RF MEASUREMENT REPORT

FCC ID:	2AXJ4XE75
Applicant:	TP-Link Corporation Limited
Application Type:	Certification
Product:	AXE5400 Whole Home Mesh Wi-Fi 6E System, AXE5300 Whole Home Mesh Wi-Fi 6E System
Model No.:	Deco XE75, Deco XE5300
Brand Name:	tp-link
FCC Classification:	15E 6GHz Low Power Indoor Access Point (6ID)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Test Date:	October 18, 2021 ~ January 20, 2022

Reviewed By: Kevin Guo

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB789033. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2109RSU041-U2	Rev. 01	Initial Report	02-08-2022	Valid

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1. General Information

1.1. Applicant

TP-Link Corporation Limited

Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hongkong

1.2. Manufacturer

TP-Link Corporation Limited

Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hongkong

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☒	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	AXE5400 Whole Home Mesh Wi-Fi 6E System AXE5300 Whole Home Mesh Wi-Fi 6E System
Model No.	Deco XE75, Deco XE5300
Brand Name	tp-link
Hardware Version	SP1
Software Version	20210909-rel32252
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Antenna Information	Refer to section 1.7
Power Supply	AC/DC Adapter
Accessory	
Adapter	Model: T120200-2B4 Input: 100-240V ~ 50/60Hz, 0.8A Output: 12V, 2.0A

Remark:

1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.
2. There is the same hardware design, PCB layout between the models, different models and product names for different marketing requirements. Only Deco XE75 (Product name: AXE5400 Whole Home Mesh Wi-Fi 6E System) was selected for final tests.

1.5. Radio Specification

Frequency Range	For 802.11ax-HE20: 6115 ~ 7095MHz For 802.11ax-HE40: 6125 ~ 7085MHz For 802.11ax-HE80: 6145 ~ 7025MHz For 802.11ax-HE160: 6185 ~ 6985MHz
Type of Modulation	802.11ax: OFDMA
Data Rate	802.11ax: up to 2402Mbps

Note: For other features of this EUT, test report will be issued separately.

1.6. Working Frequencies

802.11ax-HE20

Channel	Frequency	Channel	Frequency	Channel	Frequency
33	6115 MHz	37	6135 MHz	41	6155 MHz
45	6175 MHz	49	6195 MHz	53	6215 MHz
57	6235 MHz	61	6255 MHz	65	6275 MHz
69	6295 MHz	73	6315 MHz	77	6335 MHz
81	6355 MHz	85	6375 MHz	89	6395 MHz
93	6415 MHz	97	6435 MHz	101	6455 MHz
105	6475 MHz	109	5495 MHz	113	6515 MHz
117	6535 MHz	121	6555 MHz	125	6575 MHz
129	6595 MHz	133	6615 MHz	137	6635 MHz
141	6655 MHz	145	6675 MHz	149	6695 MHz
153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz
177	6835 MHz	181	6855 MHz	185	6875 MHz
189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz
213	7015 MHz	217	7035 MHz	221	7055 MHz
225	7075 MHz	229	7095 MHz	--	--

802.11ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
35	6125 MHz	43	6165 MHz	51	6205 MHz
59	6245 MHz	67	6285 MHz	75	6325 MHz
83	6365 MHz	91	6405 MHz	99	6445 MHz
107	6485 MHz	115	6525 MHz	123	6565 MHz
131	6605 MHz	139	6645 MHz	147	6685 MHz
155	6725 MHz	163	6765 MHz	171	6805 MHz
179	6845 MHz	187	6885 MHz	195	6925 MHz
203	6965 MHz	211	7005 MHz	219	7045 MHz
227	7085 MHz	--	--	--	--

802.11ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
39	6145 MHz	55	6225 MHz	71	6305 MHz
87	6385 MHz	103	6465 MHz	119	6545 MHz
135	6625 MHz	151	6705 MHz	167	6785 MHz
183	6865 MHz	199	6945 MHz	215	7025 MHz

802.11ax-HE160

Channel	Frequency	Channel	Frequency	Channel	Frequency
47	6185 MHz	79	6345 MHz	111	6505 MHz
143	6665 MHz	175	6825 MHz	207	6985 MHz

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	T_X Paths	Number of spatial streams	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
						For Power	For PSD
Dipole Antenna	2412 ~ 2462	2	1	2.00	5.01	2.00	5.01
	5150 ~ 5250	2	1	1.00	4.01	1.00	4.01
	5725 ~ 5850	2	1	1.00	4.01	1.00	4.01
	6105 ~ 7125	2	1	1.00	4.01	1.00	4.01
		4	2	1.00	4.01	1.00	4.01

Remark:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
   If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.
   - For power spectral density (PSD) measurements on all devices,
     Array Gain = 10 log (N_{ANT}/ N_{SS}) dB;
   - For power measurements on IEEE 802.11 devices,
     Array Gain = 0 dB for $N_{ANT} \leqslant 4$;
2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g. BF Directional gain = G_{ANT} + 10 log (N_{ANT}).

2. Test Configuration

2.1. Test Mode

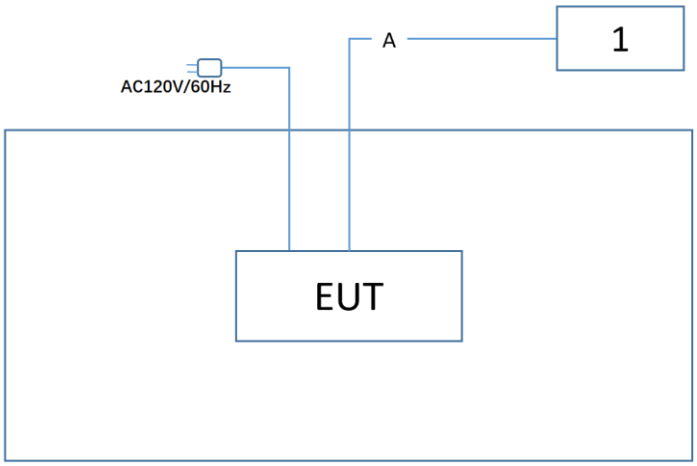
Mode 1: Transmit by 802.11ax-HE20 (MCS0) (CDD mode)
Mode 2: Transmit by 802.11ax-HE40 (MCS0) (CDD mode)
Mode 3: Transmit by 802.11ax-HE80 (MCS0) (CDD mode)
Mode 4: Transmit by 802.11 ax-HE160 (MCS0) (CDD mode)

Note: Due to CDD mode was the worst mode, so all test items were evaluated in this report. The beamforming mode only evaluated the RF output power.

2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram – Radiated Emission testing & AC Conducted Emissions



Cable Type		Cable Description
A	LAN Cable	Non shielded, > 10m
B	LAN Cable	Non shielded, 3.0m

2.3. Test System Details

Product		Manufacturer	Model No.
1	Notebook	Lenovo	X230

2.4. Test Software

The test utility software used during testing was “accessMTool”, and the version was 3.2.1.2.

Note: Final power setting please refer to operational description.

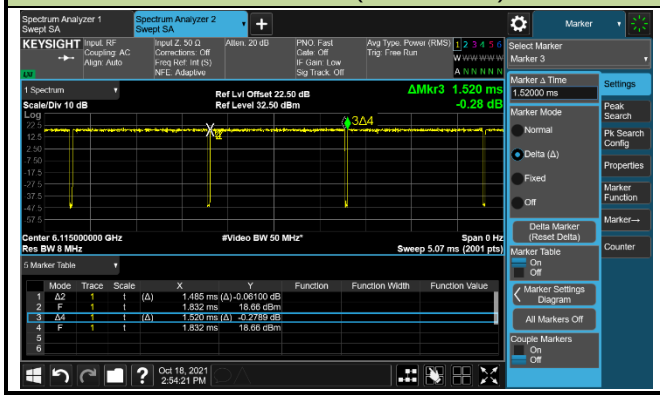
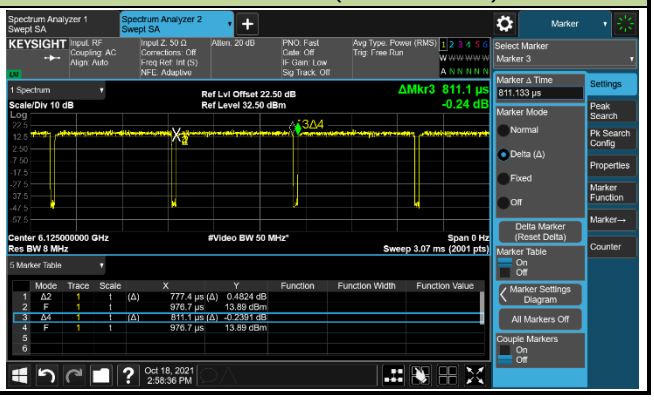
2.5. Applied Standards

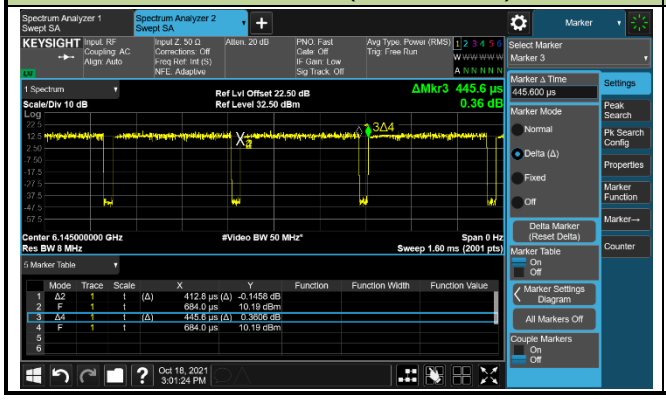
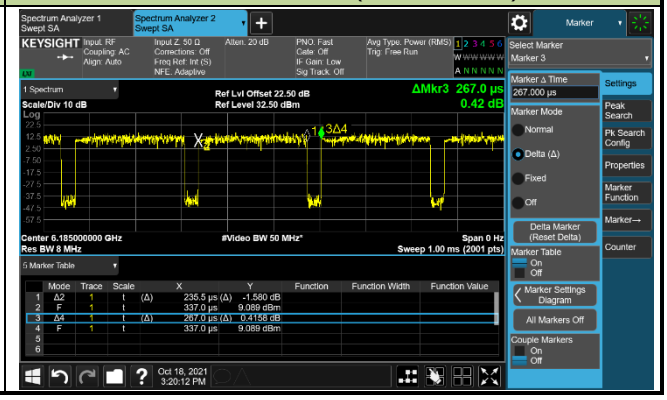
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.10-2013
- FCC KDB 789033 D02v02r01
- FCC KDB 987594 D02v01
- FCC KDB 662911 D01v02r01
- FCC KDB 414788 D01v01r01
- FCC KDB 412172 D01v01r01

2.6. Duty Cycle

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. 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:

Test Mode	Duty Cycle
802.11ax-HE20	97.70%
802.11ax-HE40	95.85%
802.11ax-HE80	92.64%
802.11ax-HE160	88.20%
Duty Cycle (T = Transmission Duration)	
802.11ax-HE20 (T=1.485ms)	802.11ax-HE40 (T=0.7774ms)
	

802.11ax-HE80 (T=0.4128ms)	802.11ax-HE160 (T=0.2355ms)
	

2.7. Test Environment Condition

Ambient Temperature	15°C~35°C
Relative Humidity	20%RH ~75%RH

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section."

The antenna of the device is built in and locked inside the enclosure.

Conclusion:

The device complies with the requirement of §15.407(a)(9).

4. Measuring Instrument

No.	Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
1	EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2023/1/4	WZ-AC1
2	Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2022/9/16	WZ-AC1
3	Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2022/11/12	WZ-AC1
4	TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2022/8/5	WZ-AC1
5	Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2022/4/29	WZ-AC1
6	Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2022/6/28	WZ-AC1
7	Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2023/1/6	WZ-AC1
8	Thermohygrometer	testo	Testo 608-H1	MRTSUE11039	1 year	2022/11/11	WZ-AC1
9	Horn Antenna	ETS	3117	MRTSUE06257	1 year	2022/9/25	WZ-AC1/WZ-AC2
10	Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2022/12/14	WZ-AC1/WZ-AC2
11	Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2023/1/14	WZ-AC1/WZ-AC2
12	Preamplifier	EMCI	EMC051845SE	MRTSUE06987	1 year	2022/9/9	WZ-AC1/WZ-AC2
13	TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2022/5/24	WZ-AC2
14	EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2022/6/24	WZ-AC2
15	Thermohygrometer	Mingle	ETH529	MRTSUE06170	1 year	2022/12/8	WZ-AC2
16	Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2022/10/21	WZ-AC2
17	Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2022/11/12	WZ-AC2
18	Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2022/4/29	WZ-AC2
19	Thermohygrometer	testo	Testo 608-H1	MRTSUE11038	1 year	2022/11/11	WZ-AC2
20	Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2022/6/8	WZ-SR2
21	CDN	Teseq	ISN PLT-A	MRTSUE06007	1 year	2022/3/1	WZ-SR2
22	Symmetrical Attenuator	Schwarzbeck	SYMAT 40	MRTSUE06117	1 year	2022/4/11	WZ-SR2
23	Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	/	/	WZ-SR2
24	Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2022/6/28	WZ-SR2
25	Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2022/10/10	WZ-SR2
26	EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2022/11/1	WZ-SR2
27	Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2022/4/13	WZ-SR5
28	Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2022/6/28	WZ-SR5
29	Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	/	/	WZ-SR5
30	Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2022/6/24	WZ-SR5
31	Signal Generator	Keysight	N5182B	MRTSUE06451	1 year	2022/6/24	WZ-SR5

No.	Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
32	Frequency extender for EXG or MXG	Keysight	N5182BX07	MRTSUE06984	1 year	2022/3/7	WZ-SR5
33	Preamplifier	EMCI	EMC051845SE	MRTSUE06987	1 year	2022/9/9	WZ-SR5
34	Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2022/10/10	WZ-TR3
35	Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2022/6/28	WZ-TR3

Software	Version	Function
EMI Software	V3	EMI Test Software
e3	9.160520a	EMI Test Software

5. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.407(a)	26dB Bandwidth	Conducted	Pass
15.407(a)(5), (a)(6)	Maximum Equivalent Isotopically Radiated Power (E.I.R.P)		Pass
15.407(a)(5), (a)(6)	Peak Power Spectral Density (E.I.R.P)		Pass
15.407(b)(6)	In-Band Emission		Pass
15.407(d)(6)	Contention-Based Protocol		Pass
15.407(b)(5)	Unwanted Emissions		Pass
15.407(b)(7), (8), (9)	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

Remark:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part ofthe system to connect the EUT to the analyzer at all frequencies of interest.
2. Output power test was verified over all data rates of each mode (data refers to operational description), and then choose the maximum power output (low data rate) for final test of each channel.
3. For radiated emission test, the test results shown in the following sections represent the worst-case emissions.
4. EUT supports one configuration only in 802.11ax full RU mode.

