

FCC Test Report

Report No.: AGC12776221102FE06

FCC ID : 2A82D-NX15V2I

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : 15.6inch Notebook

BRAND NAME : THOMSON

MODEL NAME : WWN15V2I38SL256, WWN15V2I38BK256,
WWX15V2I58BK512, WWX15V2I58T512,
WWN15V2I38T256, WWN15V2I38SL512,
WWX15V2I58SL512, WWX15V2I58BK256,
WWX15V2I58T256, WWX15V2I58SL256

APPLICANT : Metavisio SA

DATE OF ISSUE : Dec. 14, 2022

STANDARD(S) : FCC Part 15.407

TEST PROCEDURE(S) : KDB 789033 D02 v02r01

REPORT VERSION : V1.0



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 14, 2022	Valid	Initial Release

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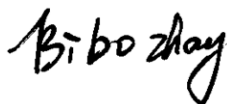
1. VERIFICATION OF CONFORMITY

Applicant	Metavisio SA
Address	80/84 ROUTE DE LA LIBERATION 77340 PONTAULT COMBAULT France
Manufacturer	Shenzhen Weihejia Electronic Technology Co., LTD
Address	Block 102, Building 9 , Xihu Industrial park, Xikeng community, Yuanshan street, Longgang district, Shenzhen
Factory	Shenzhen Weihejia Electronic Technology Co., LTD
Address	Block 102, Building 9 , Xihu Industrial park, Xikeng community, Yuanshan street, Longgang district, Shenzhen
Product Designation	15.6inch Notebook
Brand Name	THOMSON
Test Model	WWN15V2I38SL256
Series Model	WWN15V2I38BK256, WWX15V2I58BK512, WWX15V2I58T512, WWN15V2I38T256, WWN15V2I38SL512, WWX15V2I58SL512, WWX15V2I58BK256, WWX15V2I58T256, WWX15V2I58SL256
Declaration of Difference	Please see the page 6.
Date of receipt of test item	Nov. 18, 2022
Date of Test	Nov. 18, 2022 to Dec. 14, 2022
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Prepared By



Bibo Zhang
(Project Engineer)

Dec. 14, 2022

Reviewed By



Calvin Liu
(Reviewer)

Dec. 14, 2022

Approved By



Max Zhang
(Authorized Officer)

Dec. 14, 2022

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “15.6inch Notebook”. It is designed by way of utilizing the OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Equipment Type	<input type="checkbox"/> Outdoor access points <input type="checkbox"/> Indoor access points <input type="checkbox"/> Fixed P2P access points <input checked="" type="checkbox"/> Client devices
Operation Frequency	<input checked="" type="checkbox"/> U-NII 1:5150MHz~5250MHz <input checked="" type="checkbox"/> U-NII 2A: 5250MHz~5350MHz <input checked="" type="checkbox"/> U-NII 2C:5470MHz~5725MHz <input checked="" type="checkbox"/> U-NII 3: 5725MHz~5850MHz
DFS Design Type	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection
TPC Function	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Test Frequency Range:	For 802.11a/n/ac-HT20-VHT20: 5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n/ac-HT40: 5190~5230MHz, 5270~5310MHz, 5510~5670MHz, 5755~5795MHz For 802.11ac-HT80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5775MHz
Output Power	IEEE 802.11a:12.46dBm; IEEE 802.11n-HT20:12.13dBm; IEEE 802.11n-HT40:11.92dBm; IEEE 802.11ac-VHT20:11.07Bm; IEEE 802.11ac-VHT40:10.78dBm; IEEE 802.11ac-VHT80:10.20dBm
Output Power_MIMO	IEEE 802.11n(20):14.90dBm; IEEE802.11n(40):14.64dBm IEEE 802.11ac(20):14.04dBm; IEEE802.11ac(40):13.62dBm; IEEE802.11ac(80):12.98dBm
Modulation	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM, 128QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM)
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ac: up to 400Mbps
Number of channels	7 channels of U-NII-1 Band 7 channels of U-NII-2A Band 21 channels of U-NII-2C Band 8 channels of U-NII-3 Band
Hardware Version	IP3_CN1G_MB_V32_202110129A
Software Version	win11home 22H2
Antenna Designation	Refer to section 2.8 of the report (Comply with requirements of the FCC part 15.203)
Number of transmit chain	2(802.a/11n/ac all used four antennas, but 802.11a support SISO and 802.11n/ac support MIMO)
Antenna Gain	Refer to Chapter 2.8 of the report.
Power Supply	DC7.7V by battery or DC 19V by adapter

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Different Description:

Model	Storage capacity
WWN15V2I38BK256	256GB
WWN15V2I38SL256	256GB
WWX15V2I58BK512	512GB
WWX15V2I58T512	512GB
WWN15V2I38T256	256GB
WWN15V2I38SL512	512GB
WWX15V2I58SL512	512GB
WWX15V2I58BK256	256GB
WWX15V2I58T256	256GB
WWX15V2I58SL256	256GB

Note: All the same except for the model name and storage capacity

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2.2. TABLE OF CARRIER FREQUENCIES

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	--	--

For 5260~5320MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
58	5290 MHz	--	--

For 5500~5720MHz:

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

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

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz	--	--

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For 5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz	--	--

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
155	5775 MHz	--	--

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2.3. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A82D-NX15V2I** filing to comply with the FCC Part 15 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013).

Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.407 rules KDB 789033 D02

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

2.8 DESCRIPTION OF AVAILABLE ANTENNAS

Antenna Type	Frequency Band (MHz)	TX Paths	Bandwidth (MHz)	Max Peak Gain (dBi)		Max Directional Gain (dBi)
				Ant A	Ant M	
5G WIFI FPC Antenna List (5GHz 2*2 MIMO)						
FPC Antenna	5150~5850	2	20	4.52	5.85	8.86

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11n/ac mode.

If all antennas have the same gain, GANT, Directional gain = GANT + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on devices:
 $\text{Array Gain} = 10 \log (\text{NANT} / \text{NSS}) \text{ dB} = 3.01;$
- For power measurements on IEEE 802.11 devices:
 $\text{Array Gain} = 0 \text{ dB for } \text{NANT} \leq 4;$
 $\text{Array Gain} = 0 \text{ dB (i.e., no array gain) for channel widths } \geq 40 \text{ MHz for any NANT};$
 $\text{Array Gain} = 5 \log (\text{NANT} / \text{NSS}) \text{ dB or } 3 \text{ dB, whichever is less, for } 20 \text{ MHz channel widths with } \text{NANT} \geq 5.$

If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

3. MEASUREMENT UNCERTAINTY

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

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2.7 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$

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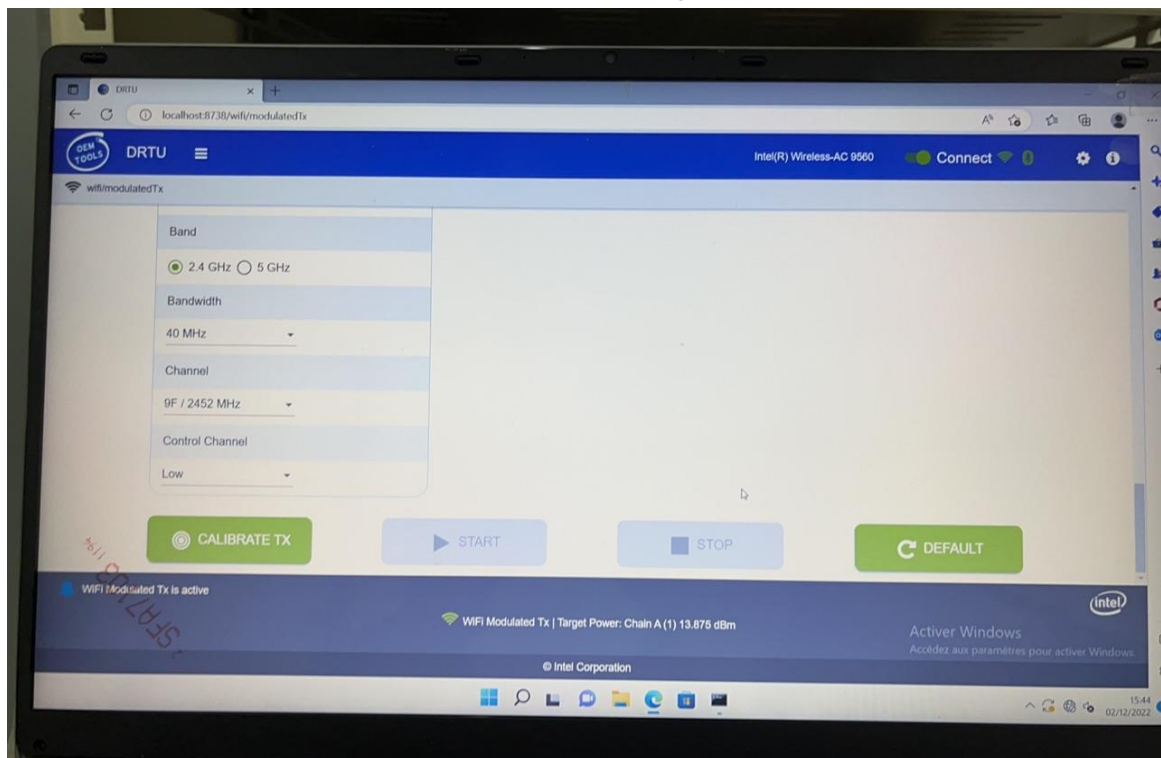
4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate(Mbps)
802.11a/n/ac20	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165	36, 40, 48, 52, 60, 64, 100, 120, 140, 149, 157, 165	OFDM	6Mbps/MCS0
802.11n/ac40	38, 46, 54, 62, 102, 110, 118, 126, 134, 151, 159;	38, 46, 54, 62, 102, 118, 134, 151, 159	OFDM	MCS0
802.11ac80	42, 58, 106, 122, 155	42, 58, 106, 122, 155	OFDM	MCS0

Note:

1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%.
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. All radiated spurious emission and conducted interference modes have been pre scanned, and the report only records that antenna 1+ antenna 2 work in the worst mode.

Software Setting



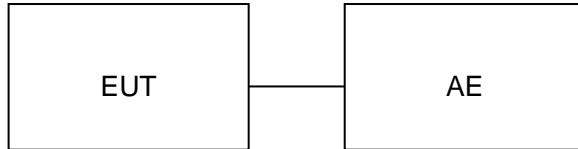
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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	15.6inch Notebook	WWN15V2I38SL256	2A82D-NX15V2I	EUT
2	Bluetooth speaker	SRS-XB01	DC5V/0.5A,AUX in, micro B	AE
3	Xiaomi router	R4A	N/A	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.407	6dB Bandwidth	Compliant
§15.407	Emission Bandwidth	Compliant
§15.407	Maximum conducted output power	Compliant
§15.407	Conducted Spurious Emission	Compliant
§15.407	Maximum Conducted Output Power Density	Compliant
§15.209	Radiated Emission	Compliant
§15.407	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Mar. 28, 2022	Mar. 27, 2023
LISN	R&S	ESH2-Z5	100086	Jun. 08, 2022	Jun. 07, 2023
Test software	R&S	ES-K1	Ver.V1.71	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
EXA Signal Analyzer	KEYSIGHT	N9020B	MY56101792	Aug. 04, 2022	Aug. 03, 2023
Power sensor	Aglient	U2021XA	MY54110007	Mar. 04, 2022	Mar. 03, 2023
5GHz Fliter	EM Electronics	5150-5880MHz	N/A	N/A	N/A
Attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 21, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Aug. 04, 2022	Aug. 03, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2020	Jan. 07, 2023
Test software	Tonscend	JS32-RE	Ver.2.5	N/A	N/A

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7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

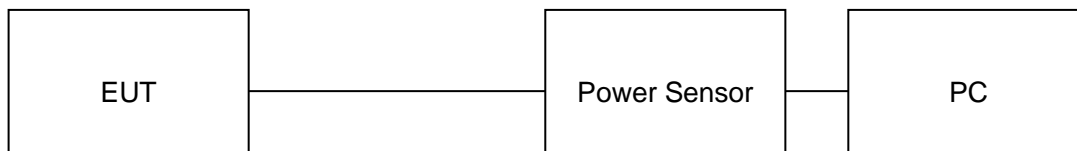
For average power test:

1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note : The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

7.2. TEST SET-UP

AVERAGE POWER SETUP



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7.3. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power for band 5.15-5.25 GHz-antenna 1				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5180	12.16	24	Pass
	5200	12.31	24	Pass
	5240	11.91	24	Pass
802.11n20	5180	11.76	24	Pass
	5200	11.65	24	Pass
	5240	11.28	24	Pass
802.11n40	5190	11.31	24	Pass
	5230	10.81	24	Pass
802.11ac20	5180	10.82	24	Pass
	5200	10.99	24	Pass
	5240	10.64	24	Pass
802.11ac40	5190	10.43	24	Pass
	5230	9.73	24	Pass
802.11ac80	5210	9.73	24	Pass

Test Data of Conducted Output Power for band 5.15-5.25 GHz-antenna 2				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5180	12.34	24	Pass
	5200	12.46	24	Pass
	5240	12.24	24	Pass
802.11n20	5180	12.13	24	Pass
	5200	11.92	24	Pass
	5240	11.93	24	Pass
802.11n40	5190	11.92	24	Pass
	5230	11.74	24	Pass
802.11ac20	5180	10.97	24	Pass
	5200	11.07	24	Pass
	5240	10.97	24	Pass
802.11ac40	5190	10.78	24	Pass
	5230	10.64	24	Pass
802.11ac80	5210	10.20	24	Pass

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Test Data of Conducted Output Power for band 5.15-5.25 GHz-antenna MIMO				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11n20	5180	14.96	24	Pass
	5200	14.80	24	Pass
	5240	14.63	24	Pass
802.11n40	5190	14.64	24	Pass
	5230	14.31	24	Pass
802.11ac20	5180	13.91	24	Pass
	5200	14.04	24	Pass
	5240	13.82	24	Pass
802.11ac40	5190	13.62	24	Pass
	5230	13.22	24	Pass
802.11ac80	5210	12.98	24	Pass

Test Data of Conducted Output Power for band 5.25-5.35 GHz-antenna 1				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5260	11.92	24	Pass
	5300	11.03	24	Pass
	5320	11.07	24	Pass
802.11n20	5260	11.12	24	Pass
	5300	11.17	24	Pass
	5320	10.92	24	Pass
802.11n40	5270	10.83	24	Pass
	5310	10.07	24	Pass
802.11ac20	5260	9.93	24	Pass
	5300	9.66	24	Pass
	5320	9.13	24	Pass
802.11ac40	5270	9.71	24	Pass
	5310	9.13	24	Pass
802.11ac80	5290	9.45	24	Pass

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Test Data of Conducted Output Power for band 5.25-5.35 GHz-antenna 2				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5260	11.84	24	Pass
	5300	11.54	24	Pass
	5320	11.36	24	Pass
802.11n20	5260	11.57	24	Pass
	5300	11.01	24	Pass
	5320	11.15	24	Pass
802.11n40	5270	11.13	24	Pass
	5310	10.66	24	Pass
802.11ac20	5260	10.41	24	Pass
	5300	10.06	24	Pass
	5320	10.03	24	Pass
802.11ac40	5270	10.14	24	Pass
	5310	9.67	24	Pass
802.11ac80	5290	9.47	24	Pass

Test Data of Conducted Output Power for band 5.25-5.35 GHz- MIMO				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11n20	5260	14.36	24	Pass
	5300	14.10	24	Pass
	5320	14.05	24	Pass
802.11n40	5270	13.99	24	Pass
	5310	13.39	24	Pass
802.11ac20	5260	13.19	24	Pass
	5300	12.87	24	Pass
	5320	12.61	24	Pass
802.11ac40	5270	12.94	24	Pass
	5310	12.42	24	Pass
802.11ac80	5290	12.47	24	Pass

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Test Data of Conducted Output Power for band 5.47-5.725 GHz-antenna 1				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5500	10.16	24	Pass
	5600	10.85	24	Pass
	5700	11.06	24	Pass
802.11n20	5500	10.18	24	Pass
	5600	10.68	24	Pass
	5700	10.79	24	Pass
802.11n40	5510	9.94	24	Pass
	5590	10.71	24	Pass
	5670	10.64	24	Pass
802.11ac20	5500	9.33	24	Pass
	5600	10.38	24	Pass
	5700	10.01	24	Pass
802.11ac40	5510	9.57	24	Pass
	5590	10.02	24	Pass
	5670	10.04	24	Pass
802.11ac80	5530	9.18	24	Pass
	5610	9.50	24	Pass

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Test Data of Conducted Output Power for band 5.47-5.725 GHz-antenna 2				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5500	10.57	24	Pass
	5600	11.41	24	Pass
	5700	10.58	24	Pass
802.11n20	5500	10.32	24	Pass
	5600	10.87	24	Pass
	5700	10.21	24	Pass
802.11n40	5510	10.08	24	Pass
	5590	10.79	24	Pass
	5670	10.35	24	Pass
802.11ac20	5500	9.66	24	Pass
	5600	10.39	24	Pass
	5700	9.42	24	Pass
802.11ac40	5510	9.16	24	Pass
	5590	9.71	24	Pass
	5670	9.53	24	Pass
802.11ac80	5530	9.26	24	Pass
	5610	9.64	24	Pass

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Test Data of Conducted Output Power for band 5.47-5.725 GHz-MIMO				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11n20	5500	13.26	24	Pass
	5600	13.79	24	Pass
	5700	13.52	24	Pass
802.11n40	5510	13.02	24	Pass
	5590	13.76	24	Pass
	5670	13.51	24	Pass
802.11ac20	5500	12.51	24	Pass
	5600	13.40	24	Pass
	5700	12.74	24	Pass
802.11ac40	5510	12.38	24	Pass
	5590	12.88	24	Pass
	5670	12.80	24	Pass
802.11ac80	5530	12.23	24	Pass
	5610	12.58	24	Pass

Test Data of Conducted Output Power for band 5.725-5.85 GHz-antenna 1				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5745	8.97	30	Pass
	5785	8.95	30	Pass
	5825	9.44	30	Pass
802.11n20	5745	8.95	30	Pass
	5785	9.05	30	Pass
	5825	9.64	30	Pass
802.11n40	5755	8.62	30	Pass
	5795	8.49	30	Pass
802.11ac20	5745	9.01	30	Pass
	5785	8.83	30	Pass
	5825	9.41	30	Pass
802.11ac40	5755	8.53	30	Pass
	5795	8.50	30	Pass
802.11ac80	5775	8.24	30	Pass

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Test Data of Conducted Output Power for band 5.725-5.85 GHz-antenna 2				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5745	10.13	30	Pass
	5785	10.33	30	Pass
	5825	10.19	30	Pass
802.11n20	5745	9.64	30	Pass
	5785	9.95	30	Pass
	5825	9.92	30	Pass
802.11n40	5755	9.42	30	Pass
	5795	9.60	30	Pass
802.11ac20	5745	9.47	30	Pass
	5785	9.45	30	Pass
	5825	9.57	30	Pass
802.11ac40	5755	9.03	30	Pass
	5795	9.15	30	Pass
802.11ac80	5775	8.79	30	Pass

Test Data of Conducted Output Power for band 5.725-5.85 GHz-MIMO				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11n20	5745	12.32	30	Pass
	5785	12.53	30	Pass
	5825	12.79	30	Pass
802.11n40	5755	12.05	30	Pass
	5795	12.09	30	Pass
802.11ac20	5745	12.26	30	Pass
	5785	12.16	30	Pass
	5825	12.50	30	Pass
802.11ac40	5755	11.80	30	Pass
	5795	11.85	30	Pass
802.11ac80	5775	11.53	30	Pass

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8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

-6dB bandwidth (DTS bandwidth):

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 100kHz.
4. Set the VBW $\geq 3 \times$ RBW. Detector = Peak. Trace mode = max hold.
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.

