FCC Test Report

Report No.: AGC08260230901FR04

FCC ID	:	2BAWX-FSC-BW151
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	WI-FI6/BT5.0 SOC Module
BRAND NAME	:	N/A
MODEL NAME	:	FSC-BW151
APPLICANT	:	Postek Electronics Co., Ltd.
DATE OF ISSUE	:	Nov. 30, 2023
STANDARD(S)	:	FCC Part 15 Subpart E §15.407
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	/	Nov. 30, 2023	Valid	Initial Release

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1. General Information

Applicant	Postek Electronics Co., Ltd.
Address	Wisdom Plaza, Block B, Tower 2, 18th Floor Qiaoxiang Road, Nanshan District, Shen Zhen, Guang Dong, China
Manufacturer	Postek Electronics Co., Ltd.
Address	Wisdom Plaza, Block B, Tower 2, 18th Floor Qiaoxiang Road, Nanshan District, Shen Zhen, Guang Dong, China
Factory	Postek Electronics Co., Ltd.
Address	Wisdom Plaza, Block B, Tower 2, 18th Floor Qiaoxiang Road, Nanshan District, Shen Zhen, Guang Dong, China
Product Designation	WI-FI6/BT5.0 SOC Module
Brand Name	N/A
Test Model	FSC-BW151
Series Model(s)	N/A
Difference Description	N/A
Date of receipt of test item	Sep. 28, 2023
Date of Test	Oct.16, 2023 – Nov. 30, 2023
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-5G WLAN-V1

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By	Alan Duan (Project Engineer)	Nov. 30, 2023
Reviewed By	Calvin Liu (Reviewer)	Nov. 30, 2023
Approved By	Max Zhang (Authorized Officer)	Nov. 30, 2023

2. Product Information

2.1 Product Technical Description

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
Hardware Version	V1.0
Software Version	V1.0.5
Test Frequency Range	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5670MHz, 5755~5795MHz
RF Output Power	IEEE 802.11a(HT20):12.35dBm; IEEE 802.11n(HT20):12.59dBm; IEEE802.11n(HT40):11.69dBm; IEEE 802.11ac(VHT20):12.19dBm; IEEE802.11ac(VHT40):12.22dBm; IEEE802.11ax(HE20):12.58dBm; IEEE802.11ax(HE40):12.47dBm;
Modulation	802.11a/n:(64-QAM, 16-QAM, QPSK, BPSK) OFDM 802.11ac :(256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDM 802.11ax :(1024-QAM,256-QAM, 64-QAM, 16-QAM, QPSK, BPSK) OFDMA
Data Rate	802.11a:6/9/12/18/24/36/48/54Mbps; 802.11n:up to 300Mbps; 802.11ac:up to 866.6Mbps; 802.11ax:up to 1201Mbps
Number of channels	6 channels of U-NII-1 Band 6 channels of U- NII-2A Band 16 channels of U-NII-2C Band 7 channels of U- NII 3 Band
Antenna Designation	FPC Antenna
Antenna Gain	0.36dBi
Power Supply	AC 120V

2.2 Table of Carrier Frequency

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

For 5260~5320MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20) , 802.11ax (HE20):

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) , 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

For 5500~5700MHz:

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

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

For 5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20) , 802.11ax (HE20):

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), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

2.3 IEEE 802.11n Modulation Scheme

MCS Index	Nss	Modulation	R	N_{BPSC}	N_{CBPS}		N_{DBPS}		Data rate (Mbps) 800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

2.4 IEEE 802.11AX Modulation Scheme

HE-MCSs for 242-tone RU, N_{SS}=1

HE-MCS Index	DCM	Modulation	R	N_{BPSCS}	N_{SD}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)		
								0.8μsGI	1.6μsGI	3.2μsGI
0	1	BPSK	1/2	1	117	117	58	4.3	4.0	3.6
	0		1/2		234	234	117	8.6	8.1	7.3
1	1	QPSK	1/2	2	117	234	117	8.6	8.1	7.3
	0		1/2		234	468	234	17.2	16.3	14.6
2	N/A		3/4		234	468	351	25.8	24.4	21.9
3	1	16-QAM	1/2	4	117	468	234	17.2	16.3	14.6
	0		1/2		234	936	468	34.4	32.5	29.3
4	1		3/4		117	468	351	25.8	24.4	21.9
	0		3/4		234	936	702	51.6	48.8	43.9
5	N/A	64-QAM	2/3	6	234	1404	936	68.8	65.0	58.5
6			3/4				1053	77.4	73.1	65.8
7			5/6				1170	86.0	81.3	73.1
8		256-QAM	3/4	8		1872	1404	103.2	97.5	87.8
9			5/6				1560	114.7	108.3	97.5
10		1024-QAM	3/4	10		2340	1755	129.0	121.9	109.7
11			5/6				1950	143.4	135.4	121.9

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

HE-MCSs for 484-tone RU, N_{SS}=1

HE-MCS Index	DCM	Modulation	R	N_{BPSCS}	N_{SD}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)		
								0.8μsGI	1.6μsGI	3.2μsGI
0	1	BPSK	1/2	1	234	234	117	8.6	8.1	7.3
	0		1/2		468	468	234	17.2	16.3	14.6
1	1	QPSK	1/2	2	234	468	234	17.2	16.3	14.6
	0		1/2		468	936	468	34.4	32.5	29.3
2	N/A		3/4		468	936	702	51.6	48.8	43.9
3	1	16-QAM	1/2	4	234	936	468	34.4	32.5	29.3
	0		1/2		468	1872	936	68.8	65.0	58.5
4	1		3/4		234	936	702	51.6	48.8	43.9
	0		3/4		468	1872	1404	103.2	97.5	87.8
5	N/A	64-QAM	2/3	6	468	2808	1872	137.6	130.0	117.0
6			3/4				2106	154.9	146.3	131.6
7			5/6				2340	172.1	162.5	146.3
8		256-QAM	3/4	8		3744	2808	206.5	195.0	175.5
9			5/6				3120	229.4	216.7	195.0
10		1024-QAM	3/4	10		4680	3510	258.1	243.8	219.4
11			5/6				3900	286.8	270.8	243.8

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

2.5 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: 2BAWX-FSC-BW151 filing to comply with the FCC Part 15 requirements.

2.6 Test Methodology

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
4	KDB 662911	662911 D01 Multiple Transmitter Output v02r01
5	KDB 789033	789033 D02 General U-NII Test Procedures New Rules v02r01

2.7 Special Accessories

Refer to section 4.4.

2.8 Equipment Modifications

Not available for this EUT intended for grant.

2.9 Antenna Requirement

Standard Requirement
15.203 requirement: 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.
EUT Antenna:
The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 0.36dBi.

2.10 Description of Test Software

For IEEE 802.11 mode:

The test utility software used during testing was “TCP&UDP testing tools”, and the version was “1.02”.

Software Setting Diagram

Test Mode	Channel	Power Index
802.11a	L/M/H	0
802.11n(HT20)	L/M/H	0
802.11n(HT40)	L/M/H	0
802.11ac(VHT20)	L/M/H	0
802.11ac(VHT40)	L/M/H	0
802.11ax(HE20)	L/M/H	0
802.11ax(HE40)	L/M/H	0

3. Test Environment

3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

3.3 Environmental Conditions

	Normal Conditions
Temperature range (℃)	15 - 35
Relative humidity range	20% - 75%
Pressure range (kPa)	86 - 106
Power supply	AC 120V

3.4 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 = ±2.9 dB
Uncertainty of Radiated Emission below 1GHz	U_c = ±3.9 dB
Uncertainty of Radiated Emission above 1GHz	U_c = ±4.9 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 = ±2.7 %

3.5 List of Equipment Used

● RF Conducted Test System							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-06-01	2024-05-31
☒	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2023-03-03	2024-03-02
☒	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2023-03-03	2024-03-02
☒	AGC-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08
☒	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2023-06-01	2024-05-31
☒	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A
☒	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A

● Radiated Spurious Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☐	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2023-02-18	2024-02-17
☒	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02
☒	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31
☒	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2022-03-12	2024-03-11
☒	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10
☒	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-03-23	2024-03-22
☒	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23
☒	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03
☒	AGC-EM-A118	5G Filter	SongYi	BRM50716	N/A	2023-06-01	2024-05-31
☒	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08
☐	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08

● AC Power Line Conducted Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2023-06-03	2024-06-02
☒	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2024-06-08
☒	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023-06-03	2024/06/02

● Test Software					
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
☒	AGC-EM-S003	RE Test System	FARA	EZ-EMC	V.RA-03A
☒	AGC-EM-S011	RSE Test System	Tonscend	TS$^+$ Ver2.1(JS36-RSE)	4.0.0.0
☒	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71
☒	AGC-ER-S009	BT/WIFI Test System	Tonscend	JS1120-3	2.6.77.0518

4.System Test Configuration

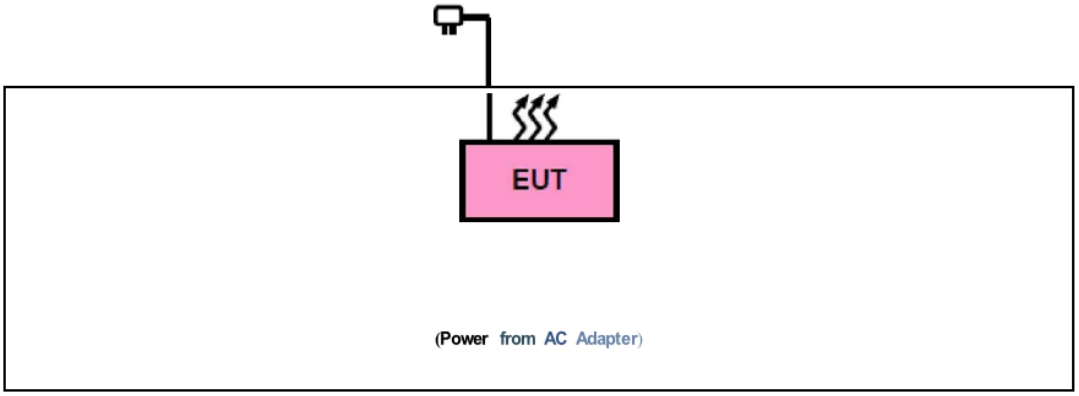
4.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 Configuration of Tested System



4.4 Equipment Used in Tested System

Th The following peripheral devices and interface cables were connected during the measurement:

☒ Test Accessories Come From The Laboratory

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1	Redmi Notebook PC	Redmi	XMA2002-AB	--	--

☐ Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1	--	--	--	--	--

4.5 Summary of Test Results

Item	FCC Rules	Description Of Test	Result
1	§15.203	Antenna Equipment	Pass
2	§15.407(a/1/2/3)	RF Output Power	Pass
3	§15.407(a)	6dB Bandwidth Measurement	Pass
4	§15.215	26dB bandwidth Measurement	Pass
5	§15.407(a/1/2/3)	Power Spectral Density	Pass
6	§15.407(b)(1/2/3/4)	Conducted Spurious Emission	Pass
7	§15.209,§15.407(b)(1/2/3/4)	Radiated Emission& Band Edge	Pass
8	§15.207	AC Power Line Conducted Emission	Pass

5. Description of Test Modes

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE > 1G	RE < 1G	PLC	APCM	
A	☒	☒	☒	☒	Powered by Adapter with WIFI(5G) Link
B	--	--	--	--	Powered by Battery with WIFI(5G) Link
C	--	--	--	--	Powered by USB with WIFI(5G) Link

Where, **RE＞1G: Radiated Emission above 1GHz** **PLC: Power Line Conducted Emission**
RE＜1G: Radiated Emission below 1GHz **APCM: Antenna Port Conducted Measurement**

NOTE 1: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane.

