RF MEASUREMENT REPORT

FCC ID:	P27R8CLARO
Applicant:	Sercomm Corporation
Application Type:	Certification
Product:	MÓDEM(Fibra óptica)
Model No.:	R8
Brand Name:	SERCOMM
FCC Classification:	Unlicensed National Information Infrastructure (NII)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407)
Test Date:	December 02 ~ 20, 2021

Reviewed By: Jame Yuan

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2111RSU080-U2	Rev. 01	Initial Report	01-13-2022	Invalid
2111RSU080-U2	Rev. 02	Add note about adapter	01-18-2022	Valid

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1. General Information

1.1. Applicant

Sercomm Corporation

8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

1.2. Manufacturer

Sercomm Corporation

8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

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	MÓDEM(Fibra óptica)
Model No.	R8
Brand Name	SERCOMM
Wi-Fi Specification	802.11a/b/g/n/ac
Antenna Information	Refer to section 1.7
Serial Number	53434F4DA0B00026
Accessories	
Adapter 1#	Model No.: PU18W120ULB18-DLP-00 Input Power: 100 - 240V ~ 50/60Hz, 0.7A Output Power: 12V dc 1.5A 18W
Adapter 2#	Model No.: MS-V1500R120-018H0-US Input Power: 100 - 240V ~ 50/60Hz, 0.6A max Output Power: 12V dc 1.5A
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. Adapter 2# was used for all RF testing.	

1.5. Radio Specification

Frequency Range	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40: 5190~5230MHz, 5270~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5290MHz, 5530MHz, 5610 MHz, 5690MHz, 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 1733.2Mbps

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	151	5755 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
PIFA & Dipole Antenna	2412 ~ 2462	2	3.3	--	3.3	6.31
	5150 ~ 5250	4	4.1	10.12	4.1	10.12
	5250 ~ 5350	4	4.1	10.12	4.1	10.12
	5470 ~ 5725	4	4.1	10.12	4.1	10.12
	5725 ~ 5850	4	4.0	10.02	4.0	10.02

Remark:

1. The EUT supports Cyclic Delay Diversity (CDD) mode except 802.11b 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 802.11ac, not include 802.11a/b/g/n. BF Directional gain = G_{ANT} + 10 log (N_{ANT}).

2. Test Configuration

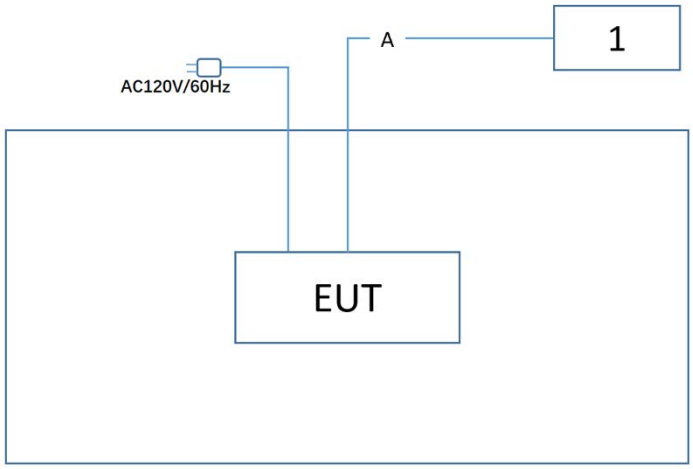
2.1. Test Mode

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: 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.

2.2. Test System Connection Diagram

Connection Diagram – Radiated Emission & 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	E495

2.4. Test Software

The test utility software used during testing was “accessMTool.exe”, and the version was 3.2.1.4.

Note: Final power setting please refer to operational description.

2.5. Applied Standards

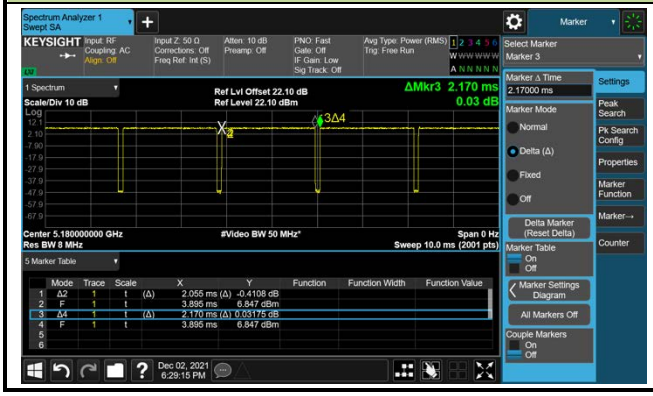
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

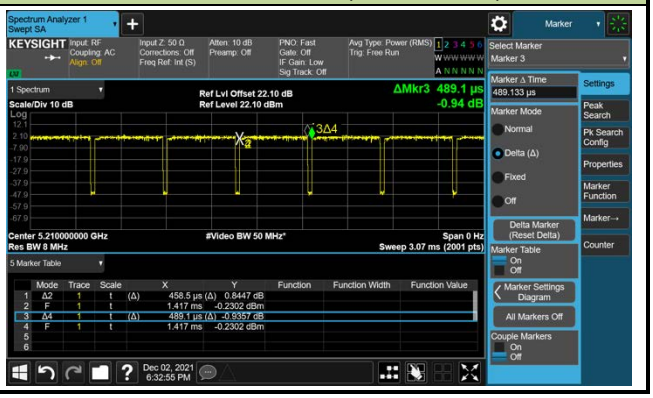
- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 662911 D01v02r01
- ANSI C63.10-2013

2.6. Duty Cycle

5GHz (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. 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	94.70%
802.11ac-VHT20	97.96%
802.11ac-VHT40	96.64%
802.1ac-VHT80	93.74%

Duty Cycle (T = Transmission Duration)	
802.11a (T = 2.055ms)	802.11ac-VHT20 (T = 1.920ms)
	

Duty Cycle (T = Transmission Duration)	
802.11ac-VHT40 (T = 947.5us)	802.11ac-VHT80 (T = 458.5us)
	