99% occupied bandwidth:

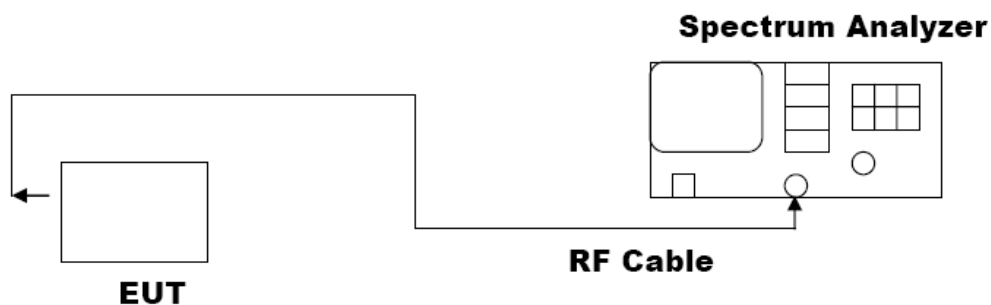
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel
The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

-26dB Bandwidth:

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW $>$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



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8.3. LIMITS AND MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz-antenna 1					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5180	16.522	22.90	N/A	Pass
	5200	16.547	22.57	N/A	Pass
	5240	16.517	22.26	N/A	Pass
802.11n20	5180	17.645	22.31	N/A	Pass
	5200	17.624	22.04	N/A	Pass
	5240	17.647	22.38	N/A	Pass
802.11n40	5190	36.016	42.35	N/A	Pass
	5230	35.939	40.89	N/A	Pass
802.11ac20	5180	17.645	22.35	N/A	Pass
	5200	17.639	22.71	N/A	Pass
	5240	17.640	22.18	N/A	Pass
802.11ac40	5190	35.987	43.36	N/A	Pass
	5230	35.970	42.27	N/A	Pass
802.11ac80	5210	75.147	82.86	N/A	Pass

Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz-antenna 2					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5180	16.542	21.98	N/A	Pass
	5200	16.521	22.52	N/A	Pass
	5240	16.506	22.79	N/A	Pass
802.11n20	5180	17.631	22.39	N/A	Pass
	5200	17.657	22.61	N/A	Pass
	5240	17.662	22.72	N/A	Pass
802.11n40	5190	36.072	42.29	N/A	Pass
	5230	35.930	42.44	N/A	Pass
802.11ac20	5180	17.655	22.43	N/A	Pass
	5200	17.646	22.24	N/A	Pass
	5240	17.661	22.12	N/A	Pass
802.11ac40	5190	36.059	42.91	N/A	Pass
	5230	35.981	41.52	N/A	Pass
802.11ac80	5210	75.150	83.25	N/A	Pass

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Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.25-5.35 GHz-antenna 1					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5260	16.531	21.94	N/A	Pass
	5300	16.519	21.96	N/A	Pass
	5320	16.539	22.71	N/A	Pass
802.11n20	5260	17.640	22.70	N/A	Pass
	5300	17.643	22.60	N/A	Pass
	5320	17.626	22.38	N/A	Pass
802.11n40	5270	35.952	41.18	N/A	Pass
	5310	35.996	40.97	N/A	Pass
802.11ac20	5260	17.673	22.29	N/A	Pass
	5300	17.651	22.68	N/A	Pass
	5320	17.664	22.49	N/A	Pass
802.11ac40	5270	35.985	41.83	N/A	Pass
	5310	35.962	41.62	N/A	Pass
802.11ac80	5290	75.160	86.53	N/A	Pass

Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.25-5.35 GHz-antenna 2					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5260	16.561	22.54	N/A	Pass
	5300	16.549	22.26	N/A	Pass
	5320	16.516	22.01	N/A	Pass
802.11n20	5260	17.694	22.92	N/A	Pass
	5300	17.667	22.15	N/A	Pass
	5320	17.648	22.30	N/A	Pass
802.11n40	5270	35.994	41.88	N/A	Pass
	5310	35.952	41.06	N/A	Pass
802.11ac20	5260	17.656	23.11	N/A	Pass
	5300	17.647	22.56	N/A	Pass
	5320	17.676	22.44	N/A	Pass
802.11ac40	5270	35.948	42.20	N/A	Pass
	5310	35.935	41.24	N/A	Pass
802.11ac80	5290	75.200	84.97	N/A	Pass

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Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.47-5.725 GHz-antenna 1					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5500	16.536	22.33	N/A	Pass
	5600	16.497	22.00	N/A	Pass
	5700	16.560	22.85	N/A	Pass
802.11n20	5500	17.638	22.59	N/A	Pass
	5600	17.644	22.02	N/A	Pass
	5700	17.634	22.20	N/A	Pass
802.11n40	5510	36.000	43.30	N/A	Pass
	5590	35.966	41.05	N/A	Pass
	5670	36.083	43.08	N/A	Pass
802.11ac20	5500	17.636	22.19	N/A	Pass
	5600	17.641	22.01	N/A	Pass
	5700	17.633	22.41	N/A	Pass
802.11ac40	5510	36.021	42.58	N/A	Pass
	5590	35.990	41.19	N/A	Pass
	5670	36.064	43.77	N/A	Pass
802.11ac80	5530	75.270	83.43	N/A	Pass
	5610	75.205	84.89	N/A	Pass

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Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.47-5.725 GHz-antenna 2					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5500	16.548	22.24	N/A	Pass
	5600	16.519	21.98	N/A	Pass
	5700	16.511	22.18	N/A	Pass
802.11n20	5500	17.641	22.21	N/A	Pass
	5600	17.624	22.60	N/A	Pass
	5700	17.650	22.42	N/A	Pass
802.11n40	5510	36.035	42.74	N/A	Pass
	5590	35.987	41.51	N/A	Pass
	5670	36.011	43.00	N/A	Pass
802.11ac20	5500	17.630	22.40	N/A	Pass
	5600	17.652	22.86	N/A	Pass
	5700	17.636	22.42	N/A	Pass
802.11ac40	5510	36.022	43.04	N/A	Pass
	5590	35.988	41.53	N/A	Pass
	5670	35.991	42.94	N/A	Pass
802.11ac80	5530	75.099	84.60	N/A	Pass
	5610	75.147	84.44	N/A	Pass

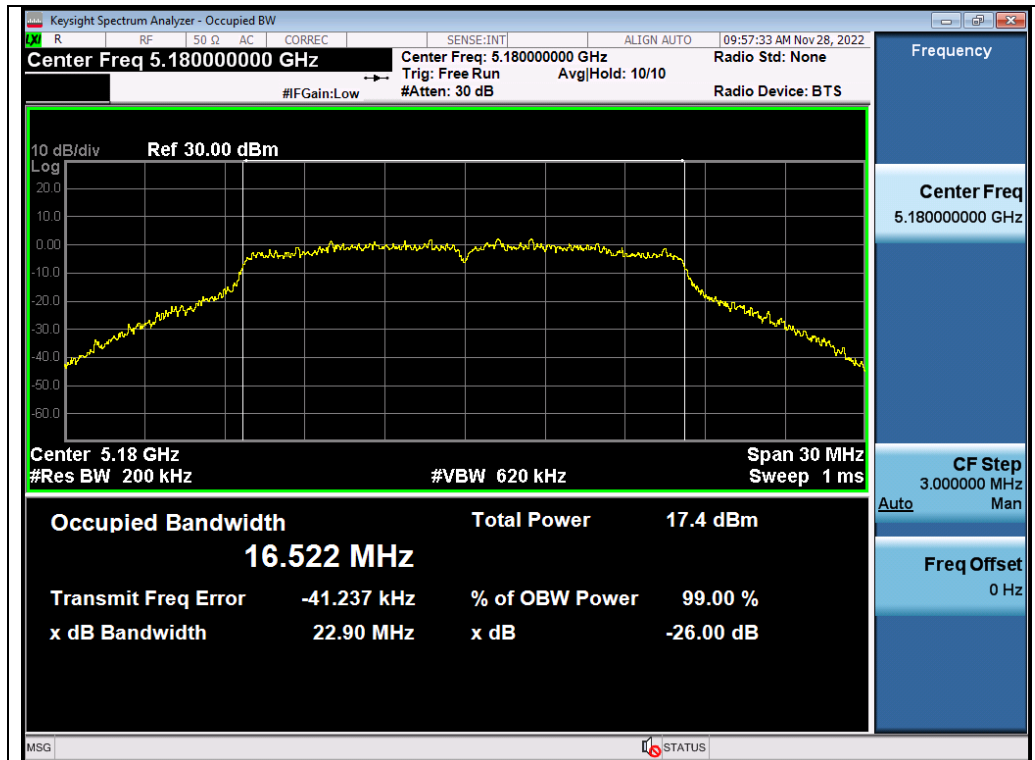
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Test Data of Occupied Bandwidth and DTS Bandwidth for band 5.725-5.85 GHz-antenna 1					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	DTS Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5745	16.537	15.06	0.5	Pass
	5785	16.553	15.09	0.5	Pass
	5825	16.552	15.09	0.5	Pass
802.11n20	5745	17.613	15.12	0.5	Pass
	5785	17.644	15.03	0.5	Pass
	5825	17.714	15.29	0.5	Pass
802.11n40	5755	36.036	35.07	0.5	Pass
	5795	36.538	34.99	0.5	Pass
802.11ac20	5745	17.622	15.07	0.5	Pass
	5785	17.650	15.14	0.5	Pass
	5825	17.683	13.89	0.5	Pass
802.11ac40	5755	36.013	35.13	0.5	Pass
	5795	36.101	35.11	0.5	Pass
802.11ac80	5775	75.025	75.10	0.5	Pass

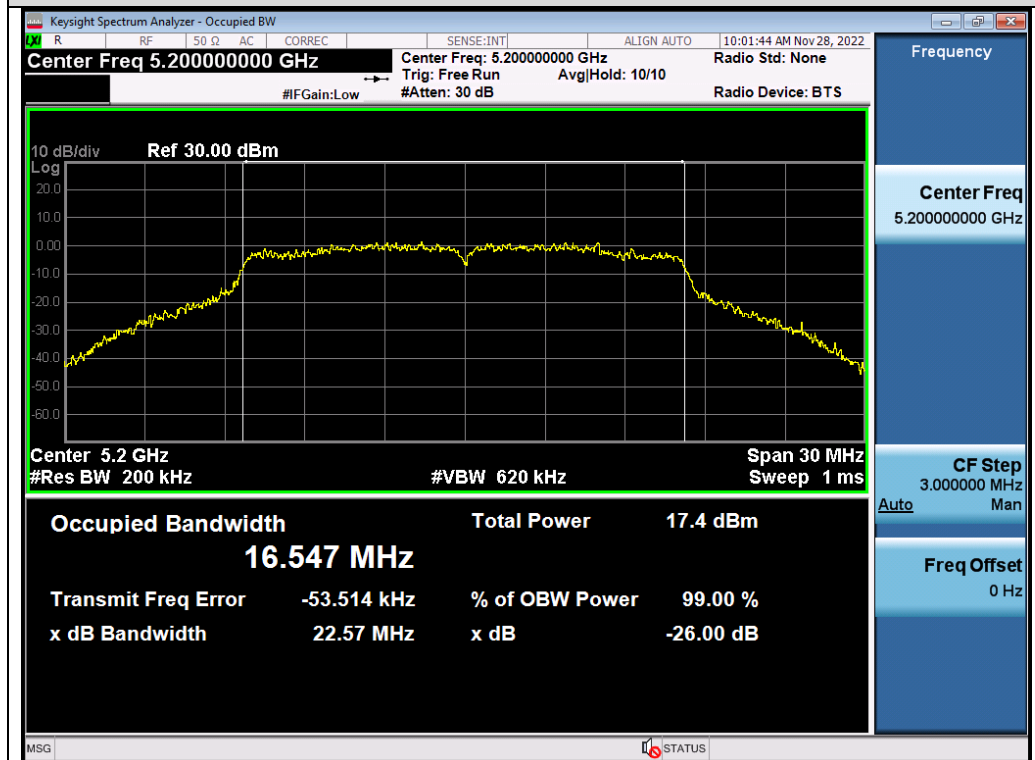
Test Data of Occupied Bandwidth and DTS Bandwidth for band 5.725-5.85 GHz-antenna 2					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	DTS Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5745	16.523	15.29	0.5	Pass
	5785	16.499	15.12	0.5	Pass
	5825	16.557	15.07	0.5	Pass
802.11n20	5745	17.619	15.01	0.5	Pass
	5785	17.626	15.06	0.5	Pass
	5825	17.655	15.69	0.5	Pass
802.11n40	5755	35.949	35.08	0.5	Pass
	5795	35.984	33.78	0.5	Pass
802.11ac20	5745	17.611	15.08	0.5	Pass
	5785	17.641	15.69	0.5	Pass
	5825	17.668	15.07	0.5	Pass
802.11ac40	5755	35.941	35.04	0.5	Pass
	5795	35.992	35.05	0.5	Pass
802.11ac80	5775	75.091	75.11	0.5	Pass

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Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz

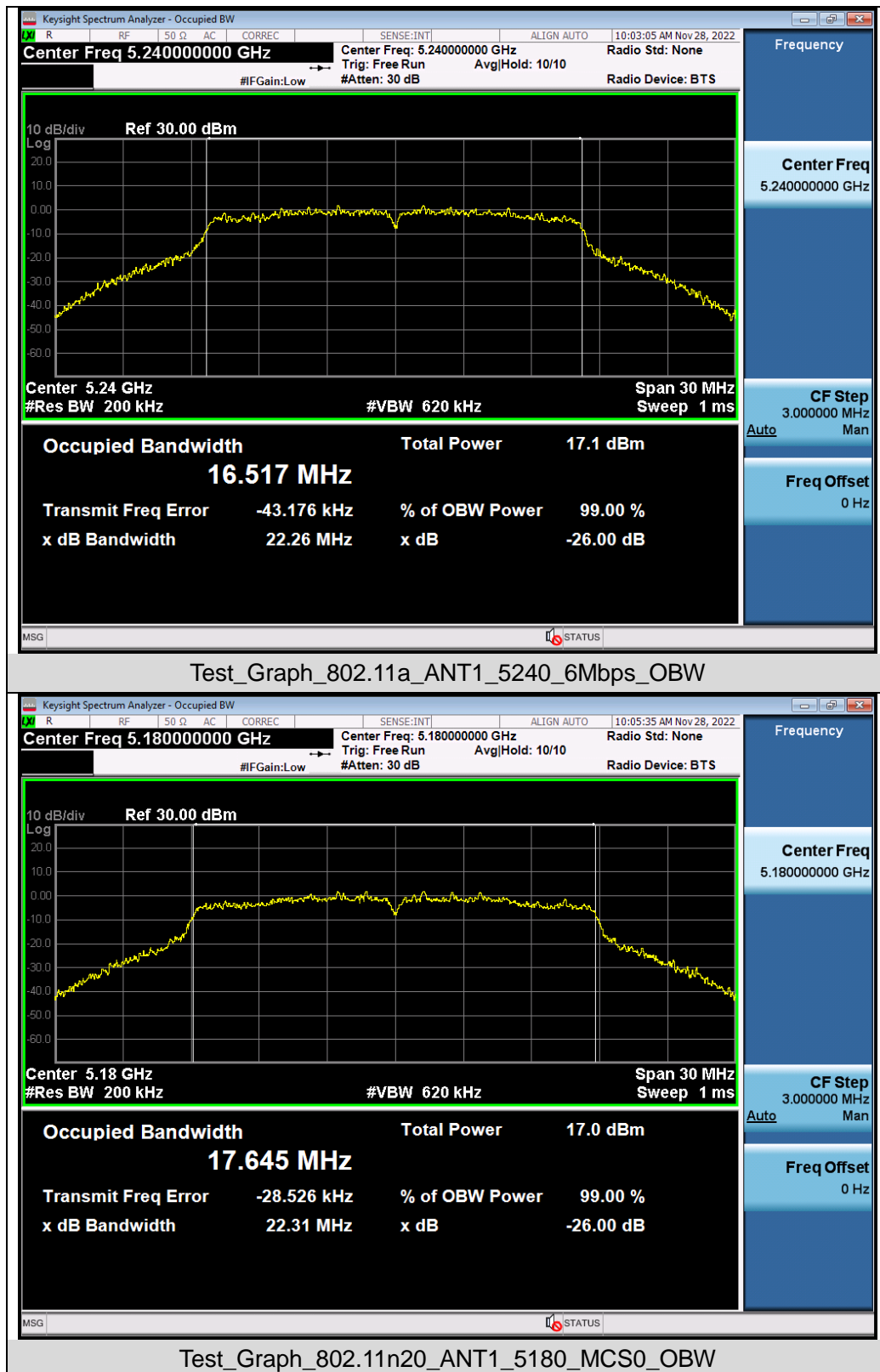


Test_Graph_802.11a_ANT1_5180_6Mbps_OBW

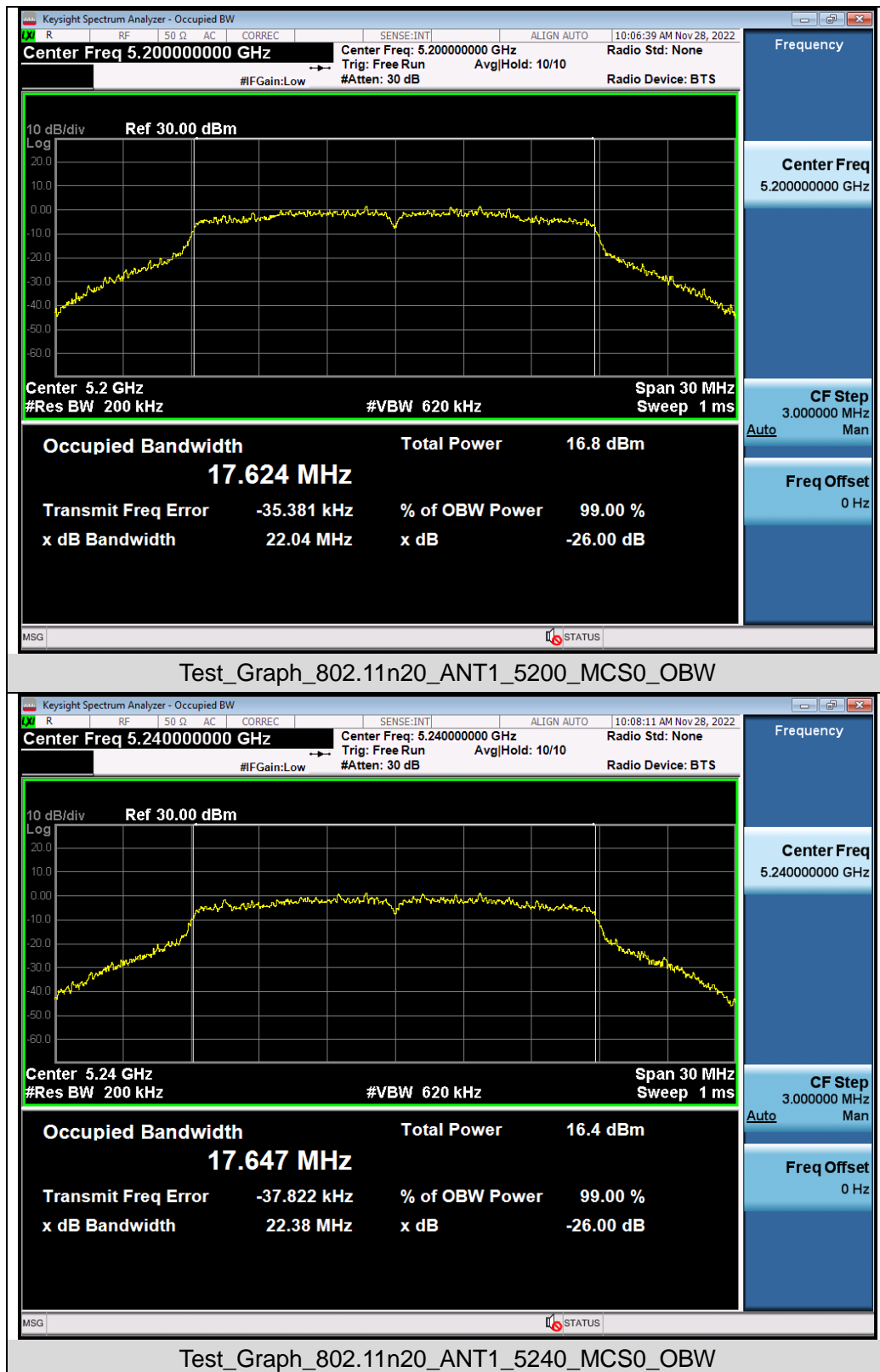


Test_Graph_802.11a_ANT1_5200_6Mbps_OBW

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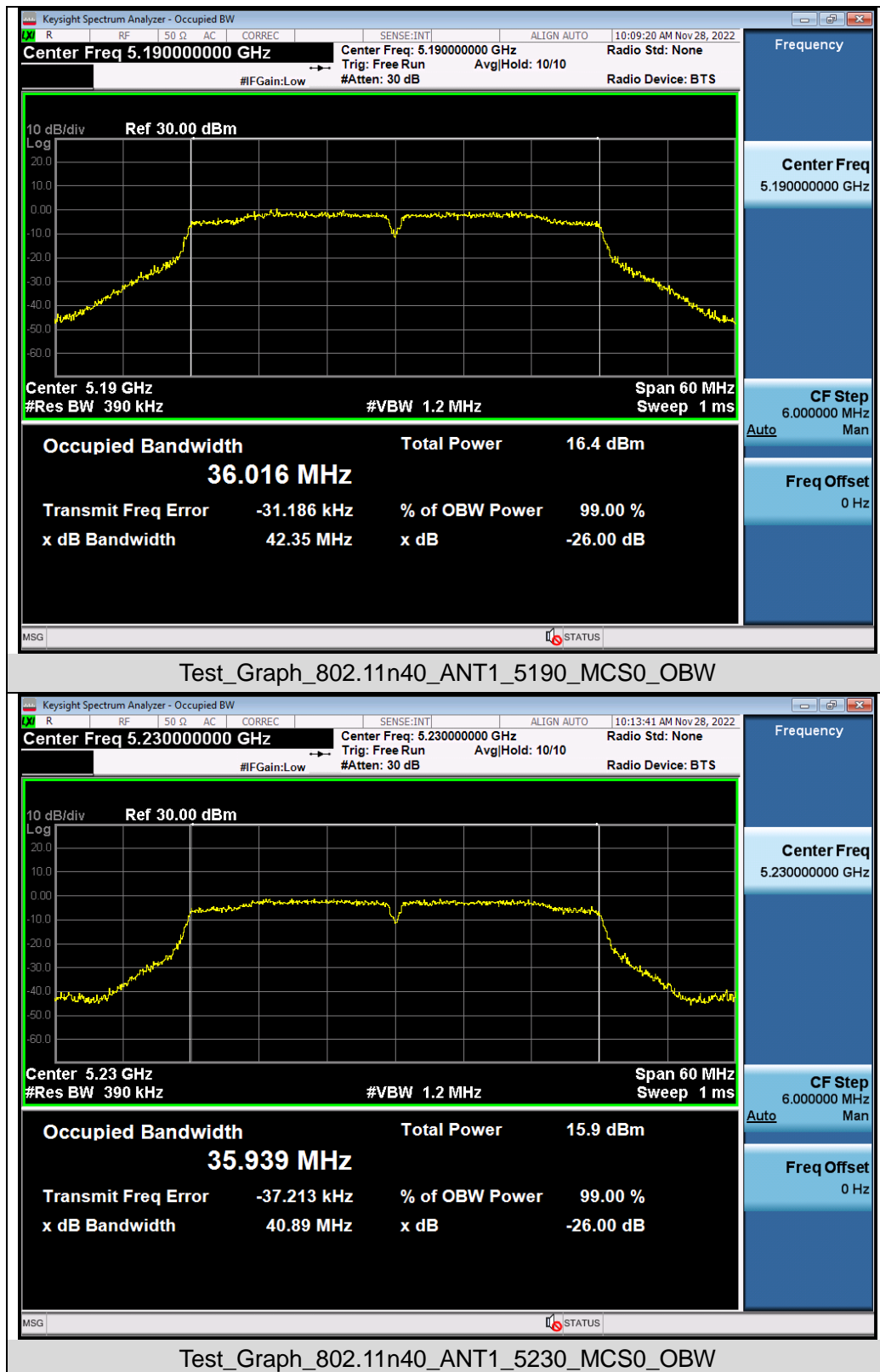