NOTE 2: "--"means no effect.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (IF EUT with antenna diversity architecture).
☐ The equipment under test has multiple antennas, and only the MIMO mode is recorded as the worst.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	6.0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
☐ The equipment under test has multiple antennas, and only the MIMO mode is recorded as the worst.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11n (40MHz)	5500-5700	36 to 48	140	OFDM	13.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
☐ The equipment under test has multiple antennas, and only the MIMO mode is recorded as the worst.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36	OFDM	6.0

Bandedge Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).
☐ The equipment under test has multiple antennas, and only the MIMO mode is recorded as the worst.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36	OFDM	6.0
A	802.11n (40MHz)		38 to 46	38	OFDM	13.5
A	802.11a	5260-5320	52 to 64	64	OFDM	6.0
A	802.11n (40MHz)		54 to 62	62	OFDM	13.5
A	802.11a	5500-5700	100 to 140	100	OFDM	6.0
A	802.11n (40MHz)		102 to 134	102	OFDM	13.5

Antenna Port Conducted Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations be Meen available modulations, data rates and antenna ports (If EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Freq. Band (MHz)	Available Channel	Tested Channel	Modulation	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	6.5
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	13.5
A	802.11ac (20MHz)		36 to 48	36, 40, 48	OFDM	6.5
A	802.11ac (40MHz)		38 to 46	38, 46	OFDM	13.5
A	802.11ax (20MHz)		36 to 48	36, 40, 48	OFDMA	MCS0
A	802.11ax (40MHz)		38 to 46	38, 46	OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	6.5
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	13.5
A	802.11ac (20MHz)		52 to 64	52, 60, 64	OFDM	6.5
A	802.11ac (40MHz)		54 to 62	54, 62	OFDM	13.5
A	802.11ax (20MHz)		52 to 64	52, 60, 64	OFDMA	MCS0
A	802.11ax (40MHz)		54 to 62	54, 62	OFDMA	MCS0
A	802.11a	5500-5700	100 to 140	100, 120, 140	OFDM	6.0
A	802.11n (20MHz)		100 to 140	100, 120, 140	OFDM	6.5
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	13.5
A	802.11ac (20MHz)		100 to 140	100, 120, 140	OFDM	6.5
A	802.11ac (40MHz)		102 to 134	102, 110, 134	OFDM	13.5
A	802.11ax (20MHz)		100 to 140	100, 116, 140	OFDMA	MCS0
A	802.11ax (40MHz)		102 to 134	102, 110, 134	OFDMA	MCS0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
A	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	6.5
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	13.5
A	802.11ac (20MHz)		149 to 165	149, 157, 165	OFDM	6.5
A	802.11ac (40MHz)		151 to 159	151, 159	OFDM	13.5
A	802.11ax (20MHz)		149 to 165	149, 157, 165	OFDM	MCS0
A	802.11ax (40MHz)		151 to 159	151, 159	OFDM	MCS0

6. Duty Cycle Measurement

5GHz WLAN (NII) operation is possible in 20MHz, 40MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = Peak. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

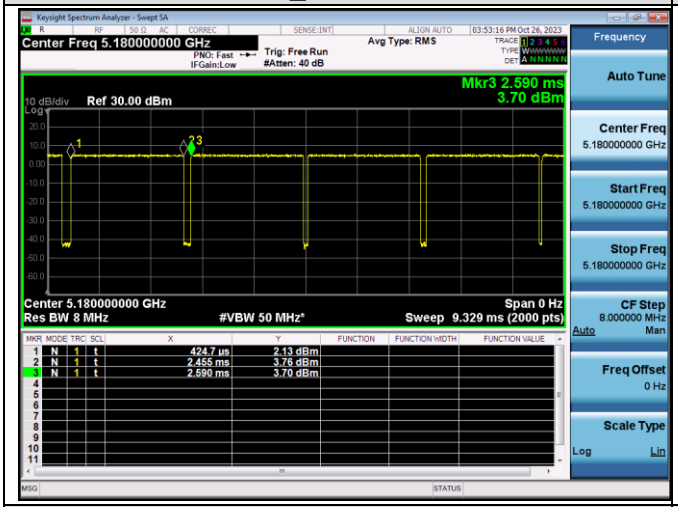
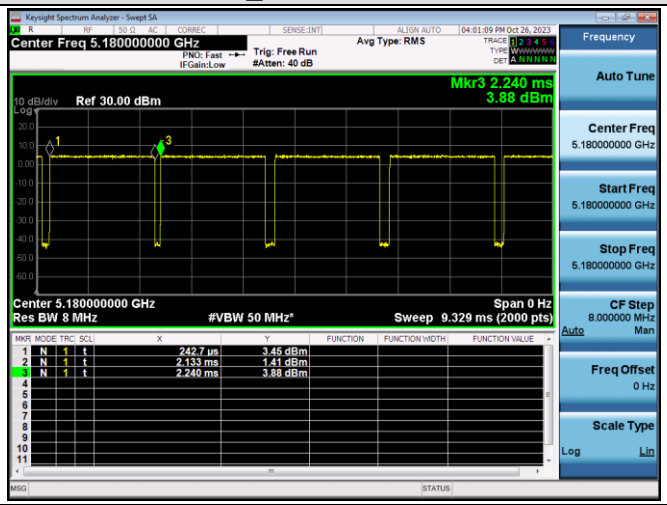
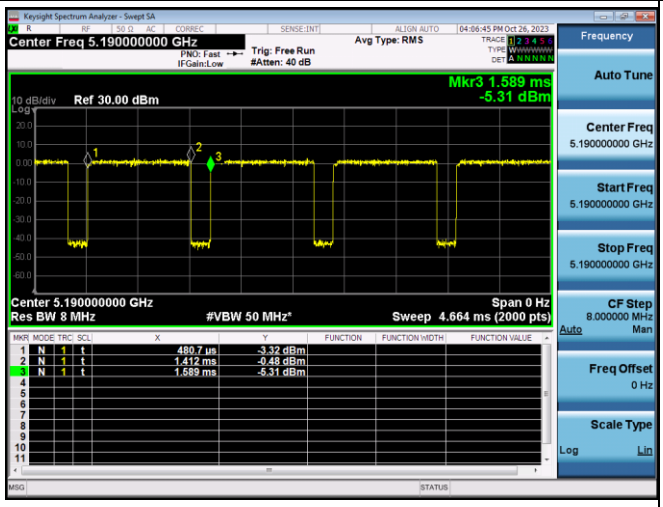
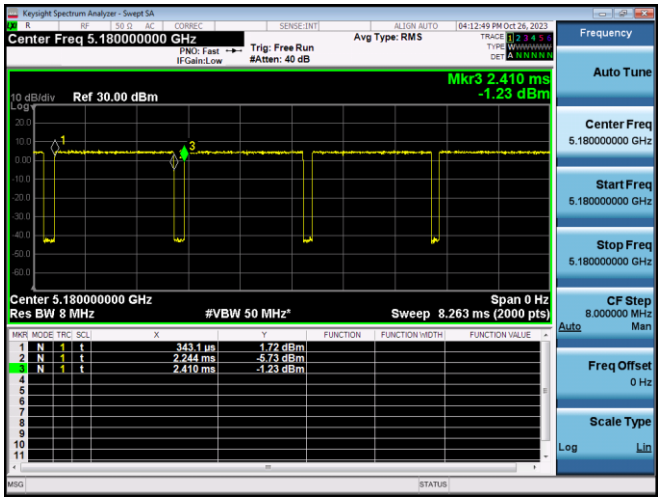
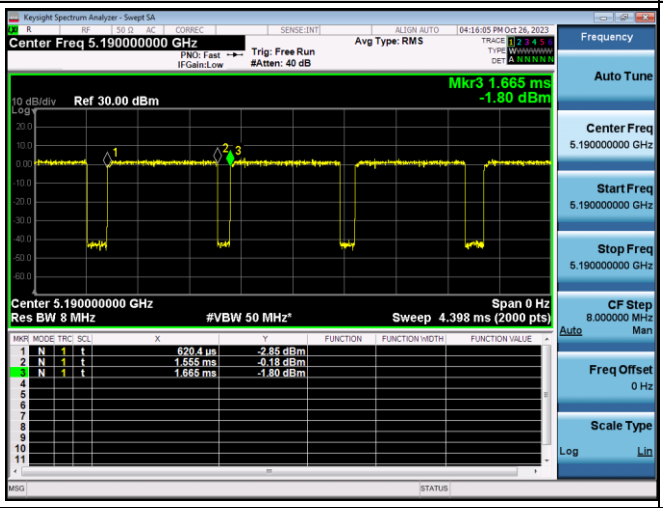
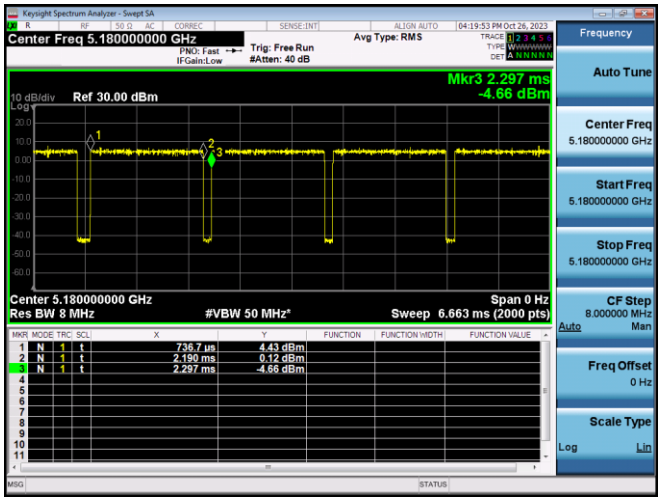
U-NII 1					
Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11a	6	93.77	0.28	0.49	-0.56
IEEE 802.11n-HT20	MCS0	94.64	0.24	0.53	-0.48
IEEE 802.11n-HT40	MCS0	84.03	0.76	1.07	-1.51
IEEE 802.11ac-VHT20	MCS0	91.97	0.36	0.53	-0.73
IEEE 802.11ac-VHT40	MCS0	89.47	0.48	1.07	-0.97
IEEE 802.11ax-HE20	MCS0	93.14	0.31	0.69	-0.62
IEEE 802.11ax-HE40	MCS0	82.47	0.84	1.34	-1.67
U-NII 2A					
Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11a	6	92.37	0.34	0.49	-0.69
IEEE 802.11n-HT20	MCS0	88.77	0.52	0.53	-1.03
IEEE 802.11n-HT40	MCS0	95.89	0.18	1.07	-0.36
IEEE 802.11ac-VHT20	MCS0	91.88	0.37	0.53	-0.74
IEEE 802.11ac-VHT40	MCS0	86.82	0.61	1.07	-1.23
IEEE 802.11ax-HE20	MCS0	92.08	0.36	0.69	-0.72
IEEE 802.11ax-HE40	MCS0	85.11	0.70	1.34	-1.40
U-NII 2C					
Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11a	6	95.27	0.21	0.49	-0.42
IEEE 802.11n-HT20	MCS0	94.47	0.25	0.53	-0.49
IEEE 802.11n-HT40	MCS0	94.04	0.27	1.07	-0.53

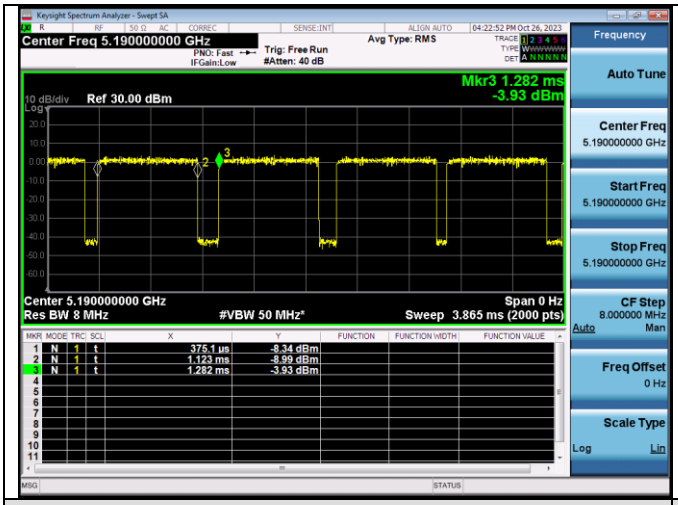
IEEE 802.11ac-VHT20	MCS0	95.76	0.19	0.53	-0.38
IEEE 802.11ac-VHT40	MCS0	92.22	0.35	1.07	-0.70
IEEE 802.11ax-HE20	MCS0	93.68	0.28	0.69	-0.57
IEEE 802.11ax-HE40	MCS0	83.02	0.81	1.34	-1.62
U-NII 3					
Operating mode	Data rates (Mbps)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11a	6	92.57	0.34	0.49	-0.67
IEEE 802.11n-HT20	MCS0	91.41	0.39	0.53	-0.78
IEEE 802.11n-HT40	MCS0	89.20	0.50	1.07	-0.99
IEEE 802.11ac-VHT20	MCS0	91.92	0.37	0.53	-0.73
IEEE 802.11ac-VHT40	MCS0	92.41	0.34	1.07	-0.69
IEEE 802.11ax-HE20	MCS0	89.13	0.50	0.69	-1.00
IEEE 802.11ax-HE40	MCS0	93.62	0.29	1.34	-0.57