2.7. Test Environment Condition

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

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the device is **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
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06292	1 year	2022/10/20	NS-AC1
Anechoic Chamber	BOOMWAVE	NS-AC1	MRTSUE06496	1 year	2022/7/24	NS-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06572	1 year	2022/3/14	NS-AC1
TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06573	1 year	2022/6/29	NS-AC1
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06574	1 year	2022/7/12	NS-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06575	1 year	2022/6/27	NS-AC1
Thermohygrometer	DELI	NO.8813	MRTSUE06588	1 year	2022/6/30	NS-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06641	1 year	2022/1/14	NS-AC1
Signal Analyzer	Agilent	N9010A	MRTSUE06195	1 year	2022/3/17	NS-AC1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2021/12/24	SIP-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2022/11/8	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2022/8/5	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2022/11/2	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2022/11/28	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2022/8/26	SIP-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/1/12	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2022/6/24	SIP-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/6/24	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2022/10/31	SIP-AC3
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2022/6/9	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022/11/9	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2022/9/12	SIP-AC3

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022/11/2	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022/11/28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2022/1/14	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2022/8/26	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2021/12/24	SIP-AC3
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2022/6/8	SIP-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2022/6/24	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2022/11/28	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	/	/	SIP-SR2
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2022/2/23	SIP-TR1
Thermohygrometer	testo	Testo 608-H1	MRTSUE11022	1 year	2022/11/2	SIP-TR1
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2022/8/8	SIP-TR1
Signal Generator	R&S	SMU200A	MRTSUE06489	1 year	2022/2/23	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06595	1 year	2022/9/7	SIP-TR1
USB Power Sensor	Keysight	U2021XA	MRTSUE06596	1 year	2022/9/7	SIP-TR1
Signal Generator	Keysight	N5182B	MRTSUE06605	1 year	2022/10/31	SIP-TR1

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)	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 Limits)	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

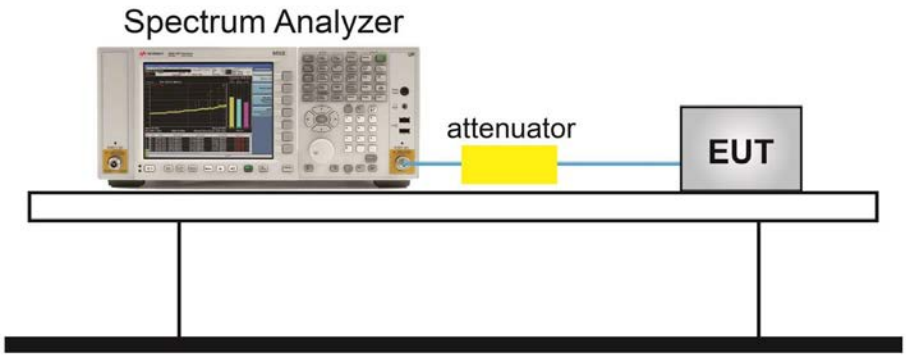
6.2.2. Test Procedure used

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.

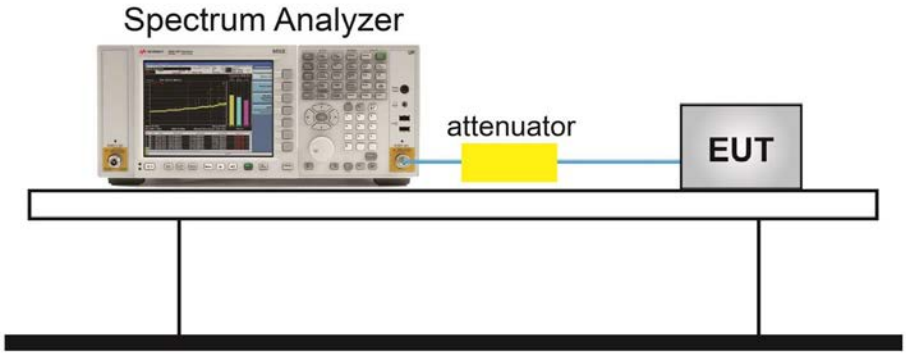
6.3.2. Test Procedure used

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

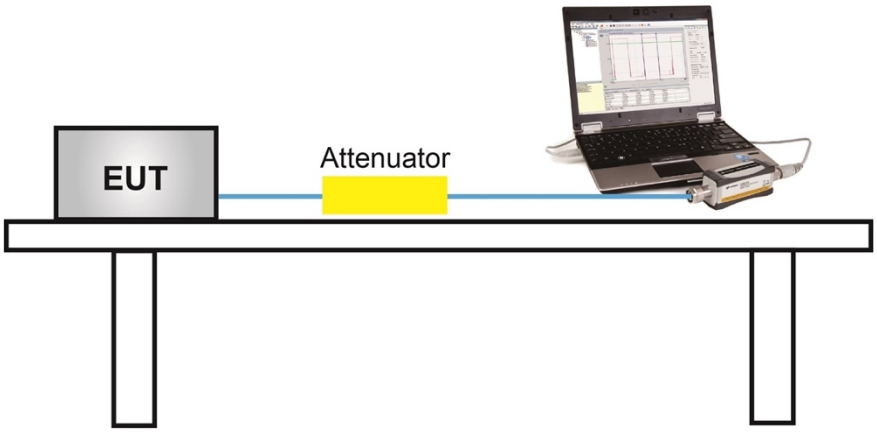
KDB 789033D02v02r01- Section E)3)b) Method PM-G

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.

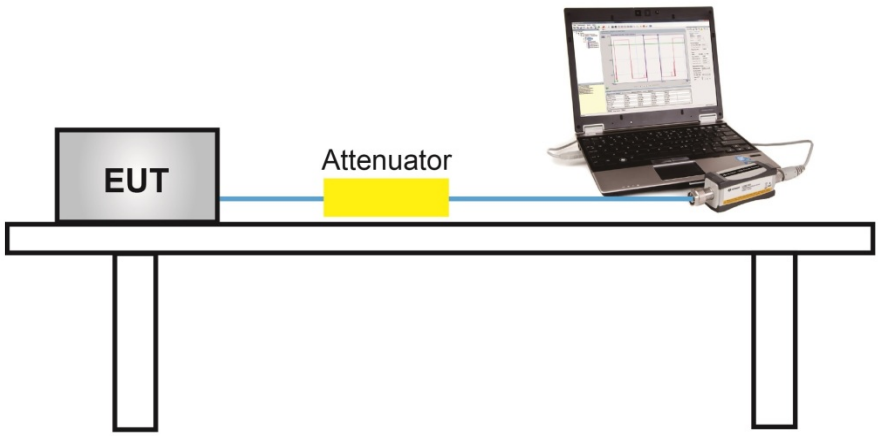
6.5.2. Test Procedure Used

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.