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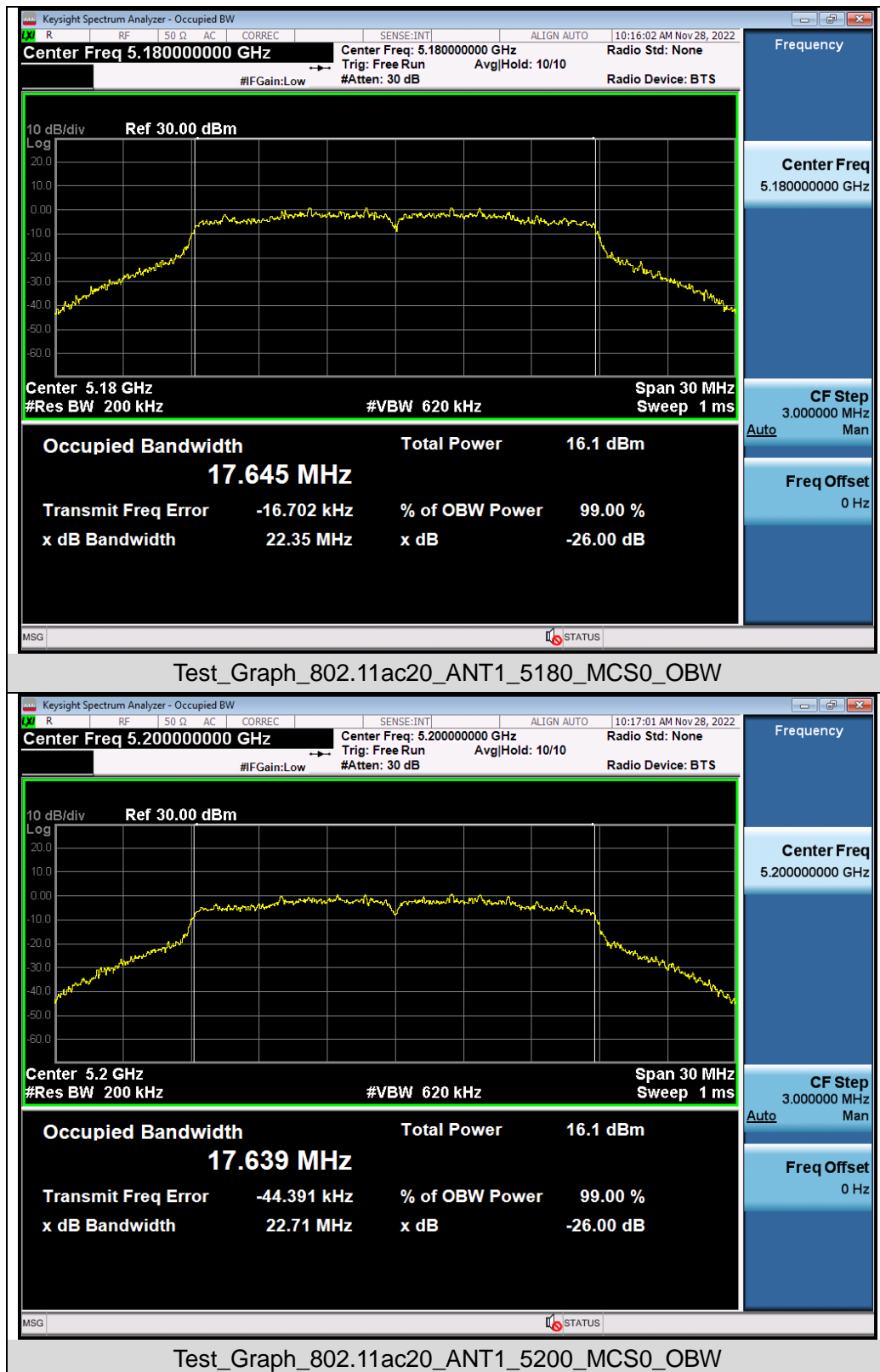
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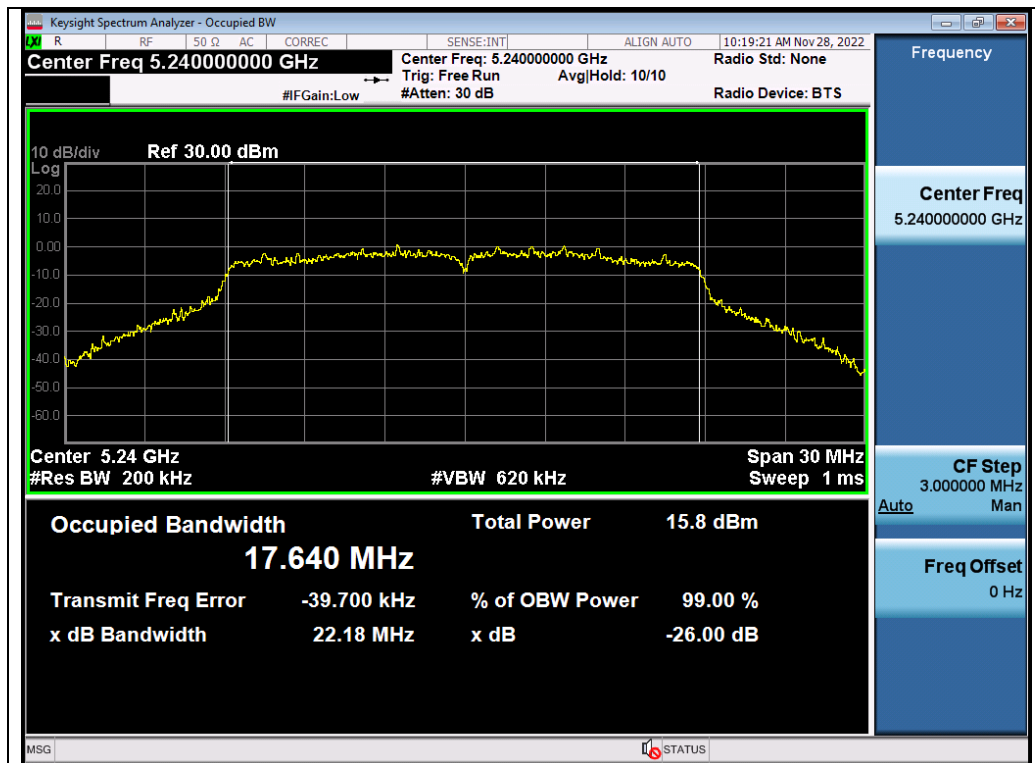


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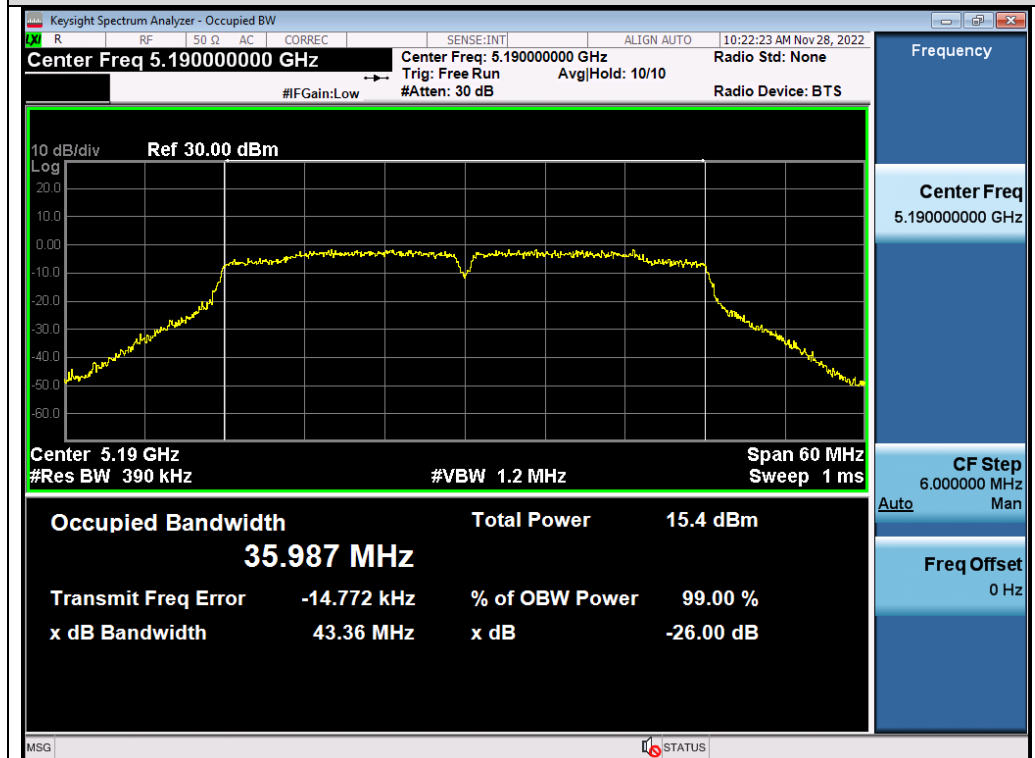
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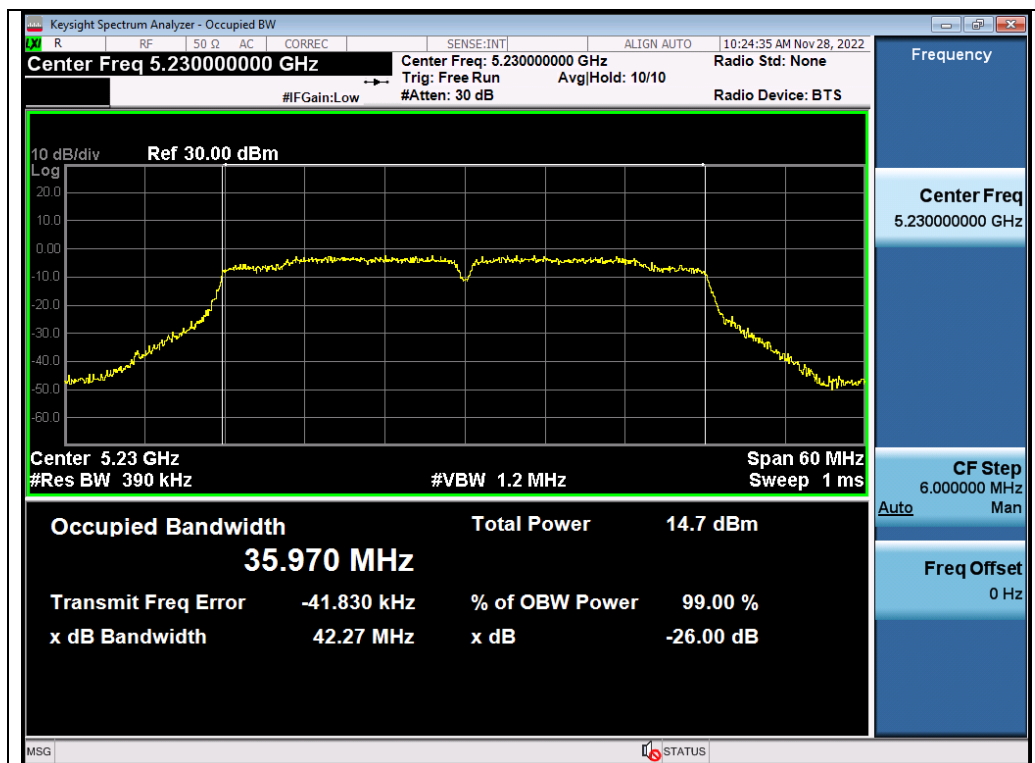


Test_Graph_802.11ac20_ANT1_5240_MCS9_OBW

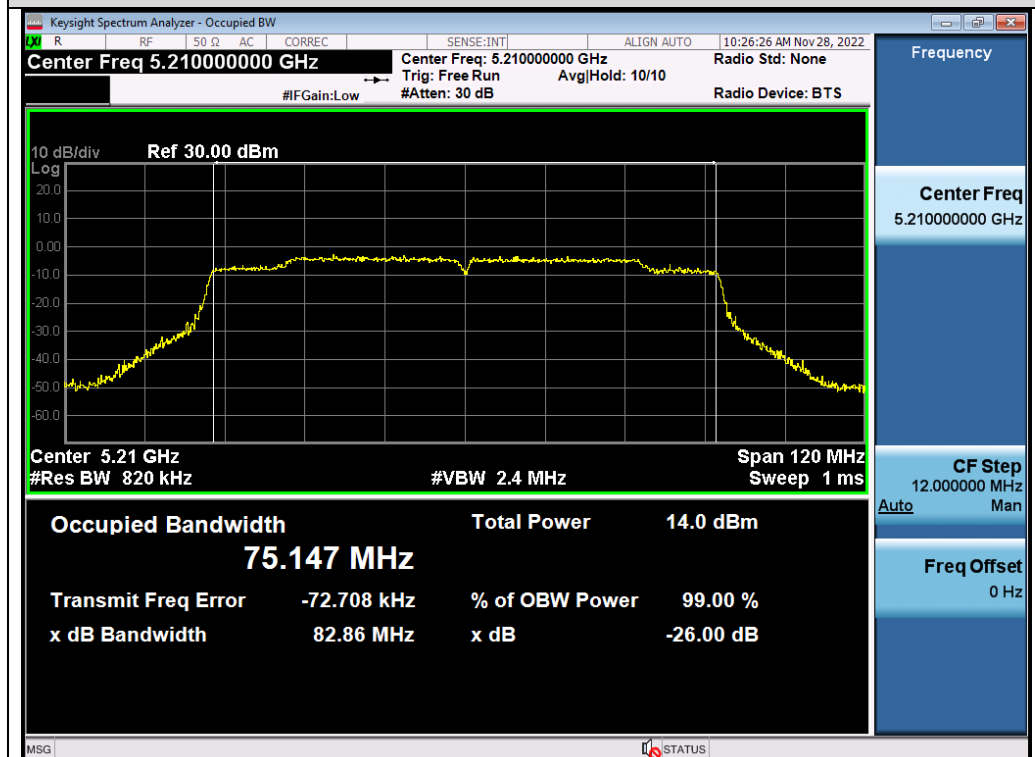


Test_Graph_802.11ac40_ANT1_5190_MCS9_OBW

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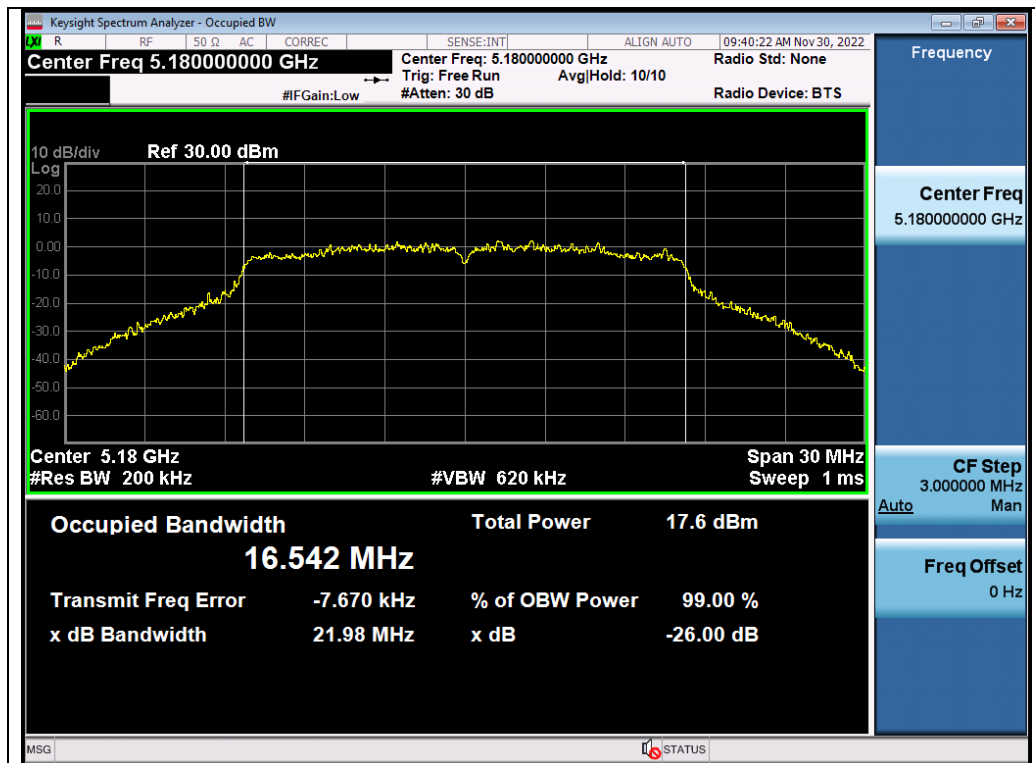
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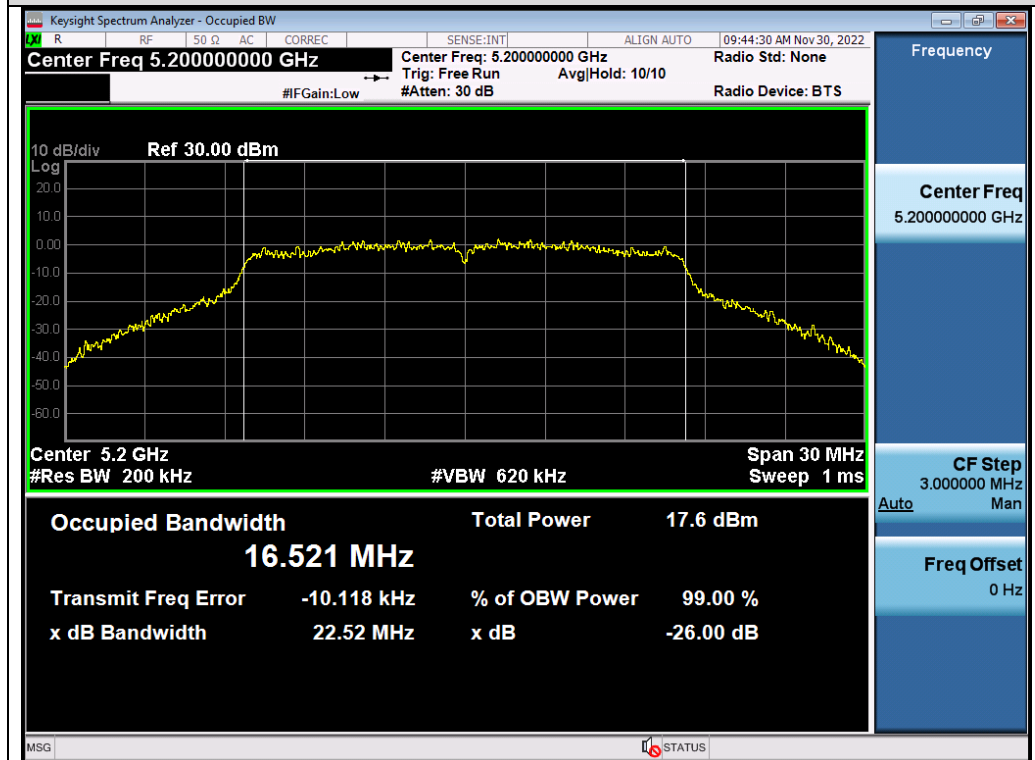
Test_Graph_802.11ac80_ANT1_5210_MCS9_OBW

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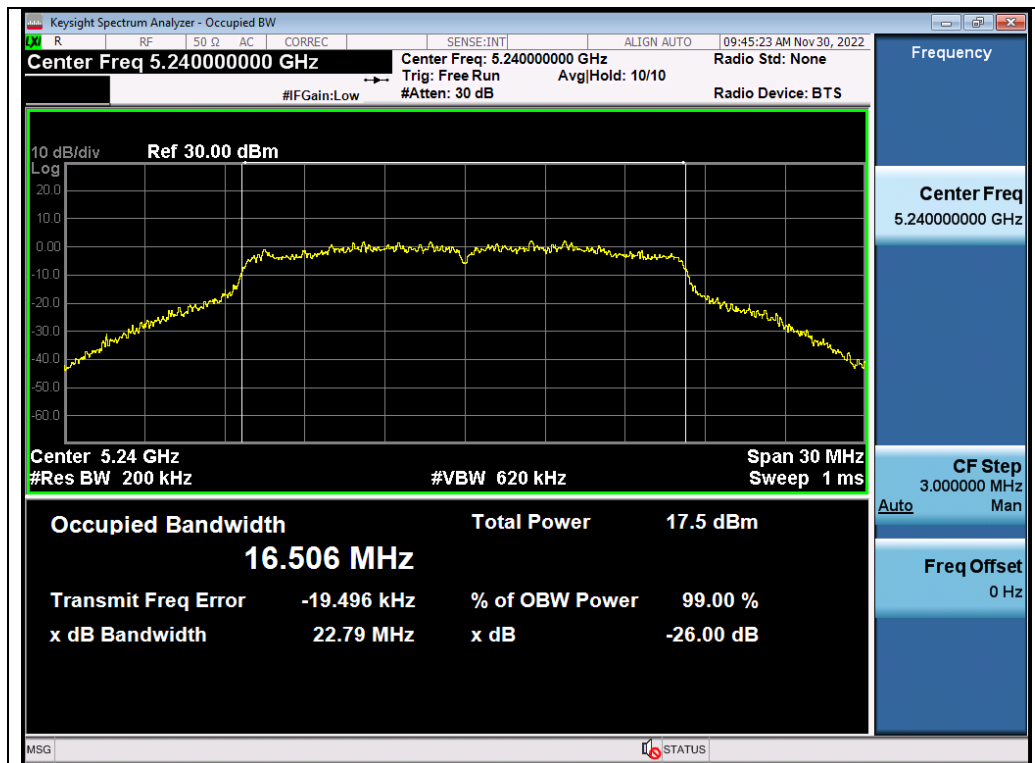


