RF MEASUREMENT REPORT

FCC ID:	2AXJ4RE650V2
Applicant:	TP-Link Corporation Limited
Application Type:	Certification
Product:	AC2600 MU-MIMO Wi-Fi Range Extender
Model No.:	RE650
Brand Name:	tp-link
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Test Date:	September 11 ~ October 27, 2021

Reviewed By: Kevin Guo

Approved By: Robin Wu

Revision History

Report No.	Version	Description	Issue Date	Note
2109RSU016-U2	Rev. 01	Initial Report	11-09-2021	Valid

CONTENTS

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	AC2600 MU-MIMO Wi-Fi Range Extender
Model No.	RE650
Brand Name	tp-link
Wi-Fi Specification	802.11a/b/g/n/ac & VHT
Antenna Information	Refer to section 1.7
EUT Identification No.	20210909Sample#08 (Conducted) 20210909Sample#11 (Radiated & AC conducted emission)
Power Supply	AC100~240V/50~60Hz
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification

Frequency Range	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40: 5190~5230MHz, 5270~5310MHz, 5510~5670MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610 MHz, 5775MHz
Type of Modulation	802.11a/n/ac: OFDM
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.4Mbps

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

1.6. Working Frequencies

802.11a/n-HT20/ac-VHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz
128	5640 MHz	132	5660 MHz	136	5680 MHz
140	5700 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz

802.11n-HT40/ac-VHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
151	5755 MHz	159	5795 MHz	--	--

802.11ac-VHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	155	5775 MHz	--	--

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	T_X Paths	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
Dipole Antenna	2412 ~ 2462	4	1.0	7.02	1.0	7.02
	5150 ~ 5850	4	2.0	8.02	2.0	8.02

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, 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 802.11a (6Mbps) (CDD mode)
Mode 2: Transmit by 802.11ac-VHT20 (MCS0) (CDD mode)
Mode 3: Transmit by 802.11ac-VHT40 (MCS0) (CDD mode)
Mode 4: Transmit by 802.11ac-VHT80 (MCS0) (CDD mode)
Mode 5: Transmit by 802.11ac-VHT20 (MCS0) (Beamforming mode)
Mode 6: Transmit by 802.11ac-VHT40 (MCS0) (Beamforming mode)
Mode 7: Transmit by 802.11ac-VHT80 (MCS0) (Beamforming mode)

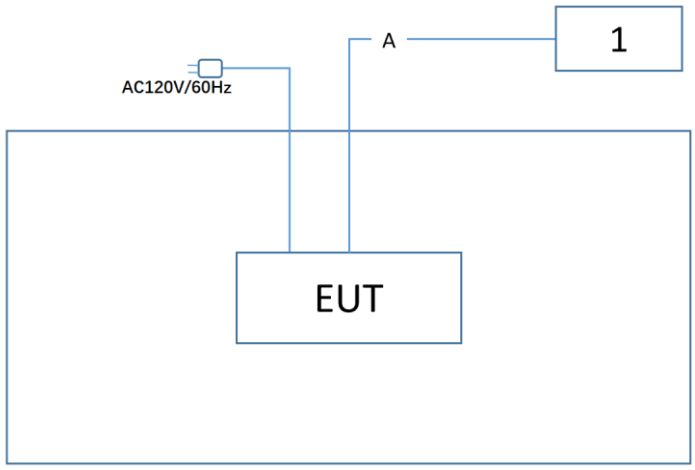
Note 1: Due to the same modulation between 802.11n and 802.11ac, so 802.11n-HT20 and HT40 are covered by 802.11ac-VHT20 and VHT40 in this report, meanwhile, power setting for 802.11n-HT20 and HT40 will not be greater than 802.11ac-VHT20 and VHT40.

Note 2: 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

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 “QATool_Dbg.exe”, and the version was 0.0.0.70.

Note: Final power setting please refer to operational description.

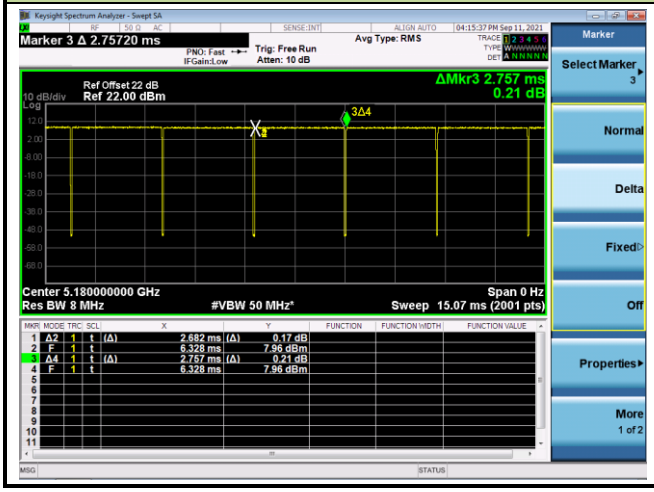
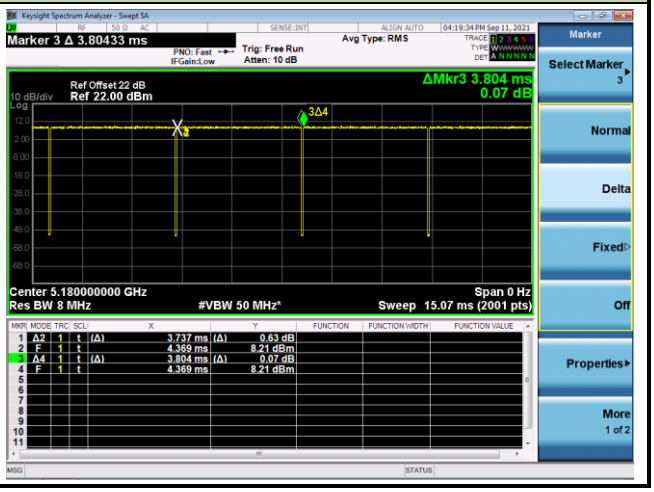
2.5. Applied Standards

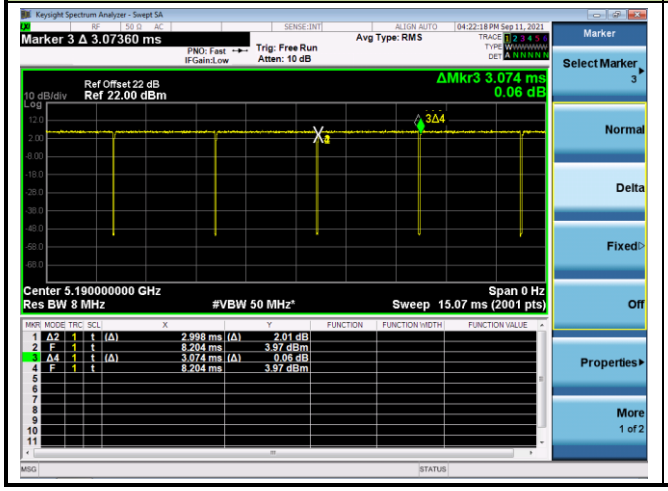
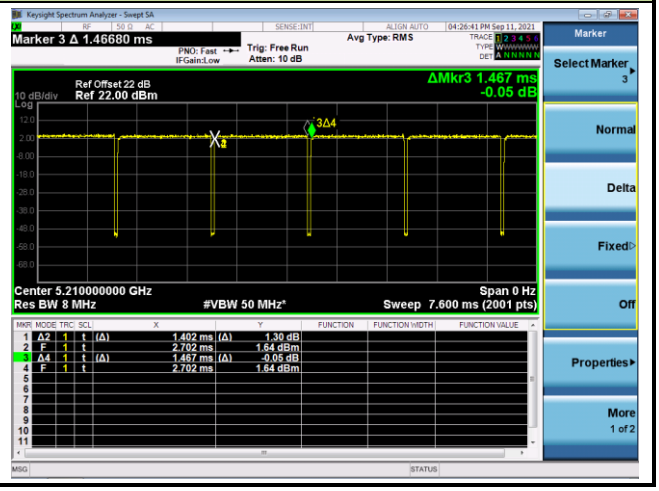
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 662911 D01v02r01
- ANSI C63.10-2013

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
802.11a	97.28%
802.11ac-VHT20	98.24%
802.11ac-VHT40	97.53%
802.1ac-VHT80	95.57%
Duty Cycle (T = Transmission Duration)	
802.11a (T = 2.682ms)	802.11ac-VHT20 (T = 3.737ms)
	

Duty Cycle (T = Transmission Duration)	
802.11ac-VHT40 (T = 2.998ms)	802.11ac-VHT80 (T = 1.402ms)
	

2.7. Test Environment Condition

Ambient Temperature	15 ~ 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 **permanently attached.**
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

No.	Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
1	Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2022/4/13	WZ-SR5
2	Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2022/6/28	WZ-SR5
3	Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	/	/	WZ-SR5
4	Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2022/6/24	WZ-SR5
5	USB Power Sensor	Agilent	U2021XA	MRTSUE06030	1 year	2022/10/10	WZ-SR3/WZ-SR5
6	USB Power Sensor	Boonton	55006	MRTSUE06109	1 year	2022/4/13	WZ-SR3/WZ-SR5
7	USB Power Sensor	Keysight	U2021XA	MRTSUE06446	1 year	2022/6/8	WZ-SR3/WZ-SR5
8	USB Power Sensor	Keysight	U2021XA	MRTSUE06447	1 year	2022/6/8	WZ-SR3/WZ-SR5
9	USB Power Sensor	Keysight	U2021XA	MRTSUE06582	1 year	2022/8/8	WZ-SR3/WZ-SR5
10	Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2022/6/8	WZ-SR2
11	CDN	Teseq	ISN PLT-A	MRTSUE06007	1 year	2022/3/1	WZ-SR2
12	Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	/	/	WZ-SR2
13	Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2022/6/28	WZ-SR2
14	Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2022/10/10	WZ-SR2
15	EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2021/11/22	WZ-SR2
16	Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/11/8	WZ-AC1/WZ-AC2
17	Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2021/12/14	WZ-AC1/WZ-AC2
18	Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2022/1/14	WZ-AC1/WZ-AC2
19	Preamplifier	EMCI	EMC051845SE	MRTSUE06987	1 year	2022/9/9	WZ-AC1/WZ-AC2
20	EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/1/4	WZ-AC1
21	Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2022/9/16	WZ-AC1
22	Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2021/11/14	WZ-AC1
23	TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2022/8/5	WZ-AC1
24	Thermohygrometer	Yuhuaze	HTC-2	MRTSUE06184	1 year	2022/8/10	WZ-AC1
25	Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2022/4/29	WZ-AC1
26	Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2022/6/28	WZ-AC1

