FCC Test Report

Report No.: AGC02762220606FE06

FCC ID	:	2AL26-D5N
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Body Worn Camera
BRAND NAME	:	Reveal Media
MODEL NAME	:	D5
APPLICANT	:	Reveal Media Limited
DATE OF ISSUE	:	Jun. 28, 2022
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15.407 KDB 789033 D02 v02r01
REPORT VERSION	:	V1.0

*A*ttestation of *G*lobal Compliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

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

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1. VERIFICATION OF CONFORMITY

Applicant	Reveal Media Limited
Address	Riverview House, 20 Old Bridge Street, Hampton Wick, KT1 4BU, UNITED KINGDOM
Manufacturer	Reveal Media Hong Kong Ltd.
Address	6/F., Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Factory	Reveal Media Hong Kong Ltd.
Address	6/F., Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Product Designation	Body Worn Camera
Brand Name	Reveal Media
Test Model	D5
Date of test	Jun. 13, 2022 to Jun. 28, 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	Eder Zhan (Project Engineer)	Jun. 28, 2022
Reviewed By	Calvin Liu (Reviewer)	Jun. 28, 2022
Approved By	Max Zhang (Authorized Officer)	Jun. 28, 2022

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “Body Worn Camera”. 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/ax-HT20-VHT20: 5180~5240MHz, 5745~5825MHz For 802.11n/ax-HT40: 5190~5230MHz, 5755~5795MHz
Test Frequency Range:	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40: 5190~5230MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5775MHz
Output Power	IEEE 802.11a:12.68dBm; IEEE 802.11n-HT20:12.19dBm; IEEE 802.11n-HT40:11.29dBm; IEEE 802.11ac-VHT20:11.47dBm; IEEE 802.11ac-VHT40:10.35dBm; IEEE 802.11ac-VHT80:10.38dBm
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM, OFDM
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 8 channels of U-NII-3 Band
Hardware Version	V1.0
Software Version	V1.0
Antenna Designation	Monople Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	1.3dBi
Power Supply	DC 3.8V by battery or DC 5V by adapter

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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
42	5210 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

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
155	5775 MHz	--	--

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

This submittal(s) (test report) is intended for **FCC ID: 2AL26-D5N** 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 %

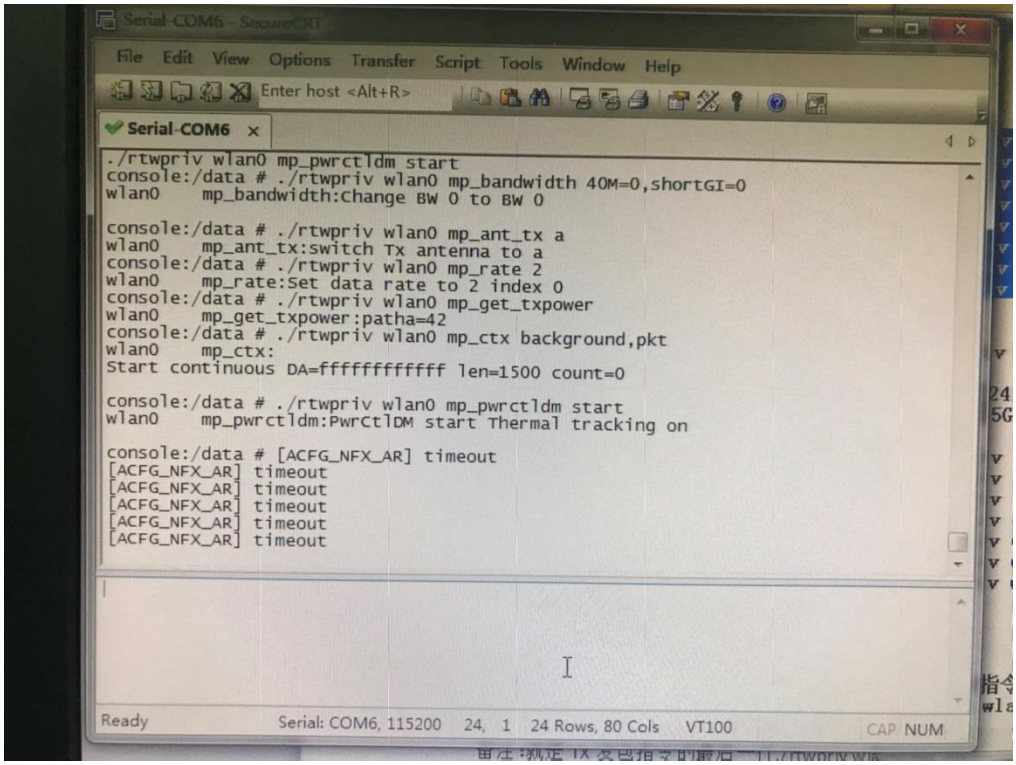
4. DESCRIPTION OF TEST MODES

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
802.11ac80	42, 155	42, 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.

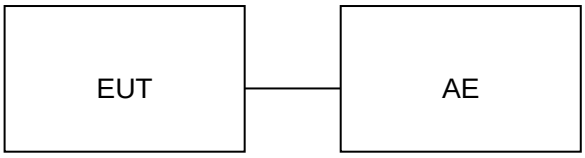
Software Setting



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	Body Worn Camera	D5	2AL26-D5N	EUT
2	Adapter	TPA-23A050200CU01	--	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

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	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
Power sensor	Aglient	U2021XA	MY54110007	Jun. 06, 2022	Jun. 05, 2023
5GHz Fliter	EM Electronics	5150-5880MHz	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
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	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2020	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

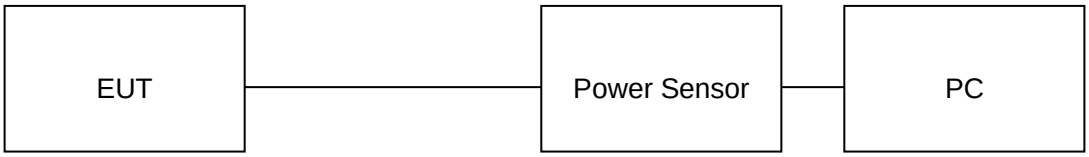
For average power test:

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



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	12.68	24	Pass
	5200	12.28	24	Pass
	5240	11.80	24	Pass
802.11n20	5180	12.19	24	Pass
	5200	11.80	24	Pass
	5240	11.13	24	Pass
802.11n40	5190	11.29	24	Pass
	5230	10.59	24	Pass
802.11ac20	5180	11.47	24	Pass
	5200	10.70	24	Pass
	5240	10.35	24	Pass
802.11ac40	5190	10.35	24	Pass
	5230	9.99	24	Pass
802.11ac80	5210	10.38	24	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	9.65	30	Pass
	5785	8.20	30	Pass
	5825	8.73	30	Pass
802.11n20	5745	9.97	30	Pass
	5785	9.02	30	Pass
	5825	8.67	30	Pass
802.11n40	5755	10.01	30	Pass
	5795	8.14	30	Pass
802.11ac20	5745	9.02	30	Pass
	5785	8.01	30	Pass
	5825	7.64	30	Pass
802.11ac40	5755	7.97	30	Pass
	5795	7.15	30	Pass
802.11ac80	5775	7.05	30	Pass

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 ≥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.

99% occupied bandwidth:

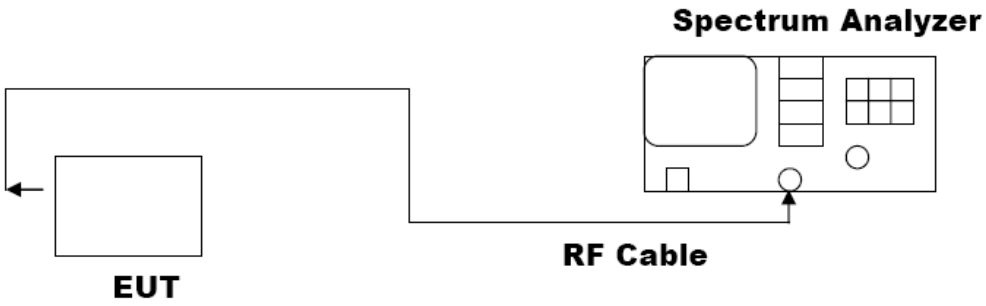
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel
   The nominal IF filter bandwidth (3 dB RBW) shall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

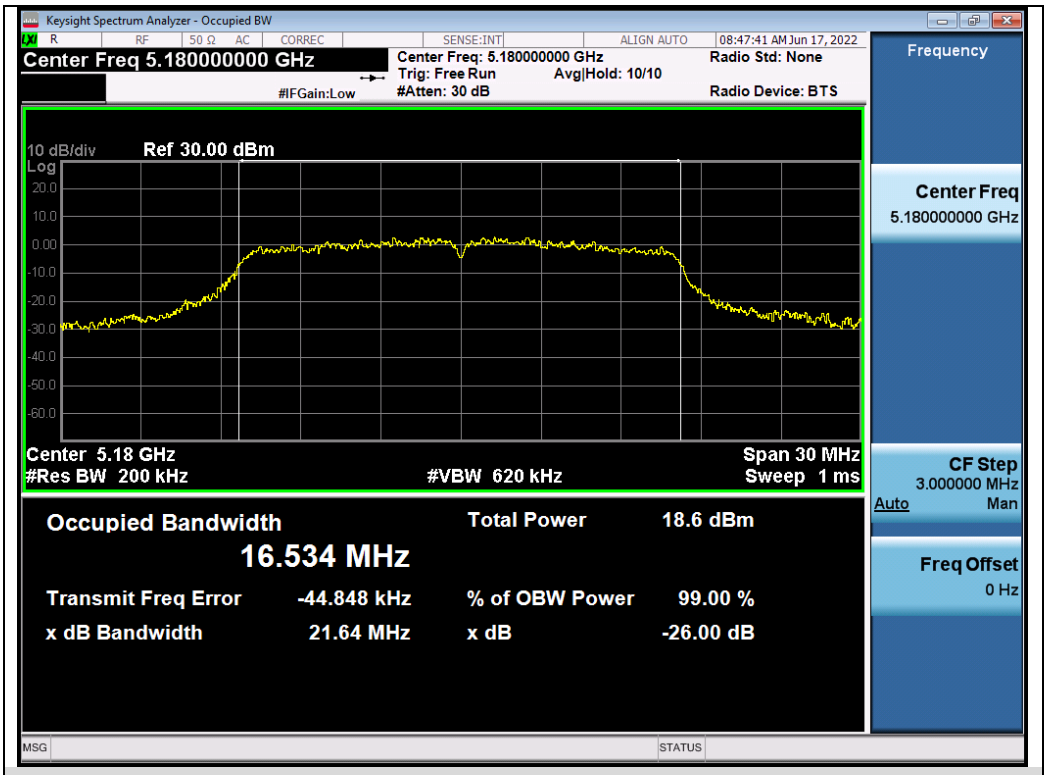


8.3. LIMITS AND MEASUREMENT RESULTS

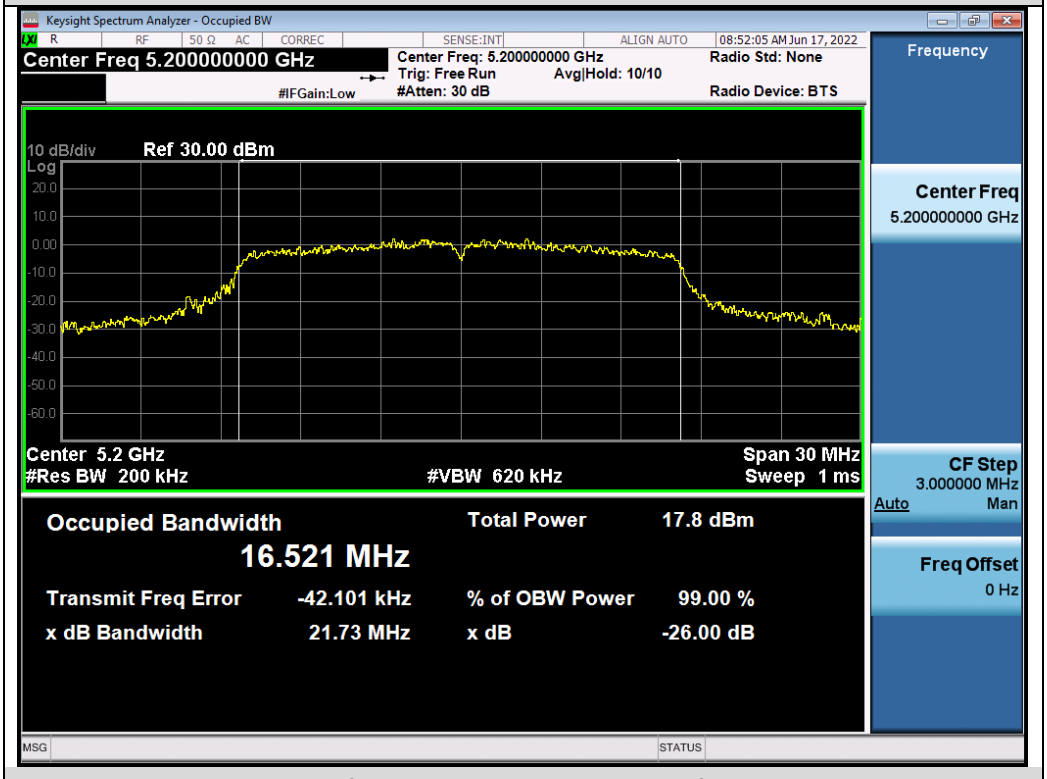
Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5180	16.534	21.64	N/A	Pass
	5200	16.521	21.73	N/A	Pass
	5240	16.495	20.90	N/A	Pass
802.11n20	5180	17.608	22.32	N/A	Pass
	5200	17.615	22.49	N/A	Pass
	5240	17.628	24.32	N/A	Pass
802.11n40	5190	36.075	49.98	N/A	Pass
	5230	36.024	50.44	N/A	Pass
802.11ac20	5180	17.587	20.61	N/A	Pass
	5200	17.588	20.83	N/A	Pass
	5240	17.580	20.53	N/A	Pass
802.11ac40	5190	36.028	49.57	N/A	Pass
	5230	36.018	50.66	N/A	Pass
802.11ac80	5210	76.102	112.8	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	16.499	15.10	0.5	Pass
	5785	16.469	15.09	0.5	Pass
	5825	16.477	15.02	0.5	Pass
802.11n20	5745	17.529	15.08	0.5	Pass
	5785	17.541	15.09	0.5	Pass
	5825	17.540	15.08	0.5	Pass
802.11n40	5755	35.957	35.09	0.5	Pass
	5795	35.987	35.09	0.5	Pass
802.11ac20	5745	17.540	15.07	0.5	Pass
	5785	17.542	15.10	0.5	Pass
	5825	17.536	15.03	0.5	Pass
802.11ac40	5755	35.947	35.09	0.5	Pass
	5795	35.934	35.08	0.5	Pass
802.11ac80	5775	75.962	76.32	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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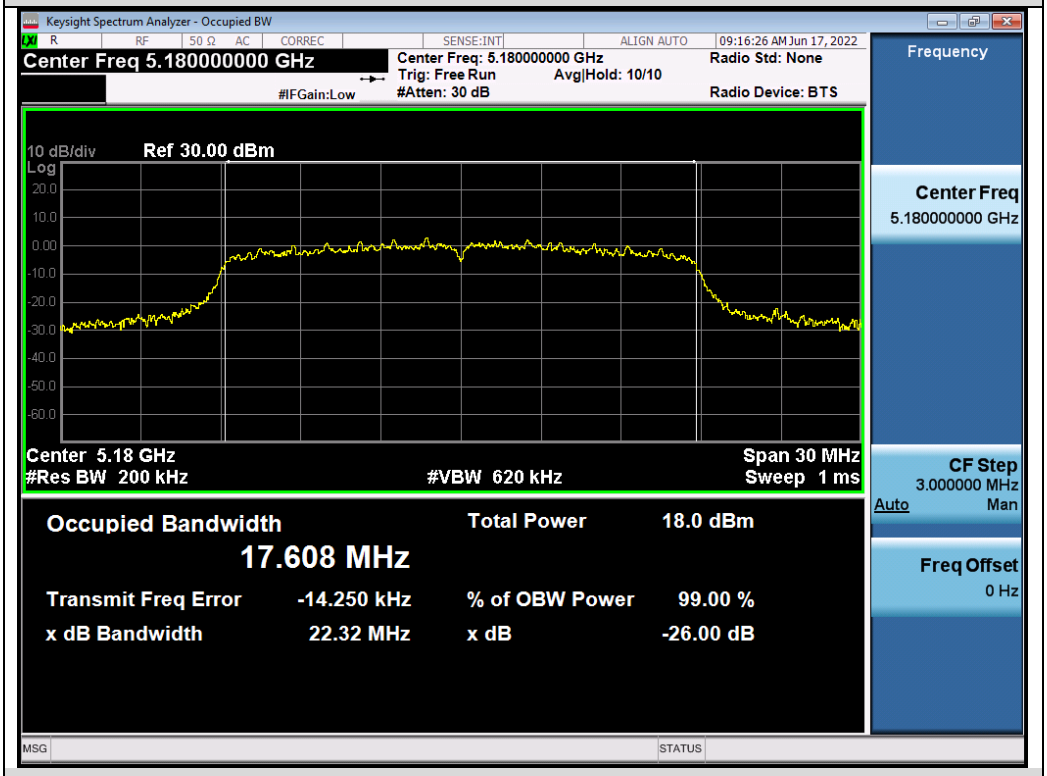
Test_Graph_802.11a_ANT1_5240_6Mbps_OBW



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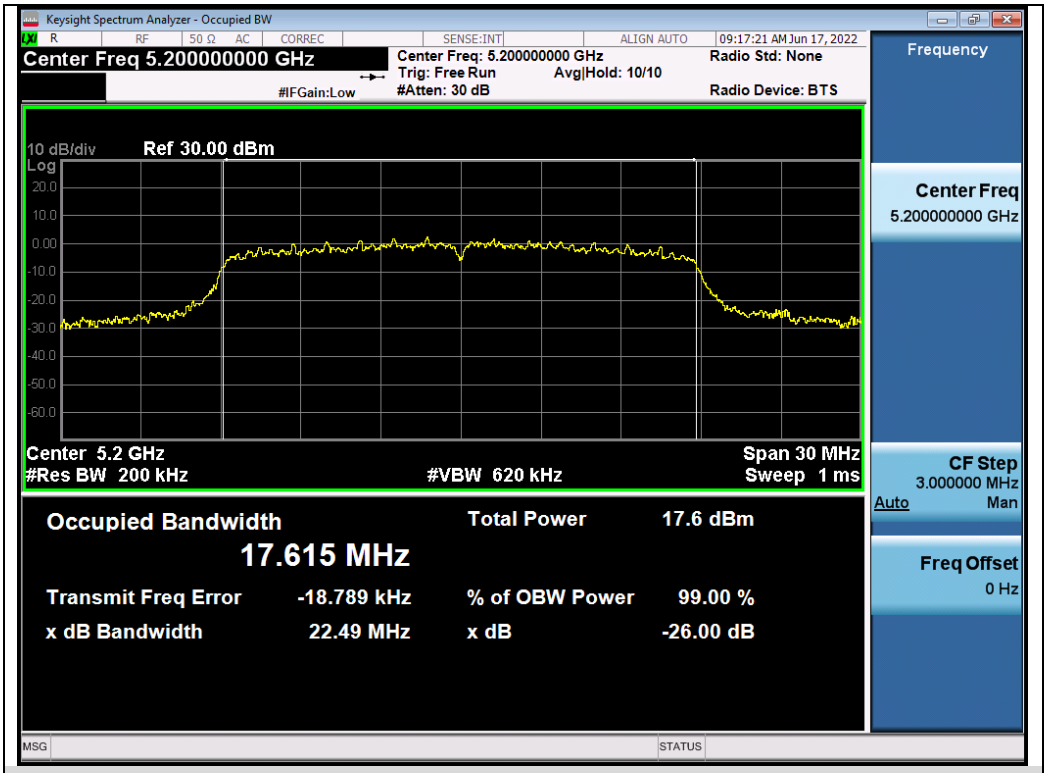