Test_Graph_802.11a_ANT2_5180_6Mbps_OBW

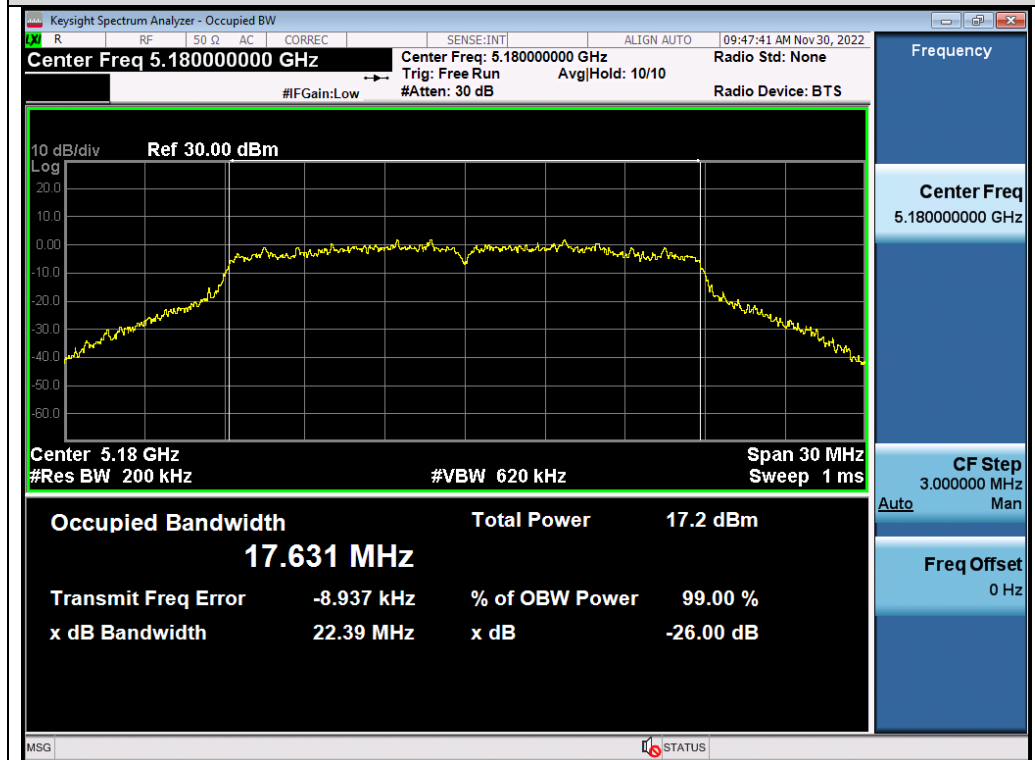


Test_Graph_802.11a_ANT2_5200_6Mbps_OBW

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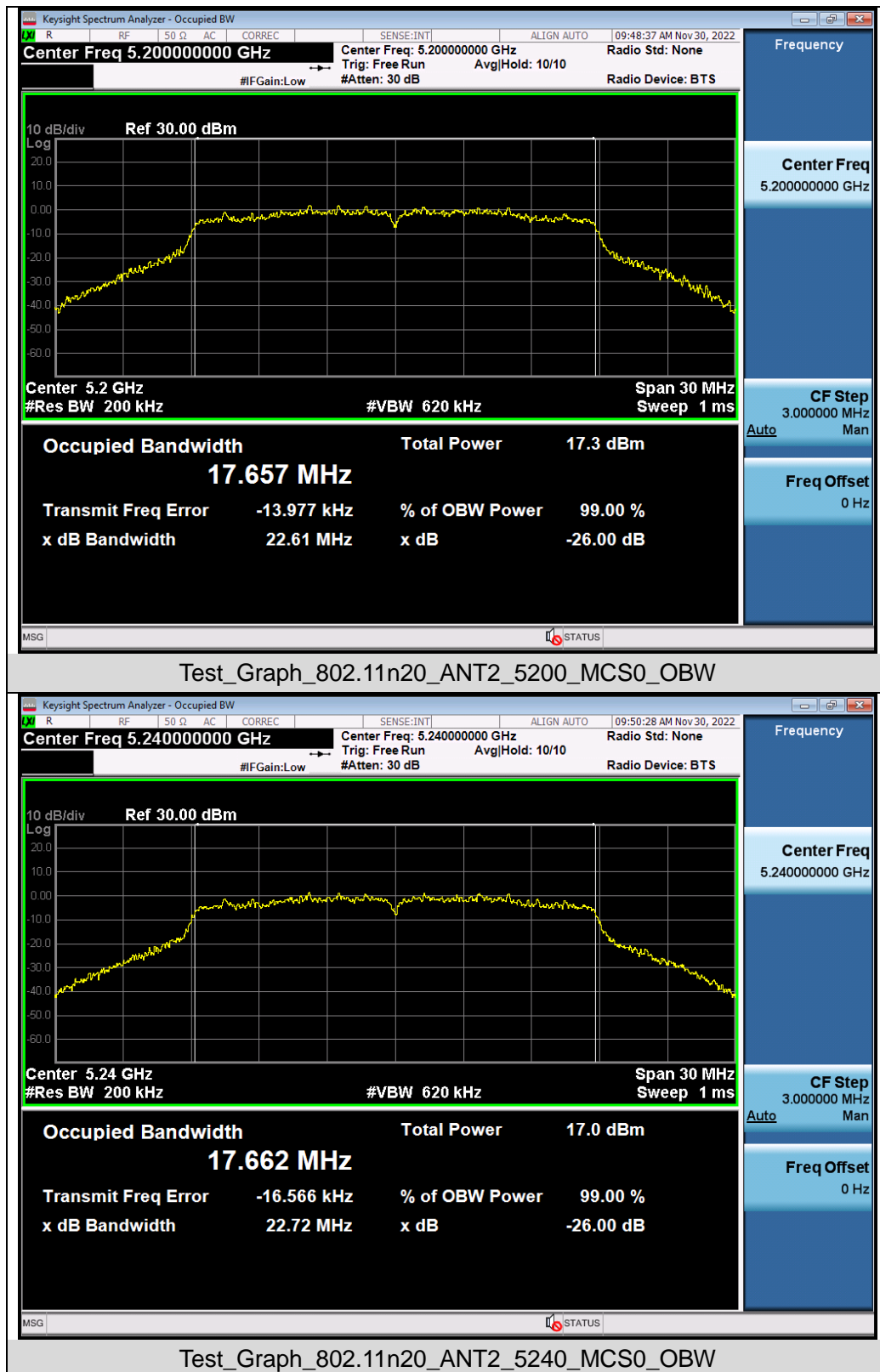


Test_Graph_802.11a_ANT2_5240_6Mbps_OBW

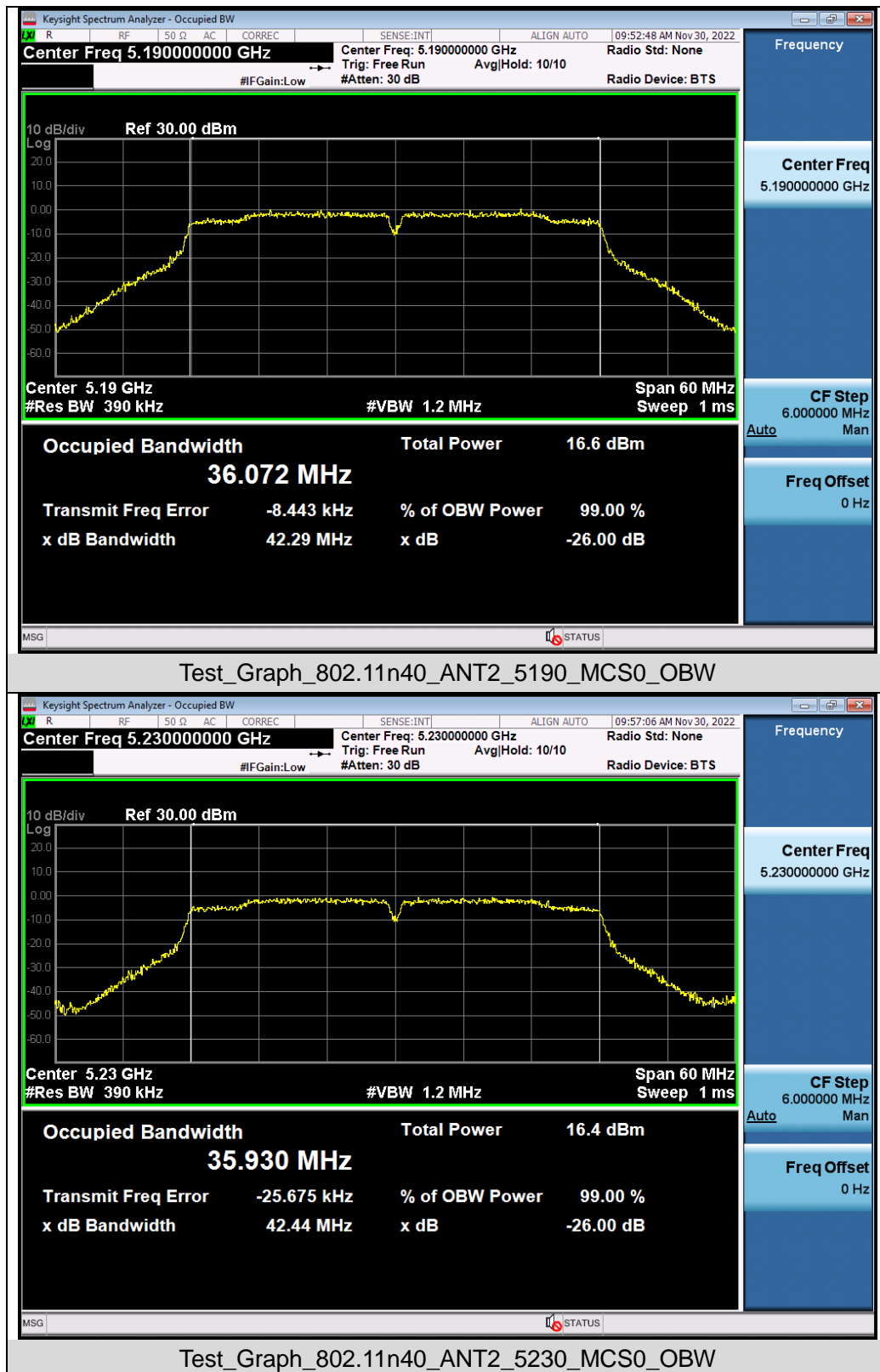


Test_Graph_802.11n20_ANT2_5180_MCS0_OBW

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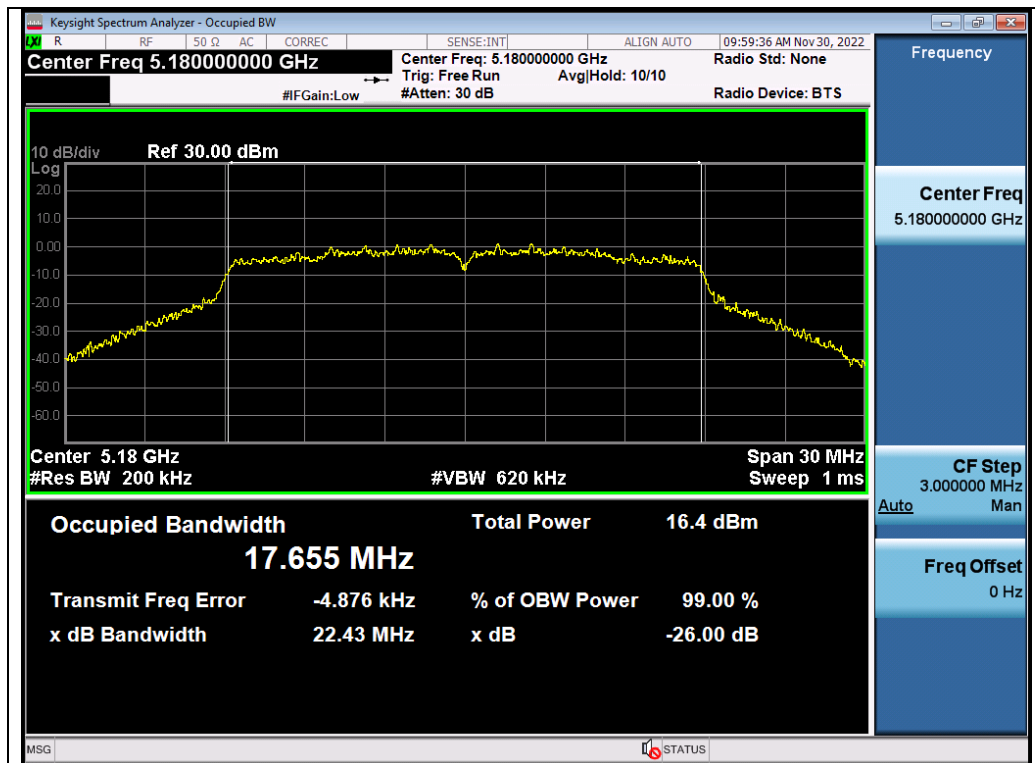


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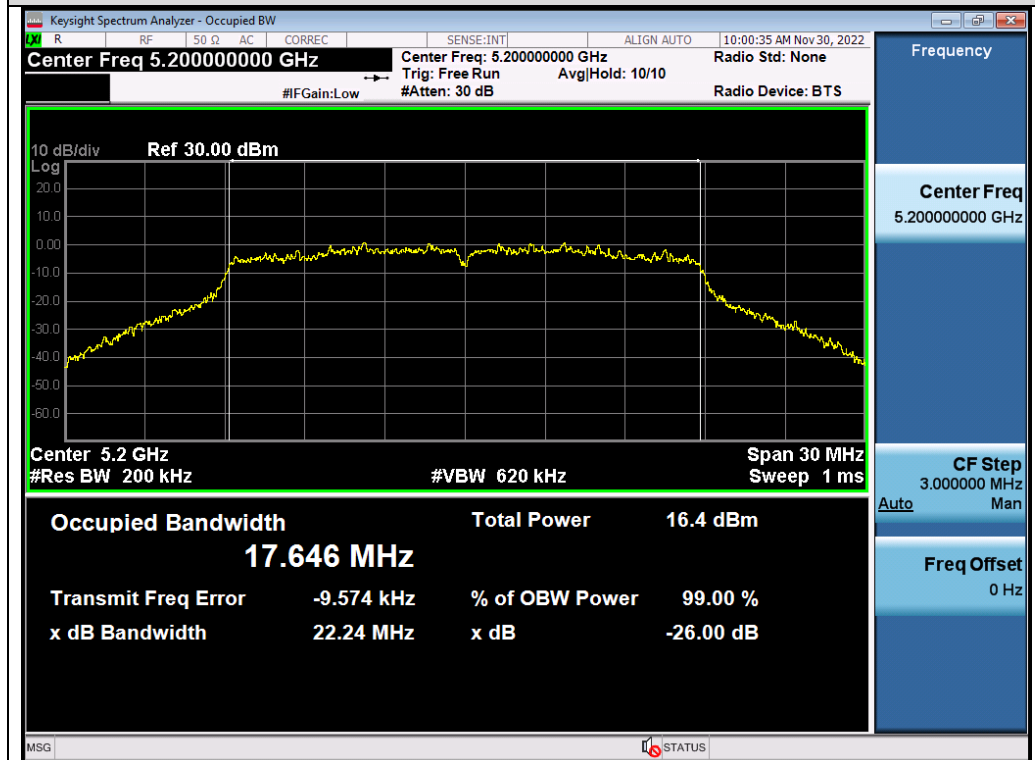


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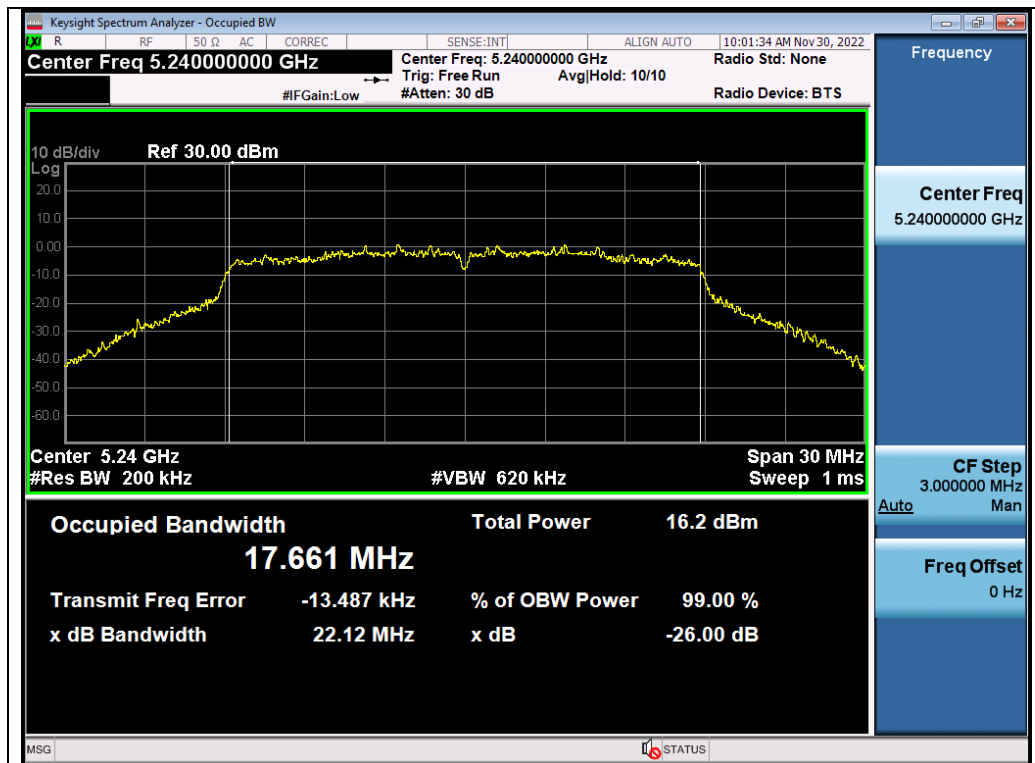


Test_Graph_802.11ac20_ANT2_5180_MCS0_OBW



Test_Graph_802.11ac20_ANT2_5200_MCS0_OBW

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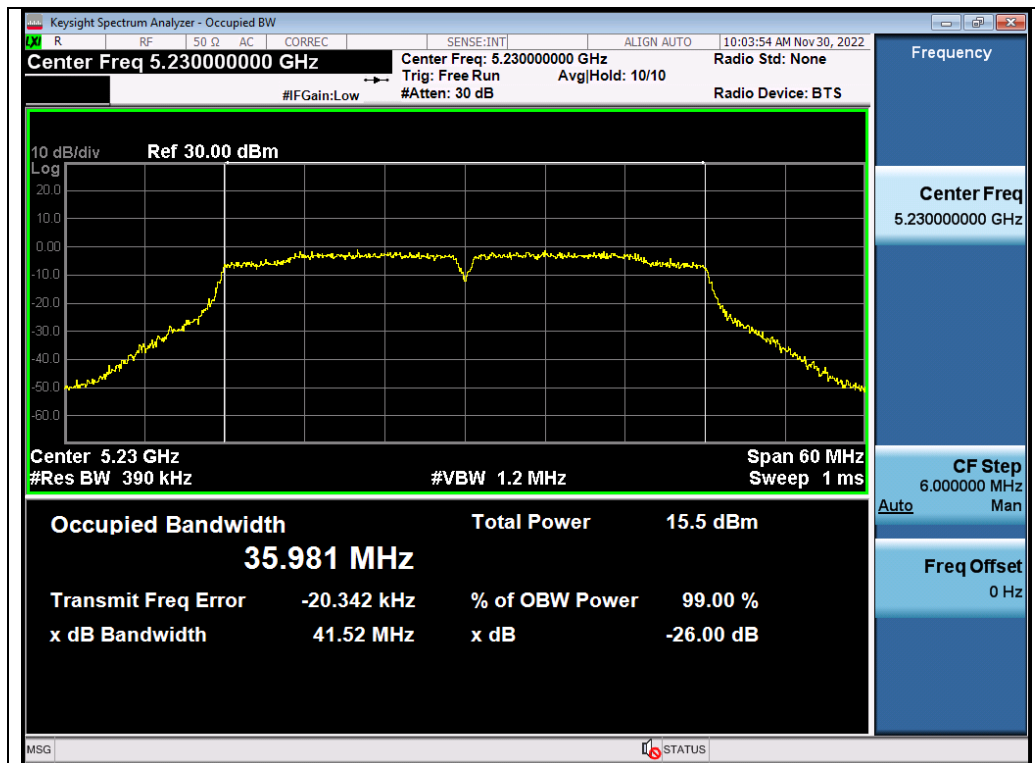


Test_Graph_802.11ac20_ANT2_5240_MCS9_OBW



Test_Graph_802.11ac40_ANT2_5190_MCS9_OBW

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Test_Graph_802.11ac40_ANT2_5230_MCS9_OBW



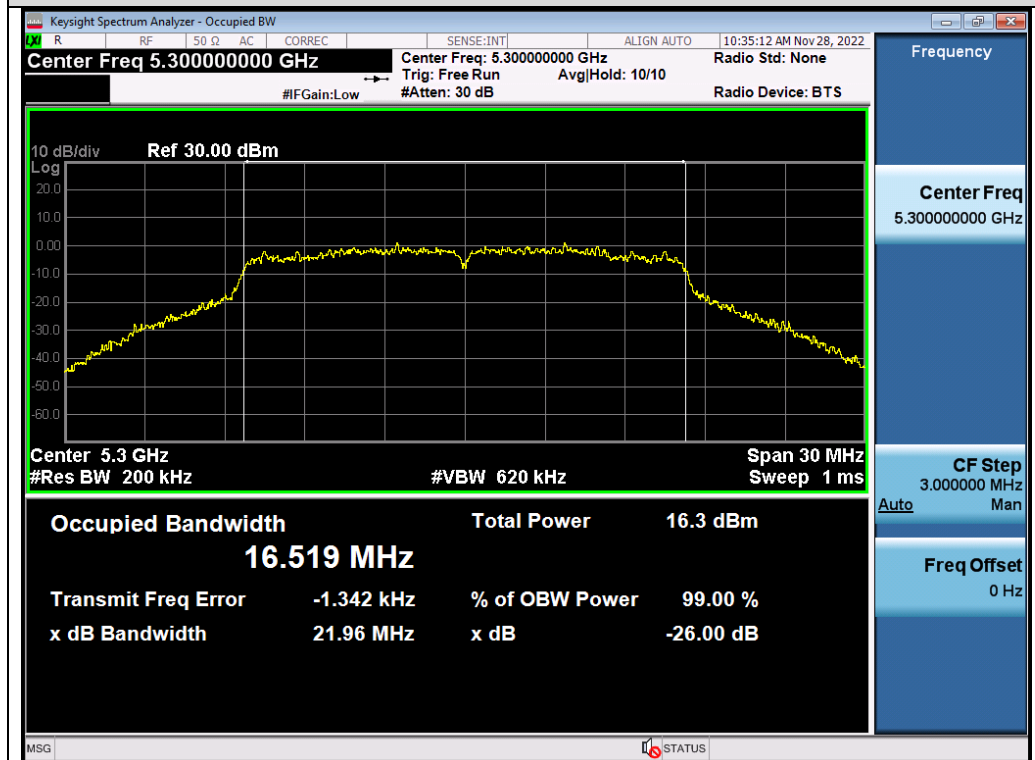
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Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.25-5.35 GHz

