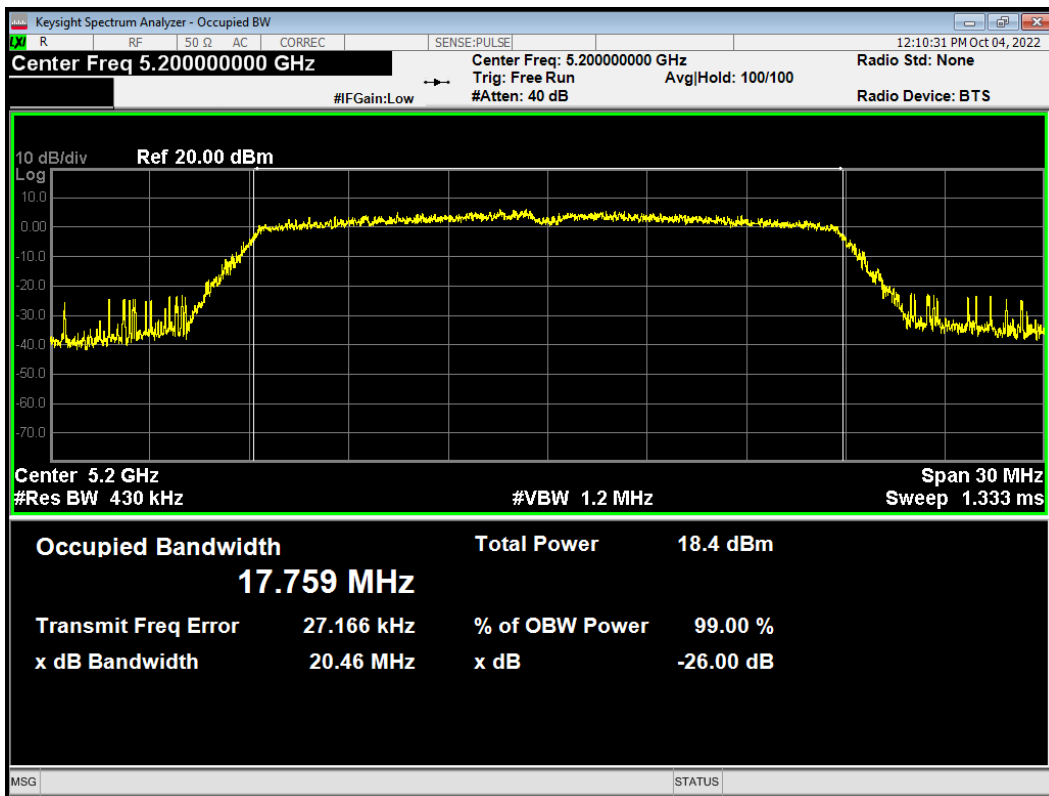
-26dB Bandwidth 802.11ac (VHT80) 5210MHz



