

TEST REPORT

Report No.	CISRR24120200702
Project No.	CISR241202007
FCC ID	2BMKC-ZX-R08S
Applicant	Shenzhen Ruilangjie Electronic Technology Co., Ltd
Address	Room 302, Building 2, Weifeng Building, Pinglong West Road 77-10 Shanxia Community, Pinghu Street, Longgang District, Shenzhen, China
Manufacturer	Shenzhen Ruilangjie Electronic Technology Co., Ltd
Address	Room 302, Building 2, Weifeng Building, Pinglong West Road 77-10 Shanxia Community, Pinghu Street, Longgang District, Shenzhen, China
Product Name	WiFi repeater
Trade Mark	N/A
Model/Type reference	ZX-R08S
Listed Model(s)	ZX-R01S, ZX-R02S, ZX-R03S, ZX-R04S, ZX-R05S, ZX-R06S, ZX-R07S, ZX-R09S, ZX-R10S, ZX-R11S, ZX-R12S, ZX-R13S, ZX-R14S, ZX-R15S, ZX-R16S, ZX-R17S, ZX-R18S, ZX-R19S, ZX-R20S
Standard	47 CFR Part 15E
Test date	December 5, 2024 to December 14, 2024
Issue date	December 17, 2024
Test result	Complied



Prepared by: Edward Wang



Approved by: Genry Long

The test results relate only to the tested samples.

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1. REPORT VERSION

Version No.	Issue date	Description
00	December 17, 2024	Original

2. TEST DESCRIPTION

No.	Test Item	Standard Requirement	Result
1	Conducted Emission at AC power line	47 CFR Part 15.207(a)	Pass
2	Duty Cycle		Pass
3	Emission bandwidth and occupied bandwidth	47 CFR Part 15.407(e)	Pass
4	Maximum conducted output power	47 CFR Part 15.407(a)(3)(i)	Pass
5	Power spectral density	47 CFR Part 15.407(a)(3)(i)	Pass
6	Band edge emissions (Conducted)	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
7	Band edge emissions (Radiated)	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
8	Undesirable emission limits (below 1GHz)	47 CFR Part 15.407(b)(9)	Pass
9	Undesirable emission limits (above 1GHz)	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass

Note:

- The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Product Description *

Main unit information:	
Product Name:	WiFi repeater
Trade Mark:	N/A
Model No.:	ZX-R08S
Listed Model(s):	ZX-R01S, ZX-R02S, ZX-R03S, ZX-R04S, ZX-R05S, ZX-R06S, ZX-R07S, ZX-R09S, ZX-R10S, ZX-R11S, ZX-R12S, ZX-R13S, ZX-R14S, ZX-R15S, ZX-R16S, ZX-R17S, ZX-R18S, ZX-R19S, ZX-R20S
Power supply:	AC100-240V~, 50/60Hz, 1A
Hardware version:	V1.0
Software version:	V1.0
Accessory unit information:	
Battery information:	N/A

3.2. Radio Specification Description *

Modulation type:	802.11a/n: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM);
Operation frequency:	802.11a/n(HT20)/ac(HT20):5745MHz to 5825MHz; 802.11n(HT40)/ac(HT40): 5755MHz to 5795MHz; 802.11ac(HT80)): 5775MHz
Channel number:	802.11a/n(HT20)/ac(HT20):5; 802.11n(HT40)/ac(HT40):2; 802.11ac(HT80):1
Channel separation:	802.11a/n(HT20)/ac(HT20): 20MHz 802.11n(HT40)/ac(HT40): 40MHz 802.11ac(HT80): 80MHz
Antenna type:	External Antenna
Antenna gain:	1.34dBi

Note:

- 1) *: Since the above information is provided by the applicant relevant results or conclusions of this report are only made for these information, Bangce is not responsible for the authenticity, integrity and results of the information and/or the validity of the conclusion.

- 2) Operation frequency list as follow:

U-NII Band 3

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
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	/	/	/	/
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3.3. Modification of EUT

No modifications are made to the EUT during all test items.

3.4. Deviation from standards

None

3.5. Testing Site

Laboratory Name	Shenzhen Bangce Testing Technology Co., Ltd.
Laboratory Location	101, building 10, Yunli Intelligent Park, Shutianpu community, Matian Street, Guangming District, Shenzhen, Guangdong, China
Contact information	Tel: 86-755-2319 6848, email: service@cis-cn.net Website: http://www.cis-cn.net/
FCC registration number	736346
FCC designation number	CN1372

4. TEST CONFIGURATION

4.1. Test frequency list

	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
802.11a/n/ac(HT20)	5745	5785	5825
802.11n/ac(HT40)	5755	/	5795
802.11ac(HT80)	/	5775	/

4.2. Descriptions of test mode

No	Test mode	Description
TM1	802.11a mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11a modulation type at lowest, middle and highest channel. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.
TM2	802.11n mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11n modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
TM3	802.11ac mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with 802.11ac modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
TM4	Normal Operating	Keep the EUT works in normal operating mode and connect to companion device

4.3. Test sample information

Type	Sample No.
Engineer sample	CISR241202007-S01
Normal sample	CISR241202007-S02

