TEST REPORT

Applicant:	Hunan GM Innovation Technology Co., Ltd
Address of Applicant:	No 46, Jiefang East Road, Furong District, Changsha, China
Manufacturer/Factory:	Hunan GM Innovation Technology Co., Ltd
Address of Manufacturer/Factory:	No 46, Jiefang East Road, Furong District, Changsha, China
Equipment Under Test (EUT)	
Product Name:	Wireless monitor system
Model No.:	ATOM A5 MONITOR, ATOM A5 PRO MONITOR
Trade Mark:	VAXIS
FCC ID:	2AJOF-ATOMA5MONITOR
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	July 21, 2022
Date of Test:	July 26~August 5, 2022
Date of report issue:	August 5, 2022
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 5, 2022*	*Original*

Prepared By: ***Date:*** ***August 5, 2022***

Project Engineer

Check By: ***Date:*** ***August 5, 2022***

Reviewer

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4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203	PASS
AC Power Line Conducted Emission	FCC part 15.207	PASS
Emission Bandwidth	FCC part 15.407	PASS
Average Transmit Power	FCC part 15.407(a)(1)	PASS
Power Spectral Density	FCC part 15.407(a)(1)	PASS
Undesirable Emission	FCC part 15.407(b), 15.205/15.209	PASS
Radiated Emission	FCC part 15.205/15.209	PASS
Band Edge	FCC part 15.407(b)(1)	PASS
Frequency Stability	FCC part 15.407(g)	PASS

Remark:

Pass: The EUT complies with the essential requirements in the standard.

Test Method: KDB 662911 D01 Multiple Transmitter Output v02r01

4.1 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	1×10^{-7}
2	Duty cycle	0.37%
3	Occupied Bandwidth	2.8dB
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	3.1dB (9kHz-30MHz)
		3.8039dB (30MHz-200MHz)
		3.9679dB (200MHz-1GHz)
		4.29dB (1GHz-18GHz)
		3.30dB (18GHz-40GHz)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.		

5 General Information

5.1 General Description of EUT

<table>
<tr><td></td><td>Product Name:</td><td>Wireless monitor system</td></tr>
<tr><td></td><td>Model No.:</td><td>ATOM A5 MONITOR, ATOM A5 PRO MONITOR</td></tr>
<tr><td></td><td>Test Model No.:</td><td>ATOM A5 MONITOR</td></tr>
<tr><td></td><td>Serial No.:</td><td>N/A</td></tr>
<tr><td></td><td>Hardware Version:</td><td>V1.2</td></tr>
<tr><td></td><td>Software Version:</td><td>V 0261</td></tr>
<tr><td></td><td>Test sample(s) ID:</td><td>GTSL202208000154-1</td></tr>
<tr><td></td><td>Sample(s) Status:</td><td>Engineer sample</td></tr>
<tr><td></td><td>Operation Frequency:</td><td>
<table>
<tr><th>Band</th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of channels</th></tr>
<tr><td rowspan="2">U-NII Band I</td><td>IEEE 802.11a</td><td>5180-5240</td><td>4</td></tr>
<tr><td>IEEE 802.11n 20MHz</td><td>5180-5240</td><td>4</td></tr>
</table>
</td></tr>
<tr><td></td><td>Modulation technology:</td><td>OFDM
MIMO: 802.11n
SISO: 802.11a</td></tr>
<tr><td></td><td>Antenna Type:</td><td>External antenna</td></tr>
<tr><td></td><td>Antenna gain:</td><td>ANT1:2.5dBi
ANT2:2.5dBi
MIMO Mode:
For power measurement: the direct gain=2.5dBi
For Power Spectral Density measurement: the direct gain=5.51dBi</td></tr>
<tr><td></td><td>Power supply:</td><td>DC 7-17V (Powered By Adaptor or Battery)</td></tr>
</table>

Channel list for 802.11a/n(HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting with modulation..

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6.5 Mbps
n(HT20)	MCS0

5.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

● **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, sBaoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

5.5 Description of Support Units

AC/DC Adaptor Mode Number: YW-122 Input: AC 100-240V,50/60Hz, Output: DC 12V 2A

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 30, 2021	Nov. 29, 2022
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 17, 2021	Oct. 16, 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17, 2021	Oct. 16, 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17, 2021	Oct. 16, 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 14, 2022	May 13, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 24, 2022	April 23, 2023
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 23, 2022	June 22, 2023
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	April 22, 2022	April 21, 2023
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	JINCHUANG	GSP-8A	GTS639	April 28, 2022	April 27, 2023
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 15, 2022	April 14, 2023
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 22, 2022	April 21, 2023
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

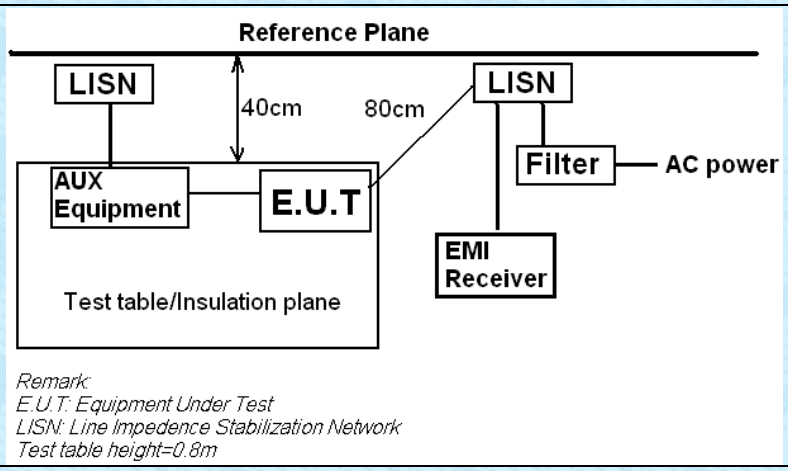
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: *An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.*	
E.U.T Antenna:	
The antennas are External antenna, the best case gain of the antennas are 2.50dBi, reference to the appendix II for details	

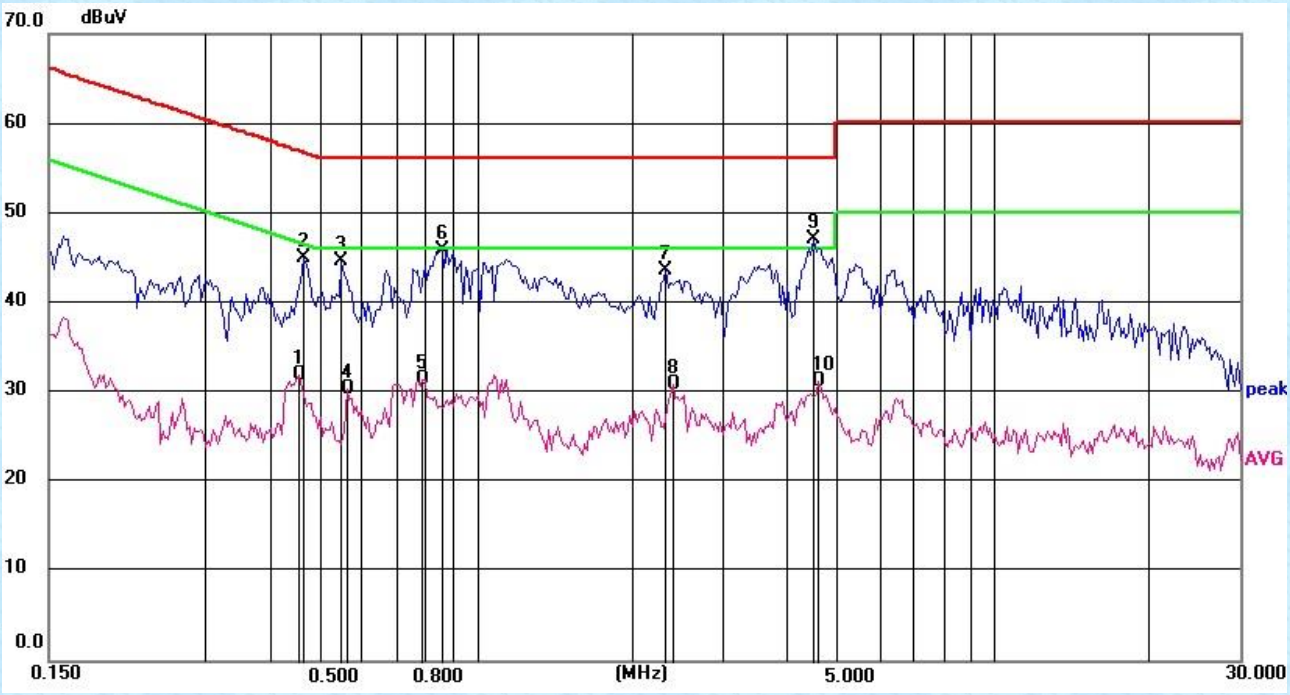
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10
Test Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9KHz, VBW=30KHz
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1012mbar
Test voltage:	DC 12V (Powered by adaptor)
Test results:	Pass

Note: Pre-scan all test modes, found worst case at 802.11n(HT20) 5180MHz, and so only show the test result of 802.11n(HT20) 5180MHz.