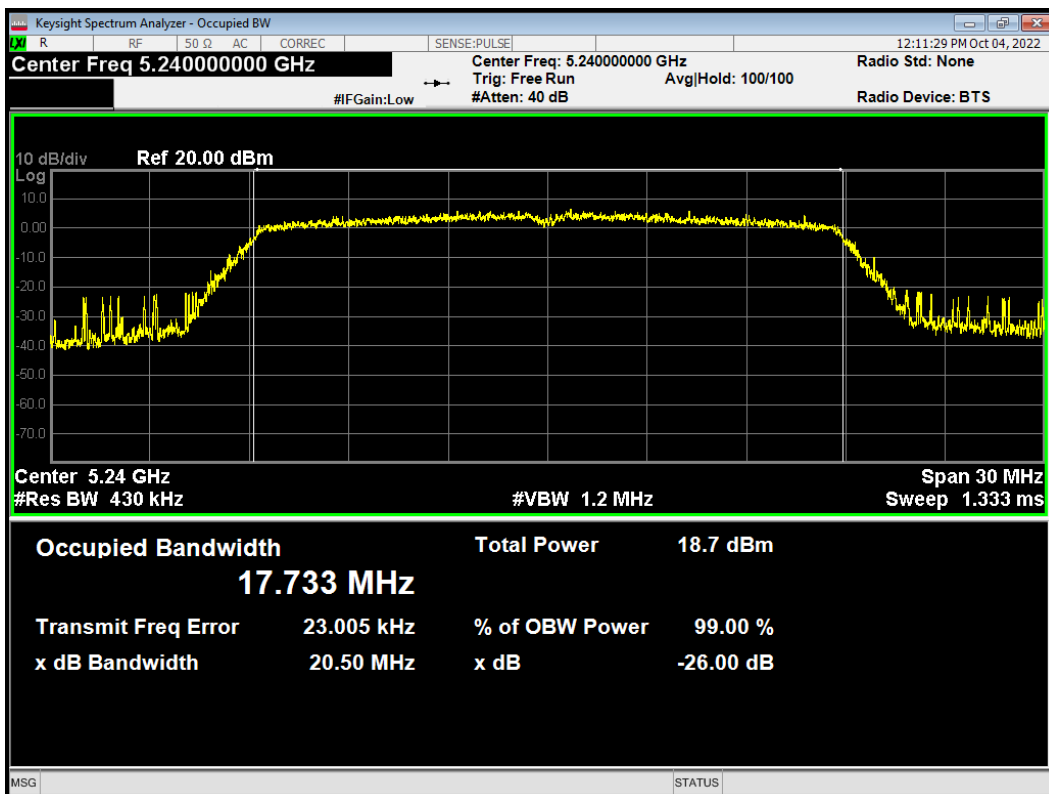
-26dB Bandwidth 802.11n (HT20) 5180MHz



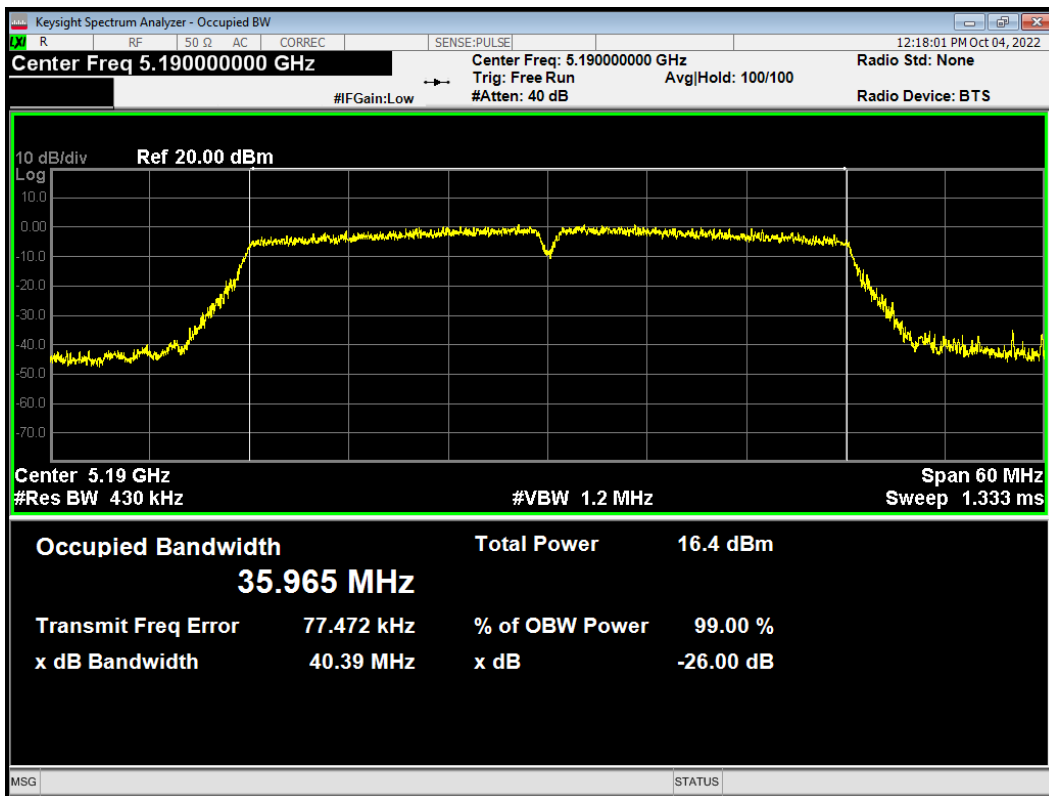
-26dB Bandwidth 802.11n (HT20) 5200MHz



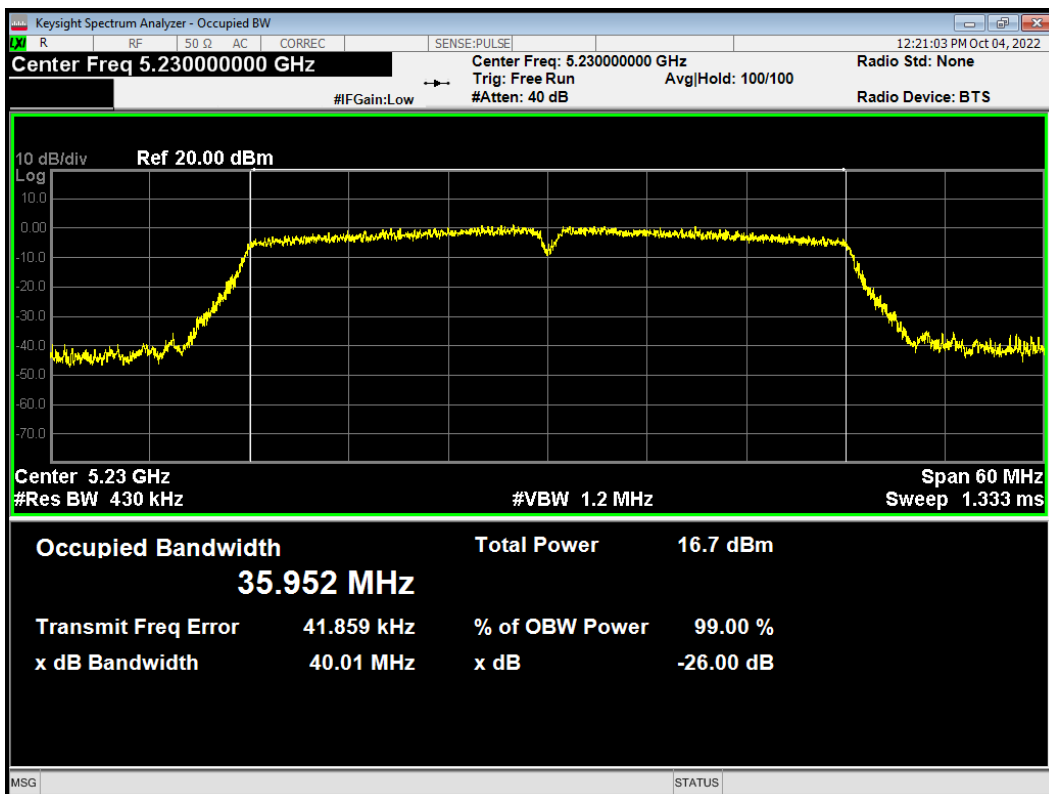
-26dB Bandwidth 802.11n (HT20) 5240MHz



-26dB Bandwidth 802.11n (HT40) 5190MHz



-26dB Bandwidth 802.11n (HT40) 5230MHz

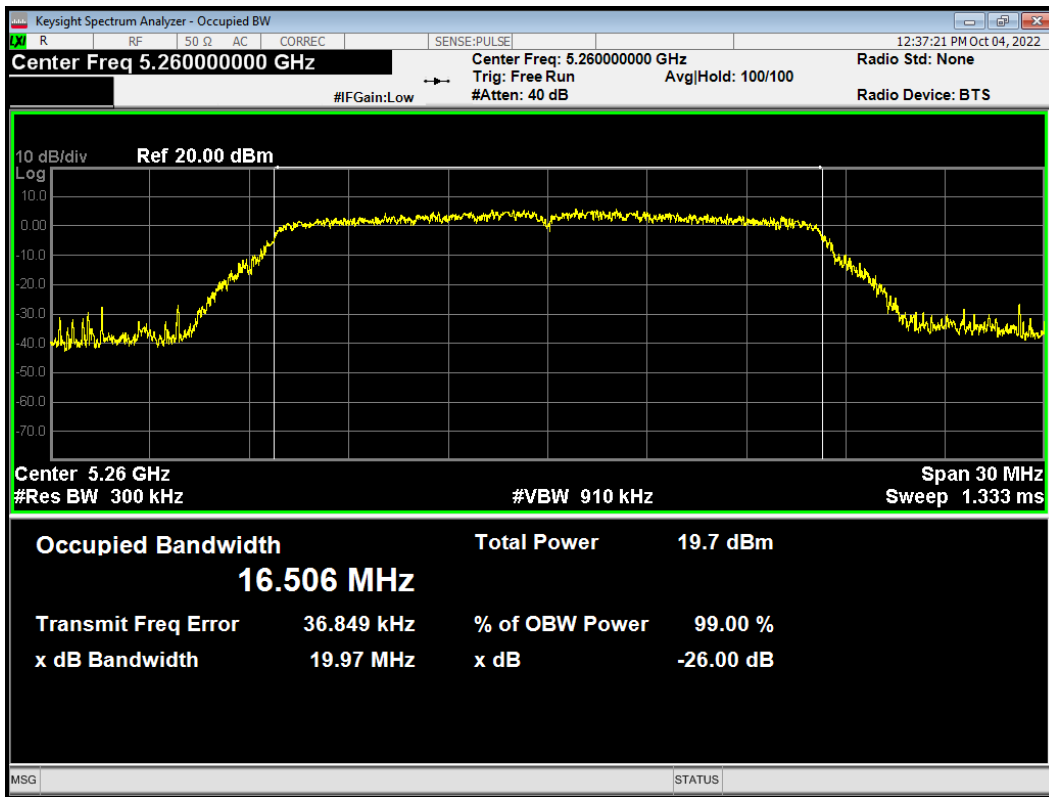




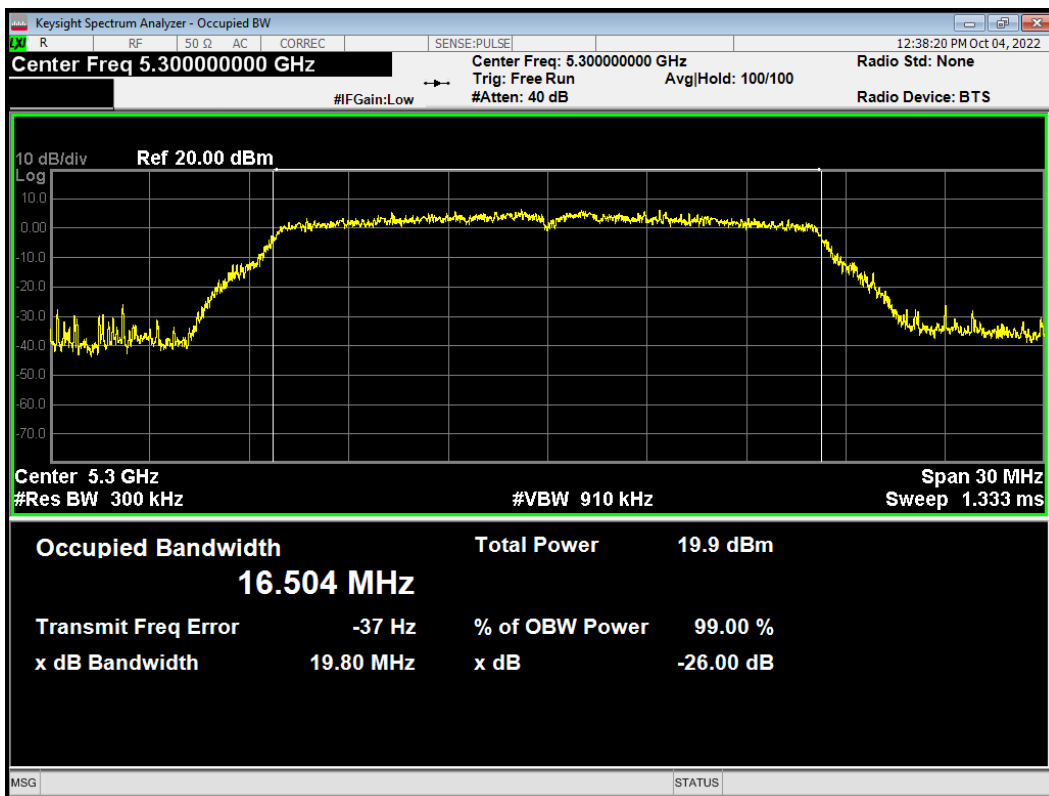
U-NII-2A

99% bandwidth

OBW 802.11a 5260MHz

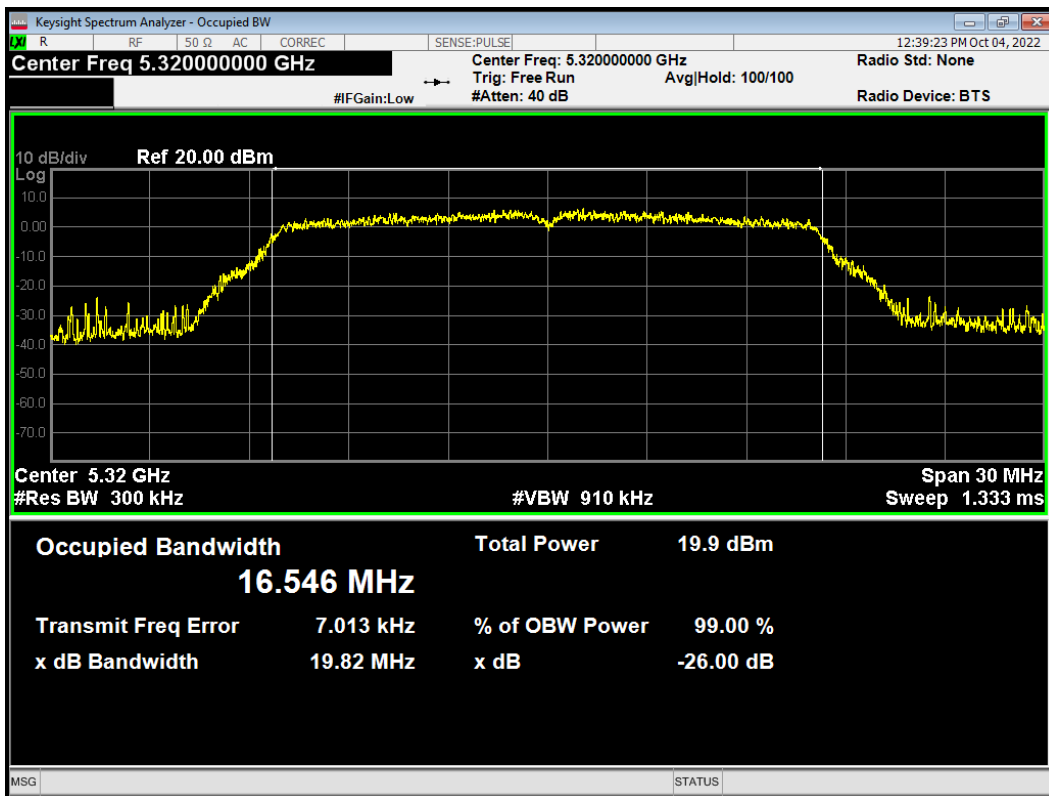


OBW 802.11a 5300MHz

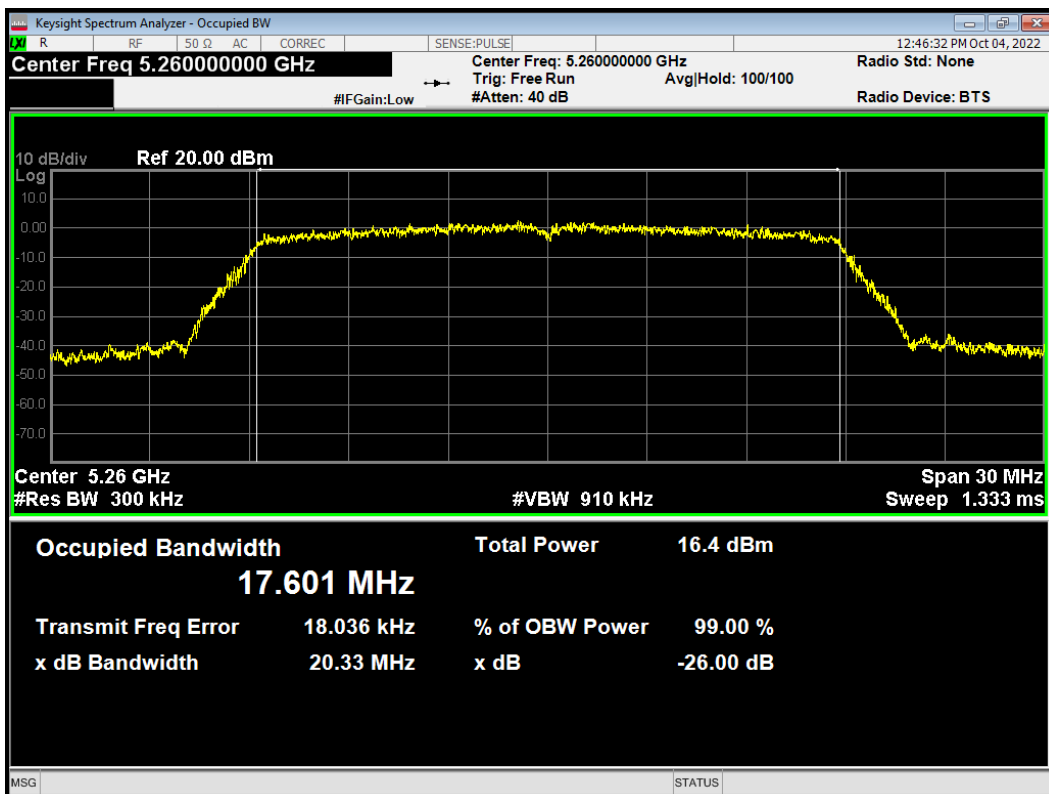




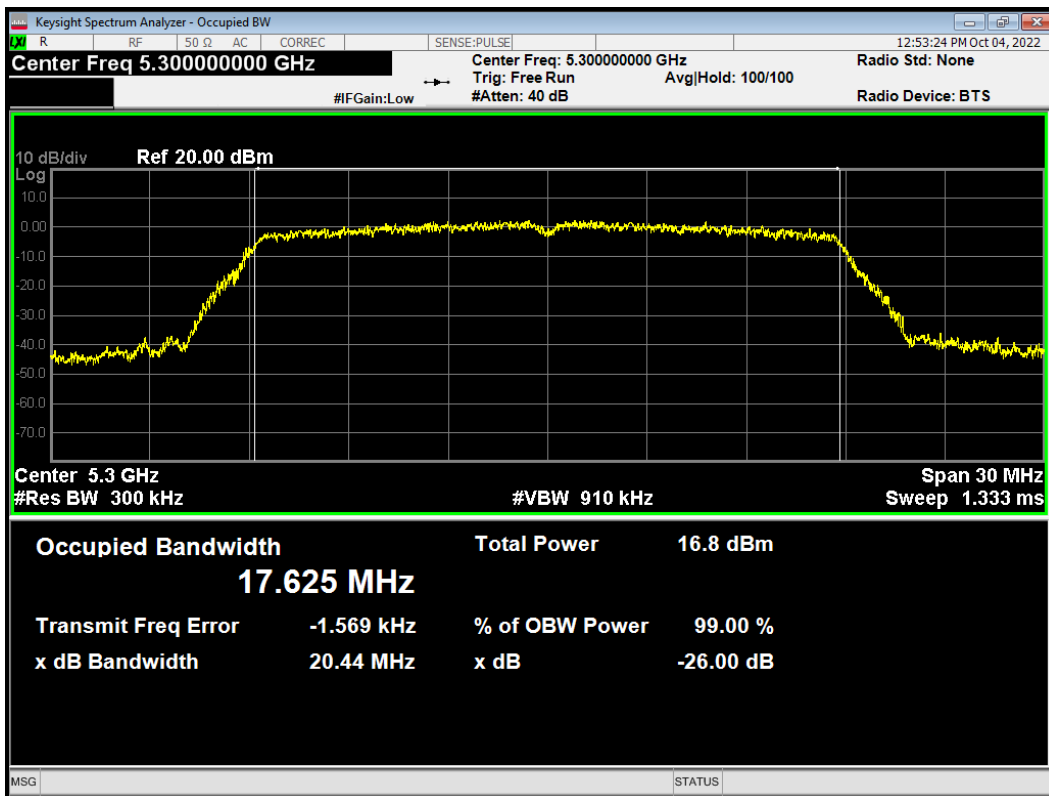
OBW 802.11a 5320MHz



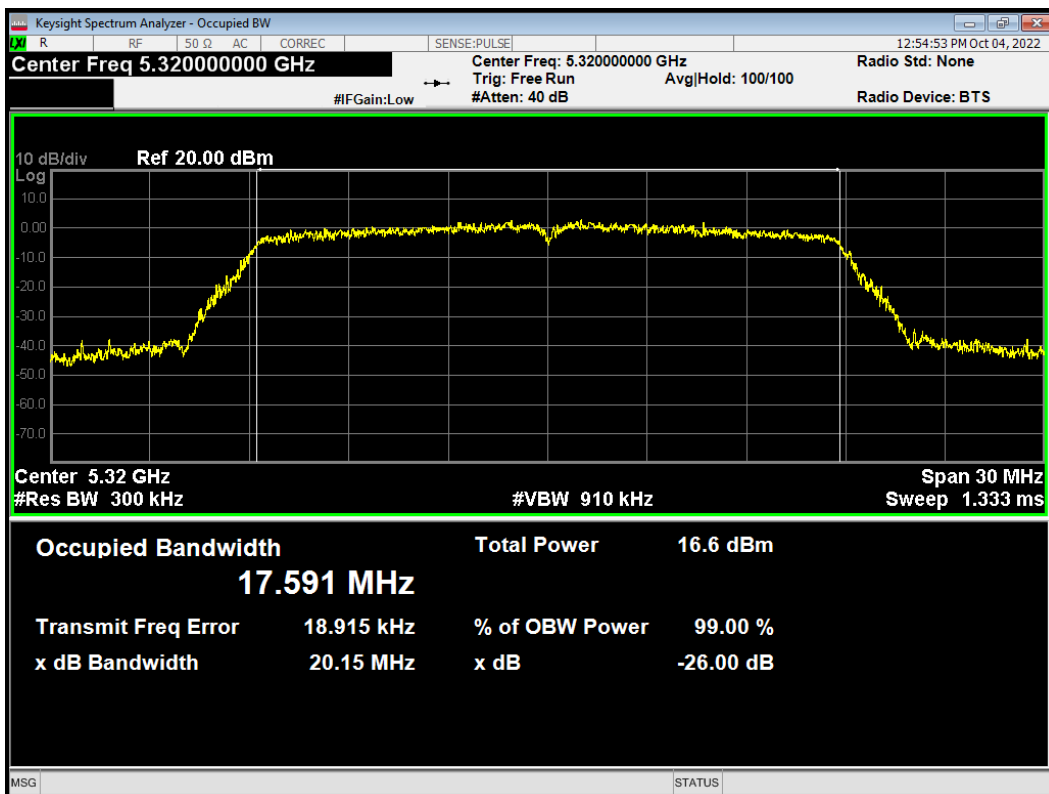
OBW 802.11ac (VHT20) 5260MHz



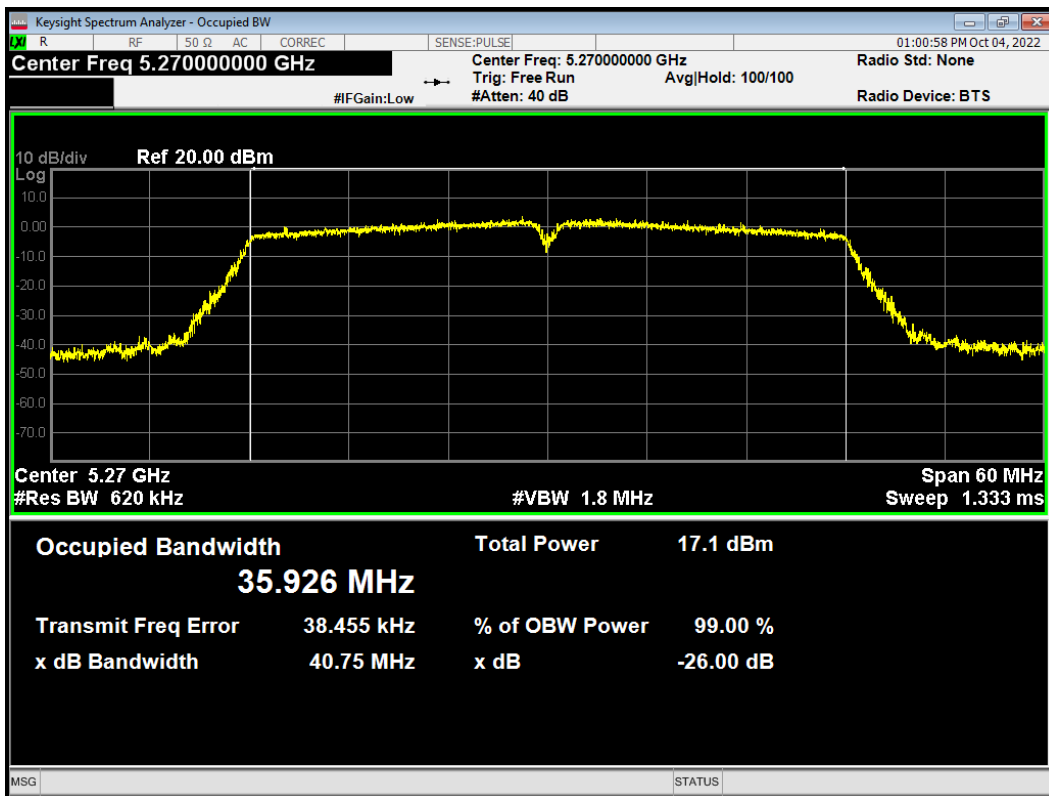
OBW 802.11ac (VHT20) 5300MHz



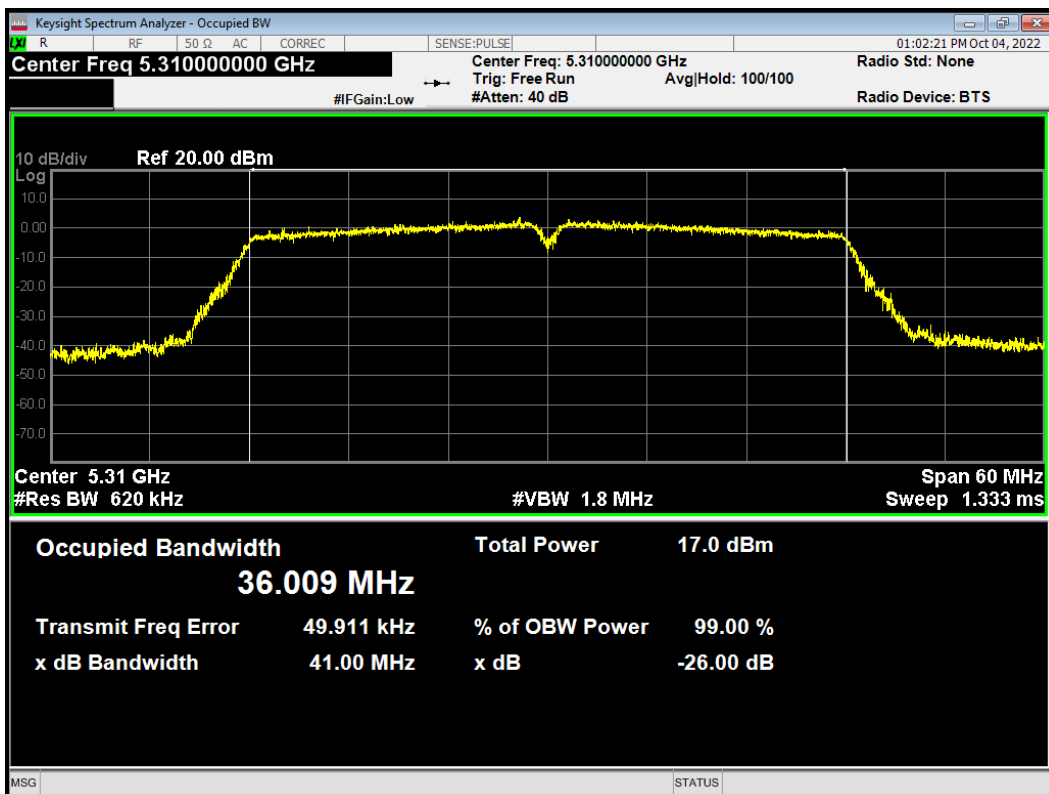
OBW 802.11ac (VHT20) 5320MHz



OBW 802.11ac (VHT40) 5270MHz

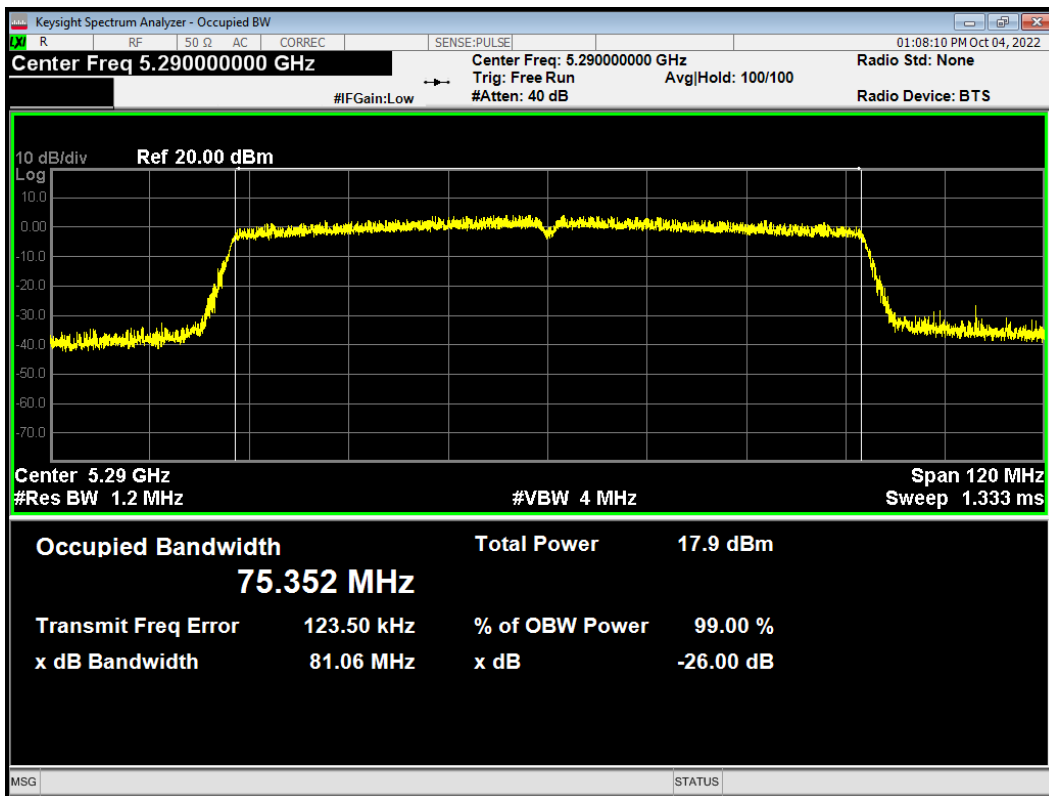


OBW 802.11ac (VHT40) 5310MHz

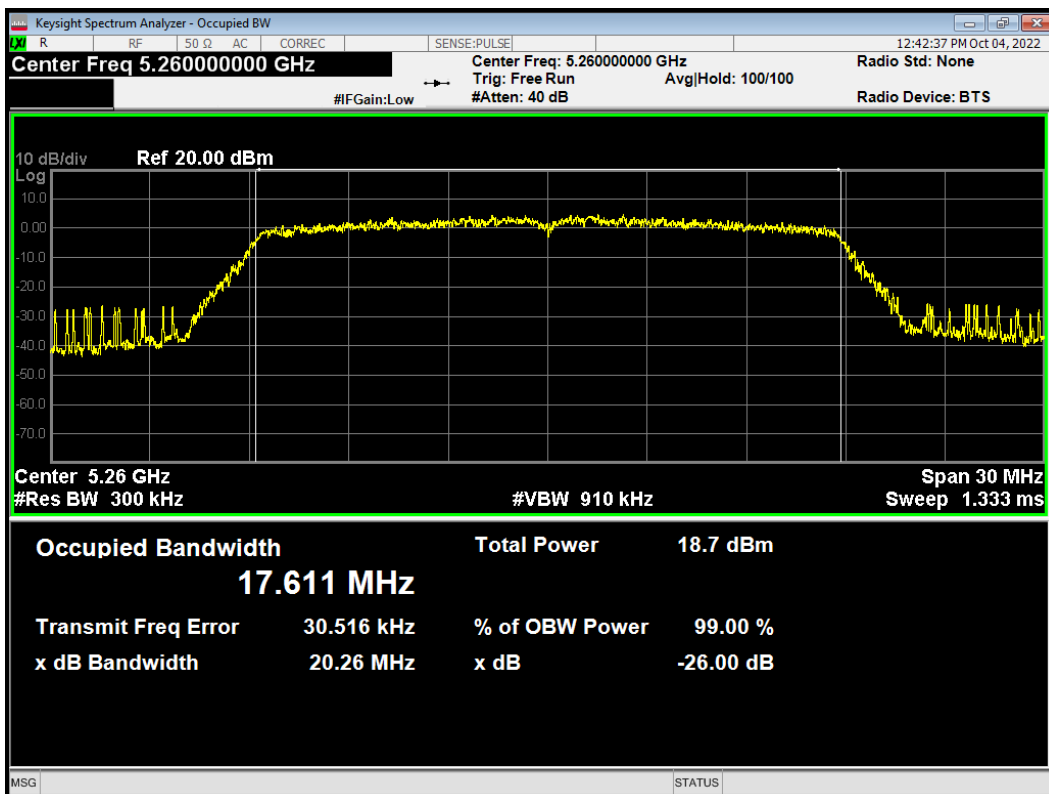




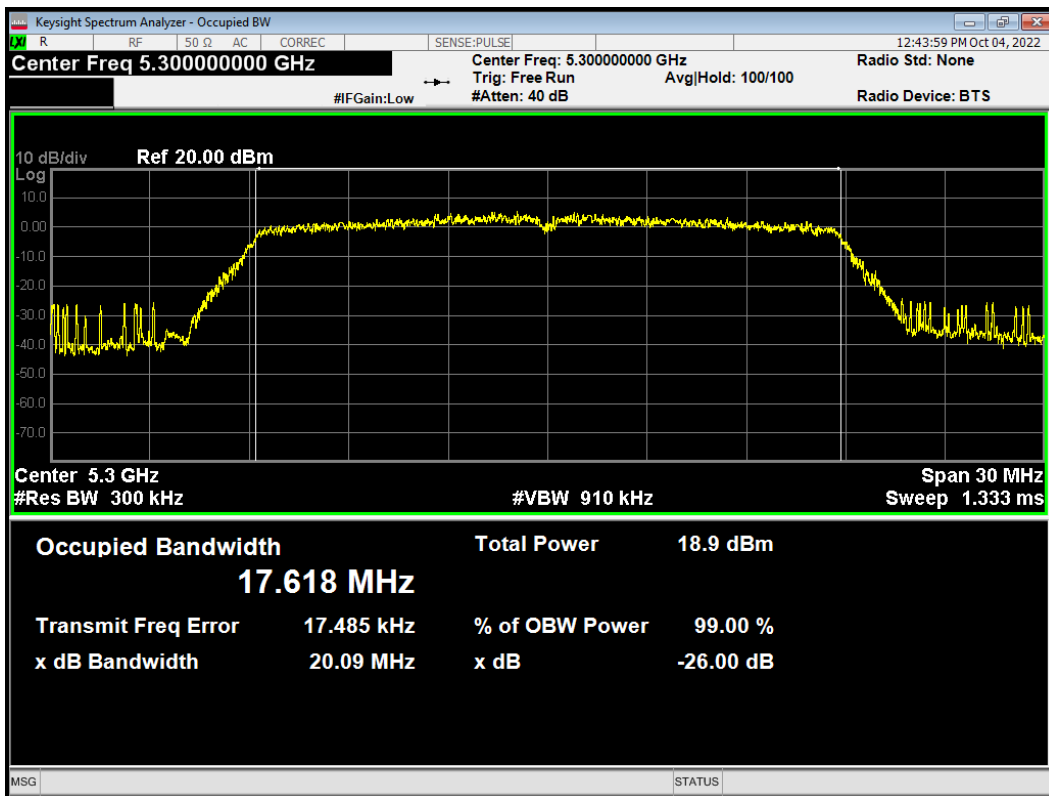
OBW 802.11ac (VHT80) 5290MHz



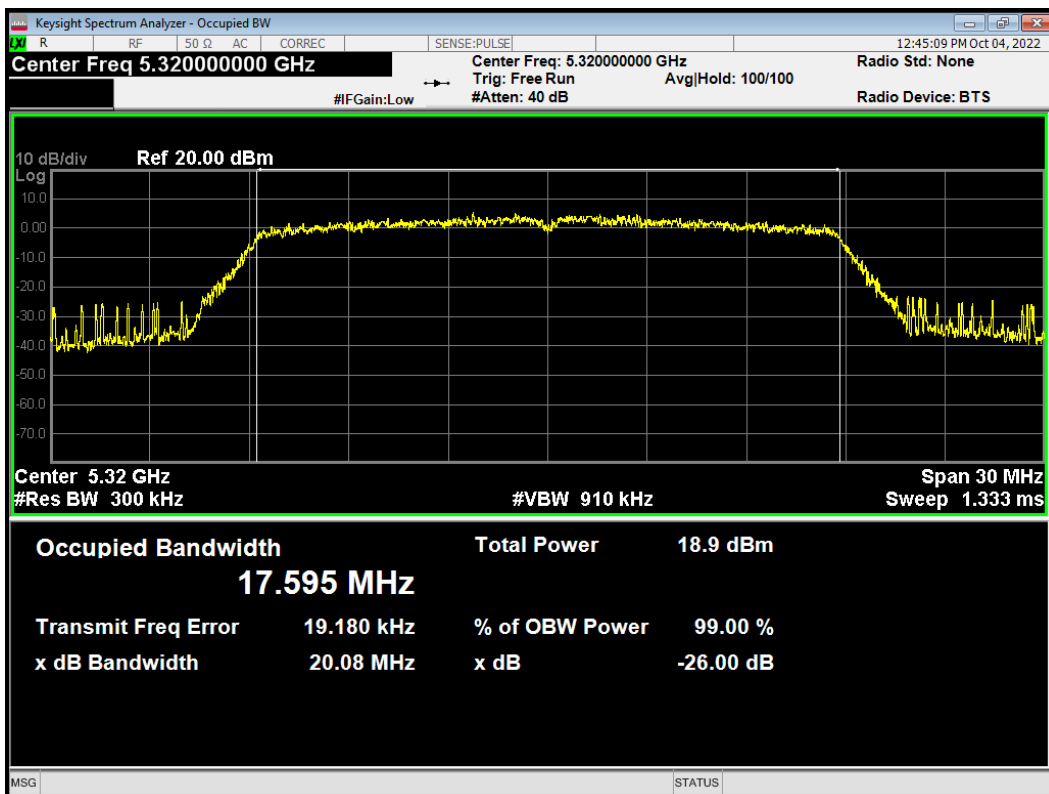
OBW 802.11n (HT20) 5260MHz



OBW 802.11n (HT20) 5300MHz

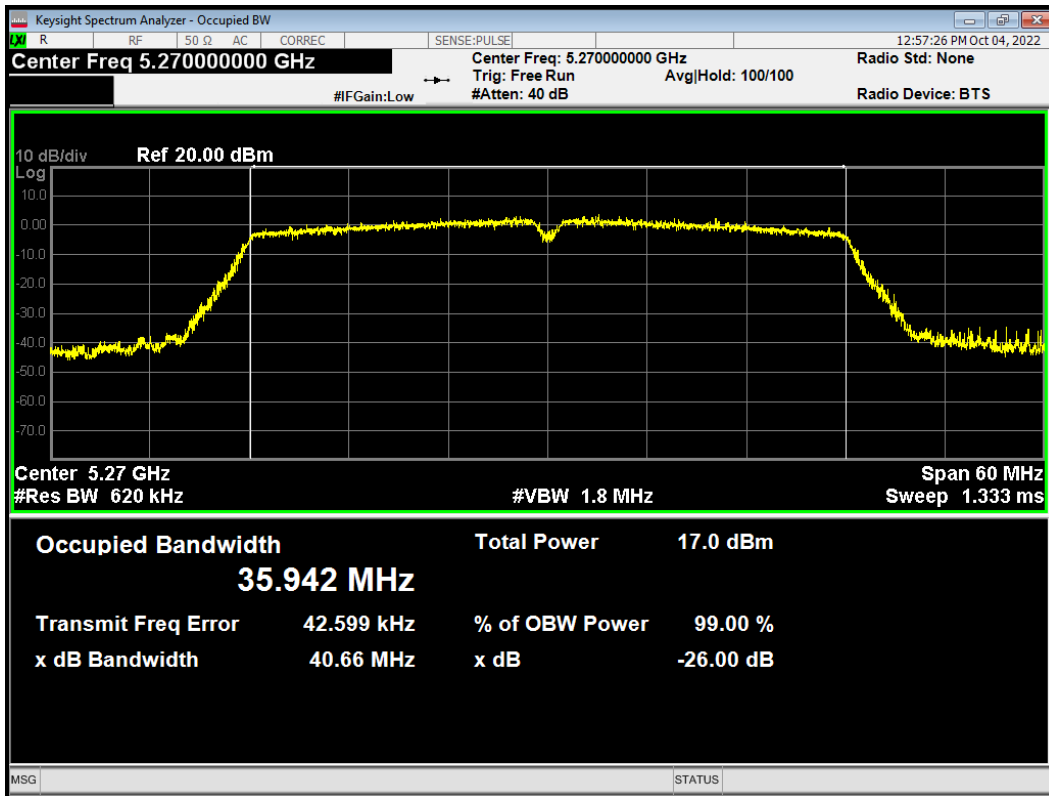


OBW 802.11n (HT20) 5320MHz

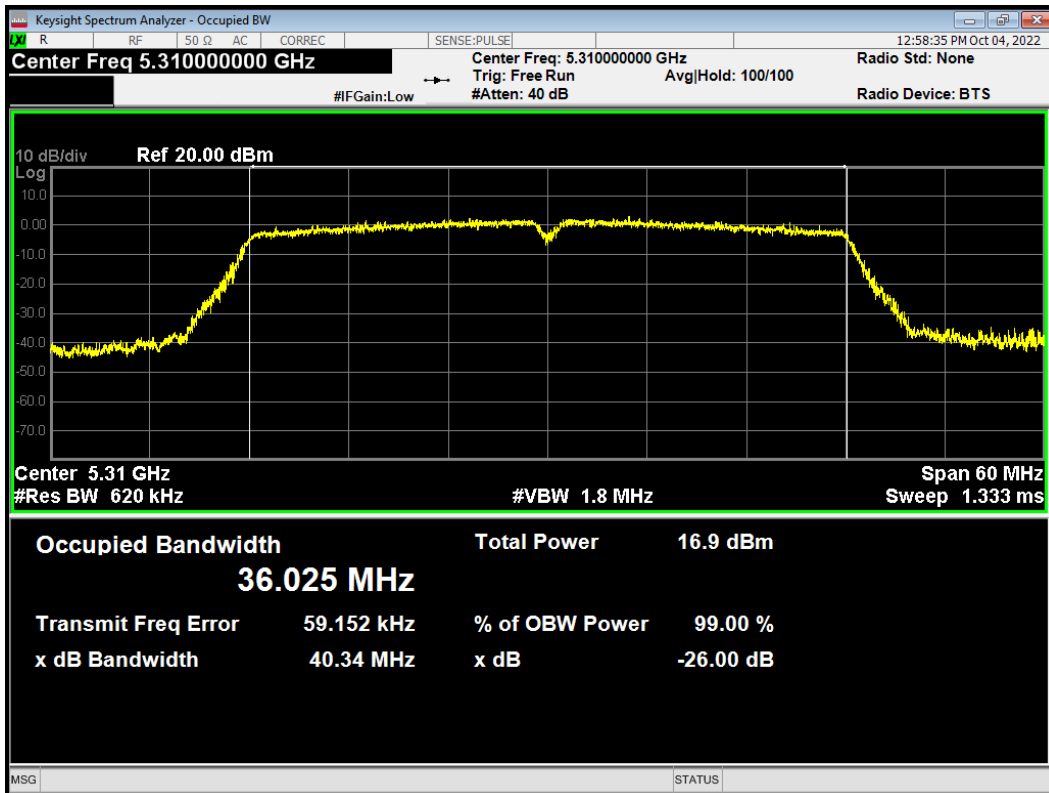




OBW 802.11n (HT40) 5270MHz



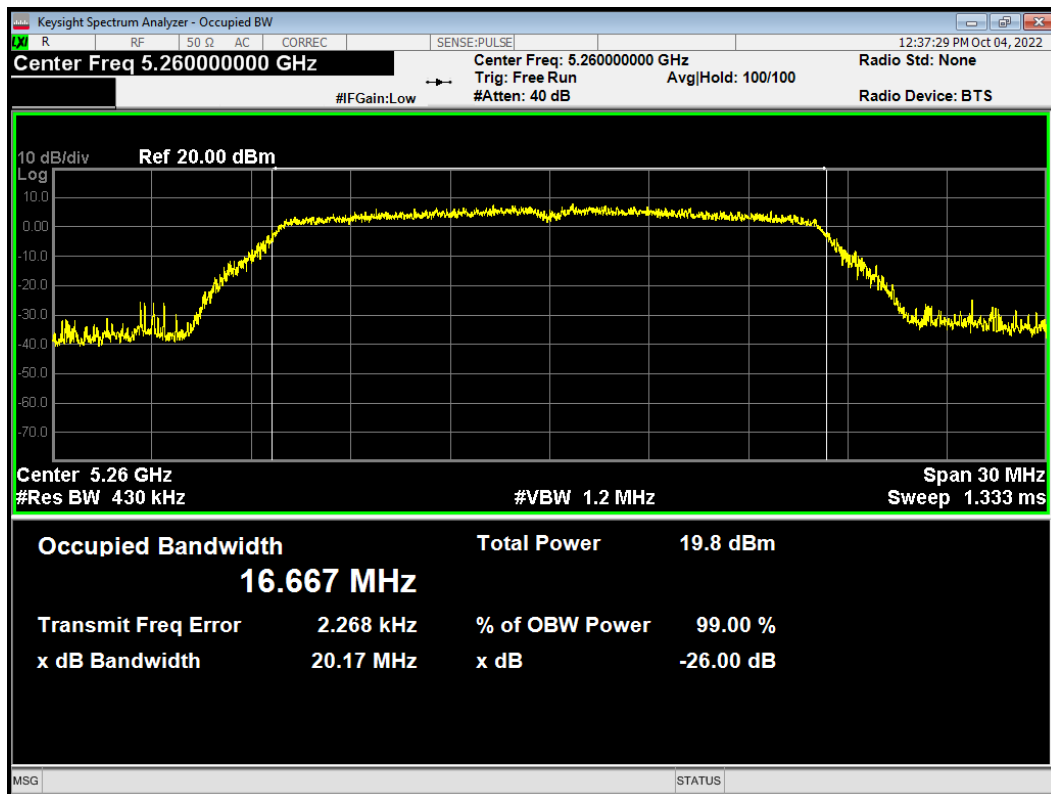
OBW 802.11n (HT40) 5310MHz



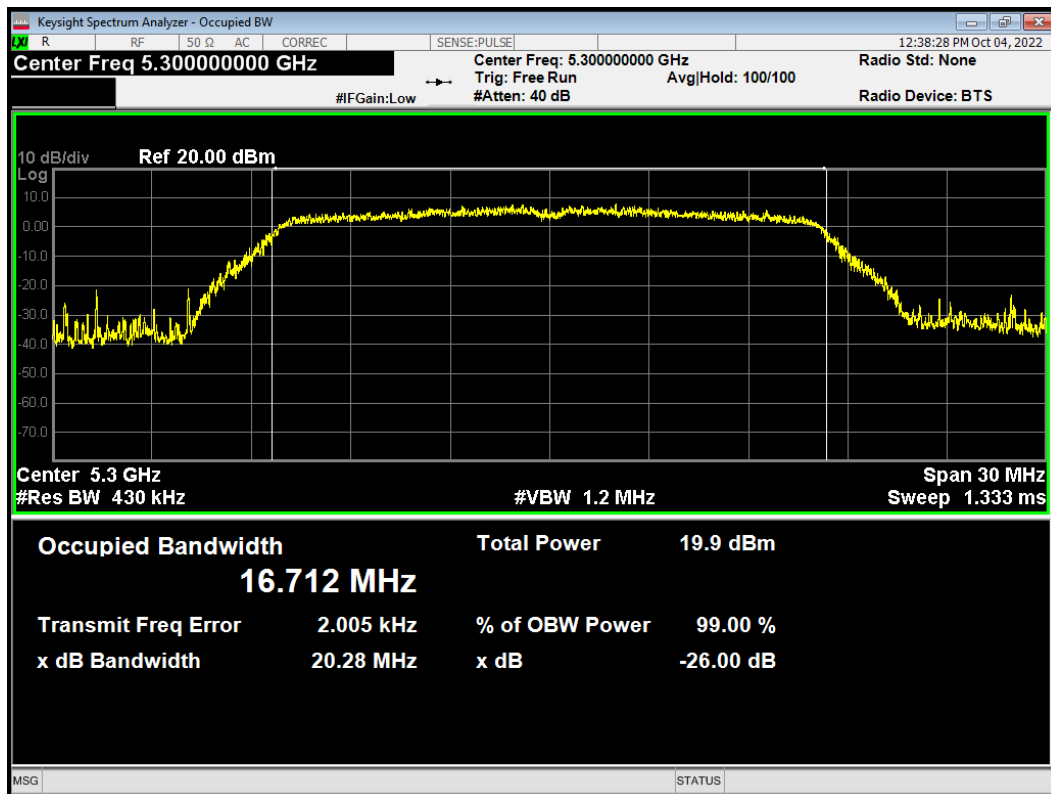


Minimum -26 dB bandwidth

-26dB Bandwidth 802.11a 5260MHz

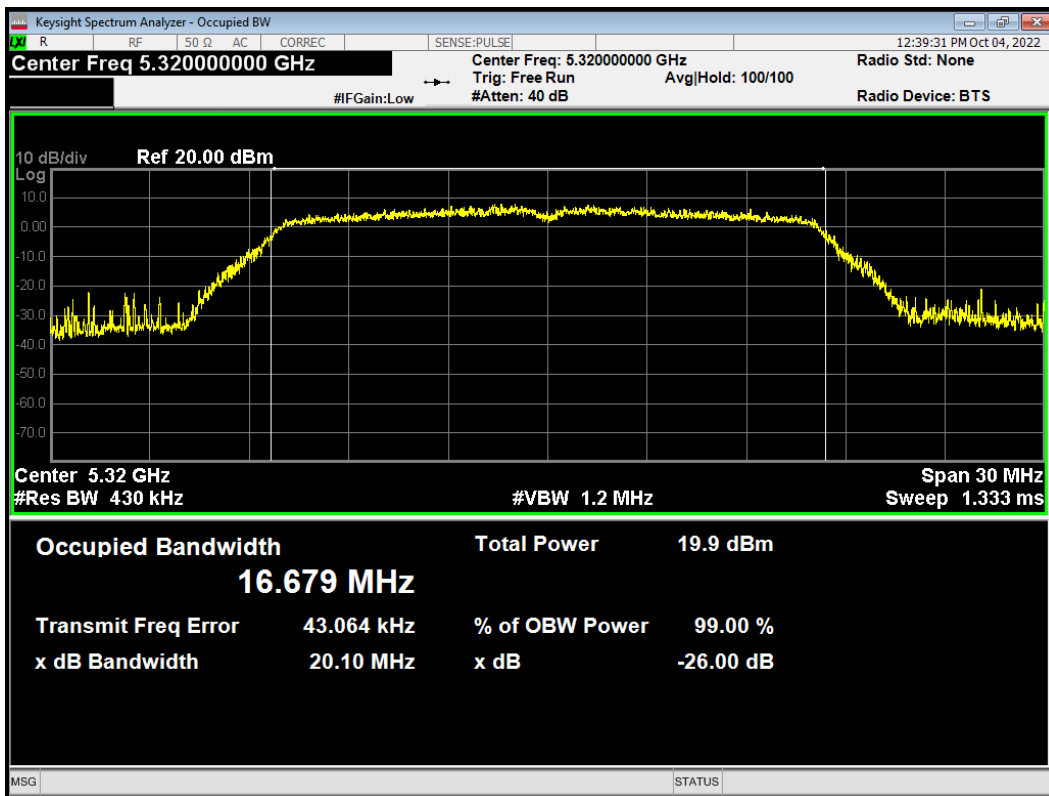


-26dB Bandwidth 802.11a 5300MHz

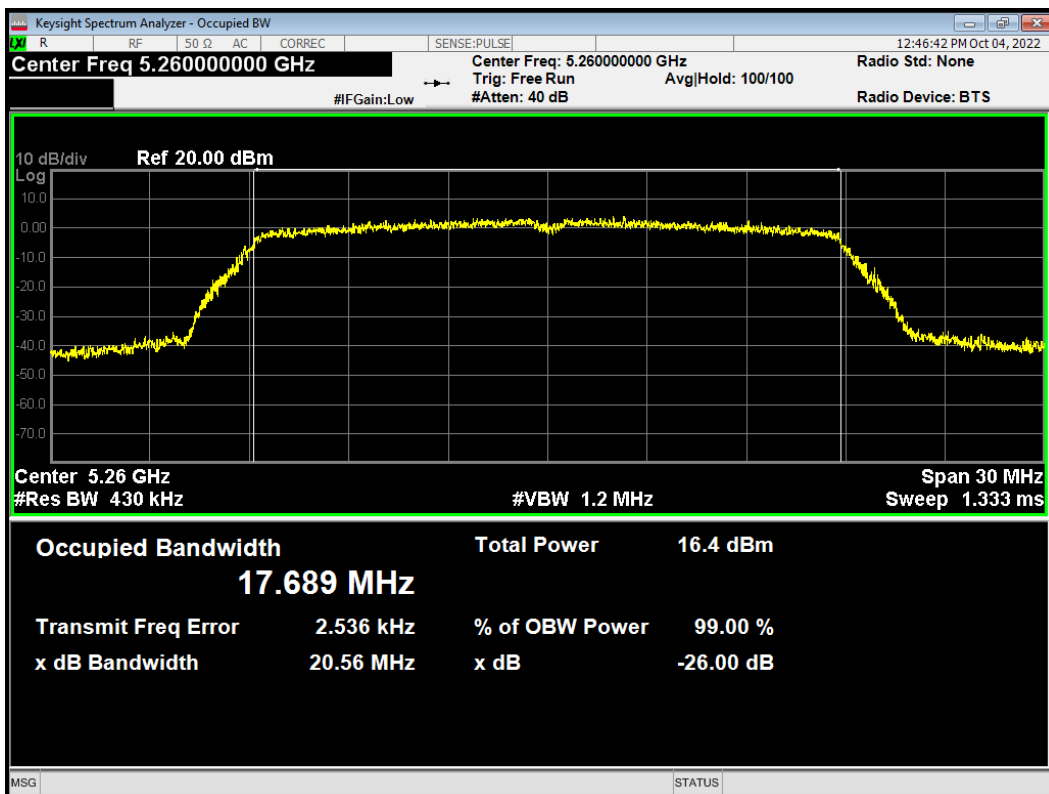




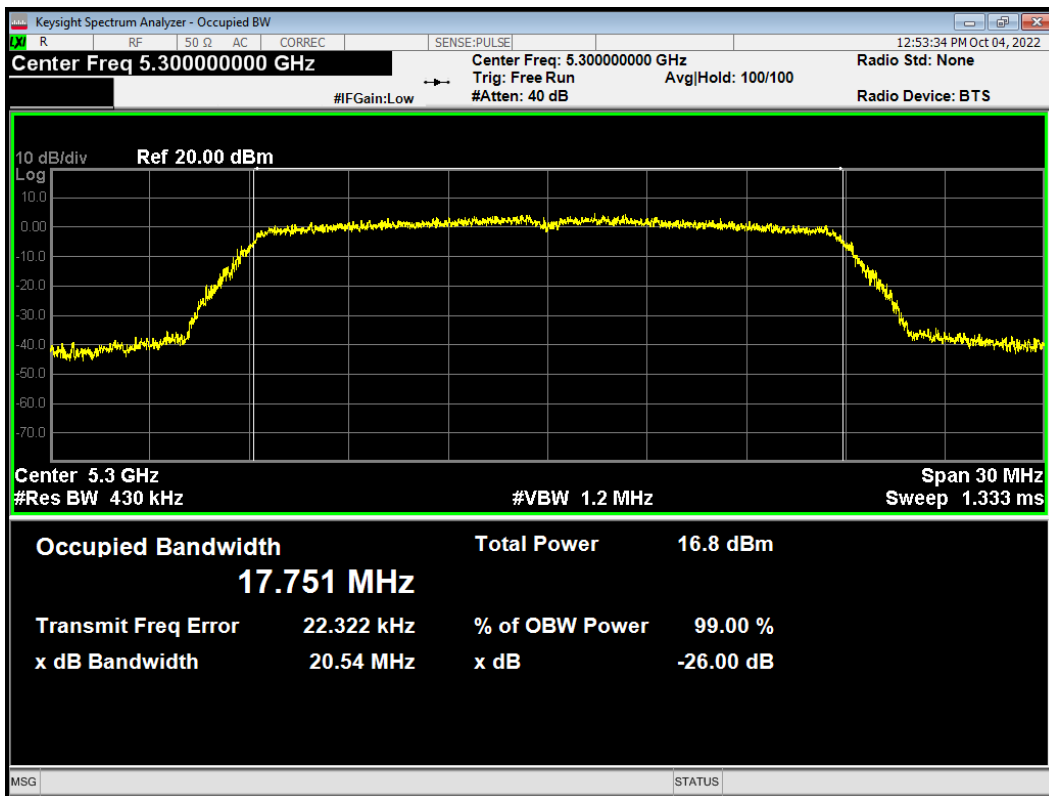
-26dB Bandwidth 802.11a 5320MHz



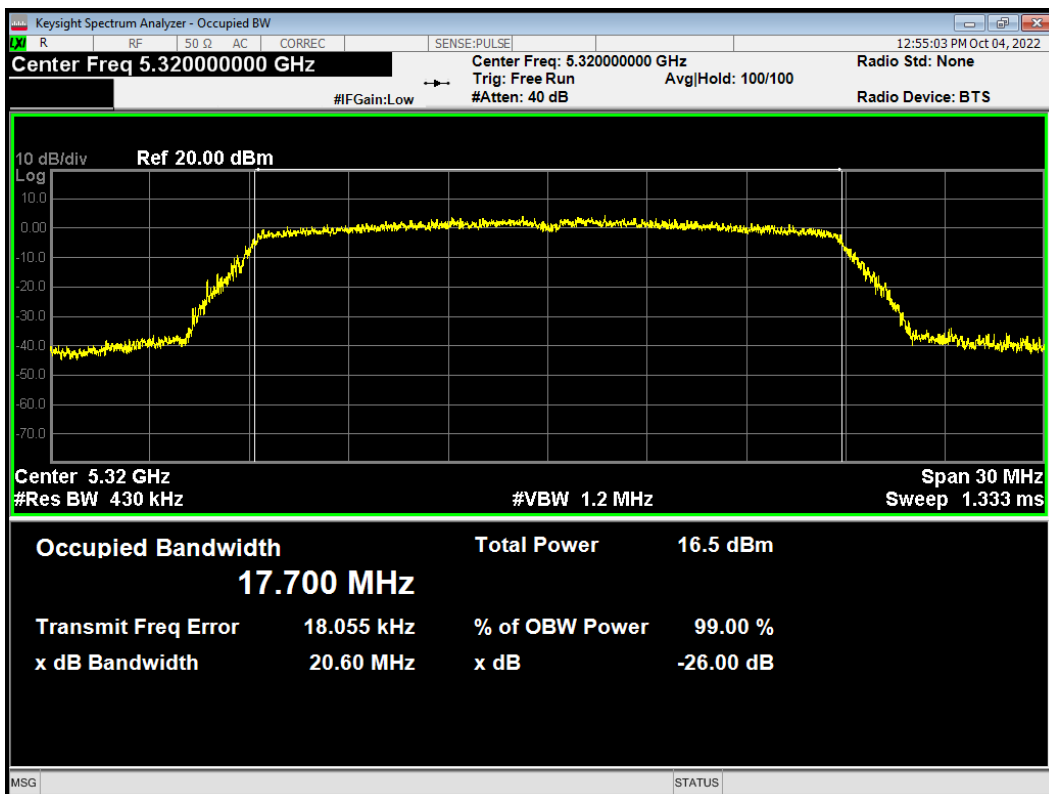
-26dB Bandwidth 802.11ac (VHT20) 5260MHz



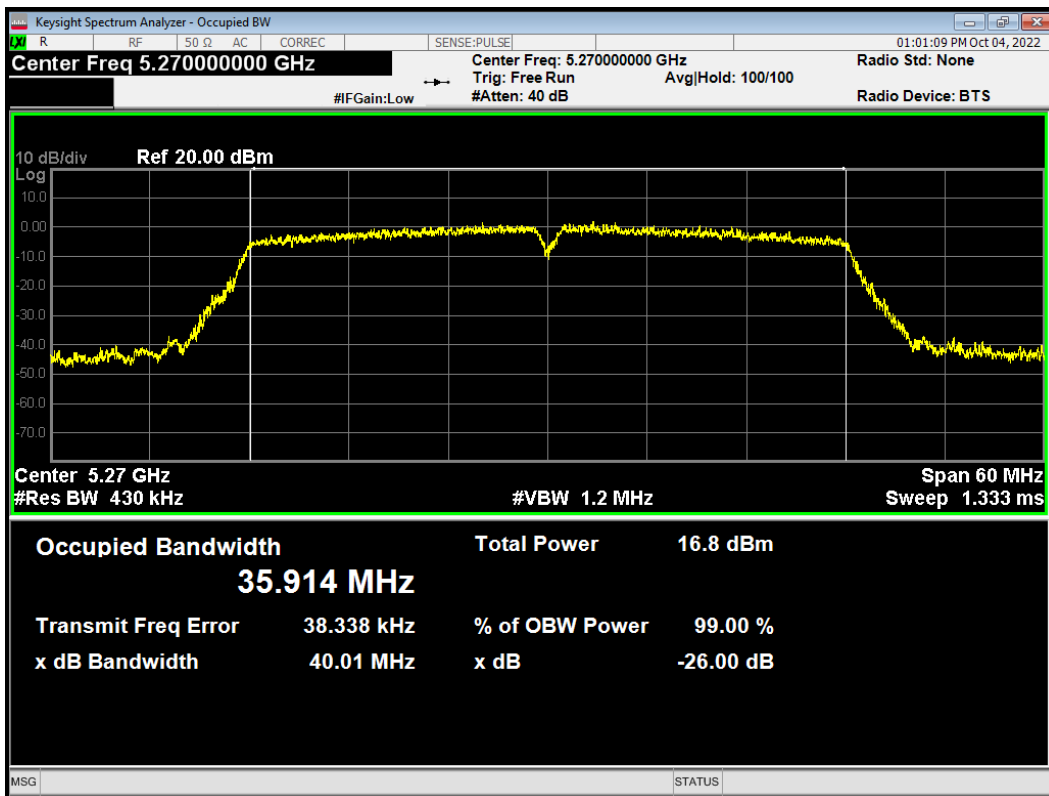
-26dB Bandwidth 802.11ac (VHT20) 5300MHz



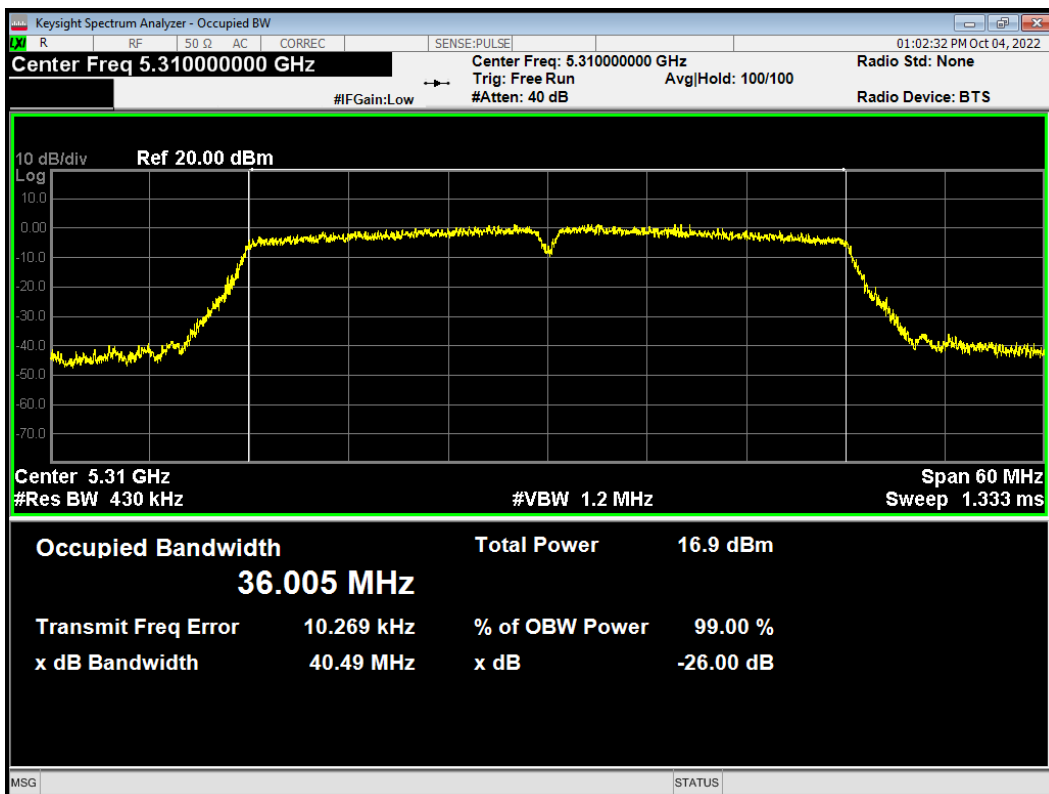
-26dB Bandwidth 802.11ac (VHT20) 5320MHz