4.4. Environmental conditions

Type	Requirement
Temperature:	15~35°C
Relative Humidity:	25~75%
Air Pressure:	860~1060mbar

4.5. Equipment Used during the Test

Conducted Emission at AC power line						
Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESC17	100853	2024-01-08	2025-01-07
2	Artificial power network	Schwarzbeck	NSLK8127	8127-01096	2024-01-08	2025-01-07
3	8-wire Impedance Stabilization Network	Schwarzbeck	NTFM 8158	8158-00337	2024-01-08	2025-01-07
4	Artificial power network	Schwarzbeck	ENV216	/	2024-01-08	2025-01-07

Duty Cycle Emission bandwidth and occupied bandwidth Maximum conducted output power Power spectral density Band edge emissions (Conducted)						
Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	MXG RF Signal Generator	Agilent	N5181A	MY50145362	2024-01-08	2025-01-07
2	Spectrum analyzer	R&S	FSV-40N	102130	2024-01-08	2025-01-07
3	Vector Signal Generator	Agilent	N5182A	MY50142364	2024-06-14	2025-06-13
4	Power Meter	WCS	WCS-PM	WCSPM230405A	2024-01-08	2025-01-07

Band edge emissions (Radiated) Undesirable emission limits (below 1GHz) Undesirable emission limits (above 1GHz)						
Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESC17	100853	2024-01-08	2025-01-07
2	Amplifier	Tonscend	TAP9K3G40	AP23A8060270	2024-01-08	2025-01-07
3	Prime amplifier	Tonscend	TAP01018050	AP23A8060280	2024-01-08	2025-01-07
4	9*6*6 anechoic chamber	SKET	9.3*6.3*6	N/A	2024-09-02	2027-09-01
5	Spectrum analyzer	Agilent	N9020A	MY50530263	2024-01-08	2025-01-07
6	Spectrum analyzer	R&S	FSV-40N	102130	2024-01-08	2025-01-07
7	Bilog Antenna	Schwarzbeck	VULB 9163	1463	2023-01-09	2025-01-08
8	Horn Antenna	SCHWARZBECK	BBHA 9120 D	2487	2023-01-09	2025-01-08

9	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	2023-01-09	2025-01-08
10	RF Cable	Tonscend	Cable 1	/	2024-01-08	2025-01-07
11	RF Cable	Tonscend	Cable 2	/	2024-01-08	2025-01-07
12	RF Cable	SKET	Cable 3	/	2024-01-08	2025-01-07
13	L.I.S.N.#1	Schwarzbeck	NSLK8127	/	2024-01-08	2025-01-07
14	L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	2024-01-08	2025-01-07
15	Horn Antenna	SCHWARZBECK	BBHA9170	1130	2023-01-09	2025-01-08
16	Preamplifier	Tonscend	TAP18040048	AP21C806126	2024-01-08	2025-01-07
17	Variable-frequency power source	Pinhong	PH1110	/	2024-01-08	2025-01-07
18	6dB Attenuator	SKET	DC-6G	/	/	/
19	Antenna tower	SKT	Bk-4AT-BS	AT2021040101-V1	2024-06-14	2025-06-13

5. TEST RESULTS

5.1. Evaluation Results (Evaluation)

5.1.1. Antenna Requirement

Test Requirement:

Refer to 47 CFR Part 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 shall be considered sufficient to comply with the provisions of this section.

5.1.1.1. Test Result

Pass

5.1.1.2. Conclusion:

The EUT antenna is External Antenna(1.34dBi), the directional gain of the antenna less than 6dBi. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used. Antenna structure please refer to the EUT internal photographs antenna photo.

5.2. Radio Spectrum Matter Test Results (RF)

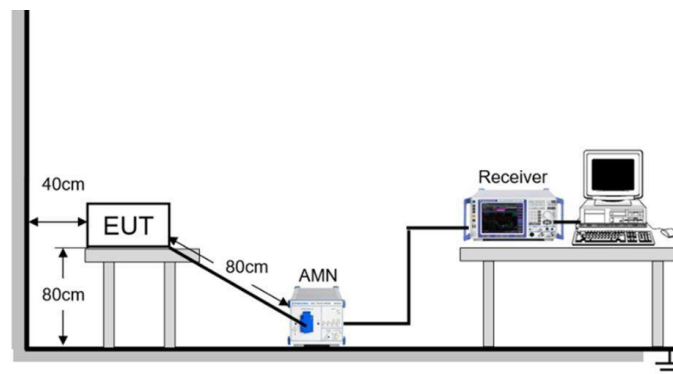
5.2.1. Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBμV)	
		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 Method:	ANSI C63.10-2020 section 6.2		

5.2.1.1. E.U.T. Operation

Operating Environment:					
Temperature:	23.4 °C	Humidity:	56.1 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3, TM4				
Final test mode:	All of the listed pre-test channel were tested, only the data of the worst channel CH1(ANT1 TM1) is recorded in the report.				

