Shenzhen GUOREN Certification Technology Service Co., Ltd.

101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.407

Report Reference No.....:	**GRCTR250902027-02**
FCC ID..... :	**2A22E-R-W62508**
Compiled by (position+printed name+signature)..:	Testing Engineer Jimmy Wang
Supervised by (position+printed name+signature)..:	Project Engineer Kelley Zhang
Approved by (position+printed name+signature)..:	Manager Sam Wang
Date of issue.....:	Oct. 14, 2025
Testing Laboratory Name.....:	**Shenzhen GUOREN Certification Technology Service Co., Ltd.**
Address..... :	101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China
Applicant's name.....:	**Micronet Union Technology(Chengdu) Co., Ltd**
Address..... :	No. 2068, Aviation Kechuang Avenue, High-tech Industrial Park, Xindu District, Chengdu,China
Test specification.....:	
Standard.....:	**FCC Part 15.407: UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE DEVICES**

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Test item description.....:	**AX3000 Dual Band Wi-Fi 6 Router**
Trade Mark.....:	/
Manufacturer.....:	Micronet Union Technology(Chengdu) Co., Ltd
Model/Type reference..... :	W30R Pro
Listed Models ..... :	H6-X30,WR-X30
Firmware Version.....:	V1.0
Hardware Version.....:	V1.0
Modulation Type..... :	DSSS,OFDM,OFDMA
Operation Frequency..... :	From 5180MHz to 5240MHz,5260MHz to 5320MHz, 5500MHz to 5700MHz, 5745MHz to 5825MHz
Rating.....:	DC 12V From External Circuit
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	AX3000 Dual Band Wi-Fi 6 Router
Model /Type	:	W30R Pro
Listed Models	:	H6-X30,WR-X30
Applicant	:	**Micronet Union Technology(Chengdu) Co., Ltd**
Address	:	No. 2068, Aviation Kechuang Avenue, High-tech Industrial Park, Xindu District, Chengdu,China
Manufacturer	:	**Micronet Union Technology(Chengdu) Co., Ltd**
Address	:	No. 2068, Aviation Kechuang Avenue, High-tech Industrial Park, Xindu District, Chengdu,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 C63.10-2020+COR. 1-2023+C63.10A-2024 + ERRATA TO C63.10A-2024: 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
KDB 662911 D01 Multiple Transmitter Output: Emissions Testing of Transmitters with Multiple Outputs in the Same Band

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Sep. 08, 2025
Testing commenced on	:	Sep. 08, 2025
Testing concluded on	:	Oct. 14, 2025

2.2. Product Description

Product Name:	AX3000 Dual Band Wi-Fi 6 Router
Model/Type reference:	W30R Pro
Listed Models:	H6-X30,WR-X30
Power supply:	DC 12V From External Circuit
Adapter information:	M/N:SCGQ18-120150-CU Input:AC 100-240V 50/60Hz 0.5A Max Output:12V⎓1.5A
Testing sample ID:	GRCTR250902027-1# (Engineer sample), GRCTR250902027-2# (Normal sample)
WIFI	
WLAN	Supported 802.11 a/n/ac/ax
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 802.11acVHT20/VHT40/VHT80/VHT160: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11axHE20/HE40/HE80/HE160:OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Operation frequency	IEEE 802.11a:5180-5240MHz,5260-5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11n HT20: 5180-5240MHz,5260-5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11n HT40: 5190-5230MHz,5270-5310MHz,5510-5670MHz,5755-5795MHz IEEE 802.11acVHT20: 5180-5240MHz,5260-5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11acVHT40: 5190-5230MHz,5270-5310MHz,5510-5670MHz,5755-5795MHz IEEE 802.11acVHT80:5210MHz,5290MHz,5530MHz,5610MHz,5775MHz IEEE 802.11acVHT160:5250MHz,5570MHz IEEE 802.11axHE20: 5180-5240MHz,5260-5320MHz,5500-5700MHz,5745-5825MHz IEEE 802.11axHE40: 5190-5230MHz,5270-5310MHz,5510-5670MHz,5755-5795MHz IEEE 802.11axHE80:5210MHz,5290MHz,5530MHz,5610MHz,5775MHz IEEE 802.11axHE160:5250MHz,5570MHz
Channel number	4 Channels for 20MHz bandwidth(5180-5240MHz) 4 Channels for 20MHz bandwidth(5260-5320MHz) 11 Channels for 20MHz bandwidth(5500-5700MHz) 5 channels for 20MHz bandwidth(5745-5825MHz) 2 channels for 40MHz bandwidth(5190~5230MHz)

	2 channels for 40MHz bandwidth(5270~5310MHz) 5 Channels for 40MHz bandwidth(5510-5670MHz) 2 channels for 40MHz bandwidth(5755~5795MHz) 1 channel for 80MHz bandwidth(5210MHz) 1 channel for 80MHz bandwidth(5290MHz) 1 Channel for 80MHz bandwidth(5530Hz) 1 Channel for 80MHz bandwidth(5610Hz) 1 channel for 80MHz bandwidth(5775MHz) 1 channel for 160MHz bandwidth(5250MHz) 1 channel for 160MHz bandwidth(5570MHz)
Antenna type:	External antenna
Antenna gain*(Supplied by the customer):	Enclosure 1 Ant 1: 5.92 dBi Ant 2: 5.73 dBi Directional gain:8.84 dBi Enclosure 2 Ant 1: 5.14 dBi Ant 2: 5.07 dBi Directional gain:8.12 dBi
Remark:*When the information provided by the customer was used to calculate test results, if the information provided by the customer is not accurate, shenzhen GUOREN Certification Technology Service Co., Ltd. does not assume any responsibility. The products are the same except for model names and enclosure.The product has two kinds of enclosure for each model. Enclosure 1 had been tested all items, Enclosure 2 had been tested Radiated Emissions and Band Edge (Radiated).	

According to KDB 662911 D01 Multiple Transmitter Output,Directional Gain Calculations for In-Band Measurements:

If transmit signals are correlated, then

Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \ldots + 10^{G_N/20})^2 / N_{ANT}]$ dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

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)		

DC 12V From External Circuit

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

This is a AX3000 Dual Band Wi-Fi 6 Router.
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/nHT20/nHT40/acVHT20/acVHT40/acVHT80/acVHT160/axHE20/axHE40/axHE80/axHE160:

U-NI-1		U-NI-1		U-NI-1	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				

48	5240				

U-NI-2A		U-NI-2A		U-NI-2A		U-NI-2A	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	54	5270	58	5290	50	5250
56	5280	62	5310				
60	5300						
64	5320						

U-NI-2C		U-NI-2C		U-NI-2C		U-NI-2C	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	102	5510	106	5530	114	5570
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-NI-3		U-NI-3		U-NI-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				

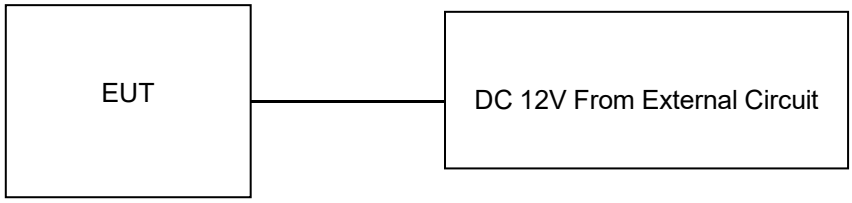
2.6. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

Item	Manufacturer	Description	Model	Certificate	Note
1[Note1]	Hewlett-Packard	Notebook	HP ProBook 445 G10	/	/
2[Note1]	/	/	/	/	/

Note1: This Auxiliary used during the test is provided by the test laboratory.

2.7. Block Diagram of Test Setup



2.8. 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.

2.9. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen GUOREN Certification Technology Service Co., Ltd.
101#, Building K & Building T, The Second Industrial Zone, Jiazitang Community, Fenghuang Street, Guangming District, Shenzhen, China

3.2. Test Facility

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

FCC-Registration No.: 920798 Designation Number: CN1304

Shenzhen GUOREN Certification Technology Service 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.: 6202.01

Shenzhen GUOREN Certification Technology Service Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

ISED#: 27264 CAB identifier: CN0115
Shenzhen GUOREN Certification Technology Service Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

CNAS-Lab Code: L15631
Shenzhen GUOREN Certification Technology Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories for the Competence of Testing and Calibration Laboratories.