-26dB Bandwidth 802.11ac (VHT40) 5270MHz

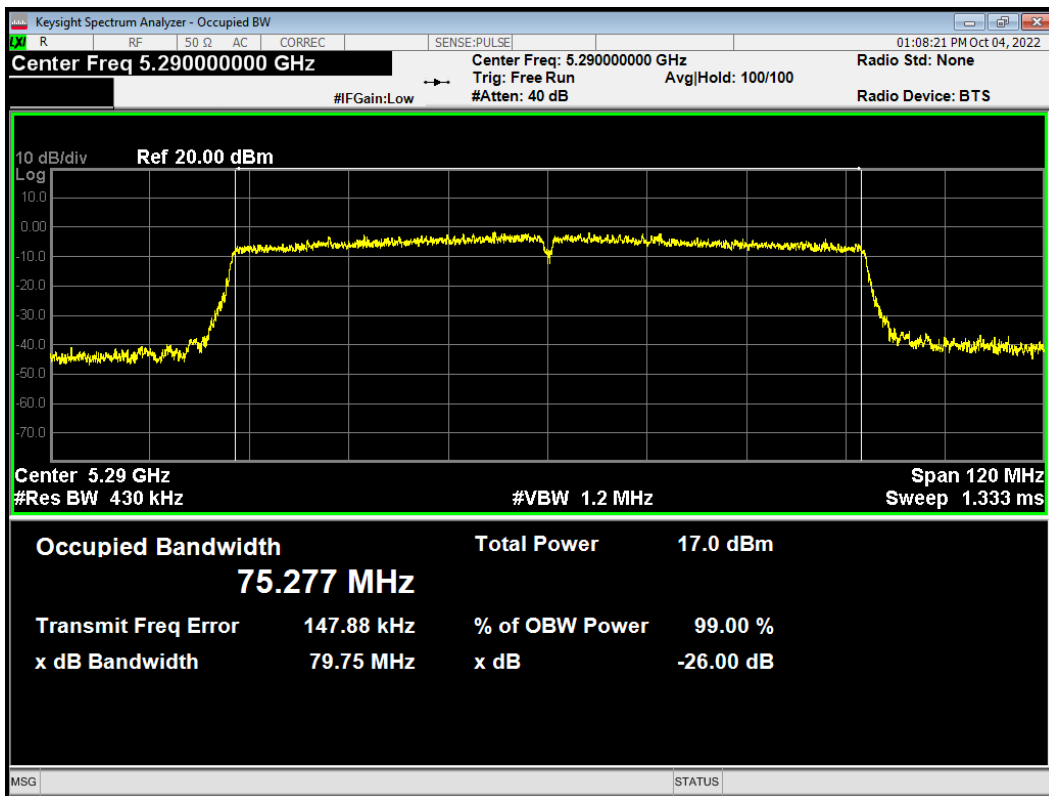


-26dB Bandwidth 802.11ac (VHT40) 5310MHz

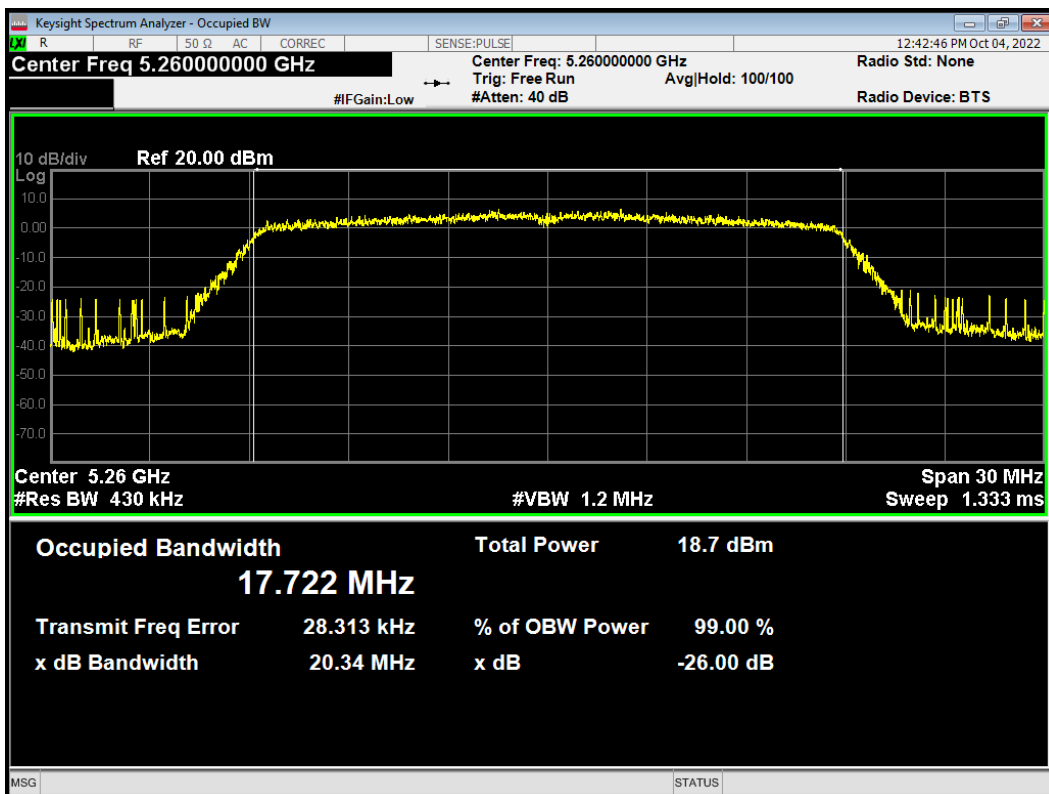




-26dB Bandwidth 802.11ac (VHT80) 5290MHz

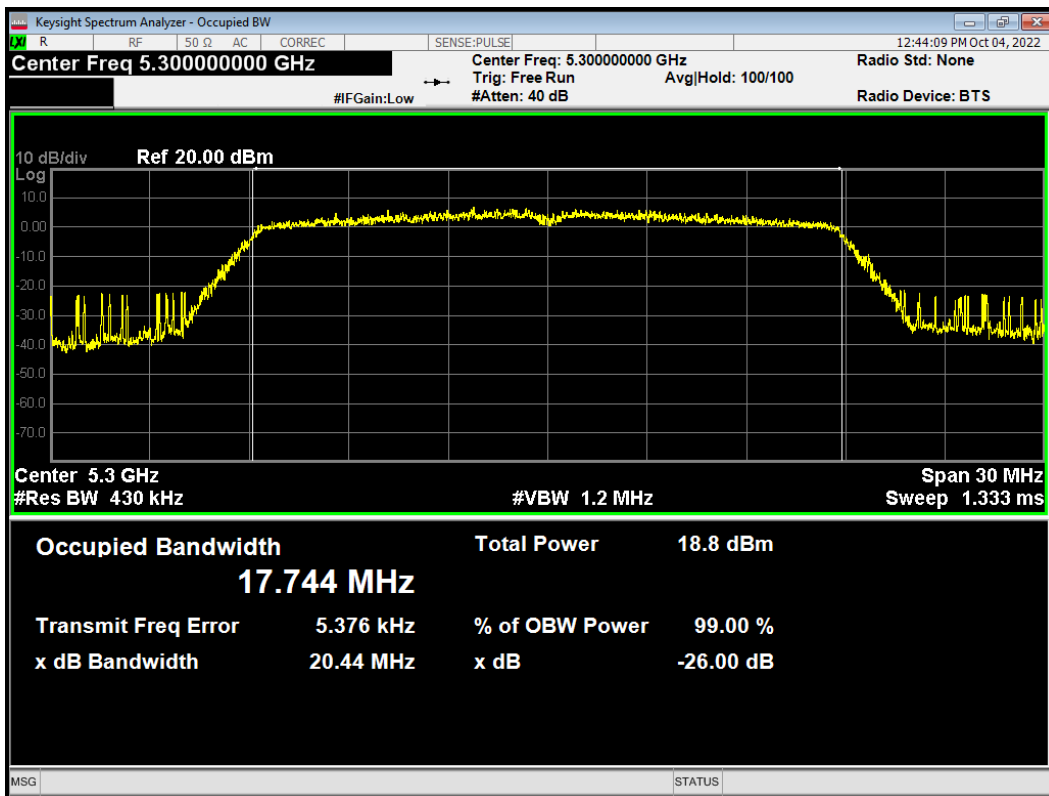


-26dB Bandwidth 802.11n (HT20) 5260MHz

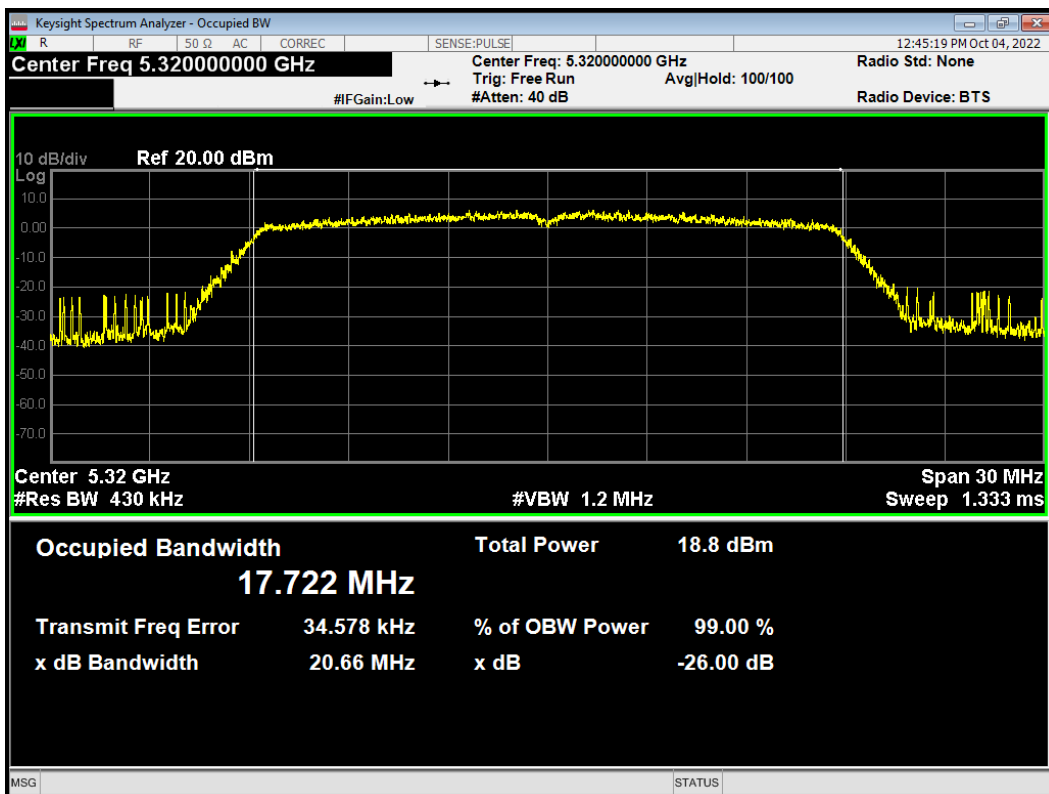




-26dB Bandwidth 802.11n (HT20) 5300MHz

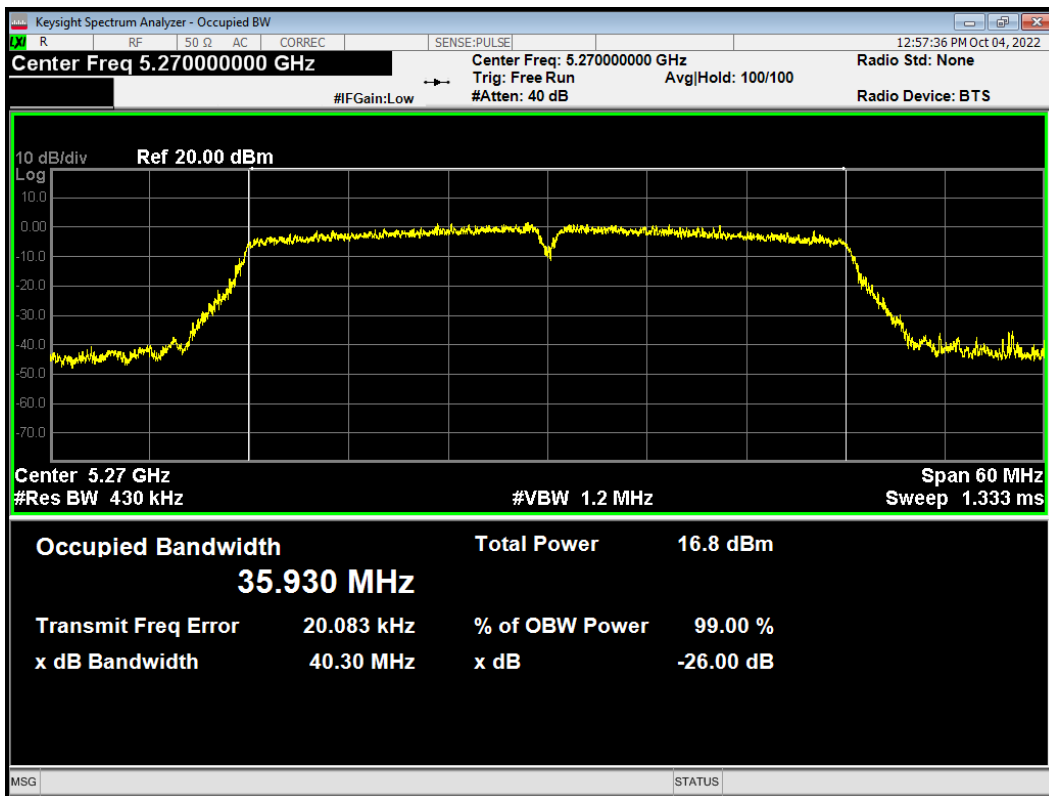


-26dB Bandwidth 802.11n (HT20) 5320MHz

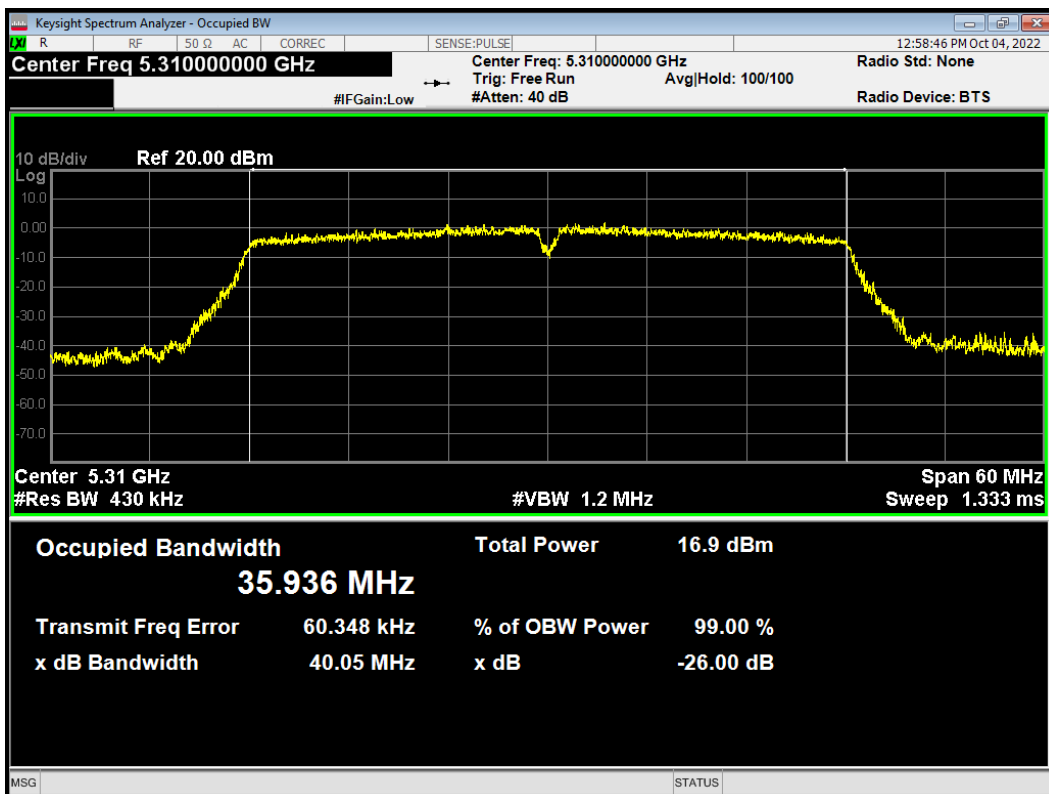




-26dB Bandwidth 802.11n (HT40) 5270MHz



-26dB Bandwidth 802.11n (HT40) 5310MHz

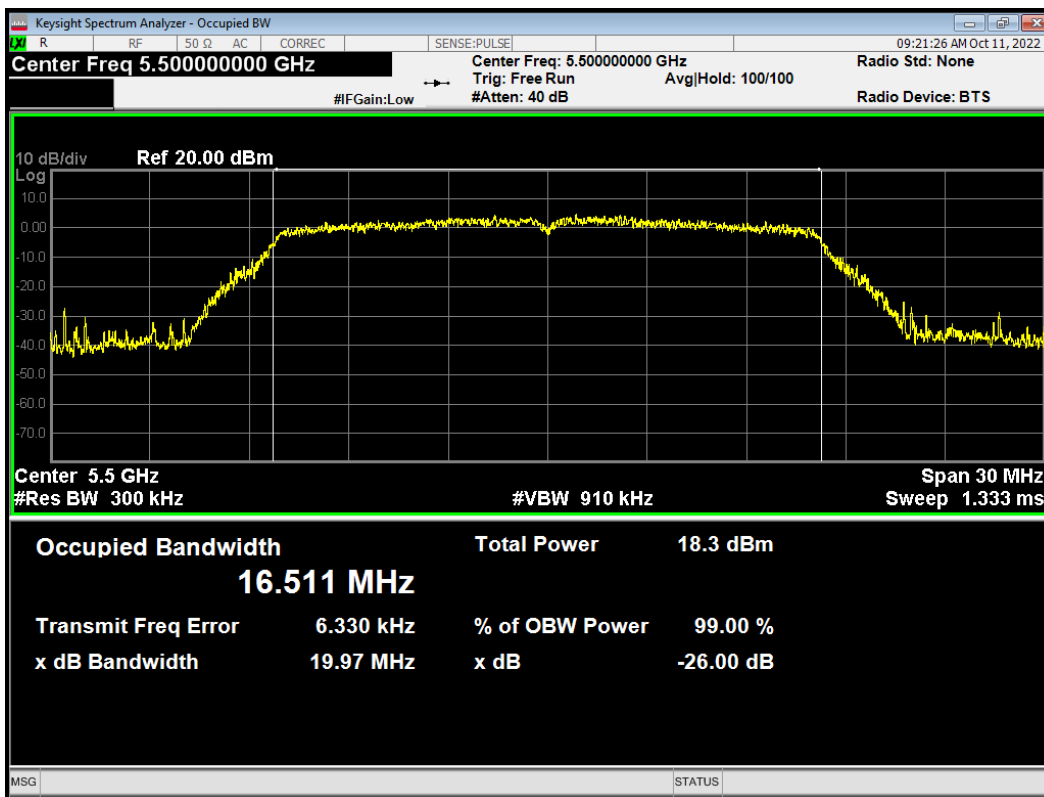




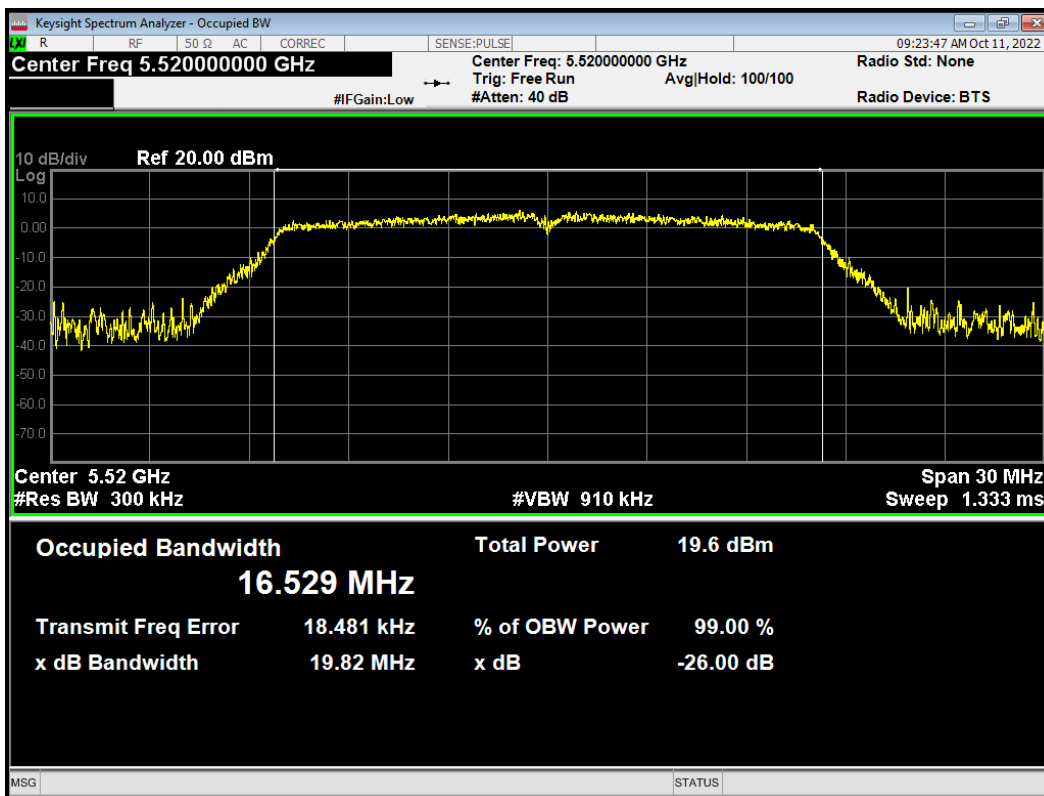
U-NII-2C

99% bandwidth

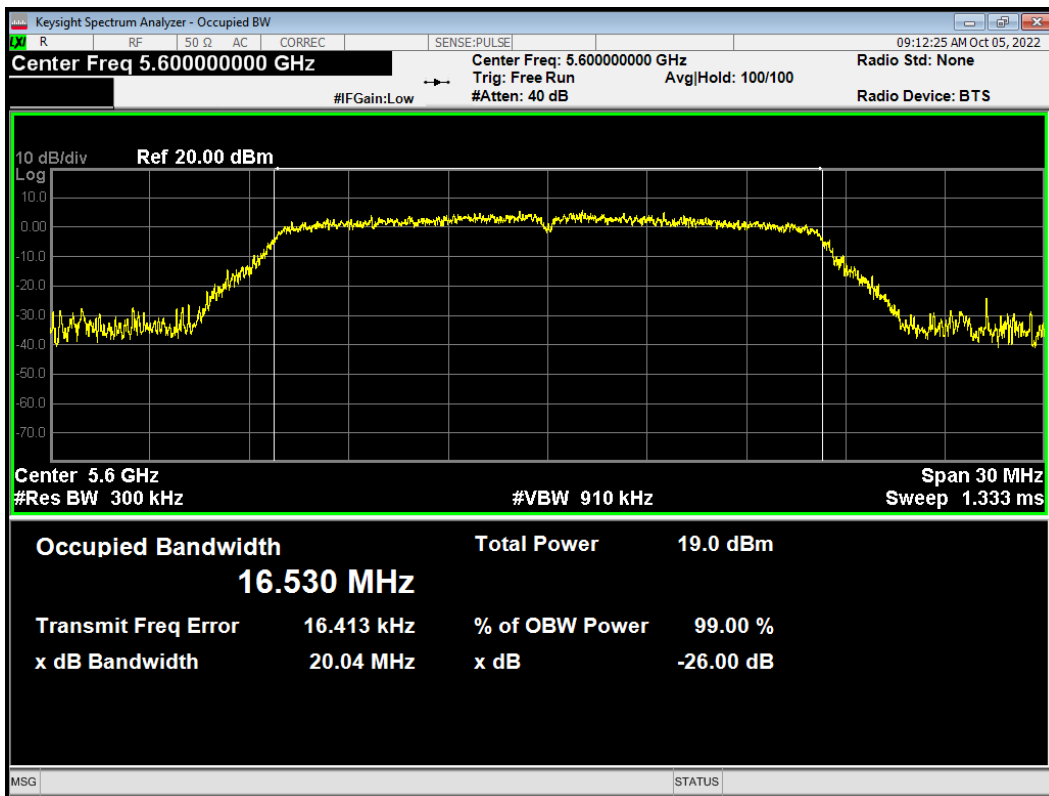
OBW 802.11a 5500MHz



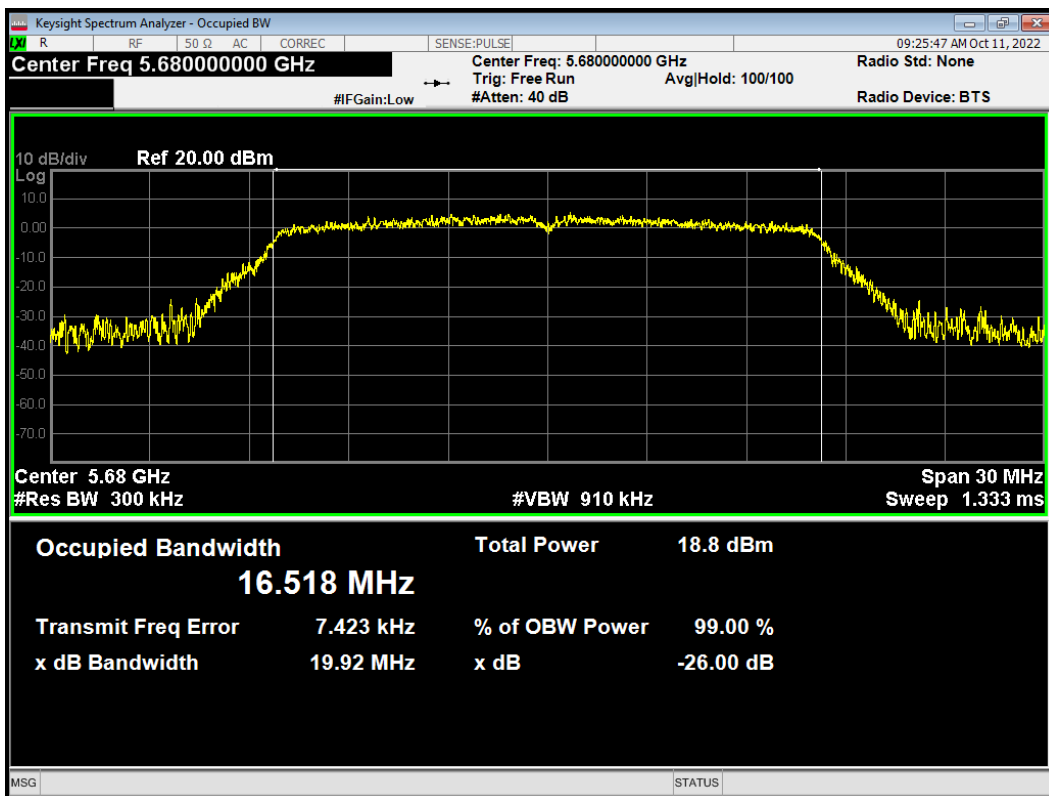
OBW 802.11a 5520MHz



OBW 802.11a 5600MHz

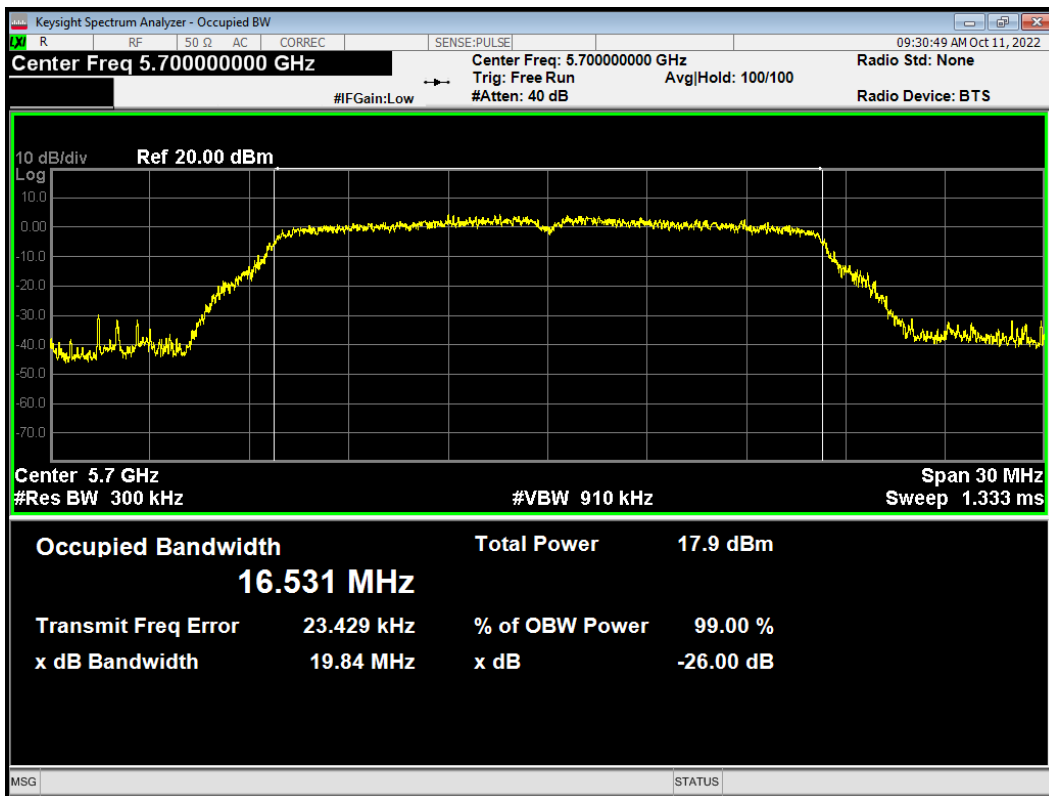


OBW 802.11a 5680MHz

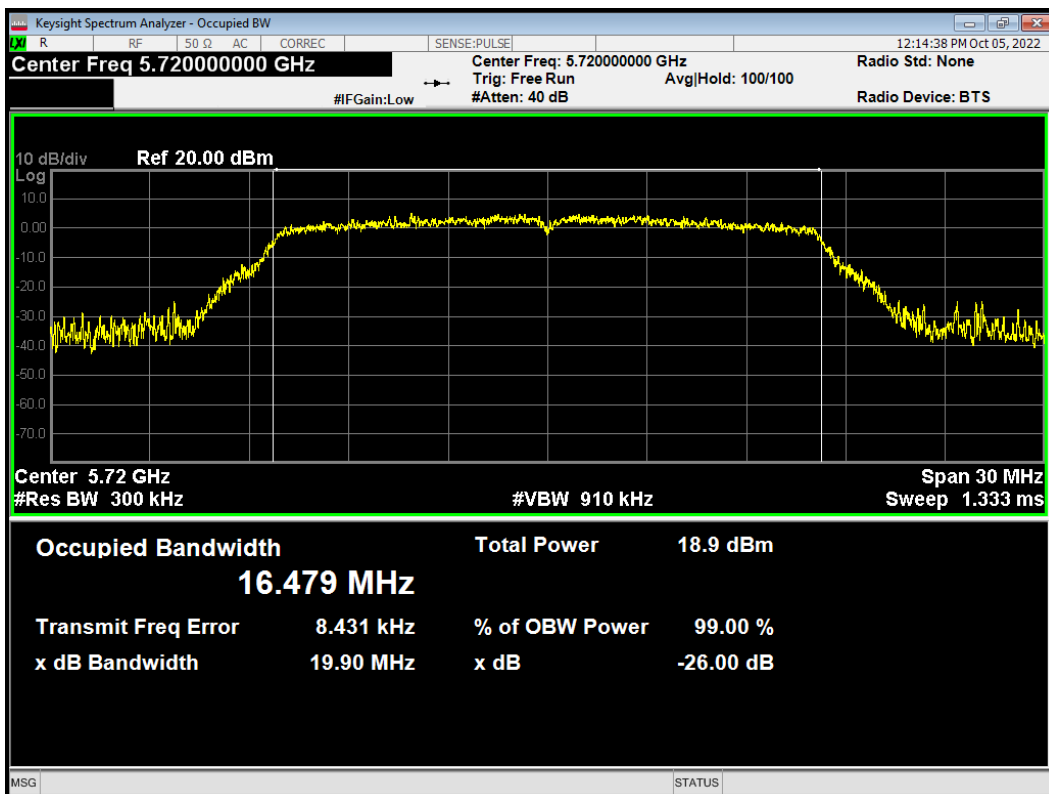




OBW 802.11a 5700MHz

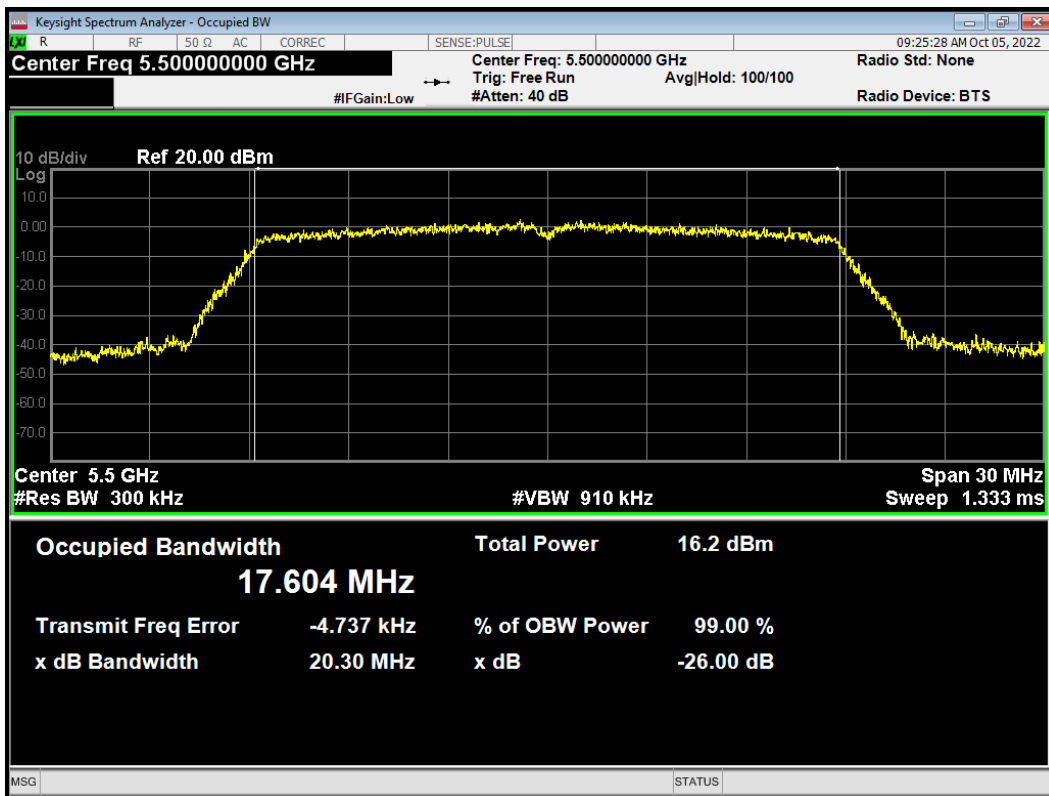


OBW 802.11a 5720MHz

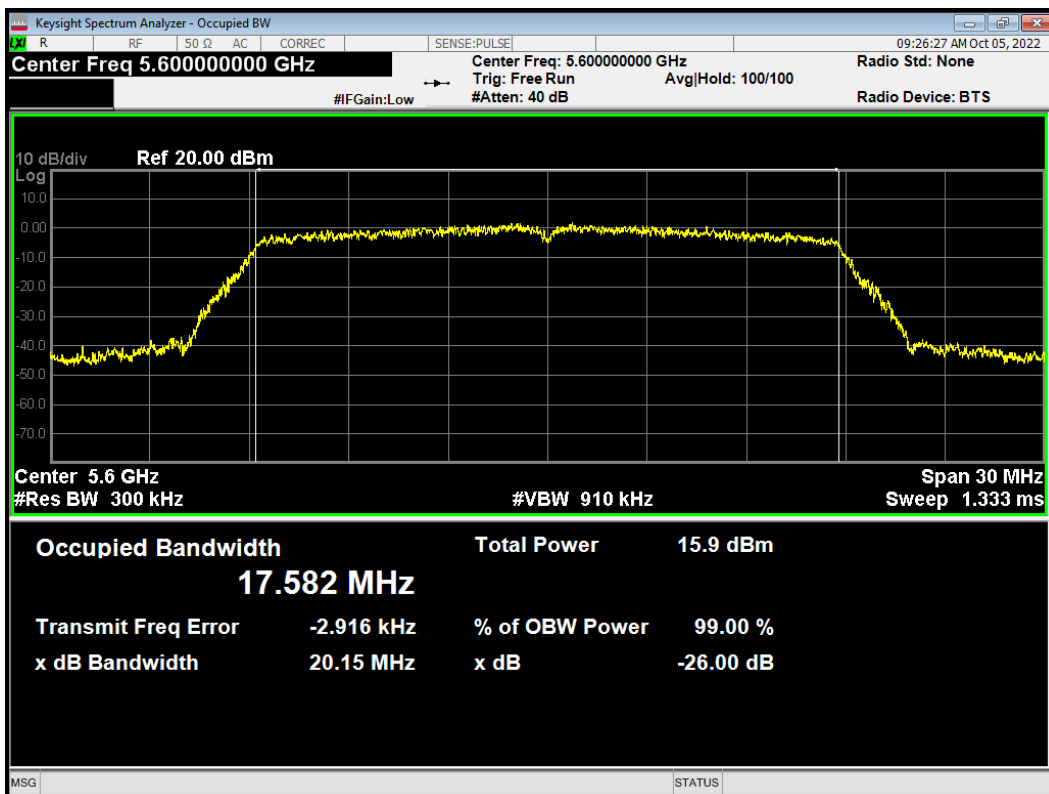




OBW 802.11ac (VHT20) 5500MHz

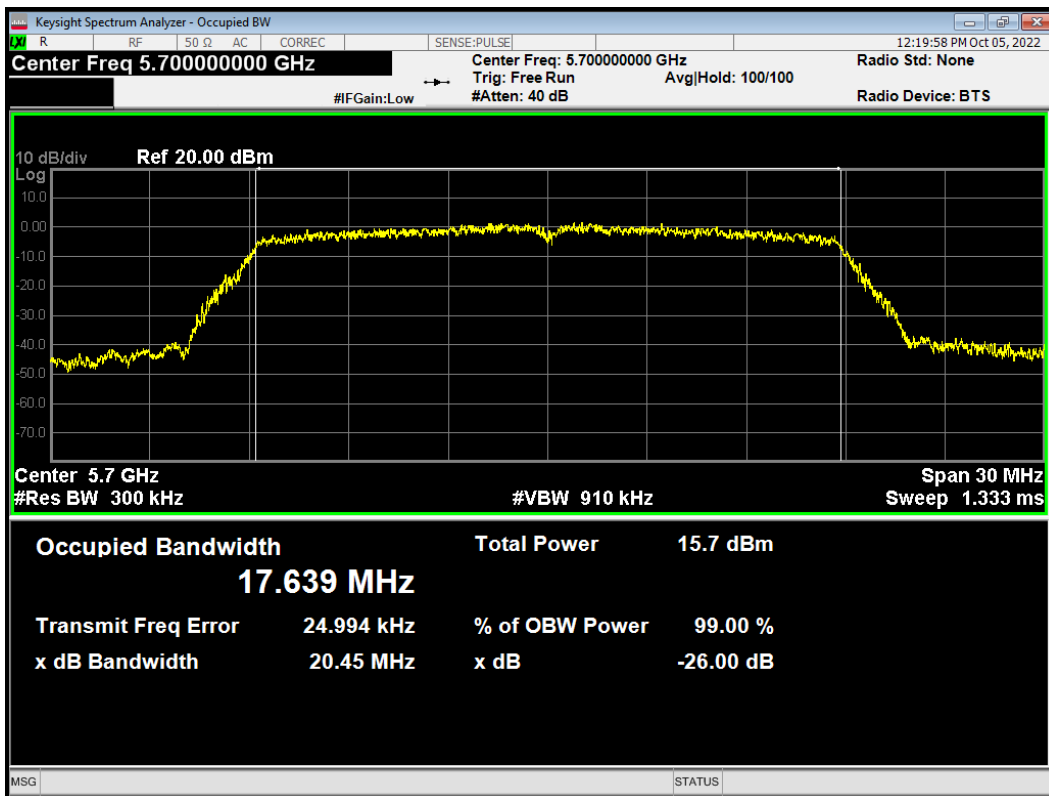


