

# FCC Test Report

**Applicant** : **Vuaant, Inc. (dba care.ai)**

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**Address** : **7300 Sand Lake Commons BLVD Orlando FL  
32819 USA**

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**Product Name** : **Ambient Monitoring Sensor**

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**Report Date** : **Mar. 15, 2024**

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**Shenzhen Anbotek Compliance Laboratory Limited**

**Shenzhen Anbotek Compliance Laboratory Limited**

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Code: AB-RF-05-b



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## TEST REPORT

Applicant : Vuaant, Inc. (dba care.ai)  
Manufacturer : Vuaant, Inc. (dba care.ai)  
Product Name : Ambient Monitoring Sensor  
Model No. : AMS-R2O  
Trade Mark :   
Rating(s) : Input: 12V== 2A

**Test Standard(s) : FCC Part15 Subpart E, Paragraph 15.407**

**Test Method(s) : ANSI C63.10: 2020  
KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart E requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

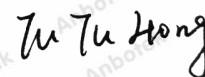
Date of Receipt

Sept. 07, 2022

Date of Test

Sept. 07~Aug. 08, 2023

Prepared By



(TuTu Hong)

Approved & Authorized Signer



(Edward Pan)



**Revision History**

Report Version	Description	Issued Date
R00	Original Issue.	Mar. 15, 2024




## 1. General Information

### 1.1. Client Information

Applicant	:	Vuaant, Inc. (dba care.ai)
Address	:	7300 Sand Lake Commons BLVD Orlando FL 32819 USA
Manufacturer	:	Vuaant, Inc. (dba care.ai)
Address	:	7300 Sand Lake Commons BLVD Orlando FL 32819 USA
Factory	:	Vuaant, Inc. (dba care.ai)
Address	:	7300 Sand Lake Commons BLVD Orlando FL 32819 USA

### 1.2. Description of Device (EUT)

Product Name	:	Ambient Monitoring Sensor			
Model No.	:	AMS-R20			
Trade Mark	:				
Test Power Supply	:	AC 120V, 60Hz for Adapter			
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)			
Adapter	:	Model: TEKA-TD120200US Input: 100-240V~50/60Hz 0.7A Output: 12V.0= 2.0A			
<b>RF Specification</b>					
Operation Mode	:	<input checked="" type="checkbox"/> a	<input checked="" type="checkbox"/> n(HT20)	<input checked="" type="checkbox"/> n(HT40)	<input checked="" type="checkbox"/> ac(VHT20)
		<input checked="" type="checkbox"/> ac(VHT40)	<input checked="" type="checkbox"/> ac(VHT80)	<input type="checkbox"/> ac(VHT160)	<input type="checkbox"/> ax(HEW20)
		<input type="checkbox"/> ax(HEW40)	<input type="checkbox"/> ax(HEW80)	<input type="checkbox"/> ax(HEW160)	
Device Type	:	<input type="checkbox"/> Outdoor AP	<input type="checkbox"/> Indoor AP	<input type="checkbox"/> Point-to-point AP	
		<input checked="" type="checkbox"/> Client			
TPC Function	:	<input type="checkbox"/> With TPC		<input checked="" type="checkbox"/> Without TPC	
DFS Type	:	<input checked="" type="checkbox"/> Slave without radar detection		<input type="checkbox"/> Slave with radar detection	
		<input type="checkbox"/> Master			
Operation Frequency	:	<input checked="" type="checkbox"/> Wi-Fi 5.2G: 5150~5250MHz		<input checked="" type="checkbox"/> Wi-Fi 5.3G: 5250~5350MHz	
		<input checked="" type="checkbox"/> Wi-Fi 5.6G: 5470~5725MHz		<input checked="" type="checkbox"/> Wi-Fi 5.8G: 5725~5850MHz	
Number of Channel	:	Wi-Fi 5.2G:			
		<input checked="" type="checkbox"/> 4 Channels for 20MHz bandwidth (5180-5240MHz)			
		<input checked="" type="checkbox"/> 2 Channels for 40MHz bandwidth (5190-5230MHz)			





	<input checked="" type="checkbox"/> 1 Channels for 80MHz bandwidth (5210MHz) Wi-Fi 5.3G: <input checked="" type="checkbox"/> 4 Channels for 20MHz bandwidth (5260-5320MHz) <input checked="" type="checkbox"/> 2 Channels for 40MHz bandwidth (5270-5310MHz) <input checked="" type="checkbox"/> 1 Channels for 80MHz bandwidth (5290MHz) Wi-Fi 5.6G: <input checked="" type="checkbox"/> 11 Channels for 20MHz bandwidth (5500-5700MHz) <input checked="" type="checkbox"/> 5 Channels for 40MHz bandwidth (5510-5670MHz) <input checked="" type="checkbox"/> 2 Channels for 80MHz bandwidth (5530~5610MHz) Wi-Fi 5.8G: <input checked="" type="checkbox"/> 5 Channels for 20MHz bandwidth (5745MHz ~ 5825MHz) <input checked="" type="checkbox"/> 2 Channels for 40MHz bandwidth (5755MHz ~ 5795MHz) <input checked="" type="checkbox"/> 1 Channels for 80MHz bandwidth (5775MHz)
Modulation Type	<input checked="" type="checkbox"/> 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) <input checked="" type="checkbox"/> 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) <input checked="" type="checkbox"/> 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) <input type="checkbox"/> 802.11ax: OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Antenna Type	Rod Antenna
Antenna Gain(Peak)	Wi-Fi 5.2G: 4.11dBi Wi-Fi 5.3G: 5.24dBi Wi-Fi 5.6G: 5.81dBi Wi-Fi 5.8G: 4.81dBi
<b>Remark:</b> 1) All of the RF specification are provided by customer. 2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	

### 1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
--	--

### 1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Frequency Band	Mode	Test channel	Frequency (MHz)
5.2GHz	OFDM 802.11a/n(HT20) /ac(HT20)	CH 36	5180MHz
		CH 40	5200MHz
		CH 48	5240MHz



	OFDM 802.11n(HT40)/ac(HT40)	CH 38	5190MHz
		CH 46	5230MHz
5.3GHz	OFDM 802.11ac(HT80)	CH 42	5210MHz
		CH 52	5260MHz
	OFDM 802.11a/n(HT20) /ac(HT20)	CH 60	5300MHz
		CH 64	5320MHz
	OFDM 802.11n(HT40)/ac(HT40)	CH 54	5270MHz
		CH 62	5310MHz
OFDM 802.11ac(HT80)	CH 58	5290MHz	
	OFDM 802.11a/n(HT20) /ac(HT20)	CH 100	5500MHz
CH 120		5600MHz	
CH 140		5700MHz	
5.6GHz	OFDM 802.11n(HT40)/ac(HT40)	CH 102	5510MHz
		CH 118	5590MHz
	OFDM 802.11ac(HT80)	CH 134	5670MHz
		CH 106	5530MHz
5.8GHz	OFDM 802.11a/n(HT20) /ac(HT20)	CH 122	5610MHz
		CH 149	5745MHz
		CH 157	5785MHz
	OFDM 802.11n(HT40)/ac(HT40)	CH 165	5825MHz
		CH 151	5755MHz
		CH 159	5795MHz
OFDM 802.11ac(HT80)	CH 155	5775MHz	

**Note:**

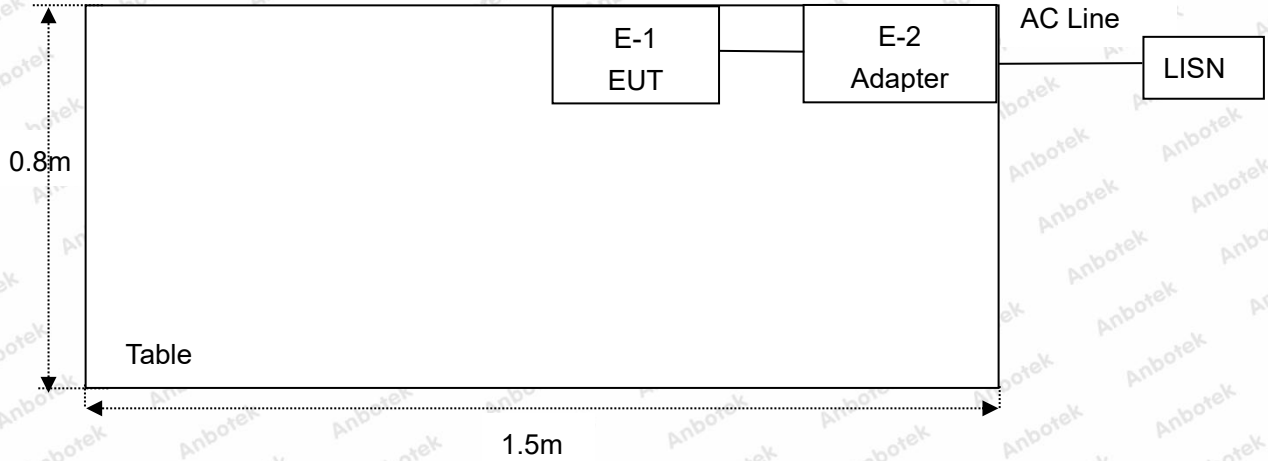
1. The measurements are performed at the highest, middle, lowest available channels.
2. The EUT has been tested as an independent unit. And Continual Transmitting in maximum power.
3. For the relevant Conducted Measurement, the temporary antenna connector is used during the measurement. Antenna Connector Impedance: 50Ω, Cable Loss: 1.0 dB
4. The EUT was programmed to be in continuously transmitting mode.



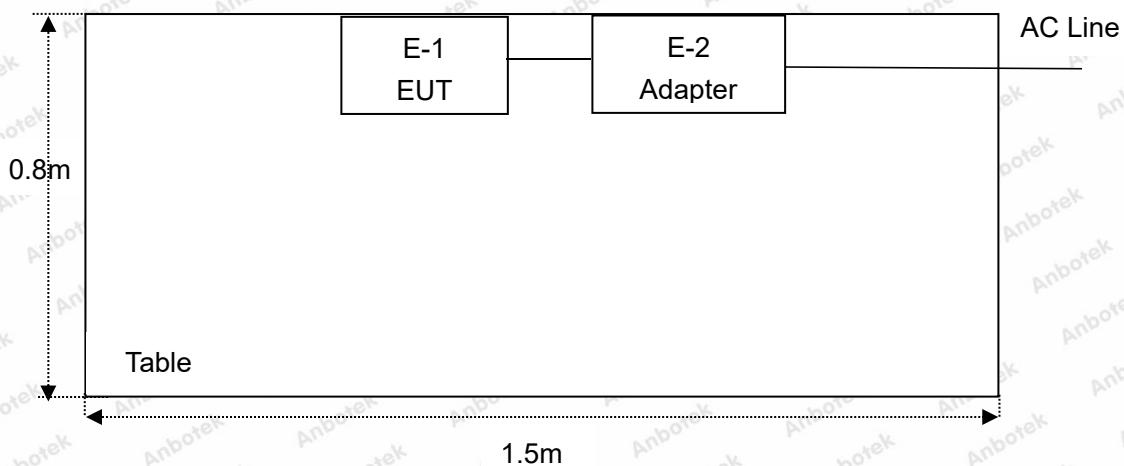


## 1.5. Description Of Test Setup

CE



RE



**1.6. Test Equipment List**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Oct. 23, 2022	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	Jul. 05, 2022	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 13, 2022	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 23, 2022	1 Year
5.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2022	1 Year
6.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 13, 2022	1 Year
7.	EMI Preamplifier	SKET Electronic	LNPA-0118G- 45	SKET-PA-002	Oct. 13, 2022	1 Year
8.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 23, 2022	1 Year
10.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 23, 2022	1 Year
11.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Oct. 23, 2022	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	Oct. 23, 2022	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY53280032	Oct. 13, 2022	1 Year
15.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 13, 2022	1 Year
16.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 13, 2022	1 Year
17.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 22, 2022	1 Year
18.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 19, 2022	1 Year



**1.7. Measurement Uncertainty**

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.8dB
Occupied Bandwidth	925Hz
Conducted Output Power	0.76dB
Power Spectral Density	0.76dB
Conducted Spurious Emission	1.24dB
Radiated spurious emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

**1.8. Description of Test Facility**

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

**FCC-Registration No.: 434132**

Shenzhen Anbotek Compliance Laboratory Limited, 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 our files. Registration No. 434132.

