RF Test Report

Applicant	:	PepperlFuchs SE
Product Name	:	Phone
Trade Name	:	PEPPERL+FUCHS
Model Number	:	Smart-Ex 03
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART E
Received Date	:	Apr. 20, 2023
Test Period	:	May 03 ~ Jan. 26, 2024
Issued Date	:	Jan. 29, 2024

Issued by

Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190
Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range : 9 kHz to 40 GHz
Test Firm Registration Number: 226252 (Bade test site)
Test Firm Registration Number: 191812 (Wugu test site)

Testing Laboratory
1330

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of Eurofins E&E Wireless Taiwan Co., Ltd.
3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Description	Revised By
00	Nov. 28, 2023	Initial Issue	Snow Wang
01	Jan. 29, 2024	Update chapter 3.4 (P.18) Update chapter 4.4 (P.30) Update chapter 5.3.3 (P.50~93) Update Appendix A. Test Data	Snow Wang

Verification of Compliance

Applicant	:	PepperlFuchs SE
Product Name	:	Phone
Trade Name	:	PEPPERL+FUCHS
Model Number	:	Smart-Ex 03
FCC ID	:	2AXZAS03GR01
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART E
Test Result	:	Complied
Performing Lab.	:	Eurofins E&E Wireless Taiwan Co., Ltd. No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330

Testing Laboratory 1330

Eurofins E&E Wireless Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Eurofins E&E Wireless Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Kai Yu Yang

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	---
15.407(b) 15.205 / 15.209	Transmitter Radiated Emissions	PASS	---
15.407(a)	Maximum Output Power	PASS	---
15.407(a)	Emission Bandwidth	PASS	---
15.407(a)	Maximum Power Spectral Density	PASS	---
15.407(b)	In-Band Emission (Mask)	PASS	---
15.407(g)	Frequency Stability	PASS	---
15.407(d)	Contention based Protocol	PASS	---
15.407(d)	Operational restrictions for 6 GHz U-NII devices	PASS	Note 2
15.407(a)	Dual Client Proper Power Adjustment	PASS	Note 3
15.407(c)	Automatically discontinue transmission	PASS	---
15.203	Antenna Requirement	PASS	---

Note 1: The above test items refer to the test standards

Note 2: Declaration by applicant

Note 3: The EUT EIRP Level less than 24 dBm

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

Standard	Description
CFR47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB789033 D02 v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
KDB 662911 D01 v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)
KDB 987594 D02 v01r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure 6 GHz (U-NII) Devices Part 15, Subpart E

1.2. Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ■ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: □ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

1.3. Measurement Uncertainty

Test Item	Frequency	Uncertainty	
		BD	WG
Conducted Emission	150 kHz ~ 30 MHz	2.7 dB	2.6 dB
Conducted Output Power		1.1 dB	1.1 dB
RF Bandwidth		4.5 %	4.5 %
Power Spectral Density		1.1 dB	1.1 dB
Duty Cycle		1.1 %	1.0 %
Time Occupancy		1.5 %	1.2 %
Frequency Stability		1.3×10^{-7}	1.3×10^{-7}

Test Item	Frequency	Uncertainty			
		96601-BD	96603-BD	96602-WG	96603-WG
Radiated Emission	9 kHz ~ 30 MHz	1.9 dB	1.9 dB	1.6 dB	1.6 dB
	30 MHz ~ 1000 MHz	4.9 dB	4.9 dB	4.8 dB	4.8 dB
	1000 MHz ~ 18000 MHz	4.9 dB	5.0 dB	5.0 dB	5.2 dB
	18000 MHz ~ 26500 MHz	4.3 dB	4.4 dB	4.4 dB	4.5 dB
	26500 MHz ~ 40000 MHz	4.5 dB	4.5 dB	4.6 dB	4.5 dB

1.4. Test Site Environment

Items	Required (IEC 60068-1)	Interval(*)
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

(*)The measurement ambient temperature is within this range.

2 EUT Description

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity(except Maximum Output Power (e.i.r.p.)).

Applicant	PepperlFuchs SE Lilienthalstrasse 200, Mannheim Germany		
Product Name	Phone		
Trade Name	PEPPERL+FUCHS		
Model No.	Smart-Ex 03		
Variants Description	Smart-Ex 03 is provided to the end user in two variants, one with camera features and the other as a non-camera variant. The camera modules are also populated in the non-camera variant; only SW deactivation and assembling physical camera opening covers, which are not metal, are required. Therefore, the testing was completed on the DUT with the camera features only.		
FCC ID	2AXZAS03GR01		
Operate Frequency	Frequency Band		Frequency Range (MHz)
	802.11a	U-NII Band 5	5955 – 6415
		U-NII Band 6	6435 – 6515
		U-NII Band 7	6535 – 6855
		U-NII Band 8	6875 – 7115
	802.11ax HE20	U-NII Band 5	5955 – 6415
		U-NII Band 6	6435 – 6515
		U-NII Band 7	6535 – 6855
		U-NII Band 8	6875 – 7115
	802.11ax HE40	U-NII Band 5	5965 – 6405
		U-NII Band 6	6445 – 6485
		U-NII Band 7	6525 – 6845
		U-NII Band 8	6885 – 7085
	802.11ax HE80	U-NII Band 5	5985 – 6385
		U-NII Band 6	6465 – 6545
		U-NII Band 7	6625 – 6785
		U-NII Band 8	6865 – 7025

<table>
<tr><td rowspan="4">Operate Frequency</td><td rowspan="4">802.11ax HE160</td><td>U-NII Band 5</td><td>6025 – 6345</td></tr>
<tr><td>U-NII Band 6</td><td>6505</td></tr>
<tr><td>U-NII Band 7</td><td>6665 – 6825</td></tr>
<tr><td>U-NII Band 8</td><td>6985</td></tr>
<tr><td>Modulation Type</td><td colspan="3">OFDM/OFDMA</td></tr>
<tr><td rowspan="3">Antenna information</td><td>ANT</td><td>Type</td><td>Max. Gain
(dBi)</td></tr>
<tr><td>ANT0</td><td>PIFA Type</td><td>1.70</td></tr>
<tr><td>ANT1</td><td>PIFA Type</td><td>1.70</td></tr>
<tr><td>Antenna Delivery</td><td colspan="3">Reference section 3.1</td></tr>
<tr><td>Operate Temp. Range</td><td colspan="3">-20 ~ +60 ℃</td></tr>
<tr><td>EUT Power Rating</td><td colspan="3">3.70 Vdc, 4400 mAh</td></tr>
</table>

Frequency Band		Maximum Output Power (e.i.r.p.)	
		(dBm)	(W)
802.11a	U-NII Band 5	7.13	0.005
	U-NII Band 6	6.83	0.005
	U-NII Band 7	7.49	0.006
	U-NII Band 8	7.35	0.005
802.11ax HE20	U-NII Band 5	6.66	0.005
	U-NII Band 6	6.40	0.004
	U-NII Band 7	7.02	0.005
	U-NII Band 8	6.44	0.004
802.11ax HE40	U-NII Band 5	9.67	0.009
	U-NII Band 6	9.39	0.009
	U-NII Band 7	9.84	0.010
	U-NII Band 8	9.92	0.010
802.11ax HE80	U-NII Band 5	12.72	0.019
	U-NII Band 6	12.37	0.017
	U-NII Band 7	13.46	0.022
	U-NII Band 8	12.55	0.018
802.11ax HE160	U-NII Band 5	15.77	0.038
	U-NII Band 6	15.41	0.035
	U-NII Band 7	15.55	0.036
	U-NII Band 8	14.91	0.031

Beamforming on

Frequency Band		Maximum Output Power (e.i.r.p.)	
		(dBm)	(W)
802.11ax HE20	U-NII Band 5	6.64	0.005
	U-NII Band 6	6.36	0.004
	U-NII Band 7	6.68	0.005
	U-NII Band 8	6.39	0.004
802.11ax HE40	U-NII Band 5	9.6	0.009
	U-NII Band 6	9.36	0.009
	U-NII Band 7	9.77	0.009
	U-NII Band 8	9.87	0.010
802.11ax HE80	U-NII Band 5	12.68	0.019
	U-NII Band 6	12.27	0.017
	U-NII Band 7	13.38	0.022
	U-NII Band 8	12.52	0.018
802.11ax HE160	U-NII Band 5	15.69	0.037
	U-NII Band 6	15.16	0.033
	U-NII Band 7	15.51	0.036
	U-NII Band 8	14.68	0.029

Equipment Type	
Indoor access point	---
Subordinate device	---
Indoor Client devices	V

WIFI 6G

BW 20M	CH	1	5	9	13	17	21	25	29
	Freq.(MHz)	5955	5975	5995	6015	6035	6055	6075	6095
BW 40M	CH	3		11		19		27	
	Freq.(MHz)	5965		6005		6045		6085	
BW 80M	CH	7				23			
	Freq.(MHz)	5985				6065			
BW 160M	CH	15							
	Freq.(MHz)	6025							

BW 20M	CH	33	37	41	45	49	53	57	61
	Freq.(MHz)	6115	6135	6155	6175	6195	6215	6235	6255
BW 40M	CH	35		43		51		59	
	Freq.(MHz)	6125		6165		6205		6245	
BW 80M	CH	39				55			
	Freq.(MHz)	6145				6225			
BW 160M	CH	47							
	Freq.(MHz)	6185							

BW 20M	CH	65	69	73	77	81	85	89	93
	Freq.(MHz)	6275	6295	6315	6335	6355	6375	6395	6415
BW 40M	CH	67		75		83		91	
	Freq.(MHz)	6285		6325		6365		6405	
BW 80M	CH	71				87			
	Freq.(MHz)	6305				6385			
BW 160M	CH	79							
	Freq.(MHz)	6345							

BW 20M	CH	97	101	105	109	113	117	121	125
	Freq.(MHz)	6435	6455	6475	6495	6515	6535	6555	6575
BW 40M	CH	99		107		115		123	
	Freq.(MHz)	6445		6485		6525		6565	
BW 80M	CH	103				119			
	Freq.(MHz)	6465				6545			
BW 160M	CH	111							
	Freq.(MHz)	6505							

BW 20M	CH	129	133	137	141	145	149	153	157
	Freq.(MHz)	6595	6615	6635	6655	6675	6695	6715	6735
BW 40M	CH	131		139		147		155	
	Freq.(MHz)	6605		6645		6685		6725	
BW 80M	CH	135				151			
	Freq.(MHz)	6625				6705			
BW 160M	CH	143							
	Freq.(MHz)	6665							

BW 20M	CH	161	165	169	173	177	181	185	189
	Freq.(MHz)	6755	6775	6795	6815	6835	6855	6875	6895
BW 40M	CH	163		171		179		187	
	Freq.(MHz)	6765		6805		6845		6885	
BW 80M	CH	167				183			
	Freq.(MHz)	6785				6865			
BW 160M	CH	175							
	Freq.(MHz)	6825							

BW 20M	CH	193	197	201	205	209	213	217	221
	Freq.(MHz)	6915	6935	6955	6975	6995	7015	7035	7055
BW 40M	CH	195		203		211		219	
	Freq.(MHz)	6925		6965		7005		7045	
BW 80M	CH	199				215			
	Freq.(MHz)	6945				7025			
BW 160M	CH	207							
	Freq.(MHz)	6985							

BW 20M	CH	225	229
	Freq.(MHz)	7075	7095
BW 40M	CH	227	
	Freq.(MHz)	7085	

BW 20M	CH	223
	Freq.(MHz)	7115

3 Test Methodology

3.1. Mode of Operation

Decision of Test Eurofins has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	Final-Test Mode
Transmit Mode	V
802.11a	V
802.11ax HE20	V
802.11ax HE40	V
802.11ax HE80	V
802.11ax HE160	V

Software used to control the EUT for staying in continuous transmitting mode was programmed.
After verification, all tests were carried out with the worst case test modes.
By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Note 1: This product supports normal mode and Beamforming on mode. According to power table, the normal mode is worst power. So, normal mode has to test and record results for Conducted.

Note 2: 802.11ax only support Full RU.

Test Mode	ANT-0	ANT-1	ANT-0+1
802.11a	V	V	V
802.11ax HE20	V	V	V
802.11ax HE40	V	V	V
802.11ax HE80	V	V	V
802.11ax HE160	V	V	V

Test Mode	Antenna Delivery	Data Rate (Mbps)	Band	Test Channel
802.11a	2TX (CDD/Beamforming on)	6	U-NII Band 5	1, 45, 93
			U-NII Band 6	97, 105, 113
			U-NII Band 7	117, 149, 181
			U-NII Band 8	185, 189, 209, 233
802.11ax HE20	2TX (CDD/Beamforming on)	MCS0	U-NII Band 5	1, 45, 93
			U-NII Band 6	97, 105, 113
			U-NII Band 7	117, 149, 181
			U-NII Band 8	185, 189, 209, 233
802.11ax HE40	2TX (CDD/Beamforming on)	MCS0	U-NII Band 5	3, 43, 91
			U-NII Band 6	99, 107
			U-NII Band 7	115, 123, 147, 179
			U-NII Band 8	187, 195, 211, 227
802.11ax HE80	2TX (CDD/Beamforming on)	MCS0	U-NII Band 5	7, 39, 87
			U-NII Band 6	103
			U-NII Band 7	119, 135, 151, 167, 183
			U-NII Band 8	199, 215
802.11ax HE160	2TX (CDD/Beamforming on)	MCS0	U-NII Band 5	15, 47, 79
			U-NII Band 6	111
			U-NII Band 7	143, 175
			U-NII Band 8	207

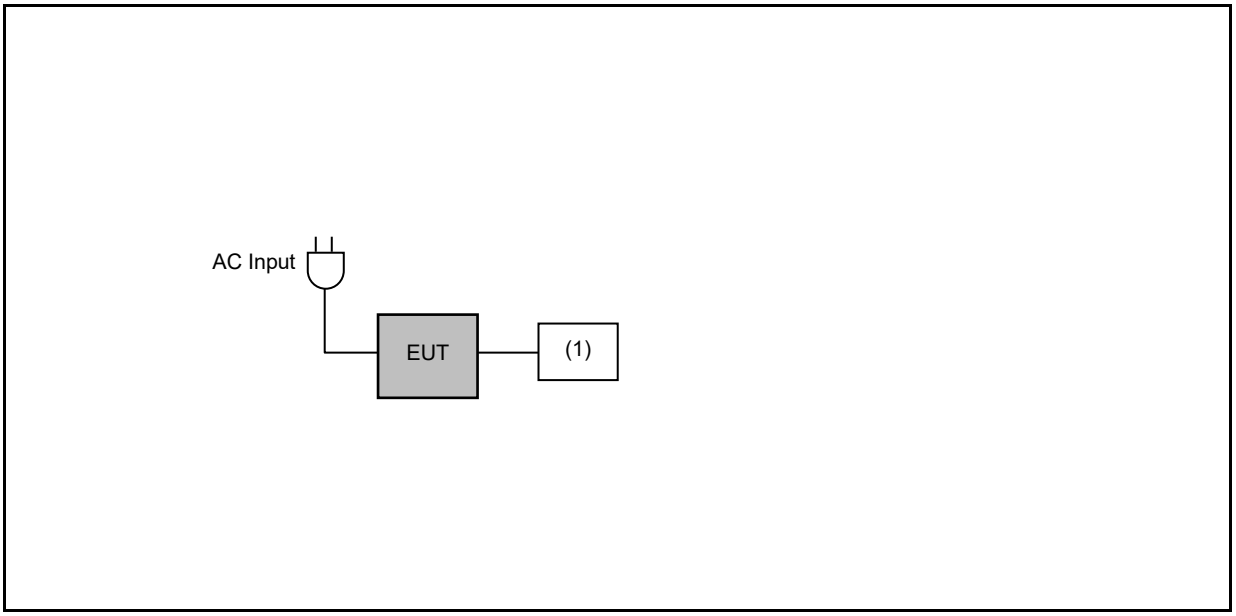
3.2. EUT Test Step

The EUT is operated in the engineering mode to fix the TX frequency for the purposes of measurement. According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

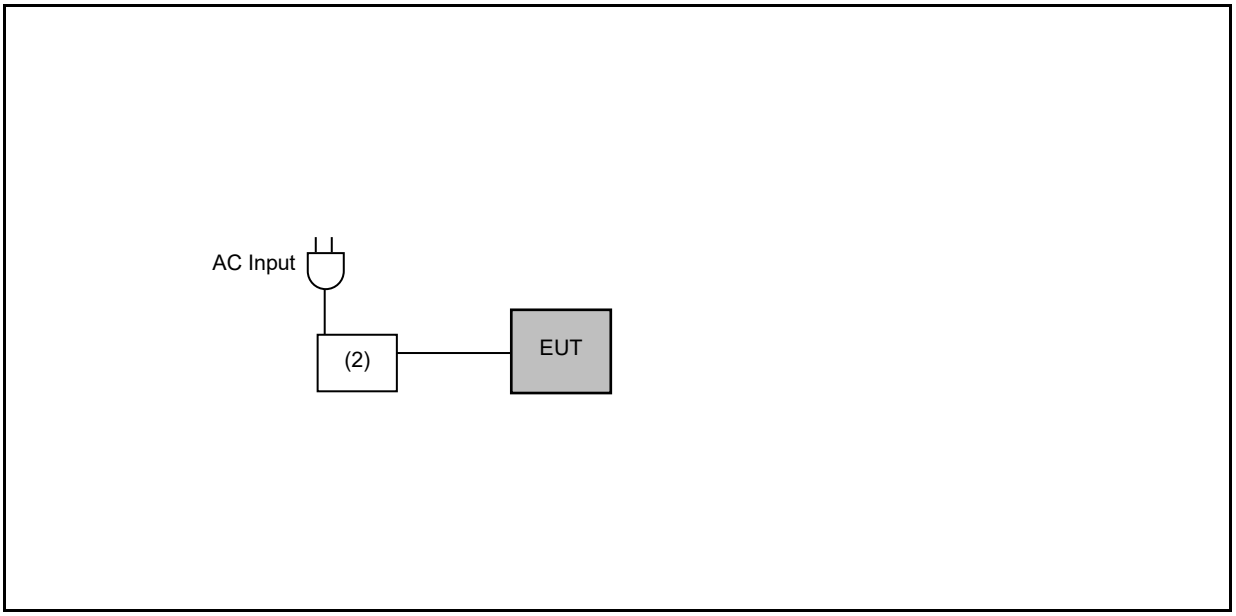
1.	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	Turn on TX function.
4.	EUT run test program.