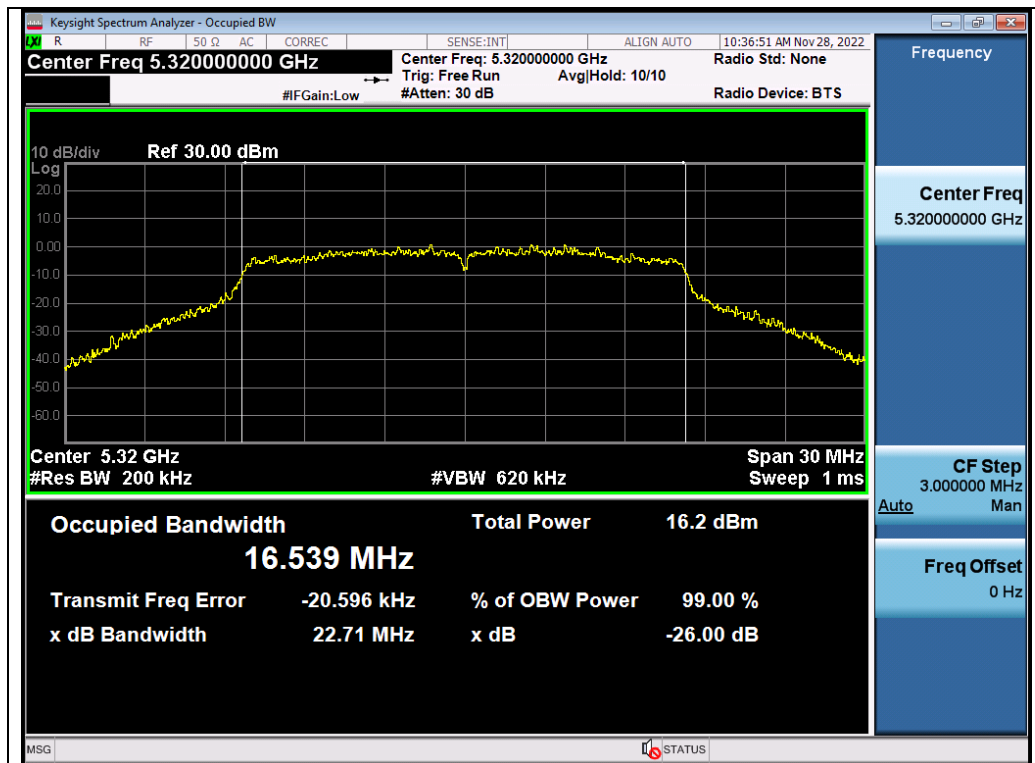


Test_Graph_802.11a_ANT1_5260_6Mbps_OBW

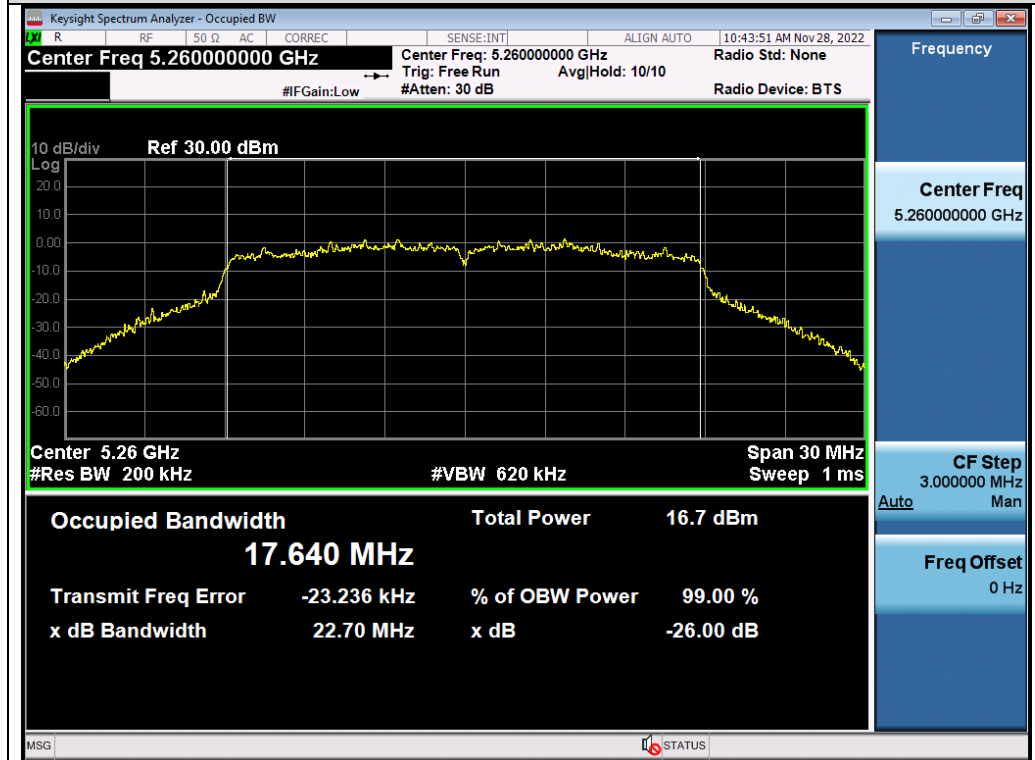


Test_Graph_802.11a_ANT1_5300_6Mbps_OBW

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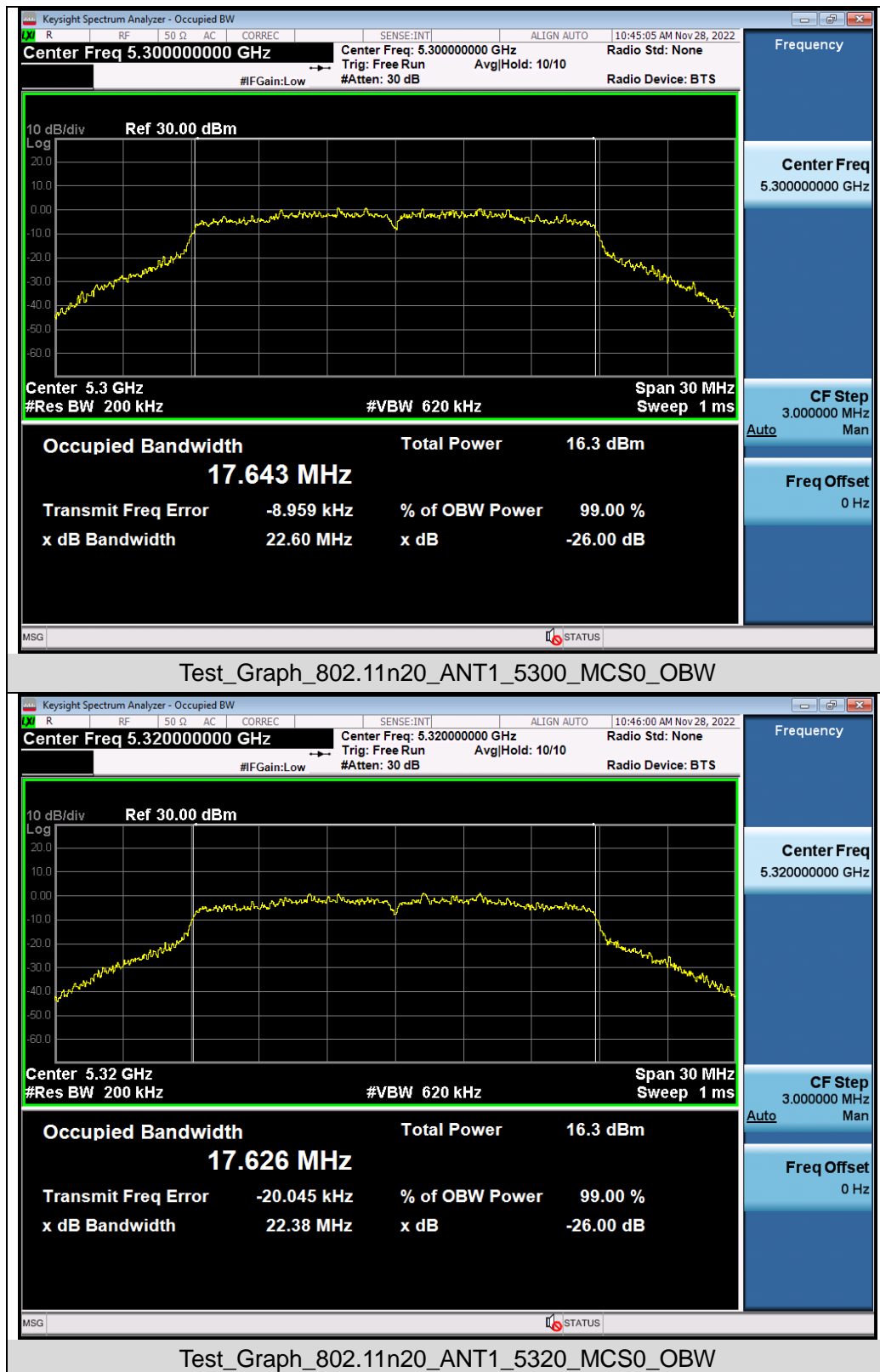


Test_Graph_802.11a_ANT1_5320_6Mbps_OBW

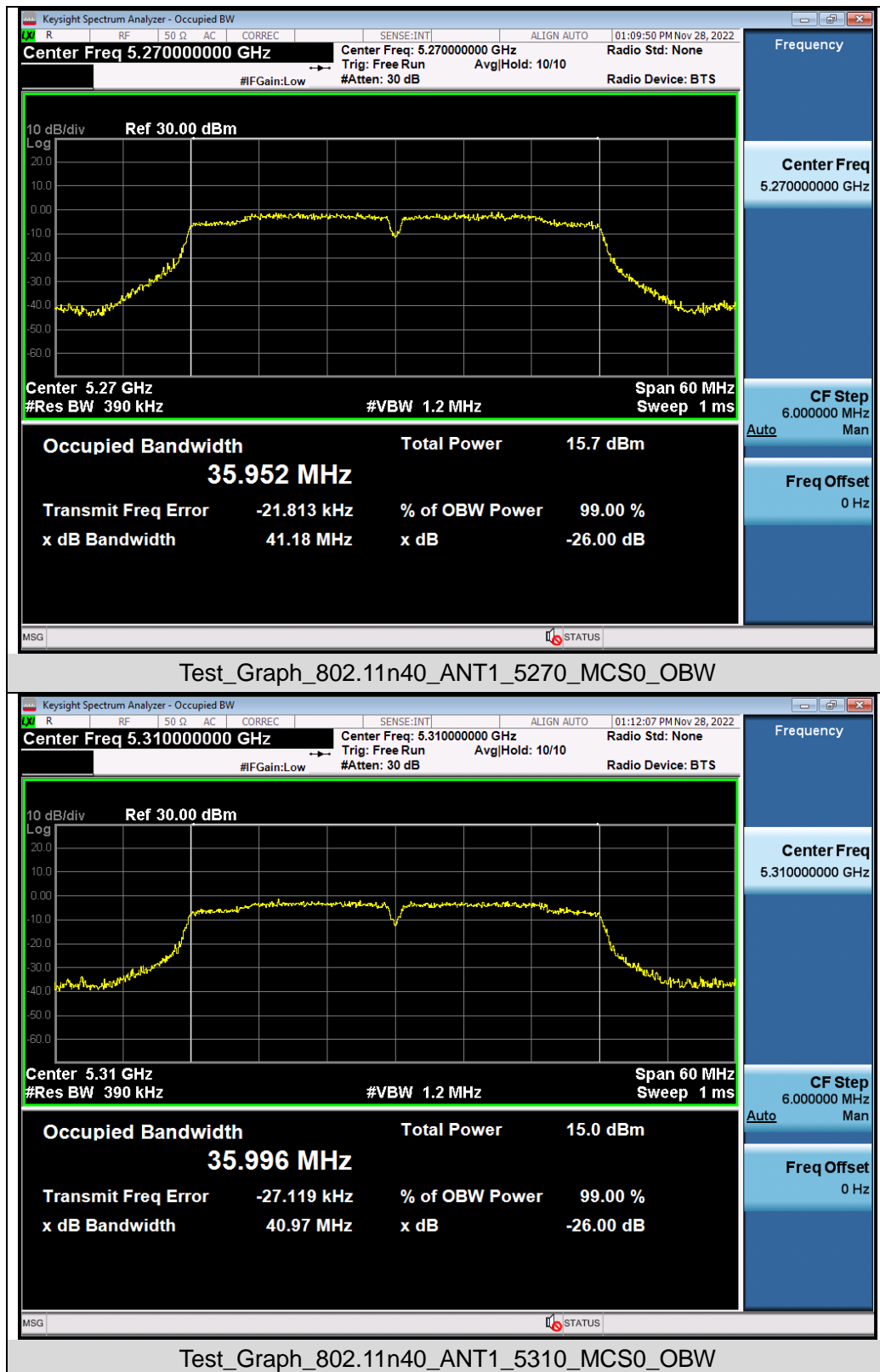


Test_Graph_802.11n20_ANT1_5260_MCS0_OBW

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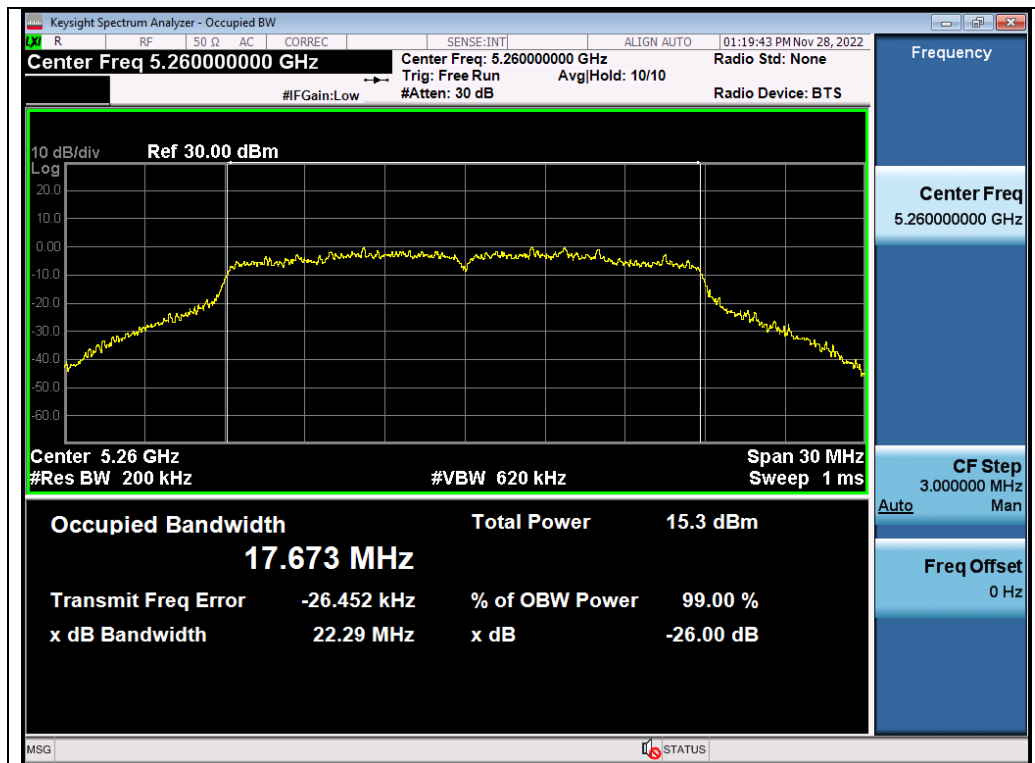


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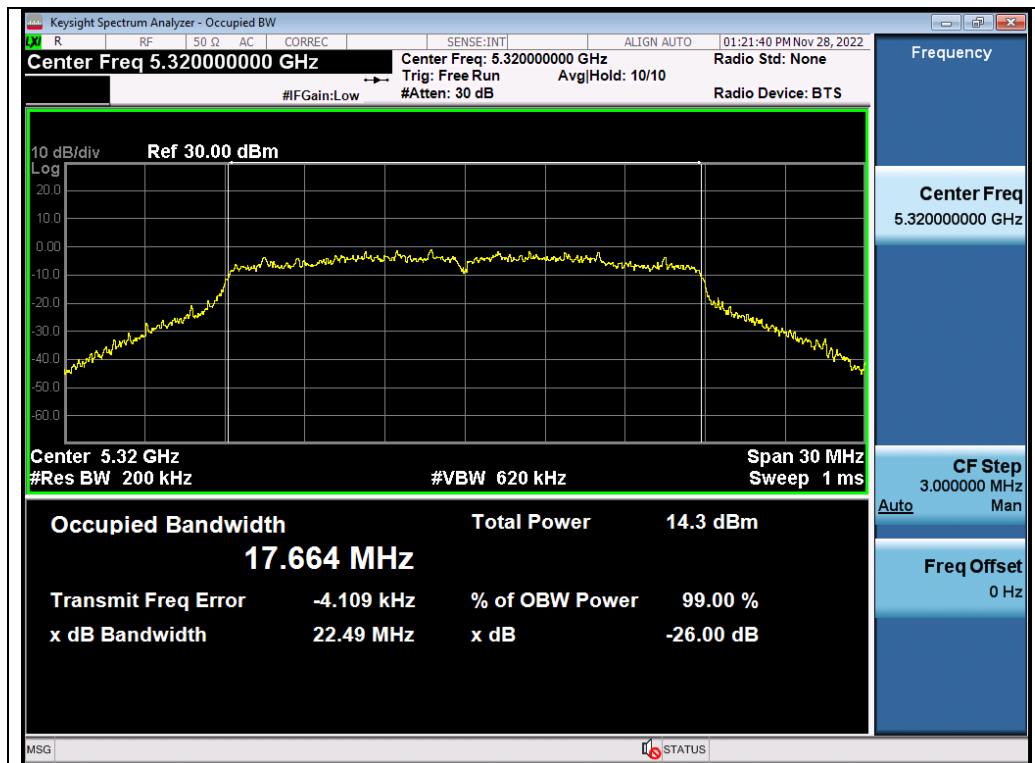


Test_Graph_802.11ac20_ANT1_5260_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5300_MCS0_OBW

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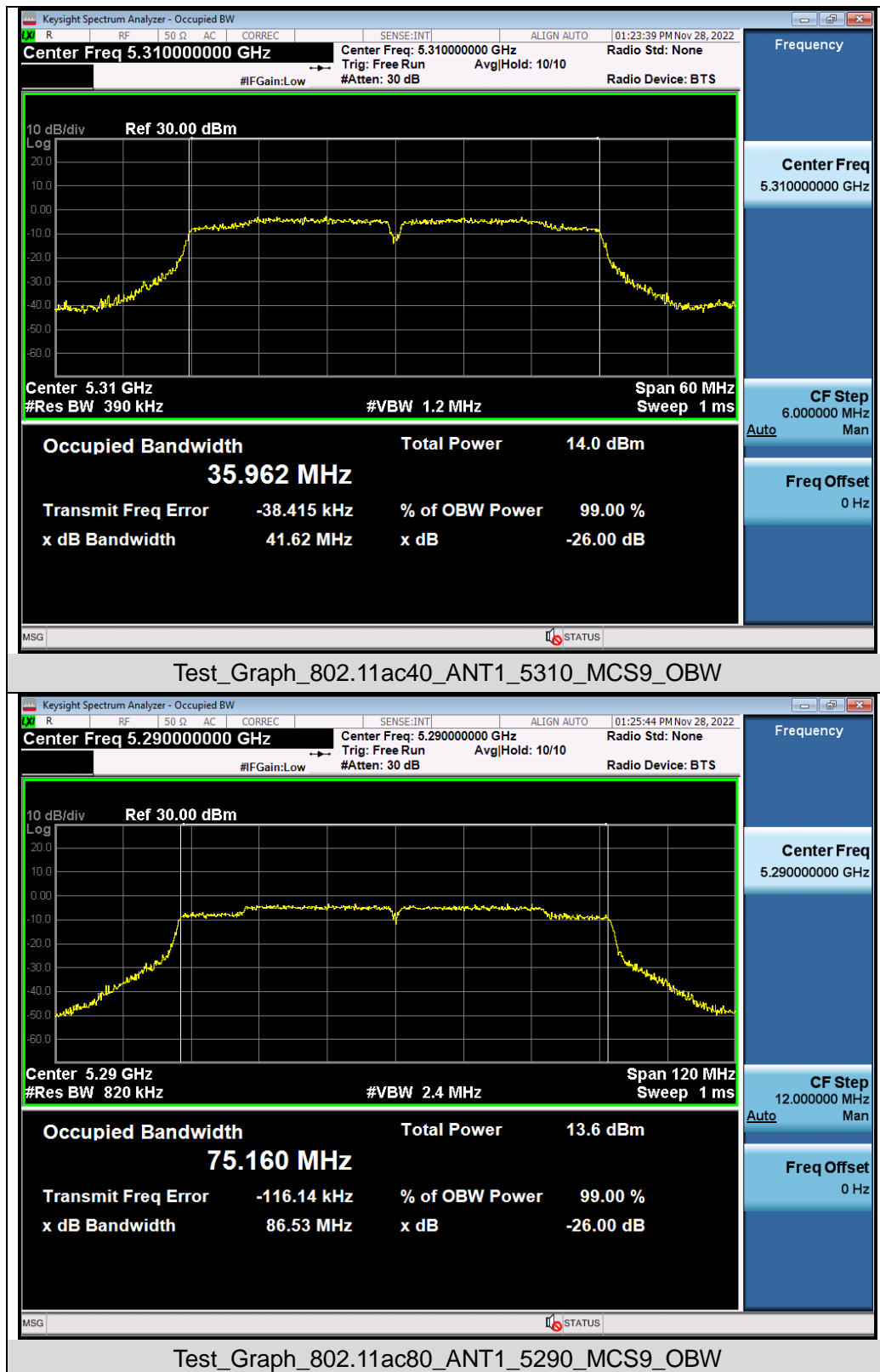


