RF MEASUREMENT REPORT

FCC ID:	2AI9TOAW-AP145X
Applicant:	ALE USA Inc.
Product:	OmniAccess Stellar
Model No.:	OAW-AP1451
Brand Name:	Alcatel-Lucent Enterprise
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Result:	Complies
Test Date:	2022-04-04 ~ 2022-06-27

Reviewed By: Sunny Sun

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

Revision History

Report No.	Version	Description	Issue Date	Note
2203RSU063-U3	Rev. 01	Initial Report	2022-08-25	Invalid
2203RSU063-U3	Rev. 02	Add description of antenna	2022-09-15	Valid

Note: For 5470-5850MHz bands, OAW-AP1451 referenced test data from OAW-AP1351 (FCC ID: 2AI9TOAW-AP135X), only spot check in this report; For 5150-5350MHz bands, we do all the tests.

This application is based on the differences between the two models as follows:

1. Identical internal printed circuit board layouts, a common design and components.
2. Enable 5150 ~ 5350MHz of High band chip.
3. Enable 5945 ~ 7125MHz and disable 5150 ~ 5350MHz of Low band chip, also disable 160MHz BW of 5GHz Wi-Fi.
4. There's no change of 2.4GHz Wi-Fi, Bluetooth and Wi-Fi Scan mode.

CONTENTS

1. General Information

1.1. Applicant

ALE USA Inc.

26801 West Agoura Road, Calabasas, CA 91301, United States

1.2. Manufacturer

ALE USA Inc.

26801 West Agoura Road, Calabasas, CA 91301, United States

1.3. Testing Facility

<table>
<tr><td>☒</td><td colspan="5">Test Site – MRT Suzhou Laboratory</td></tr>
<tr><td></td><td colspan="5">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</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="2">A2LA: 3628.01</td><td colspan="3">CNAS: L10551</td></tr>
<tr><td></td><td colspan="2">FCC: CN1166</td><td colspan="3">ISED: CN0001</td></tr>
<tr><td></td><td rowspan="2">VCCI:</td><td>☐R-20025</td><td>☐G-20034</td><td>☐C-20020</td><td>☐T-20020</td></tr>
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<tr><td>☐</td><td colspan="5">Test Site – MRT Shenzhen Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Shenzhen)
1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="2">A2LA: 3628.02</td><td colspan="3">CNAS: L10551</td></tr>
<tr><td></td><td colspan="2">FCC: CN1284</td><td colspan="3">ISED: CN0105</td></tr>
<tr><td>☐</td><td colspan="5">Test Site – MRT Taiwan Laboratory</td></tr>
<tr><td></td><td colspan="5">Laboratory Location (Taiwan)
No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</td></tr>
<tr><td></td><td colspan="5">Laboratory Accreditations</td></tr>
<tr><td></td><td colspan="5">TAF: L3261-190725</td></tr>
<tr><td></td><td colspan="2">FCC: 291082, TW3261</td><td colspan="3">ISED: TW3261</td></tr>
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1.4. Product Information

Product Name	OmniAccess Stellar
Model No.	OAW-AP1451
EUT Identification No.	20220324Sanmple#09 (Radiated) 20220324Sanmple#10 (Conducted)
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	V5.1 Single Mode
Antenna Information	Refer to Section 1.7
Power Type	AC Adapter Input or PoE Input
Operating Environment	Indoor Use
Accessories	
AC Adapter	Model: ADP-50GR B Input: 100-240V ~ 50/60Hz, 1.3A Output: 48.0V, 1.042A, 50.1W MAX
PoE Injector	Model: POE60U-1BT-X Input: 100-240V ~ 1.5A, 50/60Hz Output: 56.0V, 0.535A, 30W PIN 3, 6+ PIN 1, 2 Return Output: 56.0V, 0.535A, 30W PIN 4, 5+ PIN 7, 8 Return

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. AC Power Adapter and PoE Injector are not sold with Product.
3. For this report, we select AC Adapter for testing.

1.5. Radio Specification

Frequency Range	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610 MHz, 5690 MHz, 5775MHz
Type of Modulation	802.11a/n/ac: OFDM 802.11ax: OFDMA
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps 802.11ac: up to 3466.4Mbps 802.11ax: up to 4804Mbps

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

1.6. Working Frequencies

802.11a/n-HT20/ac-VHT20/ax-HE20

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	144	5720 MHz	149	5745 MHz
153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz	--	--	--	--

802.11n-HT40/ac-VHT40/ax-HE40

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
142	5710 MHz	151	5755 MHz	159	5795 MHz

802.11ac-VHT80/ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	T_X Paths	Max Antenna Gain (dBi)	Directional Gain (dBi)		Beamforming Directional Gain (dBi)
				For Power	For PSD	
Wi-Fi Antennas						
PIFA	2400 ~ 2483.5	4	3.9	3.9	9.92	9.92
PIFA & Dipole	5150 ~ 5850	8	3.9	BW≥40M, 3.9 BW=20M, 6.9	12.93	12.93
Dipole	5925 ~ 7125	4	3.8	3.8	9.82	9.82
Scan Antenna						
Dipole	2400 ~ 2483.5	1	3.5	3.5	3.5	--
Dipole	5150 ~ 5250 & 5725 ~5850	1	3.9	3.9	3.9	--
Bluetooth Antenna						
Dipole	2400 ~ 2483.5	1	3.5	3.5	3.5	--

Remark:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows.

Directional gain = $G_{ANT\ Max}$ + 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 $N_{ANT} \leq 4$;

  Array Gain = 0 dB for channel widths ≥ 40 MHz for any N_{ANT};

  Array Gain = 5 log(N_{ANT}/ N_{SS}) dB or 3 dB, whichever is less, for 20MHz channel widths with $N_{ANT} \geq 5$.

2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g. Beamforming Directional gain = $G_{ANT\ Max}$ + 10 log (N_{ANT}/ N_{SS}).

2. Test Configuration

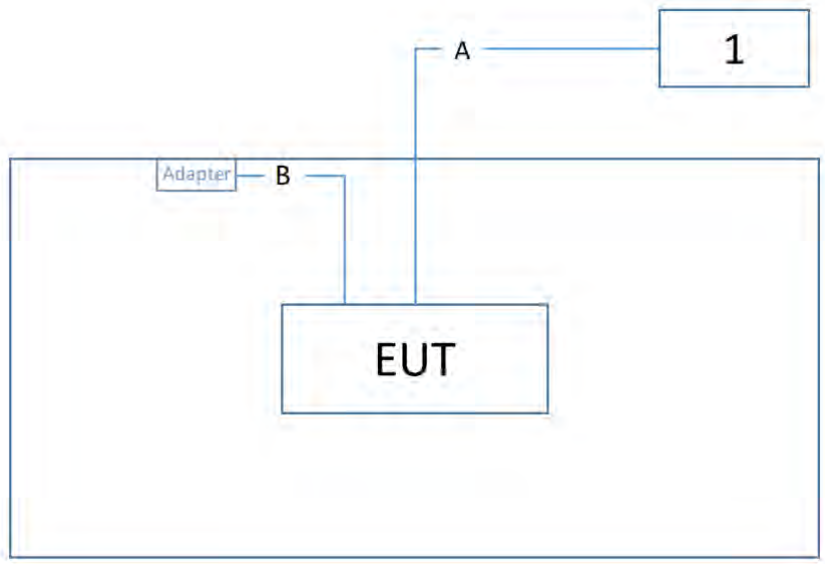
2.1. Test Mode

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 802.11ax-HE20 (MCS0) – CDD Mode
Mode 6: Transmit by 802.11ax-HE40 (MCS0) – CDD Mode
Mode 7: Transmit by 802.11ax-HE80 (MCS0) – CDD Mode
Mode 8: Transmit by 802.11a (6Mbps) - Scan Mode
Mode 9: Transmit by 802.11ac-VHT40 (MCS0) - Scan Mode
Mode 10: Transmit by 802.11ac-VHT80 (MCS0) - Scan Mode
Remark: 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. 2. For radiated spurious emission, the modulation and the date rate picked for testing are determined by the Max. RF conducted power. 3. This device supports 8 Nss and power level is the same of spatial multiplexing. The worst case is Nss=1. 4. After preliminary scan designated by the manufacturer, CDD mode is determined to be the worst case compared to Beamforming mode, hence, all the radiated test is performed in CDD mode. 5. For beamforming operation, manufacturer automatically backs power down based on CDD power. Therefore, only the CDD mode was evaluated in this report. 6. EUT supports one configuration only in 802.11ax full RU mode.

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	Power Cable	Non shielded, 1.25m	
Product		Manufacturer	Model No.
1	Notebook	Dell	Latitude 5491

2.3. Test Software

The test utility software used during testing was “QSPR”, and the version was 5.0-00099.