Remark:

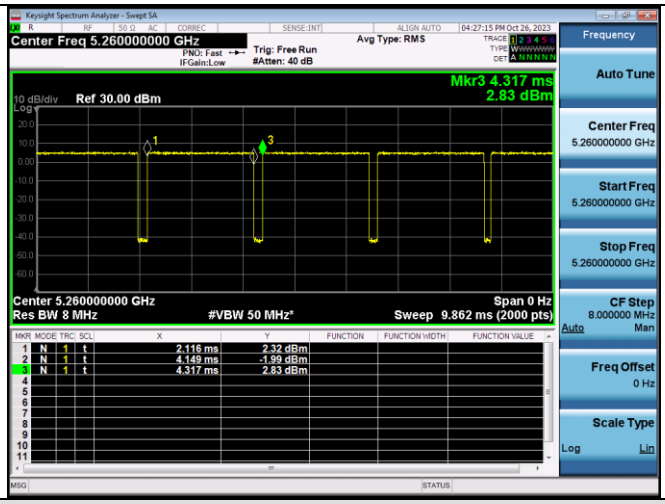
1. Duty Cycle factor = 10 * log (1/ Duty cycle)
2. Average factor = 20 log10 Duty Cycle
3. The duty cycle of each frequency band mode reflects the determination requirements of the low channel measurement value.

The test plots as follows:

U-NII 1_IEEE 802.11a	U-NII 1_IEEE 802.11n-HT20
	
U-NII 1_EEE 802.11n-HT40	U-NII 1_IEEE 802.11ac-VHT20
	
U-NII 1_IEEE 802.11ac-VHT40	U-NII 1_IEEE 802.11ax-HE20
	
U-NII 1_IEEE 802.11ax-HE40	U-NII 2A_IEEE 802.11a



U-NII 2A_IEEE 802.11n-HT20



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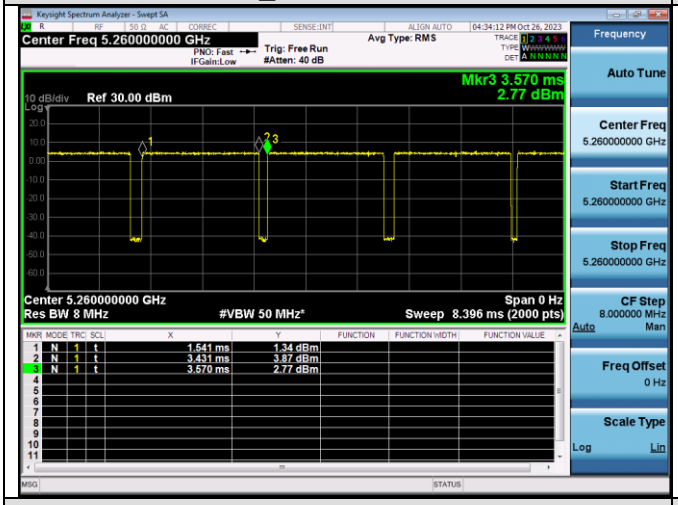
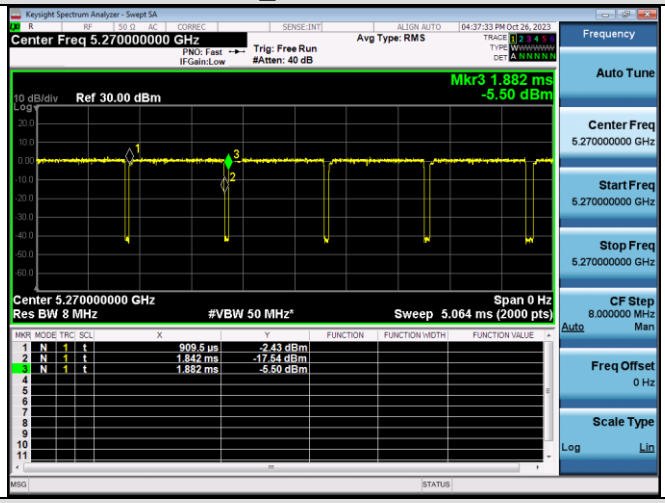


U-NII 2A_ U-NII 1_IEEE 802.11ac-VHT20



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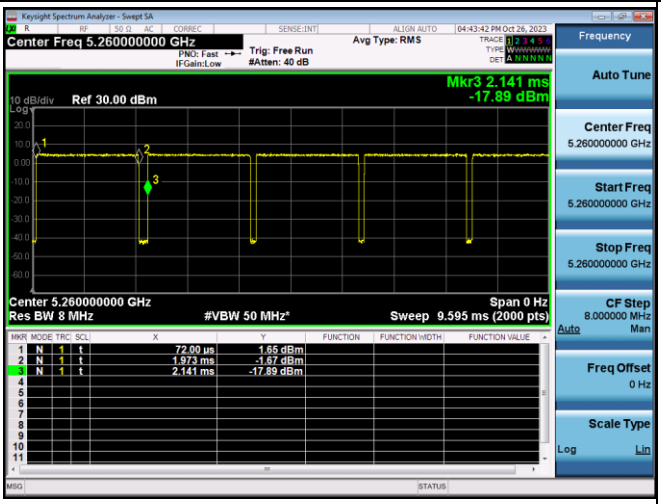

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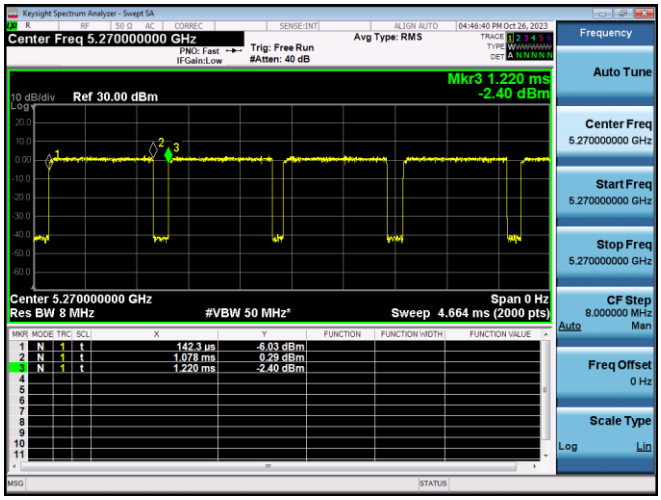

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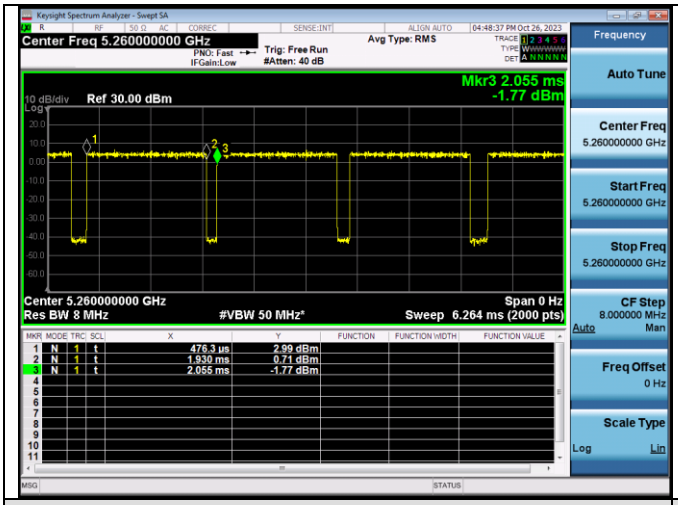
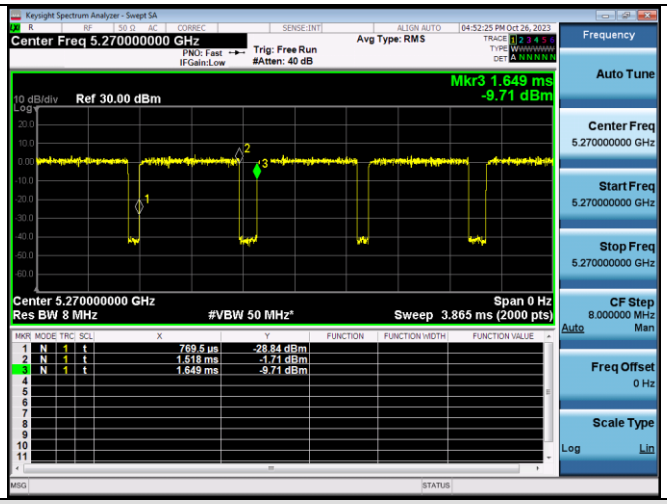


U-NII 2C_IEEE 802.11a



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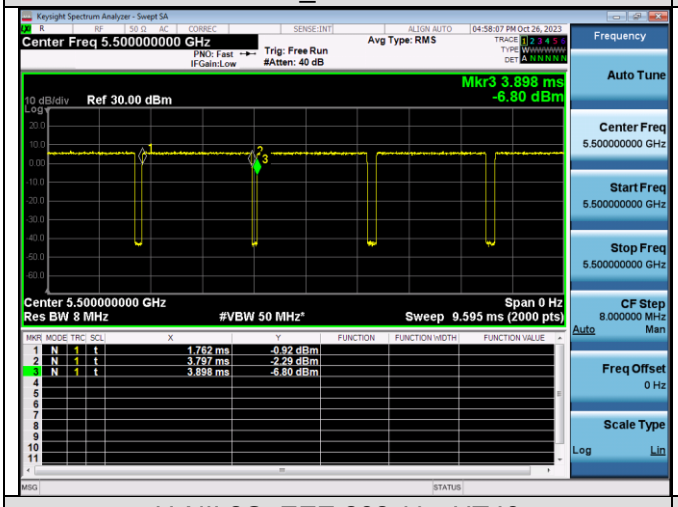

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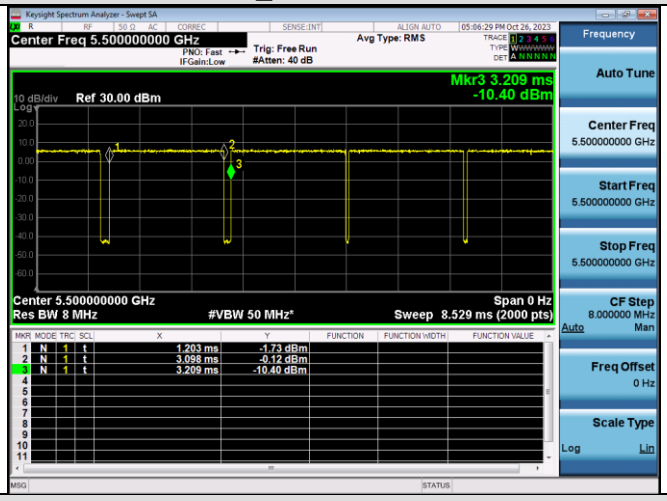

