Shenzhen HTT Technology Co., Ltd.

TEST REPORT
FCC PART 15.407

Report Reference No. ..... :	**HTT202505022F03**	
FCC ID. ..... :	**2A4WP-GMBS2100A1**	
Compiled by (position+printed name+signature). :	File administrators	Heber He
Supervised by (position+printed name+signature). :	Project Engineer	Bruce Zhu
Approved by (position+printed name+signature). :	RF Manager	Kevin Yang
Date of issue ..... :	May. 13, 2025	
Testing Laboratory Name ..... :	**Shenzhen HTT Technology Co.,Ltd.**	
Address ..... :	1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road,Nanchang Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China	
Applicant's name ..... :	**Shenzhen Speediance Living Technology Co., Ltd**	
Address ..... :	19th Floor, Gemdale Viseen Tower A, No.16, Gaoxin 10th South Road, High-tech Zone, Yuehai Street, Nanshan District, Shenzhen, China.	
Test specification ..... :		
Standard ..... :	**FCC Part 15.407: UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES**	

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Test item description ..... :	**Interactive Multi-Media DigitalFitness Equipment**
Trade Mark ..... :	N/A
Manufacturer ..... :	Shenzhen Speediance Living Technology Co., Ltd
Model/Type reference ..... :	GMBS2100A1
Listed Models ..... :	GMBS2100A2, GMBS2100A3, GMBS2100A4, GMBS2100A5
Modulation Type ..... :	DSSS, OFDM
Operation Frequency ..... :	From 5180MHz to 5320MHz, 5500MHz to 5700MHz, 5745MHz to 5825MHz
Rating ..... :	AC 100-230V
Result ..... :	**PASS**

T E S T R E P O R T

Equipment under Test	:	Interactive Multi-Media DigitalFitness Equipment
Model /Type	:	GMBS2100A1
Series Model No.		GMBS2100A2, GMBS2100A3, GMBS2100A4, GMBS2100A5
Applicant	:	**Shenzhen Speediance Living Technology Co., Ltd**
Address	:	19th Floor, Gemdale Viseen Tower A, No.16, Gaoxin 10th South Road, High-tech Zone, Yuehai Street, Nanshan District, Shenzhen, China.
Manufacturer	:	**Shenzhen Speediance Living Technology Co., Ltd**
Address	:	19th Floor, Gemdale Viseen Tower A, No.16, Gaoxin 10th South Road, High-tech Zone, Yuehai Street, Nanshan District, Shenzhen, China.

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.407: UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices
KDB 789033 D02: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORAMTION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	May. 07, 2025
Testing commenced on	:	May. 07, 2025
Testing concluded on	:	May. 13, 2025

2.2. Product Description

Product Name:	Interactive Multi-Media DigitalFitness Equipment
Model/Typereference:	GMBS2100A1
Power supply:	AC 100-230V
testing sample ID：	HTT202505022-1# (Engineer sample), HTT202505022-2# (Normal sample)
WIFI	
WLAN	Supported 802.11 a/n/ac
Modulation Type	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ac HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ac HT40: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11ac HT80: OFDM (64QAM, 16QAM, QPSK,BPSK)
Operation frequency	IEEE 802.11a:5180--5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11n HT20: 5180--5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11n HT40: 5190-5310MHz,5510-5670MHz,5755-5795MHz IEEE 802.11ac20: 5180--5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11ac40: 5190-5310MHz,5510-5670MHz,5755-5795MHz IEEE 802.11ac80:5210MHz,5290MHz,5530MHz,5775MHz
Antenna type:	Copper tube copper column spring antenna
Antenna gain:	1.98 dBi for Ant 1 and 1.98 dBi for Ant2

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	●	120V / 60Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

/

2.4. Short description of the Equipment under Test (EUT)

This is an Interactive Multi-Media DigitalFitness Equipment.

For more details, refer to the user's manual of the EUT.

2.5. EUT operation mode

The application provider specific test software to control sample in continuous TX and RX.

IEEE 802.11a/n20/n40/ac20/ac40/ac80:

U-NII-1 and U-NII-2A		U-NII-1 and U-NII-2A		U-NII-1 and U-NII-2A	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				
52	5260	54	5270	58	5290
56	5280	62	5310		
60	5300				
64	5320				

U-NII-2C		U-NII-2C		U-NII-2C	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590		
112	5560	126	5630		
116	5580	134	5670		
120	5600				
124	5620				
128	5640				
132	5660				
136	5680				
140	5700				

U-NII-3		U-NII-3		U-NII-3	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	**5745**	151	5755	155	5775
153	5765	159	5795		
157	**5785**				
161	5805				
165	**5825**				

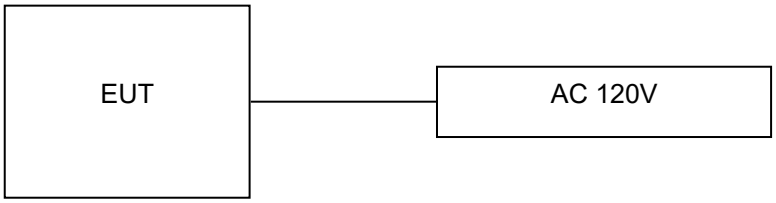
Test Software Version	EngineerMode v3.0		
Frequency	5180 MHz	5220 MHz	5240 MHz
802.11a	7	7	7
802.11n20	7	7	7
802.11ac20	7	7	7
Frequency	5190 MHz	/	5230 MHz
802.11n40	7	/	7
802.11ac40	7	/	7
Frequency	/	5210 MHz	/
802.11ac80	/	7	/

Test Software Version	EngineerMode v3.0		
Frequency	5260 MHz	5300 MHz	5320 MHz
802.11a	7	7	7
802.11n20	7	7	7
802.11ac20	7	7	7
Frequency	5270 MHz	/	5310 MHz
802.11n40	7	/	7
802.11ac40	7	/	7
Frequency	/	5290 MHz	/
802.11ac80	/	7	/

Test Software Version	EngineerMode v3.0		
Frequency	5500 MHz	5580 MHz	5700 MHz
802.11a	7	7	7
802.11n20	7	7	7
802.11ac20	7	7	7
Frequency	5510MHz	5550MHz	5670 MHz
802.11n40	7	/	7
802.11ac40	7	/	7
Frequency	5530MHz	/	5610MHz
802.11ac80	7	/	7

Test Software Version	EngineerMode v3.0		
Frequency	5745 MHz	5785 MHz	5825 MHz
802.11a	7	7	7
802.11n20	7	7	7
802.11ac20	7	7	7
Frequency	5755 MHz	/	5795 MHz
802.11n40	7	/	7
802.11ac40	7	/	7
Frequency	/	5775 MHz	/
802.11ac80	/	7	/