2.4. 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
- KDB 484596 D01v01

2.5. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 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

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2022-06-09	SIP-AC3
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2023-06-08	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022-11-09	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2022-09-12	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022-11-02	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022-11-28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2023-01-13	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2022-08-26	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022-12-23	SIP-AC3
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022-12-29	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2022-09-16	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2022-11-12	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2022-08-05	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2022-04-29	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2023-04-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2022-06-28	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022-12-29	WZ-AC1
Thermohygrometer	testo	Testo 608-H1	MRTSUE11039	1 year	2022-11-11	WZ-AC1
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2022-10-28	WZ-AC1
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2022-06-08	WZ-SR2
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2023-06-04	WZ-SR2
Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	N/A	N/A	WZ-SR2
Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2022-06-28	WZ-SR2
Four-Line V-Network	R&S	ENV432	MRTSUE06615	1 year	2022-10-13	WZ-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2022-11-01	WZ-SR2
USB Power Sensor	Agilent	U2021XA	MRTSUE06030	1 year	2022-10-10	WZ-SR5
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2022-06-28	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2022-06-24	WZ-SR5/WZ-TR3
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2023-06-04	WZ-SR5/WZ-TR3
Attenuator	MVE	MVE2213	MRTSUE11072	1 year	2022-06-10	WZ-SR5/WZ-TR3
Attenuator	MVE	MVE2213	MRTSUE11072	1 year	2023-06-09	WZ-SR5/WZ-TR3
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2022-10-10	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2022-06-28	WZ-TR3

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802	2.03C	RE Antenna&turntable
Controller_MF 7802BS	1.02	RE Antenna&turntable
BenchVue Power Meter	2021	Power

5. Decision Rules and Measurement Uncertainty

5.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.2. 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)(i), (12)	Peak Power Spectral Density		Pass
15.407(g)	Frequency Stability		Pass
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions	Radiated	Pass
15.205, 15.209 15.407(b)(8), (9), (10)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)		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 of the 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.

High Band spot check list

Test Items	Test Mode	Test Channel	Test Frequency (MHz)
Output power	802.11a	100	5500
	802.11a	157	5785
	802.11ac-VHT80	106	5530
	802.11ac-VHT80	122	5610
	802.11ac-VHT80	155	5775
Radiated Spurious Emission	802.11a	100	5500
	802.11a	157	5785
Radiated Band Edge	802.11ac-VHT80	106	5530
	802.11ac-VHT80	122	5610
	802.11ac-VHT80	155	5775

Scan Mode spot check list

Test Items	Test Mode	Test Channel	Test Frequency (MHz)
Output power	802.11a	44	5220
	802.11a	149	5745
	802.11ac-VHT40	38	5190
	802.11ac-VHT80	155	5775
Radiated Spurious Emission	802.11a	44	5220
	802.11a	149	5745
Radiated Band Edge	802.11ac-VHT40	38	5190
	802.11ac-VHT80	155	5775

6.2. 26dB & 99% Bandwidth Measurement

6.2.1. Test Limit

N/A

6.2.2. Test Procedure

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

KDB 789033 D02v02r01- Section II)D) (99% Bandwidth)

6.2.3. Test Setting

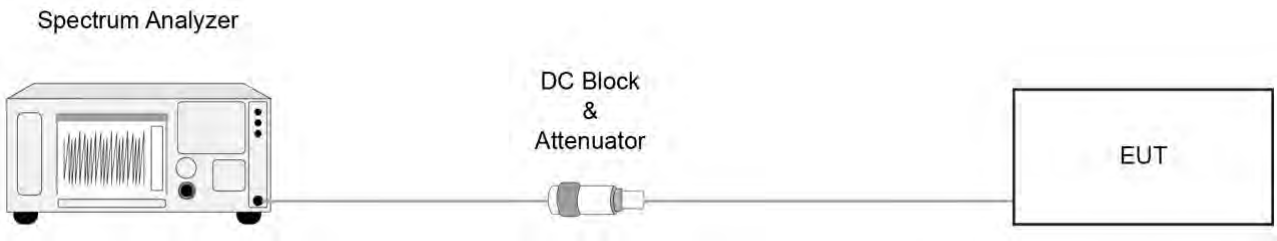
26dB Bandwidth

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth
2. RBW = approximately 1% of the emission bandwidth.
3. VBW > RBW
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 1% to 5% of the OBW
3. VBW ≥ 3 × RBW
4. Span = 1.5 times to 5 times the OBW
5. Detector = peak
6. Trace mode = max hold
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. 6dB Bandwidth Measurement

6.3.1. Test Limit

The minimum 6dBbandwidth shall be at least 500 kHz.

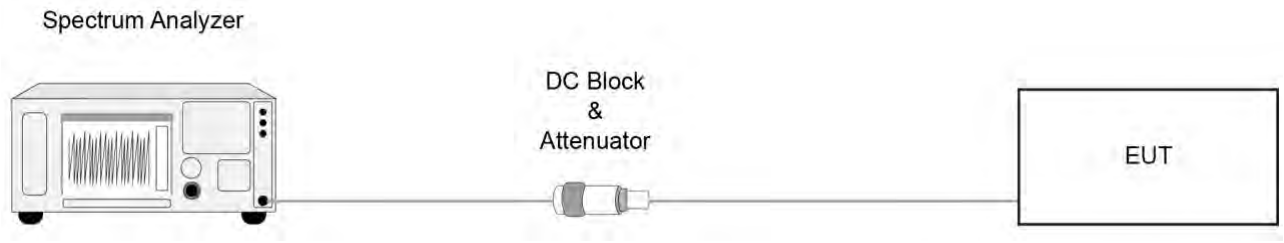
6.3.2. Test Procedure

KDB 789033 D02v02r01- Section II)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.3.

6.4. Output Power Measurement

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

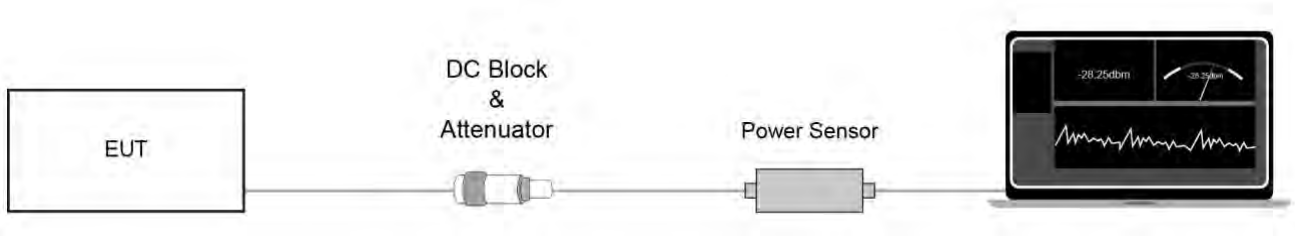
KDB 789033D02v02r01- Section II)E)3)b) Method PM-G

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.4.

6.5. Transmit Power Control Measurement

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.

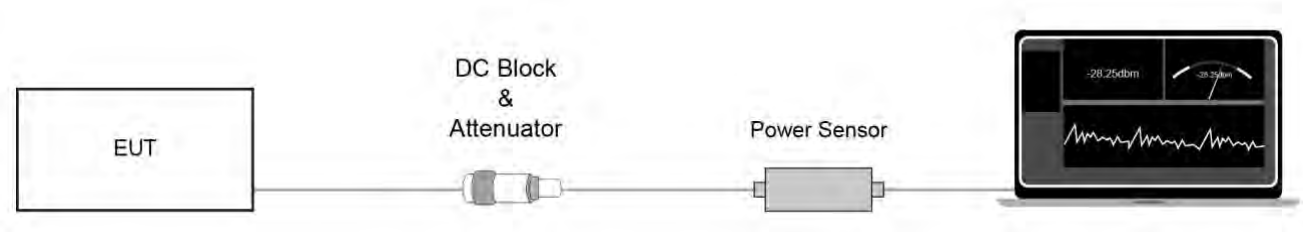
6.5.2. Test Procedure

KDB 789033 D02v01- Section Ⅱ)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 Measurement

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.

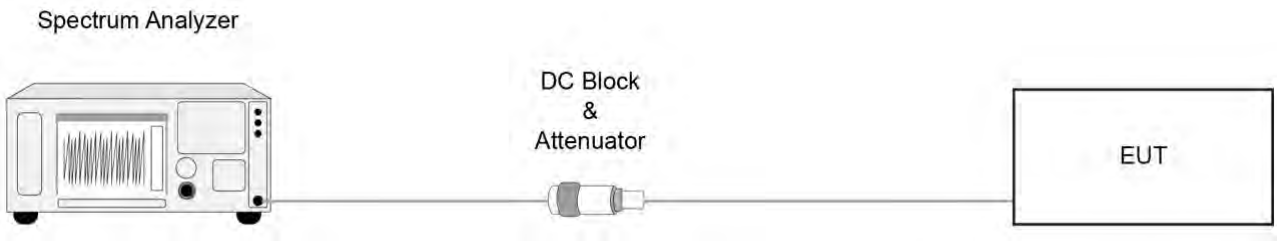
6.6.2. Test Procedure

KDB 789033 D02v02r01-Section Ⅱ)F)

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 (510kHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz)
4. VBW = 3 × RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
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.5.