No.	Instrument	Manufacturer	Model No.	Asset No.	Last Cali. Date	Cali. Due Date	Test Site
27	Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/1/6	WZ-AC1
28	Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2021/11/26	SIP-AC2
29	Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2022/10/11	SIP-AC2
30	Thermohygrometer	testo	608-H1	MRTSUE06623	1 year	2021/12/3	SIP-AC2
31	Thermohygrometer	testo	608-H1	MRTSUE06624	1 year	2021/12/3	SIP-AC2
32	Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/9	SIP-AC2
33	TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2022/8/5	SIP-AC2
34	Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2021/12/24	SIP-AC2
35	Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2022/6/24	SIP-AC1/SIP-AC2/SIP-AC3/SIP-SR1
36	Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2021/11/23	SIP-AC1/SIP-AC2/SIP-AC3/SIP-SR1
37	Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2022/9/7	SIP-AC1/SIP-AC2/SIP-AC3/SIP-SR1
38	EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/1/12	SIP-AC1/SIP-AC2/SIP-AC3
39	EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/6/24	SIP-AC1/SIP-AC2/SIP-AC3
40	Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2022/1/14	SIP-AC1/SIP-AC2/SIP-AC3
41	Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2022/3/9	SIP-AC1/SIP-AC2/SIP-AC3

Software	Version	Function
EMI Software	V3	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(e)	6dB Bandwidth		Pass
15.407(a)(1)(ii), (2), (3)(i)	Maximum Conducted Output Power		Pass
15.407(h)(1)	Transmit Power Control		Pass
15.407(a)(1)(ii), (2), (3), (12)	Peak Power Spectral Density		Pass
15.407(g)	Frequency Stability		Pass
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions		Pass
15.205, 15.209 15.407(b)(7), (8), (9)	General Field Strength Limits (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, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

6.2. 26dB Bandwidth

6.2.1. Test Limit

N/A

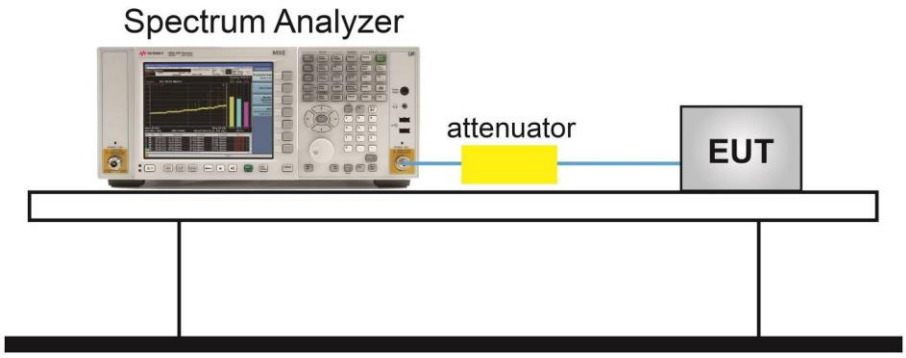
6.2.2. Test Procedure used

KDB 789033 D02v02r01- Section C.1

6.2.3. Test Setting

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 ≥ 3×RBW.
4. Detector = Peak.
5. Trace mode = max hold.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. 6dB Bandwidth

6.3.1. Test Limit

The minimum 6dBbandwidth shall be at least 500 kHz.

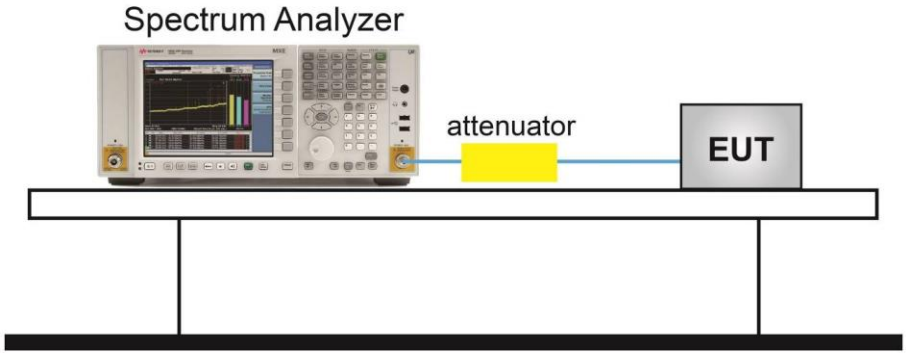
6.3.2. Test Procedure used

KDB 789033 D02v02r01- Section C.2

6.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.2.

6.4. Output Power

6.4.1. Test Limit

For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

6.4.2. Test Procedure Used

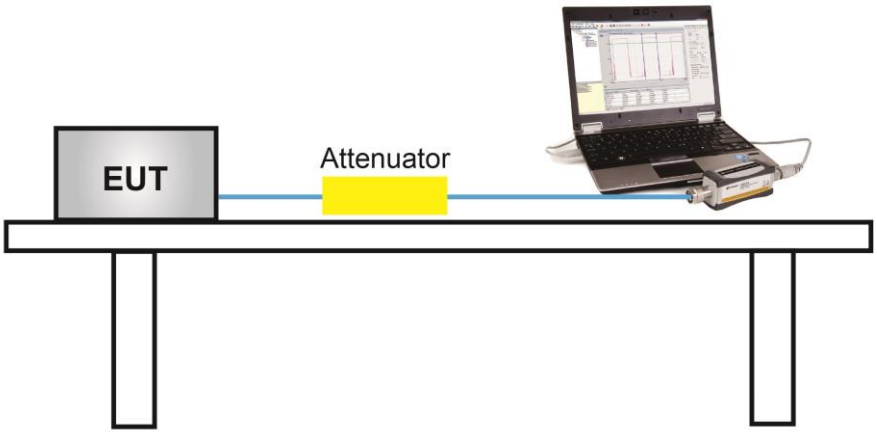
KDB 789033D02v02r01- Section E)3)b) Method PM-G

6.4.3. 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.

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.3.

6.5. Transmit Power Control

6.5.1. Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

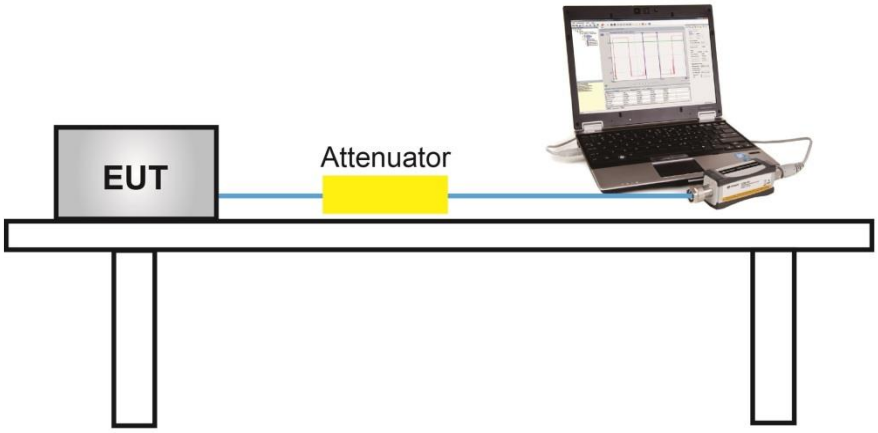
6.5.2. Test Procedure Used

KDB 789033 D02v01- Section E)3)b) Method PM-G

6.5.3. Test Setting

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. The trace was averaged over 100 traces to obtain the final measured average power.

6.5.4. Test Setup



6.5.5. Test Result

Device supports TPC mechanism, details refer to the operational description.

6.6. Power Spectral Density

6.6.1. Test Limit

For the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

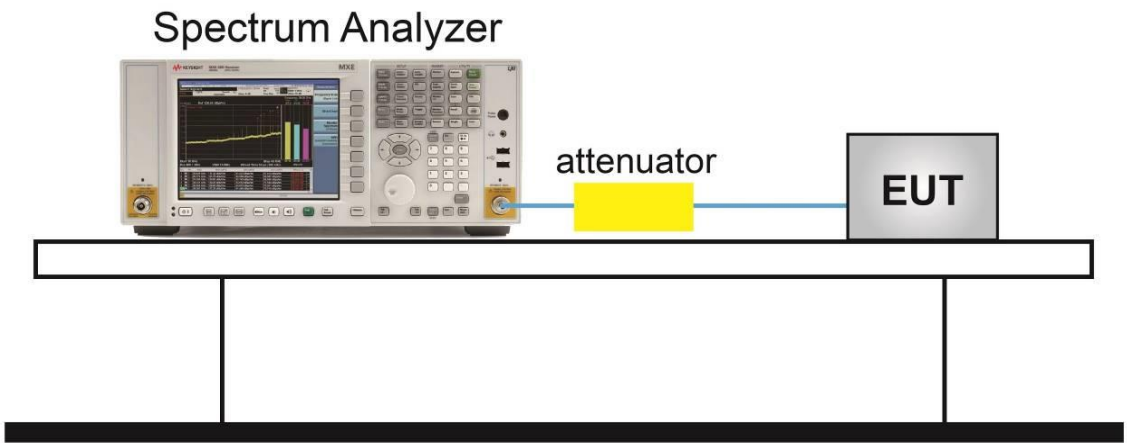
6.6.2. Test Procedure Used

KDB 789033 D02v02r01-SectionF

6.6.3. 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, if measurement bandwidth of Maximum PSD is specified in 500 kHz,
4. RBW = 510 kHz
5. VBW = 3MHz
6. Number of sweep points ≥ 2 × (span / RBW)
7. Detector = power averaging (Average)
8. Sweep time = auto
9. Trigger = free run
10. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
11. 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.

6.6.4. Test Setup



6.6.5. Test Result

Refer to Appendix A.4.

6.7. Frequency Stability Measurement

6.7.1. 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.

6.7.2. Test Procedure Used

Frequency Stability Under Temperature Variations:

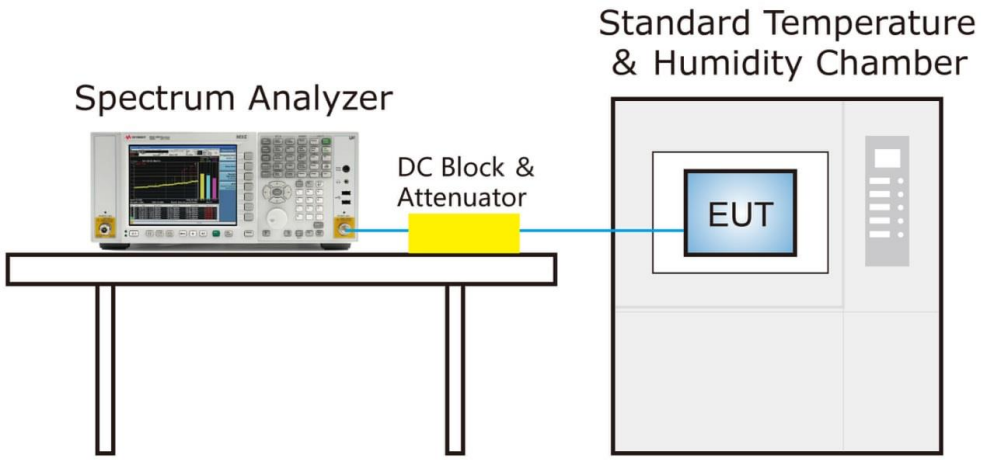
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain 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.

6.7.3. Test Setup



6.7.4. Test Result

Refer to Appendix A.5.

