



TEST REPORT

Applicant: Guangzhou Chang Jia Electronic Co., Ltd.
Address of Applicant: No.139 Zhouxing Street, Dongchong Town, Nansha District,
Guangzhou, china
Manufacturer/Factory: Guangzhou Chang Jia Electronic Co., Ltd.
Address of Manufacturer: No.139 Zhouxing Street, Dongchong Town, Nansha District,
Guangzhou, china
Product Name: Conference Interactive Flat Panel
Model No.: JH55-01,JS55-01P,JS55-01,JS55-01P,JS65-01,JS65-01P,JS75-
01,JS75-01P,JS43-01,JS43-01P
Trade Mark: N/A
FCC ID: 2A54R-JH55-01
Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of Test: Apr.29, 2024-May.11, 2024
Date of report issued: May.25, 2024

Remark:

The results shown in this test report refer only to the sample(s) tested , this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

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Authorized Signature



Report Revision History		
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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	Pass	Carr kang
Conducted Output Power	15.407 (a)(1)/(a)(3)	Pass	Yvan Fan
26dB Bandwidth and 99% Occupied Bandwidth	15.407 (a)(12)	Pass	Yvan Fan
6dB Bandwidth	15.407 (e)	Pass	Yvan Fan
Power Spectral Density	15.407(a)(1)/(a)(3)	Pass	Yvan Fan
Band Edge	15.407(b)(1)/(b)(4)	Pass	Yvan Fan
Spurious Emission	15.205/15.209 15.407(b)(1)/(b)(4)/(b)(8)	Pass	Carr kang
Frequency Stability	15.407(g)	Pass	Yvan Fan

Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013
3. Note: Compliance determination rules
 - 1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.
 - 2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

1.1 Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±0.55%	(1)
RF output power, conducted	±0.99dB	(1)
Power Spectral Density, conducted	±0.61dB	(1)
Unwanted Emissions, conducted	±0.64dB	(1)
AC Power Line Conducted Emission	± 2.64 dB	(1)
Radiated emissions 9K-30MHz	±3.98dB	(1)
Radiated emissions 30M- 1GHz	±4.32dB	(1)
Radiated emissions 1GHz-18GHz	±4.56dB	(1)
Radiated emissions 18GHz-40GHz	±4.59 dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

2 General Information

2.1 General Description of EUT

Product Name:	Conference Interactive Flat Panel
Model No.:	JH55-01,JS55-01P,JS55-01,JS55-01P,JS65-01,JS65-01P,JS75-01,JS75-01P,JS43-01,JS43-01P
Difference of model(s)	All the model are the same circuit and RF module, except the model names and colors
Test Model:	JH55-01
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	Engineer sample
Operation Frequency:	☒ 5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; ☒ 5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11n(HT40)/ac40; 5775MHz for 802.11 ac80;
Channel numbers:	☒ 4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; ☒ 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band
Channel bandwidth:	802.11a/802.11n(HT20)/ 802.11ac(HT20): 20MHz 802.11n(HT40)/ 802.11ac(HT40) : 40MHz 802.11ac(HT80) : 80MHz
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT/20/40/80):NSS1, MCS0-MCS9
Modulation technology:	Orthogonal Frequency Division Multiplexing (OFDM) with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type:	PCB Antenna
Antenna gain:	ANT2:3.01dBi ANT4:4.88dBi Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Battery	N/A
Adapter Model:	N/A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	40	5200MHz	42	5210MHz
44	5220MHz	46	5230MHz	48	5240MHz	/	/
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	153	5765MHz	155	5775MHz
157	5785MHz	159	5795MHz	161	5805MHz	/	/
165	5825MHz	/					

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
Lowest channel	5180	5190	5210
Middle channel	5200	X	
Highest channel	5240		

Test channel	Frequency (MHz)		
	802.11 a /n(HT20)/ac(HT20)	802.11 n(HT40)/ac(HT40)	802.11ac(HT80)
Lowest channel	5745	5755	5775
Middle channel	5785	X	
Highest channel	5825		

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode(or with a duty cycle $\geq 98\%$)
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pretest Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/
Mode 5	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	/

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
1	Laptop computer	DELL	VOSTRO 3400	/
2	Adapter	DELL	LA45NM140	/

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064

2.7 Test Location

All tests were performed at:

Laboratory location: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Telephone: +86 755 85259392

2.8 Additional Instructions

Test Software	SecureCRTPortable.EXE
Power level setup	Default

3 Test Instruments list

Conducted Emission

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI3	100605	2024.3.12	2025.3.11
2	Artificial power network	schwarabeck	NSLK8127	8127483	2024.3.12	2025.3.11
3	Artificial power network	ETS	3186/2NM	1132	2024.3.12	2025.3.11
4	10dB attenuator	HUBER+SUHNER	10dB	/	2024.3.12	2025.3.11
5	Cable 4	HUBER SUNNER	3M	/	2024.3.12	2025.3.11
6	Absorbing Clamp	schwarabeck	MDS21	D69250	2024.3.12	2025.3.11

Radiated Emission &RF Conducted test:

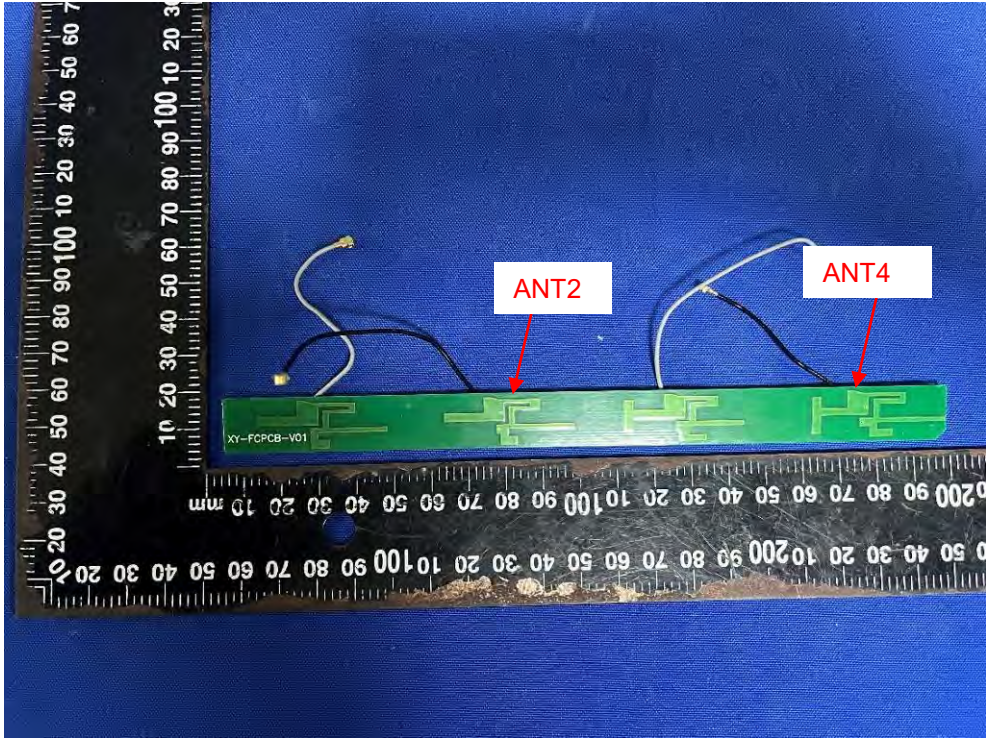
Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101032	2024.3.12	2025.3.11
2	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.19	2026.3.18
3	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.19	2026.3.18
4	Amplifier	EMtrace	RP01A	50117	2024.3.12	2025.3.11
5	Amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2024.3.12	2025.3.11
6	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2024.3.12	2025.3.11
7	Power detector meter	MWRFtest	MW100-PSB	MW201020JYT	2024.3.12	2025.3.11
8	Signal generator	Agilent	N5182A	MY49060455	2024.3.12	2025.3.11
9	Spectrum analyzer	Rohde&schwarz	FSU40	1166.1660K43	2024.3.12	2025.3.11
10	Amplifier	SKET	LNPA_1840-50	SK2019040302	2024.3.12	2025.3.11
11	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.19	2026.3.18
12	Loop antenna	schwarabeck	FMZB 1519 B	1519	2024.3.19	2026.3.18
13	Cable 6	HUBER SUNNER	0.5M	/	2024.3.12	2025.3.11
14	Cable7	HUBER SUNNER	2.0M	/	2024.3.12	2025.3.11
15	Cable8	HUBER SUNNER	6.0M	/	2024.3.12	2025.3.11
16	Filter	Xin bo	XBLBQ-GTA29	210410-3-2	2024.3.12	2025.3.11
17	Power meter	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	2024.3.12	2025.3.11

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
<i>15.203 requirement:</i> <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
The antennas are PCB Antenna, the best case gain of the antennas are ANT2:3.01dBi &ANT4:4.88dBi, reference to the photo details.	
	

4.2 Conducted Emissions

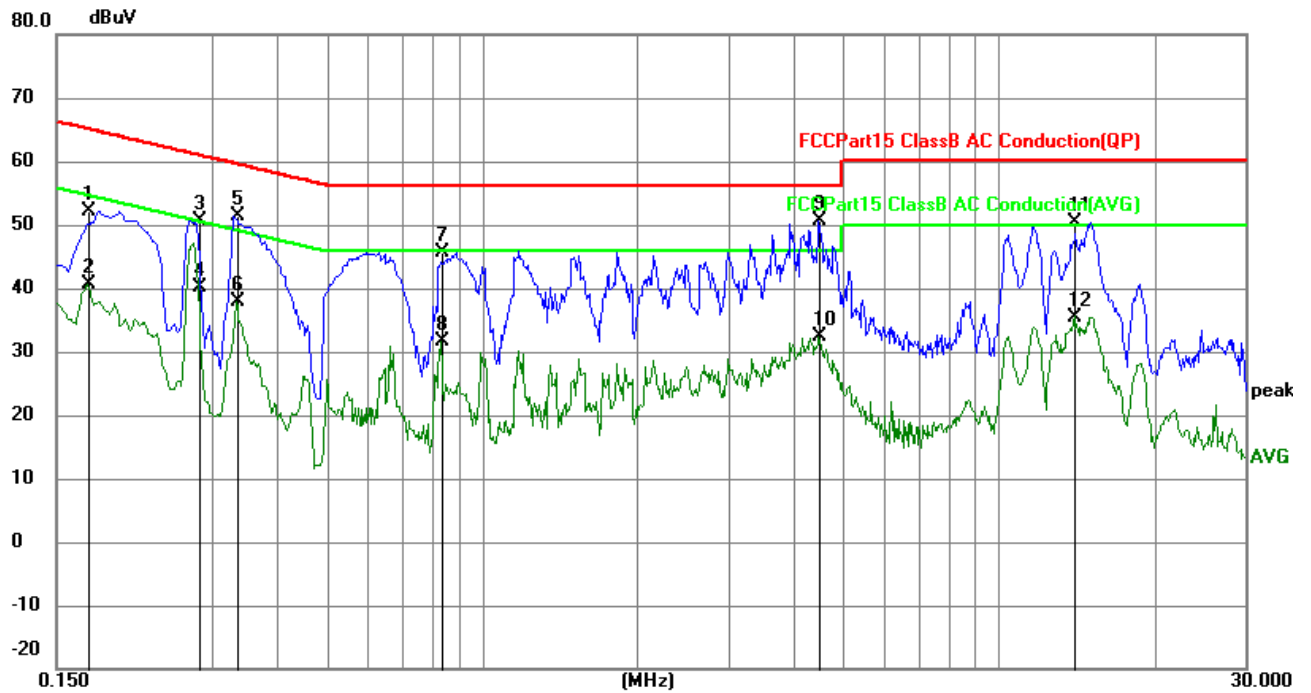
Test Requirement:	FCC Part15 C Section 15.207						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	150KHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
Limit:	Frequency range (MHz)		Limit (dBuV)				
			Quasi-peak		Average		
	0.15-0.5		66 to 56*		56 to 46*		
	0.5-5		56		46		
	5-30		60		50		
* Decreases with the logarithm of the frequency.							
Test setup:	Reference Plane 40cm LISN AUX Equipment E.U.T 80cm LISN Filter AC power EMI Receiver Test table/Insulation plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m						
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.						
Test Instruments:	Refer to section 3.0 for details						
Test mode:	Refer to section 2.2 for details						
Test environment:	Temp.:	25.5℃	Humid.:	56%	Press.:	1012mbar	
Test voltage:	AC 120V						
Test results:	PASS						

Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.
2. All antenna and all mode had been tested, The test data shows only the worst case (ANT2+ANT4:802.11a) mode

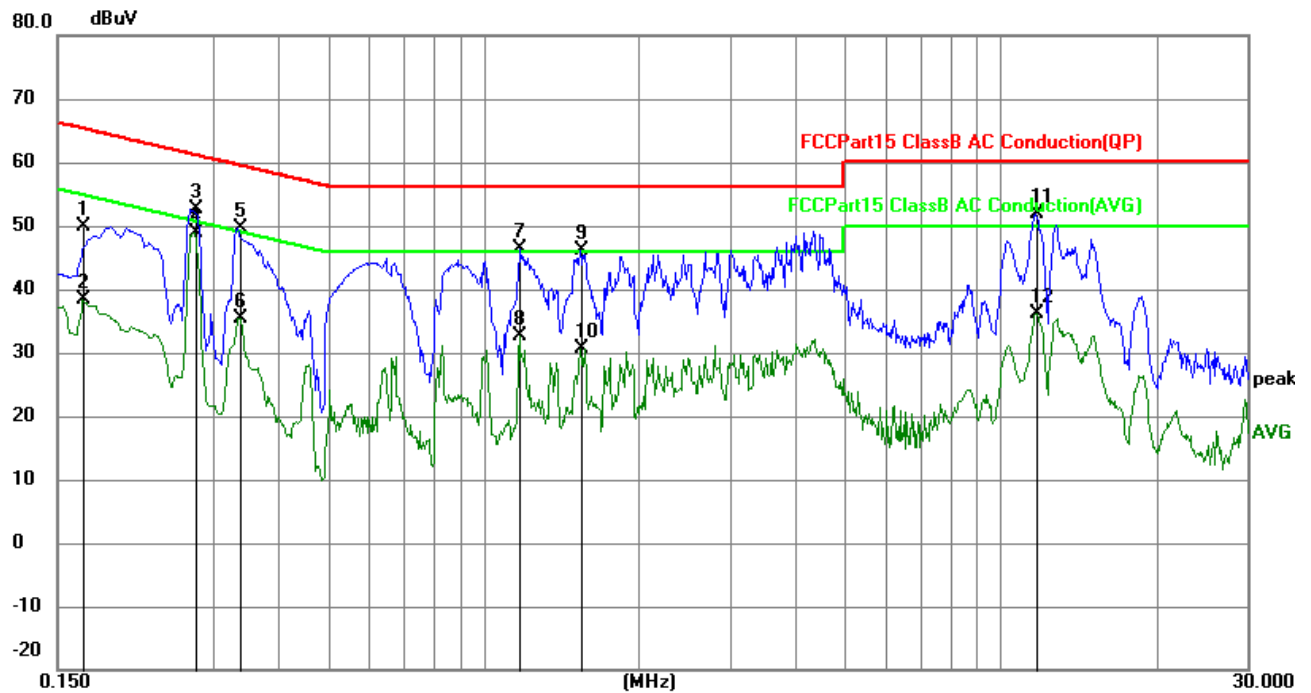
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1725	42.35	9.81	52.16	64.84	-12.68	QP
2	0.1725	30.73	9.81	40.54	54.84	-14.30	AVG
3	0.2818	40.89	9.84	50.73	60.76	-10.03	QP
4	0.2818	30.20	9.84	40.04	50.76	-10.72	AVG
5	0.3345	41.39	9.87	51.26	59.34	-8.08	QP
6	0.3345	27.96	9.87	37.83	49.34	-11.51	AVG
7	0.8340	35.56	9.96	45.52	56.00	-10.48	QP
8	0.8340	21.71	9.96	31.67	46.00	-14.33	AVG
9	4.4835	40.80	9.83	50.63	56.00	-5.37	QP
10	4.4835	22.51	9.83	32.34	46.00	-13.66	AVG
11	14.0415	40.52	9.77	50.29	60.00	-9.71	QP
12	14.0415	25.73	9.77	35.50	50.00	-14.50	AVG

Neutral:

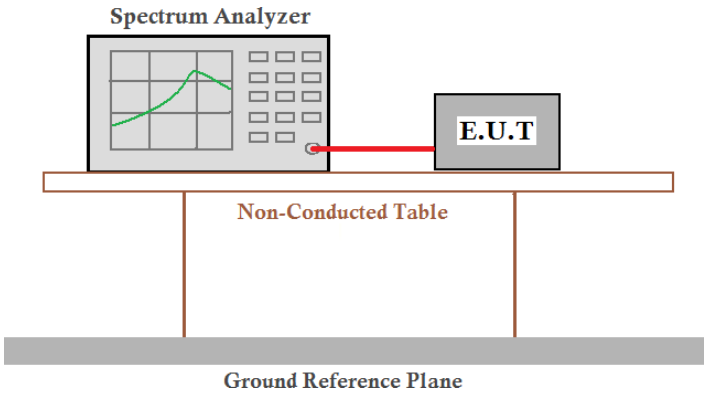


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1680	40.02	9.81	49.83	65.06	-15.23	QP
2	0.1680	28.48	9.81	38.29	55.06	-16.77	AVG
3	0.2760	42.67	9.84	52.51	60.94	-8.43	QP
4	0.2760	39.14	9.84	48.98	50.94	-1.96	AVG
5	0.3390	39.77	9.88	49.65	59.23	-9.58	QP
6	0.3390	25.61	9.88	35.49	49.23	-13.74	AVG
7	1.1760	36.53	9.94	46.47	56.00	-9.53	QP
8	1.1760	22.64	9.94	32.58	46.00	-13.42	AVG
9	1.5360	36.29	9.91	46.20	56.00	-9.80	QP
10	1.5360	20.63	9.91	30.54	46.00	-15.46	AVG
11	11.7104	42.07	9.82	51.89	60.00	-8.11	QP
12	11.7104	26.42	9.82	36.24	50.00	-13.76	AVG