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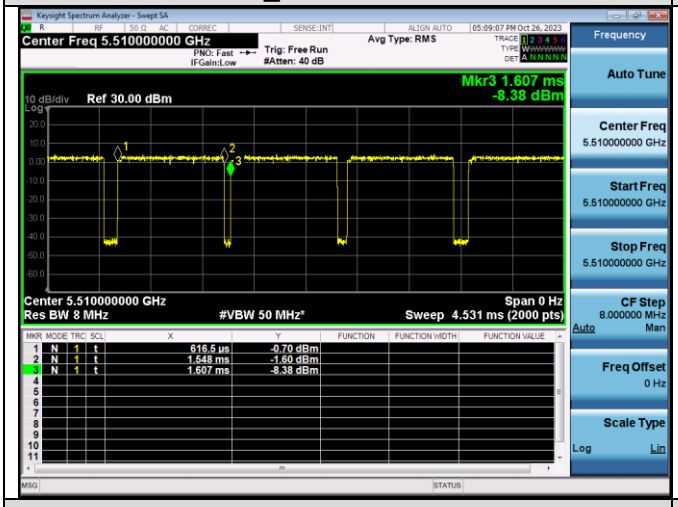

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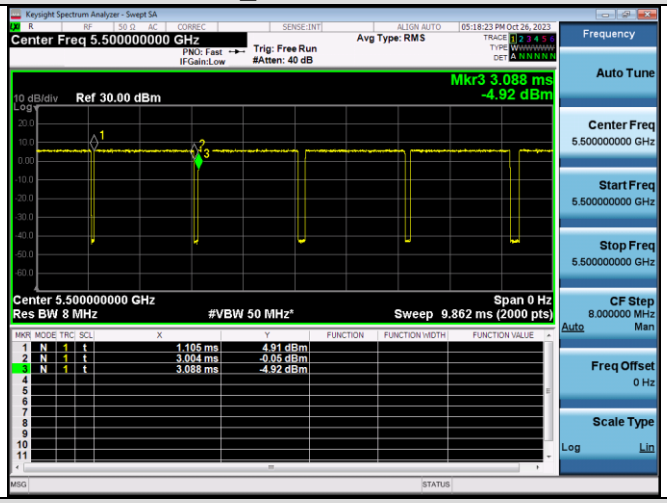

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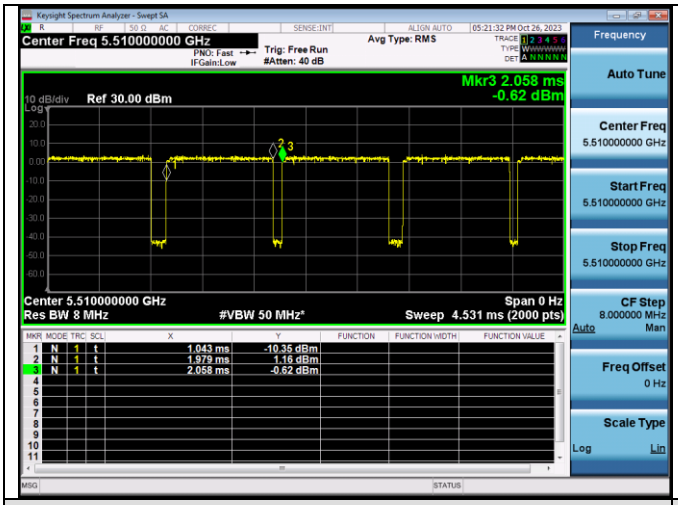

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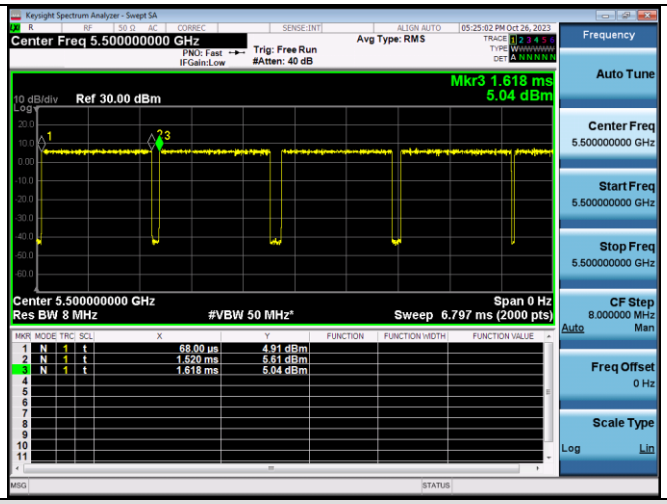
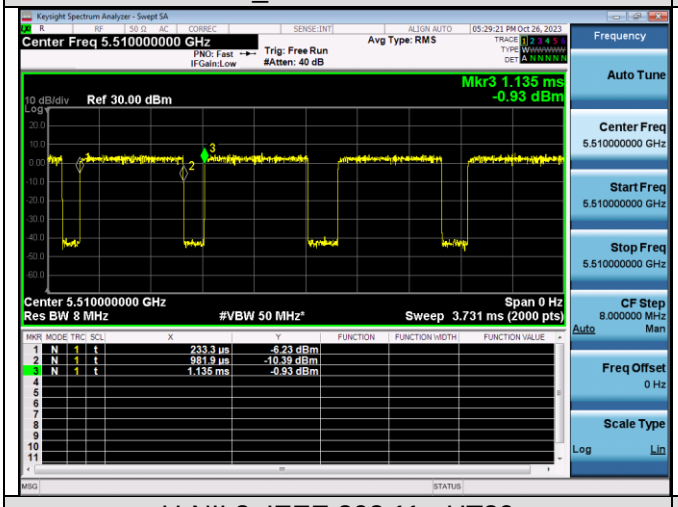
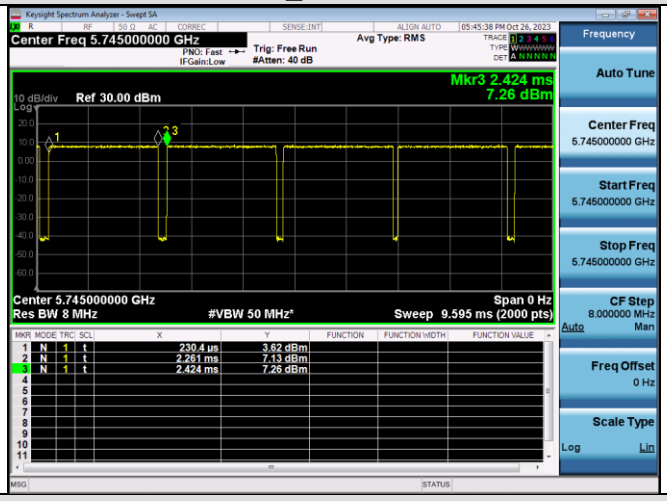


U-NII 3_IEEE 802.11a



U-NII 3_IEEE 802.11n-HT20



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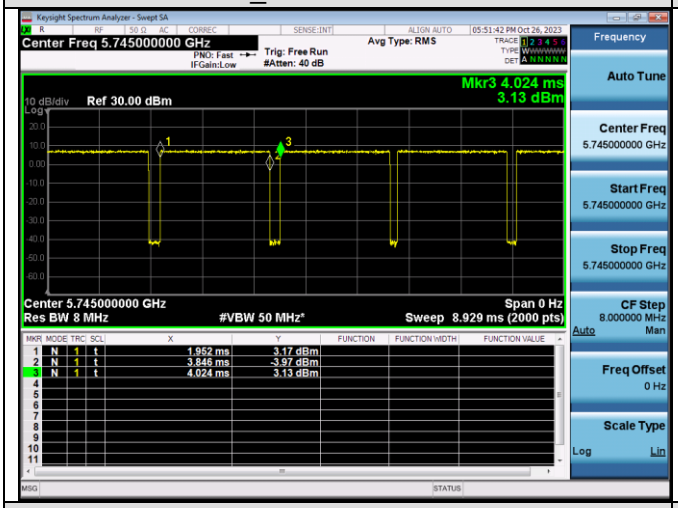
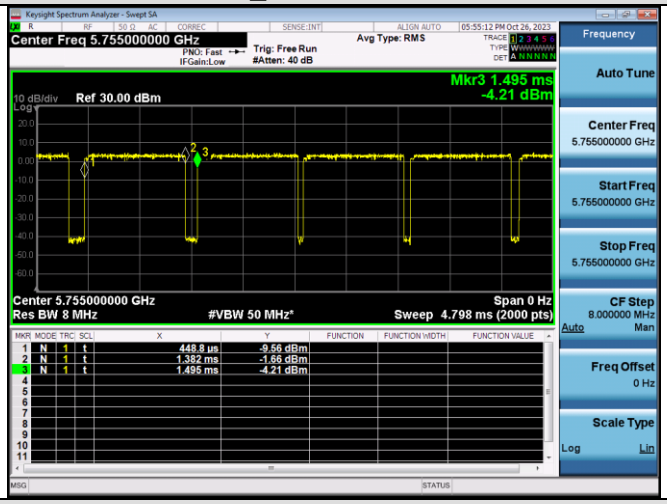


U-NII 3_ U-NII 1_IEEE 802.11ac-VHT20



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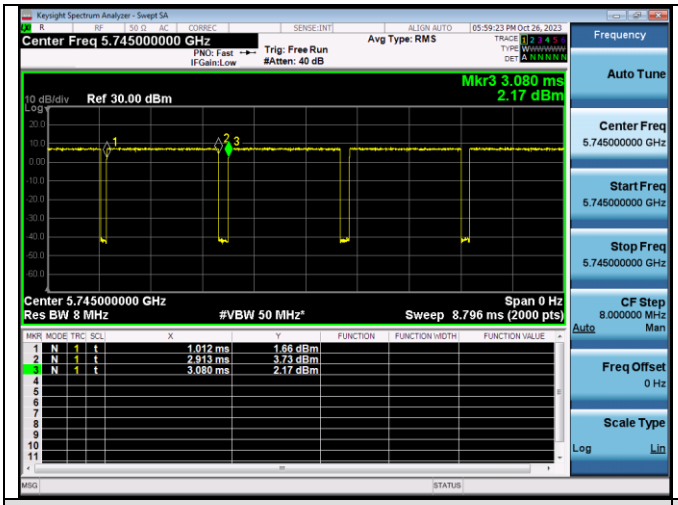
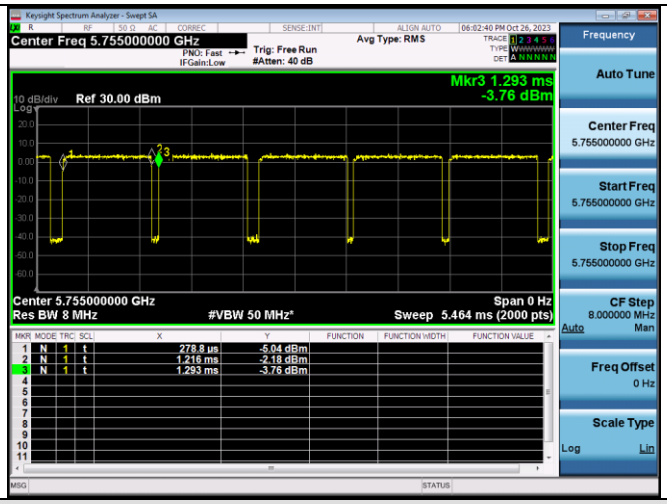
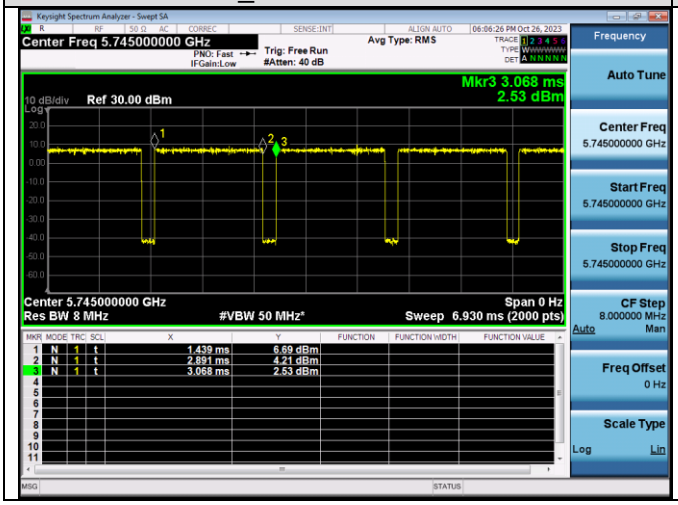
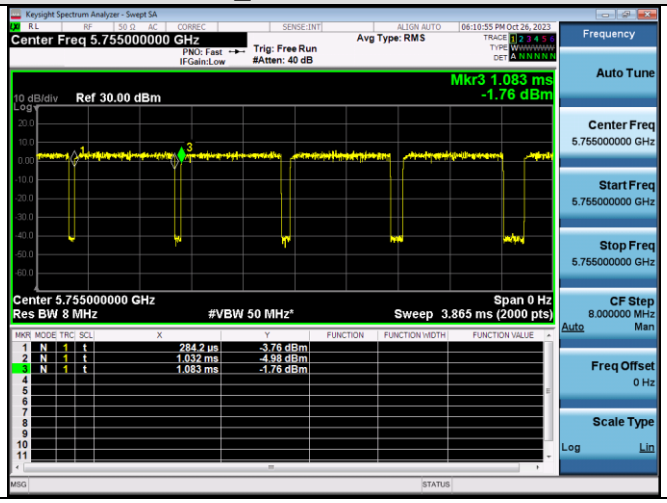