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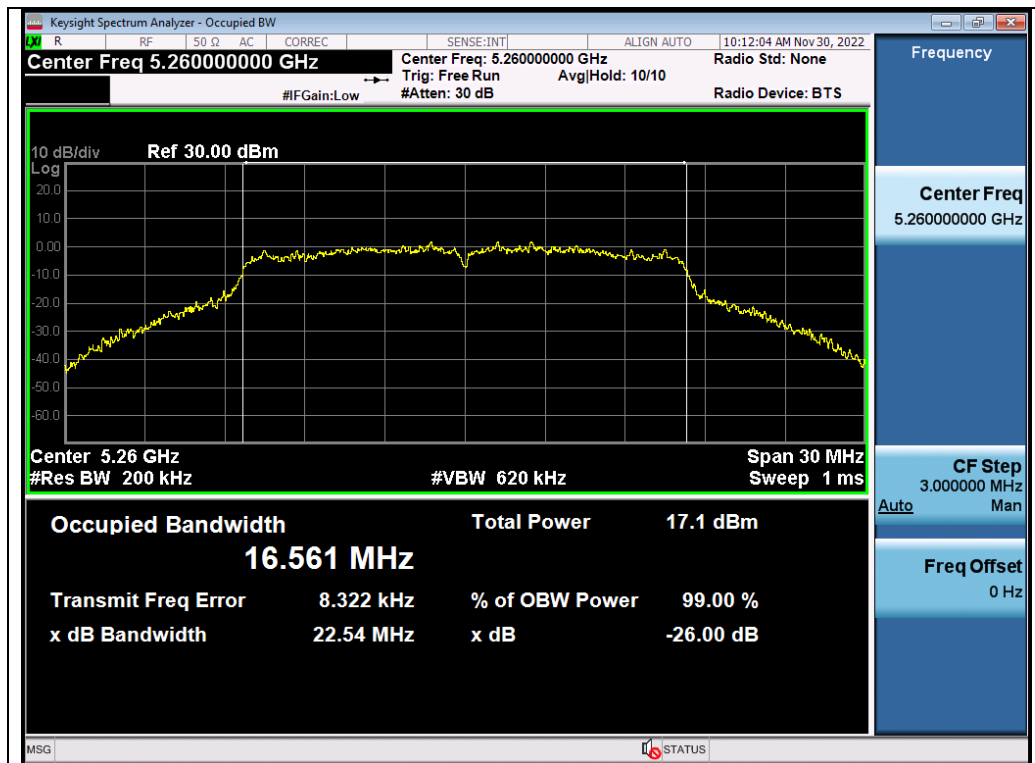


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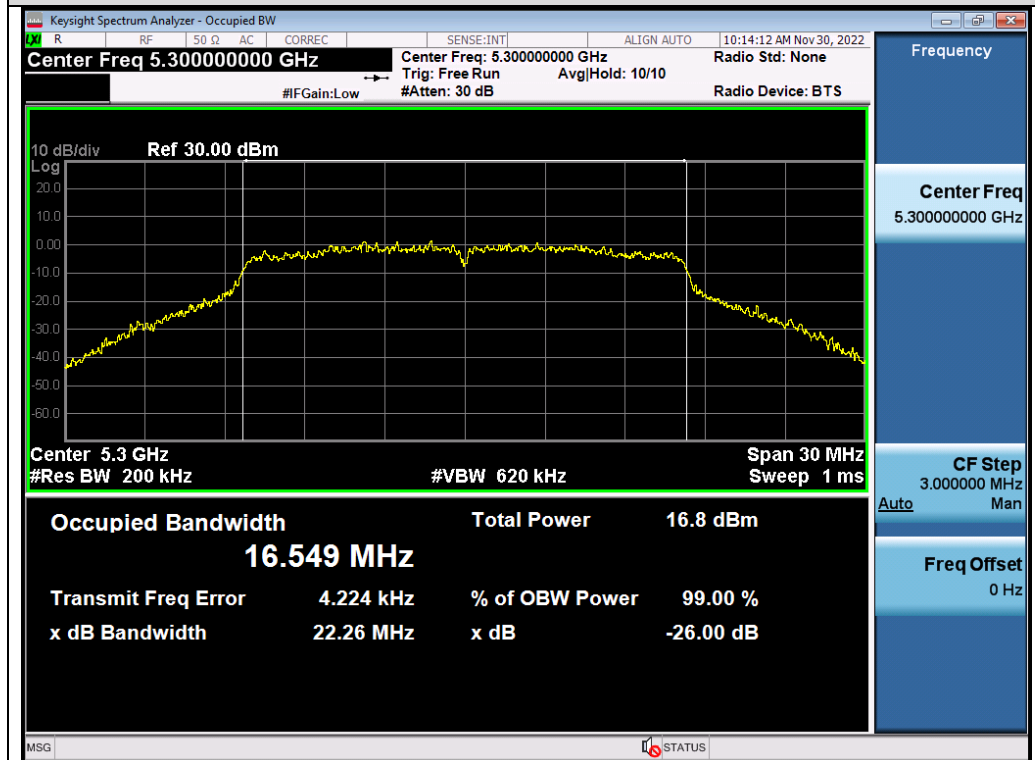
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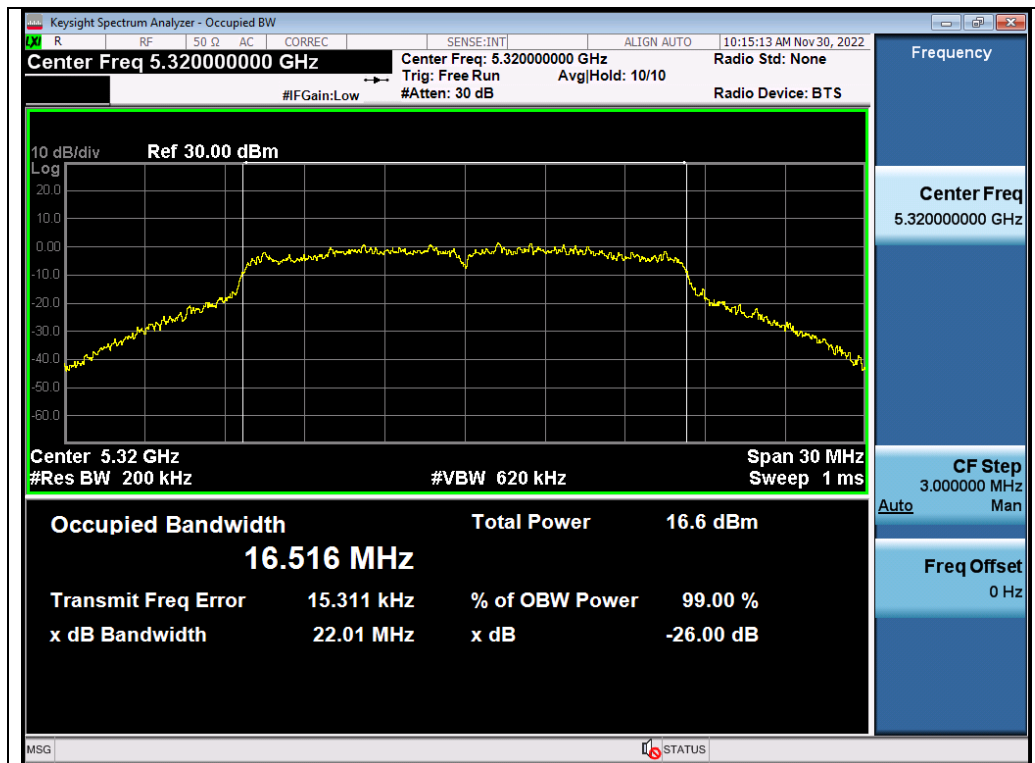


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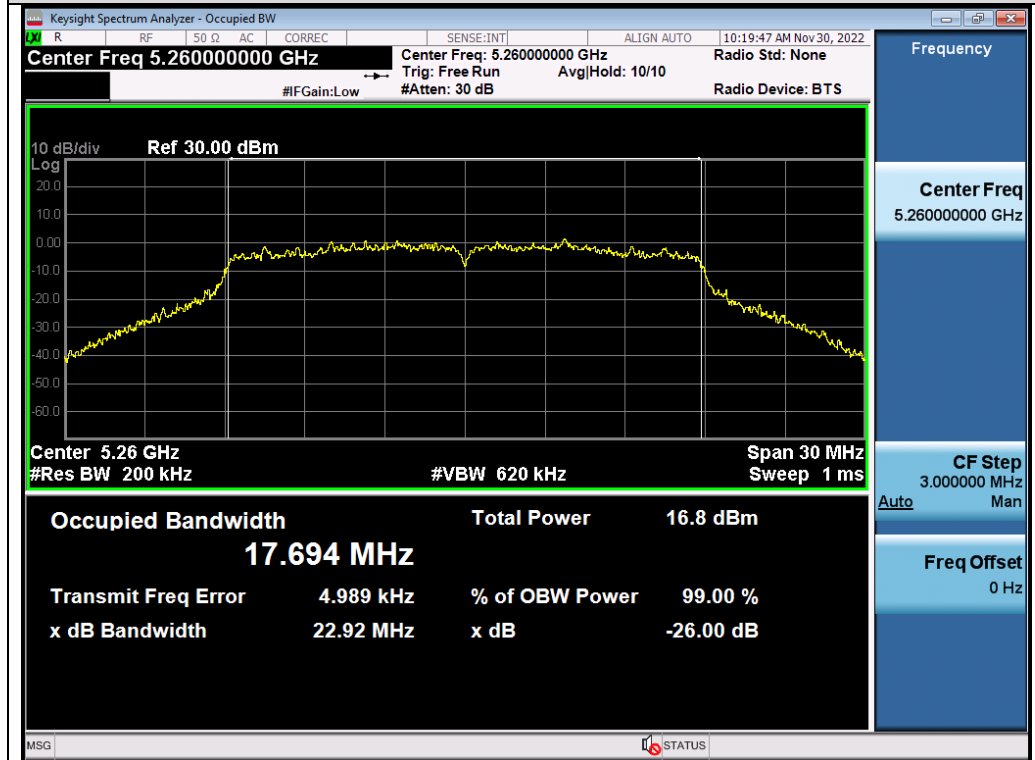


Test_Graph_802.11a_ANT2_5300_6Mbps_OBW

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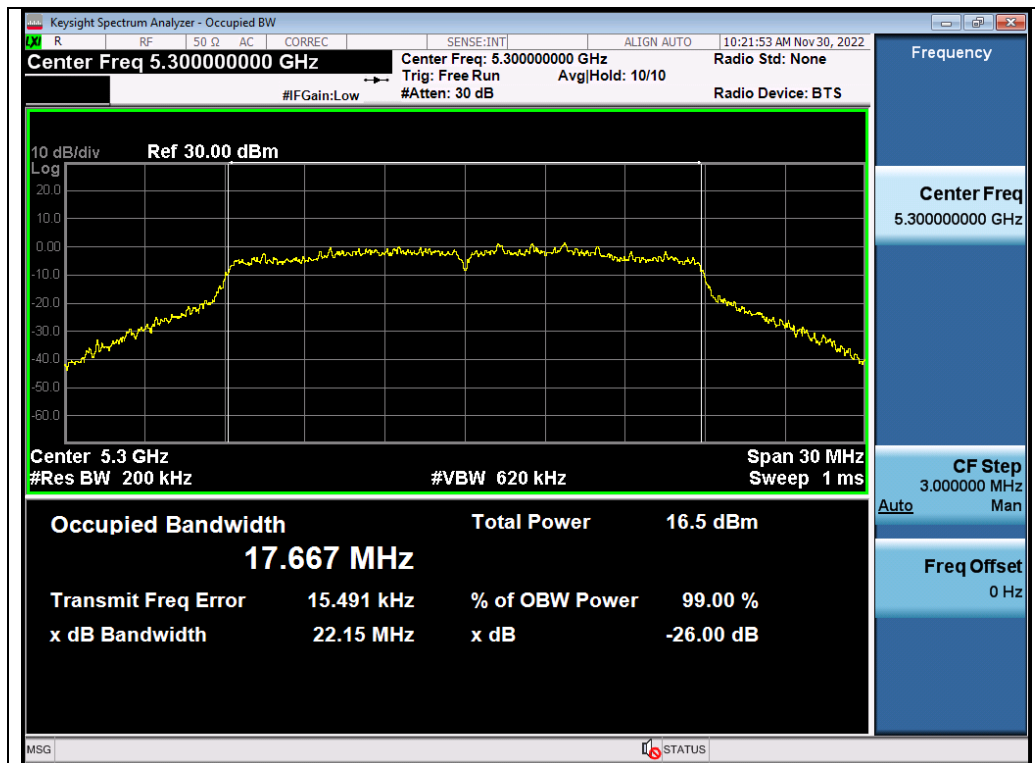


Test_Graph_802.11a_ANT2_5320_6Mbps_OBW



Test_Graph_802.11n20_ANT2_5260_MCS0_OBW

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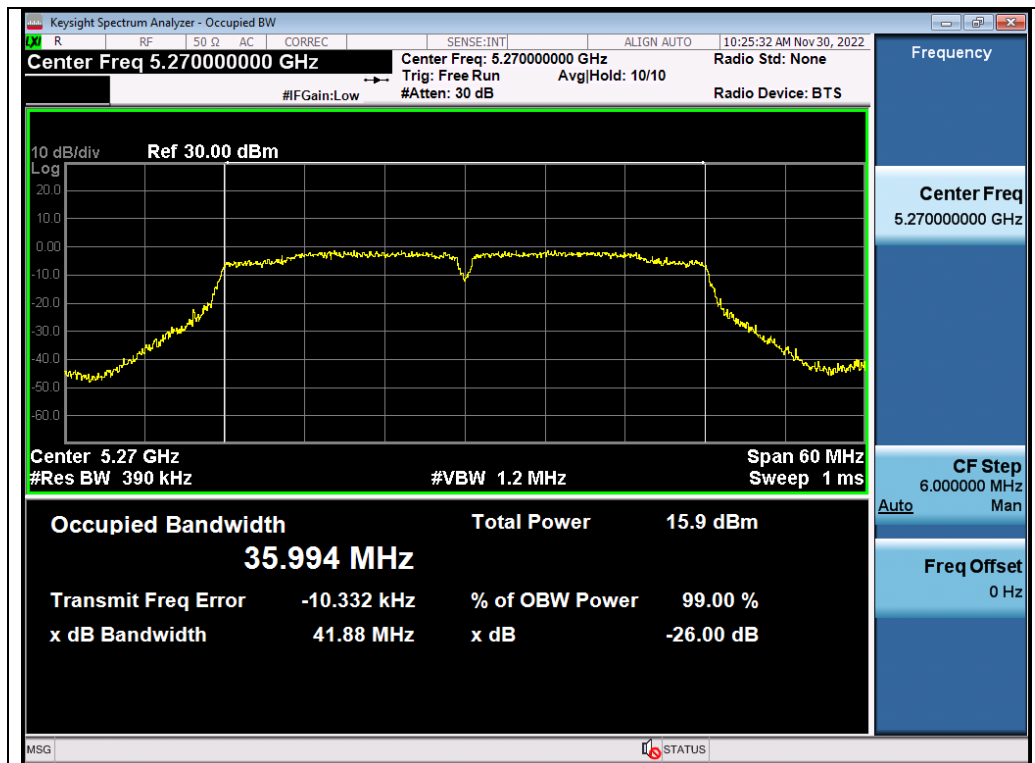
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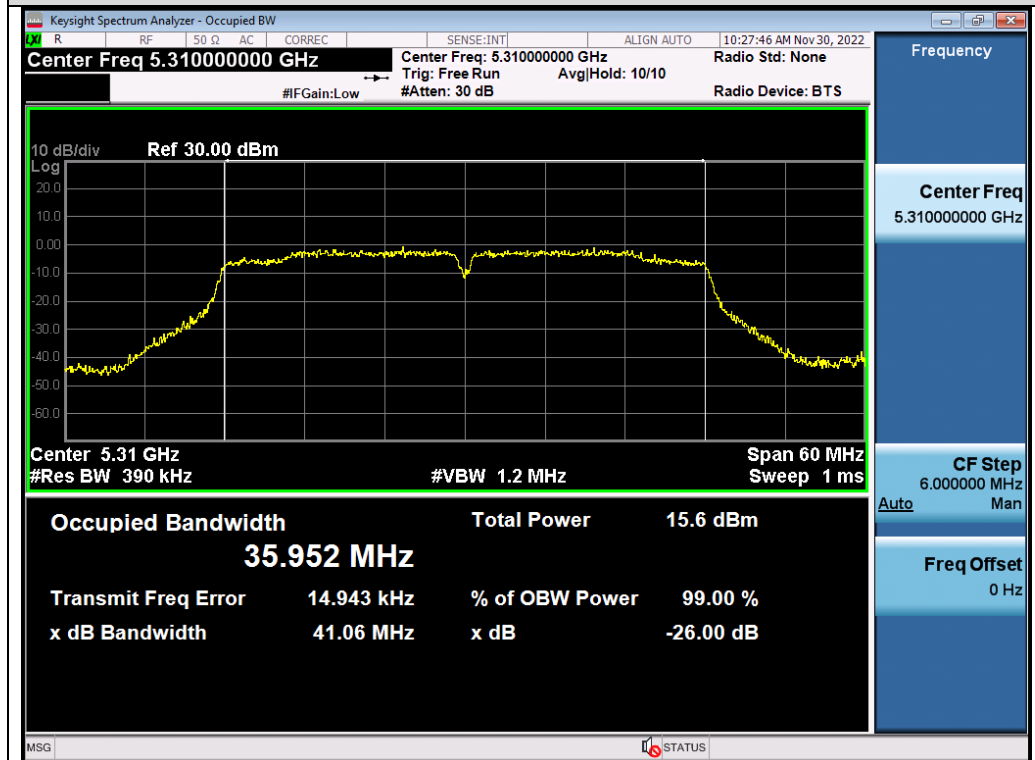
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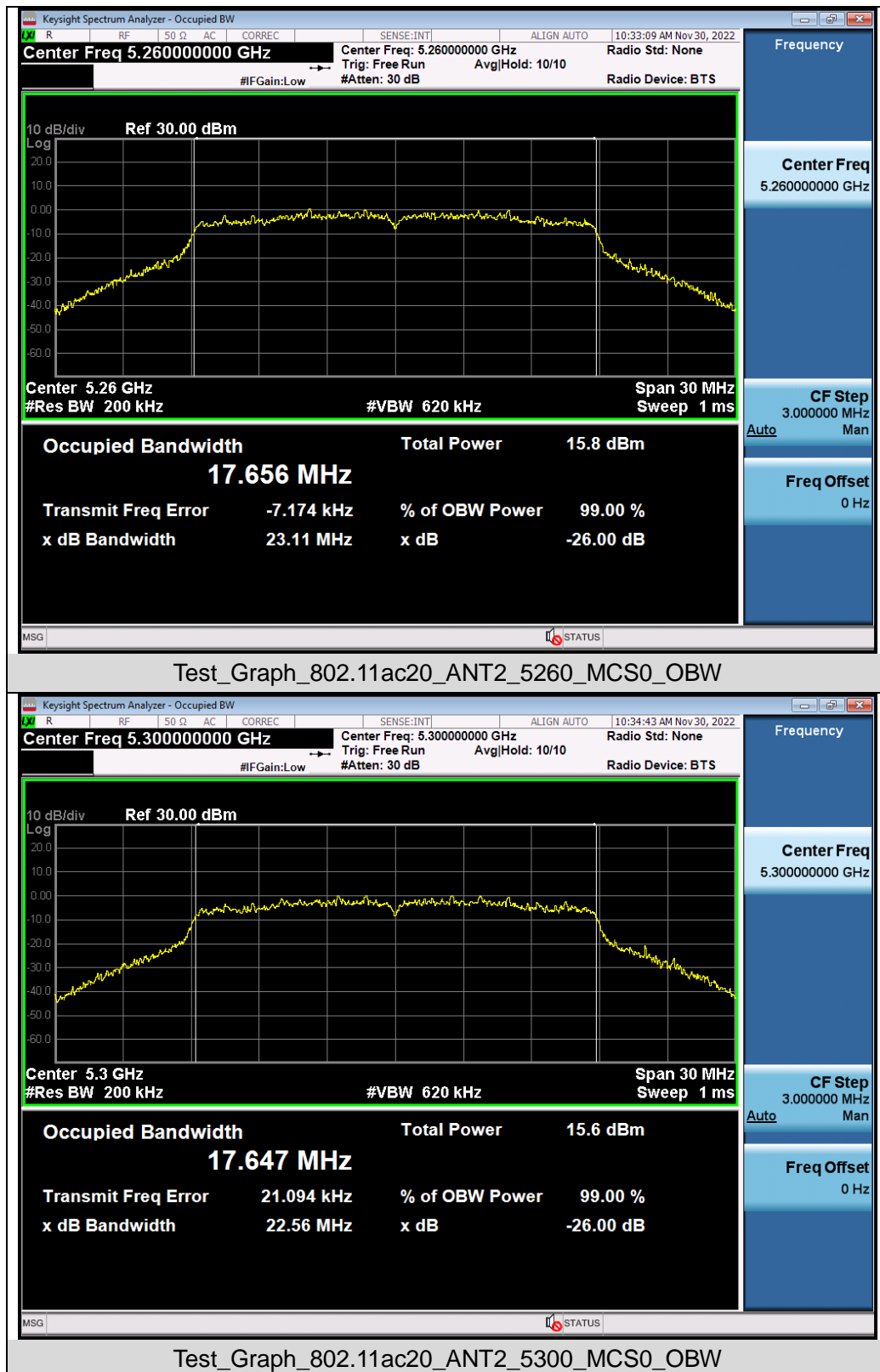