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
 3. Level = Receiver Read level + Factor (Factor = LISN Factor + Cable Loss + Attenuator Factor)
- If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

4.3 Duty cycle

Test Method :	ANSI C63.10:2013	
Limit:	/	
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane.	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.7°C	Humid.: 52%RH
Test voltage:	DC 5V	
Test results:	Pass	

Measurement Result**Module: WB800D.3(ANT2)**

5180-5240MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.70	0.72
TX 802.11n20 Mode	84.74	0.72
TX 802.11ac20 Mode	84.79	0.72
TX 802.11n40 Mode	84.32	0.74
TX 802.11a40 Mode	84.44	0.73
TX 802.11ac80 Mode	91.67	0.38

5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.78	0.72
TX 802.11n20 Mode	84.65	0.72
TX 802.11ac20 Mode	84.70	0.72
TX 802.11n40 Mode	84.48	0.73
TX 802.11a40 Mode	84.29	0.74
TX 802.11ac80 Mode	83.94	0.76

Module: WB663U.1(ANT4)

5180-5240MHz

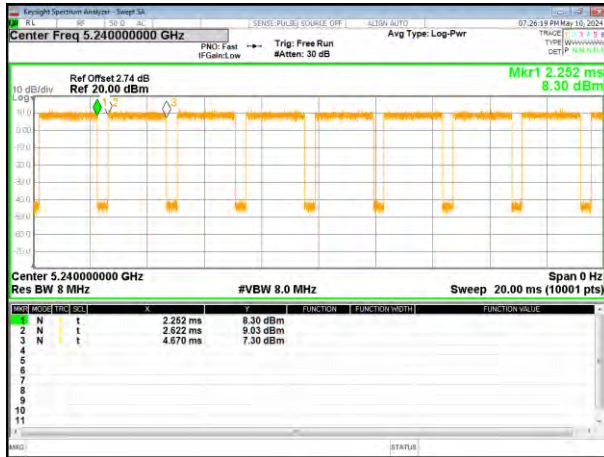
Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.77	0.72
TX 802.11n20 Mode	84.72	0.72
TX 802.11ac20 Mode	84.7	0.72
TX 802.11n40 Mode	84.48	0.73
TX 802.11a40 Mode	84.44	0.73
TX 802.11ac80 Mode	83.94	0.76

5745-5825 MHz

Mode	Duty cycle (%)	Correction Factor (dB)
TX 802.11a Mode	84.78	0.72
TX 802.11n20 Mode	84.72	0.72
TX 802.11ac20 Mode	84.70	0.72
TX 802.11n40 Mode	84.48	0.73
TX 802.11a40 Mode	84.46	0.73
TX 802.11ac80 Mode	83.94	0.76

Test plot (5180-5240MHz Module: WB800D.3(ANT2))

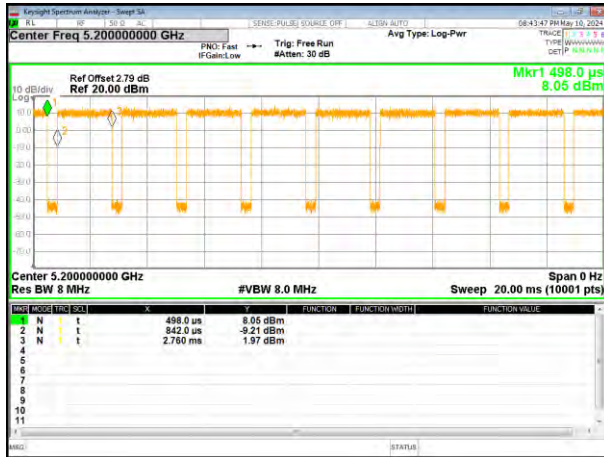
(802.11a) plot on channel 40



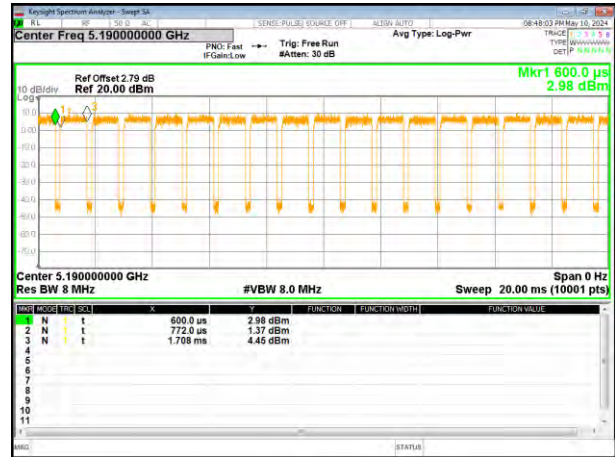
(802.11 n20) plot on channel 40



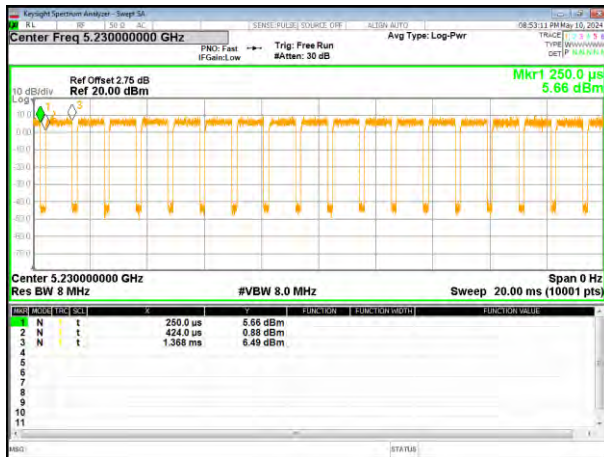
(802.11ac20) plot on channel 40



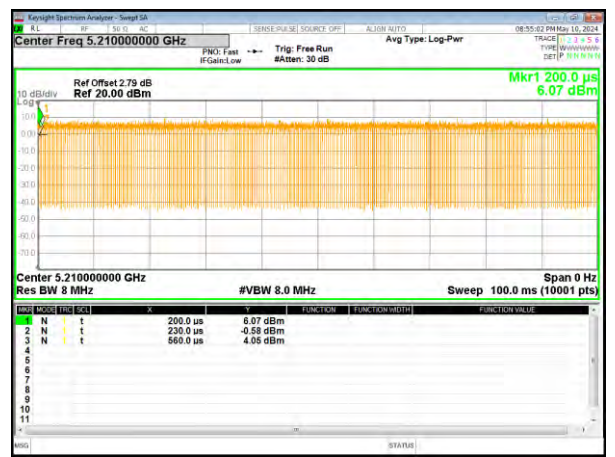
(802.11 n40) plot on channel 38



(802.11ac40) plot on channel 38

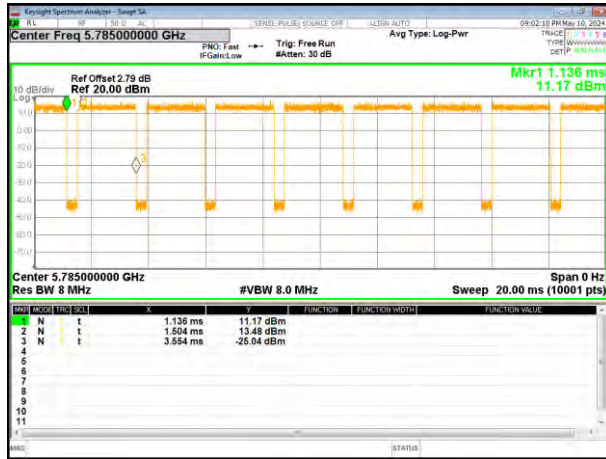


(802.11ac80) plot on channel 42

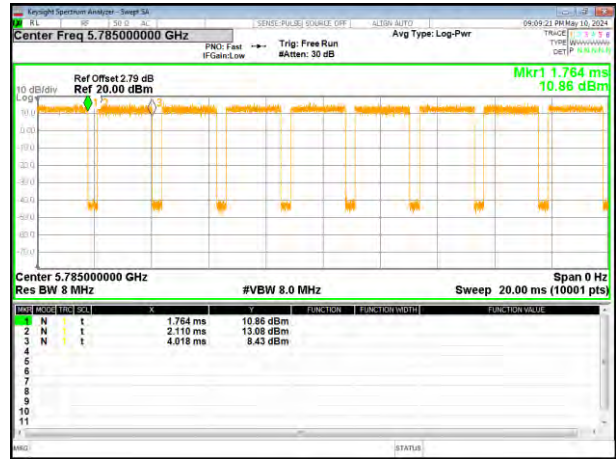


5745-5825 MHz

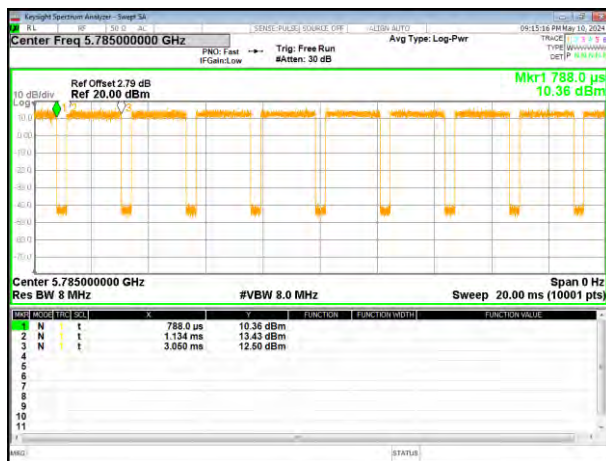
(802.11a) plot on channel 40



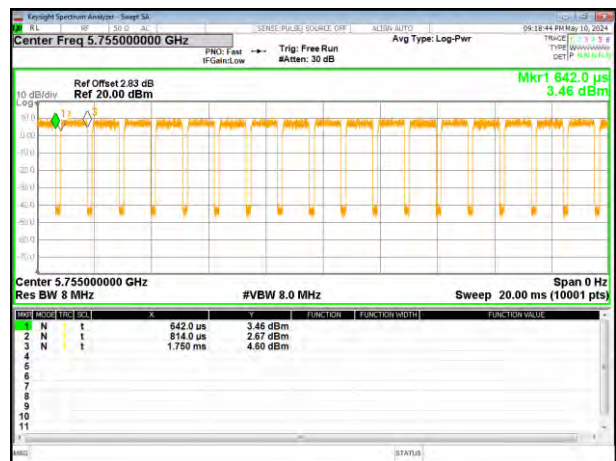
(802.11 n20) plot on channel 40



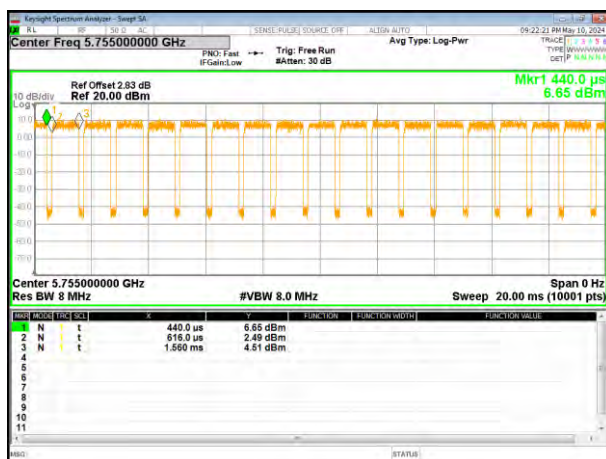
(802.11ac20) plot on channel 40



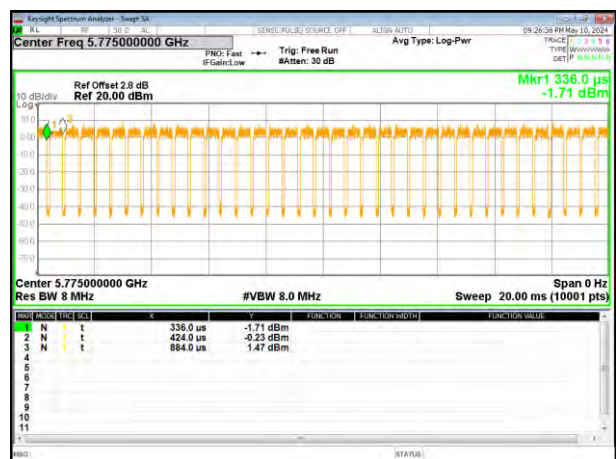
(802.11 n40) plot on channel 38



(802.11ac40) plot on channel 38

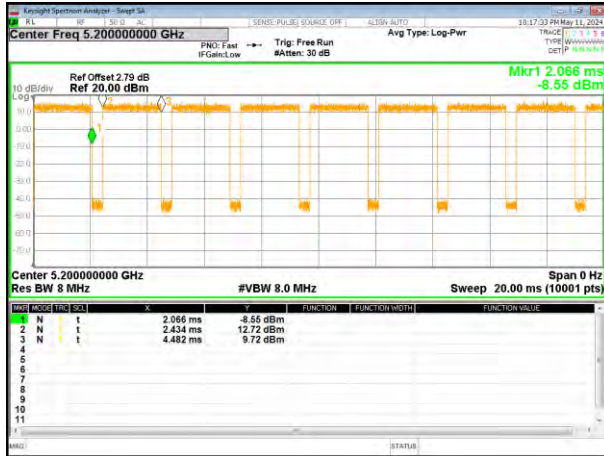


(802.11ac80) plot on channel 42

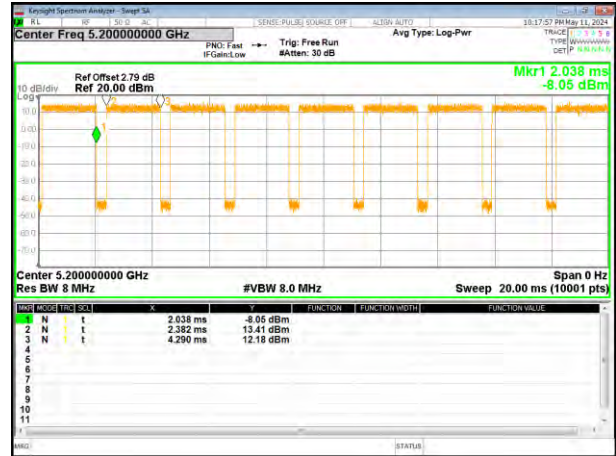


Test plot(5180-5240MHz Module: WB663U.1(ANT4))