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emissions



Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Headset microphone	YUJI	S350	---	---
(2)	Notebook	HP	HSN-I14C-4	---	---

3.4. Test Instruments

For Conducted Emission
Test Period: Sep. 13, 2023
Testing Engineer: Jayson Hsieh

Test Site		Conduction01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Test Receiver	R&S	ESCI	100367	May 22, 2023	1 year
☒	LISN	R&S	ENV216	101040	Mar. 21, 2023	1 year
☒	LISN	R&S	ENV216	101140	Jan. 12, 2023	1 year
☒	RF Cable	Woken	00100D1380194M	TE-02-03	Jun. 01, 2023	1 year
☒	Software	EZ EMC	1.1.4.3	N/A	N.C.R.	---

For Conducted
Test Period: May. 03 ~ Oct. 11, 2023
Testing Engineer: Peter Shui, Luke Yang

Test Site		RF01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Power Sensor	Agilent	N1921A	MY45241957	Nov. 30, 2022	1 year
☒	Power Meter	Agilent	N1911A	MY45101619	Nov. 30, 2022	1 year
☒	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 01, 2022 Sep. 04, 2023	1 year
☒	Signal Generator	Keysight	N5182B	MY53052569	Apr. 17, 2023	1 year
☒	Signal Generator	Keysight	N5182BX07	MY59360221	Apr. 17, 2023	1 year
☒	Power Supply	KEITHLEY	2303	4045290	Jan. 06, 2023	1 year

For Conducted
Test Period: Jan. 27, 2024
Testing Engineer: Luke Yang

Test Site		RF01-BD				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	Sep. 04 2023	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Sep. 26 ~ Oct. 02, 2023
Testing Engineer: Hung Chou, Kerry Xu, Marc Yeh

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	Jan. 07, 2023	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	Dec. 29, 2022	1 year
☐	Spectrum Analyzer (2 Hz~50 GHz)	Keysight	N9030B	MY57143537	Apr. 14, 2022	1 year
☒	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9020B	MY60112363	Jan. 13, 2023	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	Jan. 07, 2023	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330 A1F	001	Jul. 24, 2023	1 year
☐	Amplifier (1 GHz~26.5 GHz)	Agilent	8449B	3008A02237	Oct. 19, 2022	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025 A1F	002	Jul. 24, 2023	1 year
☒	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	Sep. 01, 2023	1 year
☐	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	Mar. 23, 2023	1 year
☐	Active Loop Antenna (9 kHz~30 MHz)	Schwarzbeck Mess-Elektronik	FMZB 1513-60	1513-60-031	Feb. 21, 2023	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	Jun. 26, 2023	1 year
☐	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	416	Jun.13,2023	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	Jul. 07, 2023	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	Aug. 25, 2022	1 year
☒	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	Jul. 21, 2023	1 year

Note: N.C.R. = No Calibration Request.

For Radiated Emissions
Test Period: Sep. 26 ~ Oct. 02, 2023
Testing Engineer: Hung Chou, Kerry Xu, Marc Yeh

Test Site		96603-BD				
Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Horn Antenna (18 GHz~40 GHz)	ETS	3116	00086467	Dec. 05, 2022	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 100	J11005	Aug. 10, 2023	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 900	J11004	Aug. 10, 2023	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	Aug. 10, 2023	1 year
☐	Bluetooth Tester	R&S	CBT	100350	Mar. 20, 2023	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	Jun. 01, 2022	1 year
☐	Power Supply	KEITHLEY	2303	4045290	Jan. 06, 2023	1 year
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

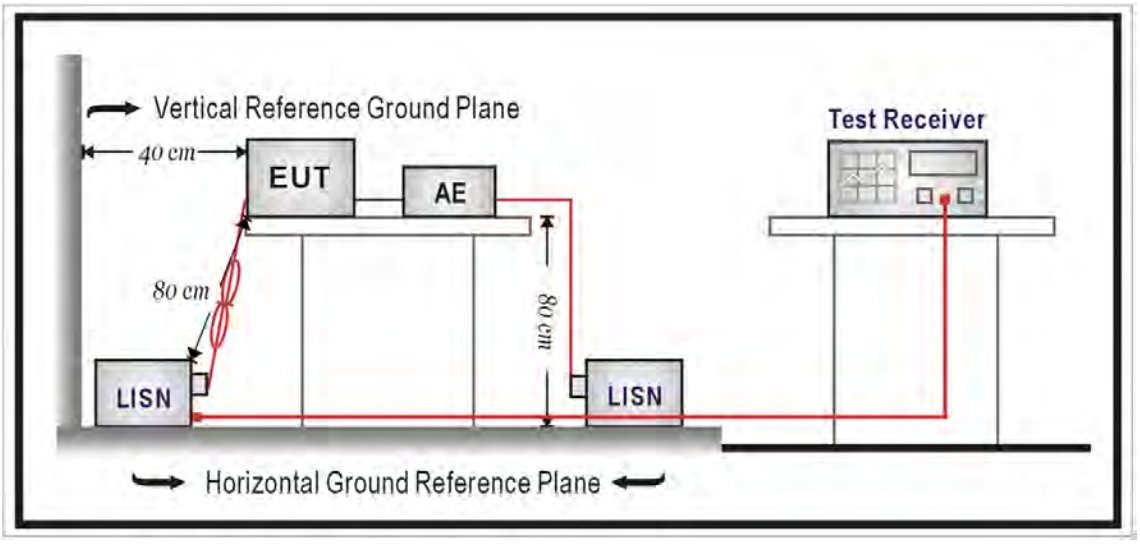
4 Measurement Procedure

4.1. AC Power Conducted Emission Measurement

■ **Limit**

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ **Test Setup**



■ **Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 Ω// 50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 Ω// 50 uH coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored

4.2. Transmitter Radiated Emissions Measurement

■ **Limit**

(1)Undesirable emission limits. Except as shown in paragraph (b)(9) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(a) For transmitters operating in the band 5925~6425 MHz, 6425~6525 MHz, 6525~6875 MHz and 6875~7125 MHz all emissions outside the band 5925~7125 MHz shall not exceed -27 dBm/MHz E.I.R.P..

E.I.R.P. (dBm/MHz)	Avg Field Strength at 3 m(dBuV/m)
-7 (Peak)	88.2 (Peak)
-27 (AVG)	68.2 (AVG)

(2)Limits of Radiated Emission Measurement

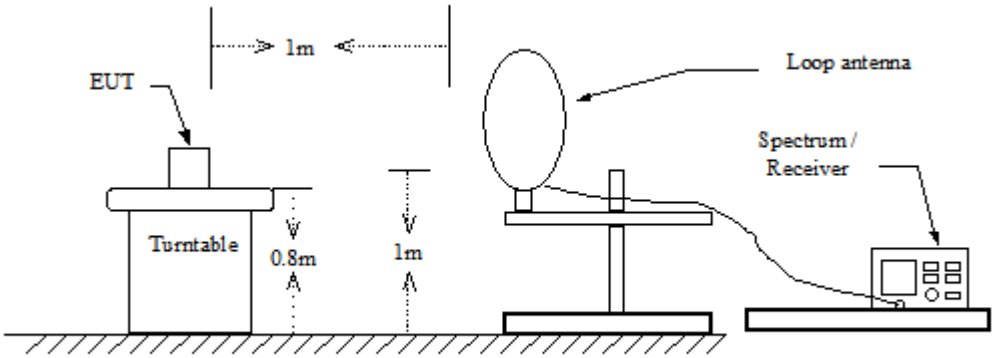
Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequency Range (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	10	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

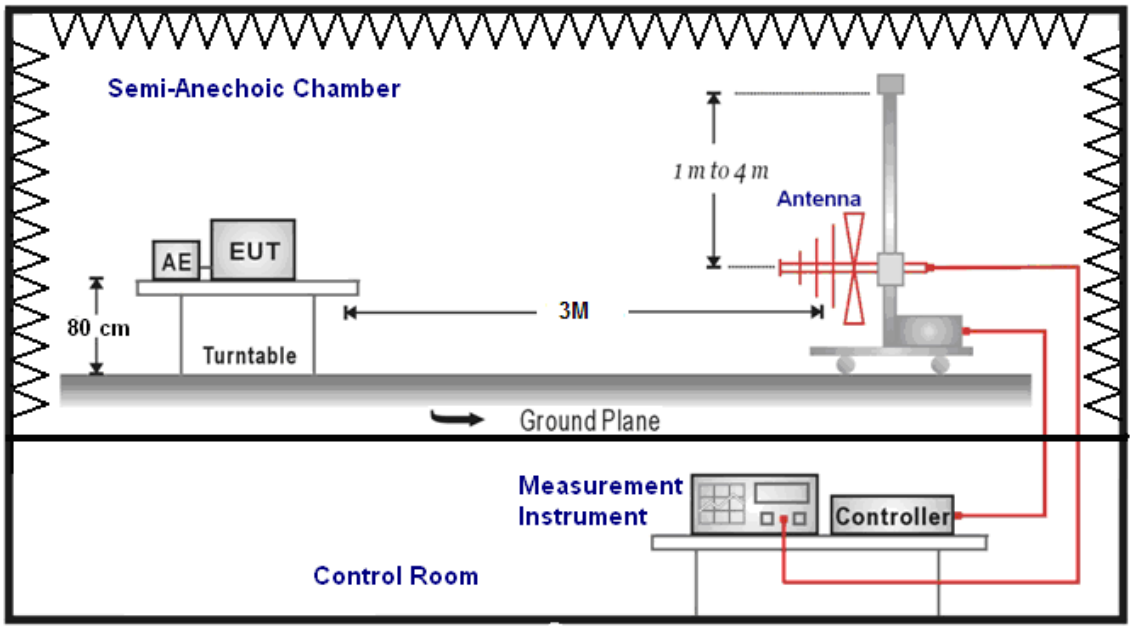
Note: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

■ **Setup**

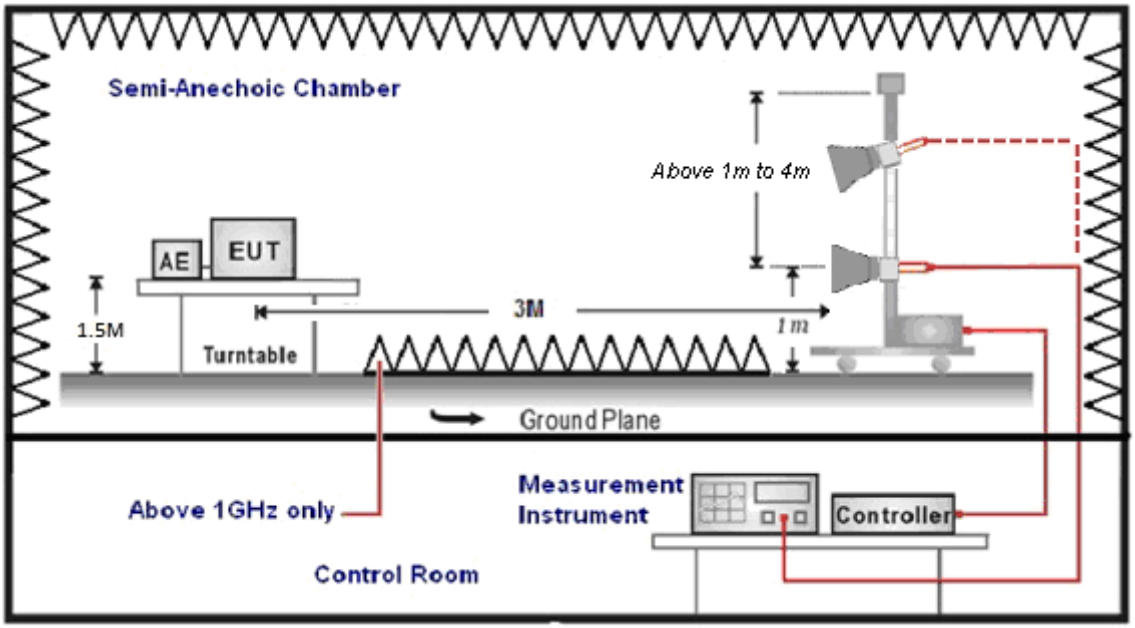
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz


Semi-Anechoic Chamber
Above 1m to 4m
AE
EUT
1.5M
3M
1m
Turntable
Ground Plane
Above 1GHz only
Measurement
Instrument
Controller
Control Room

■ **Test Procedure**

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height (below 1 GHz use 0.8 m turntable / above 1 GHz use 1.5 m turntable), top surface 1.0 x 1.5 meter. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 40 GHz is investigated.

For measurements below 30 MHz the resolution bandwidth is set to 10 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements. The video bandwidth is 3 times of the resolution bandwidth.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For restricted measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle > 0.98 / 1/T for average measurements when Duty cycle < 0.98.

For out of band measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Trilog-Broadband Antenna at 3 Meter and the ETS-Lindgren Double-Ridged Waveguide Horn antnna Schwarzbeck Mess-Elektronik Broadband Horn Antenna was used in frequencies 1 – 40 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission.All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB/m), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dB/m) +CL (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

Measuring Instruments and setting

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW/VBW(Emission in restricted band)	1 MHz / 3 MHz for Peak 1 MHz / (1/T) for Average
RBW/VBW(Emission in non-restricted band)	1 MHz / 3 MHz for Peak 1 MHz / (1/T) for Average (Only WLAN 6G)

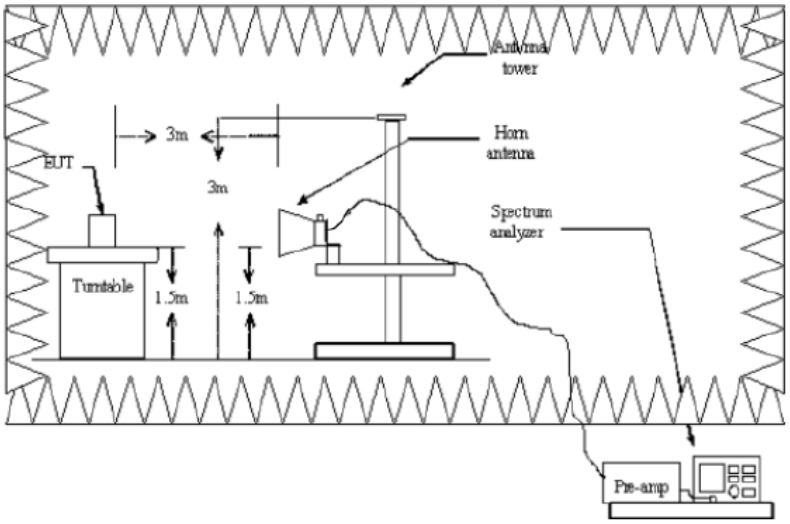
4.3. Maximum Output Power Measurement

■ **Limit**

Frequency Range (GHz)	Maximum Output Power Limit
5.925 ~ 6.425	For standard power access point and fixed client device : e.i.r.p. ≦ 36dBm, For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125mW (21dBm).
	For indoor access point : e.i.r.p. ≦ 30dBm.
	For subordinate device control of an indoor access point : e.i.r.p. ≦ 30dBm.
	For client device control of a standard power access point : e.i.r.p. ≦ 30dBm.
	For client device control of an indoor access point : e.i.r.p. ≦ 24dBm.
6.425 ~ 6.525	For indoor access point : e.i.r.p. ≦ 30dBm.
	For client device control of an indoor access point : e.i.r.p. ≦ 24dBm.
6.525 ~ 6.875	For standard power access point and fixed client device : e.i.r.p. ≦ 36dBm, For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125mW (21dBm).
	For indoor access point : e.i.r.p. ≦ 30dBm.
	For subordinate device control of an indoor access point : e.i.r.p. ≦ 30dBm.
	For client device control of a standard power access point : e.i.r.p. ≦ 30dBm.
	For client device control of an indoor access point : e.i.r.p. ≦ 24dBm.
6.875 ~ 7.125	For indoor access point : e.i.r.p. ≦ 30dBm.
	For client device control of an indoor access point : e.i.r.p. ≦ 24dBm.