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

FCC Requirement		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.407(a)	Emission Bandwidth(26dBm Bandwidth)	PASS
FCC Part 15.407(e)	Minimum Emission Bandwidth(6dBm Bandwidth)	PASS
FCC Part 15.407(a)	Maximum Conducted Output Power	PASS
FCC Part 15.407(a)	Peak Power Spectral Density	PASS
FCC Part 15.407(g)	Frequency Stability	PASS
FCC Part 15.407(b)	Undesirable emission	PASS

FCC Part 15.407(b)/15.205/15.209	Radiated Emissions	PASS
FCC Part 15.407(h)	Dynamic Frequency Selection	PASS
FCC Part 15.203/15.247(b)	Antenna Requirement	PASS

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

Tdata 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 GUOREN Certification Technology Service 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 GUOREN Certification Technology Service Co., Ltd.:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Max output power	30MHz~18GHz	0.54 dB	(1)
Power spectral density	/	0.56 dB	(1)
Spectrum bandwidth	/	1.2%	(1)

(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

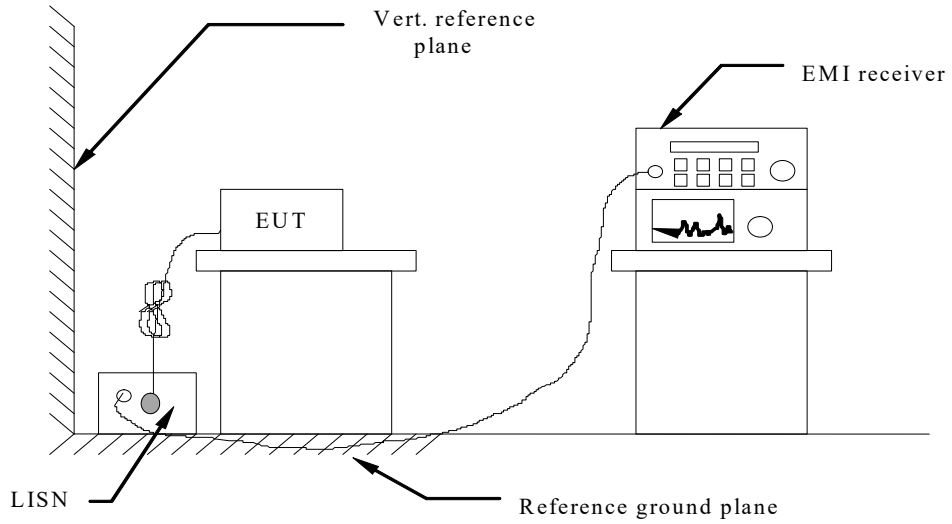
Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Last Calibration Date	Calibration Due Date
LISN	R&S	ENV216	GRCTEE009	2024/09/19	2025/09/11	2026/09/10
LISN	R&S	ENV216	GRCTEE010	2024/09/19	2025/09/11	2026/09/10
EMI Test Receiver	R&S	ESPI	GRCTEE017	2024/09/19	2025/09/11	2026/09/10
EMI Test Receiver	R&S	ESCI	GRCTEE008	2024/09/19	2025/09/11	2026/09/10
Spectrum Analyzer	Agilent	N9020A	GRCTEE002	2024/09/19	2025/09/11	2026/09/10
Spectrum Analyzer	R&S	FSP	GRCTEE003	2024/09/20	2025/09/12	2026/09/11
Vector Signal generator	Agilent	N5181A	GRCTEE007	2024/09/19	2025/09/11	2026/09/10

Analog Signal Generator	R&S	SML03	GRCTEE006	2024/09/19	2025/09/11	2026/09/10
Climate Chamber	QIYA	LCD-9530	GRCTES016	2024/09/19	2025/09/11	2026/09/10
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	GRCTEE018	2023/09/28	N/A	2026/09/27
Horn Antenna	Schwarzbeck	BBHA 9120D	GRCTEE019	2023/09/28	N/A	2026/09/27
Loop Antenna	Zhinan	ZN30900C	GRCTEE020	2023/10/15	N/A	2026/10/14
Horn Antenna	Beijing Hangwei Dayang	OBH100400	GRCTEE049	2023/09/28	N/A	2026/09/27
Amplifier	Schwarzbeck	BBV 9745	GRCTEE021	2024/09/19	2025/09/11	2026/09/10
Amplifier	Taiwan chengyi	EMC051845B	GRCTEE022	2024/09/19	2025/09/11	2026/09/10
Temperature/Humidity Meter	Huaguan	HG-308	GRCTES037	2024/09/19	2025/09/11	2026/09/10
Directional coupler	NARDA	4226-10	GRCTEE004	2024/09/19	2025/09/11	2026/09/10
High-Pass Filter	XingBo	XBLBQ-GTA18	GRCTEE053	2024/09/19	2025/09/11	2026/09/10
High-Pass Filter	XingBo	XBLBQ-GTA27	GRCTEE054	2024/09/19	2025/09/11	2026/09/10
Automated filter bank	Tonscend	JS0806-F	GRCTEE055	2024/09/19	2025/09/11	2026/09/10
Power Sensor	Agilent	U2021XA	GRCTEE070	2024/09/19	2025/09/11	2026/09/10
Cable	Times	Cable-CE	GRCTEE086	2024/09/19	2025/09/11	2026/09/10
Cable	Times	Cable-RE-1	GRCTEE087	2024/09/19	2025/09/11	2026/09/10
Cable	Times	Cable-RE-2	GRCTEE088	2024/09/19	2025/09/11	2026/09/10
EMI Test Software	ROHDE & SCHWARZ	ESK1-V1.71	GRCTEE060	N/A	N/A	N/A
EMI Test Software	Fera	EZ-EMC	GRCTEE061	N/A	N/A	N/A

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 C63.10-2020+COR. 1-2023+C63.10A-2024 + ERRATA TO C63.10A-2024.
2 Support equipment, if needed, was placed as per ANSI C63.10-2020+COR. 1-2023+C63.10A-2024 + ERRATA TO C63.10A-2024
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2020+COR. 1-2023+C63.10A-2024 + ERRATA TO C63.10A-2024
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.		

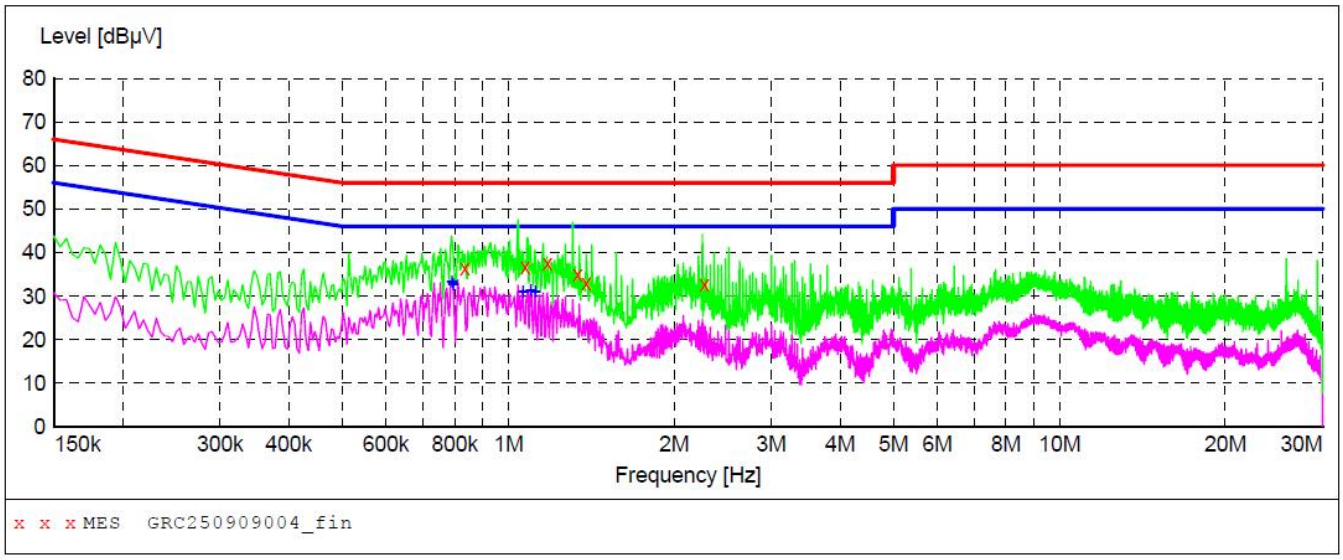
TEST RESULTS

Remark:

1. All modes were tested at Low, Middle, and High channel; only the worst result of 802.11 a CH36 for antenna 1 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:

Enclosure 1

Power supply:	DC 12V From adapter AC 120V/60Hz	Polarization	L



MEASUREMENT RESULT: "GRC250909004_fin"

9/9/2025 9:58AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.834000	36.50	10.3	56	19.5	QP	L1	GND
1.074000	36.80	10.3	56	19.2	QP	L1	GND
1.178000	37.60	10.5	56	18.4	QP	L1	GND
1.338000	35.00	10.4	56	21.0	QP	L1	GND
1.386000	33.10	10.4	56	22.9	QP	L1	GND
2.270000	32.60	10.6	56	23.4	QP	L1	GND

MEASUREMENT RESULT: "GRC250909004_fin2"