5.2.1.2. Test Setup Diagram

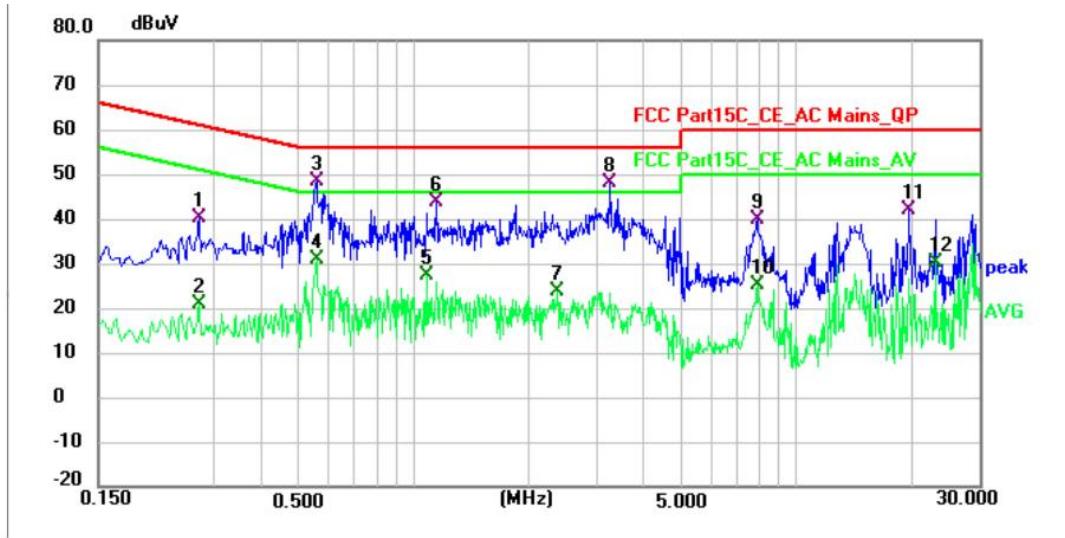


5.2.1.3. Test Result

Pass

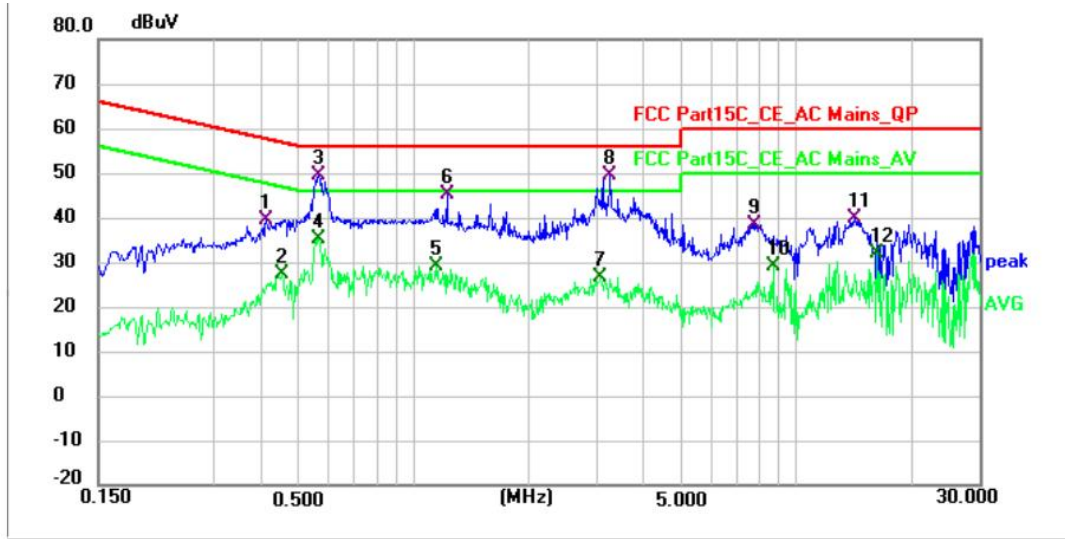
5.2.1.4. Test Data

Mode4 / Line: Line / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.274	39.92	0.33	40.25	61.00	-20.75	QP	P	
2	0.274	20.67	0.33	21.00	51.00	-30.00	AVG	P	
3 *	0.558	48.12	0.38	48.50	56.00	-7.50	QP	P	
4	0.558	30.62	0.38	31.00	46.00	-15.00	AVG	P	
5	1.078	26.77	0.45	27.22	46.00	-18.78	AVG	P	
6	1.146	43.11	0.47	43.58	56.00	-12.42	QP	P	
7	2.382	22.81	0.81	23.62	46.00	-22.38	AVG	P	
8	3.266	47.13	1.08	48.21	56.00	-7.79	QP	P	
9	7.922	36.70	3.02	39.72	60.00	-20.28	QP	P	
10	7.922	22.09	3.02	25.11	50.00	-24.89	AVG	P	
11	19.710	36.54	5.59	42.13	60.00	-17.87	QP	P	
12	23.130	24.93	5.28	30.21	50.00	-19.79	AVG	P	