6.8. Radiated Spurious Emission

6.8.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR 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

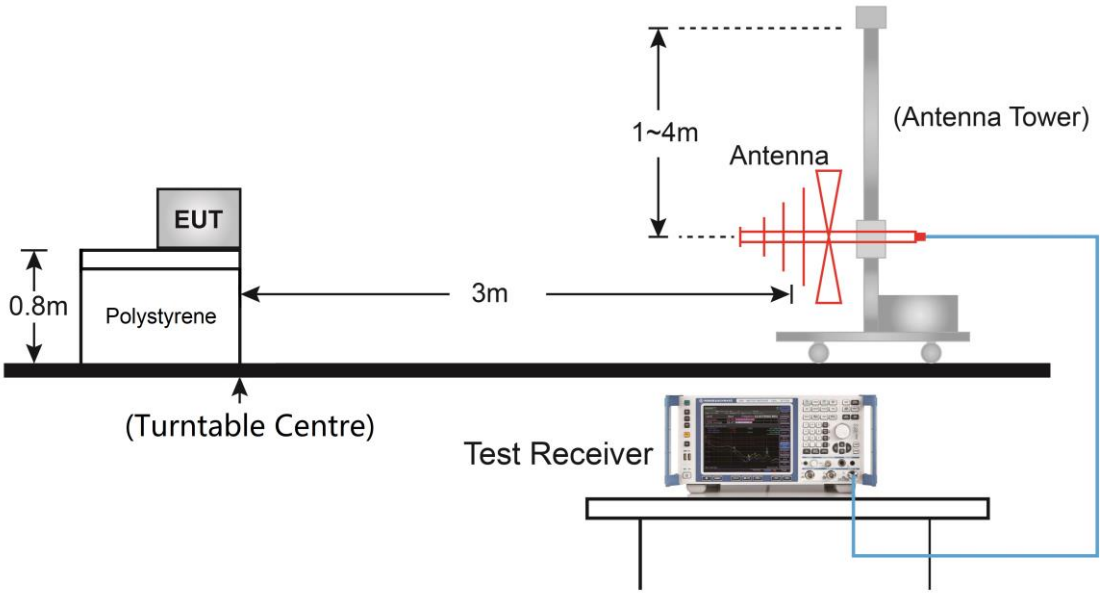
5. Sweep time = auto

6. Trace mode = max hold

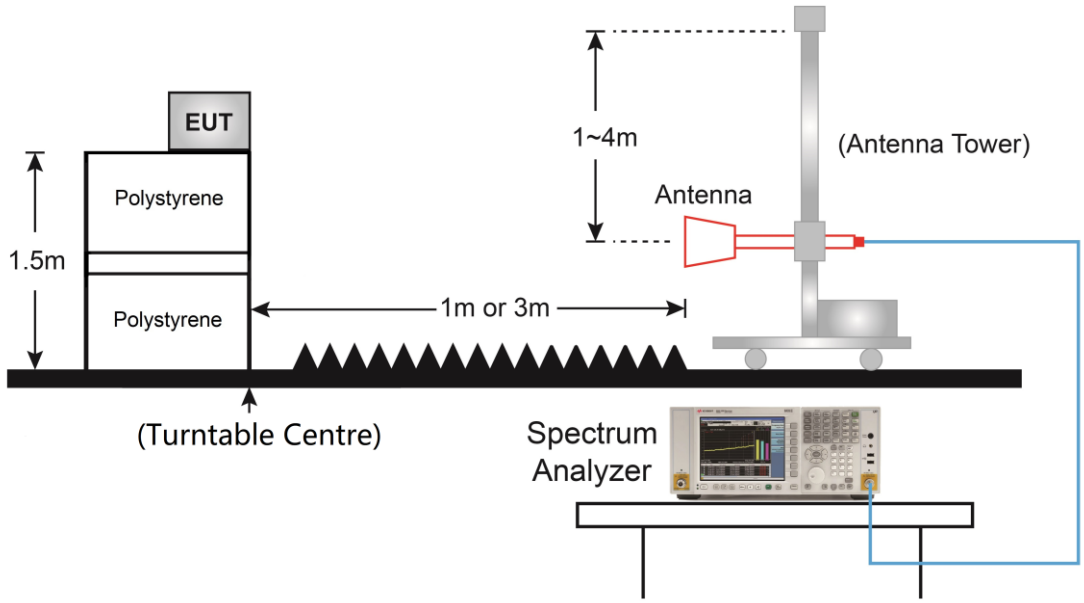
7. Trace was allowed to stabilize

6.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.8.5. Test Result

Refer to Appendix A.6.

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) requirement:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level

of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Refer to KDB 789033 D02v02r01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a maximum emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in § 15.407(b)(4)). However, an out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission 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

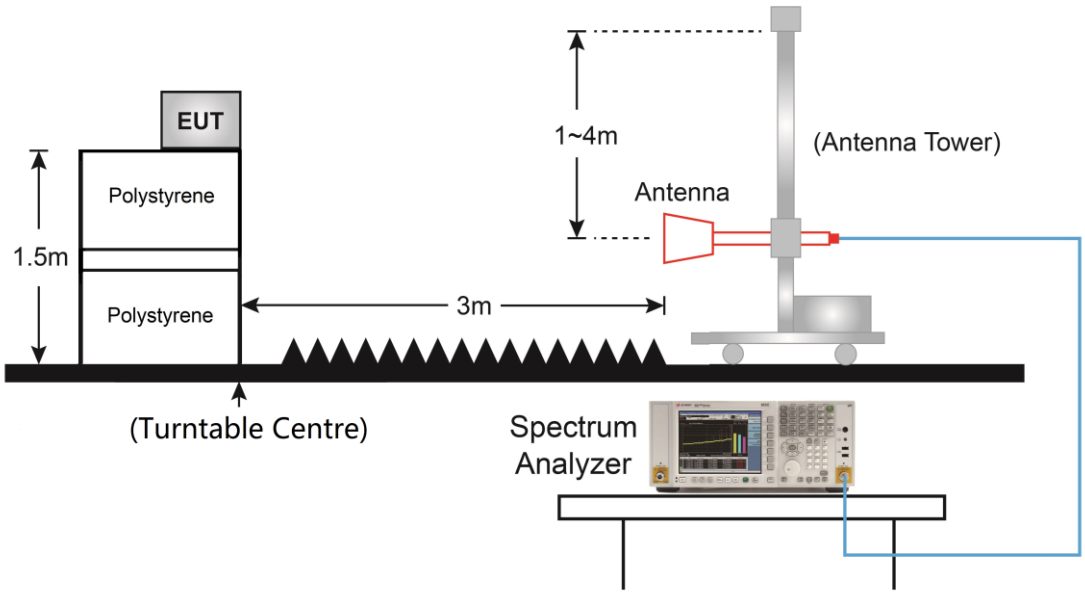
Peak Measurements above 1GHz

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

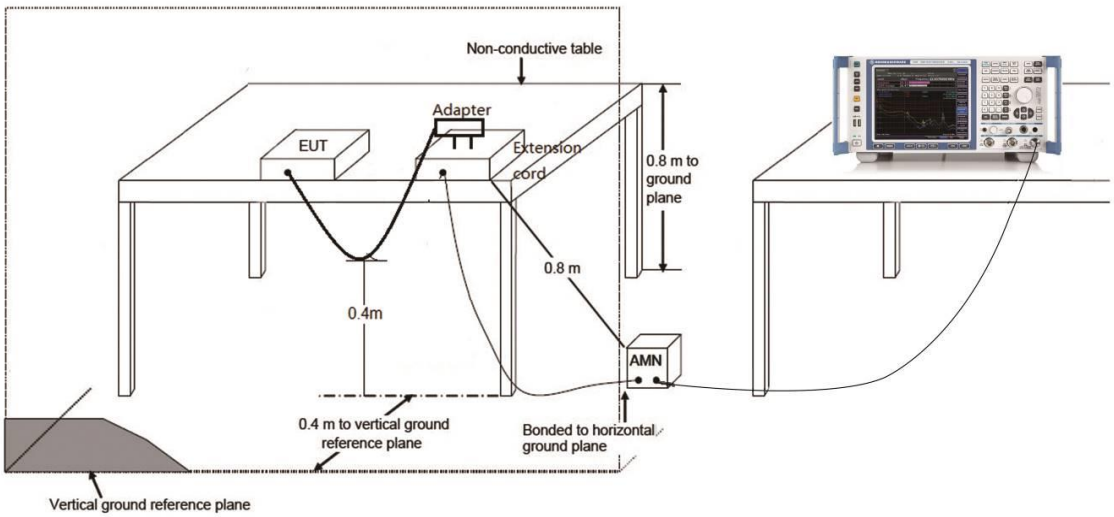
Refer to Appendix A.7.

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.8.

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.