6.2. 26dB Bandwidth

6.2.1. Test Limit

N/A

6.2.2. Test Procedure used

KDB 789033 D02v02r01- Section C.1 (26dB Bandwidth)

KDB 789033 D02v02r01- Section D (99% Bandwidth)

6.2.3. Test Setting

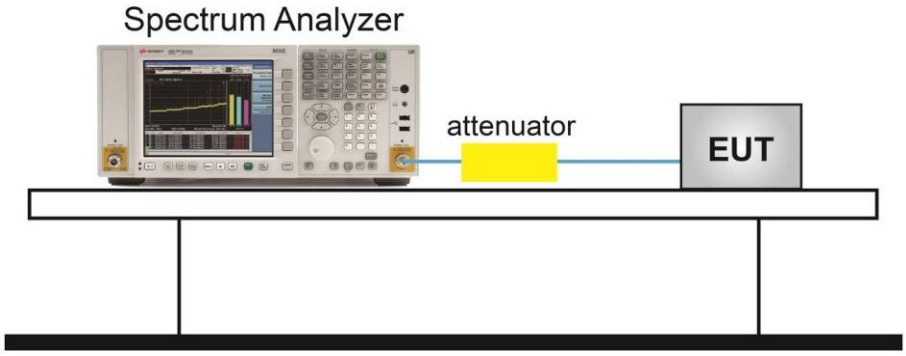
26dB Bandwidth

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

99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1% to 5% of the OBW
4. Set VBW ≥ 3×RBW
5. Detector = Peak.
6. Use the 99% power bandwidth function of the instrument.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. Output Power

6.3.1. Test Limit

For an indoor access point operating in the 5.925-7.125 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm.

For a subordinate device operating under the control of an indoor access point in the 5.925-7.125 GHz band, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm.

6.3.2. Test Procedure Used

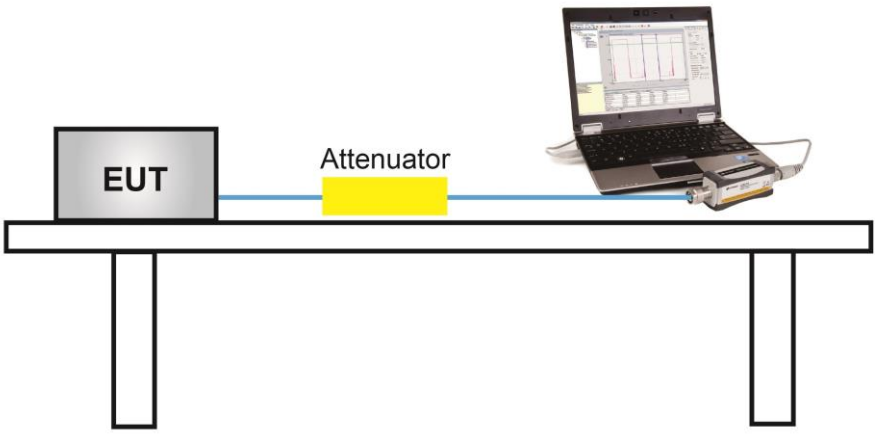
KDB 789033D02v02r01- Section E)3)b) Method PM-G

6.3.3. Test Setting

Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.2.

6.4. Power Spectral Density

6.4.1. Test Limit

For an indoor access point operating in the 5.925-7.125 GHz band, the maximum power spectral density must not exceed 5 dBm e.i.r.p. in any 1-megahertz band.

For a subordinate device operating under the control of an indoor access point in the 5.925-7.125 GHz band, the maximum power spectral density must not exceed 5 dBm e.i.r.p in any 1-megahertz band.

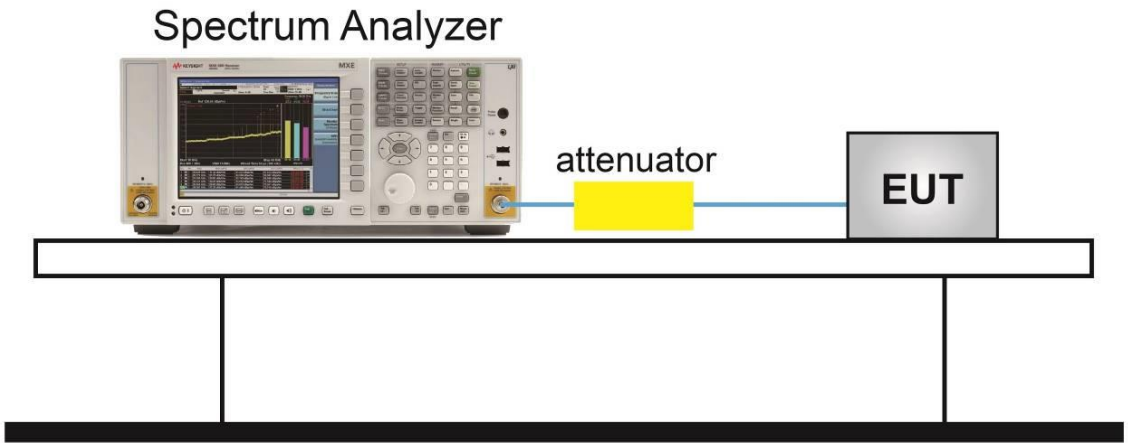
6.4.2. Test Procedure Used

KDB 789033 D02v02r01-SectionF

6.4.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
10. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

6.5. In-Band Emission Measurement

6.5.1. Test Limit

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.)

Suppressed by 28 dB at one channel bandwidth from the channel center.

Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.

6.5.2. Test Procedure used

KDB 987594 D02v01r01- Section J

6.5.3. Test Setting

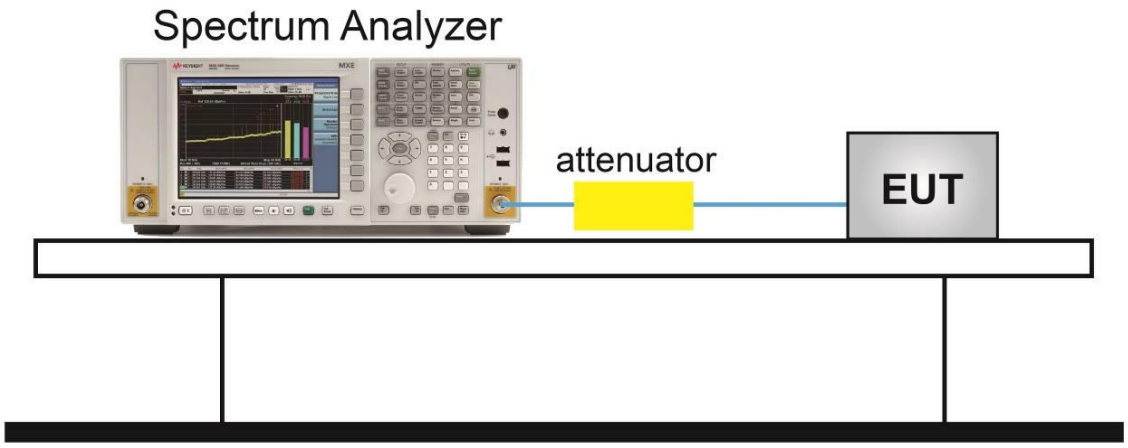
Emissions Mask Reference Level Measurement

1. Set the span to encompass the entire 26 dB EBW of the signal.
2. Set RBW = same RBW used for 26 dB EBW measurement.
3. Set VBW ⩾ 3 X RBW.
4. Number of points in sweep ⩾ [2 x span / RBW].
5. Sweep time = auto.
6. Detector = RMS.
7. Trace average at least 100 traces in power averaging (rms) mode.
8. Use the peak search function on the instrument to find the peak of the spectrum.

In-Band Emission

1. Using the measuring equipment limit line function, develop the emissions mask based on rule.
2. Adjust the span to encompass the entire mask as necessary.
3. Clear trace.
4. Trace average at least 100 traces in power averaging (rms) mode.
5. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.4.

6.6. Frequency Stability Measurement

6.6.1. Test Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.6.2. Test Procedure Used

Frequency Stability Under Temperature Variations:

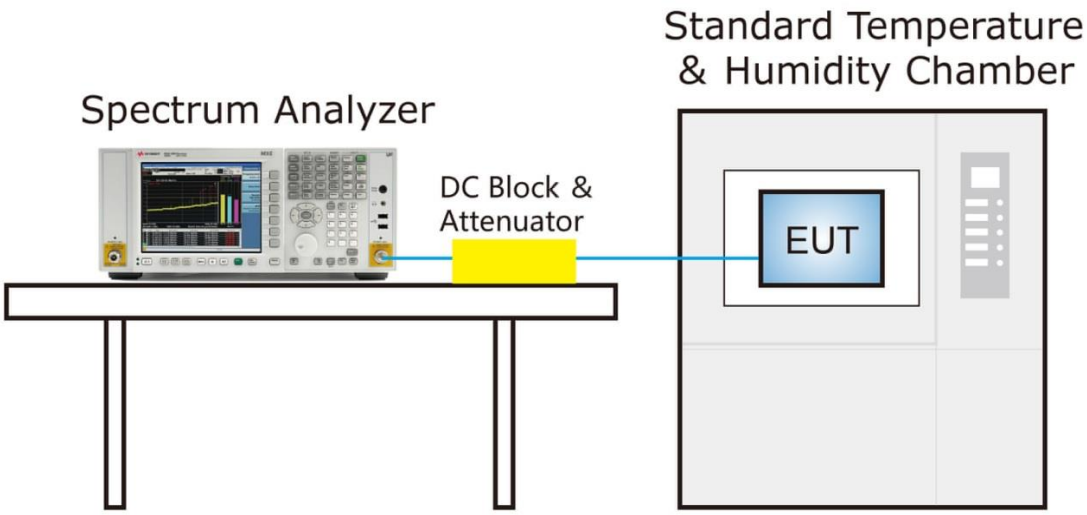
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

6.6.3. Test Setup



6.6.4. Test Result

Refer to Appendix A.5.

6.7. Contention Based Protocol

6.7.1. Test Limit

Unlicensed indoor low power device must detect co-channel radio frequency power that is at least -62dBm (The threshold is referenced to a 0dBi antenna gain.) or low.

Indoor low power device must detect an AWGN signal with 90% (or better) level of certainty.

6.7.2. Test Procedure Used

KDB 987594 D02v01- Section I

6.7.3. Test Setting

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 EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.

Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.

4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.

5. Using an AWGN signal source, generate a 10 MHz-wide AWGN signal. Use Table 1 of KDB 987594 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.

6. Set the AWGN signal power to an extremely low level. Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in below figure.

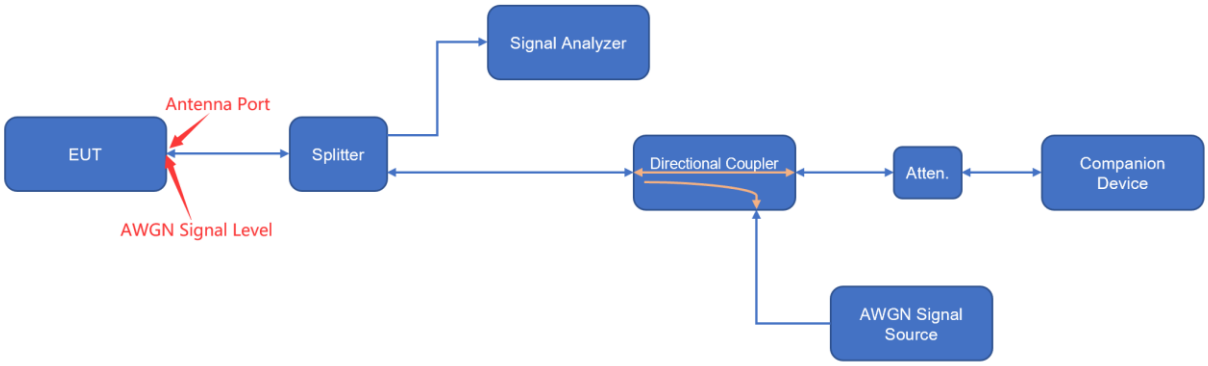
7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

8. Monitor the signal analyzer 2 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.

9. 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.

10. 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 5, choose a different center frequency for the AWGN signal and repeat the process.

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.6.

