FCC Test Report

Report No.: AGC01689220805FE06

FCC ID	:	2A2UU-P12
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Mini POS Terminal
BRAND NAME	:	Kobile, Clip, Kripto, Foodics, Dejavoo
MODEL NAME	:	P12
APPLICANT	:	Shanghai Xiangcheng Communication Technology Co.,Ltd
DATE OF ISSUE	:	Sep. 28, 2022
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15.407 KDB 789033 D02 v02r01
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 28, 2022	Valid	Initial Release

TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY

Applicant	Shanghai Xiangcheng Communication Technology Co.,Ltd
Address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai, China
Manufacturer	Shanghai Xiangcheng Communication Technology Co.,Ltd
Address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai, China
Factory	Sichuan Xiangcheng Intelligent Technology Co, Ltd
Address	Factory No. 2, Zone A, Intelligent Terminal Demonstration Park, West Section of Gangyuan Road, Lingang Economic Development Zone, Yibin City, Sichuan Province
Product Designation	Mini POS Terminal
Brand Name	Kobile, Clip, Kripto, Foodics, Dejavoo
Test Model	P12
Date of receipt of test item	Aug. 11, 2022
Date of test	Aug. 11, 2022~Sep. 27, 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

Alan Duan
(Project Engineer) Sep. 28, 2022

Reviewed By

Calvin Liu
(Reviewer) Sep. 28, 2022

Approved By

Max Zhang
Authorized Officer Sep. 28, 2022

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “Mini POS Terminal”. 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	☐ Outdoor access points ☐ Indoor access points ☐ Fixed P2P access points ☒ Client devices
Operation Frequency	☒ U-NII 1:5150MHz~5250MHz ☒ U-NII 2A: 5250MHz~5350MHz ☐ U-NII 2C:5470MHz~5725MHz ☒ U-NII 3: 5725MHz~5850MHz
DFS Design Type	☐ Master ☐ Slave with radar detection ☒ Slave without radar detection
TPC Function	☐ Yes ☒ No
Test Frequency Range	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40: 5190~5230MHz, 5755~5795MHz
Max Average Power	IEEE 802.11a:10.71dBm; IEEE 802.11n-HT20:10.24dBm; IEEE 802.11n-HT40:10.44dBm; IEEE 802.11ac-VHT20:9.94dBm; IEEE 802.11ac-VHT40:9.62dBm;
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 400(868.8)Mbps
Number of channels	6 channels of U-NII-1 Band 6 channels of U-NII-2A Band 7 channels of U-NII-3 Band
Hardware Version	V1.0
Software Version	P1291_ALL_DVT_V1.0_20220722
Antenna Designation	PIFA Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	U-NII 1:-0.71dBi U- NII-2A:-1.37dBi U- NII 3:-0.71dBi
Power Supply	DC 3.85V by battery

2.2. TABLE OF CARRIER FREQUENCYS

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

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

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

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

This submittal(s) (test report) is intended for **FCC ID: 2A2UU-P12** 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.

3. MEASUREMENT UNCERTAINTY

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

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

4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate (Mbps)
802.11a/n/ac20	36,40,44,48, 149,153,157,161,165	36,40,48, 149,157,165	OFDM	6Mbps/MCS0
802.11n/ac40	38,46,151,159	38,46, 151,159	OFDM	MCS0

Note:

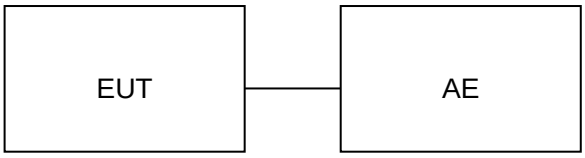
1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%.
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

3. The test software is through engineering commands, EUT can be set to a separate test mode.

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	Mini POS Terminal	P12	FCC ID: 2A2UU-P12	EUT
2	Battery	P12	DC 3.85V 1700mAh	Accessories
3	Back clip	N/A	N/A	Accessories
4	Adapter	LM-601E-050200U01CE	Input: 100-240V, 50/60Hz Output: DC 5V 2A	Accessories
5	USB Cable	N/A	N/A	Accessories

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

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	Aug. 04, 2022	Aug. 03, 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	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
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	N/A	N/A
Attenuator	ZHINAN	E-002	N/A	Sep. 01, 2022	Aug. 31, 2023
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 01, 2022	Aug. 31, 2023
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

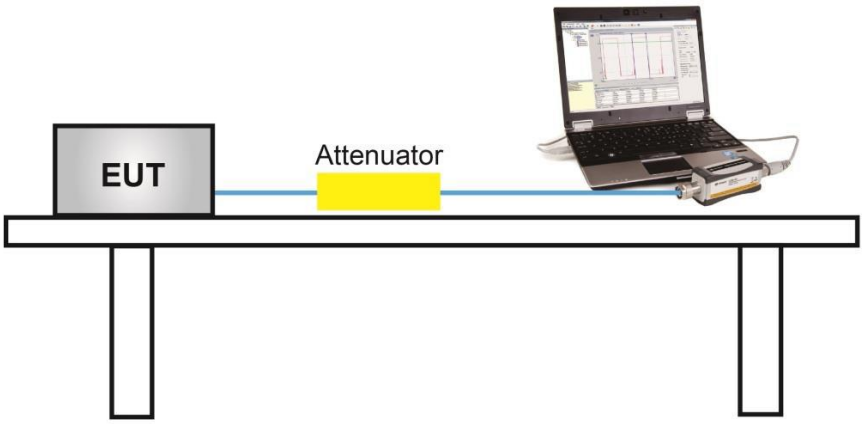
Average power measurements were perform only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

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



7.3. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power for band 5.15-5.25 GHz				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5180	10.47	23.98	Pass
	5200	10.39	23.98	Pass
	5240	**10.71**	23.98	Pass
802.11n20	5180	10.15	23.98	Pass
	5200	10.20	23.98	Pass
	5240	10.09	23.98	Pass
802.11n40	5190	10.30	23.98	Pass
	5230	**10.44**	23.98	Pass
802.11ac20	5180	9.94	23.98	Pass
	5200	9.39	23.98	Pass
	5240	9.53	23.98	Pass
802.11ac40	5190	9.93	23.98	Pass
	5230	9.57	23.98	Pass

Test Data of Conducted Output Power for band 5.25-5.35 GHz				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5260	10.23	23.98	Pass
	5300	10.01	23.98	Pass
	5320	10.08	23.98	Pass
802.11n20	5260	10.08	23.98	Pass
	5300	**10.24**	23.98	Pass
	5320	9.96	23.98	Pass
802.11n40	5270	10.02	23.98	Pass
	5310	9.81	23.98	Pass
802.11ac20	5260	9.93	23.98	Pass
	5300	9.85	23.98	Pass
	5320	9.90	23.98	Pass
802.11ac40	5270	9.67	23.98	Pass
	5310	9.62	23.98	Pass

Test Data of Conducted Output Power for band 5.725-5.85 GHz				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5745	10.01	30	Pass
	5785	10.25	30	Pass
	5825	9.94	30	Pass
802.11n20	5745	9.80	30	Pass
	5785	9.73	30	Pass
	5825	9.55	30	Pass
802.11n40	5755	9.64	30	Pass
	5795	9.71	30	Pass
802.11ac20	5745	9.39	30	Pass
	5785	9.41	30	Pass
	5825	9.48	30	Pass
802.11ac40	5755	9.11	30	Pass
	5795	9.14	30	Pass

8. BANDWIDTH MEASUREMENT

8.1. MEASUREMENT PROCEDURE

8.1.1 -6dB BANDWIDTH MEASUREMENT PROCEDURE

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 ≥3*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.

8.1.2 99% OCCUPIED BANDWIDTH

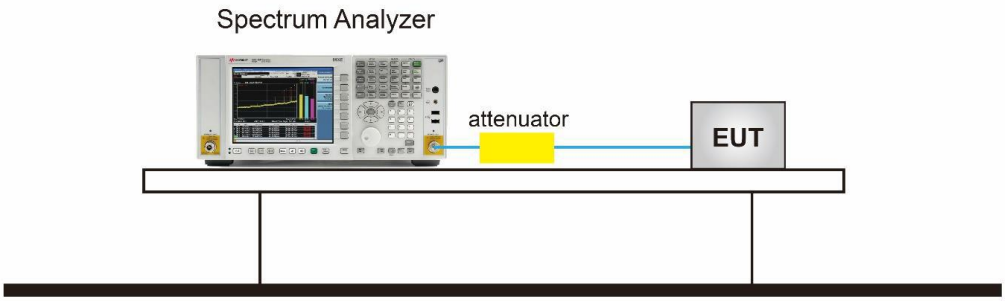
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channelThe nominal IF filter bandwidth (3 dB RBW) shall 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.

8.1.3 -26dB BANDWIDTH

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB
2. bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic
3. bandwidth measurement function also has the capability of simultaneously measuring the 99%
4. occupied bandwidth. The bandwidth measurement was not influenced by any intermediated
5. power nulls in the fundamental emission.
6. RBW = approximately 1% of the emission bandwidth.
7. VBW ≥ 3×RBW.
8. Detector = Peak.
9. Trace mode = max hold.

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)



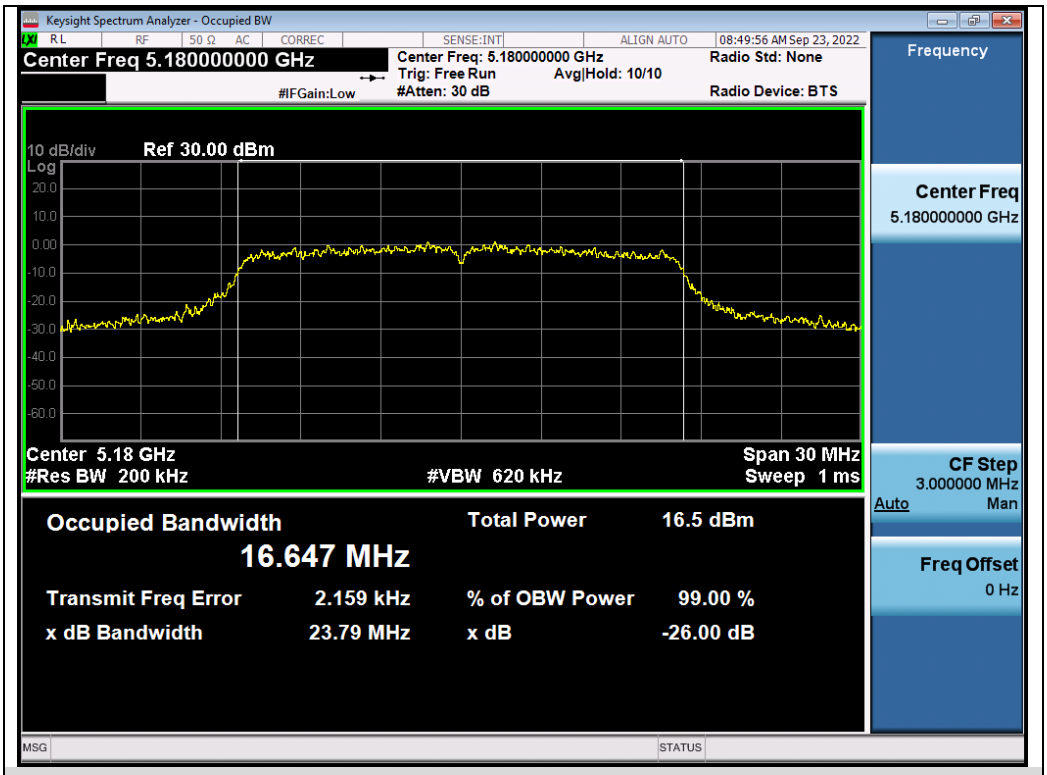
8.3. LIMITS AND MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5180	16.647	23.788	N/A	Pass
	5200	16.734	27.185	N/A	Pass
	5240	16.729	26.680	N/A	Pass
802.11n20	5180	17.678	24.309	N/A	Pass
	5200	17.713	25.827	N/A	Pass
	5240	17.792	27.906	N/A	Pass
802.11n40	5190	36.254	58.446	N/A	Pass
	5230	36.234	59.822	N/A	Pass
802.11ac20	5180	17.674	24.976	N/A	Pass
	5200	17.725	26.052	N/A	Pass
	5240	17.708	26.922	N/A	Pass
802.11ac40	5190	36.203	55.645	N/A	Pass
	5230	36.240	59.886	N/A	Pass

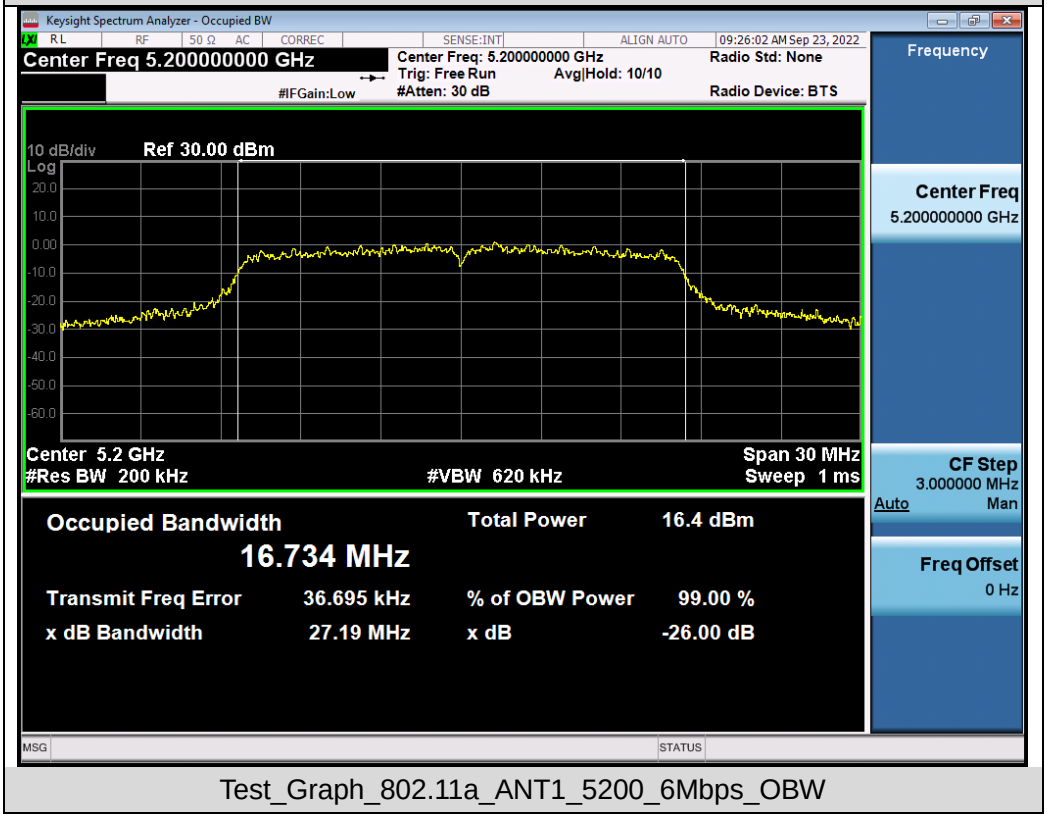
Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.25-5.35 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5260	16.650	24.695	N/A	Pass
	5300	16.631	24.375	N/A	Pass
	5320	16.605	22.459	N/A	Pass
802.11n20	5260	17.705	26.396	N/A	Pass
	5300	17.686	25.060	N/A	Pass
	5320	17.656	22.701	N/A	Pass
802.11n40	5270	36.196	56.254	N/A	Pass
	5310	36.082	54.465	N/A	Pass
802.11ac20	5260	17.703	26.704	N/A	Pass
	5300	17.664	25.522	N/A	Pass
	5320	17.673	23.718	N/A	Pass
802.11ac40	5270	36.134	54.631	N/A	Pass
	5310	36.114	57.327	N/A	Pass

Test Data of Occupied Bandwidth and DTS Bandwidth for band 5.725-5.85 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	DTS Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5745	16.532	15.114	0.5	Pass
	5785	16.489	15.430	0.5	Pass
	5825	16.499	15.680	0.5	Pass
802.11n20	5745	17.593	15.114	0.5	Pass
	5785	17.577	15.113	0.5	Pass
	5825	17.564	15.138	0.5	Pass
802.11n40	5755	35.985	35.410	0.5	Pass
	5795	35.994	35.163	0.5	Pass
802.11ac20	5745	17.587	15.884	0.5	Pass
	5785	17.567	15.930	0.5	Pass
	5825	17.561	15.134	0.5	Pass
802.11ac40	5755	36.004	35.152	0.5	Pass
	5795	35.982	35.357	0.5	Pass

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



Test_Graph_802.11a_ANT1_5180_6Mbps_OBW



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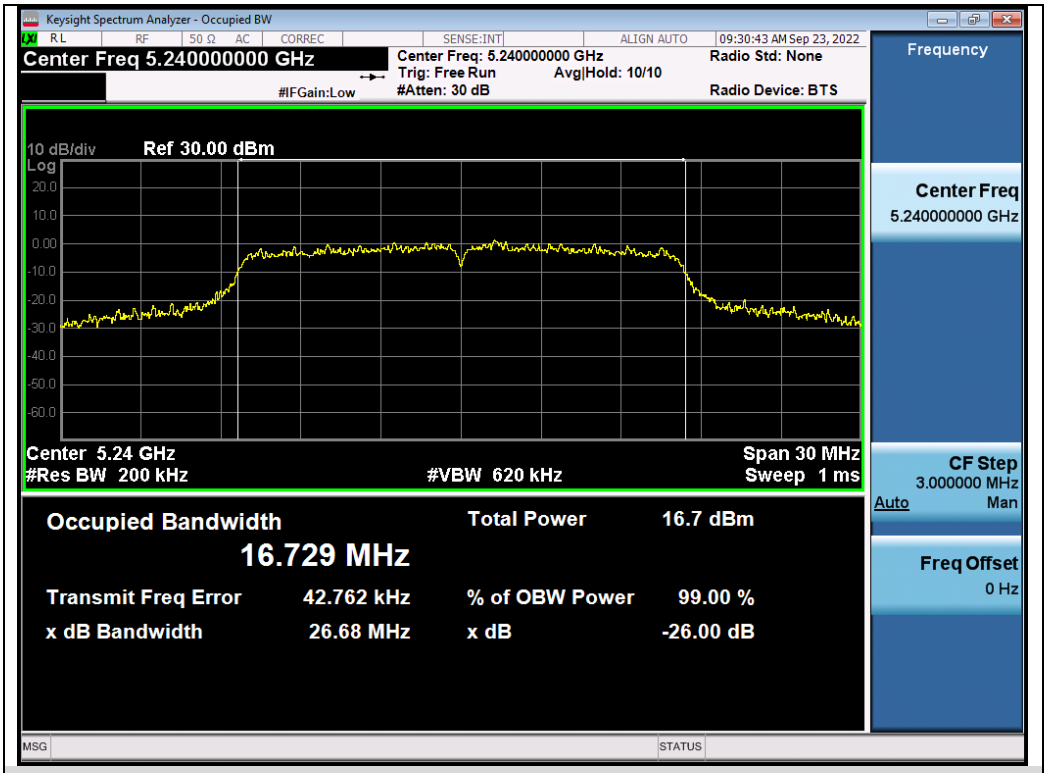