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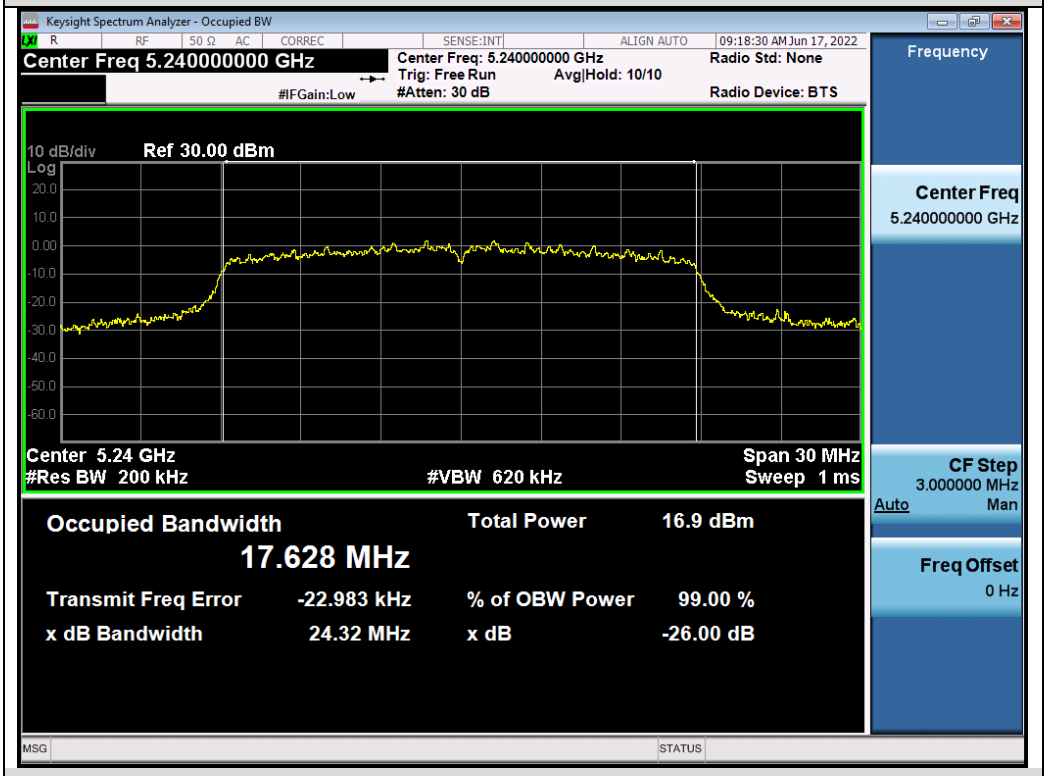

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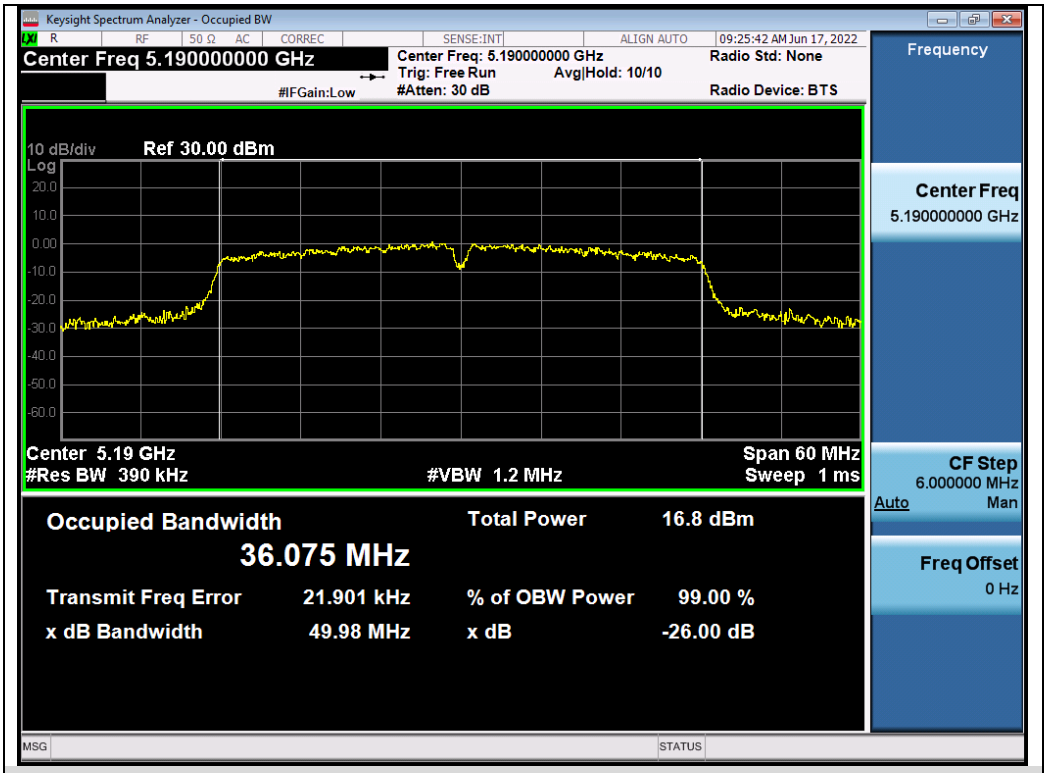

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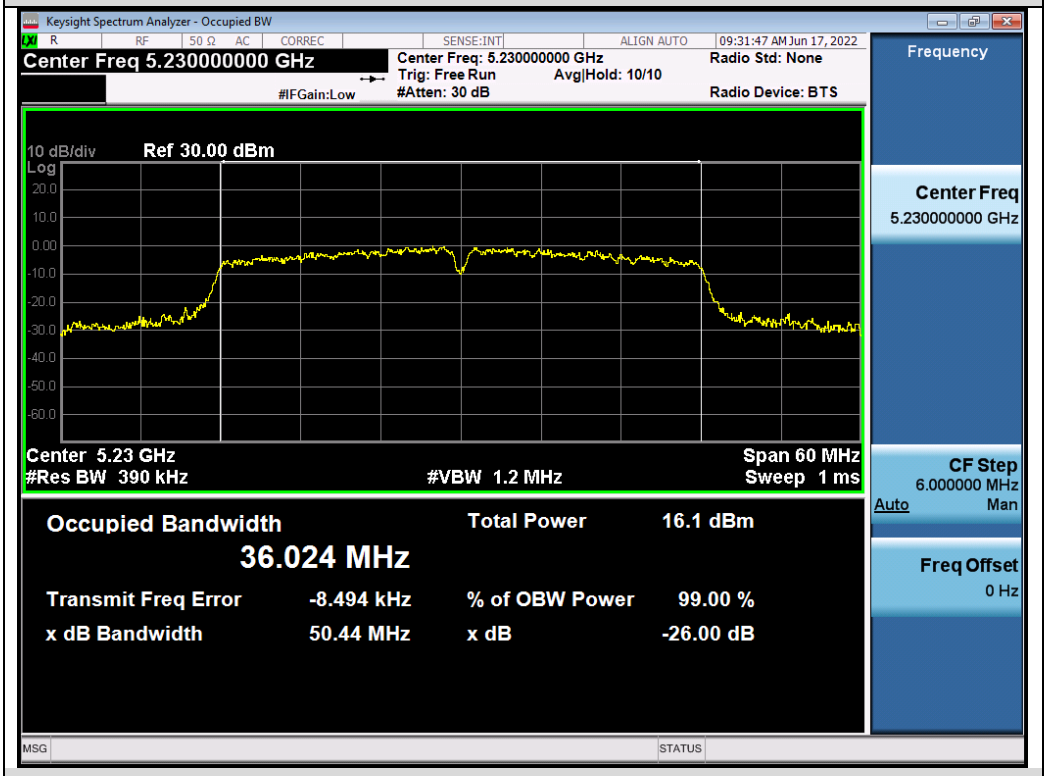

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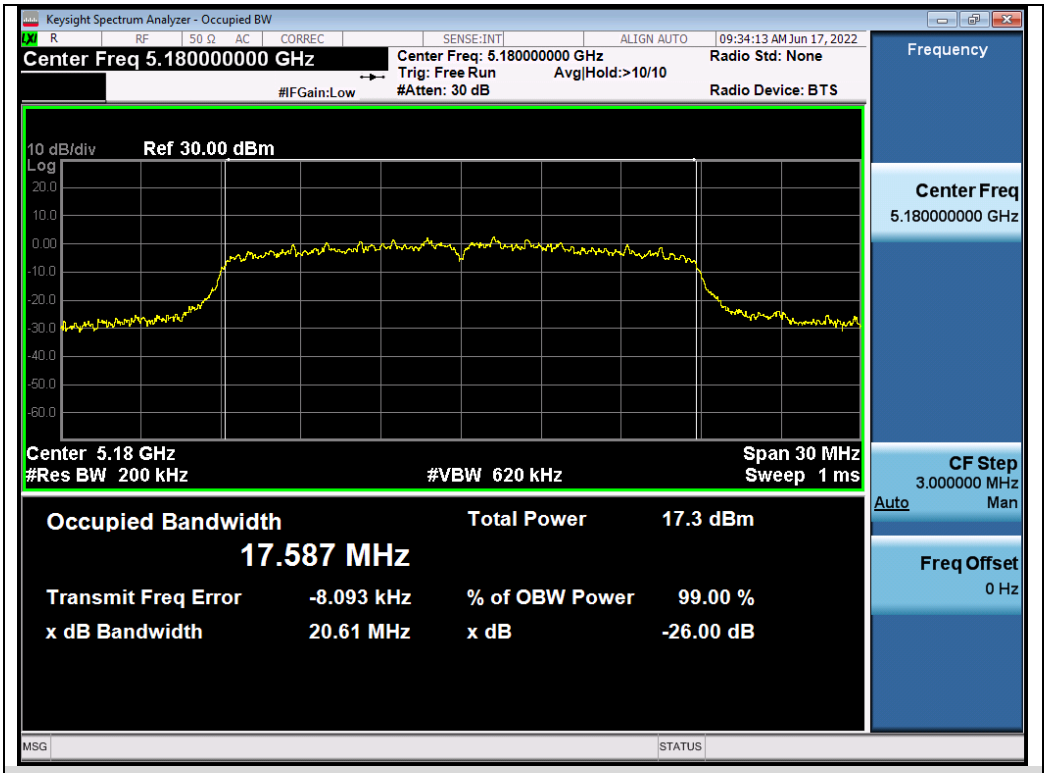

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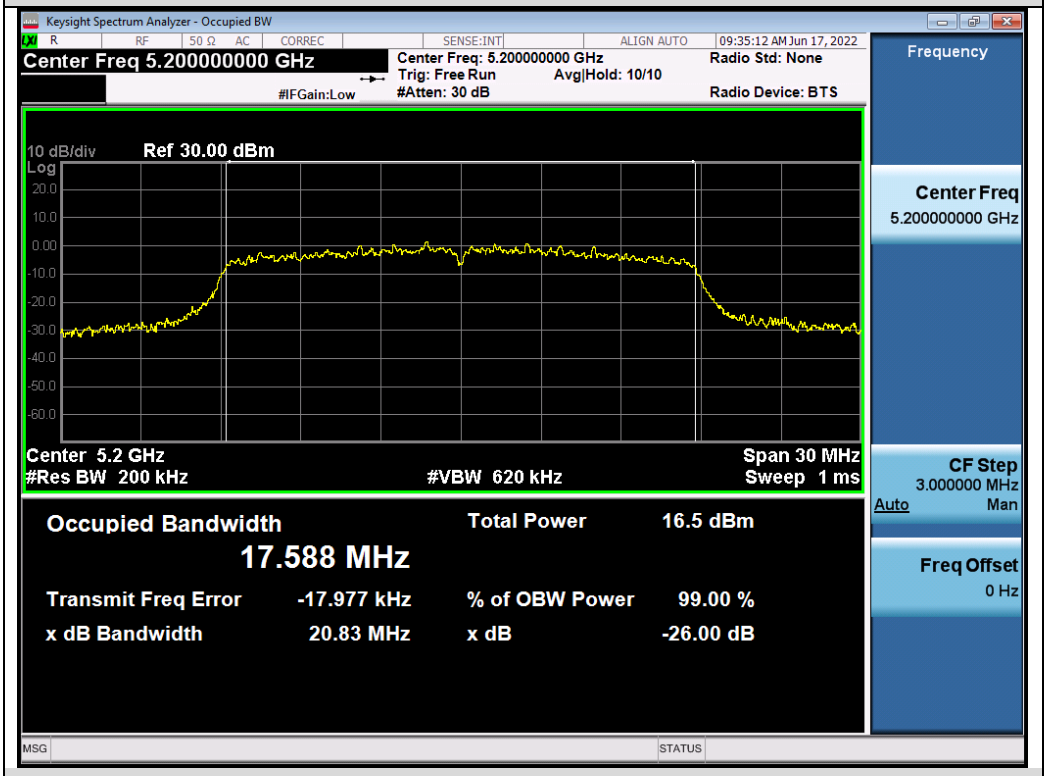

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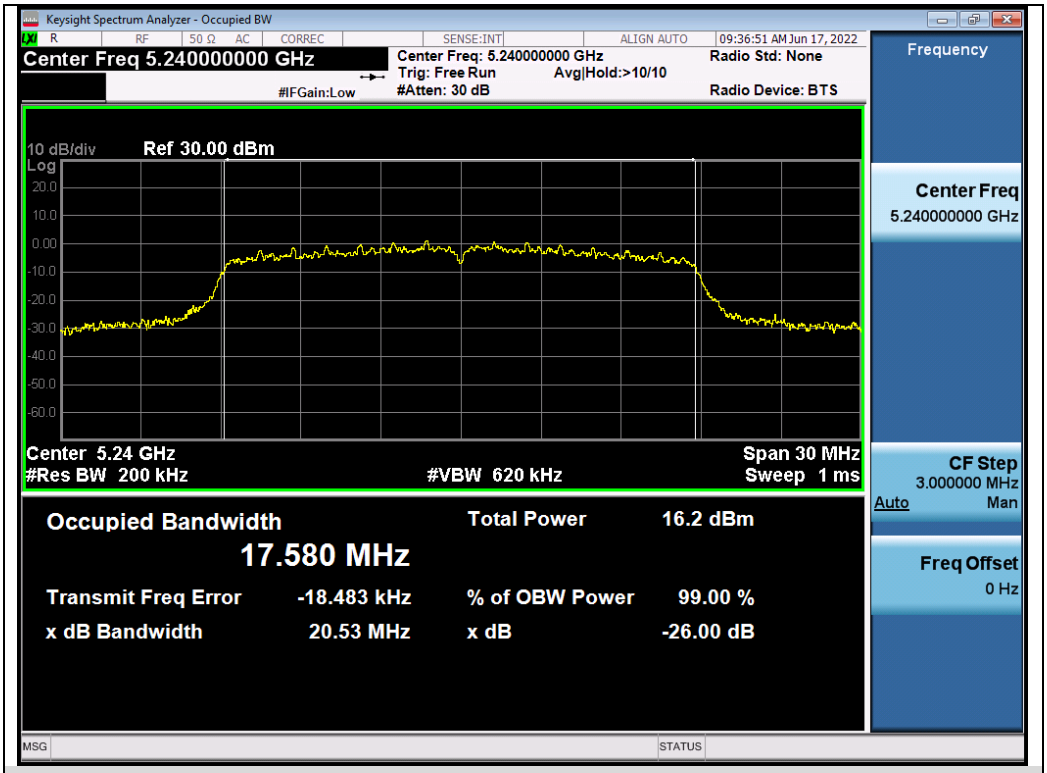

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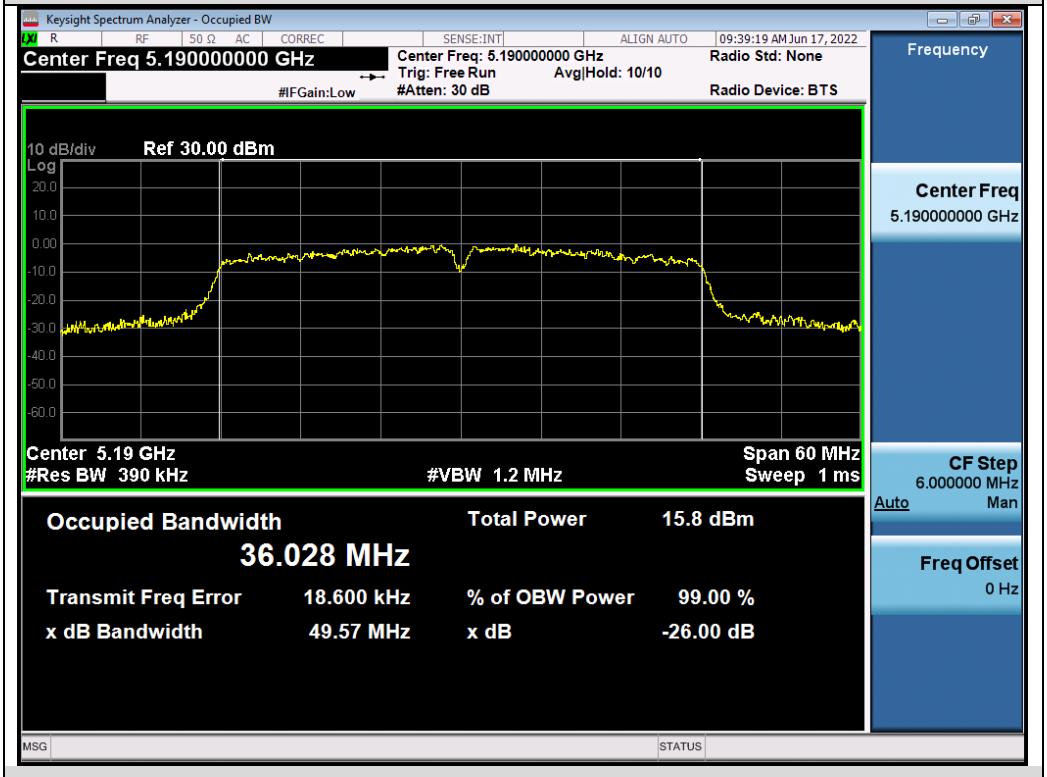