9/9/2025 9:58AM

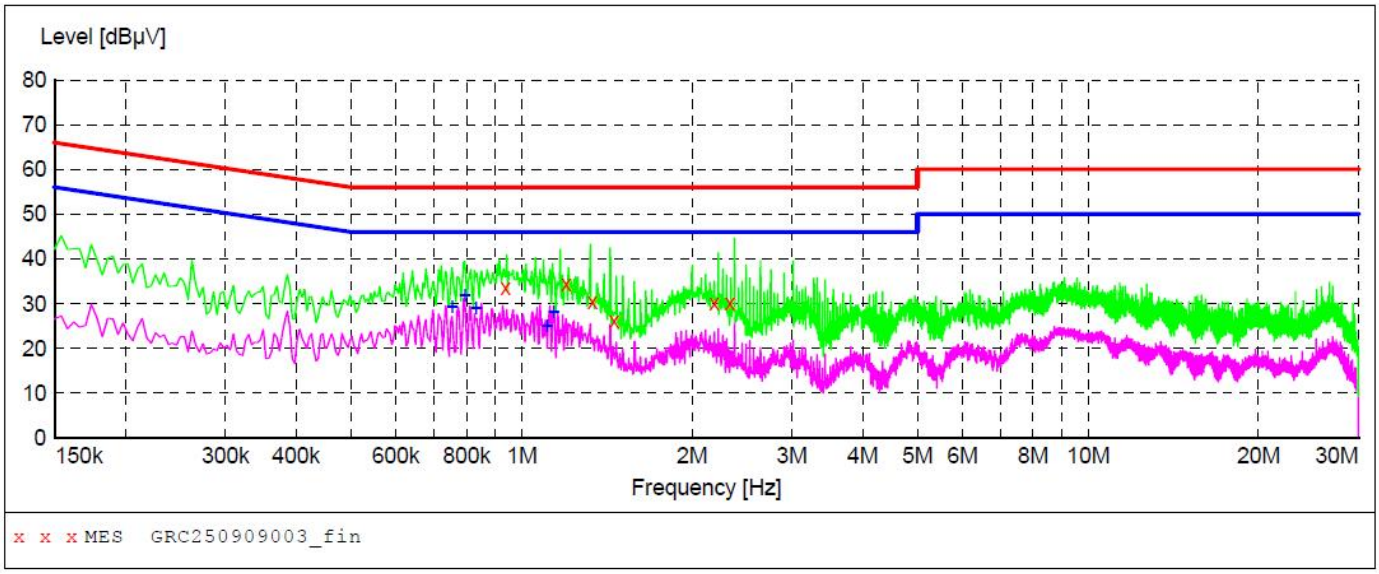
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.790000	33.40	10.3	46	12.6	AV	L1	GND
0.794000	32.70	10.3	46	13.3	AV	L1	GND
1.062000	30.90	10.3	46	15.1	AV	L1	GND
1.098000	31.20	10.3	46	14.8	AV	L1	GND
1.118000	31.10	10.4	46	14.9	AV	L1	GND

Note:1).Level (dBµV)= Reading (dBµV)+ Transducer (dB)

2). Transducer (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). Margin(dB) = Limit (dBµV) - Level (dBµV)

Power supply:	DC 12V From adapter AC 120V/60Hz	Polarization	N



MEASUREMENT RESULT: "GRC250909003_fin"

9/9/2025 9:54AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.938000	33.50	10.3	56	22.5	QP	N	GND
1.198000	34.50	10.5	56	21.5	QP	N	GND
1.334000	30.30	10.4	56	25.7	QP	N	GND
1.458000	26.10	10.3	56	29.9	QP	N	GND
2.190000	30.10	10.6	56	25.9	QP	N	GND
2.334000	30.30	10.6	56	25.7	QP	N	GND

MEASUREMENT RESULT: "GRC250909003_fin2"

9/9/2025 9:54AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.754000	29.20	10.3	46	16.8	AV	N	GND
0.794000	31.80	10.3	46	14.2	AV	N	GND
0.830000	29.00	10.3	46	17.0	AV	N	GND
1.106000	25.00	10.4	46	21.0	AV	N	GND
1.138000	28.20	10.4	46	17.8	AV	N	GND

Note:1).Level (dBµV)= Reading (dBµV)+ Transducer (dB)

2). Transducer (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). Margin(dB) = Limit (dBµV) - Level (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)

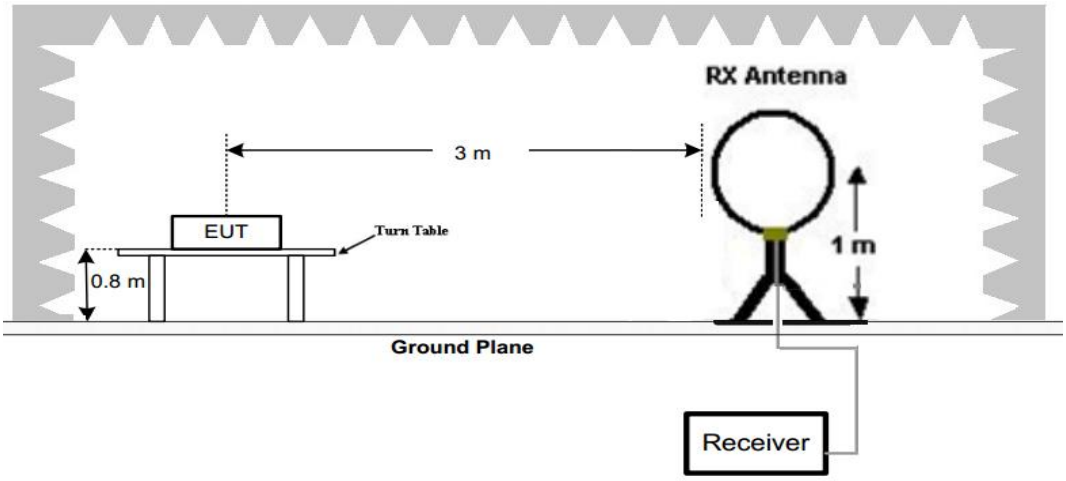
(5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209
(6)In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

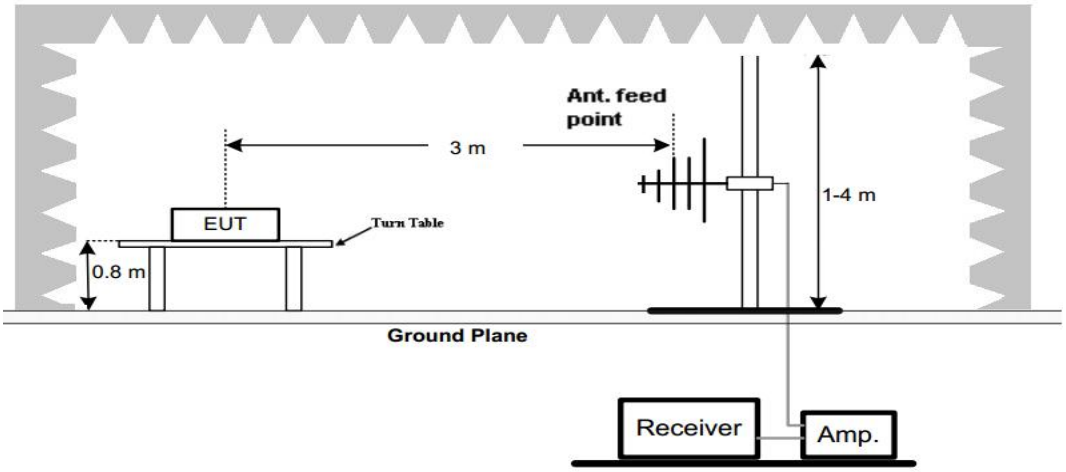
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

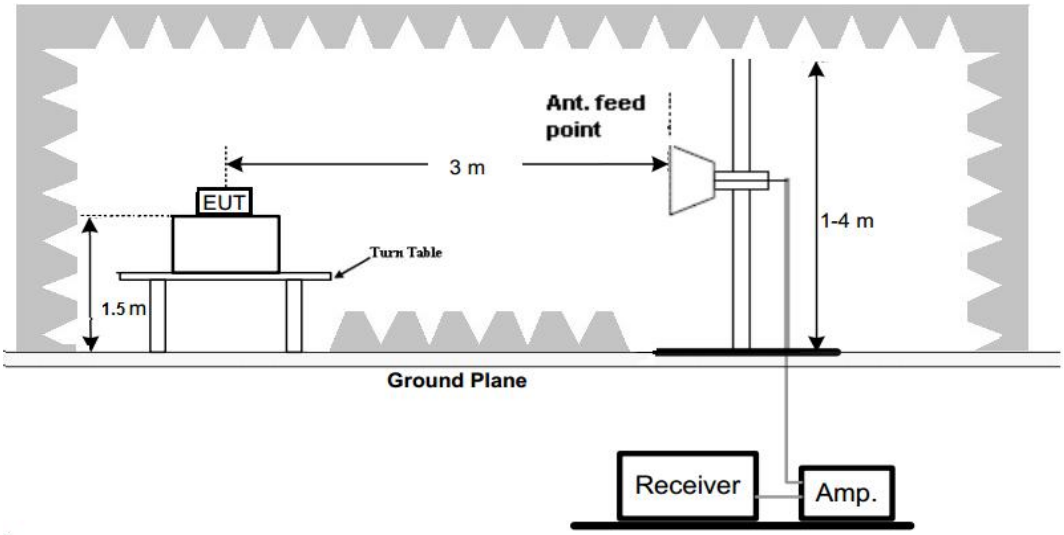
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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:

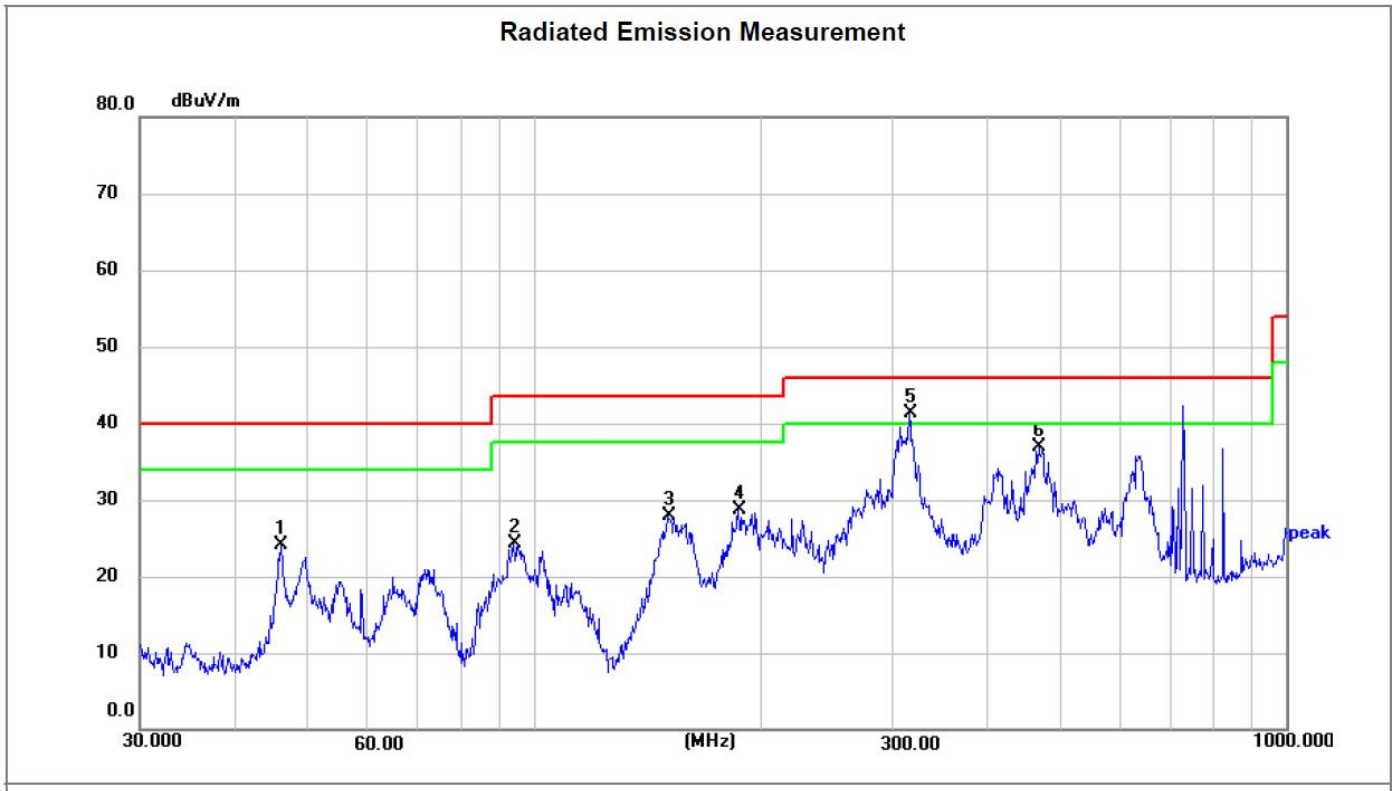
Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, 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.
2. All modes were tested at Low, Middle, and High channel for above 1GHz test, only the worst case 802.11a CH 36 for antenna 1 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
Enclosure 1

Horizontal



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

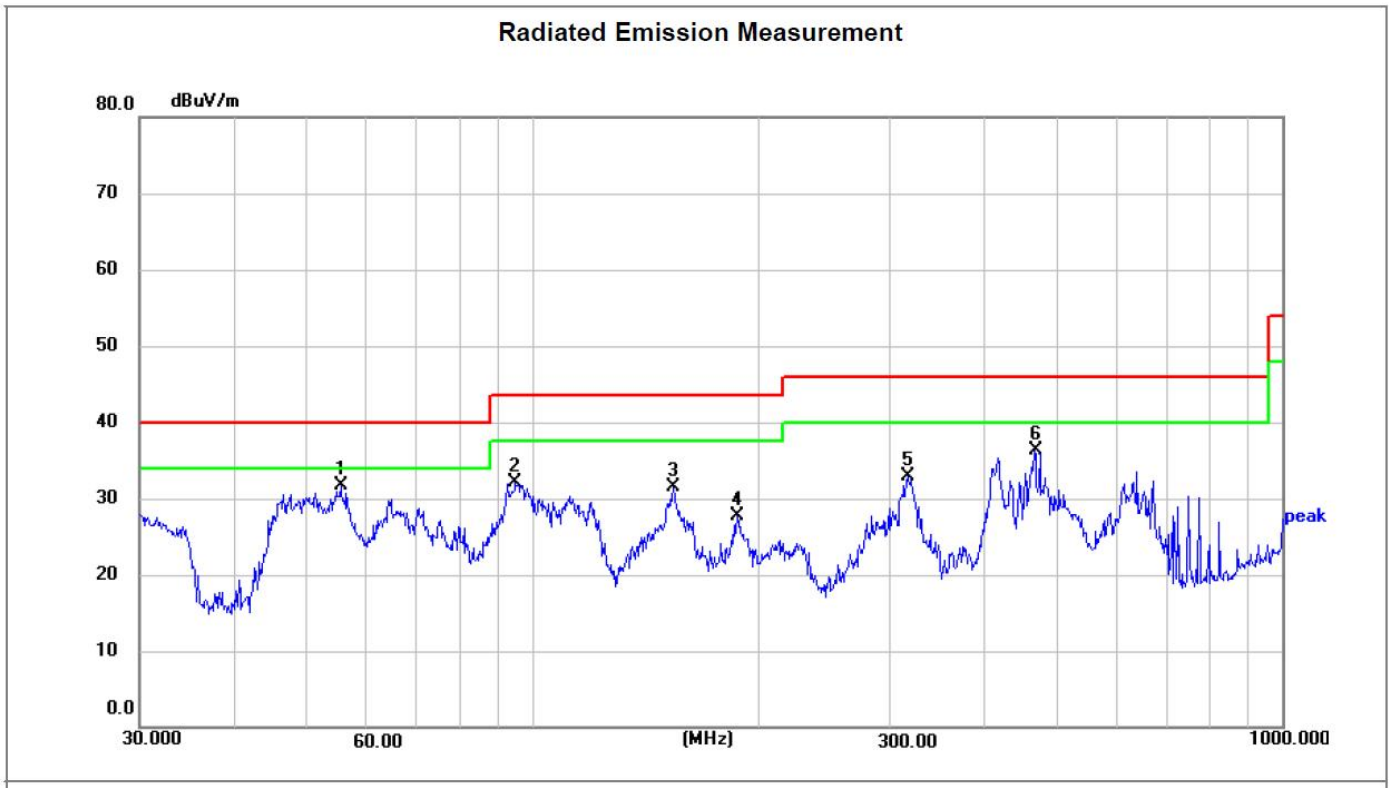
Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	46.1779	41.70	-17.54	24.16	40.00	-15.84	peak	100	351	P	
2	94.0979	44.37	-20.05	24.32	43.50	-19.18	peak	100	74	P	
3	151.0666	49.68	-21.69	27.99	43.50	-15.51	peak	100	38	P	
4	187.0958	48.84	-20.13	28.71	43.50	-14.79	peak	100	6	P	
5 *	315.4808	58.20	-16.84	41.36	46.00	-4.64	peak	100	280	P	
6	468.8762	51.68	-14.85	36.83	46.00	-9.17	peak	100	0	P	

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) = Level (dBμV/m) - Limit (dBμV/m)