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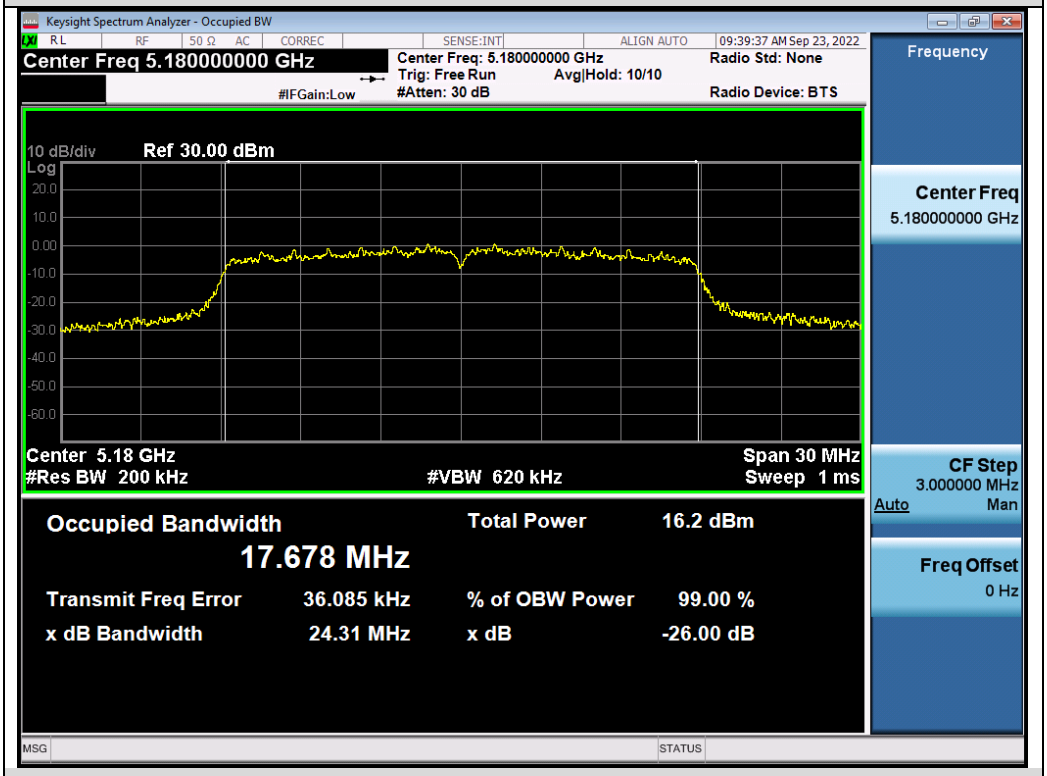
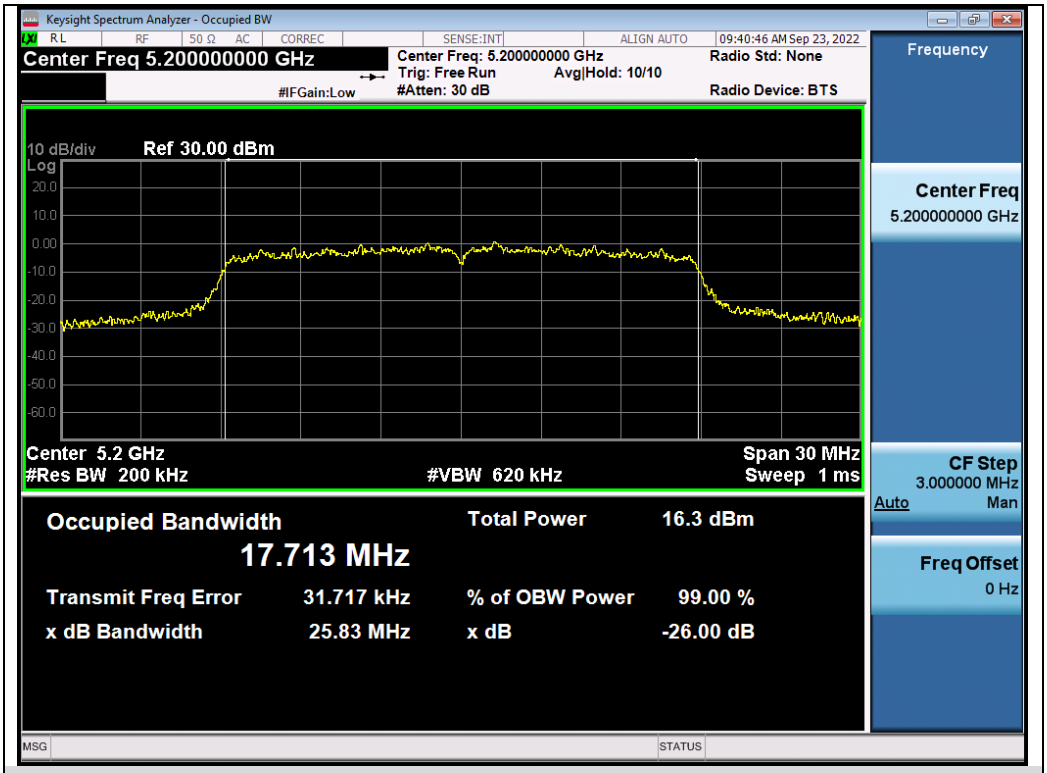


Test_Graph_802.11n20_ANT1_5180_MCS0_OBW



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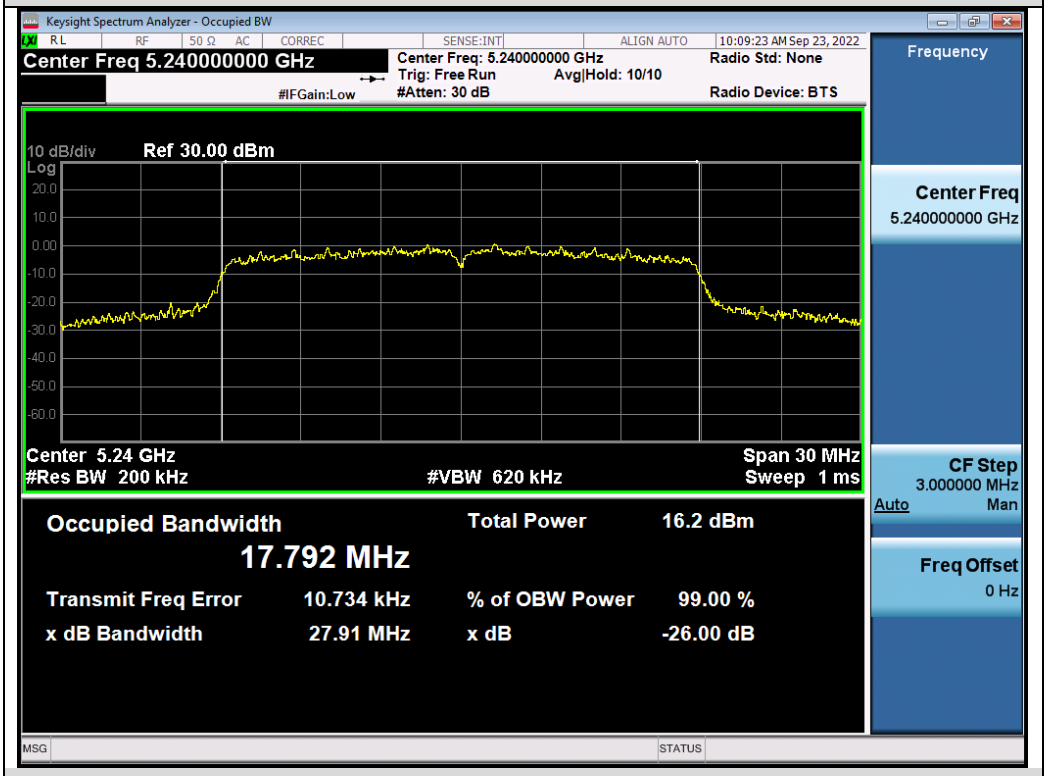

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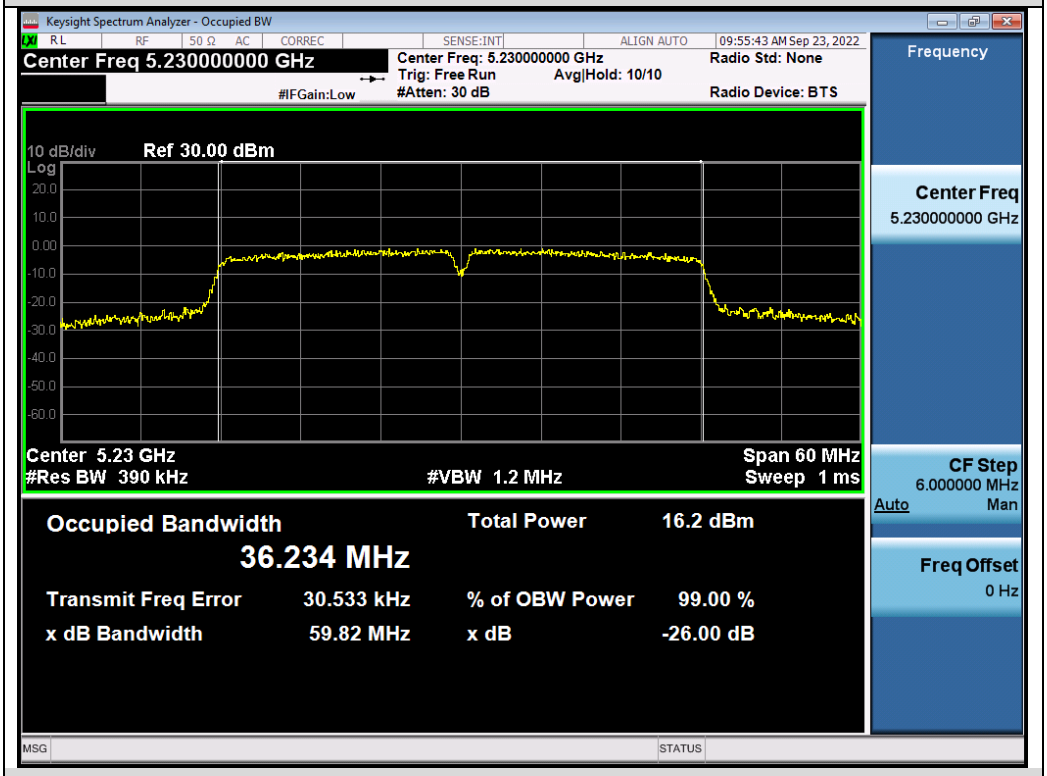
Test_Graph_802.11n40_ANT1_5190_MCS0_OBW



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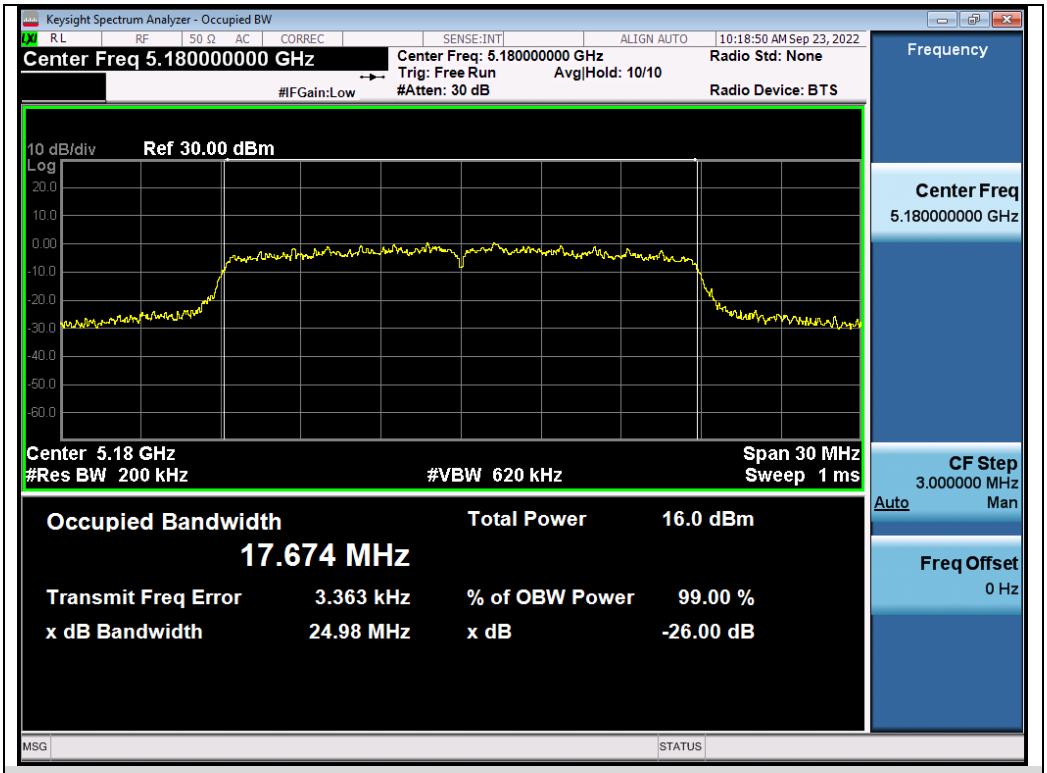

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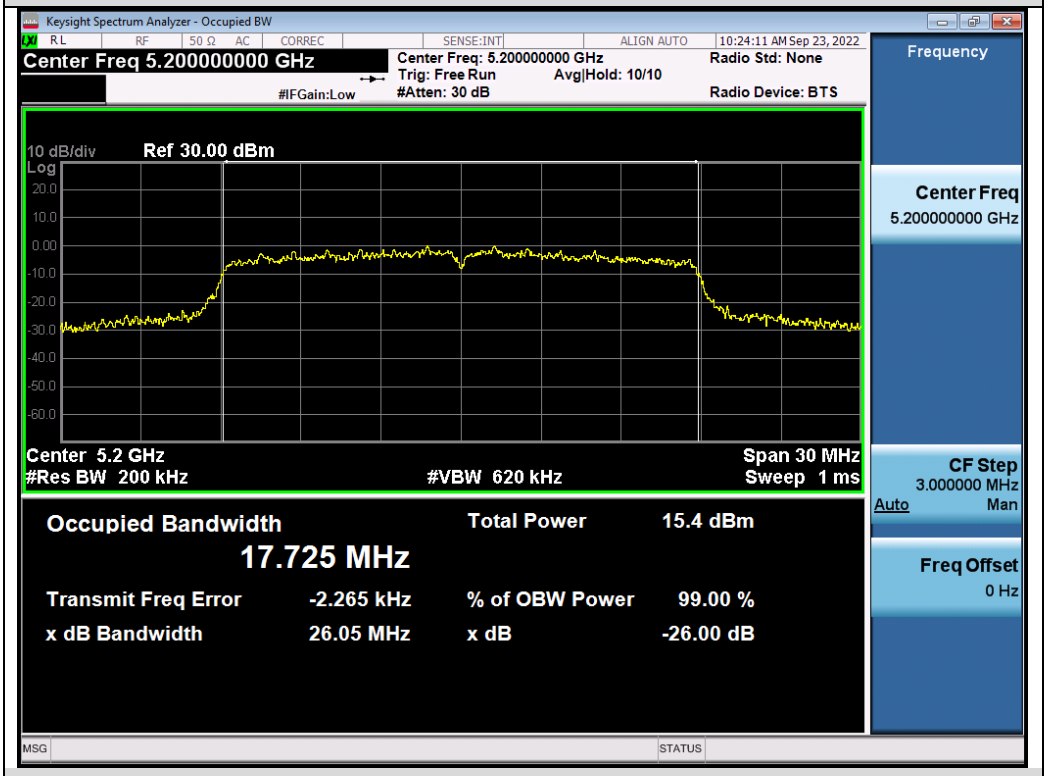