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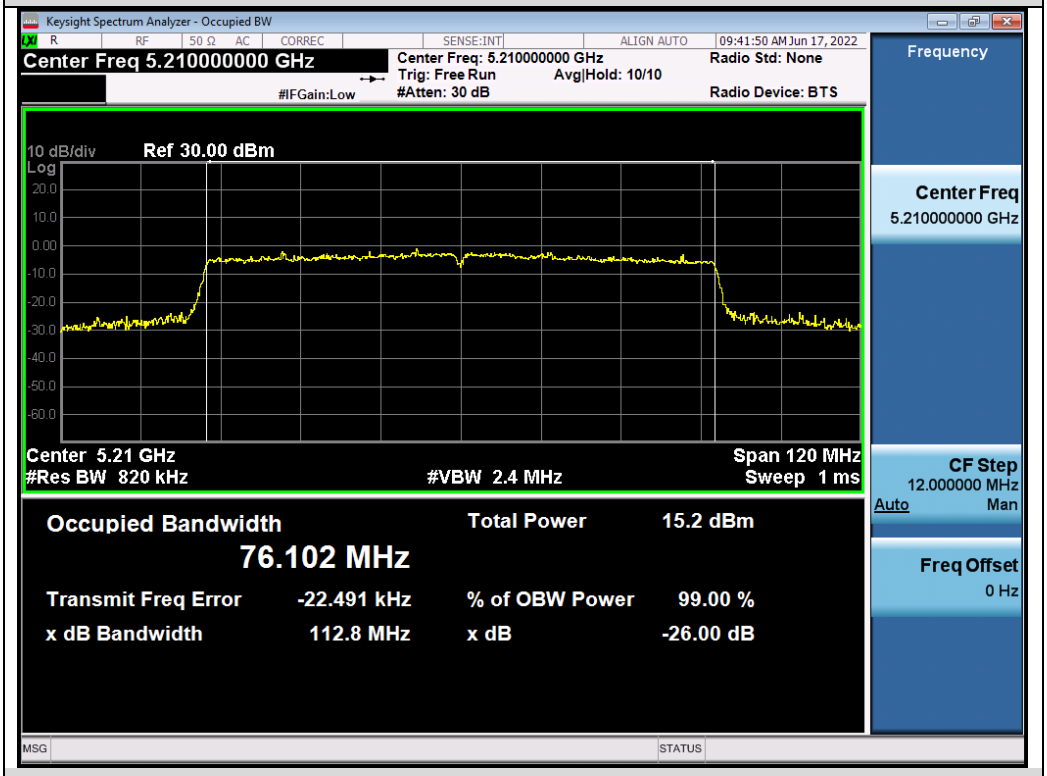
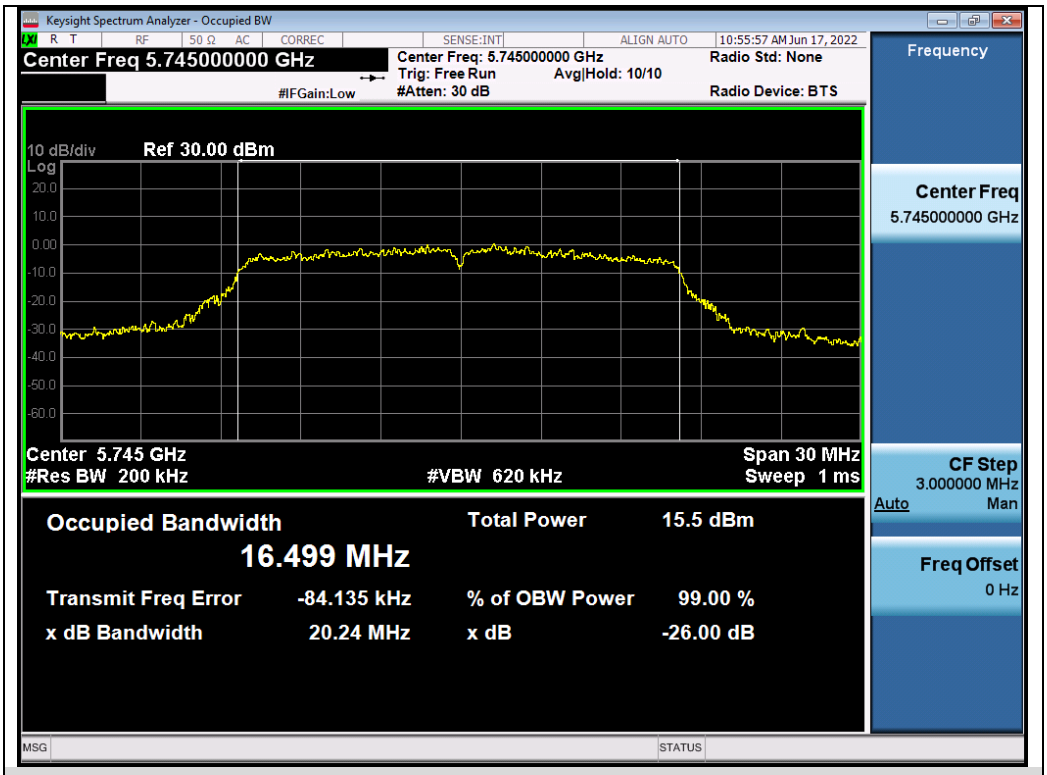
Test_Graph_802.11ac40_ANT1_5230_MCS9_OBW



Test_Graph_802.11ac80_ANT1_5210_MCS9_OBW

Test Graphs of Occupied Bandwidth for band 5.725-5.85 GHz



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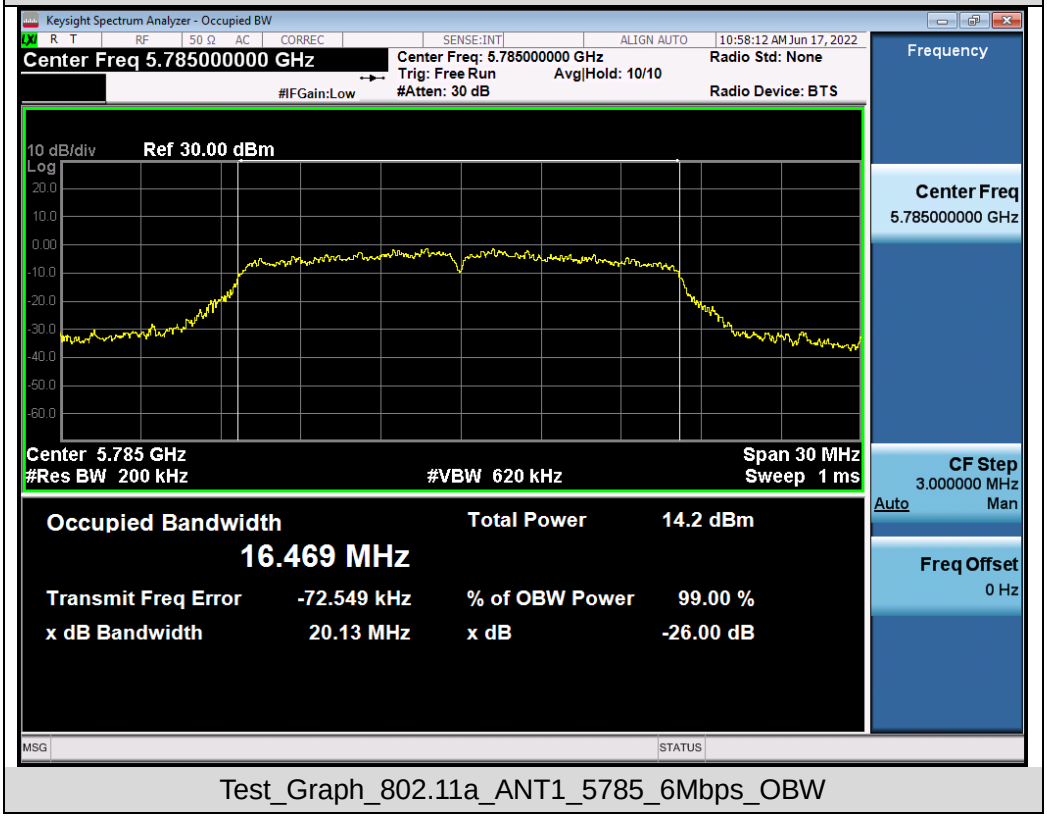

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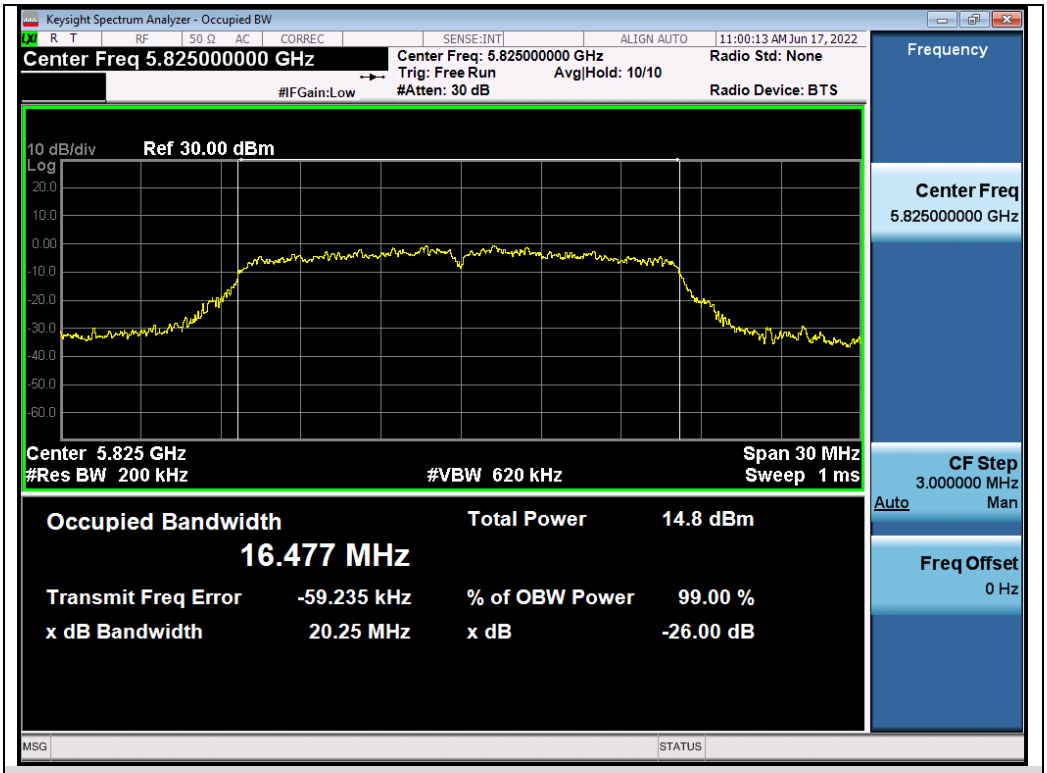

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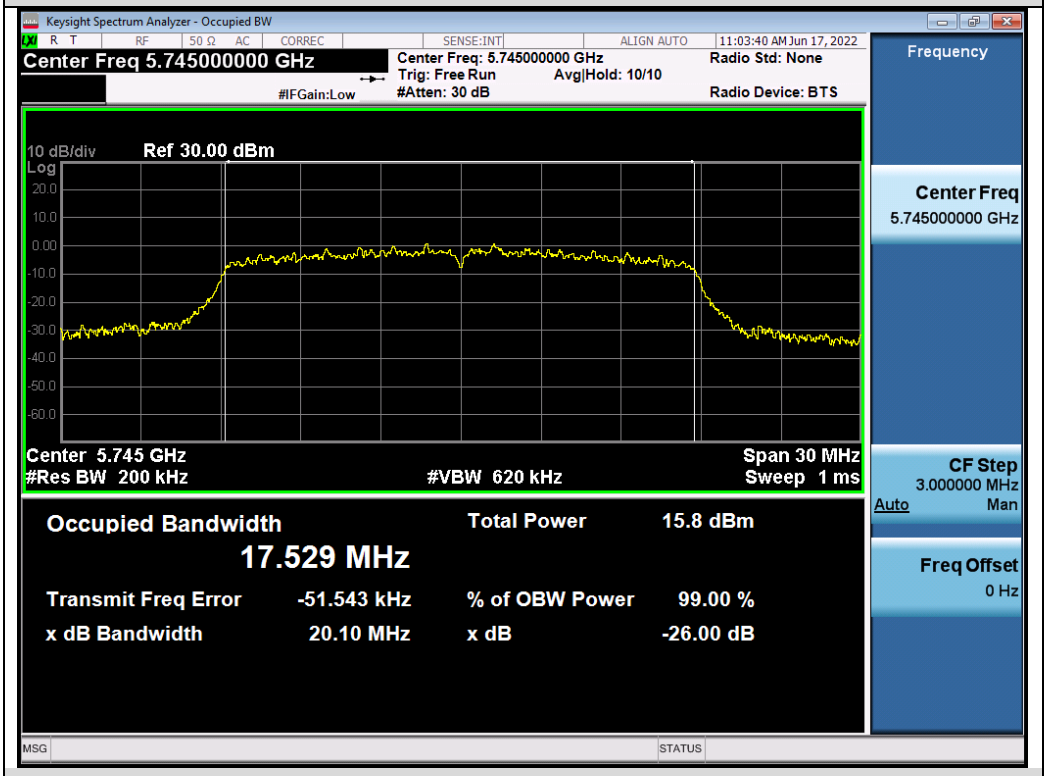

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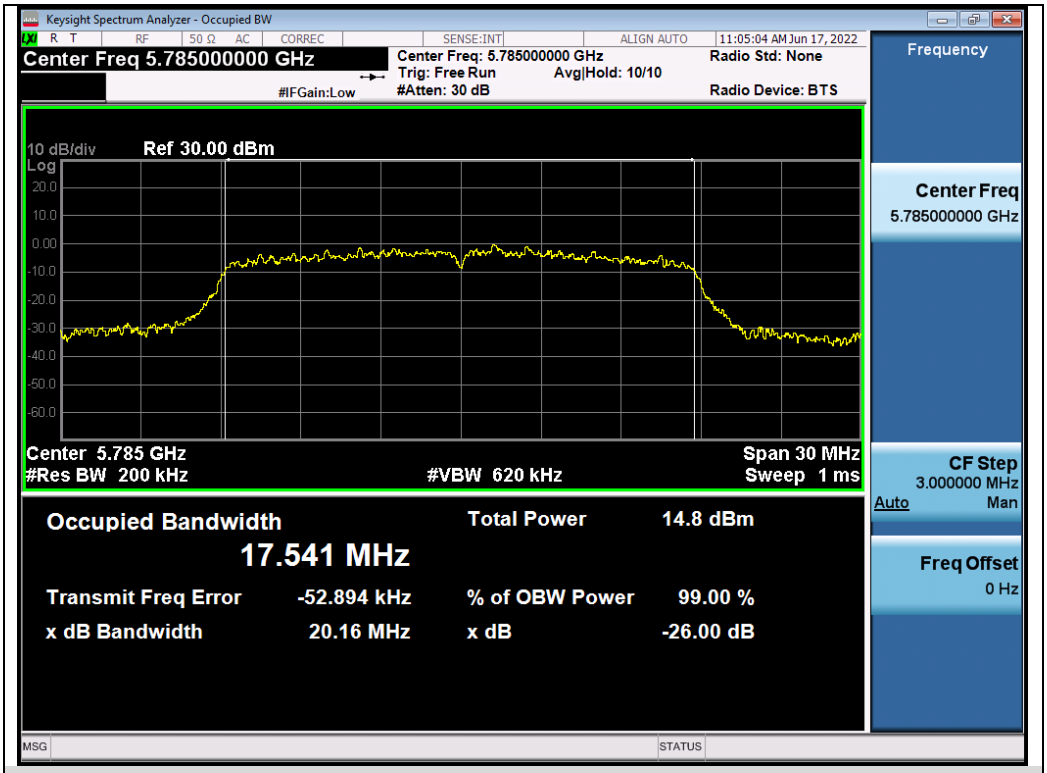
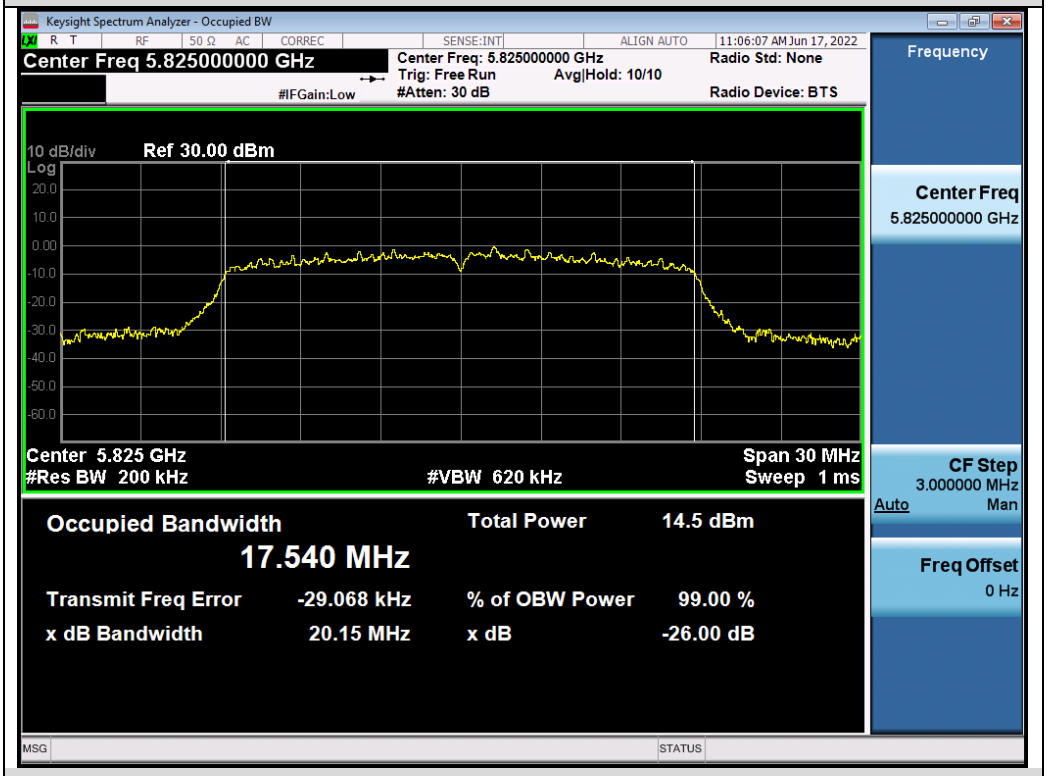
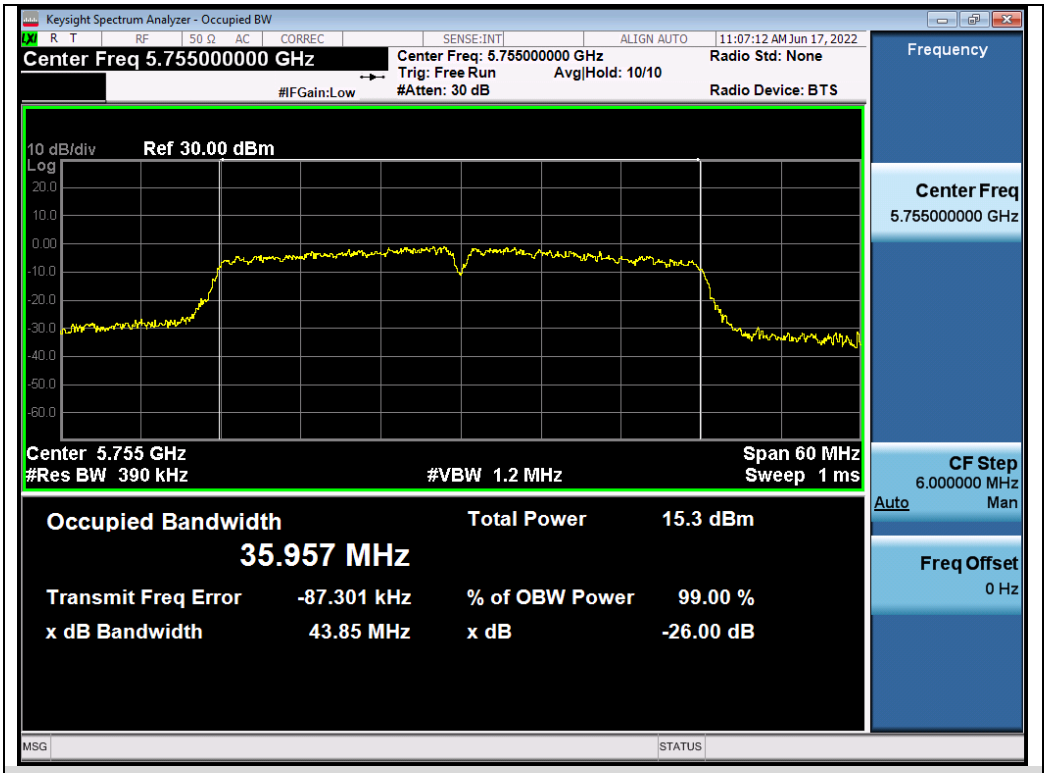