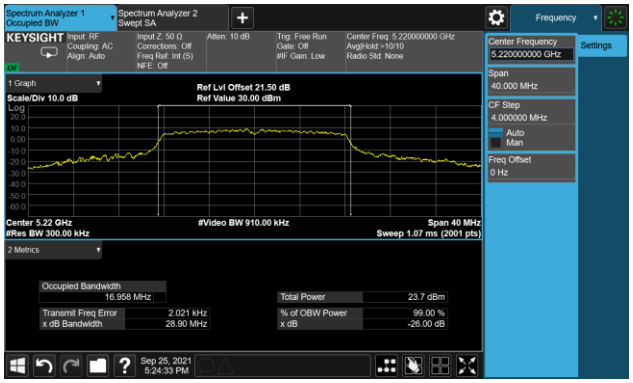
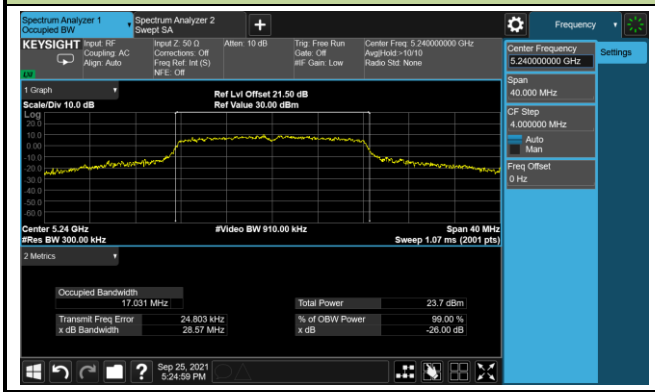
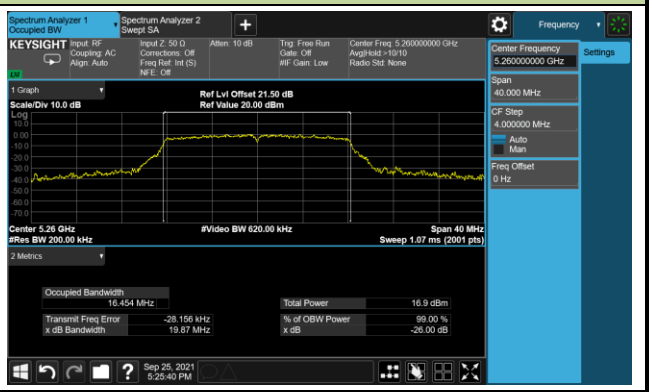
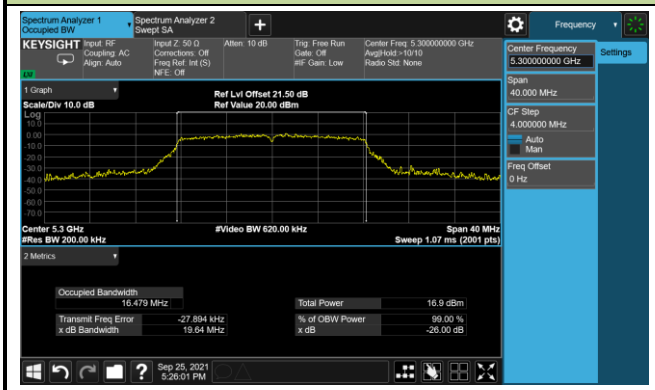
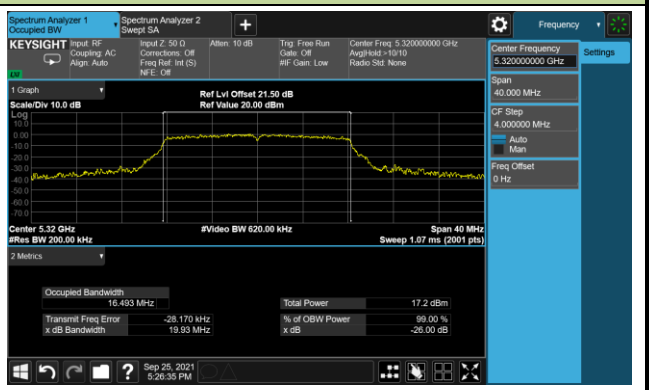
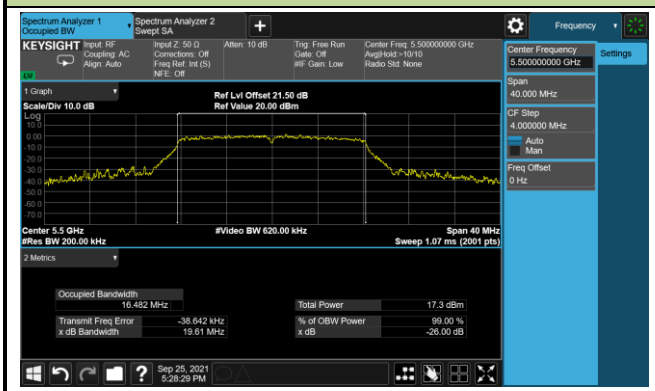
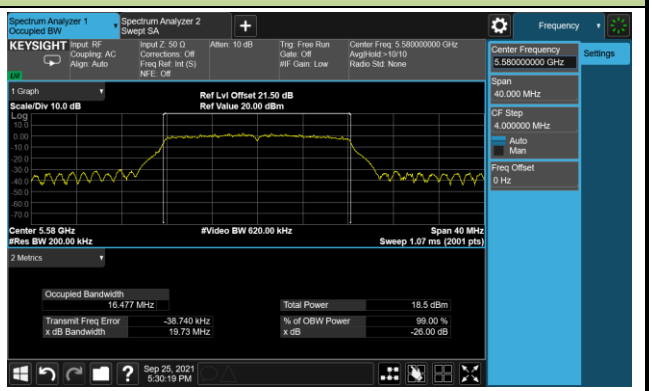
Appendix A – Test Result

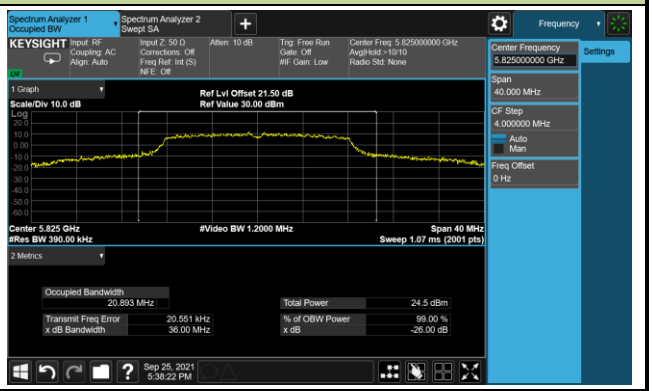
A.1 26dB Bandwidth Test Result

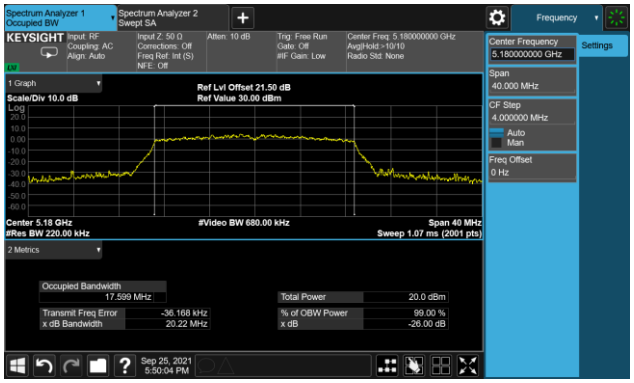
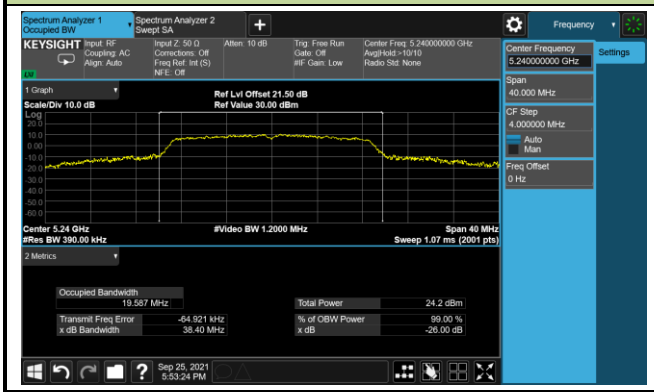
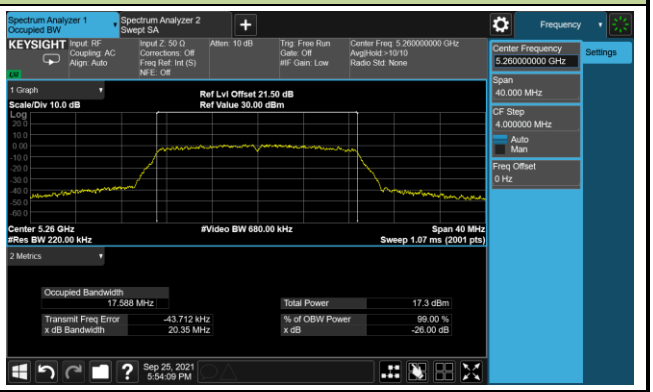
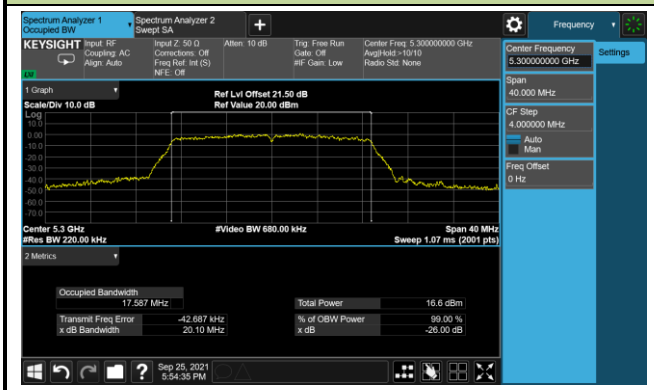
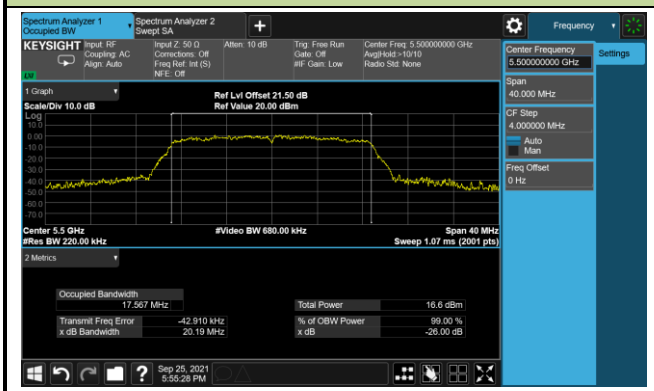
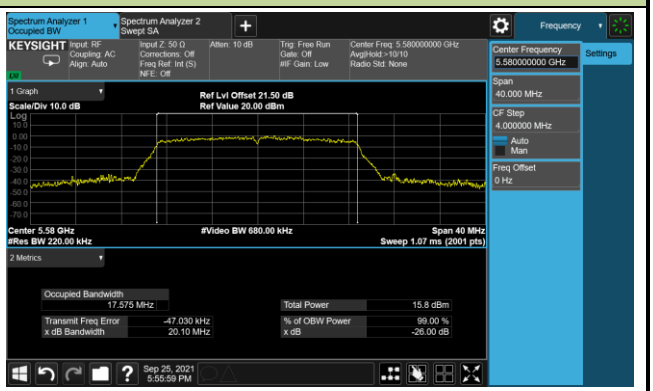
Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2021/09/25~2021/09/26		

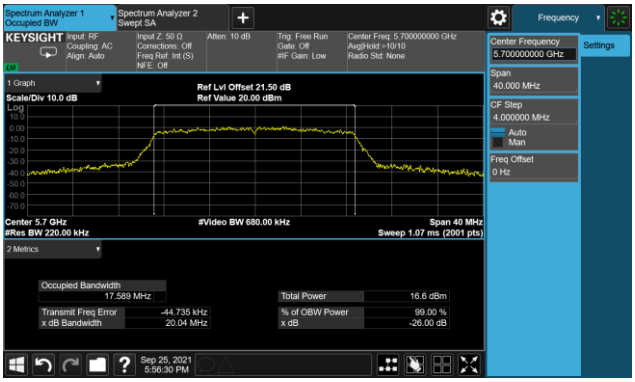
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)
802.11a	6Mbps	36	5180	19.66
802.11a	6Mbps	44	5220	28.90
802.11a	6Mbps	48	5240	28.57
802.11a	6Mbps	52	5260	19.87
802.11a	6Mbps	60	5300	19.64
802.11a	6Mbps	64	5320	19.93
802.11a	6Mbps	100	5500	19.61
802.11a	6Mbps	116	5580	19.73
802.11a	6Mbps	140	5700	19.75
802.11a	6Mbps	149	5745	38.41
802.11a	6Mbps	157	5785	37.04
802.11a	6Mbps	165	5825	36.00
802.11ac-VHT20	MCS0	36	5180	20.22
802.11ac-VHT20	MCS0	44	5220	38.34
802.11ac-VHT20	MCS0	48	5240	38.40
802.11ac-VHT20	MCS0	52	5260	20.35
802.11ac-VHT20	MCS0	60	5300	20.10
802.11ac-VHT20	MCS0	64	5320	20.15
802.11ac-VHT20	MCS0	100	5500	20.19
802.11ac-VHT20	MCS0	116	5580	20.10
802.11ac-VHT20	MCS0	140	5700	20.04
802.11ac-VHT20	MCS0	149	5745	40.00
802.11ac-VHT20	MCS0	157	5785	40.00
802.11ac-VHT20	MCS0	165	5825	40.00