For Radiation Method

■ **Test Setup**



■ **Test Procedure**

The test is performed in accordance with ANSI C63.10 section 12, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices.

Accordance with ANSI C63.10 section 12 use radiated compliance measurements.

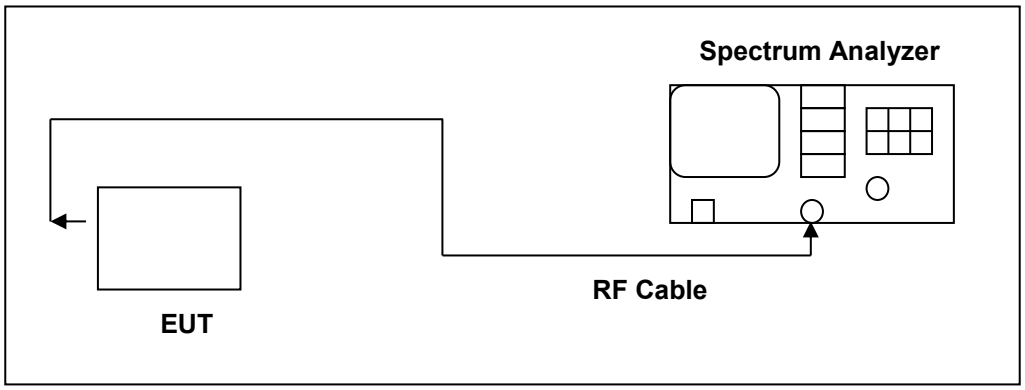
1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a antenna tower.
3. The height of antenna is fixed 1.5 meter , Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. Perform a EIRP level measurement and record the worse read value, is the EIRP level value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor.

4.4. Emission Bandwidth Measurement

■ **Limit**

≤ 320 MHz

■ **Test Setup**



■ **Test Procedure**

The test is performed in accordance with ANSI C63.10 section 12 Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

For 26 dB Bandwidth:

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	>26 dB Bandwidth
RBW	Approximately 1 %
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

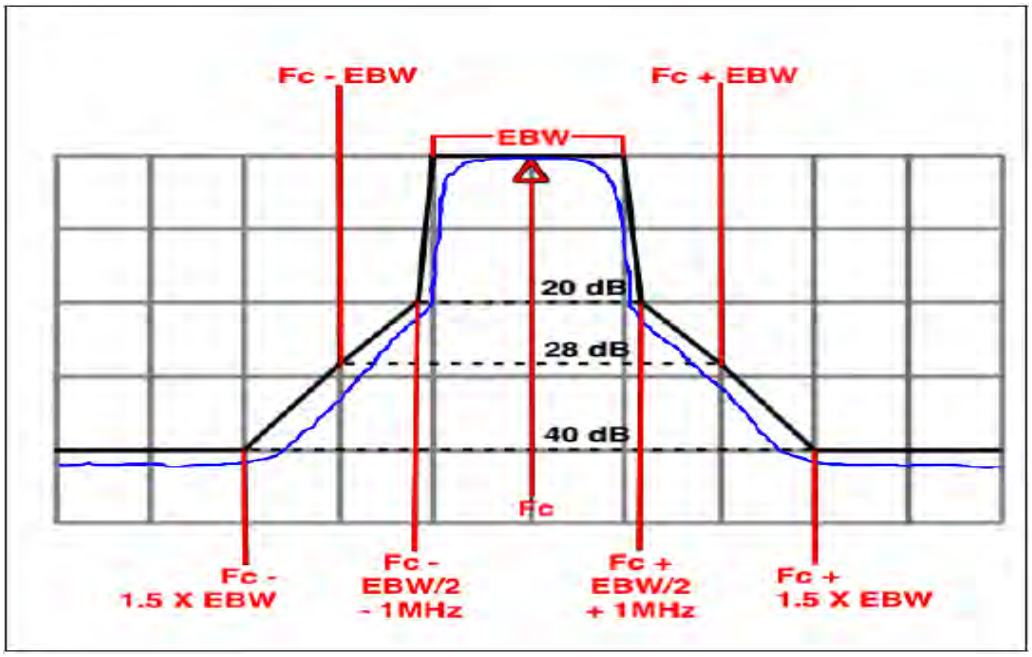
For 99% Bandwidth:

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

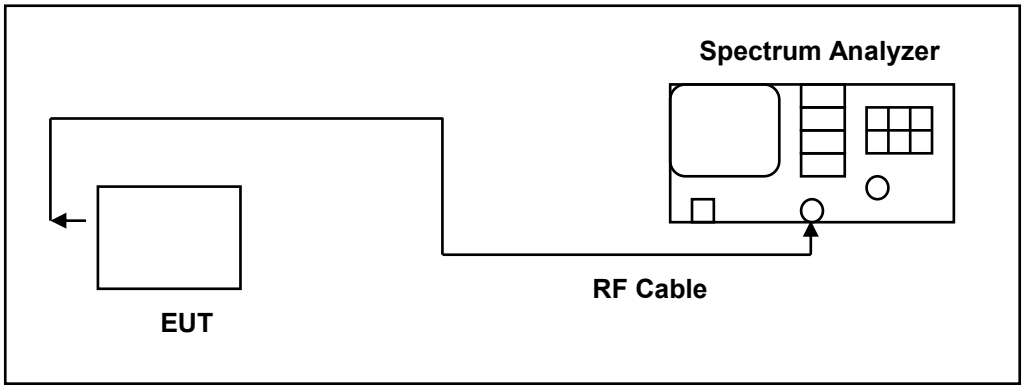
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	1.5 times and 5.0 times the OBW
RBW	Approximately 1 % ~ 5 % of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.5. In-Band Emission (Mask) Measurement

■ **Limit**



■ **Test Setup**



■ **Test Procedure**

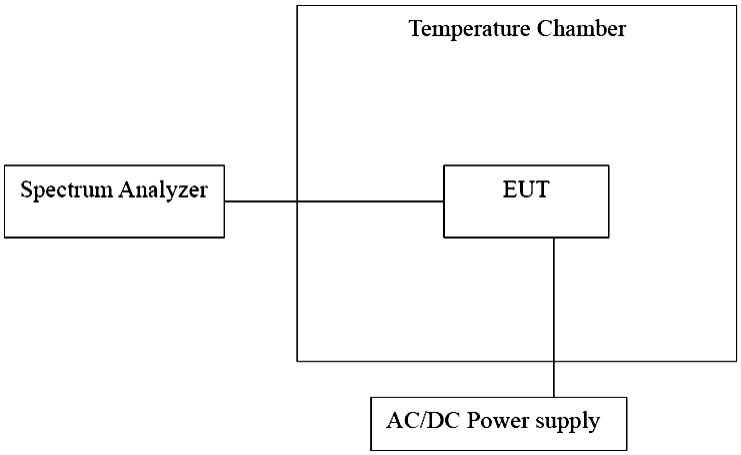
1. Connect output of the antenna port to a spectrum analyzer.
2. Measure the 26 dB EBW using the test procedure 12 of ANSI C63.10.
3. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
   a) Set the span to encompass the entire 26 dB EBW of the signal.
   b) Set RBW = same RBW used for 26 dB EBW measurement.
   c) Set VBW ≥ 3 X RBW
   d) Number of points in sweep ≥ [2 X span / RBW].
   e) Sweep time = auto.
   f) Detector = RMS (i.e., power averaging)
   g) Trace average at least 100 traces in power averaging (rms) mode.
   h) Use the peak search function on the instrument to find the peak of the spectrum.
4. For the purposes of developing the emission mask, the channel bandwidth is defined as the 26 dB EBW.
5. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
   a) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
   b) Suppressed by 28 dB at one channel bandwidth from the channel center.
   c) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
6. Adjust the span to encompass the entire mask as necessary.
7. Clear trace.
8. Trace average at least 100 traces in power averaging (rms) mode.
9. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

4.6. Frequency Stability Measurement

■ **Limit**

The carrier frequency remains within the operating frequency band.

■ **Test Setup**



■ **Test Procedure**

1. The EUT and test equipment were set up as shown on the following section.
2. Turn the on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.
5. Repeat step 4 with the temperature chamber set to the lower the chamber temperature by not more that 10 °C, and allow the temperature inside the chamber to stabilize.
6. The test chamber was allowed to stabilize at +20℃ for a minimum of 30 minutes. The supply voltage was then adjusted of the EUT form 85% (or end point) to 115% and the frequency record.

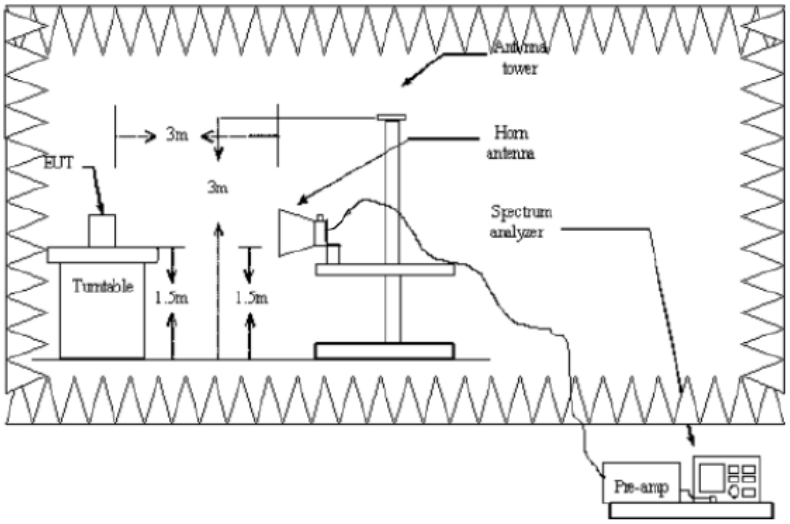
4.7. Maximum Power Spectral Density Measurement

■ **Limit**

Frequency Range (GHz)	Maximum Power Spectral Density Limit
5.925 ~ 6.425	For standard power access point and fixed client device : e.i.r.p. PSD ≤ 23 dBm/MHz.
	For indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For subordinate device control of an indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For client device control of a standard power access point : e.i.r.p. PSD ≤ 17 dBm/MHz.
	For client device control of an indoor access point : e.i.r.p. PSD ≤ -1 dBm/MHz.
6.425 ~ 6.525	For indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For client device control of an indoor access point : e.i.r.p. PSD ≤ -1 dBm/MHz.
6.525 ~ 6.875	For standard power access point and fixed client device : e.i.r.p. PSD ≤ 23 dBm/MHz.
	For indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For subordinate device control of an indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For client device control of a standard power access point : e.i.r.p. PSD ≤ 17 dBm/MHz.
	For client device control of an indoor access point : e.i.r.p. PSD ≤ -1 dBm/MHz.
6.875 ~ 7.125	For indoor access point : e.i.r.p. PSD ≤ 5 dBm/MHz.
	For client device control of an indoor access point : e.i.r.p. PSD ≤ -1 dBm/MHz.

For Radiation Method

■ **Test Setup**



■ **Test Procedure**

The test is performed in accordance with ANSI C63.10 section 12, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

Accordance with ANSI C63.10 section 12 use radiated compliance measurements.

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a antenna tower.
3. The height of antenna is fixed 1.5 meter , Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. Perform a EIRP level measurement and record the worse read value, is the EIRP level value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1 MHz
VBW	3 MHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times

4.8. Contention Based Protocol Measurement

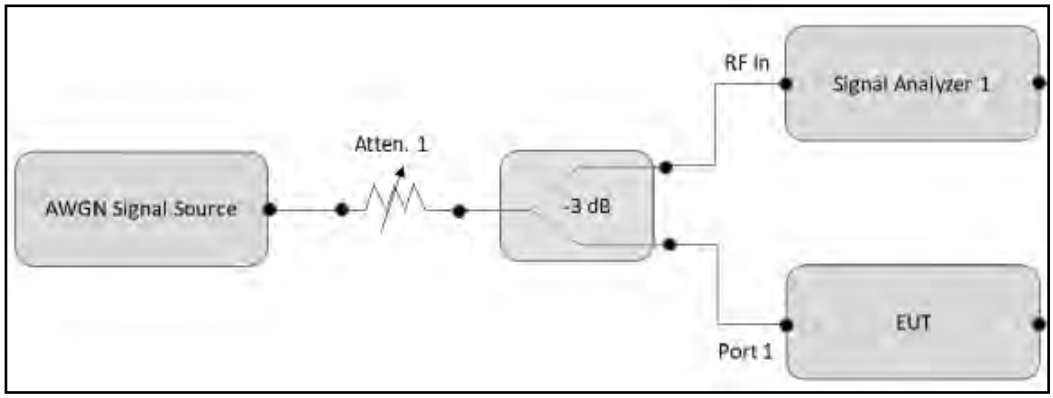
■ **Limit**

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain. Additionally, low-power indoor devices must detect co-channel energy with 90% or greater certainty.

Table 1. Criteria to determine number of times detection threshold test may be performed

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Tune incumbent and EUT transmissions ($f_{c1} = f_{c2}$)
$BW_{Inc} < BW_{EUT} \leq 2BW_{Inc}$	Once	Incumbent transmission is contained within BW_{EUT}
$2BW_{Inc} < BW_{EUT} \leq 4BW_{Inc}$	Twice. Incumbent transmission is contained within BW_{EUT}	Incumbent transmission is located as closely as possible to the lower edge and upper edge, respectively, of the EUT channel
$BW_{EUT} > 4BW_{Inc}$	Three times	Incumbent transmission is located as closely as possible to the lower edge of the EUT channel, in the middle of EUT channel, and as closely as possible to the upper edge of the EUT channel

■ **Test Setup**



■ **Test Procedure**

1. Configure the EUT to transmit with a constant duty cycle.
2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.
3. Set the signal analyzer center frequency to the nominal EEUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.
4. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
5. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB divider, to the signal analyzer 1 and the EUT as shown in Test Setup.
6. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
7. Monitor the signal analyzer to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
8. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
9. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 4, choose a different center frequency for the AWGN signal and repeat the process.

4.9. Operational restrictions for 6 GHz U-NII devices

■ **Limits**

In the 5.925-7.125 GHz band, client devices, except fixed client devices, must operate under the control of a standard power access point, indoor access point or subordinate devices; Subordinate devices must operate under the control of an indoor access point.

■ **Declare**

Device is an indoor client device under the control of a low power indoor access point. Please refer to the declaration letter exhibit supplied within this application.

4.10. Automatically discontinue transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

■ **Declare**

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving.

The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

4.11. Antenna Requirement

■ **Limit**

For intentional device, according to 15.203, 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.
And According to 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ **Antenna Connector Construction**

See section 2 – antenna information.