2.6. Block Diagram of Test Setup



2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen HTT Technology Co.,Ltd.
1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road,Nanchang Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

3.2. Test Facility

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

FCC-Registration No.: 779513 Designation Number: CN1319
Shenzhen HTT Technology Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6435.01
Shenzhen HTT Technology Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Test Description

Test Specification clause	Test case	Test Mode	Test Channel	Recorded In Report		Pass	Fail	NA	NP	Remark
§15.203	Antenna gain	802.11ac	☒ Lowest ☒ Middle ☒ Highest	802.11ac	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.407(a)	Power spectral density	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.407(a)	Spectrum bandwidth – 26 dB bandwidth	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.407(e)	Spectrum bandwidth – 6 dB bandwidth	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.407(a)	Maximum output power	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	☒ ☒ ☒	☐	☐	☐	complies
§15.407(b)	Band edge compliance conducted	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Highest	☒ ☒	☐	☐	☐	complies
§15.407(b)	Band edge compliance radiated	802.11a/ac20/ ac40/ac80 802.11n	☒ Lowest ☒ Highest	802.11a/ac20/ax20/ac40/ax40/ ac80	☒ Lowest ☒ Highest	☒	☐	☐	☐	complies

		HT20/40		802.11n HT20/40						
§15.407(a)	TX spurious emissions conducted	-/-	-/-	-/-	-/-	☐	☐	☒	☐	complies
§15.407(a)	TX spurious emissions radiated	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	802.11a/ac20/ ac40/ac80 802.11n HT20/40	☒ Lowest ☒ Middle ☒ Highest	☒	☐	☐	☐	complies
§15.407(g)	Frequency Stability	-/-	-/-	-/-	-/-	☒	☐	☐	☐	complies
§15.109	RX spurious emissions radiated	-/-	-/-	-/-	-/-	☐	☐	☒	☐	complies
§15.209(a)	TX spurious Emissions radiated < 30 MHz	802.11a/ac20/ ac40/ac80 802.11n HT20/40	-/-	802.11ac	-/-	☒	☐	☐	☐	complies
§15.107(a) §15.207	Conducted Emissions < 30 MHz	802.11a/ac20/ ac40/ac80 802.11n HT20/40	-/-	802.11ac	-/-	☒	☐	☐	☐	complies

Remark:
1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen HTT Technology Co.,Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen HTT Technology Co.,Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.12 dB	(1)
Radiated Emission	30~1000MHz	4.37 dB	(1)
Radiated Emission	1~18GHz	5.40 dB	(1)
Radiated Emission	18-40GHz	5.45 dB	(1)
Conducted Disturbance	0.15~30MHz	2.68 dB	(1)
Output Peak power	30MHz~18GHz	0.57 dB	(1)
Power spectral density	/	0.54 dB	(1)
Spectrum bandwidth	/	1.2%	(1)
Time	/	±10%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.25 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.15 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.35 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.20 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.20 dB	(1)

Occupied Bandwidth	9KHz~40GHz	-	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

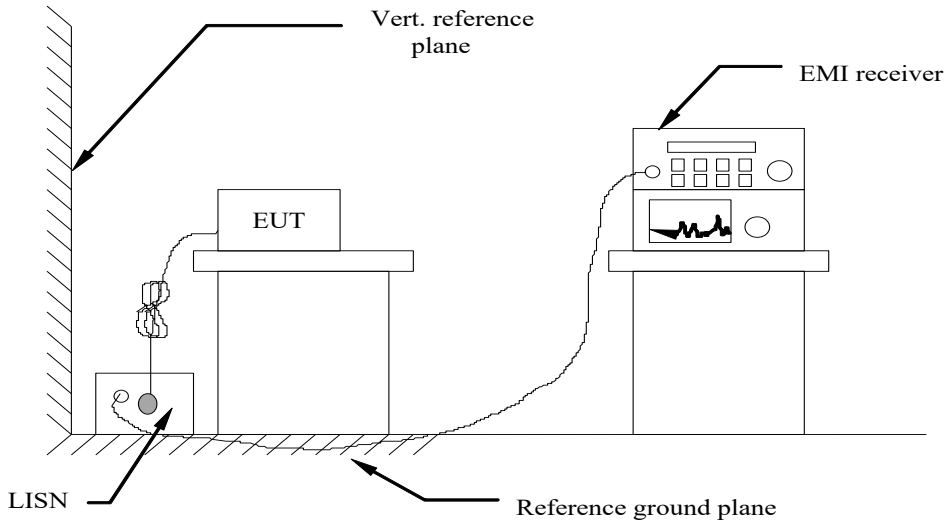
3.6. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	Shenzhen C.R.T technology co., LTD	9*6*6	HTT-E028	Aug. 10 2024	Aug. 09 2027
2	Control Room	Shenzhen C.R.T technology co., LTD	4.8*3.5*3.0	HTT-E030	Aug. 10 2024	Aug. 09 2027
3	EMI Test Receiver	Rohde&Schwar	ESCI7	HTT-E022	Apr. 22 2025	Apr. 21 2026
4	Spectrum Analyzer	Rohde&Schwar	FSP	HTT-E037	Apr. 22 2025	Apr. 21 2026
5	Coaxial Cable	ZDecl	ZT26-NJ-NJ-0.6M	HTT-E018	Apr. 22 2025	Apr. 21 2026
6	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-2M	HTT-E019	Apr. 22 2025	Apr. 21 2026
7	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-0.6M	HTT-E020	Apr. 22 2025	Apr. 21 2026
8	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-8.5M	HTT-E021	Apr. 22 2025	Apr. 21 2026
9	Composite logarithmic antenna	Schwarzbeck	VULB 9168	HTT-E017	Apr. 19 2025	Apr. 18 2026
10	Horn Antenna	Schwarzbeck	BBHA9120D	HTT-E016	Apr. 19 2025	Apr. 18 2026
11	Loop Antenna	Zhinan	ZN30900C	HTT-E039	Apr. 19 2025	Apr. 18 2026
12	Horn Antenna	Beijing Hangwei Dayang	OBH100400	HTT-E040	Apr. 19 2025	Apr. 18 2026
13	low frequency Amplifier	Sonoma Instrument	310	HTT-E015	Apr. 22 2025	Apr. 21 2026
14	high-frequency Amplifier	HP	8449B	HTT-E014	Apr. 22 2025	Apr. 21 2026
15	Variable frequency power supply	Shenzhen Anbiao Instrument Co., Ltd	ANB-10VA	HTT-082	Apr. 22 2025	Apr. 21 2026
16	EMI Test Receiver	Rohde & Schwarz	ESCI3	HTT-E043	Apr. 22 2025	Apr. 21 2026
17	Artificial Mains	Rohde & Schwarz	ESH3-Z5	HTT-E006	Apr. 22 2025	Apr. 21 2026
18	Artificial Mains	Rohde & Schwarz	ENV-216	HTT-E038	Apr. 22 2025	Apr. 21 2026
19	Cable Line	Robinson	Z302S-NJ-BNCJ-1.5M	HTT-E001	Apr. 22 2025	Apr. 21 2026
20	Attenuator	Rohde & Schwarz	ESH3-Z2	HTT-E045	Sep. 20 2024	Sep. 19 2025
21	Variable frequency power supply	Shenzhen Yanghong Electric Co., Ltd	YF-650（5KVA）	HTT-E032	Apr. 22 2025	Apr. 21 2026
22	Control Room	Shenzhen C.R.T technology co., LTD	8*4*3.5	HTT-E029	Aug. 10 2024	Aug. 09 2027
23	DC power supply	Agilent	E3632A	HTT-E023	Apr. 22 2025	Apr. 21 2026
24	EMI Test Receiver	Agilent	N9020A	HTT-E024	Apr. 22 2025	Apr. 21 2026
25	Analog signal generator	Agilent	N5181A	HTT-E025	Apr. 22 2025	Apr. 21 2026
26	Vector signal generator	Agilent	N5182A	HTT-E026	Apr. 22 2025	Apr. 21 2026
27	RF Switch box	Keysight	Switchbox	HTT-E047	Sep. 20 2024	Sep. 19 2025
28	Temperature and humidity meter	Shenzhen Anbiao Instrument Co., Ltd	TH10R	HTT-074	Apr. 21 2025	Apr. 20 2026
29	Radiated Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
30	Conducted Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
31	RF Test Software	panshanrf	TST	N/A	N/A	N/A
32	Power Meter	R&S	NRVS	HTT-E057	Apr. 22 2025	Apr. 21 2026

