

TEST REPORT

Product Name : Wifi Module
Brand Name : N/A
Model : EL.RTL8822CU-CWFT
Series Model : N/A
FCC ID : 2AWY6-ERT8822CUCT
Applicant : **EXPRESS LUCK INDUSTRIAL (SHENZHEN) LIMITED**
Floor1, Workshop1, No.88, South Baotong Road, Xikeng
Address : Community Yuanshan Street, Longgang District,
Shenzhen,GuangDong, China
Manufacturer : **EXPRESS LUCK INDUSTRIAL (SHENZHEN) LIMITED**
Floor1, Workshop1, No.88, South Baotong Road, Xikeng
Address : Community Yuanshan Street, Longgang District,
Shenzhen,GuangDong, China
Standard(s) : FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of Receipt : Aug. 13, 2025
Date of Test : Aug. 13, 2025~ Sept. 2, 2025
Issued Date : Sept. 2, 2025

Issued By: **Guangdong Asia Hongke Test Technology Limited**
B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street,
Bao'an District, Shenzhen, Guangdong, China
Tel.: +86 0755-230967639 Fax.: +86 0755-230967639

Reviewed by:


Aalen.Ye

Approved by:


Allen Wang



Note: This device has been tested and found to comply with the standard(s) listed, this 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. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.

Guangdong Asia Hongke Test Technology Limited

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.



Report Revise Record

Report Version	Issued Date	Notes
M1	Sept. 2, 2025	Initial Release

Contents

1	TEST SUMMARY	4
1.1	TEST STANDARDS	4
1.2	TEST SUMMARY	4
1.3	TEST FACILITY	5
1.4	MEASUREMENT UNCERTAINTY	5
2	GENERAL INFORMATION	6
2.1	ENVIRONMENTAL CONDITIONS	6
2.2	GENERAL DESCRIPTION OF EUT	6
2.3	DESCRIPTION OF TEST MODES AND TEST FREQUENCY	7
2.4	SPECIAL ACCESSORIES	8
2.5	EQUIPMENT LIST FOR THE TEST	8
3	TEST CONDITIONS AND RESULTS	10
3.1	CONDUCTED EMISSIONS TEST	10
3.2	RADIATED EMISSIONS AND BAND EDGE	12
3.3	MAXIMUM PEAK CONDUCTED OUTPUT POWER	24
3.4	POWER SPECTRAL DENSITY	25
3.5	6DB BANDWIDTH	26
3.6	OUT-OF-BAND EMISSIONS	27
3.7	ANTENNA REQUIREMENT	29
4	TEST SETUP PHOTOGRAPHS OF EUT	30
5	PHOTOS OF EUT	31

1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

[ANSI C63.10-2020+Cor 1-2023](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB558074 D01 15.247 Meas Guidance v05r02](#): Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules

[KDB 662911 D01 Multiple Transmitter Output v02r01](#) is required to be used for this kind of FCC 15.247 device.

1.2 Test Summary

Test Item	Section in 47 CFR	Result
Antenna requirement	§15.203	Pass
On Time and Duty Cycle	/	/
AC Power Line Conducted Emission	§ 15.207(a)	Pass
Maximum Conducted Peak Output Power	§15.247 (b)(3)	Pass
-6dB Bandwidth	§15.247 (a)(2)	Pass
Power Spectral Density	§15.247 (e)	Pass
Transmitter Radiated Spurious Emission	§15.205/15.209	Pass
Restricted Bands	§15.205/15.209	PASS
Conducted Unwanted emissions and Bandedge	§15.205, §15.247(d)	Pass

1.3 Test Facility

Test Laboratory:

Guangdong Asia Hongke Test Technology Limited

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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

FCC-Registration No.: 251906 Designation Number: CN1376

Guangdong Asia Hongke Test Technology Limited 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.

IC —Registration No.: 31737 CAB identifier: CN0165

The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

A2LA-Lab Cert. No.: 7133.01

Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

1.4 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 according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Guangdong Asia Hongke Test Technology Limited's quality system according 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 Asia Hongke laboratory is reported:

Test	Measurement Uncertainty	Notes
Power Line Conducted Emission	9KHz~30MHz ± 1.20 dB	(1)
Radiated Emission	9KHz~30MHz ± 3.10 dB	(1)
Radiated Emission	30MHz~1GHz ± 3.75 dB	(1)
Radiated Emission	1GHz~18GHz ± 3.88 dB	(1)
Radiated Emission	18GHz~40GHz ± 3.88 dB	(1)
RF power, conducted	30MHz~6GHz ± 0.16 dB	(1)
RF power density, conducted	± 0.24 dB	(1)
Spurious emissions, conducted	± 0.21 dB	(1)
Temperature	$\pm 1^{\circ}\text{C}$	(1)
Humidity	$\pm 3\%$	(1)
DC and low frequency voltages	$\pm 1.5\%$	(1)
Time	$\pm 2\%$	(1)
Duty cycle	$\pm 2\%$	(1)

The report uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty Multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%

2 GENERAL INFORMATION

2.1 Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 General Description of EUT

Product Name:	Wifi Module
Model/Type reference:	EL.RTL8822CU-CWFT
Serial Model:	N/A
Power Supply:	DC:3.3V/1A
Hardware Version:	RTL8822CU_HW_V1.0
Software Version:	F7822CU-00_EFUSE_V1.0
Sample(s) Status:	AiTSZ-250813039-1(Normal sample) AiTSZ-250813039-2(Engineer sample)
2.4G WIFI:	
Supported type:	802.11b/802.11g /802.11n(HT20)/802.11n(HT40)
Modulation:	802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM
Operation frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2462MHz 802.11n(H40): 2422MHz~2452MHz
Channel number:	802.11b/802.11g/802.11n(H20): 11 802.11n(H40): 7
Channel separation:	5MHz
Antenna type:	PCB antenna
Antenna gain:	ANT1:2.10dBi ANT2:3.28dBi Directional Gain: 5.72dBi Note: transmit signals are correlated, Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$ dBi
Remark: The above DUT's information was declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	

2.3 Description of Test Modes and Test Frequency

There are 11 channels provided to the EUT for 20MHz protocol and 7 channels for 40 MHz protocol. Channel 01/06/11 were selected for 20MHz protocol mode test and channel 03/06/09 were selected for 40MHz protocol mode test.