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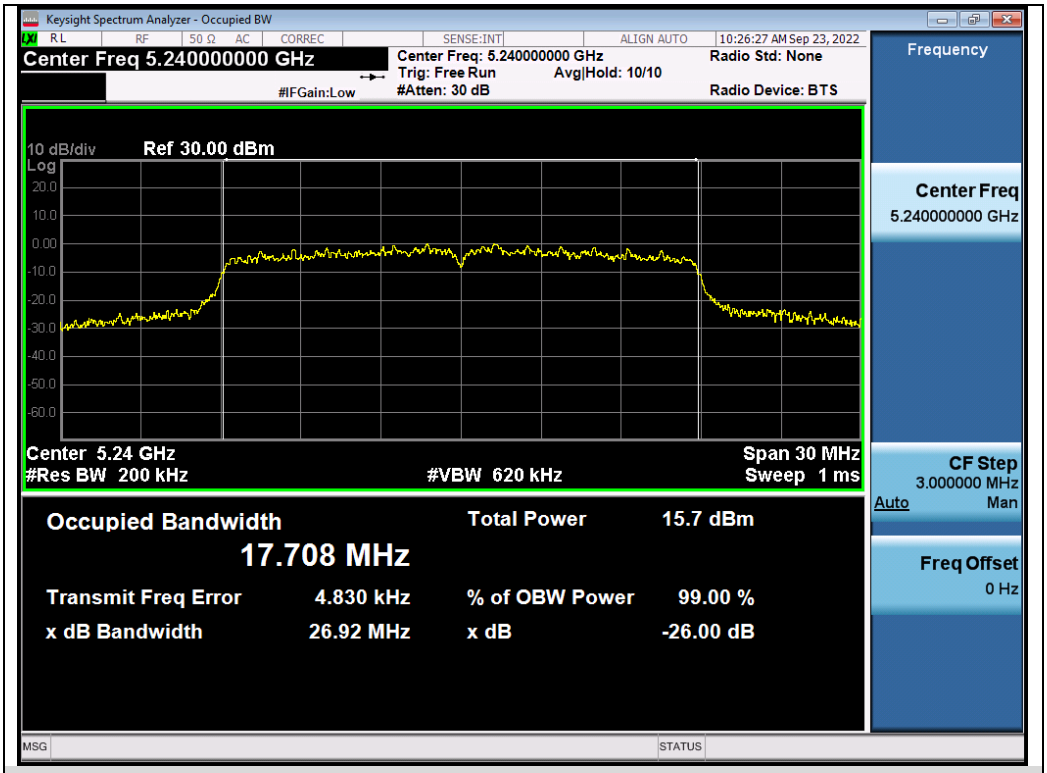
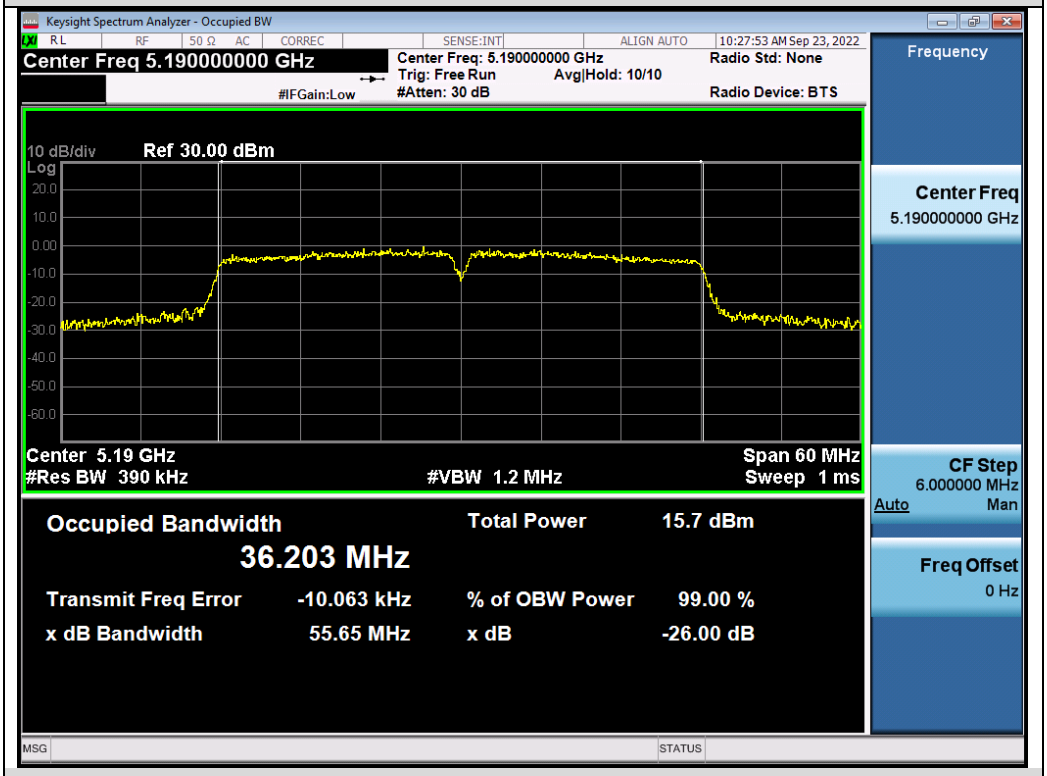


Test_Graph_802.11ac20_ANT1_5240_MCS9_OBW



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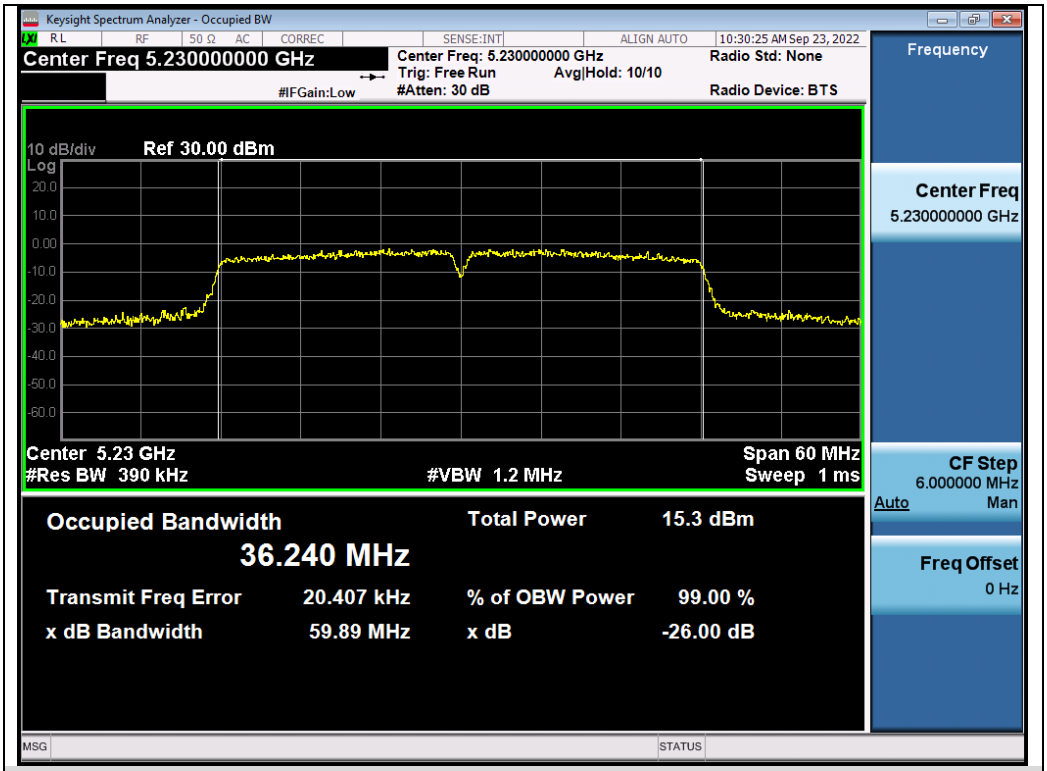
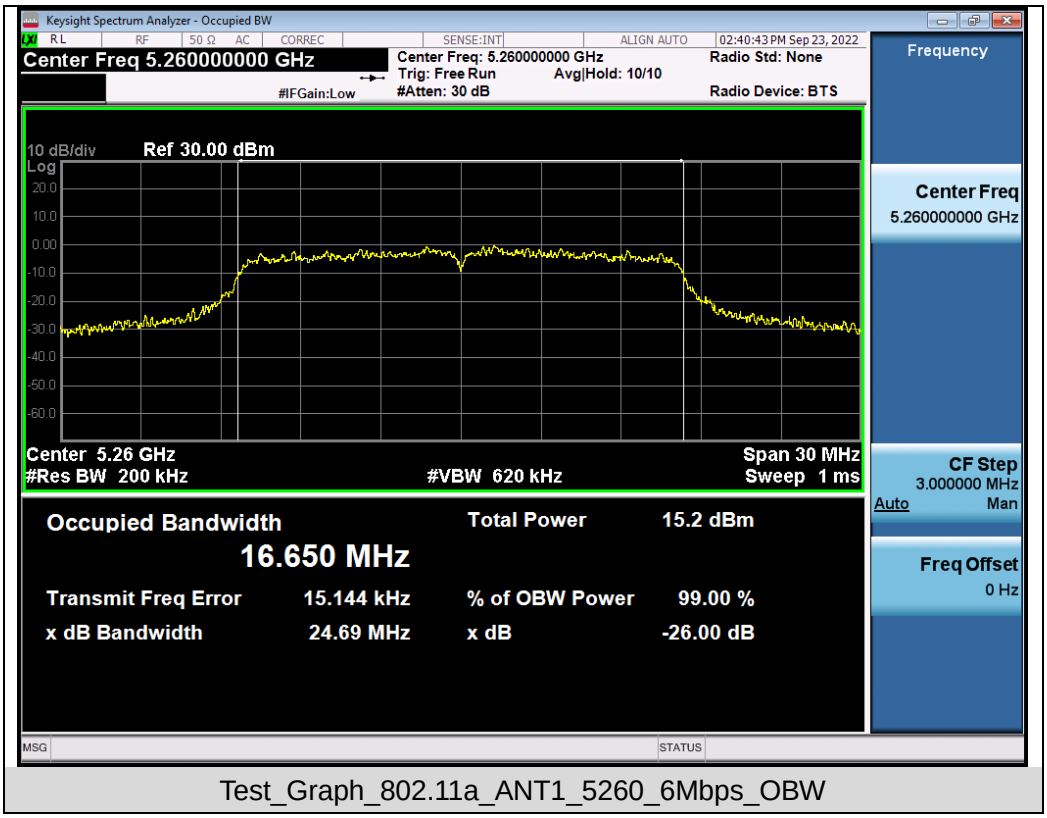
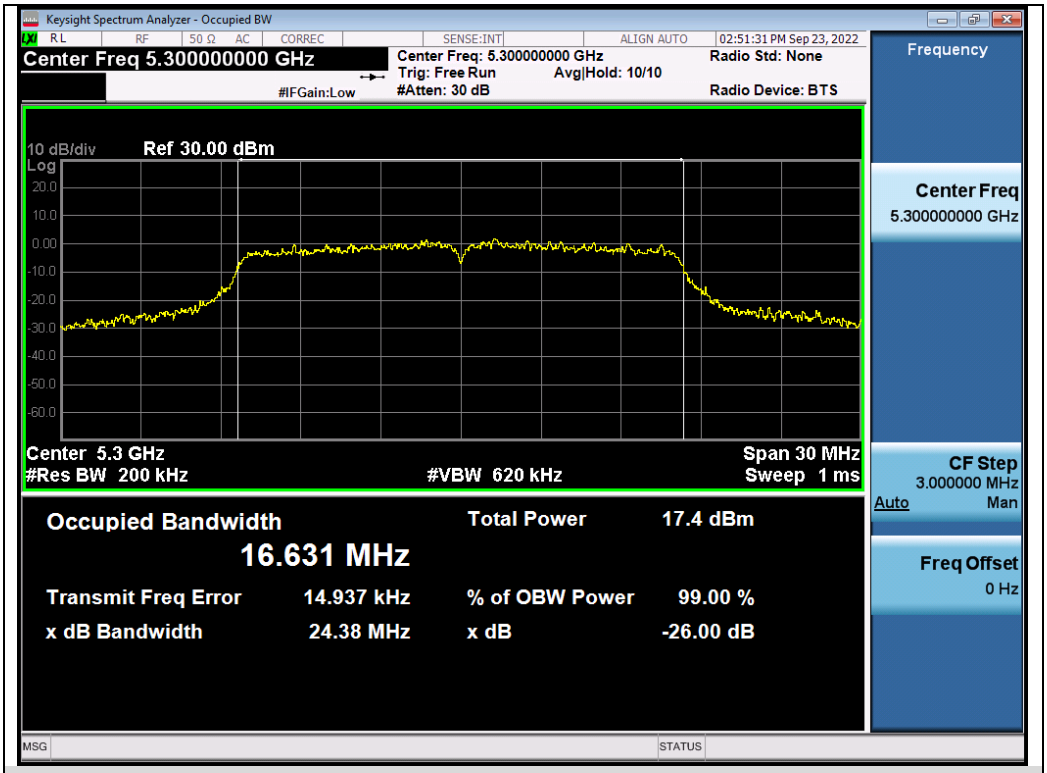


Test_Graph_802.11ac40_ANT1_5230_MCS9_OBW

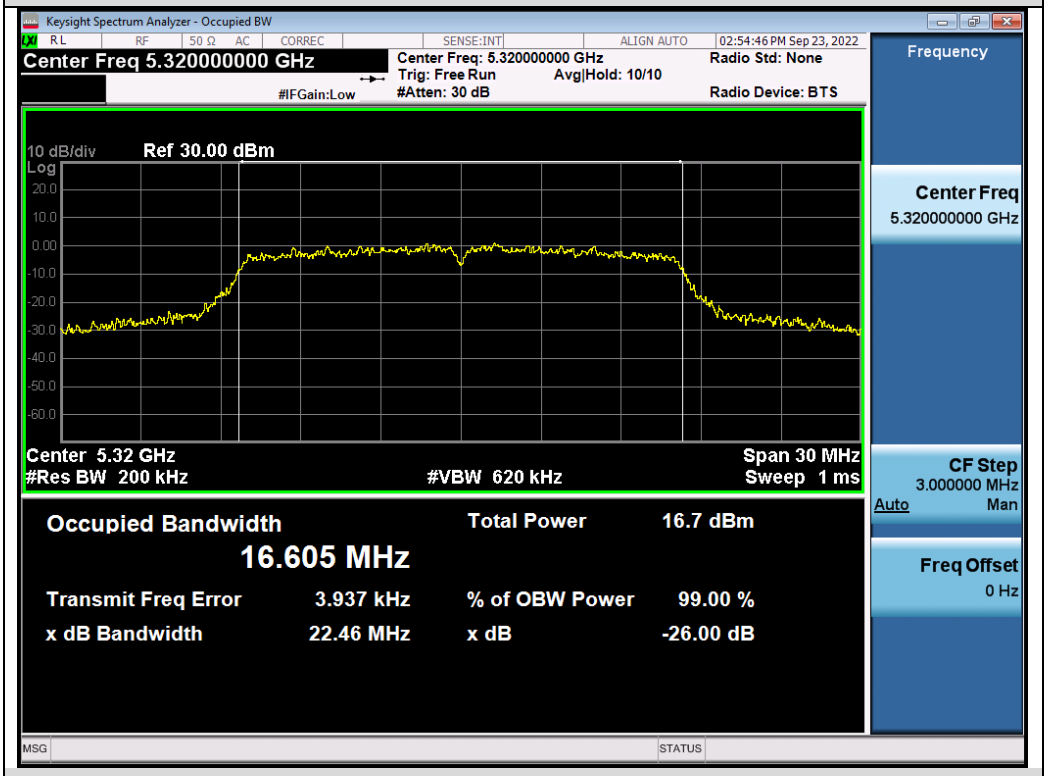
Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.25-5.35 GHz