**ISED-Registration No.: 8058A**

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

**Test Location**

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.





**1.9. Disclaimer**

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.



## 2. Summary of Test Results

Standard	Test Type	Result
15.207 & 15.407(b)	Conducted Emission	PASS
15.205 & 15.209	Spurious Emission	PASS
15.407(b)	Band Edge	PASS
15.407(a) & 2.1049	26dB Bandwidth & 99% Occupied Bandwidth	PASS
15.407(e)	Minimum 6dB bandwidth (5.725-5.85GHz band)	PASS
15.407(a)	Maximum Conducted Output Power	PASS
15.407(a)	Peak Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.407(h)	Dynamic Frequency Selection (DFS)	PASS (Please Refer to DFS Report)
15.203	Antenna Requirement	PASS



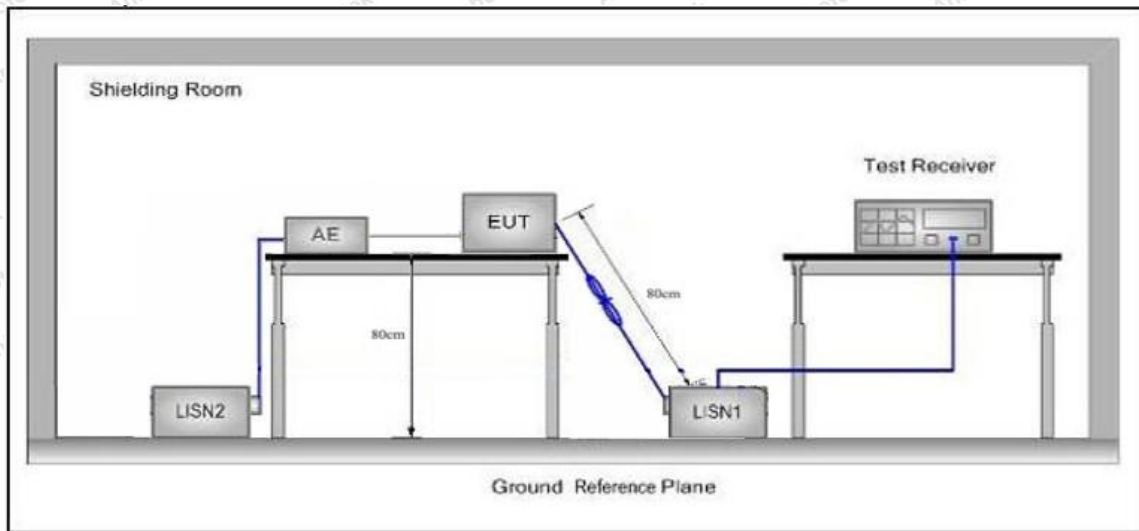
## 3. Conducted Emission Test

### 3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207 & 15.407(b)		
	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
Test Limit	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50

**Remark:** (1) \*Decreasing linearly with logarithm of the frequency.  
 (2) The lower limit shall apply at the transition frequency.

### 3.2. Test Setup



### 3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10: 2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

### 3.4. Test Data

During the test, pre-scan all modes, and found the 802.11ac(VHT80) 5210MHz which is the worst case, only the worst case is recorded in the report.

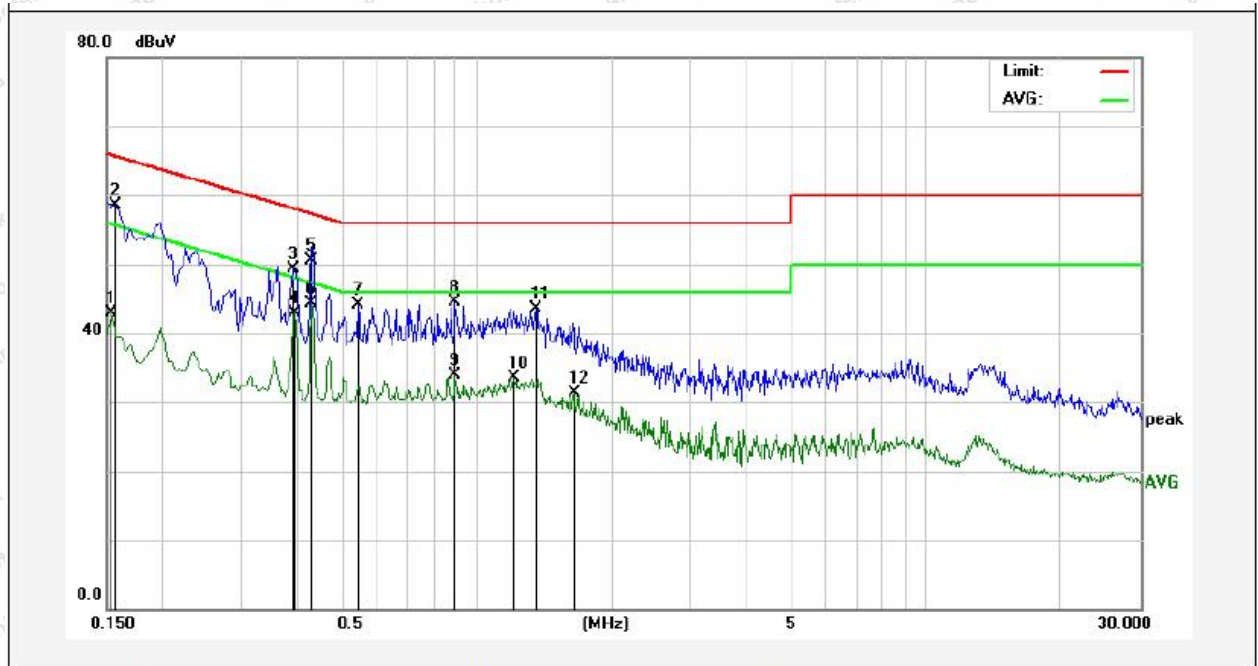
AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.





### Conducted Emission Test Data

Test Site: 1# Shielded Room  
 Operating Condition: 802.11ac(VHT80) 5210MHz  
 Test Specification: AC 120V, 60Hz for Adapter  
 Comment: Live Line  
 Temp.(°C)/Hum.(%RH): 22.1°C/52%RH

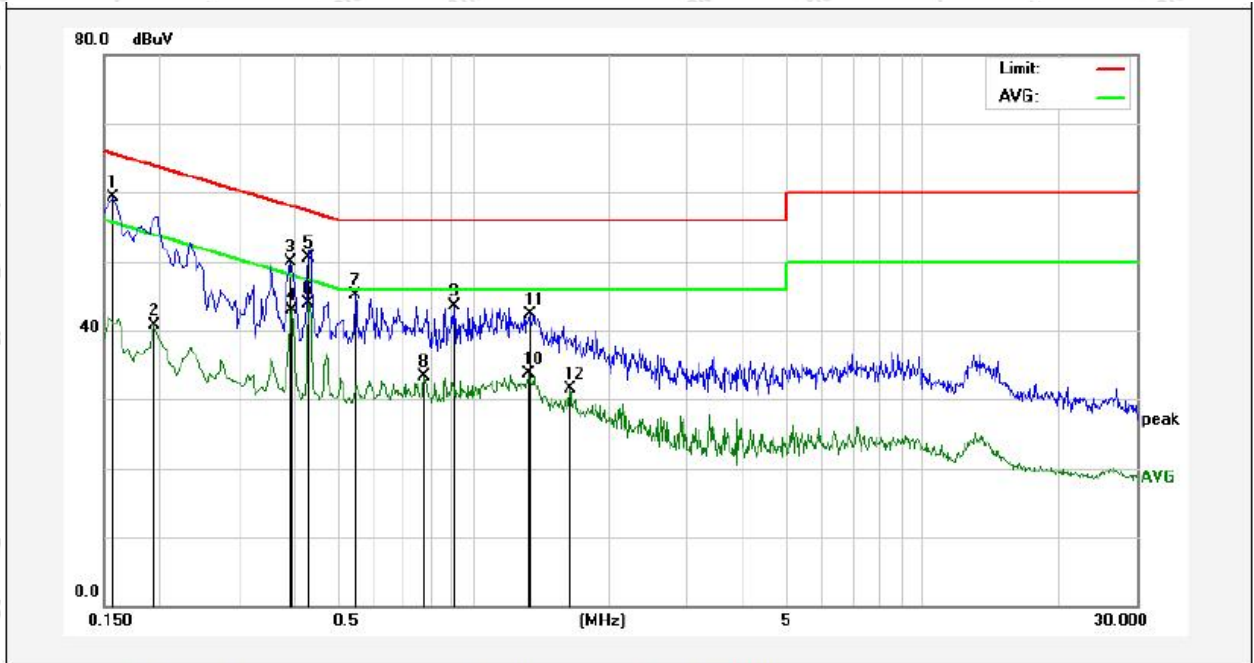


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1539	23.09	19.83	42.92	55.78	-12.86	AVG	
2	0.1580	38.76	19.83	58.59	65.56	-6.97	QP	
3	0.3899	29.49	19.81	49.30	58.06	-8.76	QP	
4	0.3940	23.16	19.81	42.97	47.98	-5.01	AVG	
5	0.4300	30.75	19.82	50.57	57.25	-6.68	QP	
6	0.4300	24.43	19.82	44.25	47.25	-3.00	AVG	
7	0.5460	24.23	19.86	44.09	56.00	-11.91	QP	
8	0.8980	24.65	19.86	44.51	56.00	-11.49	QP	
9	0.8980	14.06	19.86	33.92	46.00	-12.08	AVG	
10	1.2140	13.63	19.85	33.48	46.00	-12.52	AVG	
11	1.3580	23.60	19.86	43.46	56.00	-12.54	QP	
12	1.6460	11.40	19.85	31.25	46.00	-14.75	AVG	



### Conducted Emission Test Data

Test Site: 1# Shielded Room  
 Operating Condition: 802.11ac(VHT80) 5210MHz  
 Test Specification: AC 120V, 60Hz for Adapter  
 Comment: Neutral Line  
 Temp.(°C)/Hum.(%RH): 22.1°C/52%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1580	39.50	19.83	59.33	65.56	-6.23	QP	
2	0.1940	20.79	19.82	40.61	53.86	-13.25	AVG	
3	0.3899	30.12	19.81	49.93	58.06	-8.13	QP	
4	0.3940	23.06	19.81	42.87	47.98	-5.11	AVG	
5	0.4300	30.62	19.82	50.44	57.25	-6.81	QP	
6	0.4300	24.13	19.82	43.95	47.25	-3.30	AVG	
7	0.5460	25.30	19.86	45.16	56.00	-10.84	QP	
8	0.7780	13.41	19.87	33.28	46.00	-12.72	AVG	
9	0.9060	23.65	19.86	43.51	56.00	-12.49	QP	
10	1.3260	13.90	19.86	33.76	46.00	-12.24	AVG	
11	1.3340	22.52	19.86	42.38	56.00	-13.62	QP	
12	1.6420	11.59	19.85	31.44	46.00	-14.56	AVG	





## 4. Radiation Spurious Emission and Band Edge

### 4.1. Test Standard and Limit

Radiated Spurious Emission					
Test Standard	FCC Part15 C Section 15.205 & 15.209				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	68.2	Peak	3
Band Edge					
Test Standard	15.407(b)				
Test Limit	Operating Band	Frequency	EIRP Limit		Remark
	5150-5250MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m		Peak
	5250-5350MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m		Peak
	5470-5725MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m		Peak
	5725-5850 MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m		Peak
		1GHz-5.65GHz	-27*dBm/MHz to 10dBm/MHz (68.2* dBuV/m to 105.6dBuV/m)		Peak
		5.65GHz-5.7GHz	10*dBm/MHz to 15.6dBm/MHz (105.6*dBuV/m to 110.8dBuV/m)		Peak
		5.7GHz-5.72GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m)		Peak
		5.72GHz-5.725GHz	27dBm/MHz to 15.6*dBm/MHz (122.2dBuV/m to 110.8* dBuV/m)		Peak
	5.85GHz-5.855GHz	15.6dBm/MHz to 10*dBm/MHz (110.8dBuV/m to 105.6* dBuV/m)		Peak	





	5.855GHz-5.875GHz	10dBm/MHz to -27*dBm/MHz (105.6dBuV/m to 68.2* dBuV/m)	Peak
	5.875GHz-5.925GHz	-27 dBm/MHz(68.2dBuV/m)@3m	Peak

**Remark:**

- (1)The lower limit shall apply at the transition frequency.
- (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.
- (3)Above 1GHz limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2 \text{ dBuV/m}$ , for  $EIPR[dBm] = -27 \text{ dBm}$ .