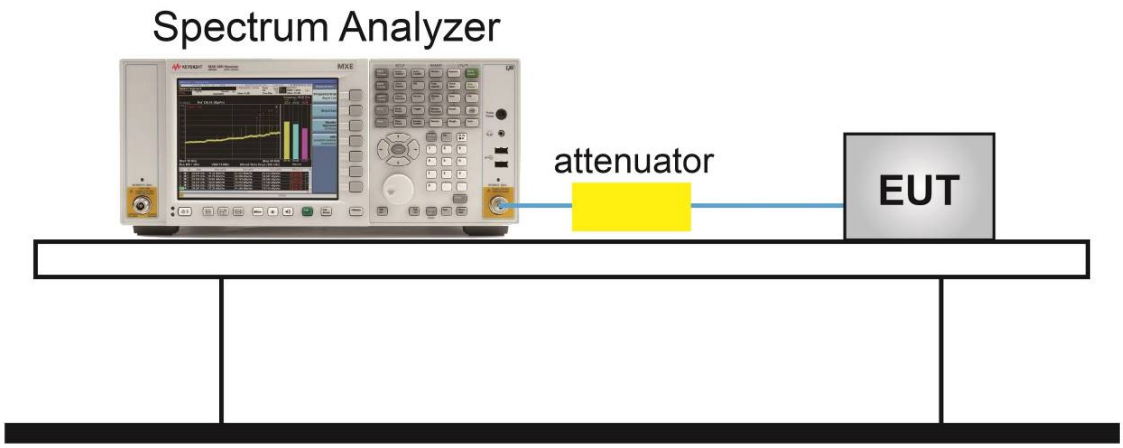
6.6.2. Test Procedure Used

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. Radiated Spurious Emission

6.7.1. 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

6.7.2. Test Procedure Used

KDB 789033 D02v02r01- Section G

6.7.3. 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

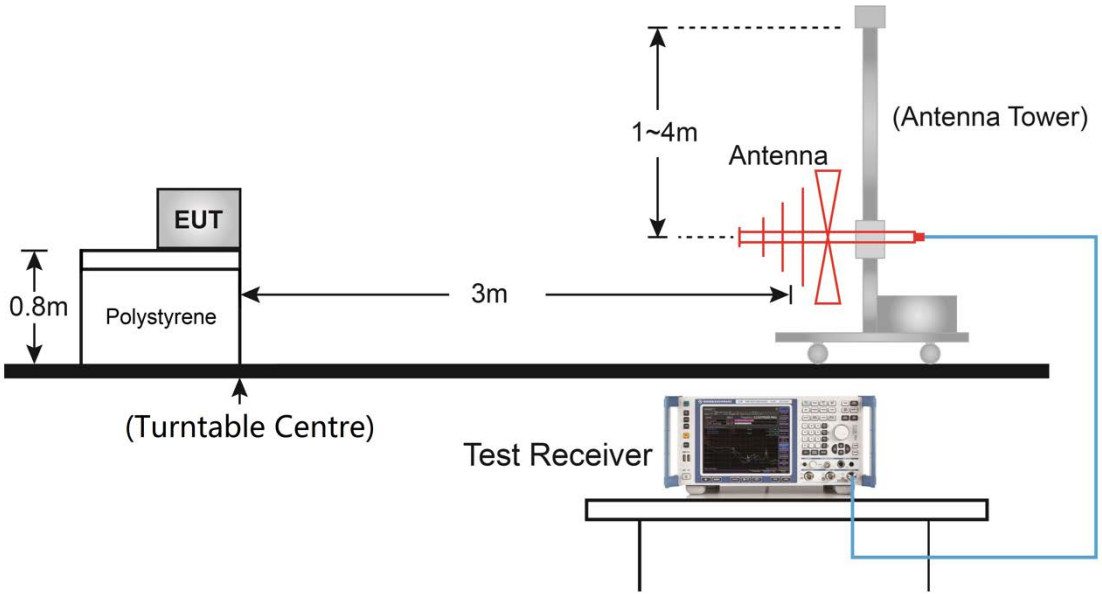
5. Sweep time = auto

6. Trace mode = max hold

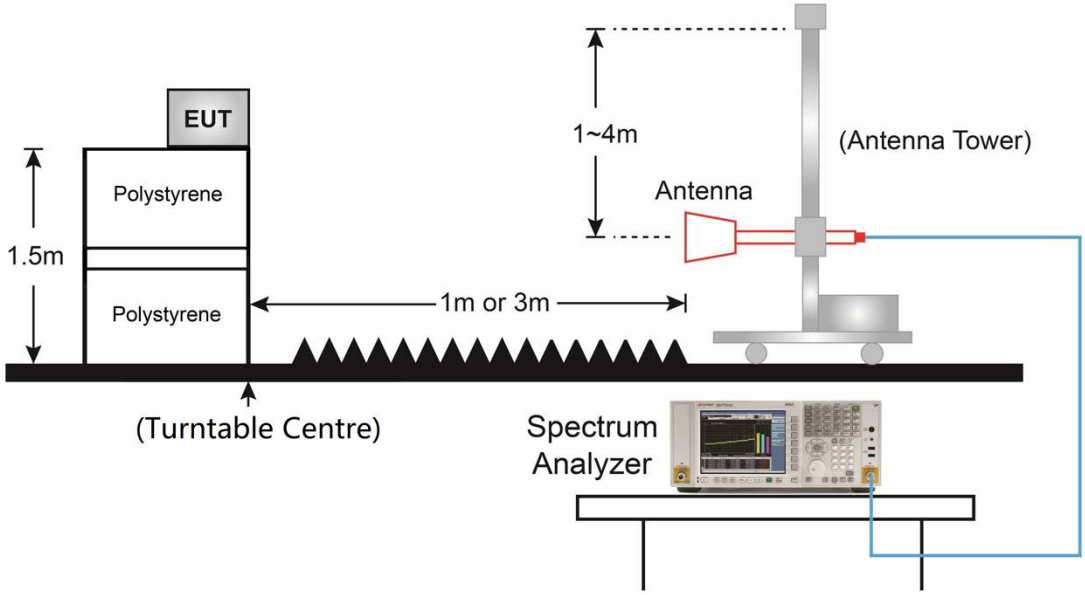
7. Trace was allowed to stabilize

6.7.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.7.5. Test Result

Refer to Appendix A.6.