OBW 802.11ac (VHT20) 5600MHz

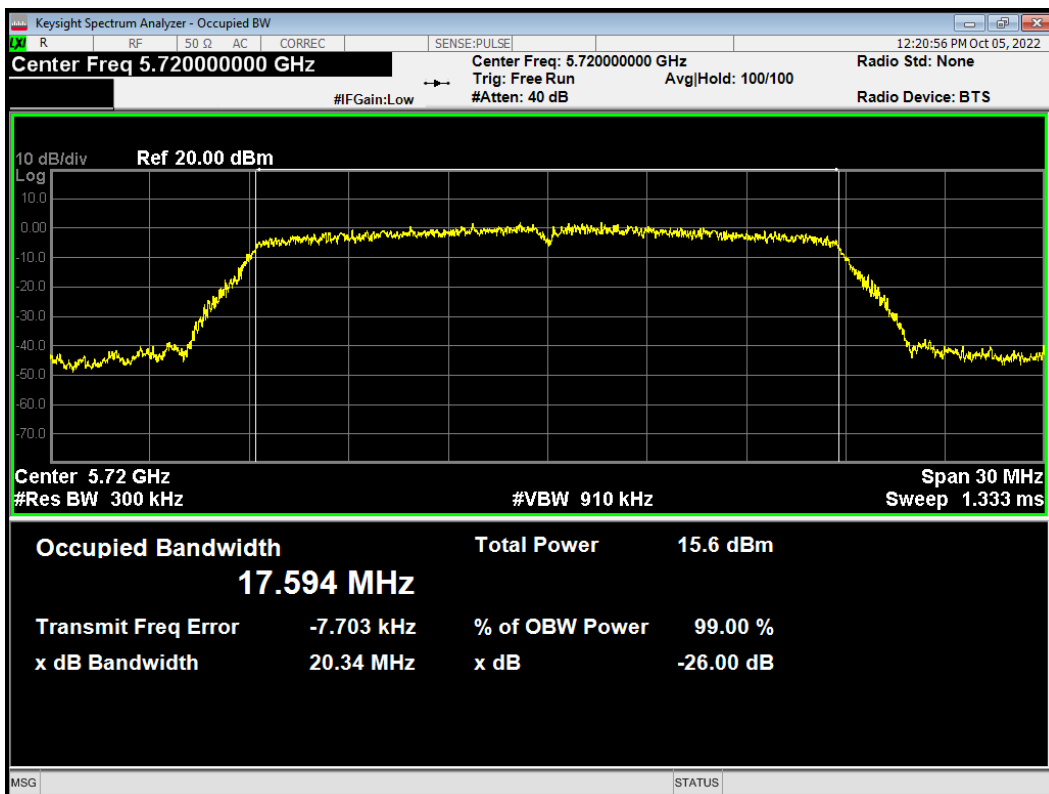




OBW 802.11ac (VHT20) 5700MHz

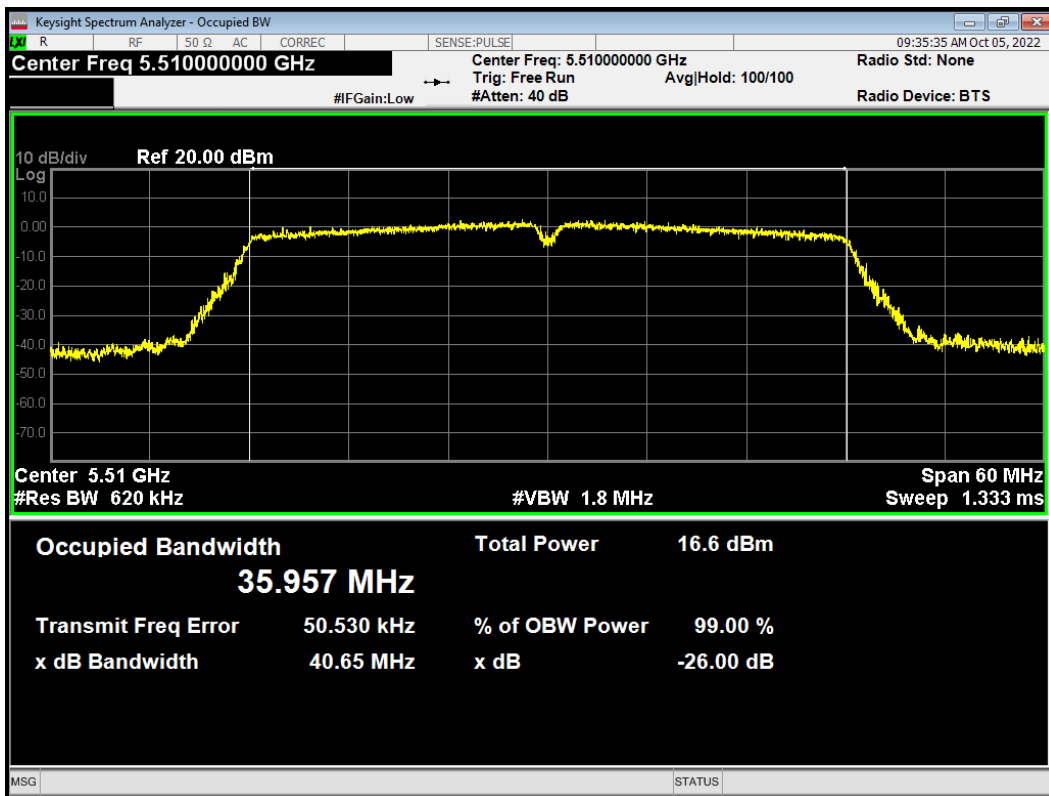


OBW 802.11ac (VHT20) 5720MHz

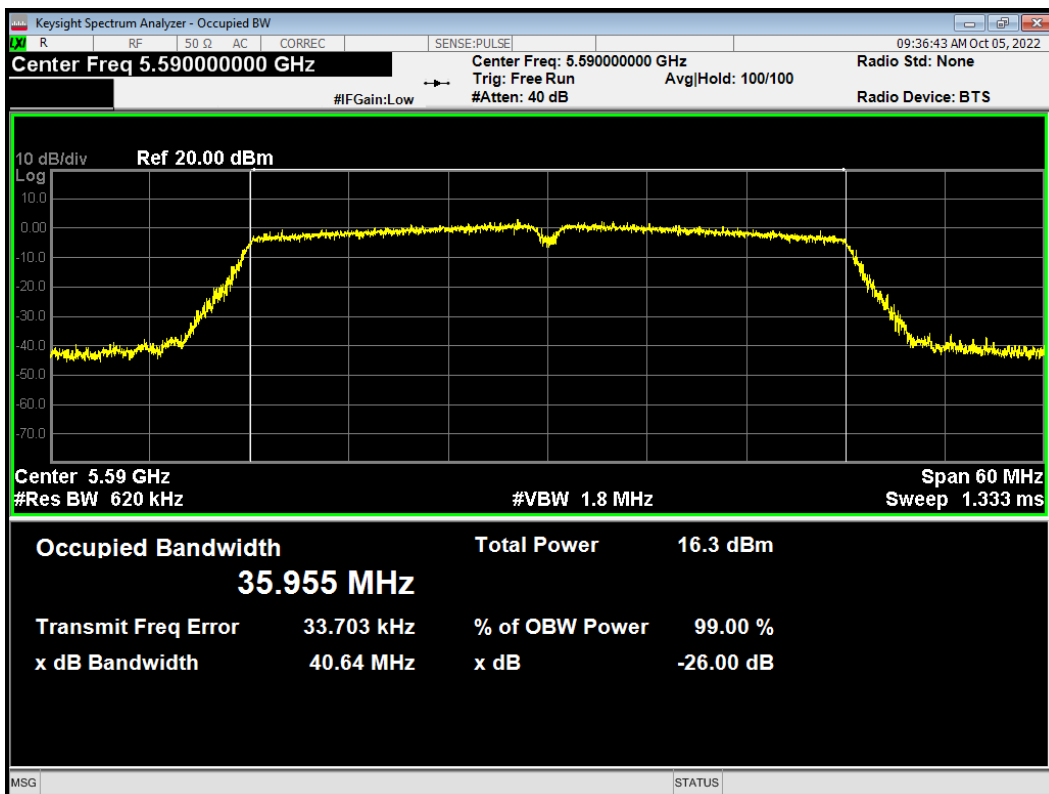




OBW 802.11ac (VHT40) 5510MHz



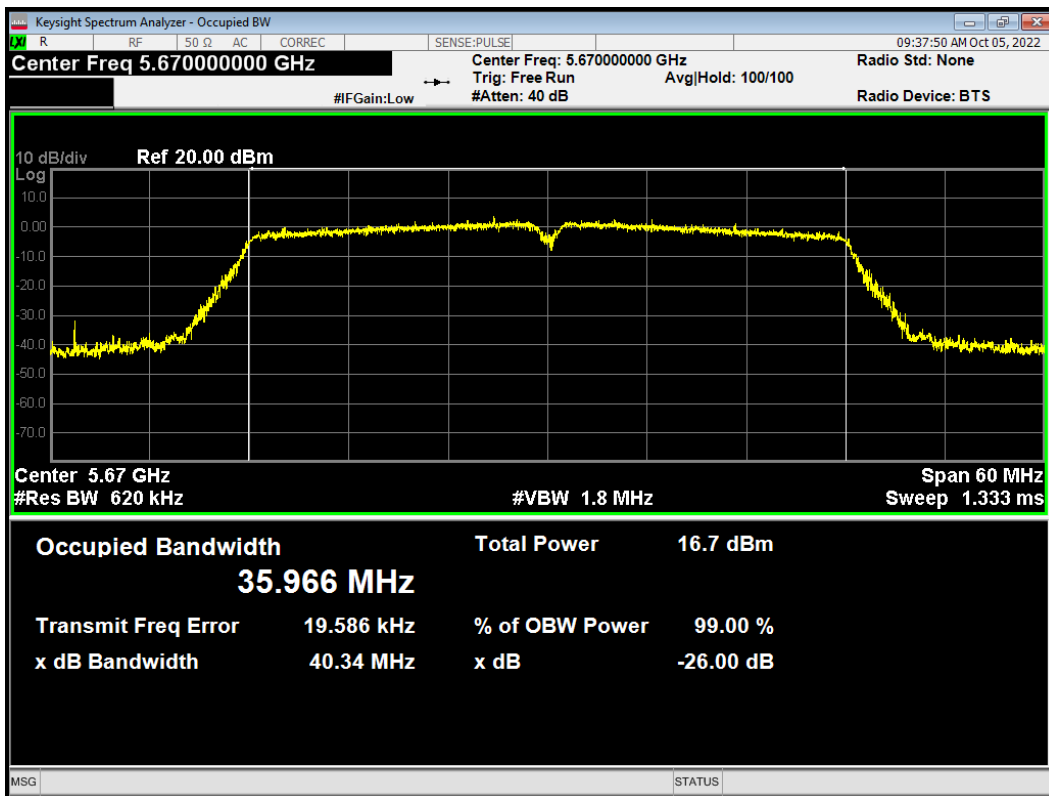
OBW 802.11ac (VHT40) 5590MHz



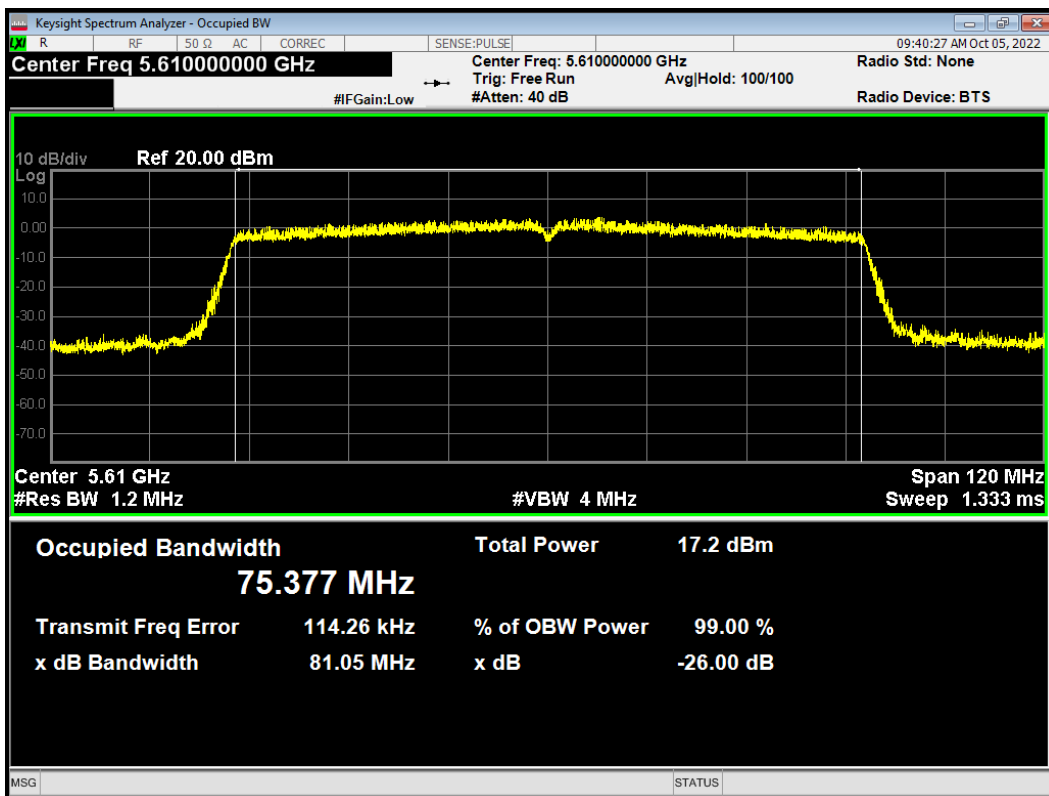




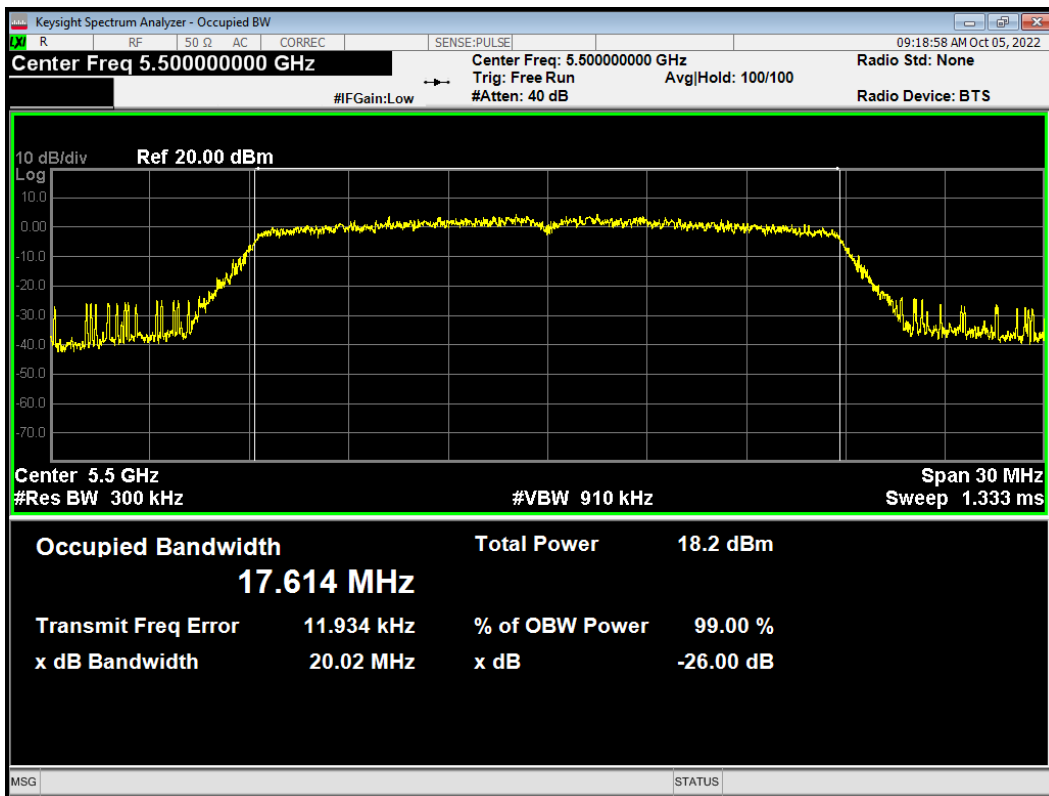
OBW 802.11ac (VHT40) 5670MHz



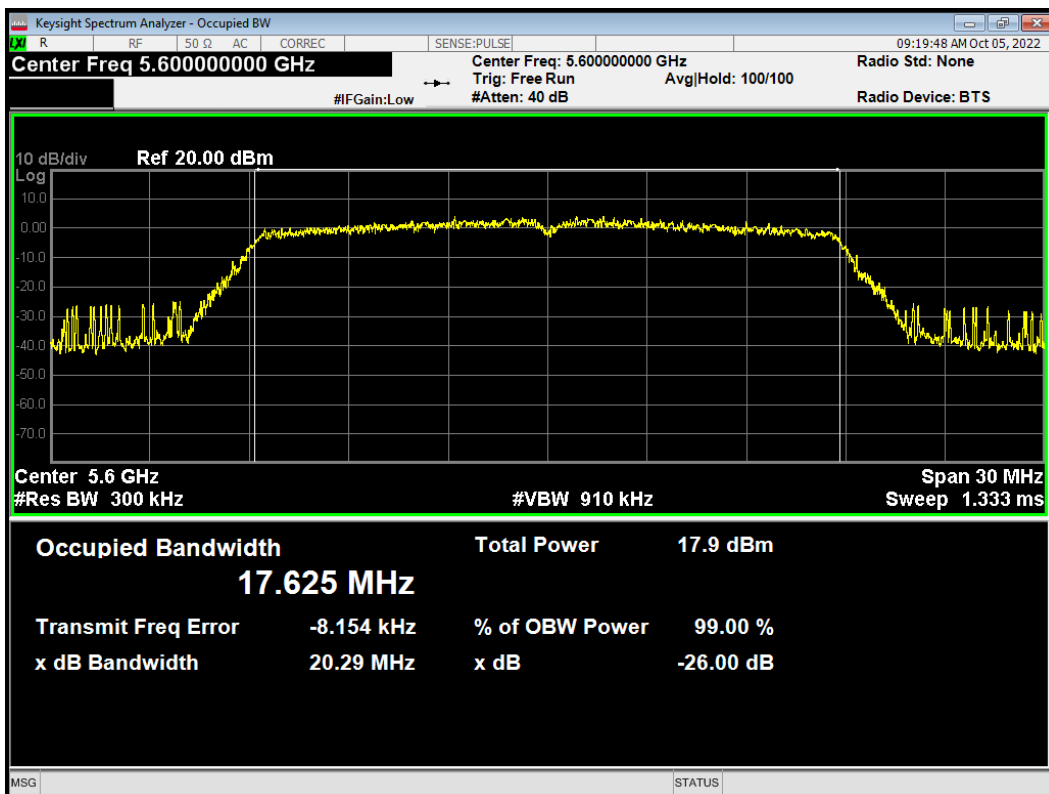
OBW 802.11ac (VHT80) 5610MHz



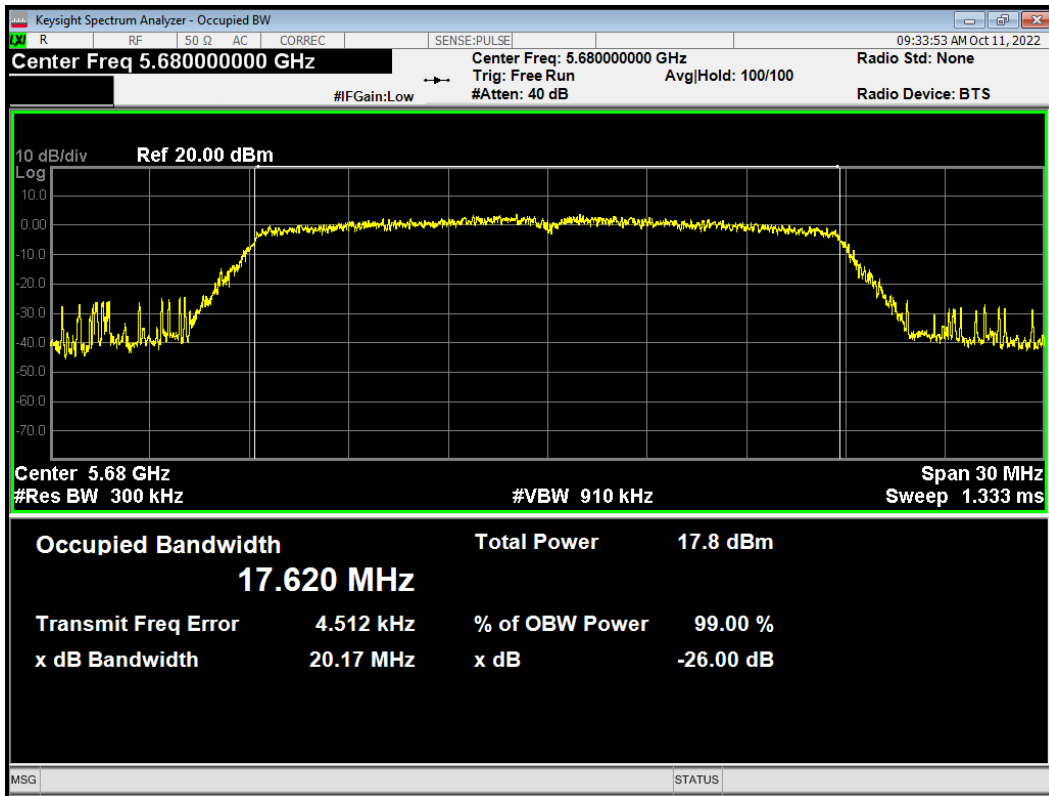
OBW 802.11n (HT20) 5500MHz



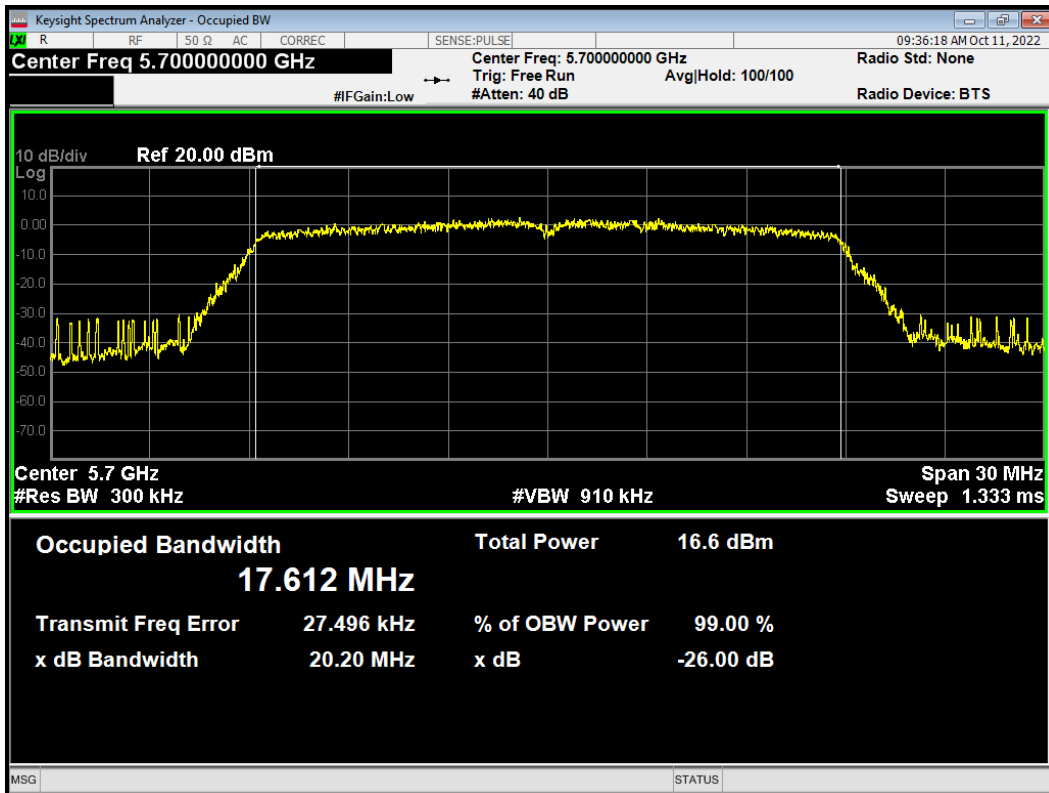
OBW 802.11n (HT20) 5600MHz



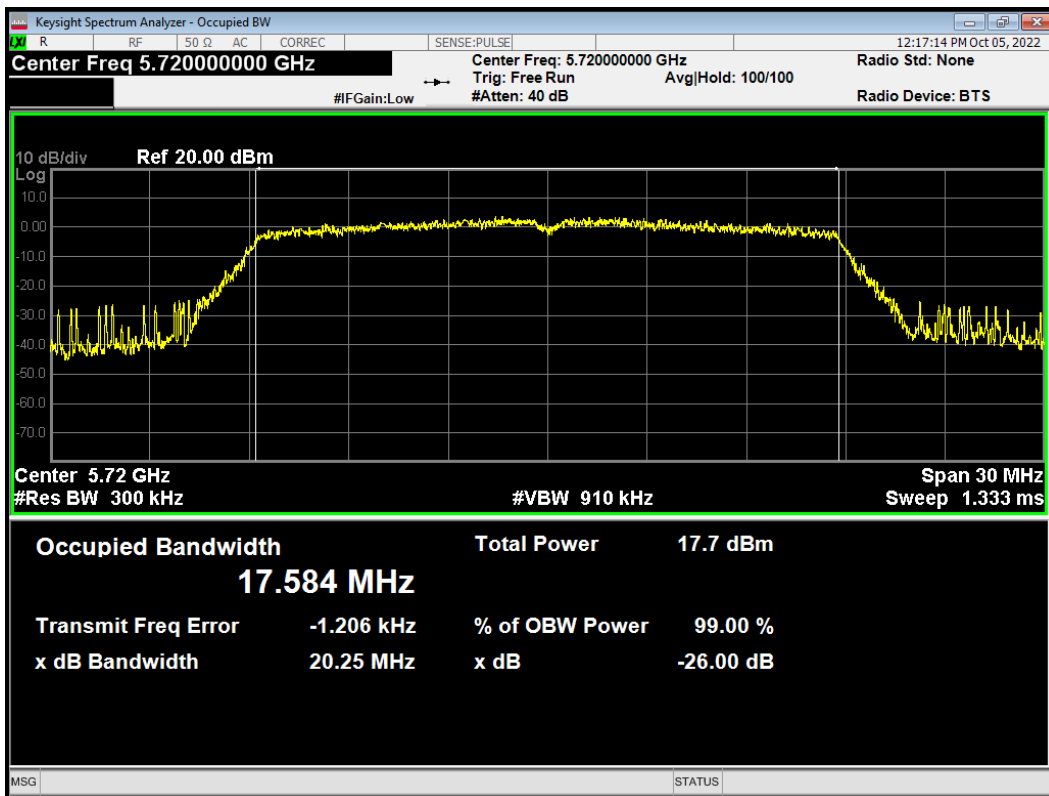
OBW 802.11n (HT20) 5680MHz



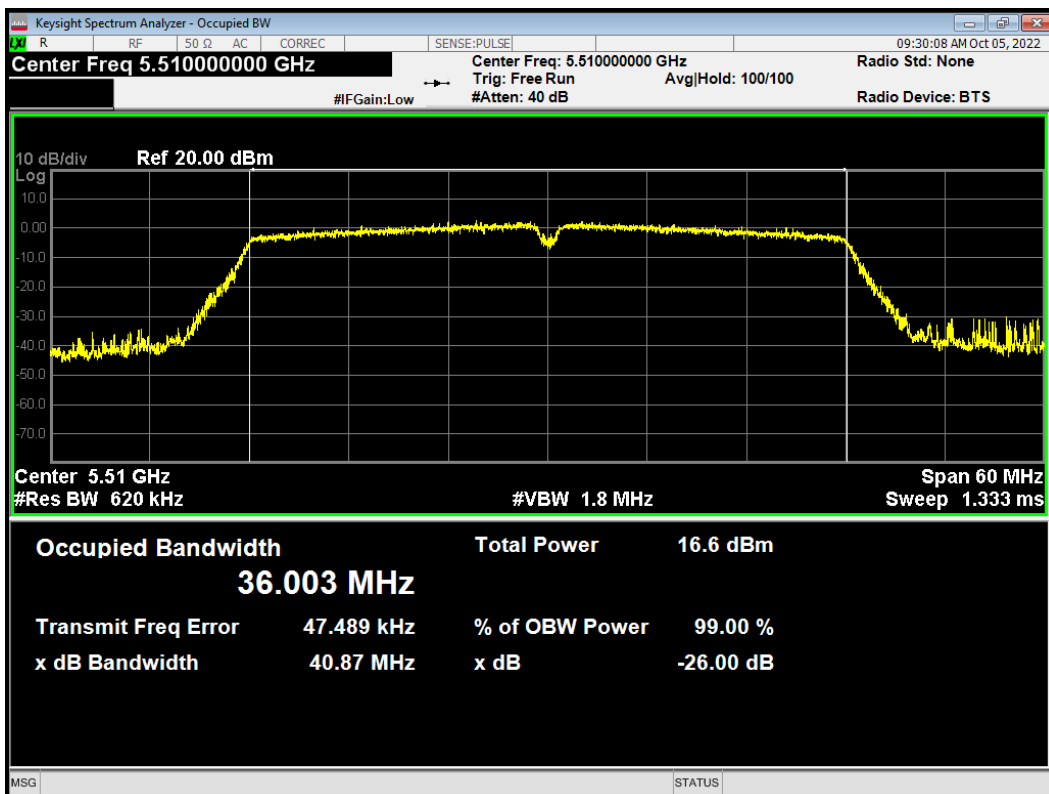
OBW 802.11n (HT20) 5700MHz



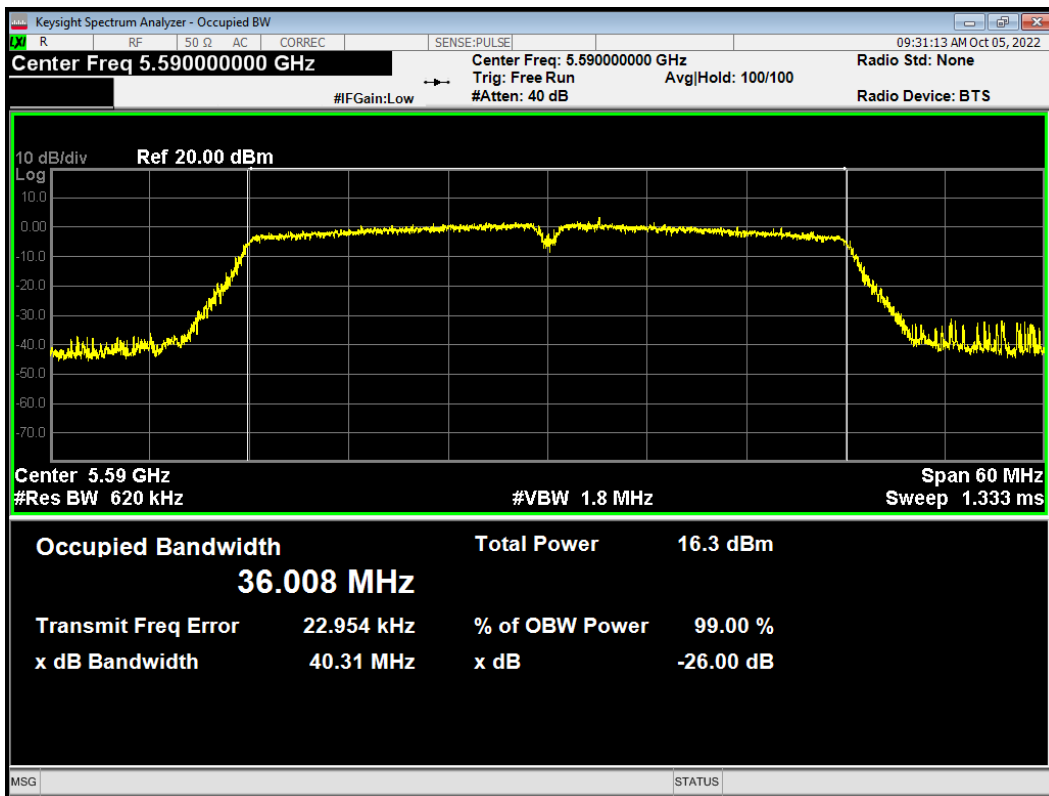
OBW 802.11n (HT20) 5720MHz



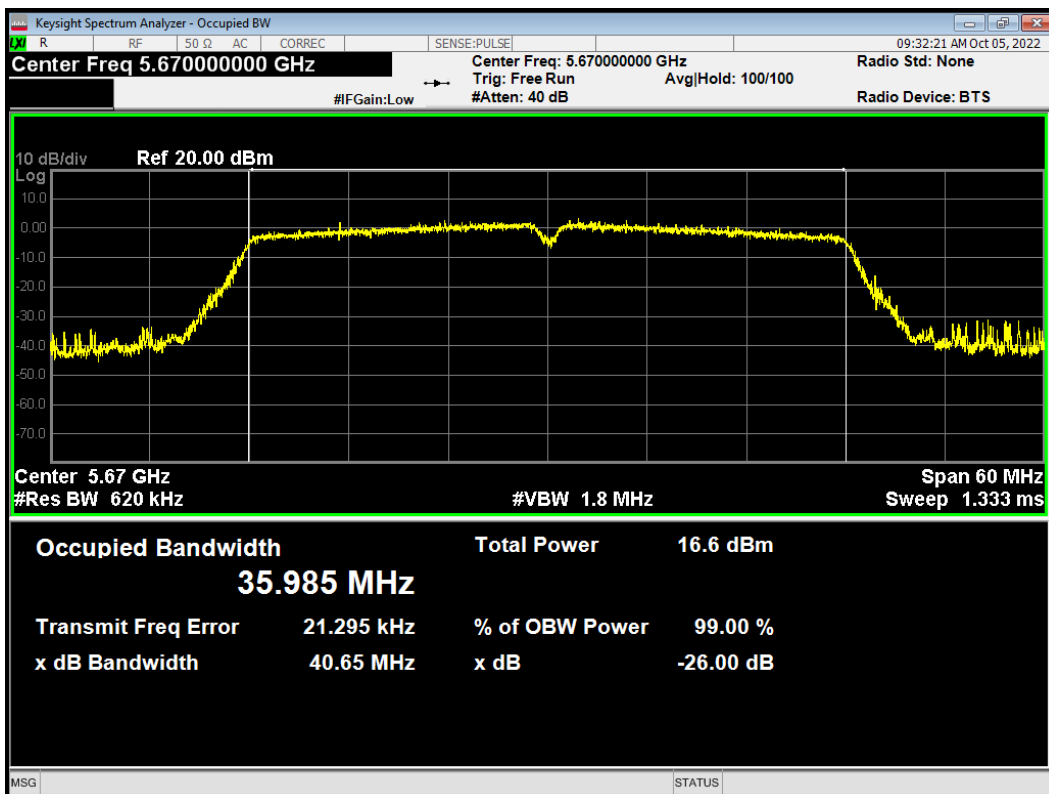
OBW 802.11n (HT40) 5510MHz



OBW 802.11n (HT40) 5590MHz



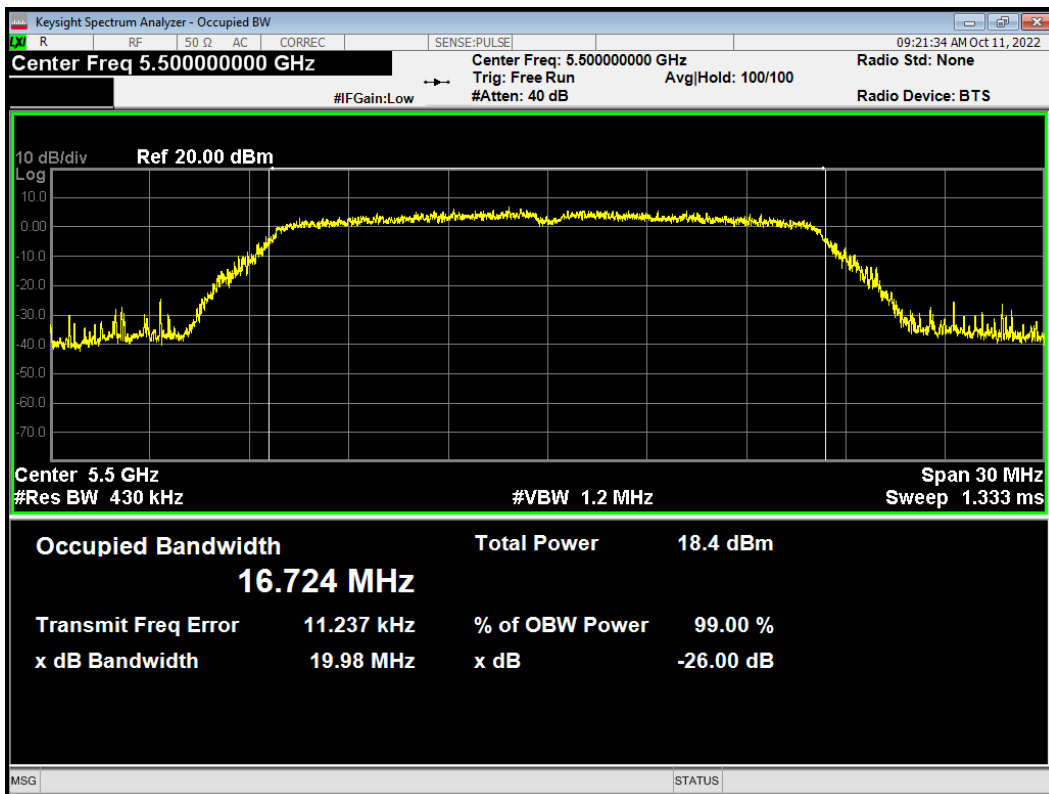
OBW 802.11n (HT40) 5670MHz



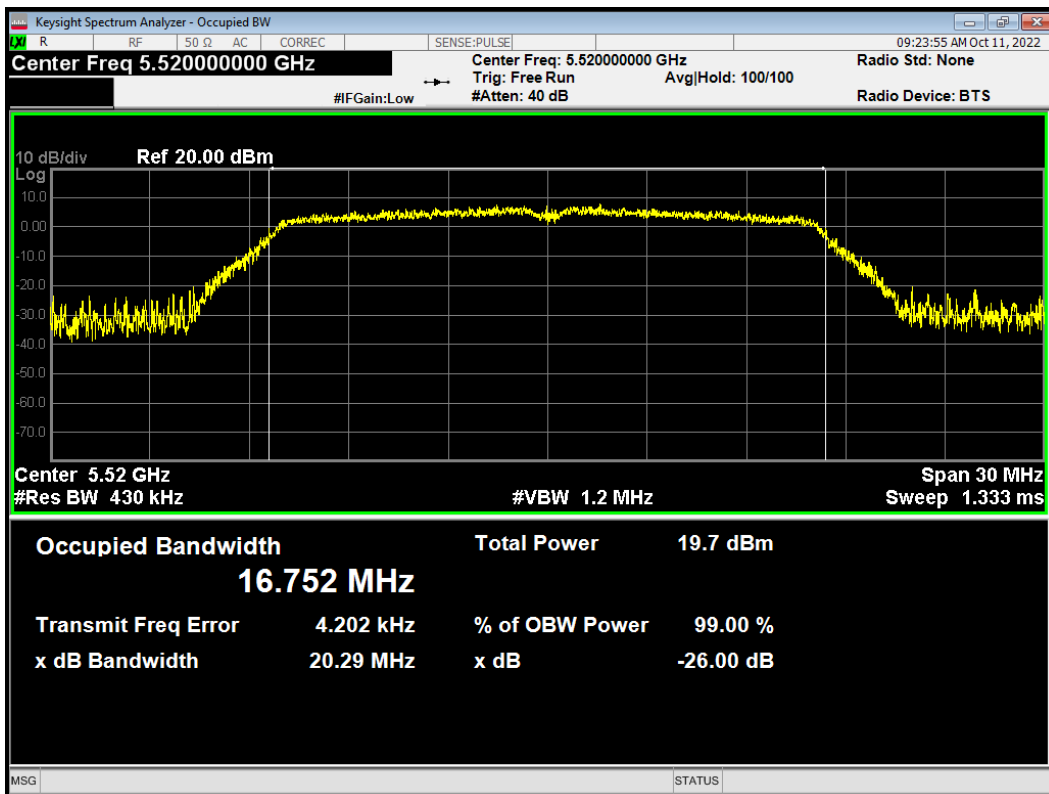