## 4.2. Test Setup

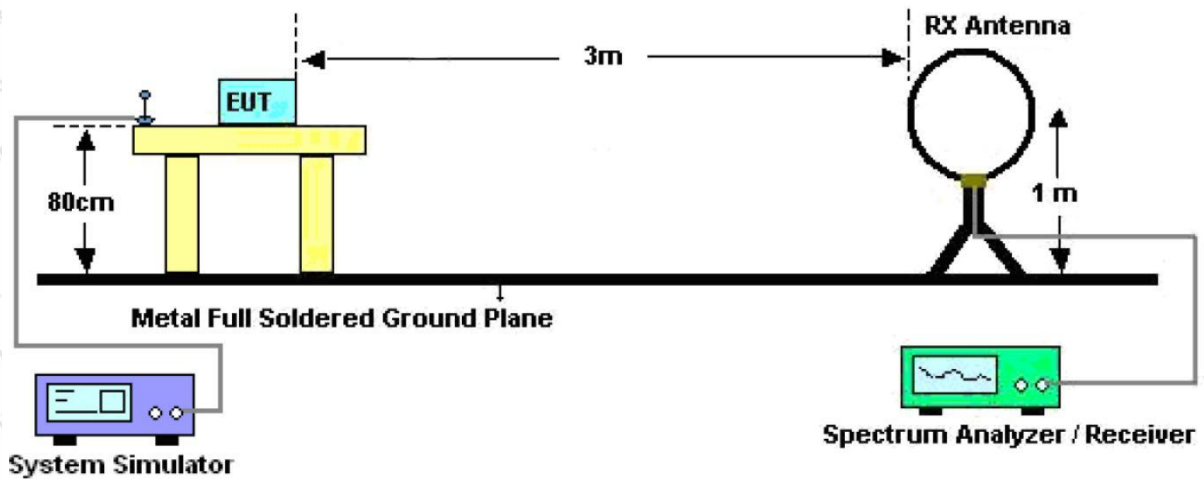


Figure 1. Below 30MHz



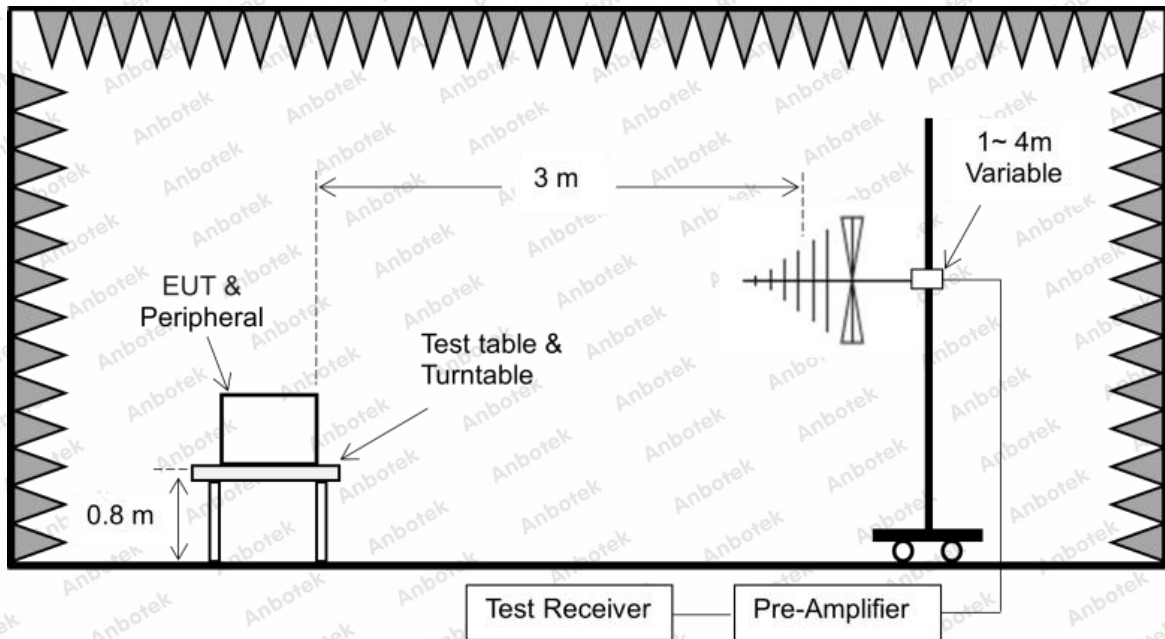


Figure 2. 30MHz to 1GHz

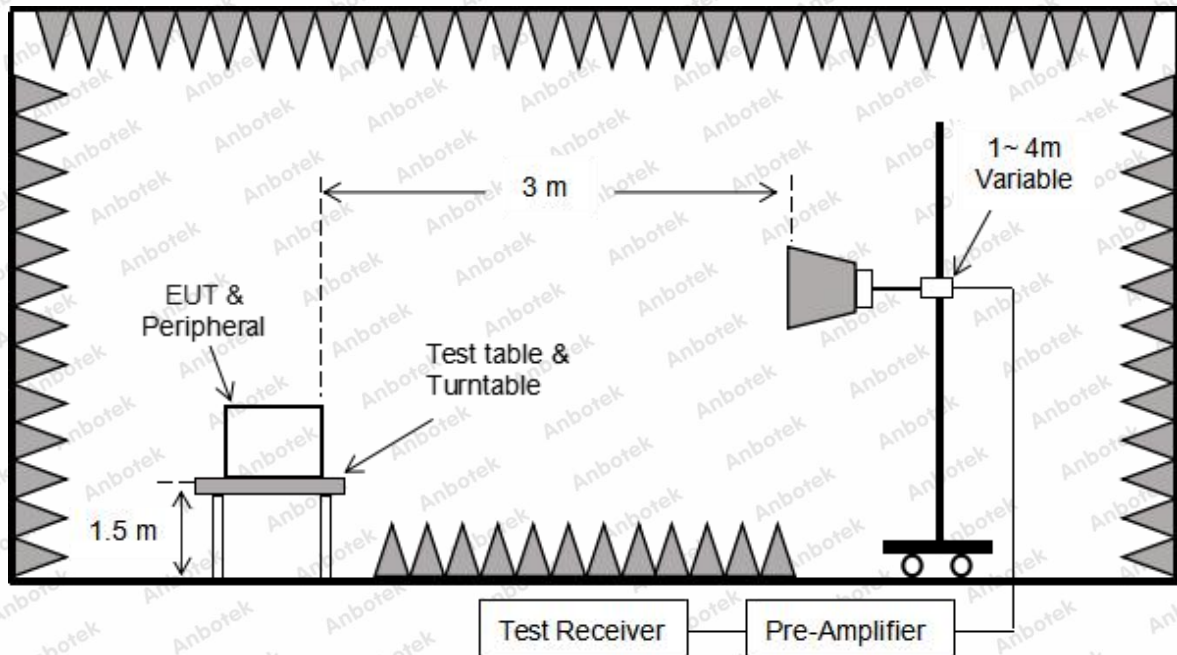


Figure 3. Above 1 GHz

### 4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level.





Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz, Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

#### 4.4. Test Data

##### PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

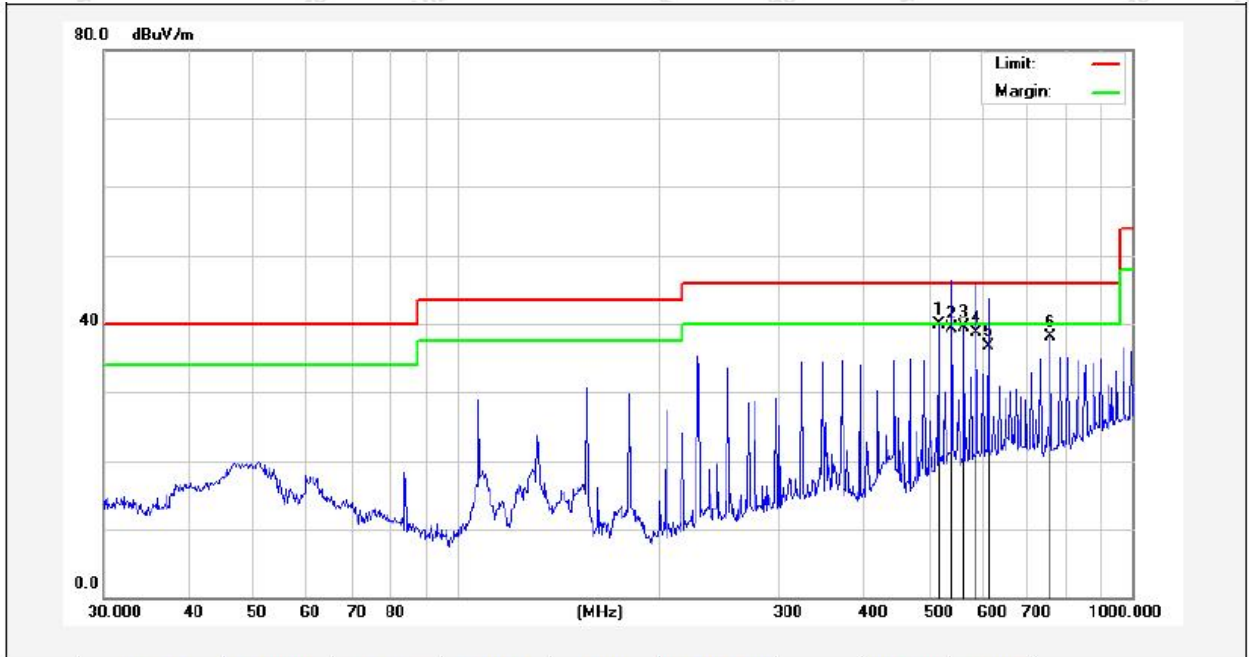
During the test, pre-scan all the modes, and found the 802.11ac(VHT80) 5210MHz which is the worst case, only the worst case is recorded in the report.