Mode4 / Line: Neutral / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.410	39.06	0.34	39.40	57.65	-18.25	QP	P	
2	0.454	27.01	0.36	27.37	46.80	-19.43	AVG	P	
3	0.566	48.90	0.39	49.29	56.00	-6.71	QP	P	
4	0.566	34.84	0.39	35.23	46.00	-10.77	AVG	P	
5	1.142	28.73	0.47	29.20	46.00	-16.80	AVG	P	
6	1.226	44.81	0.49	45.30	56.00	-10.70	QP	P	
7	3.082	25.71	1.02	26.73	46.00	-19.27	AVG	P	
8 *	3.270	48.25	1.09	49.34	56.00	-6.66	QP	P	
9	7.786	35.46	3.00	38.46	60.00	-21.54	QP	P	
10	8.718	25.75	3.25	29.00	50.00	-21.00	AVG	P	
11	14.214	34.40	5.38	39.78	60.00	-20.22	QP	P	
12	16.230	26.31	5.77	32.08	50.00	-17.92	AVG	P	

5.2.2. Duty Cycle

Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2020 section 12.2 (b)
Procedure:	i) Set the center frequency of the instrument to the center frequency of the transmission. ii) Set RBW \geq EBW if possible; otherwise, set RBW to the largest available value. iii) Set VBW \geq RBW. iv) Set detector = peak. v) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.

5.2.2.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55.8 %	Atmospheric Pressure:	103 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.2.2.2. Test Setup Diagram



5.2.2.3. Test Result

Pass

5.2.2.4. Test Data

Please Refer to Appendix for Details.

5.2.3. Emission bandwidth and occupied bandwidth

Test Requirement:	U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2
Procedure:	<p>Occupied bandwidth:</p> <p>a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.</p> <p>b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.</p> <p>c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.</p> <p>d) Step a) through step c) might require iteration to adjust within the specified range.</p> <p>e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.</p> <p>f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.</p> <p>g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.</p> <p>h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).</p> <p>6 dB emission bandwidth:</p> <p>a) Set RBW = 100 kHz.</p> <p>b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.</p> <p>c) Detector = Peak.</p> <p>d) Trace mode = max hold.</p> <p>e) Sweep = auto couple.</p> <p>f) Allow the trace to stabilize.</p> <p>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</p>

the fundamental emission.

5.2.3.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55.8 %	Atmospheric Pressure:	103 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.2.3.2. Test Setup Diagram



5.2.3.3. Test Result

Pass

5.2.3.4. Test Data

Please Refer to Appendix for Details.

5.2.4. Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(3)(i)
Test Limit:	For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2020, section 12.4
Procedure:	Refer to ANSI C63.10-2020 section 12.4

5.2.4.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55.8 %	Atmospheric Pressure:	103 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.2.4.2. Test Setup Diagram



5.2.4.3. Test Result

Pass

5.2.4.4. Test Data

Please Refer to Appendix for Details.

5.2.5. Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(3)(i)
Test Limit:	<p>For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.</p> <p>If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.</p> <p>Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.</p>
Test Method:	ANSI C63.10-2020, section 12.6
Procedure:	Refer to ANSI C63.10-2020, section 12.6

5.2.5.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55.8 %	Atmospheric Pressure:	103 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.2.5.2. Test Setup Diagram



5.2.5.3. Test Result

Pass

5.2.5.4. Test Data

Please Refer to Appendix for Details.

5.2.6. Band edge emissions (Conducted)

Test Requirement:	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)		
Test Limit:	For transmitters operating solely in the 5.725-5.850 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.		
	MHz	MHz	MHz
	0.090-0.110	16.42-16.423	399.9-410
	¹ 0.495-0.505	16.69475-16.69525	608-614
	2.1735-2.1905	16.80425-16.80475	960-1240
	4.125-4.128	25.5-25.67	1300-1427
	4.17725-4.17775	37.5-38.25	1435-1626.5
	4.20725-4.20775	73-74.6	1645.5-1646.5
	6.215-6.218	74.8-75.2	1660-1710
	6.26775-6.26825	108-121.94	1718.8-1722.2
	6.31175-6.31225	123-138	2200-2300
	8.291-8.294	149.9-150.05	2310-2390
	8.362-8.366	156.52475-156.52525	2483.5-2500
	8.37625-8.38675	156.7-156.9	2690-2900
	8.41425-8.41475	162.0125-167.17	3260-3267
	12.29-12.293	167.72-173.2	3332-3339
	12.51975-12.52025	240-285	3345.8-3358
	12.57675-12.57725	322-335.4	3600-4400
	13.36-13.41		(²)
	¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30

	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
<p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>In the emission table above, the tighter limit applies at the band edges.</p> <p>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p>			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7		
Procedure:	<p>Above 1GHz:</p> <p>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> <p>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.</p> <p>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.</p> <p>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.</p>		

5.2.6.1. E.U.T. Operation

Operating Environment:					
Temperature:	22.9 °C	Humidity:	55.8 %	Atmospheric Pressure:	103 kPa

Pre test mode:	TM1, TM2, TM3
Final test mode:	TM1, TM2, TM3

5.2.6.2. Test Setup Diagram



5.2.6.3. Test Result

Pass

5.2.6.4. Test Data

Please Refer to Appendix for Details.