6.8. Radiated Spurious Emission

6.8.1. Test Limit

For 15.407(b)(5) requirement

For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

Refer to 987594 D02 U-NII 6GHz EMC Measurement v01 clause G

Use guidance in KDB 789033 for measurements below 1000 MHz and above 1000 MHz. Unwanted emissions outside of restricted bands are measured with a RMS detector. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.8.2. Test Procedure Used

KDB 789033 D02v02r01- Section G

6.8.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. Span was set greater than 1MHz

3. RBW = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW = 3MHz

4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

4. Detector = Peak

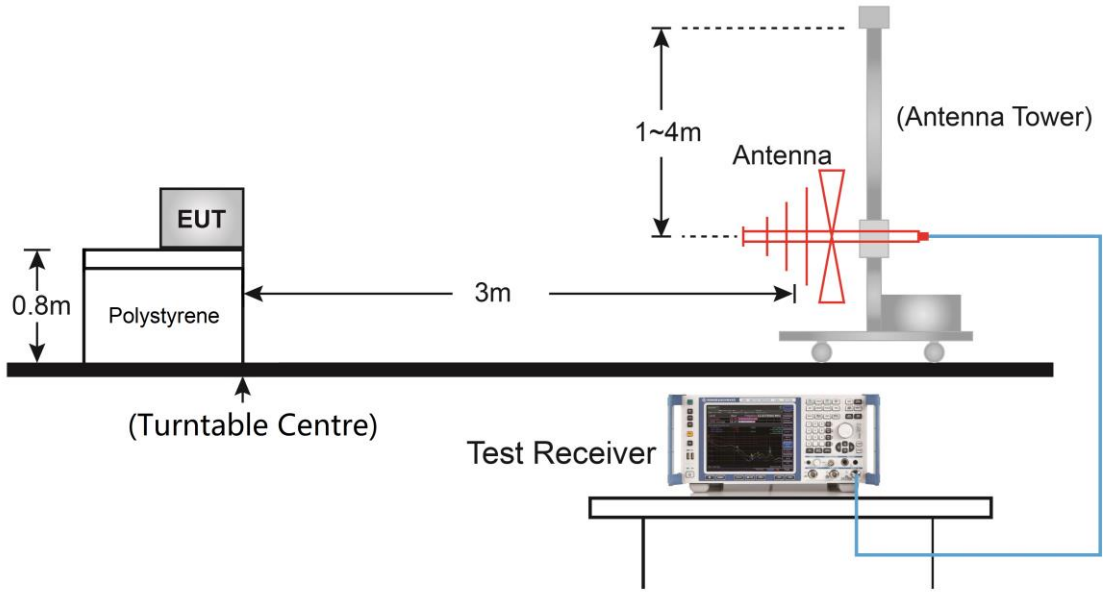
5. Sweep time = auto

6. Trace mode = max hold

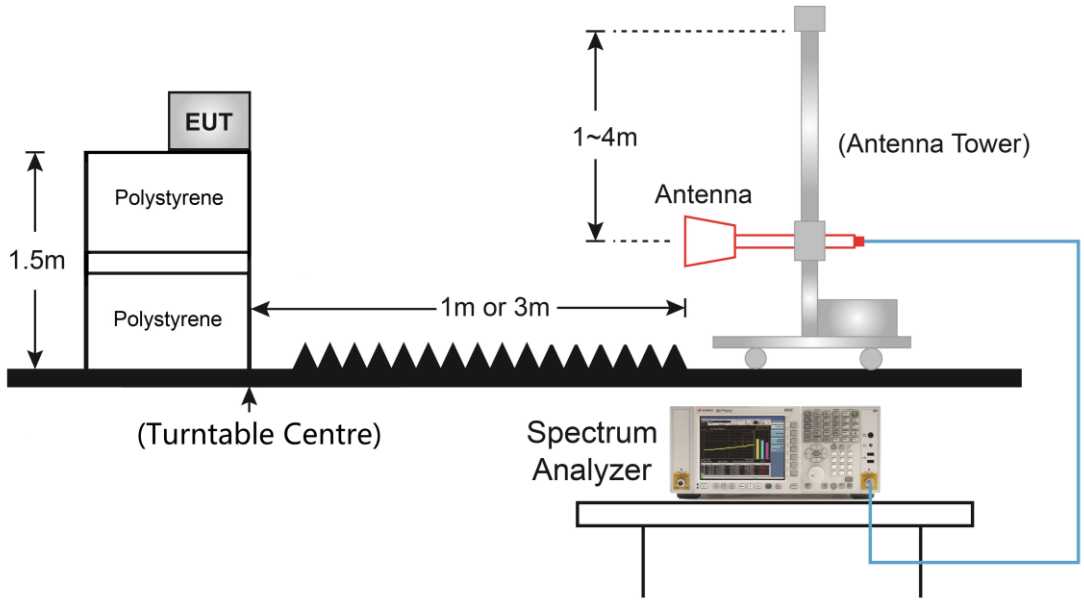
7. Trace was allowed to stabilize

6.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.8.5. Test Result

Refer to Appendix A.7.

6.9. Radiated Restricted Band Edge

6.9.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1] 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41	--	--	--

For 15.407(b)(5) requirement

For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

Refer to 987594 D02 U-NII 6GHz EMC Measurement v01 clause G - Unwanted Emission Measurement

Use guidance in KDB 789033 for measurements below 1000 MHz and above 1000 MHz. Unwanted emissions outside of restricted bands are measured with a RMS detector. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.9.2. Test Procedure Used

KDB 789033 D02v02r01- Section G

6.9.3. Test Setting

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

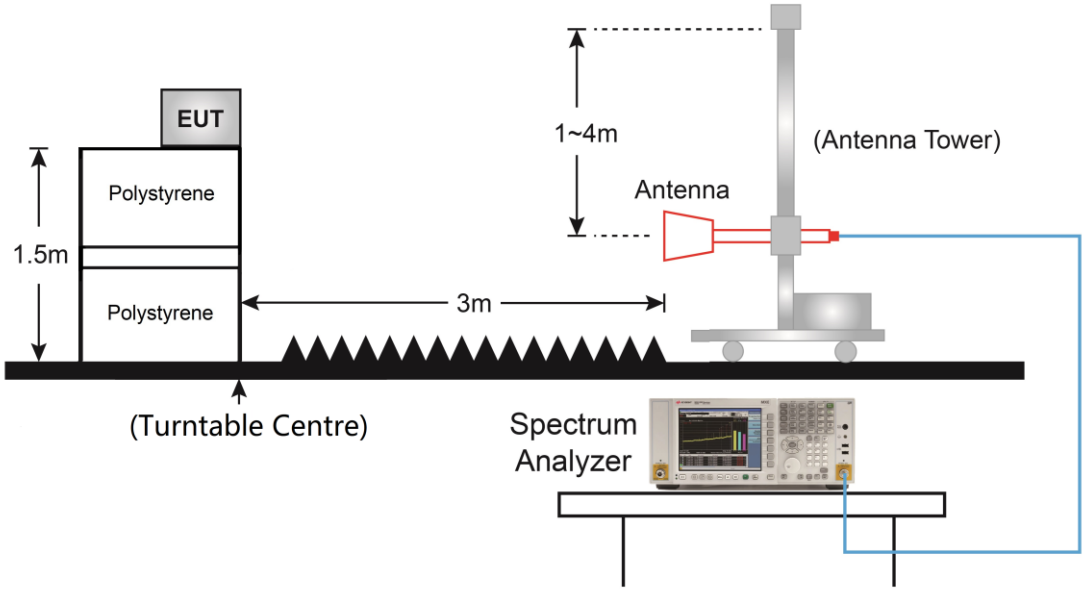
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; if the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10Hz
4. If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration
5. Detector = Peak

6. Sweep time = Auto

7. Trace mode = Max hold

8. Trace was allowed to stabilize

6.9.4. Test Setup



6.9.5. Test Result

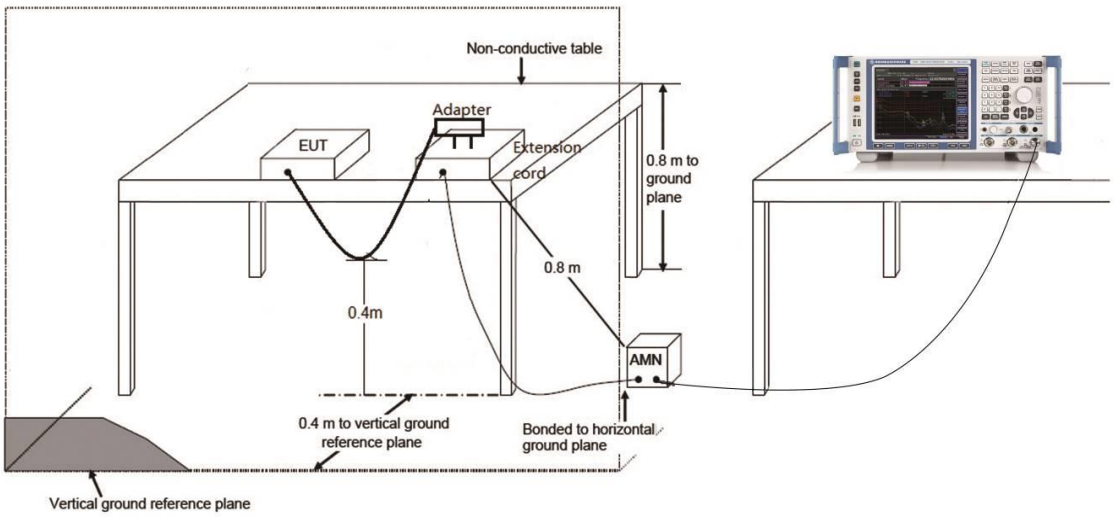
Refer to Appendix A.8.

6.10. AC Conducted Emissions

6.10.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.		

6.10.2. Test Setup



6.10.3. Test Result

Refer to Appendix A.9.

7. Conclusion

The data collected relate only the item(s) tested and show that the device is in compliance with Part 15E of the FCC rules.

Appendix A – Test Result

A.1 26dB Bandwidth Test Result

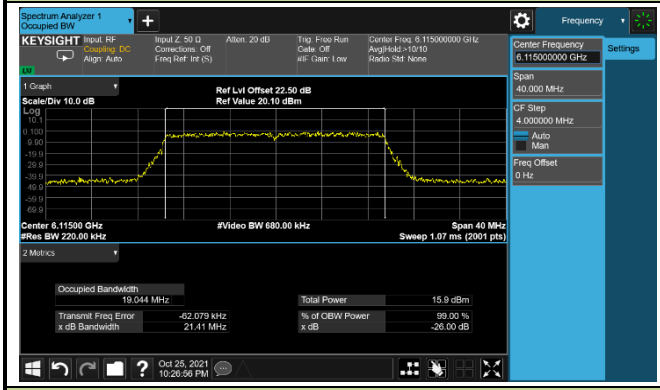
Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/10/25		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11ax-HE20	MCS0	33	6115	21.41	19.044
802.11ax-HE20	MCS0	61	6255	20.97	19.045
802.11ax-HE20	MCS0	93	6415	21.27	19.010
802.11ax-HE20	MCS0	97	6435	21.05	19.024
802.11ax-HE20	MCS0	105	6475	21.18	19.026
802.11ax-HE20	MCS0	113	6515	21.15	19.000
802.11ax-HE20	MCS0	117	6535	21.29	18.993
802.11ax-HE20	MCS0	153	6715	21.04	18.963
802.11ax-HE20	MCS0	181	6855	21.34	19.040
802.11ax-HE20	MCS0	185	6875	21.22	18.995
802.11ax-HE20	MCS0	189	6895	21.05	18.982
802.11ax-HE20	MCS0	213	7015	21.14	19.042
802.11ax-HE20	MCS0	229	7095	20.96	18.978
802.11ax-HE40	MCS0	35	6125	39.82	37.500
802.11ax-HE40	MCS0	59	6245	39.63	37.557
802.11ax-HE40	MCS0	91	6405	39.52	37.469
802.11ax-HE40	MCS0	99	6445	39.75	37.514
802.11ax-HE40	MCS0	107	6485	39.67	37.474
802.11ax-HE40	MCS0	115	6525	39.35	37.570
802.11ax-HE40	MCS0	123	6565	40.01	37.517
802.11ax-HE40	MCS0	147	6685	39.51	37.502
802.11ax-HE40	MCS0	179	6845	39.43	37.591
802.11ax-HE40	MCS0	187	6885	40.04	37.530
802.11ax-HE40	MCS0	195	6925	39.98	37.627
802.11ax-HE40	MCS0	211	7005	39.87	37.511
802.11ax-HE40	MCS0	227	7085	39.71	37.472

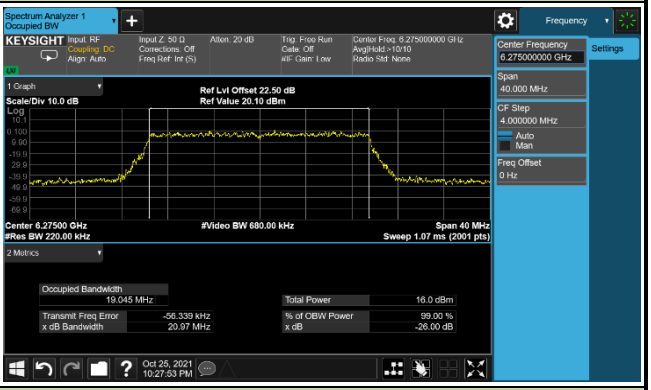
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11ax-HE80	MCS0	39	6145	80.90	76.882
802.11ax-HE80	MCS0	55	6225	80.67	76.808
802.11ax-HE80	MCS0	87	6385	80.74	76.981
802.11ax-HE80	MCS0	103	6465	80.63	76.892
802.11ax-HE80	MCS0	119	6545	80.23	76.973
802.11ax-HE80	MCS0	135	6625	80.10	76.921
802.11ax-HE80	MCS0	151	6705	80.48	76.876
802.11ax-HE80	MCS0	183	6865	80.33	77.089
802.11ax-HE80	MCS0	199	6945	80.96	77.012
802.11ax-HE80	MCS0	215	7025	80.45	76.891
802.11ax-HE160	MCS0	47	6185	162.0	155.15
802.11ax-HE160	MCS0	79	6345	162.1	155.40
802.11ax-HE160	MCS0	111	6505	162.7	155.37
802.11ax-HE160	MCS0	143	6665	161.4	155.14
802.11ax-HE160	MCS0	175	6825	162.4	155.36
802.11ax-HE160	MCS0	207	6985	160.7	155.26