### Minimum -26 dB bandwidth

#### -26dB Bandwidth 802.11a 5500MHz

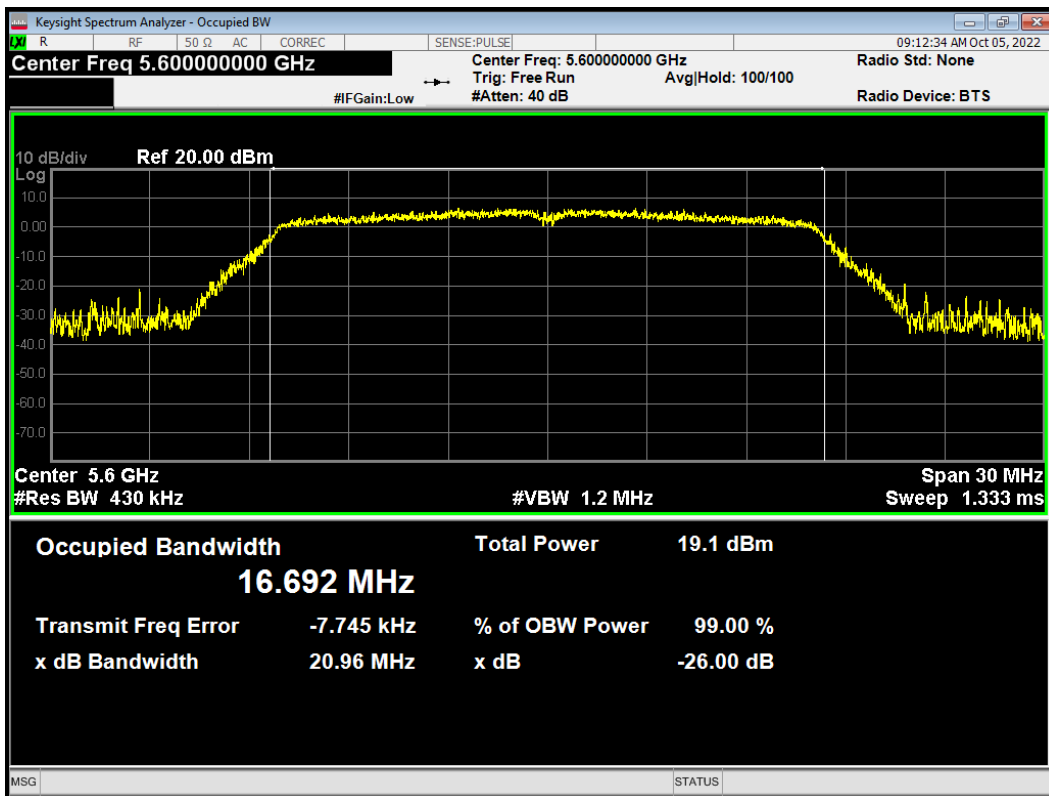


#### -26dB Bandwidth 802.11a 5520MHz

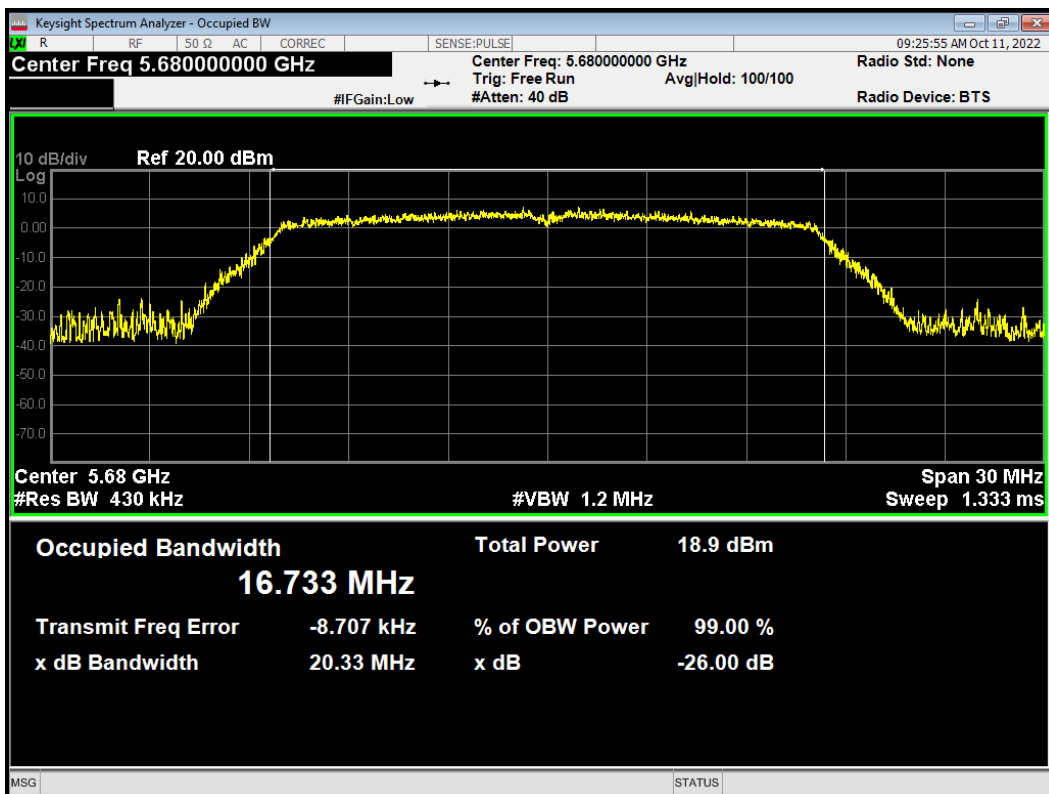




-26dB Bandwidth 802.11a 5600MHz

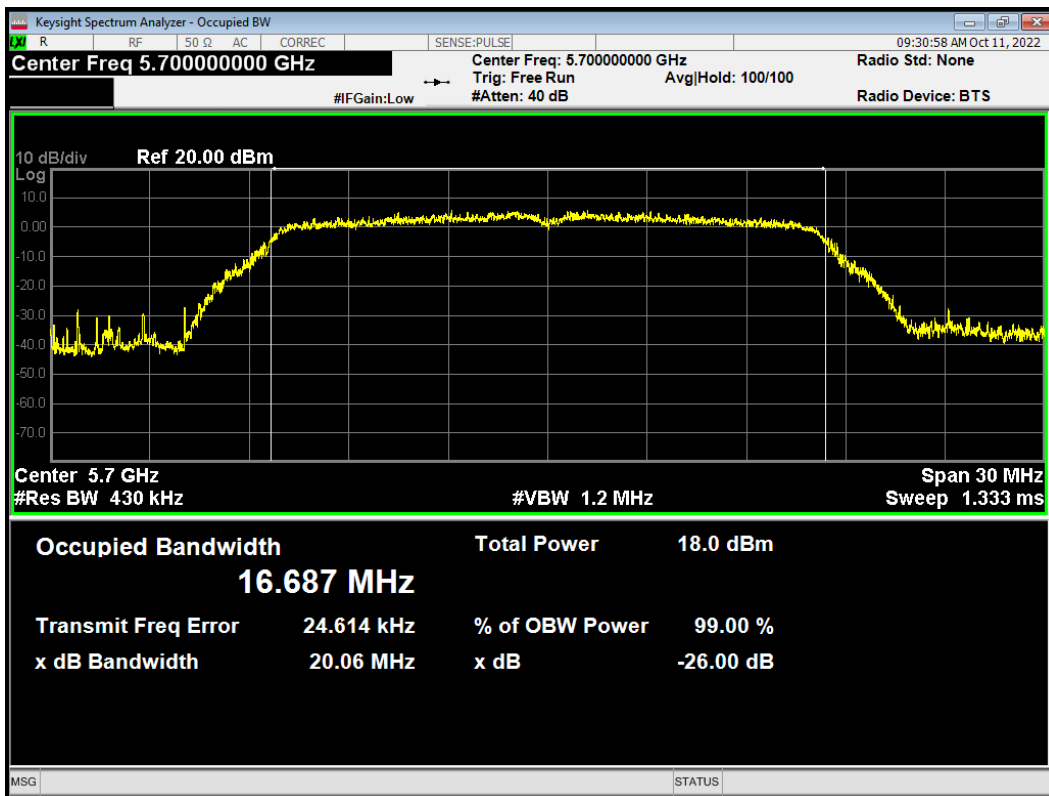


-26dB Bandwidth 802.11a 5680MHz

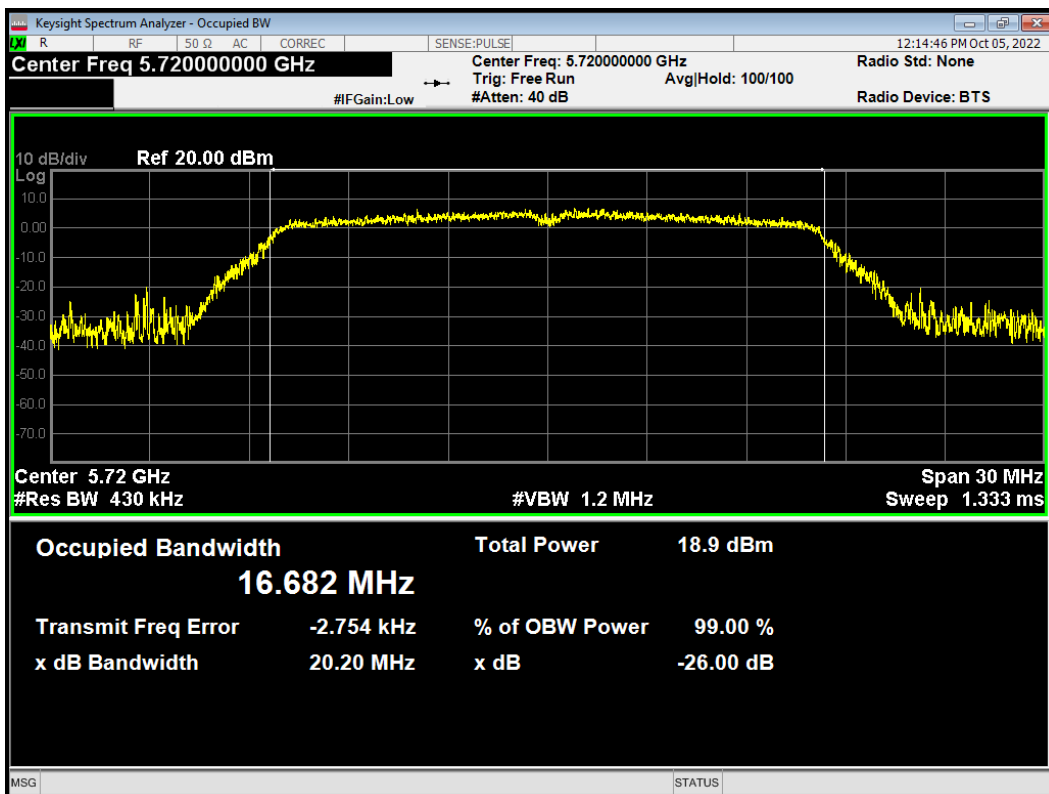




-26dB Bandwidth 802.11a 5700MHz

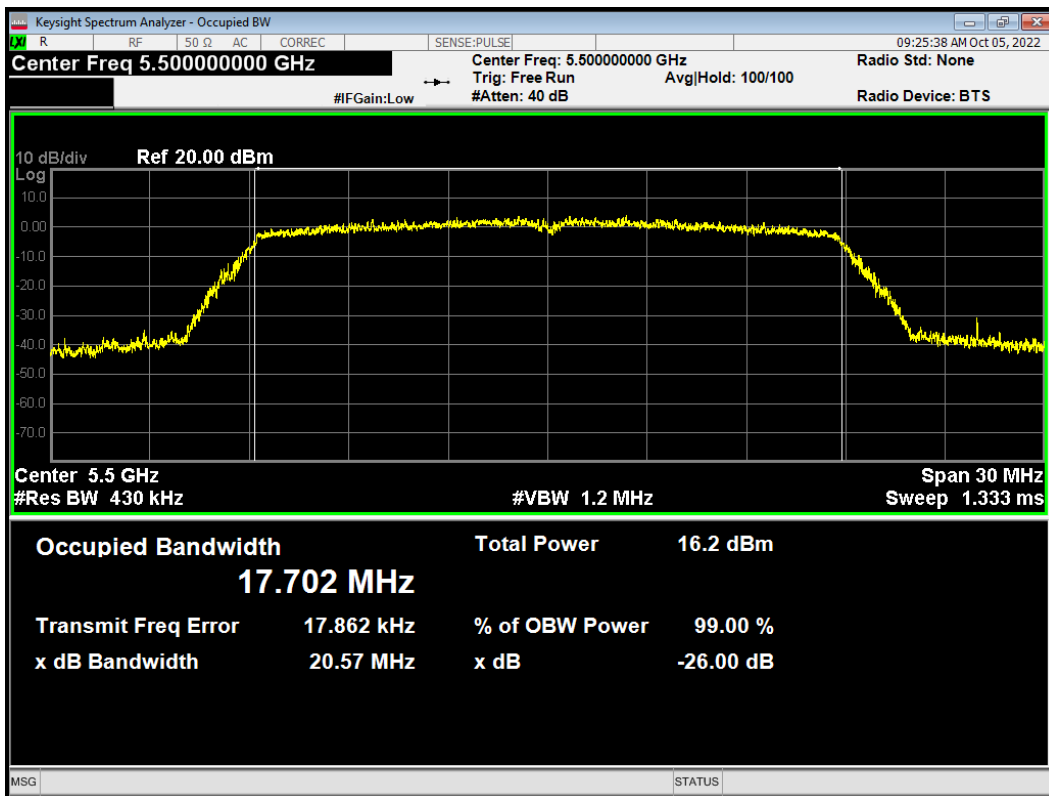


-26dB Bandwidth 802.11a 5720MHz

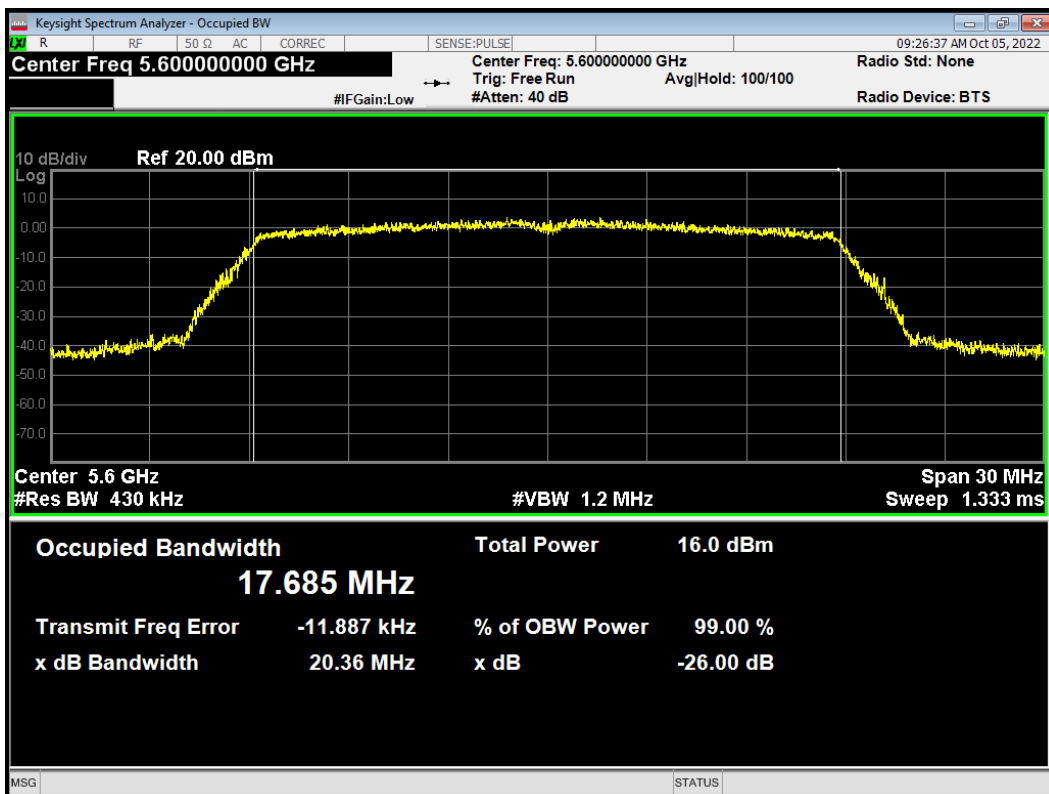




-26dB Bandwidth 802.11ac (VHT20) 5500MHz

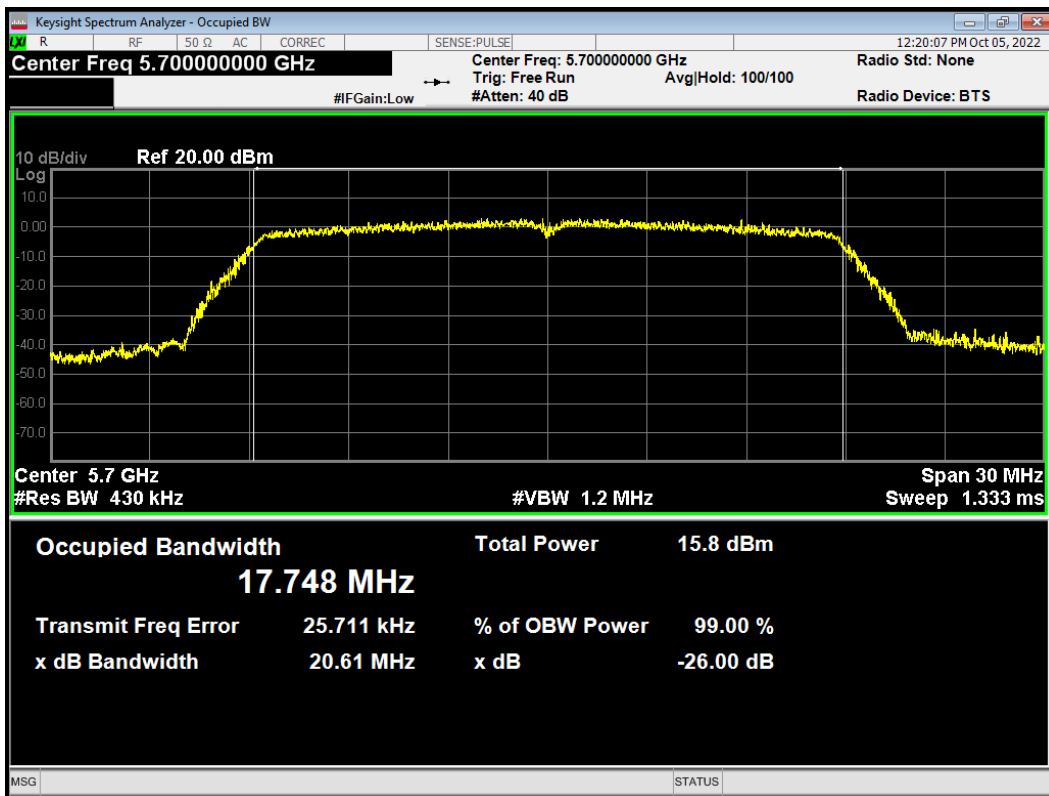


-26dB Bandwidth 802.11ac (VHT20) 5600MHz

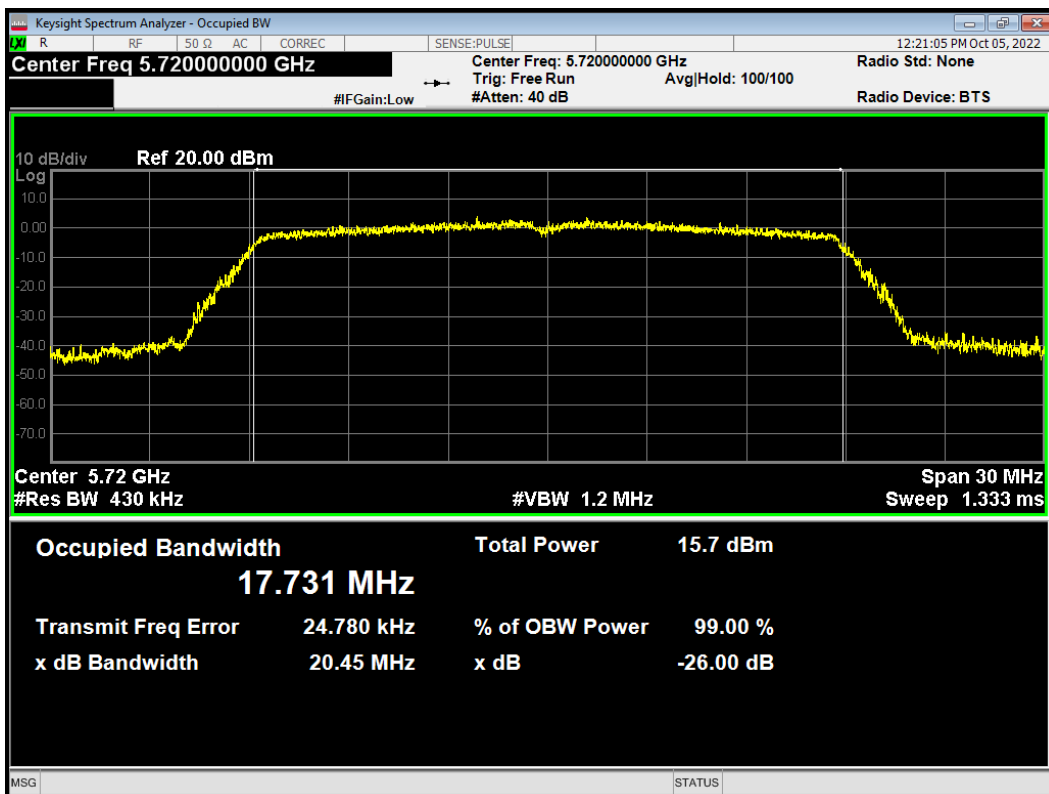




-26dB Bandwidth 802.11ac (VHT20) 5700MHz

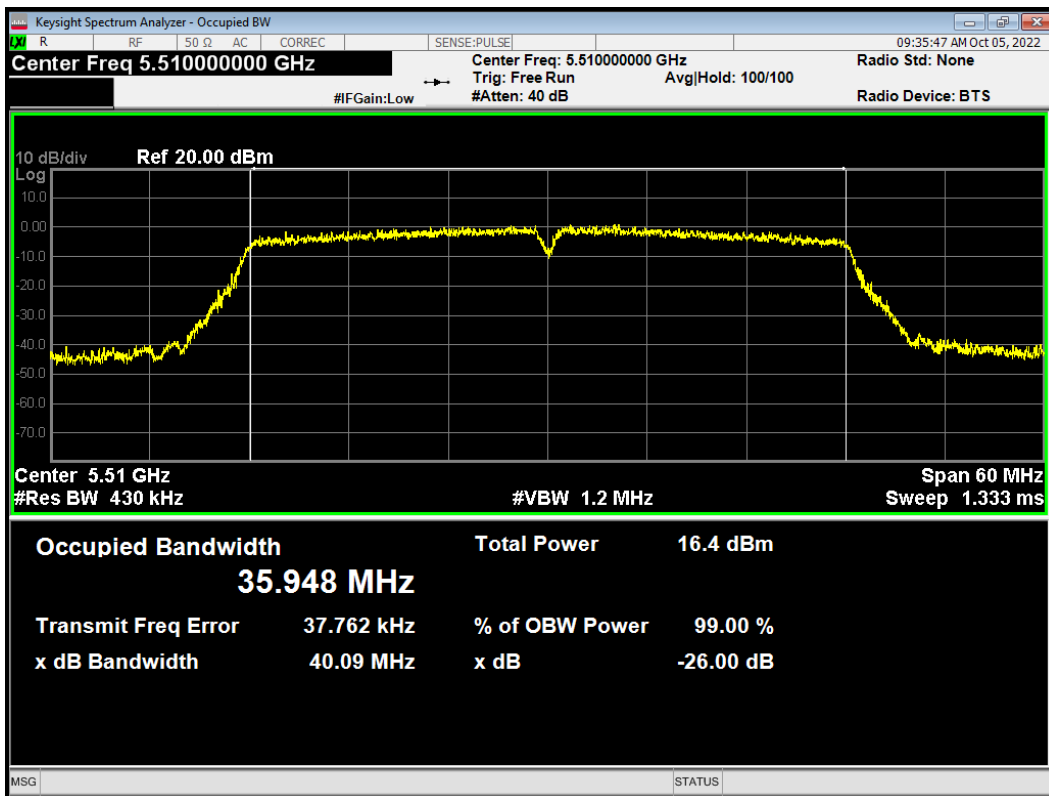


-26dB Bandwidth 802.11ac (VHT20) 5720MHz

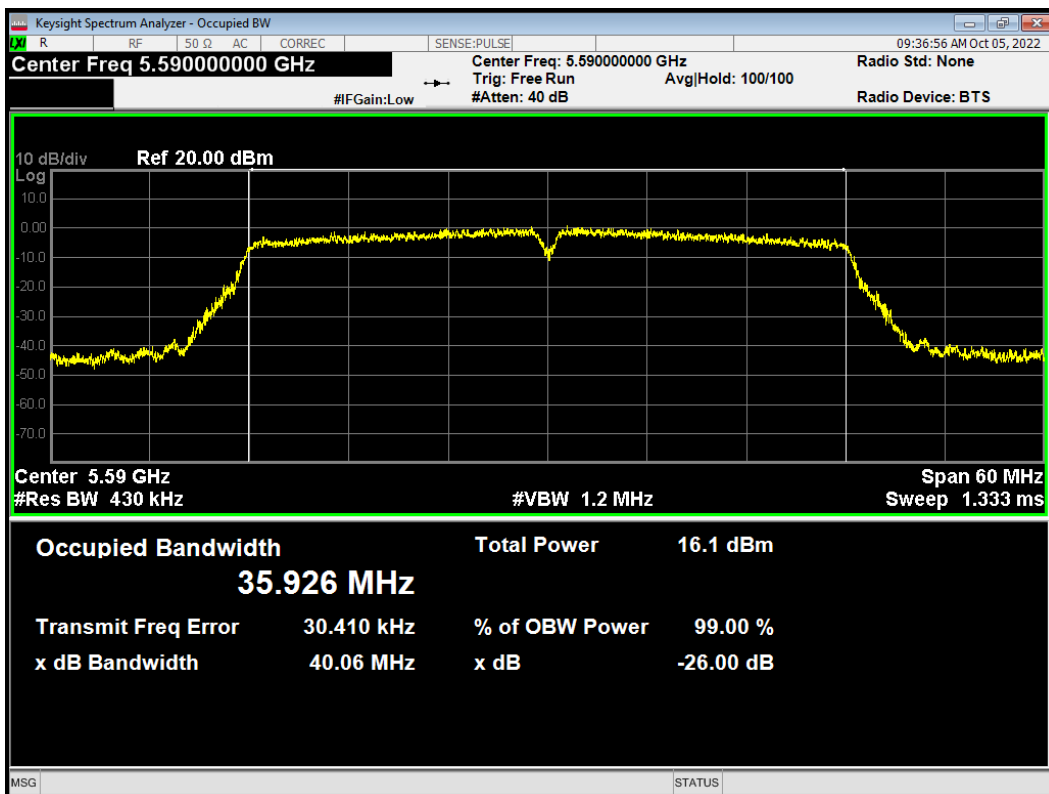




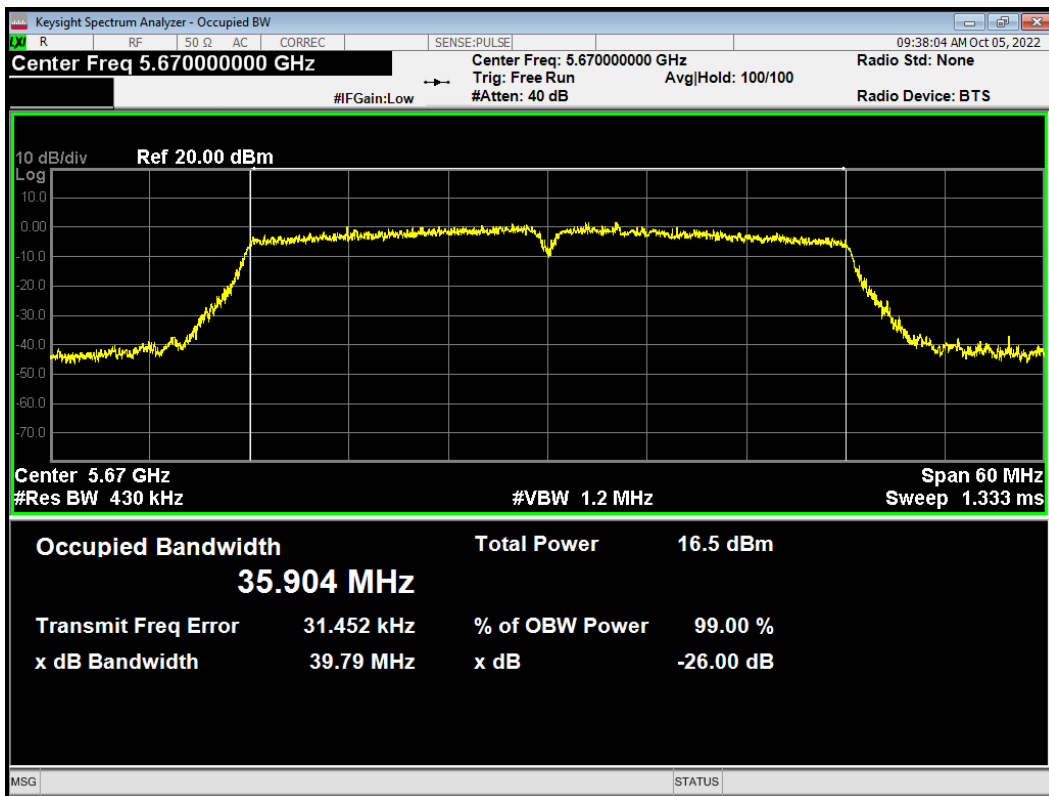
-26dB Bandwidth 802.11ac (VHT40) 5510MHz



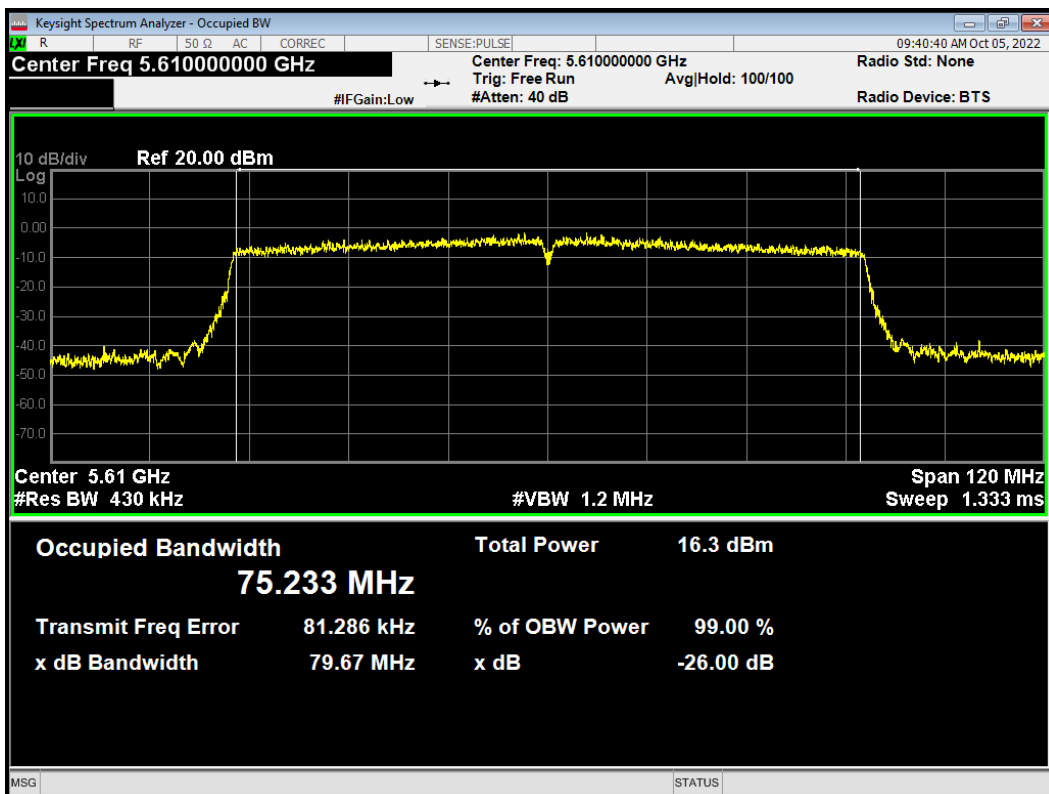
-26dB Bandwidth 802.11ac (VHT40) 5590MHz



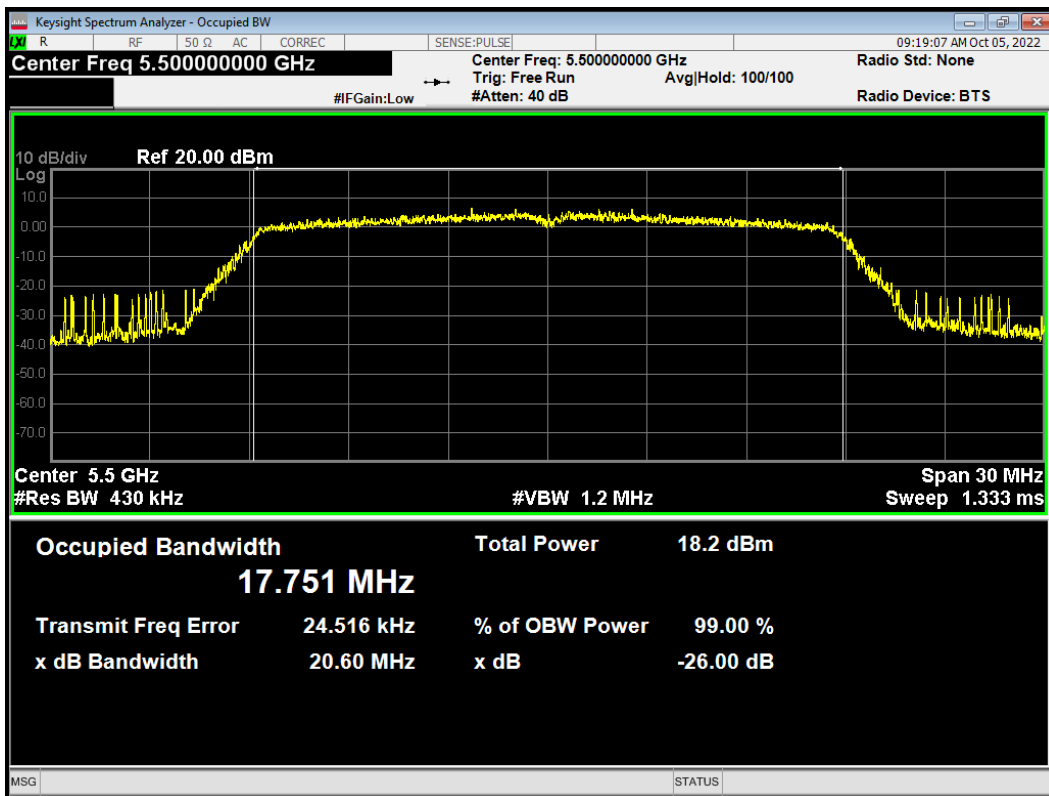
-26dB Bandwidth 802.11ac (VHT40) 5670MHz



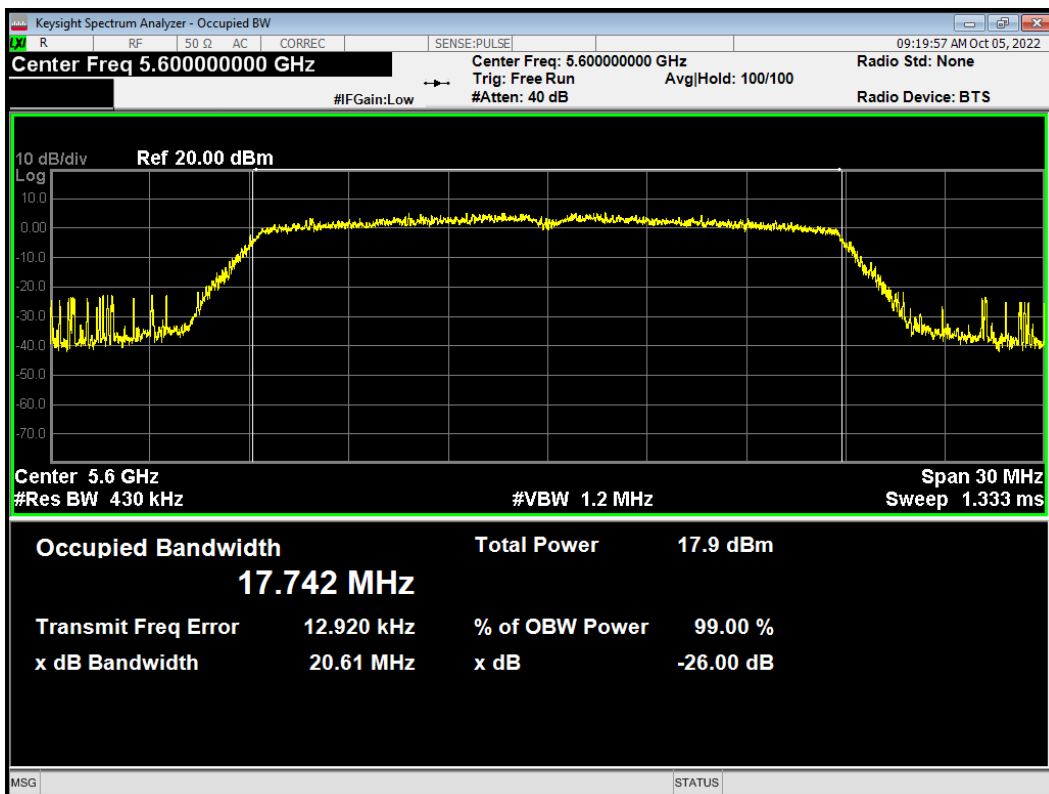
-26dB Bandwidth 802.11ac (VHT80) 5610MHz