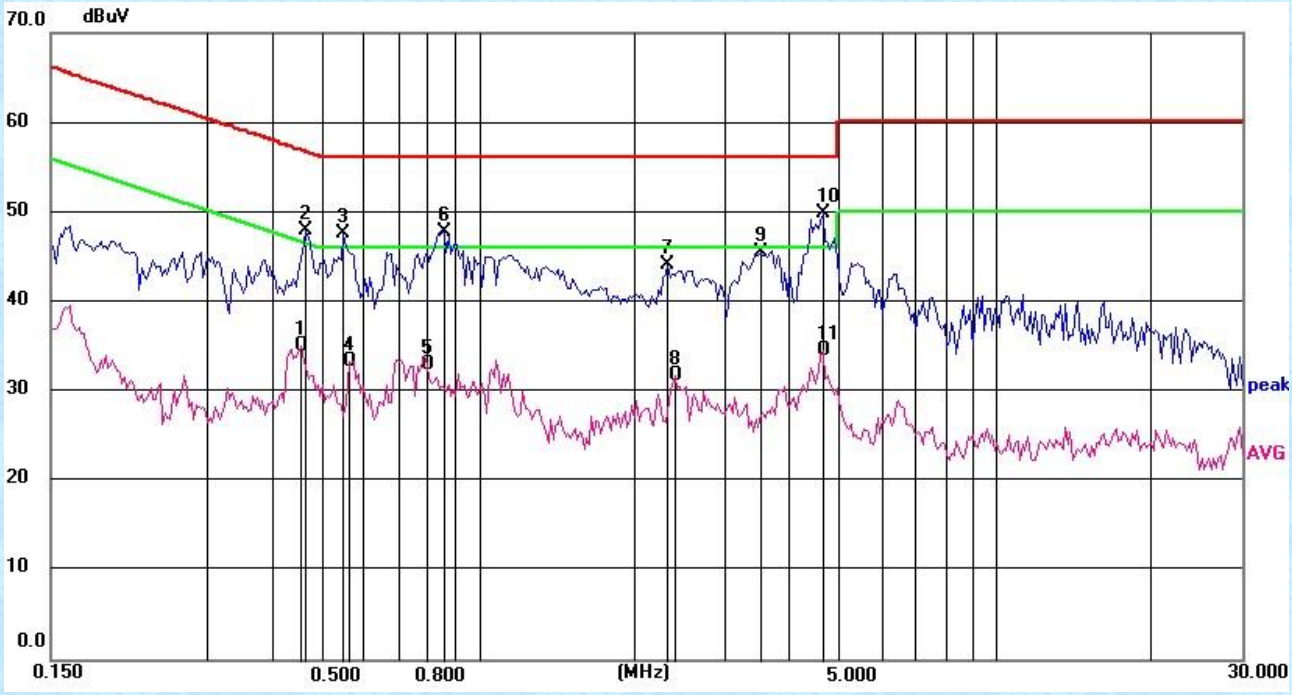
Measurement data:

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4561	22.01	10.05	32.06	46.76	-14.7	AVG
2	0.4661	35.03	10.05	45.08	56.58	-11.5	QP
3	0.5522	34.63	10.06	44.69	56	-11.31	QP
4	0.5635	20.41	10.06	30.47	46	-15.53	AVG
5	0.7913	21.49	10.07	31.56	46	-14.44	AVG
6	0.8618	35.83	10.09	45.92	56	-10.08	QP
7	2.3334	33.55	10.27	43.82	56	-12.18	QP
8	2.4089	20.81	10.29	31.1	46	-14.9	AVG
9	4.5014	37.13	10.57	47.7	56	-8.3	QP
10	4.5978	21.24	10.61	31.85	46	-14.15	AVG

Neutral:

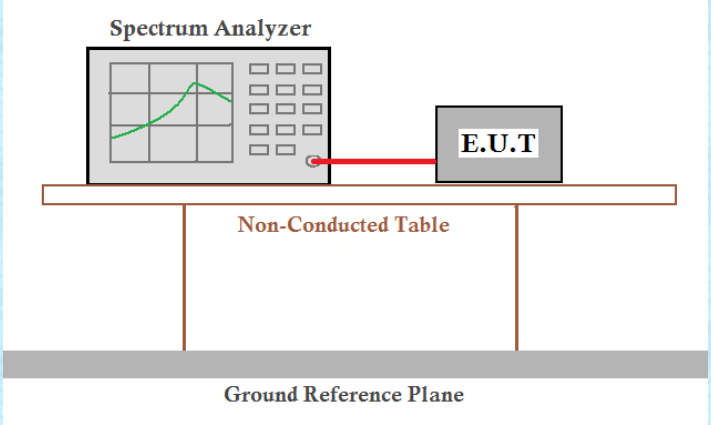


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4561	25.01	10.05	35.06	46.76	-11.7	AVG
2	0.4661	38.03	10.05	48.08	56.58	-8.5	QP
3	0.5522	37.63	10.06	47.69	56	-8.31	QP
4	0.5635	23.41	10.06	33.47	46	-12.53	AVG
5	0.8002	22.96	10.08	33.04	46	-12.96	AVG
6	0.8618	37.83	10.09	47.92	56	-8.08	QP
7	2.3334	34.05	10.27	44.32	56	-11.68	QP
8	2.4089	21.81	10.29	32.1	46	-13.9	AVG
9	3.5278	35.6	10.35	45.95	56	-10.05	QP
10	4.6467	39.93	10.66	50.59	56	-5.41	QP
11	4.6467	24.61	10.66	35.27	46	-10.73	AVG

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss*

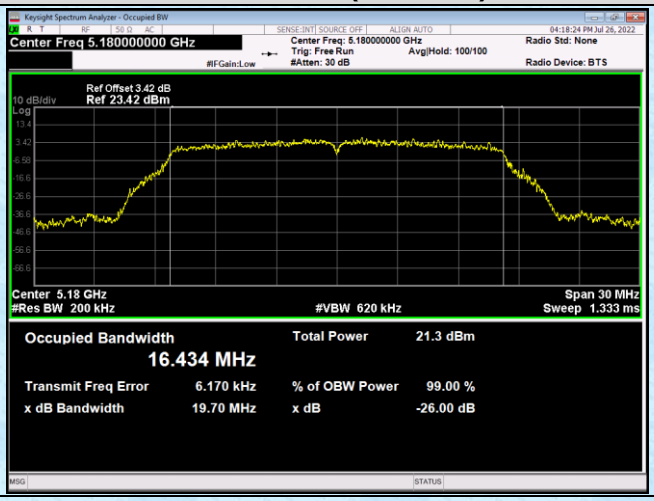
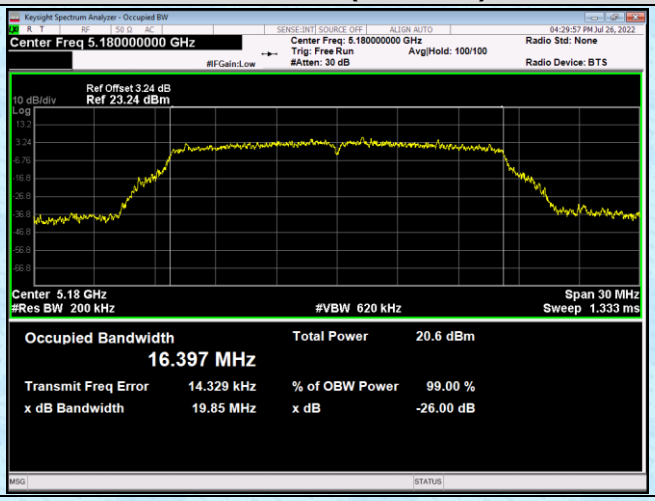
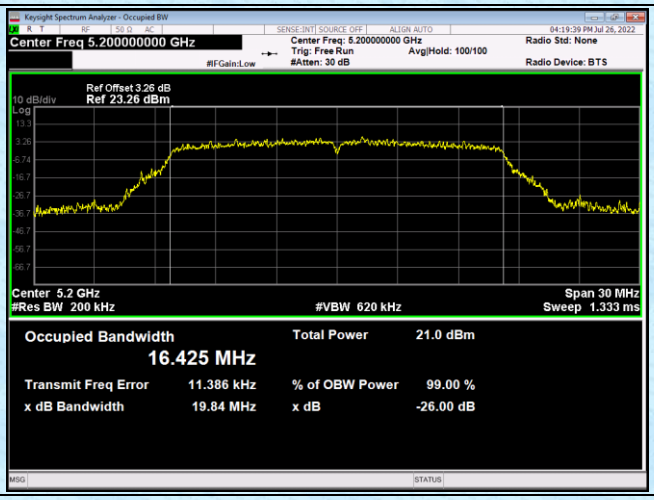
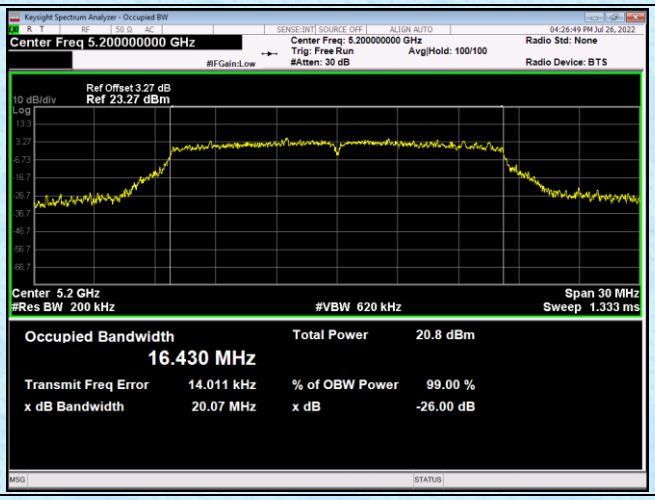
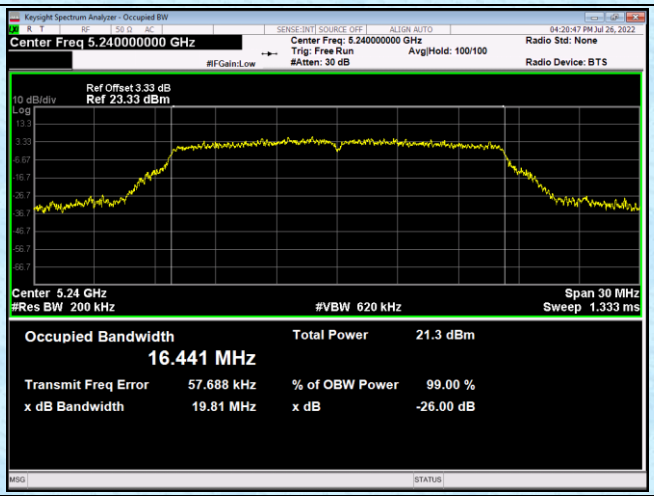
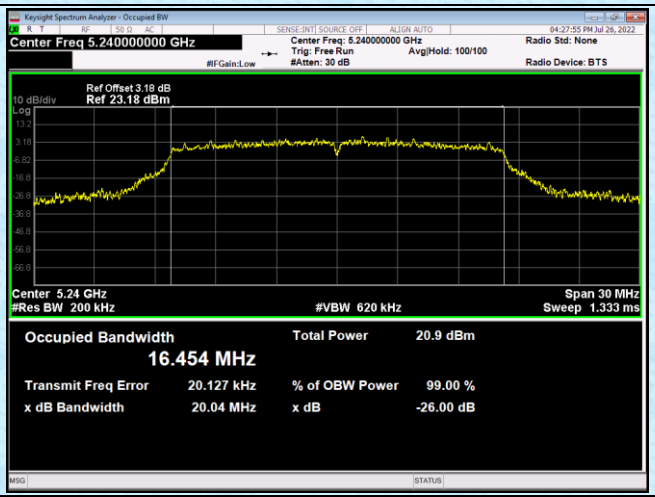
7.3 Emission Bandwidth