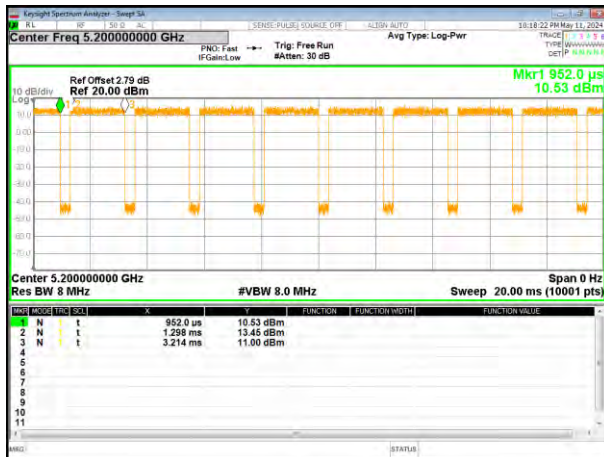
(802.11a) plot on channel 40



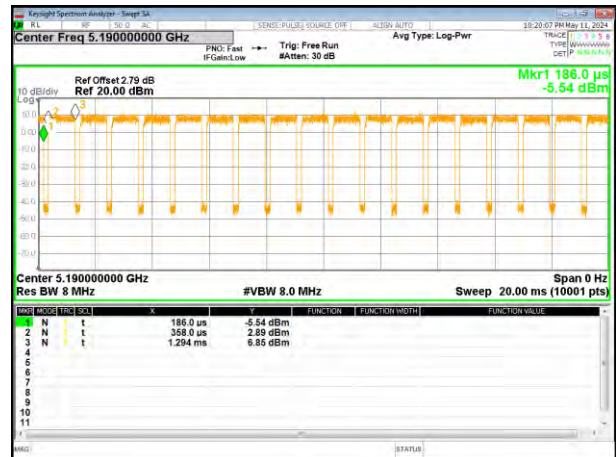
(802.11 n20) plot on channel 40



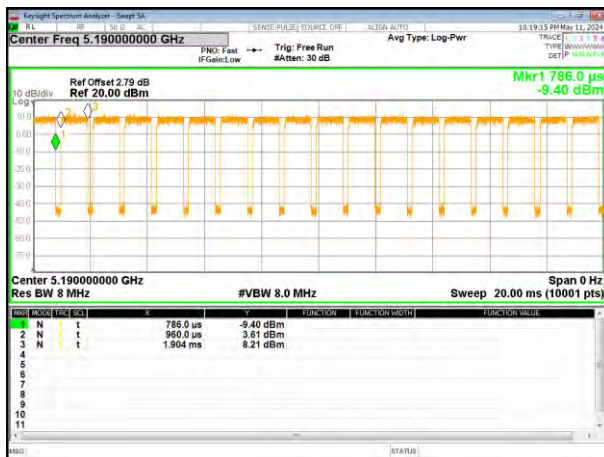
(802.11ac20) plot on channel 40



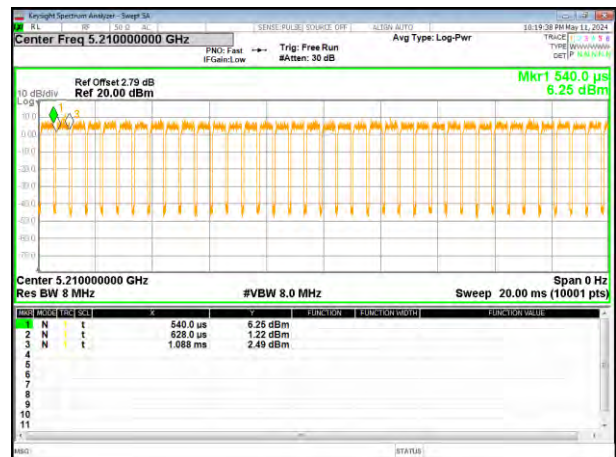
(802.11 n40) plot on channel 38



(802.11ac40) plot on channel 38

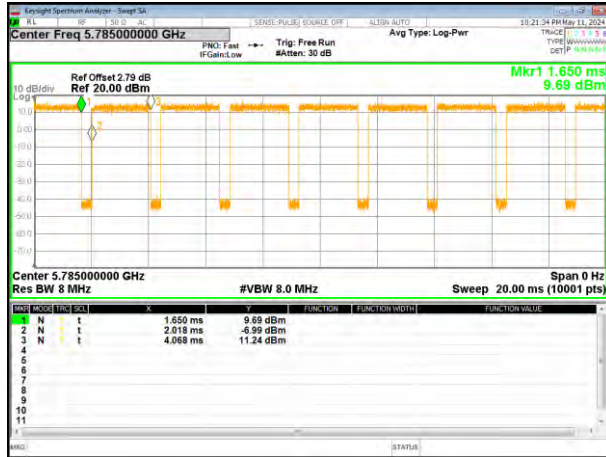


(802.11ac80) plot on channel 42

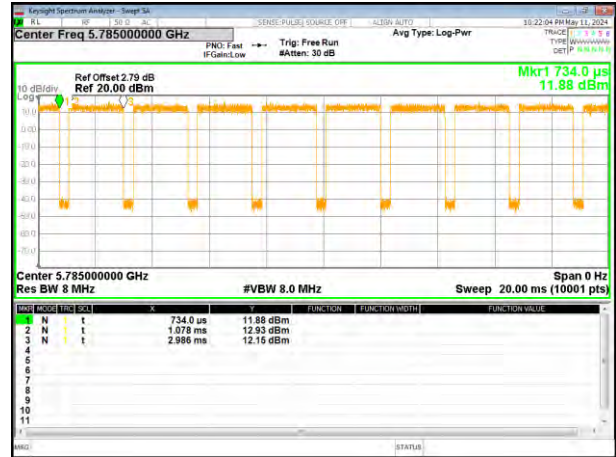


5745-5825 MHz

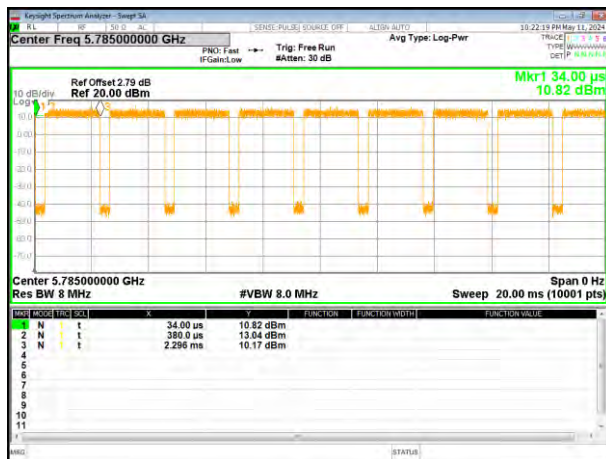
(802.11a) plot on channel 40



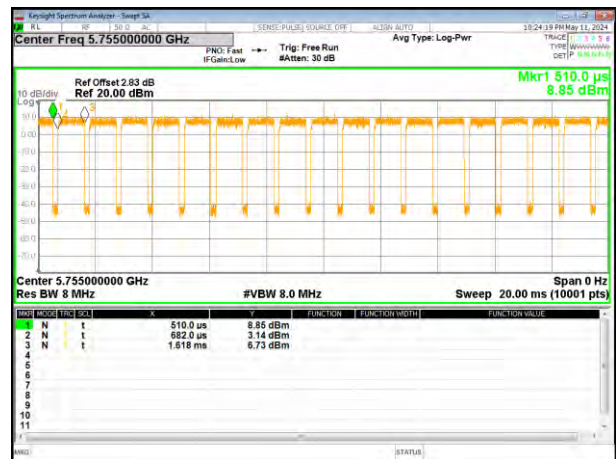
(802.11 n20) plot on channel 40



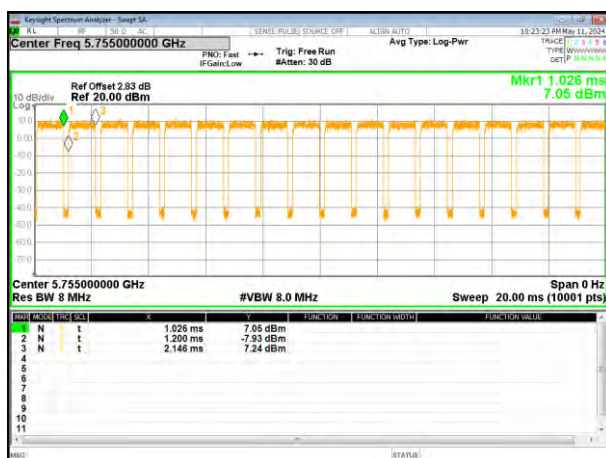
(802.11ac20) plot on channel 40



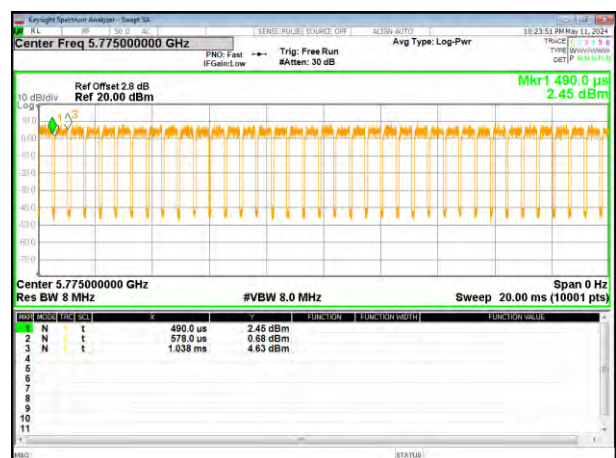
(802.11 n40) plot on channel 38



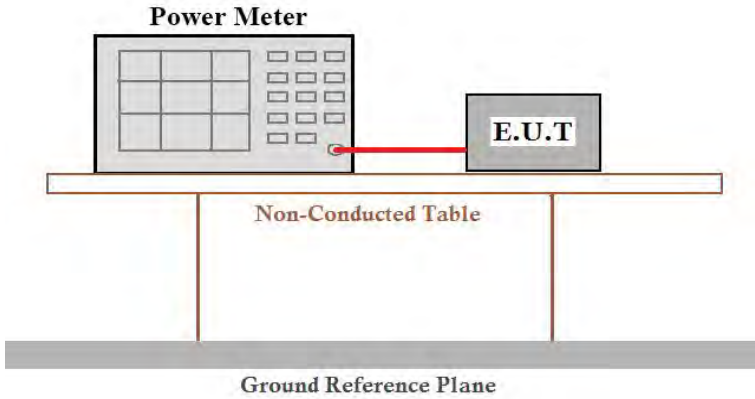
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



4.4 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a)(1)/(a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	5150-5250MHz : 250mW 5725~5850MHz : 1W	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.7°C	Humid.: 52%RH
Test voltage:	DC 5V	
Test results:	Pass	

**Measurement Result****Module: WB800D.3(ANT2)****5180-5240MHz**

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.72	11.93	12.65	23.98	Pass
CH40	5200	0.72	11.66	12.38	23.98	Pass
CH48	5240	0.72	11.26	11.98	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.72	12.58	13.30	23.98	Pass
CH40	5200	0.72	12.73	13.45	23.98	Pass
CH48	5240	0.72	12.44	13.16	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.72	13.15	13.87	23.98	Pass
CH40	5200	0.72	12.84	13.56	23.98	Pass
CH48	5240	0.72	12.58	13.30	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.74	12.45	13.19	23.98	Pass
CH46	5230	0.74	12.14	12.88	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.73	12.47	13.20	23.98	Pass
CH46	5230	0.73	12.11	12.84	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.38	11.38	11.76	23.98	Pass

5745-5825 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	0.72	15.76	16.48	30	Pass
CH157	5785	0.72	15.98	16.70	30	Pass
CH165	5825	0.72	16.12	16.84	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.72	15.08	15.80	30	Pass
CH157	5785	0.72	15.10	15.82	30	Pass
CH165	5825	0.72	15.14	15.86	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.72	15.02	15.74	30	Pass
CH157	5785	0.72	15.04	15.76	30	Pass
CH165	5825	0.72	15.32	16.04	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.73	13.51	14.24	30	Pass
CH159	5795	0.73	13.54	14.27	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.74	13.40	14.14	30	Pass
CH159	5795	0.74	13.62	14.36	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.76	12.00	12.76	30	Pass

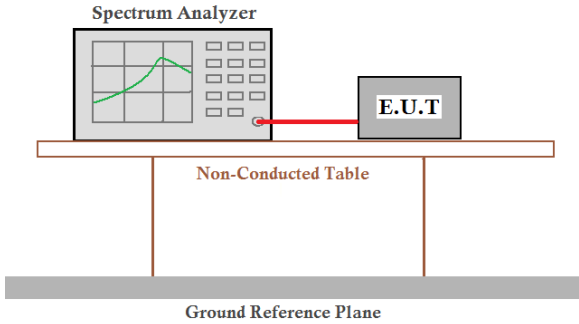
**Module: WB663U.1(ANT4)****5180-5240MHz**

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH36	5180	0.72	12.12	12.84	23.98	Pass
CH40	5200	0.72	12.23	12.95	23.98	Pass
CH48	5240	0.72	12.01	12.73	23.98	Pass
TX 802.11 n20 Mode						
CH36	5180	0.72	12.05	12.77	23.98	Pass
CH40	5200	0.72	12.18	12.9	23.98	Pass
CH48	5240	0.72	12.12	12.84	23.98	Pass
TX 802.11 ac20 Mode						
CH36	5180	0.72	11.06	11.78	23.98	Pass
CH40	5200	0.72	11.29	12.01	23.98	Pass
CH48	5240	0.72	11.1	11.82	23.98	Pass
TX 802.11 n40 Mode						
CH38	5190	0.73	12.08	12.81	23.98	Pass
CH46	5230	0.73	12.6	13.33	23.98	Pass
TX 802.11 ac40 Mode						
CH38	5190	0.73	12.31	13.04	23.98	Pass
CH46	5230	0.73	12.18	12.91	23.98	Pass
TX 802.11 ac80 Mode						
CH42	5210	0.76	11.45	12.21	23.98	Pass

5745-5825 MHz

Test Channel	Frequency	Correction Factor	Maximum output power	Total Power	LIMIT	Result
	(MHz)	(dB)	(dBm)	(dBm)	dBm	
TX 802.11a Mode						
CH149	5745	0.72	12.79	13.51	30	Pass
CH157	5785	0.72	12.74	13.46	30	Pass
CH165	5825	0.72	12.46	13.18	30	Pass
TX 802.11 n20 Mode						
CH149	5745	0.72	11.68	12.40	30	Pass
CH157	5785	0.72	11.81	12.53	30	Pass
CH165	5825	0.72	11.44	12.16	30	Pass
TX 802.11 ac20 Mode						
CH149	5745	0.72	11.66	12.38	30	Pass
CH157	5785	0.72	11.72	12.44	30	Pass
CH165	5825	0.72	11.31	12.03	30	Pass
TX 802.11 n40 Mode						
CH151	5755	0.73	10.80	11.53	30	Pass
CH159	5795	0.73	10.47	11.20	30	Pass
TX 802.11 ac40 Mode						
CH151	5755	0.73	10.61	11.34	30	Pass
CH159	5795	0.73	10.61	11.34	30	Pass
TX 802.11 ac80 Mode						
CH155	5775	0.76	10.48	11.24	30	Pass

4.5 Bandwidth 99% Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407(a)(12)&15.407(e)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.7°C	Humid.: 52%RH
Test voltage:	DC 5V	
Test results:	Pass	

Measurement Result(Module: WB800D.3(ANT2))

5180-5240MHz

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	22.72	24.39	24.48	44.47	44.06	--	Pass
Middle	23.12	24.56	24.82	--	--	81.14	
Highest	24.33	24.03	24.32	43.93	43.92	--	

Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	16.649	17.859	17.830	36.382	36.351	--	Pass
Middle	16.722	17.905	17.831	--	--	74.986	
Highest	16.695	17.850	17.814	36.352	36.343	--	

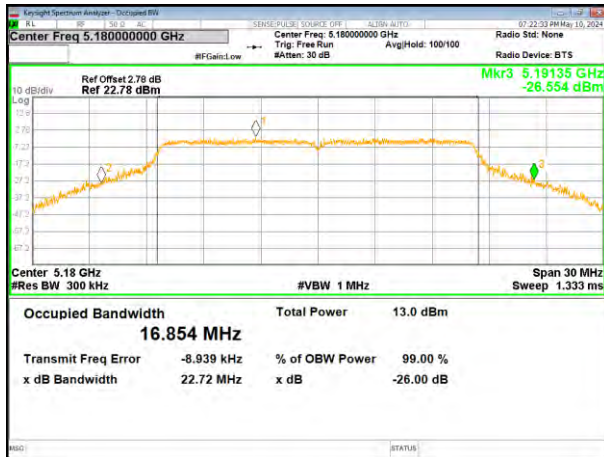
5180-5240MHz Module: WB663U.1(ANT4)

Test CH	-26dB Channel Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)	
Lowest	19.56	19.93	19.89	39.36	39.89	--	Pass
Middle	19.60	19.93	19.86	--	--	78.14	
Highest	19.57	20.05	19.91	39.74	39.23	--	

Test CH	99% Occupy Bandwidth (MHz)						Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11a c (HT40)	802.11ac (HT80)	
Lowest	16.314	17.512	17.517	35.994	35.973	--	Pass
Middle	16.340	17.519	17.533	--	--	75.445	
Highest	16.342	17.533	17.540	36.032	35.963	--	

Test plot -26dB Channel Bandwidth (Module: WB800D.3(ANT2))

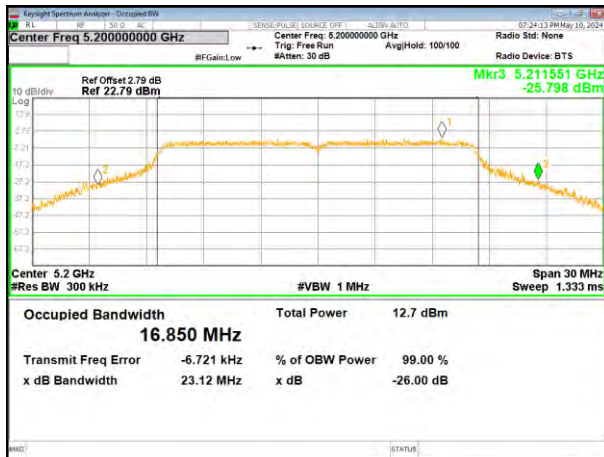
(802.11a) plot on channel 36



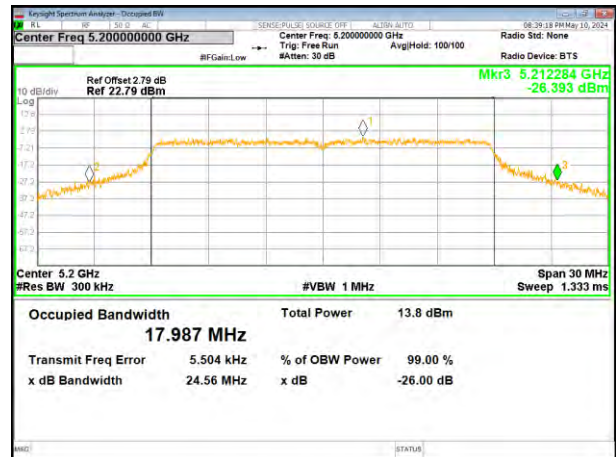
(802.11 n20) plot on channel 36



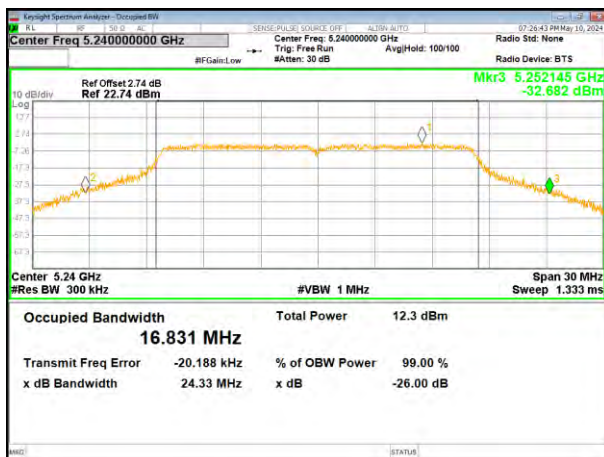
(802.11a) plot on channel 40



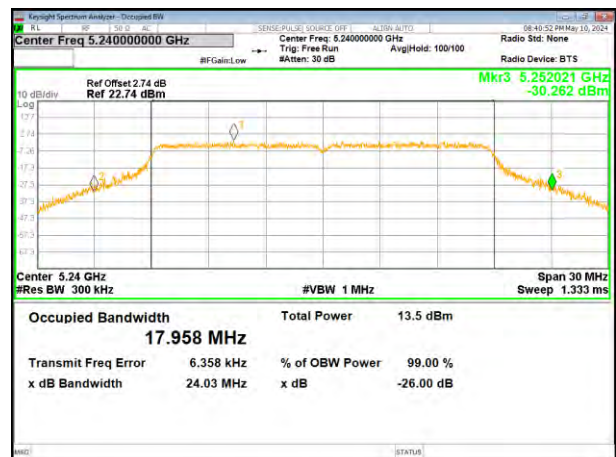
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