802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

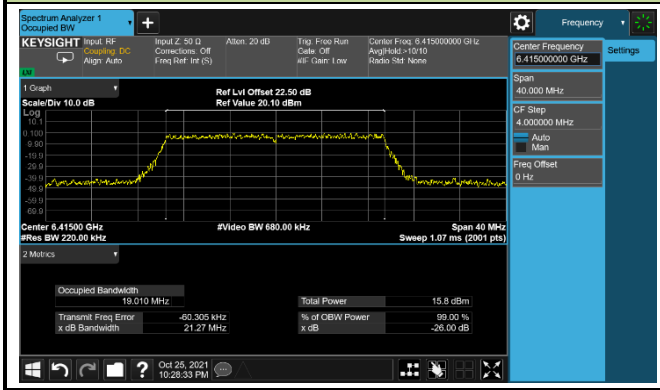
Channel 33 (6115MHz)



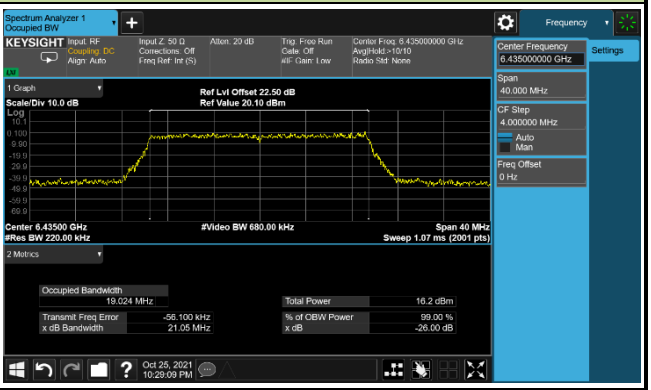
Channel 65 (6275MHz)



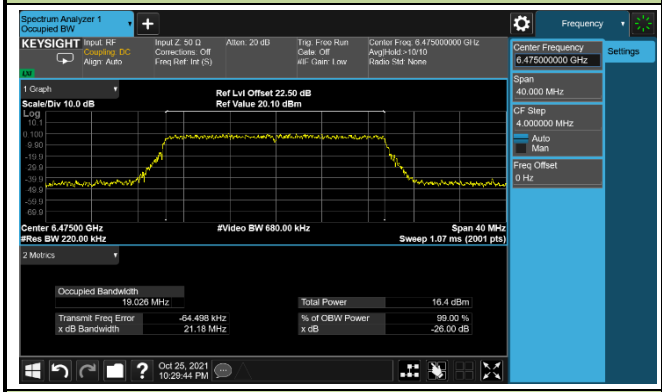
Channel 93 (6415MHz)



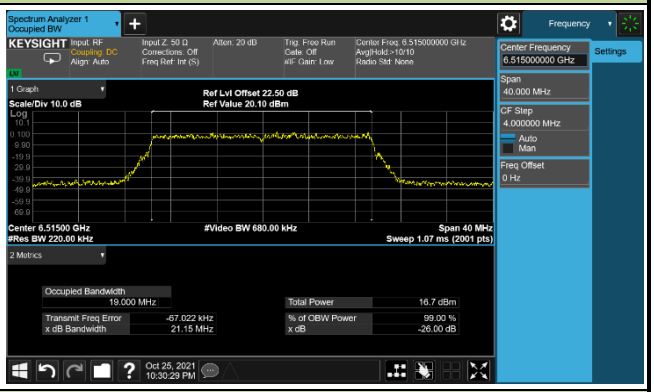
Channel 97 (6435MHz)



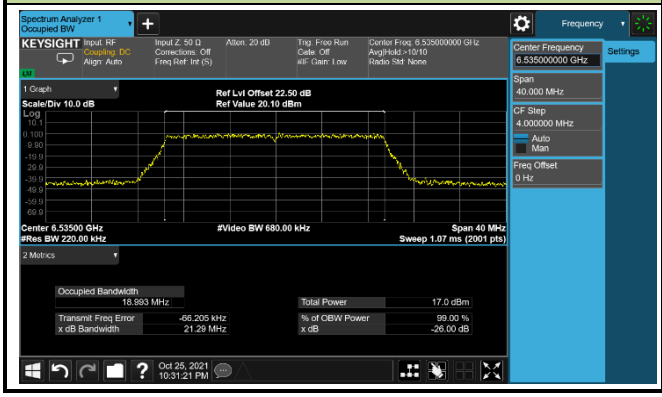
Channel 105 (6475MHz)



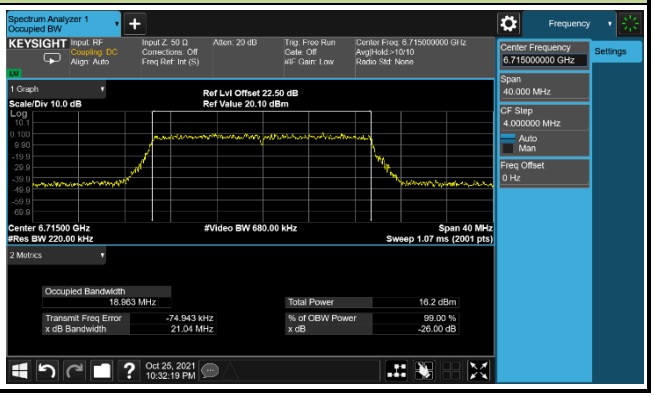
Channel 113 (6515MHz)



Channel 117 (6535MHz)

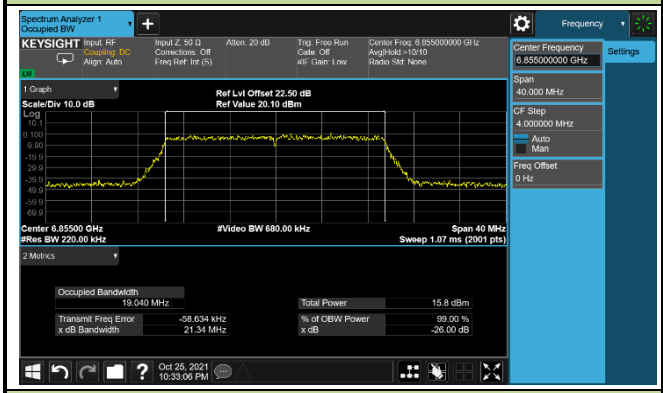


Channel 153 (6715MHz)

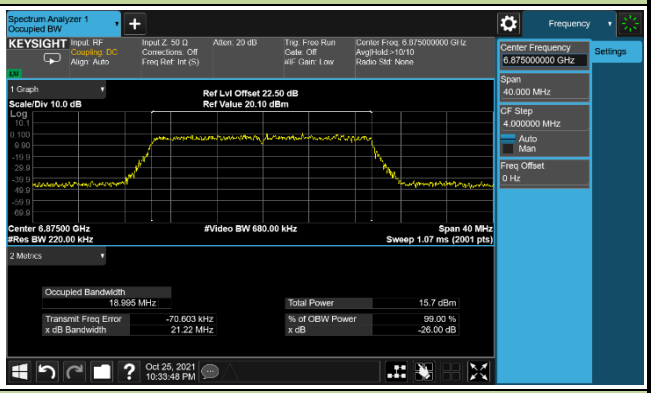


802.11ax-HE20 26dB Bandwidth & 99% Bandwidth

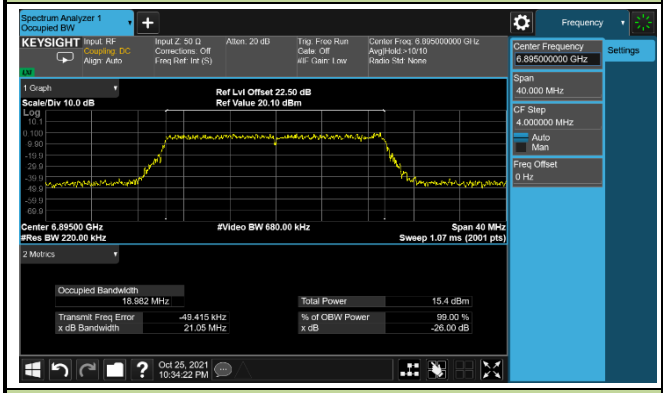
Channel 181 (6855MHz)



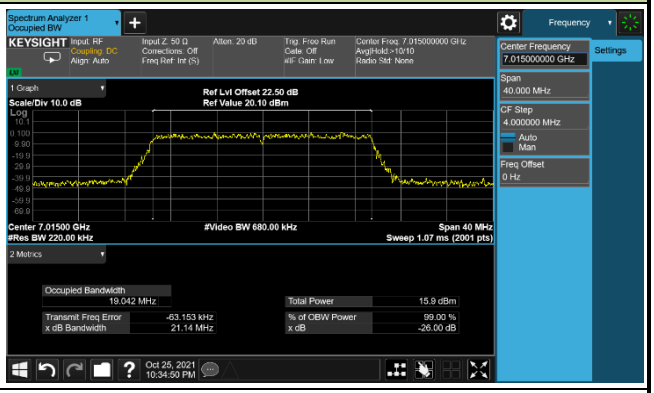
Channel 185 (6875MHz)



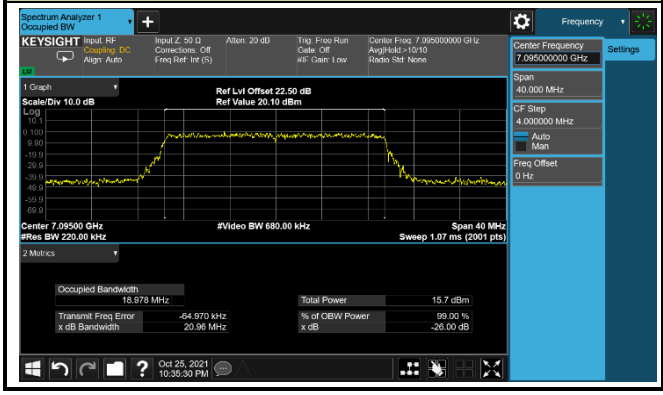
Channel 189 (6895MHz)



Channel 213 (7015MHz)

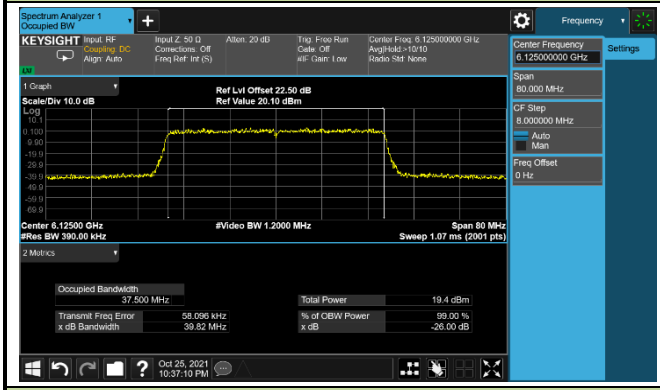


Channel 229 (7095MHz)

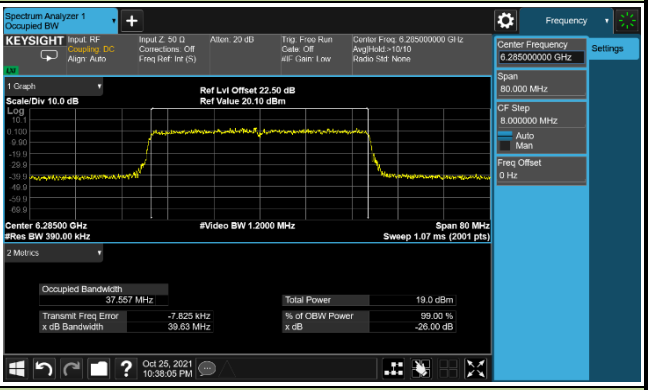


802.11ax-HE40 26dB Bandwidth & 99% Bandwidth

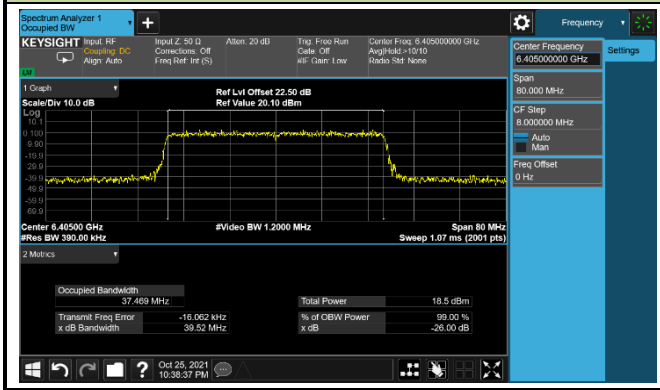
Channel 35 (6125MHz)



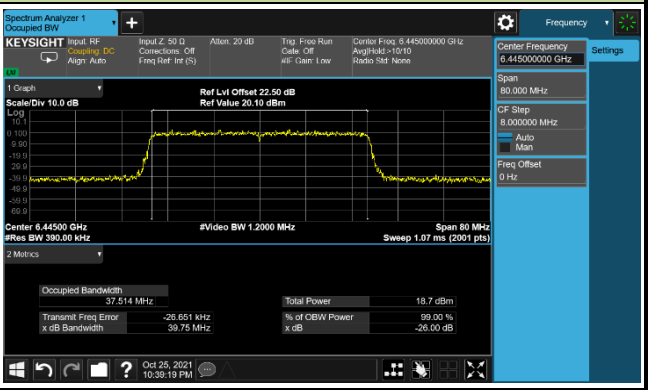
Channel 67 (6285MHz)



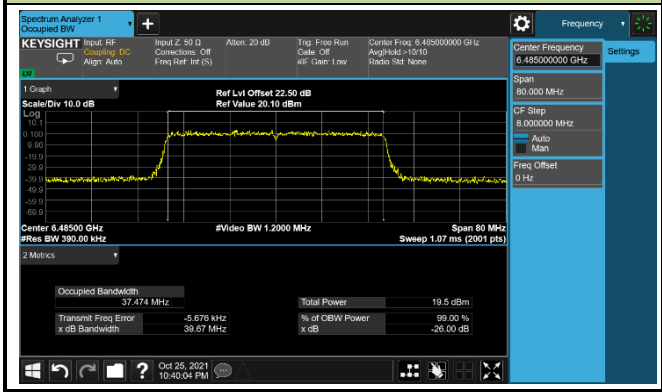
Channel 91 (6405MHz)