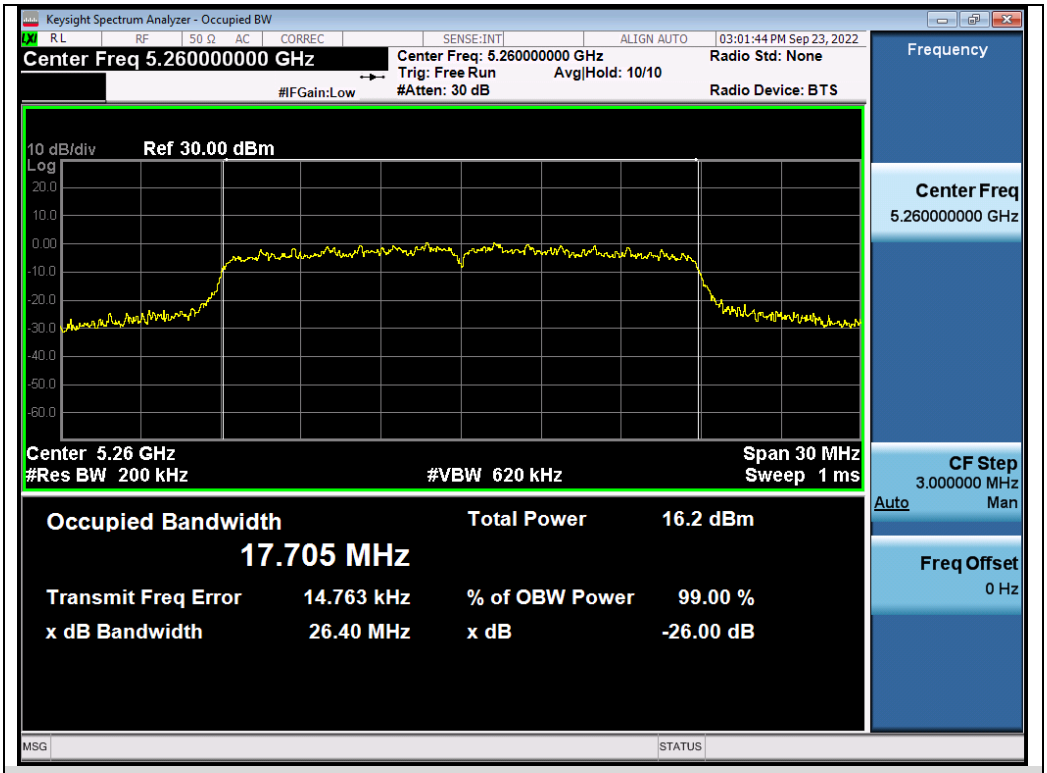
Test_Graph_802.11a_ANT1_5260_6Mbps_OBW



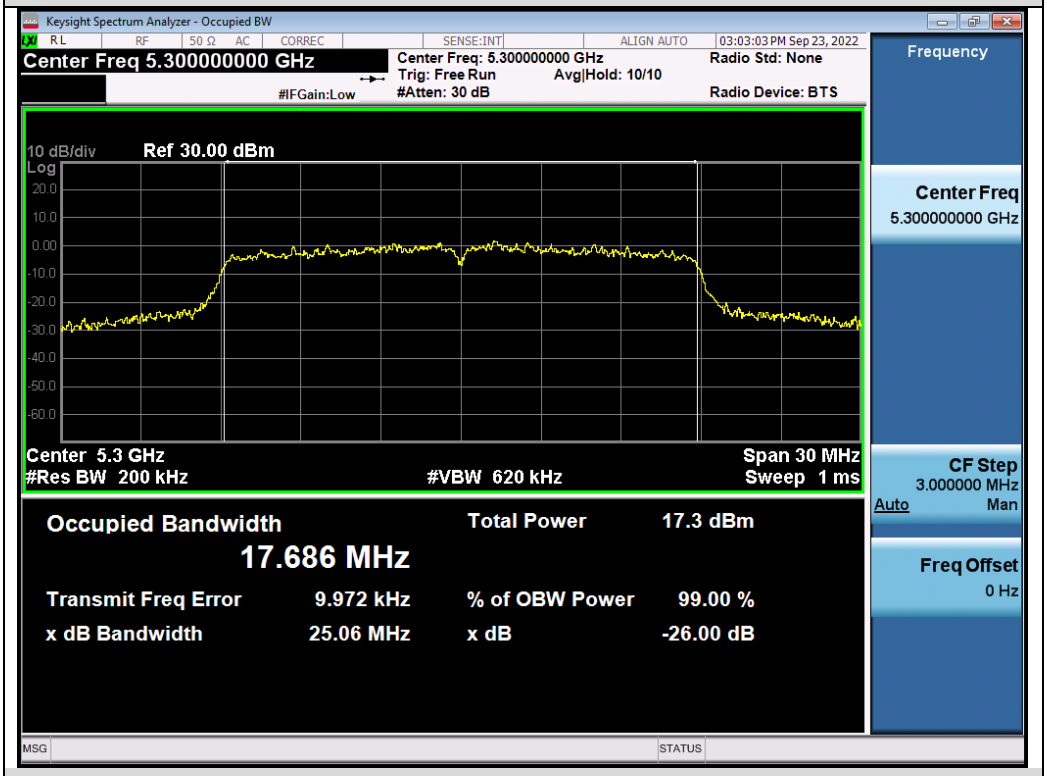
Test_Graph_802.11a_ANT1_5300_6Mbps_OBW



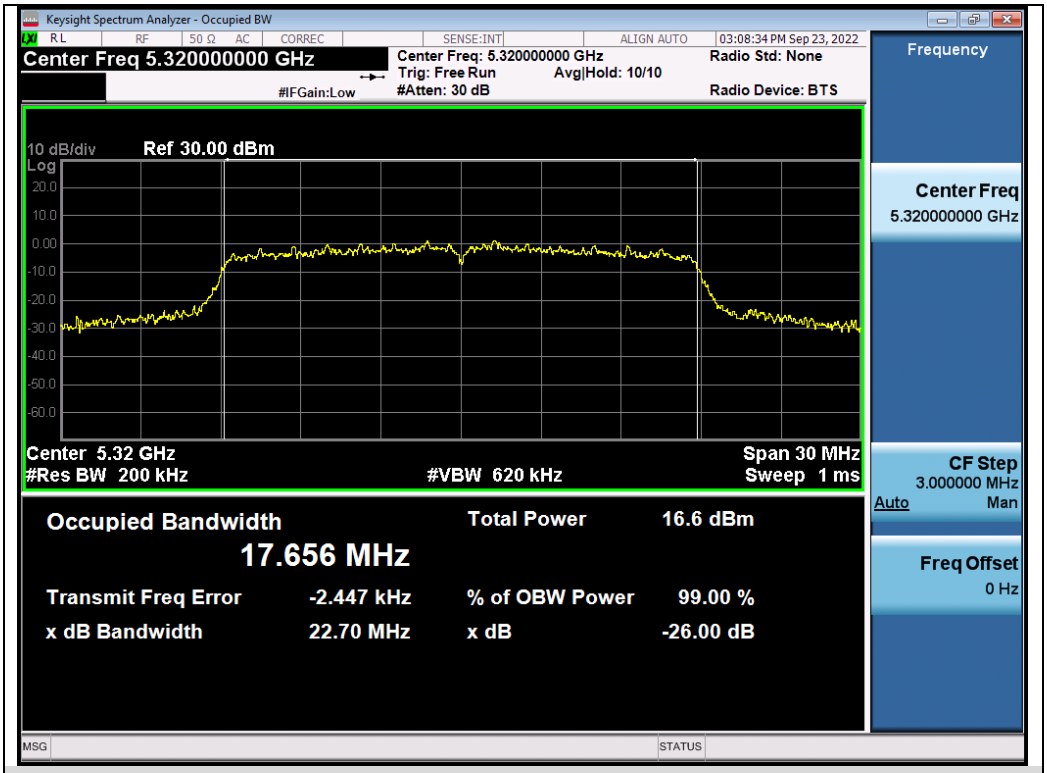
Test_Graph_802.11a_ANT1_5320_6Mbps_OBW



Test_Graph_802.11n20_ANT1_5260_MCS0_OBW



Test_Graph_802.11n20_ANT1_5300_MCS0_OBW



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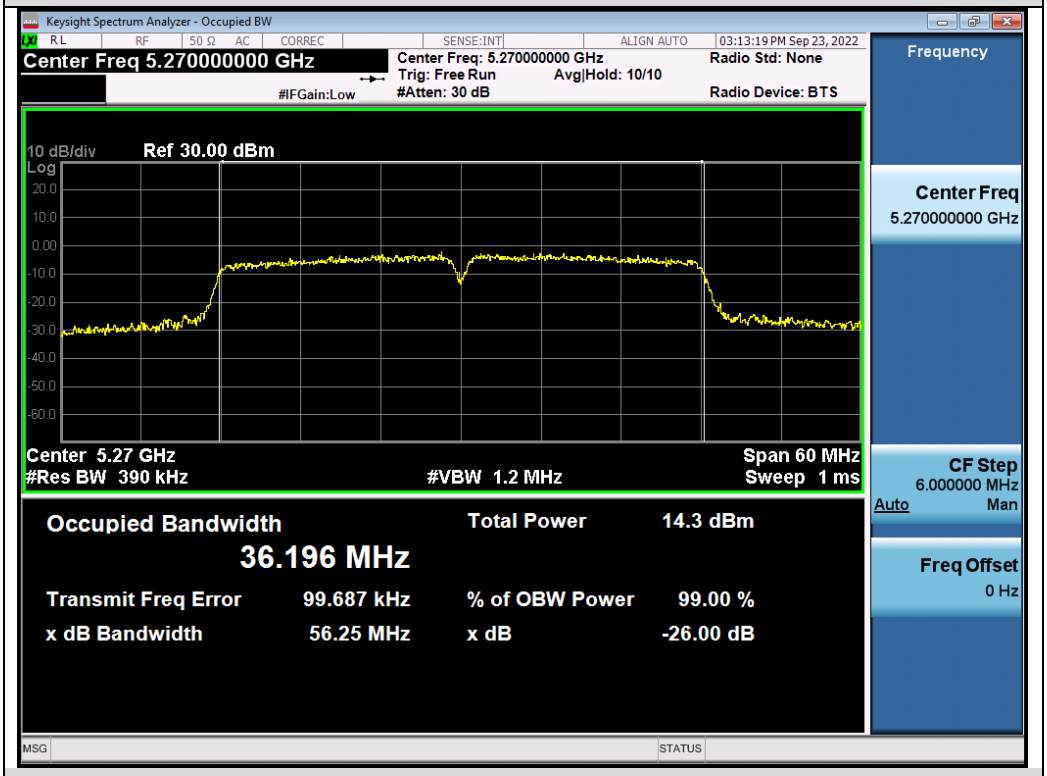
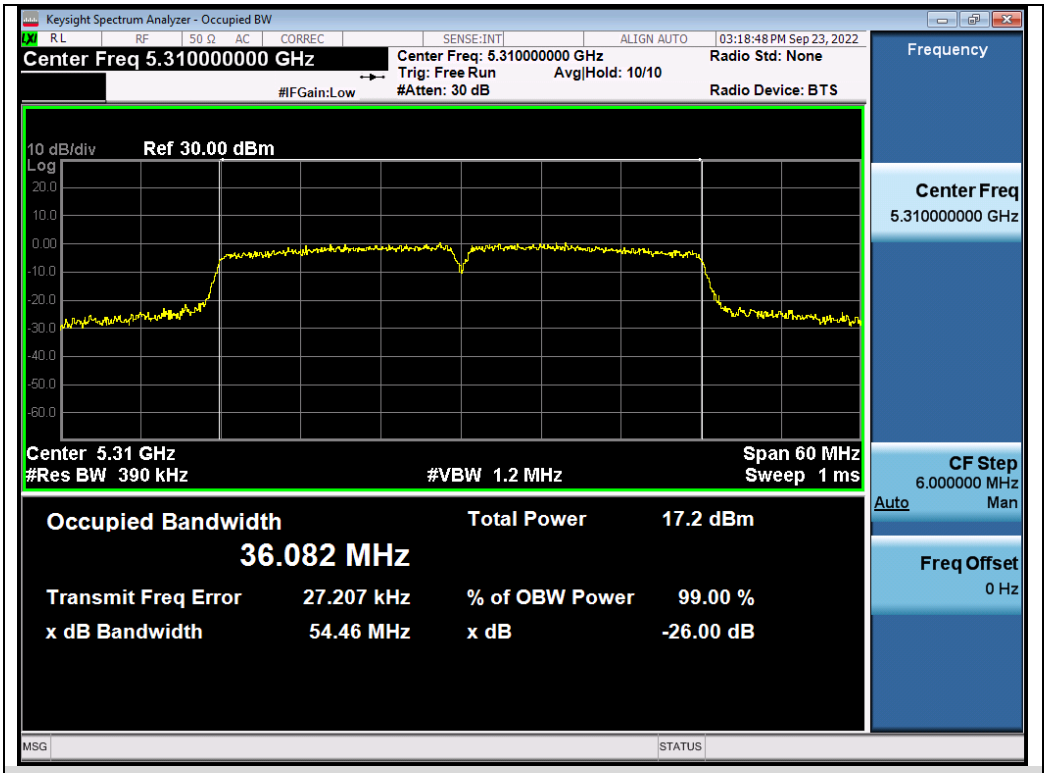
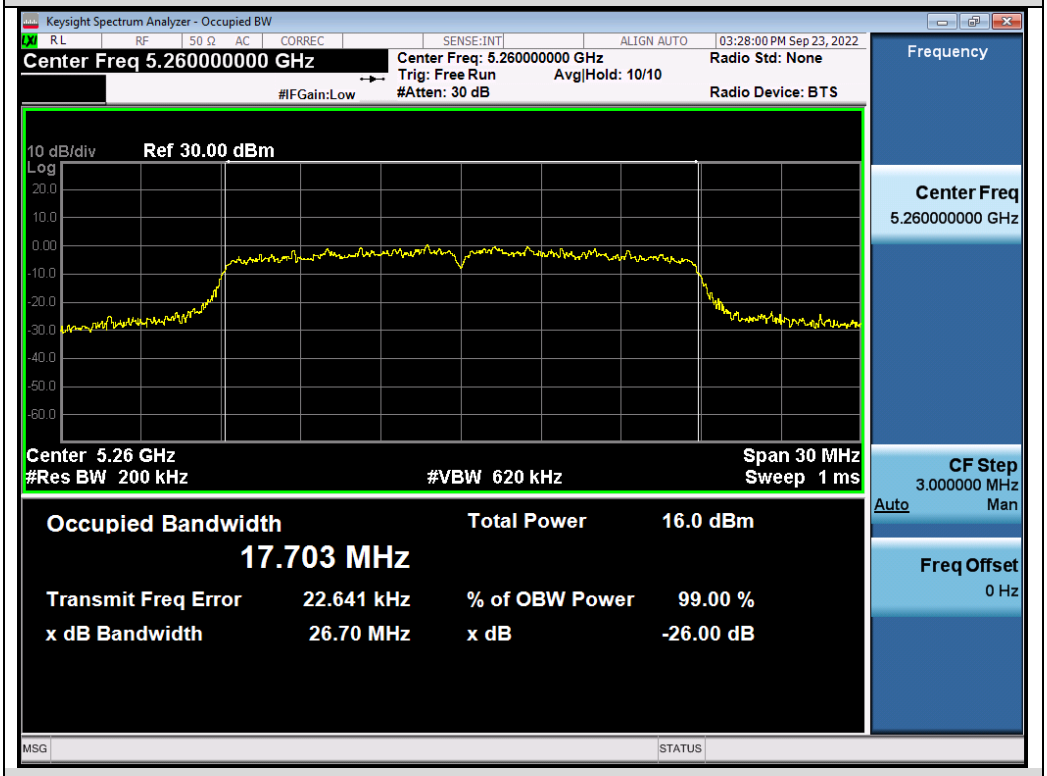


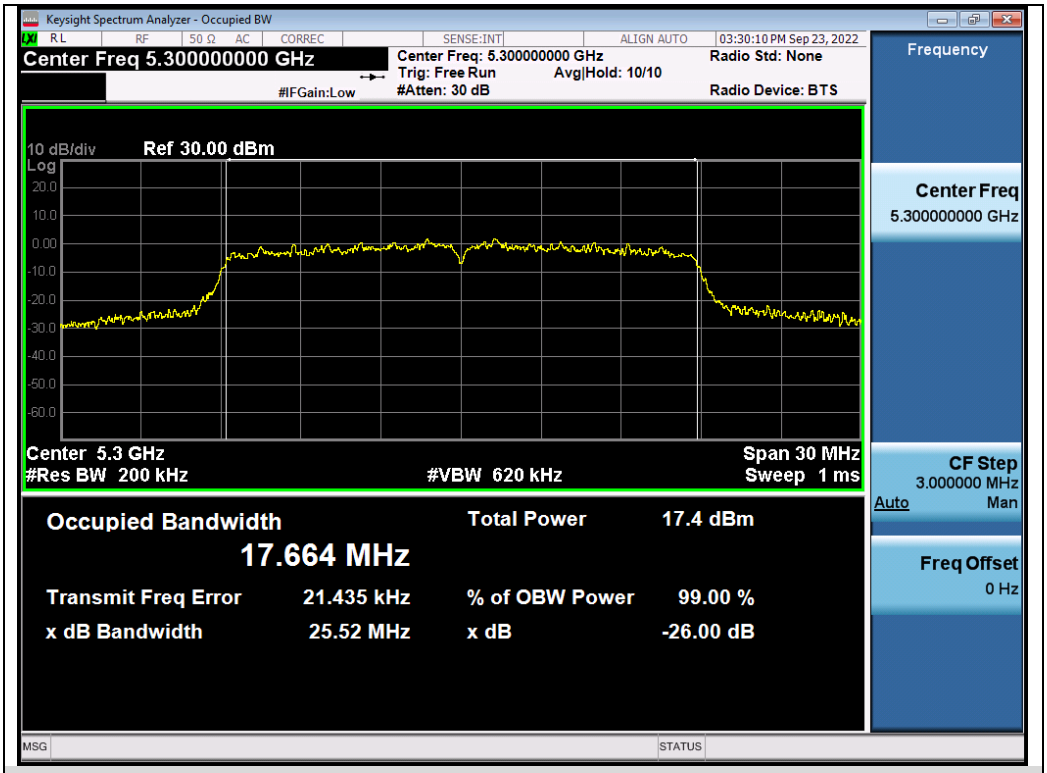
Test_Graph_802.11n40_ANT1_5270_MCS0_OBW



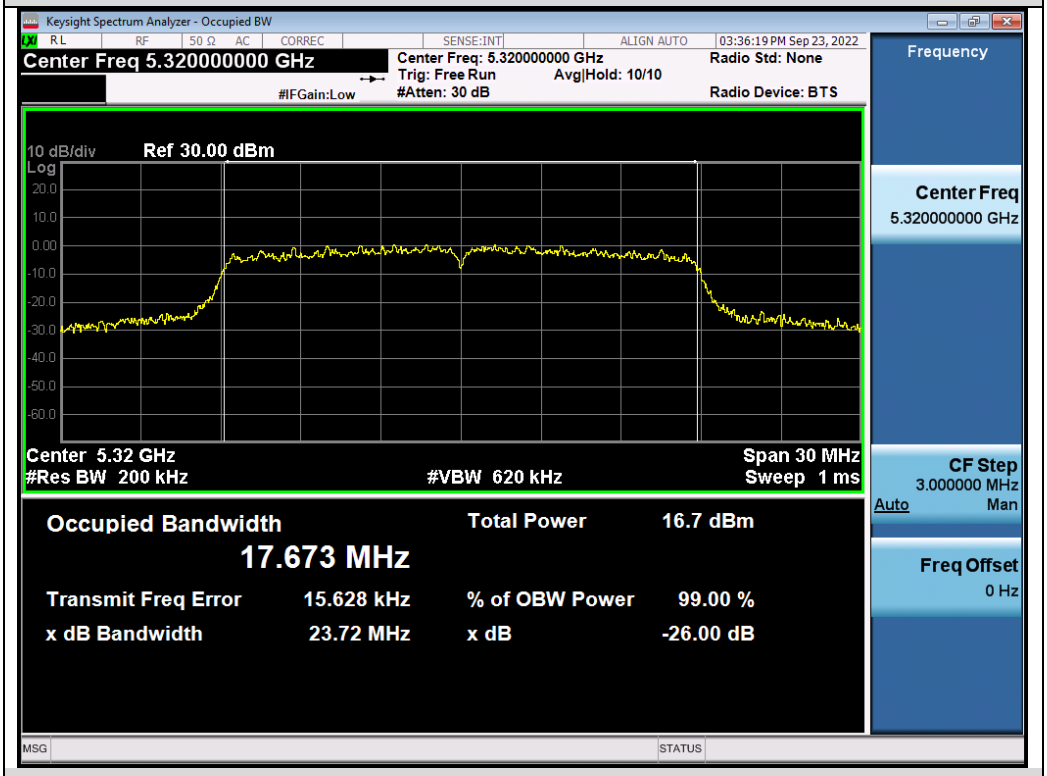
Test_Graph_802.11n40_ANT1_5310_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5260_MCS0_OBW