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

Frequency Stability Under Temperature Variations:

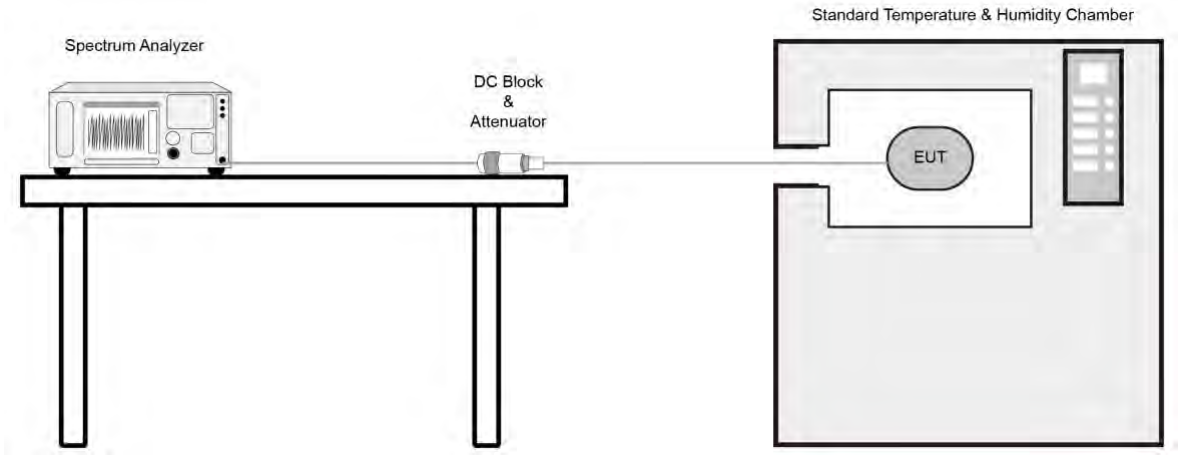
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain 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.6.

6.8. Radiated Spurious Emission Measurement

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 [μV/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

KDB 789033 D02v02r01- Section II)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

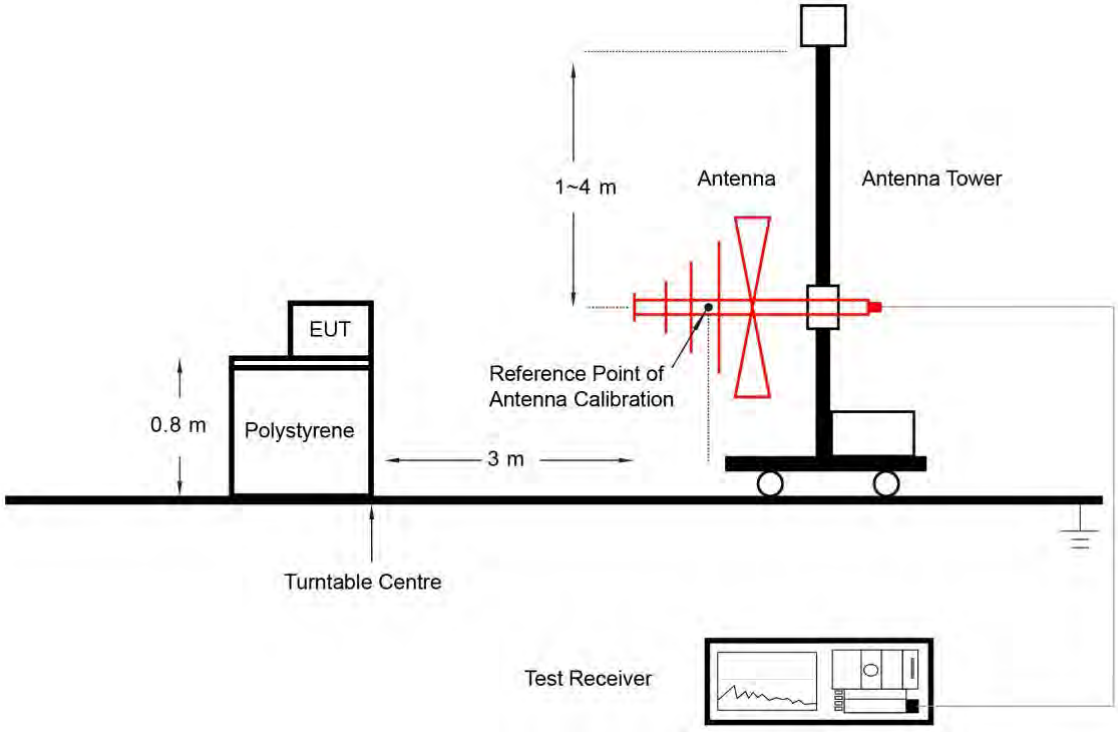
5. Sweep time = auto

6. Trace mode = max hold

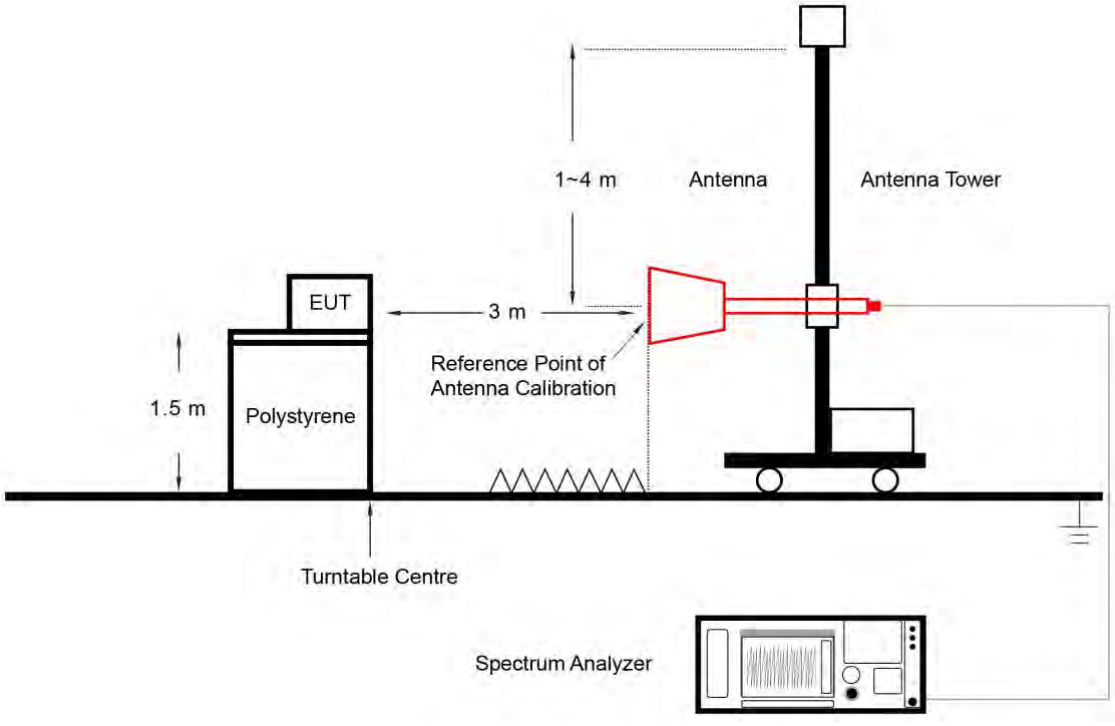
7. Trace was allowed to stabilize

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 Measurement

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 [μV/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

KDB 789033 D02v02r01- Section II)G)