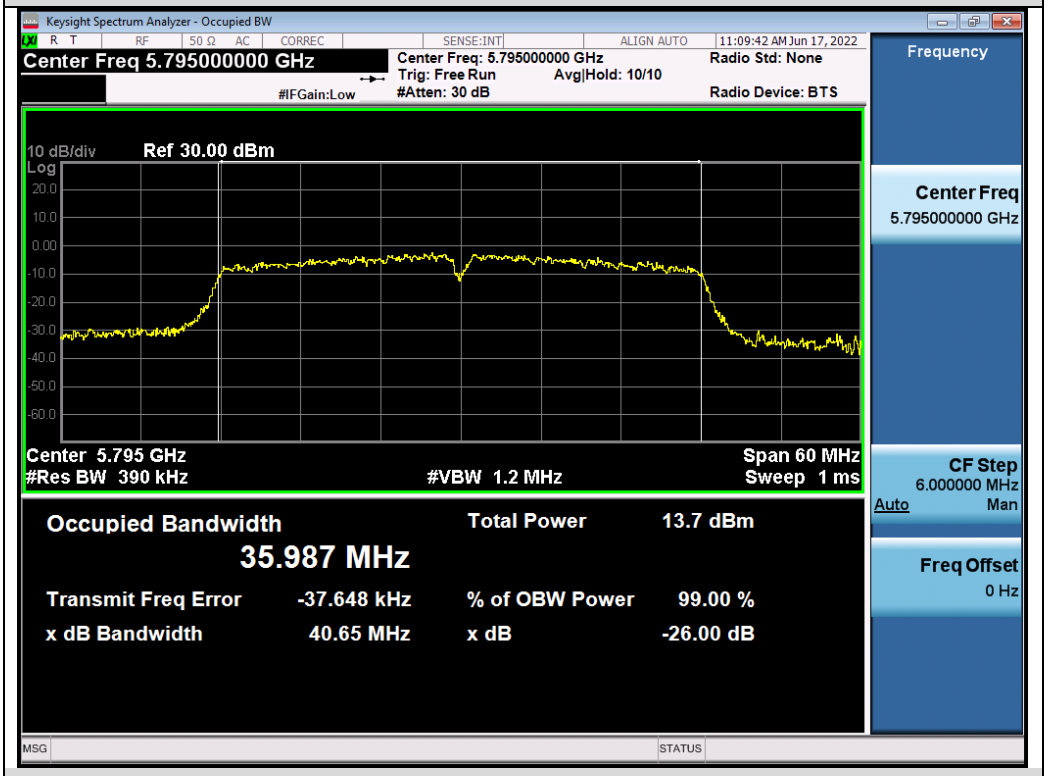
Test_Graph_802.11n20_ANT1_5785_MCS0_OBW



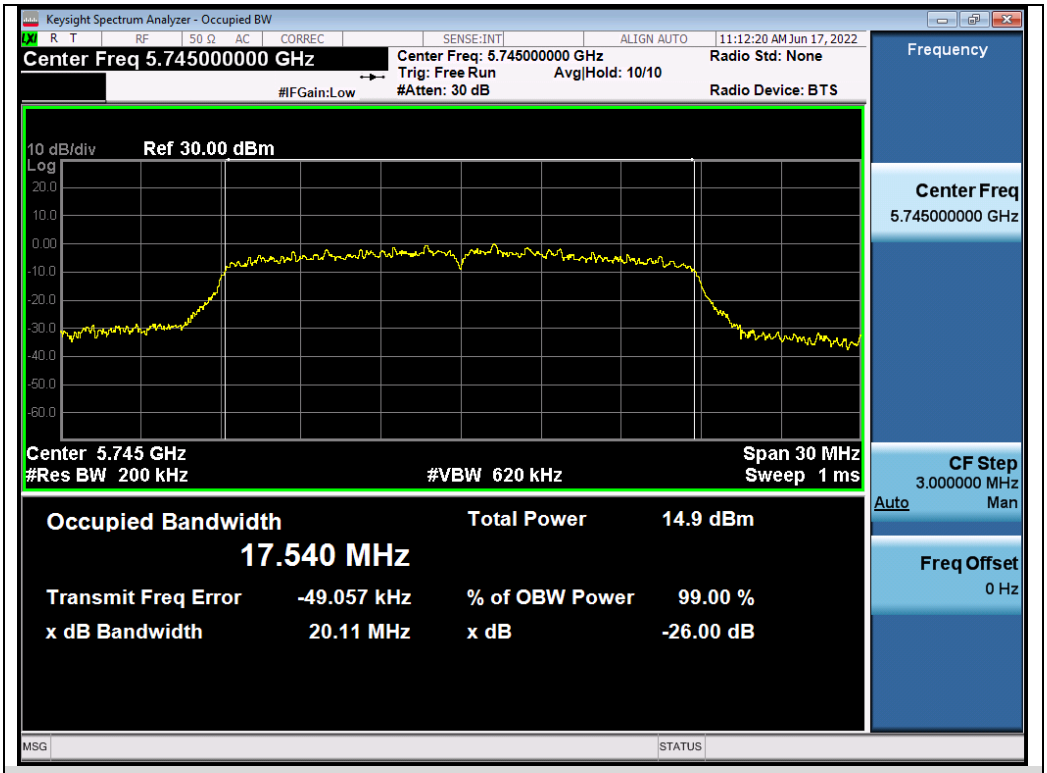
Test_Graph_802.11n20_ANT1_5825_MCS0_OBW



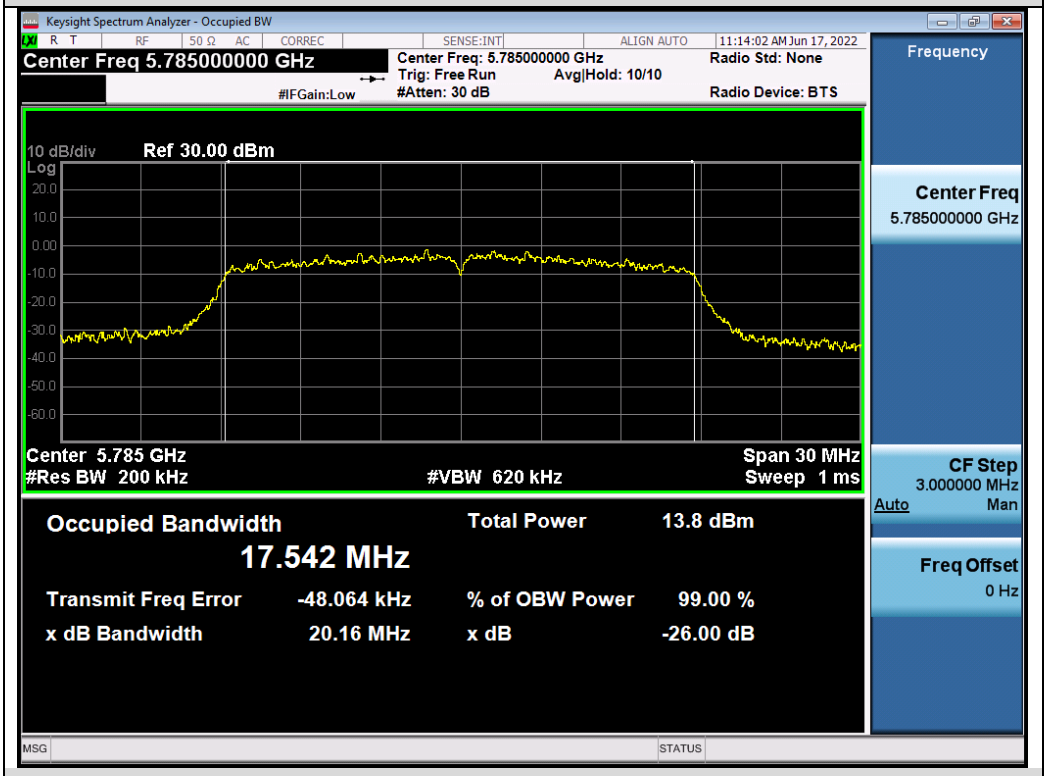
Test_Graph_802.11n40_ANT1_5755_MCS0_OBW



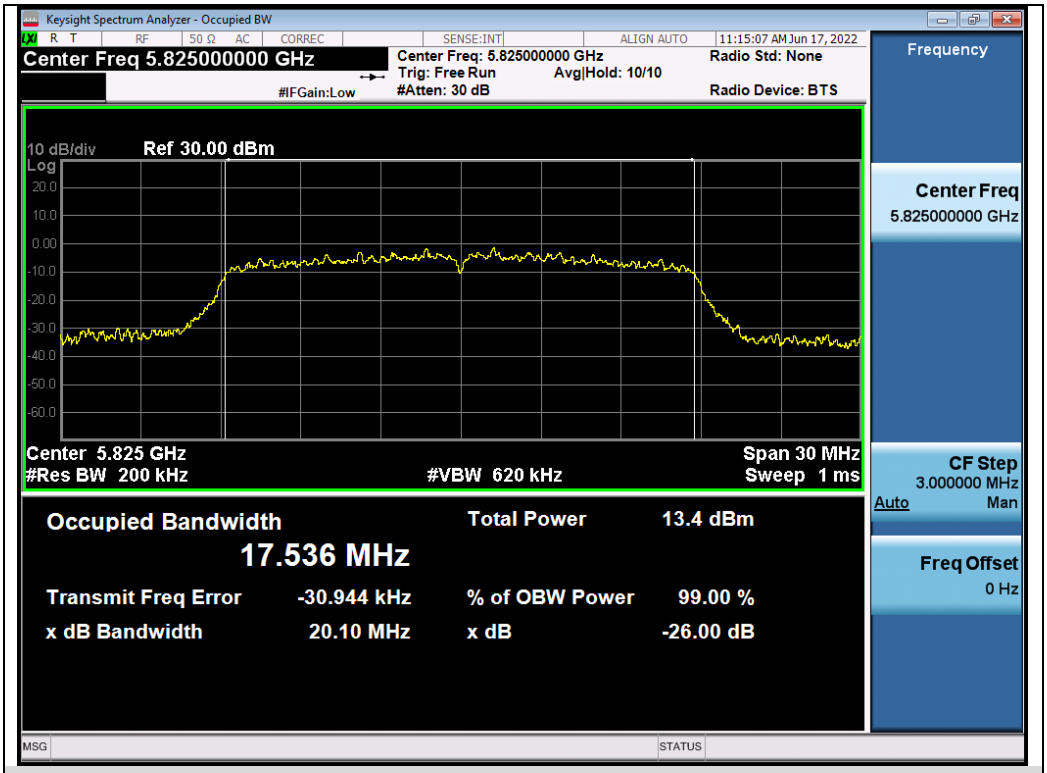
Test_Graph_802.11n40_ANT1_5795_MCS0_OBW



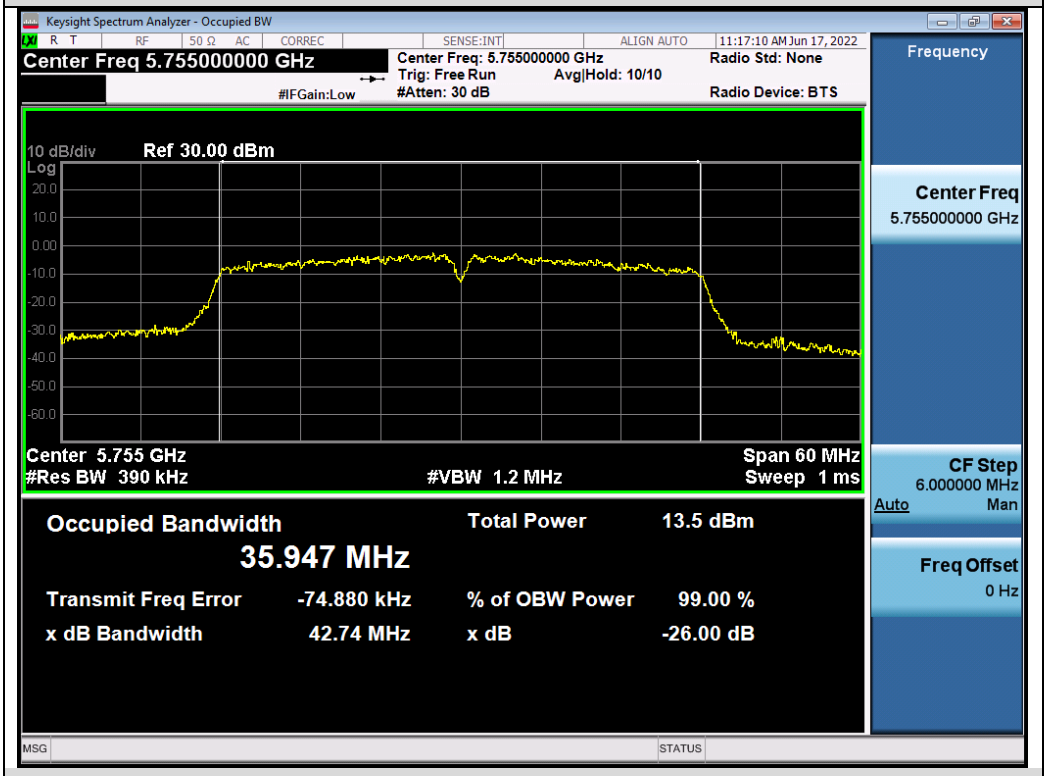
Test_Graph_802.11ac20_ANT1_5745_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5785_MCS0_OBW

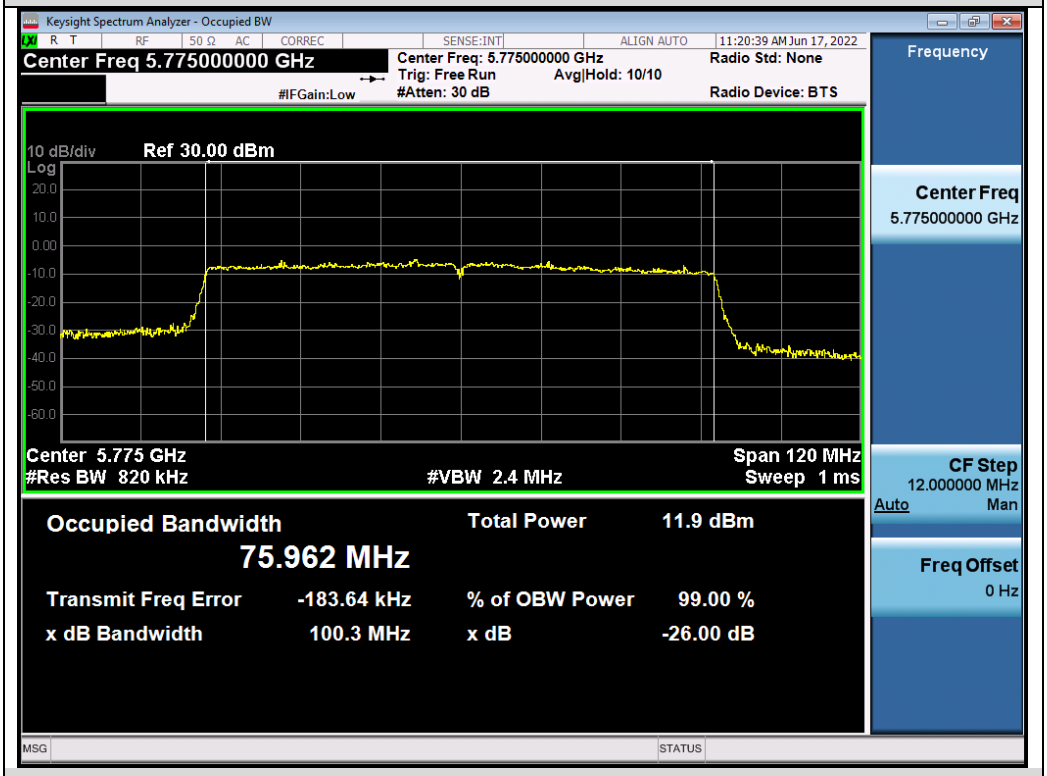


Test_Graph_802.11ac20_ANT1_5825_MCS9_OBW



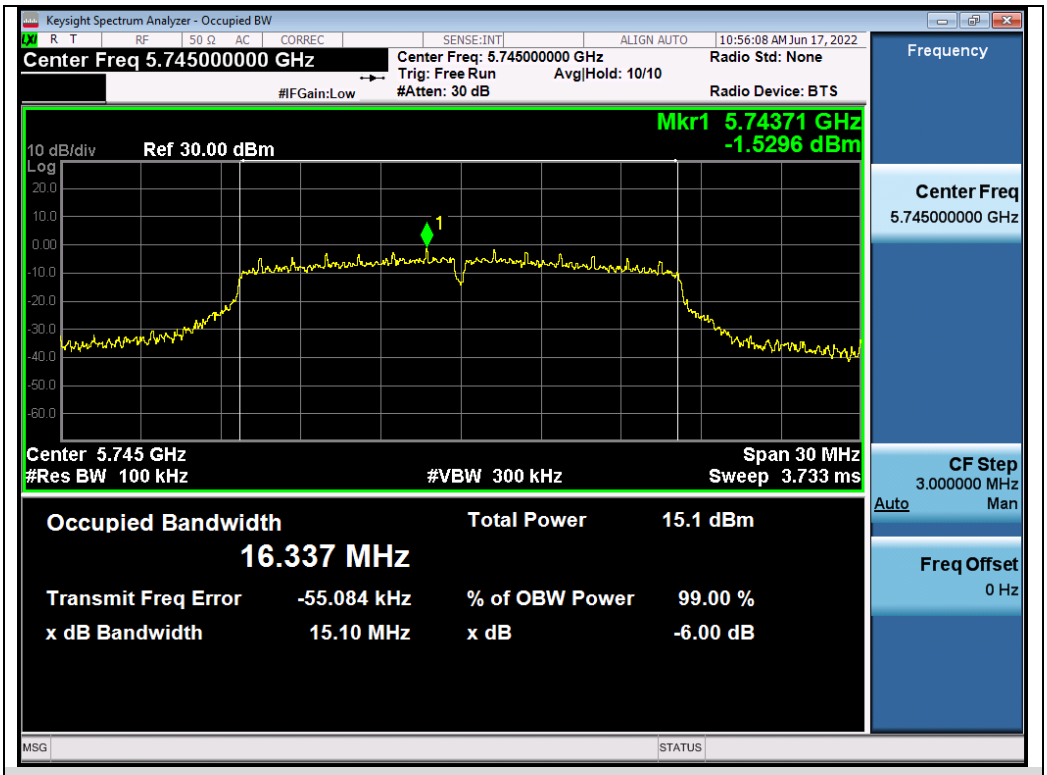
Test_Graph_802.11ac40_ANT1_5755_MCS9_OBW