■ Directional Gain Calculated

Test mode	Band	Transmission Type	Antenna				Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
			Ant-0 (dBi)	Ant-1 (dBi)	Ant-2 (dBi)	Ant-3 (dBi)				
802.11a 802.11ax HE20 802.11ax HE40 802.11ax HE80 802.11ax HE160	Band 5	Ant-0	1.70	1.70	---	---	1.70	4.71	0.00	0.00
	Band 6		1.70	1.70	---	---	1.70	4.71	0.00	0.00
	Band 7		1.70	1.70	---	---	1.70	4.71	0.20	0.00
	Band 8		1.70	1.70	---	---	1.70	4.71	0.00	0.00

Directional gain (Power) = GANT

Directional gain (PSD) = Arrary Gain

Beamforming on

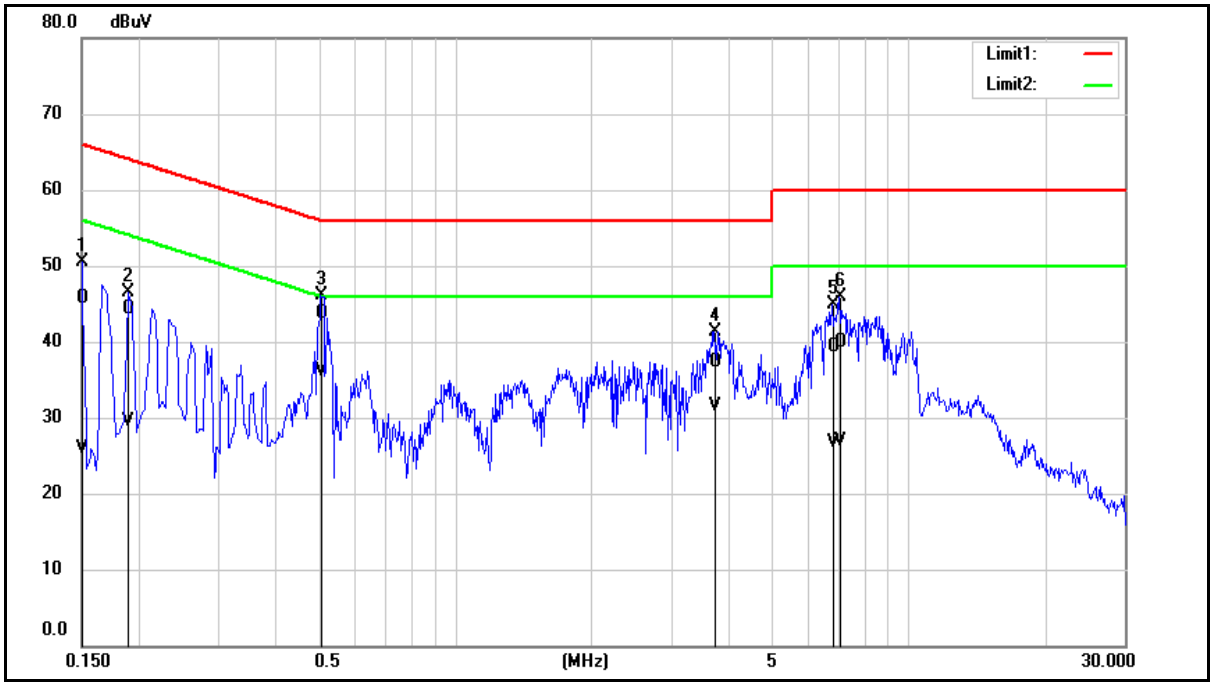
Test mode	Band	Transmission Type	Antenna				Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
			Ant-0 (dBi)	Ant-1 (dBi)	Ant-2 (dBi)	Ant-3 (dBi)				
802.11ax HE20 802.11ax HE40 802.11ax HE80 802.11ax HE160	Band 5	Ant-0	1.70	1.70	---	---	4.71	4.71	0.00	0.00
	Band 6		1.70	1.70	---	---	4.71	4.71	0.00	0.00
	Band 7		1.70	1.70	---	---	4.71	4.71	0.20	0.00
	Band 8		1.70	1.70	---	---	4.71	4.71	0.00	0.00

Directional gain = GANT + Array Gain

5 Test Results

5.1. Conducted Emission

Standard:	FCC Part 15.407	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit mode		
Description:			

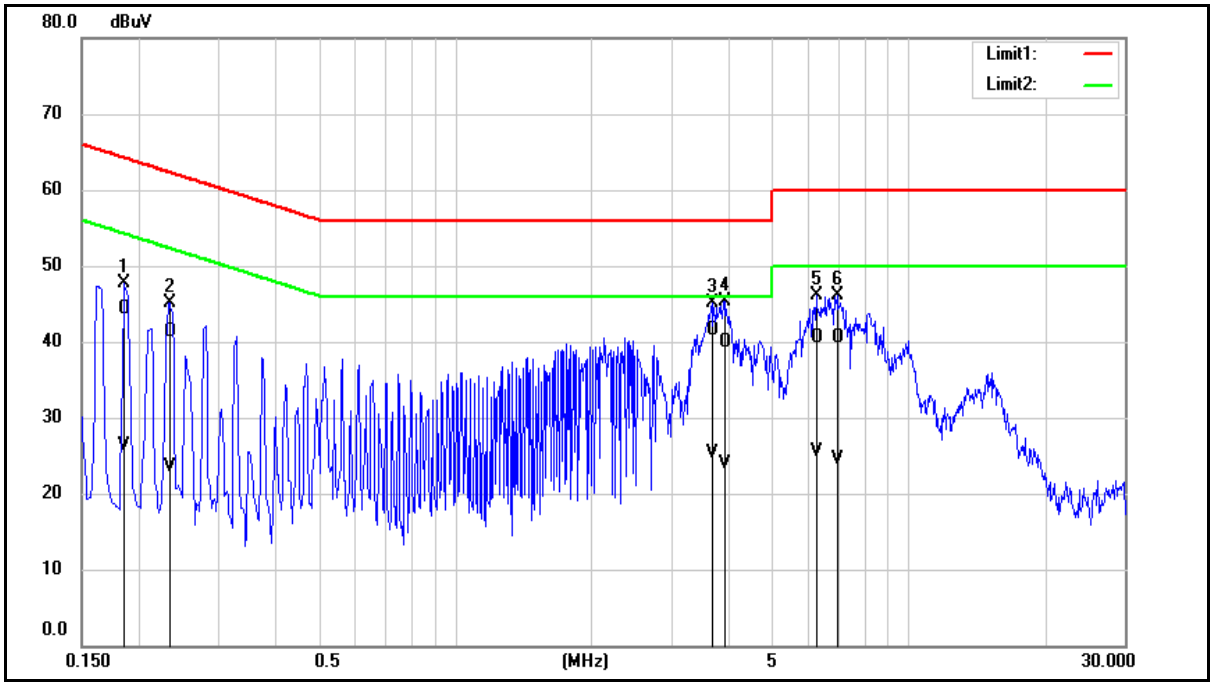


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	36.05	16.24	9.61	45.66	25.85	66.00	56.00	-20.34	-30.15	Pass
2	0.1900	34.67	19.93	9.61	44.28	29.54	64.04	54.04	-19.76	-24.50	Pass
3	0.5060	34.15	26.53	9.63	43.78	36.16	56.00	46.00	-12.22	-9.84	Pass
4	3.7300	27.61	21.70	9.74	37.35	31.44	56.00	46.00	-18.65	-14.56	Pass
5	6.7740	29.49	16.94	9.81	39.30	26.75	60.00	50.00	-20.70	-23.25	Pass
6	7.0340	30.15	17.03	9.82	39.97	26.85	60.00	50.00	-20.03	-23.15	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.407	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Transmit mode		
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1860	34.64	16.63	9.61	44.25	26.24	64.21	54.21	-19.96	-27.97	Pass
2	0.2340	31.66	13.96	9.61	41.27	23.57	62.31	52.31	-21.04	-28.74	Pass
3	3.6860	31.73	15.63	9.74	41.47	25.37	56.00	46.00	-14.53	-20.63	Pass
4	3.9380	30.22	14.11	9.75	39.97	23.86	56.00	46.00	-16.03	-22.14	Pass
5	6.2540	30.67	15.68	9.81	40.48	25.49	60.00	50.00	-19.52	-24.51	Pass
6	6.9700	30.61	14.69	9.83	40.44	24.52	60.00	50.00	-19.56	-25.48	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

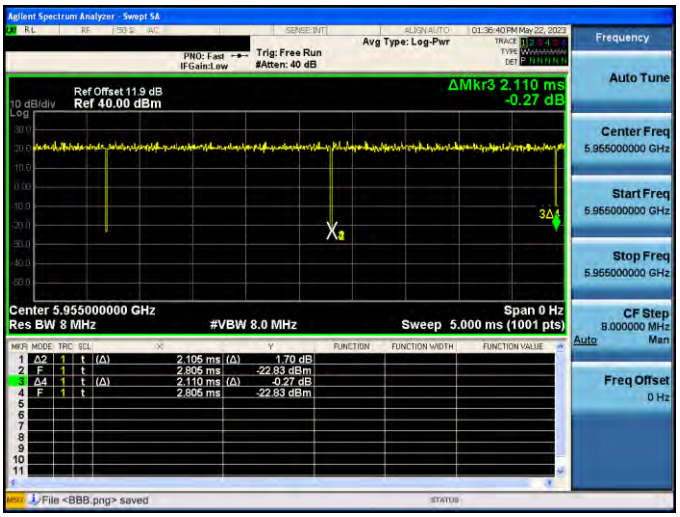
5.2. Radiated Emission Measurement

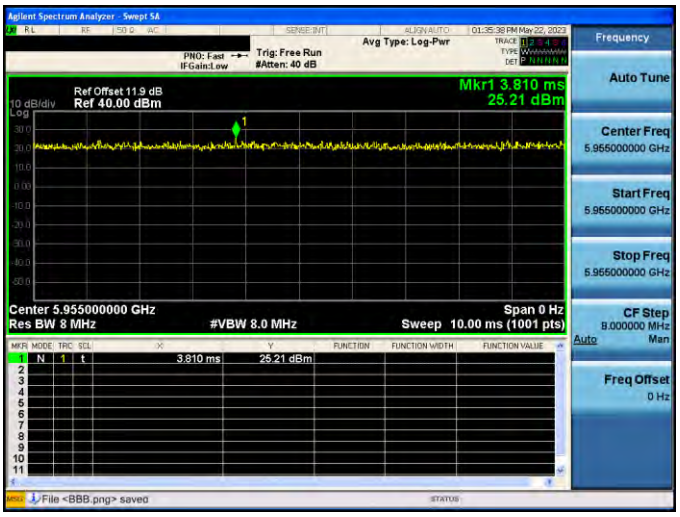
Reference Appendix B

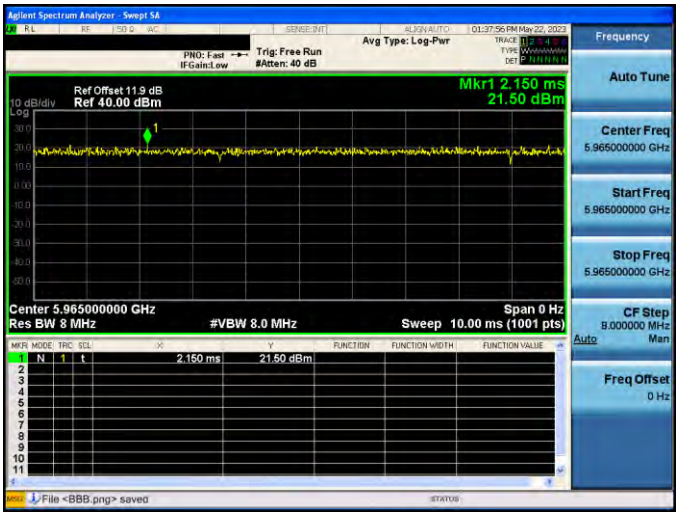
5.3. Conducted Test Results

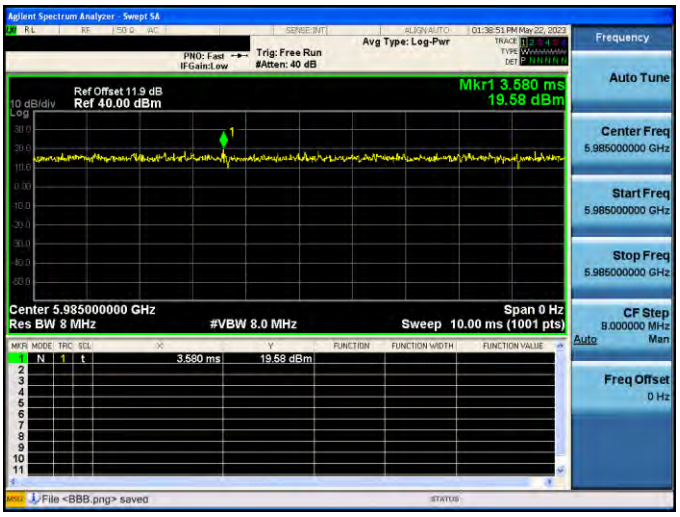
5.3.1. Duty cycle

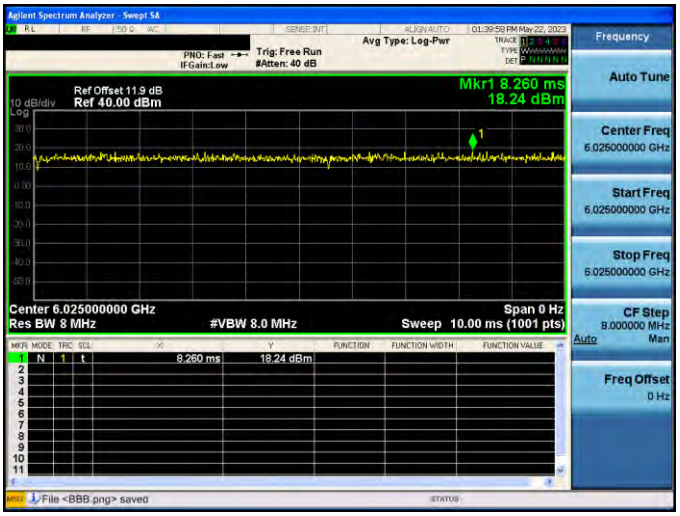
Duty Cycle Graphs

802.11a	
On+off time	

802.11ax HE20	
On+off time	

802.11ax HE40	
On+off time	

802.11ax HE80	
On+off time	

802.11ax HE160	
On+off time	

5.3.2. Maximum Output Power Measurement

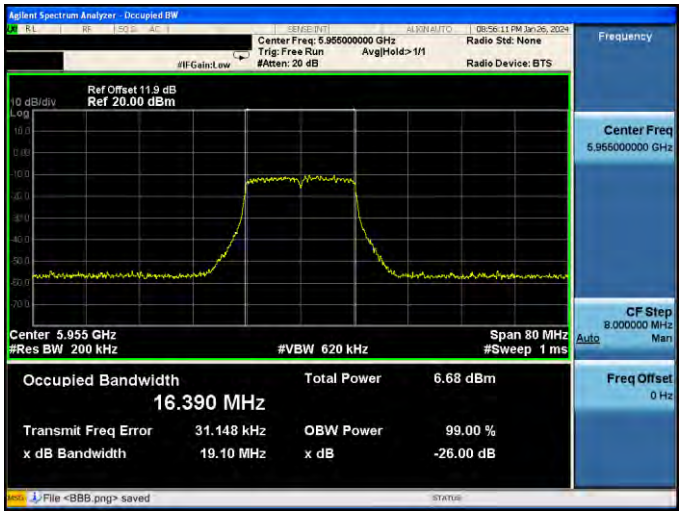
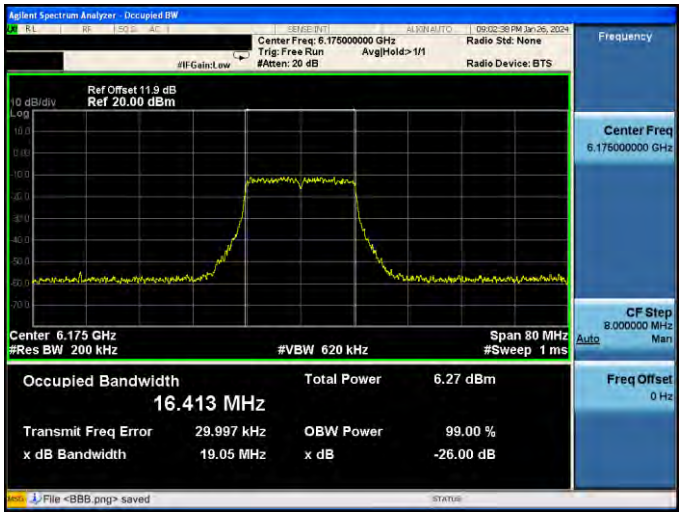
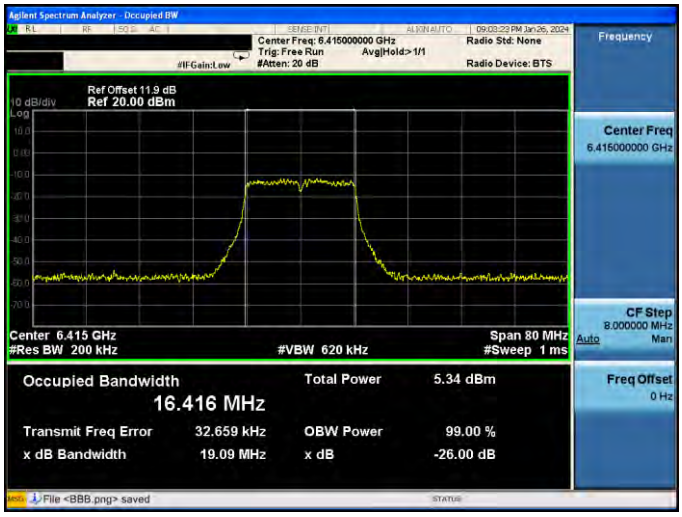
Rreference Appendix A. Test Data