6.9.3. Test Setting

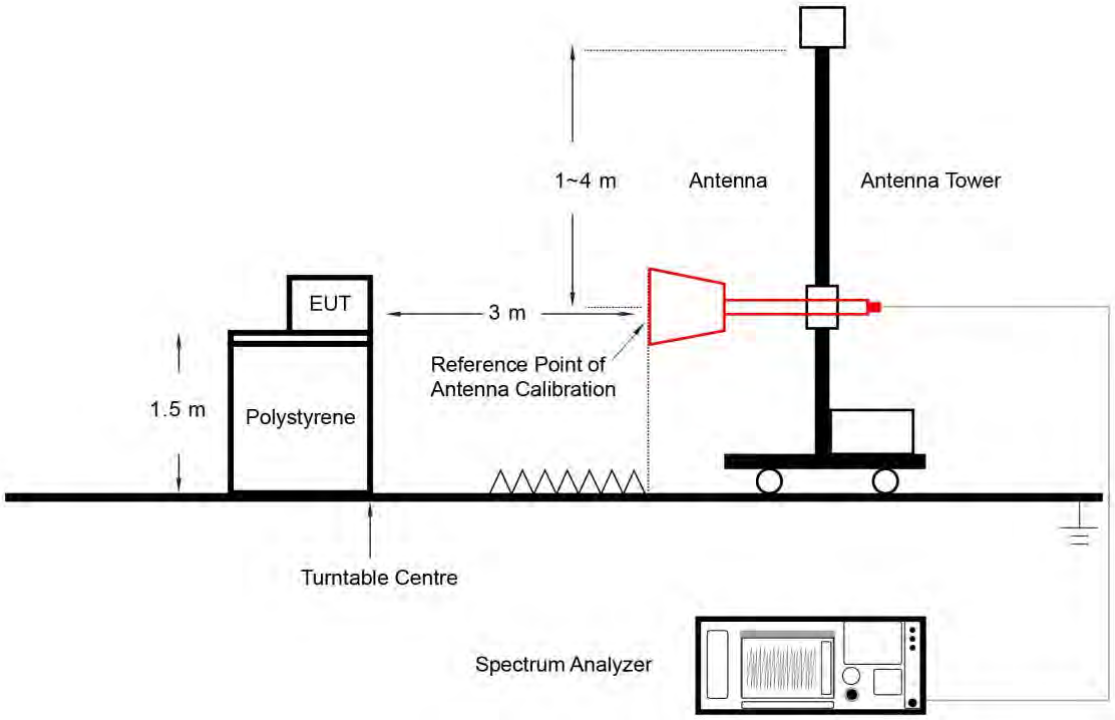
Peak Measurements above 1GHz

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

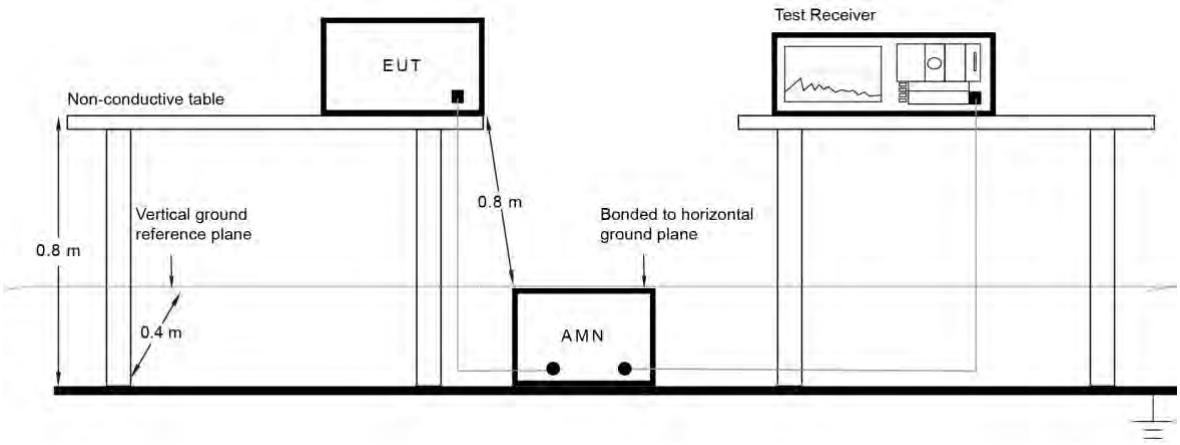
Refer to Appendix A.8.

6.10. AC Conducted Emissions Measurement

6.10.1. Test Limit

FCC Part 15.207 Limits		
Frequency (MHz)	QP (dBµV)	AV (dBµV)
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.

Appendix A – Test Result

A.1 26dB & 99% Bandwidth Test Result

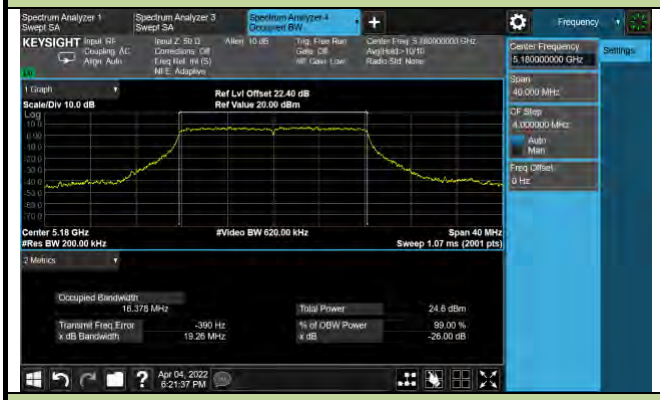
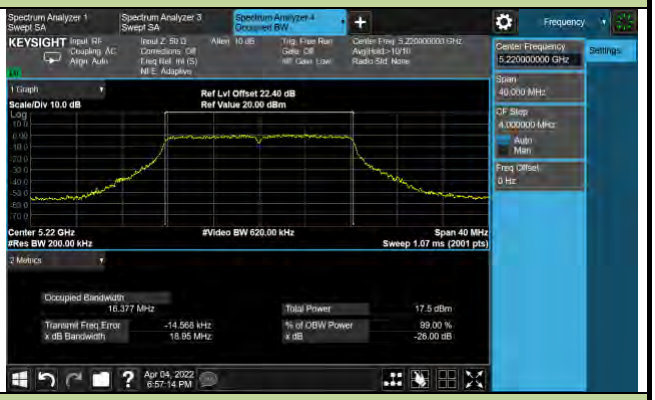
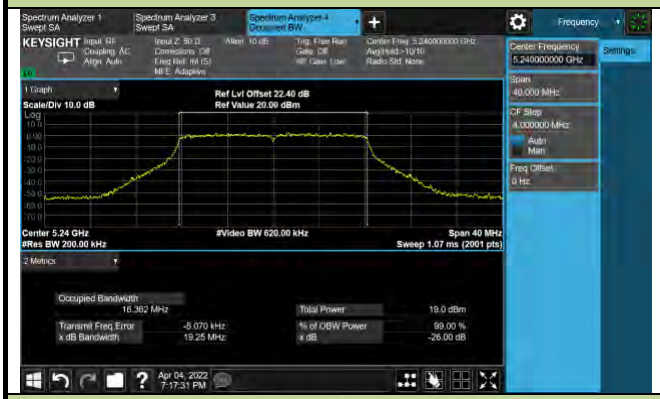
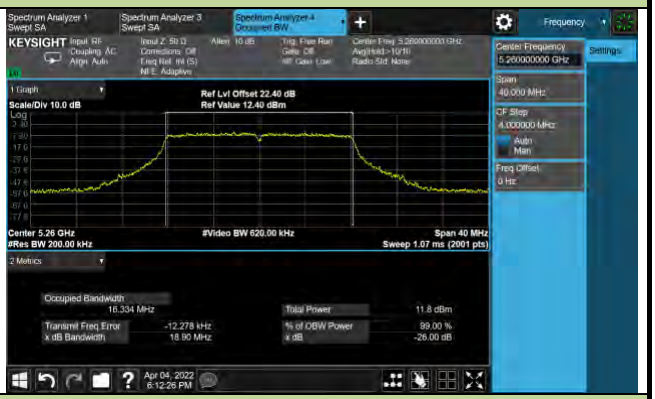
Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2022/04/04~2022/04/08		