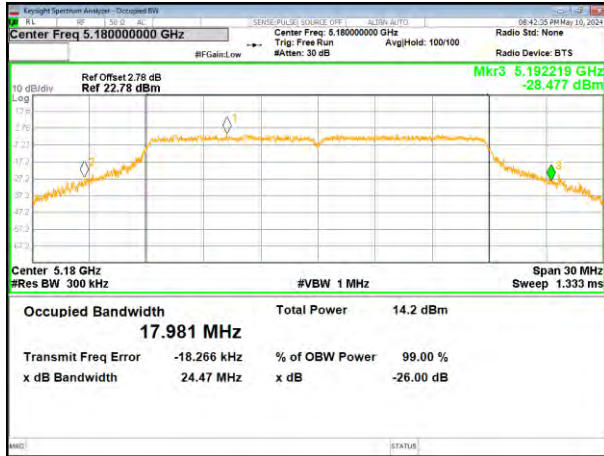


(802.11 n20) plot on channel 48

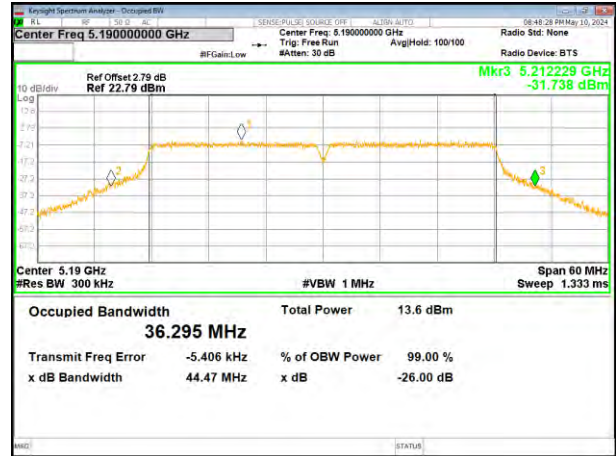


Test plot

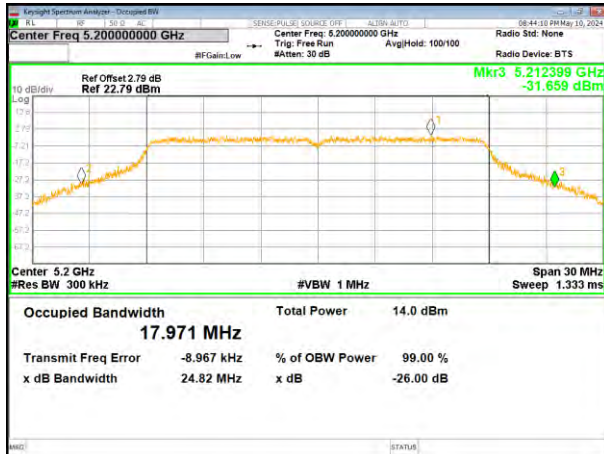
(802.11ac20) plot on channel 36



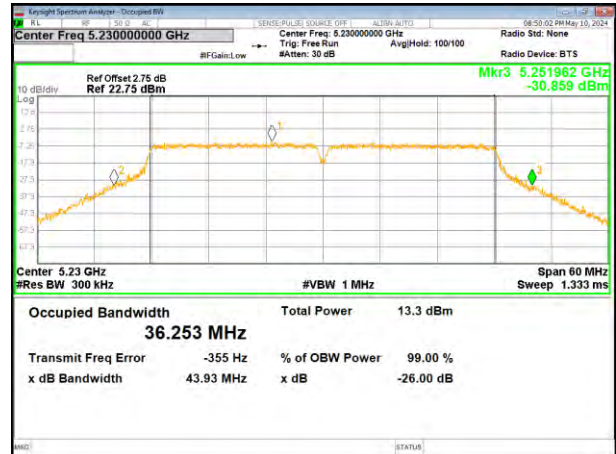
(802.11 n40) plot on channel 38



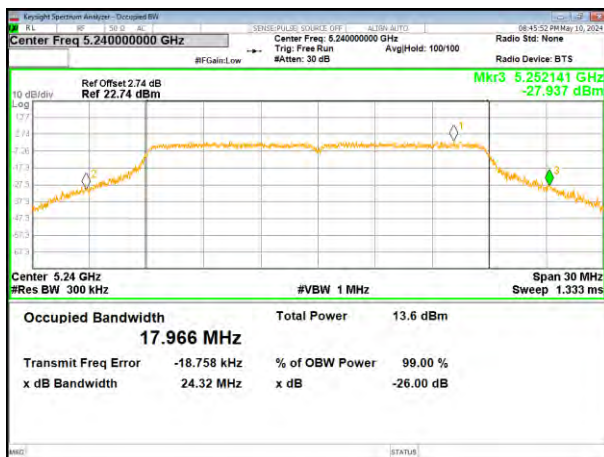
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

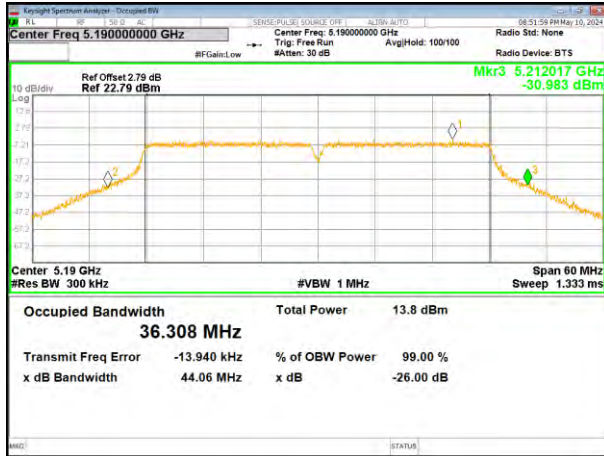


(802.11ac20) plot on channel 48

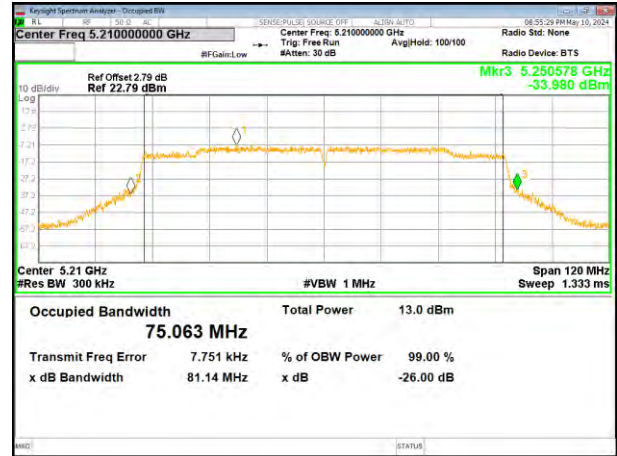


Test plot

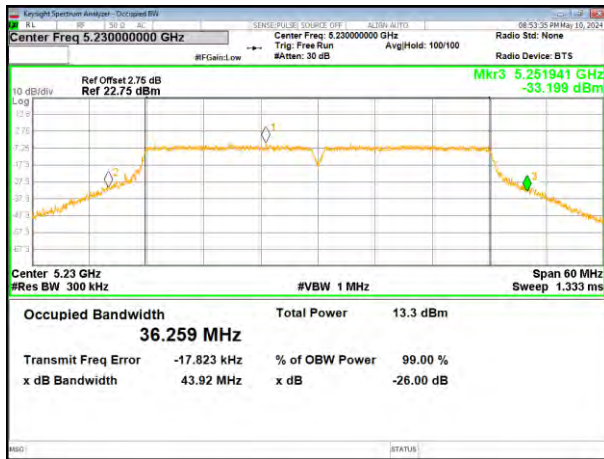
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42

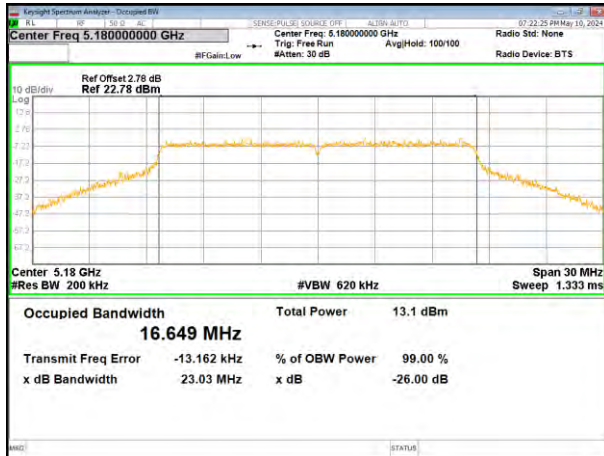


(802.11ac40) plot on channel 46

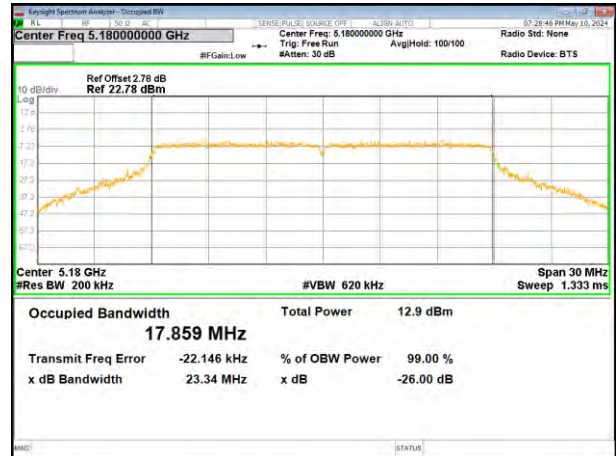


Test plot 99% Occupy Bandwidth(Module: WB800D.3(ANT2))

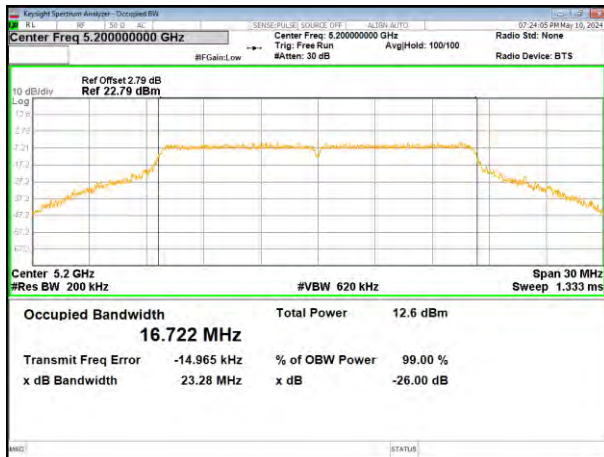
(802.11a) plot on channel 36



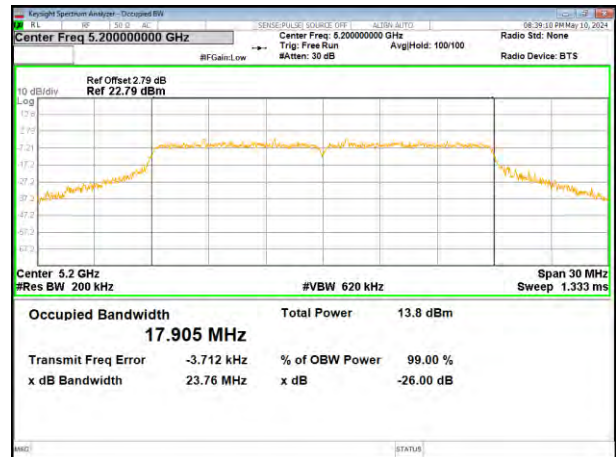
(802.11 n20) plot on channel 36



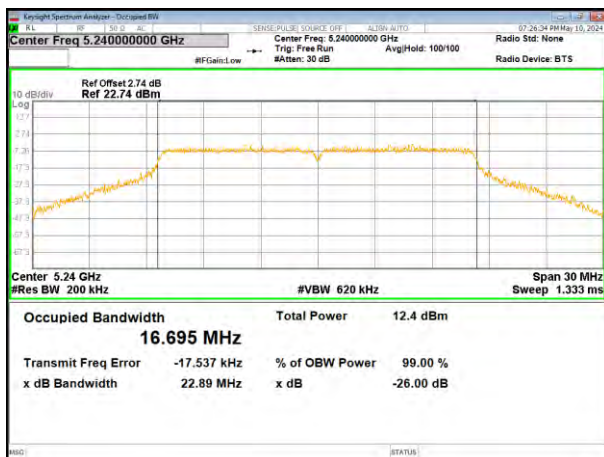
(802.11a) plot on channel 40



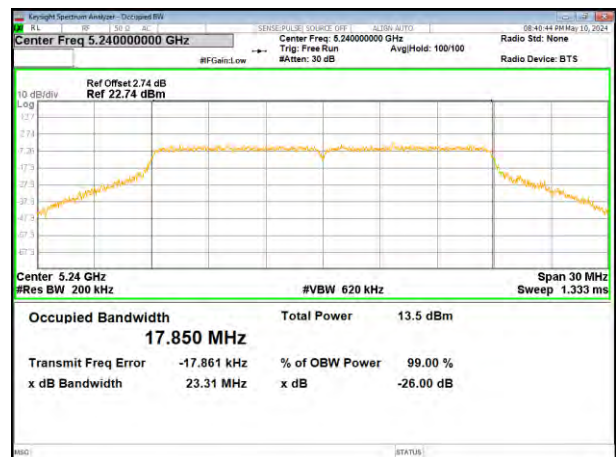
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

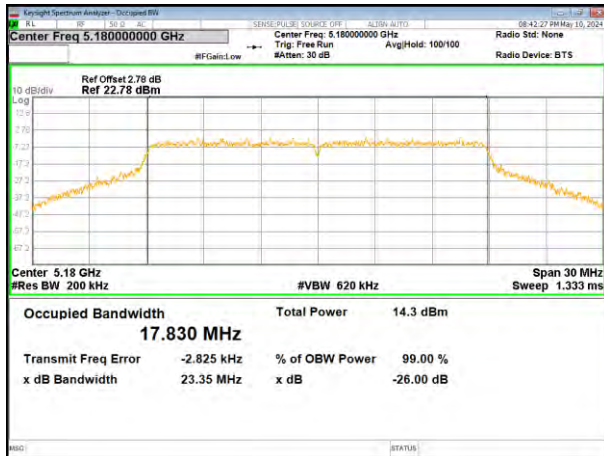


(802.11 n20) plot on channel 48

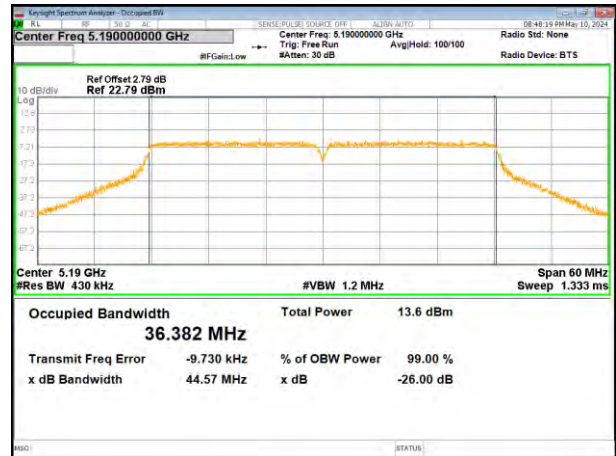


Test plot

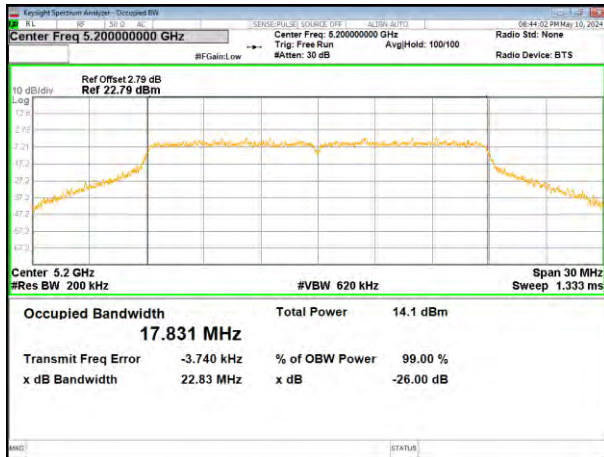
(802.11ac20) plot on channel 36



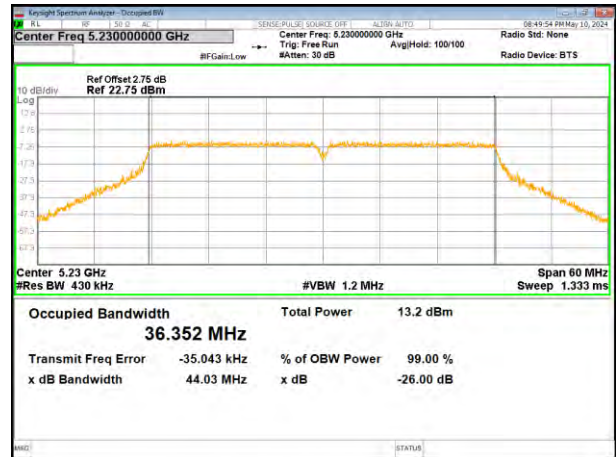
(802.11 n40) plot on channel 38



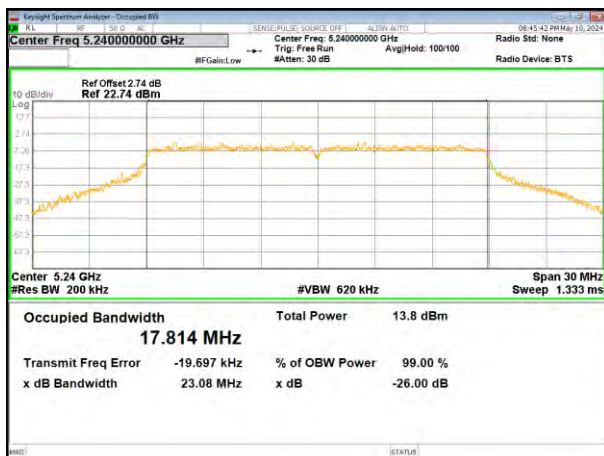
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