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
2 Support equipment, if needed, was placed as per ANSI C63.10-2013
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
4 The EUT received DC 12V power from adapter, the adapter received AC120V/60Hz and AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT.The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

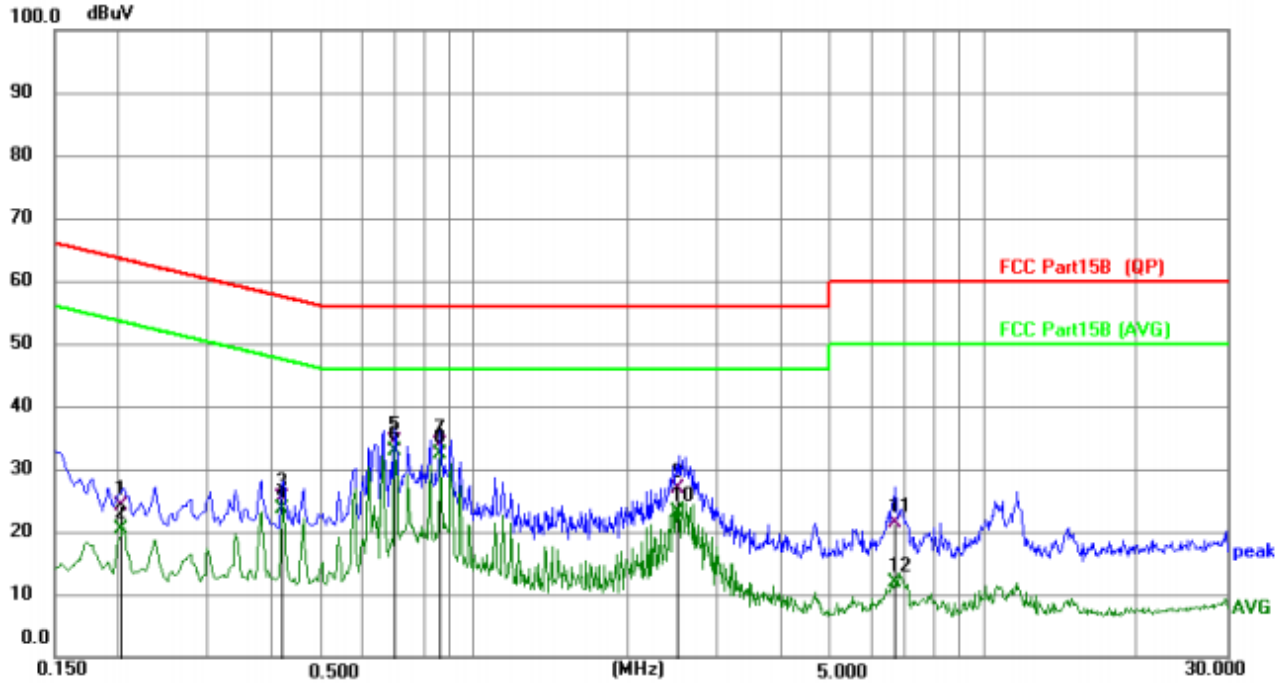
Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

Remark:
1. All modes of 802.11a/n/ac were tested at Low, Middle, and High channel; only the worst result of 802.11a CH36 was reported as below:

2. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:

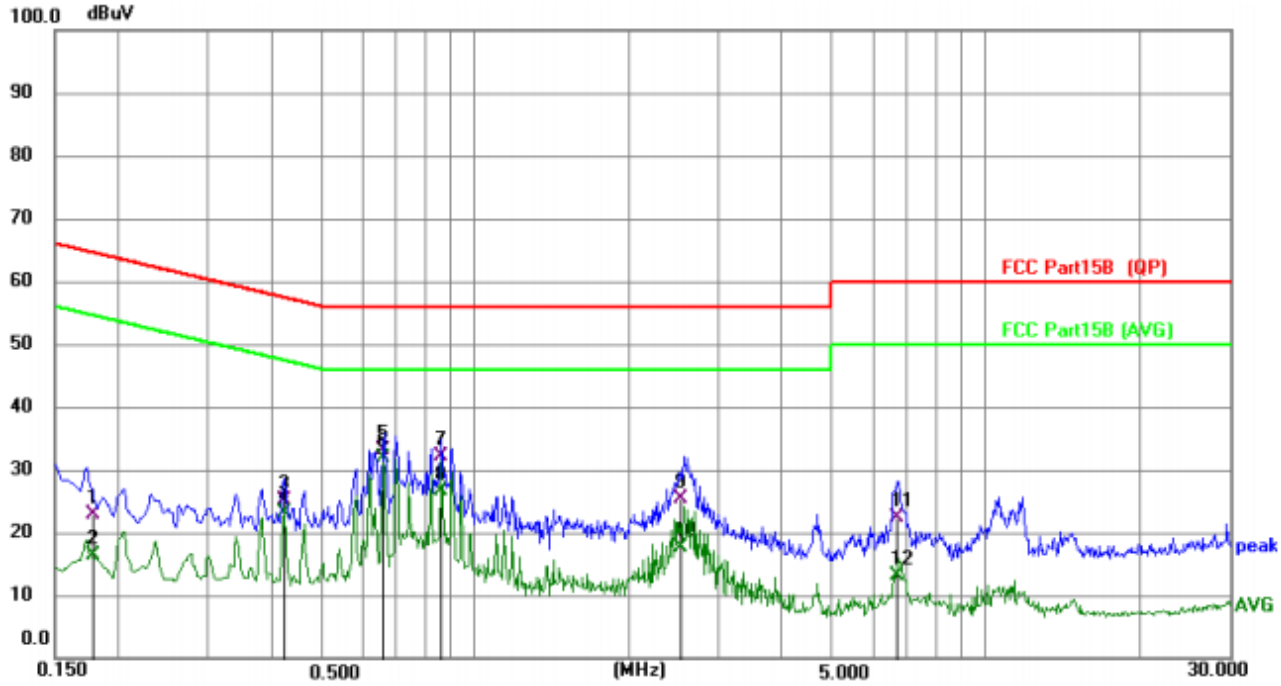
Power supply:	AC 120V/60Hz	Polarization	L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.2020	13.97	10.19	24.16	63.53	-39.37	QP
2		0.2020	10.25	10.19	20.44	53.53	-33.09	AVG
3		0.4196	15.30	10.08	25.38	57.46	-32.08	QP
4		0.4196	13.61	10.08	23.69	47.46	-23.77	AVG
5		0.6999	24.14	10.21	34.35	56.00	-21.65	QP
6	*	0.6999	22.71	10.21	32.92	46.00	-13.08	AVG
7		0.8592	23.84	10.12	33.96	56.00	-22.04	QP
8		0.8592	22.23	10.12	32.35	46.00	-13.65	AVG
9		2.5180	16.63	10.19	26.82	56.00	-29.18	QP
10		2.5180	12.96	10.19	23.15	46.00	-22.85	AVG
11		6.7084	11.37	10.12	21.49	60.00	-38.51	QP
12		6.7084	1.67	10.12	11.79	50.00	-38.21	AVG

Note:1).QP Value (dBμV)= QP Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). QPMargin(dB) = QP Limit (dBμV) - QP Value (dBμV)
4). AVMargin(dB) = AV Limit (dBμV) - AV Value (dBμV)

Power supply:	AC 120V/60Hz	Polarization	N



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1792	12.74	10.22	22.96	64.52	-41.56	QP
2		0.1792	6.15	10.22	16.37	54.52	-38.15	AVG
3		0.4202	14.88	10.15	25.03	57.44	-32.41	QP
4		0.4202	12.96	10.15	23.11	47.44	-24.33	AVG
5		0.6609	22.88	10.19	33.07	56.00	-22.93	QP
6	*	0.6609	21.79	10.19	31.98	46.00	-14.02	AVG
7		0.8605	22.03	10.17	32.20	56.00	-23.80	QP
8		0.8605	16.53	10.17	26.70	46.00	-19.30	AVG
9		2.5424	15.13	10.23	25.36	56.00	-30.64	QP
10		2.5424	7.29	10.23	17.52	46.00	-28.48	AVG
11		6.6803	12.32	10.15	22.47	60.00	-37.53	QP
12		6.6803	3.04	10.15	13.19	50.00	-36.81	AVG

Note:1).QP Value (dBμV)= QP Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). QPMargin(dB) = QP Limit (dBμV) - QP Value (dBμV)
4). AVMargin(dB) = AV Limit (dBμV) - AV Value (dBμV)

4.2. Radiated Emission

Limit

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following 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 e.i.r.p. 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 e.i.r.p. of −27 dBm/MHz.
(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 e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Undesirable emission limits

Requirement	Limit(EIRP)	Limit (Field strength at 3m) Note1
15.407(b)(1)	PK:-27(dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)		

Note1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

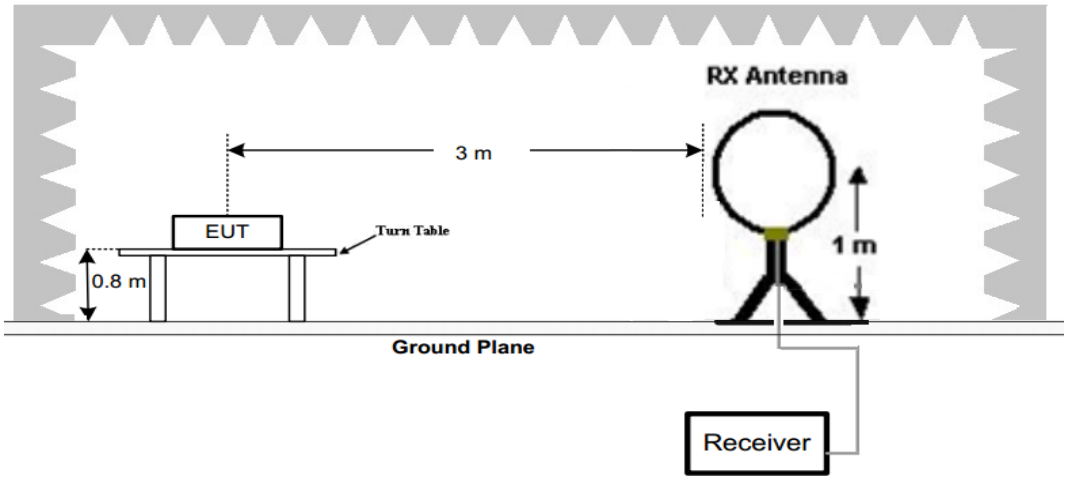
(5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209
(6)In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

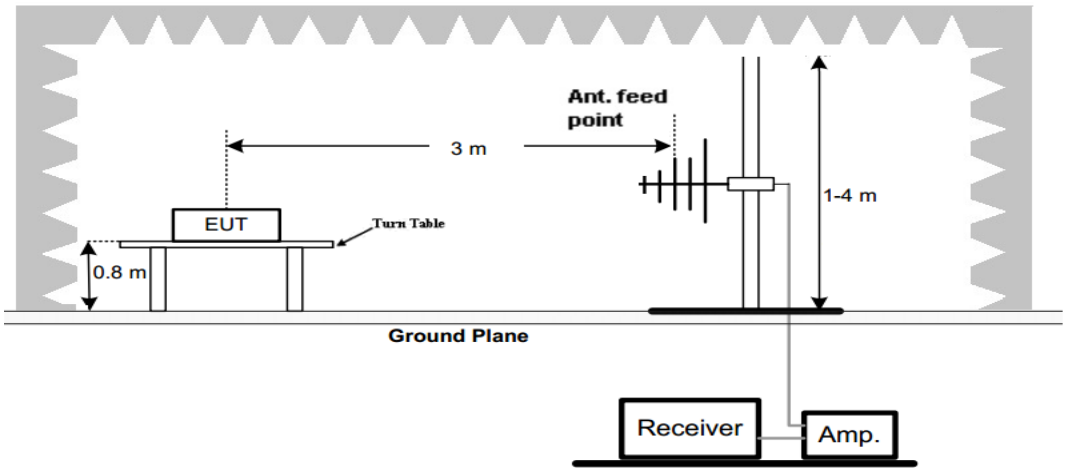
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