5.2.7. Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)		
Test Limit:	For transmitters operating solely in the 5.725-5.850 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.		
	MHz	MHz	MHz
	0.090-0.110	16.42-16.423	399.9-410
	¹ 0.495-0.505	16.69475-16.69525	608-614
	2.1735-2.1905	16.80425-16.80475	960-1240
	4.125-4.128	25.5-25.67	1300-1427
	4.17725-4.17775	37.5-38.25	1435-1626.5
	4.20725-4.20775	73-74.6	1645.5-1646.5
	6.215-6.218	74.8-75.2	1660-1710
	6.26775-6.26825	108-121.94	1718.8-1722.2
	6.31175-6.31225	123-138	2200-2300
	8.291-8.294	149.9-150.05	2310-2390
	8.362-8.366	156.52475-156.52525	2483.5-2500
	8.37625-8.38675	156.7-156.9	2690-2900
	8.41425-8.41475	162.0125-167.17	3260-3267
	12.29-12.293	167.72-173.2	3332-3339
	12.51975-12.52025	240-285	3345.8-3358
	12.57675-12.57725	322-335.4	3600-4400
	13.36-13.41		(²)
	¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30

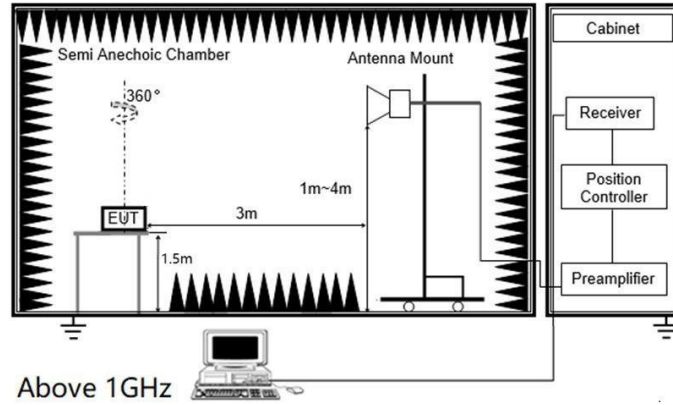
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
<p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>In the emission table above, the tighter limit applies at the band edges.</p> <p>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p>			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7		
Procedure:	<p>Above 1GHz:</p> <p>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> <p>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.</p> <p>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.</p> <p>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.</p>		

5.2.7.1. E.U.T. Operation

Operating Environment:					
Temperature:	23.4 °C	Humidity:	57 %	Atmospheric Pressure:	102 kPa

Pre test mode:	TM1, TM2, TM3
Final test mode:	TM1, TM2, TM3

5.2.7.2. Test Setup Diagram



5.2.7.3. Test Result

Pass

5.2.7.4. Test Data

ANT0

Test channel:CH149										
Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
5725.00	70.01	28.62	4.08	38.62	-5.92	64.09	74	9.91	Peak	Horizontal
5725.00	51.65	28.62	4.08	38.62	-5.92	45.73	54	8.27	Average	Horizontal
5725.00	68.67	28.62	4.08	38.62	-5.92	62.75	74	11.25	Peak	Vertical
5725.00	49.81	28.62	4.08	38.62	-5.92	43.89	54	10.11	Average	Vertical

Test channel:CH163										
Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
5850.00	70.16	29.45	3.91	40.17	-6.81	63.35	74	10.65	Peak	Horizontal
5850.00	49.41	29.45	3.91	40.17	-6.81	42.60	54	11.40	Average	Horizontal
5850.00	67.76	29.45	3.91	40.17	-6.81	60.95	74	13.05	Peak	Vertical
5850.00	51.33	29.45	3.91	40.17	-6.81	44.52	54	9.48	Average	Vertical

ANT1

Test channel:CH149										
Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
5725.00	70.50	28.62	4.08	38.62	-5.92	64.58	74	9.42	Peak	Horizontal
5725.00	51.53	28.62	4.08	38.62	-5.92	45.61	54	8.39	Average	Horizontal
5725.00	69.21	28.62	4.08	38.62	-5.92	63.29	74	10.71	Peak	Vertical
5725.00	49.71	28.62	4.08	38.62	-5.92	43.79	54	10.21	Average	Vertical

Test channel:CH163										
Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
5850.00	69.62	29.45	3.91	40.17	-6.81	62.81	74	11.19	Peak	Horizontal
5850.00	50.35	29.45	3.91	40.17	-6.81	43.54	54	10.46	Average	Horizontal
5850.00	68.05	29.45	3.91	40.17	-6.81	61.24	74	12.76	Peak	Vertical
5850.00	50.44	29.45	3.91	40.17	-6.81	43.63	54	10.37	Average	Vertical

5.2.8. Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)																								
Test Limit:	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.																								
	Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:																								
	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table>	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	0.009-0.490	2400/F(kHz)	300	0.490-1.705	24000/F(kHz)	30	1.705-30.0	30	30	30-88	100 **	3	88-216	150 **	3	216-960	200 **	3	Above 960	500	3
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																						
	0.009-0.490	2400/F(kHz)	300																						
	0.490-1.705	24000/F(kHz)	30																						
	1.705-30.0	30	30																						
	30-88	100 **	3																						
	88-216	150 **	3																						
	216-960	200 **	3																						
Above 960	500	3																							
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.																									
In the emission table above, the tighter limit applies at the band edges.																									
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																									
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.5																								
Procedure:	<p>Below 1GHz:</p> <p>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> <p>2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when</p>																								

testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Above 1GHz:

- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

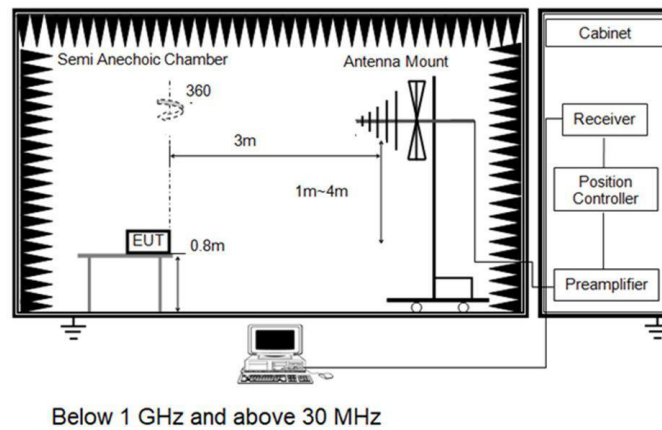
- Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5.2.8.1. E.U.T. Operation

Operating Environment:

Temperature:	23.4 °C	Humidity:	57 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

5.2.8.2. Test Setup Diagram



5.2.8.3. Test Result

Pass

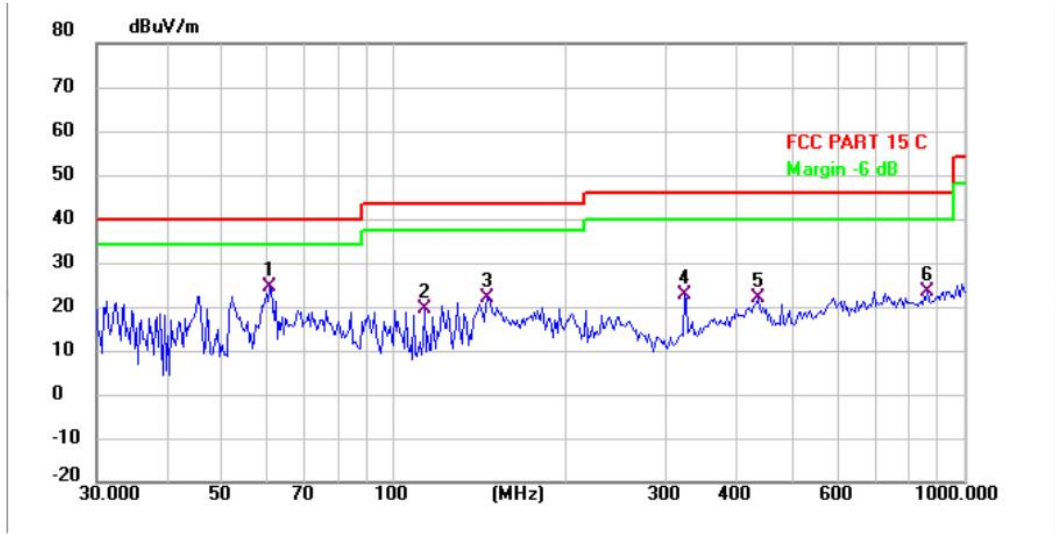
5.2.8.4. Test Data

Mode1 / Polarization: Horizontal / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	51.121	59.03	-29.37	29.66	40.00	-10.34	QP	P	
2 *	60.918	63.25	-30.92	32.33	40.00	-7.67	QP	P	
3	111.347	55.93	-30.76	25.17	43.50	-18.33	QP	P	
4	166.068	61.61	-32.76	28.85	43.50	-14.65	QP	P	
5	382.588	51.07	-25.26	25.81	46.00	-20.19	QP	P	
6	804.603	42.49	-16.43	26.06	46.00	-19.94	QP	P	

Mode1 / Polarization: Vertical / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	60.492	55.15	-30.83	24.32	40.00	-15.68	QP	P	
2	112.920	50.70	-31.08	19.62	43.50	-23.88	QP	P	
3	145.351	55.97	-33.95	22.02	43.50	-21.48	QP	P	
4	323.320	49.32	-26.62	22.70	46.00	-23.30	QP	P	
5	434.065	45.74	-23.88	21.86	46.00	-24.14	QP	P	
6	863.056	38.76	-15.40	23.36	46.00	-22.64	QP	P	