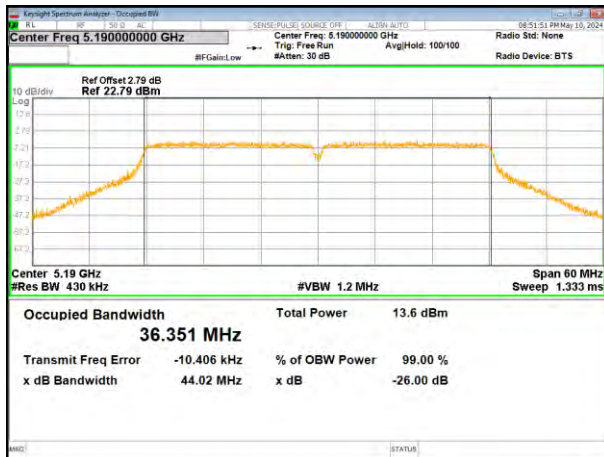


(802.11ac20) plot on channel 48

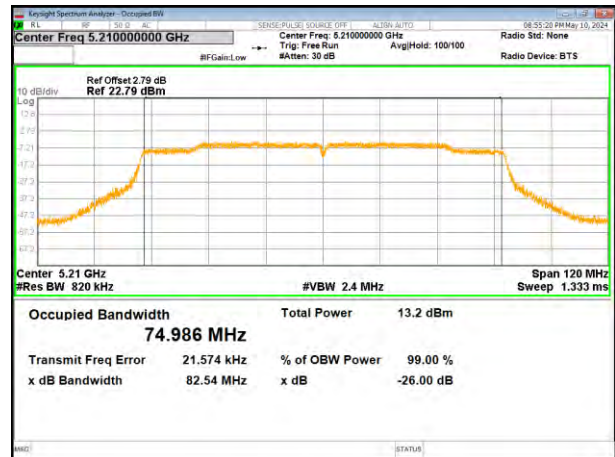


Test plot

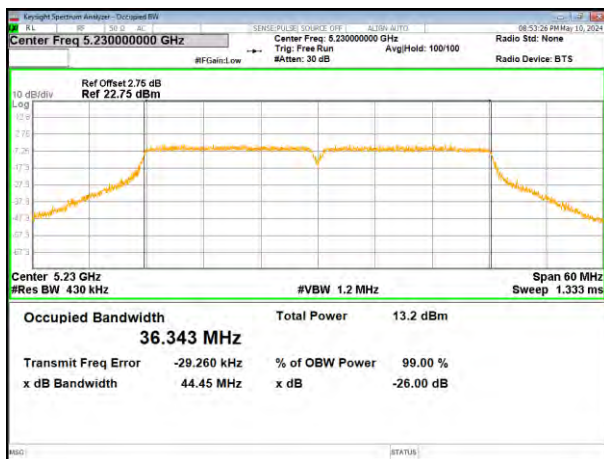
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42

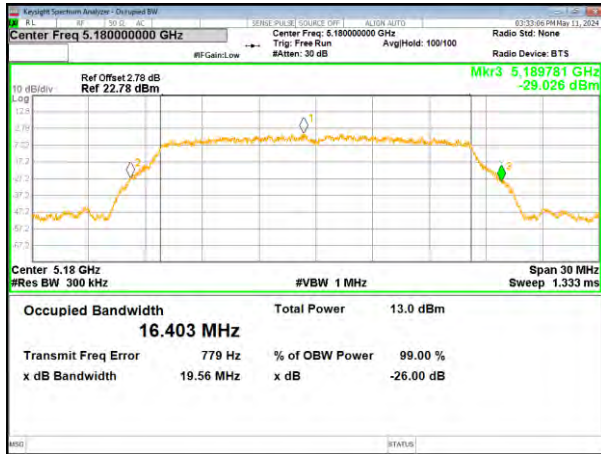


(802.11ac40) plot on channel 46

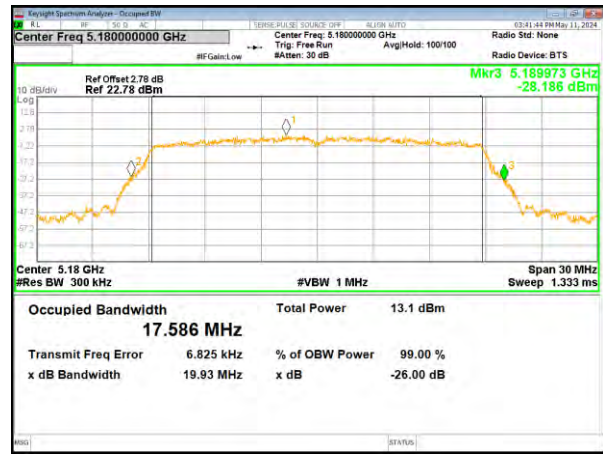


Test plot -26dB Channel Bandwidth(Module: WB663U.1(ANT4))

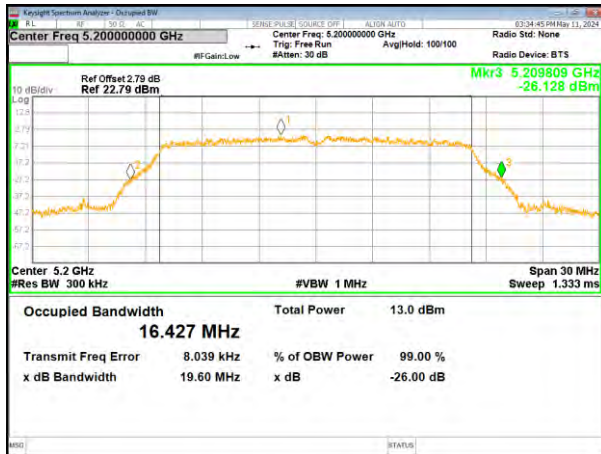
(802.11a) plot on channel 36



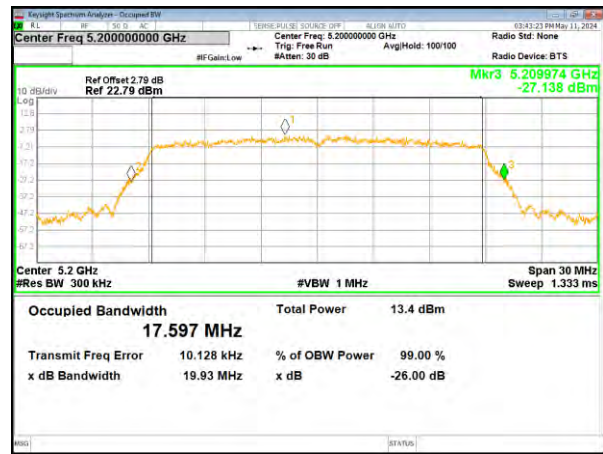
(802.11 n20) plot on channel 36



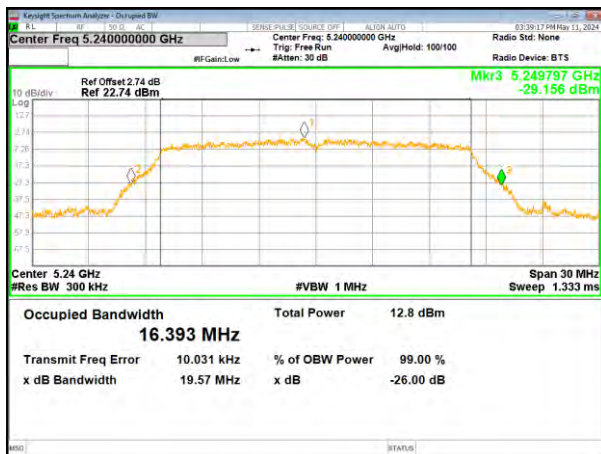
(802.11a) plot on channel 40



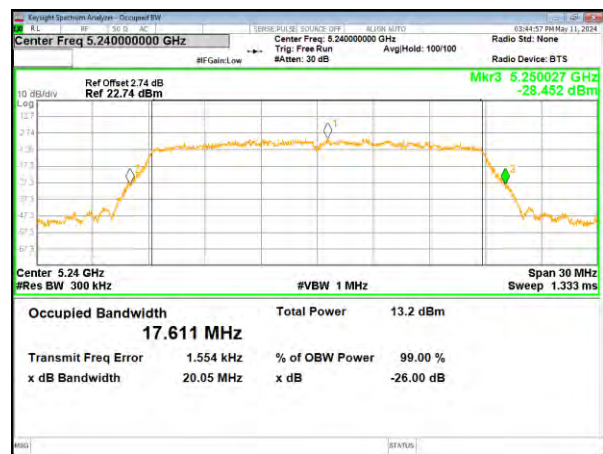
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

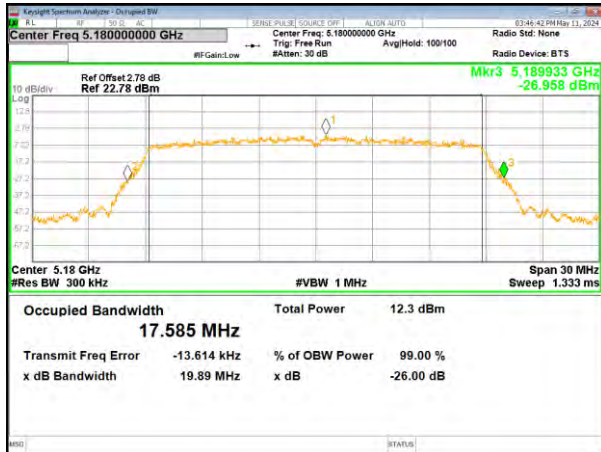


(802.11 n20) plot on channel 48

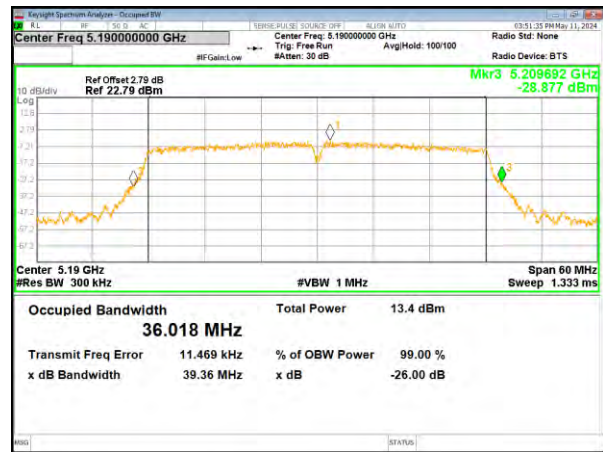


Test plot

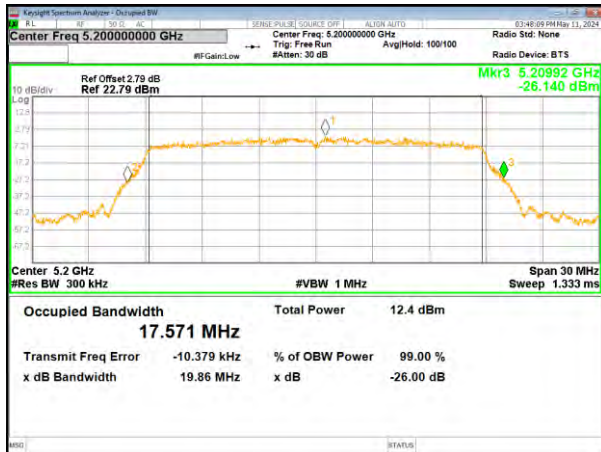
(802.11ac20) plot on channel 36



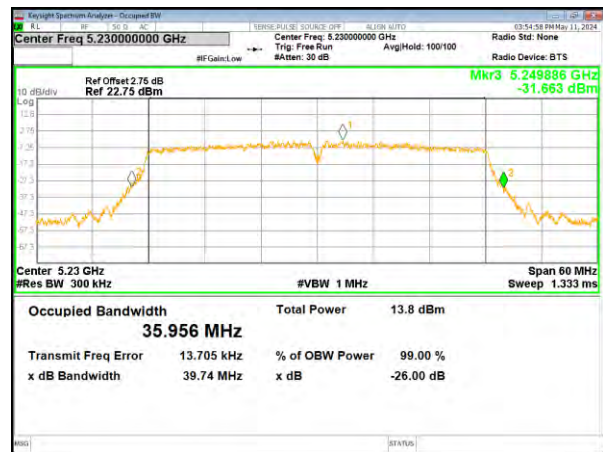
(802.11 n40) plot on channel 38



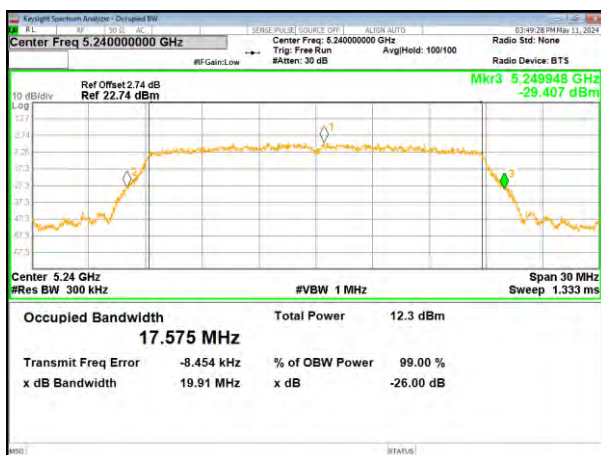
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

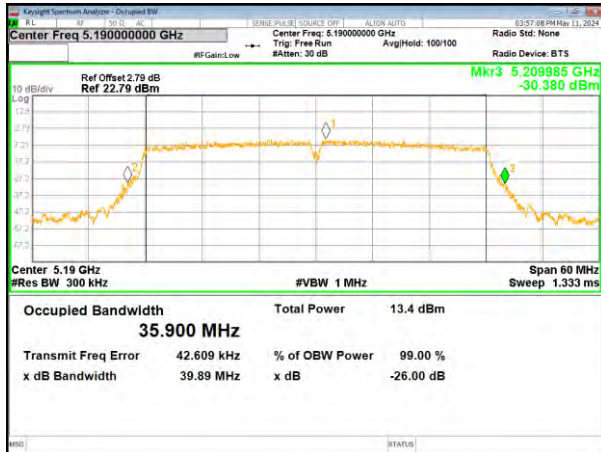


(802.11ac20) plot on channel 48

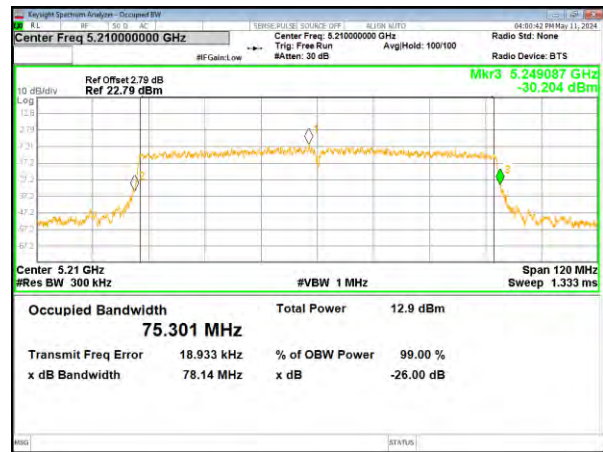


Test plot

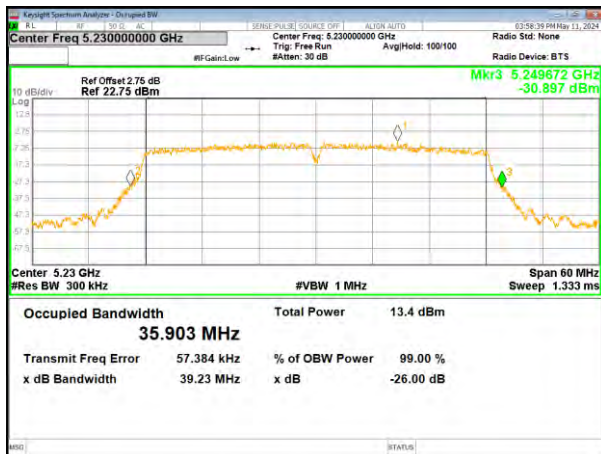
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42