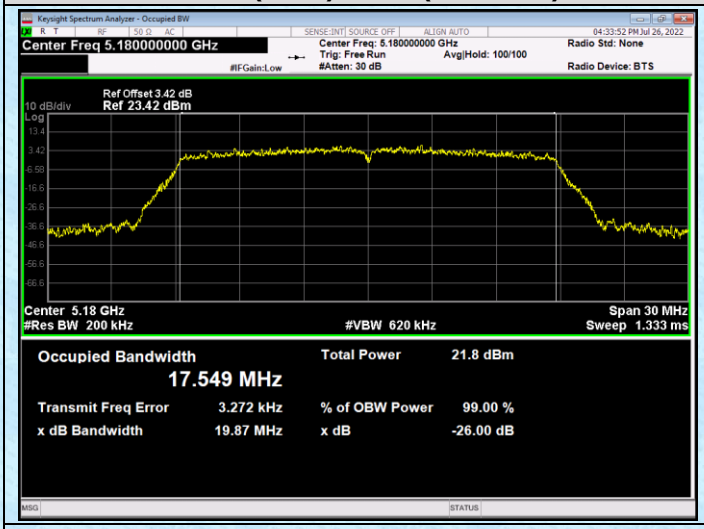
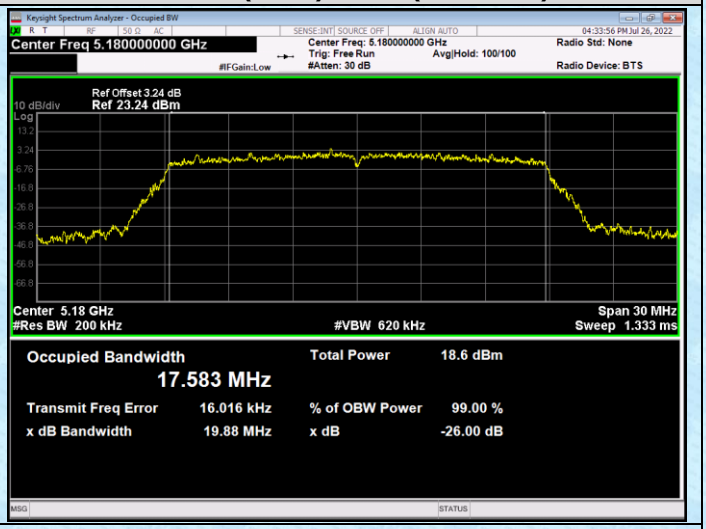
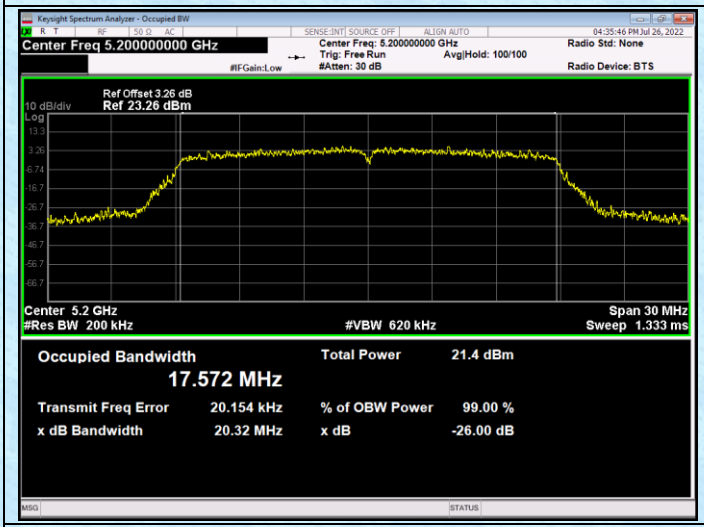
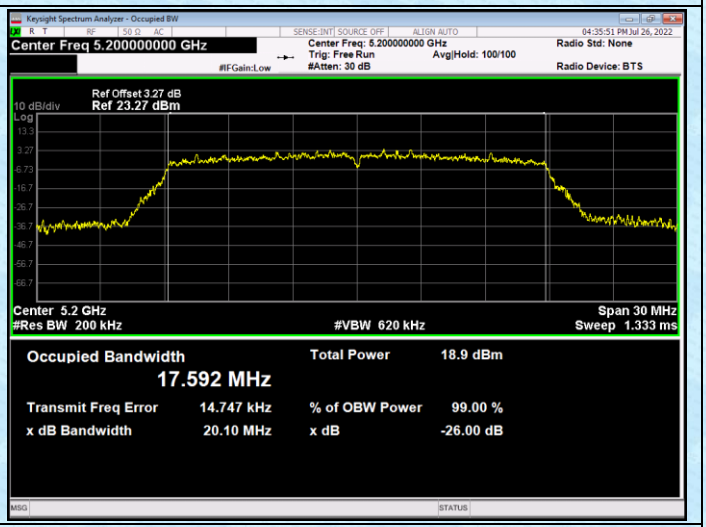
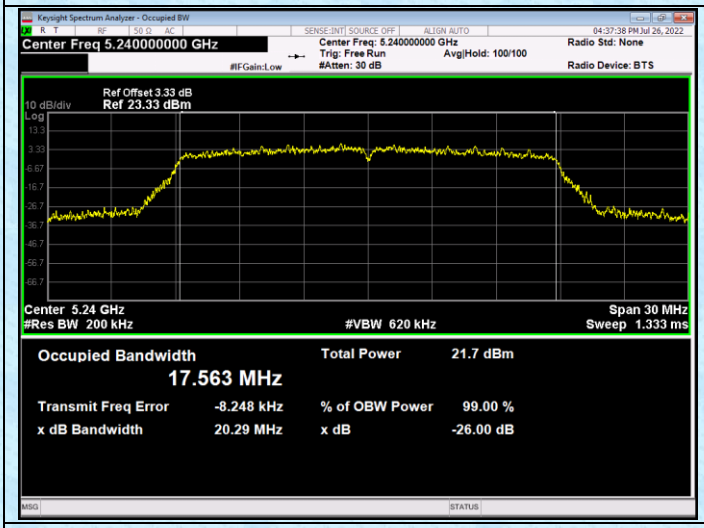
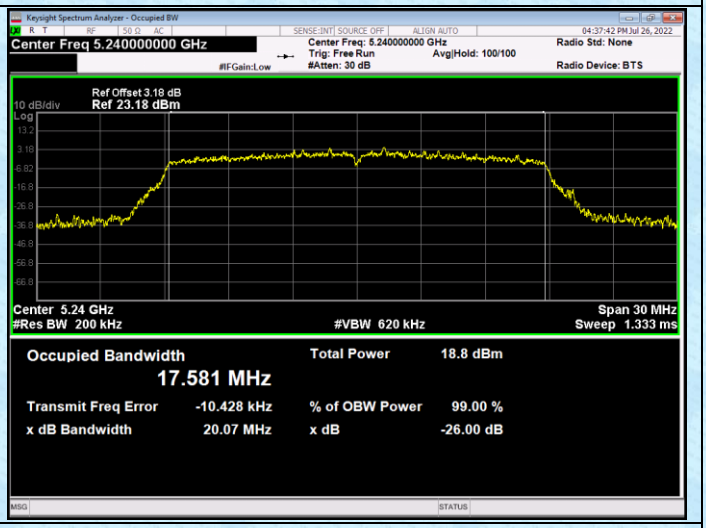
Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	
Test procedure:	According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:

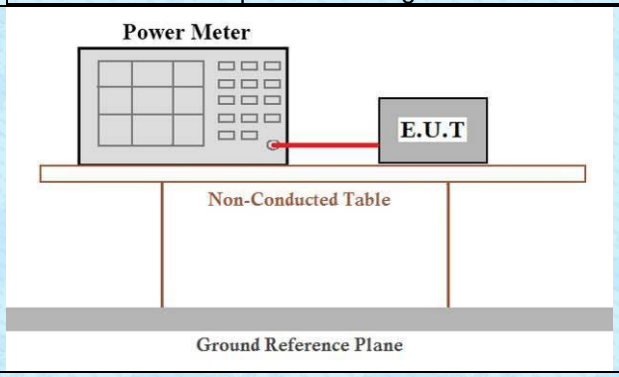
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)				26dB Occupied Bandwidth (MHz)			
		802.11a		802.11n(HT20)		802.11a		802.11n(HT20)	
		ANT1	ANT2	ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
36	5180	16.434	16.397	17.549	17.583	19.70	19.85	19.87	19.88
40	5200	16.425	16.43	17.572	17.592	19.84	20.07	20.32	20.10
48	5240	16.441	16.454	17.563	17.581	19.81	20.04	20.29	20.07

Test plots as followed:

802.11a mode (Antenna1)	802.11a mode (Antenna2)
	
5180	5180
	
5200	5200
	
5240	5240

802.11n(HT20) mode (Antenna1)	802.11n(HT20) mode (Antenna2)
	
5180	5180
	
5200	5200
	
5240	5240

7.4 Average Transmit Power

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407</td></tr>
<tr><td>Test Method:</td><td>KDB 789033 D02 General U-NII Test Procedures New Rules v02r01</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency band (MHz)</th><th>Limit</th></tr>
<tr><td rowspan="2">5150-5250</td><td>≤1W(30dBm) for master device</td></tr>
<tr><td>≤250mW(23.98dBm) for client device</td></tr>
<tr><td>5250-5350</td><td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td>5470-5725</td><td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td colspan="2">Remark: *Where B is the 26dB emission bandwidth in MHz.
The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test procedure:</td><td>Measurement using an RF average power meter
(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied
a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).
(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
(iv) Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10log(1/0.25) if the duty cycle is 25 percent).</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.2 for details</td></tr>
<tr><td>Test results:</td><td>Pass</td></tr>
</table>

Measurement Data

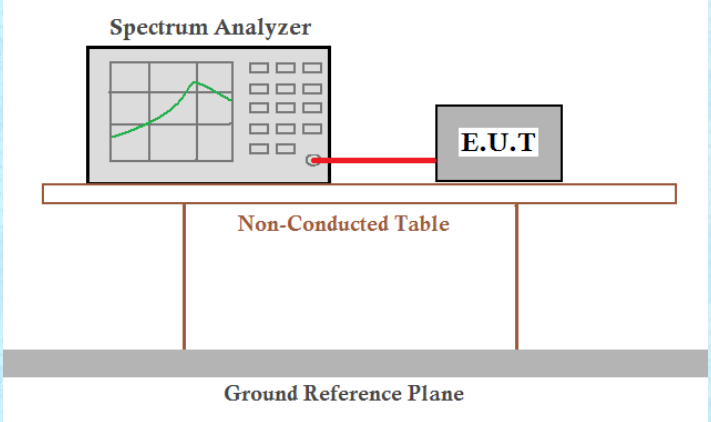
Modulation	Frequency (MHz)	Duty cycle		Duty Factor	
		Antenna1	Antenna2	Antenna1	Antenna2
802.11a	5180	97.84	97.73	0.1	0.1
	5200	97.87	97.76	0.1	0.1
	5240	97.85	97.78	0.1	0.1
802.11n(HT20)	5180	97.68	97.68	0.1	0.1
	5200	97.68	97.68	0.1	0.1
	5240	97.67	97.67	0.1	0.1