5.2.9. Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)		
Test Limit:	For transmitters operating solely in the 5.725-5.850 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.		
	MHz	MHz	MHz
	0.090-0.110	16.42-16.423	399.9-410
	¹ 0.495-0.505	16.69475-16.69525	608-614
	2.1735-2.1905	16.80425-16.80475	960-1240
	4.125-4.128	25.5-25.67	1300-1427
	4.17725-4.17775	37.5-38.25	1435-1626.5
	4.20725-4.20775	73-74.6	1645.5-1646.5
	6.215-6.218	74.8-75.2	1660-1710
	6.26775-6.26825	108-121.94	1718.8-1722.2
	6.31175-6.31225	123-138	2200-2300
	8.291-8.294	149.9-150.05	2310-2390
	8.362-8.366	156.52475-156.52525	2483.5-2500
	8.37625-8.38675	156.7-156.9	2690-2900
	8.41425-8.41475	162.0125-167.17	3260-3267
	12.29-12.293	167.72-173.2	3332-3339
	12.51975-12.52025	240-285	3345.8-3358
	12.57675-12.57725	322-335.4	3600-4400
	13.36-13.41		(²)
	¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.		
	² Above 38.6		
	The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.		
	Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30

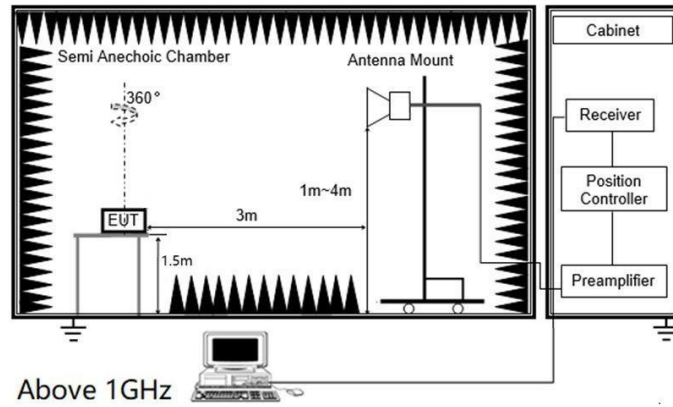
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
<p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>In the emission table above, the tighter limit applies at the band edges.</p> <p>The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p>			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7		
Procedure:	<p>Above 1GHz:</p> <p>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <p>1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> <p>2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.</p> <p>3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.</p> <p>4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.</p>		

5.2.9.1. E.U.T. Operation

Operating Environment:					
Temperature:	23.4 °C	Humidity:	57 %	Atmospheric Pressure:	102 kPa

Pre test mode:	TM1, TM2, TM3
Final test mode:	TM1, TM2, TM3

5.2.9.2. Test Setup Diagram



5.2.9.3. Test Result

Pass

5.2.9.4. Test Data

For 1 GHz ~ 40 GHz

Have pre-scan all test channel, found 11a mode which it was worst case, so only show the worst case's data on this report.

ANT0

Test channel:CH149

Freq. (GHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.49	69.11	31.33	4.23	38.62	-3.06	66.05	74	7.95	Peak	Horizontal
11.49	48.89	31.33	4.23	38.62	-3.06	45.83	54	8.17	Average	Horizontal
11.49	65.24	31.33	4.23	38.62	-3.06	62.18	74	11.82	Peak	Vertical
11.49	51.61	31.33	4.23	38.62	-3.06	48.55	54	5.45	Average	Vertical

Test channel:CH157

Freq. (GHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.57	70.50	30.26	4.09	38.29	-3.94	66.56	74	7.44	Peak	Horizontal
11.57	50.15	30.26	4.09	38.29	-3.94	46.21	54	7.79	Average	Horizontal
11.57	67.06	30.26	4.09	38.29	-3.94	63.12	74	10.88	Peak	Vertical
11.57	50.82	30.26	4.09	38.29	-3.94	46.88	54	7.12	Average	Vertical

Test channel:CH163

Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.65	63.91	31.97	4.11	38.47	-2.39	61.52	74	12.48	Peak	Horizontal
11.65	50.69	31.97	4.11	38.47	-2.39	48.30	54	5.70	Average	Horizontal
11.65	67.50	31.97	4.11	38.47	-2.39	65.11	74	8.89	Peak	Vertical
11.65	50.93	31.97	4.11	38.47	-2.39	48.54	54	5.46	Average	Vertical

ANT1

Test channel:CH149										
Freq. (GHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.49	69.60	31.33	4.23	38.62	-3.06	66.54	74	7.46	Peak	Horizontal
11.49	49.27	31.33	4.23	38.62	-3.06	46.21	54	7.79	Average	Horizontal
11.49	65.06	31.33	4.23	38.62	-3.06	62.00	74	12.00	Peak	Vertical
11.49	51.21	31.33	4.23	38.62	-3.06	48.15	54	5.85	Average	Vertical

Test channel:CH157										
Freq. (GHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.57	70.74	30.26	4.09	38.29	-3.94	66.80	74	7.20	Peak	Horizontal
11.57	50.87	30.26	4.09	38.29	-3.94	46.93	54	7.07	Average	Horizontal
11.57	67.09	30.26	4.09	38.29	-3.94	63.15	74	10.85	Peak	Vertical
11.57	50.54	30.26	4.09	38.29	-3.94	46.60	54	7.40	Average	Vertical