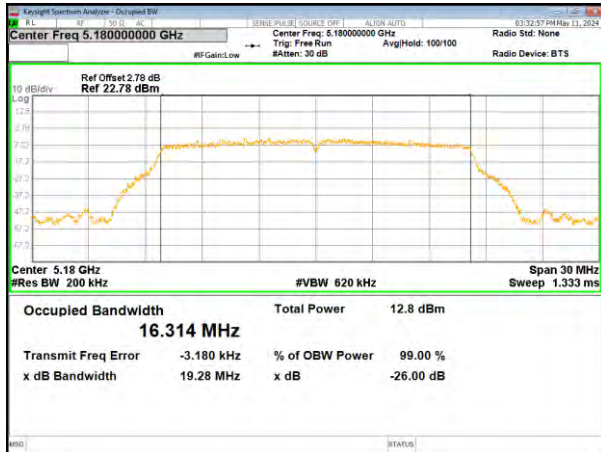


(802.11ac40) plot on channel 46

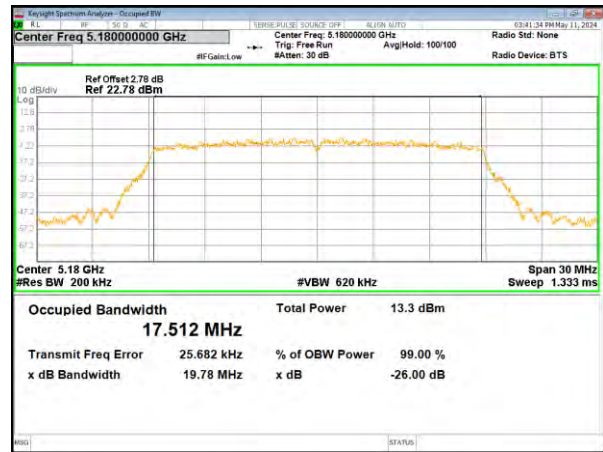


Test plot 99% Occupy Bandwidth(Module: WB663U.1(ANT4))

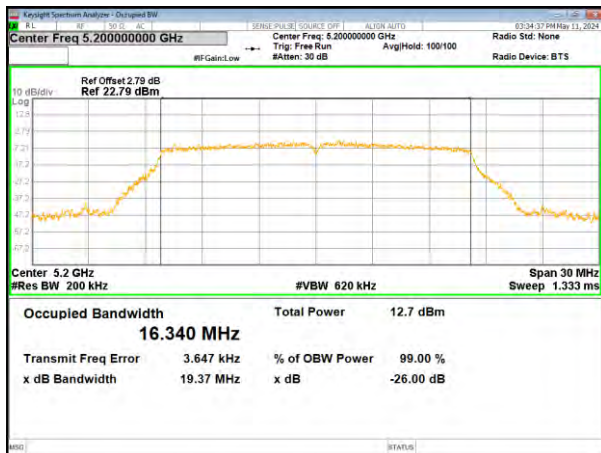
(802.11a) plot on channel 36



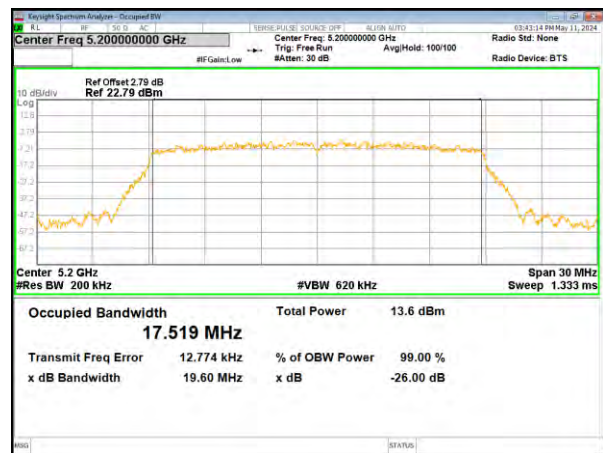
(802.11 n20) plot on channel 36



(802.11a) plot on channel 40



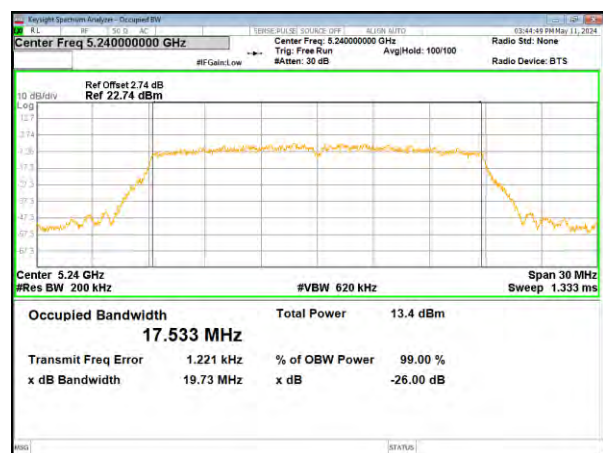
(802.11 n20) plot on channel 40



(802.11a) plot on channel 48

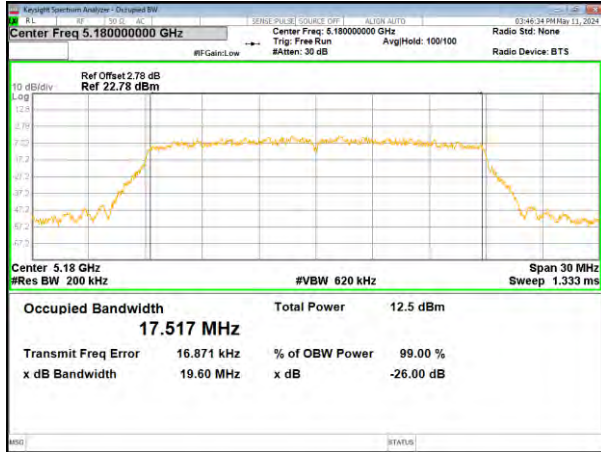


(802.11 n20) plot on channel 48

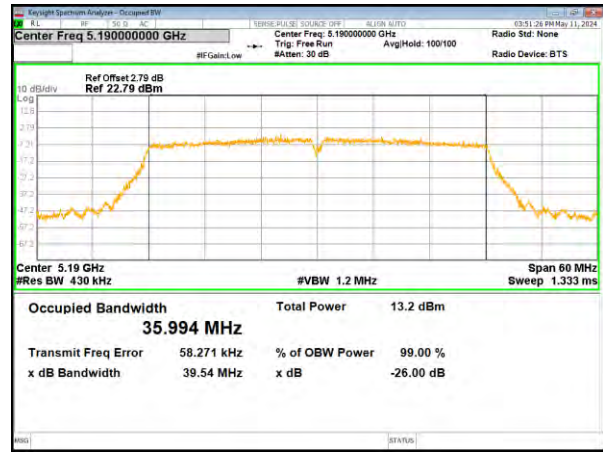


Test plot

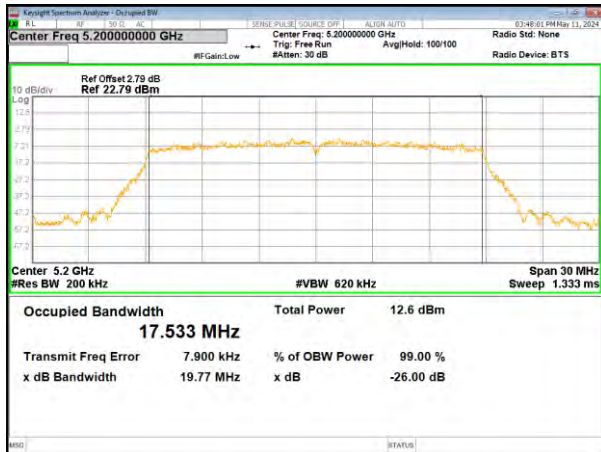
(802.11ac20) plot on channel 36



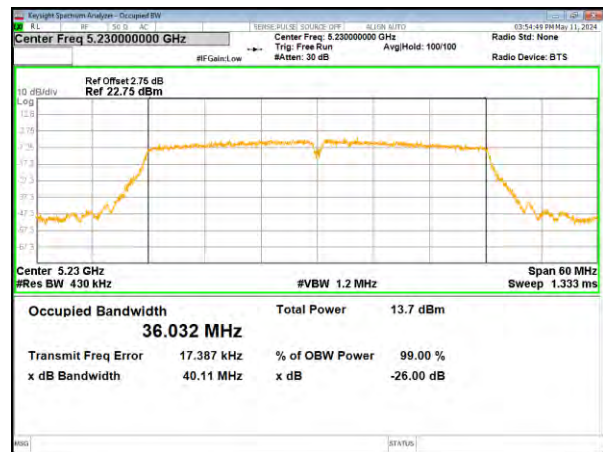
(802.11 n40) plot on channel 38



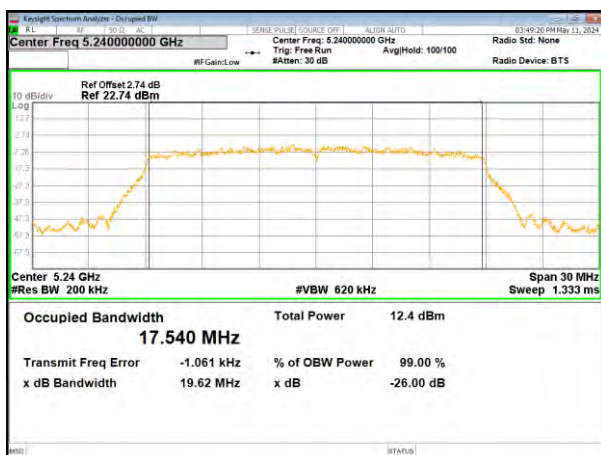
(802.11ac20) plot on channel 40



(802.11 n40) plot on channel 46

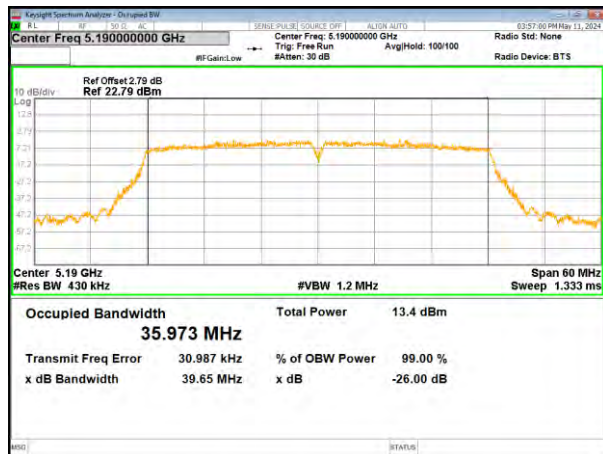


(802.11ac20) plot on channel 48

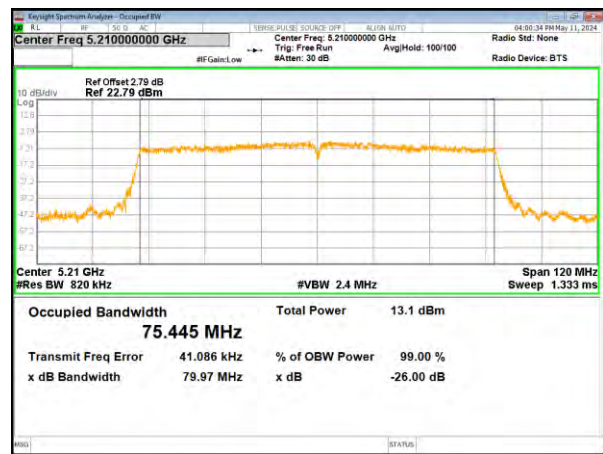


Test plot

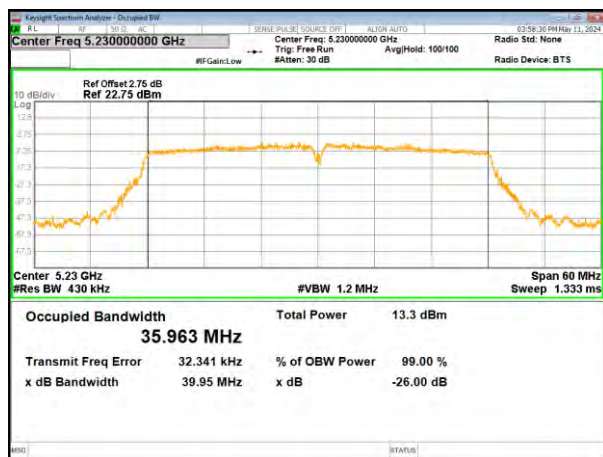
(802.11ac40) plot on channel 38



(802.11ac80) plot on channel 42



(802.11ac40) plot on channel 46



Module: WB800D.3(ANT2)

5745-5825MHz

Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	16.30	17.56	17.56	36.27	36.29	--	>500	Pass
Middle	16.33	17.58	17.55	--	--	73.77		
Highest	16.33	17.58	17.56	36.02	36.32	--		

Remark: "---"is not applicable

Module: WB663U.1(ANT4)

5745-5825MHz

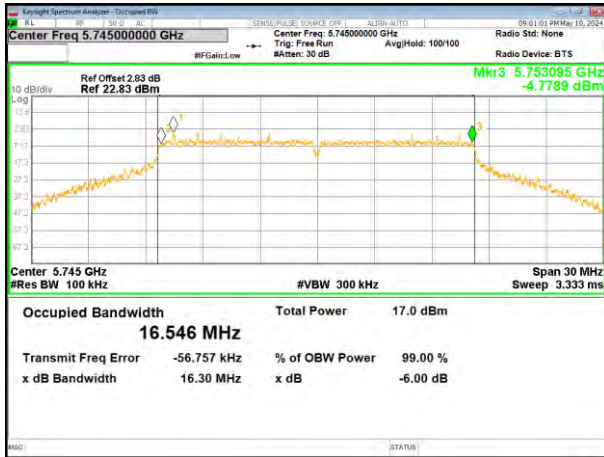
Test CH	-6dB Channel Bandwidth (MHz)						Limit (KHz)	Result
	802.11a	802.11n (HT20)	802.11ac (HT20)	802.11n (HT40)	802.11ac (HT40)	802.11ac (HT80)		
Lowest	15.02	15.09	15.38	35.06	35.10	--	>500	Pass
Middle	15.07	15.92	15.99	--	--	75.11		
Highest	15.91	15.11	16.53	35.10	35.11	--		

Remark: "---"is not applicable

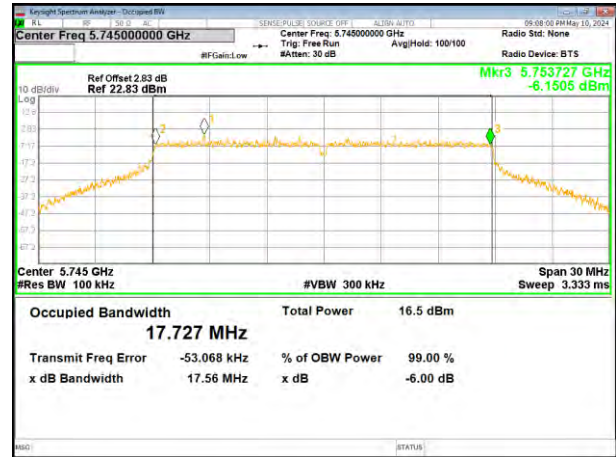
Module: WB800D.3(ANT2)