Test_Graph_802.11ac40_ANT1_5795_MCS9_OBW

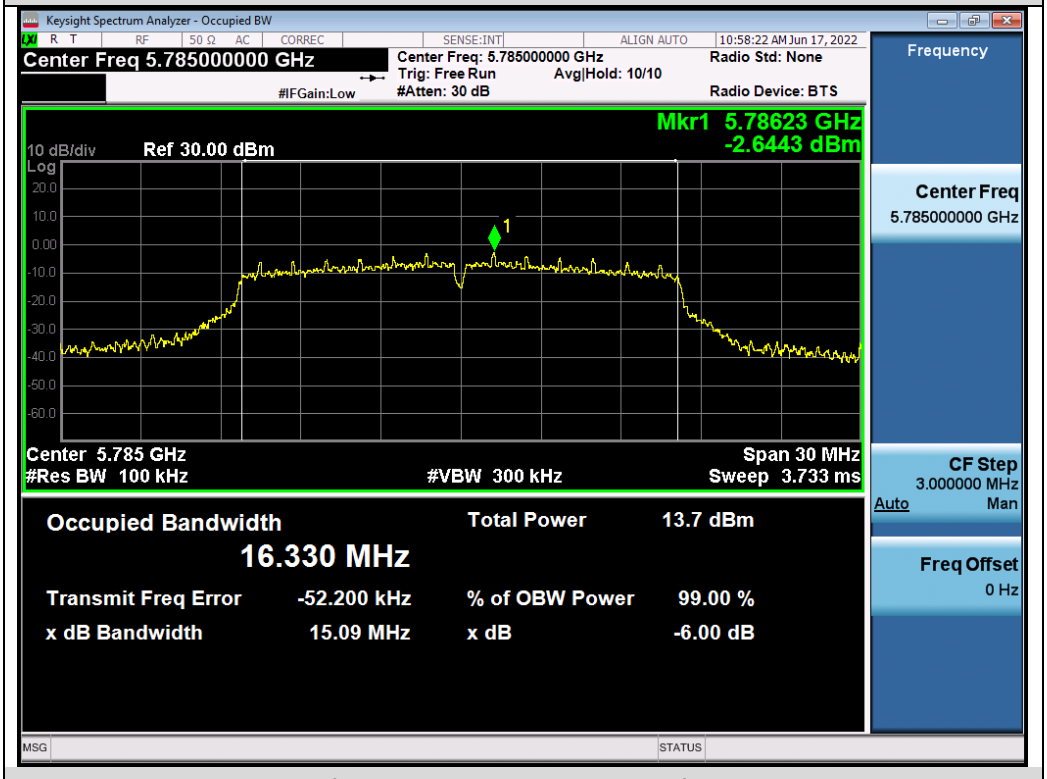


Test_Graph_802.11ac80_ANT1_5775_MCS9_OBW

Test Graphs of DTS Bandwidth for band 5.725-5.85 GHz

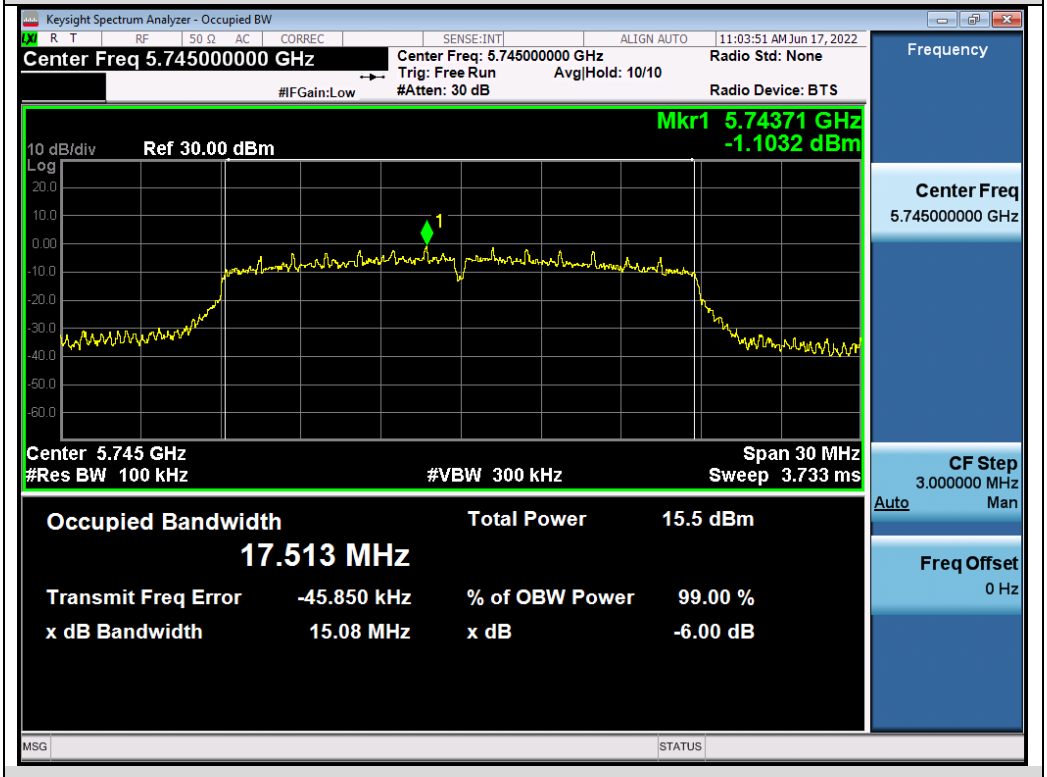


Test_Graph_802.11a_ANT1_5745_6Mbps_DTSBW

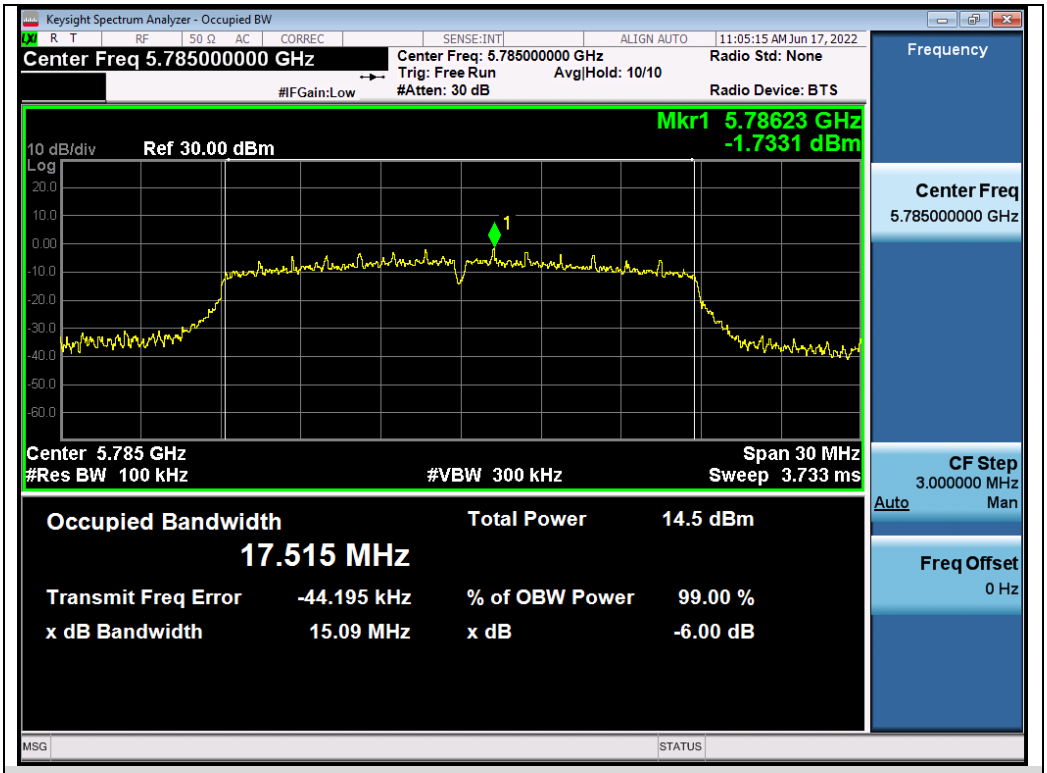


Test_Graph_802.11a_ANT1_5785_6Mbps_DTSBW

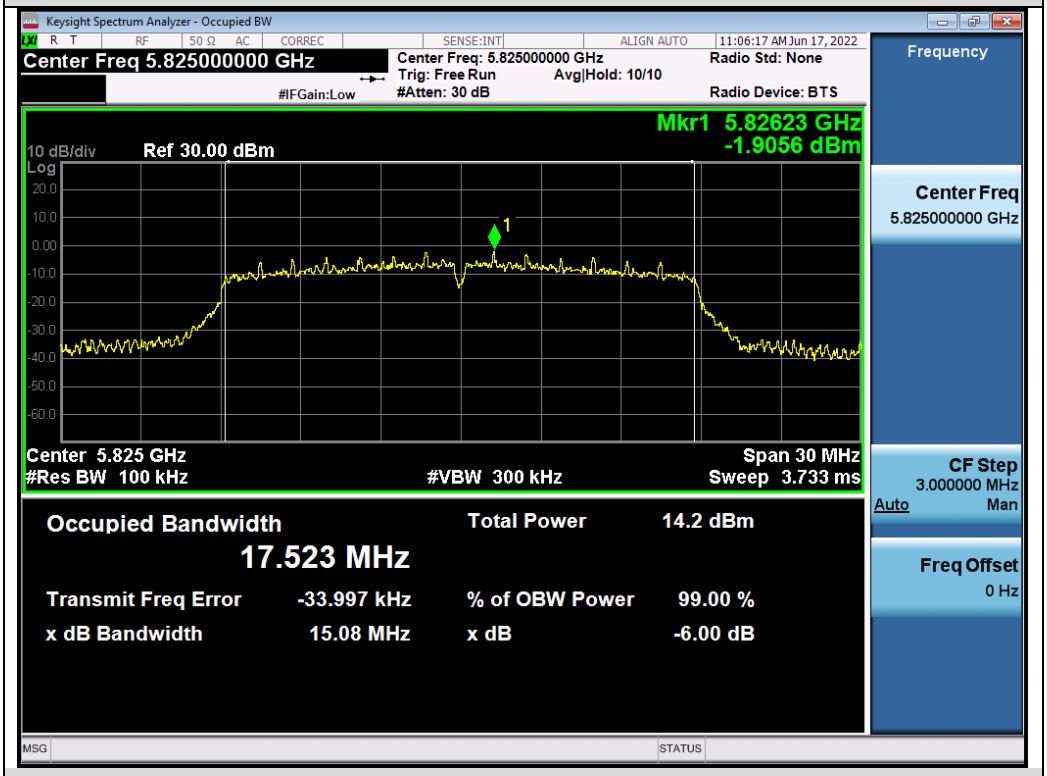
Test_Graph_802.11a_ANT1_5825_6Mbps_DTSBW



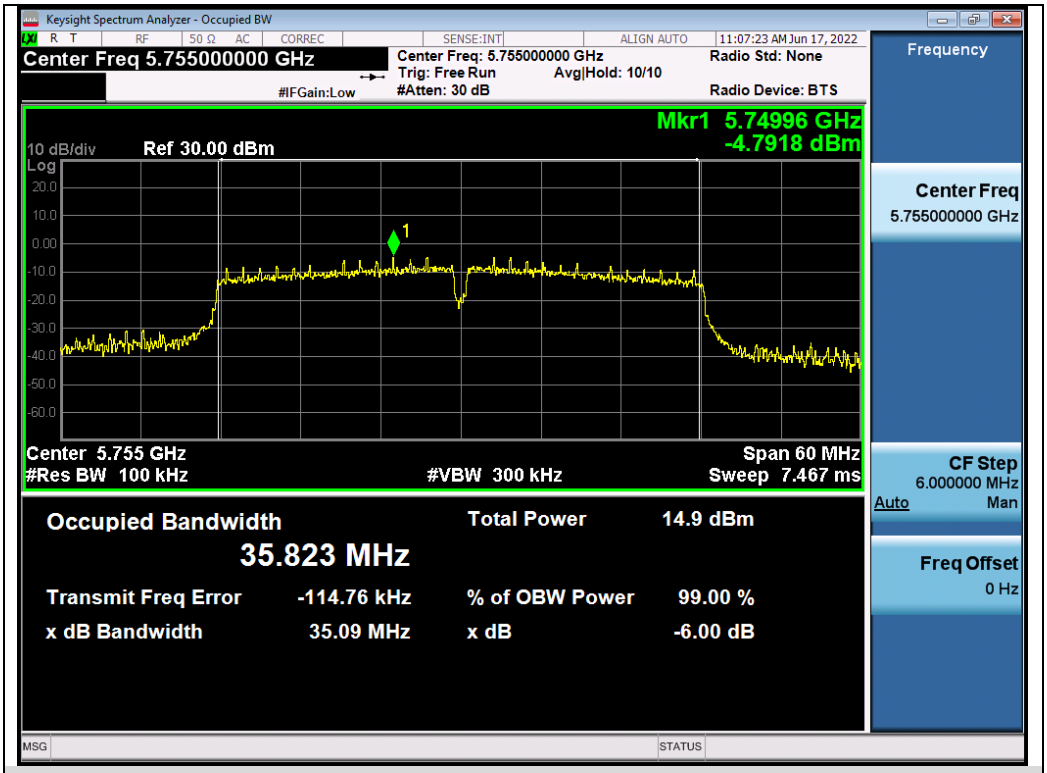
Test_Graph_802.11n20_ANT1_5745_MCS0_DTSBW



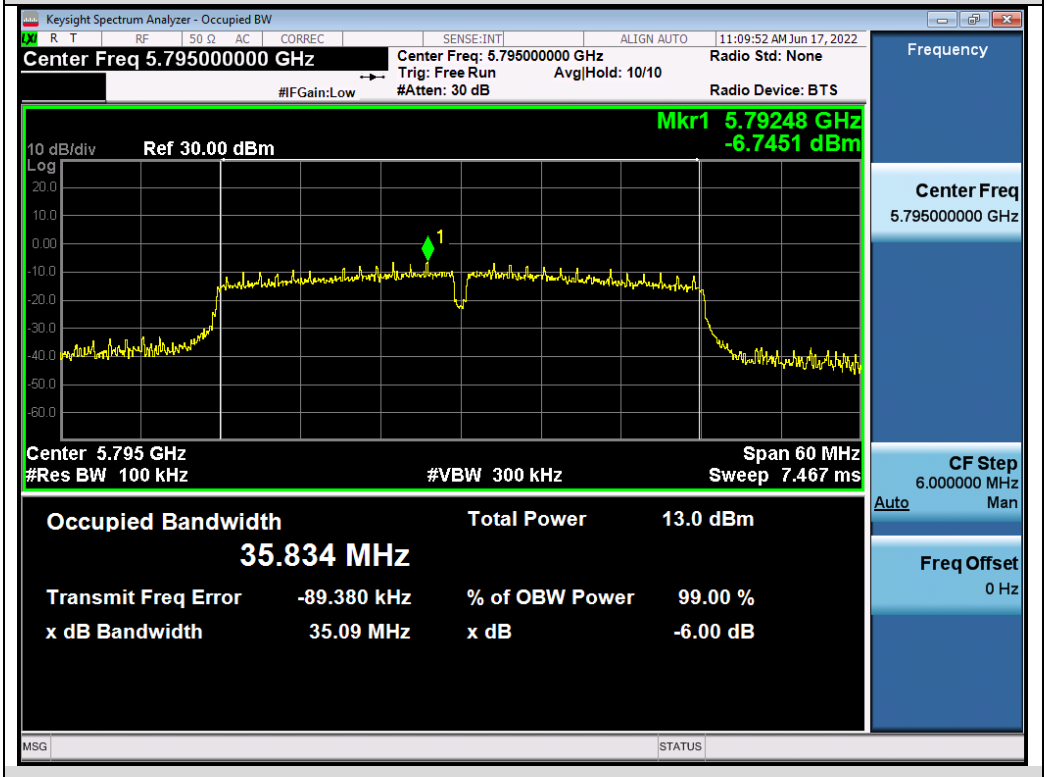
Test_Graph_802.11n20_ANT1_5785_MCS0_DTSBW



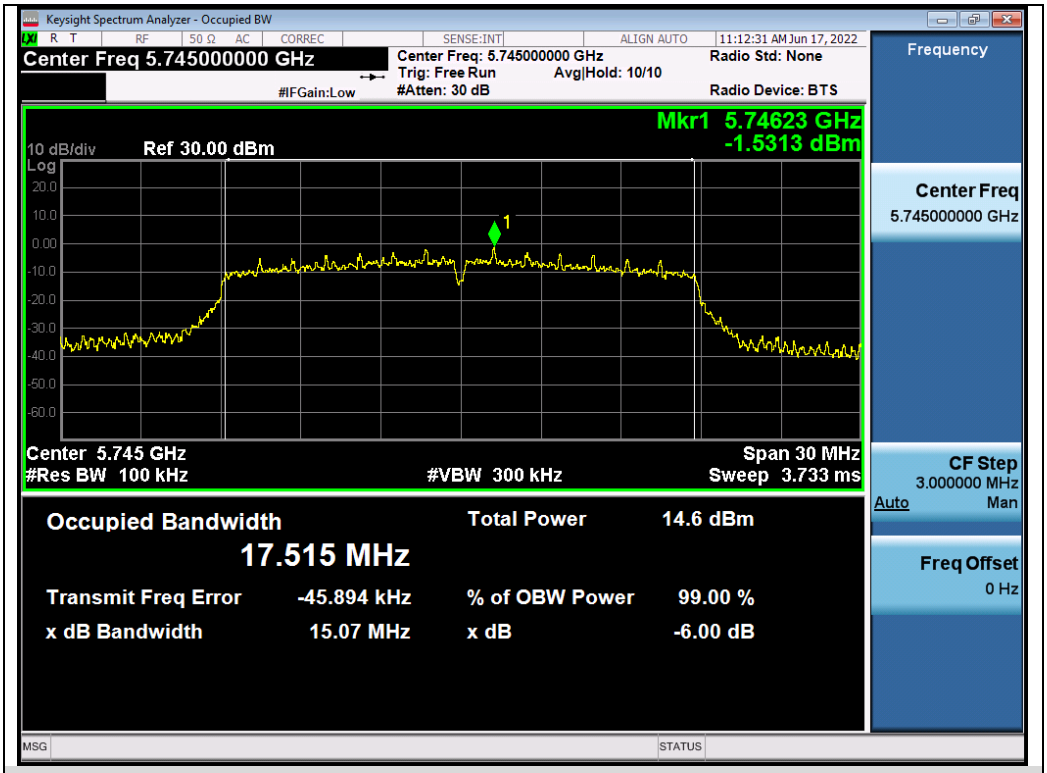
Test_Graph_802.11n20_ANT1_5825_MCS0_DTSBW



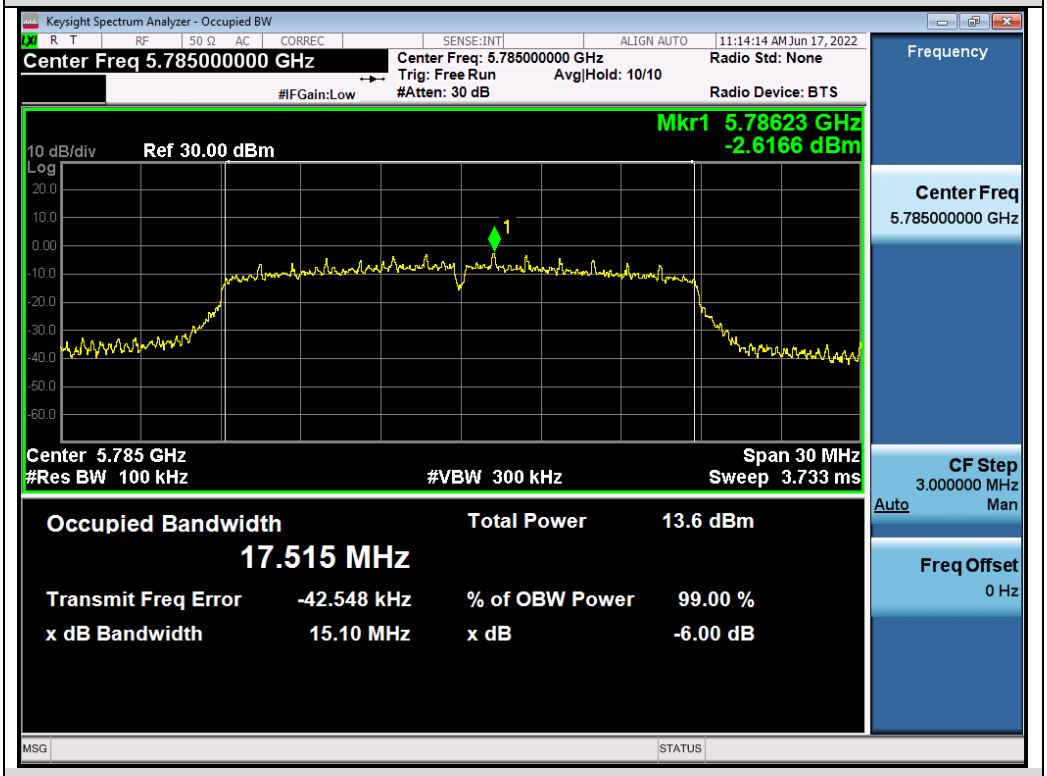
Test_Graph_802.11n40_ANT1_5755_MCS0_DTSBW



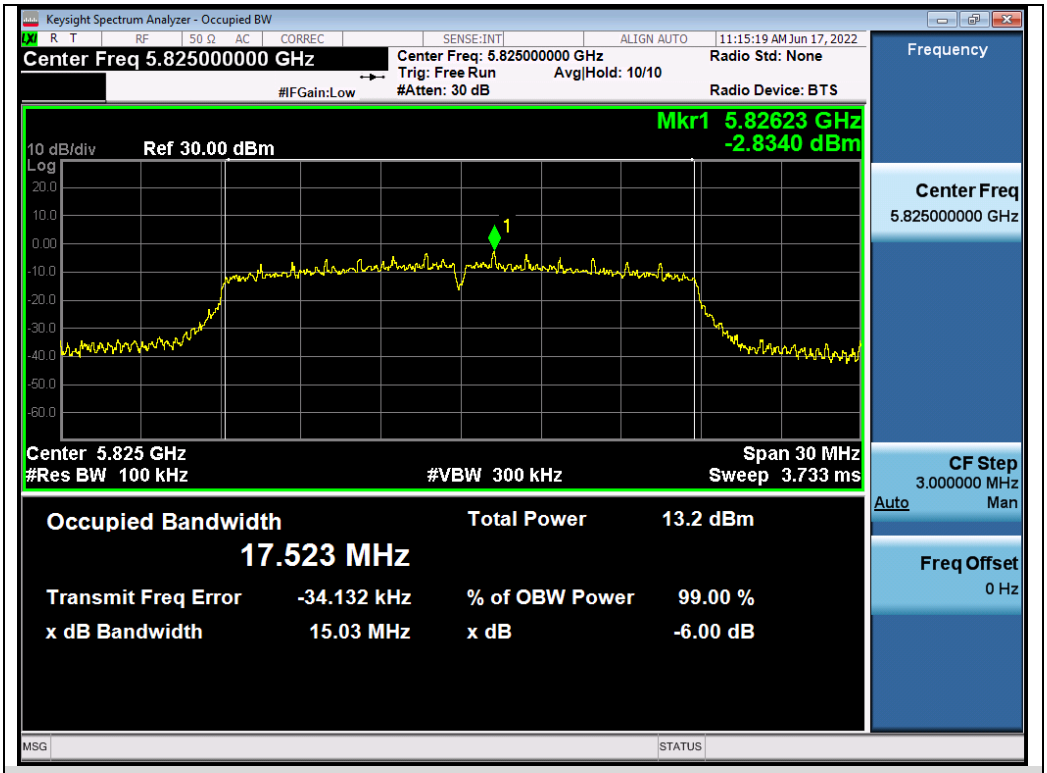
Test_Graph_802.11n40_ANT1_5795_MCS0_DTSBW