802.11a mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	15.549	15.068	--	0.1	15.649	15.168	--	24	Pass
40	5200	15.346	15.206	--	0.1	15.446	15.306	--		
48	5240	15.614	15.222	--	0.1	15.714	15.322	--		
802.11n(HT20) mode										
CH No.	Frequency (MHz)	Measured Power (dBm)			Duty Factor	Output Power (dBm)			Limit (dBm)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	16.066	13.031	17.819	0.1	16.166	13.131	17.919	24	Pass
40	5200	15.68	13.253	17.644	0.1	15.78	13.353	17.7449		
48	5240	15.876	13.314	17.792	0.1	15.976	13.414	17.892		

Note: Output Power = Measured Power + Duty Factor

Duty Factor = 10 log (1/Duty Cycle)

7.5 Power Spectral Density

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407</td></tr>
<tr><td>Test Method:</td><td>KDB 789033 D02 General U-NII Test Procedures New Rules v02r01</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency band (MHz)</th><th>Limit</th></tr>
<tr><td rowspan="2">5150-5250</td><td>≤17dBm in 1MHz for master device</td></tr>
<tr><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td>5250-5350</td><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td>5470-5725</td><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td colspan="2">Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test procedure:</td><td>1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”.
2) Use the peak search function on the instrument to find the peak of the spectrum.
3) Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4) The result is the PSD.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.2 for details</td></tr>
<tr><td>Test results:</td><td>Pass</td></tr>
</table>

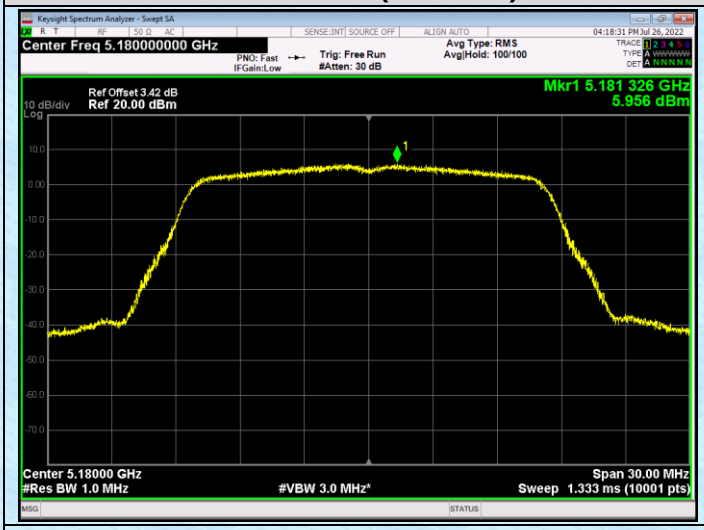
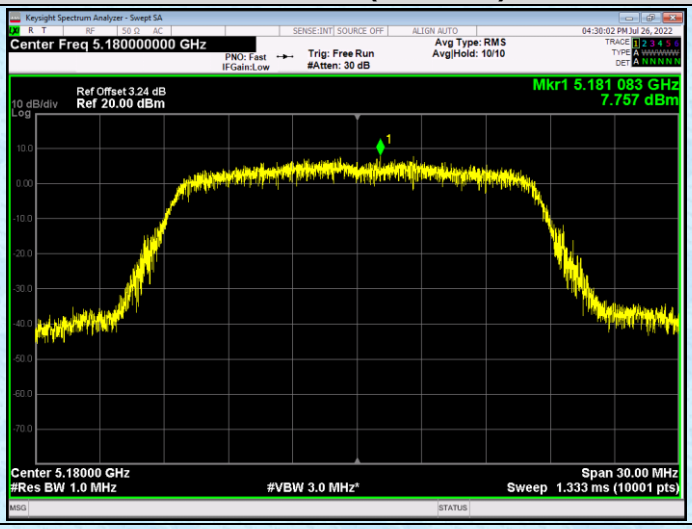
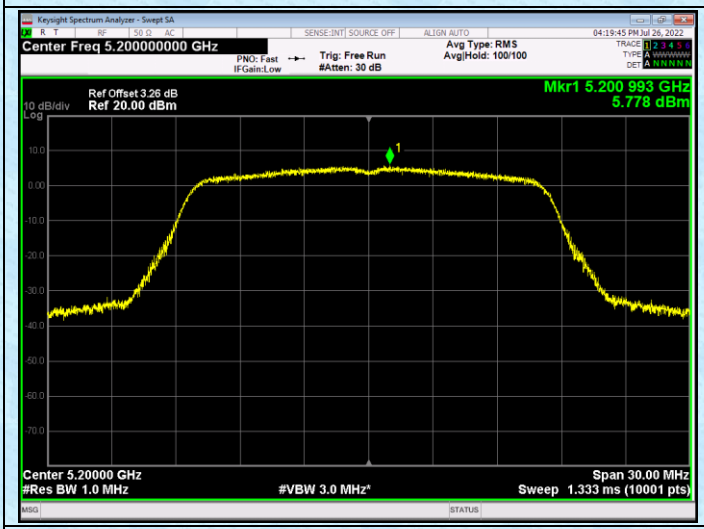
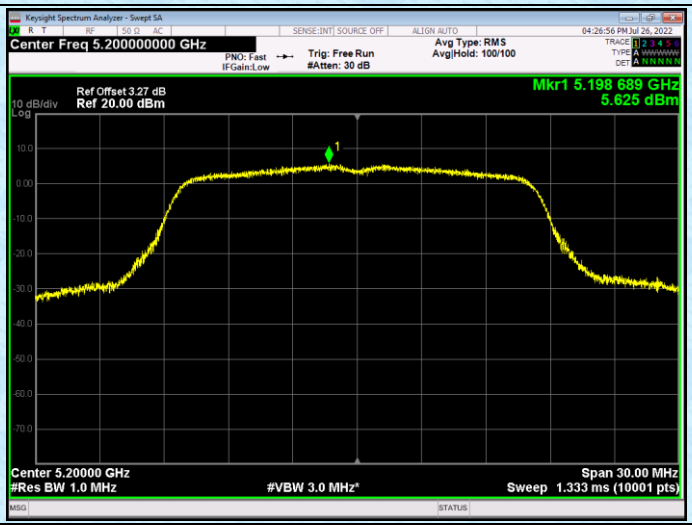
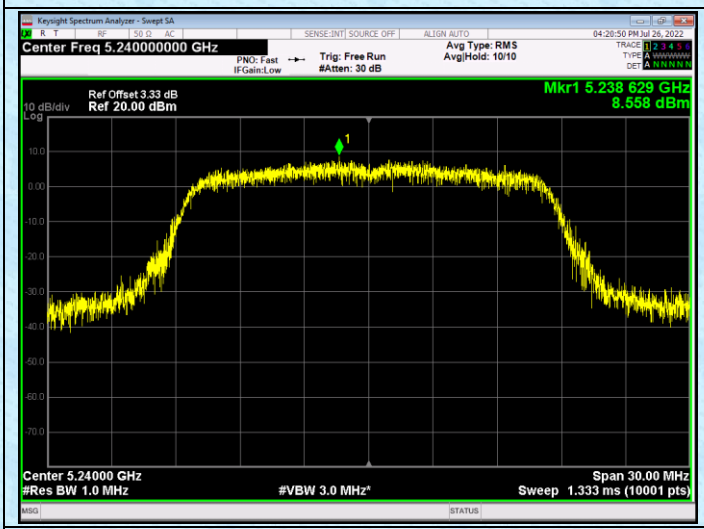
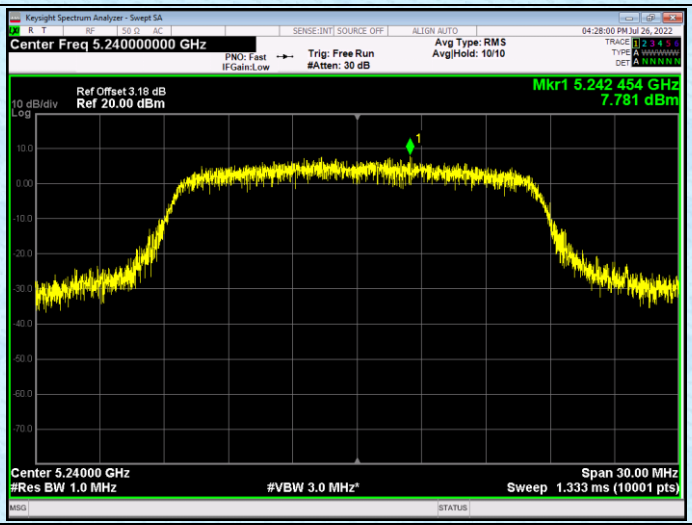
Measurement Data Measurement Data