Test plot

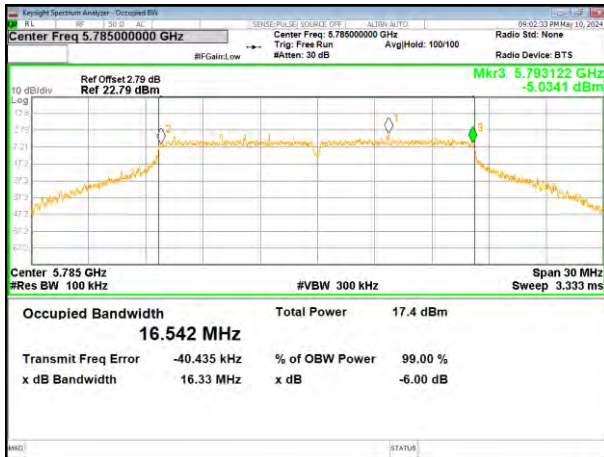
(802.11a) plot on channel 149



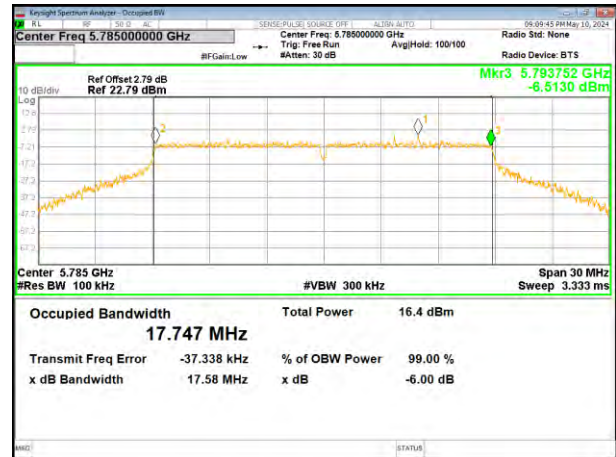
(802.11 n20) plot on channel 149



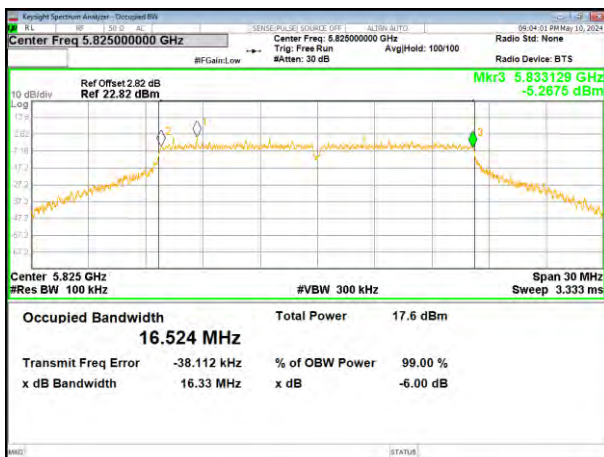
(802.11a) plot on channel 157



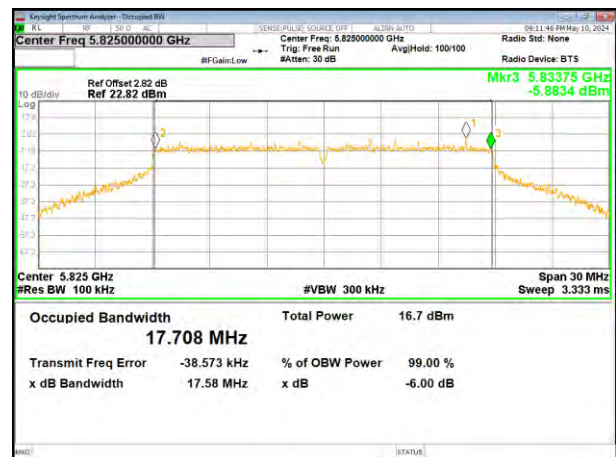
(802.11 n20) plot on channel 157



(802.11a) plot on channel 165

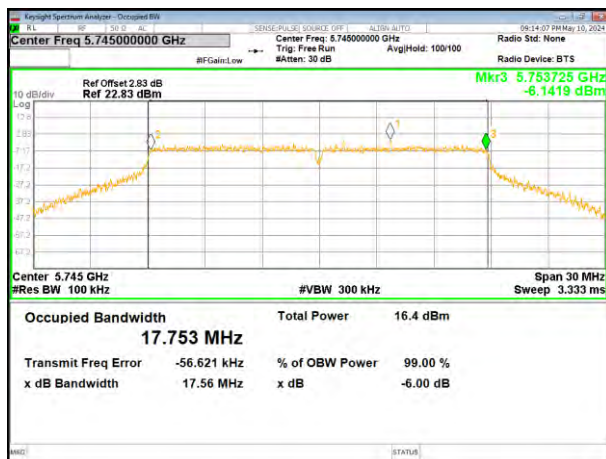


(802.11 n20) plot on channel 165

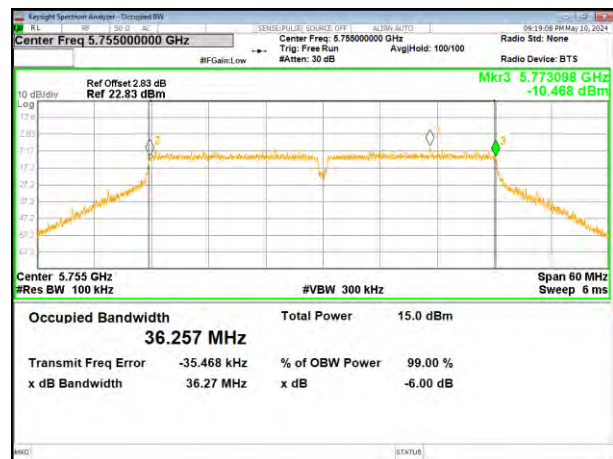


Test plot

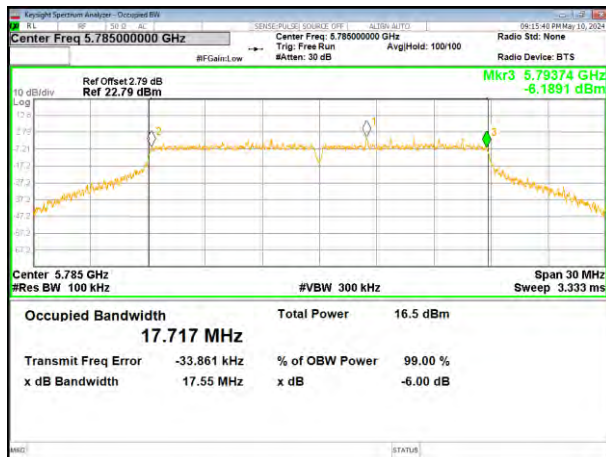
(802.11ac20) plot on channel 149



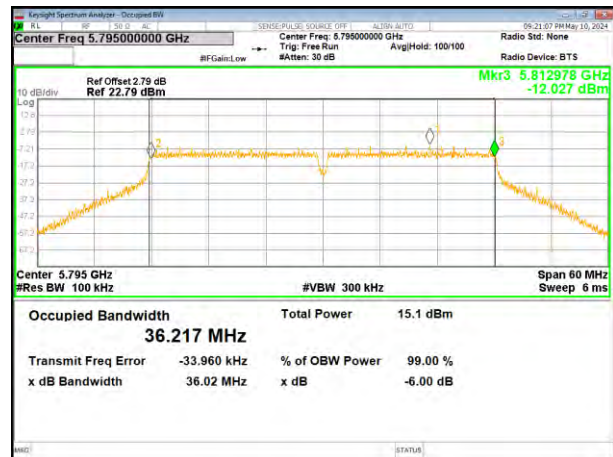
(802.11 n40) plot on channel 151



(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

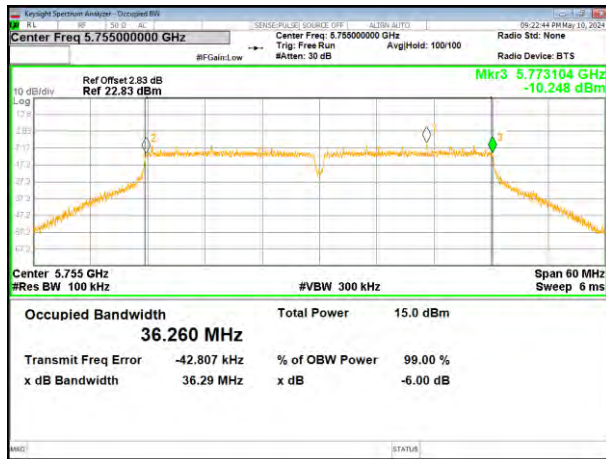


(802.11ac20) plot on channel 165

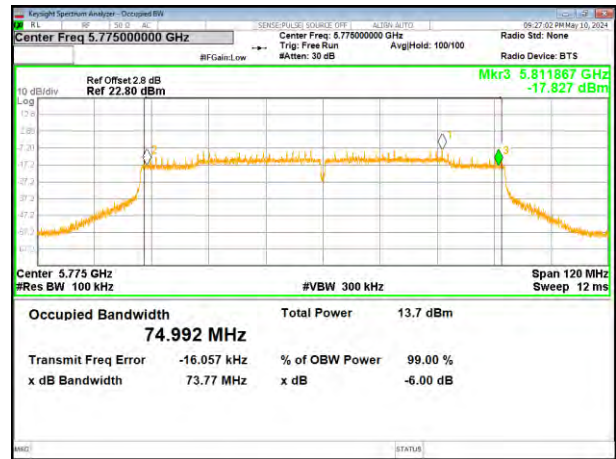


Test plot

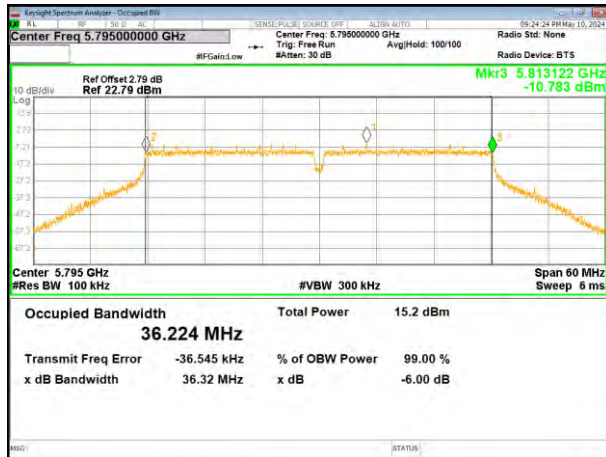
(802.11 ac40) plot on channel 151



(802.11 ac80) plot on channel 155



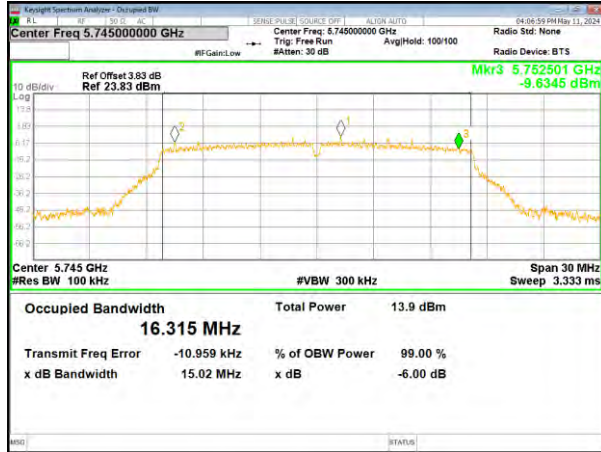
(802.11 ac40) plot on channel 159



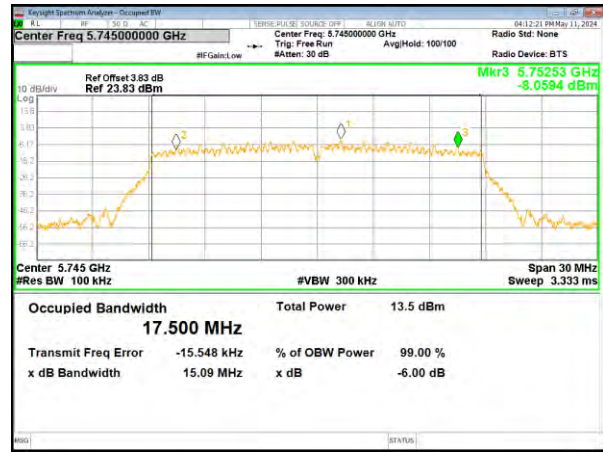
Module: WB663U.1(ANT4)

Test plot

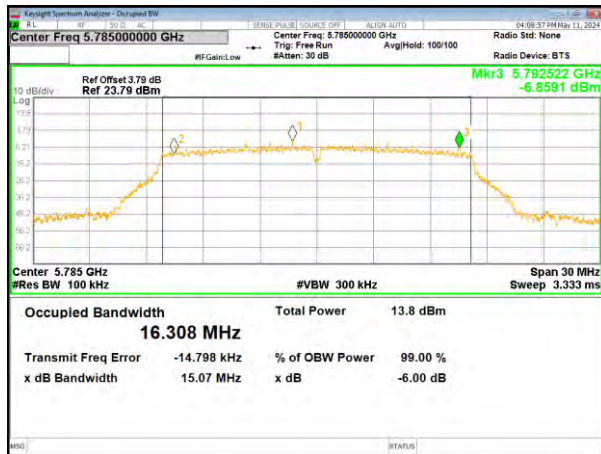
(802.11a) plot on channel 149



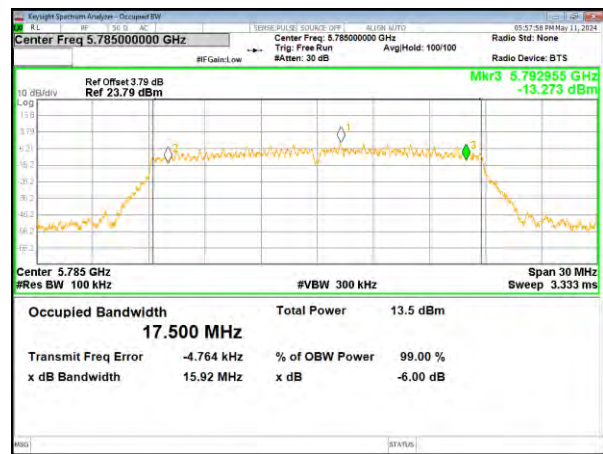
(802.11 n20) plot on channel 149



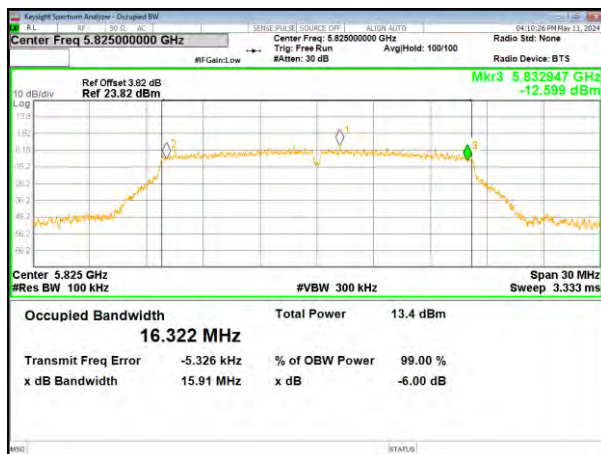
(802.11a) plot on channel 157



(802.11 n20) plot on channel 157



(802.11a) plot on channel 165



(802.11 n20) plot on channel 165



Test plot

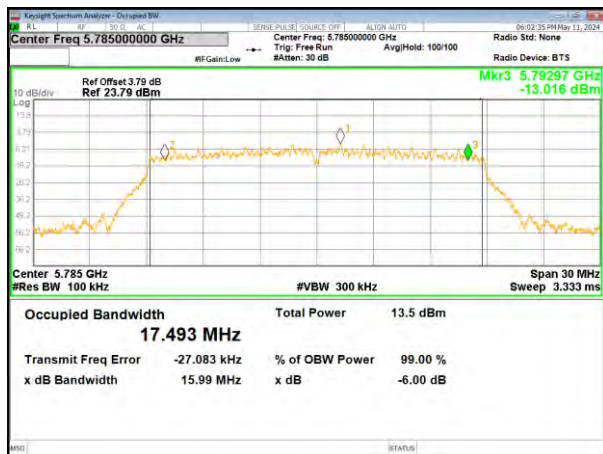
(802.11ac20) plot on channel 149



(802.11 n40) plot on channel 151



(802.11ac20) plot on channel 157



(802.11 n40) plot on channel 159

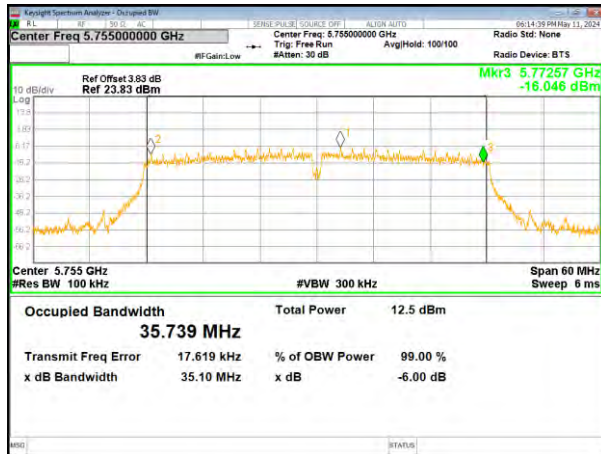


(802.11ac20) plot on channel 165

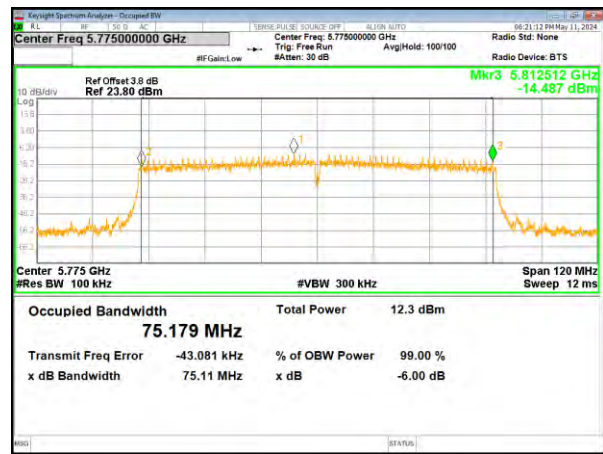


Test plot

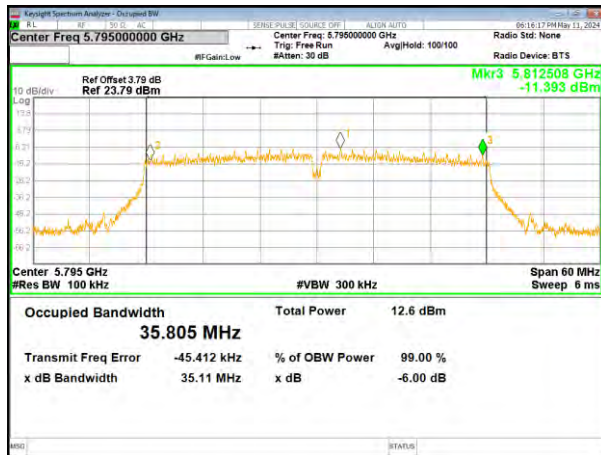
(802.11 ac40) plot on channel 151



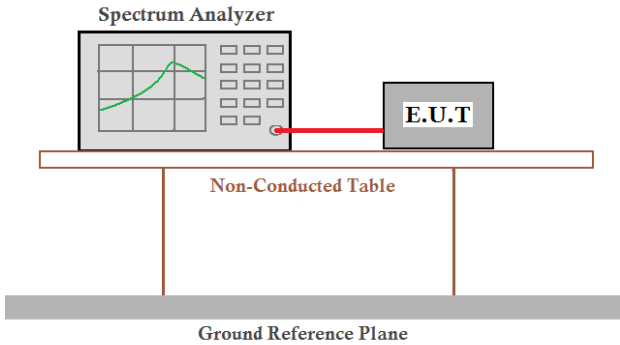
(802.11 ac80) plot on channel 155



(802.11 ac40) plot on channel 159



4.6 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407(a)(1)/ (a)(3)	
Test Method:	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm/1MHz for master device
		≤11dBm/1MHz for client device
	5250-5350	≤11dBm/1MHz for client device
	5470-5725	≤11dBm/1MHz for client device
	5725-5850	≤30dBm/500kHz
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 22.7°C	Humid.: 52%RH
Test voltage:	DC 5V	
Test results:	Pass	