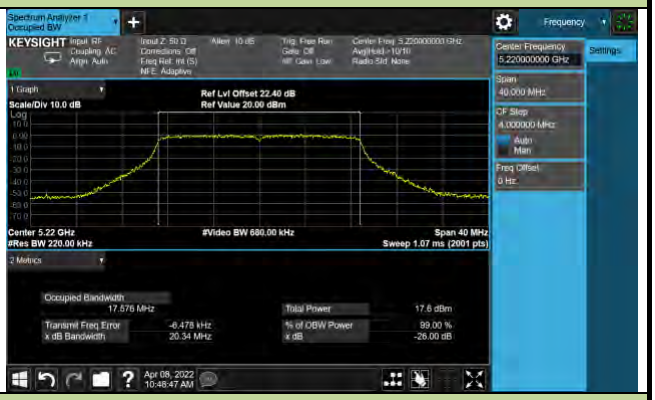
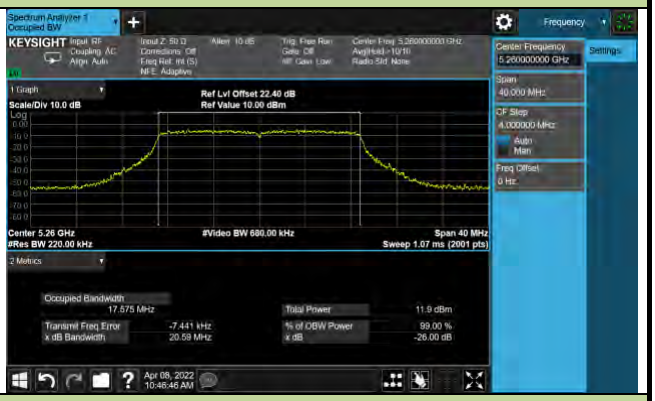
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	6Mbps	36	5180	19.26	16.378
11a	6Mbps	44	5220	18.95	16.377
11a	6Mbps	48	5240	19.25	16.362
11a	6Mbps	52	5260	18.90	16.334
11a	6Mbps	60	5300	18.83	16.340
11a	6Mbps	64	5320	19.09	16.349
11ac-VHT20	MCS0	36	5180	20.15	17.580
11ac-VHT20	MCS0	44	5220	20.34	17.576
11ac-VHT20	MCS0	48	5240	20.75	17.566
11ac-VHT20	MCS0	52	5260	20.59	17.575
11ac-VHT20	MCS0	60	5300	20.30	17.610
11ac-VHT20	MCS0	64	5320	20.19	17.558
11ac-VHT40	MCS0	38	5190	39.84	36.089
11ac-VHT40	MCS0	46	5230	39.66	36.117
11ac-VHT40	MCS0	54	5270	39.93	36.114
11ac-VHT40	MCS0	62	5310	40.08	36.098
11ac-VHT80	MCS0	42	5210	81.63	75.388
11ac-VHT80	MCS0	58	5290	81.05	75.263
11ax-HE20	MCS0	36	5180	20.97	18.937
11ax-HE20	MCS0	44	5220	20.66	18.918
11ax-HE20	MCS0	48	5240	20.81	18.908
11ax-HE20	MCS0	52	5260	20.91	18.933
11ax-HE20	MCS0	60	5300	21.04	18.911
11ax-HE20	MCS0	64	5320	21.26	18.935
11ax-HE40	MCS0	38	5190	40.76	37.709
11ax-HE40	MCS0	46	5230	40.77	37.773
11ax-HE40	MCS0	54	5270	40.86	37.771
11ax-HE40	MCS0	62	5310	40.77	37.809
11ax-HE80	MCS0	42	5210	81.88	77.147
11ax-HE80	MCS0	58	5290	81.64	77.095

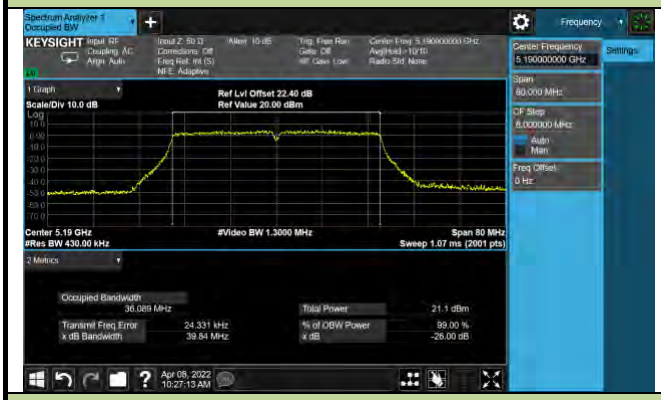
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	F_H (MHz)	Limit (MHz)
802.11a	6Mbps	48	5240	5248.181	< 5250
802.11ac-VHT20	MCS0	48	5240	5248.783	< 5250
802.11ac-VHT40	MCS0	46	5230	5248.059	< 5250
802.11ac-VHT80	MCS0	42	5210	5247.694	< 5250
802.11ax-HE20	MCS0	48	5240	5249.454	< 5250
802.11ax-HE40	MCS0	46	5230	5248.887	< 5250
802.11ax-HE80	MCS0	42	5210	5248.574	< 5250

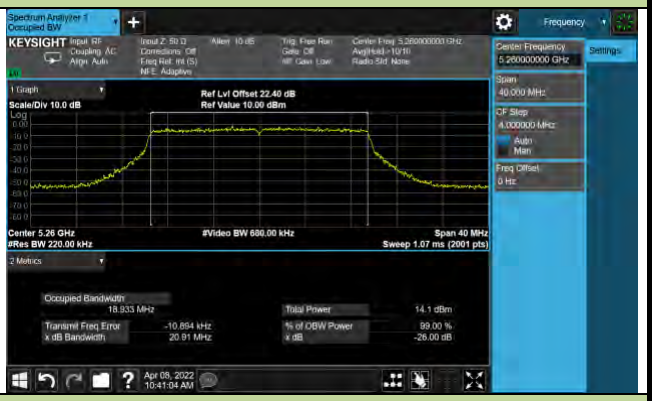
Note: F_H = Centre frequency + 99% OBW / 2

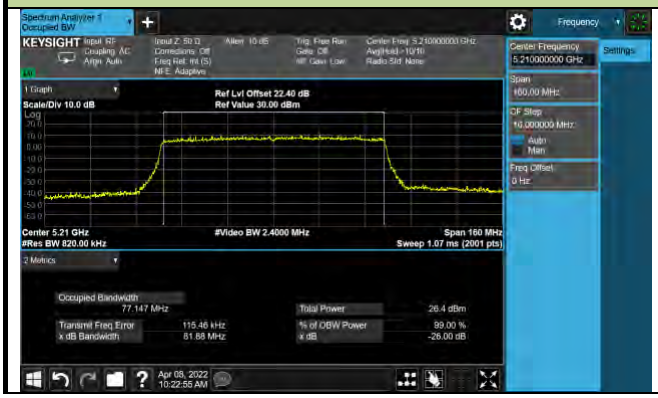
For example, 802.11a 5240MHz, F_H = 5240 MHz + 16.362 MHz / 2 = 5248.181 MHz.

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

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

802.11ac-VHT40 26dB & 99% Bandwidth	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 26dB & 99% Bandwidth	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 26dB & 99% Bandwidth	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 26dB & 99% Bandwidth	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 26dB & 99% Bandwidth	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

A.2 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2022/04/26		

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	Ant 4	Ant 5	Ant 6	Ant 7		
11a	6Mbps	100	5500	4.21	4.77	4.42	3.44	5.22	4.91	4.55	4.55	13.57	22.86
11a	6Mbps	157	5785	17.67	18.31	17.52	19.00	17.67	16.84	17.18	16.53	26.69	29.10
11ac-VHT80	MCS0	106	5530	12.10	12.21	11.92	11.41	13.09	12.52	11.82	12.10	21.20	23.98
11ac-VHT80	MCS0	122	5610	11.69	12.49	11.93	11.61	11.33	11.11	10.88	10.37	20.50	23.98
11ac-VHT80	MCS0	155	5775	17.46	17.37	17.27	18.01	16.89	17.23	16.99	16.66	26.28	30.00

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)} + 10^{(\text{Ant 3 Average Power }/10)} + 10^{(\text{Ant 4 Average Power }/10)} + 10^{(\text{Ant 5 Average Power }/10)} + 10^{(\text{Ant 6 Average Power }/10)} + 10^{(\text{Ant 7 Average Power }/10)}\}$.

Scan Mode

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2022/04/26		

Test Mode	Data Rate MCS	Ch No.	Freq. (MHz)	Average Power (dBm)	Average Power Limit (dBm)
11a	6Mbps	44	5220	16.02	30.00
11a	6Mbps	149	5745	15.67	30.00
11ac-VHT40	MCS0	38	5190	10.95	30.00
11ac-VHT80	MCS0	155	5775	15.89	30.00

Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2022/04/26		

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	Ant 4	Ant 5	Ant 6	Ant 7		
11a	6Mbps	36	5180	12.83	10.81	12.66	11.65	10.97	11.57	11.49	12.80	20.95	29.10
11a	6Mbps	44	5220	12.95	11.26	11.72	11.01	11.80	12.11	12.03	13.30	21.12	29.10
11a	6Mbps	48	5240	13.02	11.60	11.92	10.82	11.65	12.12	11.62	12.80	21.03	29.10
11a	6Mbps	52	5260	6.48	5.00	5.86	4.65	5.60	5.60	5.10	6.23	14.64	22.85
11a	6Mbps	60	5300	6.45	5.40	5.75	4.99	5.92	5.81	5.20	5.98	14.74	22.85
11a	6Mbps	64	5320	5.89	5.66	6.20	4.97	5.56	5.41	4.62	5.98	14.59	22.85
11ac-VHT20	MCS0	36	5180	12.76	10.55	12.49	11.35	11.36	11.98	11.76	12.52	20.93	29.10
11ac-VHT20	MCS0	44	5220	13.05	11.08	12.45	11.72	11.53	12.32	12.10	12.98	21.23	29.10
11ac-VHT20	MCS0	48	5240	12.99	10.96	12.10	11.06	12.01	12.12	12.13	12.43	21.05	29.10
11ac-VHT20	MCS0	52	5260	7.00	5.03	6.15	5.08	6.20	6.58	6.11	6.44	15.15	23.08
11ac-VHT20	MCS0	60	5300	7.08	6.06	6.37	5.68	6.56	6.43	6.29	6.33	15.40	23.08
11ac-VHT20	MCS0	64	5320	6.92	6.07	6.62	6.02	6.50	6.35	6.01	6.29	15.39	23.08
11ac-VHT40	MCS0	38	5190	16.30	14.32	15.81	14.56	15.12	15.58	15.36	16.22	24.49	30.00
11ac-VHT40	MCS0	46	5230	16.56	14.32	15.63	14.51	15.02	15.80	15.46	16.35	24.55	30.00
11ac-VHT40	MCS0	54	5270	9.93	8.35	9.10	8.13	8.86	9.60	8.82	9.39	18.09	23.98
11ac-VHT40	MCS0	62	5310	9.98	8.89	9.35	8.21	9.26	9.68	8.99	9.16	18.25	23.98
11ac-VHT80	MCS0	42	5210	19.33	17.19	18.42	17.33	18.17	18.56	18.37	19.45	27.45	30.00
11ac-VHT80	MCS0	58	5290	13.03	11.66	12.42	11.11	12.02	12.42	11.68	12.36	21.15	23.98
11ax-HE20	MCS0	36	5180	13.90	11.50	13.26	12.60	12.02	12.78	12.36	14.55	22.00	29.10
11ax-HE20	MCS0	44	5220	14.49	11.73	13.05	12.19	12.60	12.83	12.86	14.01	22.09	29.10
11ax-HE20	MCS0	48	5240	14.28	11.85	13.04	11.53	12.33	12.88	12.62	13.42	21.85	29.10
11ax-HE20	MCS0	52	5260	7.85	6.11	7.02	5.83	6.66	7.33	6.88	6.95	15.90	23.08
11ax-HE20	MCS0	60	5300	7.41	5.98	6.73	6.15	6.62	6.70	6.38	6.75	15.64	23.08
11ax-HE20	MCS0	64	5320	7.11	6.41	6.81	6.11	6.51	6.60	6.13	6.26	15.54	23.08
11ax-HE40	MCS0	38	5190	16.38	14.23	15.93	14.93	15.01	15.55	15.36	16.26	24.54	30.00
11ax-HE40	MCS0	46	5230	15.96	13.97	15.30	14.13	14.62	14.93	14.96	15.93	24.06	30.00
11ax-HE40	MCS0	54	5270	10.46	9.08	9.86	8.68	9.57	10.06	9.43	10.18	18.73	23.98
11ax-HE40	MCS0	62	5310	10.07	8.96	9.45	8.46	9.49	9.63	9.13	9.56	18.40	23.98

11ax-HE80	MCS0	42	5210	19.45	17.35	18.67	17.59	18.37	18.59	18.46	19.56	27.60	30.00
11ax-HE80	MCS0	58	5290	13.25	12.03	12.65	11.43	12.33	12.53	12.15	12.92	21.47	23.98

Note: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)} + 10^{(\text{Ant 2 Average Power }/10)} + 10^{(\text{Ant 3 Average Power }/10)} + 10^{(\text{Ant 4 Average Power }/10)} + 10^{(\text{Ant 5 Average Power }/10)} + 10^{(\text{Ant 6 Average Power }/10)} + 10^{(\text{Ant 7 Average Power }/10)}\}$.

A.3 Power Spectral Density Test Result

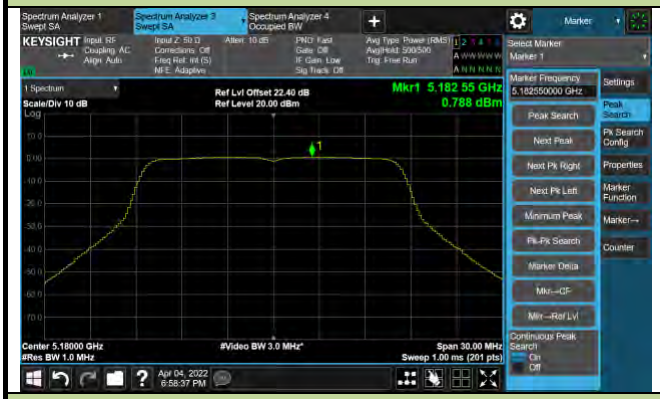
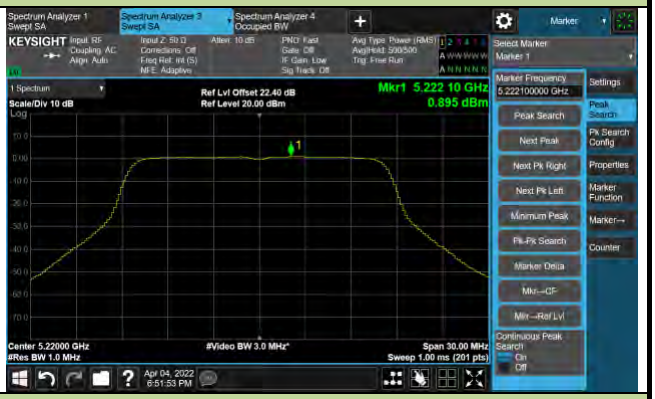
Test Site	WZ-SR5	Test Engineer	Luis Yang
Test Date	2022/04/04~2022/04/08		
Test Item	Power Spectral Density (UNII-Band 1 & UNII-2a)		

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	Ant 4	Ant 5	Ant 6	Ant 7			
11a	6Mbps	36	5180	0.79	-1.14	0.47	0.11	-0.84	0.02	-0.04	0.84	92.69	9.44	10.07
11a	6Mbps	44	5220	0.90	-0.63	0.01	-0.59	-0.38	0.60	-0.03	0.92	92.69	9.50	10.07
11a	6Mbps	48	5240	0.72	-0.43	0.13	-0.86	0.01	0.11	0.08	1.00	92.69	9.49	10.07
11a	6Mbps	52	5260	-5.31	-7.05	-5.80	-6.94	-6.45	-5.91	-6.53	-5.20	92.69	3.26	4.07
11a	6Mbps	60	5300	-5.47	-6.40	-5.57	-6.75	-5.88	-5.31	-6.27	-5.50	92.69	3.49	4.07
11a	6Mbps	64	5320	-5.52	-6.00	-5.28	-6.75	-6.06	-6.04	-6.95	-5.85	92.69	3.34	4.07
11ac-VHT20	MCS0	36	5180	0.79	-1.41	0.05	-0.75	-0.54	-0.08	-0.36	1.36	93.60	9.28	10.07
11ac-VHT20	MCS0	44	5220	1.15	-1.36	0.14	-1.24	-0.29	0.84	0.30	1.15	93.60	9.50	10.07
11ac-VHT20	MCS0	48	5240	1.24	-1.27	0.02	-0.86	-0.47	0.75	0.34	0.68	93.60	9.44	10.07
11ac-VHT20	MCS0	52	5260	-5.02	-6.86	-5.98	-6.73	-6.15	-4.95	-5.66	-5.61	93.60	3.50	4.07
11ac-VHT20	MCS0	60	5300	-4.97	-6.68	-5.19	-6.15	-5.62	-5.31	-5.79	-5.93	93.60	3.64	4.07
11ac-VHT20	MCS0	64	5320	-5.53	-5.80	-5.79	-6.58	-5.76	-5.36	-5.91	-6.20	93.60	3.47	4.07
11ac-VHT40	MCS0	38	5190	1.27	-1.12	0.71	-0.21	-0.52	0.72	0.38	0.94	93.58	9.66	10.07
11ac-VHT40	MCS0	46	5230	1.30	-1.11	0.27	-0.63	-0.22	1.18	0.83	0.98	93.58	9.72	10.07
11ac-VHT40	MCS0	54	5270	-5.30	-7.17	-6.07	-6.91	-6.20	-4.94	-5.65	-5.51	93.58	3.41	4.07
11ac-VHT40	MCS0	62	5310	-5.29	-6.43	-5.69	-6.69	-5.70	-5.17	-5.74	-5.66	93.58	3.55	4.07
11ac-VHT80	MCS0	42	5210	1.18	-1.83	-0.02	-0.96	-0.40	0.67	0.06	0.89	93.75	9.36	10.07
11ac-VHT80	MCS0	58	5290	-5.07	-6.59	-5.57	-7.00	-6.15	-5.22	-5.76	-5.55	93.75	3.49	4.07
11ax-HE20	MCS0	36	5180	0.96	-1.13	0.46	-0.14	-0.50	0.56	0.01	1.74	94.76	9.59	10.07
11ax-HE20	MCS0	44	5220	1.67	-1.23	0.55	-0.50	-0.23	0.81	0.36	1.20	94.76	9.68	10.07
11ax-HE20	MCS0	48	5240	1.01	-1.25	0.10	-1.04	-0.74	0.42	0.39	1.02	94.76	9.33	10.07
11ax-HE20	MCS0	52	5260	-4.84	-6.65	-5.33	-6.74	-5.67	-4.46	-5.34	-4.89	94.76	3.84	4.07
11ax-HE20	MCS0	60	5300	-5.34	-6.17	-5.57	-6.14	-5.94	-5.00	-5.79	-5.51	94.76	3.60	4.07
11ax-HE20	MCS0	64	5320	-5.37	-5.90	-5.61	-6.19	-5.84	-5.54	-6.40	-6.02	94.76	3.42	4.07
11ax-HE40	MCS0	38	5190	1.16	-1.89	0.61	-0.51	-0.60	0.50	-0.12	1.39	94.08	9.47	10.07
11ax-HE40	MCS0	46	5230	1.11	-1.76	0.09	-1.20	-0.57	0.50	0.25	0.92	94.08	9.31	10.07
11ax-HE40	MCS0	54	5270	-4.89	-6.58	-5.55	-6.45	-5.60	-4.87	-5.31	-5.22	94.08	3.78	4.07
11ax-HE40	MCS0	62	5310	-5.25	-6.54	-5.72	-6.54	-5.59	-5.15	-5.59	-5.39	94.08	3.60	4.07