.Operation Frequency List:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

Note: The line display in grey were the channel selected for testing

Exploratory testing was performed under each mode combination test channel; only the final measurement of the worst combination was made and recorded in this report.

Test case	Exploratory measurement			Final measurement Recorded In Report		
	Mode	Date rate	Channel	Mode	Date rate	Channel
Duty cycle	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest
Maximum output power	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest
Power spectral density	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest
-6dB bandwidth	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest
Conducted Spurious Emissions	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	1~11Mbps 6~54Mbps MCS0~MCS7 MCS0~MCS7	SISO SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest
Conducted Band edge	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO SISO MIMO MIMO	☒ Lowest ☒ Highest	1~11Mbps 6~54Mbps MCS0~MCS7 MCS0~MCS7	SISO SISO MIMO MIMO	☒ Lowest ☒ Highest
Radiated Band edge	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO Ant1 SISO MIMO MIMO	☒ Lowest ☒ Highest	802.11n(HT40) 802.11b(Ant1)	MIMO SISO	☒ Lowest ☒ Highest
Radiated Emissions Above 1GHz	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO Ant1 SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b(Ant1)	SISO	☒ Lowest ☒ Middle ☒ Highest
Radiated Emissions Below 1GHz	802.11b 802.11g 802.11n(HT20) 802.11n(HT40)	SISO Ant1 SISO MIMO MIMO	☒ Lowest ☒ Middle ☒ Highest	802.11b(Ant1)	SISO	☒ Middle
Conducted Emissions	802.11b 802.11g	SISO SISO	☒ Lowest ☒ Middle	802.11b(Ant1)	SISO	☒ Middle

	802.11n(HT20) 802.11n(HT40)	MIMO MIMO	☒ Highest			
--	--------------------------------	--------------	---	--	--	--

Power setting during the test:

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters:

Test Software Version	Engineering Mode		
Frequency	2412/2422MHz	2437MHz	2452/2462MHz
802.11b	Default	Default	Default
802.11g	Default	Default	Default
802.11n(HT20)SISO	Default	Default	Default
802.11n(HT40) SISO	Default	Default	Default
802.11n(HT20) MIMO	Default	Default	Default
802.11n(HT40) MIMO	Default	Default	Default

Note: SISO and MIMO mode share with same power setting

2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Serial No.	Provided by	Other
Adapter	HNT	HNT-QC530	/	Test lab	/
Notebook	LenOVO	T440S	/	Test lab.	/

2.5 Equipment List for the Test

Conducted Emission measurement						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
☒ 1	EMI Test Receiver	R&S	ESPI	100771	2024.09.25	2025.09.24
☒ 2	LISN	R&S	NNLK 8129	8130179	2024.09.24	2025.09.23
☒ 3	ISN	TESEQ	T800	29429	2024.09.26	2025.09.25
☒ 4	Pulse Limiter	R&S	ESH3-Z2	102789	2024.09.24	2025.09.23
☒ 5	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A

Radiation Emission measurement						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
☒ 1	EMI Measuring Receiver	R&S	ESR	101160	2024.09.25	2025.09.24
☒ 2	Low Noise Pre Amplifier	SCHWARZBECK	BBV 9745	00282	2024.09.25	2025.09.24
☒ 3	Low Noise Pre Amplifier	CESHENG	CSKJLNA231 016A	CSKJLNA23 1016A	2024.09.25	2025.09.24
☒ 4	Spectrum Analyzer	R&S	FSV40	101470	2024.09.23	2025.09.22
☒ 5	Passive Loop	ETS	6512	00165355	2024.08.29	2026.08.28
☒ 6	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9168	01434	2024.08.29	2027.08.28
☒ 7	Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	452	2024.08.29	2027.08.28

☒ 8	Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA91703 67	2024.08.28	2027.08.27
☒ 9	6dB Attenuator	JFW	50FPE-006	4360846-94 9-1	2024.09.24	2025.09.23
☒ 10	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A

RF Conducted measurement						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
☒ 1	Spectrum Analyzer	Agilent	N9020A	MY53421570	2024.09.25	2025.09.24
☒ 2	Power Sensor	Agilent	8481A	MY41097697	2024.09.25	2025.09.24
☐ 3	Vector Signal Generator	Agilent	N5182A	MY50143009	2024.09.25	2025.09.24
☐ 4	Analog signal generator	Agilent	E8257	MY51554256	2024.09.25	2025.09.24
☐ 5	Const Temp. & Humidity Chamber	Eastlab	YH-HW-408L	23051109	2024.09.24	2025.09.23
☐ 6	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2024.09.24	2025.09.23
☒ 7	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	2024.09.24	2025.09.23
☐ 8	RF Test box	TST	TSTPASS	21033016	2024.09.25	2025.09.24
☒ 9	RF Software	TST	TSTPASS	Version 2.0	N/A	N/A
☐ 10	RF Software	Cesheng	WCN Regulary	Ver 25.03.2901	N/A	N/A

Note: ☐ is not applicable in this Test Report. ☒ is applicable in this Test Report.