6.8. Radiated Restricted Band Edge

6.8.1. 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

6.8.2. Test Procedure Used

KDB 789033 D02v02r01- Section G

6.8.3. Test Setting

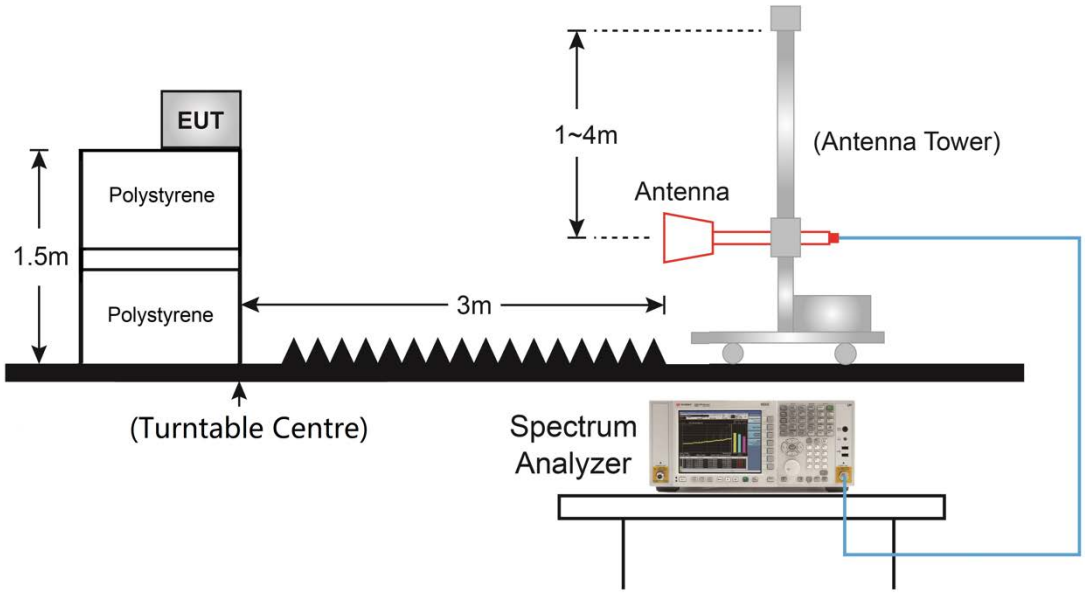
Peak Measurements above 1GHz

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

6.8.4. Test Setup



6.8.5. Test Result

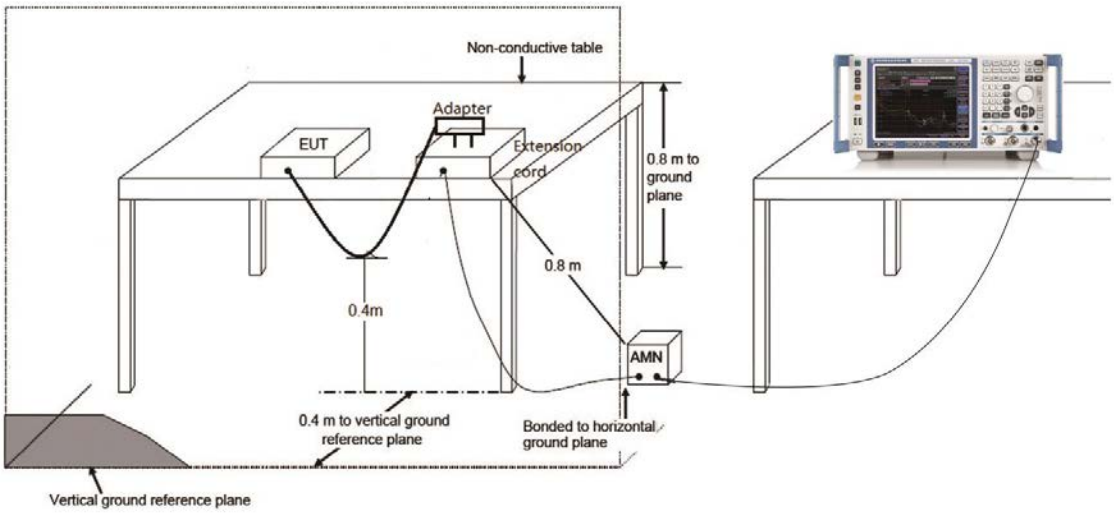
Refer to Appendix A.7.

6.9. AC Conducted Emissions

6.9.1. 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.		

6.9.2. Test Setup



6.9.3. 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 & 99% Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/12/10~2021/12/13		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	6Mbps	36	5180	21.55	16.84
802.11a	6Mbps	44	5220	21.41	16.86
802.11a	6Mbps	48	5240	21.37	16.86
802.11a	6Mbps	52	5260	21.29	16.85
802.11a	6Mbps	60	5300	21.35	16.87
802.11a	6Mbps	64	5320	21.35	16.88
802.11a	6Mbps	100	5500	21.36	16.92
802.11a	6Mbps	116	5580	21.39	16.88
802.11a	6Mbps	140	5700	21.42	16.85
802.11a	6Mbps	144	5720	21.35	16.86
802.11a	6Mbps	149	5745	37.05	20.03
802.11a	6Mbps	157	5785	36.93	20.19
802.11a	6Mbps	165	5825	36.85	19.86
802.11ac-VHT20	MCS0	36	5180	21.69	17.96
802.11ac-VHT20	MCS0	44	5220	21.62	18.04
802.11ac-VHT20	MCS0	48	5240	21.58	17.96
802.11ac-VHT20	MCS0	52	5260	21.73	18.01
802.11ac-VHT20	MCS0	60	5300	21.74	17.99
802.11ac-VHT20	MCS0	64	5320	21.66	17.95
802.11ac-VHT20	MCS0	100	5500	21.64	17.99
802.11ac-VHT20	MCS0	116	5580	21.50	17.95
802.11ac-VHT20	MCS0	140	5700	21.58	17.98
802.11ac-VHT20	MCS0	144	5720	21.78	17.94
802.11ac-VHT20	MCS0	149	5745	38.99	19.78
802.11ac-VHT20	MCS0	157	5785	37.85	19.51
802.11ac-VHT20	MCS0	165	5825	39.07	19.77