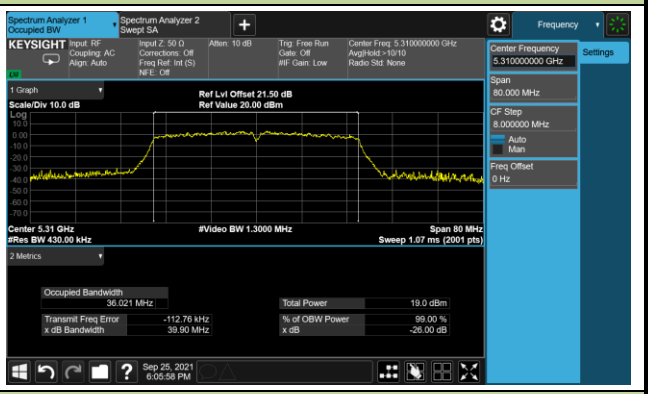
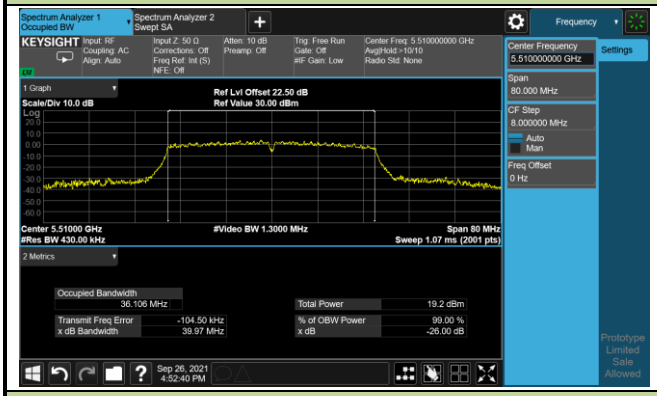
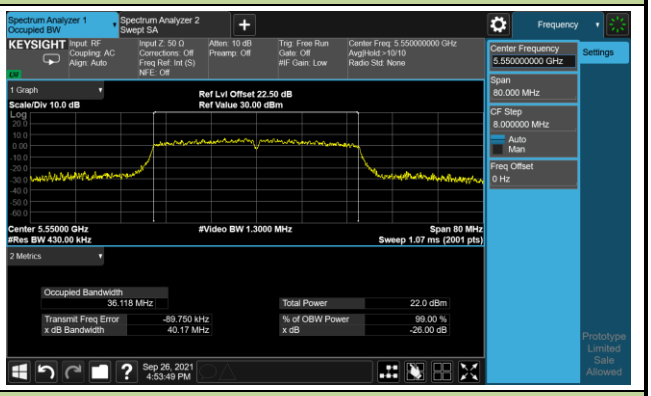
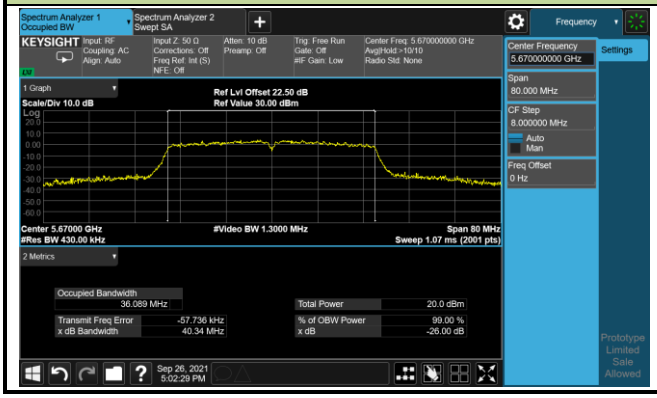
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)
802.11ac-VHT40	MCS0	38	5190	40.20
802.11ac-VHT40	MCS0	46	5230	71.84
802.11ac-VHT40	MCS0	54	5270	40.18
802.11ac-VHT40	MCS0	62	5310	39.90
802.11ac-VHT40	MCS0	102	5510	39.97
802.11ac-VHT40	MCS0	110	5550	40.17
802.11ac-VHT40	MCS0	134	5670	40.34
802.11ac-VHT40	MCS0	151	5755	79.22
802.11ac-VHT40	MCS0	159	5795	78.35
802.11ac-VHT80	MCS0	42	5210	80.18
802.11ac-VHT80	MCS0	58	5290	79.82
802.11ac-VHT80	MCS0	106	5530	79.73
802.11ac-VHT80	MCS0	122	5610	89.42
802.11ac-VHT80	MCS0	155	5775	80.24

802.11a 26dB & 99% Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

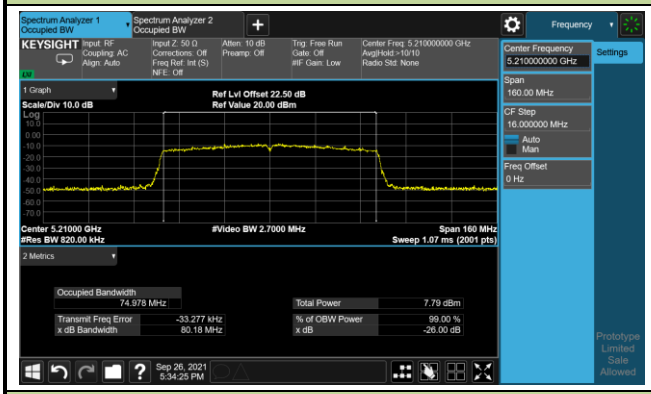
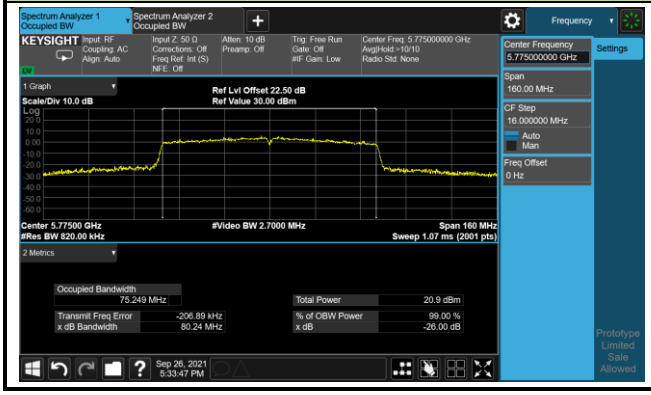
Channel 140 (5700MHz)	Channel 149 (5745MHz)
	
Channel 157 (5785MHz)	**Channel 165 (5825MHz)**
	

802.11ac-VHT20 26dB & 99% Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

Channel 140 (5700MHz)	Channel 149 (5745MHz)
	
Channel 157 (5785MHz)	**Channel 165 (5825MHz)**
	

802.11ac-VHT40 26dB & 99% Bandwidth	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 151 (5755MHz)
	

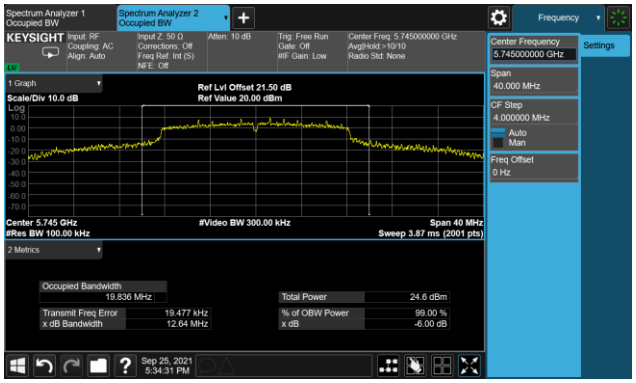
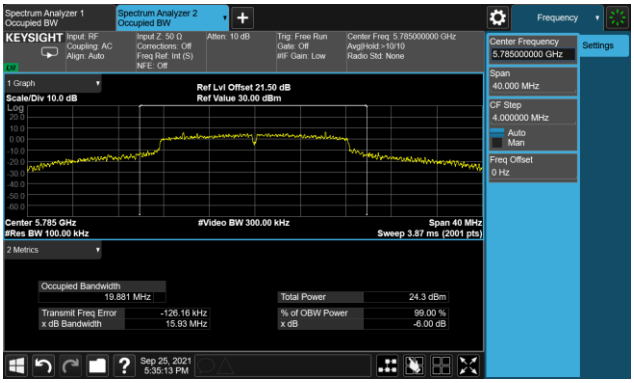
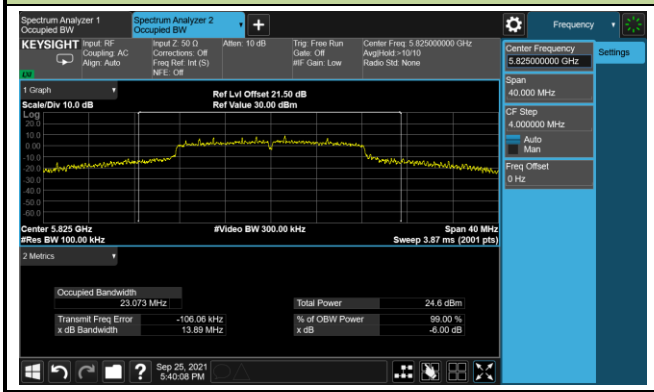
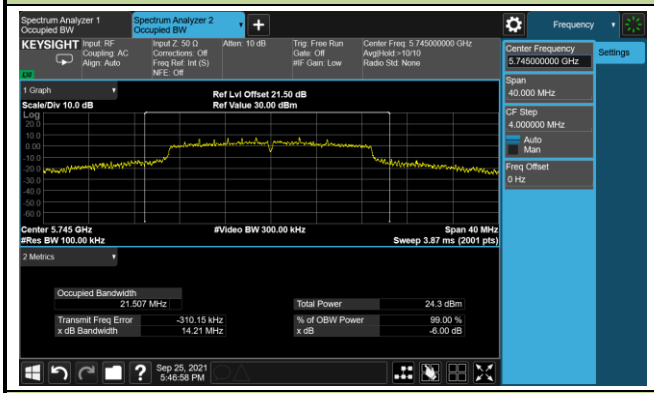
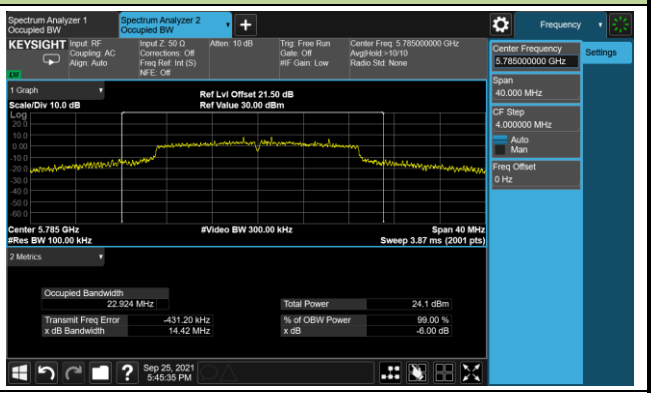
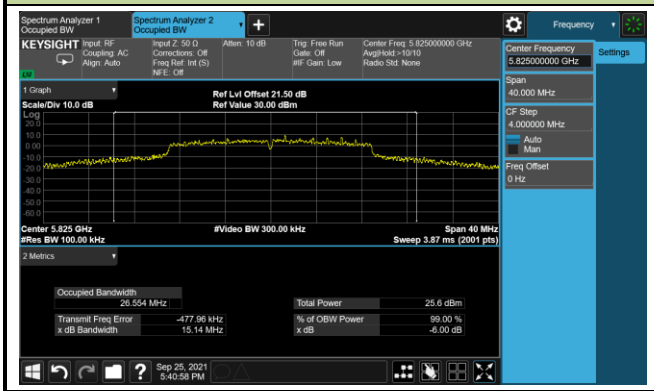
Channel 159 (5795MHz)	
	