3 TEST CONDITIONS AND RESULTS

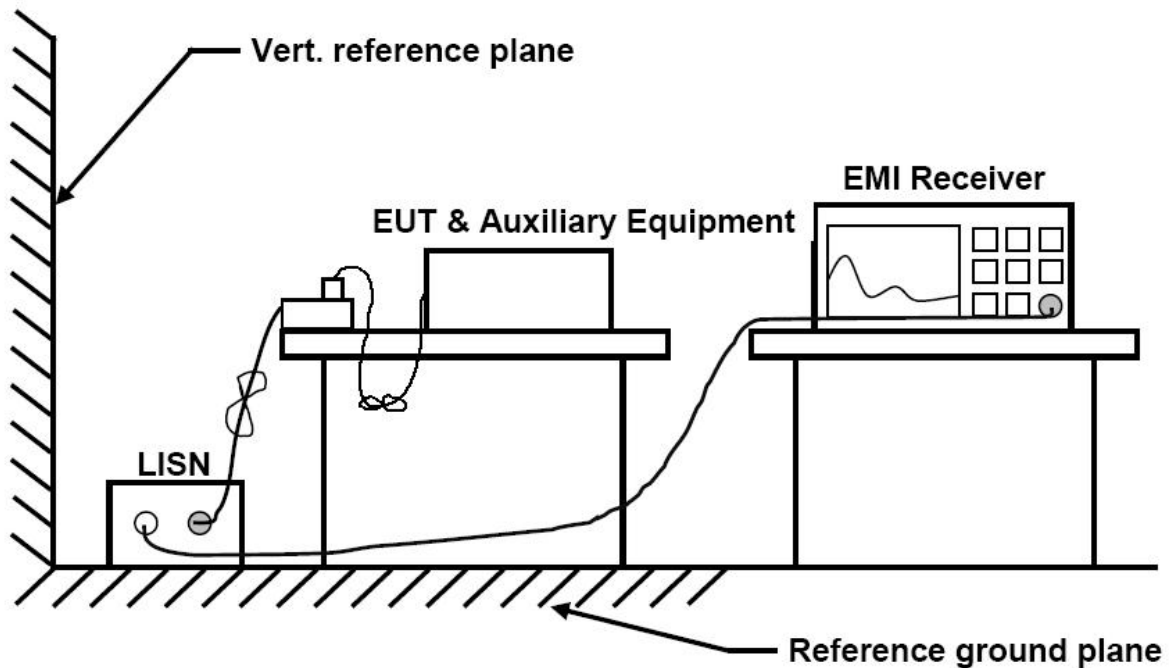
3.1 Conducted Emissions Test

LIMIT

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

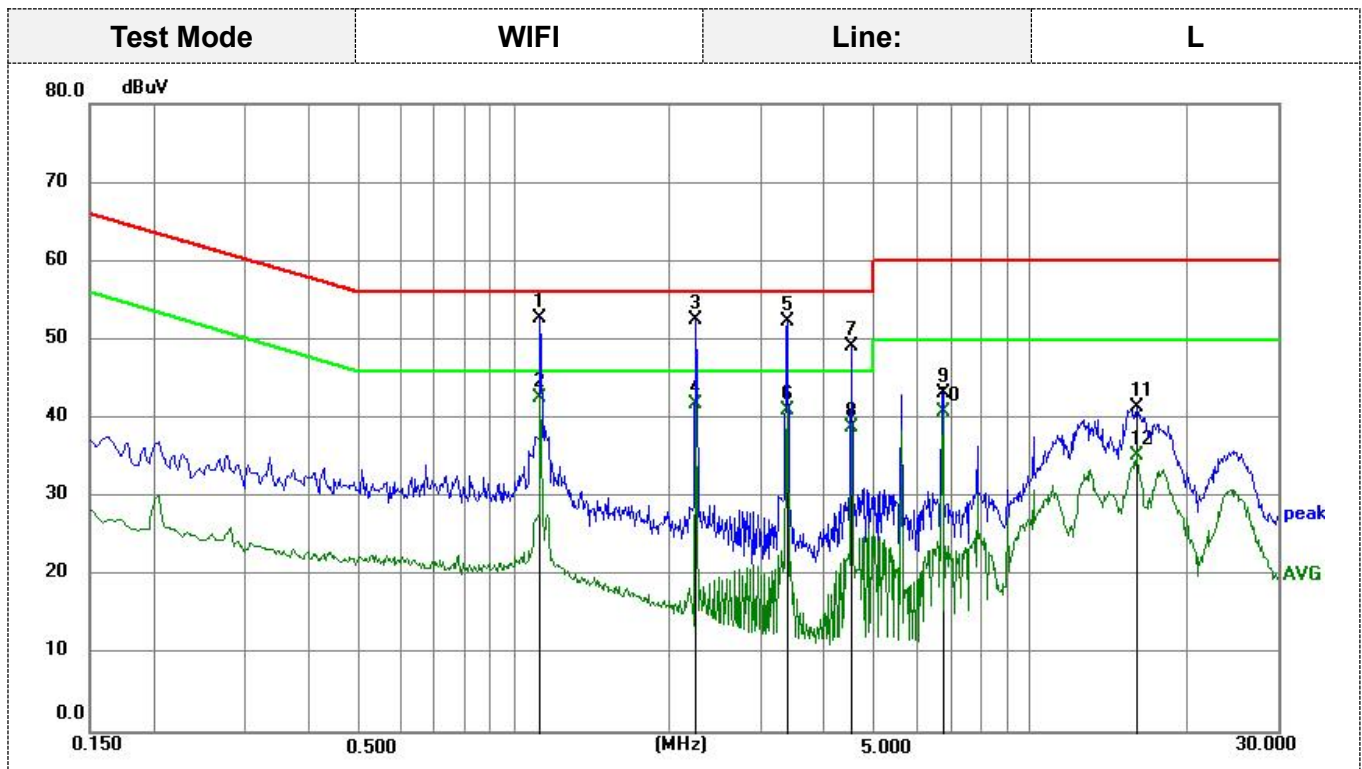
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2020+Cor 1-2023.
2. Support equipment, if needed, was placed as per ANSI C63.10-2020+Cor 1-2023.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2020+Cor 1-2023.
4. The adapter received AC120V/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.