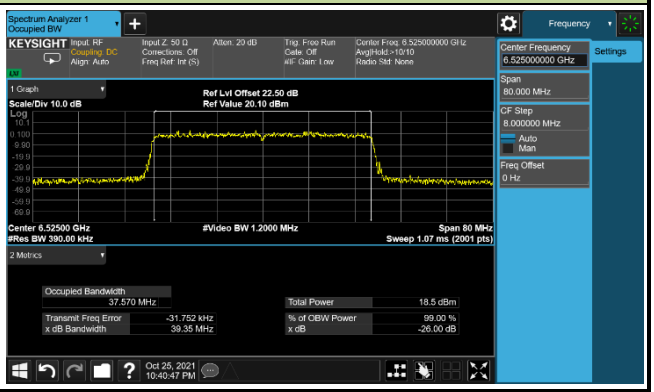
Channel 99 (6445MHz)



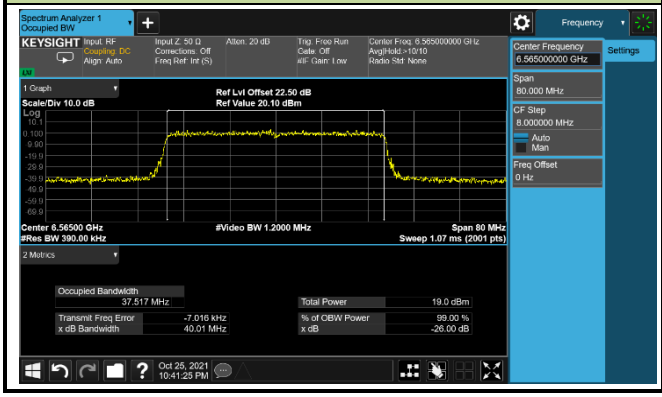
Channel 107 (6485MHz)



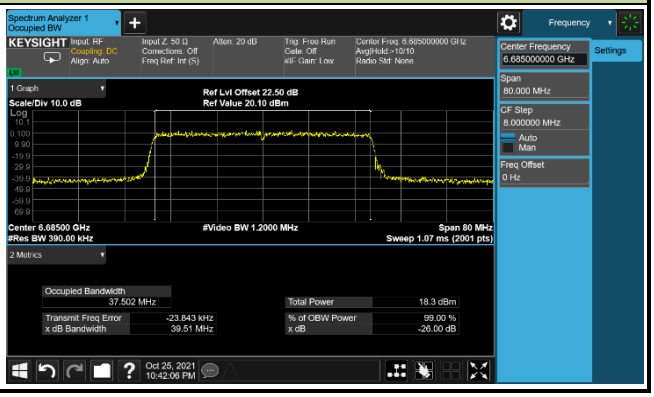
Channel 115 (6525MHz)

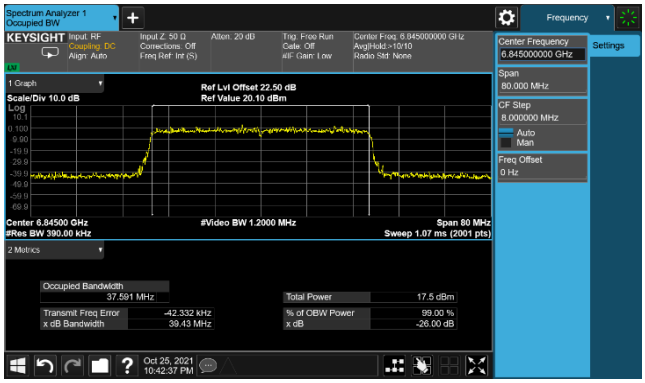
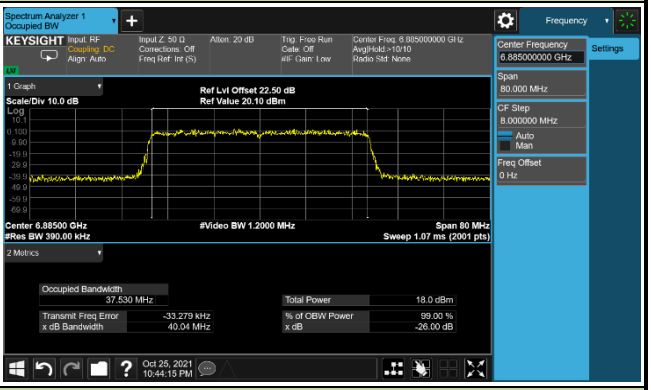
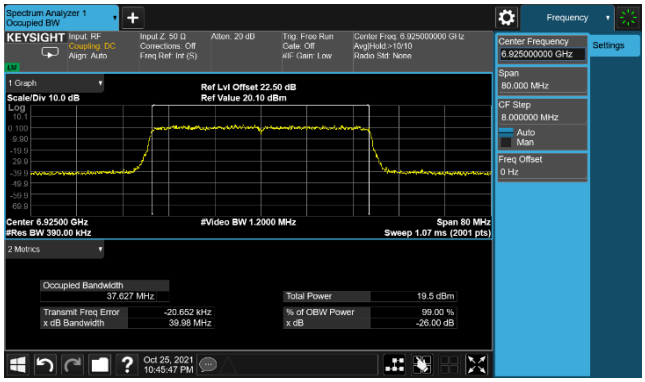
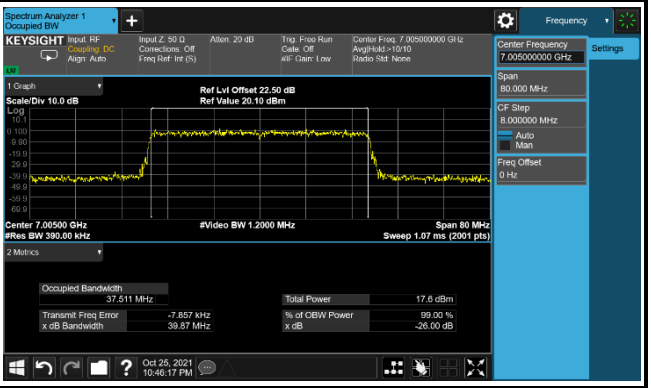
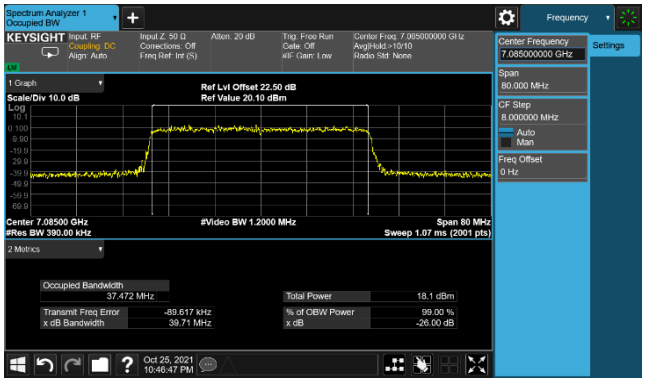


Channel 123 (6565MHz)



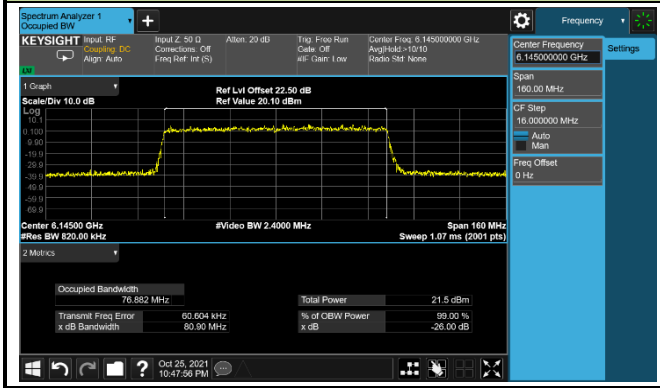
Channel 147 (6685MHz)



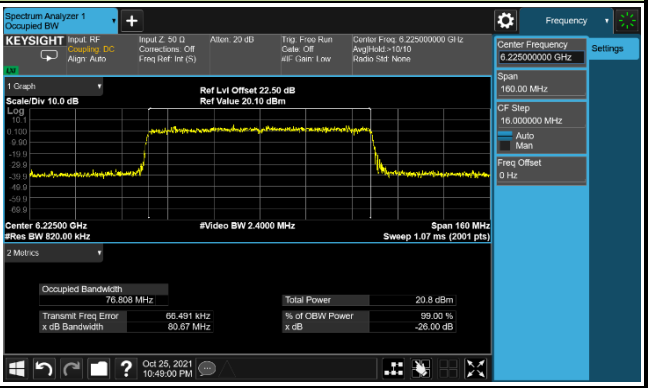
802.11ax-HE40 26dB Bandwidth & 99% Bandwidth	
Channel 179 (6845MHz)	Channel 187 (6885MHz)
	
Channel 195 (6925MHz)	Channel 211 (7005MHz)
	
Channel 227 (7085MHz)	
	

802.11ax-HE80 26dB Bandwidth & 99% Bandwidth

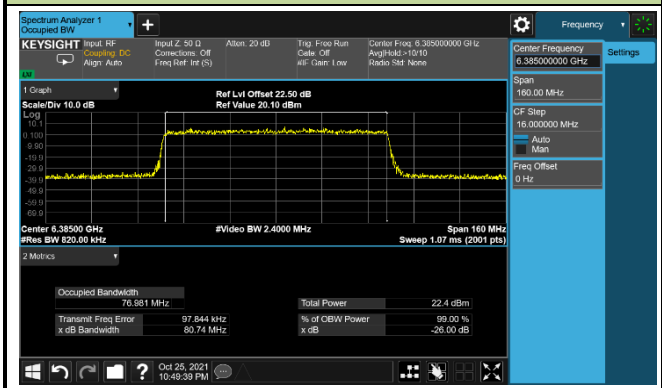
Channel 39 (6145MHz)



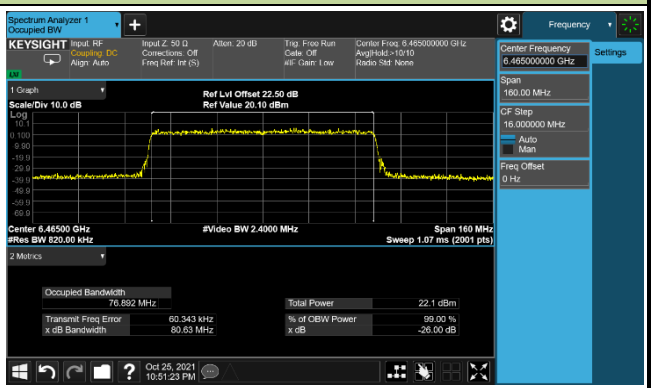
Channel 55 (6225MHz)



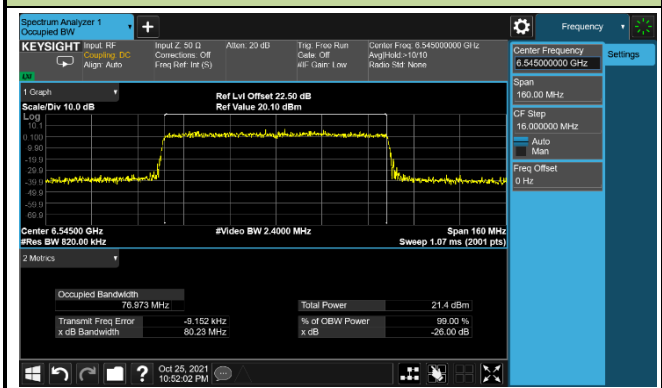
Channel 87 (6385MHz)



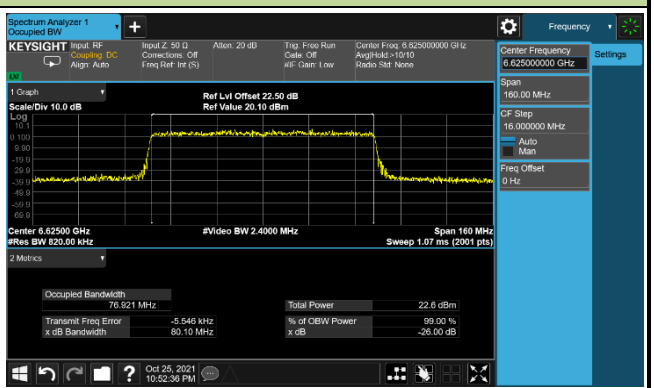
Channel 103 (6465MHz)



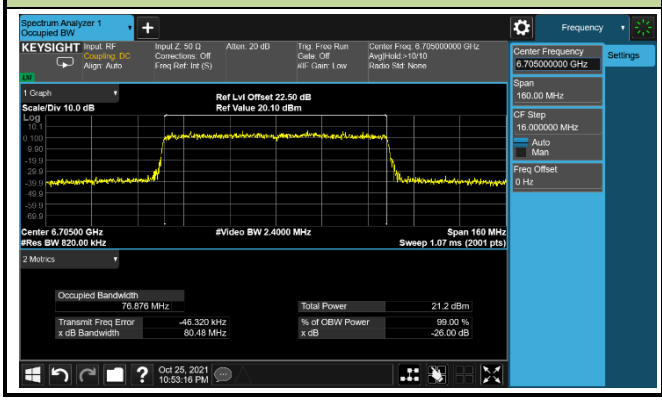
Channel 119 (6545MHz)



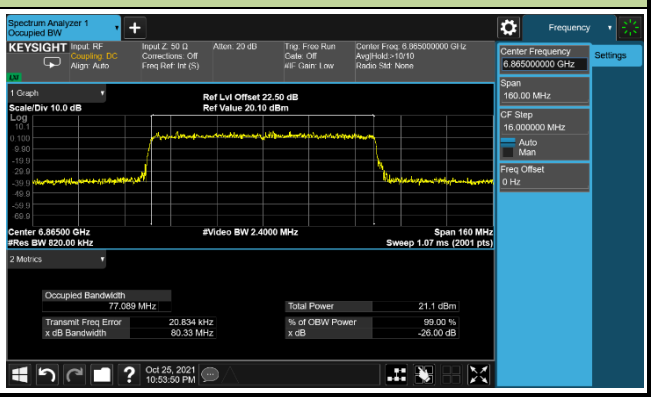
Channel 135 (6625MHz)