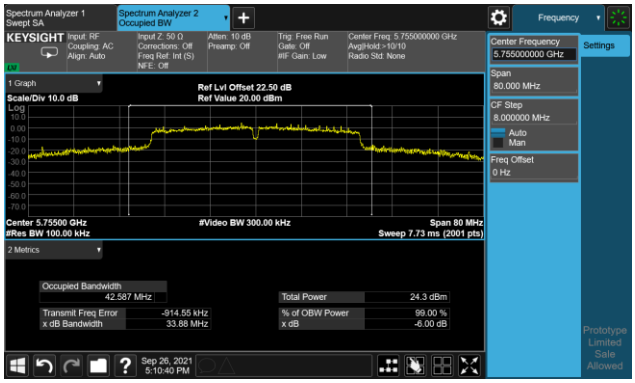
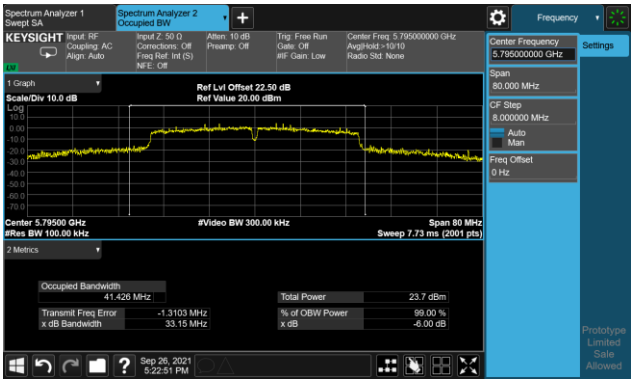
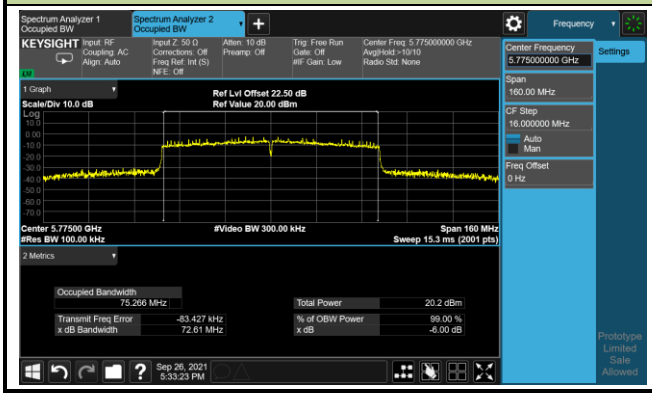
802.11ac-VHT80 26dB & 99% Bandwidth	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 122 (5610MHz)
	
Channel 155 (5775MHz)	
	

A.2 6dB Bandwidth Test Result

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2021/09/25~2021/09/26		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
802.11a	6Mbps	149	5745	12.64	≥ 0.5
802.11a	6Mbps	157	5785	15.93	≥ 0.5
802.11a	6Mbps	165	5825	13.89	≥ 0.5
802.11ac-VHT20	MCS0	149	5745	14.21	≥ 0.5
802.11ac-VHT20	MCS0	157	5785	14.42	≥ 0.5
802.11ac-VHT20	MCS0	165	5825	15.14	≥ 0.5
802.11ac-VHT40	MCS0	151	5755	33.88	≥ 0.5
802.11ac-VHT40	MCS0	159	5795	33.15	≥ 0.5
802.11ac-VHT80	MCS0	155	5775	72.61	≥ 0.5

802.11a 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	
802.11ac-VHT20 6dB Bandwidth	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ac-VHT40 6dB Bandwidth	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	
802.11ac-VHT80 6dB Bandwidth	
Channel 155 (5775MHz)	
	

A.3 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2021/09/22	Test Mode	CDD Mode

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Average Power Limit (dBm)
				Ant 0	Ant 1	Ant 2	Ant 3		
11a	MCS0	36	5180	15.39	15.32	15.48	14.85	21.29	≤ 30.00
11a	MCS0	44	5220	18.85	19.24	18.84	18.82	24.96	≤ 30.00
11a	MCS0	48	5240	19.23	19.67	19.02	19.24	25.32	≤ 30.00
11a	6Mbps	52	5260	12.68	12.36	12.65	12.57	18.59	≤ 23.92
11a	6Mbps	60	5300	12.60	13.03	11.84	12.69	18.58	≤ 23.92
11a	6Mbps	64	5320	12.37	12.98	13.05	12.66	18.79	≤ 23.92
11a	6Mbps	100	5500	12.23	12.74	12.62	12.69	18.60	≤ 23.92
11a	6Mbps	116	5580	12.41	13.37	13.24	14.05	19.33	≤ 23.92
11a	6Mbps	140	5700	11.27	11.91	12.36	11.54	17.81	≤ 23.92
11a	6Mbps	149	5745	20.23	20.66	20.87	20.31	26.55	≤ 30.00
11a	6Mbps	157	5785	19.67	21.25	20.92	19.89	26.50	≤ 30.00
11a	6Mbps	165	5825	19.14	19.61	19.76	19.32	25.48	≤ 30.00
11ac-VHT20	MCS0	36	5180	15.34	15.19	16.22	15.40	21.58	≤ 30.00
11ac-VHT20	MCS0	44	5220	19.13	19.54	16.68	18.94	24.72	≤ 30.00
11ac-VHT20	MCS0	48	5240	19.11	19.38	19.19	18.61	25.10	≤ 30.00
11ac-VHT20	MCS0	52	5260	12.18	12.07	12.84	12.53	18.44	≤ 23.98
11ac-VHT20	MCS0	60	5300	11.56	12.85	12.98	12.51	18.53	≤ 23.98
11ac-VHT20	MCS0	64	5320	12.29	12.82	12.91	12.37	18.63	≤ 23.98
11ac-VHT20	MCS0	100	5500	12.31	12.78	12.59	12.75	18.63	≤ 23.98
11ac-VHT20	MCS0	116	5580	11.52	12.05	12.07	12.41	18.04	≤ 23.98
11ac-VHT20	MCS0	140	5700	12.36	12.67	13.95	12.29	18.89	≤ 23.98
11ac-VHT20	MCS0	149	5745	19.17	20.04	20.79	18.84	25.80	≤ 30.00
11ac-VHT20	MCS0	157	5785	18.92	20.21	19.98	18.17	25.42	≤ 30.00
11ac-VHT20	MCS0	165	5825	19.14	20.23	20.65	19.41	25.92	≤ 30.00
11ac-VHT40	MCS0	38	5190	12.21	12.34	12.32	12.08	18.26	≤ 30.00
11ac-VHT40	MCS0	46	5230	18.15	18.85	17.93	18.13	24.30	≤ 30.00
11ac-VHT40	MCS0	54	5270	15.85	15.21	15.45	15.75	21.59	≤ 23.98
11ac-VHT40	MCS0	62	5310	13.77	14.18	14.23	14.09	20.09	≤ 23.98
11ac-VHT40	MCS0	102	5510	12.30	12.34	12.52	12.59	18.46	≤ 23.98
11ac-VHT40	MCS0	110	5550	15.11	15.61	15.09	15.73	21.42	≤ 23.98

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Average Power Limit (dBm)
				Ant 0	Ant 1	Ant 2	Ant 3		
11ac-VHT40	MCS0	134	5670	14.32	14.43	14.67	14.71	20.56	≤ 23.98
11ac-VHT40	MCS0	151	5755	19.37	20.42	20.71	18.75	25.90	≤ 30.00
11ac-VHT40	MCS0	159	5795	18.56	19.78	19.86	18.49	25.24	≤ 30.00
11ac-VHT80	MCS0	42	5210	8.30	8.34	9.28	8.38	14.62	≤ 30.00
11ac-VHT80	MCS0	58	5290	8.85	8.98	8.91	9.02	14.96	≤ 23.98
11ac-VHT80	MCS0	106	5530	10.73	11.06	10.95	11.28	17.03	≤ 23.98
11ac-VHT80	MCS0	122	5610	15.52	14.91	14.74	15.20	21.12	≤ 23.98
11ac-VHT80	MCS0	155	5775	15.68	16.35	16.37	15.91	22.11	≤ 30.00

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)} + 10^{(\text{Ant 3 Average Power }/10)}\}$.

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2021/09/22	Test Mode	Beamforming Mode

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Average Power Limit (dBm)
				Ant 0	Ant 1	Ant 2	Ant 3		
11ac-VHT20	MCS0	36	5180	15.34	15.19	16.22	15.40	21.58	≤ 27.98
11ac-VHT20	MCS0	44	5220	19.13	19.54	16.68	18.94	24.72	≤ 27.98
11ac-VHT20	MCS0	48	5240	19.11	19.38	19.19	18.61	25.10	≤ 27.98
11ac-VHT20	MCS0	52	5260	12.18	12.07	12.84	12.53	18.44	≤ 21.96
11ac-VHT20	MCS0	60	5300	11.56	12.85	12.98	12.51	18.53	≤ 21.96
11ac-VHT20	MCS0	64	5320	12.29	12.82	12.91	12.37	18.63	≤ 21.96
11ac-VHT20	MCS0	100	5500	12.31	12.78	12.59	12.75	18.63	≤ 21.96
11ac-VHT20	MCS0	116	5580	11.52	12.05	12.07	12.41	18.04	≤ 21.96
11ac-VHT20	MCS0	140	5700	12.36	12.67	13.95	12.29	18.89	≤ 21.96
11ac-VHT20	MCS0	149	5745	19.17	20.04	20.79	18.84	25.80	≤ 27.98
11ac-VHT20	MCS0	157	5785	18.92	20.21	19.98	18.17	25.42	≤ 27.98
11ac-VHT20	MCS0	165	5825	19.14	20.23	20.65	19.41	25.92	≤ 27.98
11ac-VHT40	MCS0	38	5190	12.21	12.34	12.32	12.08	18.26	≤ 27.98
11ac-VHT40	MCS0	46	5230	18.15	18.85	17.93	18.13	24.30	≤ 27.98
11ac-VHT40	MCS0	54	5270	15.85	15.21	15.45	15.75	21.59	≤ 21.96
11ac-VHT40	MCS0	62	5310	13.77	14.18	14.23	14.09	20.09	≤ 21.96
11ac-VHT40	MCS0	102	5510	12.30	12.34	12.52	12.59	18.46	≤ 21.96
11ac-VHT40	MCS0	110	5550	15.11	15.61	15.09	15.73	21.42	≤ 21.96
11ac-VHT40	MCS0	134	5670	14.32	14.43	14.67	14.71	20.56	≤ 21.96
11ac-VHT40	MCS0	151	5755	19.37	20.42	20.71	18.75	25.90	≤ 27.98
11ac-VHT40	MCS0	159	5795	18.56	19.78	19.86	18.49	25.24	≤ 27.98
11ac-VHT80	MCS0	42	5210	8.30	8.34	9.28	8.38	14.62	≤ 27.98
11ac-VHT80	MCS0	58	5290	8.85	8.98	8.91	9.02	14.96	≤ 21.96
11ac-VHT80	MCS0	106	5530	10.73	11.06	10.95	11.28	17.03	≤ 21.96
11ac-VHT80	MCS0	122	5610	15.52	14.91	14.74	15.20	21.12	≤ 21.96
11ac-VHT80	MCS0	155	5775	15.68	16.35	16.37	15.91	22.11	≤ 27.98

Note 1: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)} + 10^{(\text{Ant 3 Average Power }/10)}\}$

Note 2:

For 5125 - 5250MHz & 5725 - 5850MHz Bands: Average Power Limit (dBm) = 30 - (8.02- 6) = 27.98dBm

For 5250 - 5350MHz & 5470 - 5725MHz Bands: Average Power Limit (dBm) = 23.98 - (8.02- 6) = 21.96dBm.