TEST RESULTS

Remark: 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:

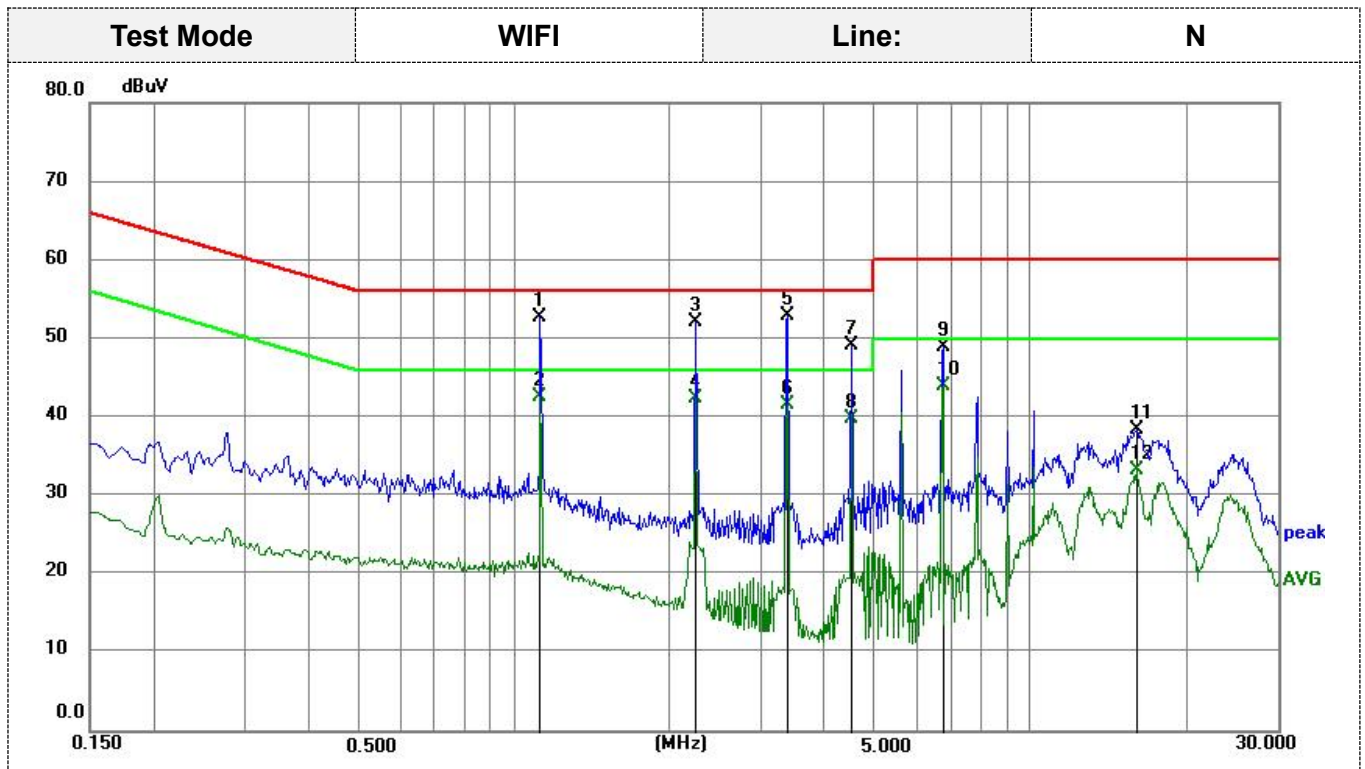


Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter;

Measurement Result = Reading Level + Correct Factor;

Margin = Measurement Result - Limit

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	1.1220	41.97	10.66	52.63	56.00	-3.37	peak
2	1.1220	31.92	10.66	42.58	46.00	-3.42	AVG
3	2.2425	41.63	10.79	52.42	56.00	-3.58	peak
4	2.2425	30.98	10.79	41.77	46.00	-4.23	AVG
5	3.3675	41.27	10.94	52.21	56.00	-3.79	peak
6	3.3675	29.99	10.94	40.93	46.00	-5.07	AVG
7	4.4880	38.07	11.01	49.08	56.00	-6.92	peak
8	4.4880	27.85	11.01	38.86	46.00	-7.14	AVG
9	6.7335	32.21	11.03	43.24	60.00	-16.76	peak
10	6.7335	29.83	11.03	40.86	50.00	-9.14	AVG
11	15.9990	29.79	11.54	41.33	60.00	-18.67	peak
12	15.9990	23.60	11.54	35.14	50.00	-14.86	AVG



Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter;

Measurement Result = Reading Level + Correct Factor;

Margin = Measurement Result - Limit

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	1.1220	42.07	10.65	52.72	56.00	-3.28	peak
2	1.1220	32.02	10.65	42.67	46.00	-3.33	AVG
3	2.2425	41.34	10.78	52.12	56.00	-3.88	peak
4	2.2425	31.51	10.78	42.29	46.00	-3.71	AVG
5	3.3675	41.90	10.93	52.83	56.00	-3.17	peak
6	3.3675	30.68	10.93	41.61	46.00	-4.39	AVG
7	4.4880	38.19	11.00	49.19	56.00	-6.81	peak
8	4.4880	28.76	11.00	39.76	46.00	-6.24	AVG
9	6.7335	37.86	11.01	48.87	60.00	-11.13	peak
10	6.7335	32.92	11.01	43.93	50.00	-6.07	AVG
11	15.9990	26.87	11.50	38.37	60.00	-21.63	peak
12	15.9990	21.81	11.50	33.31	50.00	-16.69	AVG

3.2 Radiated Emissions and Band Edge

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

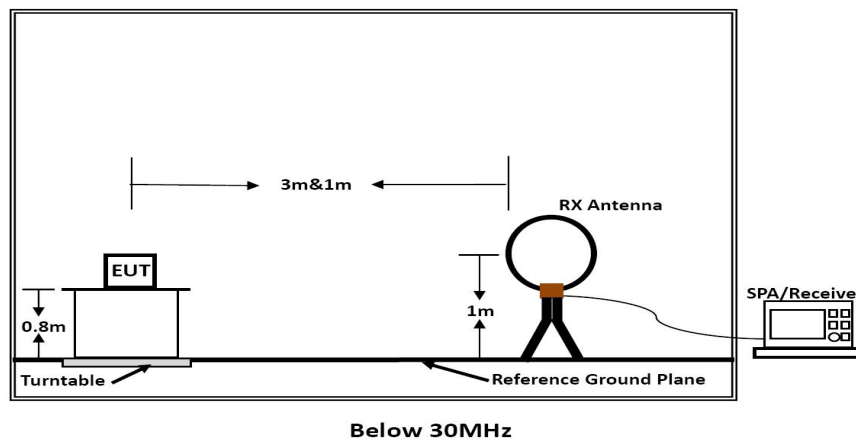
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