Vertical



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

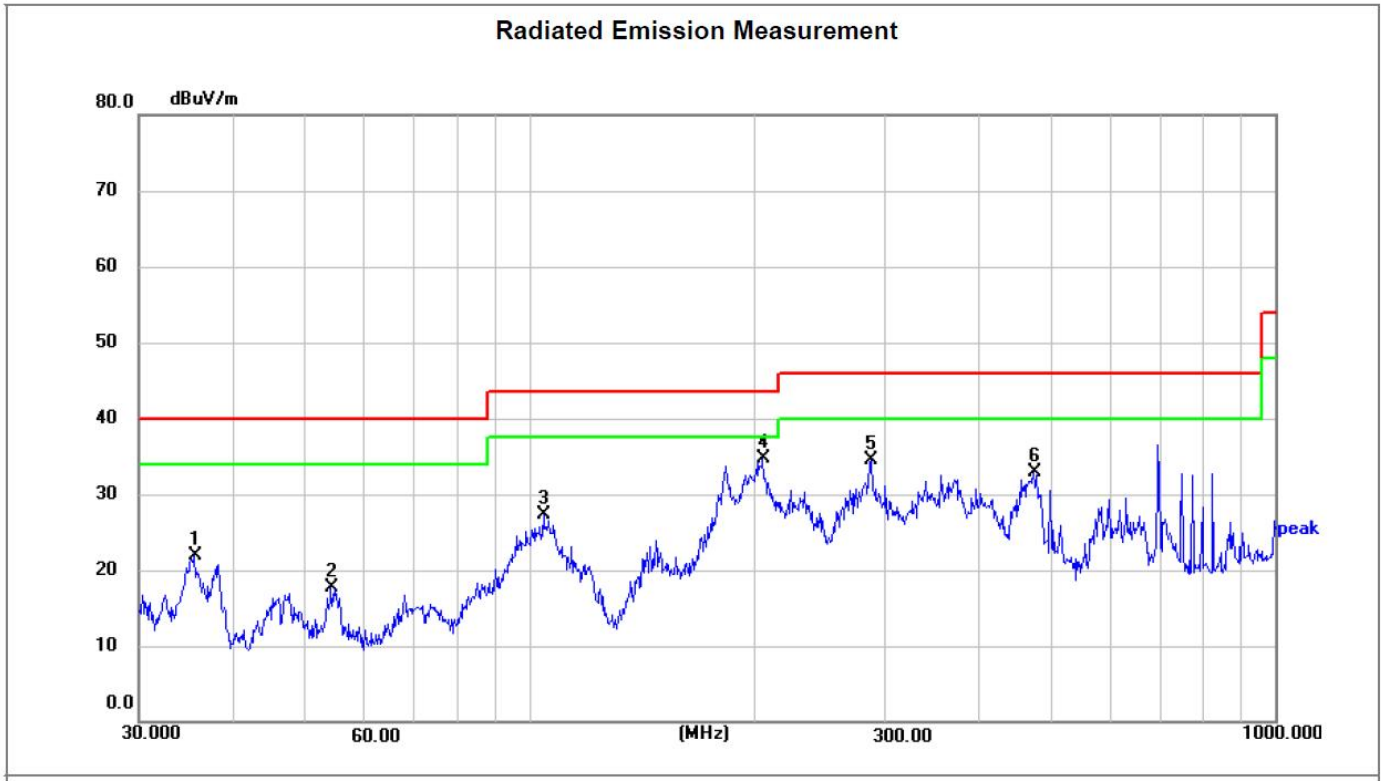
Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	55.6093	49.63	-17.92	31.71	40.00	-8.29	peak	100	117	P	
2	95.0929	51.95	-19.90	32.05	43.50	-11.45	peak	100	296	P	
3	154.2785	53.45	-21.89	31.56	43.50	-11.94	peak	100	360	P	
4	187.7529	47.69	-20.03	27.66	43.50	-15.84	peak	100	314	P	
5	316.5889	49.83	-16.83	33.00	46.00	-13.00	peak	100	8	P	
6	467.2349	51.25	-14.88	36.37	46.00	-9.63	peak	100	162	P	

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) = Level (dBμV/m) - Limit (dBμV/m)

Enclosure 2

Horizontal



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

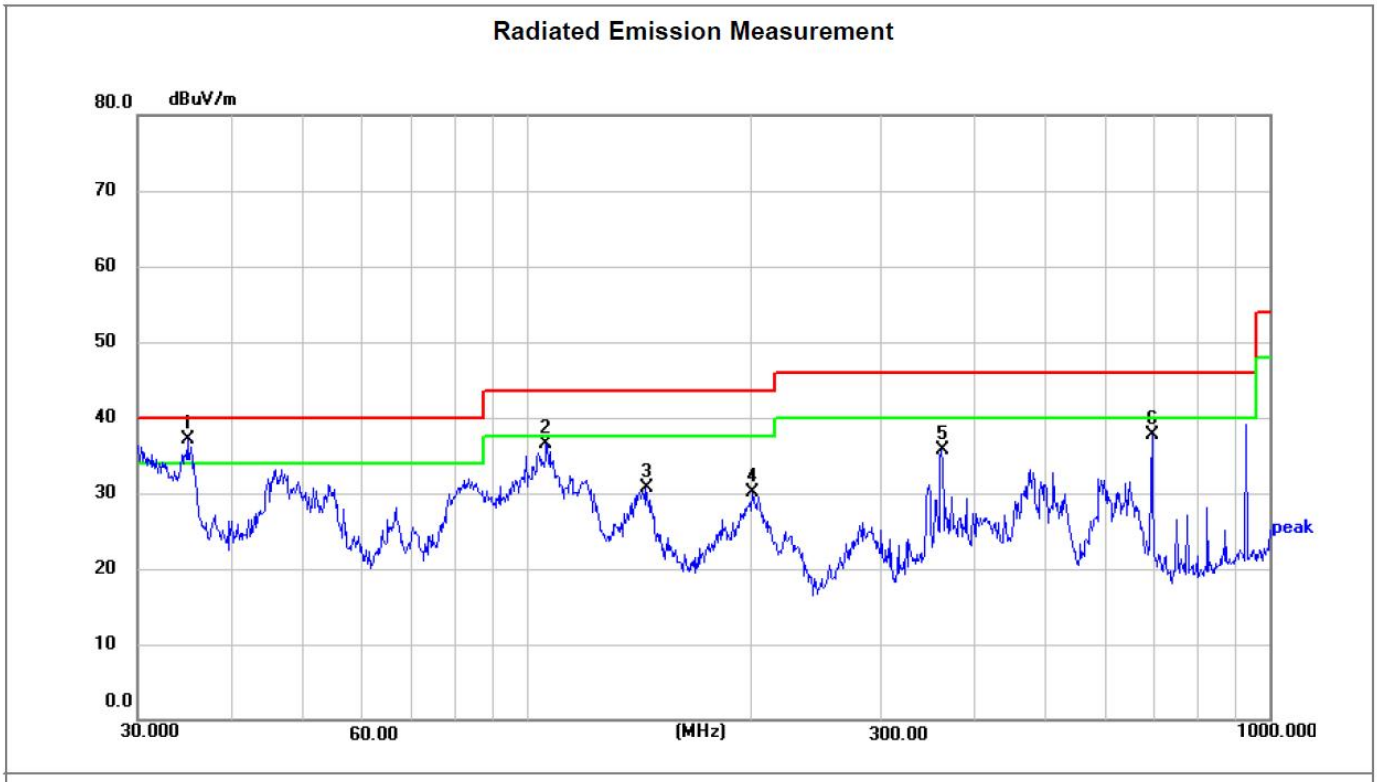
Polarization: *Horizontal*
Power: AC120V/60Hz
Distance: 3m

Temperature: 25.5(C)
Humidity: 51 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	35.6240	41.24	-19.37	21.87	40.00	-18.13	peak	100	8	P	
2	54.2610	35.44	-17.74	17.70	40.00	-22.30	peak	100	163	P	
3	104.5361	46.41	-19.14	27.27	43.50	-16.23	peak	100	360	P	
4 *	205.6751	53.54	-18.93	34.61	43.50	-8.89	peak	100	8	P	
5	287.9904	51.81	-17.30	34.51	46.00	-11.49	peak	100	317	P	
6	473.8347	47.69	-14.77	32.92	46.00	-13.08	peak	100	335	P	

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) = Level (dBμV/m) - Limit (dBμV/m)

Vertical



Site LAB
Limit: FCC Part15 RE-Class B_30-1000MHz
EUT:
M/N:
Mode:
Note:

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

Temperature: 25.5(C)
Humidity: 51 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	35.0048	56.67	-19.58	37.09	40.00	-2.91	peak	100	240	P	
2	106.3850	55.68	-19.23	36.45	43.50	-7.05	peak	100	137	P	
3	144.8418	52.50	-21.76	30.74	43.50	-12.76	peak	100	351	P	
4	201.3930	49.08	-18.99	30.09	43.50	-13.41	peak	100	110	P	
5	361.7139	52.03	-16.35	35.68	46.00	-10.32	peak	100	166	P	
6	694.4174	48.39	-10.59	37.80	46.00	-8.20	peak	100	295	P	

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) = Level (dBμV/m) - Limit (dBμV/m)

For 1GHz to 40GHz

Note: All modes have been tested for above 1GHz test, only the worst case 802.11a for antenna 1 was recorded.