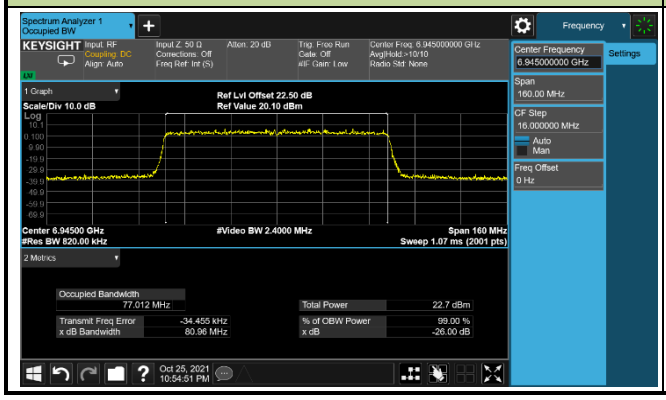
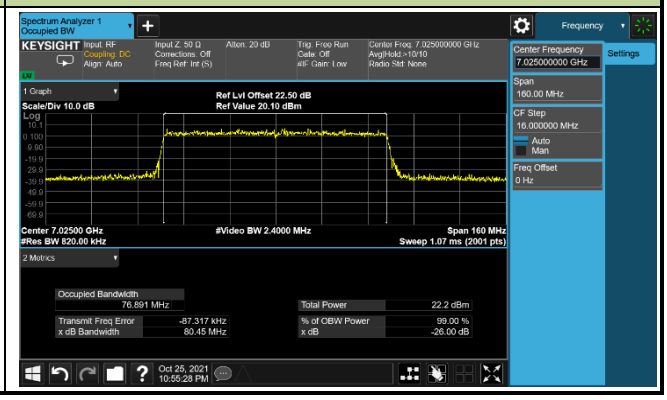


Channel 151 (6705MHz)



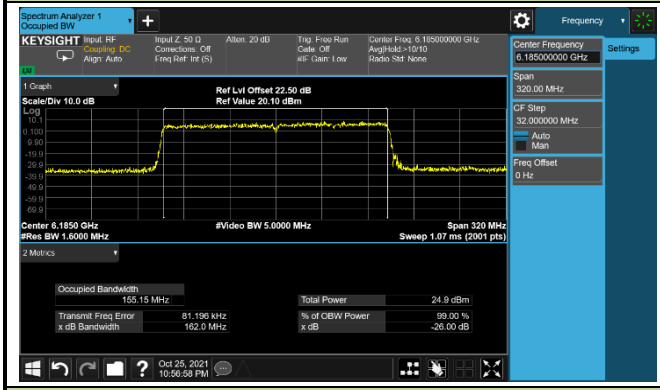
Channel 183 (6865MHz)



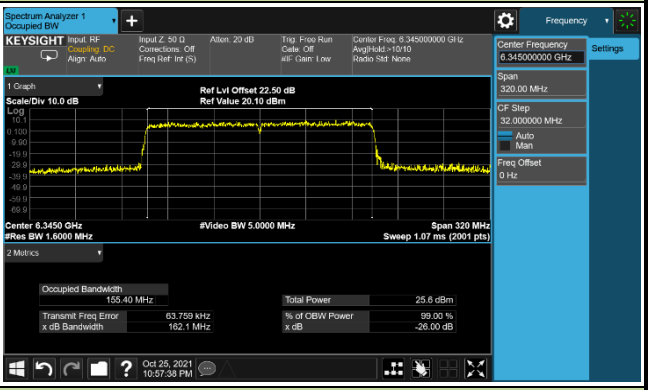
802.11ax-HE80 26dB Bandwidth & 99% Bandwidth (Nss=1)	
Channel 199 (6945MHz)	Channel 215 (7025MHz)
	

802.11ax-HE160 26dB Bandwidth & 99% Bandwidth

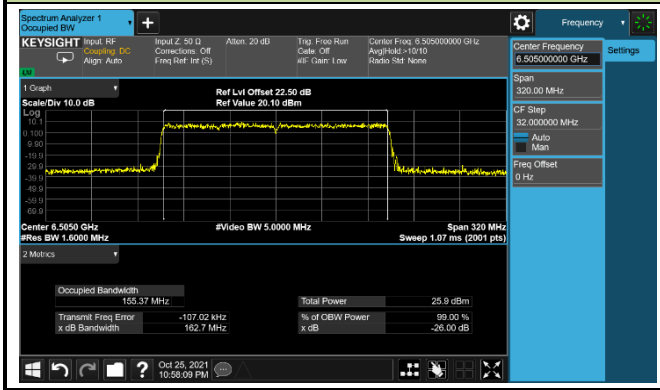
Channel 47 (6185MHz)



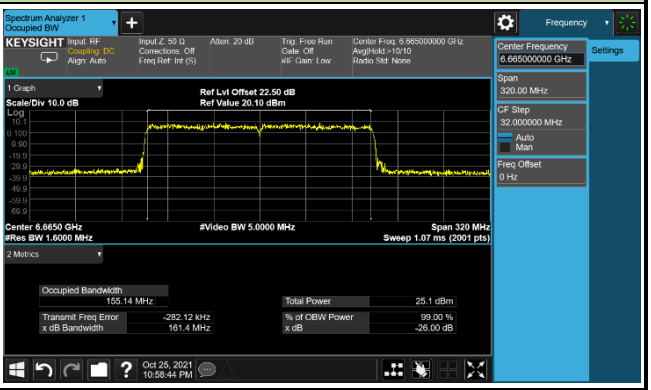
Channel 79 (6345MHz)



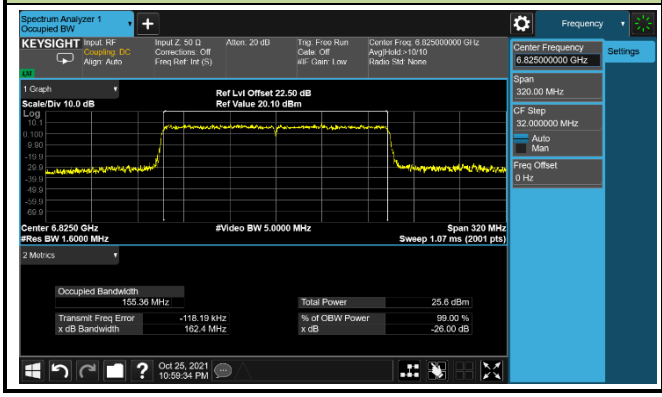
Channel 111 (6505MHz)



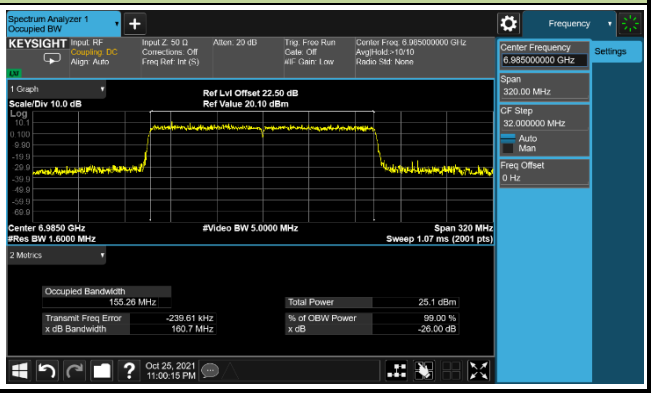
Channel 143 (6665MHz)



Channel 175 (6825MHz)



Channel 207 (6985MHz)



A.2 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/10/18~2021/11/04		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	CDD Directional Gain (dBi)	CDD EIRP (dBm)	Beamforming Directional Gain (dBi)	Beamforming EIRP (dBm)	EIRP Limit (dBm)
				Ant 0	Ant 1						
CDD Mode (Nss = 1) & Beamforming Mode											
11ax-HE20	MCS0	33	6115	9.61	9.83	12.73	1.0	13.73	4.01	16.74	≤ 30.00
11ax-HE20	MCS0	61	6255	9.75	9.65	12.71	1.0	13.71	4.01	16.72	≤ 30.00
11ax-HE20	MCS0	93	6415	9.92	9.33	12.65	1.0	13.65	4.01	16.66	≤ 30.00
11ax-HE20	MCS0	97	6435	9.99	9.43	12.73	1.0	13.73	4.01	16.74	≤ 30.00
11ax-HE20	MCS0	105	6475	10.13	9.45	12.81	1.0	13.81	4.01	16.82	≤ 30.00
11ax-HE20	MCS0	113	6515	10.28	9.39	12.87	1.0	13.87	4.01	16.88	≤ 30.00
11ax-HE20	MCS0	117	6535	10.35	9.29	12.86	1.0	13.86	4.01	16.87	≤ 30.00
11ax-HE20	MCS0	153	6715	10.22	9.71	12.98	1.0	13.98	4.01	16.99	≤ 30.00
11ax-HE20	MCS0	181	6855	10.15	9.58	12.88	1.0	13.88	4.01	16.89	≤ 30.00
11ax-HE20	MCS0	185	6875	9.90	9.69	12.81	1.0	13.81	4.01	16.82	≤ 30.00
11ax-HE20	MCS0	189	6895	9.98	9.52	12.77	1.0	13.77	4.01	16.78	≤ 30.00
11ax-HE20	MCS0	213	7015	10.03	10.01	13.03	1.0	14.03	4.01	17.04	≤ 30.00
11ax-HE20	MCS0	229	7095	10.10	9.71	12.92	1.0	13.92	4.01	16.93	≤ 30.00
11ax-HE40	MCS0	35	6125	12.02	12.45	15.25	1.0	16.25	4.01	19.26	≤ 30.00
11ax-HE40	MCS0	59	6245	12.26	12.32	15.30	1.0	16.30	4.01	19.31	≤ 30.00
11ax-HE40	MCS0	91	6405	12.33	12.22	15.29	1.0	16.29	4.01	19.3	≤ 30.00
11ax-HE40	MCS0	99	6445	11.92	11.91	14.93	1.0	15.93	4.01	18.94	≤ 30.00
11ax-HE40	MCS0	107	6485	12.45	12.63	15.55	1.0	16.55	4.01	19.56	≤ 30.00
11ax-HE40	MCS0	115	6525	12.36	12.26	15.32	1.0	16.32	4.01	19.33	≤ 30.00
11ax-HE40	MCS0	123	6565	12.30	12.36	15.34	1.0	16.34	4.01	19.35	≤ 30.00
11ax-HE40	MCS0	147	6685	12.15	12.53	15.35	1.0	16.35	4.01	19.36	≤ 30.00
11ax-HE40	MCS0	179	6845	12.29	12.40	15.36	1.0	16.36	4.01	19.37	≤ 30.00
11ax-HE40	MCS0	187	6885	12.58	12.32	15.46	1.0	16.46	4.01	19.47	≤ 30.00
11ax-HE40	MCS0	195	6925	12.13	11.86	15.01	1.0	16.01	4.01	19.02	≤ 30.00
11ax-HE40	MCS0	211	7005	12.16	11.89	15.04	1.0	16.04	4.01	19.05	≤ 30.00
11ax-HE40	MCS0	227	7085	12.58	12.20	15.40	1.0	16.40	4.01	19.41	≤ 30.00

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	CDD Directional Gain (dBi)	CDD EIRP (dBm)	Beamforming Directional Gain (dBi)	Beamforming EIRP (dBm)	EIRP Limit (dBm)
				Ant 0	Ant 1						
11ax-HE80	MCS0	39	6145	14.55	15.31	17.96	1.0	18.96	4.01	21.97	≤ 30.00
11ax-HE80	MCS0	55	6225	14.75	15.29	18.04	1.0	19.04	4.01	22.05	≤ 30.00
11ax-HE80	MCS0	87	6385	15.08	15.03	18.07	1.0	19.07	4.01	22.08	≤ 30.00
11ax-HE80	MCS0	103	6465	14.82	15.30	18.08	1.0	19.08	4.01	22.09	≤ 30.00
11ax-HE80	MCS0	119	6545	14.70	15.51	18.13	1.0	19.13	4.01	22.14	≤ 30.00
11ax-HE80	MCS0	135	6625	15.38	15.49	18.45	1.0	19.45	4.01	22.46	≤ 30.00
11ax-HE80	MCS0	151	6705	14.90	15.27	18.10	1.0	19.10	4.01	22.11	≤ 30.00
11ax-HE80	MCS0	183	6865	15.13	15.43	18.29	1.0	19.29	4.01	22.30	≤ 30.00
11ax-HE80	MCS0	199	6945	15.23	15.02	18.14	1.0	19.14	4.01	22.15	≤ 30.00
11ax-HE80	MCS0	215	7025	15.32	14.68	18.02	1.0	19.02	4.01	22.03	≤ 30.00
11ax-HE160	MCS0	47	6185	17.38	17.77	20.59	1.0	21.59	4.01	24.60	≤ 30.00
11ax-HE160	MCS0	79	6345	17.90	17.80	20.86	1.0	21.86	4.01	24.87	≤ 30.00
11ax-HE160	MCS0	111	6505	17.92	18.59	21.28	1.0	22.28	4.01	25.29	≤ 30.00
11ax-HE160	MCS0	143	6665	17.69	18.09	20.90	1.0	21.90	4.01	24.91	≤ 30.00
11ax-HE160	MCS0	175	6825	17.56	17.98	20.79	1.0	21.79	4.01	24.80	≤ 30.00
11ax-HE160	MCS0	207	6985	17.38	17.68	20.54	1.0	21.54	4.01	24.55	≤ 30.00

Note 1: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

Note 2: CDD EIRP Power (dBm) = Total Average Power (dBm) + CDD Directional Gain (dBi).

Note 3: Beamforming EIRP Power (dBm) = Total Average Power (dBm) + Beamforming Directional Gain (dBi).