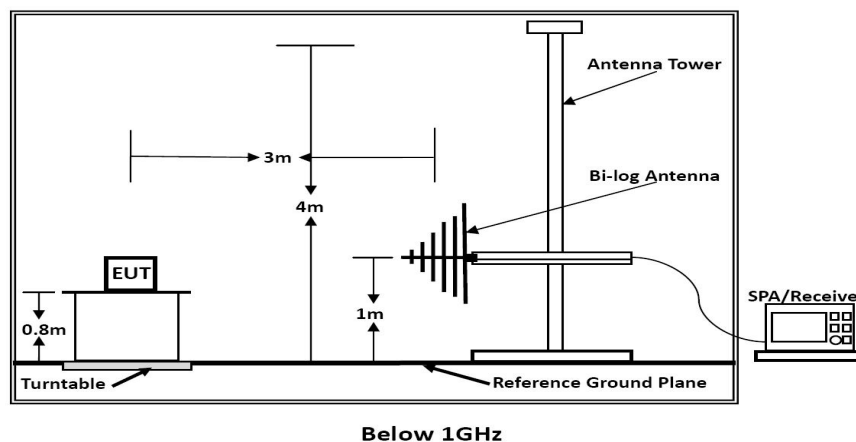
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960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

TEST CONFIGURATION

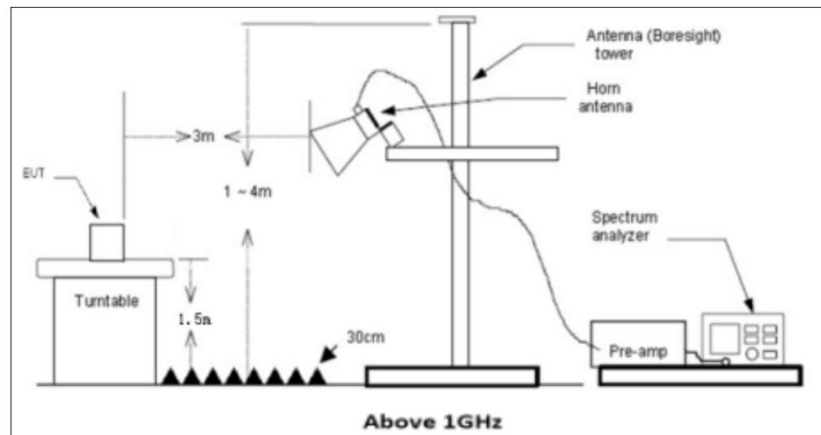
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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



Test Procedure

- 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.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- 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 Antennna	1

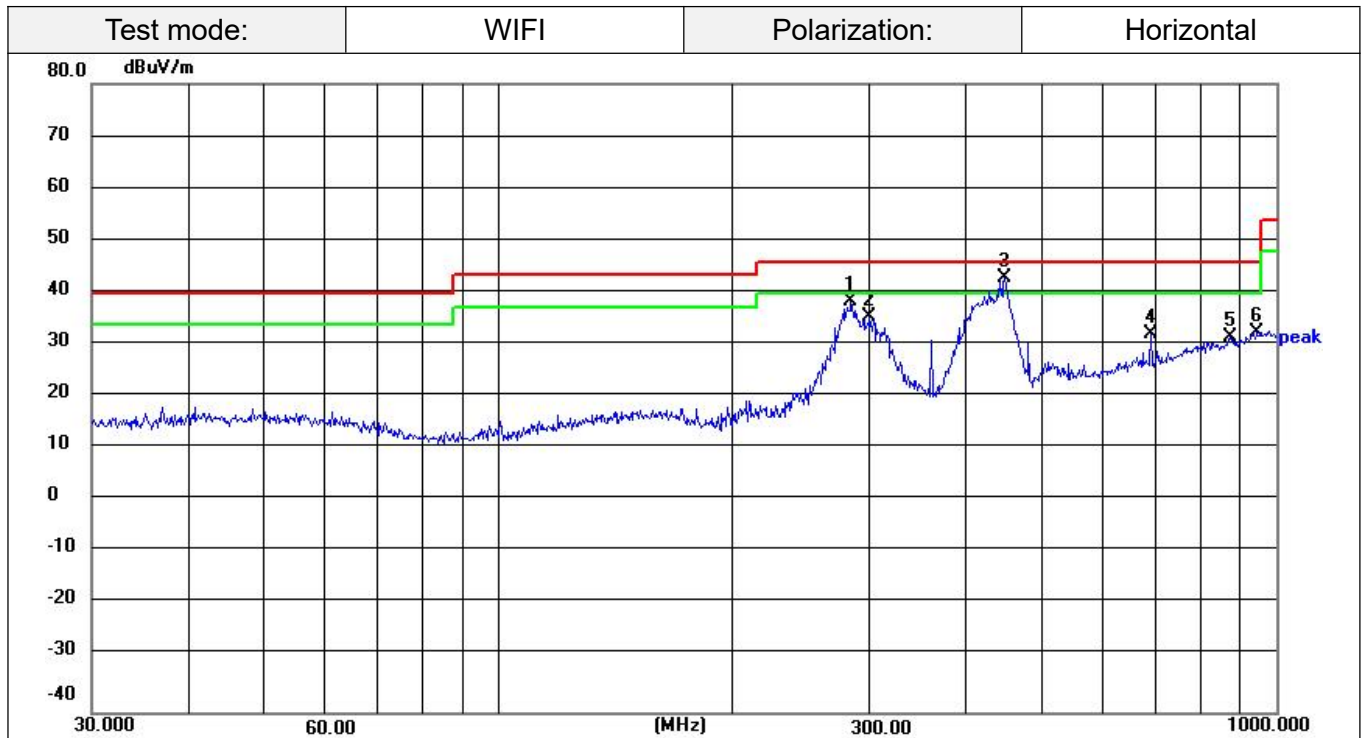
- Setting test receiver/spectrum as following table states:

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: Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and The emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