Enclosure 1

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	50.49	PK	H	68.20	17.71	69.39	29.91	5.87	54.68	-18.90
36.00	5150.00	37.94	AV	H	54.00	16.06	56.84	29.91	5.87	54.68	-18.90
(5180MHz)	10360.00	50.37	PK	H	68.20	17.83	57.29	37.62	10.02	54.56	-6.92
	--	--	--	--	--	--	--	--	--	--	--
40.00	10400.00	50.01	PK	H	68.20	18.19	56.43	37.81	10.14	54.37	-6.42
(5200MHz)	--	--	--	--	--	--	--	--	--	--	--
48.00	5350.50	51.38	PK	H	68.20	16.82	69.95	30.24	5.93	54.74	-18.57
(5240MHz)	10480.00	51.04	PK	H	68.20	17.16	57.56	37.95	10.17	54.64	-6.52
	--	--	--	--	--	--	--	--	--	--	--

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	50.14	PK	V	68.20	18.06	69.04	29.91	5.87	54.68	-18.90
36.00	5150.00	37.09	AV	V	54.00	16.91	55.99	29.91	5.87	54.68	-18.90
(5180MHz)	10360.00	50.42	PK	V	68.20	17.78	57.34	37.62	10.02	54.56	-6.92
	--	--	--	--	--	--	--	--	--	--	--
40.00	10400.00	50.38	PK	V	68.20	17.82	56.80	37.81	10.14	54.37	-6.42
(5200MHz)	--	--	--	--	--	--	--	--	--	--	--
48.00	5350.50	50.12	PK	V	68.20	18.08	68.69	30.24	5.93	54.74	-18.57
(5240MHz)	10480.00	51.06	PK	V	68.20	17.14	57.58	37.95	10.17	54.64	-6.52
	--	--	--	--	--	--	--	--	--	--	--

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	52.04	PK	H	68.20	16.16	70.94	29.91	5.87	54.68	-18.90
52.00	5150.00	37.86	AV	H	54.00	16.14	56.76	29.91	5.87	54.68	-18.90
5260MHz	10520.00	50.14	PK	H	68.20	18.06	38.83	38.07	10.21	54.58	-6.30
	--	--	--	--	--	--	--	--	--	--	--
56.00	10560.00	50.36	PK	H	68.20	17.84	56.15	38.43	10.23	54.45	-5.79
5280MHz	--	--	--	--	--	--	--	--	--	--	--
64.00	5350.50	50.78	PK	H	68.20	17.42	69.35	30.24	5.93	54.74	-18.57
5320MHz	5350.50	39.04	AV	H	54.00	14.96	57.61	30.24	5.93	54.74	-18.57
	10480.00	49.26	PK	H	68.20	18.94	53.99	39.05	10.78	54.56	-4.73

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	51.26	PK	V	68.20	16.94	70.16	29.91	5.87	54.68	-18.90
52.00	5150.00	37.54	AV	V	54.00	16.46	56.44	29.91	5.87	54.68	-18.90
5260MHz	10520.00	50.23	PK	V	68.20	17.97	38.83	38.07	10.21	54.58	-6.30
	--	--	--	--	--	--	--	--	--	--	--
56.00	10560.00	50.10	PK	V	68.20	18.10	55.89	38.43	10.23	54.45	-5.79
5280MHz	--	--	--	--	--	--	--	--	--	--	--
64.00	5350.50	51.24	PK	V	68.20	16.96	69.81	30.24	5.93	54.74	-18.57
5320MHz	5350.50	37.92	AV	V	54.00	16.08	56.49	30.24	5.93	54.74	-18.57
	10480.00	49.61	PK	V	68.20	18.59	54.34	39.05	10.78	54.56	-4.73

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	49.15	PK	H	68.20	19.05	67.29	30.52	5.95	54.61	-18.14
100.00	5460.00	37.94	AV	H	54.00	16.06	56.08	30.52	5.95	54.61	-18.14
5500MHz	11000.00	49.56	PK	H	68.20	18.64	54.95	38.54	10.45	54.38	-5.39
	--	--	--	--	--	--	--	--	--	--	--
116.00	11160.00	50.78	PK	H	68.20	17.42	55.93	38.71	10.61	54.47	-5.15
5580MHz	--	--	--	--	--	--	--	--	--	--	--
140.00	5855.00	50.35	PK	H	68.20	17.85	67.89	30.94	6.15	54.63	-17.54
5700MHz	5855.00	39.27	AV	H	54.00	14.73	56.81	30.94	6.15	54.63	-17.54
	11400.00	49.25	PK	H	68.20	18.95	54.24	39.01	10.73	54.73	-4.99

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	50.14	PK	V	68.20	18.06	68.28	30.52	5.95	54.61	-18.14
100.00	5460.00	38.41	AV	V	54.00	15.59	56.55	30.52	5.95	54.61	-18.14
5500MHz	11000.00	50.23	PK	V	68.20	17.97	55.62	38.54	10.45	54.38	-5.39
	--	--	--	--	--	--	--	--	--	--	--
116.00	11160.00	50.58	PK	V	68.20	17.62	55.73	38.71	10.61	54.47	-5.15
5580MHz	--	--	--	--	--	--	--	--	--	--	--
140.00	5855.00	51.62	PK	V	68.20	16.58	69.16	30.94	6.15	54.63	-17.54
5700MHz	5855.00	38.21	AV	V	54.00	15.79	55.75	30.94	6.15	54.63	-17.54
	11400.00	50.36	PK	V	68.20	17.84	55.35	39.01	10.73	54.73	-4.99

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	49.26	PK	H	68.20	18.94	67.13	30.82	6.02	54.71	-17.87
149.00	5720.00	37.45	AV	H	54.00	16.55	55.32	30.82	6.02	54.71	-17.87
(5745MHz)	11490.00	51.22	PK	H	68.20	16.98	55.97	39.23	10.83	54.81	-4.75
	--	--	--	--	--	--		--	--	--	--
157.00	11570.00	52.04	PK	H	68.20	16.16	56.49	39.34	10.96	54.75	-4.45
(5785MHz)	--	--	--	--	--	--	--	--	--	--	--
165.00	5855.00	51.87	PK	H	68.20	16.33	69.41	30.94	6.15	54.63	-17.54
(5825MHz)	11650.00	50.36	PK	H	68.20	17.84	54.07	39.42	11.15	54.28	-3.71
	--	--	--	--	--	--	--	--	--	--	--

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	52.12	PK	V	68.20	16.08	69.99	30.82	6.02	54.71	-17.87
149.00	5720.00	39.55	AV	V	54.00	14.45	57.42	30.82	6.02	54.71	-17.87
(5745MHz)	11490.00	50.48	PK	V	68.20	17.72	55.23	39.23	10.83	54.81	-4.75
	--	--	--	--	--	--	--	--	--	--	--
157.00	11570.00	50.23	PK	V	68.20	17.97	54.68	39.34	10.96	54.75	-4.45
(5785MHz)	--	--	--	--	--	--	--	--	--	--	--
165.00	5855.00	51.78	PK	V	68.20	16.42	69.32	30.94	6.15	54.63	-17.54
(5825MHz)	11650.00	51.09	PK	V	68.20	17.11	54.80	39.42	11.15	54.28	-3.71
	--	--	--	--	--	--	--	--	--	--	--

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,IEEE 802.11ac VHT80,IEEE 802.11ac VHT160, IEEE 802.11ax HE20 ,IEEE 802.11ax HE40,IEEE 802.11ax HT80,IEEE 802.11ax VHT160.

Enclosure 2

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	50.12	PK	H	68.20	18.08	69.02	29.91	5.87	54.68	-18.90
36.00	5150.00	37.59	AV	H	54.00	16.41	56.49	29.91	5.87	54.68	-18.90
(5180MHz)	10360.00	50.69	PK	H	68.20	17.51	57.61	37.62	10.02	54.56	-6.92
	--	--	--	--	--	--	--	--	--	--	--
40.00	10400.00	52.10	PK	H	68.20	16.10	58.52	37.81	10.14	54.37	-6.42
(5200MHz)	--	--	--	--	--	--	--	--	--	--	--
48.00	5350.50	51.23	PK	H	68.20	16.97	69.80	30.24	5.93	54.74	-18.57
(5240MHz)	10480.00	51.44	PK	H	68.20	16.76	57.96	37.95	10.17	54.64	-6.52
	--	--	--	--	--	--	--	--	--	--	--

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	51.08	PK	V	68.20	17.12	69.98	29.91	5.87	54.68	-18.90
36.00	5150.00	39.63	AV	V	54.00	14.37	58.53	29.91	5.87	54.68	-18.90
(5180MHz)	10360.00	52.07	PK	V	68.20	16.13	58.99	37.62	10.02	54.56	-6.92
	--	--	--	--	--	--	--	--	--	--	--
40.00	10400.00	51.84	PK	V	68.20	16.36	58.26	37.81	10.14	54.37	-6.42
(5200MHz)	--	--	--	--	--	--	--	--	--	--	--
48.00	5350.50	51.26	PK	V	68.20	16.94	69.83	30.24	5.93	54.74	-18.57
(5240MHz)	10480.00	50.88	PK	V	68.20	17.32	57.40	37.95	10.17	54.64	-6.52
	--	--	--	--	--	--	--	--	--	--	--