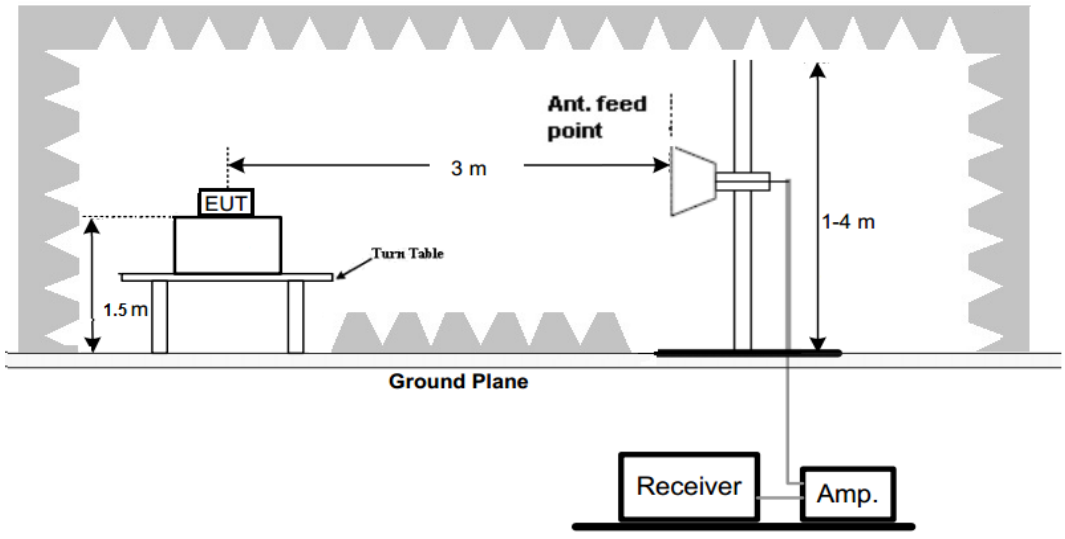
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz

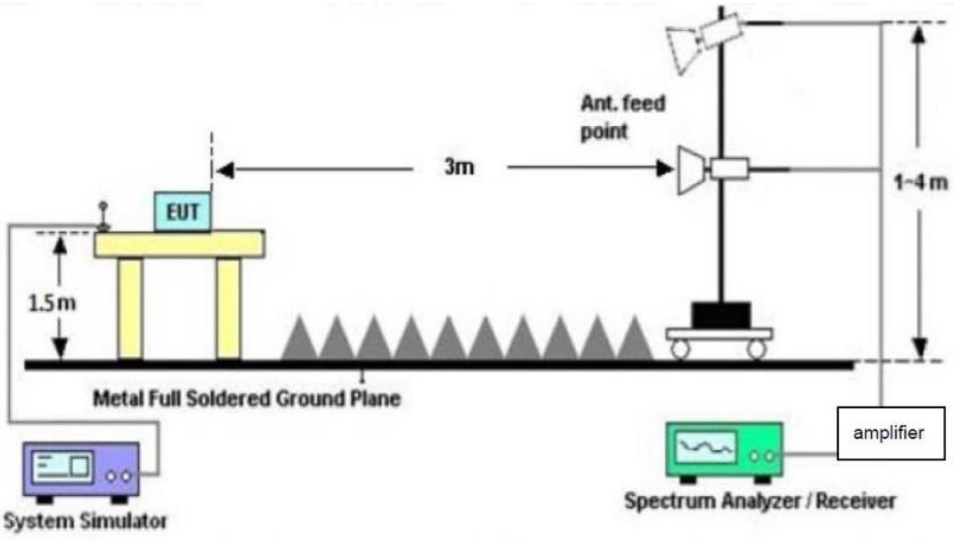


(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz





Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 40GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

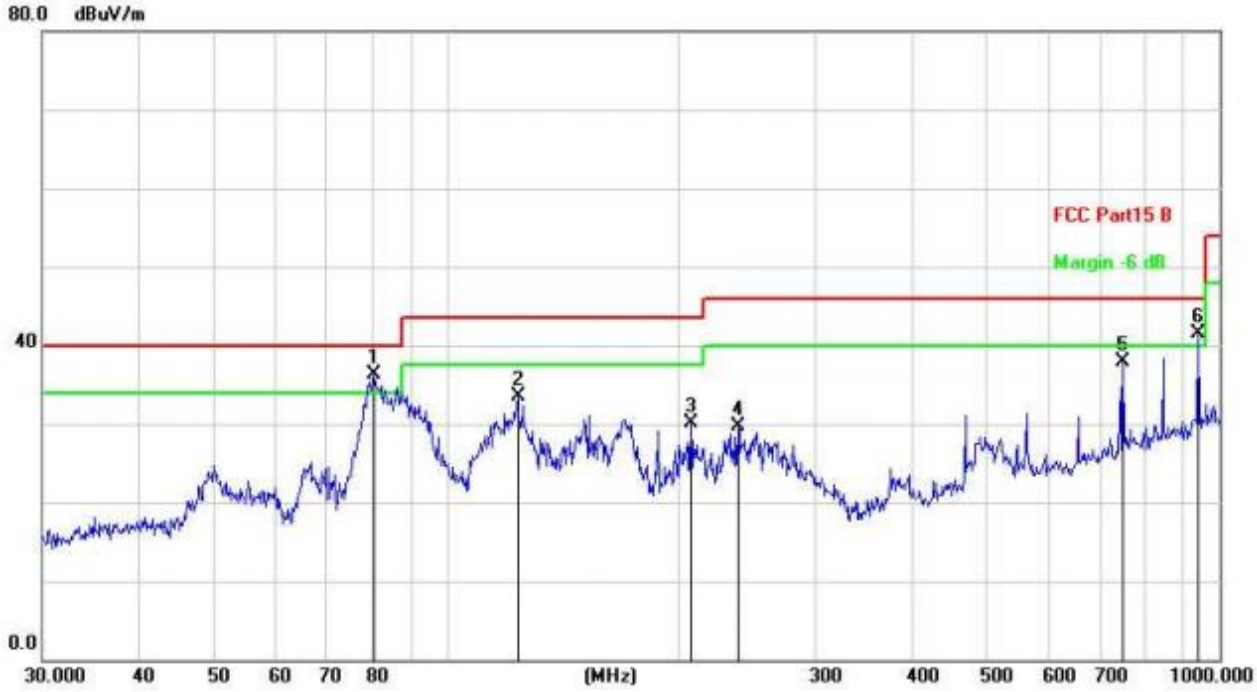
TEST RESULTS

Remark:

1. This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.
1. All 802.11a / 802.11n/ac (HT20) /802.11n/ac (HT40)/ 802.11ac (HT80) modes have been tested for above 1GHz test, for below 1GHz test, only the worst case 802.11a low channel of U-NII 1 band was recorded.
2. All 802.11a / 802.11n/ac (HT20) /802.11n/ac (HT40)/ 802.11ac (HT80) modes have been tested for above 1GHz test, for above 1GHz test, only the worst case 802.11a was recorded.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz

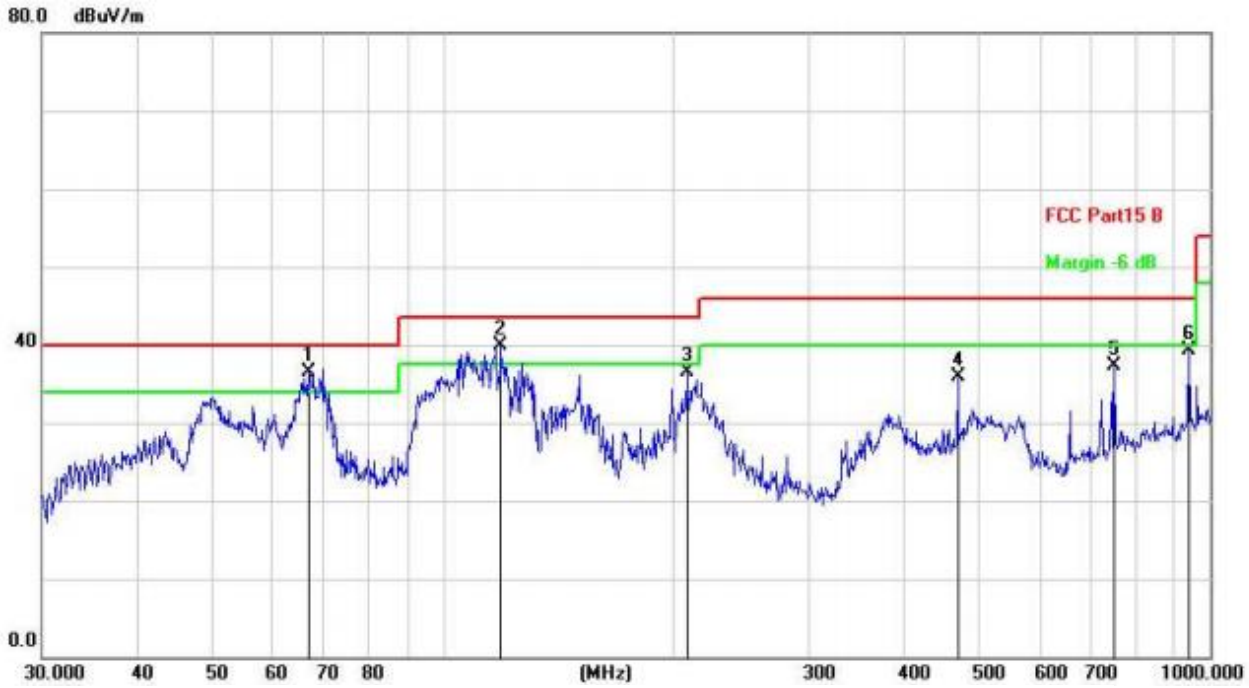
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dB/m	dB	Detector
1	*	80.6441	51.52	-15.31	36.21	40.00	-3.79	peak
2		123.6984	46.36	-12.86	33.50	43.50	-10.00	peak
3		207.1226	43.53	-13.33	30.20	43.50	-13.30	peak
4		238.3102	41.62	-11.94	29.68	46.00	-16.32	peak
5		750.1082	38.61	-0.62	37.99	46.00	-8.01	peak
6	!	938.8325	38.80	2.76	41.56	46.00	-4.44	peak

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dB/m	dB	Detector
1	*	66.7325	49.30	-12.77	36.53	40.00	-3.47	peak
2	!	119.0180	53.07	-13.15	39.92	43.50	-3.58	peak
3		207.8500	49.80	-13.33	36.47	43.50	-7.03	peak
4		468.8761	42.25	-6.39	35.86	46.00	-10.14	peak
5		750.1082	37.97	-0.62	37.35	46.00	-8.65	peak
6		938.8325	36.55	2.76	39.31	46.00	-6.69	peak

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

For 1GHz to 40GHz

Note: All MIMO and 802.11a / 802.11n/ac (HT20) /802.11n/ac (HT40)/ 802.11ac (HT80) modes have been tested for above 1GHz test, only the worst case 802.11n MIMO was recorded.

5150-5250MHz:

U-NII 1 & 802.11a Mode (above 1GHz)

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5150.00	58.04	PK	H	68.20	10.16	43.97	32.8	12.67	31.4	14.07
36.00	5150.00	48.52	AV	H	54.00	5.48	34.45	32.8	12.67	31.4	14.07
5180MHz	10360.00	52.69	PK	H	68.20	15.51	38.83	39.6	15.5	30.3	24.80
	--		--	--	--	--	--	--	--	--	--
44.00	10440.00	53.02	PK	H	68.20	15.18	28.22	39.6	15.5	30.3	24.80
5220MHz	--		--	--	--	--	--	--	--	--	--
48.00	5350.50	58.44	PK	H	68.20	9.76	43.97	33.2	12.67	31.4	14.47
5240MHz	5350.50	49.24	AV	H	54.00	4.76	34.77	33.2	12.67	31.4	14.47
	10480.00	54.13	PK	H	68.20	14.07	31.96	39.7	15.5	33.03	22.17

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5150.00	54.17	PK	V	68.20	14.03	40.10	32.8	12.67	31.4	14.07
36.00	5150.00	47.89	AV	V	54.00	6.11	33.82	32.8	12.67	31.4	14.07
5180MHz	10360.00	51.63	PK	V	68.20	16.57	26.83	39.6	15.5	30.3	24.80
	--		--	--	--	--	--	--	--	--	--
44.00	10440.00	53.01	PK	V	68.20	15.19	28.21	39.6	15.5	30.3	24.80
5220MHz	--		--	--	--	--	--	--	--	--	--
48.00	5350.50	58.74	PK	V	68.20	9.46	44.27	33.2	12.67	31.4	14.47
5240MHz	5350.50	48.51	AV	V	54.00	5.49	34.04	33.2	12.67	31.4	14.47
	10480.00	53.12	PK	V	68.20	15.08	30.95	39.7	15.5	33.03	22.17