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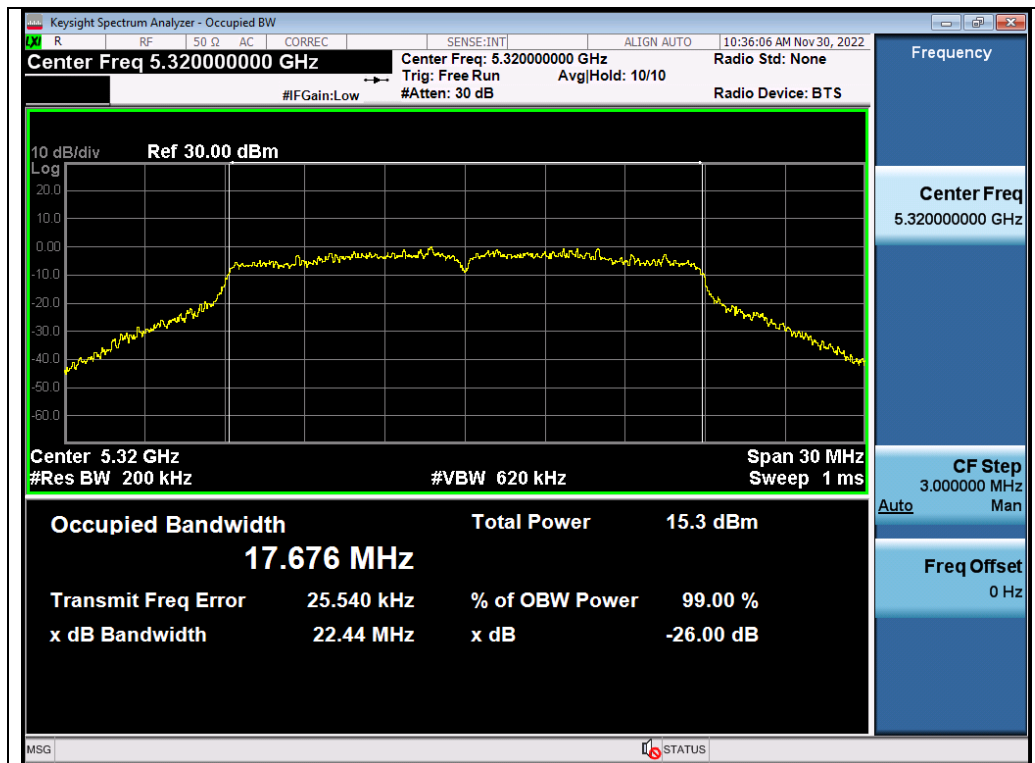


Test_Graph_802.11n40_ANT2_5310_MCS0_OBW

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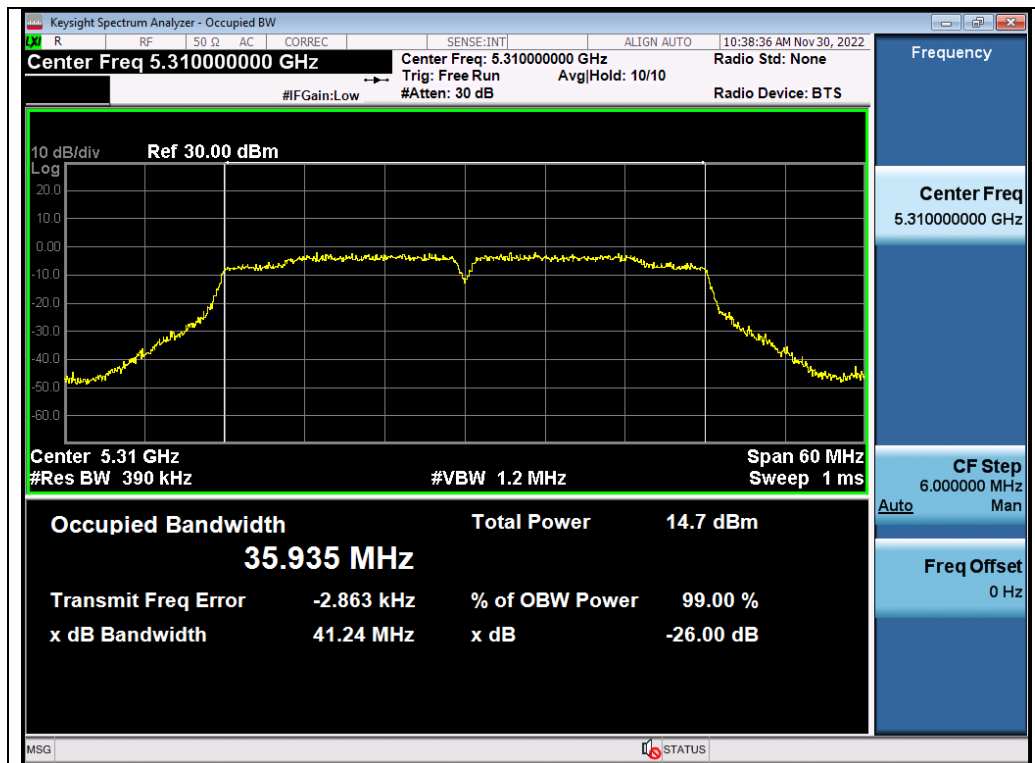


Test_Graph_802.11ac20_ANT2_5320_MCS9_OBW

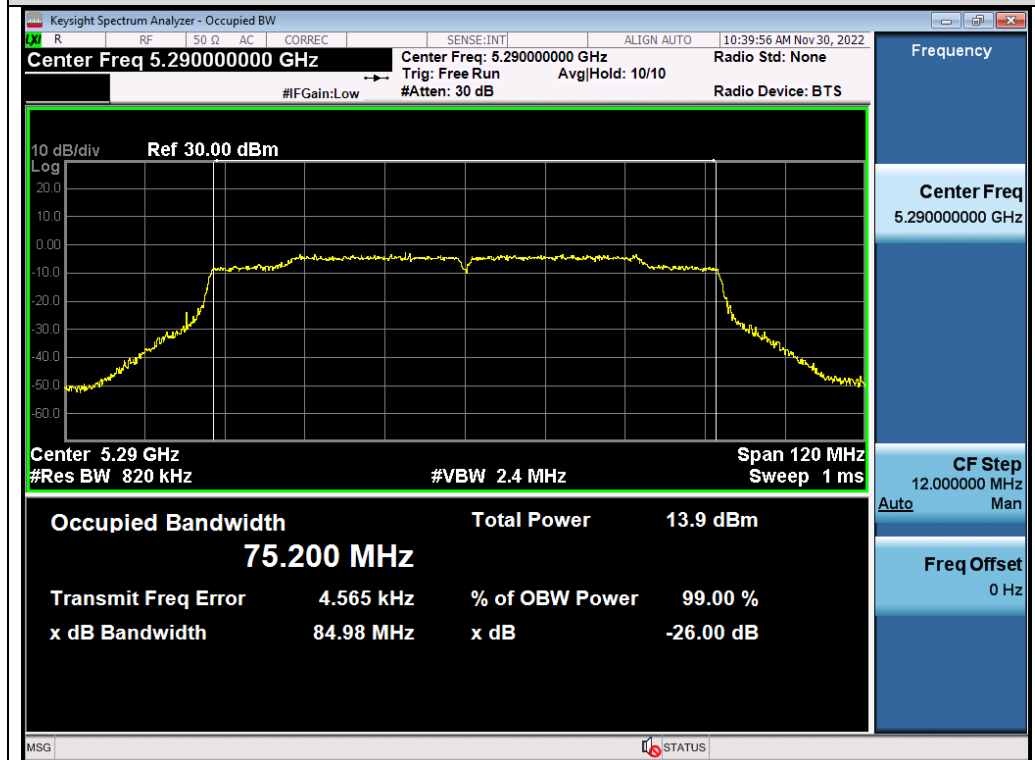


Test_Graph_802.11ac40_ANT2_5270_MCS9_OBW

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Test_Graph_802.11ac40_ANT2_5310_MCS9_OBW



Test_Graph_802.11ac80_ANT2_5290_MCS9_OBW

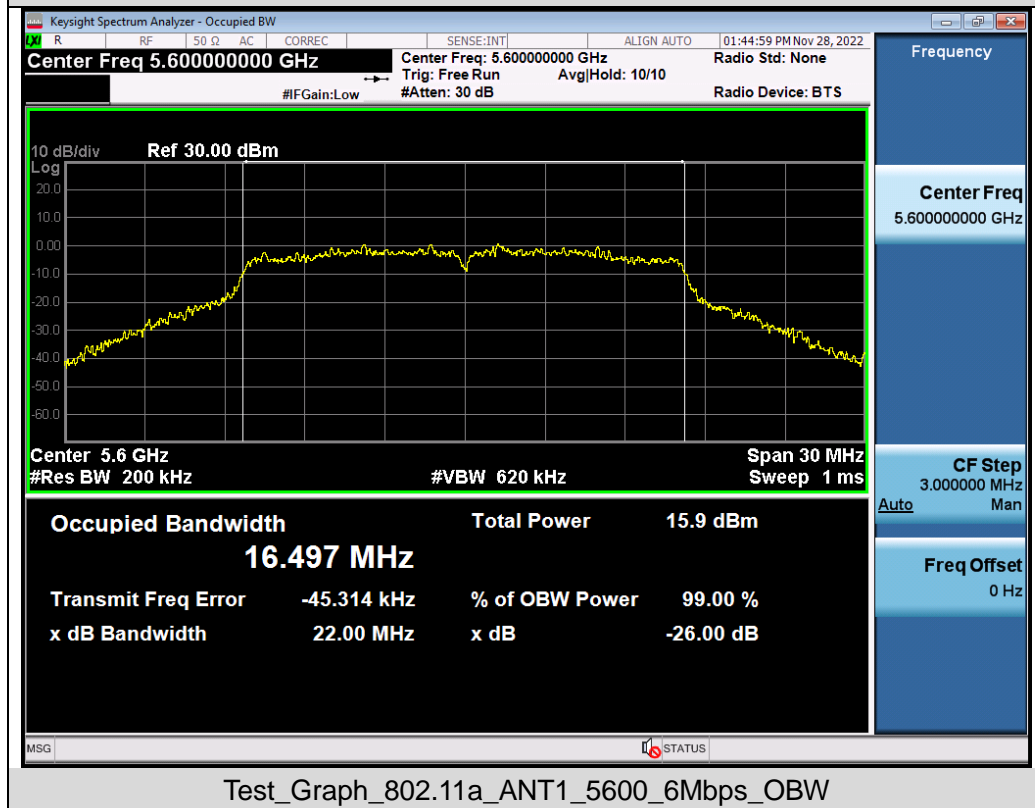
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Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.47-5.725 GHz

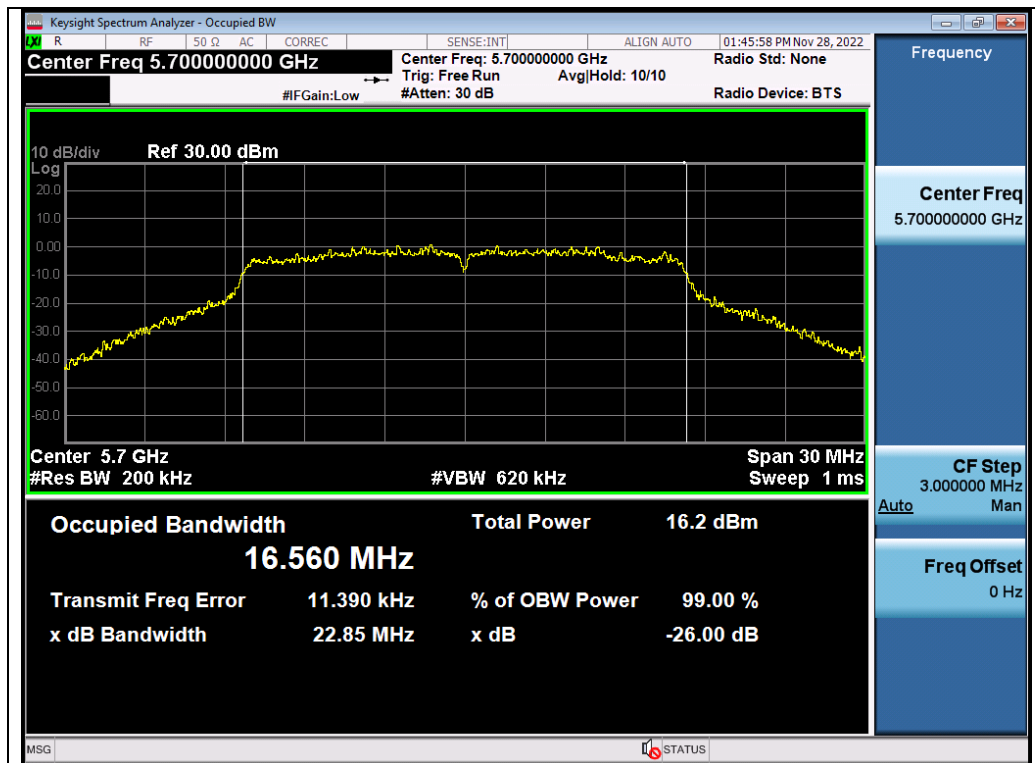


Test_Graph_802.11a_ANT1_5500_6Mbps_OBW



Test_Graph_802.11a_ANT1_5600_6Mbps_OBW

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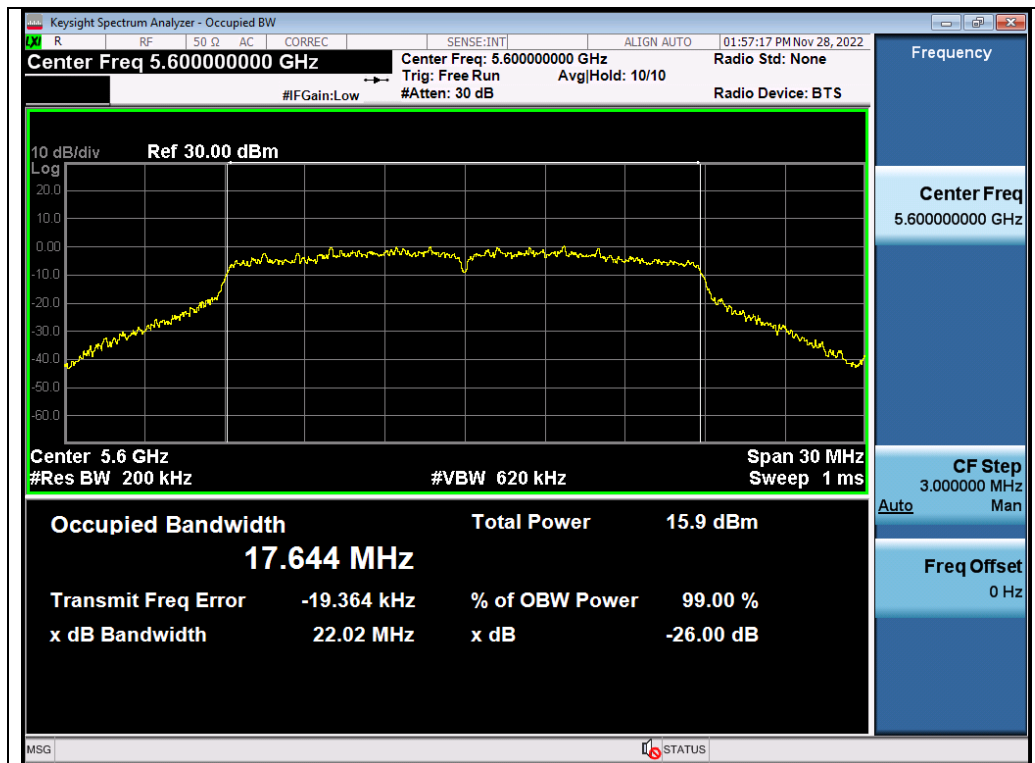
Test_Graph_802.11a_ANT1_5700_6Mbps_OBW



Test_Graph_802.11n20_ANT1_5500_MCS0_OBW

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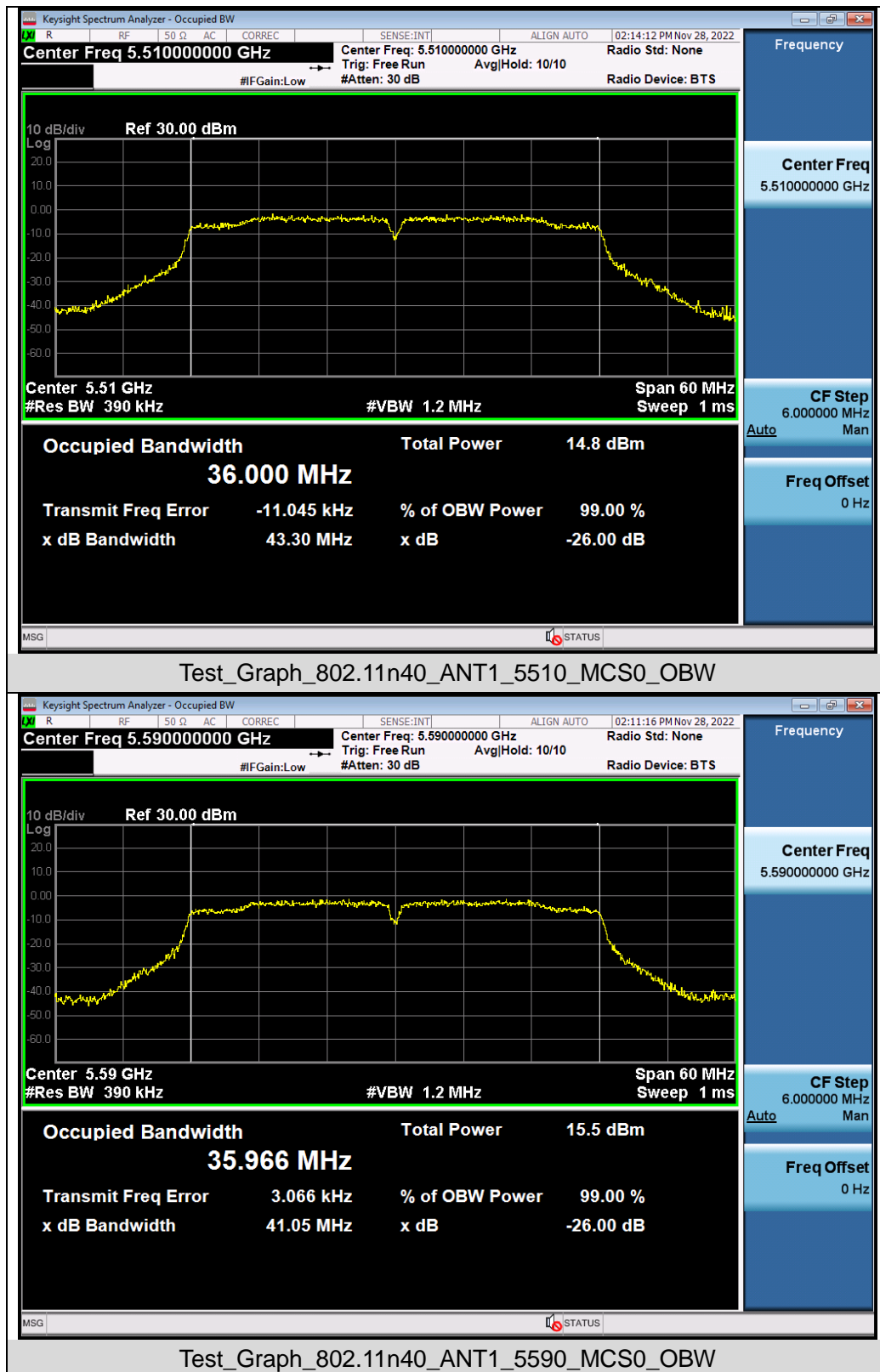


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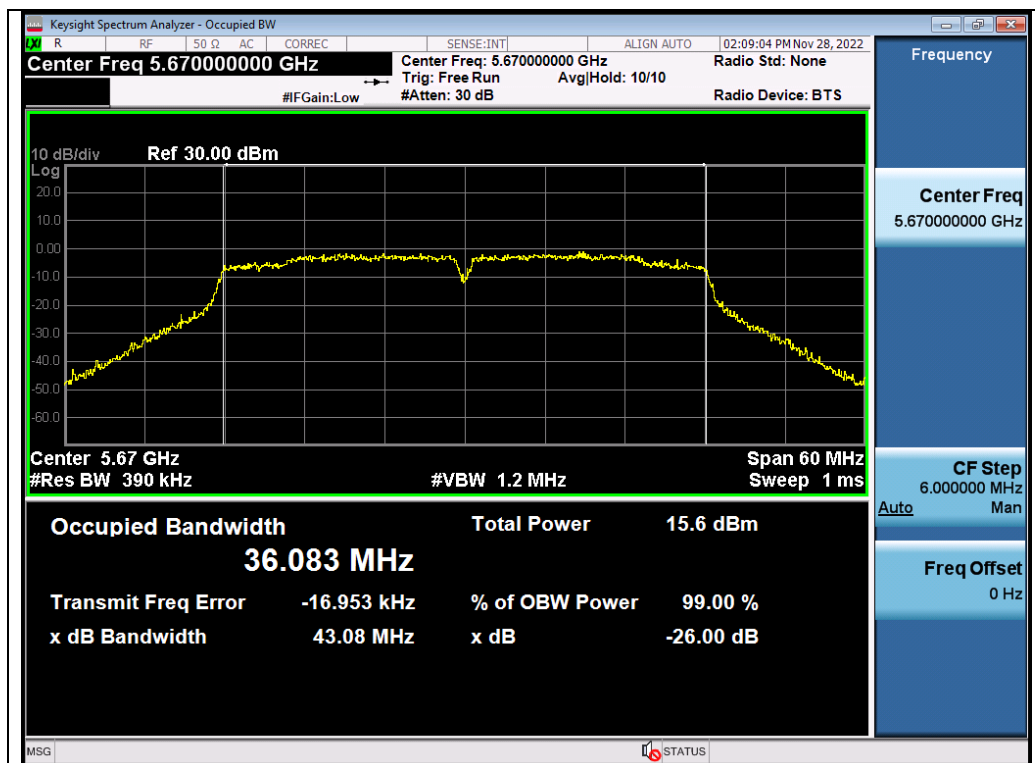