**Test Results (30~1000MHz)**

Test Mode: 802.11ac(VHT80) 5210MHz  
 Power Source: AC 120V, 60Hz for Adapter  
 Polarization: Vertical  
 Temp.(°C)/Hum.(%RH): 24.8°C/41%RH

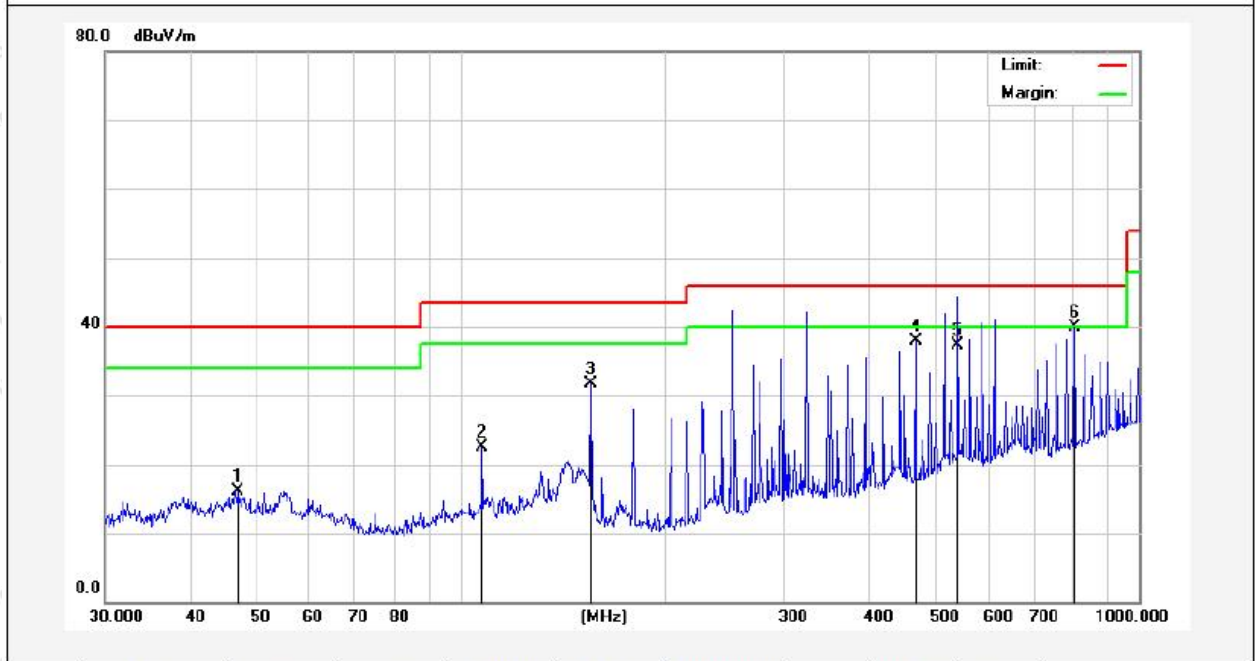


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	517.2480	52.03	-12.06	39.97	46.00	-6.03	QP			
2	541.3725	51.13	-11.85	39.28	46.00	-6.72	QP			
3	564.6389	50.93	-11.41	39.52	46.00	-6.48	QP			
4	588.9051	49.51	-10.79	38.72	46.00	-7.28	QP			
5	612.0642	47.22	-10.55	36.67	46.00	-9.33	QP			
6	758.0408	47.09	-9.08	38.01	46.00	-7.99	QP			



### Test Results (30~1000MHz)

Test Mode: 802.11ac(VHT80) 5210MHz  
 Power Source: AC 120V, 60Hz for Adapter  
 Polarization: Horizontal  
 Temp.(°C)/Hum.(%RH): 24.8°C/41%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	46.9948	31.56	-15.43	16.13	40.00	-23.87	QP			
2	107.8877	45.20	-22.79	22.41	43.50	-21.09	QP			
3	155.9101	55.23	-23.54	31.69	43.50	-11.81	QP			
4	468.8762	52.73	-14.83	37.90	46.00	-8.10	QP			
5	541.3725	49.39	-12.12	37.27	46.00	-8.73	QP			
6	804.6028	48.03	-8.19	39.84	46.00	-6.16	QP			



## Test Results (Above 1000MHz)

## Test Mode: IEEE 802.11ac(VHT80) for WiFi 5.2G

Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Over limit (dB)	Antenna Pol.	Detector
10420.00	30.08	23.81	53.89	68.20	-14.31	V	Peak
15630.00	30.79	29.36	60.15	68.20	-8.05	V	Peak
10420.00	31.04	23.81	54.85	68.20	-13.35	H	Peak
15630.00	32.29	29.36	61.65	68.20	-6.55	H	Peak
10420.00	20.58	23.81	44.39	54.00	-9.61	V	AVG
15630.00	21.53	29.36	50.89	54.00	-3.11	V	AVG
10420.00	20.70	23.81	44.51	54.00	-9.49	H	AVG
15630.00	21.70	29.36	51.06	54.00	-2.94	H	AVG

## Remark:

1. During the test, pre-scan the 802.11a, 802.11n(HT20), ac(VHT20), n(HT40), ac(VHT40), ac(VHT80) mode, and found the 802.11ac(VHT80) mode is worse case , the report only record this mode.
2. Result =Reading + Factor





**Radiated Band Edge: 5.2G&5.3G**

Test Mode: IEEE 802.11a							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.69	15.99	52.68	68.20	-15.52	H	Peak
5150.00	38.71	15.99	54.70	68.20	-13.50	V	Peak
5150.00	26.71	15.99	42.70	54.00	-11.30	H	AVG
5150.00	28.68	15.99	44.67	54.00	-9.33	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.22	16.43	53.65	68.20	-14.55	H	Peak
5350.00	39.98	16.43	56.41	68.20	-11.79	V	Peak
5350.00	28.44	16.43	44.87	54.00	-9.13	H	AVG
5350.00	29.44	16.43	45.87	54.00	-8.13	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11n(HT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.74	15.99	51.73	68.20	-16.47	H	Peak
5150.00	37.06	15.99	53.05	68.20	-15.15	V	Peak
5150.00	26.46	15.99	42.45	54.00	-11.55	H	AVG
5150.00	27.48	15.99	43.47	54.00	-10.53	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.51	16.43	53.94	68.20	-14.26	H	Peak
5350.00	38.60	16.43	55.03	68.20	-13.17	V	Peak
5350.00	27.52	16.43	43.95	54.00	-10.05	H	AVG
5350.00	28.89	16.43	45.32	54.00	-8.68	V	AVG

Remark: 1. Result =Reading + Factor



Test Mode: IEEE 802.11n(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.16	15.99	52.15	68.20	-16.05	H	Peak
5150.00	38.03	15.99	54.02	68.20	-14.18	V	Peak
5150.00	26.70	15.99	42.69	54.00	-11.31	H	AVG
5150.00	28.61	15.99	44.60	54.00	-9.40	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.87	16.43	54.30	68.20	-13.90	H	Peak
5350.00	36.81	16.43	53.24	68.20	-14.96	V	Peak
5350.00	27.95	16.43	44.38	54.00	-9.62	H	AVG
5350.00	29.10	16.43	45.53	54.00	-8.47	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(VHT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.59	15.99	52.58	68.20	-15.62	H	Peak
5150.00	38.29	15.99	54.28	68.20	-13.92	V	Peak
5150.00	26.37	15.99	42.36	54.00	-11.64	H	AVG
5150.00	28.46	15.99	44.45	54.00	-9.55	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.69	16.43	54.12	68.20	-14.08	H	Peak
5350.00	37.97	16.43	54.40	68.20	-13.80	V	Peak
5350.00	27.55	16.43	43.98	54.00	-10.02	H	AVG
5350.00	28.01	16.43	44.44	54.00	-9.56	V	AVG

Remark: 1. Result =Reading + Factor



Test Mode: IEEE 802.11ac(VHT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.57	15.99	51.56	68.20	-16.64	H	Peak
5150.00	36.12	15.99	52.11	68.20	-16.09	V	Peak
5150.00	25.62	15.99	41.61	54.00	-12.39	H	AVG
5150.00	26.49	15.99	42.48	54.00	-11.52	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.77	16.43	54.20	68.20	-14.00	H	Peak
5350.00	36.99	16.43	53.42	68.20	-14.78	V	Peak
5350.00	27.30	16.43	43.73	54.00	-10.27	H	AVG
5350.00	27.05	16.43	43.48	54.00	-10.52	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(VHT80)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.83	15.99	51.82	68.20	-16.38	H	Peak
5150.00	36.03	15.99	52.02	68.20	-16.18	V	Peak
5150.00	26.15	15.99	42.14	54.00	-11.86	H	AVG
5150.00	26.54	15.99	42.53	54.00	-11.47	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5350.00	37.89	16.43	54.32	68.20	-13.88	H	Peak
5350.00	37.12	16.43	53.55	68.20	-14.65	V	Peak
5350.00	28.31	16.43	44.74	54.00	-9.26	H	AVG
5350.00	27.81	16.43	44.24	54.00	-9.76	V	AVG

Remark: 1. Result =Reading + Factor





**Radiated Band Edge: 5.6G&5.8G**

**Test Mode: IEEE 802.11a**

Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	37.97	16.37	54.34	74.00	-19.66	H	Peak
5460.00	39.28	16.37	55.65	74.00	-18.35	V	Peak
5470.00	38.52	16.70	55.22	68.20	-12.98	H	Peak
5470.00	39.05	16.70	55.75	68.20	-12.45	V	Peak
5460.00	28.62	16.37	44.99	54.00	-9.01	H	AVG
5460.00	28.47	16.37	44.84	54.00	-9.16	V	AVG
5470.00	28.61	16.70	45.31	54.00	-8.69	H	AVG
5470.00	29.67	16.70	46.37	54.00	-7.63	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.88	17.21	56.09	68.20	-12.11	H	Peak
5850.00	39.21	17.21	56.42	68.20	-11.78	V	Peak
5850.00	28.90	17.21	46.11	54.00	-7.89	H	AVG
5850.00	28.95	17.21	46.16	54.00	-7.84	V	AVG

Remark: Result =Reading + Factor

**Test Mode: IEEE 802.11n(HT20)**

Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	37.93	16.37	54.30	74.00	-19.70	H	Peak
5460.00	38.45	16.37	54.82	74.00	-19.18	V	Peak
5470.00	37.62	16.70	54.32	68.20	-13.88	H	Peak
5470.00	37.88	16.70	54.58	68.20	-13.62	V	Peak
5460.00	27.05	16.37	43.42	54.00	-10.58	H	AVG
5460.00	27.42	16.37	43.79	54.00	-10.21	V	AVG
5470.00	27.28	16.70	43.98	54.00	-10.02	H	AVG
5470.00	27.65	16.70	44.35	54.00	-9.65	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.12	17.21	54.33	68.20	-13.87	H	Peak
5850.00	37.79	17.21	55.00	68.20	-13.20	V	Peak
5850.00	27.33	17.21	44.54	54.00	-9.46	H	AVG
5850.00	28.24	17.21	45.45	54.00	-8.55	V	AVG

Remark: 1. Result =Reading + Factor



Test Mode: IEEE 802.11n(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	37.51	16.37	53.88	74.00	-20.12	H	Peak
5460.00	38.33	16.37	54.70	74.00	-19.30	V	Peak
5470.00	37.92	16.70	54.62	68.20	-13.58	H	Peak
5470.00	38.42	16.70	55.12	68.20	-13.08	V	Peak
5460.00	26.68	16.37	43.05	54.00	-10.95	H	AVG
5460.00	28.61	16.37	44.98	54.00	-9.02	V	AVG
5470.00	26.57	16.70	43.27	54.00	-10.73	H	AVG
5470.00	28.08	16.70	44.78	54.00	-9.22	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.87	17.05	54.92	68.20	-13.28	H	Peak
5850.00	38.30	17.05	55.35	68.20	-12.85	V	Peak
5850.00	28.02	17.05	45.07	54.00	-8.93	H	AVG
5850.00	29.17	17.05	46.22	54.00	-7.78	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(VHT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	37.19	16.37	53.56	74.00	-20.44	H	Peak
5460.00	37.43	16.37	53.80	74.00	-20.20	V	Peak
5470.00	37.42	16.70	54.12	68.20	-14.08	H	Peak
5470.00	38.06	16.70	54.76	68.20	-13.44	V	Peak
5460.00	27.88	16.37	44.25	54.00	-9.75	H	AVG
5460.00	28.42	16.37	44.79	54.00	-9.21	V	AVG
5470.00	27.92	16.70	44.62	54.00	-9.38	H	AVG
5470.00	28.46	16.70	45.16	54.00	-8.84	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.93	17.21	55.14	68.20	-13.06	H	Peak
5850.00	38.85	17.21	56.06	68.20	-12.14	V	Peak
5850.00	27.84	17.21	45.05	54.00	-8.95	H	AVG
5850.00	28.84	17.21	46.05	54.00	-7.95	V	AVG