-26dB Bandwidth 802.11n (HT20) 5500MHz

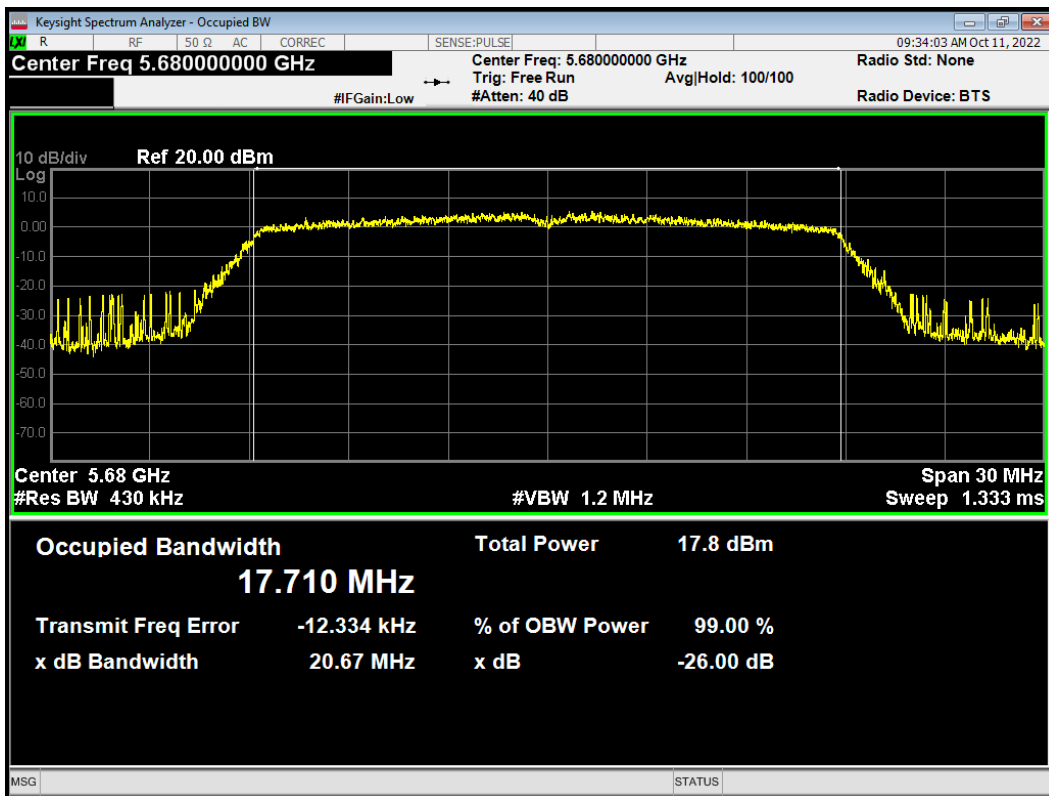


-26dB Bandwidth 802.11n (HT20) 5600MHz

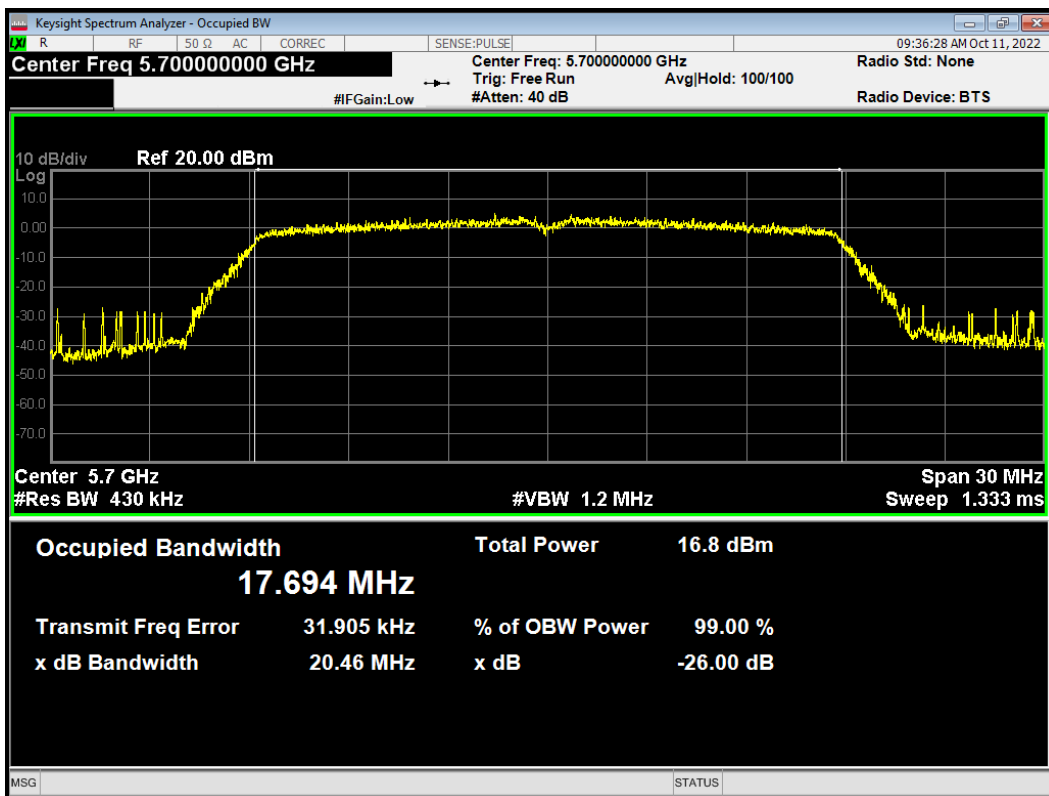




-26dB Bandwidth 802.11n (HT20) 5680MHz

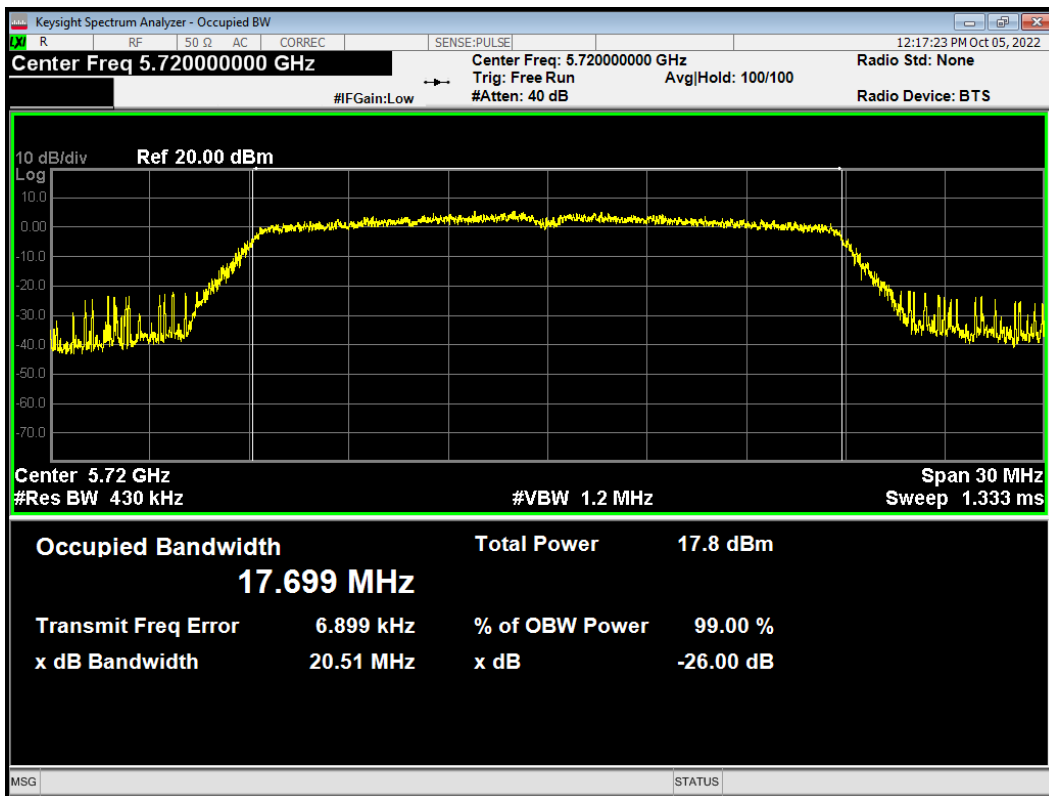


-26dB Bandwidth 802.11n (HT20) 5700MHz

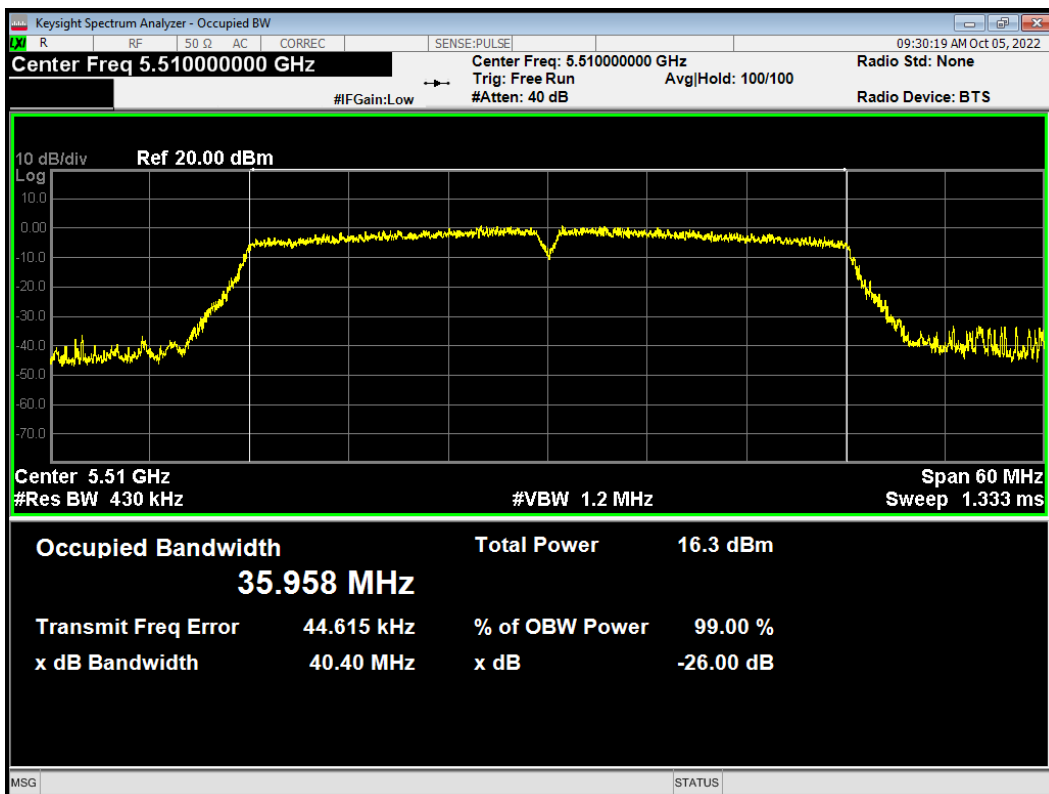




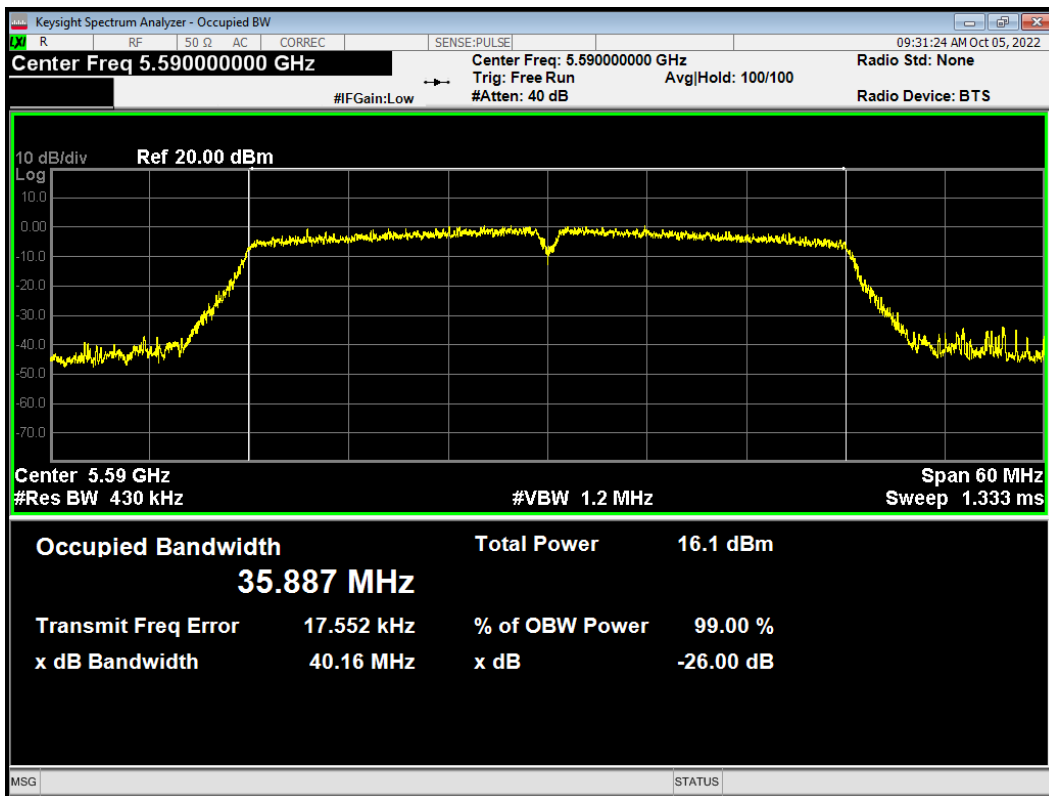
-26dB Bandwidth 802.11n (HT20) 5720MHz



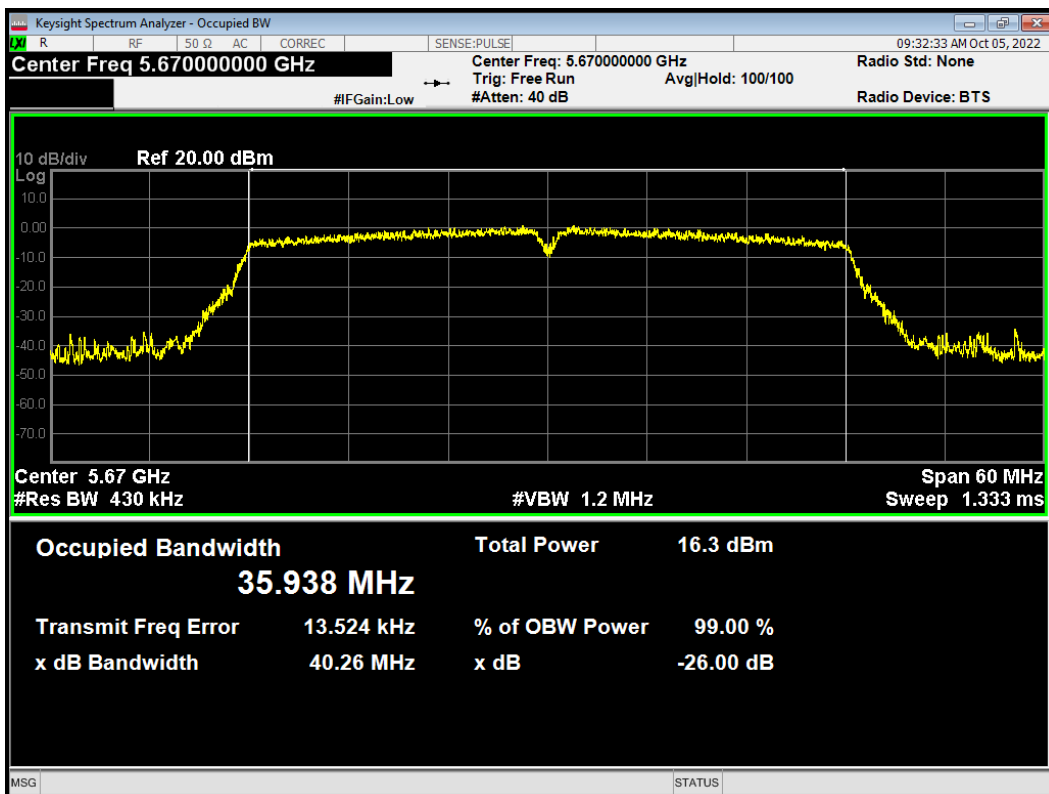
-26dB Bandwidth 802.11n (HT40) 5510MHz



-26dB Bandwidth 802.11n (HT40) 5590MHz



-26dB Bandwidth 802.11n (HT40) 5670MHz



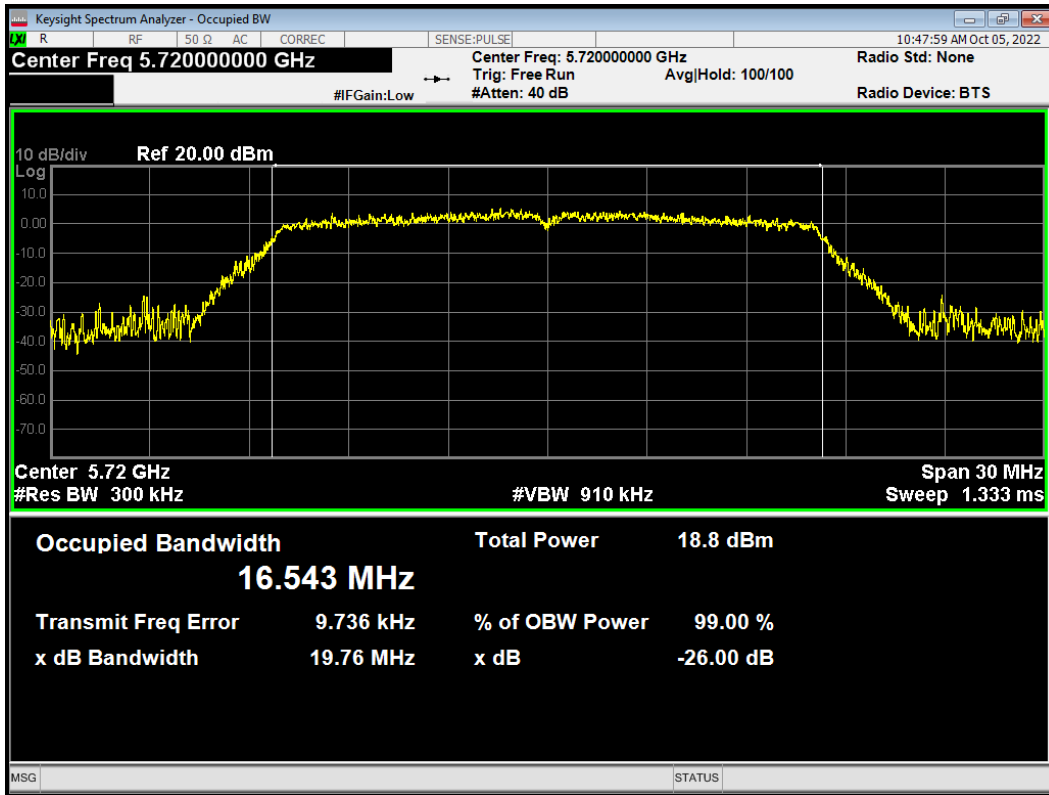




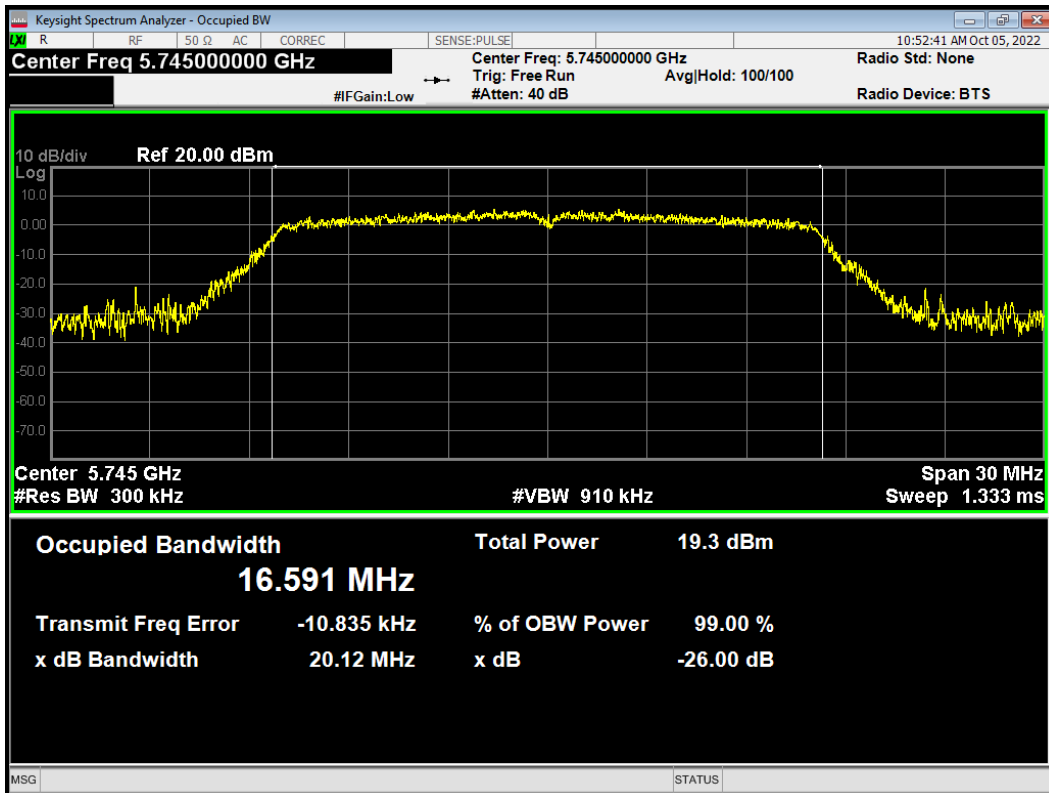
U-NII-3

99% bandwidth

OBW 802.11a 5720MHz

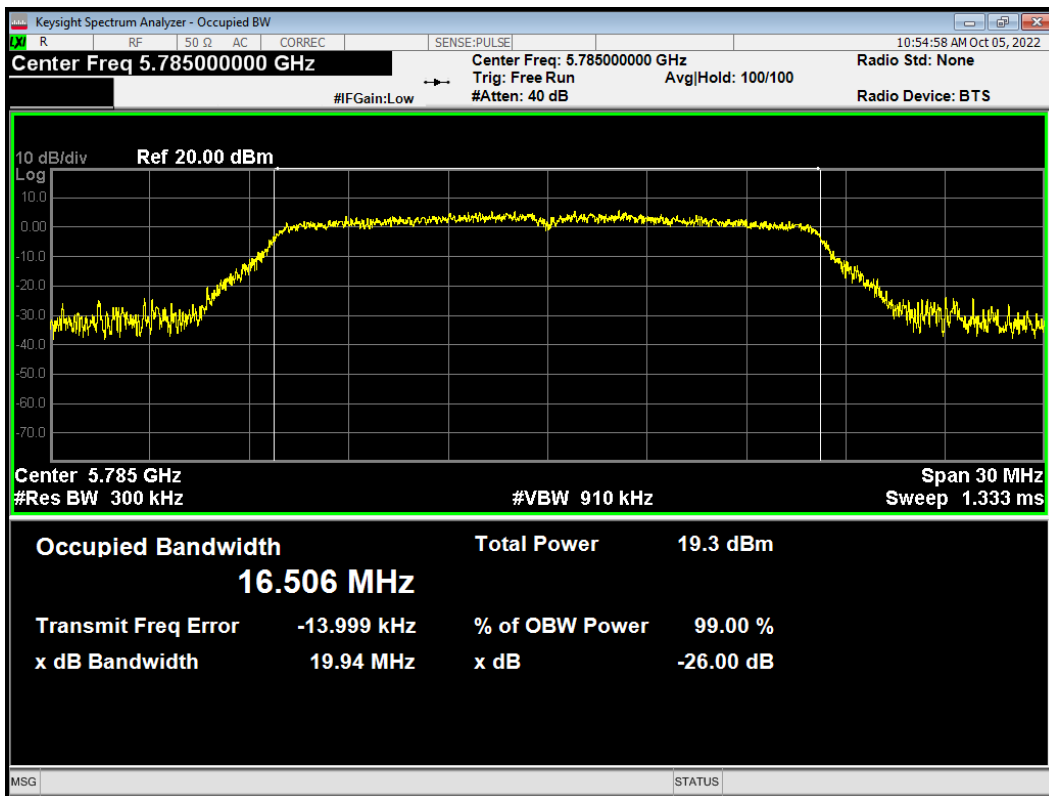


OBW 802.11a 5745MHz

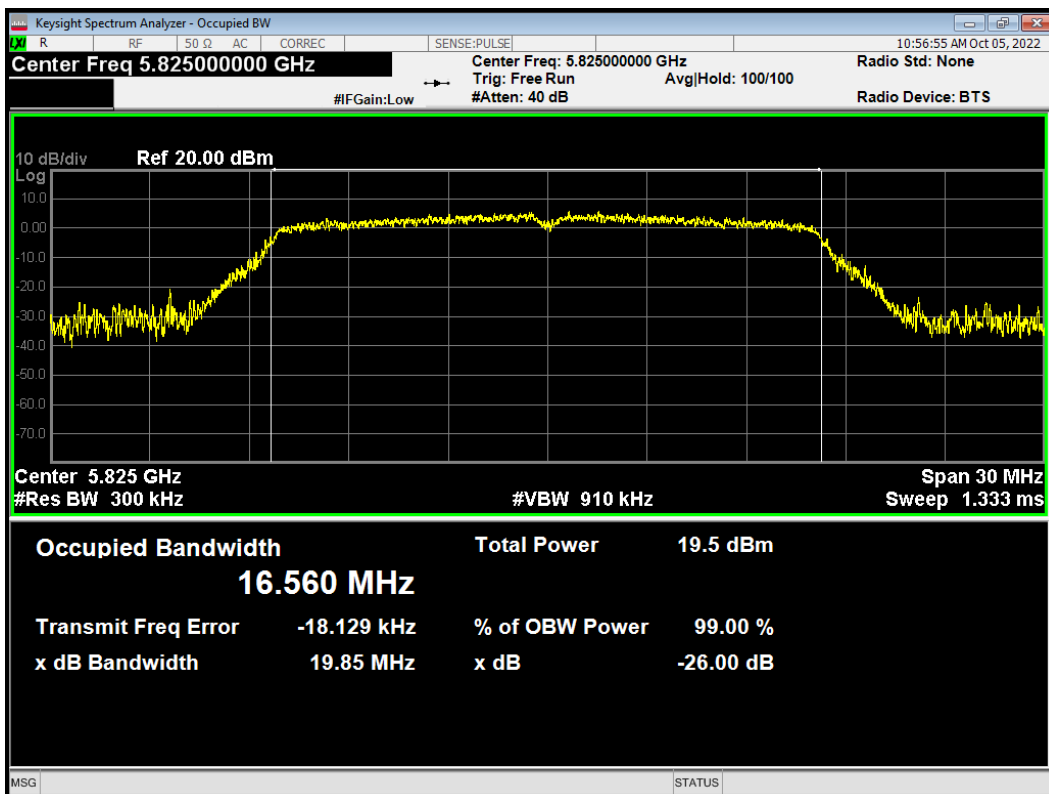




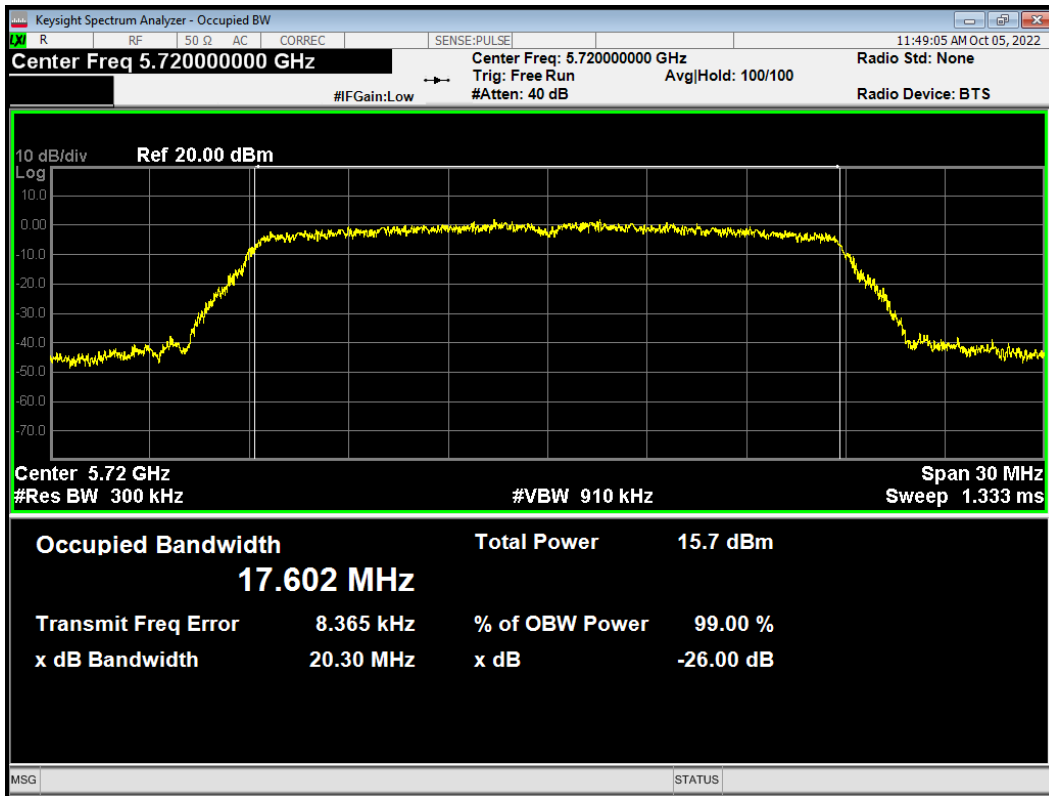
OBW 802.11a 5785MHz



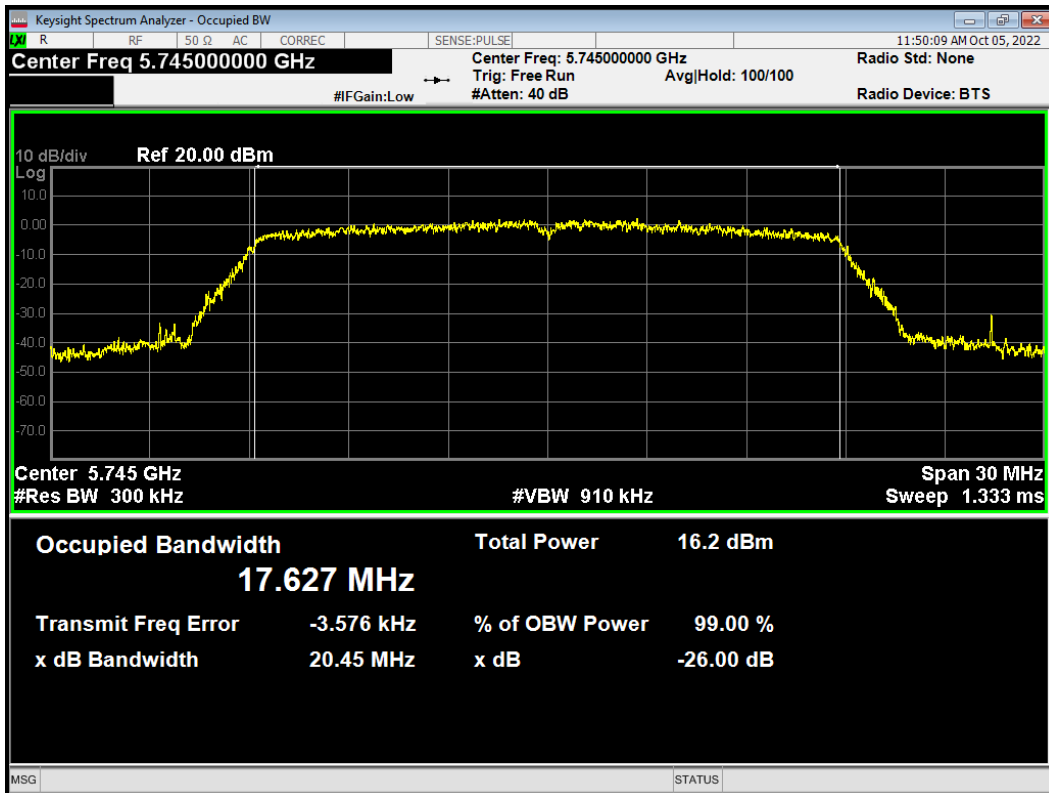
OBW 802.11a 5825MHz



OBW 802.11ac (VHT20) 5720MHz

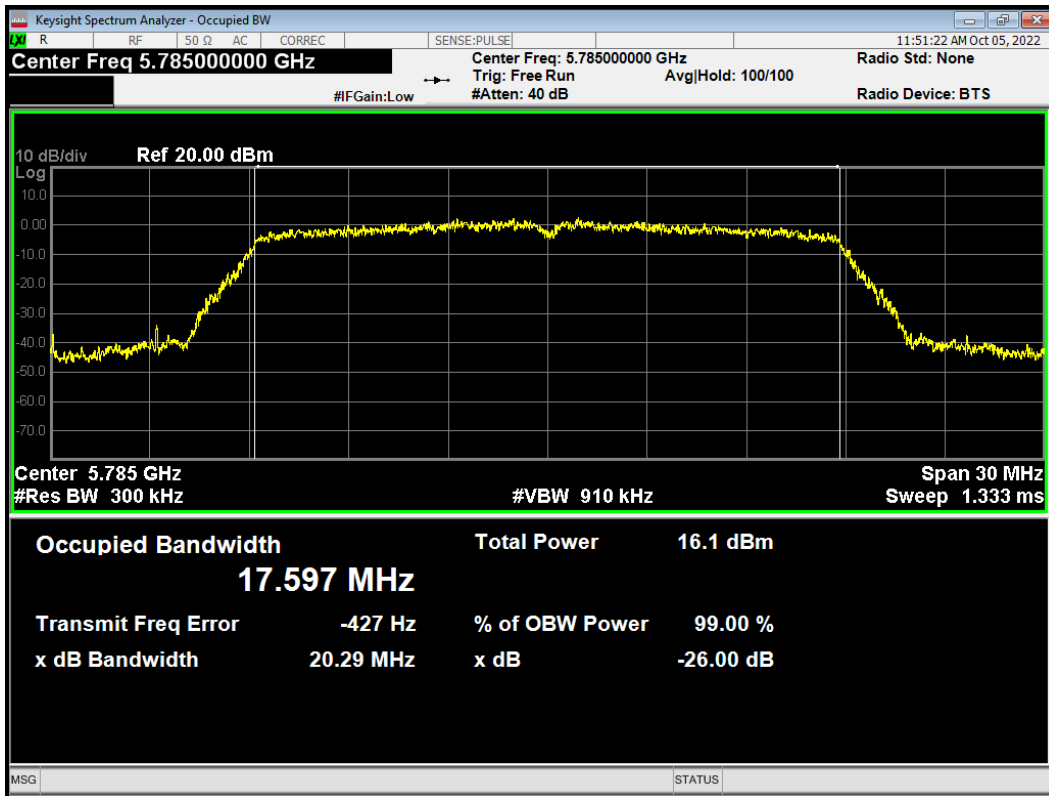


OBW 802.11ac (VHT20) 5745MHz

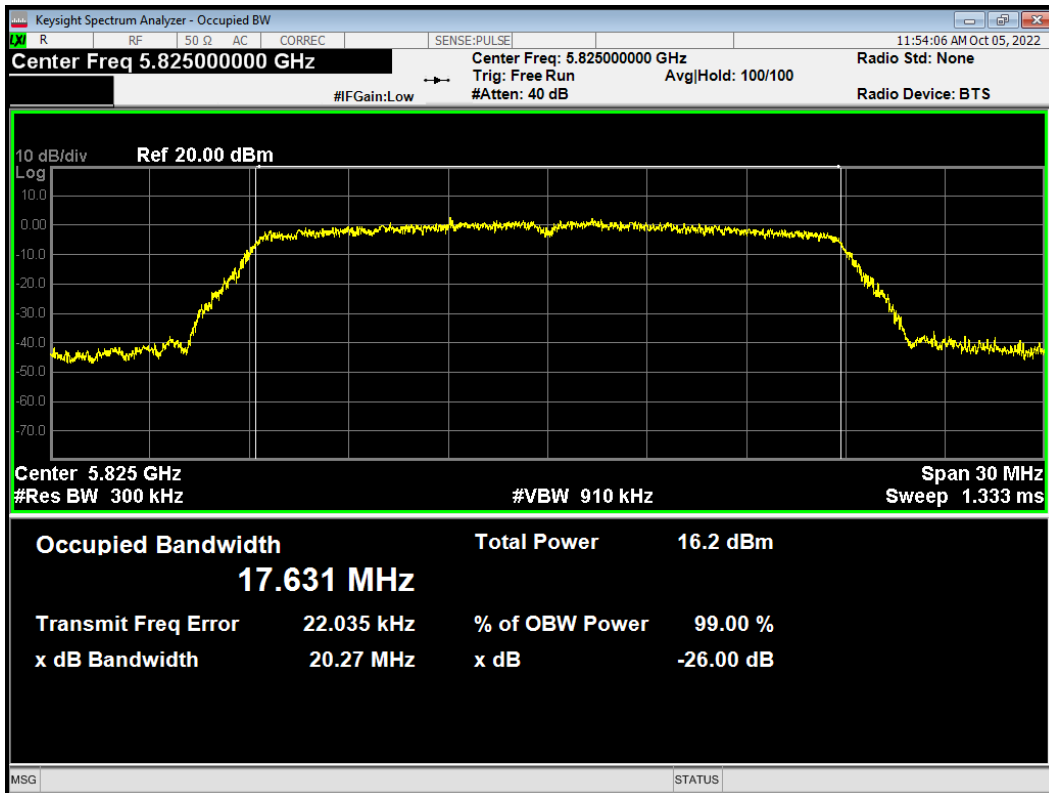




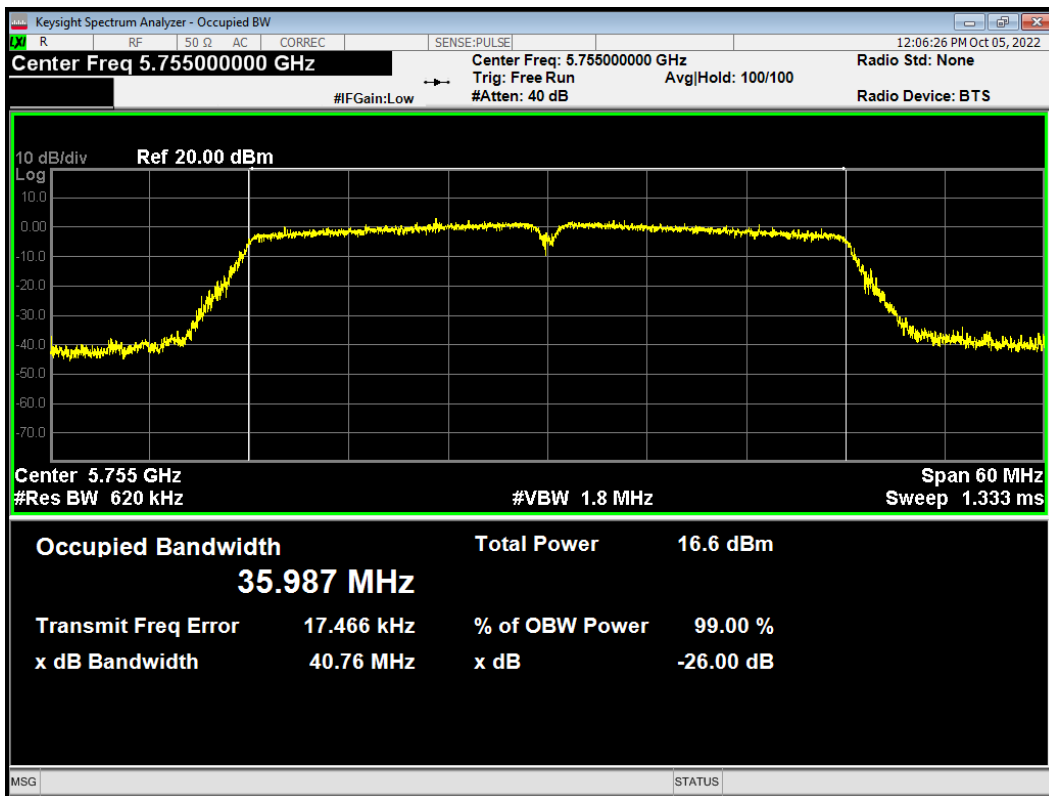
OBW 802.11ac (VHT20) 5785MHz



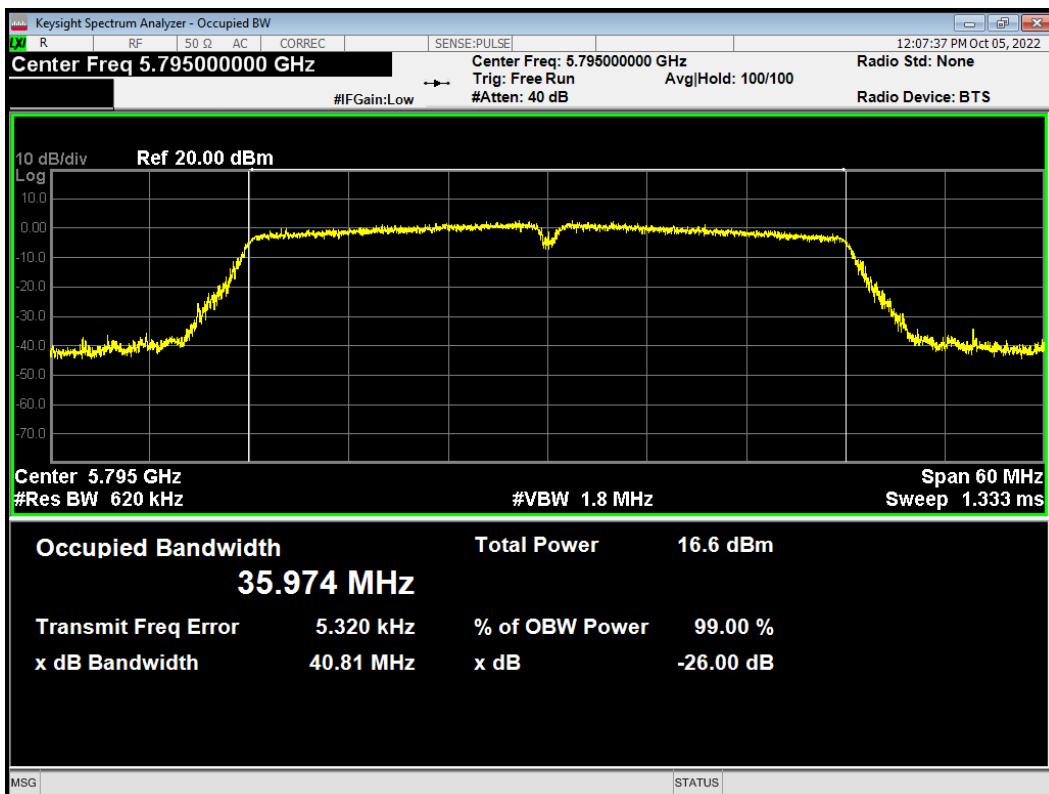
OBW 802.11ac (VHT20) 5825MHz



OBW 802.11ac (VHT40) 5755MHz

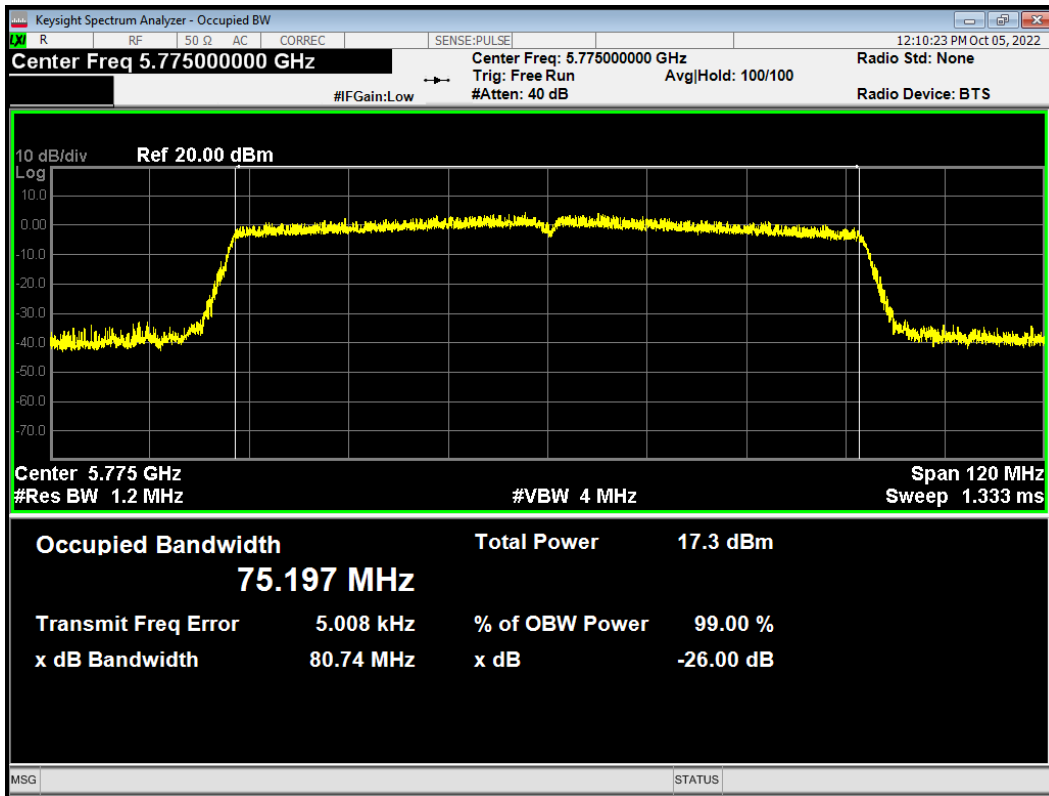


OBW 802.11ac (VHT40) 5795MHz

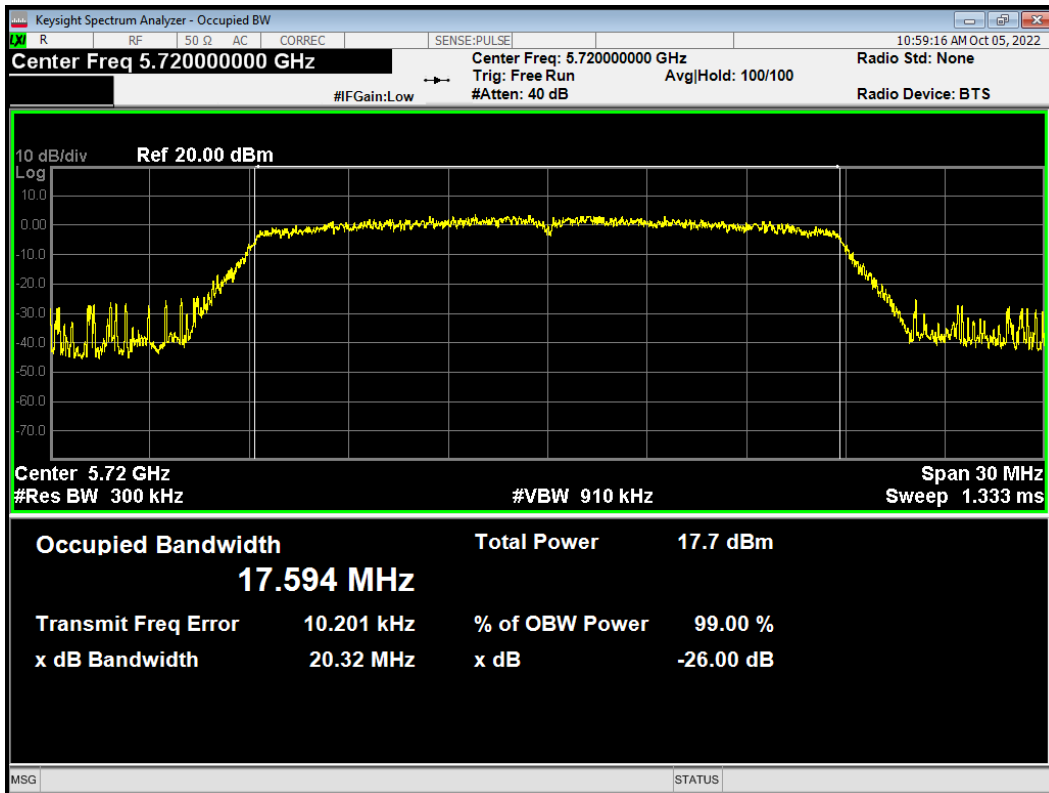




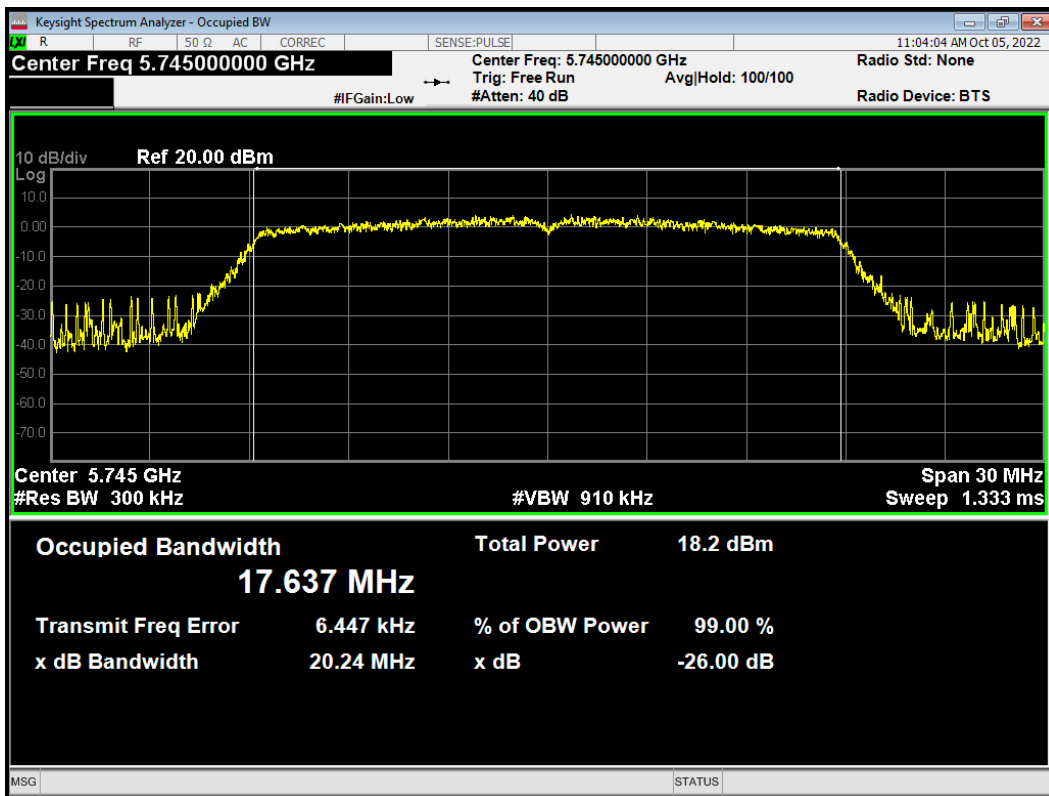
OBW 802.11ac (VHT80) 5775MHz



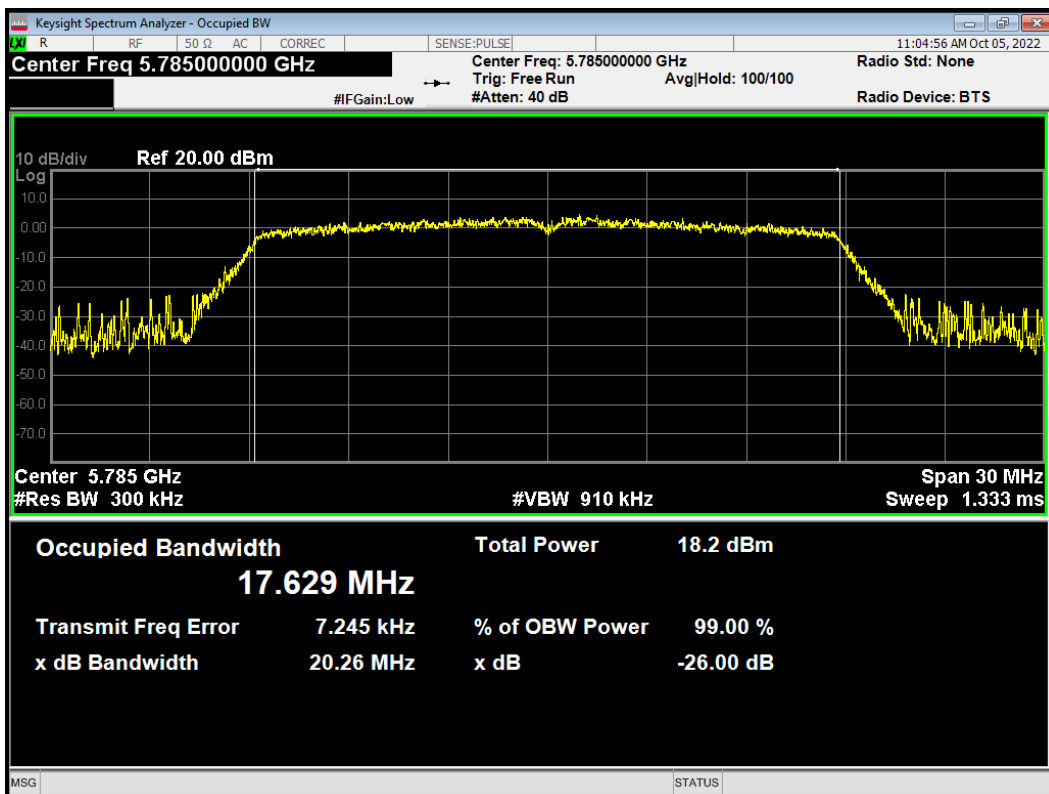
OBW 802.11n (HT20) 5720MHz



OBW 802.11n (HT20) 5745MHz

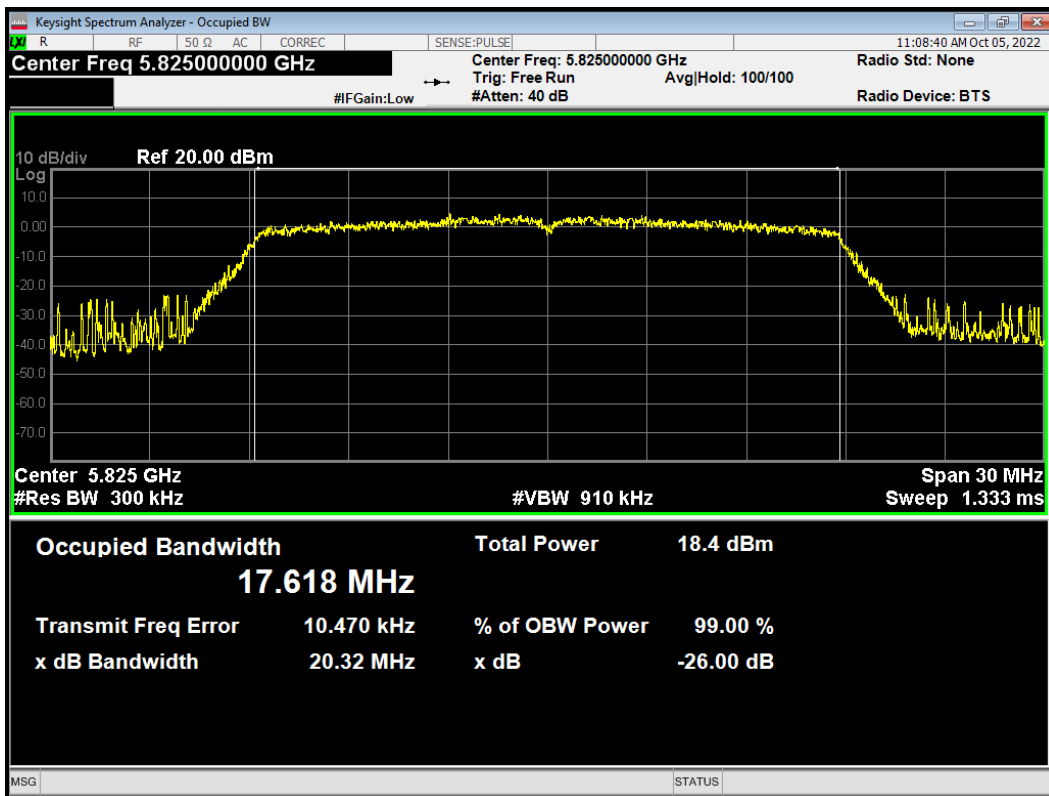


OBW 802.11n (HT20) 5785MHz

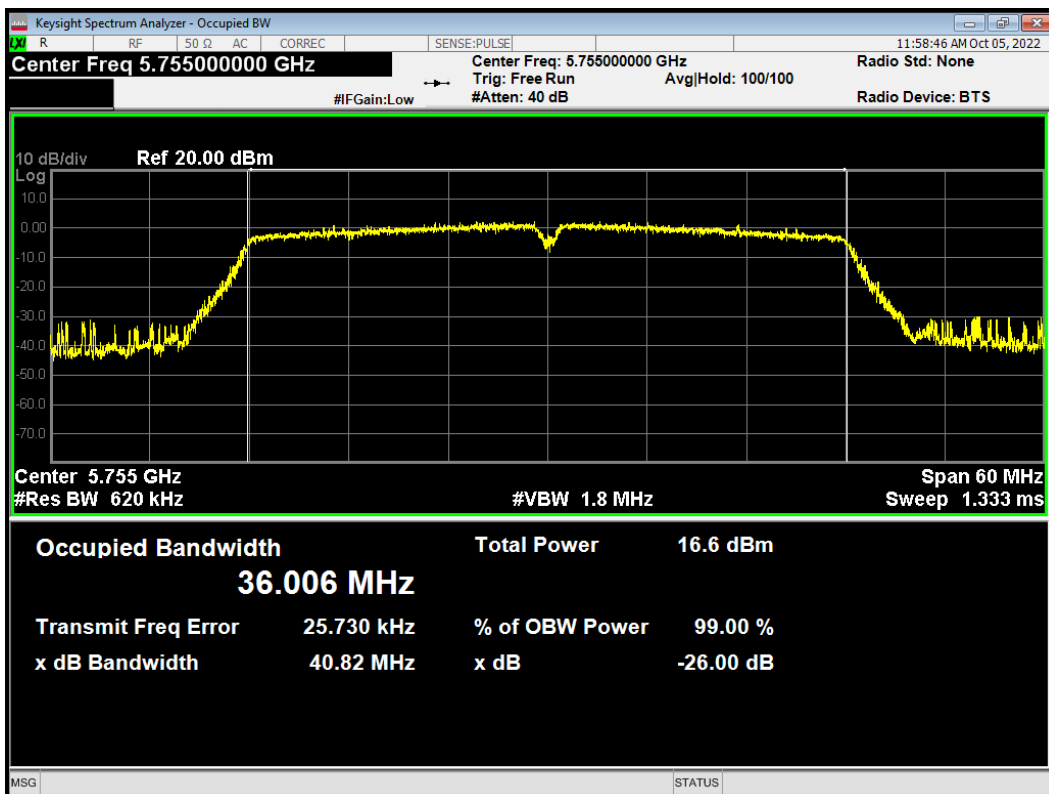




OBW 802.11n (HT20) 5825MHz



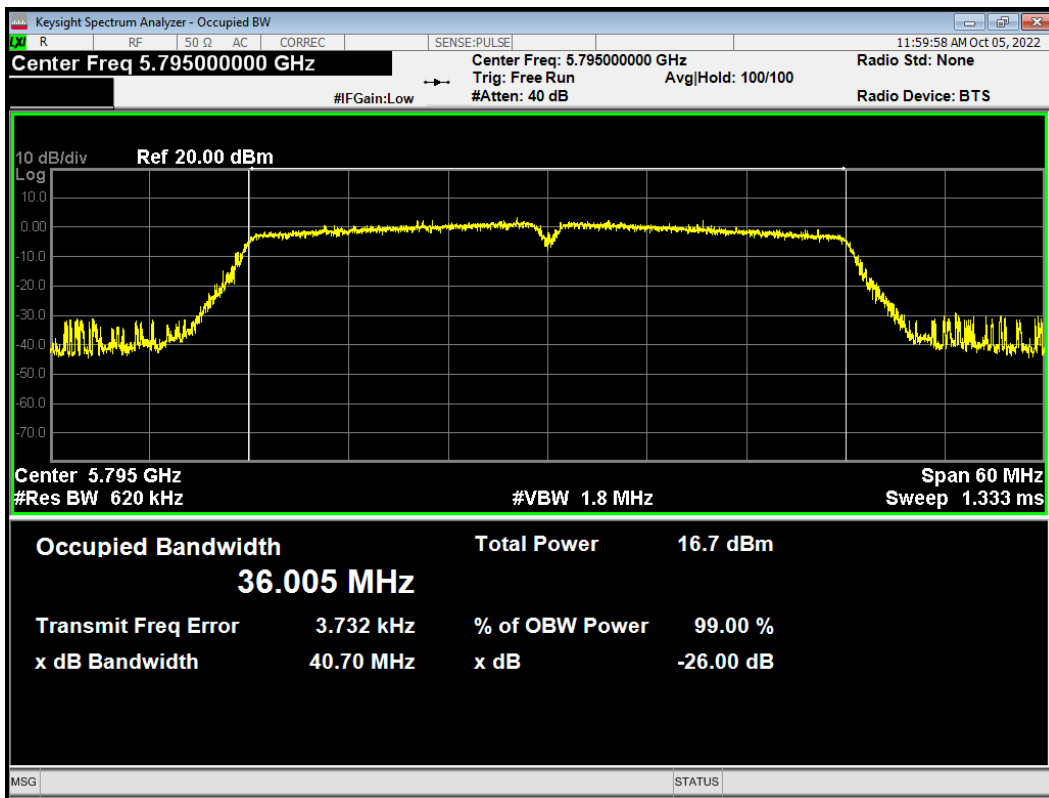
OBW 802.11n (HT40) 5755MHz







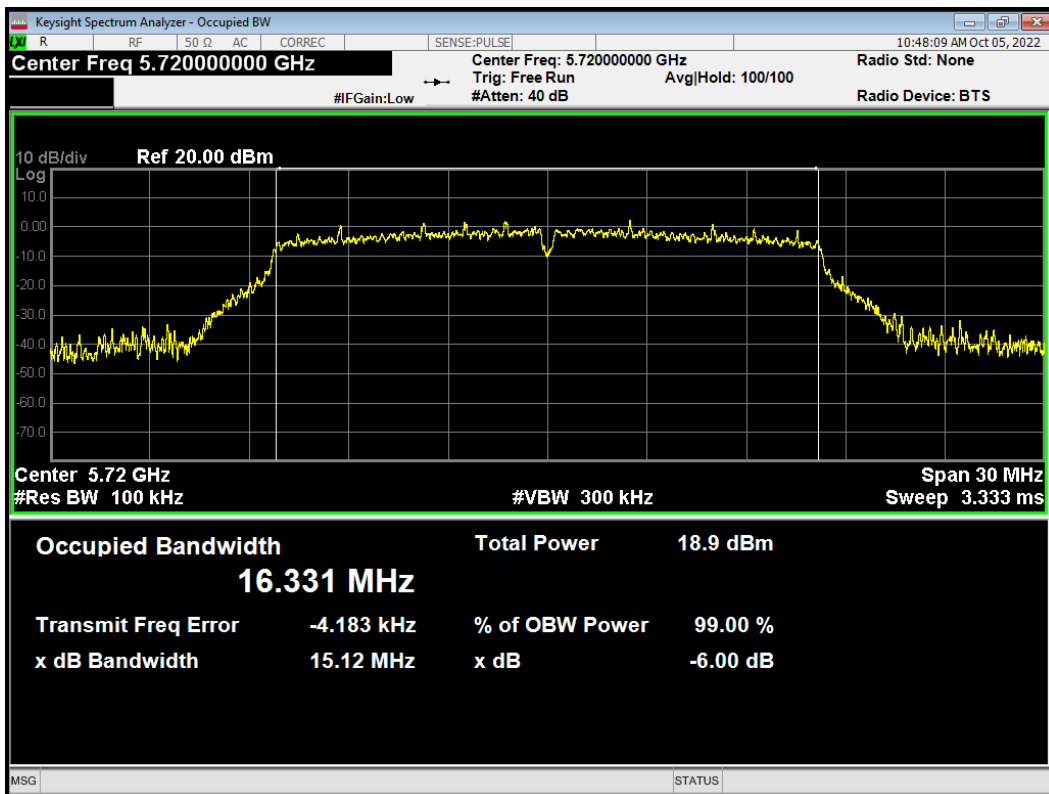
OBW 802.11n (HT40) 5795MHz



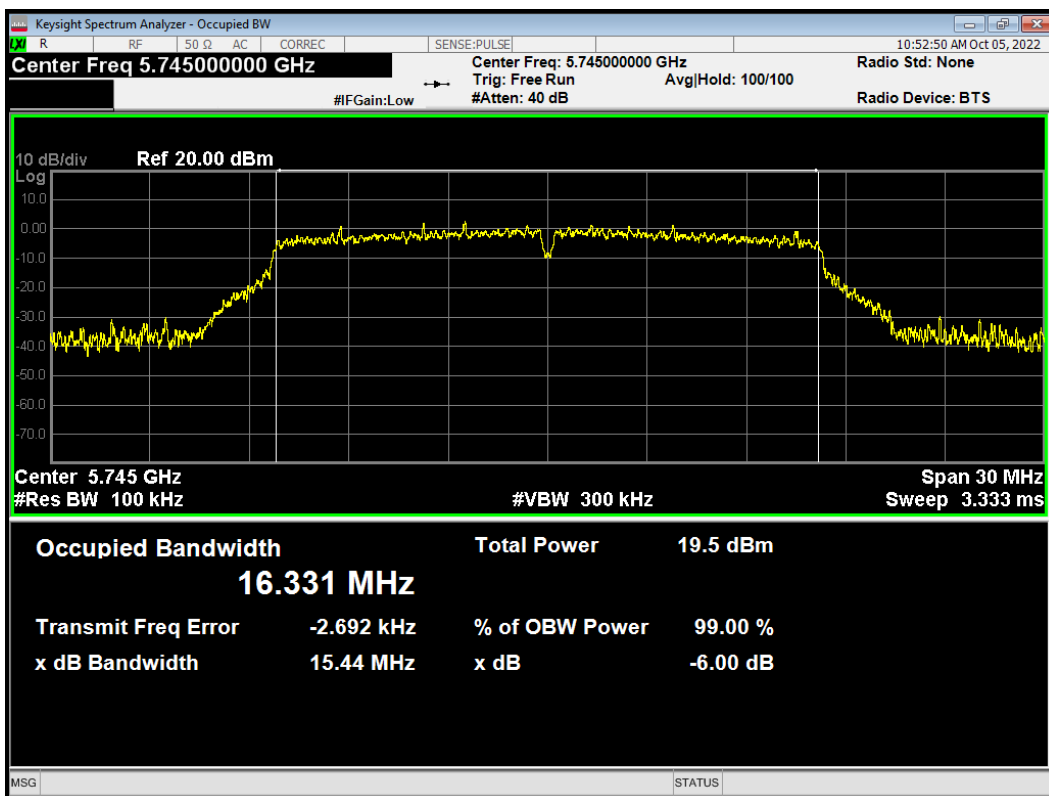


### Minimum 6 dB bandwidth

-6dB Bandwidth 802.11a 5720MHz

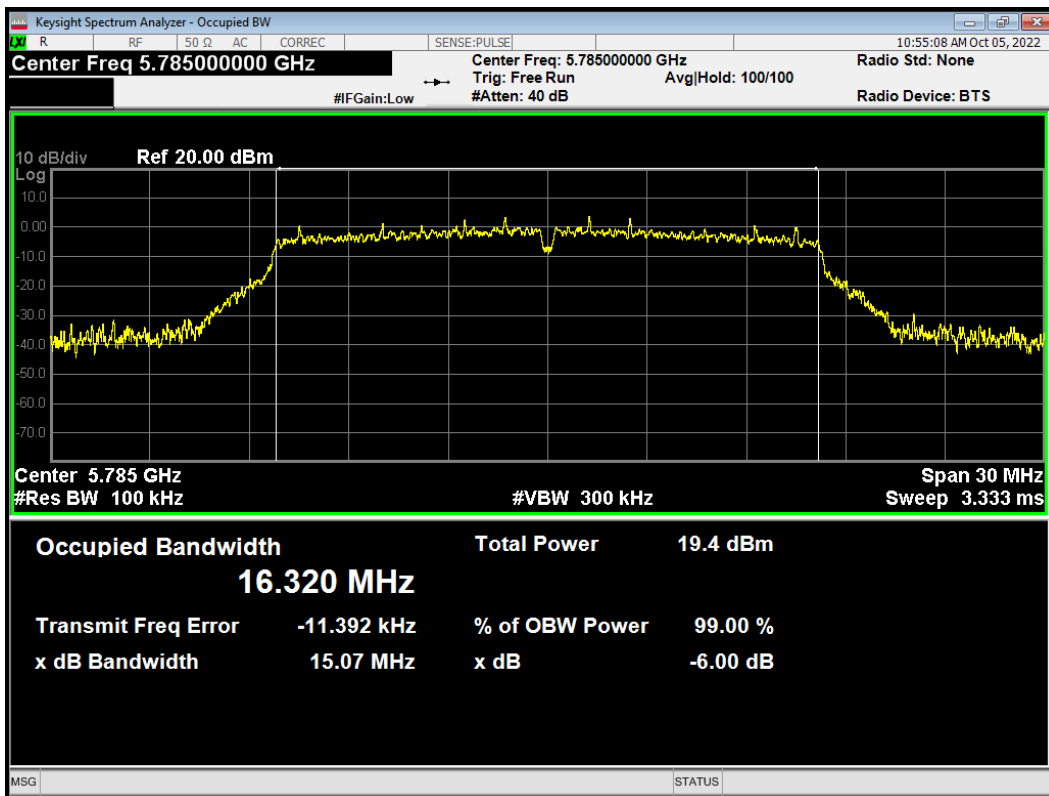


-6dB Bandwidth 802.11a 5745MHz

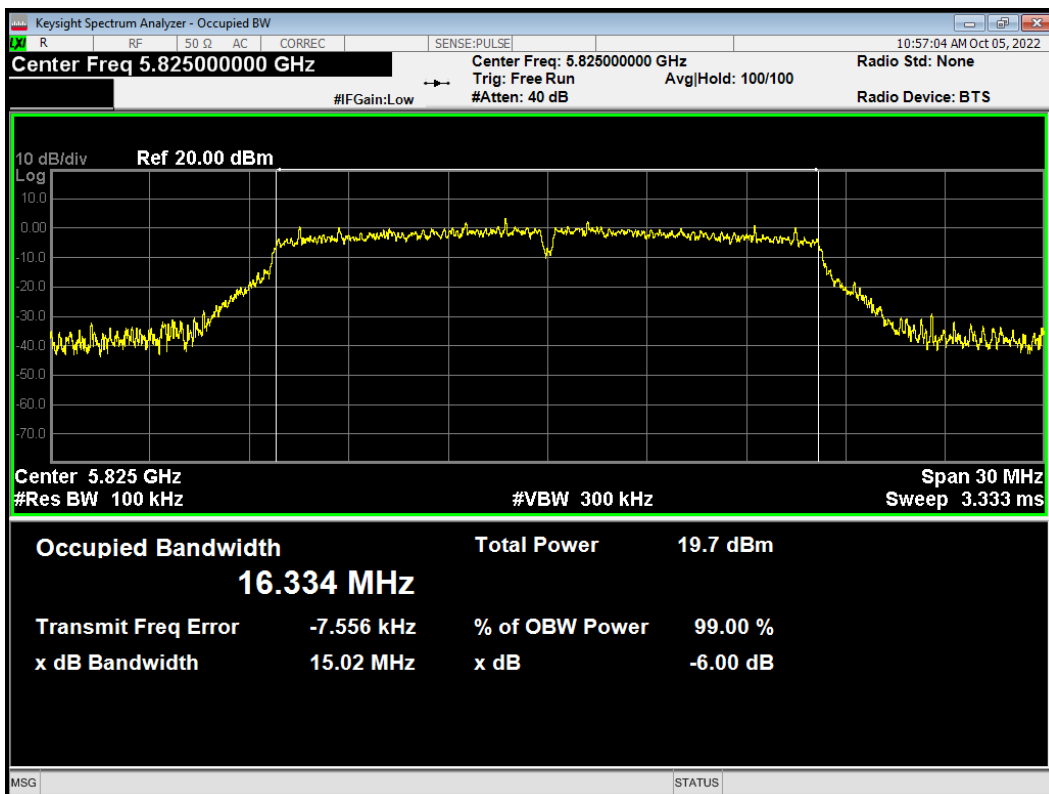




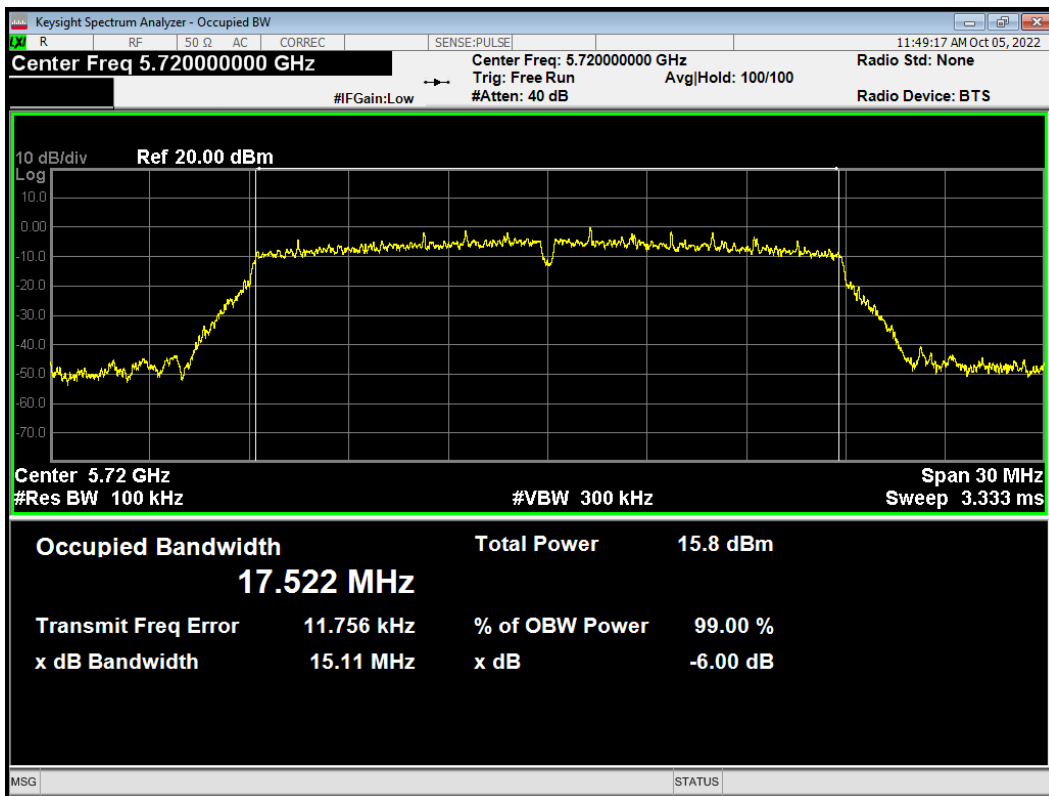
-6dB Bandwidth 802.11a 5785MHz



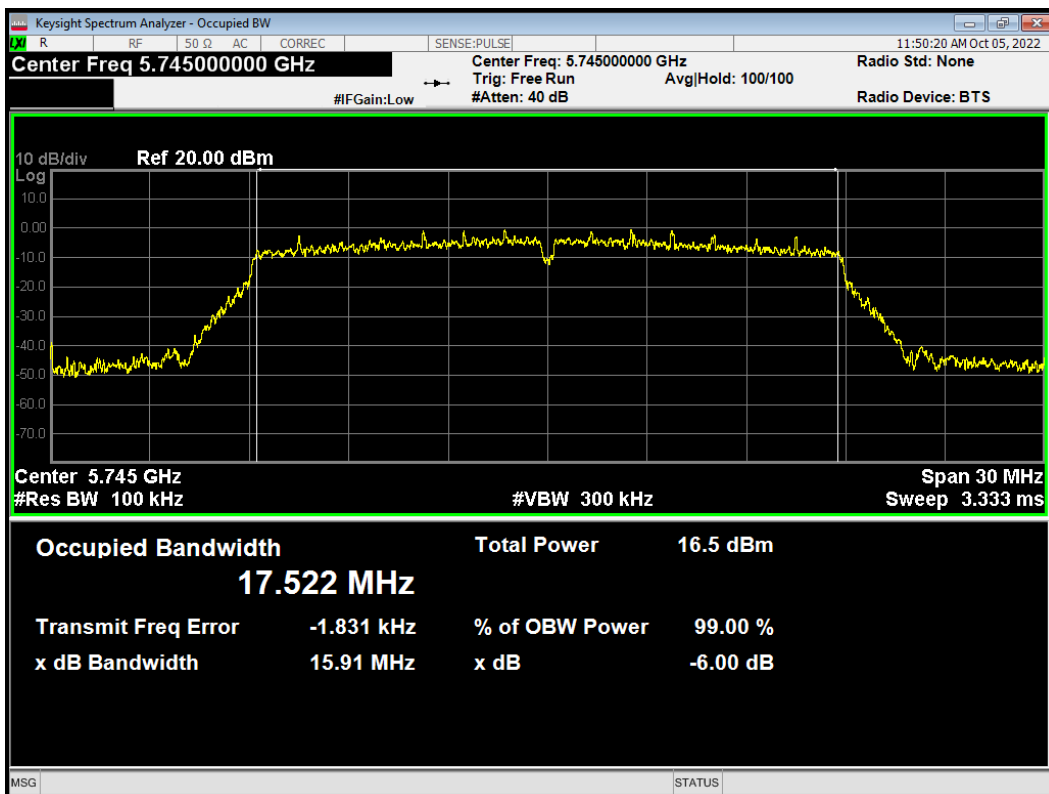
-6dB Bandwidth 802.11a 5825MHz



-6dB Bandwidth 802.11ac (VHT20) 5720MHz

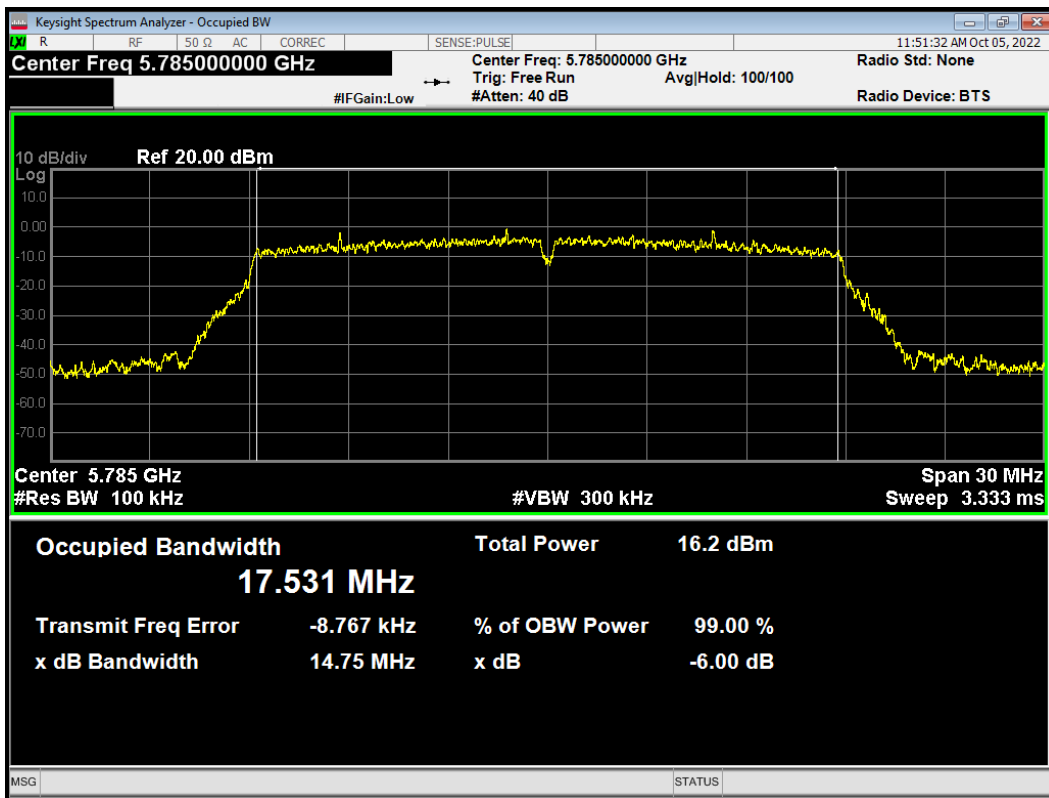


-6dB Bandwidth 802.11ac (VHT20) 5745MHz

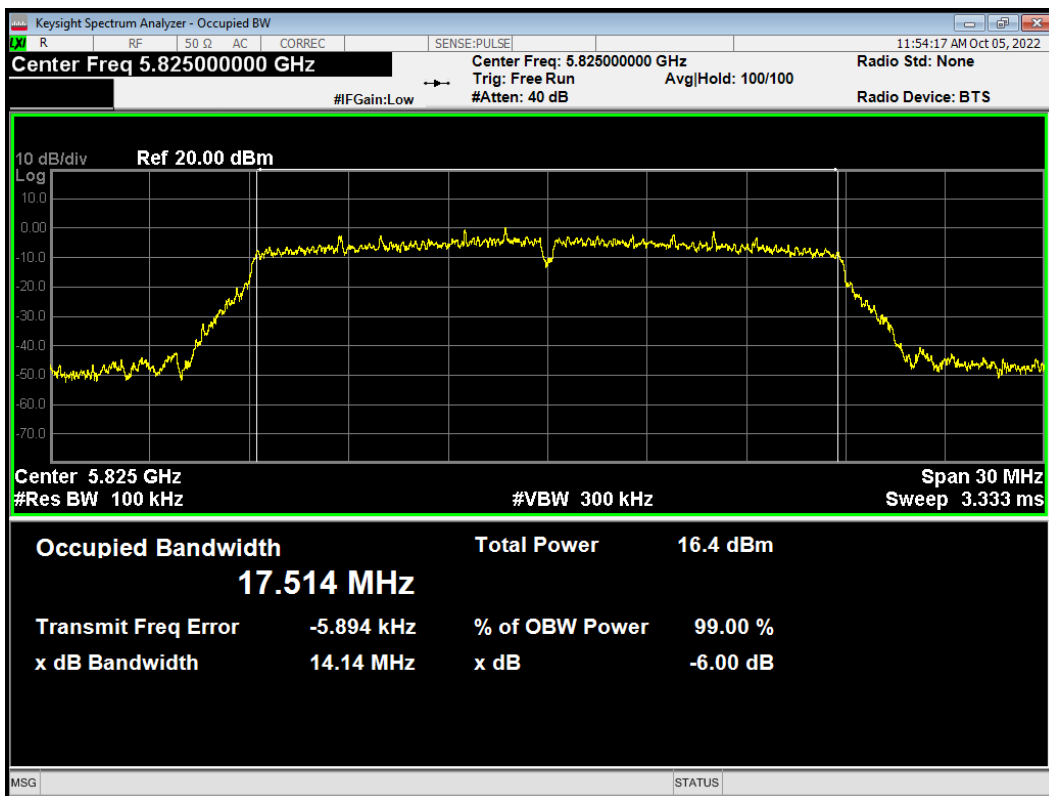




-6dB Bandwidth 802.11ac (VHT20) 5785MHz

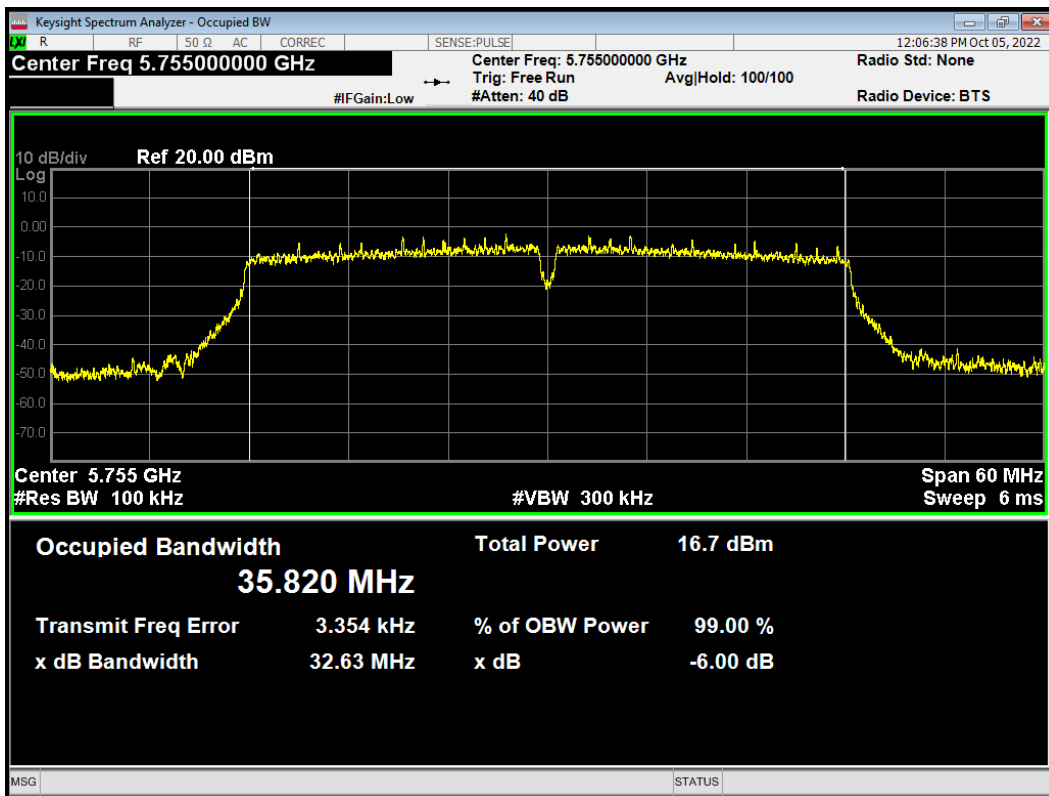


-6dB Bandwidth 802.11ac (VHT20) 5825MHz

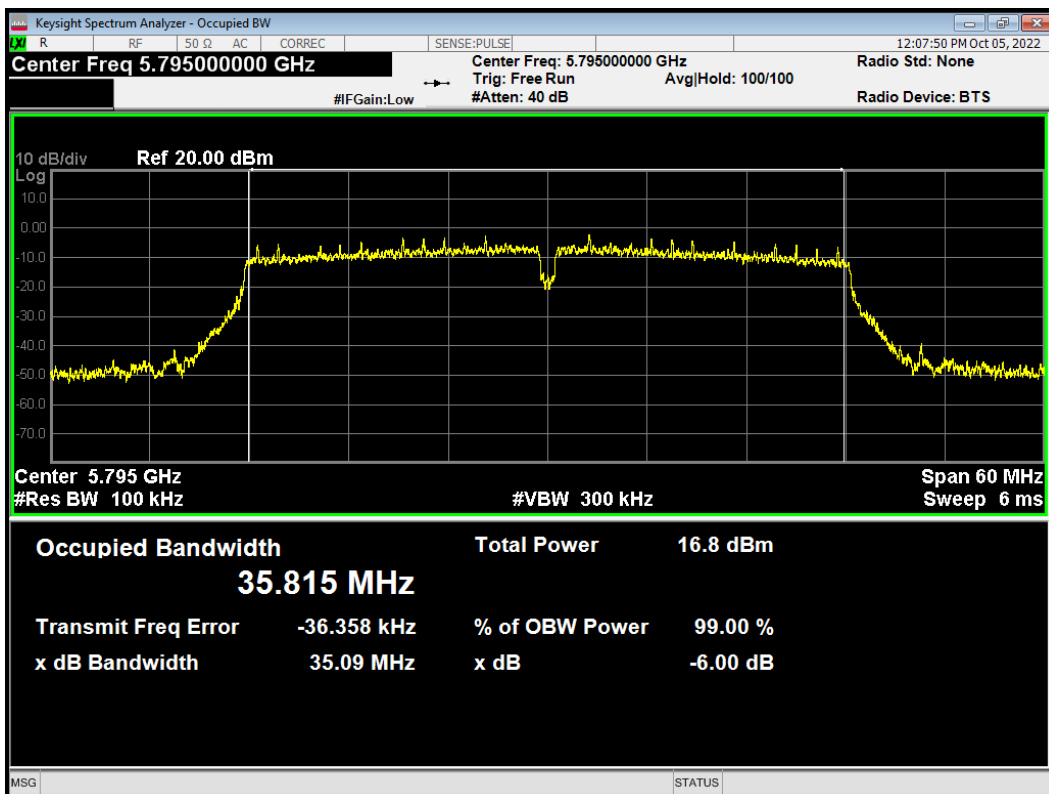




-6dB Bandwidth 802.11ac (VHT40) 5755MHz

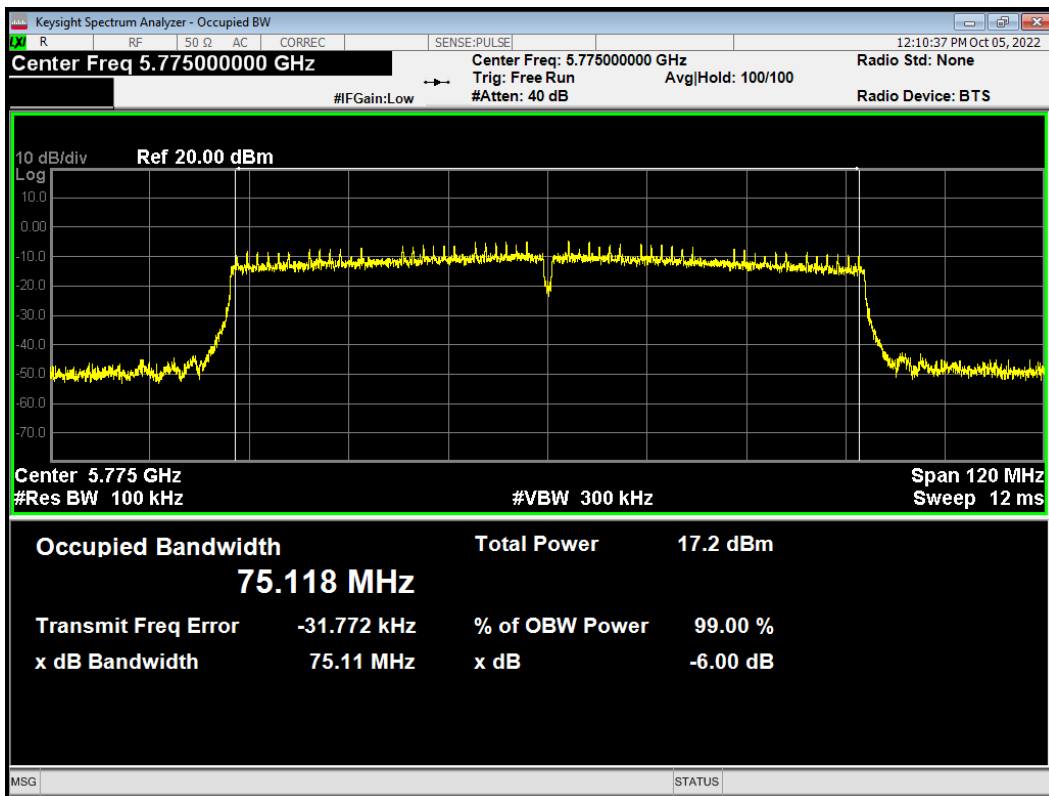


-6dB Bandwidth 802.11ac (VHT40) 5795MHz

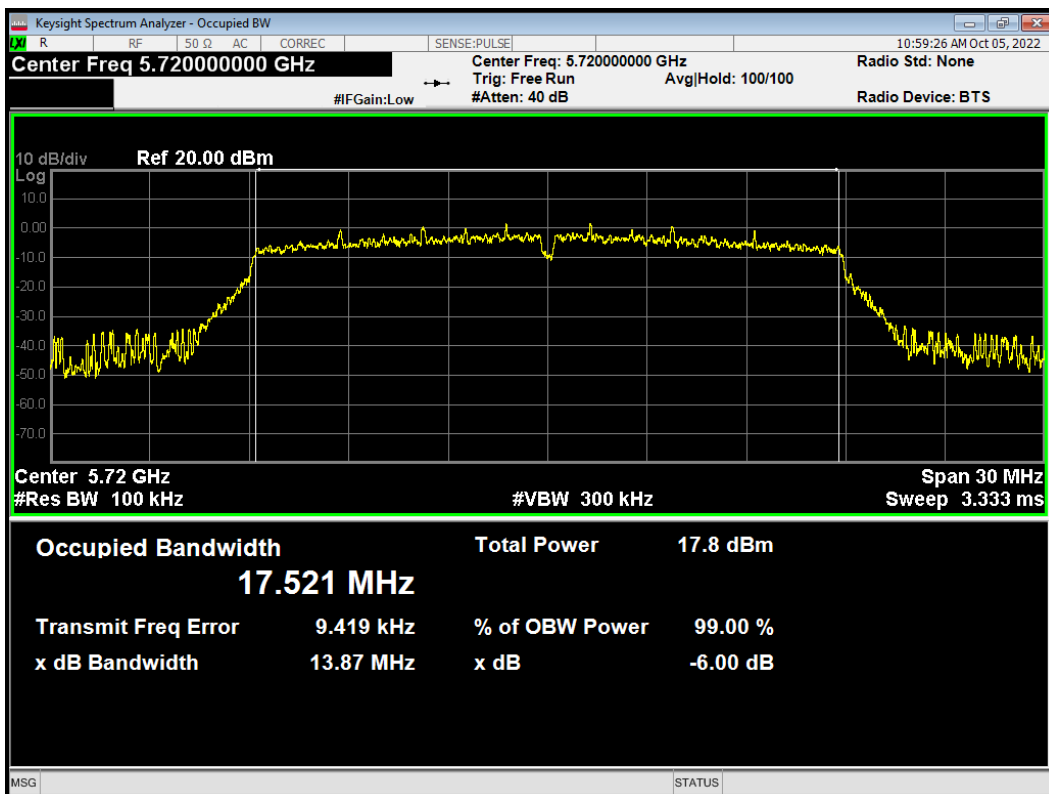




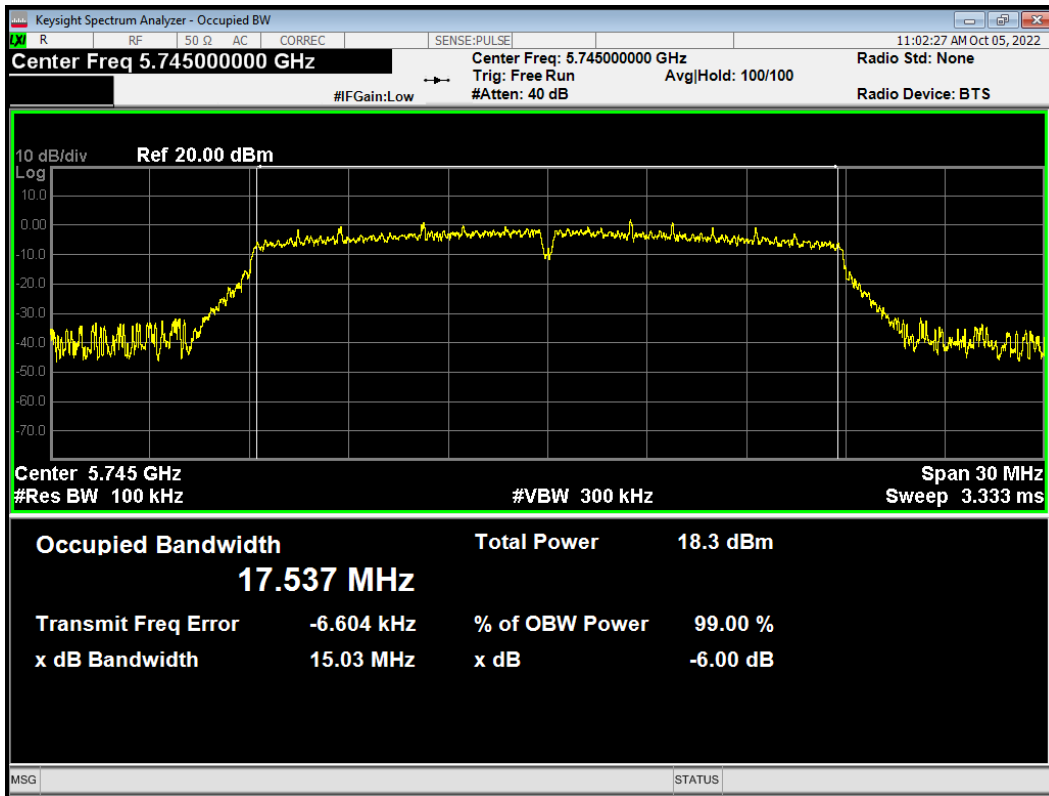
-6dB Bandwidth 802.11ac (VHT80) 5775MHz



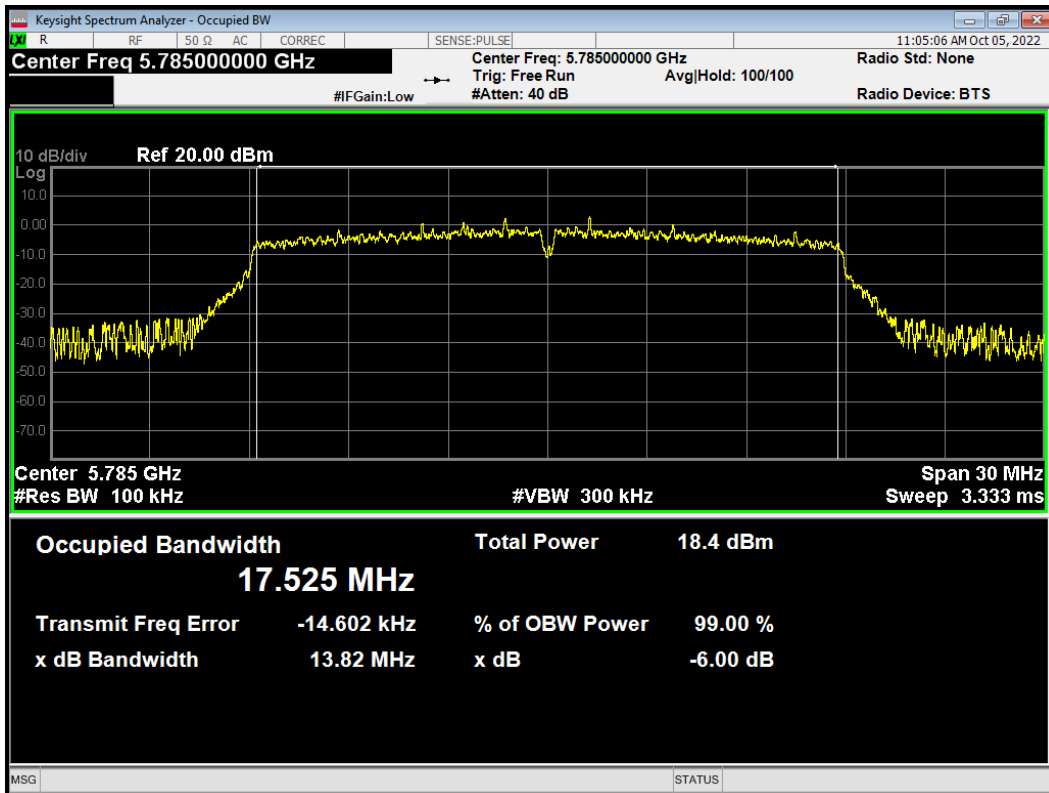
-6dB Bandwidth 802.11n (HT20) 5720MHz



-6dB Bandwidth 802.11n (HT20) 5745MHz