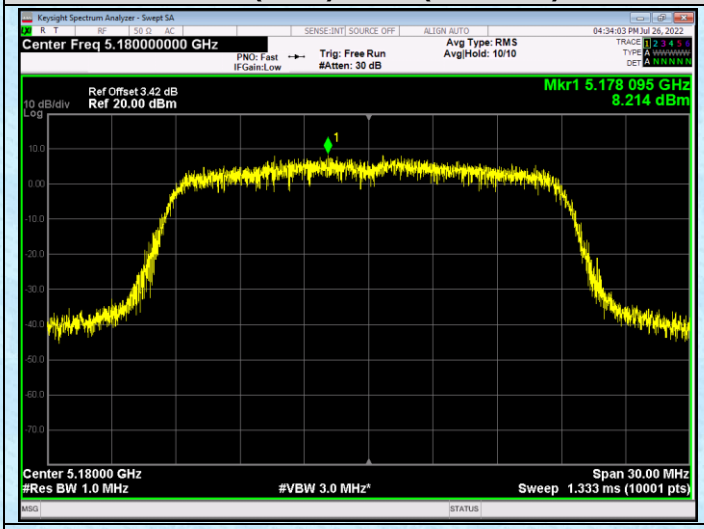
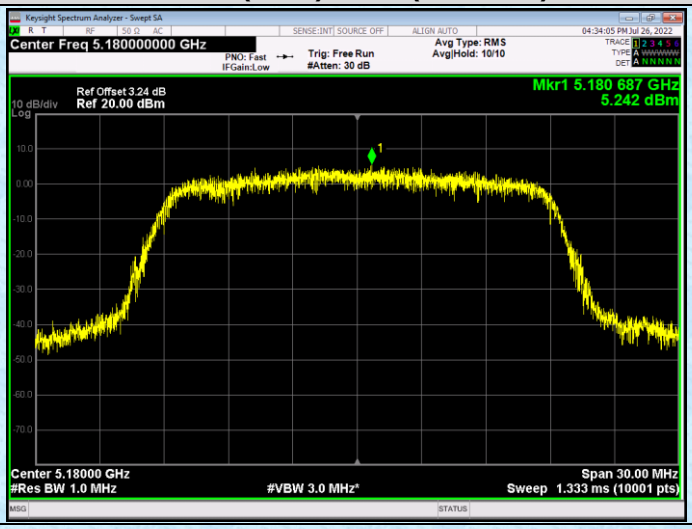
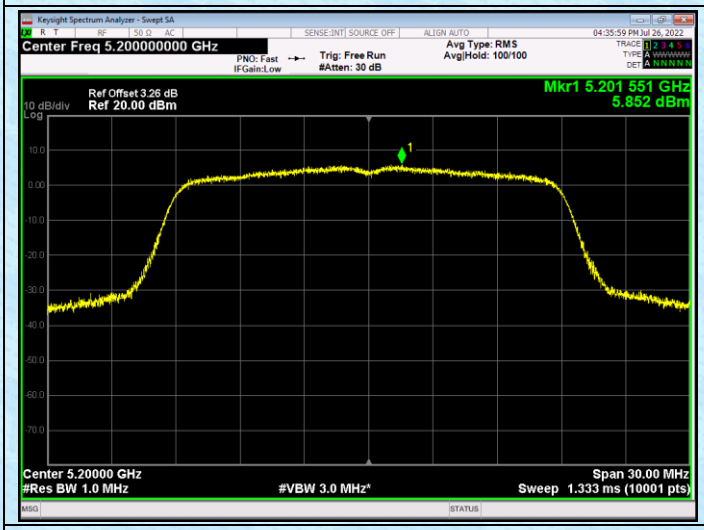
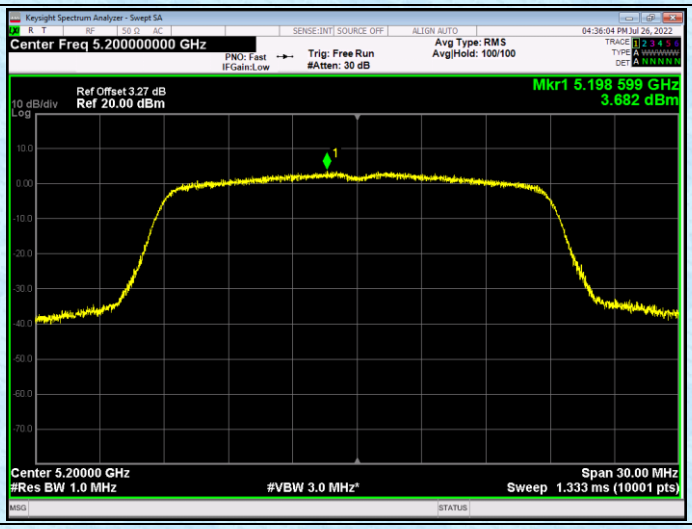
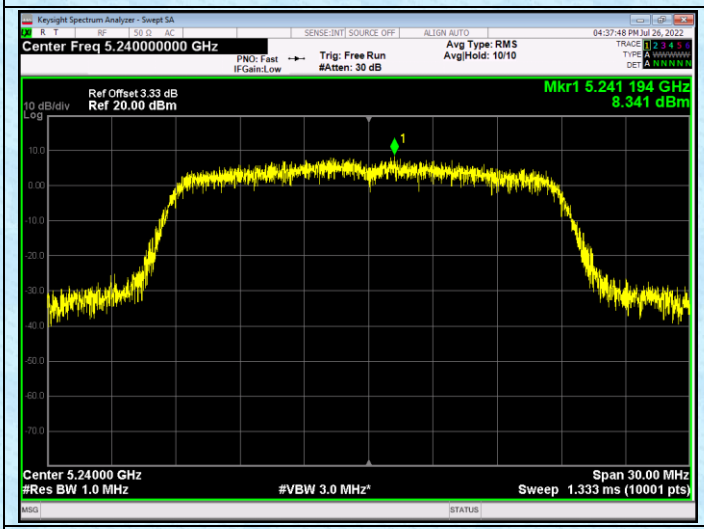
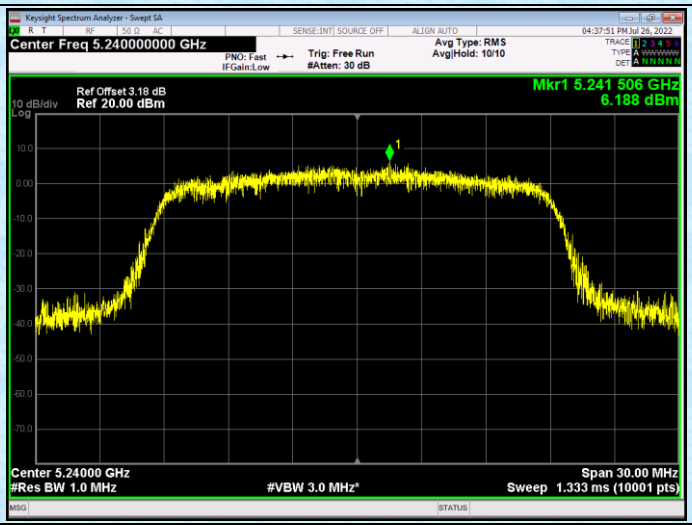
Modulation	Frequency (MHz)	Duty cycle		Duty Factor	
		Antenna1	Antenna2	Antenna1	Antenna2
802.11a	5180	97.84	97.73	0.1	0.1
	5200	97.87	97.76	0.1	0.1
	5240	97.85	97.78	0.1	0.1
802.11n(HT20)	5180	97.68	97.68	0.1	0.1
	5200	97.68	97.68	0.1	0.1
	5240	97.67	97.67	0.1	0.1

802.11a mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	5.956	7.757	--	0.1	6.056	7.857	--	11	Pass
40	5200	5.778	5.625	--	0.1	5.878	5.725	--	11	Pass
48	5240	8.558	7.781	--	0.1	8.658	7.881	--	11	Pass
802.11n(HT20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT1	ANT2	ANT 1+2		ANT1	ANT2	ANT 1+2		
36	5180	8.214	5.242	9.988	0.1	8.314	5.342	10.087	11	Pass
40	5200	5.852	3.682	7.911	0.1	5.952	3.782	8.011	11	Pass
48	5240	8.341	6.188	10.407	0.1	8.441	6.288	10.507	11	Pass

Note: Output Power = Measured Power + Duty Factor
Duty Factor = 10 log (1/Duty Cycle)

Test plots as followed:

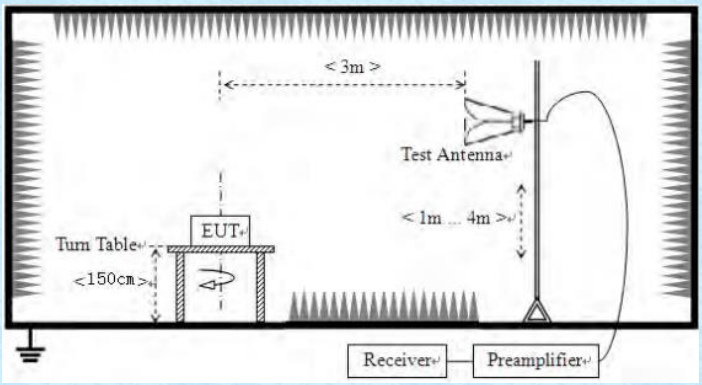
802.11a mode (Antenna1)	802.11a mode (Antenna2)
	
5180	5180
	
5200	5200
	
5240	5240

802.11n(HT20) mode (Antenna1)	802.11n(HT20) mode (Antenna2)
	
5180	5180
	
5200	5200
	
5240	5240

7.6 Band Edge

7.6.1 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 E Section 15.407 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>68.2</td><td>Peak Value</td></tr>
</table>
Undesirable emission limits:
(1) 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 EIRP of -27 dBm/MHz.
(2) 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 EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
(3) 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 EIRP of −27 dBm/MHz.
</td></tr>
<tr><td>Test Procedure:</td><td>
a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than
</td></tr>
</table>

	the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Radiated Emissions Test setup:	For radiated emissions above 1GHz 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remarks:

1. *Only the worst case Main Antenna test data.*
2. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*
5. *According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:*
   E[dBuV/m] = EIRP[dBm] + 95.2;
   For example, if EIRP = -27dBm
   E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.

Radiated Emissions Measurement Data:

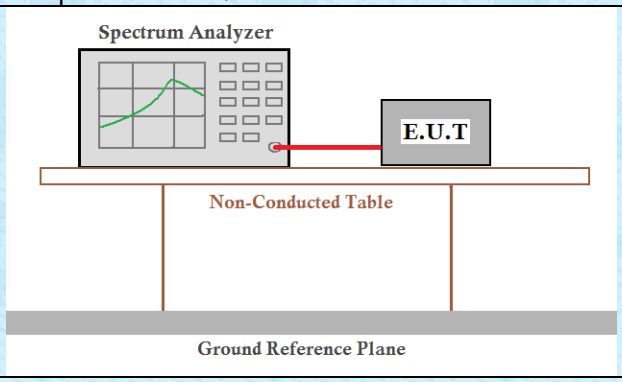
Worse case mode: ANT 1		802.11a		Test Frequency:		5180MHz	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	51.02	-3.63	47.39	68.2	-20.81	peak	H
5150	35.38	-3.63	31.75	54	-22.25	AVG	H
5150	50.55	-3.63	46.92	68.2	-21.28	peak	V
5150	32.99	-3.63	29.36	54	-24.64	AVG	V

Worse case mode: ANT 1		802.11a		Test Frequency:		5240MHz	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	49.63	-3.59	46.04	68.2	-22.16	peak	H
5350	34.39	-3.59	30.8	54	-23.2	AVG	H
5350	49.73	-3.59	46.14	68.2	-22.06	peak	V
5350	32.37	-3.59	28.78	54	-25.22	AVG	V