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11ac-VHT40	MCS0	38	5190	40.25	36.35
802.11ac-VHT40	MCS0	46	5230	67.30	37.00
802.11ac-VHT40	MCS0	54	5270	40.18	36.32
802.11ac-VHT40	MCS0	62	5310	40.17	36.30
802.11ac-VHT40	MCS0	102	5510	40.10	36.28
802.11ac-VHT40	MCS0	110	5550	40.24	36.30
802.11ac-VHT40	MCS0	134	5670	40.32	36.47
802.11ac-VHT40	MCS0	142	5710	40.02	36.38
802.11ac-VHT40	MCS0	151	5755	76.74	38.29
802.11ac-VHT40	MCS0	159	5795	78.26	38.94
802.11ac-VHT80	MCS0	42	5210	80.99	75.00
802.11ac-VHT80	MCS0	58	5290	82.32	75.87
802.11ac-VHT80	MCS0	106	5530	81.63	75.65
802.11ac-VHT80	MCS0	122	5610	81.49	75.68
802.11ac-VHT80	MCS0	138	5690	82.39	75.94
802.11ac-VHT80	MCS0	155	5775	144.10	76.34

Test Mode	Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	F_H (MHz)	F_L (MHz)	Result
802.11a	48	5240	16.787	5248.42	--	< 5250
802.11ac-VHT20	48	5240	17.927	5248.98	--	< 5250
802.11ac-VHT40	46	5230	36.414	5248.30	--	< 5250
802.11ac-VHT80	42	5210	74.916	5247.74	--	< 5250

Note: F_H is the frequency of the upper marker resulting from the 99% BW.

F_L is the frequency of the lower marker resulting from the 99% BW.

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 144 (5720MHz)
	
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 144 (5720MHz)
	
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 142 (5710MHz)
	

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 138 (5690MHz)	Channel 155 (5775MHz)
	

A.2 6dB Bandwidth Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/12/10		

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	6Mbps	149	5745	16.39	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.39	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.37	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	17.62	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.62	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	17.62	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	36.36	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	36.34	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	75.83	≥ 0.5	Pass

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	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/12/06	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	19.28	17.84	18.09	17.60	24.27	≤ 30.00
11a	MCS0	44	5220	19.12	17.87	18.05	17.84	24.27	≤ 30.00
11a	MCS0	48	5240	19.04	17.72	17.66	17.63	24.08	≤ 30.00
11a	6Mbps	52	5260	12.39	11.21	11.35	11.38	17.63	≤ 23.98
11a	6Mbps	60	5300	12.59	11.45	11.36	11.06	17.68	≤ 23.98
11a	6Mbps	64	5320	12.87	11.30	11.23	11.08	17.70	≤ 23.98
11a	6Mbps	100	5500	12.78	11.82	11.24	11.15	17.82	≤ 23.98
11a	6Mbps	116	5580	12.83	11.72	11.24	11.32	17.85	≤ 23.98
11a	6Mbps	140	5700	12.51	11.64	11.32	11.24	17.73	≤ 23.98
11a	6Mbps	144	5720	12.55	11.98	11.56	11.43	17.92	≤ 22.95
11a	6Mbps	149	5745	19.59	19.16	18.85	18.87	25.15	≤ 30.00
11a	6Mbps	157	5785	19.45	18.62	18.46	18.33	24.76	≤ 30.00
11a	6Mbps	165	5825	18.46	17.82	17.56	17.72	23.92	≤ 30.00
11ac-VHT20	MCS0	36	5180	18.76	17.53	17.59	17.36	23.87	≤ 30.00
11ac-VHT20	MCS0	44	5220	19.03	18.08	18.19	18.15	24.40	≤ 30.00
11ac-VHT20	MCS0	48	5240	19.44	18.17	18.03	17.84	24.44	≤ 30.00
11ac-VHT20	MCS0	52	5260	13.26	11.83	11.95	12.43	18.43	≤ 23.98
11ac-VHT20	MCS0	60	5300	13.64	11.84	11.94	12.18	18.48	≤ 23.98
11ac-VHT20	MCS0	64	5320	13.52	11.95	12.08	12.46	18.57	≤ 23.98
11ac-VHT20	MCS0	100	5500	13.62	12.14	11.83	12.11	18.51	≤ 23.98
11ac-VHT20	MCS0	116	5580	13.14	11.48	11.53	11.92	18.09	≤ 23.98
11ac-VHT20	MCS0	140	5700	13.16	12.11	11.82	12.01	18.33	≤ 23.98
11ac-VHT20	MCS0	144	5720	12.84	11.85	11.93	12.18	18.24	≤ 23.01
11ac-VHT20	MCS0	149	5745	20.44	19.65	19.63	19.47	25.83	≤ 30.00
11ac-VHT20	MCS0	157	5785	20.03	19.30	19.03	19.26	25.44	≤ 30.00
11ac-VHT20	MCS0	165	5825	19.31	18.68	18.12	18.24	24.63	≤ 30.00