Measurement Result (5180-5240MHz Module: WB800D.3(ANT2))

Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	4.520	0.72	5.240	11
	5200 MHz	3.914	0.72	4.634	11
	5240 MHz	3.540	0.72	4.260	11
802.11 n20	5180 MHz	4.384	0.72	5.104	11
	5200 MHz	4.907	0.72	5.627	11
	5240 MHz	4.435	0.72	5.155	11
802.11 ac20	5180 MHz	5.211	0.74	5.951	11
	5200 MHz	5.201	0.74	5.941	11
	5240 MHz	4.835	0.72	5.555	11
802.11 n40	5190 MHz	1.973	0.72	2.693	11
	5230 MHz	1.525	0.72	2.245	11
802.11 ac40	5190 MHz	2.109	0.73	2.839	11
	5230 MHz	1.650	0.73	2.380	11
802.11 ac80	5210 MHz	-1.815	0.38	-1.435	11



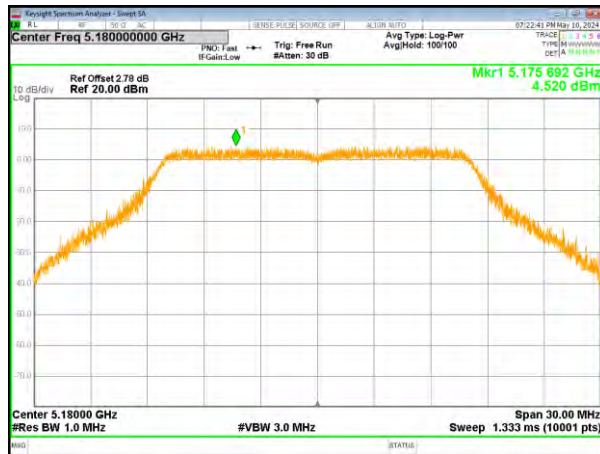
Measurement Result (Module: WB663U.1(ANT4))

5180-5240MHz

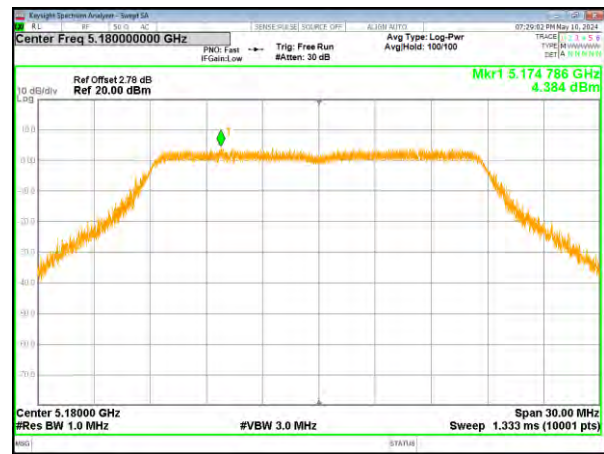
Mode	Frequency	Measured Power Density (dBm/MHz)	Correction Factor (dB)	Total Measured Power Density (dBm/MHz)	Limit (dBm/MHz)
802.11 a	5180 MHz	5.092	0.720	5.812	11
	5200 MHz	5.284	0.720	6.004	11
	5240 MHz	5.260	0.720	5.980	11
802.11 n20	5180 MHz	5.476	0.720	6.196	11
	5200 MHz	5.981	0.720	6.701	11
	5240 MHz	5.570	0.720	6.290	11
802.11 ac20	5180 MHz	4.532	0.720	5.252	11
	5200 MHz	4.805	0.720	5.525	11
	5240 MHz	4.649	0.720	5.369	11
802.11 n40	5190 MHz	2.280	0.730	3.010	11
	5230 MHz	3.255	0.730	3.985	11
802.11 ac40	5190 MHz	2.967	0.730	3.697	11
	5230 MHz	2.225	0.730	2.955	11
802.11 ac80	5210 MHz	-1.359	0.760	-0.599	11

Module: WB800D.3(ANT2)

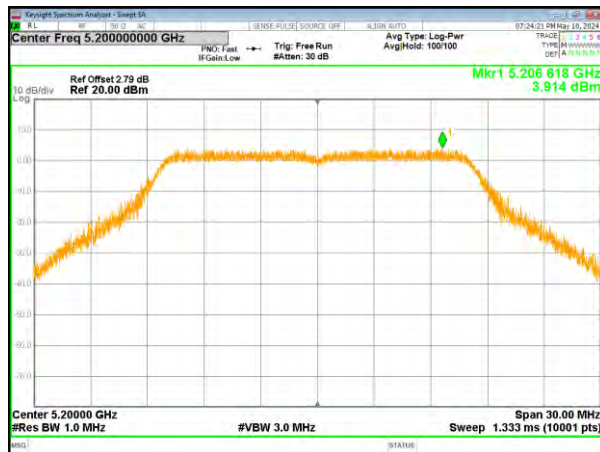
(802.11a) PSD plot on channel 36



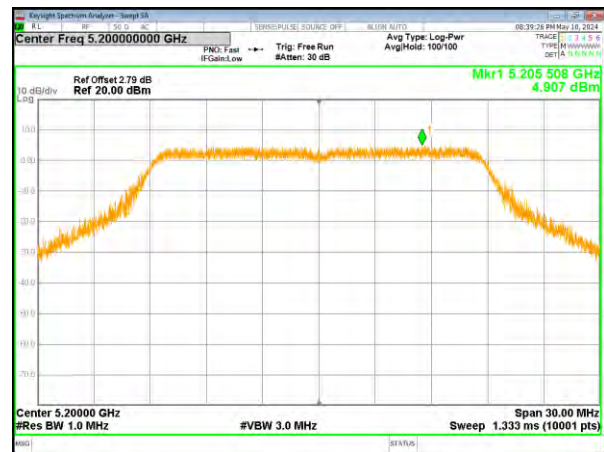
(802.11n20) PSD plot on channel 36



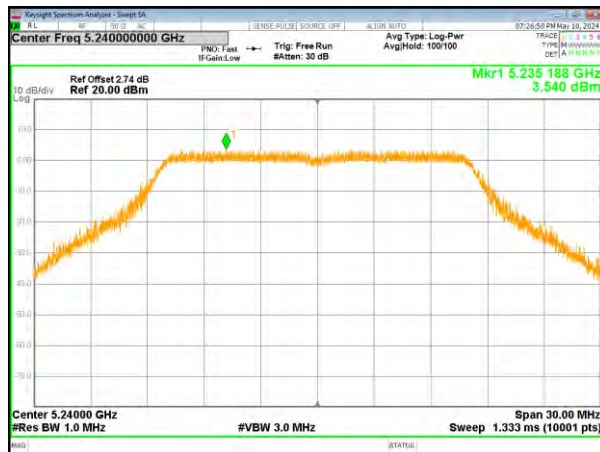
(802.11a) PSD plot on channel 40



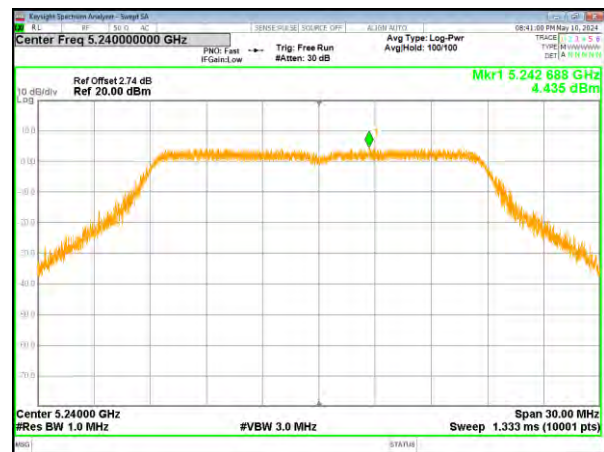
(802.11n20) PSD plot on channel 40



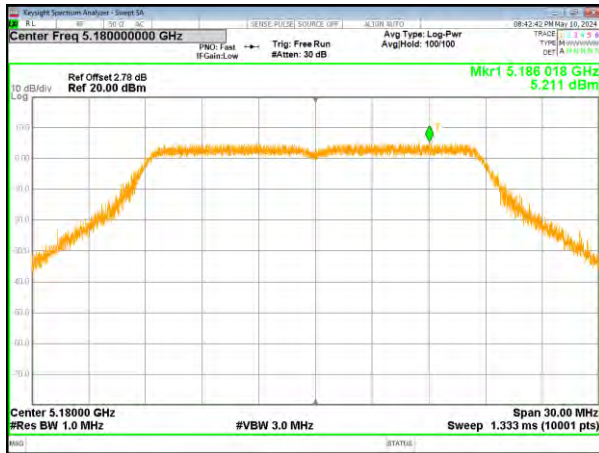
(802.11a) PSD plot on channel 48



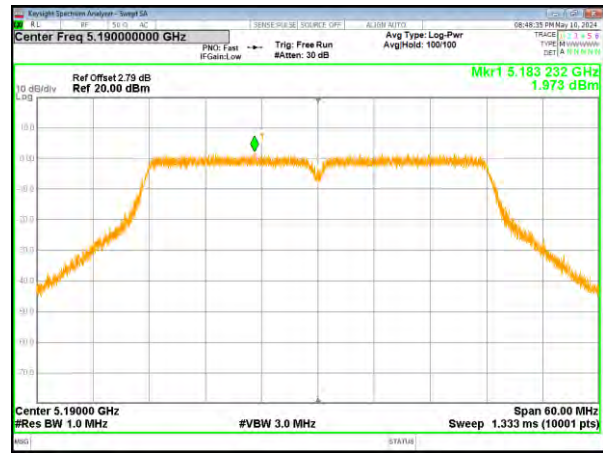
(802.11n20) PSD plot on channel 48



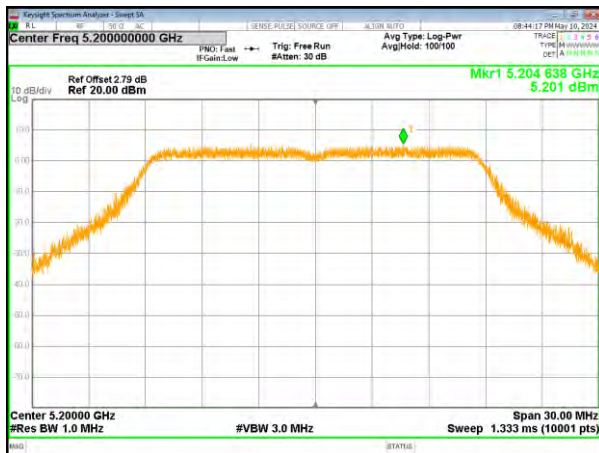
(802.11ac20) PSD plot on channel 36



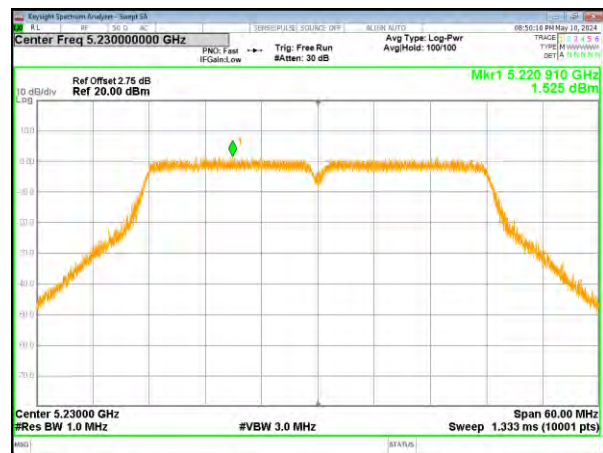
(802.11n40) PSD plot on channel 38



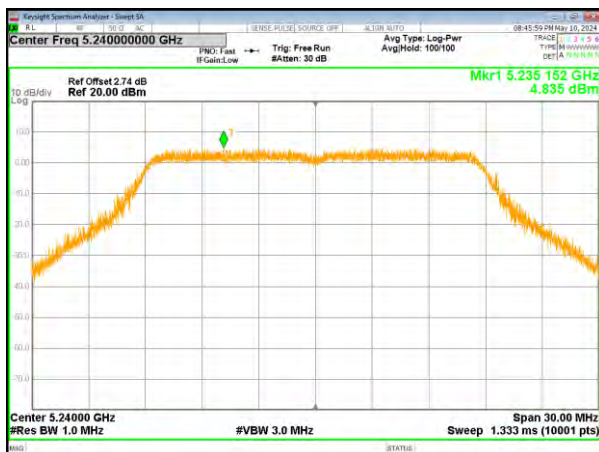
(802.11ac20) PSD plot on channel 40



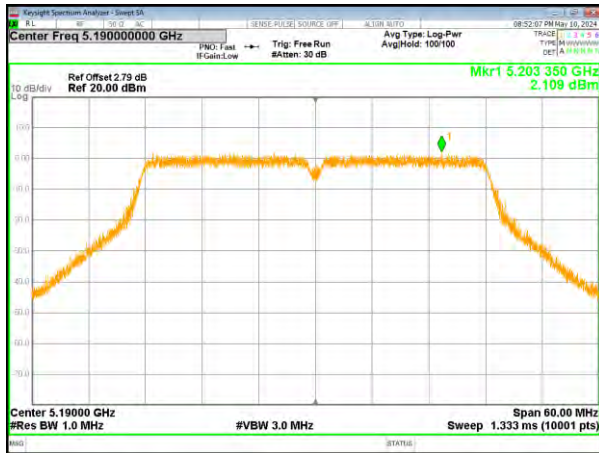
(802.11n40) PSD plot on channel 46



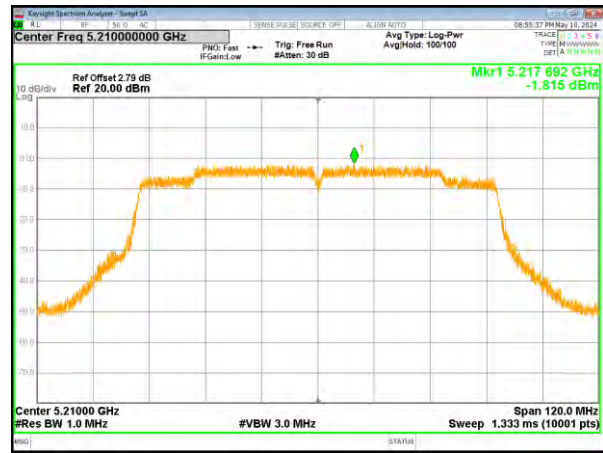
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46

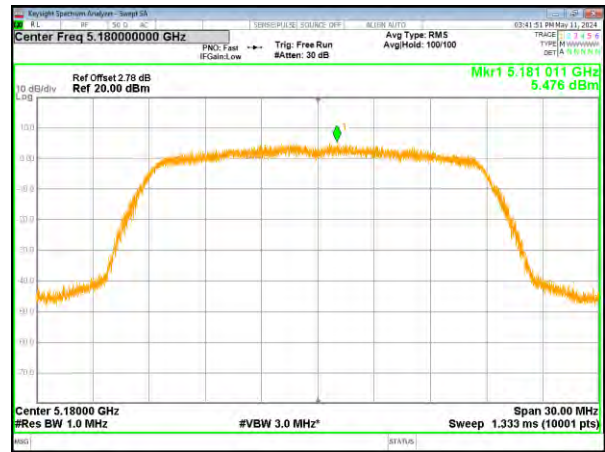


Module: WB663U.1(ANT4)

(802.11a) PSD plot on channel 36



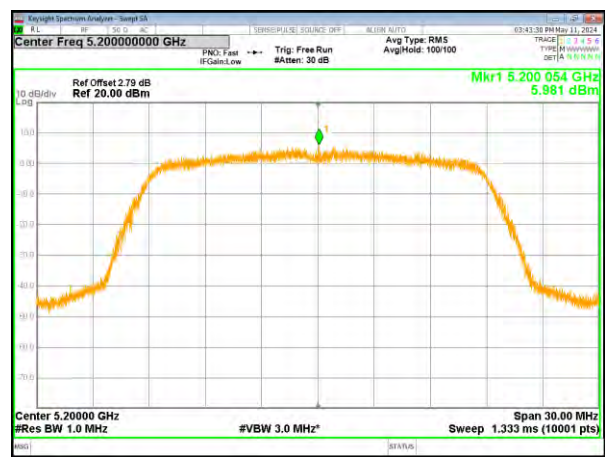
(802.11n20) PSD plot on channel 36



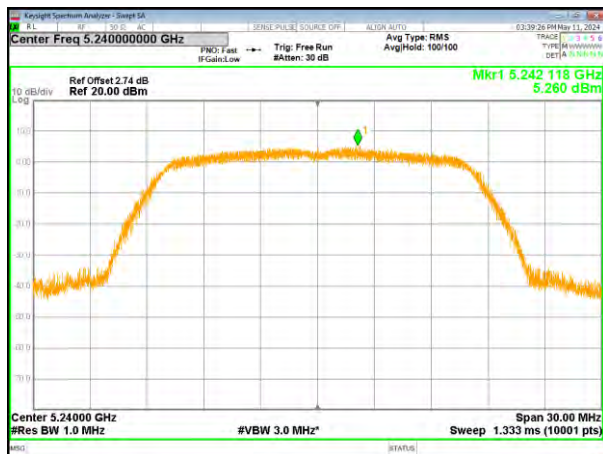
(802.11a) PSD plot on channel 40



(802.11n20) PSD plot on channel 40



(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48