Remark: 1. Result =Reading + Factor





Test Mode: IEEE 802.11ac(VHT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	36.15	16.37	52.52	74.00	-21.48	H	Peak
5460.00	37.73	16.37	54.10	74.00	-19.90	V	Peak
5470.00	36.27	16.70	52.97	68.20	-15.23	H	Peak
5470.00	37.86	16.70	54.56	68.20	-13.64	V	Peak
5460.00	27.19	16.37	43.56	54.00	-10.44	H	AVG
5460.00	27.34	16.37	43.71	54.00	-10.29	V	AVG
5470.00	27.20	16.70	43.90	54.00	-10.10	H	AVG
5470.00	27.94	16.70	44.64	54.00	-9.36	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.52	17.21	54.73	68.20	-13.47	H	Peak
5725.00	38.28	17.21	55.49	68.20	-12.71	V	Peak
5725.00	27.50	17.21	44.71	54.00	-9.29	H	AVG
5725.00	27.07	17.21	44.28	54.00	-9.72	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(VHT80)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5460.00	35.45	16.37	51.82	74.00	-22.18	H	Peak
5460.00	36.92	16.37	53.29	74.00	-20.71	V	Peak
5470.00	35.53	16.70	52.23	68.20	-15.97	H	Peak
5470.00	37.49	16.70	54.19	68.20	-14.01	V	Peak
5460.00	25.62	16.37	41.99	54.00	-12.01	H	AVG
5460.00	26.83	16.37	43.20	54.00	-10.80	V	AVG
5470.00	25.92	16.70	42.62	54.00	-11.38	H	AVG
5470.00	26.76	16.70	43.46	54.00	-10.54	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.32	17.21	54.53	68.20	-13.67	H	Peak
5850.00	37.70	17.21	54.91	68.20	-13.29	V	Peak
5850.00	27.63	17.21	44.84	54.00	-9.16	H	AVG
5850.00	28.09	17.21	45.30	54.00	-8.70	V	AVG

Remark: 1. Result =Reading + Factor

**Conducted Measurement:**

Please refer to Appendix E of the Appendix Test Data.



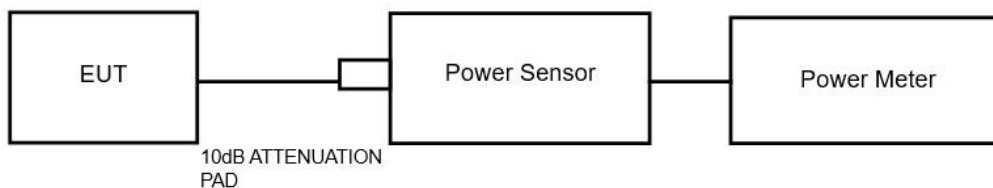


## 5. Maximum conducted output power Test

### 5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407(a)	
Test Limit	5.15 - 5.25GHz	1) Outdoor AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if $GT_x > 6dBi$ , then $P_{out} = 30 - (GT_x - 6)$ . e.i.r.p. at any elevation angle above 30 degrees $\leq 125mW$ (21dBm) 2) Indoor AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if $GT_x > 6dBi$ , then $P_{out} = 30 - (GT_x - 6)$ . 3) Point-to-point AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if $GT_x > 23dBi$ , then $P_{out} = 30 - (GT_x - 23)$ . 4) Client devices The maximum conducted output power (Pout) shall not exceed the lesser of 250W (23.98dBm). if $GT_x > 6dBi$ , then $P_{out} = 24 - (GT_x - 6)$ .
	5.25 - 5.35GHz	The maximum conducted output power (Pout) shall not exceed the lesser of 250mW (24dBm) or $11dBm + 10 \log B$ , where B is the 26dB emission bandwidth in MHz. if $GT_x > 6dBi$ , then $P_{out} = 24 - (GT_x - 6)$ .
	5.47- 5.725GHz	The maximum conducted output power (Pout) shall not exceed the lesser of 250mW (23.98dBm) or $11dBm + 10 \log B$ , where B is the 26dB emission bandwidth in MHz. if $GT_x > 6dBi$ , then $P_{out} = 24 - (GT_x - 6)$ .
	5.725 - 5.85GHz	1) Point-to-multipoint systems (P2M) The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if $GT_x > 6dBi$ , then $P_{out} = 30 - (GT_x - 6)$ . 2) Point-to-point systems (P2P) The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm).

### 5.2. Test Setup



### 5.3. Test Procedure

1. The Transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

### 5.4. Test Data

Pass

Please refer to Appendix C of the Appendix Test Data.

#### **Additional test for duty cycle.**

Please refer to Appendix B of the Appendix Test Data.

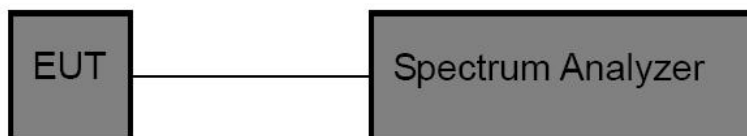


## 6. 26dB Bandwidth & 99% Occupied Bandwidth Test

### 6.1. Test Standard

Test Standard	FCC Part15 C Section 15.407(a) & 2.1049
Test Limit	N/A

### 6.2. Test Setup



### 6.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
  - 26 dB & 99% bandwidth**
  - RBW = approximately 1% of the emission bandwidth;
  - Set the VBW > RBW;
  - Detector= Peak
  - Trace mode= Max hold.
  - Sweep- auto couple.
4. Measure the maximum width of the emission that is 26dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer.
5. Repeat until all the rest channels are investigated.

### 6.4. Test Data

Pass

Please refer to Appendix A1&A2 of the Appendix Test Data.





## 7. Minimum 6dB bandwidth Test

### 7.1. Test Standard

Test Standard	FCC Part15 C Section 15.407(e)
Test Limit	≥500 kHz

### 7.2. Test Setup



### 7.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

4. Set the spectrum analyzer as:

#### 6 dB bandwidth

RBW = approximately 1% of the emission bandwidth;

Set the VBW > RBW;

Detector= Peak

Trace mode= Max hold.

Sweep- auto couple.

4. Measure the maximum width of the emission that is 6dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer.
5. Repeat until all the rest channels are investigated.

### 7.4. Test Data

Pass

Please refer to Appendix A3 of the Appendix Test Data.

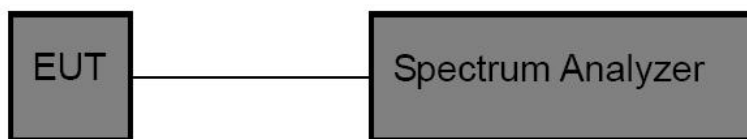


## 8. Power Spectral Density Test

### 8.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407(a)	
Test Limit	5.15 - 5.25GHz	1) Outdoor AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if $GT_x > 6\text{dBi}$ , then $PSD = 17 - (GT_x - 6)$ . 2) Indoor AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if $GT_x > 6\text{dBi}$ , then $PSD = 17 - (GT_x - 6)$ . 3) Point-to-point AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if $GT_x > 23\text{dBi}$ , then $PSD = 17 - (GT_x - 23)$ . 4) Client devices The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if $GT_x > 6\text{dBi}$ , then $PSD = 11 - (GT_x - 6)$ .
	5.25 - 5.35GHz	The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if $GT_x > 6\text{dBi}$ , then $PSD = 11 - (GT_x - 6)$ .
	5.47- 5.725GHz	The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if $GT_x > 6\text{dBi}$ , then $PSD = 11 - (GT_x - 6)$ .
	5.725 - 5.85GHz	1) Point-to-multipoint systems (P2M) The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz. if $GT_x > 6\text{dBi}$ , then $PSD = 30 - (GT_x - 6)$ . 2) Point-to-point systems (P2P) The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

### 8.2. Test Setup



### 8.3. Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz).

1. The EUT is directly connected to the spectrum analyzer;
2. Set RBW =1MHz;



3. Set VBW  $\geq$  3 RBW=3MHz;
3. Set the span to encompass the entire emissions bandwidth (EBW) of the signal;
5. Detector=RMS;
6. Sweep time= auto couple;
7. Trace mode=max. hold;

#### 8.4. Test Data

Pass

Please refer to Appendix D of the Appendix Test Data.



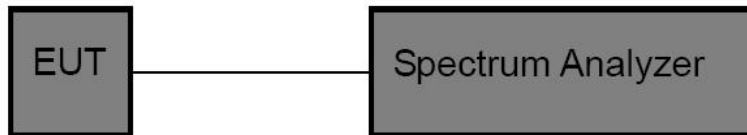


## 9. Frequency Stability

### 9.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.407(g)
Test Limit	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

### 9.2. Test Setup



### 9.3. Test Procedure

The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

### 9.4. Test Data

Pass

Please to see the following pages.



Test Mode: 5.2G										
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict			
802.11a	SISO	5180	20	102.00	5180.03	5172 to 5188	Pass			
				120.00	5180.07	5172 to 5188	Pass			
				138.00	5180.00	5172 to 5188	Pass			
			5200	-30	120.00	5180.08	5172 to 5188	Pass		
					-20	120.00	5180.06	5150 to 5250	Pass	
					-10	120.00	5180.06	5150 to 5250	Pass	
				5240	0	120.00	5180.12	5150 to 5250	Pass	
						10	120.00	5180.12	5150 to 5250	Pass
						30	120.00	5180.05	5150 to 5250	Pass
		5200			40	120.00	5180.10	5150 to 5250	Pass	
						50	120.00	5180.03	5172 to 5188	Pass
						20	102.00	5200.12	5192 to 5208	Pass
			5240		-30	120.00	5200.10	5192 to 5208	Pass	
						-20	120.00	5200.01	5150 to 5250	Pass
						-10	120.00	5200.00	5150 to 5250	Pass
				5240	0	120.00	5200.11	5150 to 5250	Pass	
						10	120.00	5200.13	5150 to 5250	Pass
						30	120.00	5200.06	5150 to 5250	Pass
		5240			40	120.00	5200.07	5150 to 5250	Pass	
						50	120.00	5200.02	5192 to 5208	Pass
						20	102.00	5240.02	5232 to 5248	Pass
			5240		-30	120.00	5240.09	5232 to 5248	Pass	
						-20	120.00	5240.10	5232 to 5248	Pass
						-10	120.00	5240.10	5232 to 5248	Pass
				5240	0	120.00	5240.06	5150 to 5250	Pass	
						10	120.00	5240.06	5150 to 5250	Pass
						30	120.00	5240.09	5150 to 5250	Pass
5240	40	120.00			5240.10	5150 to 5250	Pass			
		50			120.00	5240.13	5232 to 5248	Pass		
		30			120.00	5240.04	5150 to 5250	Pass		
	802.11n (HT20)	SISO	5180		20	102.00	5180.01	5172 to 5188	Pass	
						120.00	5180.06	5172 to 5188	Pass	
						138.00	5180.04	5172 to 5188	Pass	
				-30		120.00	5180.03	5172 to 5188	Pass	