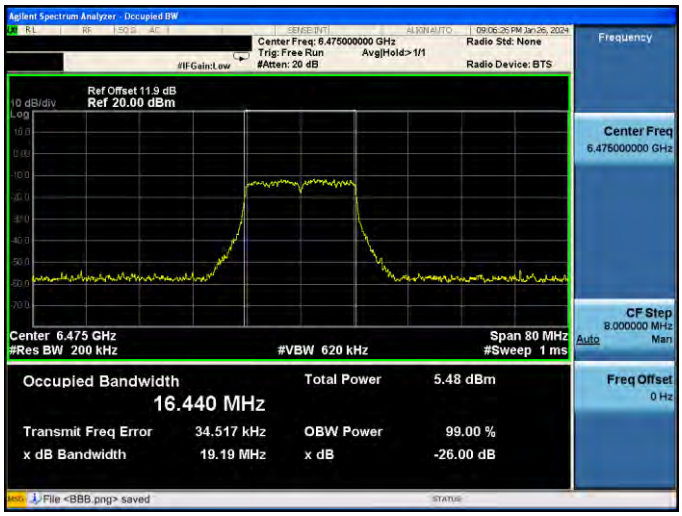
5.3.3. Emission Bandwidth Measurement

Rreference Appendix A. Test Data

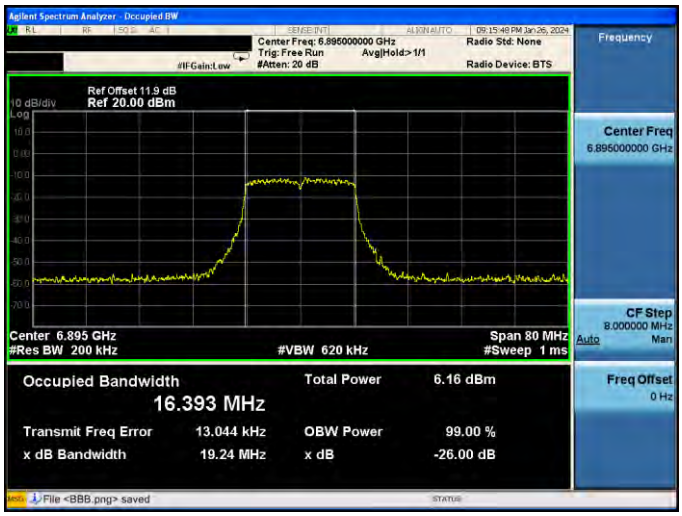
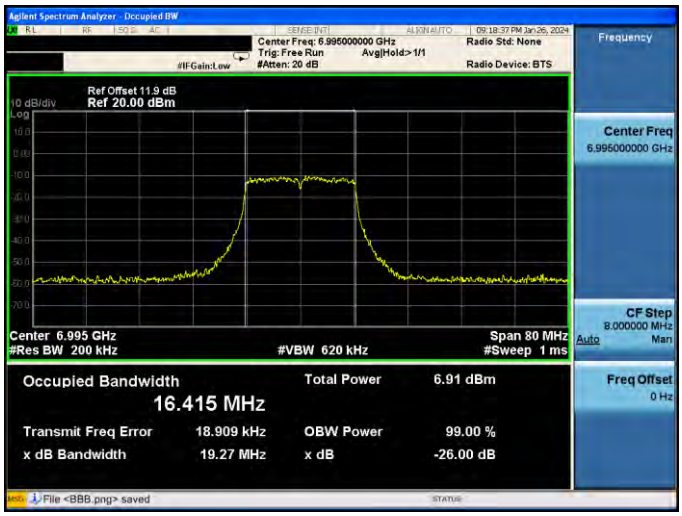
■ **Test Graphs**

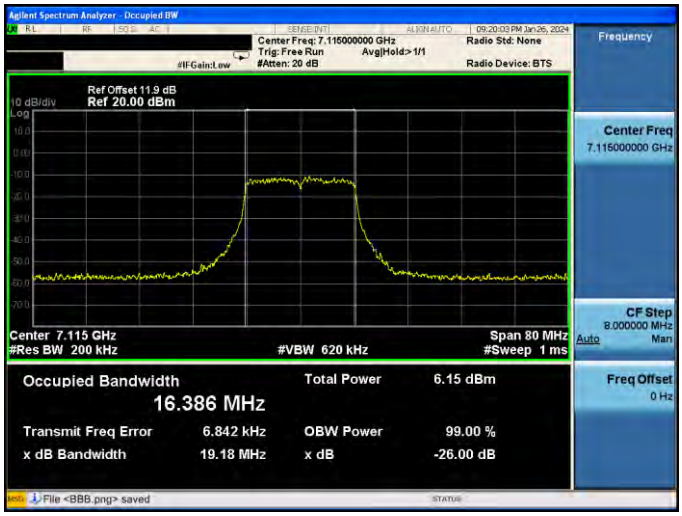
99%&26dB Occupied Bandwidth

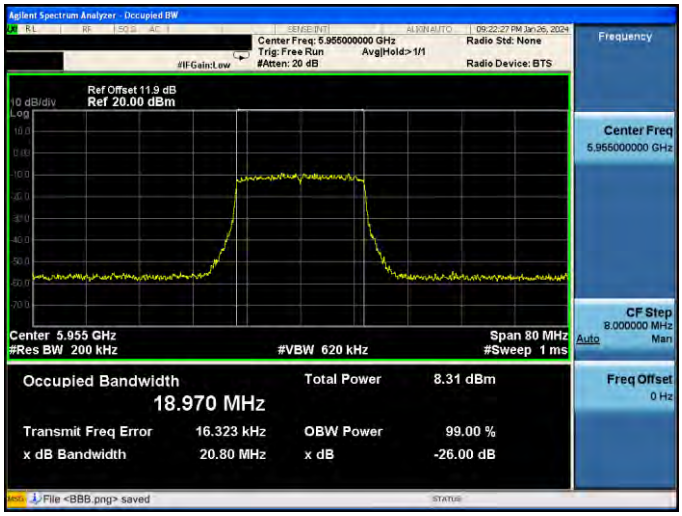
802.11a_ANT-0	
5955 MHz	
6175 MHz	
6415 MHz	

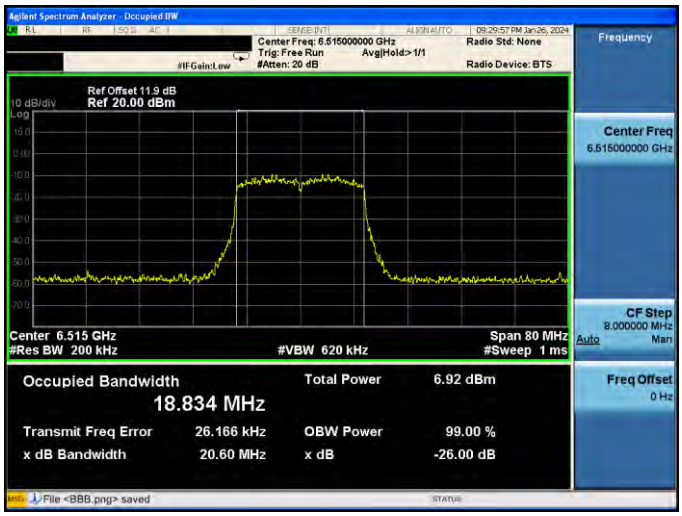
802.11a_ANT-0	
6435 MHz	
6475 MHz	
6515 MHz	

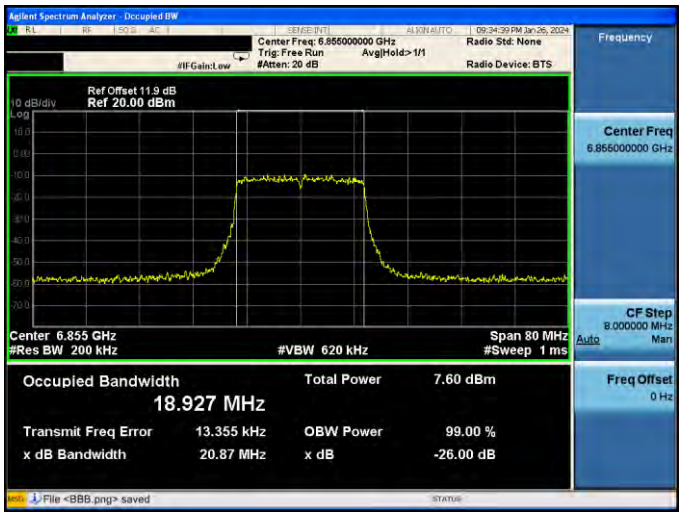
802.11a_ANT-0	
6535 MHz	
6695 MHz	
6855 MHz	

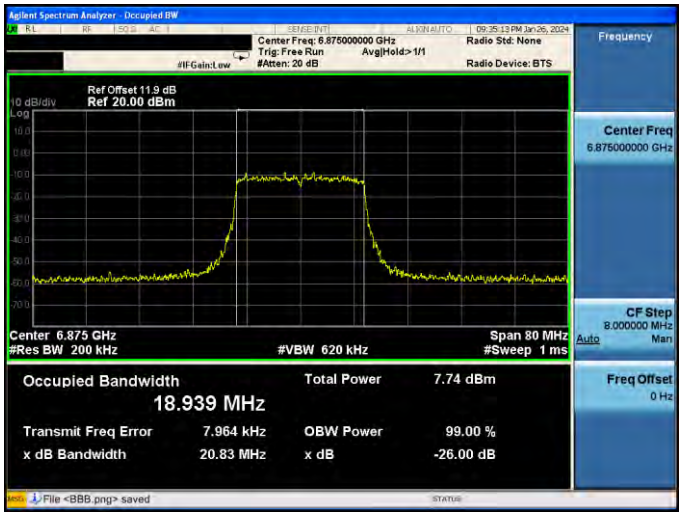
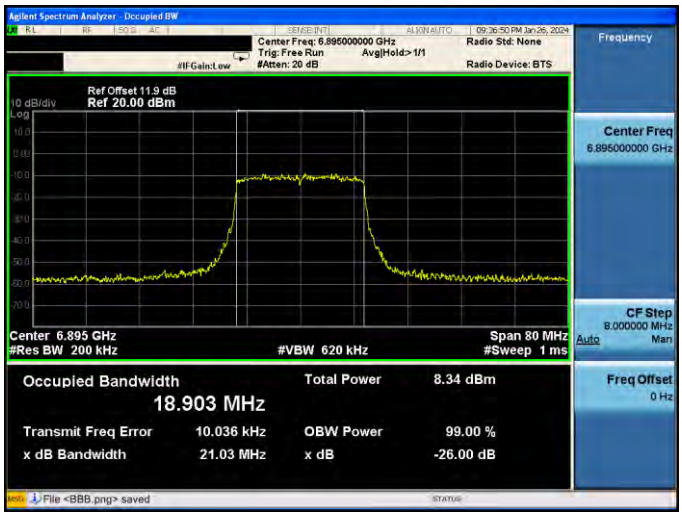
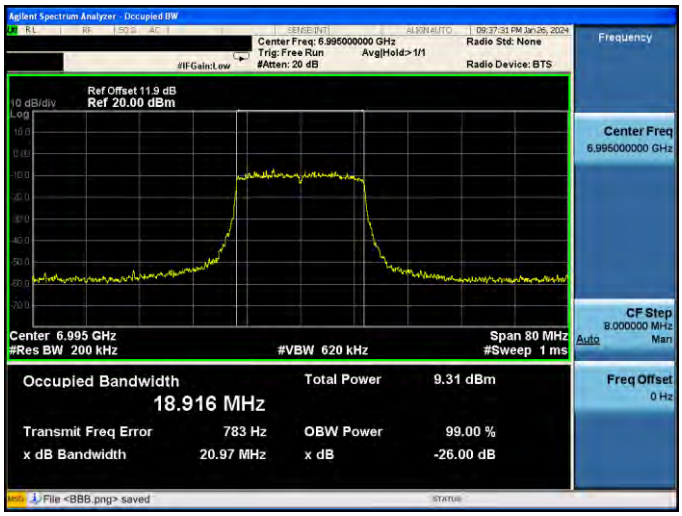
802.11a_ANT-0	
6875 MHz	
6895 MHz	
6995 MHz	

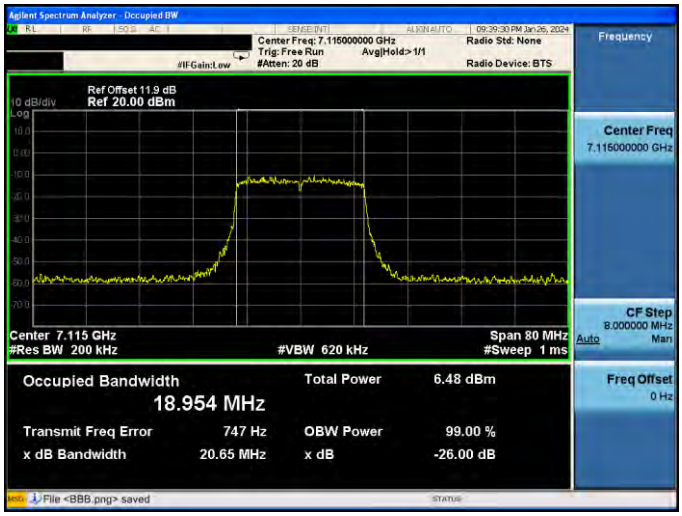
802.11a_ANT-0	
7115 MHz	

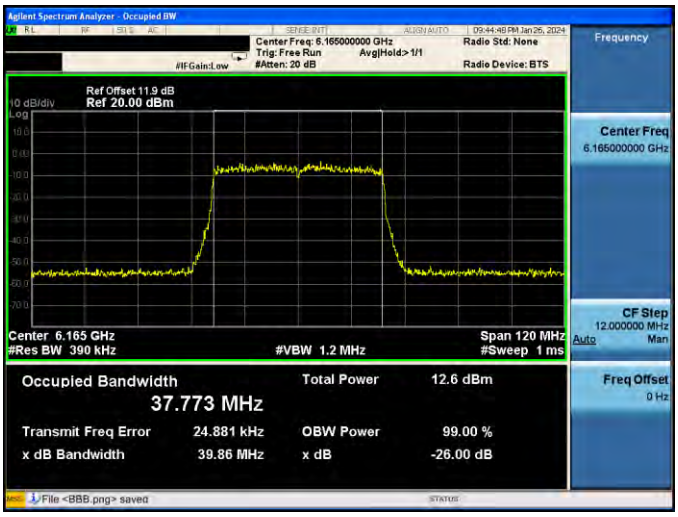
802.11ax HE20_ANT-0	
5955 MHz	
6175 MHz	
6415 MHz	

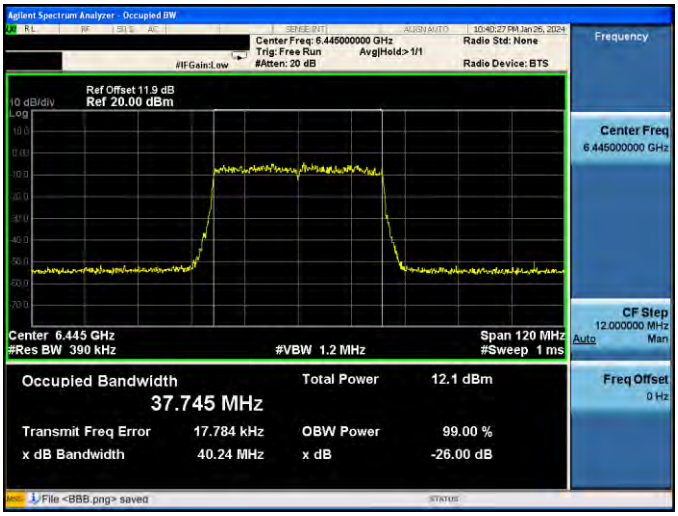
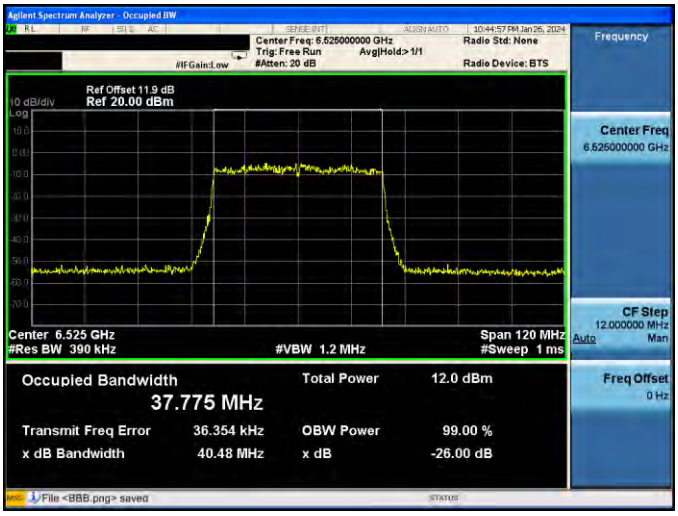
802.11ax HE20_ANT-0	
6435 MHz	
6475 MHz	
6515 MHz	