U-NII 3_ IEEE 802.11ax-HE20

U-NII 3_ IEEE 802.11ax-HE40





7. RF Output Power Measurement

7.1 Provisions Applicable

Operation Band	EUT Category		LIMIT
U-NII-1	☐	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p < 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	☐	Fixed point-to-point Access Point	1 Watt (30 dBm)
	☐	Indoor Access Point	1 Watt (30 dBm)
	☒	Client devices	250mW (23.98 dBm)
U-NII-2A	/		250mW (23.98 dBm) or 11 dBm+10 log B*
U-NII-2C	/		250mW (23.98 dBm) or 11 dBm+10 log B*
U-NII-3	/		1 Watt (30 dBm)

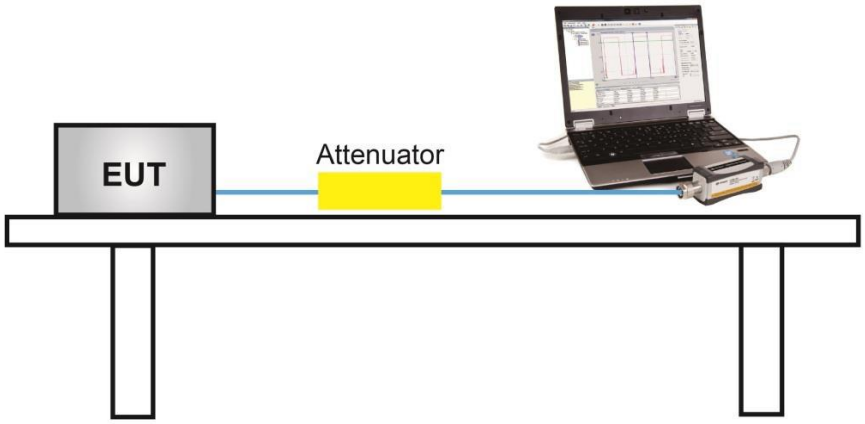
Note: Where B is the 26dB emission bandwidth in MHz.

7.2 Measurement Procedure

☒Method PM is Measurement using an RF average power meter. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 12.3.3.1
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
3. The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
4. At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
5. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
6. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
7. Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
8. Adjust the measurement in dBm by adding [10 log (1 / D)], where D is the duty cycle {e.g., [10 log (1 / 0.25)], if the duty cycle is 25%}.
9. Record the test results in the report.

7.3 Measurement Setup (Block Diagram of Configuration)



7.4 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	8.12	23.98	Pass
	5200	8.06	23.98	Pass
	5240	8.23	23.98	Pass
802.11n20	5180	7.88	23.98	Pass
	5200	7.91	23.98	Pass
	5240	8.06	23.98	Pass
802.11n40	5190	8.52	23.98	Pass
	5230	9.04	23.98	Pass
802.11ac20	5180	8.26	23.98	Pass
	5200	8.49	23.98	Pass
	5240	8.14	23.98	Pass
802.11ac40	5190	8.24	23.98	Pass
	5230	8.43	23.98	Pass
802.11ax20	5180	8.56	23.98	Pass
	5200	8.25	23.98	Pass
	5240	9.11	23.98	Pass
802.11ax40	5190	8.63	23.98	Pass
	5230	8.73	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	8.36	23.98	Pass
	5300	7.07	23.98	Pass
	5320	6.98	23.98	Pass
802.11n20	5260	7.98	23.98	Pass
	5300	7.18	23.98	Pass
	5320	6.95	23.98	Pass
802.11n40	5270	7.26	23.98	Pass
	5310	7.20	23.98	Pass
802.11ac20	5260	8.21	23.98	Pass
	5300	7.47	23.98	Pass
	5320	7.13	23.98	Pass
802.11ac40	5270	8.27	23.98	Pass
	5310	7.25	23.98	Pass
802.11ax20	5260	8.14	23.98	Pass
	5300	7.73	23.98	Pass
	5320	7.01	23.98	Pass
802.11ax40	5270	8.30	23.98	Pass
	5310	7.96	23.98	Pass

Test Data of Conducted Output Power for band 5.470-5.725 GHz				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5500	9.12	23.98	Pass
	5600	10.47	23.98	Pass
	5700	12.35	23.98	Pass
802.11n20	5500	9.56	23.98	Pass
	5600	10.63	23.98	Pass
	5700	12.59	23.98	Pass
802.11n40	5510	9.39	23.98	Pass
	5590	10.70	23.98	Pass
	5670	11.69	23.98	Pass
802.11ac20	5500	9.32	23.98	Pass
	5600	10.33	23.98	Pass
	5700	12.19	23.98	Pass
802.11ac40	5510	9.49	23.98	Pass
	5590	10.48	23.98	Pass
	5670	12.22	23.98	Pass
802.11ax20	5500	9.91	23.98	Pass
	5600	10.96	23.98	Pass
	5700	12.58	23.98	Pass
802.11ax40	5510	10.26	23.98	Pass
	5590	11.64	23.98	Pass
	5670	12.47	23.98	Pass

Test Data of Conducted Output Power for band 5.725-5.850 GHz				
Test Mode	Test Channel (MHz)	Average Power (dBm)	Limits (dBm)	Pass or Fail
802.11a	5745	11.26	30	Pass
	5785	8.81	30	Pass
	5825	6.93	30	Pass
802.11n20	5745	10.75	30	Pass
	5785	8.79	30	Pass
	5825	6.91	30	Pass
802.11n40	5755	10.15	30	Pass
	5795	8.09	30	Pass
802.11ac20	5745	10.93	30	Pass
	5785	8.70	30	Pass
	5825	6.68	30	Pass
802.11ac40	5755	9.94	30	Pass
	5795	8.67	30	Pass
802.11ax20	5745	11.22	30	Pass
	5785	8.75	30	Pass
	5825	6.79	30	Pass
802.11ax40	5755	9.83	30	Pass
	5795	7.96	30	Pass

8. 6dB&26dB Bandwidth Measurement

8.1 Provisions Applicable

The minimum 6dB bandwidth shall be at least 500 kHz.

8.2 Measurement Procedure

◆ **-6dB bandwidth (DTS bandwidth) Test setting:**

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 test setting:**

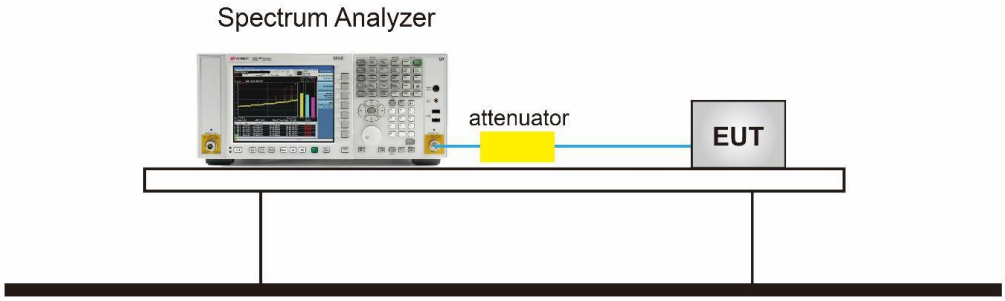
1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel
   The nominal IF filter bandwidth (3 dB RBW) shall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

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.

8.3 Measurement Setup (Block Diagram of Configuration)



8.4 Measurement Results

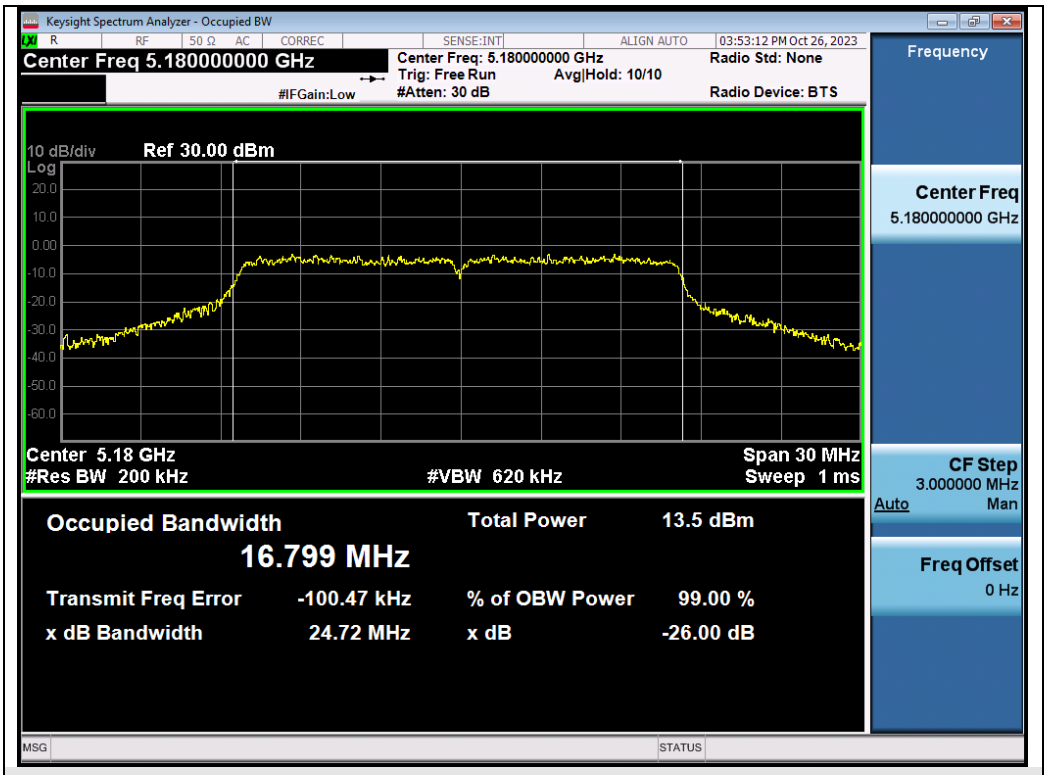
Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5180	16.799	24.721	N/A	Pass
	5200	16.799	24.097	N/A	Pass
	5240	16.803	24.019	N/A	Pass
802.11n20	5180	17.979	26.162	N/A	Pass
	5200	17.978	25.406	N/A	Pass
	5240	17.971	25.822	N/A	Pass
802.11n40	5190	36.477	46.306	N/A	Pass
	5230	36.461	46.319	N/A	Pass
802.11ac20	5180	17.997	25.708	N/A	Pass
	5200	17.988	25.026	N/A	Pass
	5240	17.968	24.328	N/A	Pass
802.11ac40	5190	36.435	47.691	N/A	Pass
	5230	36.451	47.142	N/A	Pass
802.11ax20	5180	19.140	24.783	N/A	Pass
	5200	19.153	24.535	N/A	Pass
	5240	19.156	24.776	N/A	Pass
802.11ax40	5190	37.995	45.673	N/A	Pass
	5230	37.924	43.576	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	16.784	25.865	N/A	Pass
	5300	16.802	25.333	N/A	Pass
	5320	16.794	24.465	N/A	Pass
802.11n20	5260	17.961	25.348	N/A	Pass
	5300	17.982	24.936	N/A	Pass
	5320	17.969	25.165	N/A	Pass
802.11n40	5270	36.439	46.017	N/A	Pass
	5310	36.509	46.220	N/A	Pass
802.11ac20	5260	17.977	25.108	N/A	Pass
	5300	17.982	25.000	N/A	Pass
	5320	17.961	24.984	N/A	Pass
802.11ac40	5270	36.448	46.745	N/A	Pass
	5310	36.447	46.784	N/A	Pass
802.11ax20	5260	19.195	24.861	N/A	Pass
	5300	19.124	25.291	N/A	Pass
	5320	19.173	25.136	N/A	Pass
802.11ax40	5270	37.969	45.553	N/A	Pass
	5310	37.943	43.737	N/A	Pass