5260-5320MHz:

U-NII 1 & 802.11a Mode (above 1GHz)

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5150.00	58.04	PK	H	68.20	10.16	43.97	32.8	12.67	31.4	14.07
52.00	5150.00	43.59	AV	H	54.00	10.41	29.52	32.8	12.67	31.4	14.07
5260MHz	10520.00	54.56	PK	H	68.20	13.64	38.83	39.7	16.3	30	26.00
	--	--	--	--	--	--	--	--	--	--	--
60.00	10600.00	52.37	PK	H	68.20	15.83	26.27	39.8	16.3	30	26.10
5300MHz	--	--	--	--	--	--	--	--	--	--	--
64.00	5350.50	56.31	PK	H	68.20	11.89	41.84	33.2	12.67	31.4	14.47
5320MHz	5350.50	47.96	AV	H	54.00	6.04	33.49	33.2	12.67	31.4	14.47
	10640.00	52.69	PK	H	68.20	15.51	26.59	39.8	16.3	30	26.10

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5150.00	57.64	PK	H	68.20	10.56	43.57	32.8	12.67	31.4	14.07
52.00	5150.00	45.21	AV	H	54.00	8.79	31.14	32.8	12.67	31.4	14.07
5260MHz	10520.00	56.31	PK	H	68.20	11.89	38.83	39.7	16.3	30	26.00
	--		--	--	--	--	--	--	--	--	--
60.00	10600.00	53.99	PK	H	68.20	14.21	27.89	39.8	16.3	30	26.10
5300MHz	--		--	--	--	--	--	--	--	--	--
64.00	5350.50	53.48	PK	H	68.20	14.72	39.01	33.2	12.67	31.4	14.47
5320MHz	5350.50	45.06	AV	H	54.00	8.94	30.59	33.2	12.67	31.4	14.47
	10640.00	53.71	PK	H	68.20	14.49	27.61	39.8	16.3	30	26.10

5500-5700MHz:

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5460.00	54.21	PK	V	68.20	13.99	39.44	33.5	12.67	31.4	14.77
100.00	5460.00	48.31	AV	V	54.00	5.69	33.54	33.5	12.67	31.4	14.77
5500MHz	11000.00	52.14	PK	V	68.20	16.06	25.84	40	16.3	30	26.30
	--		--	--	--	--	--	--	--	--	--
120.00	11160.00	52.18	PK	V	68.20	16.02	26.08	39.8	16.3	30	26.1
5580MHz	--		--	--	--	--	--	--	--	--	--
140.00	5855.00	55.30	PK	V	68.20	12.90	39.50	33.9	13.3	31.4	15.8
5700MHz	5855.00	47.04	AV	V	54.00	6.96	31.24	33.9	13.3	31.4	15.8
	11400.00	52.44	PK	V	68.20	15.76	26.44	39.7	16.3	30	26

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5460.00	56.24	PK	V	68.20	11.96	41.47	33.5	12.67	31.4	14.77
100.00	5460.00	46.18	AV	V	54.00	7.82	31.41	33.5	12.67	31.4	14.77
5500MHz	11000.00	53.74	PK	V	68.20	14.46	27.44	40	16.3	30	26.30
	--		--	--	--	--	--	--	--	--	--
120.00	11160.00	54.18	PK	V	68.20	14.02	28.08	39.8	16.3	30	26.1
5580MHz	--		--	--	--	--	--	--	--	--	--
140.00	5855.00	55.62	PK	V	68.20	12.58	39.82	33.9	13.3	31.4	15.8
5700MHz	5855.00	48.27	AV	V	54.00	5.73	32.47	33.9	13.3	31.4	15.8
	11400.00	55.09	PK	V	68.20	13.11	29.09	39.7	16.3	30	26

5725-5850MHz:

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5720.00	56.64	PK	H	68.20	11.56	41.04	33.7	13.3	31.4	15.60
149.00	5720.00	48.05	AV	H	54.00	5.95	32.45	33.7	13.3	31.4	15.60
5745MHz	11490.00	55.21	PK	H	68.20	12.99	29.21	39.7	16.3	30	26.00
	--		--	--	--	--		--	--	--	--
157.00	11570.00	53.60	PK	H	68.20	14.60	29.60	39.6	16.6	32.2	24
5785MHz	--		--	--	--	--	--	--	--	--	--
165.00	5855.00	54.81	PK	H	68.20	13.39	39.01	33.9	13.3	31.4	15.8
5825MHz	5855.00	48.21	AV	H	54.00	5.79	32.41	33.9	13.3	31.4	15.8
	11650.00	53.88	PK	H	68.20	14.32	29.88	39.6	16.6	32.2	24

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
	5720.00	57.40	PK	V	68.20	10.80	41.80	33.7	13.3	31.4	15.60
149.00	5720.00	48.62	AV	V	54.00	5.38	33.02	33.7	13.3	31.4	15.60
5745MHz	11490.00	54.07	PK	V	68.20	14.13	28.07	39.7	16.3	30	26.00
	--		--	--	--	--	--	--	--	--	--
157.00	11570.00	53.80	PK	V	68.20	14.40	29.80	39.6	16.6	32.2	24
5785MHz	--		--	--	--	--	--	--	--	--	--
165.00	5855.00	59.15	PK	V	68.20	9.05	43.35	33.9	13.3	31.4	15.8
5825MHz	5855.00	46.38	AV	V	54.00	7.62	30.58	33.9	13.3	31.4	15.8
	11650.00	53.15	PK	V	68.20	15.05	29.15	39.6	16.6	32.2	24

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the other emission levels were very low against the limit.
5. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
6. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20 ,IEEE 802.11ac VHT40 and IEEE 802.11ac VHT80

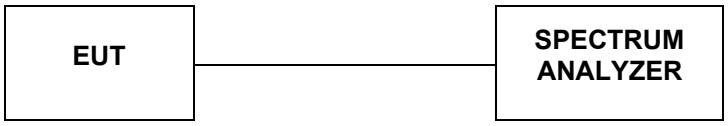
4.3. For Conducted Band edge Measurement

The test results have included the antenna gain

Please refer to Appendix RF Test Data for WIFI 5G.

4.4. Duty Cycle

TEST CONFIGURATION



TEST PROCEDURE

According to KDB789033 D02 General UNII Test Procedures New Rules v01 B Duty Cycle (x), Transmission Duration (T):

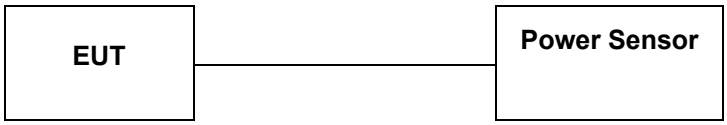
a. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on and off times of the transmitted signal
b. The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zerospan measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in section II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

TEST RESULTS

For reporting purpose only.
Please refer to Appendix RF Test Data for WIFI 5G.