			-20	120.00	5180.00	5150 to 5250	Pass	
			-10	120.00	5180.09	5150 to 5250	Pass	
			0	120.00	5180.05	5150 to 5250	Pass	
			10	120.00	5180.02	5150 to 5250	Pass	
			30	120.00	5180.00	5150 to 5250	Pass	
			40	120.00	5180.01	5150 to 5250	Pass	
			50	120.00	5180.07	5172 to 5188	Pass	
		5200	20	102.00	5200.06	5192 to 5208	Pass	
				120.00	5200.11	5192 to 5208	Pass	
				138.00	5200.08	5192 to 5208	Pass	
			-30	120.00	5200.09	5192 to 5208	Pass	
			-20	120.00	5200.12	5150 to 5250	Pass	
			-10	120.00	5200.11	5150 to 5250	Pass	
			0	120.00	5200.04	5150 to 5250	Pass	
			10	120.00	5200.04	5150 to 5250	Pass	
			30	120.00	5200.10	5150 to 5250	Pass	
			40	120.00	5200.11	5150 to 5250	Pass	
			50	120.00	5200.11	5192 to 5208	Pass	
			5240	20	102.00	5240.03	5232 to 5248	Pass
					120.00	5240.01	5232 to 5248	Pass
		138.00			5240.09	5232 to 5248	Pass	
		-30		120.00	5240.10	5232 to 5248	Pass	
		-20		120.00	5240.03	5150 to 5250	Pass	
		-10		120.00	5240.03	5150 to 5250	Pass	
		0		120.00	5240.11	5150 to 5250	Pass	
		10		120.00	5240.02	5150 to 5250	Pass	
		30		120.00	5240.11	5150 to 5250	Pass	
40	120.00	5240.06		5150 to 5250	Pass			
50	120.00	5240.07	5232 to 5248	Pass				
802.11n (HT40)	SISO	5190	20	102.00	5190.11	5174 to 5206	Pass	
				120.00	5190.05	5174 to 5206	Pass	
				138.00	5190.10	5174 to 5206	Pass	
			-30	120.00	5190.06	5174 to 5206	Pass	
			-20	120.00	5190.01	5150 to 5250	Pass	
			-10	120.00	5190.07	5150 to 5250	Pass	
			0	120.00	5190.02	5150 to 5250	Pass	
			10	120.00	5190.11	5150 to 5250	Pass	
			30	120.00	5190.08	5150 to 5250	Pass	
			40	120.00	5190.01	5150 to 5250	Pass	
50	120.00	5190.06	5174 to 5206	Pass				





5230			20	102.00	5230.03	5214 to 5246	Pass
				120.00	5230.03	5214 to 5246	Pass
				138.00	5230.04	5214 to 5246	Pass
			-30	120.00	5230.06	5214 to 5246	Pass
				120.00	5230.03	5150 to 5250	Pass
			-10	120.00	5230.10	5150 to 5250	Pass
				0	120.00	5230.04	5150 to 5250
			10	120.00	5230.10	5150 to 5250	Pass
			30	120.00	5230.10	5150 to 5250	Pass
			40	120.00	5230.09	5150 to 5250	Pass
50	120.00	5230.08	5214 to 5246	Pass			
5180			20	102.00	5180.12	5172 to 5188	Pass
				120.00	5180.08	5172 to 5188	Pass
				138.00	5180.03	5172 to 5188	Pass
			-30	120.00	5180.13	5172 to 5188	Pass
				120.00	5180.12	5150 to 5250	Pass
			-10	120.00	5180.11	5150 to 5250	Pass
				0	120.00	5180.11	5150 to 5250
			10	120.00	5180.07	5150 to 5250	Pass
			30	120.00	5180.08	5150 to 5250	Pass
			40	120.00	5180.03	5150 to 5250	Pass
50	120.00	5180.07	5172 to 5188	Pass			
5200			20	102.00	5200.06	5192 to 5208	Pass
				120.00	5200.10	5192 to 5208	Pass
				138.00	5200.08	5192 to 5208	Pass
			-30	120.00	5200.13	5192 to 5208	Pass
				120.00	5200.03	5150 to 5250	Pass
			-10	120.00	5200.07	5150 to 5250	Pass
				0	120.00	5200.11	5150 to 5250
			10	120.00	5200.07	5150 to 5250	Pass
			30	120.00	5200.08	5150 to 5250	Pass
			40	120.00	5200.00	5150 to 5250	Pass
50	120.00	5200.11	5192 to 5208	Pass			
5240			20	102.00	5240.09	5232 to 5248	Pass
				120.00	5240.10	5232 to 5248	Pass
				138.00	5240.13	5232 to 5248	Pass
			-30	120.00	5240.03	5232 to 5248	Pass
				120.00	5240.06	5150 to 5250	Pass
			-10	120.00	5240.10	5150 to 5250	Pass
0	120.00	5240.01	5150 to 5250	Pass			

802.11ac  
(VHT20)

SISO



			10	120.00	5240.03	5150 to 5250	Pass
			30	120.00	5240.04	5150 to 5250	Pass
			40	120.00	5240.11	5150 to 5250	Pass
			50	120.00	5240.01	5232 to 5248	Pass
802.11ac (VHT40)	SISO	5190	20	102.00	5190.05	5174 to 5206	Pass
				120.00	5190.12	5174 to 5206	Pass
				138.00	5190.10	5174 to 5206	Pass
			-30	120.00	5190.07	5174 to 5206	Pass
			-20	120.00	5190.02	5150 to 5250	Pass
			-10	120.00	5190.02	5150 to 5250	Pass
			0	120.00	5190.07	5150 to 5250	Pass
			10	120.00	5190.13	5150 to 5250	Pass
			30	120.00	5190.08	5150 to 5250	Pass
			40	120.00	5190.10	5150 to 5250	Pass
	50	120.00	5190.10	5174 to 5206	Pass		
	5230	20	102.00	5230.04	5214 to 5246	Pass	
			120.00	5230.01	5214 to 5246	Pass	
			138.00	5230.00	5214 to 5246	Pass	
		-30	120.00	5230.05	5214 to 5246	Pass	
		-20	120.00	5230.01	5150 to 5250	Pass	
		-10	120.00	5230.12	5150 to 5250	Pass	
		0	120.00	5230.10	5150 to 5250	Pass	
		10	120.00	5230.03	5150 to 5250	Pass	
		30	120.00	5230.00	5150 to 5250	Pass	
40		120.00	5230.12	5150 to 5250	Pass		
50	120.00	5230.07	5214 to 5246	Pass			
802.11ac (VHT80)	SISO	5210	20	102.00	5210.03	5178 to 5242	Pass
				120.00	5210.06	5178 to 5242	Pass
				138.00	5210.03	5178 to 5242	Pass
			-30	120.00	5210.10	5178 to 5242	Pass
			-20	120.00	5210.10	5150 to 5250	Pass
			-10	120.00	5210.04	5150 to 5250	Pass
			0	120.00	5210.07	5150 to 5250	Pass
			10	120.00	5210.08	5150 to 5250	Pass
			30	120.00	5210.10	5150 to 5250	Pass
			40	120.00	5210.12	5150 to 5250	Pass
50	120.00	5210.12	5178 to 5242	Pass			





Test Mode: 5.3G										
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict			
802.11a	SISO	5180	20	102.00	5260.06	5252 to 5268	Pass			
				120.00	5260.12	5252 to 5268	Pass			
				138.00	5260.11	5252 to 5268	Pass			
			5200	-30	102.00	5260.08	5252 to 5268	Pass		
					-20	120.00	5260.09	5250 to 5350	Pass	
					-10	120.00	5260.13	5250 to 5350	Pass	
				5240	0	120.00	5260.09	5250 to 5350	Pass	
						10	120.00	5260.11	5250 to 5350	Pass
						30	120.00	5260.11	5250 to 5350	Pass
		5200			40	120.00	5260.04	5250 to 5350	Pass	
						50	120.00	5260.09	5252 to 5268	Pass
						20	102.00	5300.07	5292 to 5308	Pass
			120.00		5300.03		5292 to 5308	Pass		
			138.00		5300.03		5292 to 5308	Pass		
			5180		-30	102.00	5300.05	5292 to 5308	Pass	
				-20		120.00	5300.01	5250 to 5350	Pass	
				-10		120.00	5300.00	5250 to 5350	Pass	
				5240	0	120.00	5300.12	5250 to 5350	Pass	
		10				120.00	5300.02	5250 to 5350	Pass	
		30				120.00	5300.13	5250 to 5350	Pass	
		5200			40	120.00	5300.04	5250 to 5350	Pass	
						50	120.00	5300.07	5292 to 5308	Pass
						20	102.00	5320.12	5312 to 5328	Pass
			120.00		5320.11		5312 to 5328	Pass		
			138.00		5320.12		5312 to 5328	Pass		
			5180		-30	102.00	5320.11	5312 to 5328	Pass	
				-20		120.00	5320.07	5250 to 5350	Pass	
-10	120.00			5320.02		5250 to 5350	Pass			
5240	0			120.00	5320.13	5250 to 5350	Pass			
		10		120.00	5320.03	5250 to 5350	Pass			
		30		120.00	5320.10	5250 to 5350	Pass			
	5200	40		120.00	5320.08	5250 to 5350	Pass			
				50	120.00	5320.11	5312 to 5328	Pass		
				20	102.00	5260.10	5252 to 5268	Pass		
		120.00	5260.11		5252 to 5268	Pass				
		138.00	5260.07		5252 to 5268	Pass				
		802.11n (HT20)	SISO	5180	-30	102.00	5260.10	5252 to 5268	Pass	





			-20	120.00	5260.09	5250 to 5350	Pass		
			-10	120.00	5260.01	5250 to 5350	Pass		
			0	120.00	5260.09	5250 to 5350	Pass		
			10	120.00	5260.12	5250 to 5350	Pass		
			30	120.00	5260.12	5250 to 5350	Pass		
			40	120.00	5260.06	5250 to 5350	Pass		
			50	120.00	5260.11	5252 to 5268	Pass		
		5200	20	102.00	5300.02	5292 to 5308	Pass		
				120.00	5300.03	5292 to 5308	Pass		
				138.00	5300.06	5292 to 5308	Pass		
			-30	102.00	5300.13	5292 to 5308	Pass		
			-20	120.00	5300.11	5250 to 5350	Pass		
			-10	120.00	5300.04	5250 to 5350	Pass		
			0	120.00	5300.00	5250 to 5350	Pass		
			10	120.00	5300.11	5250 to 5350	Pass		
			30	120.00	5300.07	5250 to 5350	Pass		
			40	120.00	5300.09	5250 to 5350	Pass		
			50	120.00	5300.04	5292 to 5308	Pass		
			5240	20	102.00	5320.06	5312 to 5328	Pass	
					120.00	5320.12	5312 to 5328	Pass	
		138.00			5320.02	5312 to 5328	Pass		
		-30		102.00	5320.06	5312 to 5328	Pass		
		-20		120.00	5320.06	5250 to 5350	Pass		
		-10		120.00	5320.11	5250 to 5350	Pass		
		0		120.00	5320.11	5250 to 5350	Pass		
		10		120.00	5320.03	5250 to 5350	Pass		
		30		120.00	5320.04	5250 to 5350	Pass		
		40		120.00	5320.08	5250 to 5350	Pass		
		50	120.00	5320.12	5312 to 5328	Pass			
		802.11n (HT40)	SISO	5190	102.00	5270.03	5254 to 5286	Pass	
					20	120.00	5270.02	5254 to 5286	Pass
						138.00	5270.01	5254 to 5286	Pass
						-30	102.00	5270.09	5254 to 5286
-20	120.00				5270.06	5250 to 5350	Pass		
-10	120.00				5270.05	5250 to 5350	Pass		
0	120.00				5270.02	5250 to 5350	Pass		
10	120.00				5270.03	5250 to 5350	Pass		
30	120.00				5270.12	5250 to 5350	Pass		
40	120.00				5270.05	5250 to 5350	Pass		
50	120.00				5270.12	5254 to 5286	Pass		