A.4 Power Spectral Density Test Result

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2021/09/11~2021/10/25		

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	AVPSD (dBm/ MHz)				Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/ MHz)
				Ant 0	Ant 1	Ant 2	Ant 3			
For NII-1/-2a/-2c Bands:										
11a	6Mbps	36	5180	3.31	3.25	3.75	2.92	97.28	9.45	≤ 14.98
11a	6Mbps	44	5220	8.42	8.73	8.18	8.61	97.28	14.63	≤ 14.98
11a	6Mbps	48	5240	8.81	8.88	8.51	8.55	97.28	14.83	≤ 14.98
11a	6Mbps	52	5260	2.90	2.07	2.64	2.01	97.28	8.56	≤ 8.98
11a	6Mbps	60	5300	2.54	2.54	2.88	2.59	97.28	8.78	≤ 8.98
11a	6Mbps	64	5320	2.73	2.64	2.49	2.40	97.28	8.71	≤ 8.98
11a	6Mbps	100	5500	2.59	2.52	2.40	2.51	97.28	8.65	≤ 8.98
11a	6Mbps	116	5580	2.56	2.62	2.80	2.81	97.28	8.84	≤ 8.98
11a	6Mbps	140	5700	2.67	2.51	2.75	2.16	97.28	8.67	≤ 8.98
11ac-VHT20	MCS0	36	5180	4.32	4.24	4.37	3.80	98.24	10.29	≤ 14.98
11ac-VHT20	MCS0	44	5220	8.59	9.26	8.42	8.18	98.24	14.73	≤ 14.98
11ac-VHT20	MCS0	48	5240	8.65	9.24	8.50	8.45	98.24	14.82	≤ 14.98
11ac-VHT20	MCS0	52	5260	2.27	2.55	2.60	2.38	98.24	8.55	≤ 8.98
11ac-VHT20	MCS0	60	5300	2.42	2.96	2.75	2.80	98.24	8.83	≤ 8.98
11ac-VHT20	MCS0	64	5320	2.04	2.78	2.74	2.84	98.24	8.71	≤ 8.98
11ac-VHT20	MCS0	100	5500	2.57	2.76	2.31	3.05	98.24	8.78	≤ 8.98
11ac-VHT20	MCS0	116	5580	1.42	2.36	2.43	2.24	98.24	8.23	≤ 8.98
11ac-VHT20	MCS0	140	5700	2.03	2.68	3.05	3.00	98.24	8.80	≤ 8.98
11ac-VHT40	MCS0	38	5190	-2.04	-2.39	-2.22	-2.25	97.53	3.91	≤ 14.98
11ac-VHT40	MCS0	46	5230	5.25	5.49	5.06	4.90	97.53	11.31	≤ 14.98
11ac-VHT40	MCS0	54	5270	2.73	2.39	2.60	2.35	97.53	8.65	≤ 8.98
11ac-VHT40	MCS0	62	5310	0.41	0.48	0.56	0.39	97.53	6.59	≤ 8.98
11ac-VHT40	MCS0	102	5510	-1.07	-0.90	-1.61	-1.09	97.53	4.97	≤ 8.98
11ac-VHT40	MCS0	110	5550	2.43	2.87	2.42	3.01	97.53	8.82	≤ 8.98
11ac-VHT40	MCS0	134	5670	0.84	0.72	1.13	0.72	97.53	6.98	≤ 8.98
11ac-VHT80	MCS0	42	5210	-7.76	-7.62	-6.56	-7.18	95.57	-1.04	≤ 14.98
11ac-VHT80	MCS0	58	5290	-7.29	-7.10	-6.43	-6.83	95.57	-0.68	≤ 8.98
11ac-VHT80	MCS0	106	5530	-5.41	-4.97	-5.12	-4.63	95.57	1.19	≤ 8.98
11ac-VHT80	MCS0	122	5610	-1.04	-1.31	-0.76	-0.50	95.57	5.32	≤ 8.98

Note 1: When EUT duty cycle < 98%, the total PSD (dBm/MHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$

$+10^{(\text{Ant 2 AVGPSD/10})} + 10^{(\text{Ant 3 AVGPSD/10})}\}$ +10*log (1/Duty cycle).

When EUT duty cycle ≥ 98%, the total PSD (dBm/MHz) =10*log $\{10^{(\text{Ant 0 AVGPSD/10})} + 10^{(\text{Ant 1 AVGPSD/10})} + 10^{(\text{Ant 2 AVGPSD/10})} + 10^{(\text{Ant 3 AVGPSD/10})}\}$.

Note 2:

For 5150 - 5250MHz Band: PSD Limit (dBm/MHz) = 17 - (8.02 - 6) = 14.98dBm/MHz.

For 5250 - 5350MHz & 5470 - 5725MHz Bands: PSD Limit (dBm/MHz) = 11 - (8.02 - 6) = 8.98dBm/MHz.

Note 2: The power setting of Beamforming mode is not greater than CDD mode, so only CDD mode result was shown in this section.

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	AVPSD (dBm/ 510kHz)				Duty Cycle (%)	Total PSD (dBm/510kHz)	PSD Limit (dBm/510kHz)
				Ant 0	Ant 1	Ant 2	Ant 3			
For NII-3 Band:										
11a	6Mbps	149	5745	5.52	6.00	6.56	6.17	97.28	12.22	≤ 27.98
11a	6Mbps	157	5785	5.42	6.65	6.30	5.02	97.28	12.04	≤ 27.98
11a	6Mbps	165	5825	5.03	5.34	6.19	5.09	97.28	11.58	≤ 27.98
11ac-VHT20	MCS0	149	5745	4.82	5.99	6.56	5.34	98.24	11.83	≤ 27.98
11ac-VHT20	MCS0	157	5785	4.88	6.61	6.16	5.10	98.24	11.84	≤ 27.98
11ac-VHT20	MCS0	165	5825	5.17	6.58	6.25	5.08	98.24	11.92	≤ 27.98
11ac-VHT40	MCS0	151	5755	2.25	3.50	4.22	3.04	97.53	9.44	≤ 27.98
11ac-VHT40	MCS0	159	5795	1.61	3.71	3.12	1.91	97.53	8.80	≤ 27.98
11ac-VHT80	MCS0	155	5775	0.85	1.20	0.96	0.55	95.57	7.11	≤ 27.98