4.5. Maximum Average Output Power

TEST CONFIGURATION



TEST PROCEDURE

According to KDB789033 D02 General UNII Test Procedures New Rules v01 Section E3 Measurement using a Power Meter (PM):

a. 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
   1. The EUT is configured to transmit continuously or to transmit with a constant duty cycle
   2. At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
   3. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B

c. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10 log(1/0.25) if the duty cycle is 25 percent).

LIMIT

According to §15.407(a): The maximum output power should be not exceed follow:

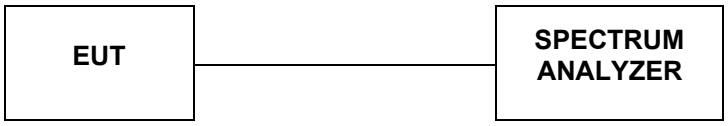
Frequency Range (MHz)	Limit
5150-5250	Fixed:1 Watt (30dBm) Mobile and portable: 250mW (24dBm)
5250-5350	250mW (24dBm)
5470-5725	250mW (24dBm)
5725-5850	1 Watt (30dBm)
Note: The maximum e.i.r.p at anyelevation angle above 30 degrees as measured from the horizon must not exceed 125mW(21dBm)	

TEST RESULTS

Please refer to Appendix RF Test Data for WIFI 5G.

4.6. Power Spectral Density

TEST CONFIGURATION



TEST PROCEDURE

According to KDB 789033 D02 General UNII Test Procedures New Rules v01 F: The rules requires "maximum power spectral density" measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission

a. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.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…". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
b. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
c. Make the following adjustments to the peak value of the spectrum, if applicable:
   1. 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.
   2.) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
d. The result is the Maximum PSD over 1 MHz reference bandwidth.
e. 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). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:
   1. Set RBW ≥ 1/T, where T is defined in section II.B.I.a).
   2. Set VBW ≥ 3 RBW.
   3. If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
   4. If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
   5. Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

   Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHz is available on nearly all spectrum analyzers.
f. Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10 log(1/0.25) if the duty cycle is 25 percent).

LIMIT

According to §15.407(a): The maximum output power should be not exceed follow:

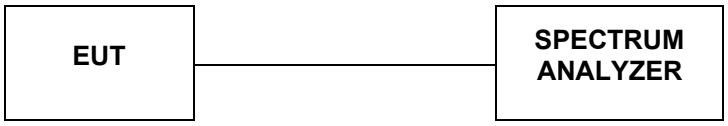
Frequency Range (MHz)	Limit
5150-5250	Other then Mobile and portable:17dBm/MHz Mobile and portable:11dBm/MHz
5250-5350	11dBm/MHz
5470-5725	11dBm/MHz
5725-5850	30dBm/500kHz

TEST RESULTS

Please refer to Appendix RF Test Data for WIFI 5G.

4.7. 6dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

According to KDB789033 D02 General UNII Test Procedures New Rules v01 for one of the following procedures may be used for section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a. Set RBW = 100 kHz.
b. Set the video bandwidth (VBW) ≥ 3 × RBW
c. Detector = Peak.
d. Trace mode = max hold.
e. Sweep = auto couple.
f. Allow the trace to stabilize
g. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

LIMIT

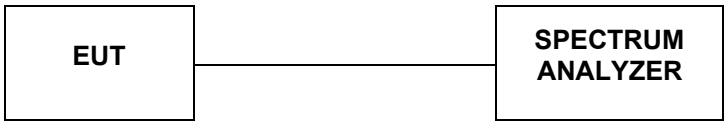
For Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz

TEST RESULTS

Please refer to Appendix RF Test Data for WIFI 5G.

4.8. 26dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

According to KDB789033 D02 General UNII Test Procedures New Rules v01 for one of the following procedures may be used for Emission Bandwidth (EBW) measurement:

a. Set RBW = 300 kHz (approximately 1% of the emission bandwidth).
b. Set the video bandwidth (VBW) = 1000 KHz (VBW > RBW)
c. Detector = Peak.
d. Trace mode = max hold.
e. Sweep = auto couple.
f. Allow the trace to stabilize
g. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

LIMIT

No Limits for 26dBc Bandwith

TEST RESULTS

Please refer to Appendix RF Test Data for WIFI 5G.

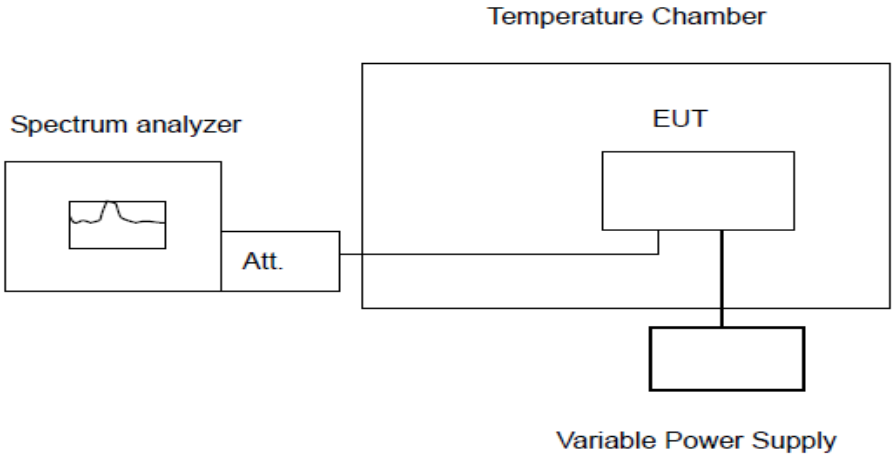
4.9. Frequency Stability

Standard Applicable

According to FCC §15.407(g) “Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.”
According to FCC §2.1055(a) “The frequency stability shall be measured with variation of ambient temperature as follows:”

(1) From −30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.
(2) From −20° to + 50° centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radiobeacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.
(3) From 0° to + 50° centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

Test Configuration



Test Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum anzlyer via feed through attenators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low engouh to obtain the desired frequency resoluation and measure EUT 20 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure wuth 10 degree increased per stage until the highest temperature of +50 degree reached.

Test Results

Please refer to Appendix RF Test Data for WIFI 5G.

4.10. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

And according to FCC 47 CFR Section 15.407 (a), 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.

Antenna Information

The maximum gain of antenna were 1.98 dBi for Ant 1 and 1.98 dBi for Ant2, It meets the requirements of 15.203.

Remark: The antenna gain is provided by the customer , if the data provided by the customer is not accurate, Shenzhen HTT Technology Co.,Ltd. does not assume any responsibility.

5. Test Setup Photos of the EUT

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

6. External and Internal Photos of the EUT

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

.....End of Report.....