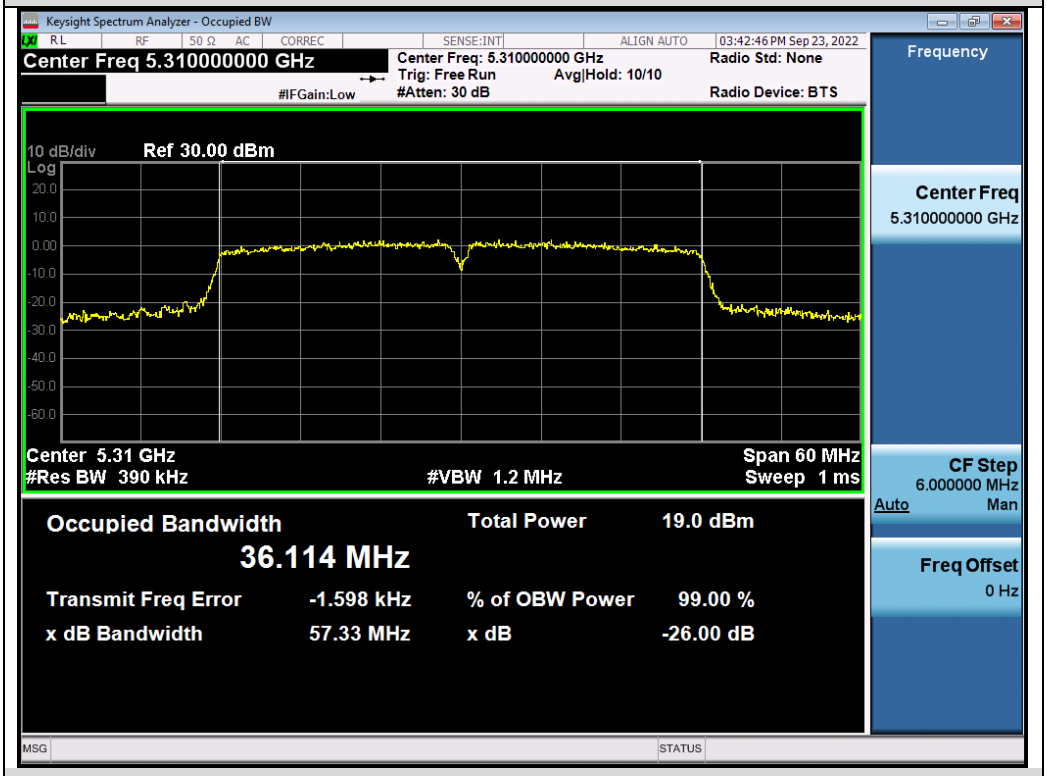


Test_Graph_802.11ac20_ANT1_5300_MCS0_OBW



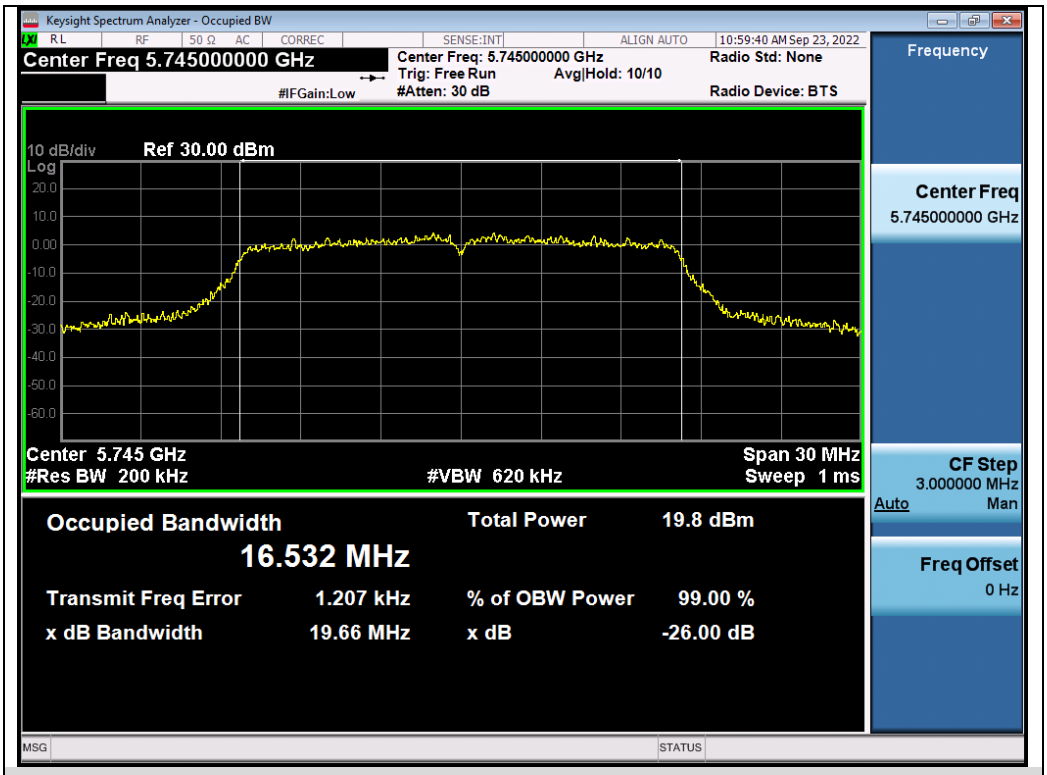
Test_Graph_802.11ac20_ANT1_5320_MCS9_OBW