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	38	5190	15.53	13.91	14.37	14.02	20.53	≤ 30.00
11ac-VHT40	MCS0	46	5230	21.57	19.87	20.23	19.83	26.46	≤ 30.00
11ac-VHT40	MCS0	54	5270	16.08	14.82	14.98	14.61	21.18	≤ 23.98
11ac-VHT40	MCS0	62	5310	13.83	12.82	12.94	12.81	19.14	≤ 23.98
11ac-VHT40	MCS0	102	5510	14.77	13.84	13.11	13.72	19.92	≤ 23.98
11ac-VHT40	MCS0	110	5550	16.27	15.05	14.78	14.84	21.30	≤ 23.98
11ac-VHT40	MCS0	134	5670	15.61	15.44	15.16	14.65	21.25	≤ 23.98
11ac-VHT40	MCS0	142	5710	15.64	15.32	15.14	14.67	21.23	≤ 23.98
11ac-VHT40	MCS0	151	5755	21.30	21.36	21.28	21.15	27.29	≤ 30.00
11ac-VHT40	MCS0	159	5795	21.71	21.83	21.46	21.08	27.55	≤ 30.00
11ac-VHT80	MCS0	42	5210	14.51	13.41	13.51	13.12	19.69	≤ 30.00
11ac-VHT80	MCS0	58	5290	18.45	17.42	17.37	17.47	23.72	≤ 23.98
11ac-VHT80	MCS0	106	5530	14.57	13.44	13.27	13.34	19.71	≤ 23.98
11ac-VHT80	MCS0	122	5610	15.79	15.35	15.46	14.97	21.42	≤ 23.98
11ac-VHT80	MCS0	138	5690	18.15	17.74	17.83	17.34	23.80	≤ 23.98
11ac-VHT80	MCS0	155	5775	20.68	20.04	19.96	19.57	26.10	≤ 30.00

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 5250-5350MHz & 5470-5725MHz, the conducted power limit is as below.

802.11a: 11 + 10 log10 (21.29) = 24.28 > 23.98 dBm

802.11ac-VHT20: 11 + 10 log10 (21.73) = 24.37 > 23.98 dBm

802.11ac-VHT40/ac-VHT80: 11 + 10 log10 B > 23.98dBm

Note 3: For straddle channel, the conducted power limit is as below.

802.11a CH144: 11 + 10 log10 (B) = 22.95dBm, B = 21.35/2 + 5 = 15.68MHz.

802.11ac-VHT20 CH144: 11 + 10 log10 (B) = 23.01dBm, B = 21.78/2 + 5 = 15.89MHz.

802.11ac-VHT40/ac-VHT80: 11 + 10 log10 B > 23.98dBm;

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/12/06	Test Mode	BF 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	18.76	17.53	17.59	17.36	23.87	≤ 25.88
11ac-VHT20	MCS0	44	5220	19.03	18.08	18.19	18.15	24.40	≤ 25.88
11ac-VHT20	MCS0	48	5240	19.44	18.17	18.03	17.84	24.44	≤ 25.88
11ac-VHT20	MCS0	52	5260	13.26	11.83	11.95	12.43	18.43	≤ 19.86
11ac-VHT20	MCS0	60	5300	13.64	11.84	11.94	12.18	18.48	≤ 19.86
11ac-VHT20	MCS0	64	5320	13.52	11.95	12.08	12.46	18.57	≤ 19.86
11ac-VHT20	MCS0	100	5500	13.62	12.14	11.83	12.11	18.51	≤ 19.86
11ac-VHT20	MCS0	116	5580	13.14	11.48	11.53	11.92	18.09	≤ 19.86
11ac-VHT20	MCS0	140	5700	13.16	12.11	11.82	12.01	18.33	≤ 19.86
11ac-VHT20	MCS0	144	5720	12.84	11.85	11.93	12.18	18.24	≤ 18.89
11ac-VHT20	MCS0	149	5745	20.30	19.58	19.37	19.29	25.67	≤ 25.98
11ac-VHT20	MCS0	157	5785	20.04	19.41	19.37	19.51	25.61	≤ 25.98
11ac-VHT20	MCS0	165	5825	19.31	18.68	18.12	18.24	24.63	≤ 25.98

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	38	5190	15.53	13.91	14.37	14.02	20.53	≤ 25.88
11ac-VHT40	MCS0	46	5230	20.59	19.11	19.36	19.26	25.64	≤ 25.88
11ac-VHT40	MCS0	54	5270	14.32	13.38	13.37	13.52	19.69	≤ 19.86
11ac-VHT40	MCS0	62	5310	13.83	12.82	12.94	12.81	19.14	≤ 19.86
11ac-VHT40	MCS0	102	5510	14.73	13.73	12.91	13.19	19.72	≤ 19.86
11ac-VHT40	MCS0	110	5550	14.51	14.00	12.90	13.04	19.68	≤ 19.86
11ac-VHT40	MCS0	134	5670	14.08	13.91	13.53	13.22	19.72	≤ 19.86
11ac-VHT40	MCS0	142	5710	14.13	13.64	13.39	13.45	19.68	≤ 19.86
11ac-VHT40	MCS0	151	5755	19.81	19.57	19.76	19.64	25.72	≤ 25.98
11ac-VHT40	MCS0	159	5795	19.95	19.54	19.65	19.48	25.68	≤ 25.98
11ac-VHT80	MCS0	42	5210	14.51	13.41	13.51	13.12	19.69	≤ 25.88
11ac-VHT80	MCS0	58	5290	14.37	13.31	13.49	13.61	19.73	≤ 19.86
11ac-VHT80	MCS0	106	5530	14.57	13.44	13.27	13.34	19.71	≤ 19.86
11ac-VHT80	MCS0	122	5610	14.26	13.73	13.56	13.35	19.76	≤ 19.86
11ac-VHT80	MCS0	138	5690	14.13	13.83	13.76	13.10	19.74	≤ 19.86
11ac-VHT80	MCS0	155	5775	19.95	19.42	19.70	19.42	25.65	≤ 25.98

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 5150-5250MHz, the conducted power limit = 30 – (10.12 - 6) = 25.88 dBm.

For 5250-5350MHz & 5470-5725MHz, the conducted power limit is as below.

802.11ac-VHT20: 11 + 10 log10 (21.73) – (10.12 - 6)= 20.25 > 23.98 – (10.12 - 6) = 19.86 dBm.