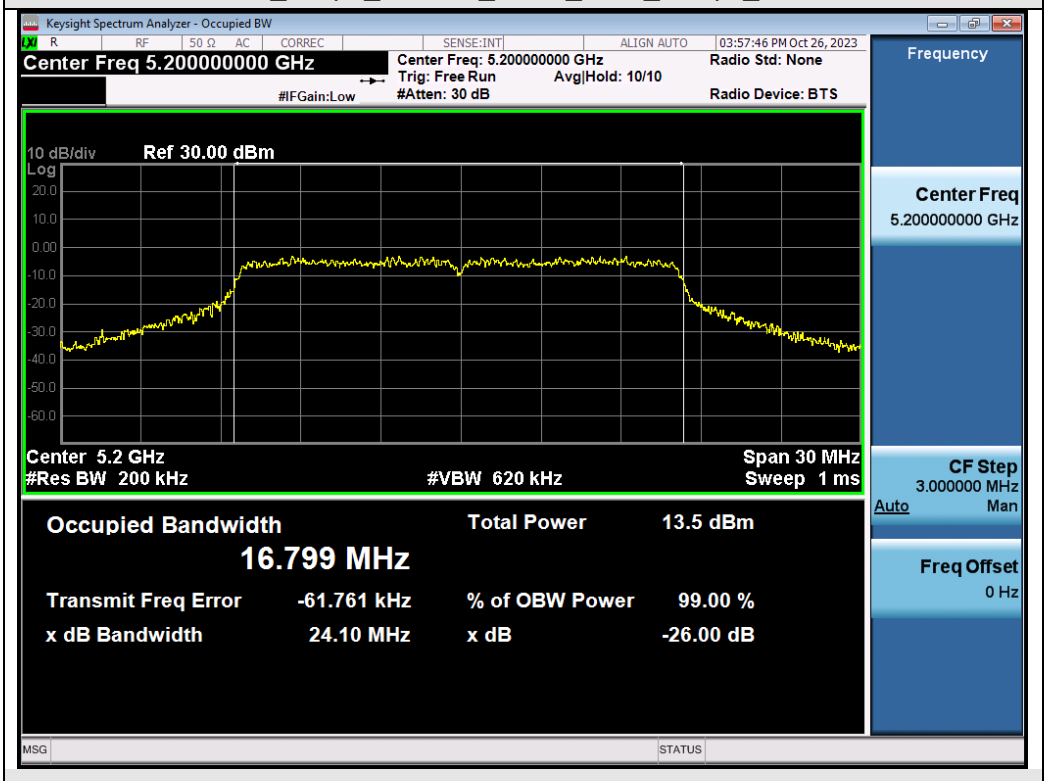
Test Data of Occupied Bandwidth and -26dB Bandwidth for band 5.47-5.725 GHz					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-26dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11a	5500	16.801	24.828	N/A	Pass
	5600	16.776	24.721	N/A	Pass
	5700	16.763	24.076	N/A	Pass
802.11n20	5500	17.969	26.345	N/A	Pass
	5600	17.953	26.035	N/A	Pass
	5700	17.954	27.309	N/A	Pass
802.11n40	5510	36.494	47.291	N/A	Pass
	5590	36.516	46.303	N/A	Pass
	5670	36.472	46.483	N/A	Pass
802.11ac20	5500	17.972	25.146	N/A	Pass
	5600	17.988	24.842	N/A	Pass
	5700	17.958	25.066	N/A	Pass
802.11ac40	5510	36.448	47.255	N/A	Pass
	5590	35.519	47.689	N/A	Pass
	5670	36.530	45.699	N/A	Pass
802.11ax20	5500	19.167	26.284	N/A	Pass
	5600	19.176	26.598	N/A	Pass
	5700	19.168	25.604	N/A	Pass
802.11ax40	5510	37.966	44.305	N/A	Pass
	5590	38.006	45.315	N/A	Pass
	5670	37.975	46.110	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	16.790	16.354	0.5	Pass
	5785	16.809	16.347	0.5	Pass
	5825	16.779	16.377	0.5	Pass
802.11n20	5745	18.020	17.615	0.5	Pass
	5785	18.029	17.582	0.5	Pass
	5825	17.977	17.608	0.5	Pass
802.11n40	5755	36.521	36.369	0.5	Pass
	5795	36.474	36.369	0.5	Pass
802.11ac20	5745	17.969	17.559	0.5	Pass
	5785	17.940	17.608	0.5	Pass
	5825	17.989	17.582	0.5	Pass
802.11ac40	5755	36.503	36.366	0.5	Pass
	5795	36.494	36.360	0.5	Pass
802.11ax20	5180	19.182	18.938	0.5	Pass
	5200	19.158	19.010	0.5	Pass
	5240	19.206	19.007	0.5	Pass
802.11ax40	5190	37.971	37.465	0.5	Pass
	5230	37.957	37.755	0.5	Pass

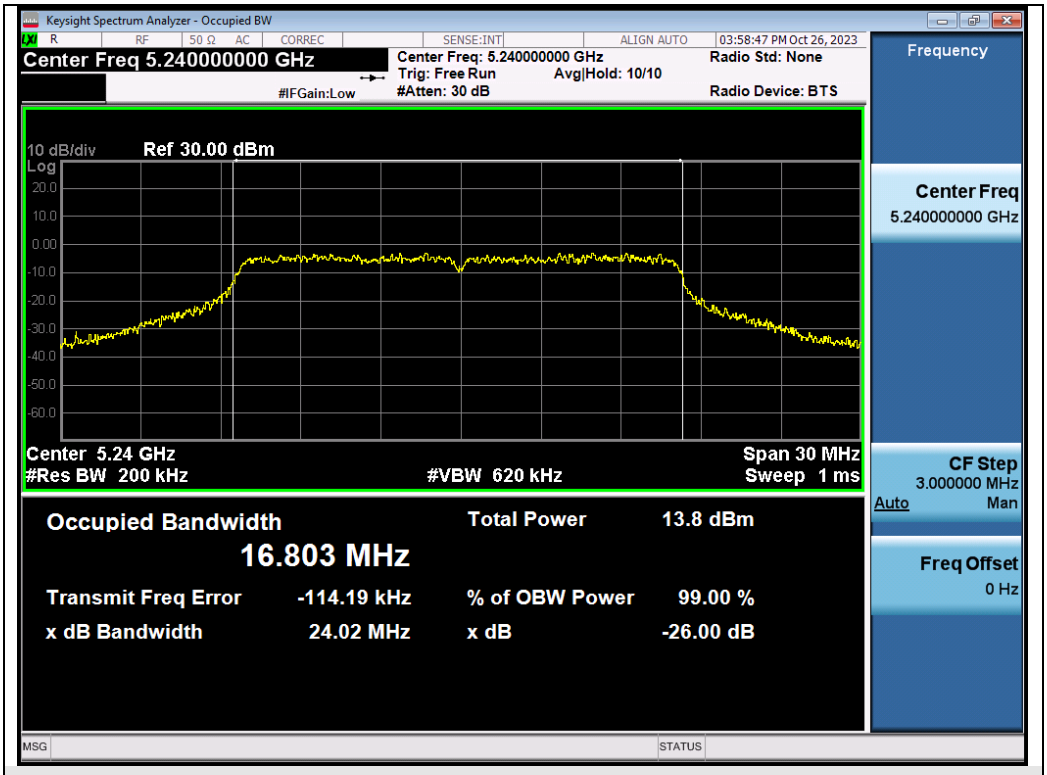
Test Graphs of Occupied Bandwidth and -26dB Bandwidth for band 5.15-5.25 GHz