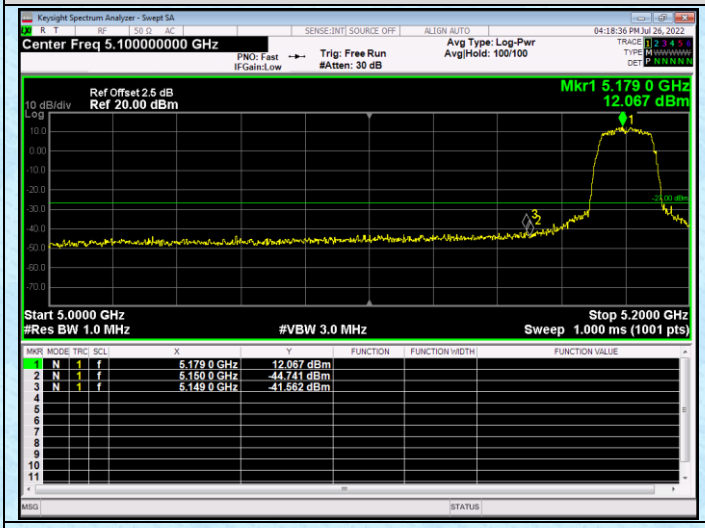
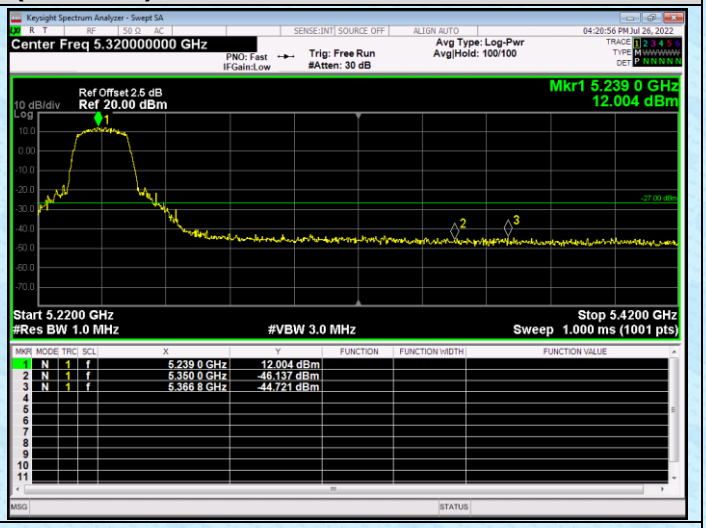
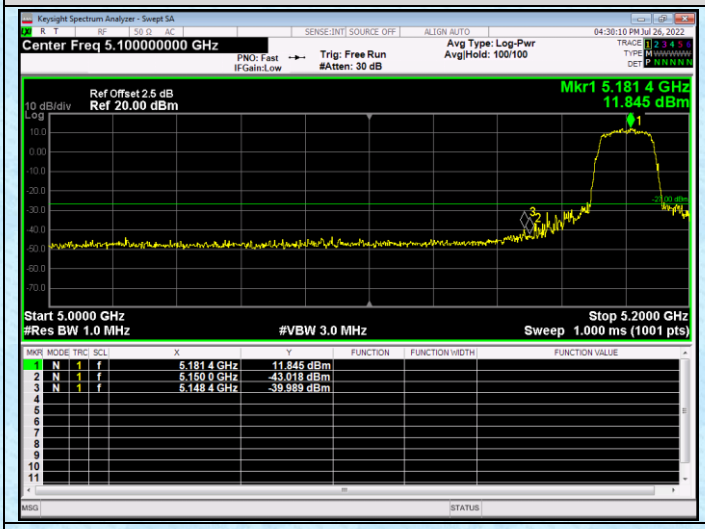
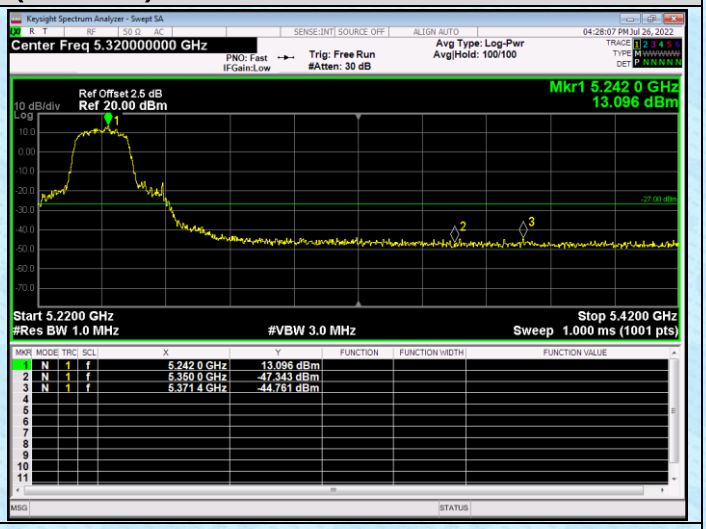
Worse case mode: SUM		802.11n(HT20)		Test Frequency:		5180MHz	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	50.36	-3.63	46.73	68.2	-21.47	peak	H
5150	35.05	-3.63	31.42	54	-22.58	AVG	H
5150	49.79	-3.63	46.16	68.2	-22.04	peak	V
5150	32.73	-3.63	29.1	54	-24.9	AVG	V

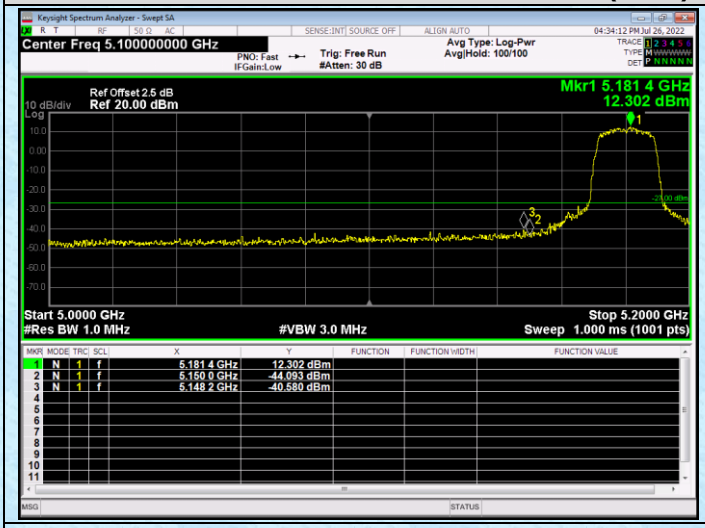
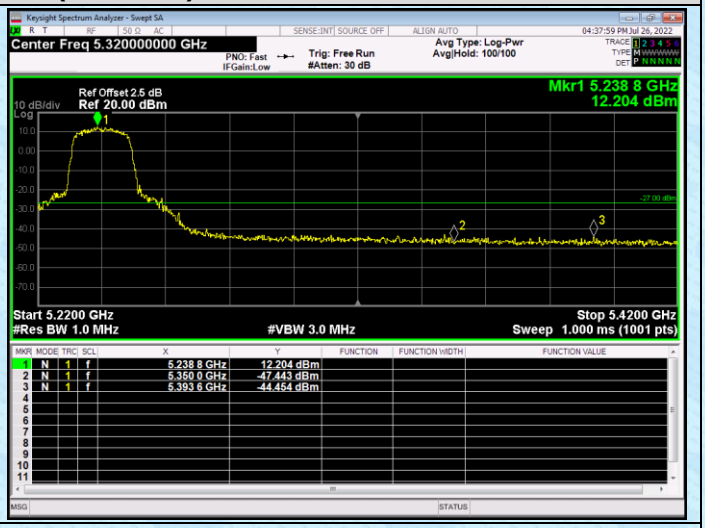
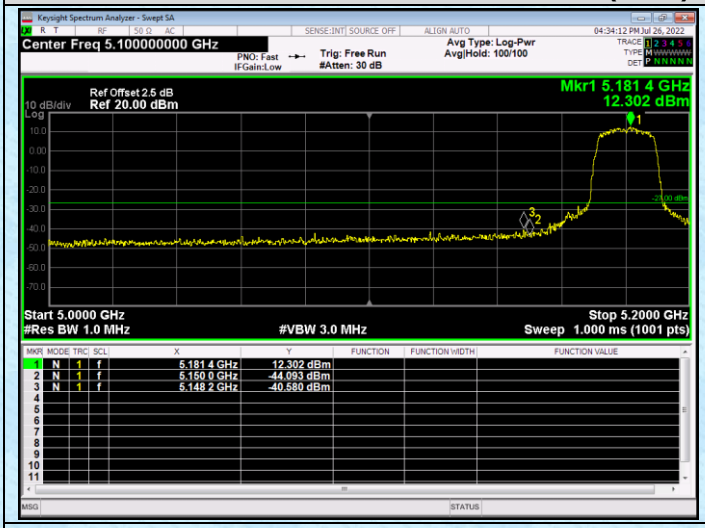
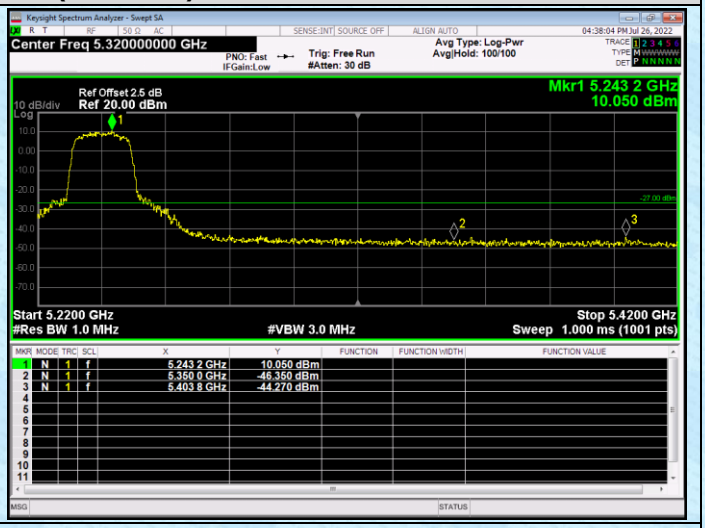
Worse case mode: SUM		802.11n(HT20)		Test Frequency:		5240MHz	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	49.84	-3.59	46.25	68.2	-21.95	peak	H
5350	34.6	-3.59	31.01	54	-22.99	AVG	H
5350	49.5	-3.59	45.91	68.2	-22.29	peak	V
5350	32.26	-3.59	28.67	54	-25.33	AVG	V

7.6.2 Conducted Emission Method

Test Requirement:	FCC Part15 E Section 15.407 and 15.205
Test Method:	ANSI C63.10
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak
Limit:	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.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