802.11ax HE20_ANT-0	
6535 MHz	
6695 MHz	
6855 MHz	

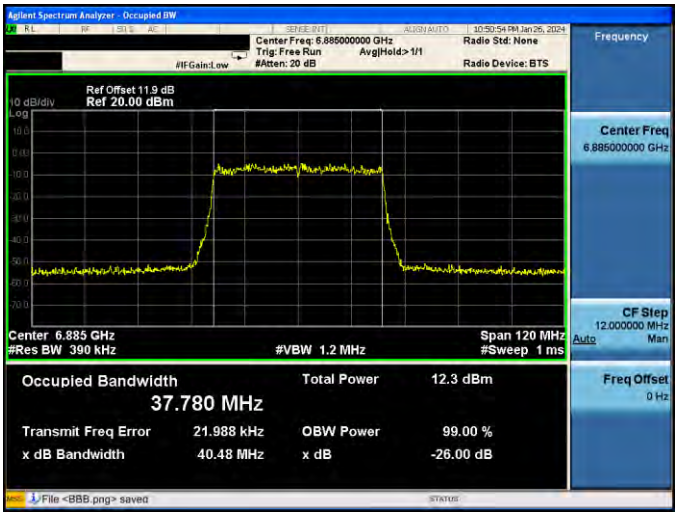
802.11ax HE20_ANT-0	
6875 MHz	
6895 MHz	
6995 MHz	

802.11ax HE20_ANT-0	
7115 MHz	

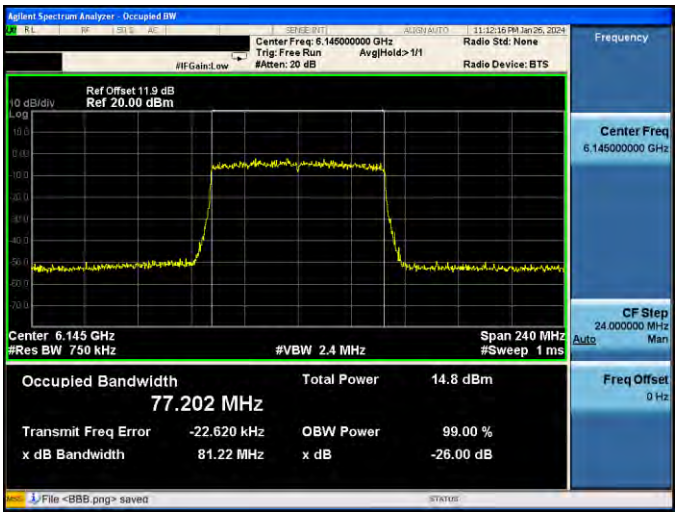
802.11ax HE40_ANT-0	
5965 MHz	
6165 MHz	
6405 MHz	

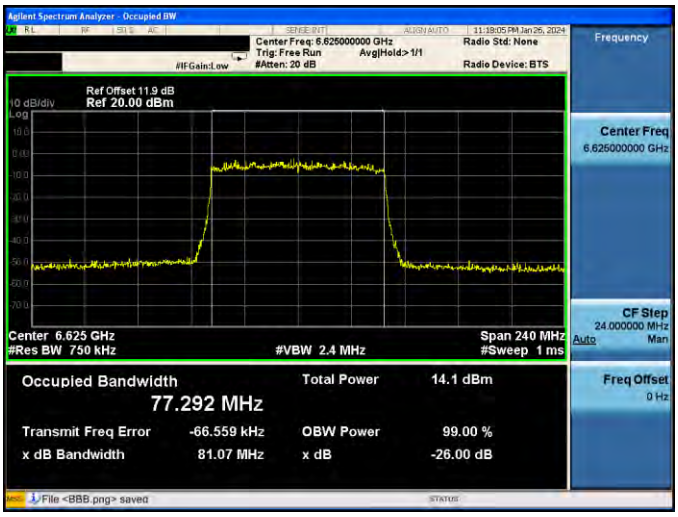
802.11ax HE40_ANT-0	
6445 MHz	
6485 MHz	
6525 MHz	

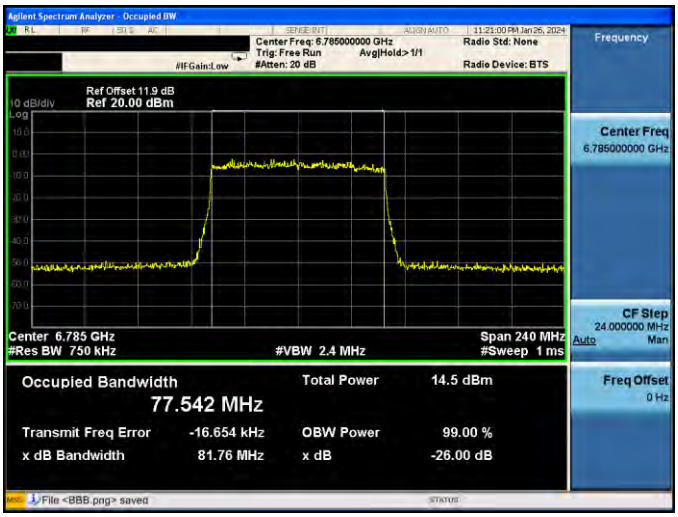
802.11ax HE40_ANT-0	
6565 MHz	
6685 MHz	
6845 MHz	

802.11ax HE40_ANT-0	
6885 MHz	
6925 MHz	
7005 MHz	

802.11ax HE40_ANT-0	
7085 MHz	

802.11ax HE80_ANT-0	
5985 MHz	
6145 MHz	
6385 MHz	

802.11ax HE80_ANT-0	
6465 MHz	
6545 MHz	
6625 MHz	

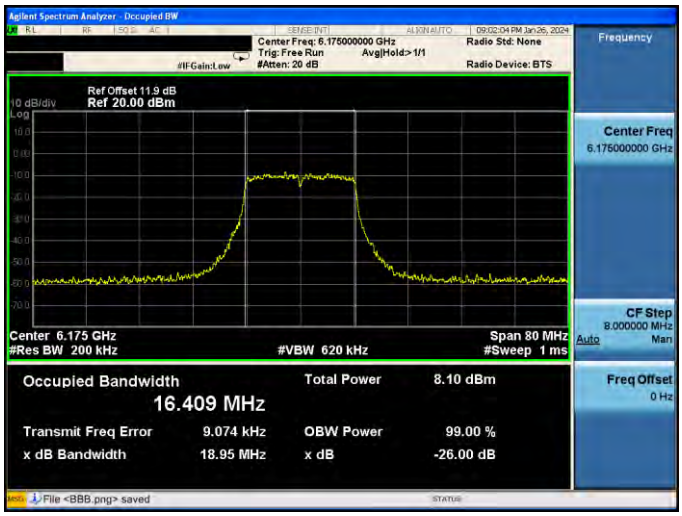
802.11ax HE80_ANT-0	
6705 MHz	
6785 MHz	
6865 MHz	

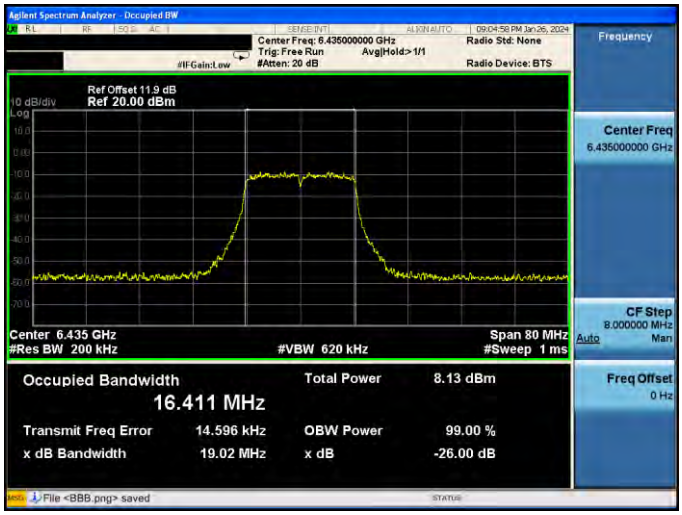
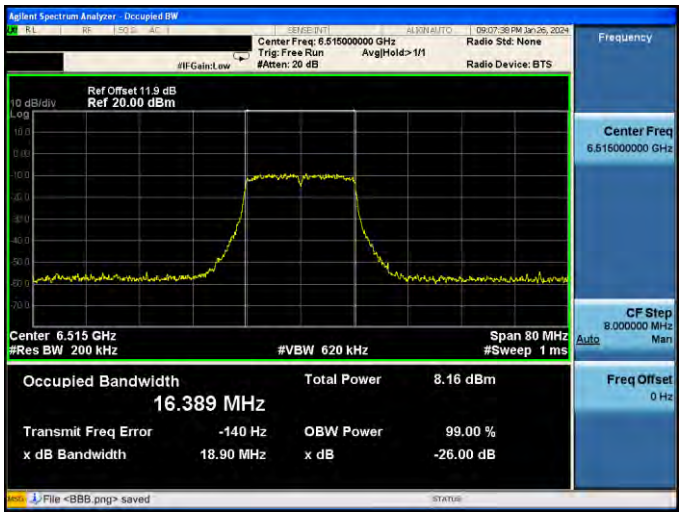
802.11ax HE80_ANT-0	
6945 MHz	
7025 MHz	

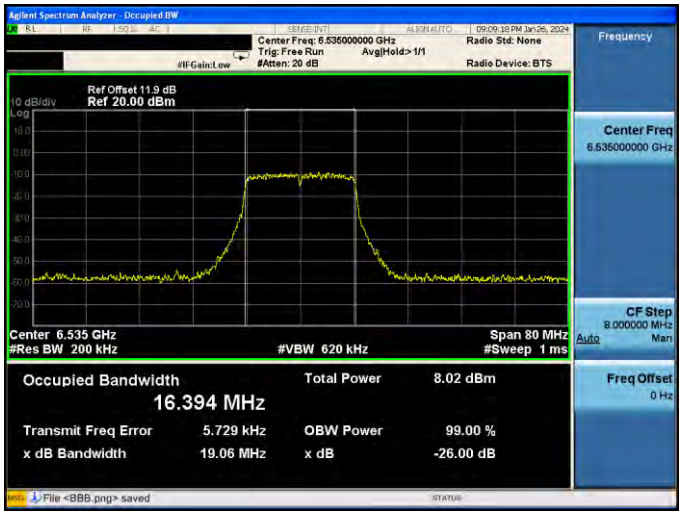
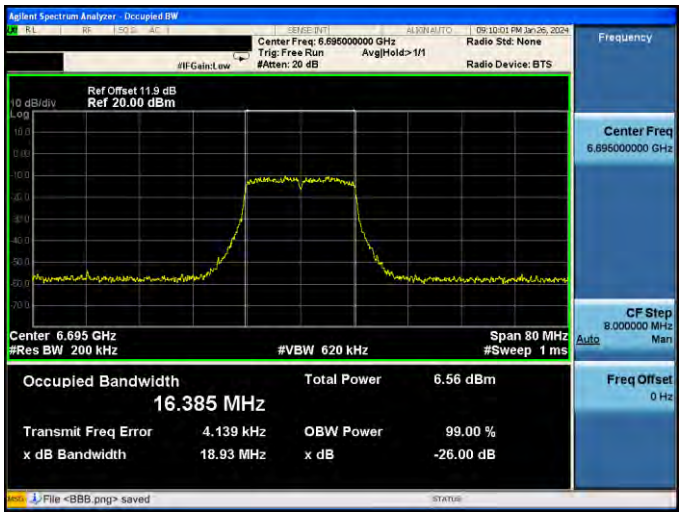
802.11ax HE160_ANT-0	
6025 MHz	
6185 MHz	
6345 MHz	

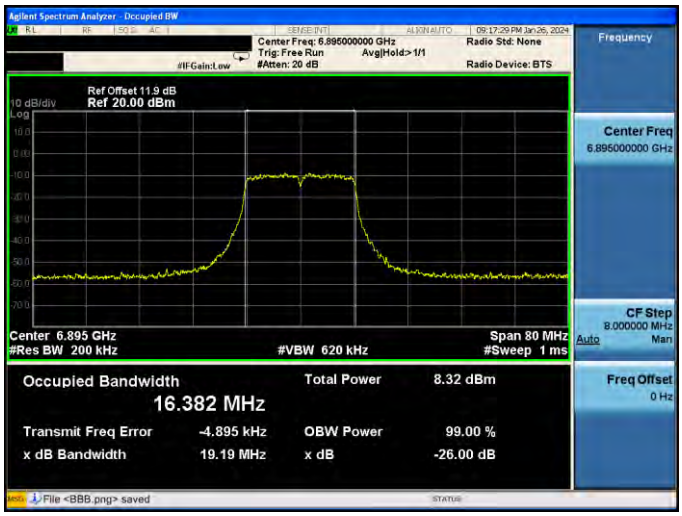
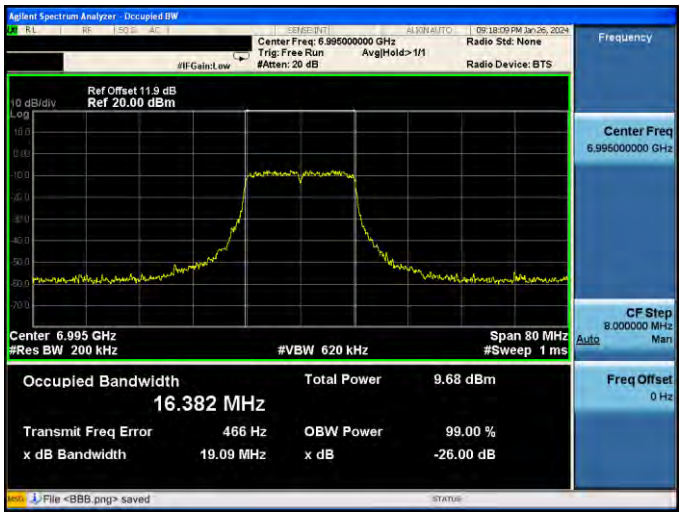
802.11ax HE160_ANT-0	
6505 MHz	
6665 MHz	
6825 MHz	

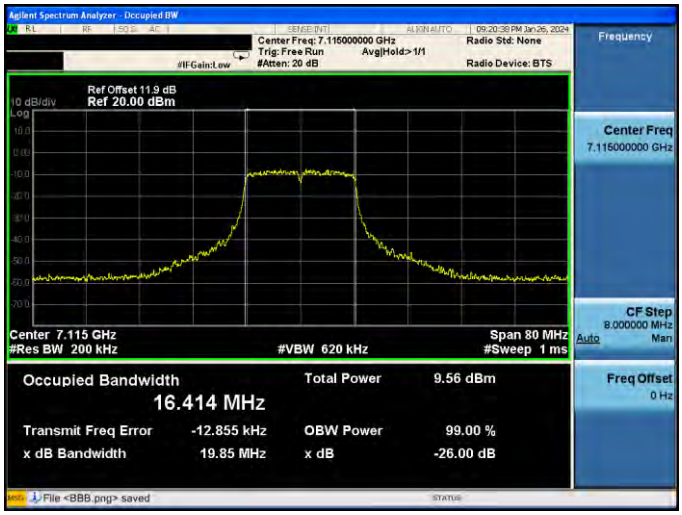
802.11ax HE160_ANT-0	
6985 MHz	

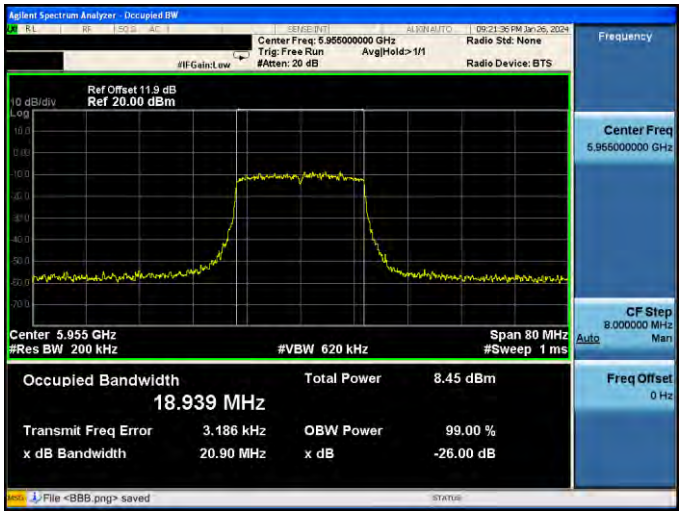
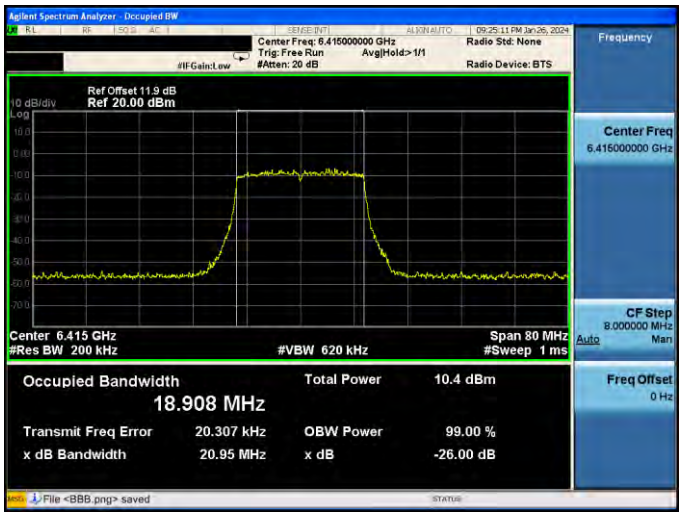
802.11a_ANT-1	
5955 MHz	
6175 MHz	
6415 MHz	