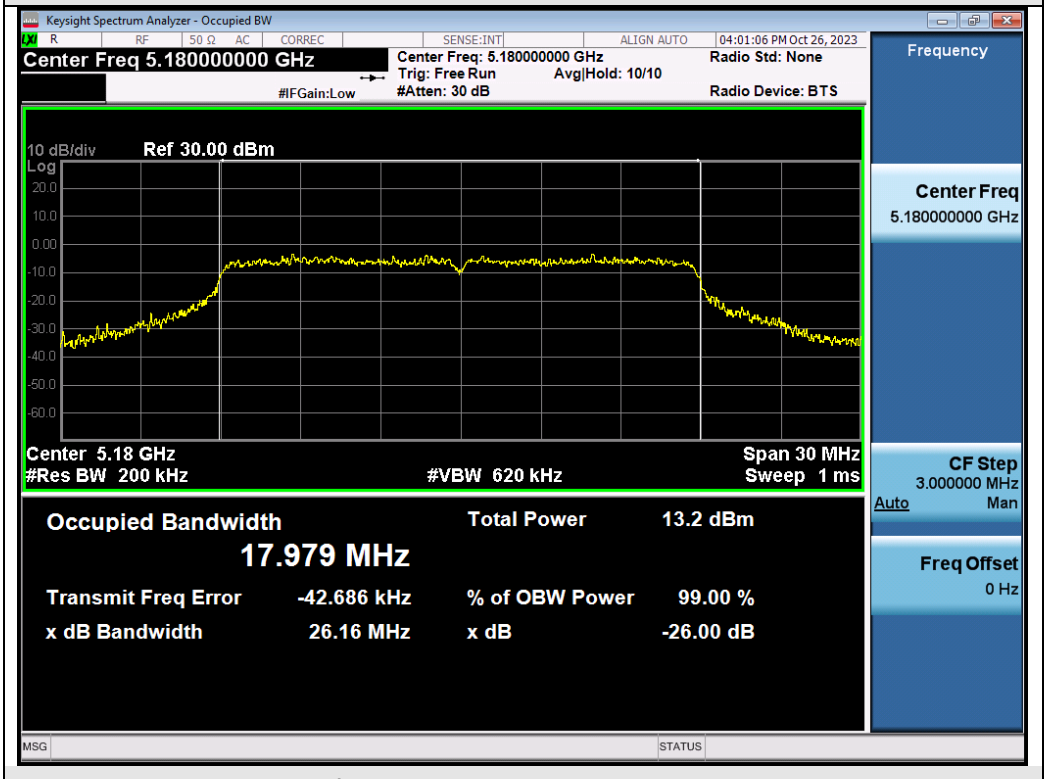
Test_Graph_802.11a_ANT1_5180_6Mbps_OBW



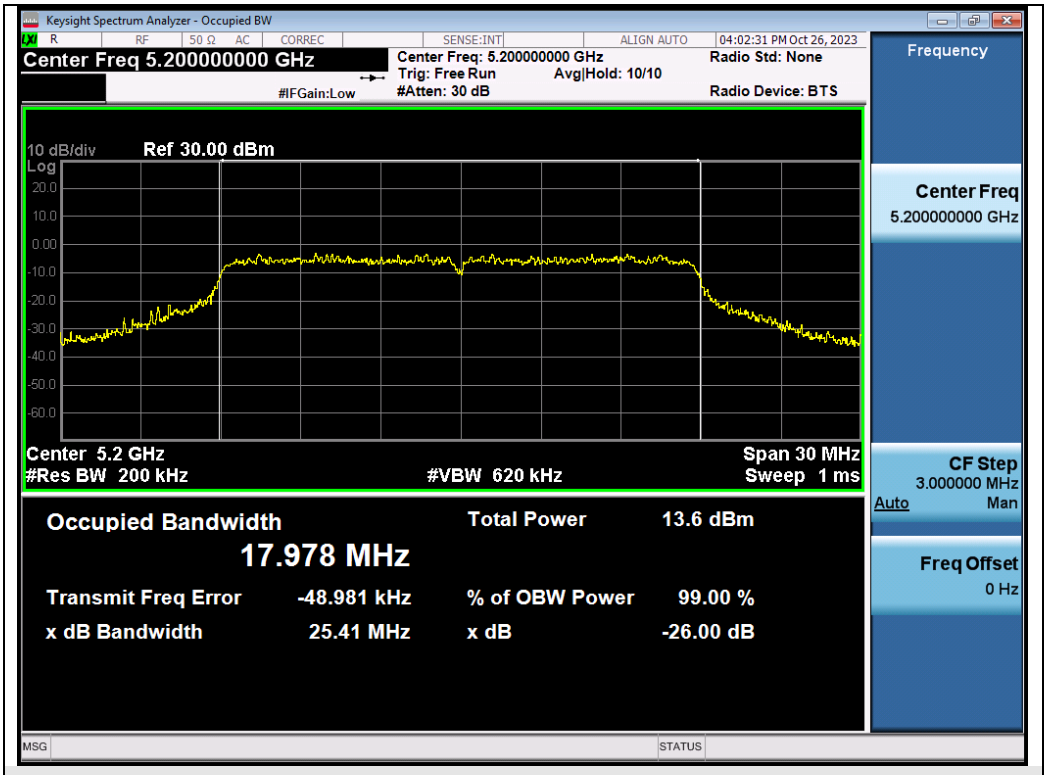
Test_Graph_802.11a_ANT1_5200_6Mbps_OBW



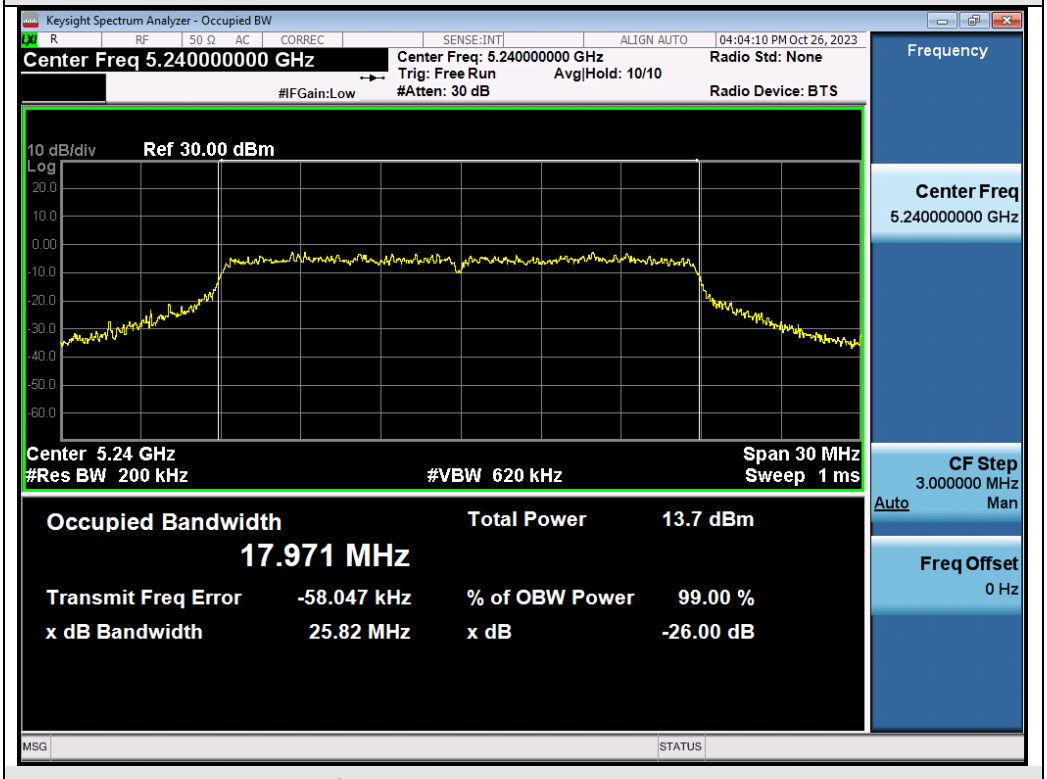
Test_Graph_802.11a_ANT1_5240_6Mbps_OBW



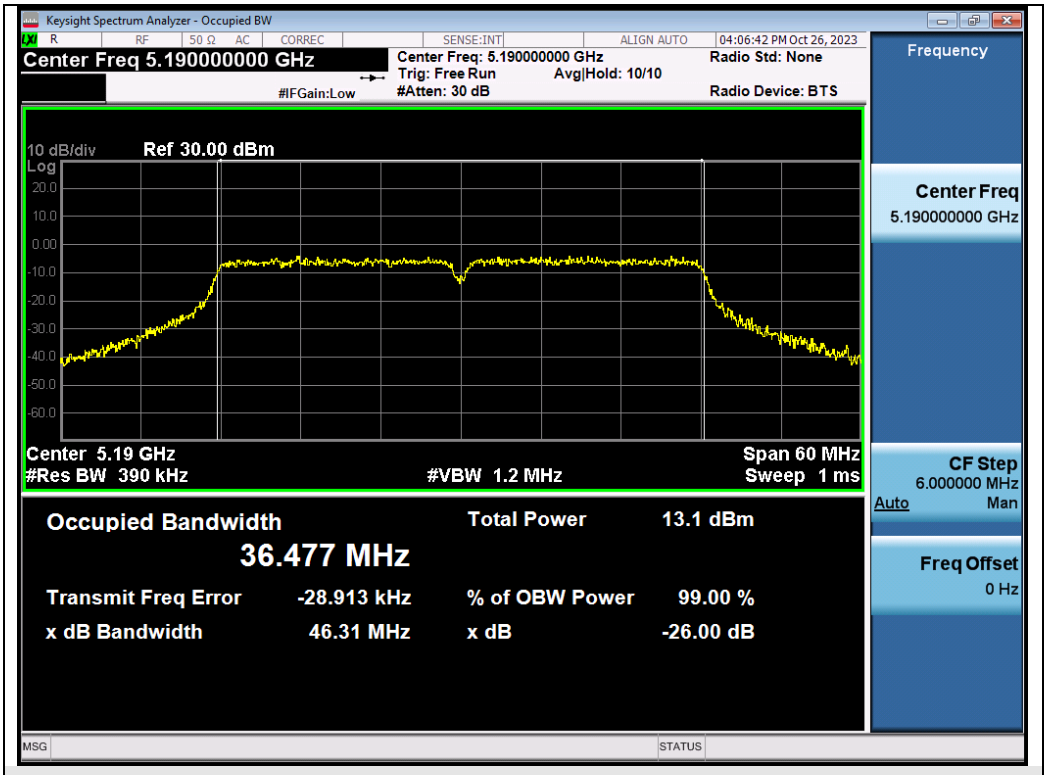
Test_Graph_802.11n20_ANT1_5180_MCS0_OBW



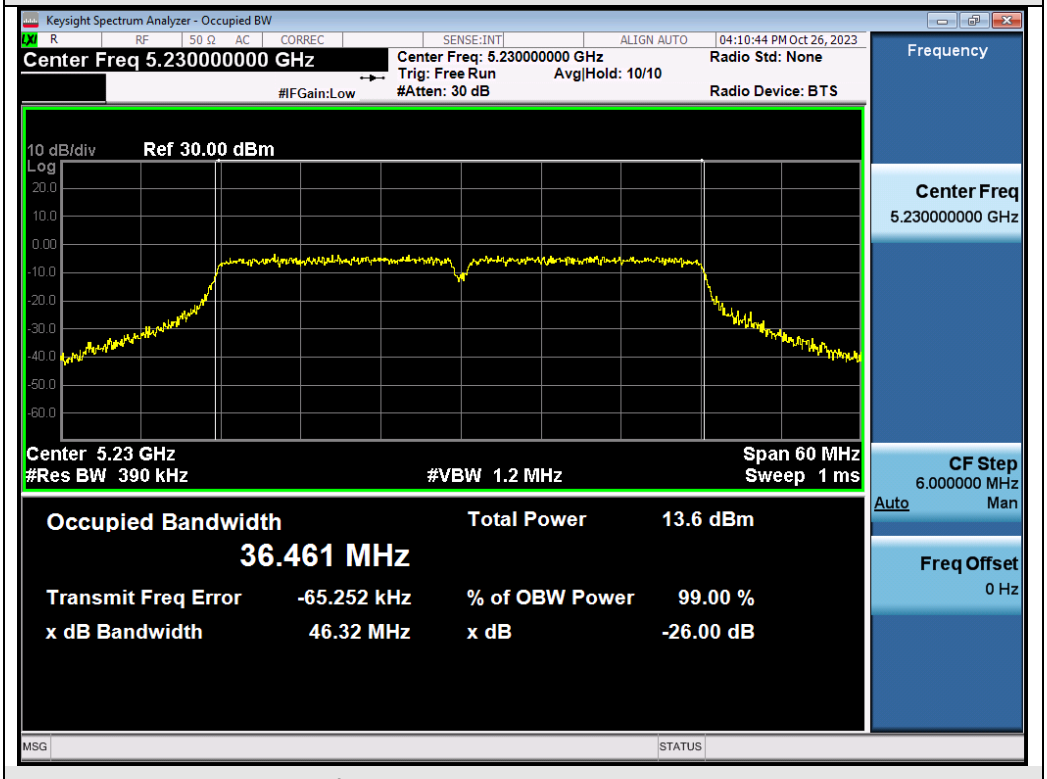
Test_Graph_802.11n20_ANT1_5200_MCS0_OBW



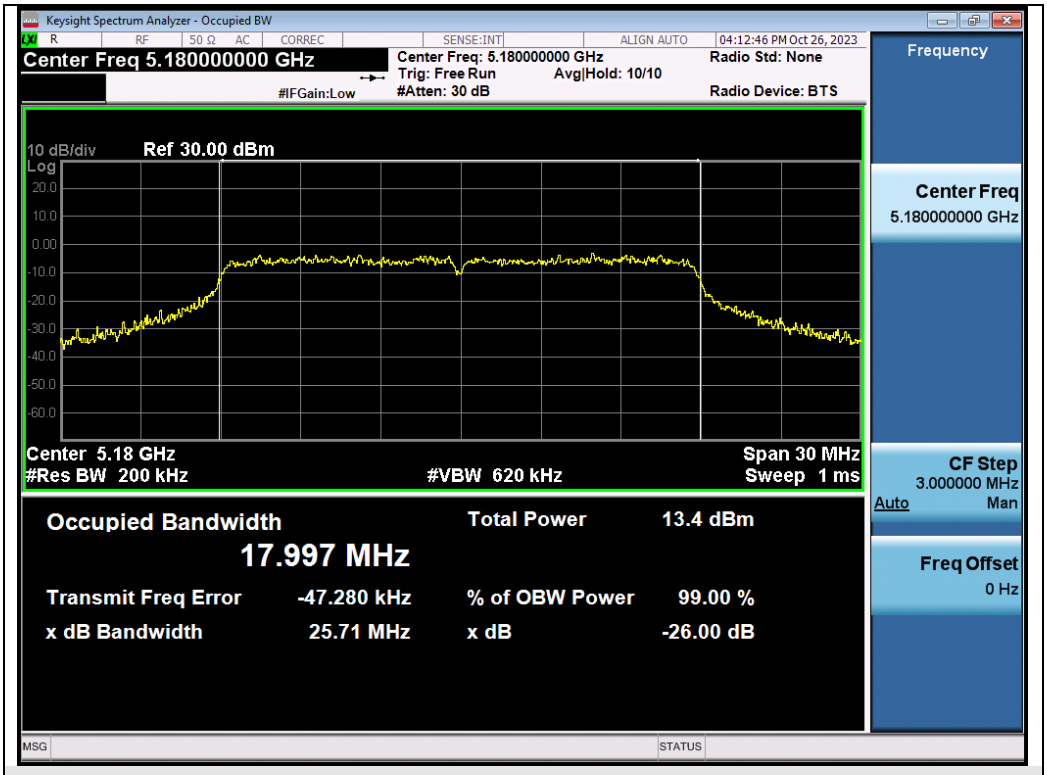
Test_Graph_802.11n20_ANT1_5240_MCS0_OBW