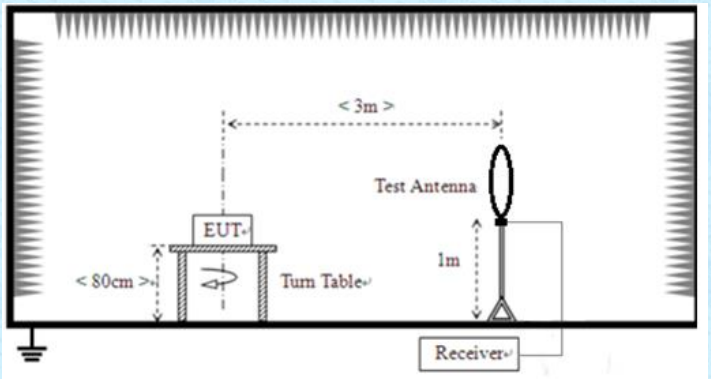
Test plot as follows:

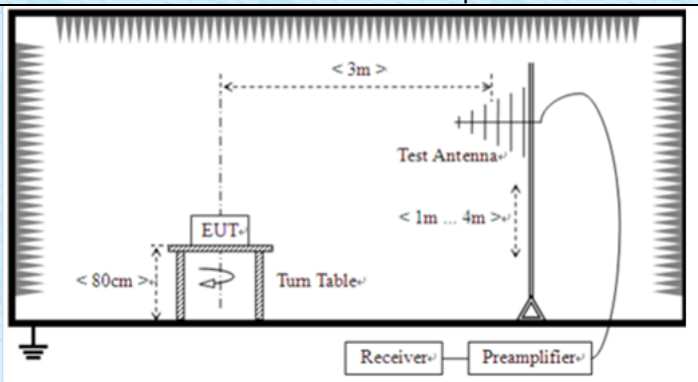
802.11a mode (Antenna1)	
	
5180	5240
802.11a mode (Antenna2)	
	
5180	5240

802.11n(HT20) mode (Antenna1)	
	
5180	5240
802.11n(HT20) mode (Antenna2)	
	
5180	5240

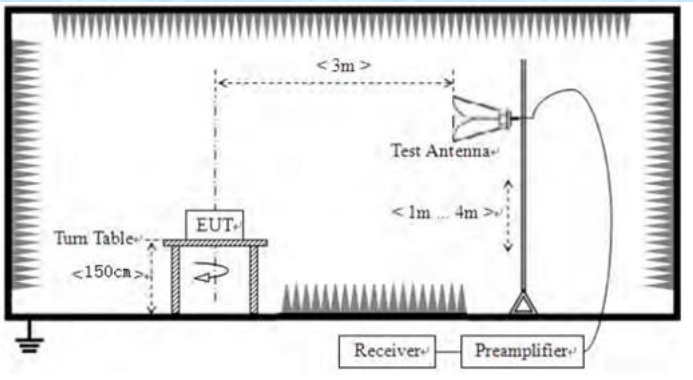
7.7 Radiated Emission

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205, Part 15E Section 15.407(b)(4)</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10</td></tr>
<tr><td>Test Frequency Range:</td><td>9kHz to 40GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td>9kHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>AV</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Limit (uV/m)</td><td>Value</td><td>Measurement Distance</td></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>QP</td><td>30m</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>QP</td><td rowspan="4">3m</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>QP</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>QP</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>QP</td></tr>
<tr><td>Frequency</td><td>Limit (dBuV/m)</td><td colspan="2">Remark</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>68.20</td><td colspan="2">Peak</td></tr>
<tr><td>54.00</td><td colspan="2">Average</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>Substitution method was performed to determine the actual ERP emission levels of the EUT.
The following test procedure as below:
1>.Below 1GHz test procedure:
1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported</td></tr>
</table>

	in a data sheet. 2>.Above 1GHz test procedure: 1. On the test site as test setup graph above,the EUT shall be placed at the 0.8m support on the turntable and in the position closest to normal use as declared by the provider. 2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.The output of the test antenna shall be connected to the measuring receiver. 3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test. 4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna 7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. 8. Repeat step 7 with both antennas horizontally polarized for each test frequency. 9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) where: Pg is the generator output power into the substitution antenna.
Test setup:	For radiated emissions from 9kHz to 30MHz  For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	DC 12V (Powered by adaptor)					
Test results:	Pass					

Remarks:

1. *Only the worst case Main Antenna test data.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement Data:

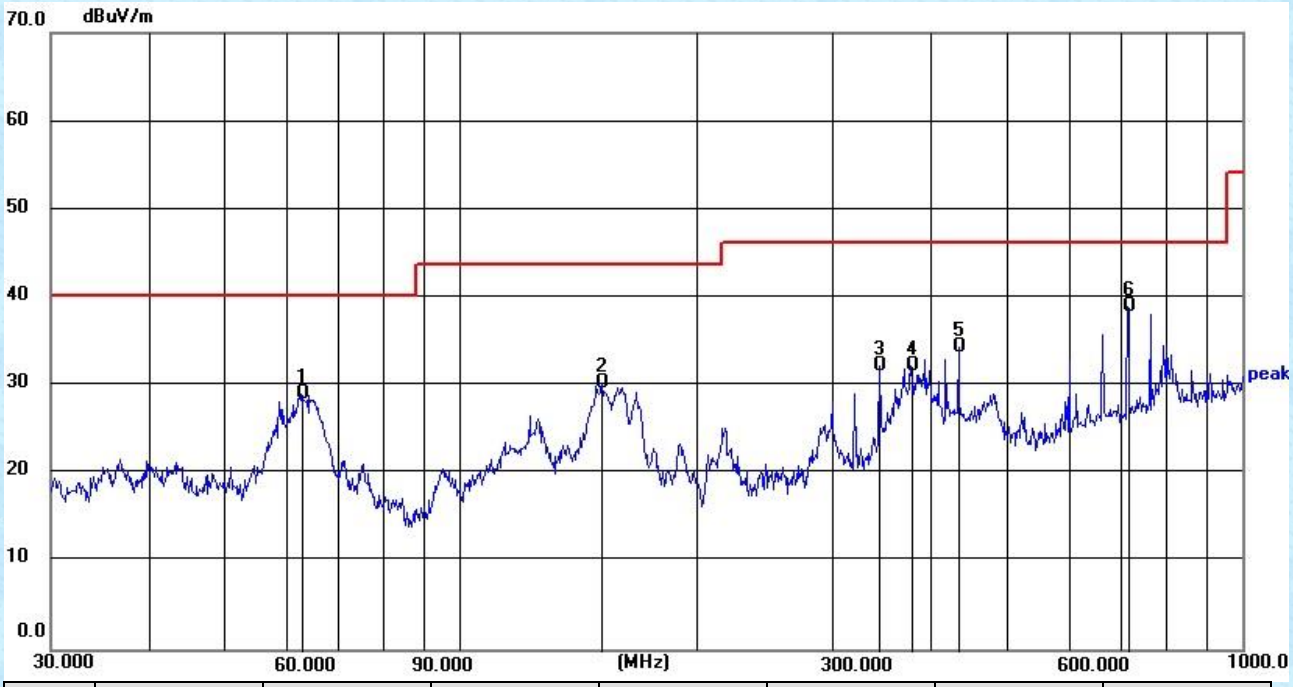
9 kHz ~ 30 MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

30MHz~ 1GHz

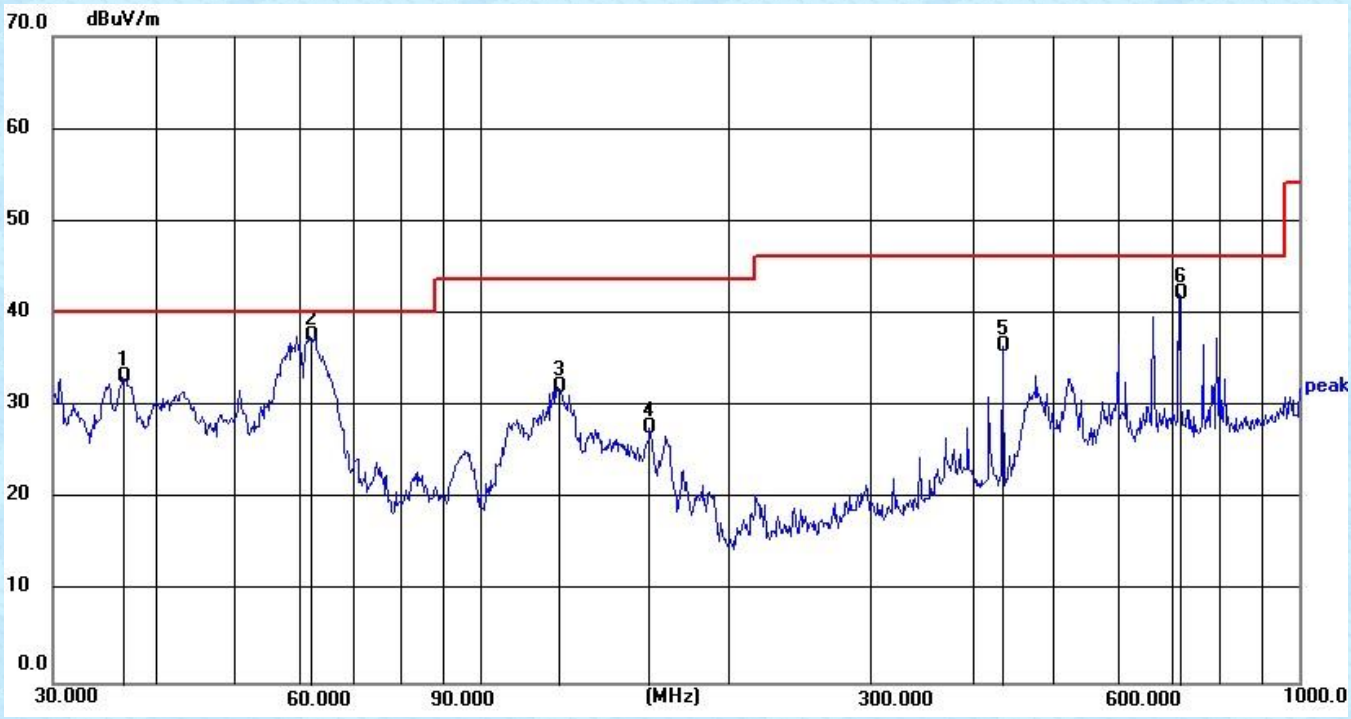
Pre-scan all test modes, found worst case at 802.11n(HT20) 5180MHz, and so only show the test result of 802.11n(HT20) 5180MHz.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	62.6507	15.59	13.44	29.03	40.00	-10.97	QP
2	152.1297	14.39	16.00	30.39	43.50	-13.11	QP
3	344.3854	16.57	15.73	32.30	46.00	-13.70	QP
4	377.2591	15.95	16.38	32.33	46.00	-13.67	QP
5	434.0649	16.72	17.65	34.37	46.00	-11.63	QP
6	714.1734	16.81	22.10	38.91	46.00	-7.09	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.5092	19.73	13.36	33.09	40.00	-6.91	QP
2	61.7781	24.02	13.60	37.62	40.00	-2.38	QP
3	124.1330	17.76	14.29	32.05	43.50	-11.45	QP
4	160.9088	11.81	15.90	27.71	43.50	-15.79	QP
5	434.0651	18.87	17.65	36.52	46.00	-9.48	QP
6	714.1734	20.08	22.10	42.18	46.00	-3.82	QP