5230			20	102.00	5310.11	5294 to 5326	Pass
				120.00	5310.04	5294 to 5326	Pass
				138.00	5310.04	5294 to 5326	Pass
			-30	102.00	5310.13	5294 to 5326	Pass
			-10	120.00	5310.08	5250 to 5350	Pass
			10	120.00	5310.12	5250 to 5350	Pass
			40	120.00	5310.08	5250 to 5350	Pass
50	120.00	5310.08					
			5180			20	102.00
120.00	5260.06	5252 to 5268					Pass
138.00	5260.01	5252 to 5268					Pass
-30	102.00	5260.06				5252 to 5268	Pass
-10	120.00	5260.07				5250 to 5350	Pass
10	120.00	5260.02				5250 to 5350	Pass
40	120.00	5260.11				5250 to 5350	Pass
			50	120.00	5260.13		
5200						20	102.00
			120.00	5300.06	5292 to 5308		Pass
			138.00	5300.12	5292 to 5308		Pass
			-30	102.00	5300.12	5292 to 5308	Pass
			-10	120.00	5300.12	5250 to 5350	Pass
			10	120.00	5300.01	5250 to 5350	Pass
			40	120.00	5300.05	5250 to 5350	Pass
50	120.00	5300.02					
			5240			20	102.00
120.00	5320.08	5312 to 5328					Pass
138.00	5320.07	5312 to 5328					Pass
-30	102.00	5320.09				5312 to 5328	Pass
-10	120.00	5320.05				5250 to 5350	Pass
			0	120.00	5320.04		

802.11ac  
(VHT20)

SISO





			10	120.00	5320.05	5250 to 5350	Pass
			30	120.00	5320.01	5250 to 5350	Pass
			40	120.00	5320.09	5250 to 5350	Pass
			50	120.00	5320.02	5312 to 5328	Pass
802.11ac (VHT40)	SISO	5190	20	102.00	5270.09	5254 to 5286	Pass
				120.00	5270.11	5254 to 5286	Pass
				138.00	5270.03	5254 to 5286	Pass
			-30	102.00	5270.05	5254 to 5286	Pass
			-20	120.00	5270.13	5250 to 5350	Pass
			-10	120.00	5270.02	5250 to 5350	Pass
			0	120.00	5270.03	5250 to 5350	Pass
			10	120.00	5270.12	5250 to 5350	Pass
			30	120.00	5270.12	5250 to 5350	Pass
			40	120.00	5270.06	5250 to 5350	Pass
		50	120.00	5270.07	5254 to 5286	Pass	
		5230	20	102.00	5310.03	5294 to 5326	Pass
				120.00	5310.08	5294 to 5326	Pass
				138.00	5310.08	5294 to 5326	Pass
			-30	102.00	5310.04	5294 to 5326	Pass
			-20	120.00	5310.01	5250 to 5350	Pass
			-10	120.00	5310.02	5250 to 5350	Pass
			0	120.00	5310.11	5250 to 5350	Pass
			10	120.00	5310.07	5250 to 5350	Pass
			30	120.00	5310.07	5250 to 5350	Pass
40	120.00		5310.13	5250 to 5350	Pass		
50	120.00	5310.05	5294 to 5326	Pass			
802.11ac (VHT80)	SISO	5210	20	102.00	5290.02	5258 to 5322	Pass
				120.00	5290.13	5258 to 5322	Pass
				138.00	5290.01	5258 to 5322	Pass
			-30	102.00	5290.03	5258 to 5322	Pass
			-20	120.00	5290.05	5250 to 5350	Pass
			-10	120.00	5290.07	5250 to 5350	Pass
			0	120.00	5290.02	5250 to 5350	Pass
			10	120.00	5290.01	5250 to 5350	Pass
			30	120.00	5290.05	5250 to 5350	Pass
			40	120.00	5290.10	5250 to 5350	Pass
50	120.00	5290.08	5258 to 5322	Pass			





Test Mode: 5.6G										
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict			
802.11a	SISO	5500	20	102.00	5500.01	5492 to 5508	Pass			
				120.00	5500.05	5492 to 5508	Pass			
				138.00	5500.11	5492 to 5508	Pass			
			-30	102.00	5500.12	5492 to 5508	Pass			
				-20	120.00	5500.05	5470 to 5725	Pass		
					-10	120.00	5500.08	5470 to 5725	Pass	
			5580	20	102.00	5580.10	5572 to 5588	Pass		
					120.00	5580.04	5572 to 5588	Pass		
					138.00	5580.07	5572 to 5588	Pass		
				-30	102.00	5580.11	5572 to 5588	Pass		
		-20			120.00	5580.12	5470 to 5725	Pass		
					-10	120.00	5580.09	5470 to 5725	Pass	
		5700		20	102.00	5700.04	5692 to 5708	Pass		
					120.00	5700.07	5692 to 5708	Pass		
					138.00	5700.03	5692 to 5708	Pass		
				-30	102.00	5700.13	5692 to 5708	Pass		
			-20		120.00	5700.08	5470 to 5725	Pass		
					-10	120.00	5700.05	5470 to 5725	Pass	
			5700	0	120.00	5700.02	5470 to 5725	Pass		
					10	120.00	5700.03	5470 to 5725	Pass	
						30	120.00	5700.04	5470 to 5725	Pass
				40	120.00	5700.09	5470 to 5725	Pass		
		50			120.00	5700.11	5692 to 5708	Pass		
		802.11n (HT20)		SISO	5500	20	102.00	5500.04	5492 to 5508	Pass
							120.00	5500.07	5492 to 5508	Pass
							138.00	5500.04	5492 to 5508	Pass



			-30	102.00	5500.10	5492 to 5508	Pass
			-20	120.00	5500.13	5470 to 5725	Pass
			-10	120.00	5500.09	5470 to 5725	Pass
			0	120.00	5500.07	5470 to 5725	Pass
			10	120.00	5500.12	5470 to 5725	Pass
			30	120.00	5500.03	5470 to 5725	Pass
			40	120.00	5500.07	5470 to 5725	Pass
			50	120.00	5500.05	5492 to 5508	Pass
		5580	20	102.00	5580.02	5572 to 5588	Pass
				120.00	5580.09	5572 to 5588	Pass
				138.00	5580.01	5572 to 5588	Pass
			-30	102.00	5580.04	5572 to 5588	Pass
			-20	120.00	5580.05	5470 to 5725	Pass
			-10	120.00	5580.08	5470 to 5725	Pass
			0	120.00	5580.07	5470 to 5725	Pass
			10	120.00	5580.12	5470 to 5725	Pass
			30	120.00	5580.06	5470 to 5725	Pass
			40	120.00	5580.13	5470 to 5725	Pass
			50	120.00	5580.05	5572 to 5588	Pass
			5700	20	102.00	5700.01	5692 to 5708
		120.00			5700.03	5692 to 5708	Pass
		138.00			5700.05	5692 to 5708	Pass
		-30		102.00	5700.03	5692 to 5708	Pass
		-20		120.00	5700.08	5470 to 5725	Pass
		-10		120.00	5700.03	5470 to 5725	Pass
		0		120.00	5700.08	5470 to 5725	Pass
		10		120.00	5700.10	5470 to 5725	Pass
		30		120.00	5700.12	5470 to 5725	Pass
40	120.00	5700.02		5470 to 5725	Pass		
50	120.00	5700.13	5692 to 5708	Pass			
802.11n (HT40)	SISO	5510	20	102.00	5510.10	5494 to 5526	Pass
				120.00	5510.11	5494 to 5526	Pass
				138.00	5510.09	5494 to 5526	Pass
			-30	102.00	5510.02	5494 to 5526	Pass
			-20	120.00	5510.12	5470 to 5725	Pass
			-10	120.00	5510.09	5470 to 5725	Pass
			0	120.00	5510.12	5470 to 5725	Pass
			10	120.00	5510.07	5470 to 5725	Pass
30	120.00	5510.03	5470 to 5725	Pass			





		5590	40	120.00	5510.12	5470 to 5725	Pass
			50	120.00	5510.11	5494 to 5526	Pass
			20	102.00	5550.09	5534 to 5566	Pass
				120.00	5550.02	5534 to 5566	Pass
				138.00	5550.04	5534 to 5566	Pass
			-30	102.00	5550.07	5534 to 5566	Pass
			-20	120.00	5550.04	5470 to 5725	Pass
			-10	120.00	5550.02	5470 to 5725	Pass
			0	120.00	5550.05	5470 to 5725	Pass
			10	120.00	5550.10	5470 to 5725	Pass
		30	120.00	5550.13	5470 to 5725	Pass	
		40	120.00	5550.10	5470 to 5725	Pass	
		50	120.00	5550.01	5534 to 5566	Pass	
		5670	20	102.00	5670.02	5654 to 5686	Pass
				120.00	5670.12	5654 to 5686	Pass
				138.00	5670.01	5654 to 5686	Pass
			-30	102.00	5670.08	5654 to 5686	Pass
			-20	120.00	5670.10	5470 to 5725	Pass
			-10	120.00	5670.12	5470 to 5725	Pass
			0	120.00	5670.08	5470 to 5725	Pass
10	120.00		5670.07	5470 to 5725	Pass		
30	120.00		5670.07	5470 to 5725	Pass		
40	120.00		5670.12	5470 to 5725	Pass		
50	120.00	5670.01	5654 to 5686	Pass			
802.11ac (VHT20)	SISO	5500	20	102.00	5500.01	5492 to 5508	Pass
				120.00	5500.09	5492 to 5508	Pass
				138.00	5500.00	5492 to 5508	Pass
			-30	102.00	5500.05	5492 to 5508	Pass
			-20	120.00	5500.03	5470 to 5725	Pass
			-10	120.00	5500.01	5470 to 5725	Pass
			0	120.00	5500.13	5470 to 5725	Pass
			10	120.00	5500.07	5470 to 5725	Pass
			30	120.00	5500.10	5470 to 5725	Pass
			40	120.00	5500.12	5470 to 5725	Pass
		50	120.00	5500.03	5492 to 5508	Pass	
		5580	20	102.00	5580.06	5572 to 5588	Pass
				120.00	5580.08	5572 to 5588	Pass
				138.00	5580.12	5572 to 5588	Pass
-30	102.00			5580.13	5572 to 5588	Pass	





			-20	120.00	5580.03	5470 to 5725	Pass	
			-10	120.00	5580.05	5470 to 5725	Pass	
			0	120.00	5580.02	5470 to 5725	Pass	
			10	120.00	5580.05	5470 to 5725	Pass	
			30	120.00	5580.09	5470 to 5725	Pass	
			40	120.00	5580.09	5470 to 5725	Pass	
			50	120.00	5580.09	5572 to 5588	Pass	
		5700	20	102.00	5700.05	5692 to 5708	Pass	
				120.00	5700.03	5692 to 5708	Pass	
				138.00	5700.06	5692 to 5708	Pass	
			-30	102.00	5700.12	5692 to 5708	Pass	
			-20	120.00	5700.12	5470 to 5725	Pass	
			-10	120.00	5700.12	5470 to 5725	Pass	
			0	120.00	5700.07	5470 to 5725	Pass	
			10	120.00	5700.10	5470 to 5725	Pass	
			30	120.00	5700.06	5470 to 5725	Pass	
			40	120.00	5700.01	5470 to 5725	Pass	
			50	120.00	5700.01	5692 to 5708	Pass	
			5510	20	102.00	5510.04	5494 to 5526	Pass
					120.00	5510.03	5494 to 5526	Pass
					138.00	5510.10	5494 to 5526	Pass
-30	102.00	5510.01		5494 to 5526	Pass			
-20	120.00	5510.01		5470 to 5725	Pass			
-10	120.00	5510.10		5470 to 5725	Pass			
0	120.00	5510.12		5470 to 5725	Pass			
10	120.00	5510.05		5470 to 5725	Pass			
30	120.00	5510.06		5470 to 5725	Pass			
40	120.00	5510.05		5470 to 5725	Pass			
50	120.00	5510.12		5494 to 5526	Pass			
5590	20	102.00		5550.01	5534 to 5566	Pass		
		120.00		5550.09	5534 to 5566	Pass		
		138.00		5550.12	5534 to 5566	Pass		
	-30	102.00	5550.12	5534 to 5566	Pass			
	-20	120.00	5550.07	5470 to 5725	Pass			
	-10	120.00	5550.11	5470 to 5725	Pass			
	0	120.00	5550.11	5470 to 5725	Pass			
	10	120.00	5550.06	5470 to 5725	Pass			
	30	120.00	5550.01	5470 to 5725	Pass			
	40	120.00	5550.05	5470 to 5725	Pass			