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	51.23	PK	H	68.20	16.97	70.13	29.91	5.87	54.68	-18.90
52.00	5150.00	39.45	AV	H	54.00	14.55	58.35	29.91	5.87	54.68	-18.90
5260MHz	10520.00	50.17	PK	H	68.20	18.03	38.83	38.07	10.21	54.58	-6.30
	--	--	--	--	--	--	--	--	--	--	--
56.00	10560.00	50.78	PK	H	68.20	17.42	56.57	38.43	10.23	54.45	-5.79
5280MHz	--	--	--	--	--	--	--	--	--	--	--
64.00	5350.50	50.75	PK	H	68.20	17.45	69.32	30.24	5.93	54.74	-18.57
5320MHz	5350.50	38.96	AV	H	54.00	15.04	57.53	30.24	5.93	54.74	-18.57
	10480.00	50.12	PK	H	68.20	18.08	54.85	39.05	10.78	54.56	-4.73

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	51.18	PK	V	68.20	17.02	70.08	29.91	5.87	54.68	-18.90
52.00	5150.00	37.65	AV	V	54.00	16.35	56.55	29.91	5.87	54.68	-18.90
5260MHz	10520.00	51.23	PK	V	68.20	16.97	38.83	38.07	10.21	54.58	-6.30
	--	--	--	--	--	--	--	--	--	--	--
56.00	10560.00	50.48	PK	V	68.20	17.72	56.27	38.43	10.23	54.45	-5.79
5280MHz	--	--	--	--	--	--	--	--	--	--	--
64.00	5350.50	51.37	PK	V	68.20	16.83	69.94	30.24	5.93	54.74	-18.57
5320MHz	5350.50	39.56	AV	V	54.00	14.44	58.13	30.24	5.93	54.74	-18.57
	10480.00	51.87	PK	V	68.20	16.33	56.60	39.05	10.78	54.56	-4.73

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	51.23	PK	H	68.20	16.97	69.37	30.52	5.95	54.61	-18.14
100.00	5460.00	37.54	AV	H	54.00	16.46	55.68	30.52	5.95	54.61	-18.14
5500MHz	11000.00	51.02	PK	H	68.20	17.18	56.41	38.54	10.45	54.38	-5.39
	--	--	--	--	--	--	--	--	--	--	--
116.00	11160.00	50.48	PK	H	68.20	17.72	55.63	38.71	10.61	54.47	-5.15
5580MHz	--	--	--	--	--	--	--	--	--	--	--
140.00	5855.00	50.76	PK	H	68.20	17.44	68.30	30.94	6.15	54.63	-17.54
5700MHz	5855.00	37.68	AV	H	54.00	16.32	55.22	30.94	6.15	54.63	-17.54
	11400.00	51.51	PK	H	68.20	16.69	56.50	39.01	10.73	54.73	-4.99

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	52.13	PK	V	68.20	16.07	70.27	30.52	5.95	54.61	-18.14
100.00	5460.00	38.45	AV	V	54.00	15.55	56.59	30.52	5.95	54.61	-18.14
5500MHz	11000.00	50.47	PK	V	68.20	17.73	55.86	38.54	10.45	54.38	-5.39
	--	--	--	--	--	--	--	--	--	--	--
116.00	11160.00	50.39	PK	V	68.20	17.81	55.54	38.71	10.61	54.47	-5.15
5580MHz	--	--	--	--	--	--	--	--	--	--	--
140.00	5855.00	50.96	PK	V	68.20	17.24	68.50	30.94	6.15	54.63	-17.54
5700MHz	5855.00	38.23	AV	V	54.00	15.77	55.77	30.94	6.15	54.63	-17.54
	11400.00	51.05	PK	V	68.20	17.15	56.04	39.01	10.73	54.73	-4.99

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	50.17	PK	H	68.20	18.03	68.04	30.82	6.02	54.71	-17.87
149.00	5720.00	37.62	AV	H	54.00	16.38	55.49	30.82	6.02	54.71	-17.87
(5745MHz)	11490.00	51.36	PK	H	68.20	16.84	56.11	39.23	10.83	54.81	-4.75
	--	--	--	--	--	--		--	--	--	--
157.00	11570.00	51.47	PK	H	68.20	16.73	55.92	39.34	10.96	54.75	-4.45
(5785MHz)	--	--	--	--	--	--	--	--	--	--	--
165.00	5855.00	50.19	PK	H	68.20	18.01	67.73	30.94	6.15	54.63	-17.54
(5825MHz)	11650.00	50.39	PK	H	68.20	17.81	54.10	39.42	11.15	54.28	-3.71
	--	--	--	--	--	--	--	--	--	--	--

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	50.82	PK	V	68.20	17.38	68.69	30.82	6.02	54.71	-17.87
149.00	5720.00	38.27	AV	V	54.00	15.73	56.14	30.82	6.02	54.71	-17.87
(5745MHz)	11490.00	51.55	PK	V	68.20	16.65	56.30	39.23	10.83	54.81	-4.75
	--	--	--	--	--	--	--	--	--	--	--
157.00	11570.00	50.76	PK	V	68.20	17.44	55.21	39.34	10.96	54.75	-4.45
(5785MHz)	--	--	--	--	--	--	--	--	--	--	--
165.00	5855.00	50.49	PK	V	68.20	17.71	68.03	30.94	6.15	54.63	-17.54
(5825MHz)	11650.00	50.37	PK	V	68.20	17.83	54.08	39.42	11.15	54.28	-3.71
	--	--	--	--	--	--	--	--	--	--	--

REMARKS:

7. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
8. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
9. Margin value = Limit value- Emission level.
10. -- Mean the other emission levels were very low against the limit.
11. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
12. 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,IEEE 802.11ac VHT80,IEEE 802.11ac VHT160, IEEE 802.11ax HE20 ,IEEE 802.11ax HE40,IEEE 802.11ax HT80,IEEE 802.11ax VHT160.

For Conducted Band edge Measurement
The test results have included the antenna gain.

Please refer to Appendix E.

4.3. Duty Cycle

TEST CONFIGURATION

TEST PROCEDURE

1). Set the Centre frequency of the spectrum analyzer to the transmitting frequency;
2). Set the span=0MHz, RBW=8MHz, VBW=8MHz, Sweep time=Auto;
3). Detector = peak;
4). Trace mode = Single hold.

TEST RESULTS

For reporting purpose only.

Please refer to Appendix B.

4.4. Maximum Average Output Power

TEST CONFIGURATION

TEST PROCEDURE

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor. Method PM is Measurement using an RF average power sensor. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 12.4.3
2. The maximum average conducted output power may be measured using a broadband average RF power sensor.
3. The power sensor shall have a video bandwidth that is greater than or equal to the OBW bandwidth and shall use a fast-responding diode detector.

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 (23.98dBm)
5250-5350	250mW (23.98dBm)
5470-5725	250mW (23.98dBm)
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)	

For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

TEST RESULTS

Please refer to Appendix C

4.5. Power Spectral Density

TEST CONFIGURATION

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 = 1MHz for U-NII 1, U-NII 2A, U-NII C band and 500KHz for U-NII 3 band.
3. Set the VBW ≥ 3× RBW.
4. Set the span to encompass the entire EBW.
5. Detector = Average.
6. Sweep time = auto couple.
7. Trace mode = Average hold.
8. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum power level.

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 D.

4.6. 6dB Bandwidth

TEST CONFIGURATION

TEST PROCEDURE

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 = No faster than coupled (auto) time.
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.

LIMIT

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

TEST RESULTS

Please refer to Appendix A3.

4.7. 26dB Bandwidth

TEST CONFIGURATION

TEST PROCEDURE

The procedure for this method is as follows:
a) Set RBW = shall be in the range of 1% to 5% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = peak.
d) Trace mode = max-hold.
e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

LIMIT

No Limits for 26dBc Bandwidth

TEST RESULTS

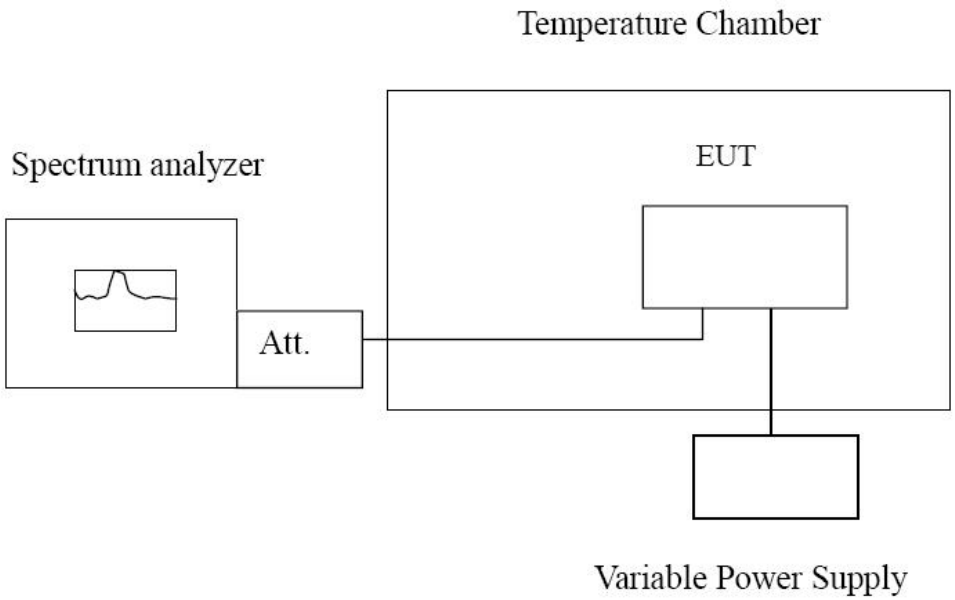
Please refer to Appendix A1.