Test_Graph_802.11ac40_ANT1_5270_MCS9_OBW

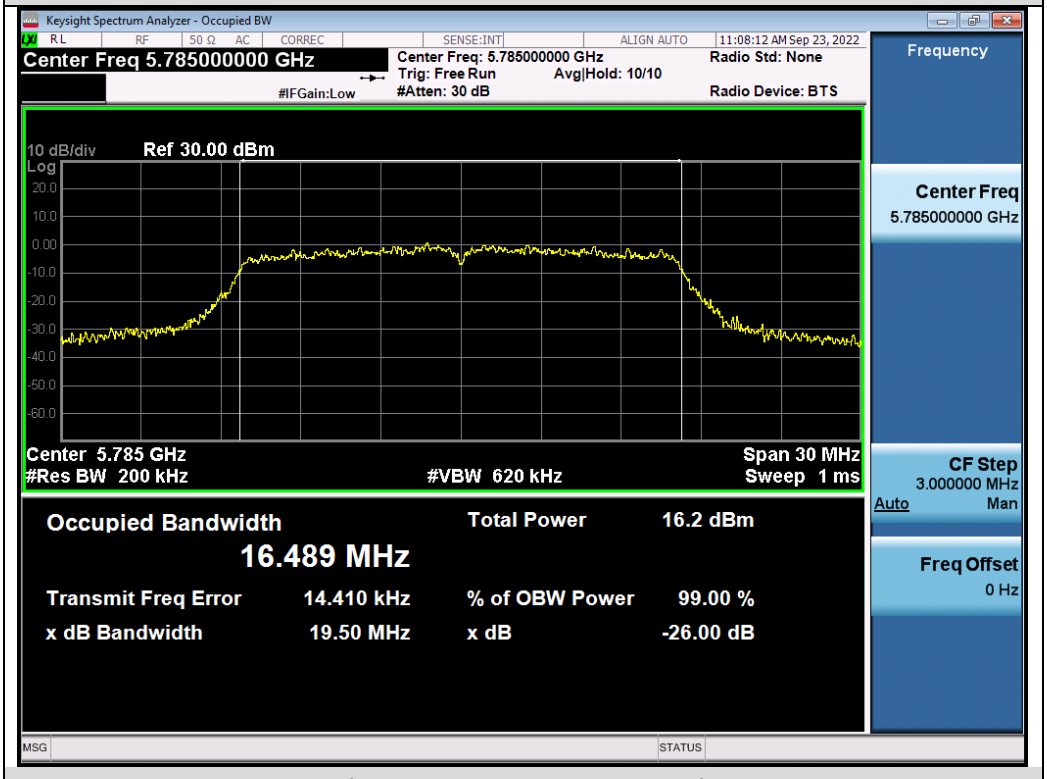


Test_Graph_802.11ac40_ANT1_5310_MCS9_OBW

Test Graphs of Occupied Bandwidth for band 5.725-5.85 GHz

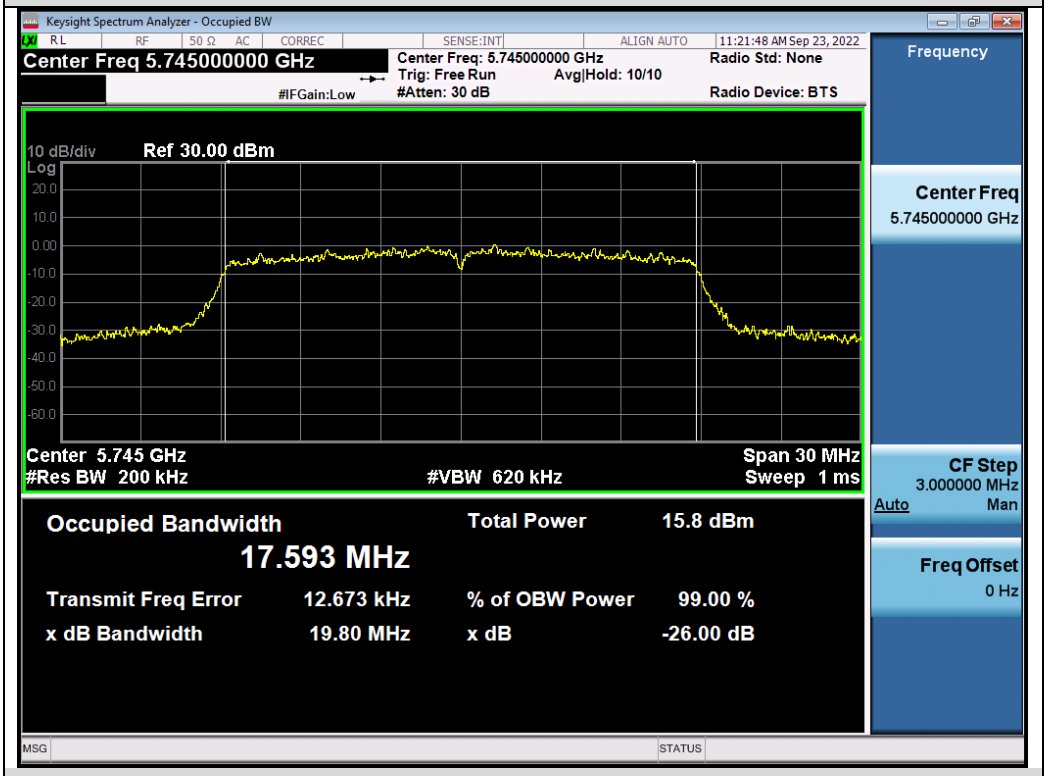


Test_Graph_802.11a_ANT1_5745_6Mbps_OBW

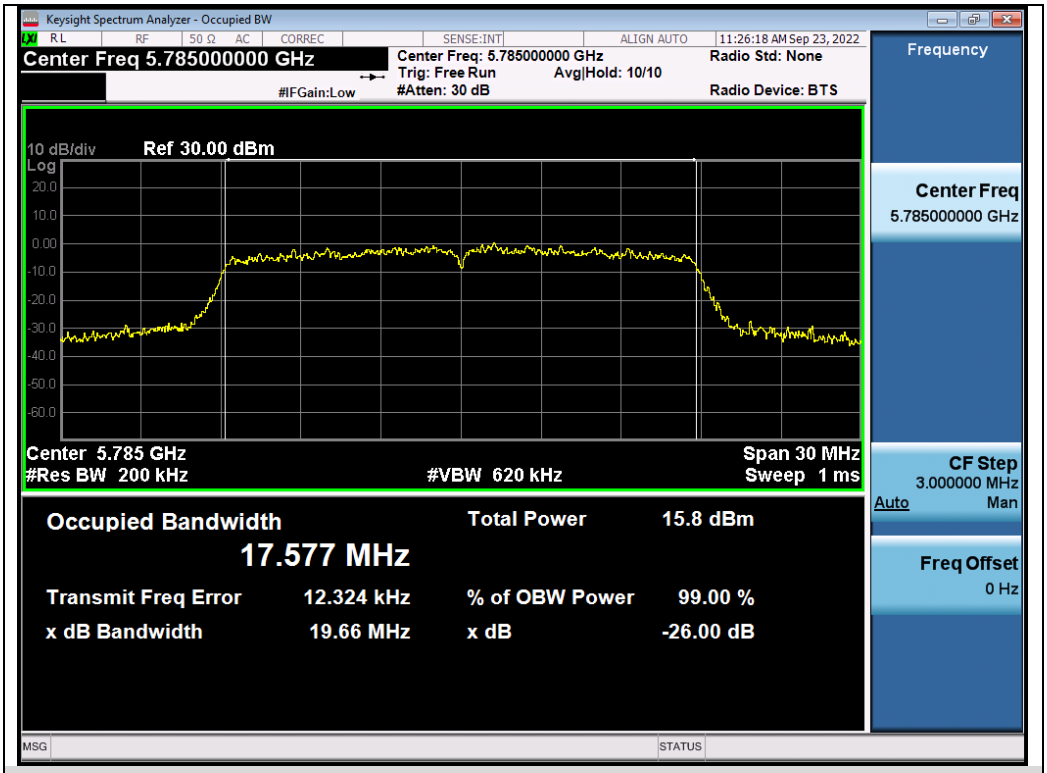


Test_Graph_802.11a_ANT1_5785_6Mbps_OBW

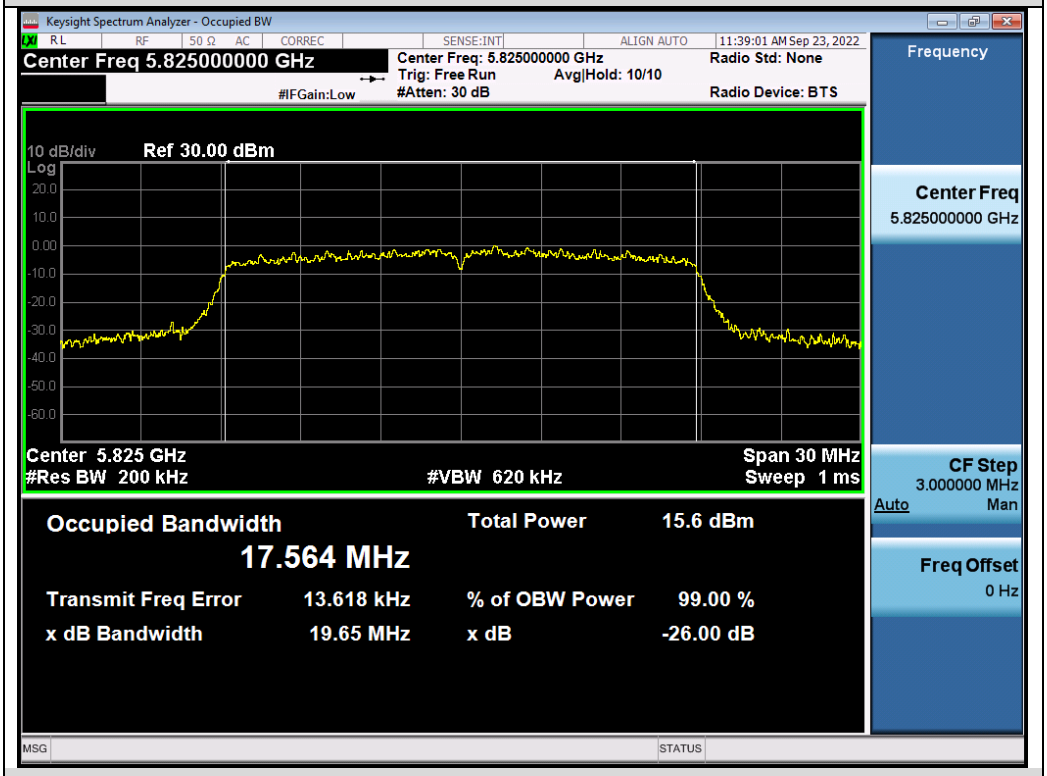
Test_Graph_802.11a_ANT1_5825_6Mbps_OBW



Test_Graph_802.11n20_ANT1_5745_MCS0_OBW

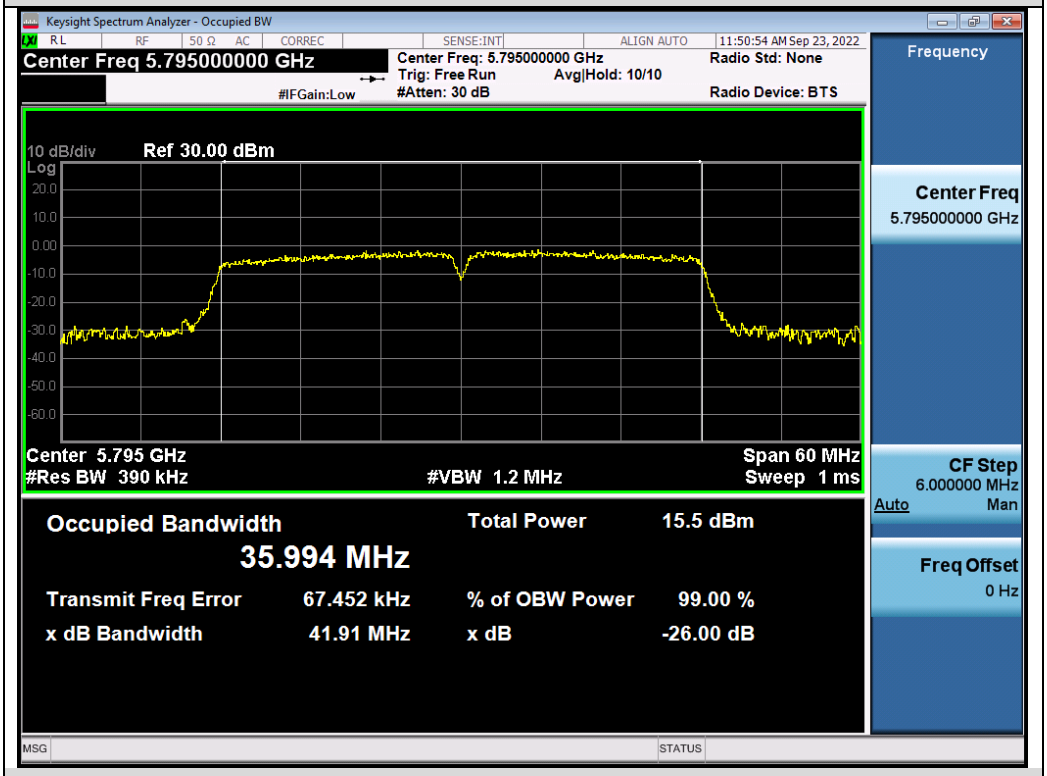


Test_Graph_802.11n20_ANT1_5785_MCS0_OBW

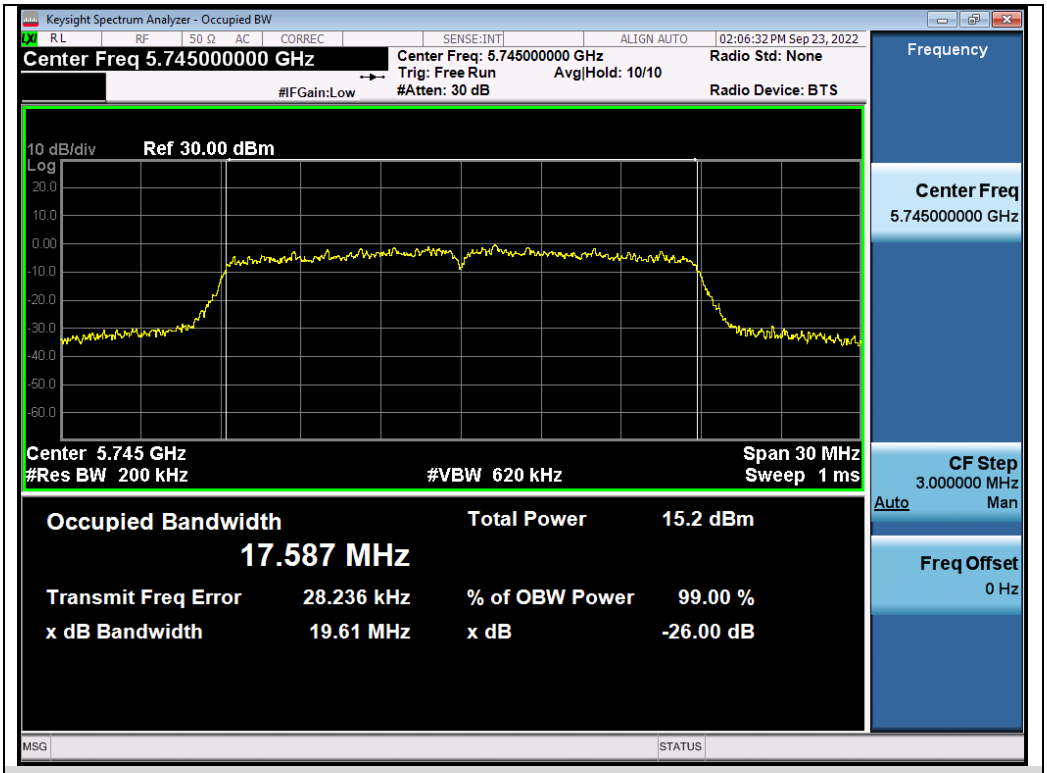


Test_Graph_802.11n20_ANT1_5825_MCS0_OBW

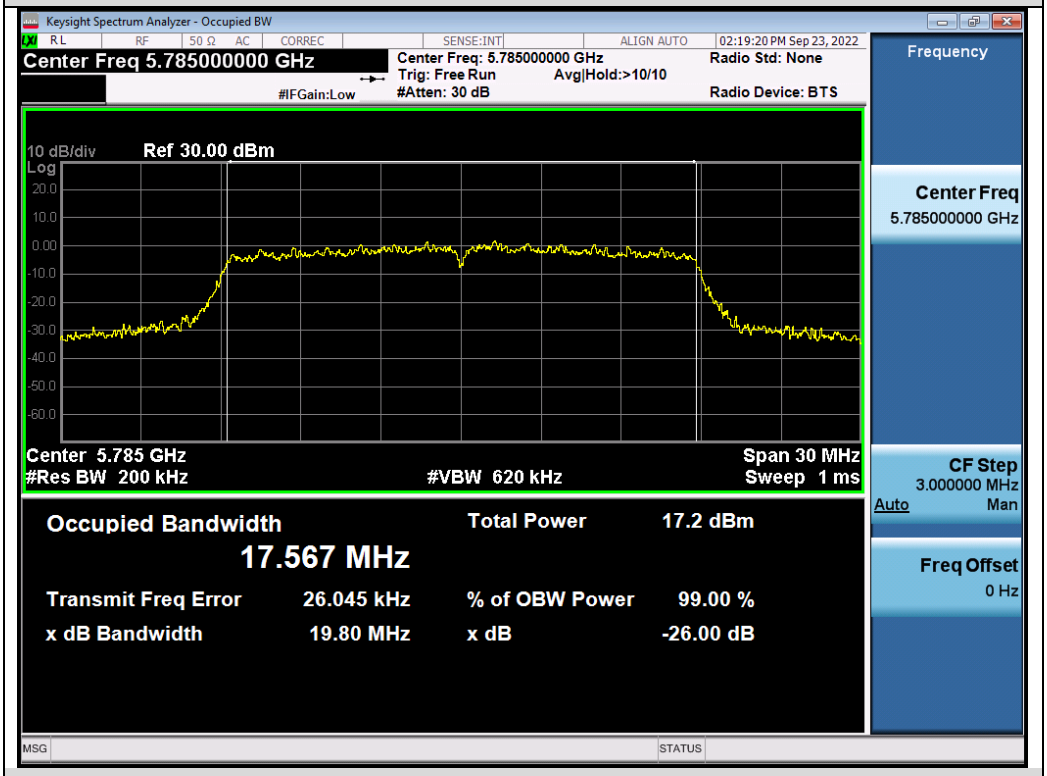
Test_Graph_802.11n40_ANT1_5755_MCS0_OBW



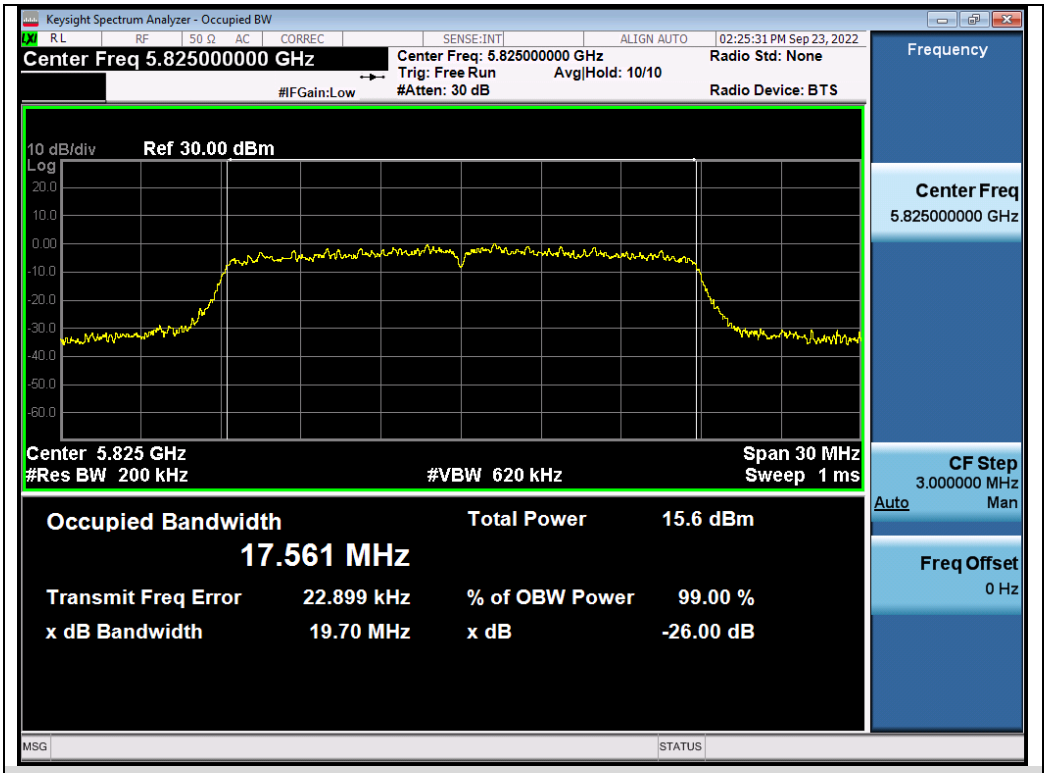
Test_Graph_802.11n40_ANT1_5795_MCS0_OBW



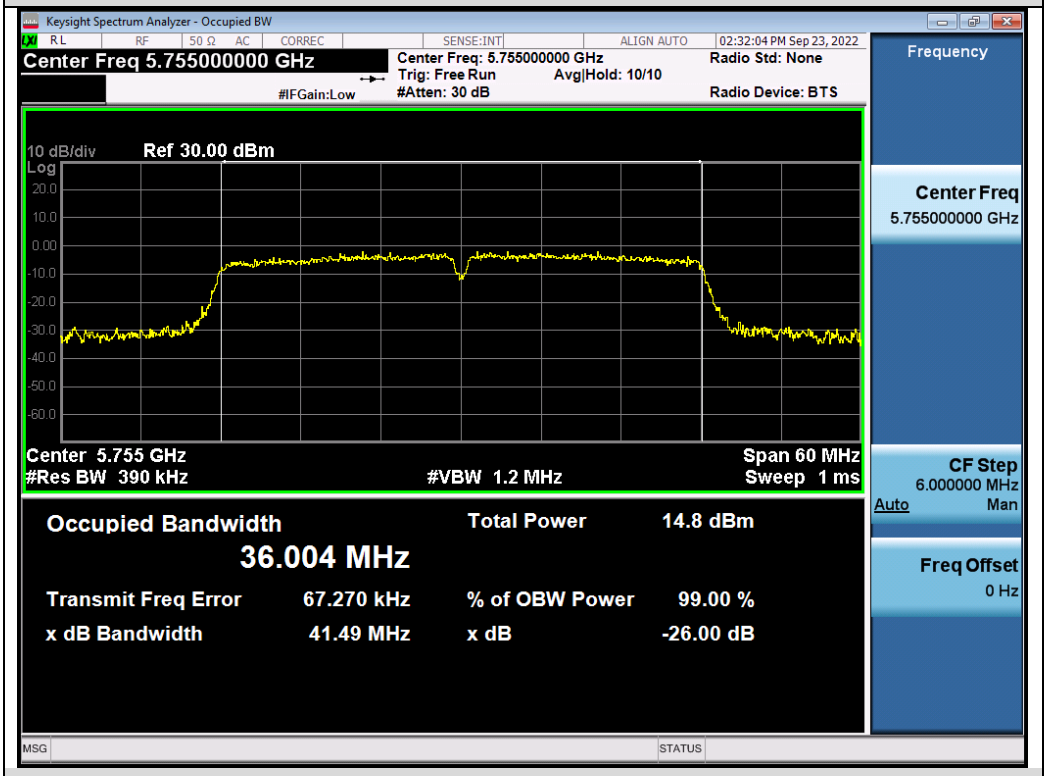
Test_Graph_802.11ac20_ANT1_5745_MCS0_OBW



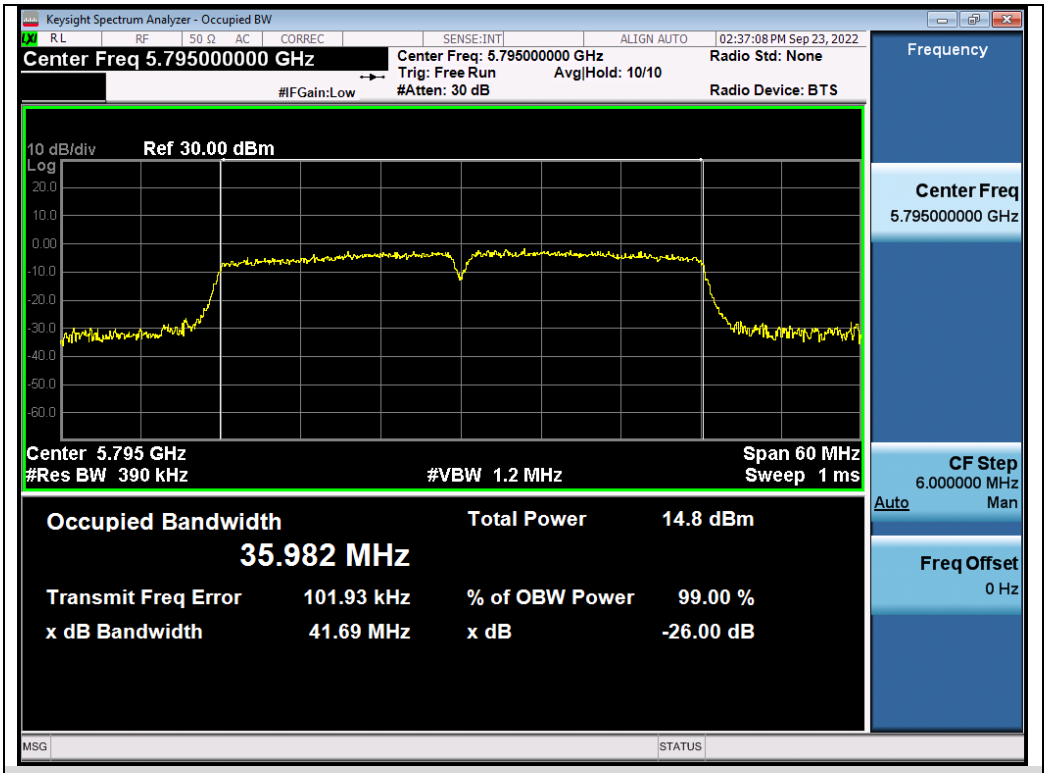
Test_Graph_802.11ac20_ANT1_5785_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5825_MCS9_OBW

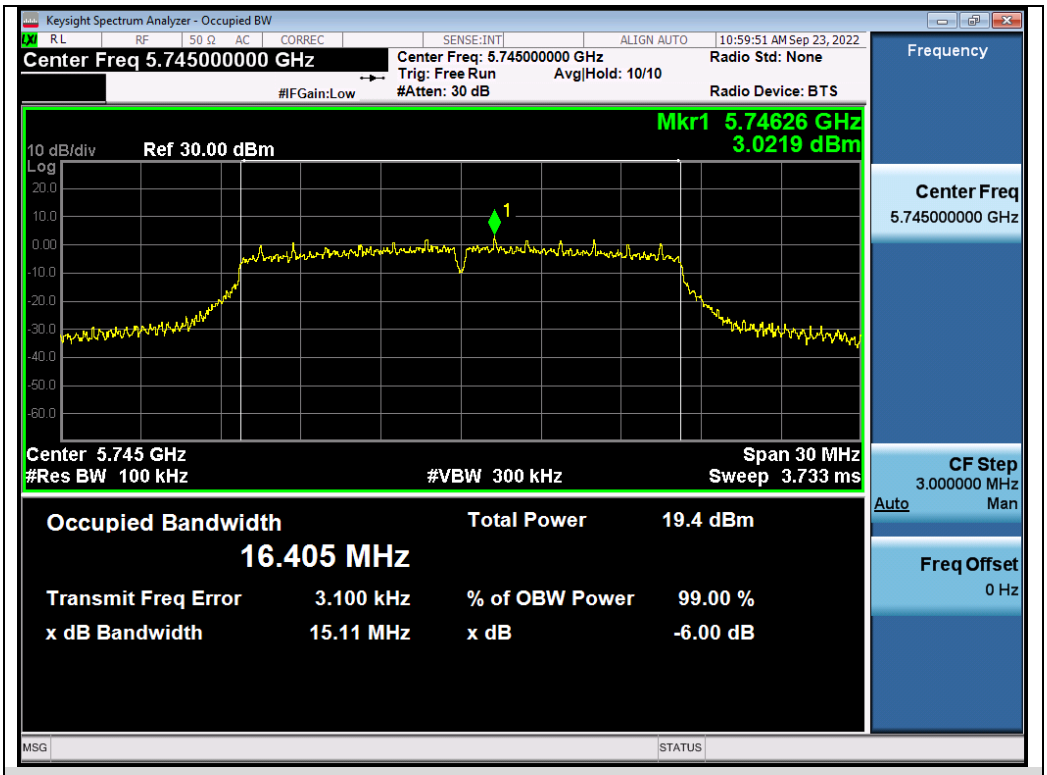


Test_Graph_802.11ac40_ANT1_5755_MCS9_OBW

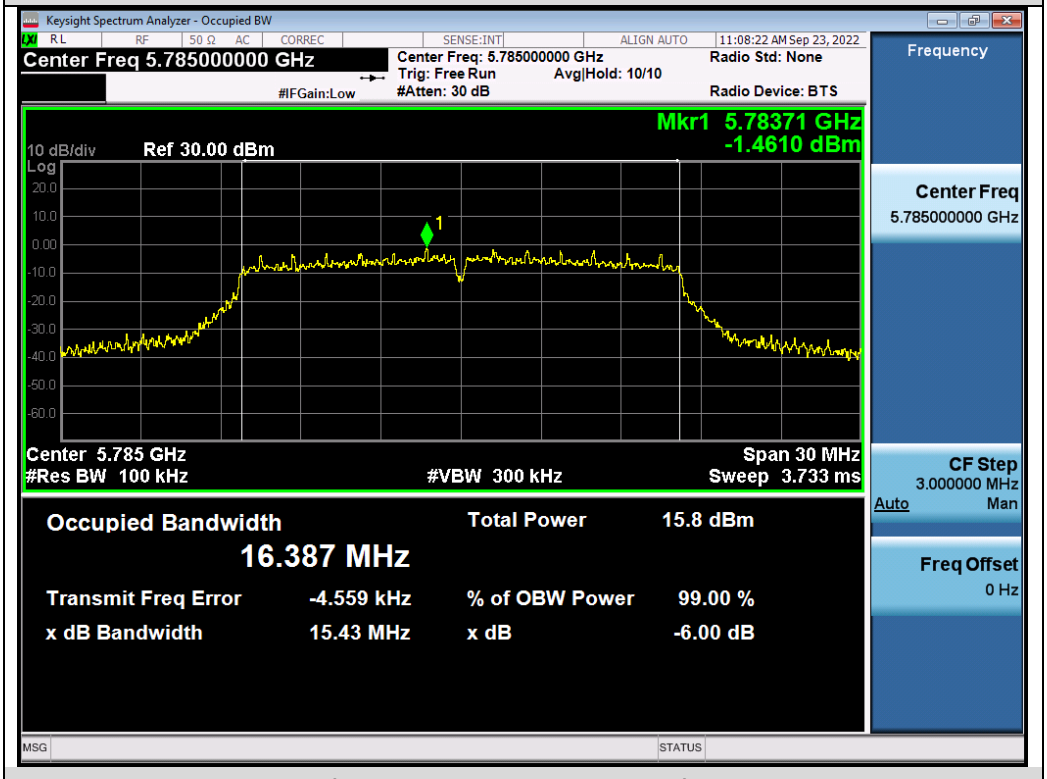


Test_Graph_802.11ac40_ANT1_5795_MCS9_OBW

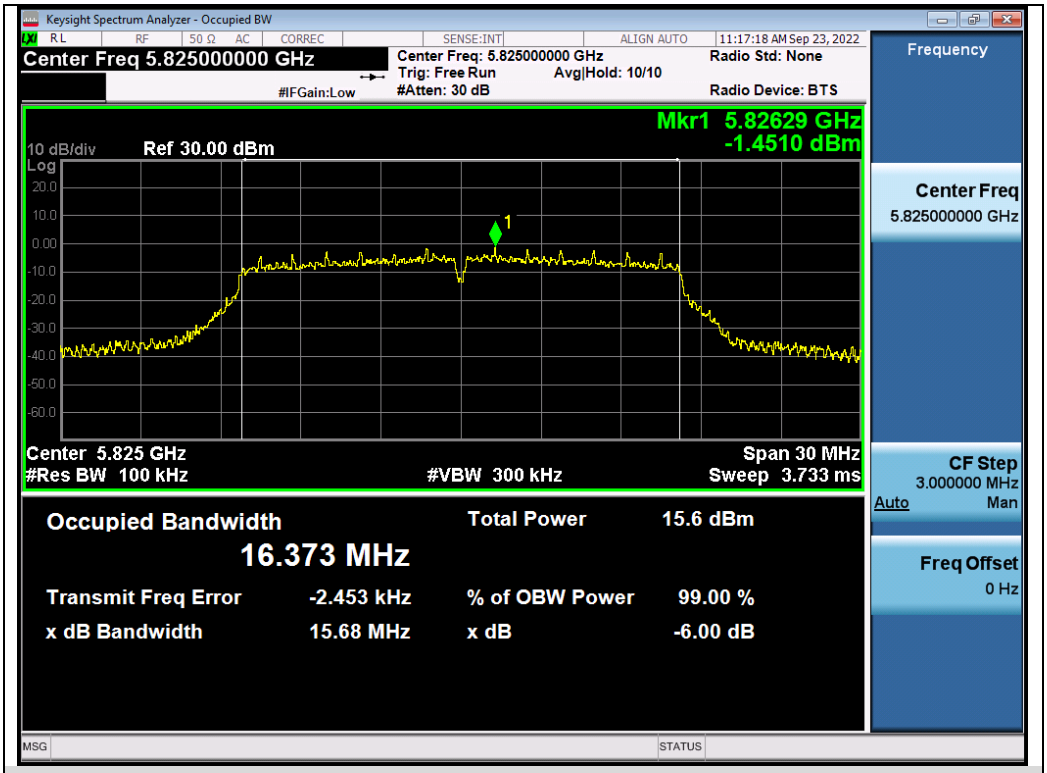
Test Graphs of DTS Bandwidth for band 5.725-5.85 GHz