802.11ac-VHT40/ac-VHT80: 11 + 10 log10 B – (10.12 - 6)> 23.98 – (10.12 - 6) = 19.86 dBm;

Note 3: For straddle channel, the conducted power limit is as below.

802.11ac-VHT20 CH144: 11 + 10 log10 (B) – (10.12 - 6)= 18.89 dBm, B = 21.78/2 + 5 = 15.89MHz.

802.11ac-VHT40/ac-VHT80: 11 + 10 log10 B – (10.12 - 6)> 23.98 – (10.12 - 6) = 19.86 dBm;

For 5725-5850MHz, the conducted power limit = 30 – (10.02 - 6) = 25.98 dBm.

A.4 Power Spectral Density Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/12/12~2021/12/20	Test Mode	CDD Mode

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	7.12	5.80	6.84	6.16	94.70	12.77	≤ 12.88
11a	6Mbps	44	5220	7.22	5.95	6.64	6.05	94.70	12.75	≤ 12.88
11a	6Mbps	48	5240	7.04	5.78	6.47	6.12	94.70	12.63	≤ 12.88
11a	6Mbps	52	5260	1.14	-0.24	0.02	-0.56	94.70	6.40	≤ 6.88
11a	6Mbps	60	5300	0.90	0.06	-0.20	-0.03	94.70	6.46	≤ 6.88
11a	6Mbps	64	5320	1.10	0.33	0.06	-0.34	94.70	6.58	≤ 6.88
11a	6Mbps	100	5500	0.79	0.58	-0.68	-0.11	94.70	6.44	≤ 6.88
11a	6Mbps	116	5580	0.91	0.77	-0.27	0.55	94.70	6.77	≤ 6.88
11a	6Mbps	140	5700	0.76	0.29	0.40	0.46	94.70	6.74	≤ 6.88
11a	6Mbps	144	5720	1.04	0.37	0.30	0.18	94.70	6.74	≤ 6.88
11ac-VHT20	MCS0	36	5180	6.72	5.50	5.79	5.51	97.96	12.02	≤ 12.88
11ac-VHT20	MCS0	44	5220	7.46	6.10	5.91	5.92	97.96	12.51	≤ 12.88
11ac-VHT20	MCS0	48	5240	7.31	6.15	6.08	6.30	97.96	12.60	≤ 12.88
11ac-VHT20	MCS0	52	5260	1.34	0.11	-0.14	0.72	97.96	6.66	≤ 6.88
11ac-VHT20	MCS0	60	5300	1.42	-0.03	-0.07	0.79	97.96	6.68	≤ 6.88
11ac-VHT20	MCS0	64	5320	1.56	0.08	-0.27	0.26	97.96	6.58	≤ 6.88
11ac-VHT20	MCS0	100	5500	1.25	0.30	0.10	0.48	97.96	6.66	≤ 6.88
11ac-VHT20	MCS0	116	5580	1.23	0.27	0.14	0.45	97.96	6.65	≤ 6.88
11ac-VHT20	MCS0	140	5700	1.05	0.66	0.53	0.03	97.96	6.69	≤ 6.88
11ac-VHT20	MCS0	144	5720	1.25	0.50	0.20	-0.10	97.96	6.60	≤ 6.88
11ac-VHT40	MCS0	38	5190	0.54	-0.65	-0.35	-0.63	96.64	5.93	≤ 12.88
11ac-VHT40	MCS0	46	5230	6.56	5.22	5.32	5.51	96.64	11.85	≤ 12.88
11ac-VHT40	MCS0	54	5270	1.12	0.23	-0.15	0.26	96.64	6.56	≤ 6.88
11ac-VHT40	MCS0	62	5310	-0.86	-1.71	-2.13	-1.76	96.64	4.58	≤ 6.88
11ac-VHT40	MCS0	102	5510	0.28	-0.84	-1.26	-1.21	96.64	5.46	≤ 6.88
11ac-VHT40	MCS0	110	5550	1.16	0.68	0.16	0.35	96.64	6.77	≤ 6.88
11ac-VHT40	MCS0	134	5670	0.84	1.20	0.48	-0.20	96.64	6.78	≤ 6.88
11ac-VHT40	MCS0	142	5710	0.68	0.82	0.37	-0.08	96.64	6.63	≤ 6.88

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:										
11ac-VHT80	MCS0	42	5210	-2.32	-3.39	-3.63	-3.48	93.74	3.13	≤ 12.88
11ac-VHT80	MCS0	58	5290	0.84	-0.24	-0.15	0.26	93.74	6.50	≤ 6.88
11ac-VHT80	MCS0	106	5530	-2.96	-3.88	-3.97	-4.17	93.74	2.58	≤ 6.88
11ac-VHT80	MCS0	122	5610	-1.62	-1.82	-2.05	-2.37	93.74	4.34	≤ 6.88
11ac-VHT80	MCS0	138	5690	0.63	0.58	0.30	-0.56	93.74	6.56	≤ 6.88

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).

Note 2: For 5150 - 5250MHz Band: PSD Limit (dBm/MHz) = 17 - (10.12 - 6) = 12.88 dBm/MHz.

For 5250 - 5350MHz Band: PSD Limit (dBm/MHz) = 11 - (10.12 - 6) = 6.88 dBm/MHz.

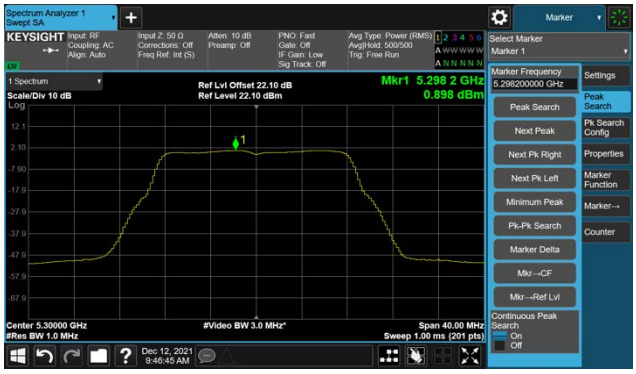
For 5470 - 5725MHz Band: PSD Limit (dBm/MHz) = 11 - (10.12 - 6) = 6.88 dBm/MHz.