4.8. Frequency Stability

LIMIT

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.

TEST CONFIGURATION



TEST PROCEDURE

Frequency Stability under Temperature Variations:
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 analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

TEST RESULTS

Please refer to Appendix F.

4.9. 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

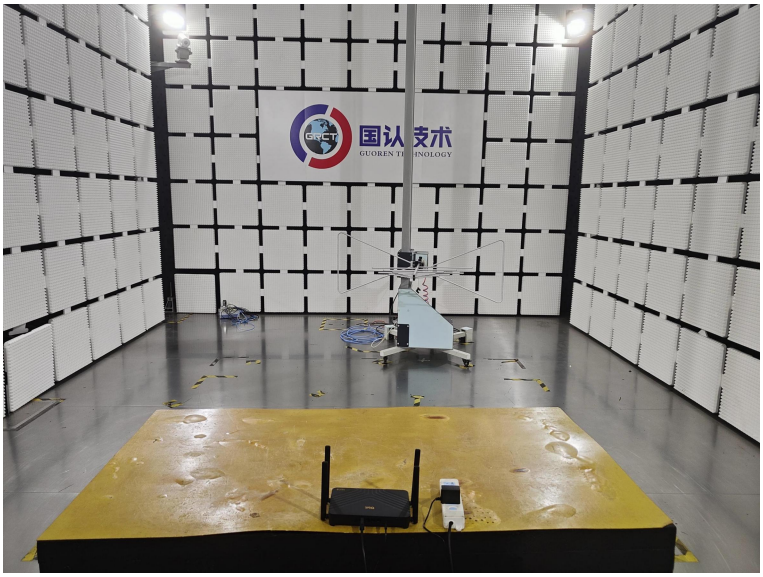
Enclosure 1
The maximum gain of antenna was 5.92 dBi for 5GHz WIFI Ant 1,the maximum gain of antenna was 5.73 dBi for 5GHz WIFI Ant 2.

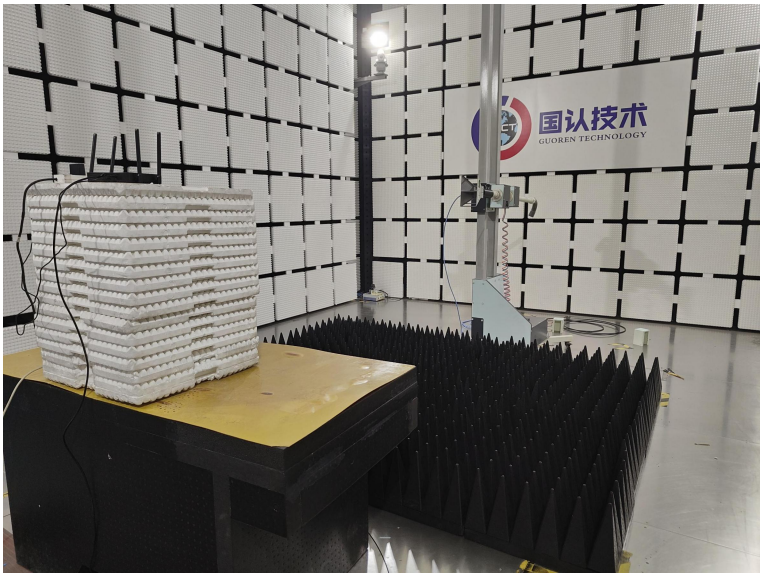
Enclosure 2
The maximum gain of antenna was 5.14 dBi for 5GHz WIFI Ant 1,the maximum gain of antenna was 5.07 dBi for 5GHz WIFI Ant 2.

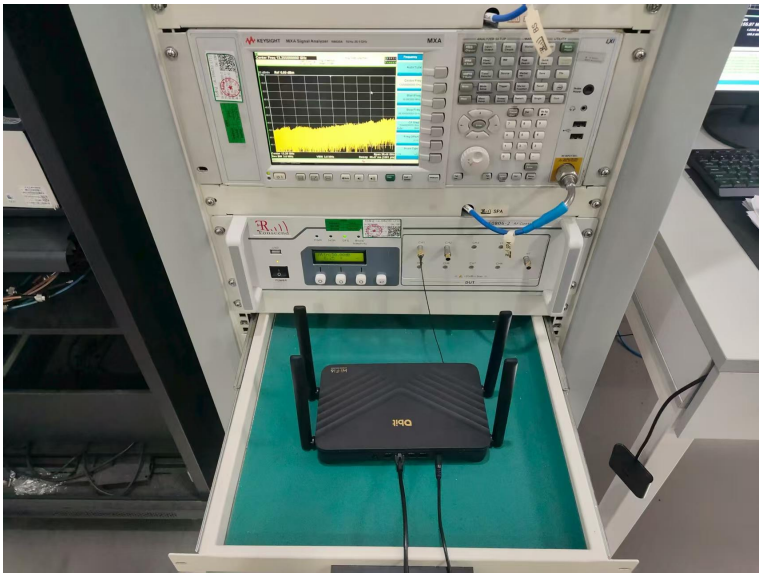
Remark:The antenna gain is provided by the customer, if the data provided by the customer is not accurate, Shenzhen GUOREN Certification Technology Service Co., Ltd. does not assume any responsibility.

5. Test Setup Photos of the EUT

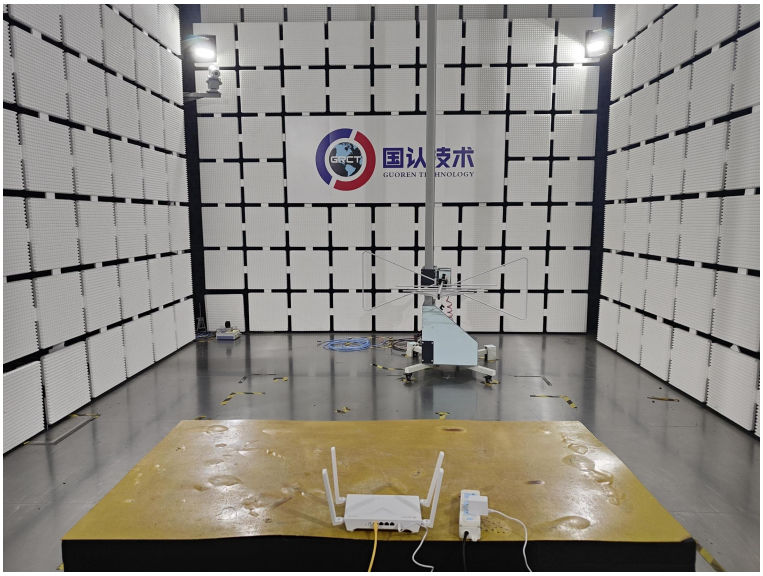
Enclosure 1

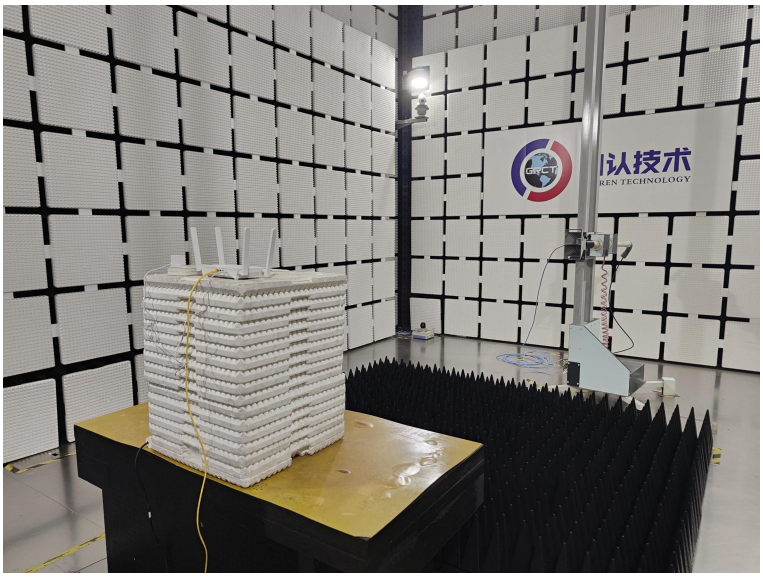






Enclosure 2





6. External and Internal Photos of the EUT

Reference to the test report No.**GRCTR250902027-01**

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