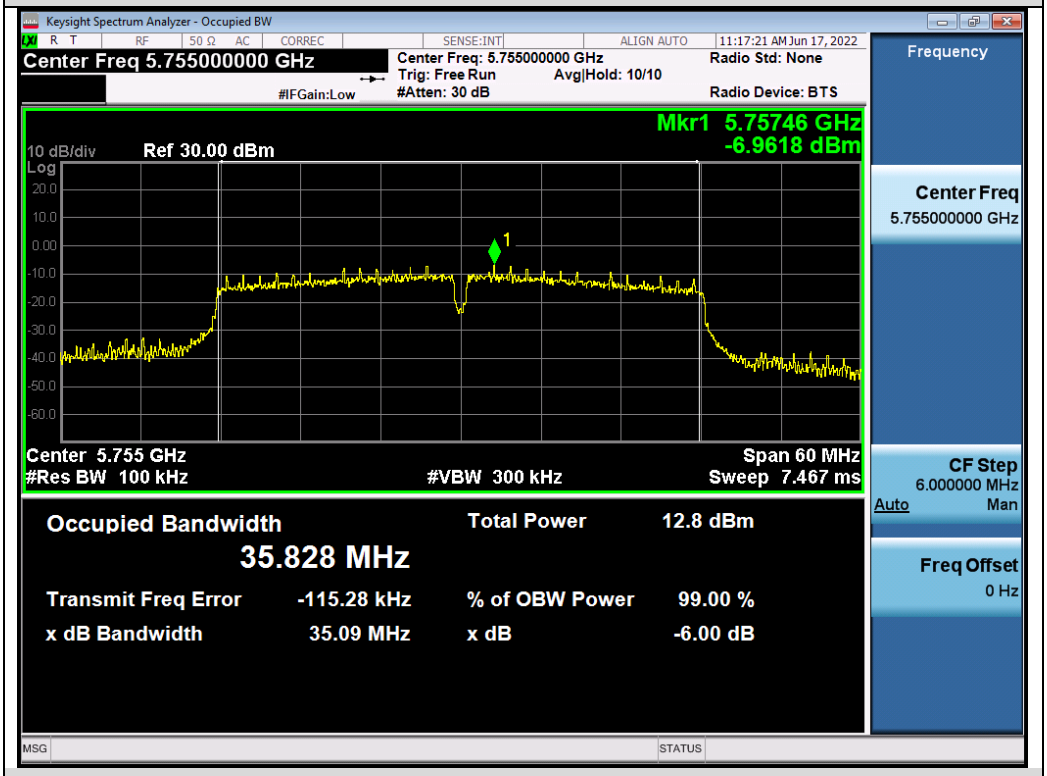
Test_Graph_802.11ac20_ANT1_5745_MCS0_DTSBW



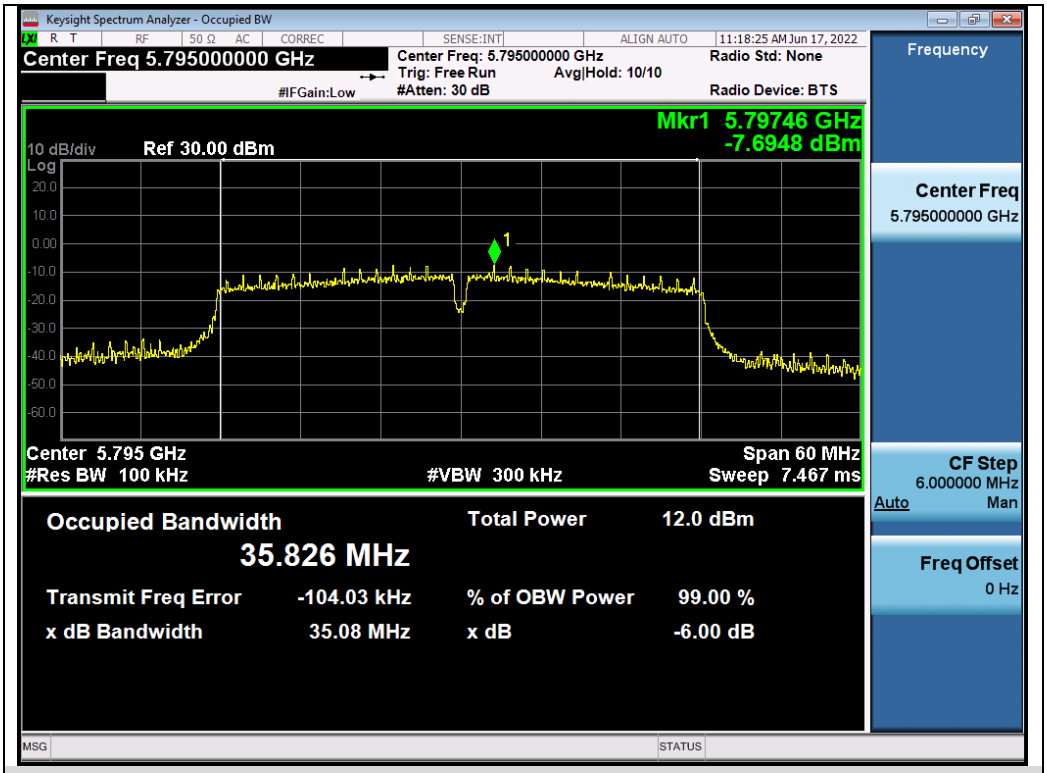
Test_Graph_802.11ac20_ANT1_5785_MCS0_DTSBW



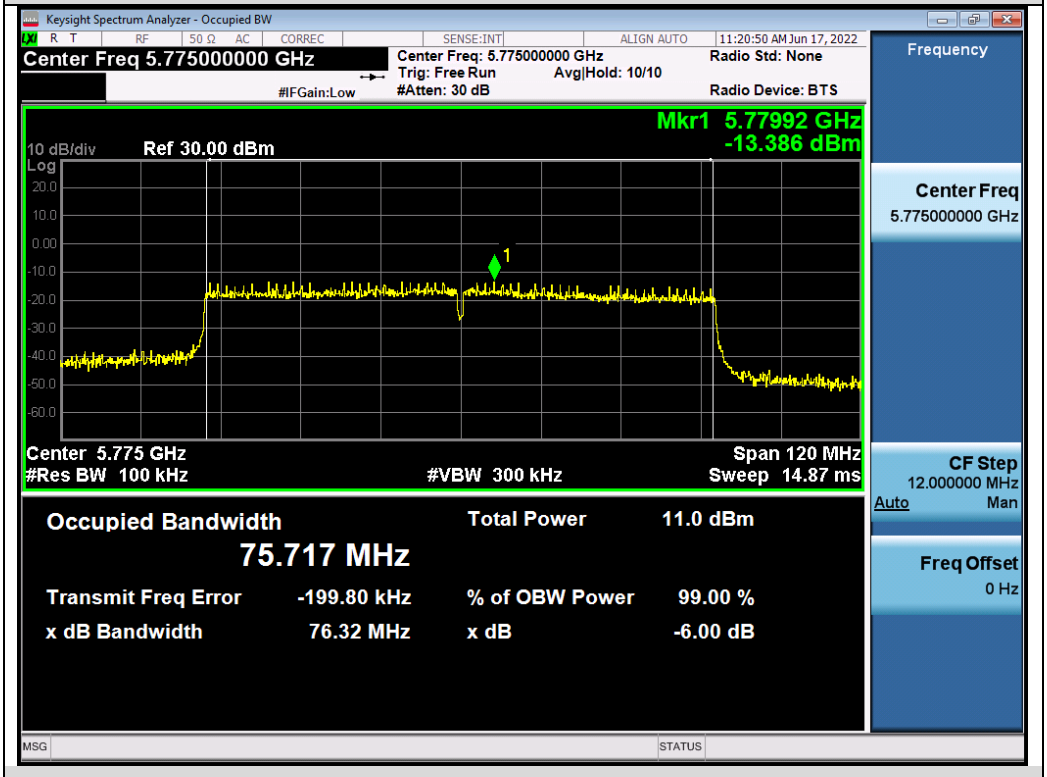
Test_Graph_802.11ac20_ANT1_5825_MCS9_DTSBW



Test_Graph_802.11ac40_ANT1_5755_MCS9_DTSBW



Test_Graph_802.11ac40_ANT1_5795_MCS9_DTSBW



Test_Graph_802.11ac80_ANT1_5775_MCS9_DTSBW

9. MAXIMUM CONDUCTED OUTPUT AVERAGE POWER SPECTRAL DENSITY

9.1. MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

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

Refer to Section 8.2.

9.3. MEASUREMENT EQUIPMENT USED

Refer to Section 6.

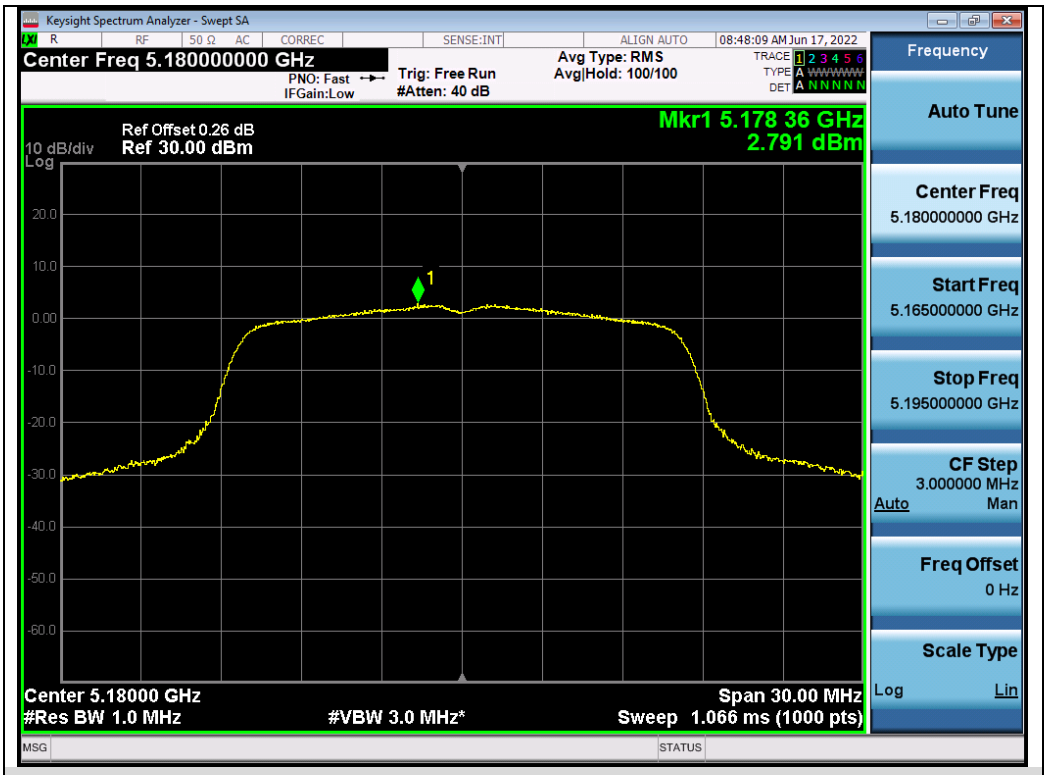
9.4. LIMITS AND MEASUREMENT RESULT

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	2.791	11	Pass
	5200	2.314	11	Pass
	5240	1.830	11	Pass
802.11n20	5180	2.095	11	Pass
	5200	1.800	11	Pass
	5240	1.023	11	Pass
802.11n40	5190	-1.746	11	Pass
	5230	-2.427	11	Pass
802.11ac20	5180	1.406	11	Pass
	5200	0.578	11	Pass
	5240	0.206	11	Pass
802.11ac40	5190	-2.706	11	Pass
	5230	-3.065	11	Pass
802.11ac80	5210	-6.386	11	Pass

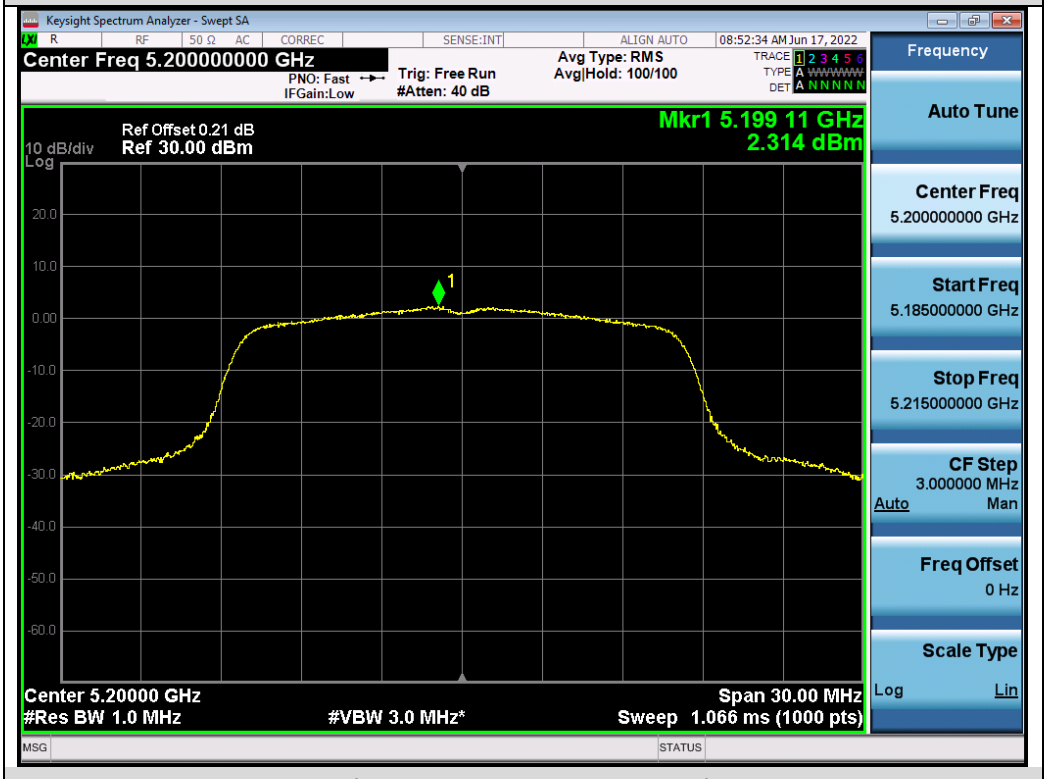
Test Data of Conducted Output Power Density for band 5.725-5.85 GHz					
Test Mode	Test Channel (MHz)	Average Power Density (dBm/100kHz)	Average Power Density (dBm/500kHz)	Limits (dBm/500kHz)	Pass or Fail
802.11a	5745	-9.431	-2.441	30	Pass
	5785	-10.791	-3.801	30	Pass
	5825	-10.267	-3.277	30	Pass
802.11n20	5745	-9.117	-2.127	30	Pass
	5785	-9.993	-3.003	30	Pass
	5825	-10.484	-3.494	30	Pass
802.11n40	5755	-12.051	-5.061	30	Pass
	5795	-14.172	-7.182	30	Pass
802.11ac20	5745	-9.726	-2.736	30	Pass
	5785	-10.681	-3.691	30	Pass
	5825	-11.104	-4.114	30	Pass
802.11ac40	5755	-14.128	-7.138	30	Pass
	5795	-15.080	-8.090	30	Pass
802.11ac80	5775	-18.430	-11.440	30	Pass

Note:1. 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

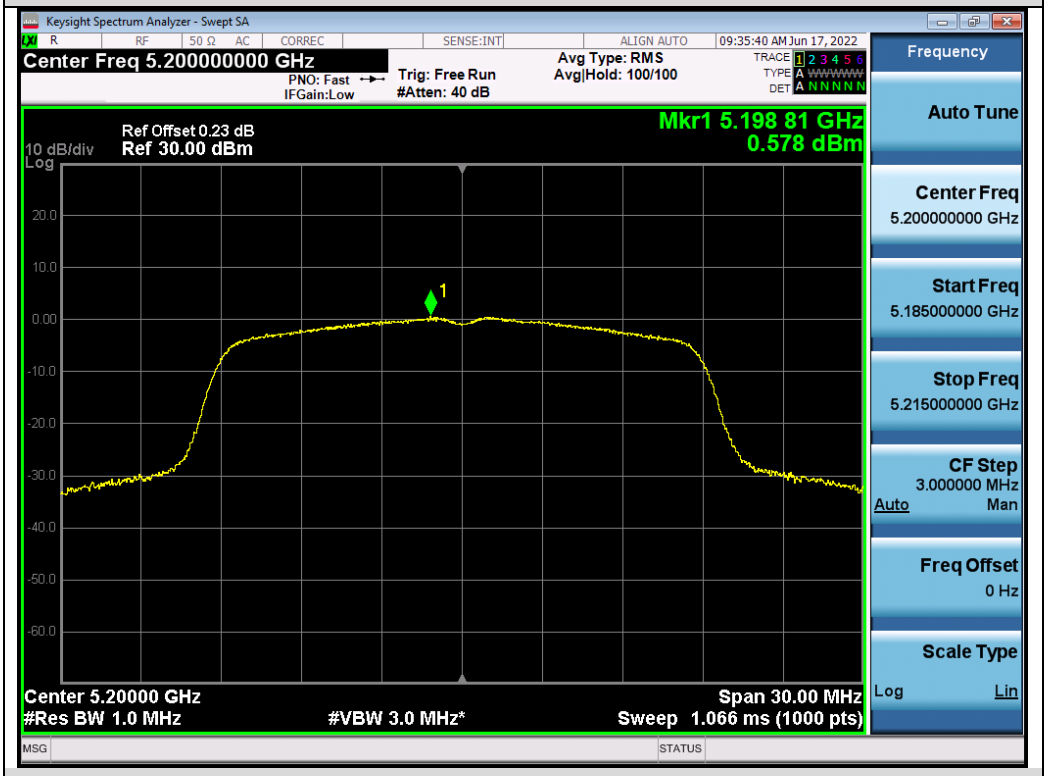
Test_Graph_802.11n20_ANT1_5200_MCS0_PSD

Test_Graph_802.11n20_ANT1_5240_MCS0_PSD

Test_Graph_802.11n40_ANT1_5190_MCS0_PSD

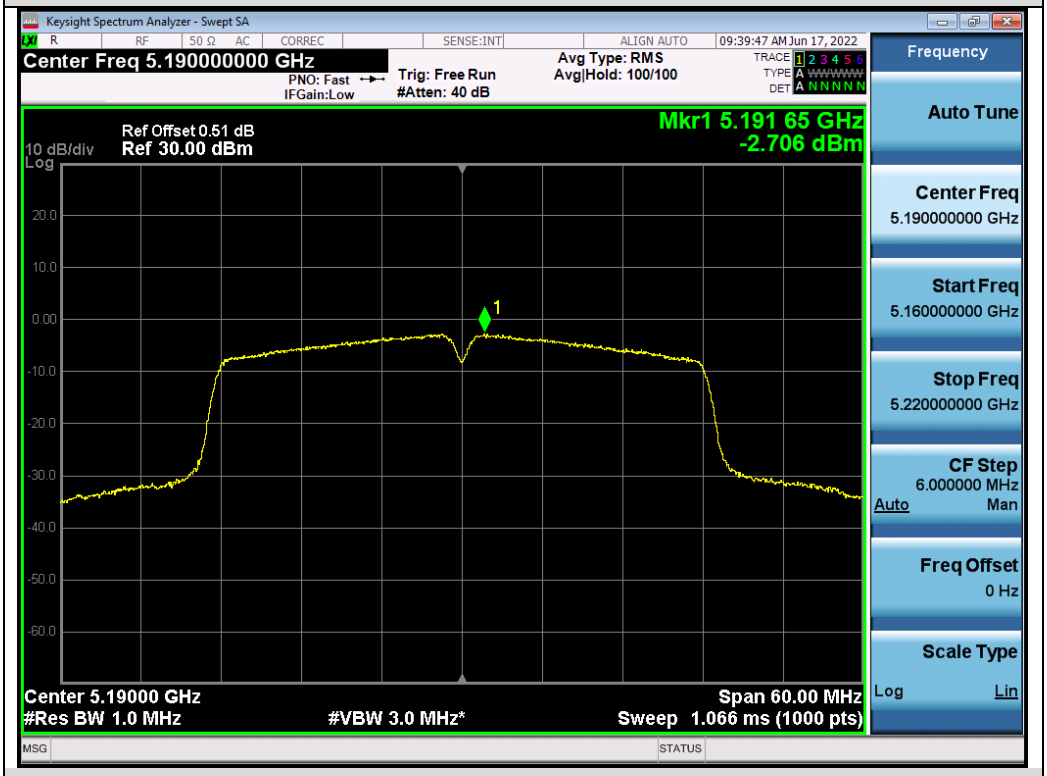
Test_Graph_802.11n40_ANT1_5230_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5180_MCS0_PSD