802.11ac  
(VHT40)

SISO



		5670	50	120.00	5550.07	5534 to 5566	Pass
			20	102.00	5670.05	5654 to 5686	Pass
				120.00	5670.07	5654 to 5686	Pass
				138.00	5670.04	5654 to 5686	Pass
			-30	102.00	5670.01	5654 to 5686	Pass
			-20	120.00	5670.09	5470 to 5725	Pass
			-10	120.00	5670.03	5470 to 5725	Pass
			0	120.00	5670.08	5470 to 5725	Pass
			10	120.00	5670.02	5470 to 5725	Pass
			30	120.00	5670.12	5470 to 5725	Pass
			40	120.00	5670.11	5470 to 5725	Pass
			50	120.00	5670.01	5654 to 5686	Pass
802.11ac (VHT80)	SISO	5530	20	102.00	5530.08	5498 to 5562	Pass
				120.00	5530.04	5498 to 5562	Pass
				138.00	5530.12	5498 to 5562	Pass
			-30	102.00	5530.00	5498 to 5562	Pass
			-20	120.00	5530.04	5470 to 5725	Pass
			-10	120.00	5530.05	5470 to 5725	Pass
			0	120.00	5530.04	5470 to 5725	Pass
			10	120.00	5530.08	5470 to 5725	Pass
			30	120.00	5530.01	5470 to 5725	Pass
			40	120.00	5530.12	5470 to 5725	Pass
			50	120.00	5530.03	5498 to 5562	Pass





Test Mode: 5.8G								
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict	
802.11a	SISO	5745	20	102.00	5745.00	5737 to 5753	Pass	
				120.00	5745.07	5737 to 5753	Pass	
				138.00	5745.08	5737 to 5753	Pass	
			-30	102.00	5745.03	5737 to 5753	Pass	
				-20	120.00	5745.09	5725 to 5850	Pass
					10	120.00	5745.10	5725 to 5850
			0	120.00	5745.10	5725 to 5850	Pass	
				10	120.00	5745.04	5725 to 5850	Pass
			30	120.00	5745.05	5725 to 5850	Pass	
			40	120.00	5745.11	5725 to 5850	Pass	
		50	120.00	5745.11	5737 to 5753	Pass		
		5785	20	102.00	5785.11	5777 to 5793	Pass	
				120.00	5785.11	5777 to 5793	Pass	
				138.00	5785.11	5777 to 5793	Pass	
			-30	102.00	5785.09	5777 to 5793	Pass	
				-20	120.00	5785.09	5725 to 5850	Pass
					10	120.00	5785.01	5725 to 5850
			0	120.00	5785.05	5725 to 5850	Pass	
				10	120.00	5785.02	5725 to 5850	Pass
			30	120.00	5785.12	5725 to 5850	Pass	
			40	120.00	5785.03	5725 to 5850	Pass	
		50	120.00	5785.09	5777 to 5793	Pass		
		5825	20	102.00	5825.11	5817 to 5833	Pass	
				120.00	5825.02	5817 to 5833	Pass	
				138.00	5825.08	5817 to 5833	Pass	
			-30	102.00	5825.07	5817 to 5833	Pass	
				-20	120.00	5825.05	5725 to 5850	Pass
					10	120.00	5825.01	5725 to 5850
			0	120.00	5825.11	5725 to 5850	Pass	
				10	120.00	5825.01	5725 to 5850	Pass
30	120.00		5825.04	5725 to 5850	Pass			
40	120.00		5825.01	5725 to 5850	Pass			
50	120.00	5825.10	5817 to 5833	Pass				
802.11n (HT20)	SISO	5745	20	102.00	5745.06	5737 to 5753	Pass	
				120.00	5745.06	5737 to 5753	Pass	
				138.00	5745.10	5737 to 5753	Pass	
				-30	102.00	5745.11	5737 to 5753	Pass





			-20	120.00	5745.05	5725 to 5850	Pass	
			-10	120.00	5745.06	5725 to 5850	Pass	
			0	120.00	5745.04	5725 to 5850	Pass	
			10	120.00	5745.09	5725 to 5850	Pass	
			30	120.00	5745.05	5725 to 5850	Pass	
			40	120.00	5745.09	5725 to 5850	Pass	
			50	120.00	5745.12	5737 to 5753	Pass	
		5785	20	102.00	5785.05	5777 to 5793	Pass	
				120.00	5785.09	5777 to 5793	Pass	
				138.00	5785.03	5777 to 5793	Pass	
			-30	102.00	5785.00	5777 to 5793	Pass	
			-20	120.00	5785.10	5725 to 5850	Pass	
			-10	120.00	5785.05	5725 to 5850	Pass	
			0	120.00	5785.04	5725 to 5850	Pass	
			10	120.00	5785.08	5725 to 5850	Pass	
			30	120.00	5785.12	5725 to 5850	Pass	
			40	120.00	5785.06	5725 to 5850	Pass	
			50	120.00	5785.01	5777 to 5793	Pass	
			5825	20	102.00	5825.03	5817 to 5833	Pass
					120.00	5825.03	5817 to 5833	Pass
					138.00	5825.12	5817 to 5833	Pass
-30	102.00	5825.08		5817 to 5833	Pass			
-20	120.00	5825.04		5725 to 5850	Pass			
-10	120.00	5825.07		5725 to 5850	Pass			
0	120.00	5825.09		5725 to 5850	Pass			
10	120.00	5825.01		5725 to 5850	Pass			
30	120.00	5825.13		5725 to 5850	Pass			
40	120.00	5825.12		5725 to 5850	Pass			
50	120.00	5825.06	5817 to 5833	Pass				
802.11n (HT40)	SISO	5755	20	102.00	5755.13	5739 to 5771	Pass	
				120.00	5755.08	5739 to 5771	Pass	
				138.00	5755.12	5739 to 5771	Pass	
			-30	102.00	5755.05	5739 to 5771	Pass	
			-20	120.00	5755.02	5725 to 5850	Pass	
			-10	120.00	5755.07	5725 to 5850	Pass	
			0	120.00	5755.12	5725 to 5850	Pass	
			10	120.00	5755.03	5725 to 5850	Pass	
			30	120.00	5755.01	5725 to 5850	Pass	
			40	120.00	5755.03	5725 to 5850	Pass	
50	120.00	5755.00	5739 to 5771	Pass				



5795	SISO	20	102.00	5795.02	5779 to 5811	Pass
			120.00	5795.11	5779 to 5811	Pass
			138.00	5795.11	5779 to 5811	Pass
		-30	102.00	5795.07	5779 to 5811	Pass
		-10	120.00	5795.10	5725 to 5850	Pass
		10	120.00	5795.10	5725 to 5850	Pass
		40	120.00	5795.01	5725 to 5850	Pass
50	120.00					
		5745	SISO	20	102.00	5745.12
120.00	5745.08				5737 to 5753	Pass
138.00	5745.03				5737 to 5753	Pass
-30	102.00			5745.00	5737 to 5753	Pass
-10	120.00			5745.04	5725 to 5850	Pass
10	120.00			5745.09	5725 to 5850	Pass
40	120.00			5745.04	5725 to 5850	Pass
		50	120.00			
5785	SISO			20	102.00	5785.02
		120.00	5785.09		5777 to 5793	Pass
		138.00	5785.01		5777 to 5793	Pass
		-30	102.00	5785.03	5777 to 5793	Pass
		-10	120.00	5785.01	5725 to 5850	Pass
		10	120.00	5785.02	5725 to 5850	Pass
		40	120.00	5785.01	5725 to 5850	Pass
50	120.00					
		5825	SISO	20	102.00	5825.08
120.00	5825.00				5817 to 5833	Pass
138.00	5825.01				5817 to 5833	Pass
-30	102.00			5825.13	5817 to 5833	Pass
-10	120.00			5825.02	5725 to 5850	Pass
		0	120.00			





			10	120.00	5825.11	5725 to 5850	Pass
			30	120.00	5825.00	5725 to 5850	Pass
			40	120.00	5825.08	5725 to 5850	Pass
			50	120.00	5825.07	5817 to 5833	Pass
802.11ac (VHT40)	SISO	5755	20	102.00	5755.09	5739 to 5771	Pass
				120.00	5755.12	5739 to 5771	Pass
				138.00	5755.08	5739 to 5771	Pass
			-30	102.00	5755.02	5739 to 5771	Pass
			-20	120.00	5755.05	5725 to 5850	Pass
			-10	120.00	5755.11	5725 to 5850	Pass
			0	120.00	5755.12	5725 to 5850	Pass
			10	120.00	5755.09	5725 to 5850	Pass
			30	120.00	5755.09	5725 to 5850	Pass
			40	120.00	5755.11	5725 to 5850	Pass
		50	120.00	5755.01	5739 to 5771	Pass	
		5795	20	102.00	5795.04	5779 to 5811	Pass
				120.00	5795.01	5779 to 5811	Pass
				138.00	5795.03	5779 to 5811	Pass
			-30	102.00	5795.00	5779 to 5811	Pass
			-20	120.00	5795.11	5725 to 5850	Pass
			-10	120.00	5795.04	5725 to 5850	Pass
			0	120.00	5795.09	5725 to 5850	Pass
			10	120.00	5795.10	5725 to 5850	Pass
			30	120.00	5795.04	5725 to 5850	Pass
40	120.00		5795.05	5725 to 5850	Pass		
50	120.00	5795.10	5779 to 5811	Pass			
802.11ac (VHT80)	SISO	5775	20	102.00	5775.05	5743 to 5807	Pass
				120.00	5775.05	5743 to 5807	Pass
				138.00	5775.06	5743 to 5807	Pass
			-30	102.00	5775.06	5743 to 5807	Pass
			-20	120.00	5775.07	5725 to 5850	Pass
			-10	120.00	5775.08	5725 to 5850	Pass
			0	120.00	5775.03	5725 to 5850	Pass
			10	120.00	5775.06	5725 to 5850	Pass
			30	120.00	5775.01	5725 to 5850	Pass
			40	120.00	5775.00	5725 to 5850	Pass
50	120.00	5775.10	5743 to 5807	Pass			





## 10. Antenna Requirement

### 10.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /15.407
Requirement	<p>1) 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.</p> <p>2) 15.407 requirement: if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.</p>

### 10.2. Antenna Connected Construction

The antenna is a Rod Antenna, and the best case gain of the Wi-Fi 5.2G: 4.11dBi, Wi-Fi 5.3G: 5.24dBi, Wi-Fi 5.6G: 5.81dBi, Wi-Fi 5.8G: 4.81dBi. It complies with the standard requirement.



## **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Please refer to separated files Appendix I -- Test Setup Photograph

## **APPENDIX II -- EXTERNAL PHOTOGRAPH**

Please refer to separated files Appendix II -- External Photograph

## **APPENDIX III -- INTERNAL PHOTOGRAPH**

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----