For 30MHz-1GHz



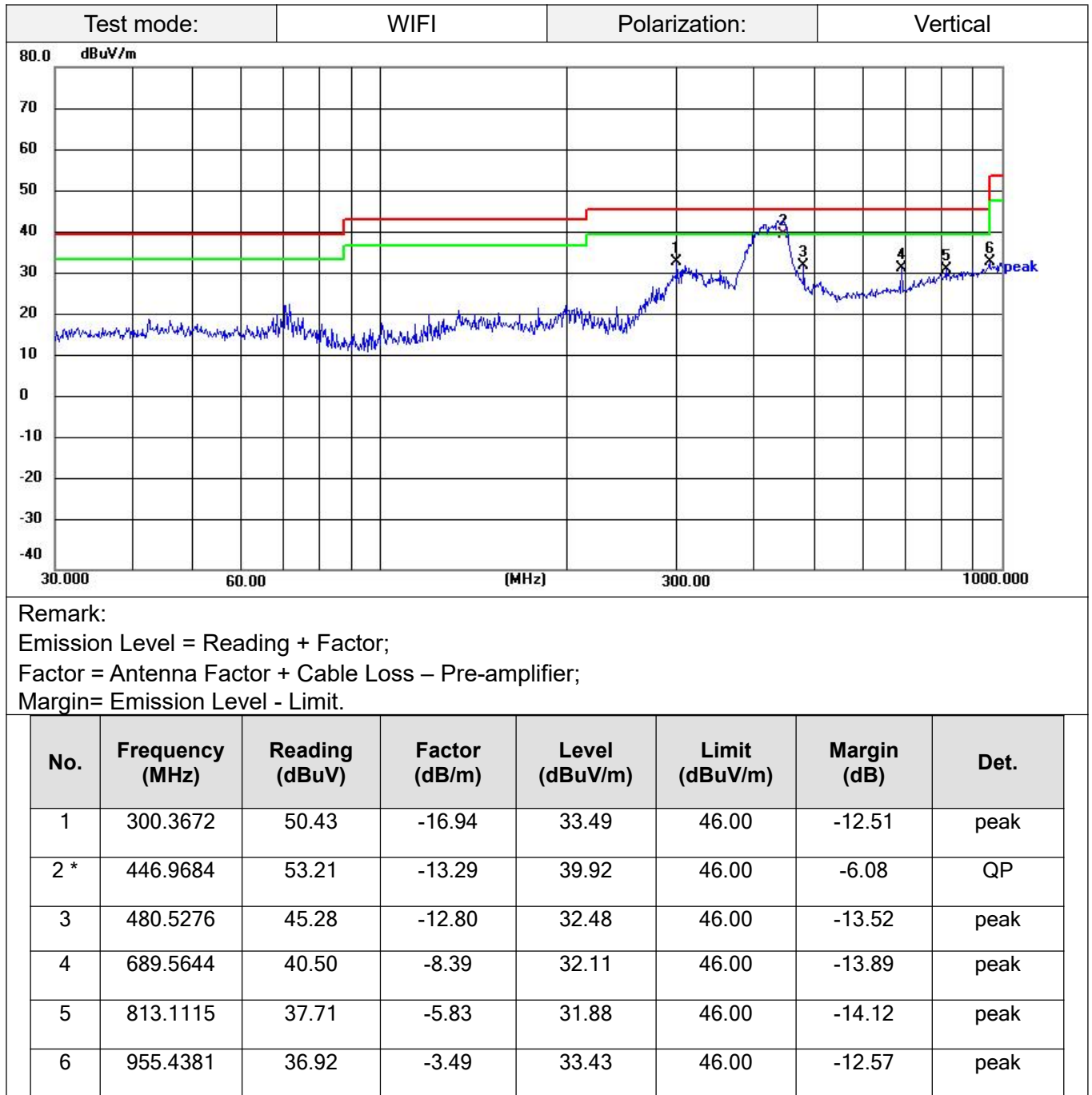
Remark:

Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Emission Level - Limit.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	283.9791	55.82	-17.40	38.42	46.00	-7.58	peak
2	300.3672	52.39	-16.94	35.45	46.00	-10.55	peak
3 *	447.9822	56.16	-13.26	42.90	46.00	-3.10	peak
4	689.5644	40.80	-8.39	32.41	46.00	-13.59	peak
5	872.1832	36.86	-5.15	31.71	46.00	-14.29	peak
6	945.4400	36.32	-3.63	32.69	46.00	-13.31	peak



For 1GHz to 25GHz
802.11b SISO ant 1 (above 1GHz)

Frequency(MHz):		2412		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4823.40	64.69	-7.35	57.34	74	-16.66	PEAK
4823.40	56.65	-7.35	49.30	54	-4.70	AVG
7235.35	48.96	-1.35	47.61	74	-26.39	PEAK
--	--	--	--	--	--	AVG

Frequency(MHz):		2412		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4823.40	65.85	-7.35	58.50	74	-15.50	PEAK
4823.40	57.02	-7.35	49.67	54	-4.33	AVG
7235.35	49.10	-1.35	47.75	74	-26.25	PEAK
--	--	--	--	--	--	AVG

Frequency(MHz):		2437		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4874.20	65.49	-6.82	58.67	74	-15.33	PEAK
4874.20	56.61	-6.82	49.79	54	-4.21	AVG
7311.00	50.60	-0.61	49.99	74	-24.01	PEAK
--	--	--	--	--	--	AVG

Frequency(MHz):		2437		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4874.20	66.68	-6.82	59.86	74	-14.14	PEAK
4874.20	55.59	-6.82	48.77	54	-5.23	AVG
7311.00	51.36	-0.61	50.75	74	-23.25	PEAK
--	--	--	--	--	--	AVG

Frequency(MHz):		2462		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4923.85	47.02	-6.24	55.85	74	-18.15	PEAK
4923.85	55.15	-6.24	48.91	54	-5.09	AVG
7386.00	46.47	0.05	48.19	74	-25.81	PEAK
--	--	--	--	--	--	AVG

Frequency(MHz):		2462		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4923.85	45.63	-6.24	55.97	74	-18.03	PEAK
4923.85	55.94	-6.24	49.70	54	-4.30	AVG
7386.00	45.02	0.05	49.33	74	-24.67	PEAK
--	--	--	--	--	--	AVG

802.11N40 MIMO (above 1GHz)