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/10/27		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	CDD Directional Gain (dBi)	CDD EIRP (dBm)	EIRP Limit (dBm)
				Ant 0	Ant 1				
CDD Mode (Nss = 2)									
11ax-HE20	MCS0	33	6115	11.48	11.70	14.60	1.0	15.60	≤ 30.00
11ax-HE20	MCS0	61	6255	11.89	11.77	14.84	1.0	15.84	≤ 30.00
11ax-HE20	MCS0	93	6415	11.84	11.76	14.81	1.0	15.81	≤ 30.00
11ax-HE20	MCS0	97	6435	11.91	12.12	15.03	1.0	16.03	≤ 30.00
11ax-HE20	MCS0	105	6475	11.97	11.92	14.96	1.0	15.96	≤ 30.00
11ax-HE20	MCS0	113	6515	11.88	11.89	14.90	1.0	15.90	≤ 30.00
11ax-HE20	MCS0	117	6535	11.76	11.97	14.88	1.0	15.88	≤ 30.00
11ax-HE20	MCS0	153	6715	11.87	12.31	15.11	1.0	16.11	≤ 30.00
11ax-HE20	MCS0	181	6855	12.24	12.23	15.25	1.0	16.25	≤ 30.00
11ax-HE20	MCS0	185	6875	11.67	11.98	14.84	1.0	15.84	≤ 30.00
11ax-HE20	MCS0	189	6895	11.94	11.90	14.93	1.0	15.93	≤ 30.00
11ax-HE20	MCS0	213	7015	11.92	11.63	14.79	1.0	15.79	≤ 30.00
11ax-HE20	MCS0	229	7095	11.97	12.00	15.00	1.0	16.00	≤ 30.00
11ax-HE40	MCS0	33	6125	14.50	14.83	17.68	1.0	18.68	≤ 30.00
11ax-HE40	MCS0	57	6245	14.72	14.87	17.81	1.0	18.81	≤ 30.00
11ax-HE40	MCS0	89	6405	14.84	14.52	17.69	1.0	18.69	≤ 30.00
11ax-HE40	MCS0	97	6445	14.96	14.93	17.96	1.0	18.96	≤ 30.00
11ax-HE40	MCS0	105	6485	14.66	14.97	17.83	1.0	18.83	≤ 30.00
11ax-HE40	MCS0	113	6525	14.50	14.75	17.64	1.0	18.64	≤ 30.00
11ax-HE40	MCS0	121	6565	14.86	14.92	17.90	1.0	18.90	≤ 30.00
11ax-HE40	MCS0	145	6685	14.39	15.01	17.72	1.0	18.72	≤ 30.00
11ax-HE40	MCS0	177	6845	14.57	14.69	17.64	1.0	18.64	≤ 30.00
11ax-HE40	MCS0	185	6885	14.63	14.62	17.64	1.0	18.64	≤ 30.00
11ax-HE40	MCS0	193	6925	14.90	14.19	17.57	1.0	18.57	≤ 30.00
11ax-HE40	MCS0	209	7005	14.66	14.52	17.60	1.0	18.60	≤ 30.00
11ax-HE40	MCS0	225	7085	14.98	14.43	17.72	1.0	18.72	≤ 30.00

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)		Total Average Power (dBm)	CDD Directional Gain (dBi)	CDD EIRP (dBm)	EIRP Limit (dBm)
				Ant 0	Ant 1				
11ax-HE80	MCS0	33	6145	17.04	17.86	20.48	1.0	21.48	≤ 30.00
11ax-HE80	MCS0	49	6225	17.09	17.42	20.27	1.0	21.27	≤ 30.00
11ax-HE80	MCS0	81	6385	17.84	17.43	20.65	1.0	21.65	≤ 30.00
11ax-HE80	MCS0	97	6465	17.56	17.82	20.70	1.0	21.70	≤ 30.00
11ax-HE80	MCS0	113	6545	17.31	17.86	20.60	1.0	21.60	≤ 30.00
11ax-HE80	MCS0	129	6625	17.81	17.85	20.84	1.0	21.84	≤ 30.00
11ax-HE80	MCS0	145	6705	17.79	17.94	20.88	1.0	21.88	≤ 30.00
11ax-HE80	MCS0	177	6865	17.71	17.60	20.67	1.0	21.67	≤ 30.00
11ax-HE80	MCS0	193	6945	17.97	17.38	20.70	1.0	21.70	≤ 30.00
11ax-HE80	MCS0	209	7025	17.78	17.53	20.67	1.0	21.67	≤ 30.00
11ax-HE160	MCS0	33	6185	20.23	20.26	23.26	1.0	24.26	≤ 30.00
11ax-HE160	MCS0	65	6345	20.49	20.11	23.31	1.0	24.31	≤ 30.00
11ax-HE160	MCS0	97	6505	20.54	20.35	23.46	1.0	24.46	≤ 30.00
11ax-HE160	MCS0	129	6665	20.56	20.82	23.70	1.0	24.70	≤ 30.00
11ax-HE160	MCS0	161	6825	20.37	20.59	23.49	1.0	24.49	≤ 30.00
11ax-HE160	MCS0	193	6985	20.13	20.06	23.11	1.0	24.11	≤ 30.00

Note 1: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

Note 2: CDD EIRP Power (dBm) = Total Average Power (dBm) + CDD Directional Gain (dBi).

A.3 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/10/18		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Duty Cycle (%)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)
				Ant 0	Ant 1					
CDD Mode (Nss = 1) and Beamforming Mode										
11ax-HE20	MCS0	33	6115	-2.52	-2.25	0.63	97.70	4.01	4.74	≤ 5.00
11ax-HE20	MCS0	61	6255	-2.19	-2.48	0.68	97.70	4.01	4.79	≤ 5.00
11ax-HE20	MCS0	93	6415	-2.40	-2.91	0.36	97.70	4.01	4.48	≤ 5.00
11ax-HE20	MCS0	97	6435	-2.43	-2.85	0.38	97.70	4.01	4.49	≤ 5.00
11ax-HE20	MCS0	105	6475	-2.22	-3.15	0.35	97.70	4.01	4.46	≤ 5.00
11ax-HE20	MCS0	113	6515	-2.09	-2.83	0.57	97.70	4.01	4.68	≤ 5.00
11ax-HE20	MCS0	117	6535	-1.99	-2.90	0.59	97.70	4.01	4.70	≤ 5.00
11ax-HE20	MCS0	153	6715	-2.09	-2.78	0.59	97.70	4.01	4.70	≤ 5.00
11ax-HE20	MCS0	181	6855	-2.39	-2.67	0.48	97.70	4.01	4.59	≤ 5.00
11ax-HE20	MCS0	185	6875	-2.44	-2.76	0.41	97.70	4.01	4.52	≤ 5.00
11ax-HE20	MCS0	189	6895	-2.37	-2.84	0.41	97.70	4.01	4.53	≤ 5.00
11ax-HE20	MCS0	213	7015	-2.06	-2.50	0.74	97.70	4.01	4.85	≤ 5.00
11ax-HE20	MCS0	229	7095	-2.39	-2.77	0.43	97.70	4.01	4.54	≤ 5.00
11ax-HE40	MCS0	33	6125	-2.85	-2.56	0.31	95.85	4.01	4.50	≤ 5.00
11ax-HE40	MCS0	57	6245	-2.74	-2.54	0.37	95.85	4.01	4.57	≤ 5.00
11ax-HE40	MCS0	89	6405	-2.48	-2.70	0.42	95.85	4.01	4.62	≤ 5.00
11ax-HE40	MCS0	97	6445	-2.88	-2.65	0.25	95.85	4.01	4.44	≤ 5.00
11ax-HE40	MCS0	105	6485	-2.49	-2.20	0.67	95.85	4.01	4.86	≤ 5.00
11ax-HE40	MCS0	113	6525	-2.69	-2.44	0.45	95.85	4.01	4.64	≤ 5.00
11ax-HE40	MCS0	121	6565	-2.56	-2.71	0.38	95.85	4.01	4.57	≤ 5.00
11ax-HE40	MCS0	145	6685	-2.70	-2.40	0.46	95.85	4.01	4.66	≤ 5.00
11ax-HE40	MCS0	177	6845	-2.45	-2.65	0.46	95.85	4.01	4.65	≤ 5.00
11ax-HE40	MCS0	185	6885	-2.54	-2.76	0.36	95.85	4.01	4.56	≤ 5.00
11ax-HE40	MCS0	193	6925	-2.58	-2.88	0.28	95.85	4.01	4.48	≤ 5.00
11ax-HE40	MCS0	209	7005	-2.39	-2.93	0.36	95.85	4.01	4.56	≤ 5.00
11ax-HE40	MCS0	225	7085	-2.50	-2.93	0.30	95.85	4.01	4.50	≤ 5.00

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Duty Cycle (%)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)
				Ant 0	Ant 1					
11ax-HE80	MCS0	33	6145	-3.10	-2.38	0.29	92.64	4.01	4.63	≤ 5.00
11ax-HE80	MCS0	49	6225	-2.97	-2.45	0.31	92.64	4.01	4.65	≤ 5.00
11ax-HE80	MCS0	81	6385	-2.79	-2.94	0.15	92.64	4.01	4.49	≤ 5.00
11ax-HE80	MCS0	97	6465	-3.13	-2.43	0.24	92.64	4.01	4.59	≤ 5.00
11ax-HE80	MCS0	113	6545	-3.16	-2.26	0.32	92.64	4.01	4.67	≤ 5.00
11ax-HE80	MCS0	129	6625	-2.61	-2.61	0.40	92.64	4.01	4.74	≤ 5.00
11ax-HE80	MCS0	145	6705	-3.01	-2.19	0.43	92.64	4.01	4.77	≤ 5.00
11ax-HE80	MCS0	177	6865	-2.53	-2.57	0.46	92.64	4.01	4.81	≤ 5.00
11ax-HE80	MCS0	193	6945	-2.56	-3.28	0.11	92.64	4.01	4.45	≤ 5.00
11ax-HE80	MCS0	209	7025	-2.45	-3.14	0.23	92.64	4.01	4.57	≤ 5.00
11ax-HE160	MCS0	33	6185	-2.98	-2.92	0.06	88.20	4.01	4.62	≤ 5.00
11ax-HE160	MCS0	65	6345	-2.90	-2.92	0.10	88.20	4.01	4.66	≤ 5.00
11ax-HE160	MCS0	97	6505	-2.91	-2.49	0.32	88.20	4.01	4.87	≤ 5.00
11ax-HE160	MCS0	129	6665	-3.27	-2.70	0.03	88.20	4.01	4.59	≤ 5.00
11ax-HE160	MCS0	161	6825	-3.27	-2.60	0.09	88.20	4.01	4.65	≤ 5.00
11ax-HE160	MCS0	193	6985	-3.11	-3.00	-0.04	88.20	4.01	4.51	≤ 5.00

Note 1: Total PSD (dBm/MHz) = $10*\log \{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)}\}$

Note 2: When EUT duty cycle < 98%, EIRP PSD (dBm/MHz) = Total PSD (dBm/MHz) + 10*log (1/Duty Cycle) + Directional Gain (dBi).

Test Site	WZ-SR5	Test Engineer	Liz Yuan
Test Date	2021/10/25 ~ 2021/10/26		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Duty Cycle (%)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)
				Ant 0	Ant 1					
CDD Mode (Nss = 2)										
11ax-HE20	MCS0	33	6115	0.42	0.59	3.52	97.70	1.0	4.62	≤ 5.00
11ax-HE20	MCS0	61	6255	0.62	0.46	3.55	97.70	1.0	4.65	≤ 5.00
11ax-HE20	MCS0	93	6415	0.68	0.50	3.60	97.70	1.0	4.70	≤ 5.00
11ax-HE20	MCS0	97	6435	0.61	0.96	3.80	97.70	1.0	4.90	≤ 5.00
11ax-HE20	MCS0	105	6475	0.50	0.87	3.70	97.70	1.0	4.80	≤ 5.00
11ax-HE20	MCS0	113	6515	0.56	0.89	3.74	97.70	1.0	4.83	≤ 5.00
11ax-HE20	MCS0	117	6535	0.74	0.80	3.78	97.70	1.0	4.88	≤ 5.00
11ax-HE20	MCS0	153	6715	0.36	0.93	3.66	97.70	1.0	4.76	≤ 5.00
11ax-HE20	MCS0	181	6855	0.52	0.73	3.64	97.70	1.0	4.74	≤ 5.00
11ax-HE20	MCS0	185	6875	0.43	0.78	3.62	97.70	1.0	4.72	≤ 5.00
11ax-HE20	MCS0	189	6895	0.59	0.70	3.66	97.70	1.0	4.76	≤ 5.00
11ax-HE20	MCS0	213	7015	0.53	0.66	3.61	97.70	1.0	4.71	≤ 5.00
11ax-HE20	MCS0	229	7095	0.53	0.87	3.71	97.70	1.0	4.82	≤ 5.00
11ax-HE40	MCS0	33	6125	0.42	0.79	3.62	95.85	1.0	4.80	≤ 5.00
11ax-HE40	MCS0	57	6245	0.47	0.94	3.72	95.85	1.0	4.90	≤ 5.00
11ax-HE40	MCS0	89	6405	0.48	0.78	3.64	95.85	1.0	4.83	≤ 5.00
11ax-HE40	MCS0	97	6445	0.51	0.84	3.69	95.85	1.0	4.87	≤ 5.00
11ax-HE40	MCS0	105	6485	0.49	0.86	3.69	95.85	1.0	4.87	≤ 5.00
11ax-HE40	MCS0	113	6525	0.50	0.92	3.73	95.85	1.0	4.91	≤ 5.00
11ax-HE40	MCS0	121	6565	0.59	0.73	3.67	95.85	1.0	4.85	≤ 5.00
11ax-HE40	MCS0	145	6685	0.47	0.70	3.60	95.85	1.0	4.78	≤ 5.00
11ax-HE40	MCS0	177	6845	0.49	0.55	3.53	95.85	1.0	4.72	≤ 5.00
11ax-HE40	MCS0	185	6885	0.34	0.63	3.50	95.85	1.0	4.68	≤ 5.00
11ax-HE40	MCS0	193	6925	0.63	0.38	3.52	95.85	1.0	4.70	≤ 5.00
11ax-HE40	MCS0	209	7005	0.91	0.31	3.63	95.85	1.0	4.81	≤ 5.00
11ax-HE40	MCS0	225	7085	0.65	0.43	3.55	95.85	1.0	4.73	≤ 5.00