Note 3: Since the power setting of BF mode is less than or equal to that of CDD mode, CDD mode was selected for testing when the PSD limit is the same.

Test Mode	Data Rate/ MCS	Ch. No.	Freq. (MHz)	AVPSD (dBm/ 510kHz)				Duty Cycle (%)	Total PSD (dBm/510kHz)	PSD Limit (dBm/500kHz)
				Ant 0	Ant 1	Ant 2	Ant 3			
For NII-3 Band:										
11a	6Mbps	149	5745	4.77	4.25	4.63	3.55	94.70	10.58	≤ 25.98
11a	6Mbps	157	5785	3.88	3.36	3.86	3.21	94.70	9.84	≤ 25.98
11a	6Mbps	165	5825	3.87	3.50	3.21	2.97	94.70	9.66	≤ 25.98
11ac-VHT20	MCS0	149	5745	5.55	5.85	5.21	4.83	97.96	11.49	≤ 25.98
11ac-VHT20	MCS0	157	5785	5.20	5.16	4.47	4.15	97.96	10.87	≤ 25.98
11ac-VHT20	MCS0	165	5825	4.00	4.10	3.46	3.55	97.96	9.90	≤ 25.98
11ac-VHT40	MCS0	151	5755	3.74	4.29	3.40	3.17	96.64	9.84	≤ 25.98
11ac-VHT40	MCS0	159	5795	3.84	4.63	3.75	3.69	96.64	10.16	≤ 25.98
11ac-VHT80	MCS0	155	5775	-0.01	-0.04	-0.19	-0.65	93.74	6.09	≤ 25.98

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).

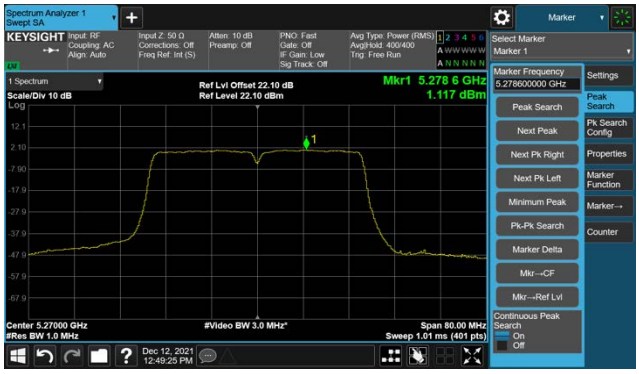
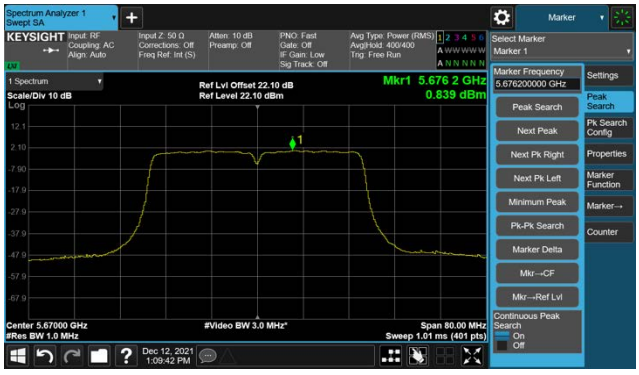
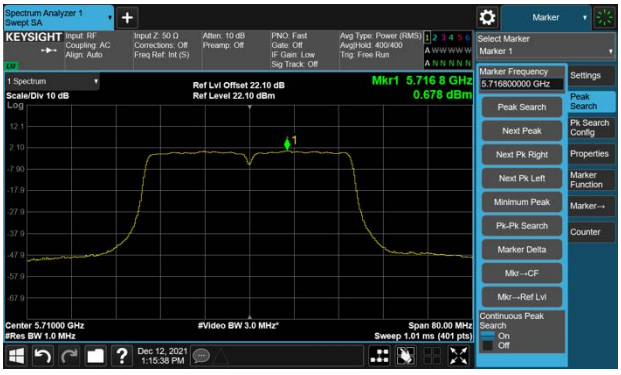
Note 2: For 5725 - 5850MHz Band: PSD Limit (dBm/500kHz) = 30 - (10.02 - 6) = 25.98 dBm/500kHz.

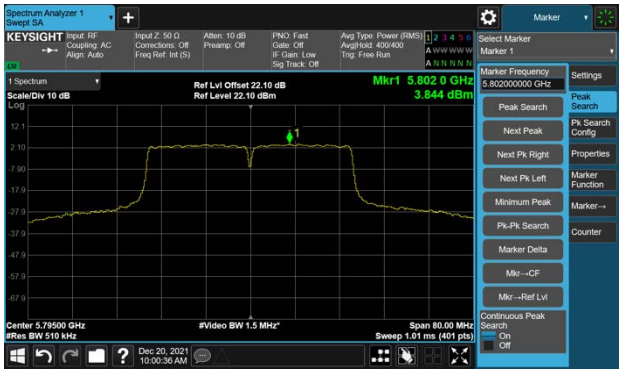
802.11a Power Spectral Density - Ant 0	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 64 (5580MHz)
	

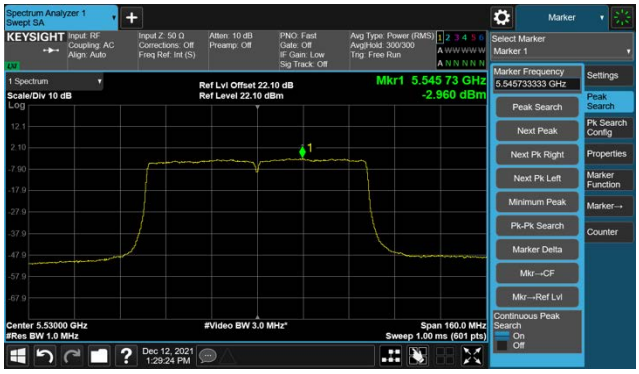
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

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)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11ac-VHT40 Power Spectral Density - Ant 0	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	

Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT80 Power Spectral Density - Ant 0	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 122 (5610MHz)
	
Channel 138 (5690MHz)	Channel 155 (5775MHz)