Frequency(MHz):		2422		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4843.70	64.09	-7.14	56.95	74	-17.05	PEAK
4843.70	55.09	-7.14	47.95	54	-6.05	AVG
7265.45	58.95	-1.05	57.90	74	-16.10	PEAK
7265.45	51.77	-1.05	50.72	54	-3.28	AVG

Frequency(MHz):		2422		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4843.70	64.34	-7.14	57.20	74	-16.80	PEAK
4843.70	55.72	-7.14	48.58	54	-5.42	AVG
7265.45	59.16	-1.05	58.11	74	-15.89	PEAK
7265.45	51.32	-1.05	50.27	54	-3.73	AVG

Frequency(MHz):		2437		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4873.55	62.45	-6.82	55.63	74	-18.37	PEAK
4873.55	55.01	-6.82	48.19	54	-5.81	AVG
7311.55	56.64	-0.6	56.04	74	-17.96	PEAK
7311.55	50.34	-0.60	49.74	54	-4.26	AVG

Frequency(MHz):		2437		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4873.55	63.61	-6.82	56.79	74	-17.21	PEAK
4873.55	56.28	-6.82	49.46	54	-4.54	AVG
7311.55	56.91	-0.6	56.31	74	-17.69	PEAK
7311.55	49.60	-0.60	49.00	54	-5.00	AVG

Frequency(MHz):		2452		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4904.65	47.02	-6.49	56.77	74	-17.23	PEAK
4904.65	56.05	-6.49	49.56	54	-4.44	AVG
7356.40	46.47	-0.21	59.53	74	-14.47	PEAK
7356.40	50.44	-0.21	50.23	54	-3.77	AVG

Frequency(MHz):		2452		Polarity:	VERTICAL	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
4904.65	45.63	-6.49	57.60	74	-16.40	PEAK
4904.65	55.13	-6.49	48.64	54	-5.36	AVG
7356.40	45.02	-0.21	59.97	74	-14.03	PEAK
7356.40	49.31	-0.21	49.10	54	-4.90	AVG

Radiation Restricted band
802.11b SISO ant 1

Frequency(MHz):		2412		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2388.75	59.07	-4.08	54.99	74	-19.01	PEAK
2388.75	52.75	-4.08	48.67	54	-5.33	AVG
2390.00	40.62	-4.10	55.88	74	-18.12	PEAK
2390.00	53.09	-4.10	48.99	54	-5.01	AVG

Frequency(MHz):		2412		Polarity:	Vertical	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2387.36	60.03	-4.06	55.97	74	-18.03	PEAK
2387.36	51.68	-4.06	47.62	54	-6.38	AVG
2390.00	60.17	-4.10	56.07	74	-17.93	PEAK
2390.00	52.87	-4.10	48.77	54	-5.23	AVG

Frequency(MHz):		2462		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2483.50	60.01	-3.09	56.92	74	-17.08	PEAK
2483.50	51.08	-3.09	47.99	54	-6.01	AVG
2485.22	57.17	-3.07	54.10	74	-19.90	PEAK
2485.22	51.78	-3.07	48.71	54	-5.29	AVG

Frequency(MHz):		2462		Polarity:	Vertical	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2483.50	60.45	-3.09	57.36	74	-16.64	PEAK
2483.50	53.92	-3.09	50.83	54	-3.17	AVG
2484.34	58.36	-3.08	55.28	74	-18.72	PEAK
2484.34	50.70	-3.08	47.62	54	-6.38	AVG

802.11n(HT40)MIMO

Frequency(MHz):		2422		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2389.34	60.31	-4.09	56.22	74	-17.78	PEAK
2389.34	53.56	-4.09	49.47	54	-4.53	AVG
2390.00	40.62	-4.10	56.98	74	-17.02	PEAK
2390.00	53.05	-4.10	48.95	54	-5.05	AVG

Frequency(MHz):		2422		Polarity:	Vertical	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2386.20	61.07	-4.04	57.03	74	-16.97	PEAK
2386.20	52.15	-4.04	48.11	54	-5.89	AVG
2390.00	61.19	-4.10	57.09	74	-16.91	PEAK
2390.00	56.62	-4.10	52.52	54	-1.48	AVG

Frequency(MHz):		2452		Polarity:	Horizontal	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2483.50	60.81	-3.09	57.72	74	-16.28	PEAK
2483.50	52.01	-3.09	48.92	54	-5.08	AVG
2484.39	58.49	-3.08	55.41	74	-18.59	PEAK
2484.39	51.59	-3.08	48.51	54	-5.49	AVG

Frequency(MHz):		2452		Polarity:	Vertical	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)	
2483.50	61.33	-3.09	58.24	74	-15.76	PEAK
2483.50	52.39	-3.09	49.30	54	-4.70	AVG
2484.98	58.92	-3.07	55.85	74	-18.15	PEAK
2484.98	50.54	-3.07	47.47	54	-6.53	AVG

REMARKS:

1. Emission level (dBuV/m) = Reading (dBuV) + Factor (dB/m).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor.
3. Margin value = Emission level - Limit value.
4. Other emission levels are attenuated 20dB below the limit and not recorded in report.
5. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

3.3 Maximum Peak Conducted Output Power

Limit

The maximum peak conducted output power shall not exceed 1.0 W.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power Meter.

PKPM1 Peak power meter method described in ANSI C63.10-2020+Cor 1-2023 section 11.9.1.2 is used to measure the Conducted Peak Output Power.

Test Configuration



Test Results

☒ **Pass** ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for WIFI2.4G.

3.4 Power Spectral Density

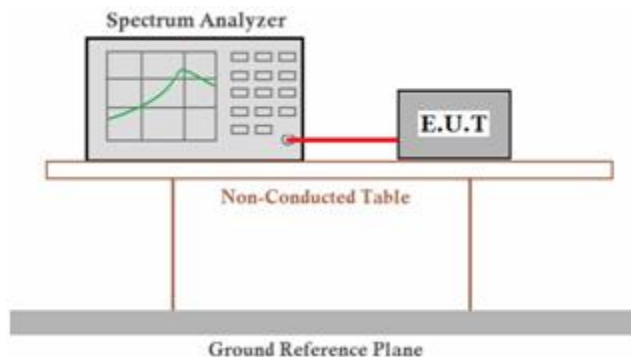
Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW ≥ 3 kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

Test Configuration



Test Results

☒ **Pass** ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for WIFI2.4G.