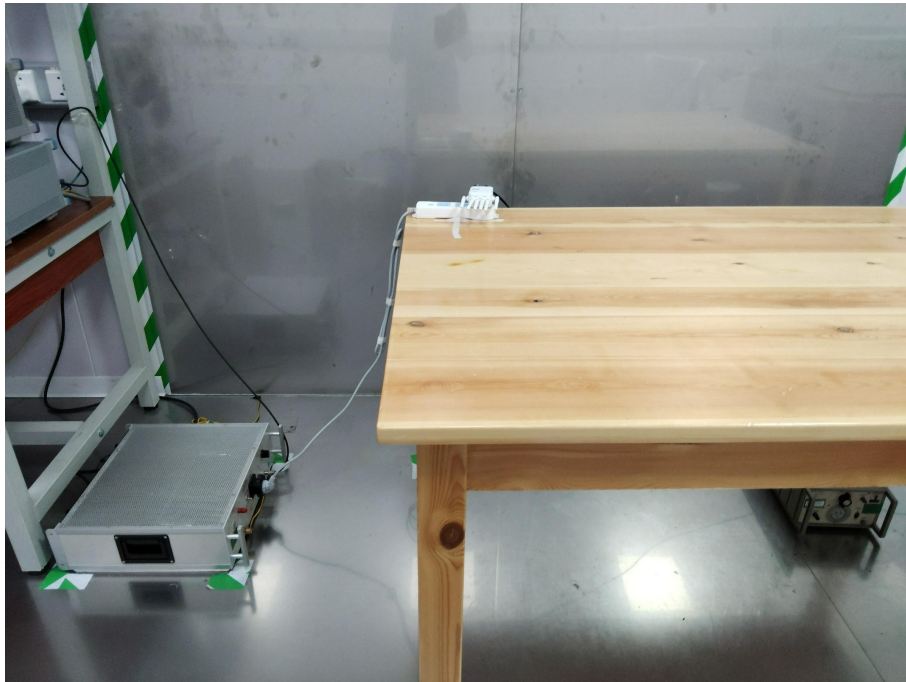
Test channel:CH163										
Freq. (MHz)	Reading (dBuv)	Ant. Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correc tion Factor (dB/m)	Level (dBuv)	Limit (dBu V/m)	Margin (dB)	Remark	Polarity
11.65	64.57	31.97	4.11	38.47	-2.39	62.18	74	11.82	Peak	Horizontal
11.65	50.48	31.97	4.11	38.47	-2.39	48.09	54	5.91	Average	Horizontal
11.65	67.77	31.97	4.11	38.47	-2.39	65.38	74	8.62	Peak	Vertical
11.65	51.13	31.97	4.11	38.47	-2.39	48.74	54	5.26	Average	Vertical

Notes:

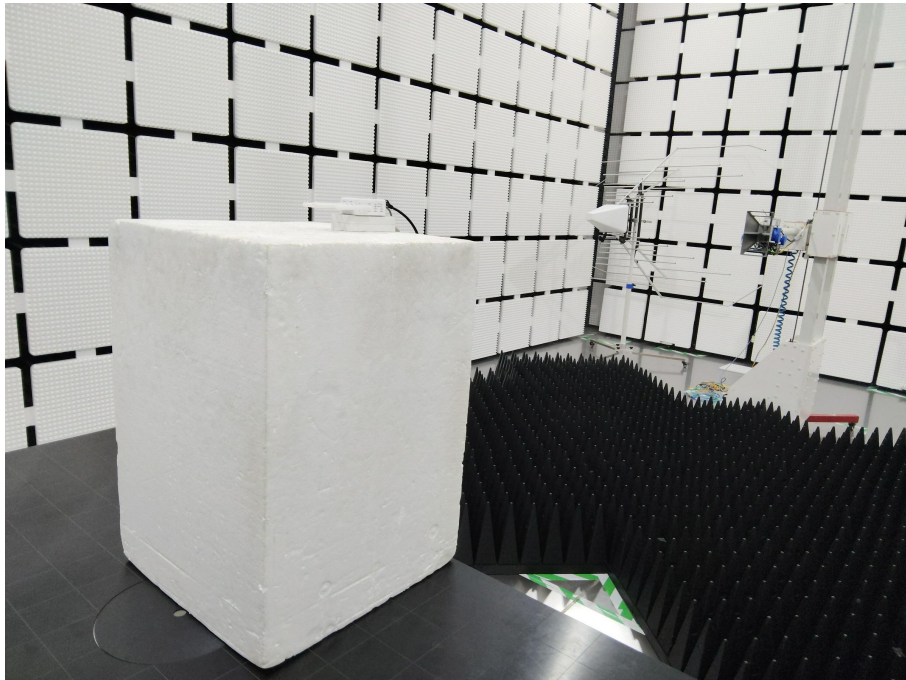
- 1). Measuring frequencies from 9 KHz ~ 40GHz, emissions are attenuated more than 20dB below the permissible limits generated frequency to 30MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz ~ 40GHz were made with an instrument using Peak detector mode.
- 3). 18~40GHz at least have 20dB margin. No recording in the test report.

6. TEST SETUP PHOTOS

Conducted Emission at AC power line



Band edge emissions (Radiated)
Undesirable emission limits (above 1GHz)



Undesirable emission limits (below 1GHz)