Above 1GHz:

802.11a 5180MHz (worst case: Antenna1)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	34.62	38.96	8.27	35.64	46.21	68.2	-21.99	Vertical
15540	31.76	38.4	10.57	35.35	45.38	68.2	-22.82	Vertical
10360	35.87	38.96	8.27	35.64	47.46	68.2	-20.74	Horizontal
15540	31.81	38.4	10.57	35.35	45.43	68.2	-22.77	Horizontal

802.11a 5200MHz (worst case: Antenna1)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	33.84	39.01	8.29	35.67	45.47	68.2	-22.73	Vertical
15600	30.17	38.3	10.62	35.36	43.73	68.2	-24.47	Vertical
10400	31.66	39.01	8.29	35.67	43.29	68.2	-24.91	Horizontal
15600	27.07	38.3	10.62	35.36	40.63	68.2	-27.57	Horizontal

802.11a 5240MHz (worst case: Antenna1)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	34.51	39.15	8.32	35.78	46.2	68.2	-22	Vertical
15720	31.64	38	10.72	35.37	44.99	68.2	-23.21	Vertical
10480	35.62	39.15	8.32	35.78	47.31	68.2	-20.89	Horizontal
15720	31.92	38	10.72	35.37	45.27	68.2	-22.93	Horizontal

802.11n(HT20) 5180MHz (worst case:MIMO)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	33	38.96	8.27	35.64	44.59	68.2	-23.61	Vertical
15540	30.66	38.4	10.57	35.35	44.28	68.2	-23.92	Vertical
10360	34.71	38.96	8.27	35.64	46.3	68.2	-21.9	Horizontal
15540	30.44	38.4	10.57	35.35	44.06	68.2	-24.14	Horizontal

802.11n(HT20) 5200MHz (worst case:MIMO)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	33	39.01	8.29	35.67	44.63	68.2	-23.57	Vertical
15600	29.19	38.3	10.62	35.36	42.75	68.2	-25.45	Vertical
10400	31.16	39.01	8.29	35.67	42.79	68.2	-25.41	Horizontal
15600	26.35	38.3	10.62	35.36	39.91	68.2	-28.29	Horizontal

802.11n(HT20) 5240MHz (worst case: MIMO)

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	34.27	39.15	8.32	35.78	45.96	68.2	-22.24	Vertical
15720	31.28	38	10.72	35.37	44.63	68.2	-23.57	Vertical
10480	34.89	39.15	8.32	35.78	46.58	68.2	-21.62	Horizontal
15720	31.01	38	10.72	35.37	44.36	68.2	-23.84	Horizontal

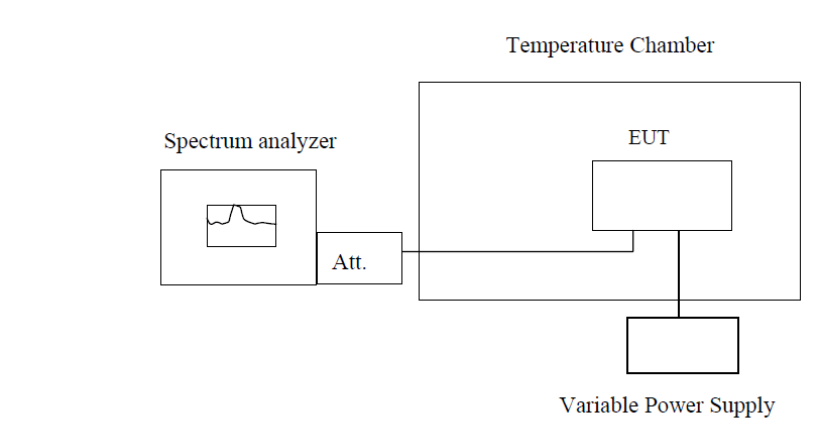
Notes:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.

2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

7.8 Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)
Test Method:	ANSI C63.10, FCC Part 2.1055
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
Test Procedure:	The EUT was setup to ANSI C63.4, 2003; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.

Measurement data:

Frequency stability versus Temp.													
Worst Case Operating Frequency：5180MHz													
Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass / Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
-30	12.0	5180.0298	5.75	P	5180.0284	5.48	P	5180.028	5.41	P	5180.0268	5.17	Pass
-20	12.0	5179.9935	-1.25	P	5179.9906	-1.81	P	5179.9846	-2.97	P	5179.9932	-1.31	Pass
-10	12.0	5179.978	-4.25	P	5179.9768	-4.48	P	5179.9809	-3.69	P	5179.9844	-3.01	Pass
0	12.0	5180.0241	4.65	P	5180.0227	4.38	P	5180.0188	3.63	P	5180.0246	4.75	Pass
10	12.0	5179.9624	-7.26	P	5179.9534	-9	P	5179.9566	-8.38	P	5179.959	-7.92	Pass
20	12.0	5179.9515	-9.36	P	5179.951	-9.46	P	5179.9496	-9.73	P	5179.9513	-9.4	Pass
30	12.0	5180.0238	4.59	P	5180.0187	3.61	P	5180.0222	4.29	P	5180.0189	3.65	Pass
40	12.0	5180.0002	0.04	P	5180.0006	0.12	P	5180.0042	0.81	P	5180.0093	1.8	Pass
50	12.0	5179.9807	-3.73	P	5179.9787	-4.11	P	5179.9798	-3.9	P	5179.9774	-4.36	Pass
Frequency stability versus Voltage.													
Worst Case Operating Frequency：5180MHz													
Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
25	6.3	5180.0356	6.87	P	5180.0343	6.62	P	5180.0265	5.12	P	5180.0327	6.31	Pass
25	12.0	5179.9922	-1.51	P	5179.9937	-1.22	P	5179.9855	-2.8	P	5179.9913	-1.68	Pass
25	18.7	5179.9832	-3.24	P	5179.9754	-4.75	P	5179.9755	-4.73	P	5179.9786	-4.13	Pass
Frequency stability versus Temp.													
Worst Case Operating Frequency：5200MHz													
Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass / Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
-30	12.0	5200.0092	1.77	P	5200.0102	1.96	P	5200.0169	3.25	P	5200.0194	3.73	Pass
-20	12.0	5199.9856	-2.77	P	5199.9886	-2.19	P	5199.9863	-2.63	P	5199.9915	-1.63	Pass
-10	12.0	5199.9817	-3.52	P	5199.9764	-4.54	P	5199.9761	-4.6	P	5199.9798	-3.88	Pass
0	12.0	5200.0237	4.56	P	5200.0193	3.71	P	5200.016	3.08	P	5200.0194	3.73	Pass
10	12.0	5199.9627	-7.17	P	5199.9568	-8.31	P	5199.9607	-7.56	P	5199.9592	-7.85	Pass
20	12.0	5199.9509	-9.44	P	5199.95	-9.62	P	5199.9481	-9.98	P	5199.9484	-9.92	Pass
30	12.0	5200.0183	3.52	P	5200.019	3.65	P	5200.0173	3.33	P	5200.017	3.27	Pass
40	12.0	5199.9979	-0.4	P	5200.001	0.19	P	5199.9999	-0.02	P	5199.9977	-0.44	Pass
50	12.0	5199.9808	-3.69	P	5199.9775	-4.33	P	5199.9797	-3.9	P	5199.9775	-4.33	Pass
Frequency stability versus Voltage.													
Worst Case Operating Frequency：5200MHz													
Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
25	6.3	5200.0149	2.87	P	5200.011	2.12	P	5200.0121	2.33	P	5200.0136	2.62	Pass
25	12.0	5199.9933	-1.29	P	5199.9899	-1.94	P	5199.9944	-1.08	P	5199.9886	-2.19	Pass
25	18.7	5199.9812	-3.62	P	5199.9794	-3.96	P	5199.9772	-4.38	P	5199.9745	-4.9	Pass

Frequency stability versus Temp.

Worst Case Operating Frequency：5240MHz

Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass / Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
-30	12.0	5240.0112	5.21	P	5240.011	6.79	P	5240.0066	6.43	P	5240.0122	5.95	Pass
-20	12.0	5239.9849	-1.34	P	5239.99	-2.21	P	5239.9878	-2.31	P	5239.9925	-1.98	Pass
-10	12.0	5239.9797	-3.99	P	5239.9834	-4.01	P	5239.9768	-3.89	P	5239.9786	-3.57	Pass
0	12.0	5240.0234	4.08	P	5240.0169	3.61	P	5240.0161	4.54	P	5240.02	4.12	Pass
10	12.0	5239.9582	-8.89	P	5239.9614	-8.89	P	5239.9558	-7.6	P	5239.9614	-7.94	Pass
20	12.0	5239.9492	-9.33	P	5239.9504	-9.5	P	5239.9527	-9.56	P	5239.9507	-9.52	Pass
30	12.0	5240.0182	4.35	P	5240.0239	4.9	P	5240.026	4.45	P	5240.0262	3.05	Pass
40	12.0	5240.0078	0.67	P	5240.0062	1.95	P	5240.0045	-0.04	P	5239.998	-0.55	Pass
50	12.0	5239.9813	-3.87	P	5239.9822	-3.7	P	5239.9807	-3.4	P	5239.9808	-4.08	Pass

Frequency stability versus Voltage.

Worst Case Operating Frequency：5240MHz

Temp. (°C)	Power Supply (VDC)	0 minute			2 minute			5 minute			10 minute		
		Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail	Measured Frequency (MHz)	Frequency Error (ppm)	Pass /Fail
25	6.3	5239.9741	-4.43	P	5239.9741	-4.87	P	5239.9758	0	P	5239.9777	-4.2	Pass
25	12.0	5240.0161	3.72	P	5240.0179	3.89	P	5240.0243	3.68	P	5240.0239	4.94	Pass
25	18.7	5239.9958	1.3	P	5240.0009	1.34	P	5240.0097	1.66	P	5240.008	-0.36	Pass

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

---END---