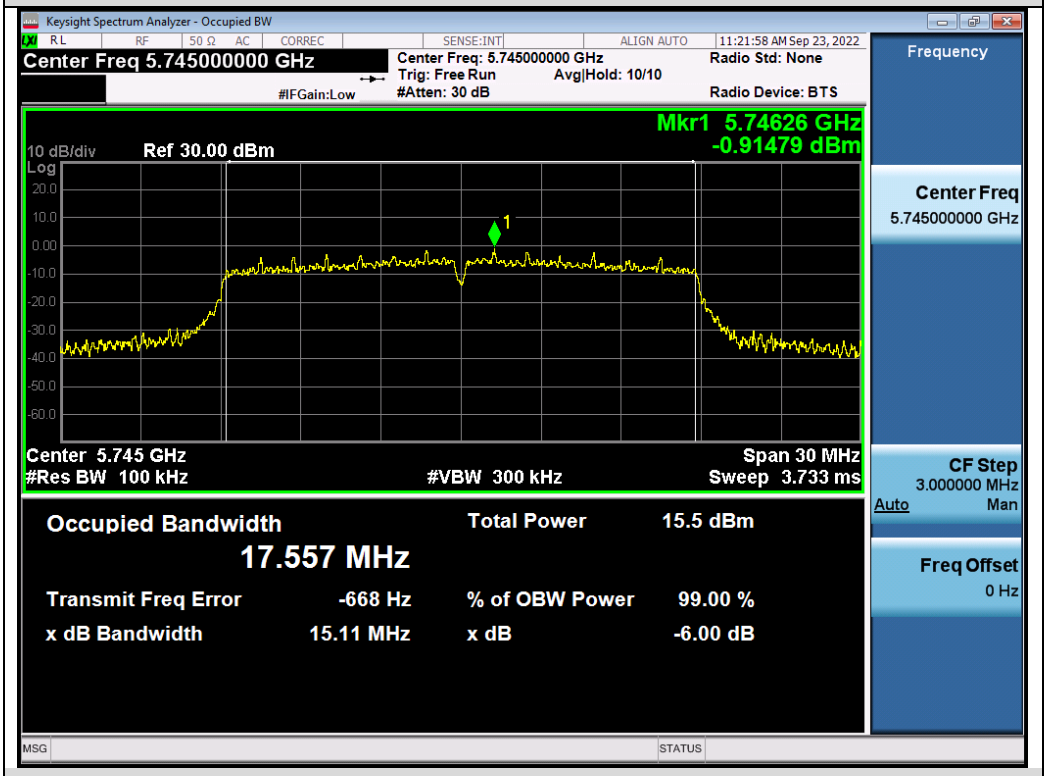
Test_Graph_802.11a_ANT1_5745_6Mbps_DTSBW



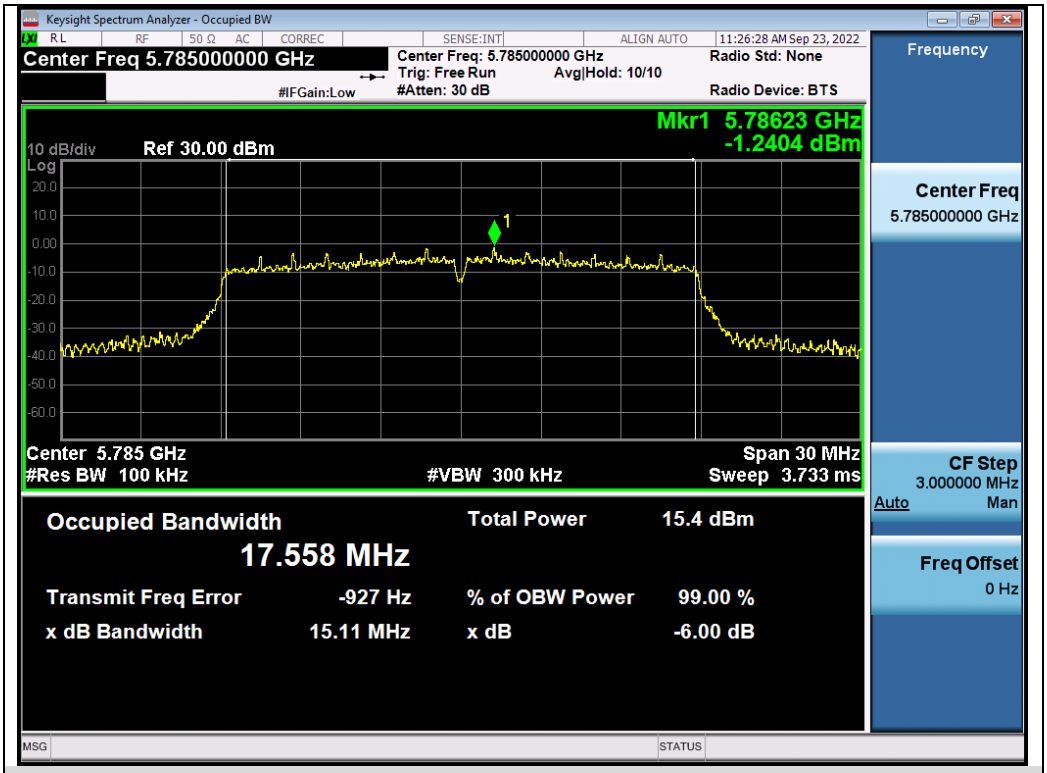
Test_Graph_802.11a_ANT1_5785_6Mbps_DTSBW



Test_Graph_802.11a_ANT1_5825_6Mbps_DTSBW



Test_Graph_802.11n20_ANT1_5745_MCS0_DTSBW



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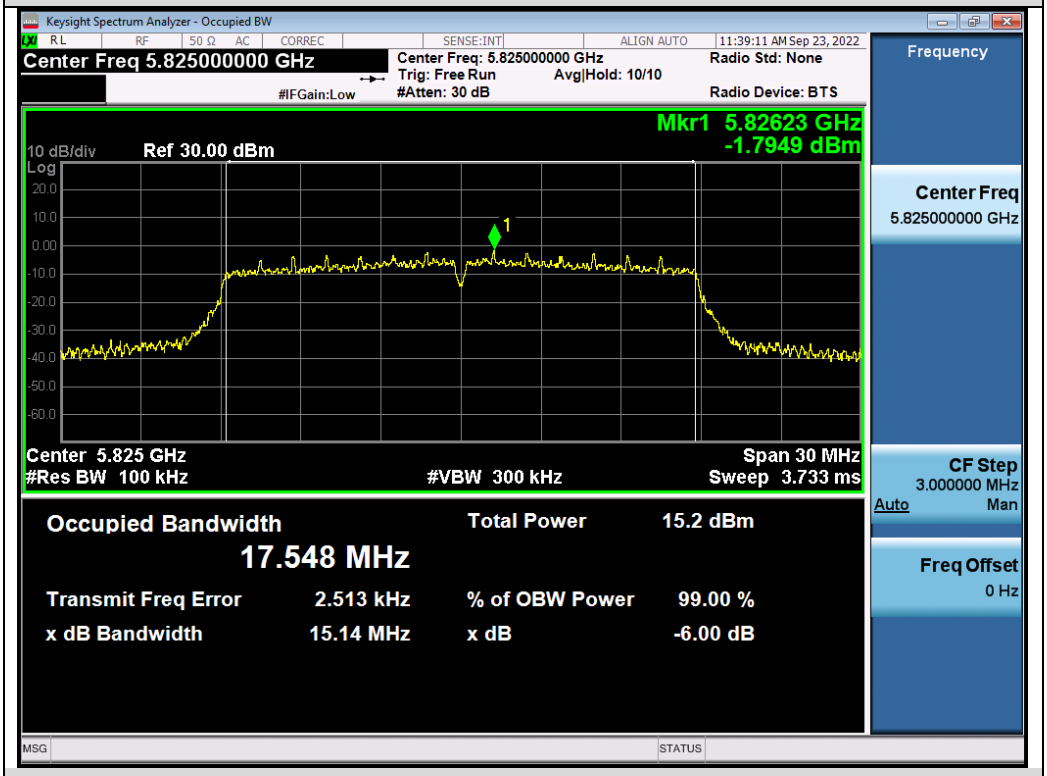
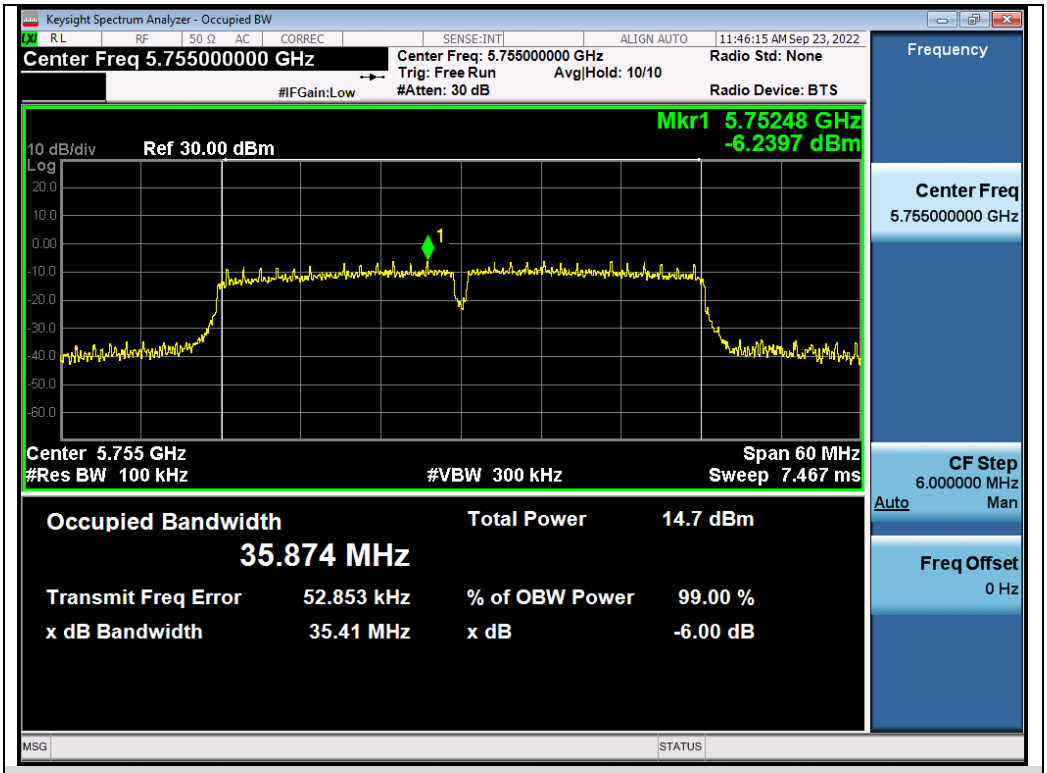
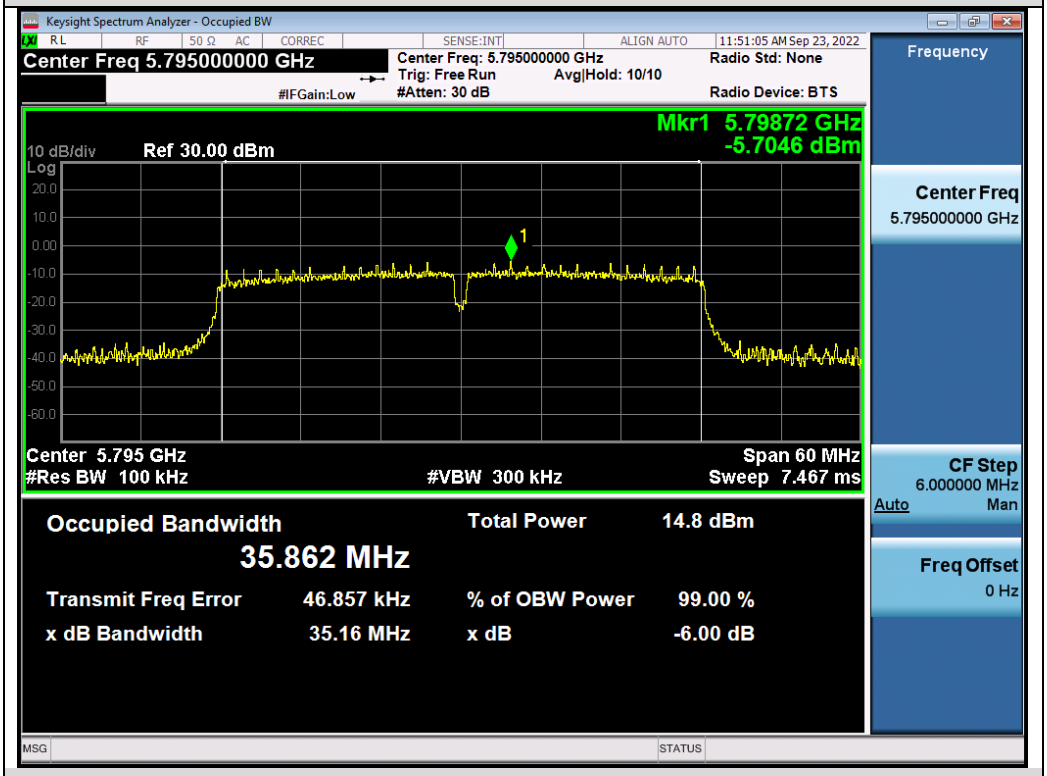


Test_Graph_802.11n20_ANT1_5825_MCS0_DTSBW

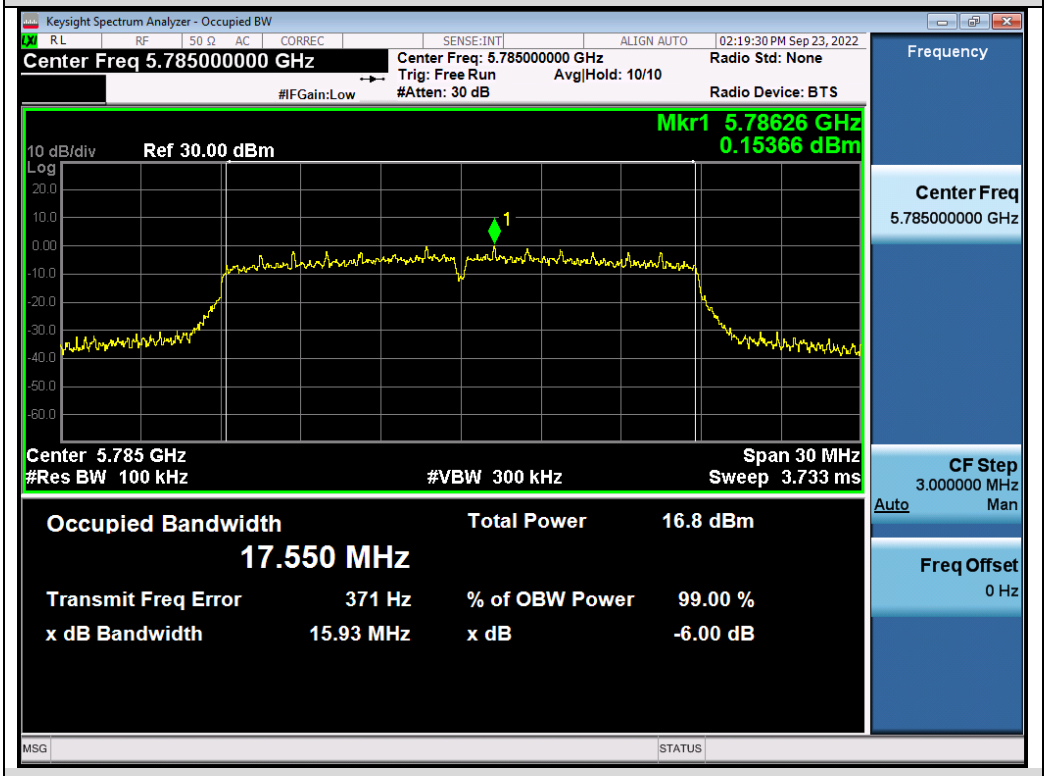


Test_Graph_802.11n40_ANT1_5755_MCS0_DTSBW



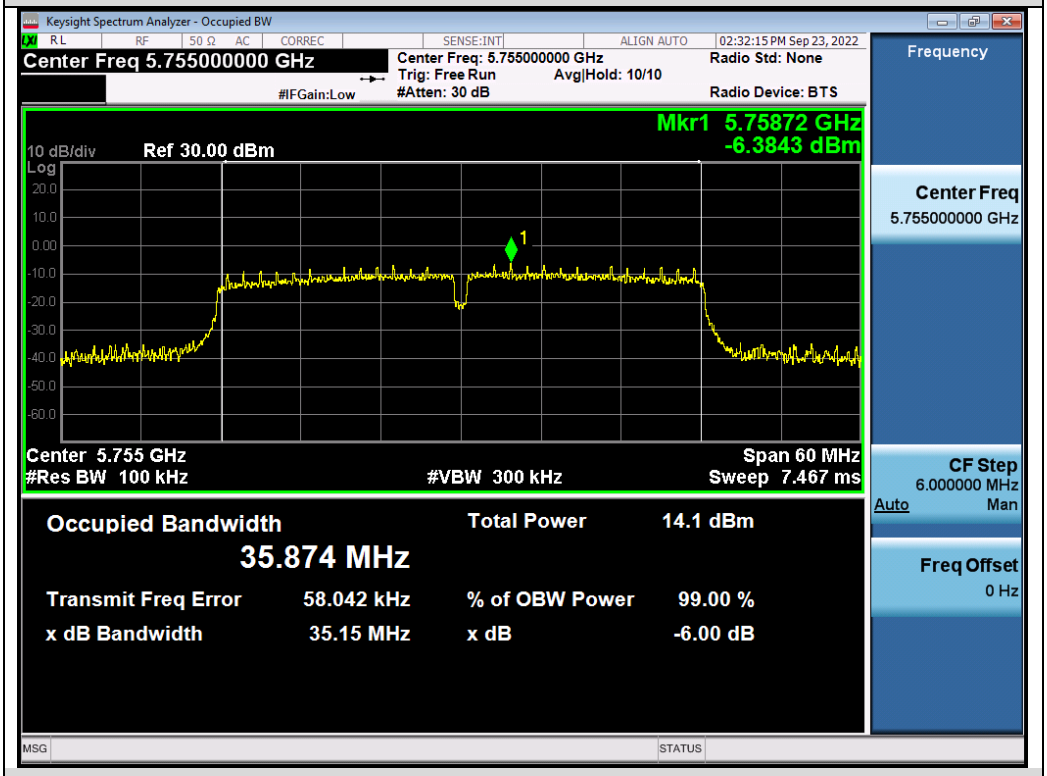
Test_Graph_802.11n40_ANT1_5795_MCS0_DTSBW