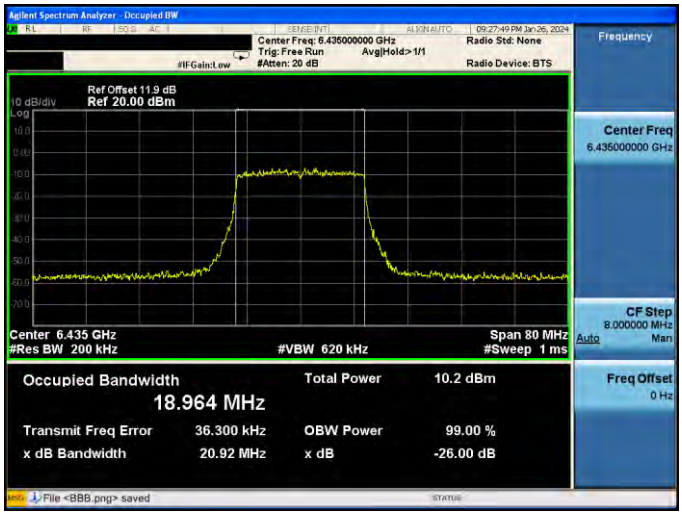
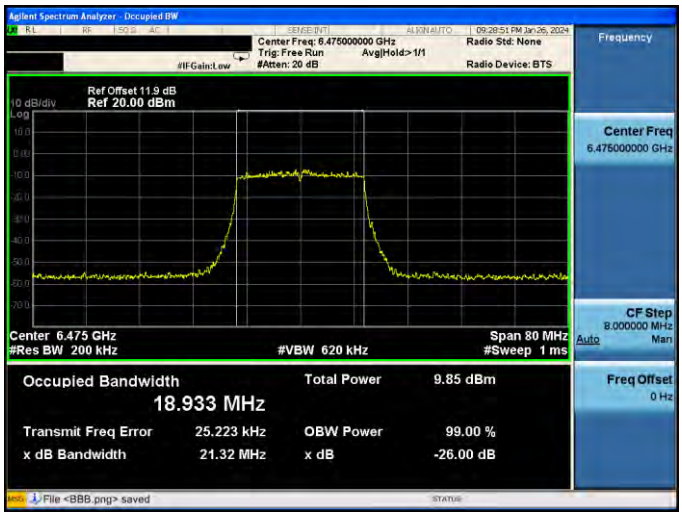
802.11a_ANT-1	
6435 MHz	
6475 MHz	
6515 MHz	

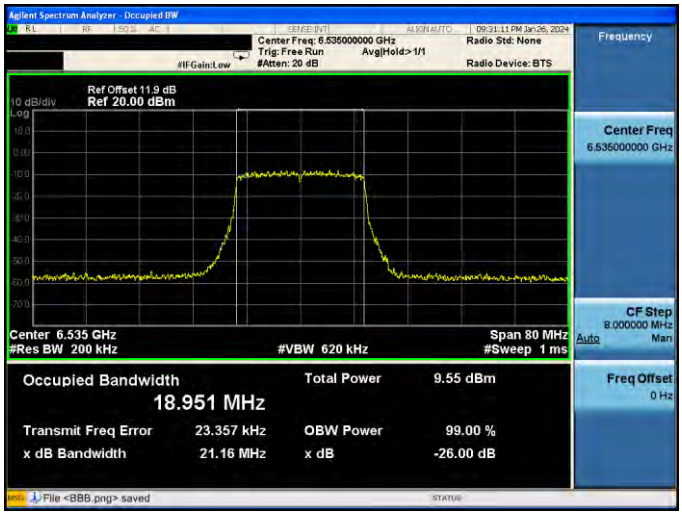
802.11a_ANT-1	
6535 MHz	
6695 MHz	
6855 MHz	

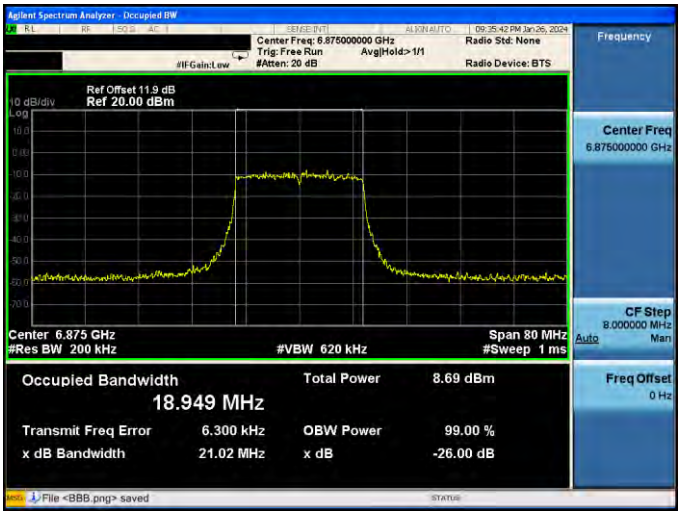
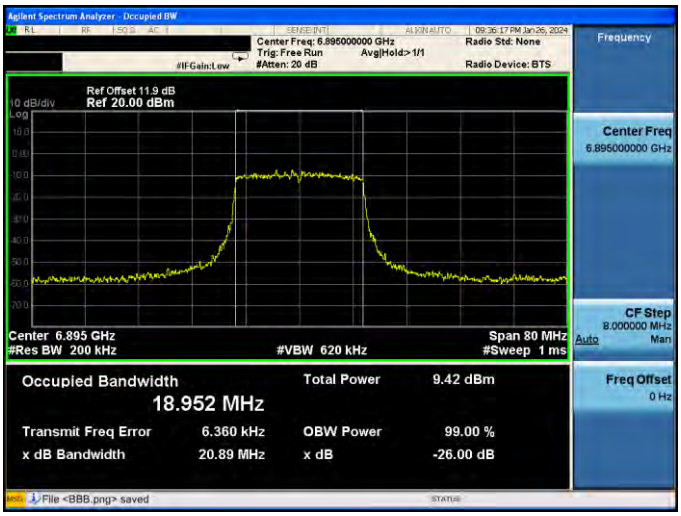
802.11a_ANT-1	
6875 MHz	
6895 MHz	
6995 MHz	

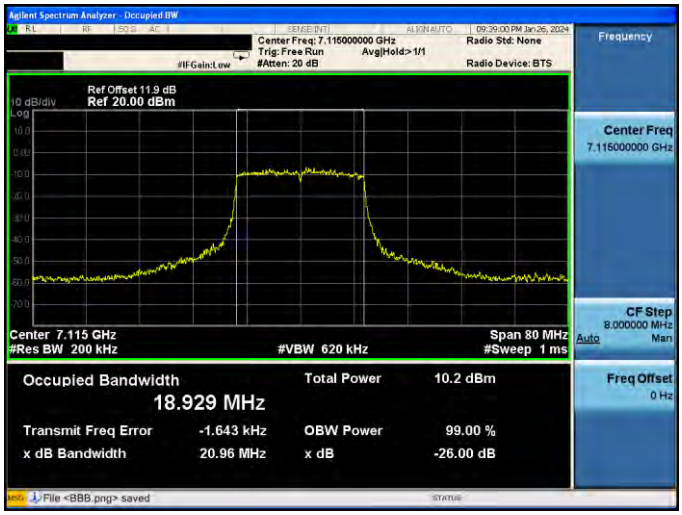
802.11a_ANT-1	
7115 MHz	

802.11ax HE20_ANT-1	
5955 MHz	
6175 MHz	
6415 MHz	

802.11ax HE20_ANT-1	
6435 MHz	
6475 MHz	
6515 MHz	

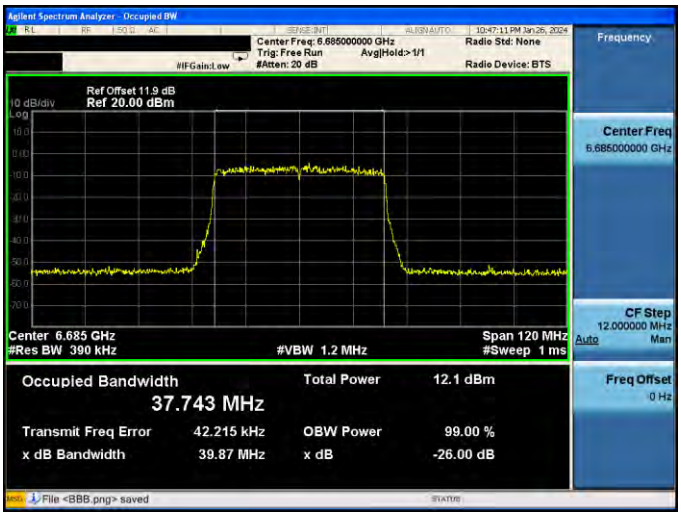
802.11ax HE20_ANT-1	
6535 MHz	
6695 MHz	
6855 MHz	

802.11ax HE20_ANT-1	
6875 MHz	
6895 MHz	
6995 MHz	

802.11ax HE20_ANT-1	
7115 MHz	

802.11ax HE40_ANT-1	
5965 MHz	
6165 MHz	
6405 MHz	

802.11ax HE40_ANT-1	
6445 MHz	
6485 MHz	
6525 MHz	

802.11ax HE40_ANT-1	
6565 MHz	
6685 MHz	
6845 MHz	

802.11ax HE40_ANT-1	
6885 MHz	
6925 MHz	
7005 MHz	

802.11ax HE40_ANT-1	
7085 MHz	

802.11ax HE80_ANT-1	
5985 MHz	
6145 MHz	
6385 MHz	

802.11ax HE80_ANT-1	
6465 MHz	
6545 MHz	
6625 MHz	

802.11ax HE80_ANT-1	
6705 MHz	
6785 MHz	
6865 MHz	

802.11ax HE80_ANT-1	
6945 MHz	
7025 MHz	

802.11ax HE160_ANT-1	
6025 MHz	
6185 MHz	
6345 MHz	

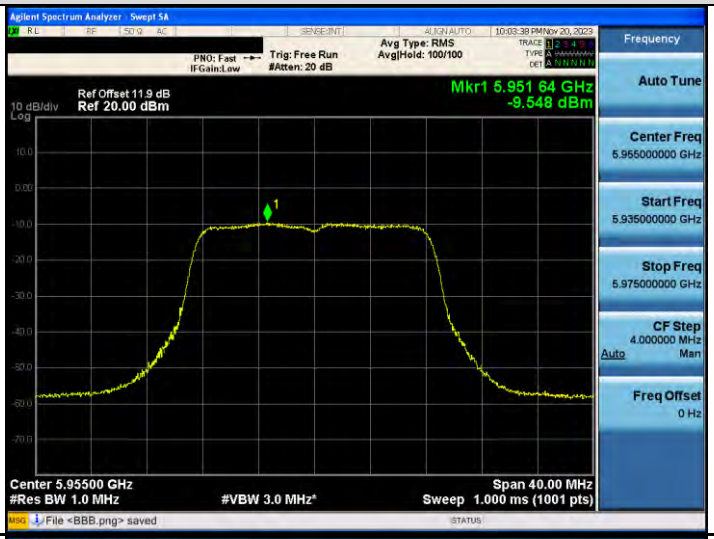
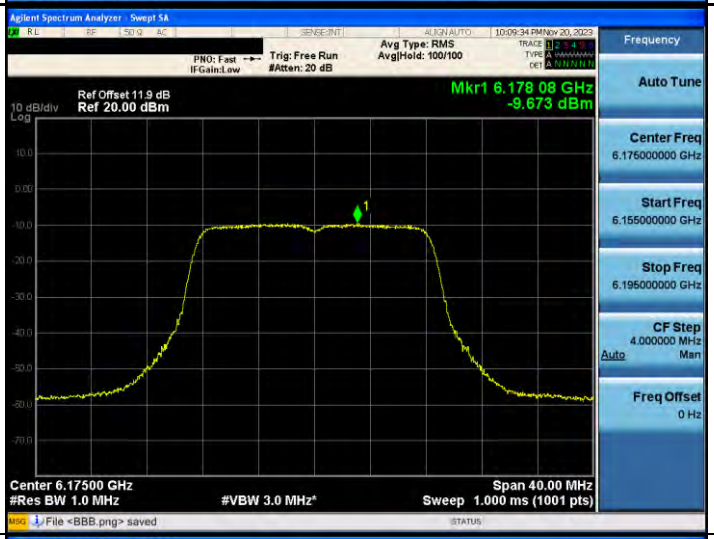
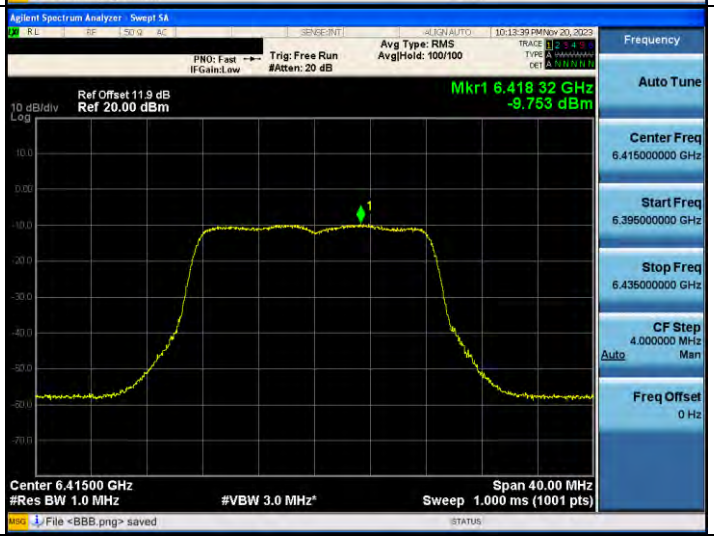
802.11ax HE160_ANT-1	
6505 MHz	
6665 MHz	
6825 MHz	

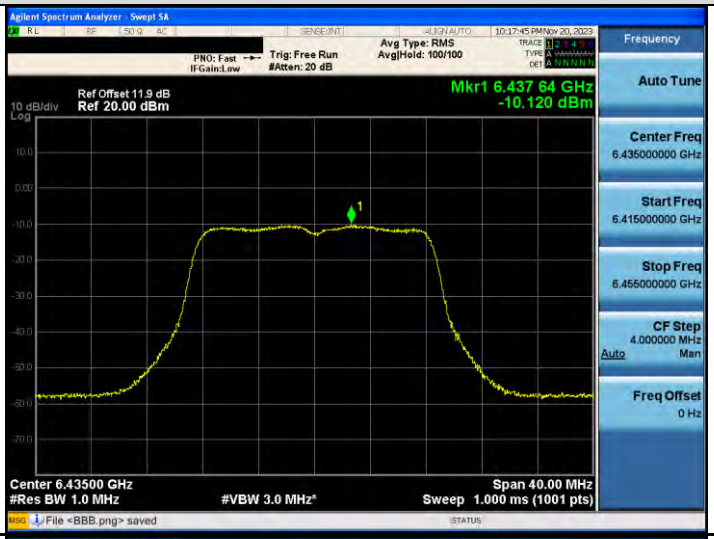
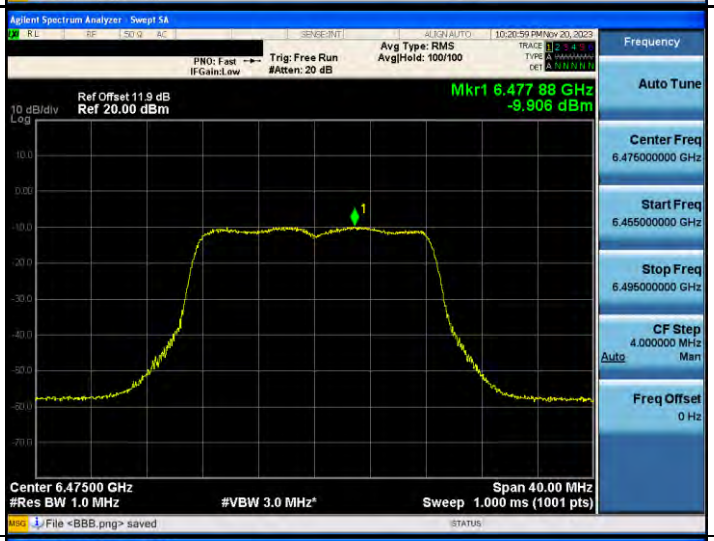
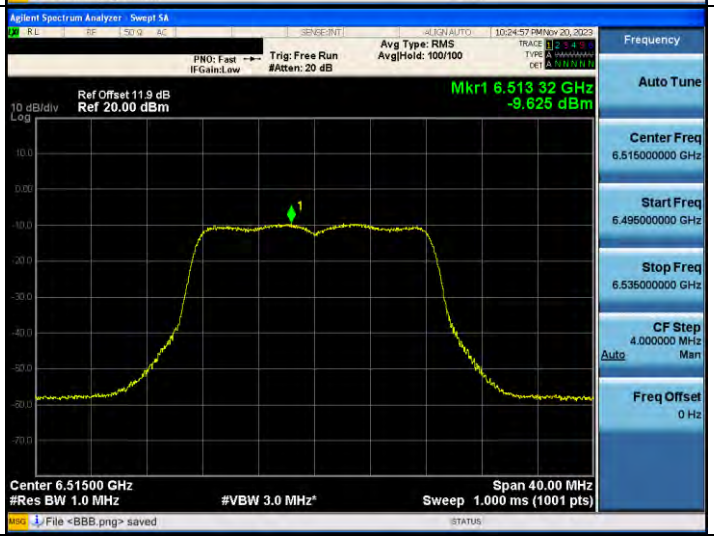
802.11ax HE160_ANT-1	
6985 MHz	