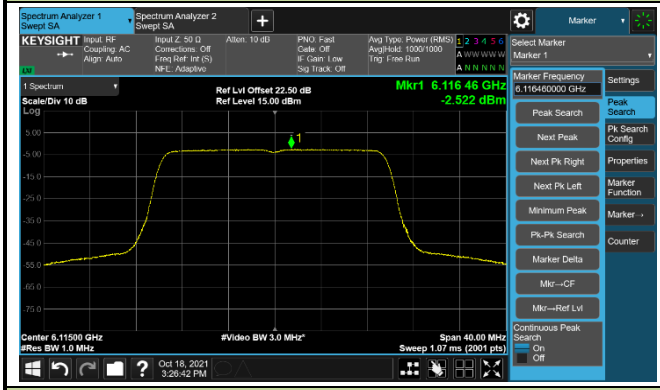
Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Duty Cycle (%)	Directional Gain (dBi)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)
				Ant 0	Ant 1					
11ax-HE80	MCS0	33	6145	0.15	0.97	3.59	92.64	1.0	4.92	≤ 5.00
11ax-HE80	MCS0	49	6225	0.25	0.87	3.58	92.64	1.0	4.91	≤ 5.00
11ax-HE80	MCS0	81	6385	0.80	0.29	3.56	92.64	1.0	4.89	≤ 5.00
11ax-HE80	MCS0	97	6465	0.30	0.76	3.55	92.64	1.0	4.88	≤ 5.00
11ax-HE80	MCS0	113	6545	0.26	0.78	3.54	92.64	1.0	4.87	≤ 5.00
11ax-HE80	MCS0	129	6625	0.46	0.50	3.49	92.64	1.0	4.82	≤ 5.00
11ax-HE80	MCS0	145	6705	0.41	0.55	3.49	92.64	1.0	4.82	≤ 5.00
11ax-HE80	MCS0	177	6865	0.51	0.58	3.56	92.64	1.0	4.89	≤ 5.00
11ax-HE80	MCS0	193	6945	0.62	0.29	3.47	92.64	1.0	4.80	≤ 5.00
11ax-HE80	MCS0	209	7025	0.70	0.33	3.53	92.64	1.0	4.86	≤ 5.00
11ax-HE160	MCS0	33	6185	0.28	0.23	3.27	88.20	1.0	4.81	≤ 5.00
11ax-HE160	MCS0	65	6345	0.47	0.11	3.30	88.20	1.0	4.85	≤ 5.00
11ax-HE160	MCS0	97	6505	0.43	0.12	3.29	88.20	1.0	4.83	≤ 5.00
11ax-HE160	MCS0	129	6665	0.25	0.50	3.39	88.20	1.0	4.93	≤ 5.00
11ax-HE160	MCS0	161	6825	-0.04	0.47	3.23	88.20	1.0	4.78	≤ 5.00
11ax-HE160	MCS0	193	6985	0.28	0.16	3.23	88.20	1.0	4.78	≤ 5.00

Note 1: Total PSD (dBm/MHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$}

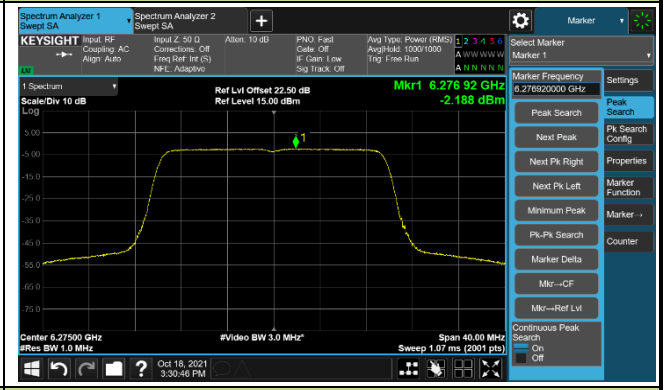
Note 2: When EUT duty cycle < 98%, EIRP PSD (dBm/MHz) = Total PSD (dBm/MHz) + 10*log (1/Duty Cycle) + Directional Gain (dBi).

802.11ax-HE20 Power Spectral Density – Ant 0 (Nss=1)

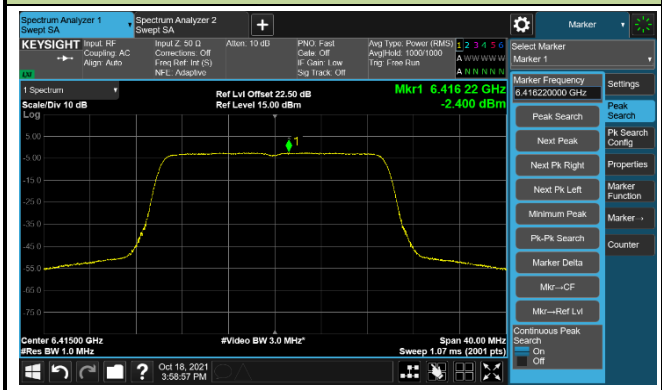
Channel 33 (6115MHz)



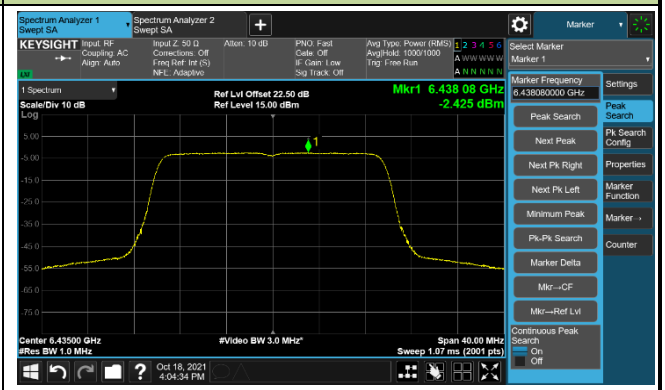
Channel 65 (6275MHz)



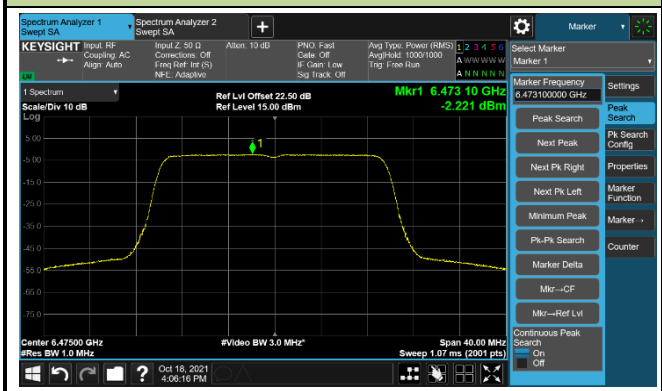
Channel 93 (6415MHz)



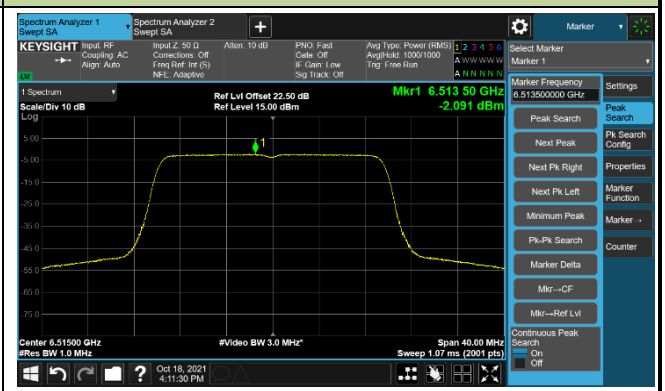
Channel 97 (6435MHz)



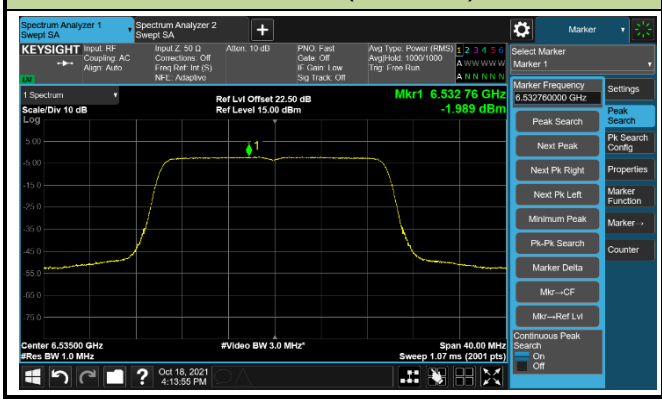
Channel 105 (6475MHz)



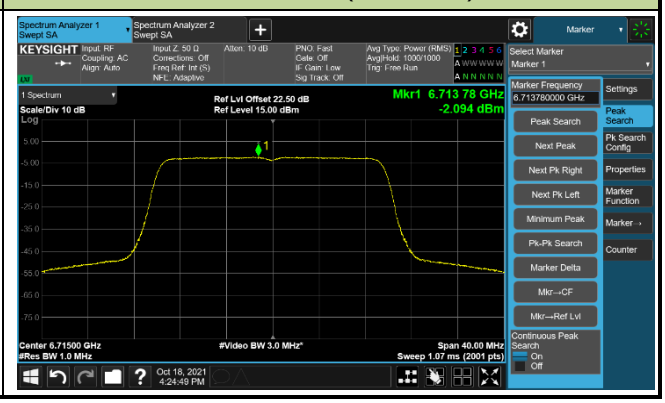
Channel 113 (6515MHz)

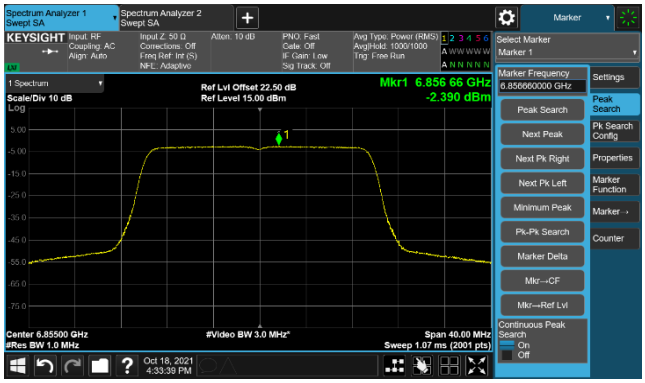
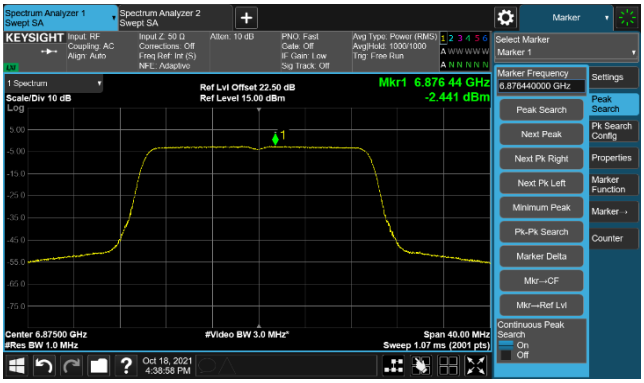
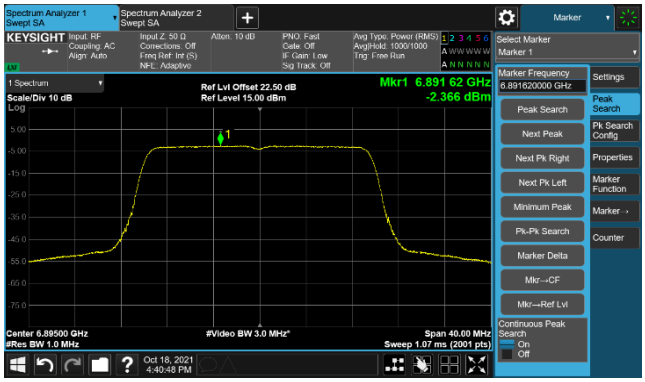
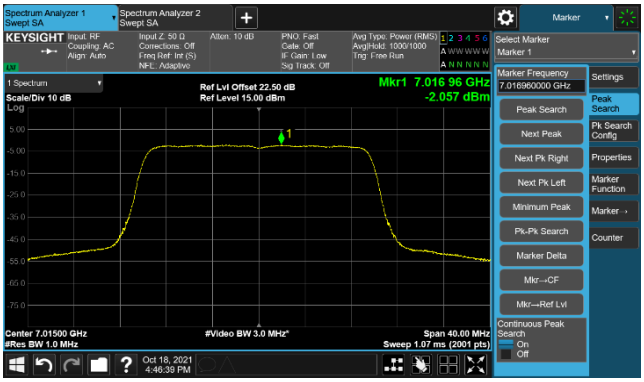
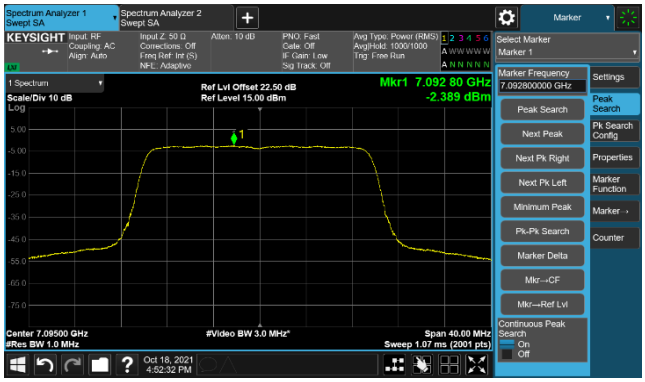


Channel 117 (6535MHz)



Channel 153 (6715MHz)



802.11ax-HE20 Power Spectral Density – Ant 0 (Nss=1)	
Channel 181 (6855MHz)	Channel 185 (6875MHz)
	
Channel 189 (6895MHz)	Channel 213 (7015MHz)
	
Channel 229 (7095MHz)