Test_Graph_802.11ac20_ANT1_5745_MCS0_DTSBW

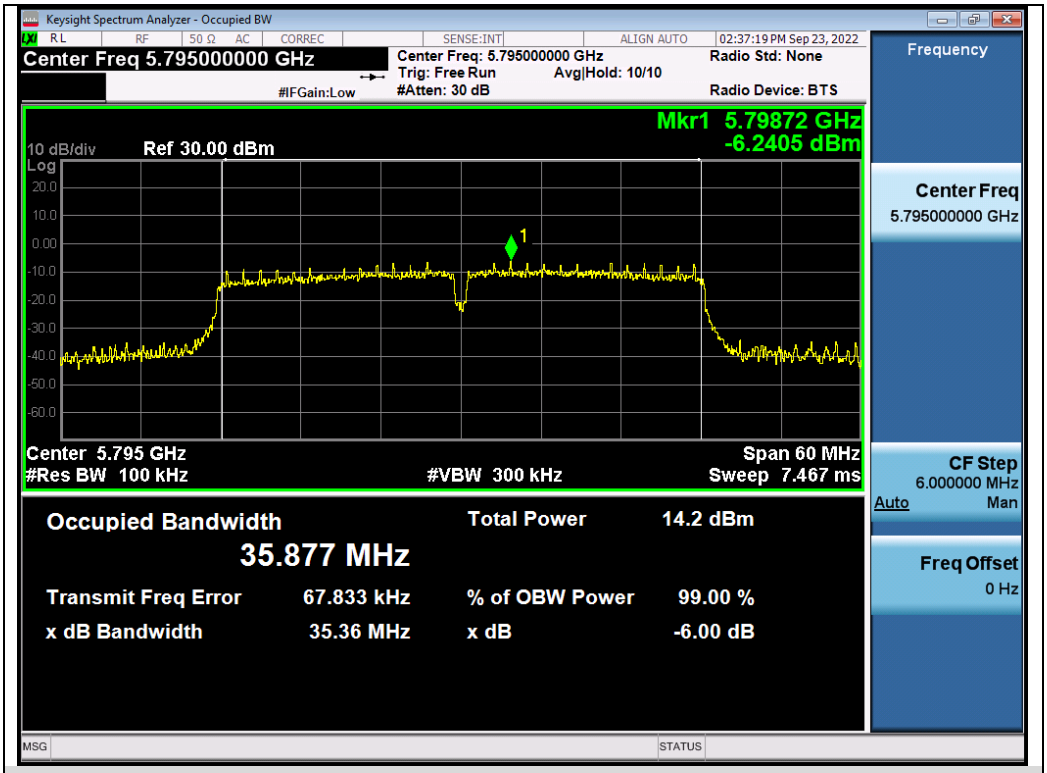


Test_Graph_802.11ac20_ANT1_5785_MCS0_DTSBW

Test_Graph_802.11ac20_ANT1_5825_MCS9_DTSBW



Test_Graph_802.11ac40_ANT1_5755_MCS9_DTSBW



Test_Graph_802.11ac40_ANT1_5795_MCS9_DTSBW

9. MAXIMUM CONDUCTED OUTPUT AVERAGE POWER SPECTRAL DENSITY

9.1 MEASUREMENT LIMITS

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 MHz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band.

For the 5.745–5.825 GHz bands, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

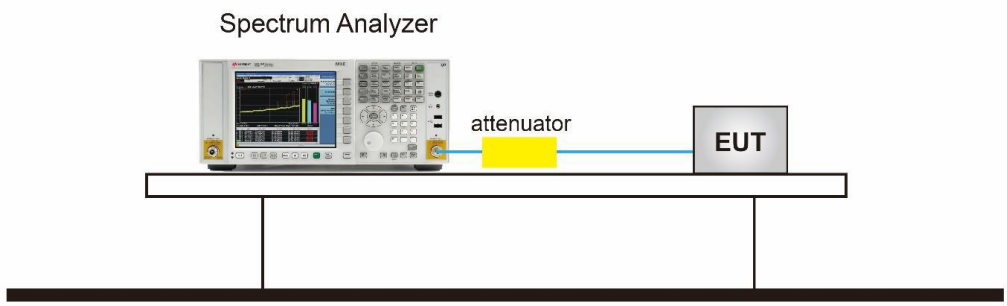
For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.2 MEASUREMENT PROCEDURE

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz,RBW = 510KHz
4. VBW ≥ 3RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average), Sweep time = auto
7. Trigger = free run
8. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
9. When the measurement bandwidth of Maximum PSD is specified in 500 kHz, add a constant factor 10*log(500kHz/510kHz) = -0.09 dB to the measured result.

Note: The EUT was tested according to KDB 789033 section F for compliance to Part 15.407 requirements.

9.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



9.4. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power Density for band 5.15-5.25 GHz				
Test Mode	Test Channel (MHz)	Average Power Density (dBm/MHz)	Limits (dBm/MHz)	Pass or Fail
802.11a	5180	0.266	11	Pass
	5200	0.068	11	Pass
	5240	0.191	11	Pass
802.11n20	5180	-0.278	11	Pass
	5200	-0.290	11	Pass
	5240	-0.410	11	Pass
802.11n40	5190	-3.653	11	Pass
	5230	-3.549	11	Pass
802.11ac20	5180	-0.475	11	Pass
	5200	-0.914	11	Pass
	5240	-0.793	11	Pass
802.11ac40	5190	-4.016	11	Pass
	5230	-4.445	11	Pass

Test Data of Conducted Output Power Density for band 5.25-5.35 GHz				
Test Mode	Test Channel (MHz)	Average Power Density (dBm/MHz)	Limits (dBm/MHz)	Pass or Fail
802.11a	5260	-0.048	11	Pass
	5300	-0.220	11	Pass
	5320	-0.150	11	Pass
802.11n20	5260	-0.340	11	Pass
	5300	-0.176	11	Pass
	5320	-0.406	11	Pass
802.11n40	5270	-3.837	11	Pass
	5310	-4.169	11	Pass
802.11ac20	5260	-0.414	11	Pass
	5300	-0.517	11	Pass
	5320	-0.244	11	Pass
802.11ac40	5270	-4.062	11	Pass
	5310	-4.245	11	Pass

Test Data of Conducted Output Power Density for band 5.725-5.85 GHz					
Test Mode	Test Channel (MHz)	Average Power Density (dBm/100kHz)	Average Power Density (dBm/500kHz)	Limits (dBm/500kHz)	Pass or Fail
802.11a	5745	-8.894	-1.904	30	Pass
	5785	-8.878	-1.888	30	Pass
	5825	-9.113	-2.123	30	Pass
802.11n20	5745	-9.450	-2.460	30	Pass
	5785	-9.691	-2.701	30	Pass
	5825	-9.244	-2.254	30	Pass
802.11n40	5755	-13.141	-6.151	30	Pass
	5795	-13.154	-6.164	30	Pass
802.11ac20	5745	-9.700	-2.710	30	Pass
	5785	-9.892	-2.902	30	Pass
	5825	-9.749	-2.759	30	Pass
802.11ac40	5755	-13.677	-6.687	30	Pass
	5795	-13.556	-6.566	30	Pass

Note: Power density(dBm/500kHz) = Power density(dBm/100kHz) +10*log(500/100).

Test Graphs of Conducted Output Power Spectral Density for band 5.15-5.25 GHz

Test_Graph_802.11a_ANT1_5180_6Mbps_PSD

Test_Graph_802.11a_ANT1_5200_6Mbps_PSD

Test_Graph_802.11a_ANT1_5240_6Mbps_PSD

Test_Graph_802.11n20_ANT1_5180_MCS0_PSD

Test_Graph_802.11n20_ANT1_5200_MCS0_PSD

Test_Graph_802.11n20_ANT1_5240_MCS0_PSD

Test_Graph_802.11n40_ANT1_5190_MCS0_PSD

Test_Graph_802.11n40_ANT1_5230_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5180_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5200_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5240_MCS9_PSD

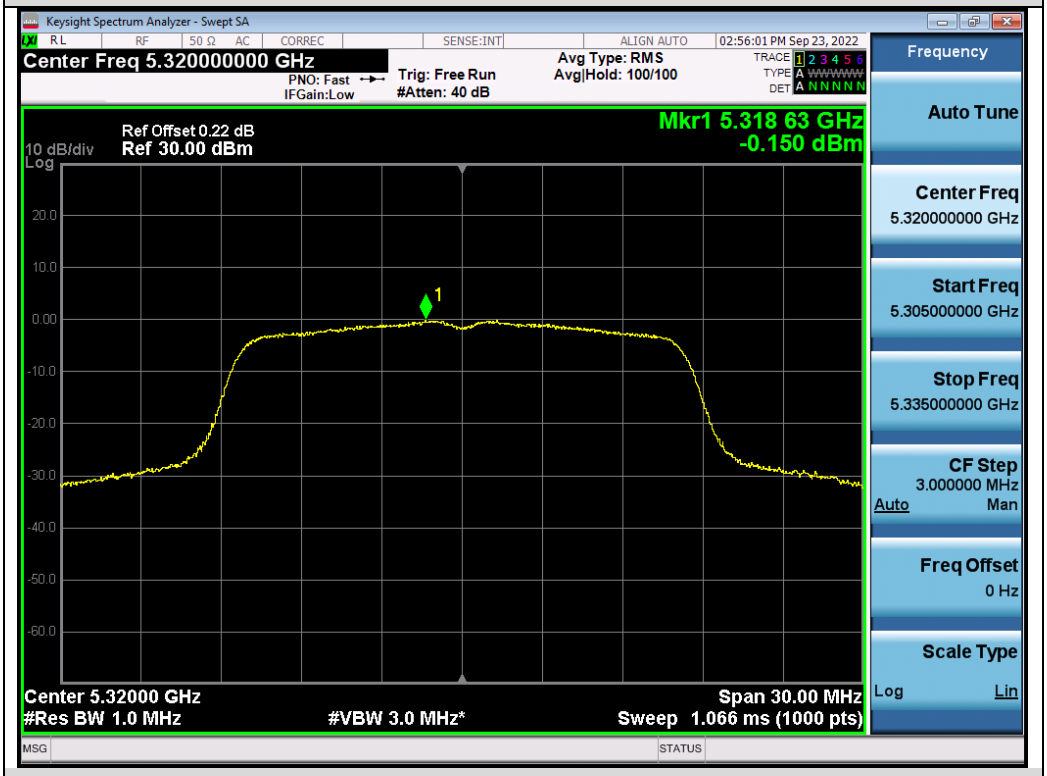
Test_Graph_802.11ac40_ANT1_5190_MCS9_PSD

Test_Graph_802.11ac40_ANT1_5230_MCS9_PSD

Test Graphs of Conducted Output Power Spectral Density for band 5.25-5.35 GHz

Test_Graph_802.11a_ANT1_5260_6Mbps_PSD

Test_Graph_802.11a_ANT1_5300_6Mbps_PSD



Test_Graph_802.11a_ANT1_5320_6Mbps_PSD

Test_Graph_802.11n20_ANT1_5260_MCS0_PSD

Test_Graph_802.11n20_ANT1_5300_MCS0_PSD

Test_Graph_802.11n20_ANT1_5320_MCS0_PSD

Test_Graph_802.11n40_ANT1_5270_MCS0_PSD

Test_Graph_802.11n40_ANT1_5310_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5260_MCS0_PSD

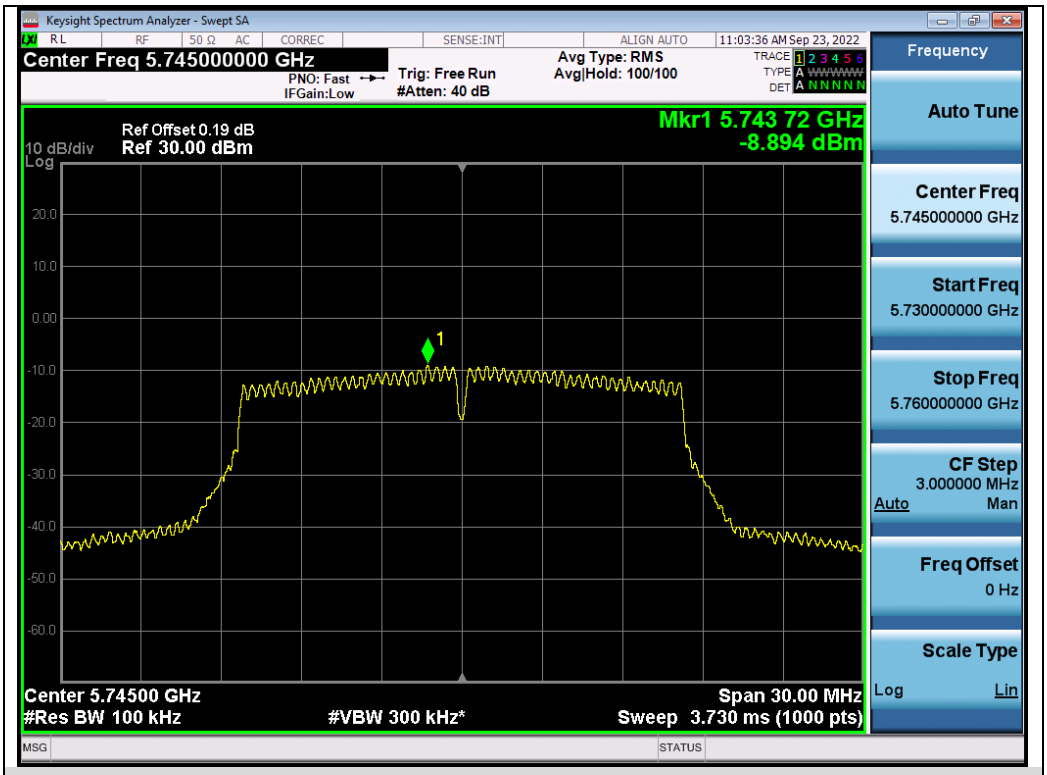
Test_Graph_802.11ac20_ANT1_5300_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5320_MCS9_PSD

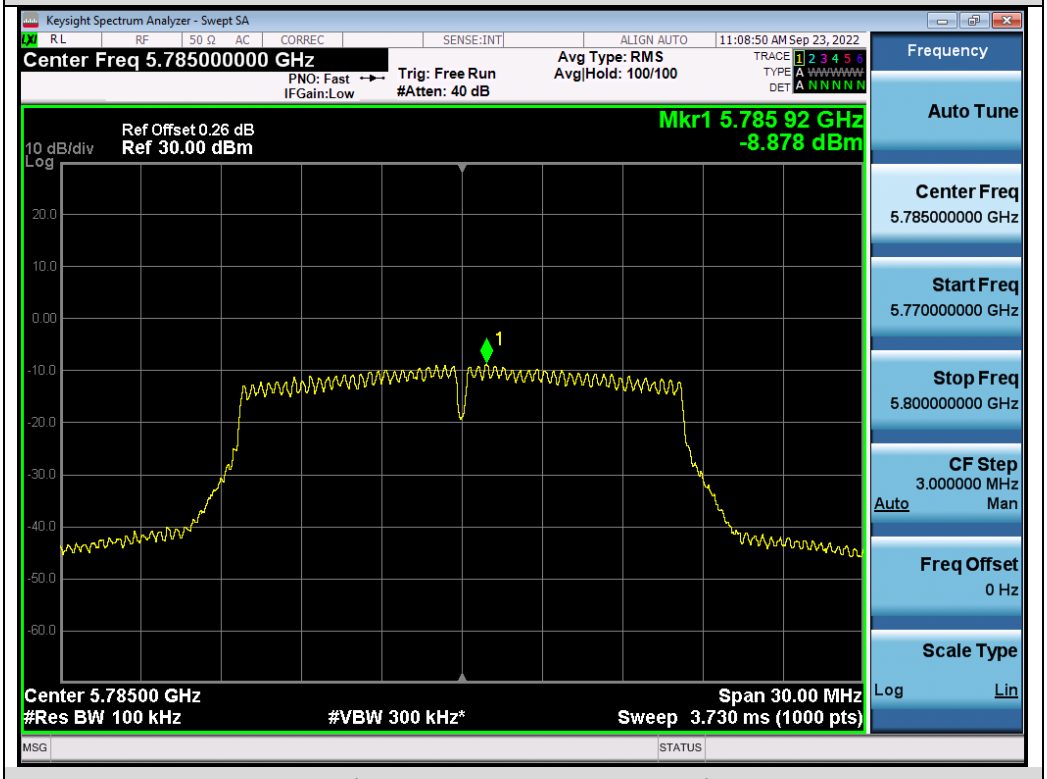
Test_Graph_802.11ac40_ANT1_5270_MCS9_PSD

Test_Graph_802.11ac40_ANT1_5310_MCS9_PSD

Test Graphs of Conducted Output Power Spectral Density for band 5.725-5.85 GHz



Test_Graph_802.11a_ANT1_5745_6Mbps_PSD



Test_Graph_802.11a_ANT1_5785_6Mbps_PSD