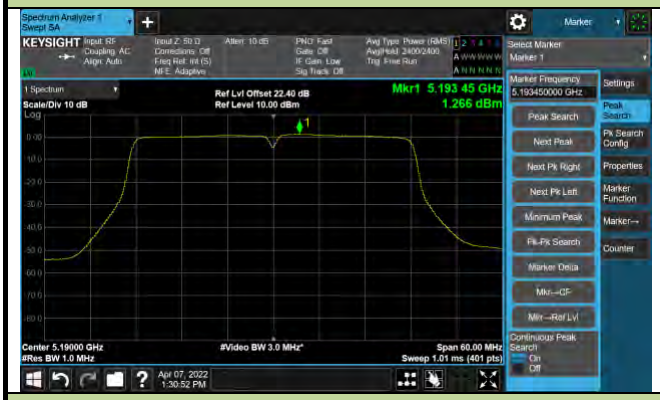
11ax-HE80	MCS0	42	5210	1.58	-1.34	0.41	-0.53	0.29	1.04	0.82	1.79	94.11	9.91	10.07
11ax-HE80	MCS0	58	5290	-5.07	-6.38	-5.41	-6.57	-5.74	-5.16	-5.45	-5.21	94.11	3.70	4.07

Note: When EUT duty cycle < 98%, the total PSD (dBm/MHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$ +$10^{(\text{Ant 2 AVGPSD}/10)}$ + $10^{(\text{Ant 3 AVGPSD}/10)}$ +$10^{(\text{Ant 4 AVGPSD}/10)}$ + $10^{(\text{Ant 5 AVGPSD}/10)}$ +$10^{(\text{Ant 6 AVGPSD}/10)}$ + $10^{(\text{Ant 7 AVGPSD}/10)}$} +10*log (1/Duty cycle).

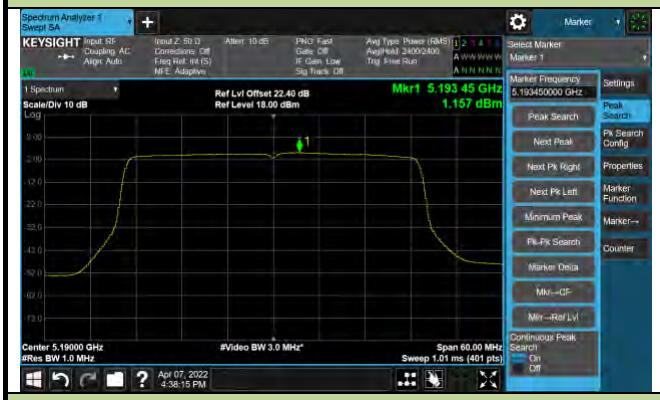
When EUT duty cycle ≥ 98%, the total PSD (dBm/MHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$ +$10^{(\text{Ant 2 AVGPSD}/10)}$ + $10^{(\text{Ant 3 AVGPSD}/10)}$ +$10^{(\text{Ant 4 AVGPSD}/10)}$ + $10^{(\text{Ant 5 AVGPSD}/10)}$ +$10^{(\text{Ant 6 AVGPSD}/10)}$ + $10^{(\text{Ant 7 AVGPSD}/10)}$}.

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)
	

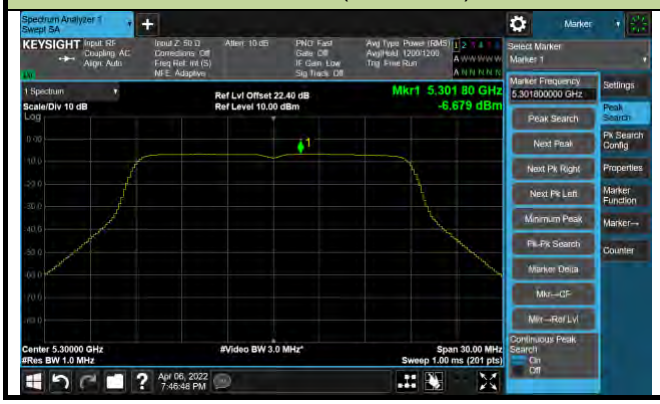
802.11ac-VHT20 Power Spectral Density- Ant 0	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

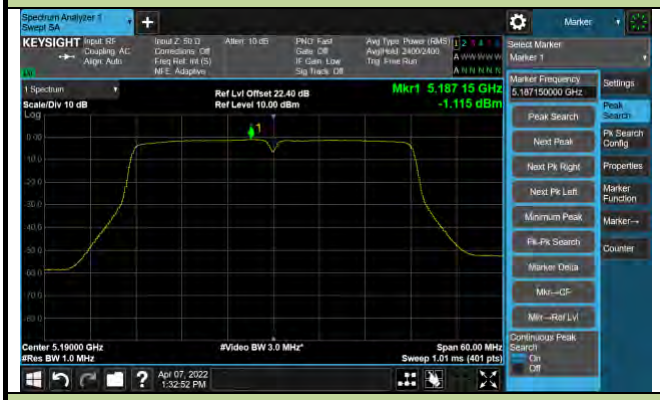
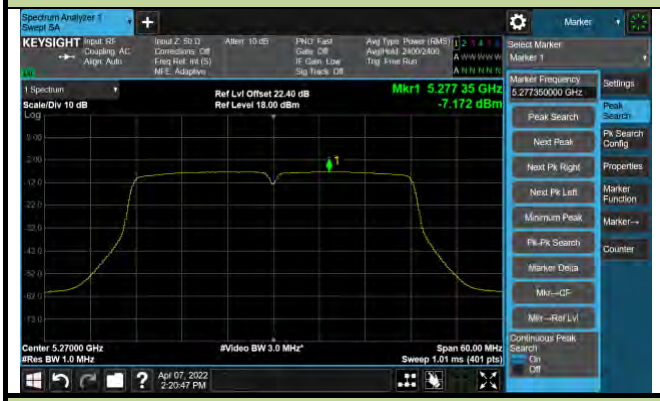
802.11ac-VHT40 Power Spectral Density- Ant 0	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 0	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 0	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

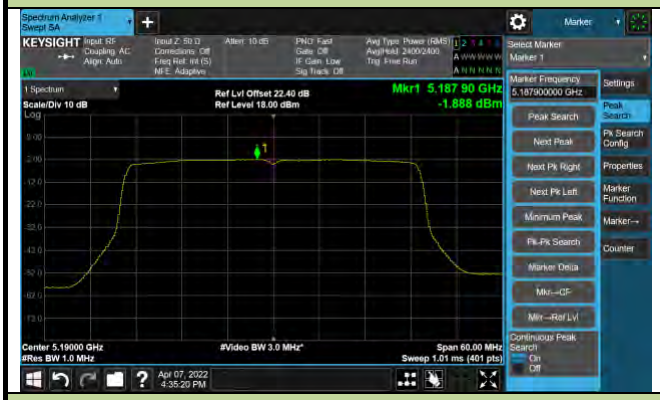
802.11ax-HE40 Power Spectral Density- Ant 0	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 0	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