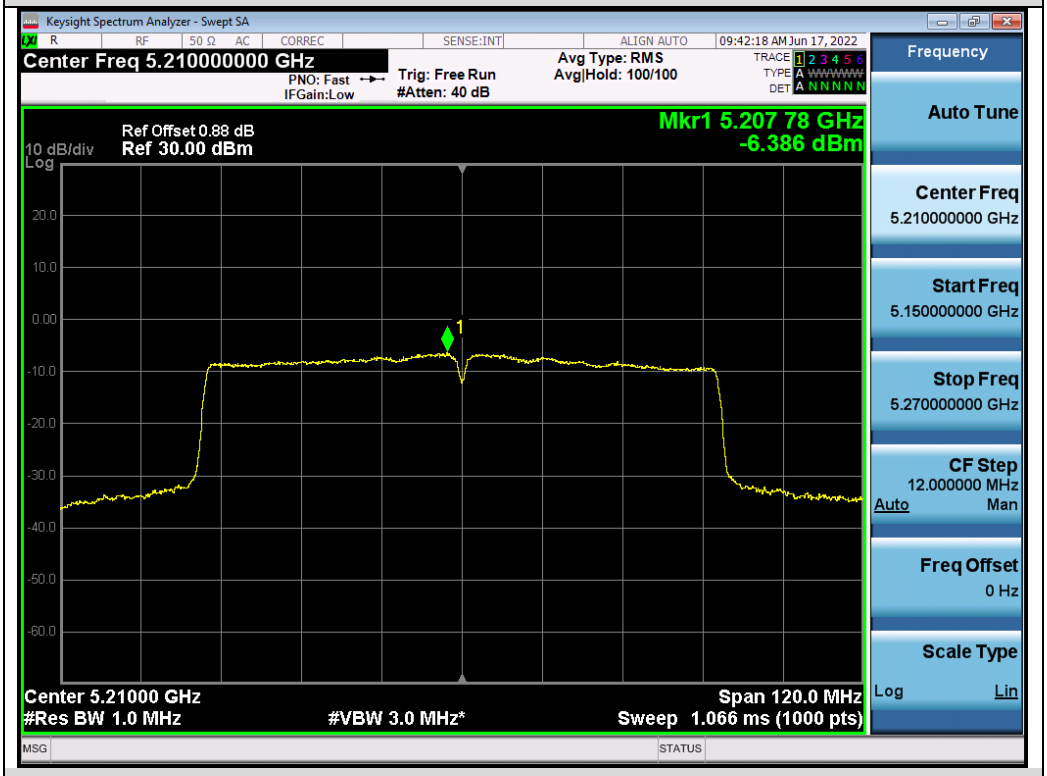
Test_Graph_802.11ac20_ANT1_5200_MCS0_PSD

Test_Graph_802.11ac20_ANT1_5240_MCS9_PSD



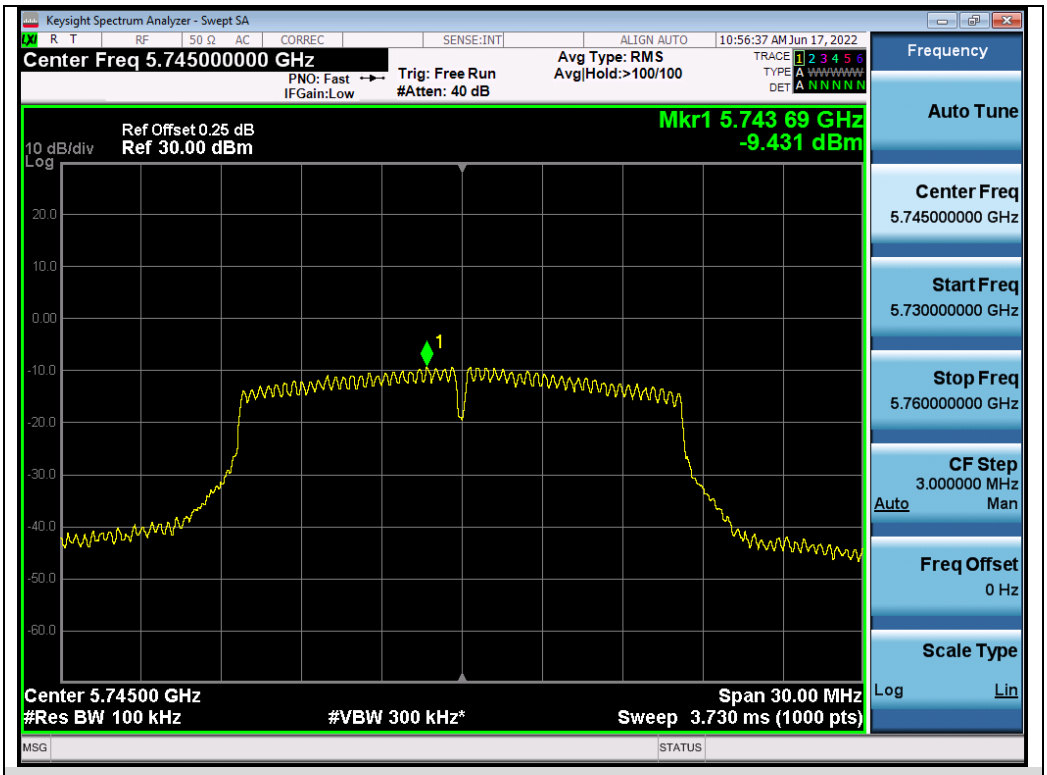
Test_Graph_802.11ac40_ANT1_5190_MCS9_PSD

Test_Graph_802.11ac40_ANT1_5230_MCS9_PSD

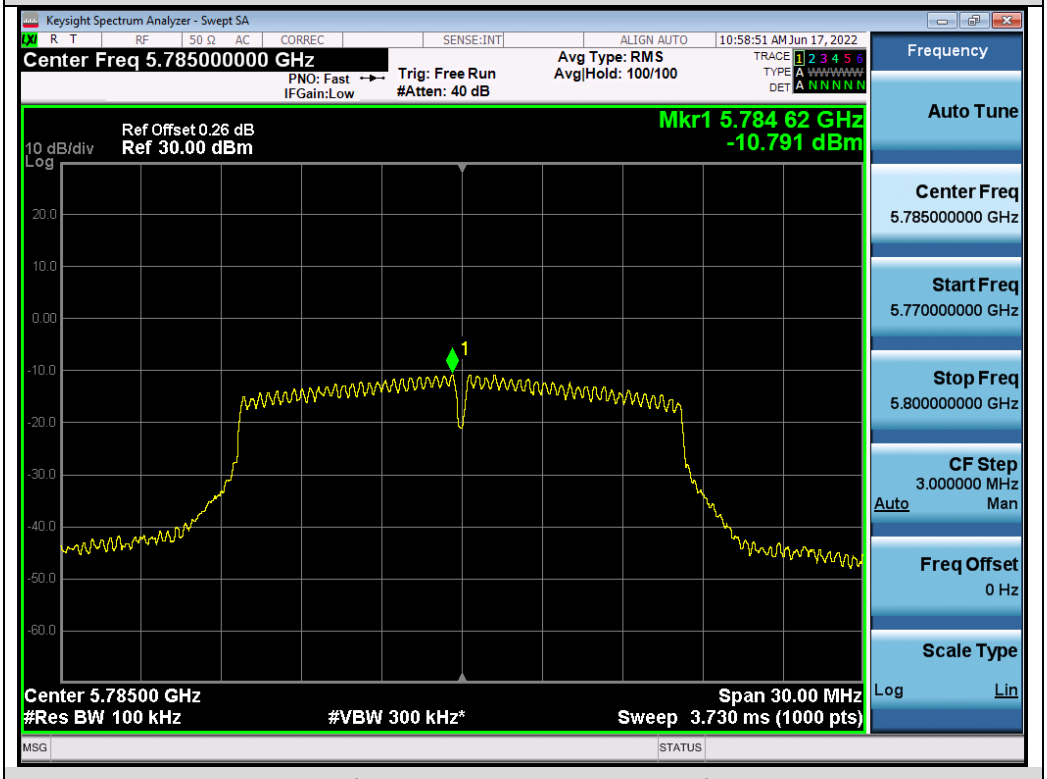


Test_Graph_802.11ac80_ANT1_5210_MCS9_PSD

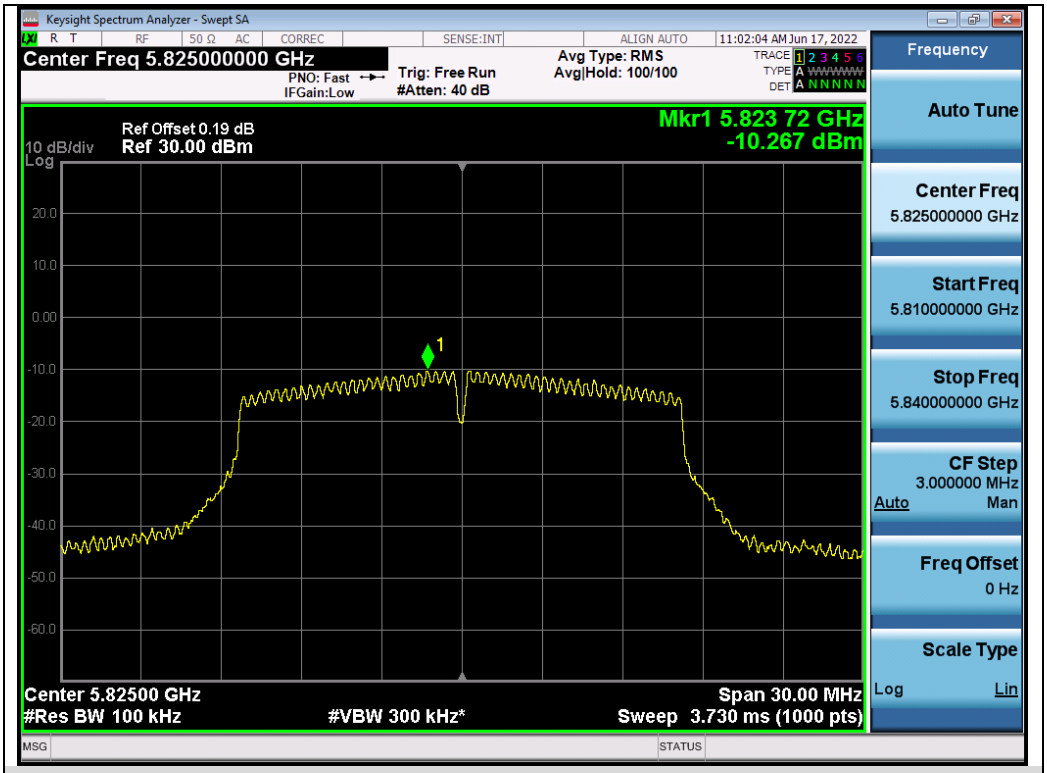
Test Graphs of Conducted Output Power Spectral Density for band 5.725-5.85 GHz