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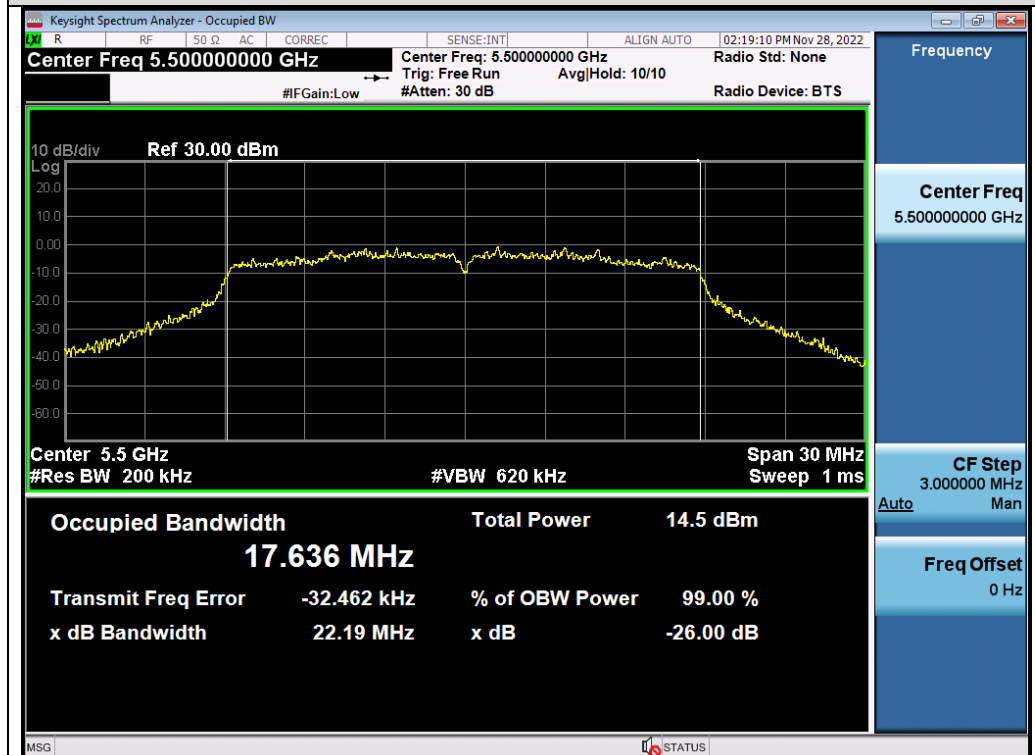
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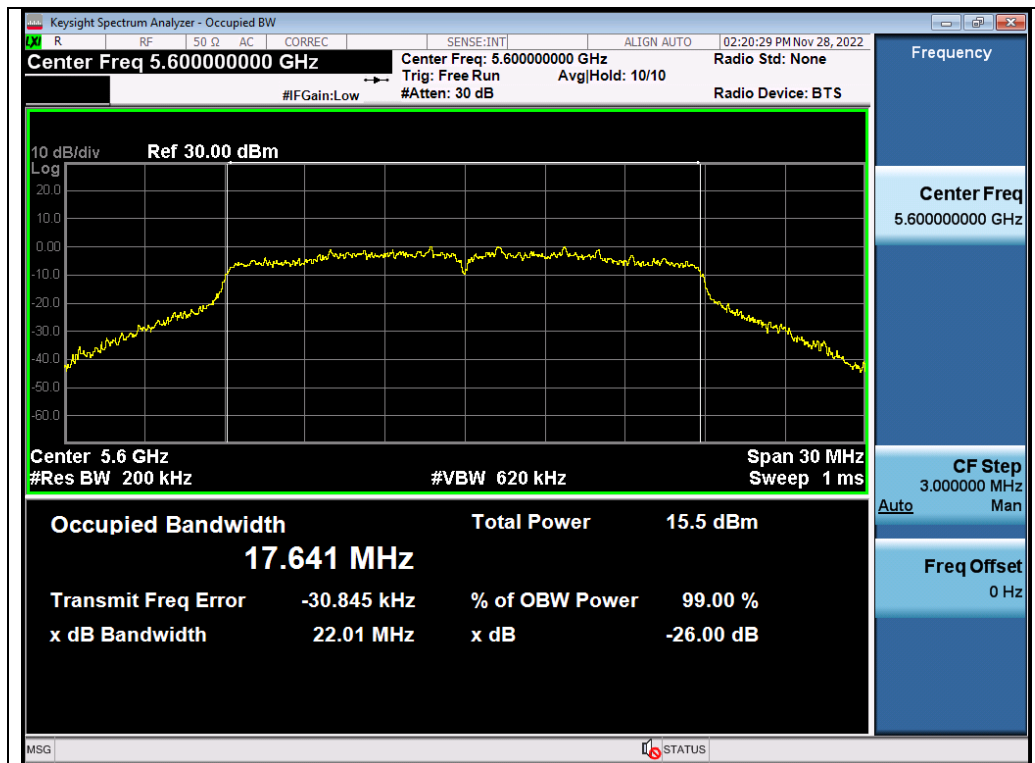
Test_Graph_802.11n40_ANT1_5670_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5500_MCS0_OBW

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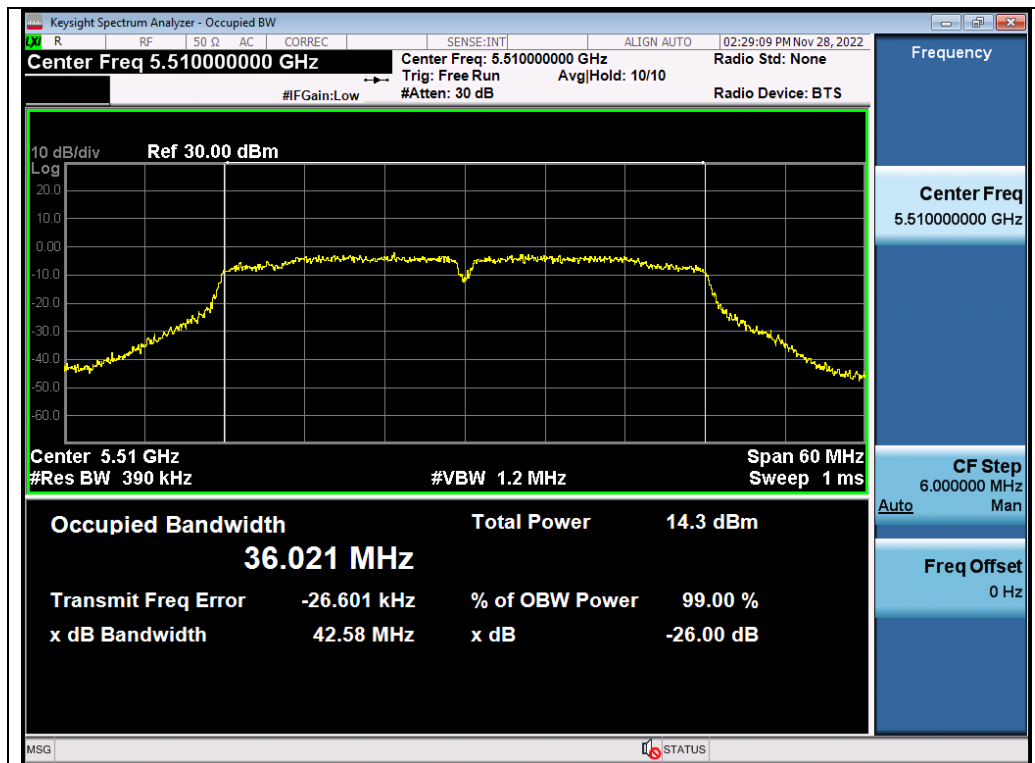


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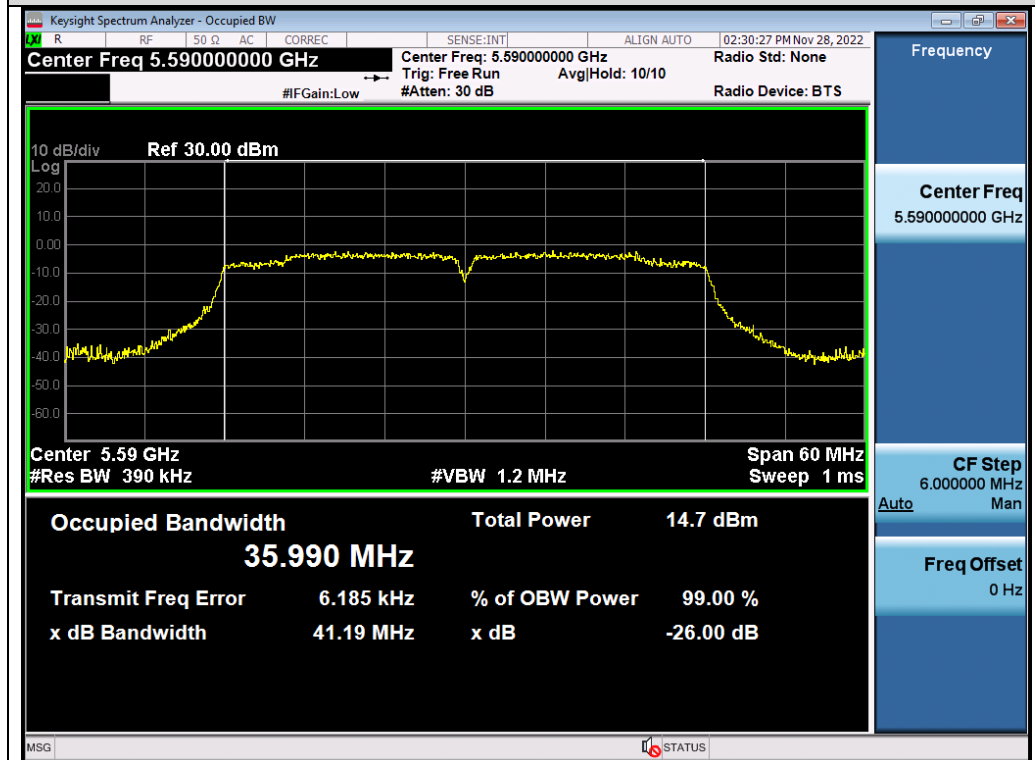


Test_Graph_802.11ac20_ANT1_5700_MCS9_OBW

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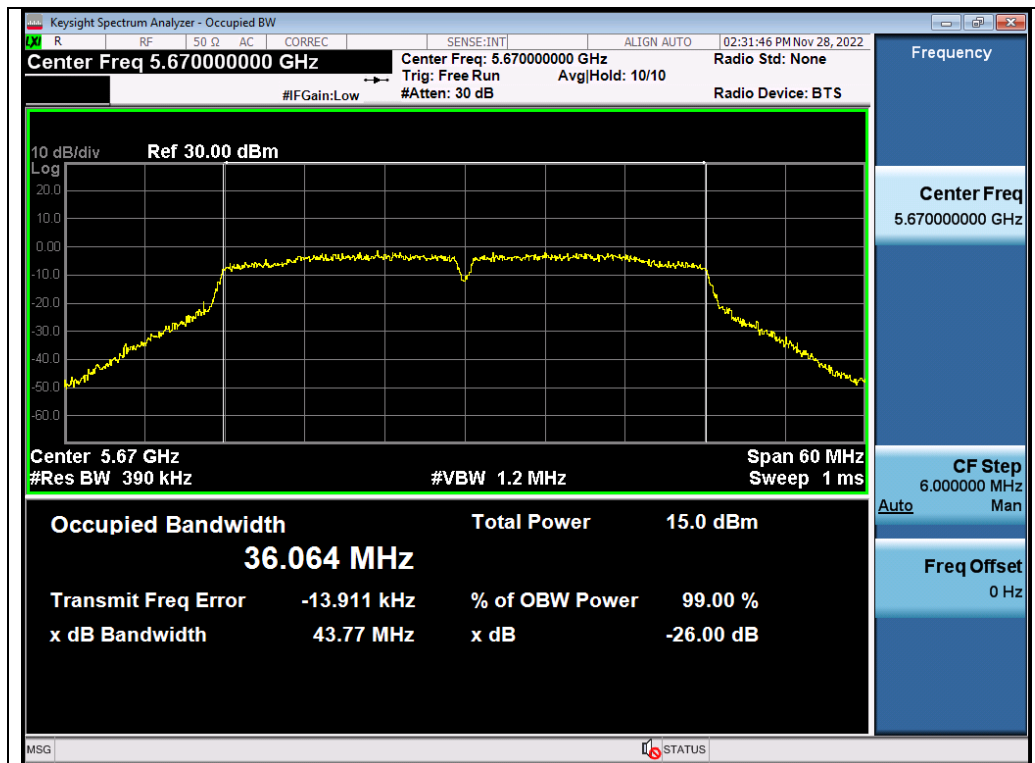
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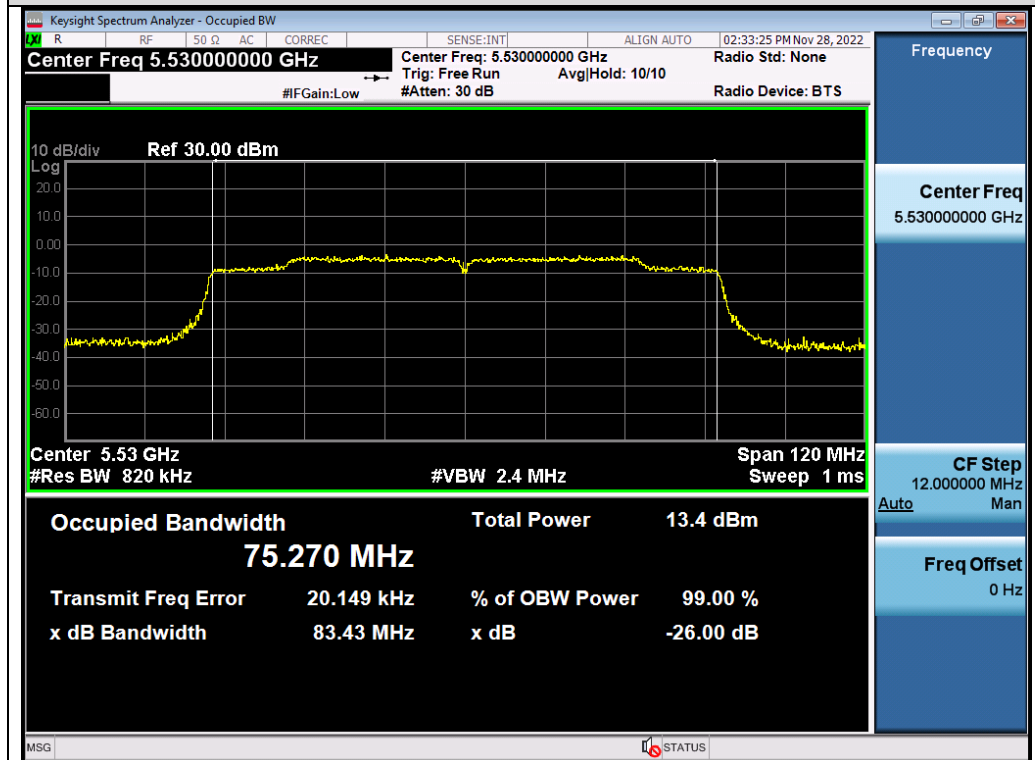
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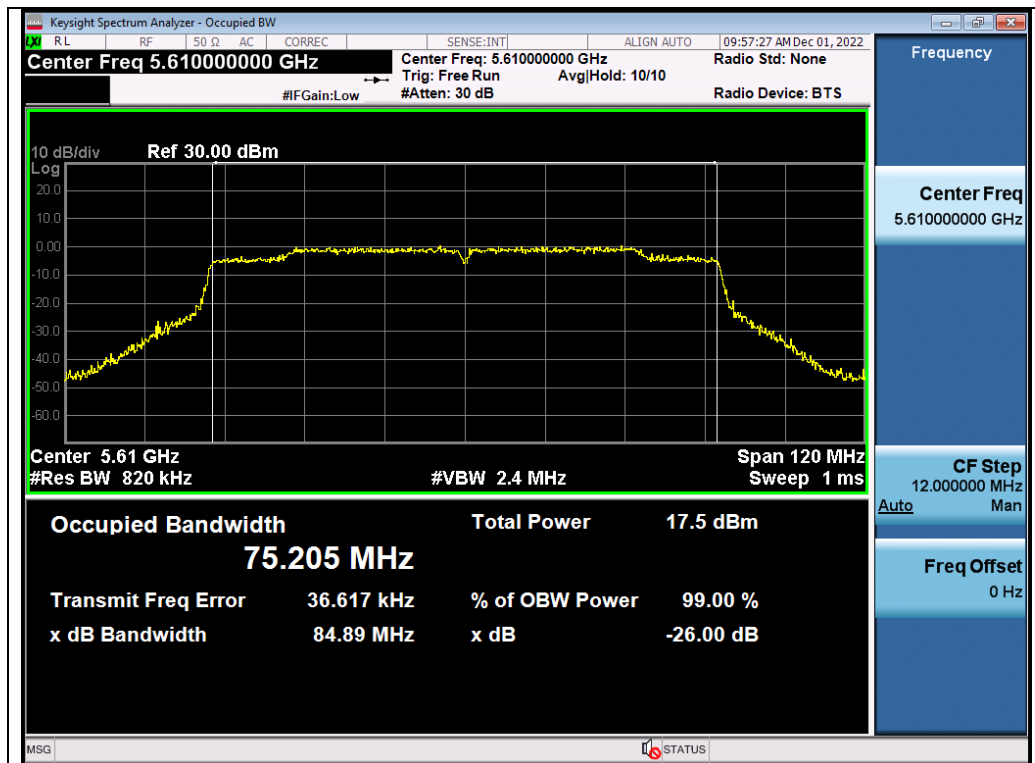


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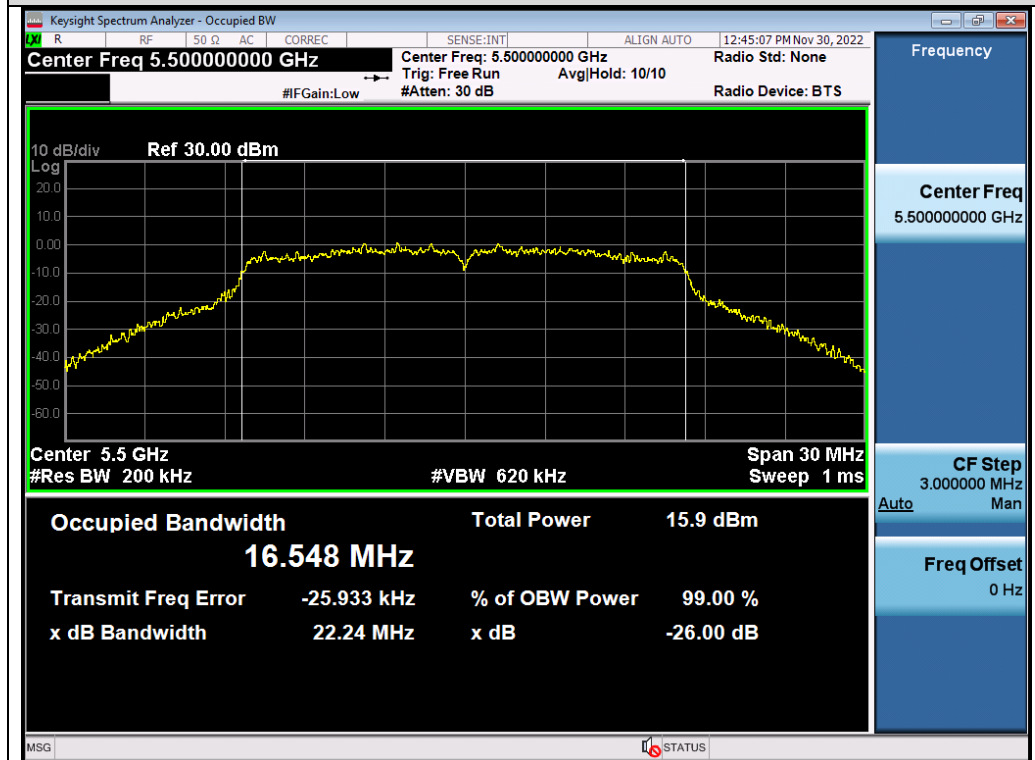


Test_Graph_802.11ac80_ANT1_5530_MCS9_OBW

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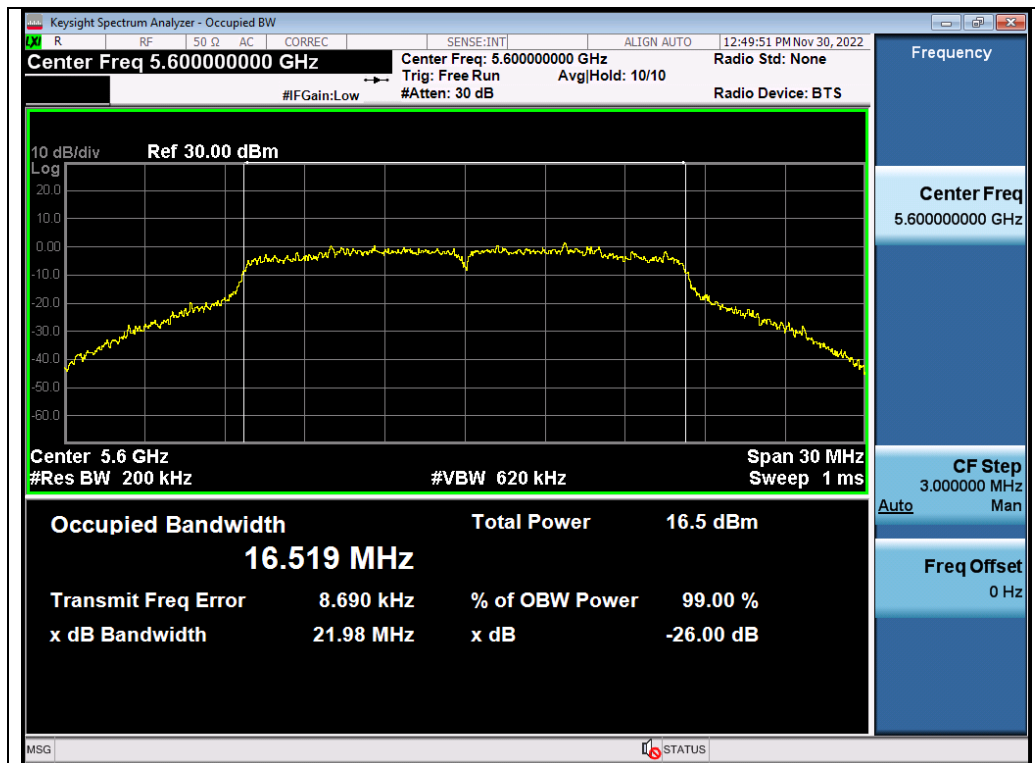


Test_Graph_802.11ac80_ANT1_5610_MCS9_OBW



Test_Graph_802.11a_ANT2_5500_6Mbps_OBW

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Test_Graph_802.11a_ANT2_5600_6Mbps_OBW



Test_Graph_802.11a_ANT2_5700_6Mbps_OBW

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