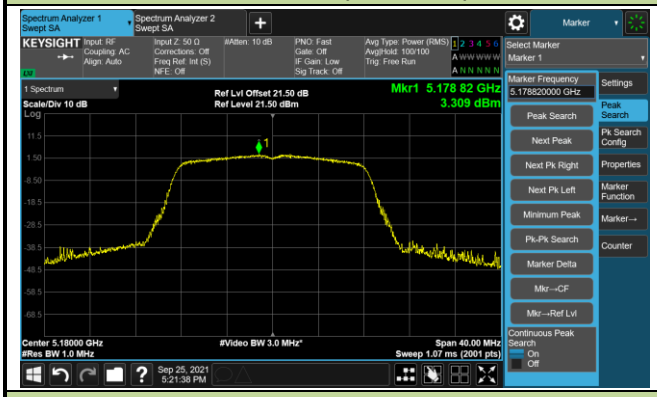
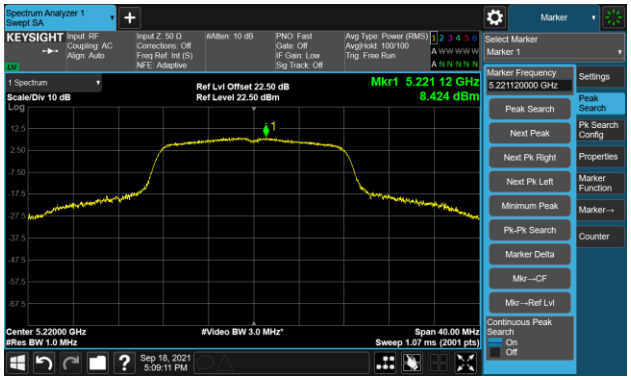
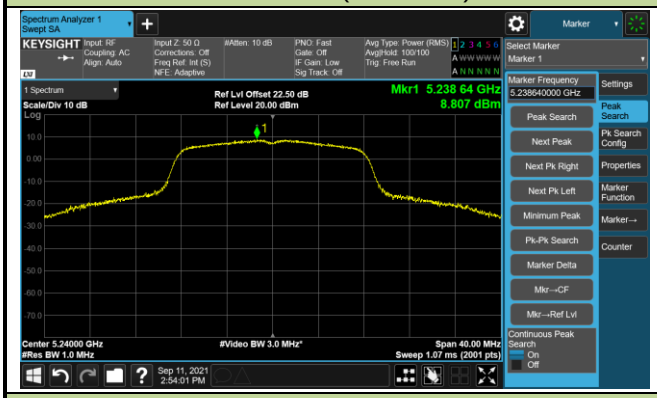
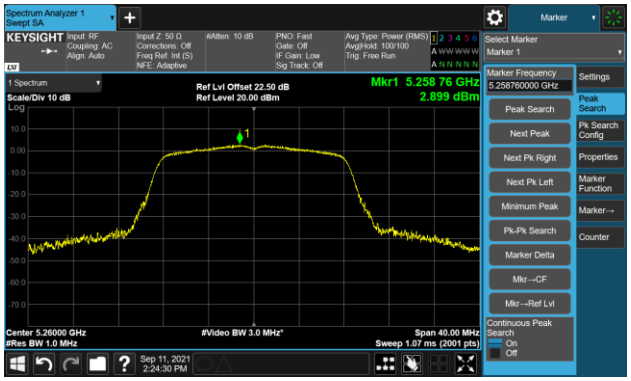
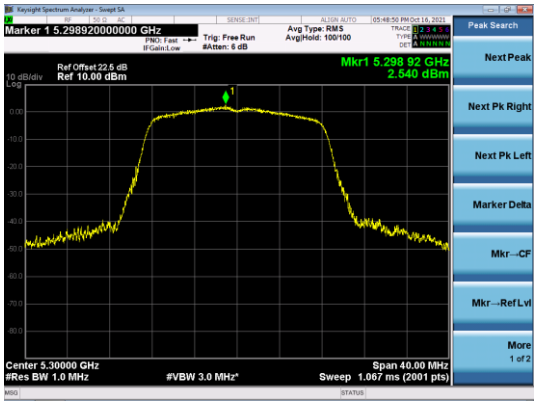
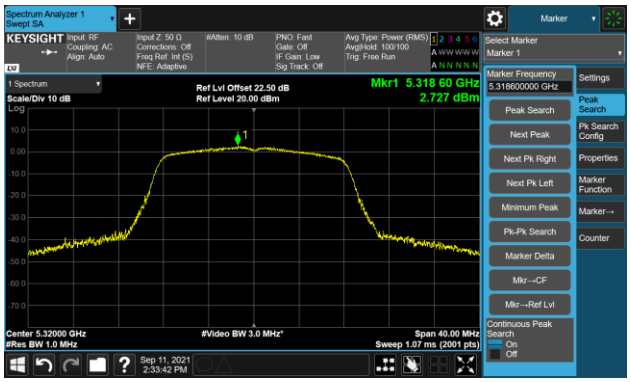
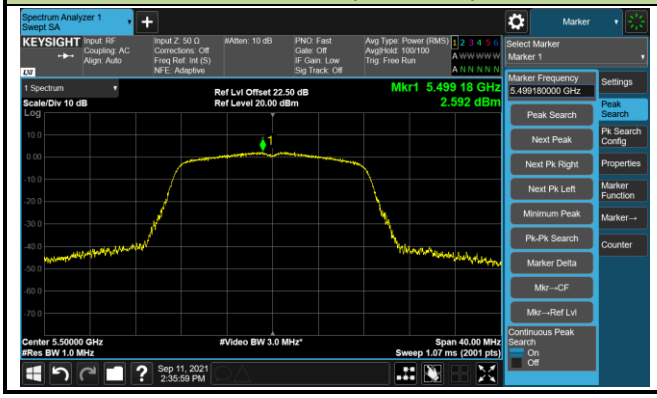
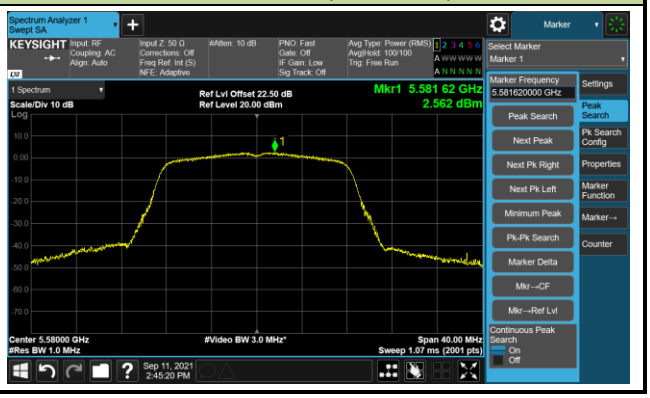
Note 1:

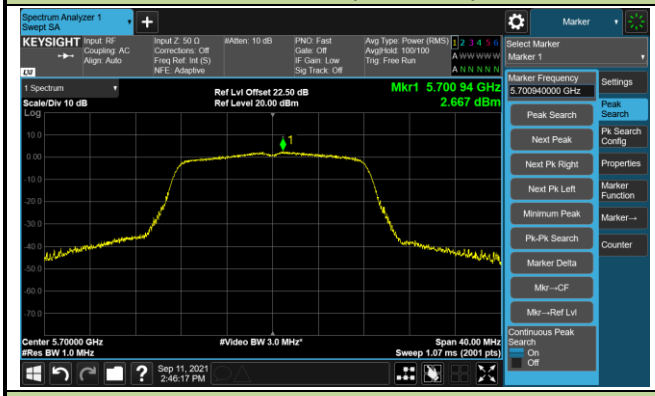
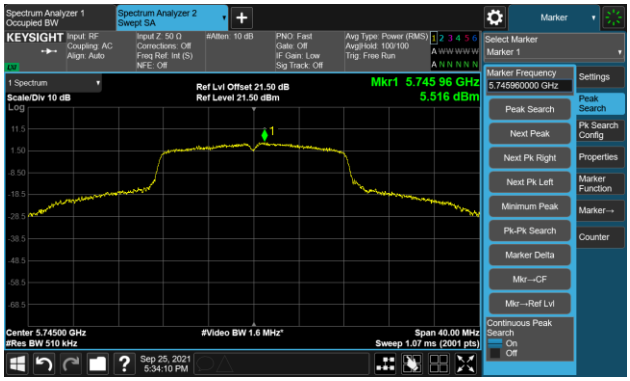
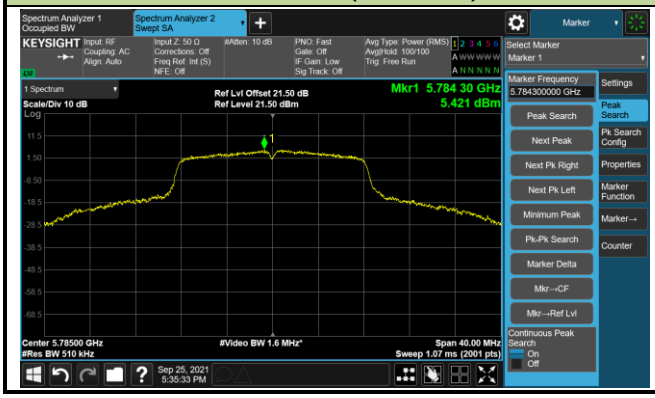
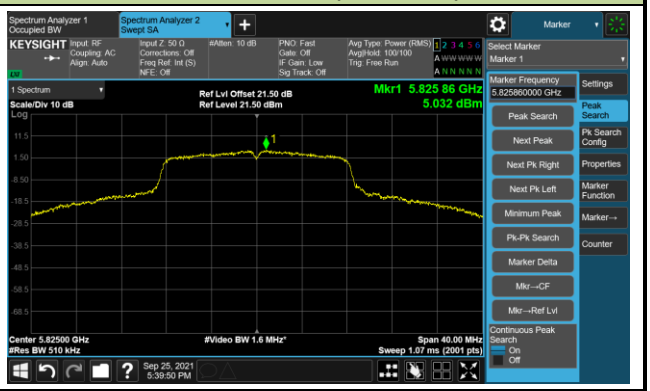
When EUT duty cycle < 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$ +$10^{(\text{Ant 2 AVGPSD}/10)}$ + $10^{(\text{Ant 3 AVGPSD}/10)}$} +10*log (1/Duty cycle).

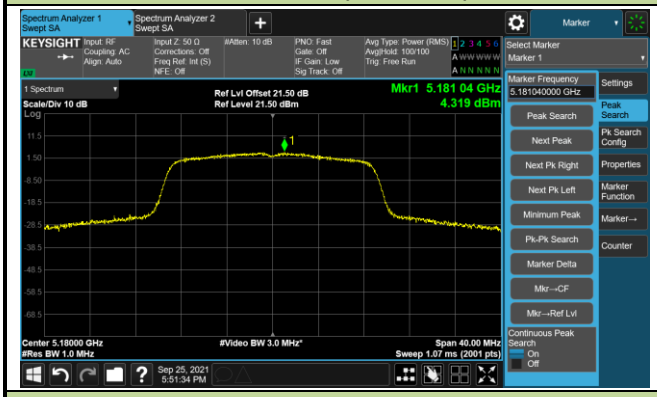
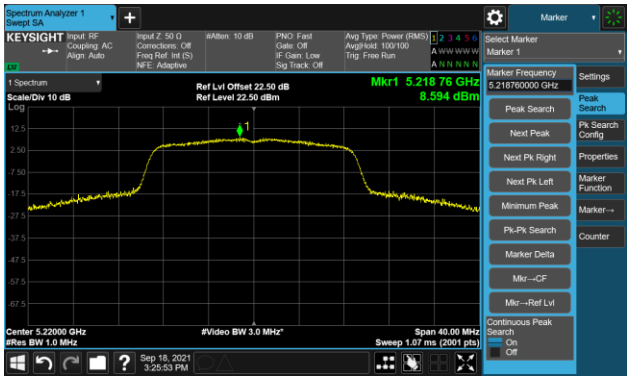
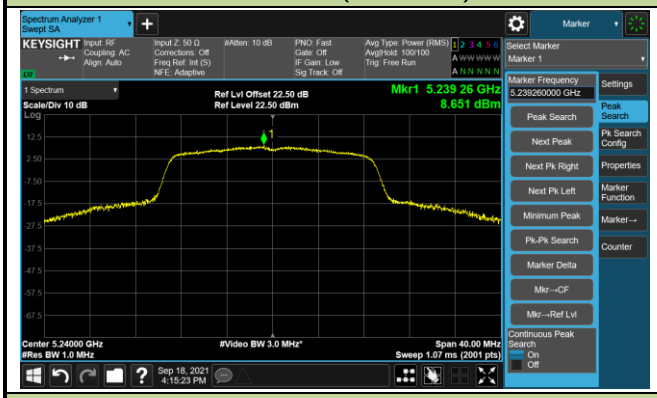
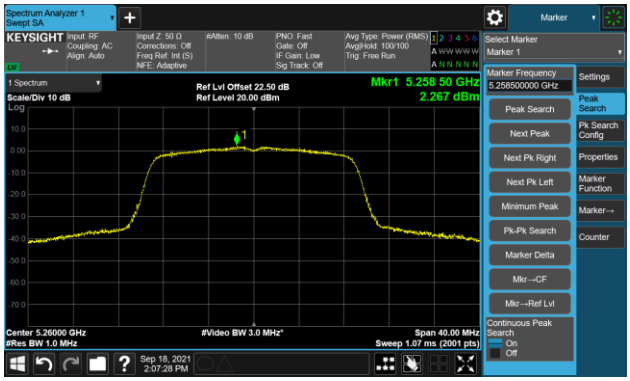
When EUT duty cycle ≥ 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$ +$10^{(\text{Ant 2 AVGPSD}/10)}$ + $10^{(\text{Ant 3 AVGPSD}/10)}$}.

Note 2: PSD Limit (dBm/500KHz) = 30 - (8.02 - 6) = 27.98dBm/MHz.

Note 3: The power setting of Beamforming mode is not greater than CDD mode, so only CDD mode result was shown in this section.

802.11a Power Spectral Density - Ant 0	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 64 (5580MHz)
	

Channel 140 (5700MHz)	Channel 149 (5745MHz)
	
Channel 157 (5785MHz)	**Channel 165 (5825MHz)**
	

802.11ac-VHT20 Power Spectral Density - Ant 0	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)