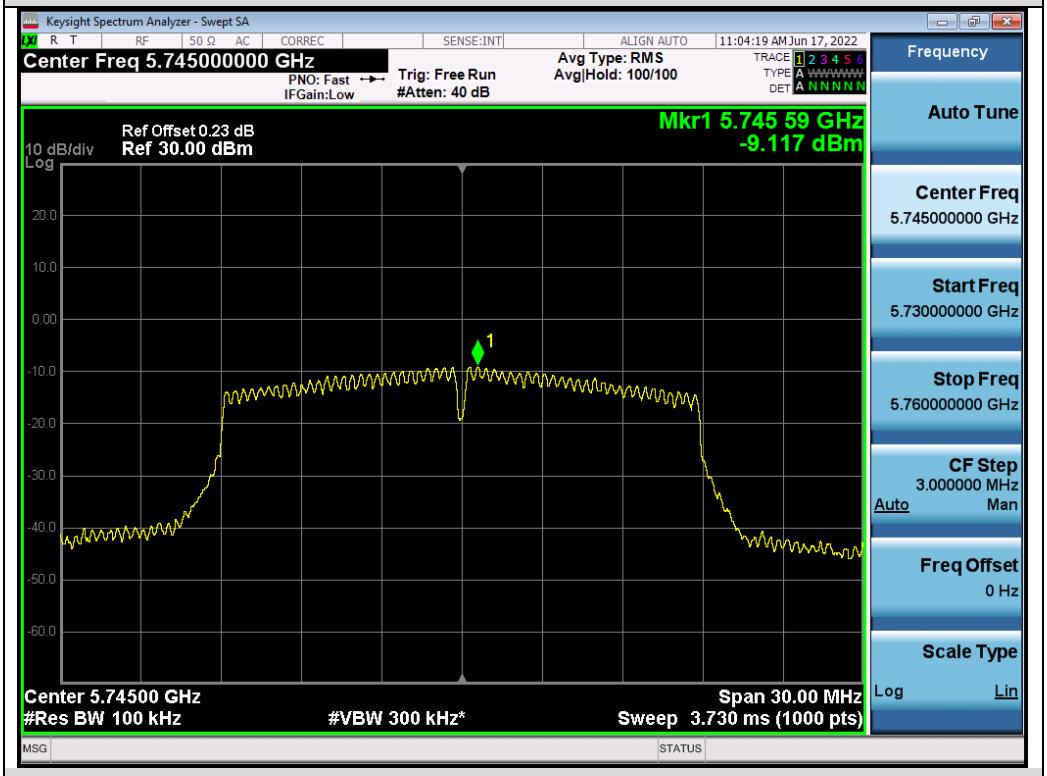
Test_Graph_802.11a_ANT1_5745_6Mbps_PSD



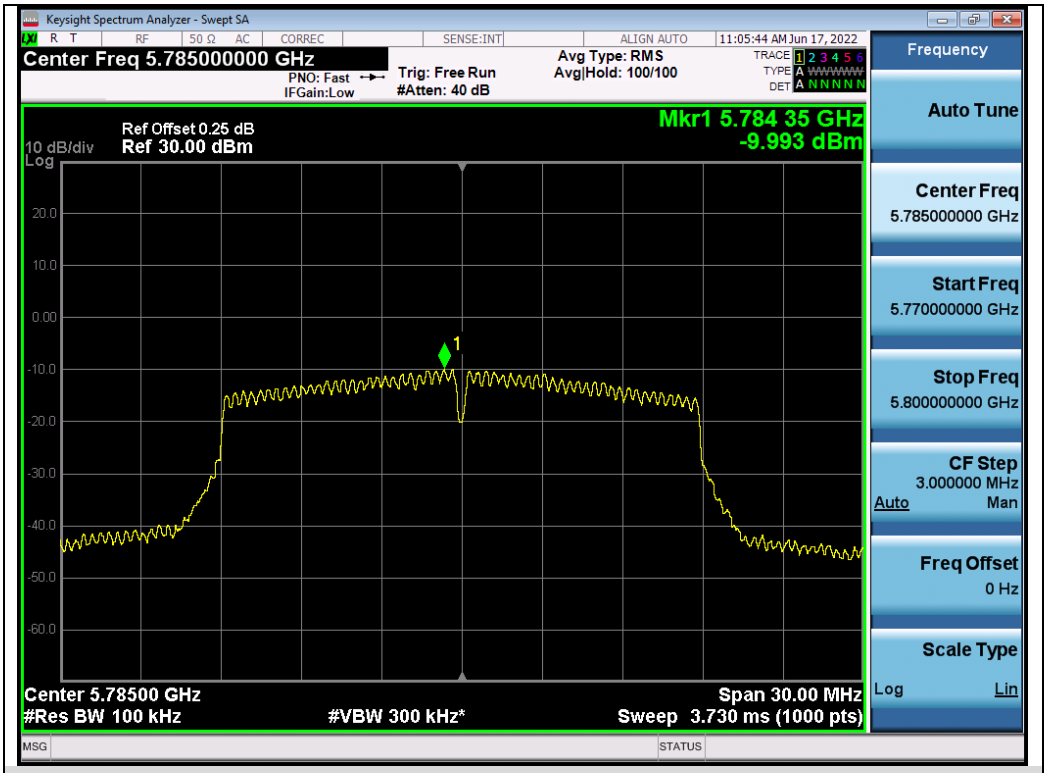
Test_Graph_802.11a_ANT1_5785_6Mbps_PSD



Test_Graph_802.11a_ANT1_5825_6Mbps_PSD



Test_Graph_802.11n20_ANT1_5745_MCS0_PSD



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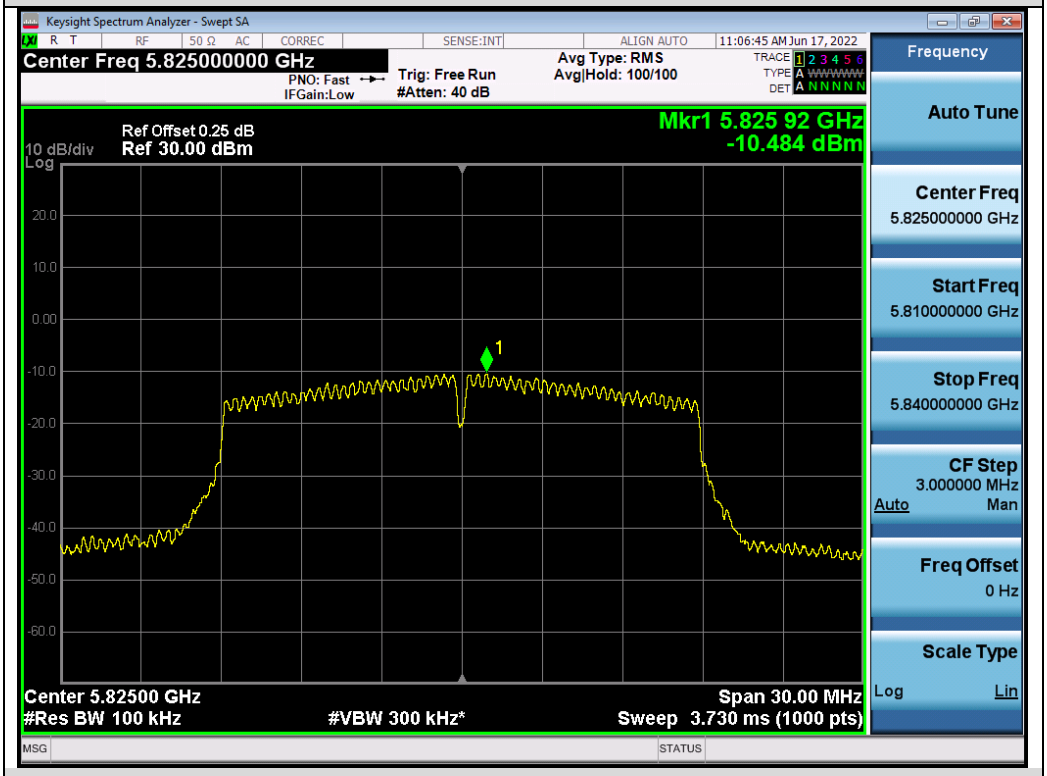
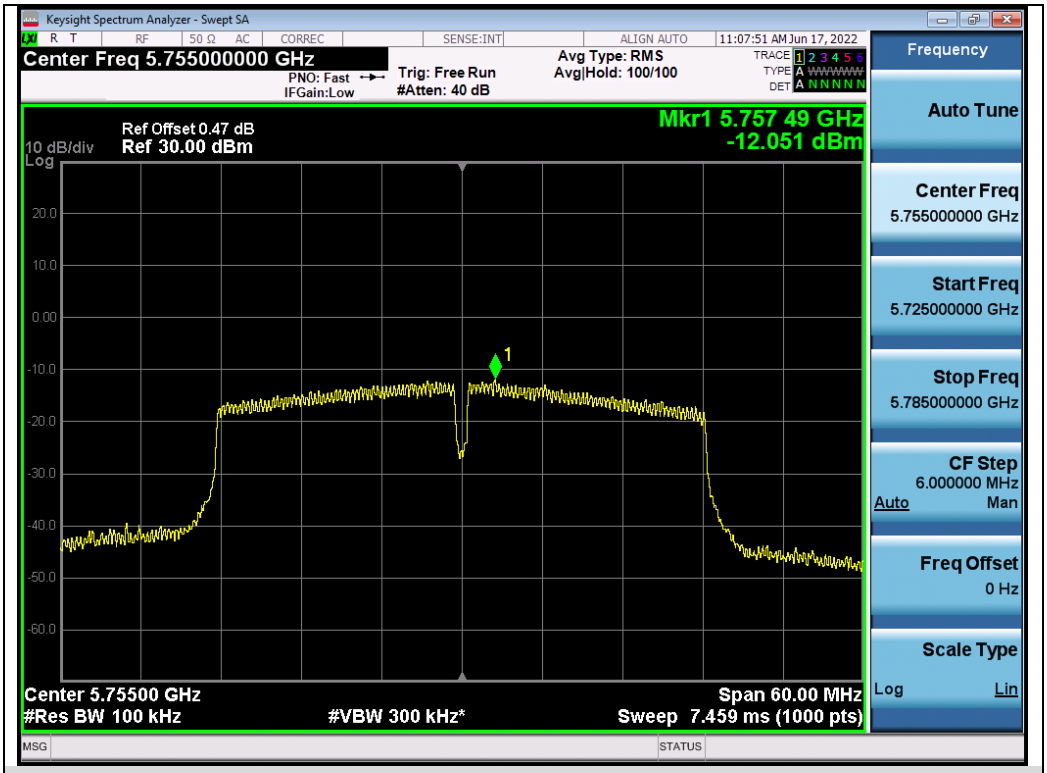
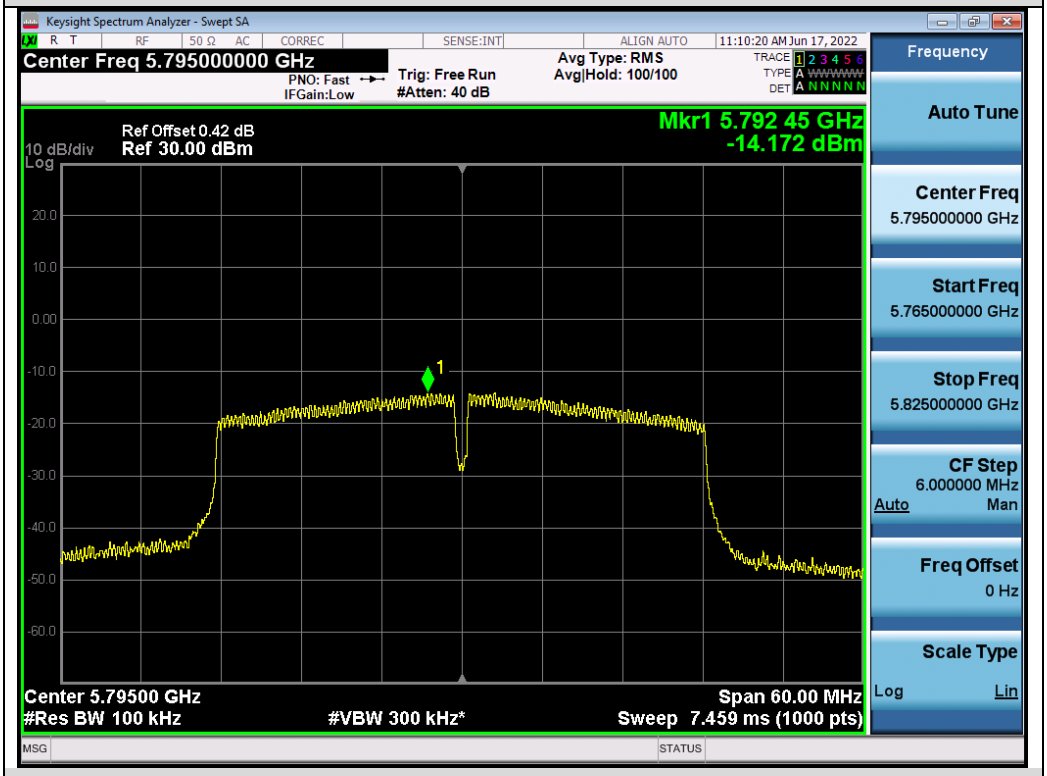


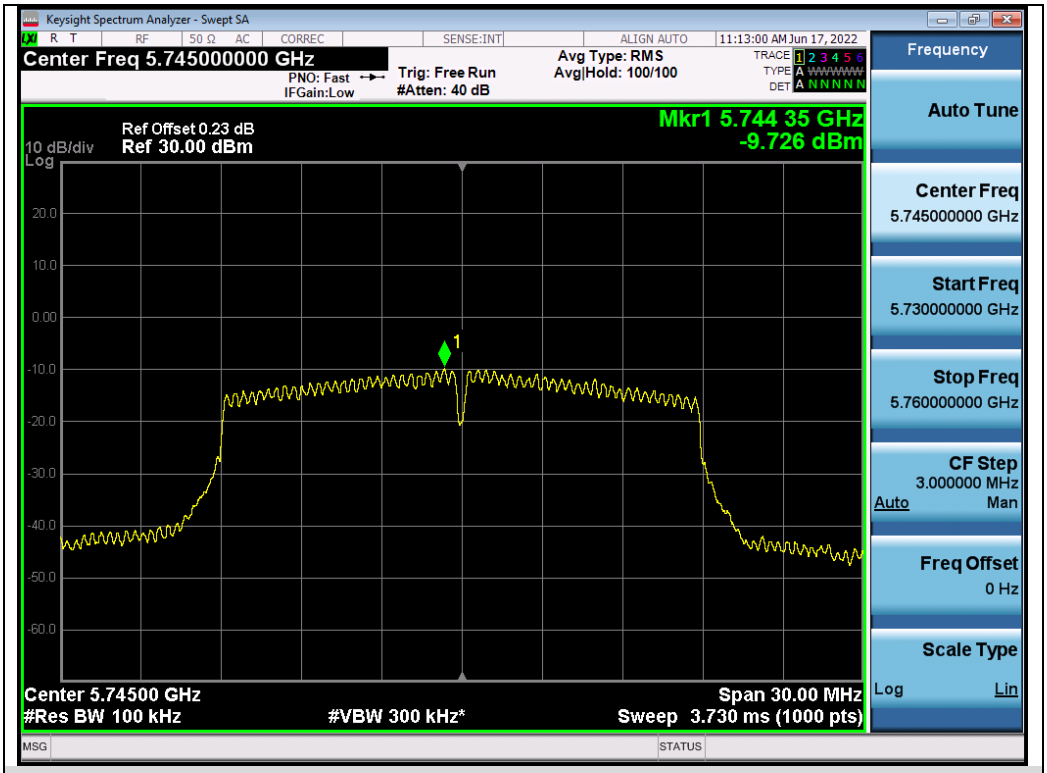
Test_Graph_802.11n20_ANT1_5825_MCS0_PSD



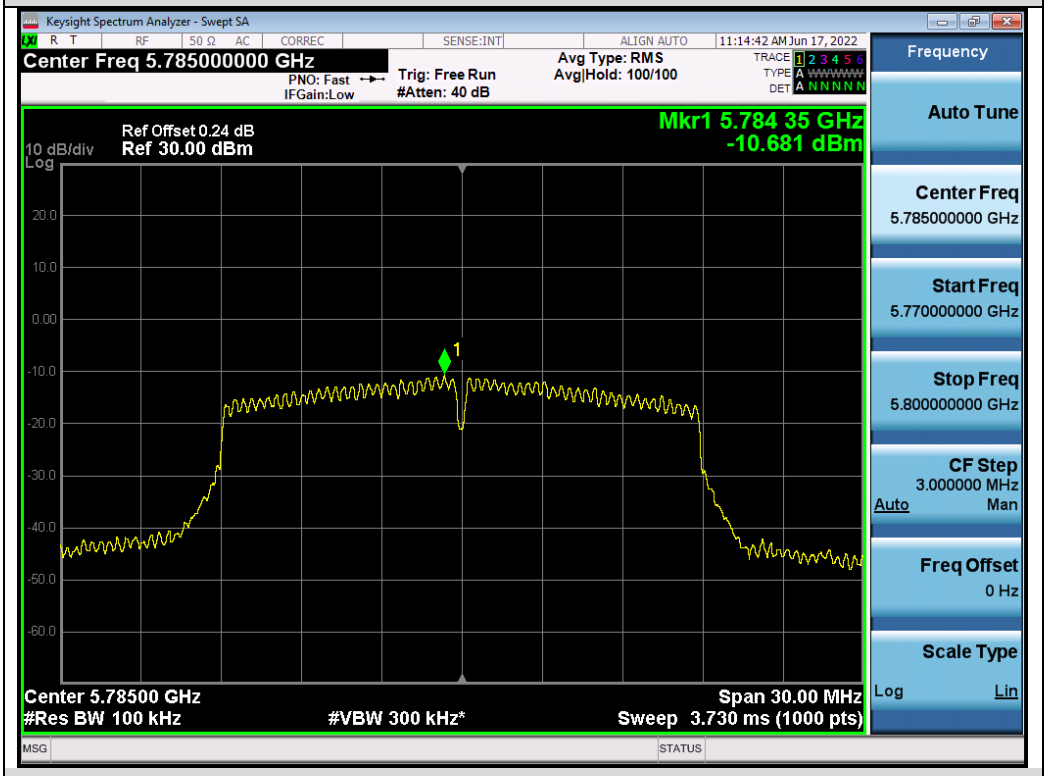
Test_Graph_802.11n40_ANT1_5755_MCS0_PSD



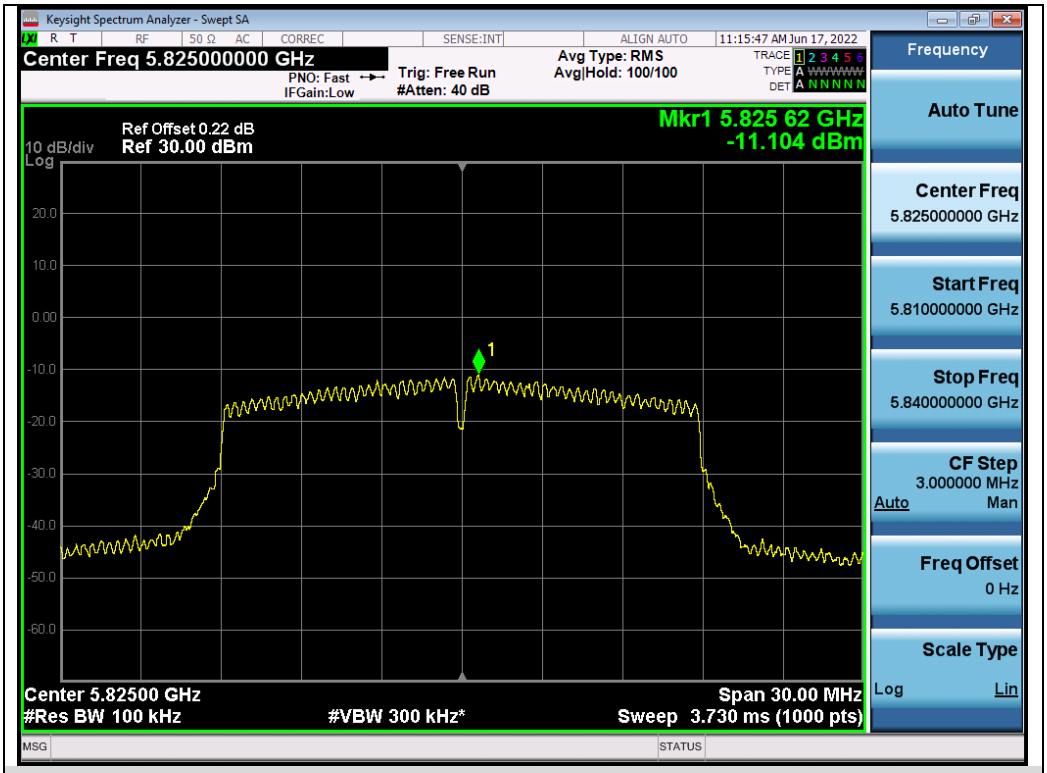
Test_Graph_802.11n40_ANT1_5795_MCS0_PSD



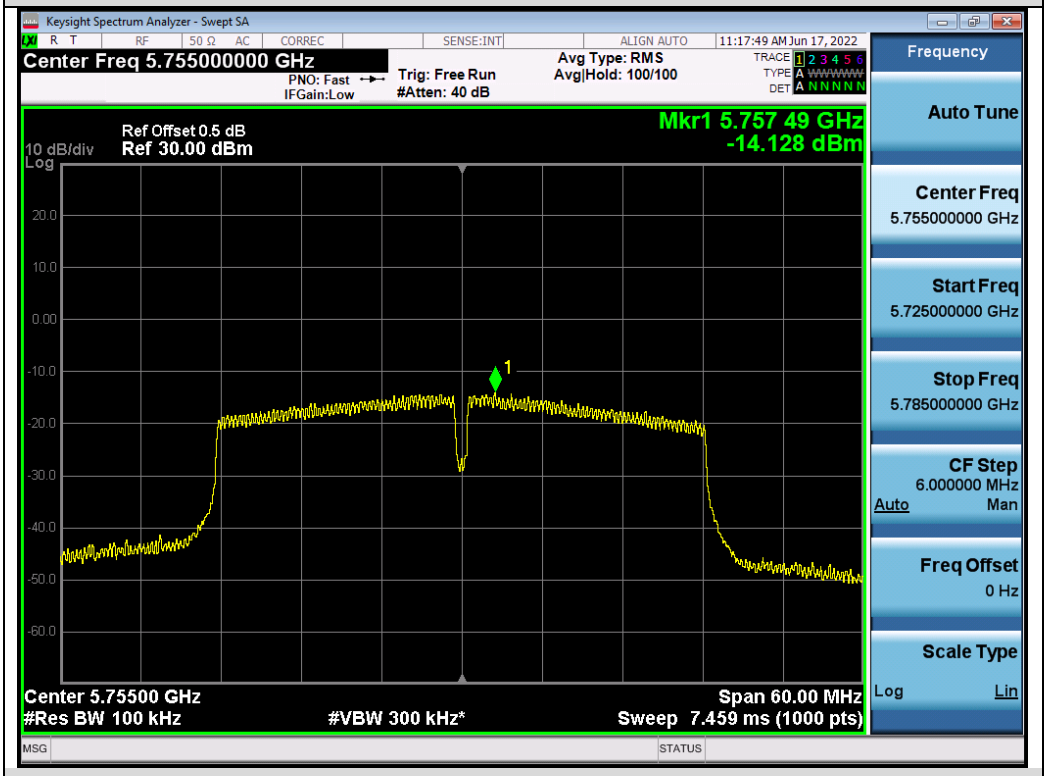
Test_Graph_802.11ac20_ANT1_5745_MCS0_PSD



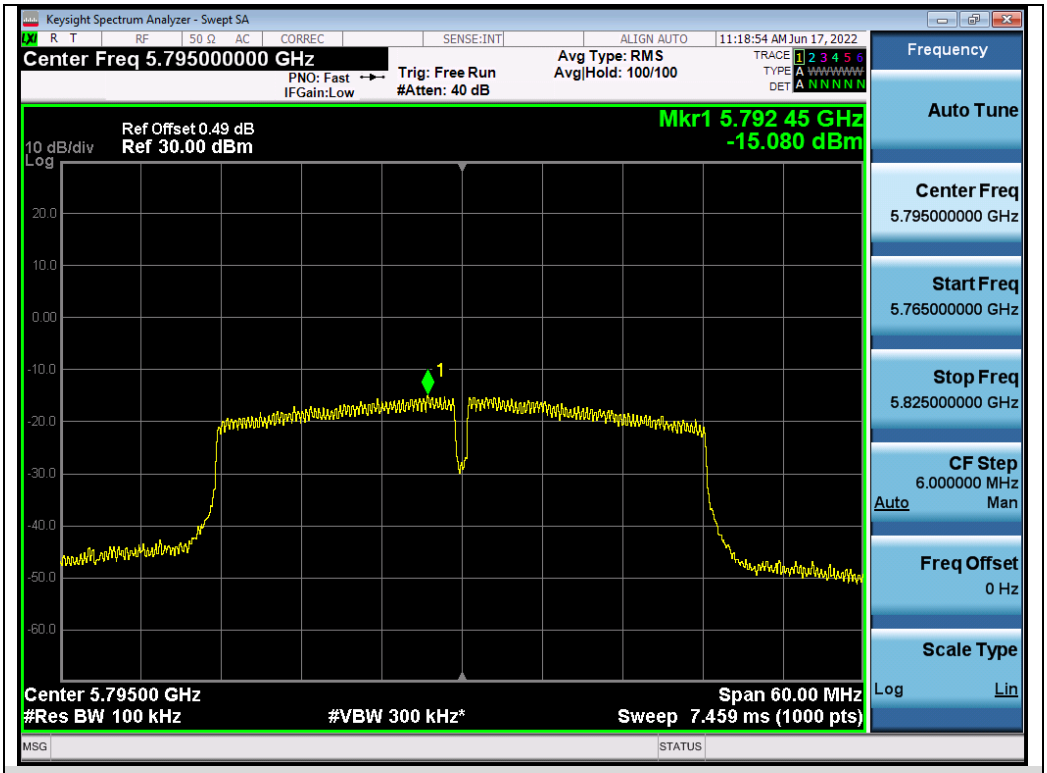
Test_Graph_802.11ac20_ANT1_5785_MCS0_PSD



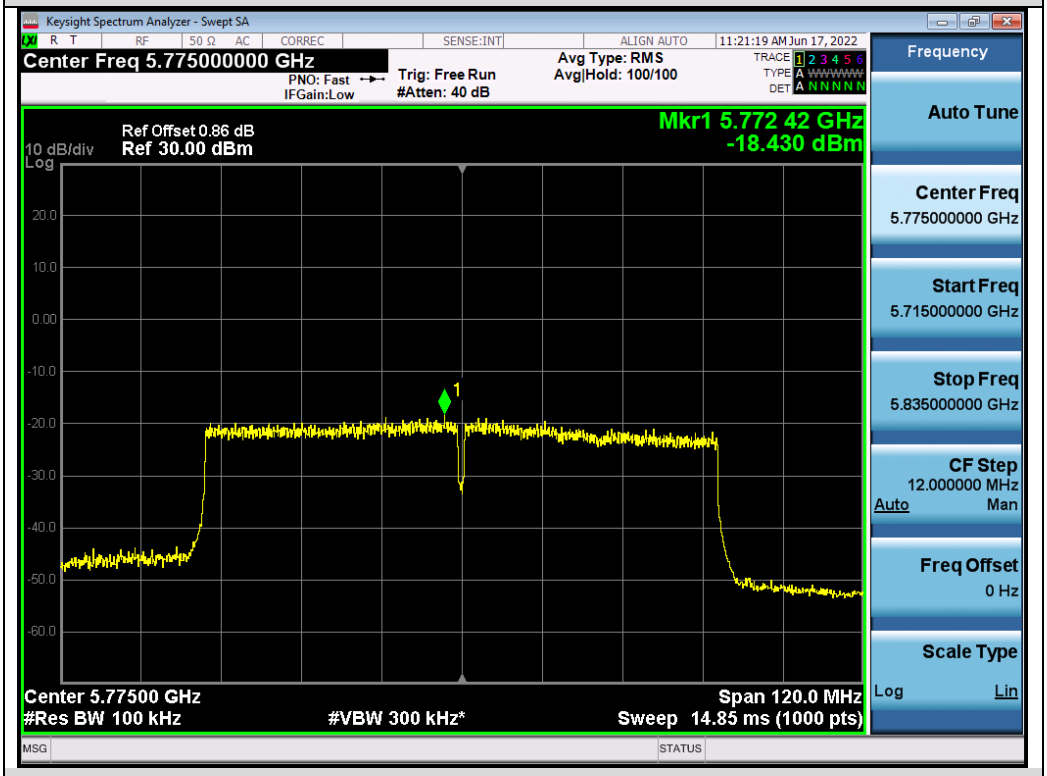
Test_Graph_802.11ac20_ANT1_5825_MCS9_PSD



Test_Graph_802.11ac40_ANT1_5755_MCS9_PSD



Test_Graph_802.11ac40_ANT1_5795_MCS9_PSD



Test_Graph_802.11ac80_ANT1_5775_MCS9_PSD