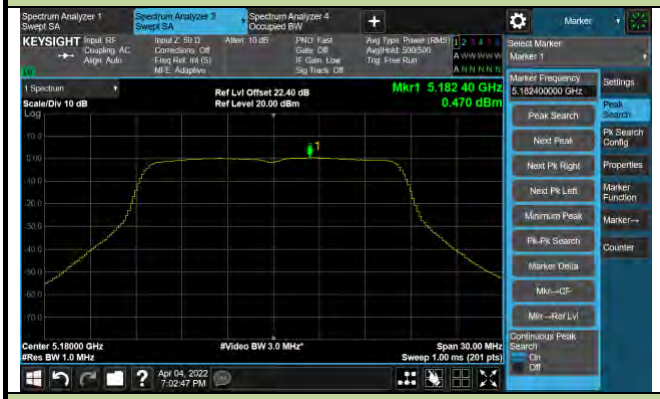
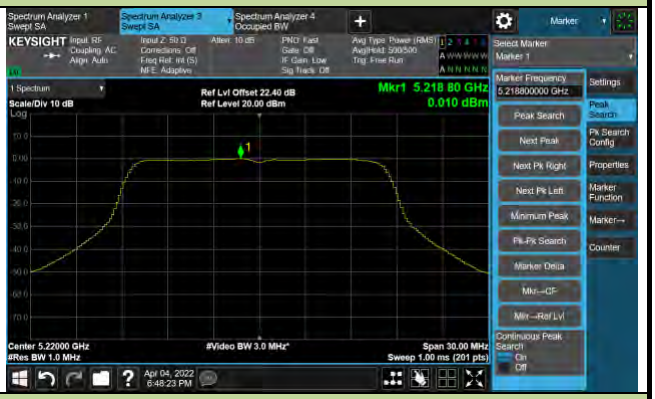
802.11a Power Spectral Density- Ant 1	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT20 Power Spectral Density- Ant 1	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

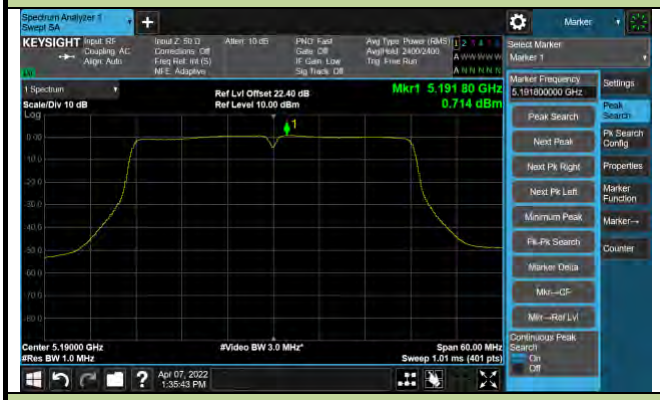
802.11ac-VHT40 Power Spectral Density- Ant 1	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 1	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 1	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 Power Spectral Density- Ant 1	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 1	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11a Power Spectral Density- Ant 2	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

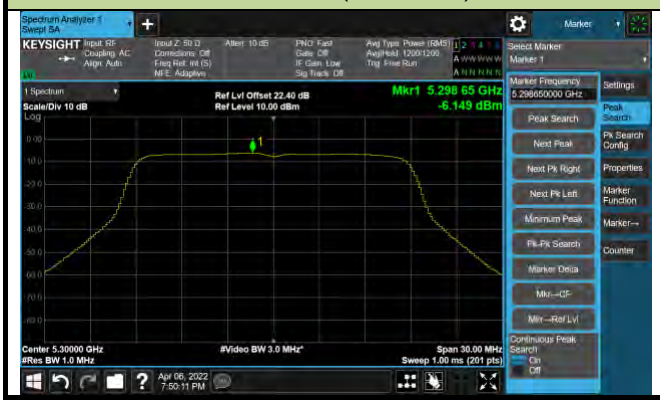
802.11ac-VHT20 Power Spectral Density- Ant 2	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

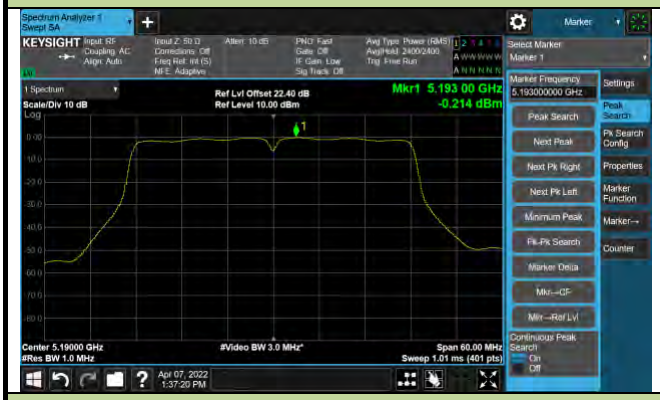
802.11ac-VHT40 Power Spectral Density- Ant 2	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 2	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 2	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 Power Spectral Density- Ant 2	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 2	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

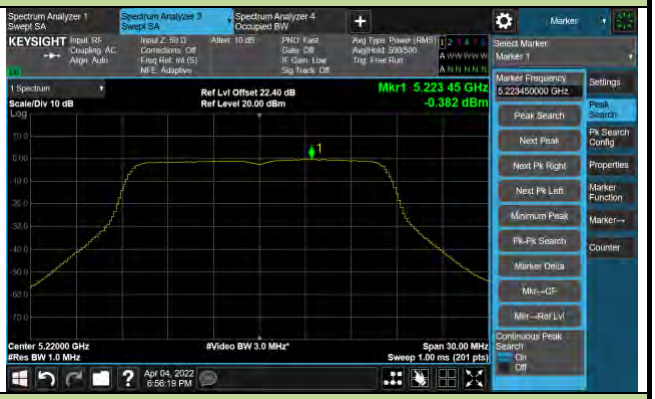
802.11a Power Spectral Density- Ant 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT20 Power Spectral Density- Ant 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT40 Power Spectral Density- Ant 3	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 3	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 3	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 Power Spectral Density- Ant 3	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 3	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

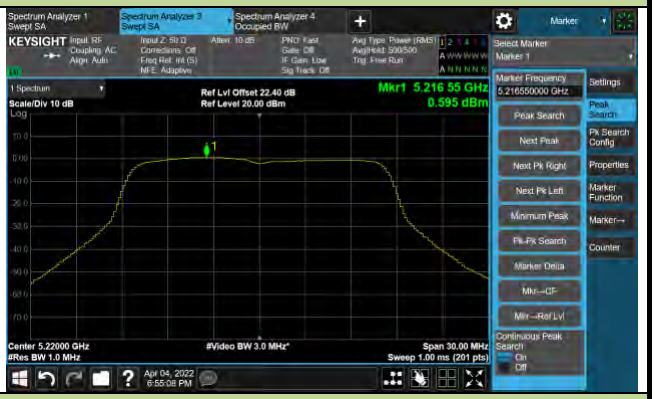
802.11a Power Spectral Density- Ant 4	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT20 Power Spectral Density- Ant 4	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT40 Power Spectral Density- Ant 4	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 4	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 4	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 Power Spectral Density- Ant 4	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 4	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11a Power Spectral Density- Ant 5	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

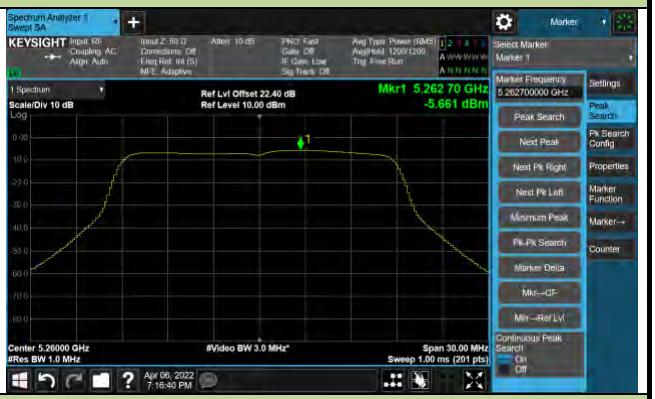
802.11ac-VHT20 Power Spectral Density- Ant 5	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

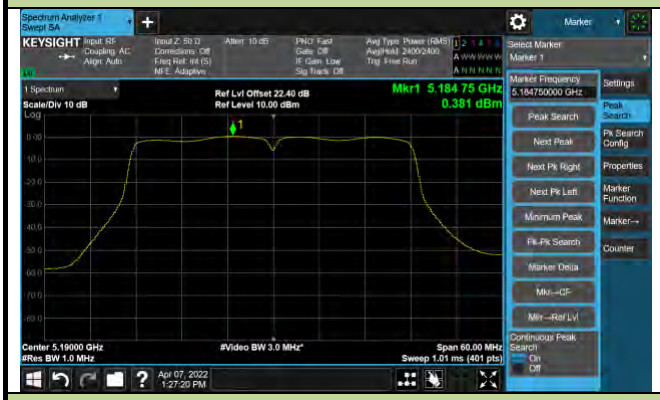
802.11ac-VHT40 Power Spectral Density- Ant 5	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 5	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11ax-HE20 Power Spectral Density- Ant 5	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ax-HE40 Power Spectral Density- Ant 5	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ax-HE80 Power Spectral Density- Ant 5	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	

802.11a Power Spectral Density- Ant 6	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT20 Power Spectral Density- Ant 6	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

802.11ac-VHT40 Power Spectral Density- Ant 6	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
802.11ac-VHT80 Power Spectral Density- Ant 6	
Channel 42 (5210MHz)	Channel 58 (5290MHz)