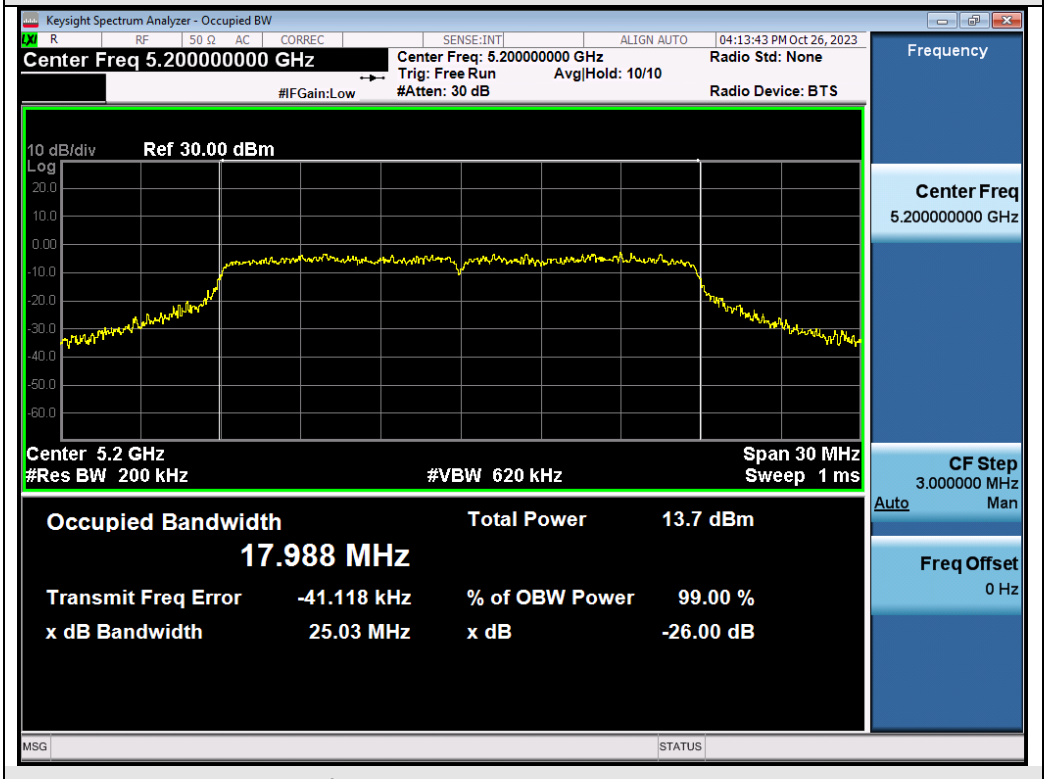
Test_Graph_802.11n40_ANT1_5190_MCS0_OBW



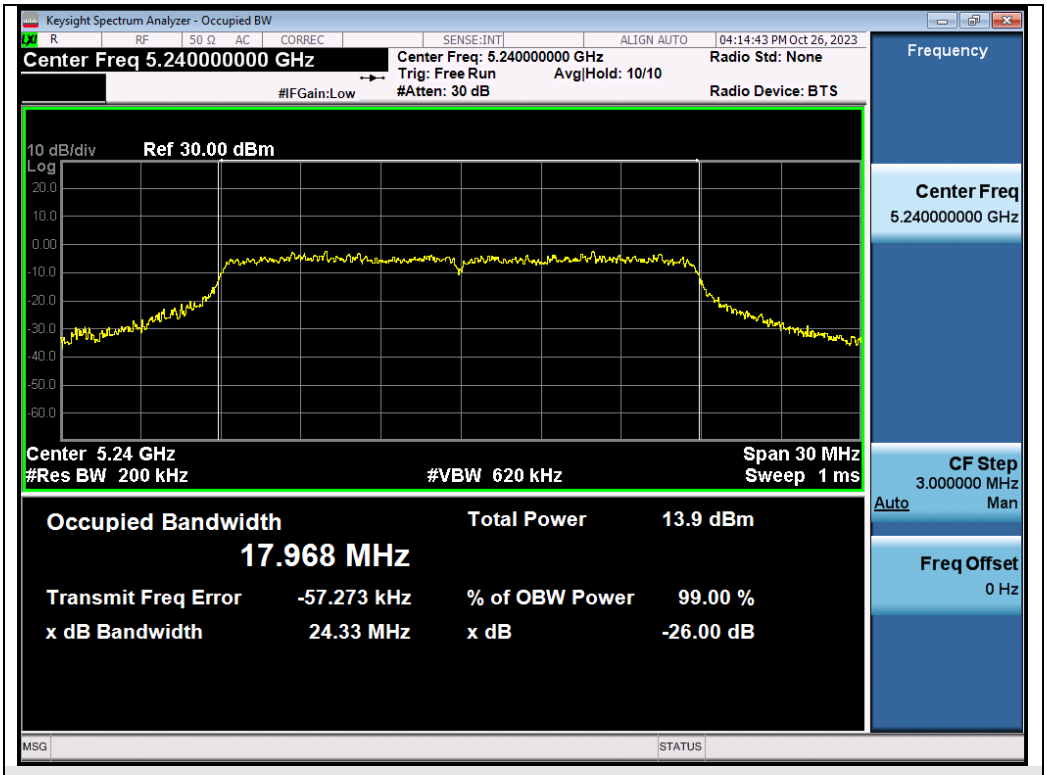
Test_Graph_802.11n40_ANT1_5230_MCS0_OBW



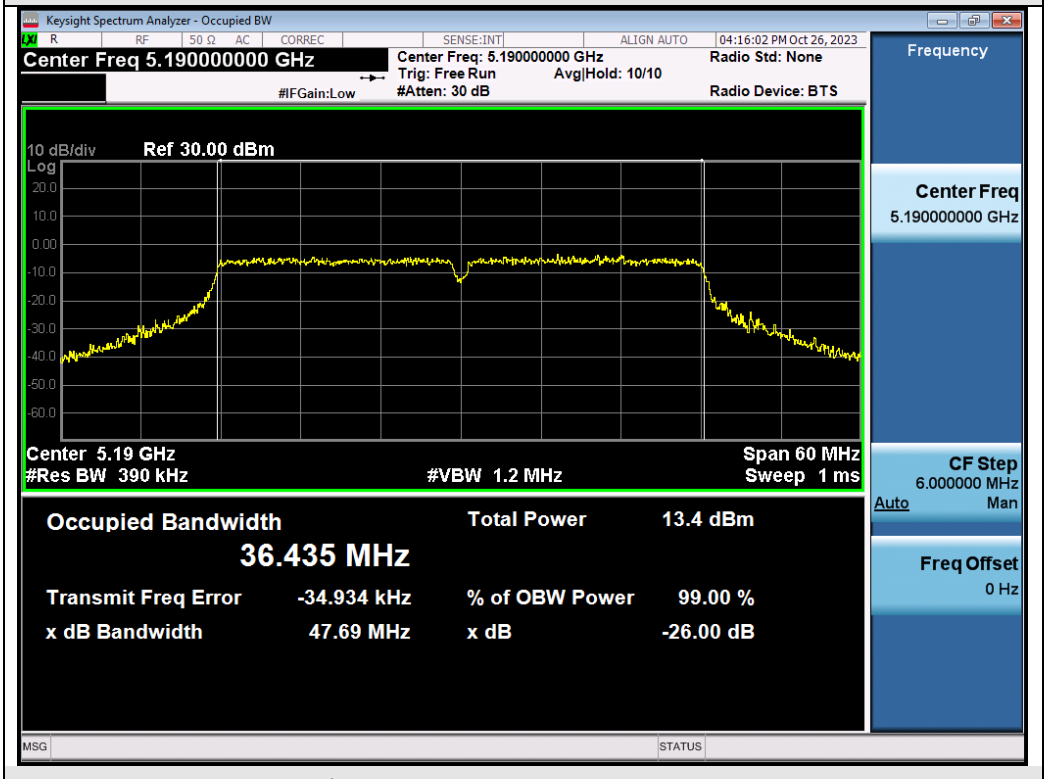
Test_Graph_802.11ac20_ANT1_5180_MCS0_OBW



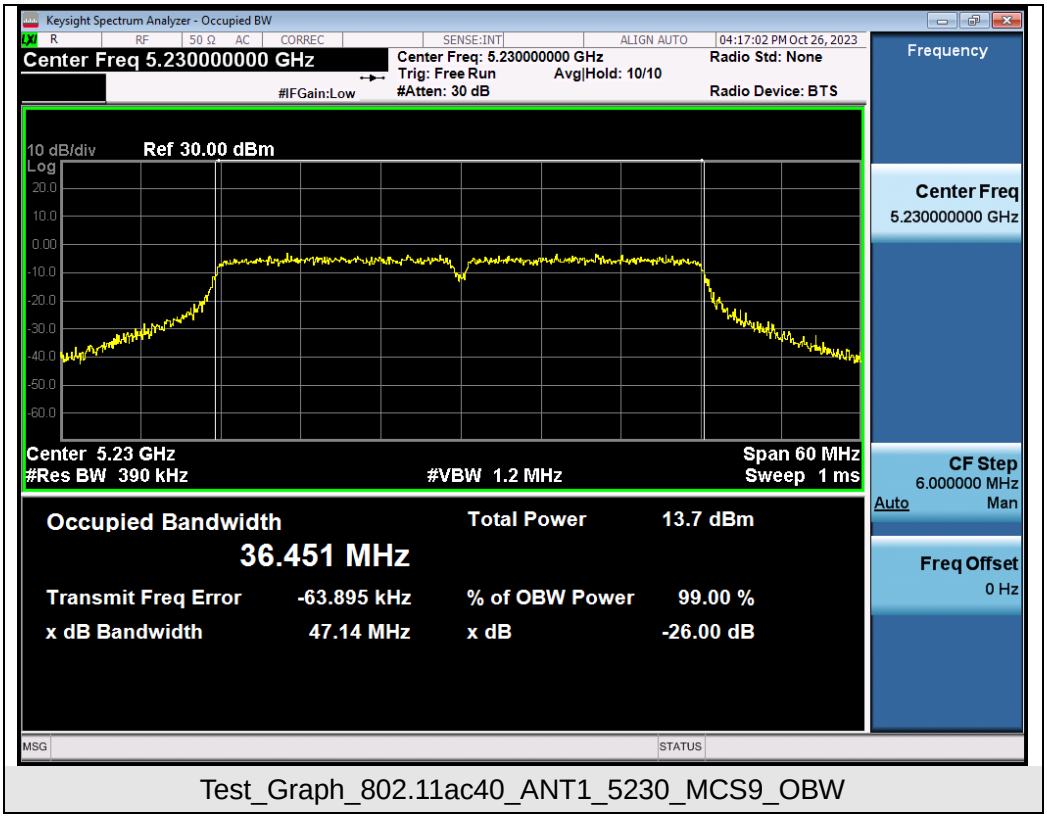
Test_Graph_802.11ac20_ANT1_5200_MCS0_OBW



Test_Graph_802.11ac20_ANT1_5240_MCS9_OBW



Test_Graph_802.11ac40_ANT1_5190_MCS9_OBW



Test_Graph_802.11ac40_ANT1_5230_MCS9_OBW