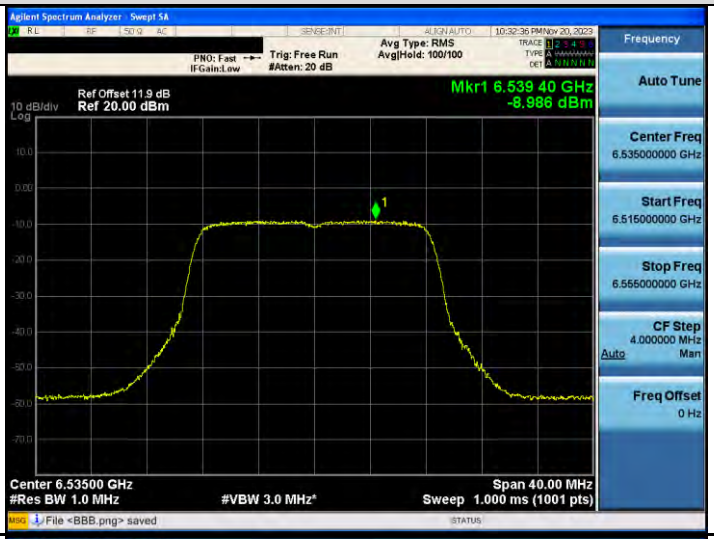
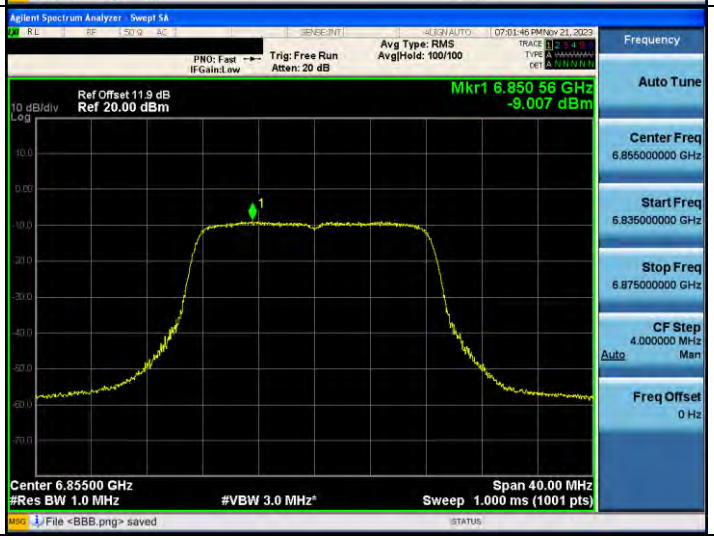
5.3.4. Maximum Power Spectral Density Measurement

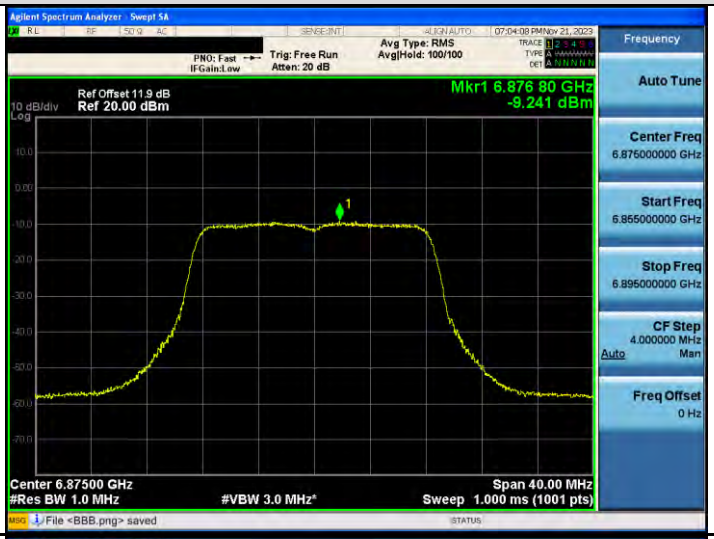
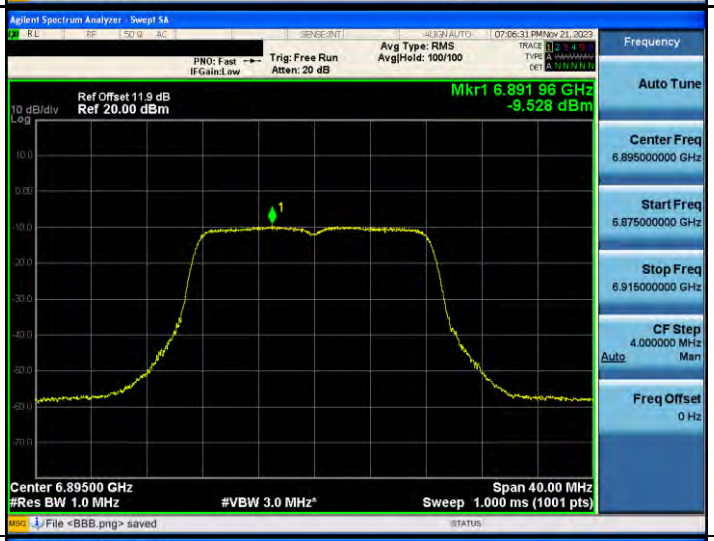
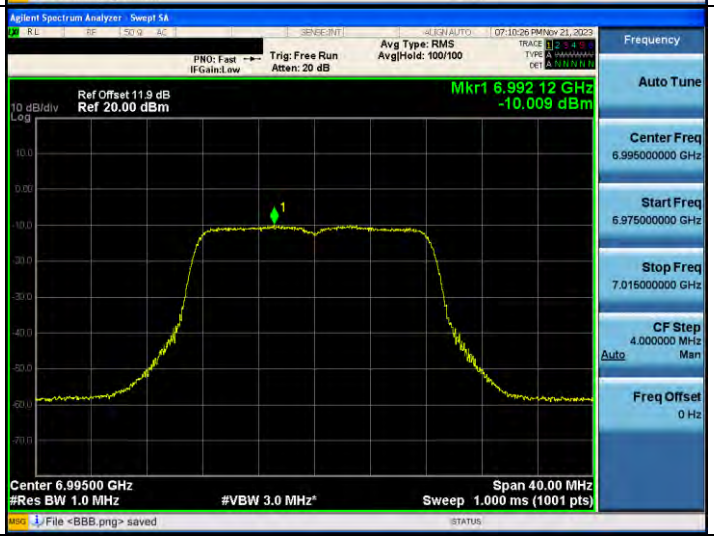
Rreference Appendix A. Test Data

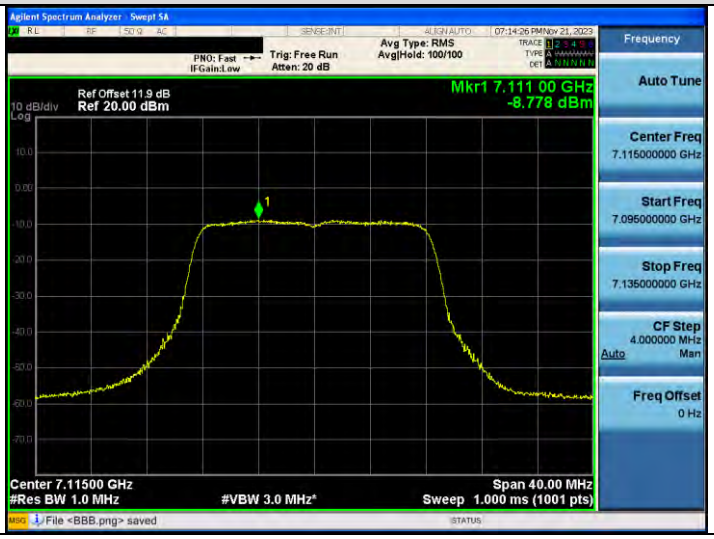
■ **Test Graphs**

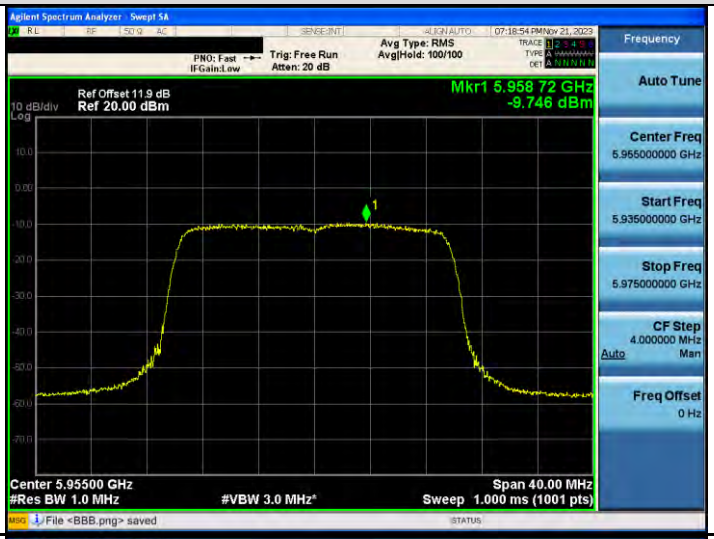
802.11a_ANT-0	
5955 MHz	
6175 MHz	
6415 MHz	

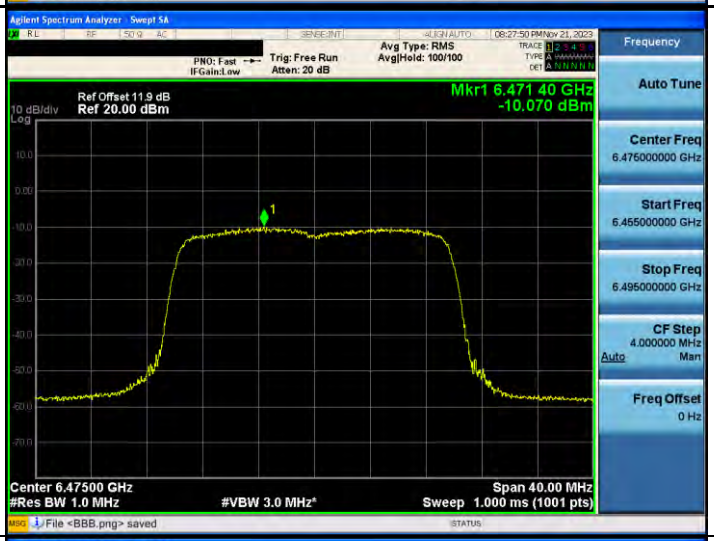
802.11a_ANT-0	
6435 MHz	
6475 MHz	
6515 MHz	

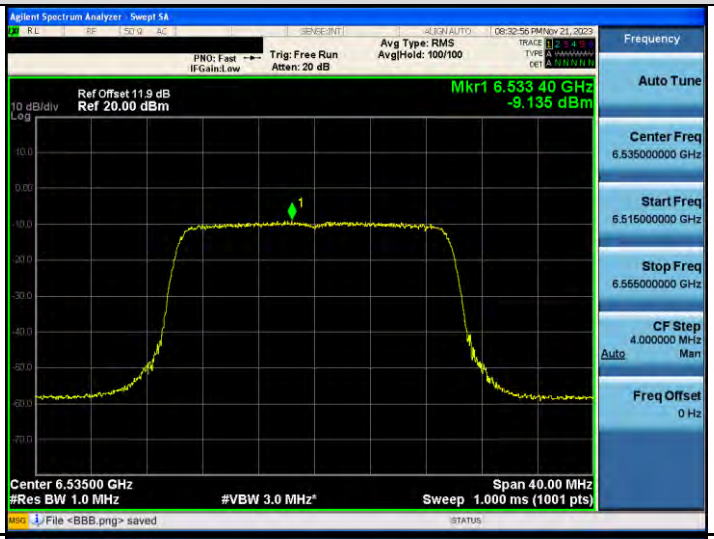
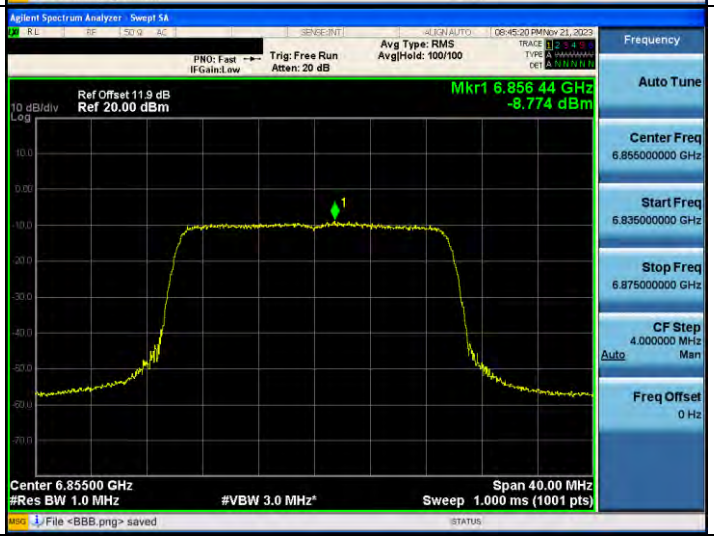
802.11a_ANT-0		
6535 MHz		
6695 MHz		
6855 MHz		

802.11a_ANT-0		
6875 MHz		
6895 MHz		
6995 MHz		

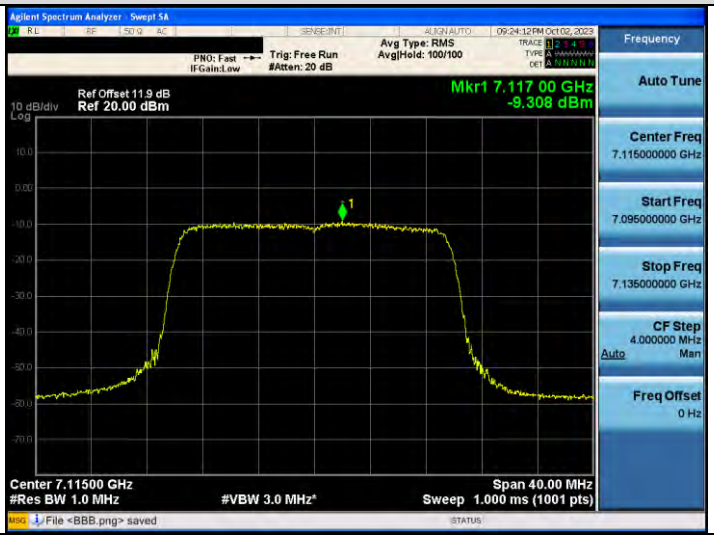
802.11a_ANT-0	
7115 MHz	

802.11ax HE20_ANT-0		
5955 MHz		
6175 MHz		
6415 MHz		

802.11ax HE20_ANT-0		
6435 MHz		
6475 MHz		
6515 MHz		

802.11ax HE20_ANT-0		
6535 MHz		
6695 MHz		
6855 MHz		

802.11ax HE20_ANT-0		
6875 MHz		
6895 MHz		
6995 MHz		

802.11ax HE20_ANT-0	
7115 MHz	

802.11ax HE40_ANT-0		
5965 MHz		
6165 MHz		
6405 MHz		

802.11ax HE40_ANT-0		
6445 MHz		
6485 MHz		
6525 MHz		

802.11ax HE40_ANT-0		
6565 MHz		
6685 MHz		
6845 MHz