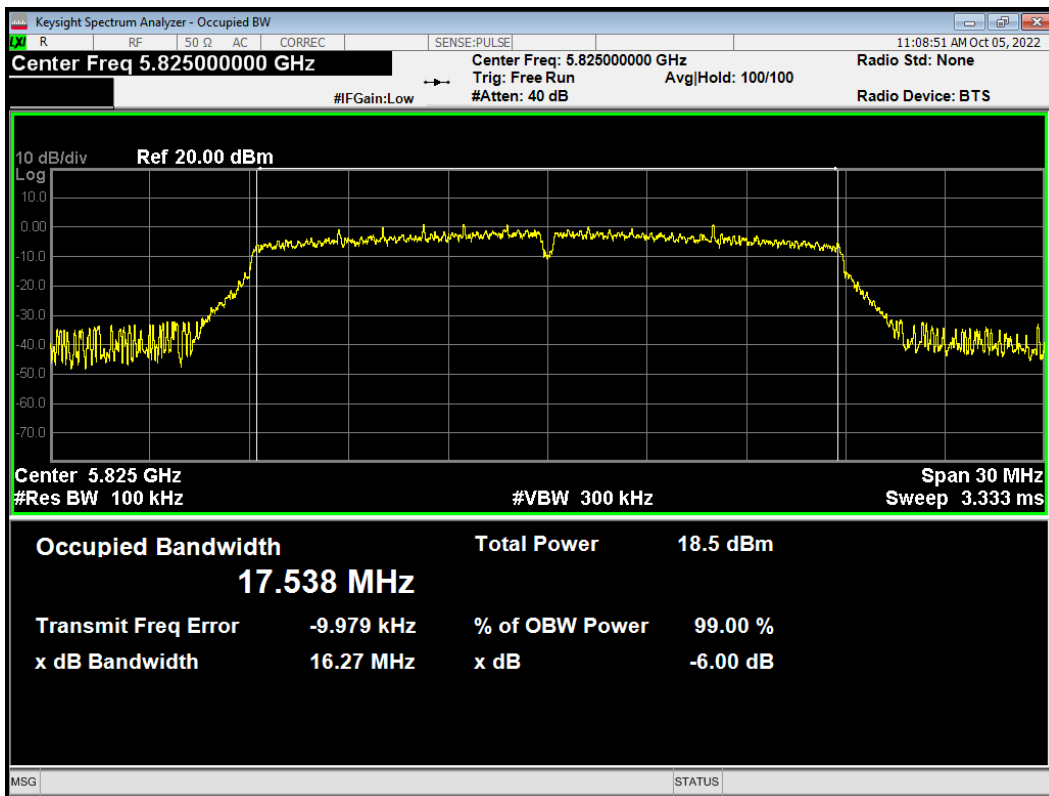
-6dB Bandwidth 802.11n (HT20) 5785MHz



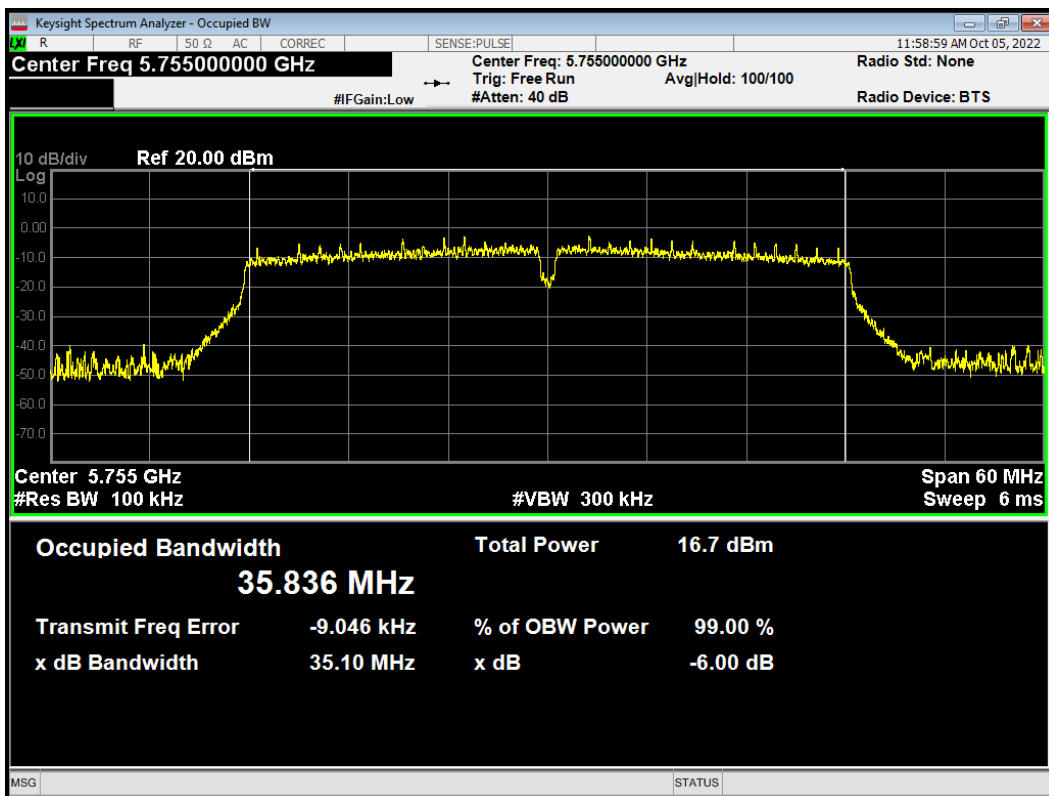




-6dB Bandwidth 802.11n (HT20) 5825MHz

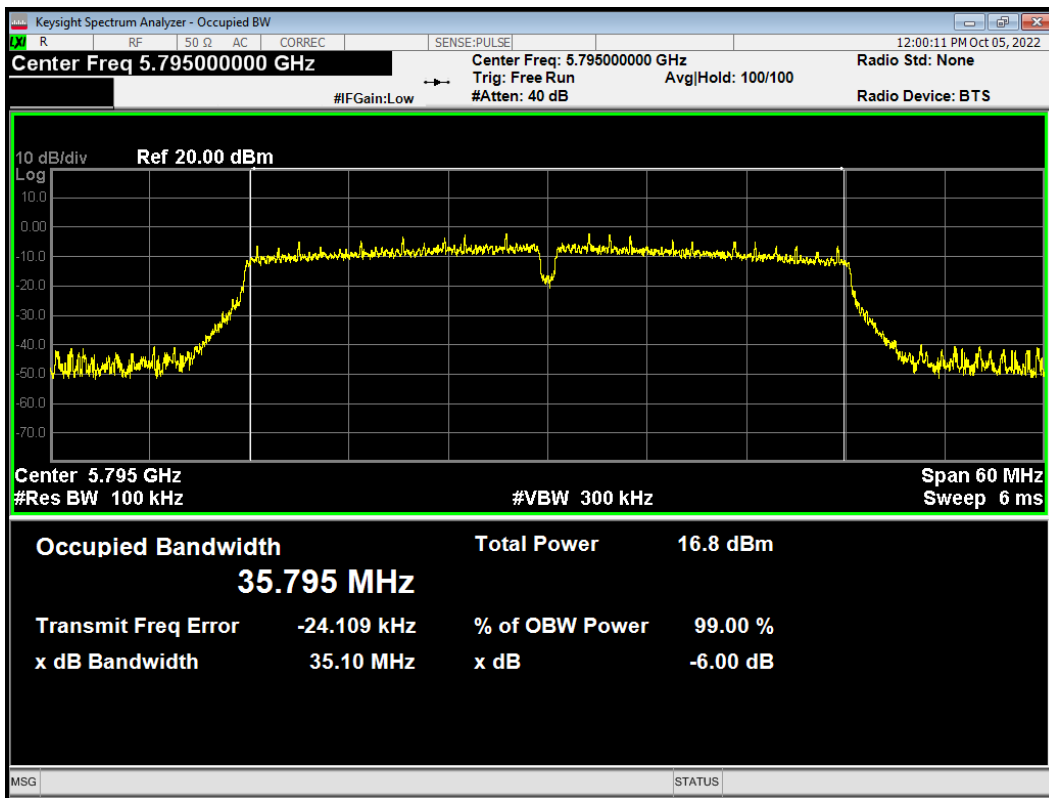


-6dB Bandwidth 802.11n (HT40) 5755MHz





-6dB Bandwidth 802.11n (HT40) 5795MHz



## 5.2. Average Power Output

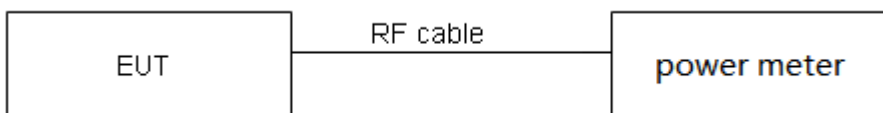
### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

### Test Setup



### Limits

Rule FCC Part 15.407(a)(1)(2)(3)

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude



the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.44$  dB.



## Test Results

Mode	Duty cycle	Duty cycle correction Factor(dB)
802.11a	0.97	0.13
802.11n HT20	0.97	0.14
802.11n HT40	0.94	0.28
802.11ac VHT20	0.97	0.14
802.11ac VHT40	0.94	0.27
802.11ac VHT80	0.89	0.53

Note: when Duty cycle $\geq$ 0.98, Duty cycle correction Factor not required.

Power Index								
Channel	802.11a	802.11n HT20	802.11ac VHT20	Channel	802.11n HT40	802.11ac VHT40	Channel	802.11ac VHT80
CH36	17	16	14	CH38	14	14	CH42	14
CH40	17	16	14	CH46	14	14	/	/
CH48	17	16	14	/	/	/	/	/
CH52	17	16	14	CH54	14	14	CH58	14
CH60	17	16	14	CH62	14	14	/	/
CH64	17	16	14	/	/	/	/	/
CH100	16	16	14	CH102	14	14	/	/
CH104	17	/	/	/	/	/	/	/
CH120	17	16	14	CH118	14	14	CH122	14
CH136	17	16	/	/	/	/	/	/
CH140	16	15	14	CH134	14	14	/	/
CH144	17	16	14	/	/	/	/	/
CH149	17	16	14	CH151	14	14	CH155	14
CH157	17	16	14	CH159	14	14	/	/
CH165	17	16	14	/	/	/	/	/



Test Mode		Channel/Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit (dBm)
U-NII-2A	802.11a	52/5260	20.17	24.05>24	24.00
		60/5300	20.28	24.07>24	24.00
		64/5320	20.10	24.03>24	24.00
	802.11n HT20	52/5260	20.34	24.08>24	24.00
		60/5300	20.44	24.10>24	24.00
		64/5320	20.66	24.15>24	24.00
	802.11n HT40	54/5270	40.30	27.05>24	24.00
		62/5310	40.05	27.03>24	24.00
	802.11ac VHT20	52/5260	20.56	24.13>24	24.00
		60/5300	20.54	24.13>24	24.00
		64/5320	20.60	24.14>24	24.00
	802.11ac VHT40	54/5270	40.01	27.02>24	24.00
62/5310		40.49	27.07>24	24.00	
802.11ac VHT80	58/5290	79.75	30.02>24	24.00	
U-NII-2C	802.11a	100/5500	19.98	24.01>24	24.00
		104/5520	20.29	24.07>24	24.00
		120/5600	20.96	24.21>24	24.00
		136/5680	20.33	24.08>24	24.00
		140/5700	20.06	24.02>24	24.00
		144/5720	20.20	24.05>24	24.00
	802.11n HT20	100/5500	20.60	24.14>24	24.00
		120/5600	20.61	24.14>24	24.00
		136/5680	20.67	24.15>24	24.00
		140/5700	20.46	24.11>24	24.00
		144/5720	20.51	24.12>24	24.00
	802.11n HT40	102/5510	40.40	27.06>24	24.00
		118/5590	40.16	27.04>24	24.00
		134/5670	40.26	27.05>24	24.00
	802.11ac VHT20	100/5500	20.57	24.13>24	24.00
		120/5600	20.36	24.09>24	24.00
		140/5700	20.61	24.14>24	24.00
		144/5720	20.45	24.11>24	24.00
	802.11ac VHT40	102/5510	40.09	27.03>24	24.00
		118/5590	40.06	27.03>24	24.00
		134/5670	39.79	27.00>24	24.00
	802.11ac VHT80	122/5610	79.67	30.01>24	24.00

Note: 250mW=24dBm



## U-NII-1

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	15.44	15.57	24	PASS
	40/5200	15.48	15.61	24	PASS