3.5 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

Set RBW=1%-5% OBW, but not less than 100kHz for 6dB Bandwidth

(Set RBW = 1%-5% OBW for 99% Occupied bandwidth)

Set the video bandwidth (VBW) = 3*RBW.

Set Span= 2 times OBW

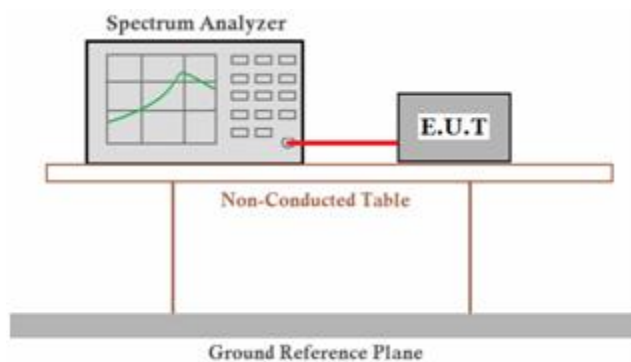
Set Detector = Peak.

Set Trace mode = max hold. Set Sweep = auto couple.

Allow the trace to stabilize. 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.

(Measure the 99% OBW maximum width with SA 99% OBW function) Measure and record the results in the test report.

Test Configuration



Test Results

☒ Pass ☐ Not Applicable

Note:

For test data, please refer to Appendix RF test data for WIFI2.4G.

3.6 Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Test Procedure

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

Step 1: Reference level measurement using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

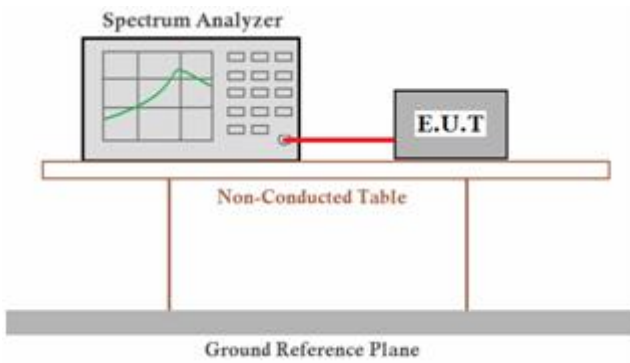
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Step 2: Emission level measurement using the following procedure:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements of PSD level measured in step 1 Reference level measurement.

Test Configuration



Test Results

Passed

☒ **Pass** ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for WIFI2.4G.

3.7 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. 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

FCC CFR Title 47 Part 15 Subpart C Section 15.247(b) (4):

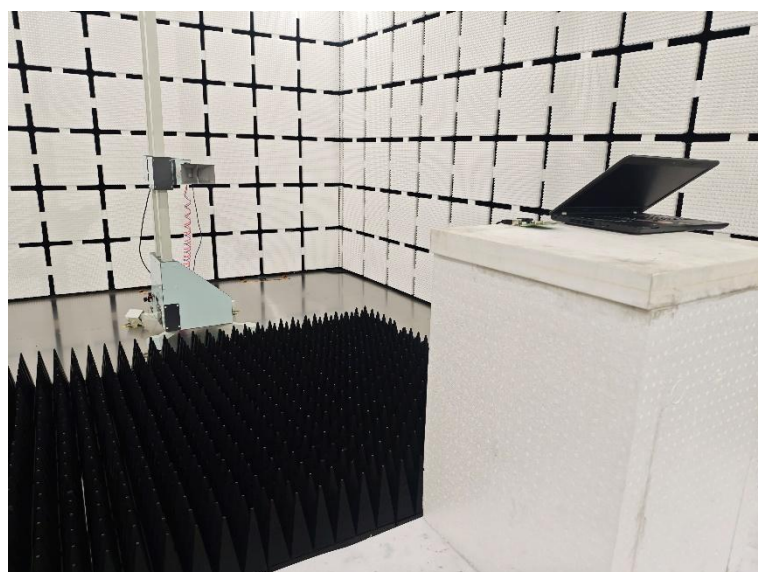
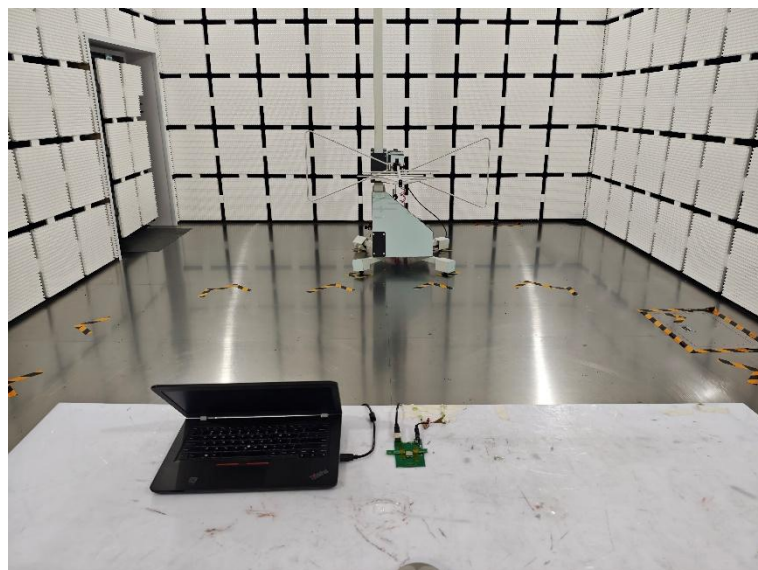
(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Result

Ant1 PCB antenna, the maximum gain of antenna:2.10dBi; Ant2 PCB antenna with trace design maximum gain 3.43dBi; the more information about trace design antenna, see the user manual. Two antennas are complied with 15.203 requirement

Results: Compliance.

4 Test Setup Photographs of EUT



5 Photos of EUT

Please refer to test Report No.: AiTSZ-250813039FW1.

***** **End of Report** *****