	48/5240	15.58	15.71	24	PASS
802.11n HT20	36/5180	14.17	14.31	24	PASS
	40/5200	14.17	14.31	24	PASS
	48/5240	14.49	14.63	24	PASS
802.11n HT40	38/5190	11.98	12.26	24	PASS
	46/5230	12.22	12.50	24	PASS
802.11ac VHT20	36/5180	12.12	12.26	24	PASS
	40/5200	12.15	12.29	24	PASS
	48/5240	12.25	12.39	24	PASS
802.11ac VHT40	38/5190	11.96	12.23	24	PASS
	46/5230	12.23	12.50	24	PASS
802.11ac VHT80	42/5210	11.98	12.51	24	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

## U-NII-2A

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	15.49	15.62	24.00	PASS
	60/5300	15.71	15.84	24.00	PASS
	64/5320	15.78	15.91	24.00	PASS
802.11n HT20	52/5260	14.30	14.44	24.00	PASS
	60/5300	14.62	14.76	24.00	PASS
	64/5320	14.55	14.69	24.00	PASS
802.11n HT40	54/5270	12.43	12.71	24.00	PASS
	62/5310	12.31	12.59	24.00	PASS
802.11ac VHT20	52/5260	12.24	12.38	24.00	PASS
	60/5300	12.60	12.74	24.00	PASS
	64/5320	12.35	12.49	24.00	PASS
802.11ac VHT40	54/5270	12.41	12.68	24.00	PASS
	62/5310	12.29	12.57	24.00	PASS
802.11ac VHT80	58/5290	12.25	12.78	24.00	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor



## U-NII-2C

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	14.29	14.42	24.00	PASS
	104/5520	15.44	15.57	24.00	PASS
	120/5600	14.74	14.88	24.00	PASS
	136/5680	14.82	14.95	24.00	PASS
	140/5700	13.85	13.99	24.00	PASS
	144/5720	14.08	14.22	24.00	PASS
802.11n HT20	100/5500	14.02	14.16	24.00	PASS
	120/5600	13.64	13.78	24.00	PASS
	136/5680	13.61	13.74	24.00	PASS
	140/5700	12.65	12.79	24.00	PASS
	144/5720	12.84	12.97	24.00	PASS
802.11n HT40	102/5510	11.94	12.22	24.00	PASS
	118/5590	11.66	11.94	24.00	PASS
	134/5670	11.93	12.21	24.00	PASS
802.11ac VHT20	100/5500	12.04	12.17	24.00	PASS
	120/5600	11.46	11.60	24.00	PASS
	140/5700	11.47	11.60	24.00	PASS
	144/5720	10.79	10.93	24.00	PASS
802.11ac VHT40	102/5510	11.93	12.20	24.00	PASS
	118/5590	11.67	11.95	24.00	PASS
	134/5670	11.94	12.21	24.00	PASS
802.11ac VHT80	122/5610	11.38	11.91	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					





## U-NII-3

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	144/5720	6.28	6.41	30	PASS
	149/5745	15.24	15.37	30	PASS
	157/5785	15.09	15.22	30	PASS
	165/5825	15.41	15.54	30	PASS
802.11n HT20	144/5720	5.46	5.59	30	PASS
	149/5745	14.05	14.19	30	PASS
	157/5785	14.13	14.27	30	PASS
	165/5825	14.16	14.30	30	PASS
802.11n HT40	151/5755	11.91	12.19	30	PASS
	159/5795	11.80	12.09	30	PASS
802.11ac VHT20	144/5720	3.89	4.03	30	PASS
	149/5745	12.32	12.46	30	PASS
	157/5785	11.98	12.11	30	PASS
	165/5825	12.38	12.51	30	PASS
802.11ac VHT40	151/5755	11.96	12.23	30	PASS
	159/5795	11.80	12.07	30	PASS
802.11ac VHT80	155/5775	11.66	12.19	30	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

### 5.3. Frequency Stability

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

##### 1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more than 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

##### 2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.