

RF Test Report

For

Applicant name: Limitless Innovations, Inc.
Address: 4800 Metalmaster Way, McHenry, IL 60050
EUT name: Desktop Wireless Charger With Retractable Cables
Brand name: LIMITLESS
Model number: LIM-DTCRC-M001
Series model number: Refer to section 2
FCC ID: 2AQ9A-LIMDTCRCM001

Issued By

Company name: BTF Testing Lab (Shenzhen) Co., Ltd.
Address: 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China

Report number: BTF250812R00901
Test standards: 47 CFR FCC Part 15C
Test conclusion: Pass

Date of sample receipt: 2025-08-12
Test date: 2025-08-13 to 2025-08-25
Date of issue: 2025-09-12

Prepared by:



Chris Liu / Project
engineer

Approved by:



Ryan.CJ / EMC Manager

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.

Revision History		
Version	Issue Date	Revisions Content
R_V0	2025-09-12	Original

Note:

Once the revision has been made, then previous versions reports are invalid.

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1 Introduction

1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

1.2 Laboratory Facility

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

- **FCC - Designation No.: CN1409**

BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 695374.

- **CNAS - Registration No.: CNAS L17568**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.

- **A2LA - Registration No.: 6660.01**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.
- (7) All entrusted information in this report is provided by the client and has been confirmed through consultation with the client; The testing items for this report have been discussed and confirmed with the client, and our company is only responsible for the content reflected in the report.

2 Product Information

2.1 Application Information

Company name:	Limitless Innovations, Inc.
Address:	4800 Metalmaster Way, McHenry, IL 60050

2.2 Manufacturer Information

Company name:	SHENZHEN CHIFROG TECHNOLOGY CO., LTD
Address:	402, BLD B,Bafang Industrial Park, 13 Lingxia Rd,Fenghuang,Fuyong,Bao'An District,Shenzhen,China PostCode: 518103

2.3 Factory Information

Company name:	SHENZHEN CHIFROG TECHNOLOGY CO., LTD
Address:	402, BLD B,Bafang Industrial Park, 13 Lingxia Rd,Fenghuang,Fuyong,Bao'An District,Shenzhen,China PostCode: 518103

2.4 General Description of Equipment under Test (EUT)

EUT name:	Desktop Wireless Charger With Retractable Cables											
Under test model name:	LIM-DTCRC-M001											
Series model name:	LIM-DTCRC-M002, LIM-DTCRC-M005, LIM-DTCRC-M015, LIM-DTCRC-M098											
Description of model name differentiation:	All models are identical except for the name and color of the model. <table border="1"><tr><td>LIM-DTCRC-M001</td><td>Black Metallic</td></tr><tr><td>LIM-DTCRC-M002</td><td>White Metallic</td></tr><tr><td>LIM-DTCRC-M005</td><td>Pink Metallic</td></tr><tr><td>LIM-DTCRC-M015</td><td>Navy Metallic</td></tr><tr><td>LIM-DTCRC-M098</td><td>Espresso Metallic</td></tr></table>		LIM-DTCRC-M001	Black Metallic	LIM-DTCRC-M002	White Metallic	LIM-DTCRC-M005	Pink Metallic	LIM-DTCRC-M015	Navy Metallic	LIM-DTCRC-M098	Espresso Metallic
LIM-DTCRC-M001	Black Metallic											
LIM-DTCRC-M002	White Metallic											
LIM-DTCRC-M005	Pink Metallic											
LIM-DTCRC-M015	Navy Metallic											
LIM-DTCRC-M098	Espresso Metallic											
Hardware version:	N/A											
Software version:	N/A											
Ratings:	AC Input: 100V-240Vac 50/60Hz 2A Output: Type-C Output:PD65W 5V== 3A, 9V== 3A, 12V== 3A, 15V== 3A, 20V== 3.25A, PPS 5-21V== 3A. USB-A1/A2 Output:QC3.0 5V/3.0A,9V/2.0A,12V/1.5A; 22.5W. MAX Wireless Charging Output: 5W/7.5W/15W											

2.5 Technical Information

Operation Frequency:	120kHz~205kHz
Modulation technology:	ASK
Antenna type:	Coil Antenna

3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards:
47 CFR Part 15C: Intentional Radiators

3.2 Uncertainty of Test

Measurement	Value
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, conducted	±3.0 dB

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15C	47 CFR Part 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15C	47 CFR Part 15.207(a)	Pass
20dB Bandwidth	47 CFR Part 15C	47 CFR Part 15.215(c)	Pass
Emissions in frequency bands (below 30MHz)	47 CFR Part 15C	47 CFR Part 15.209	Pass
Emissions in frequency bands (30MHz - 1GHz)	47 CFR Part 15C	47 CFR Part 15.209	Pass

Remark:

1. *Pass: Meet the requirements.*
2. *N/A: not applicable.*

3.4 Additions to, deviations, or exclusions from the method

None

4 Test Configuration

4.1 Test Equipment List

Conducted Emission at AC power line					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI3	101422	2024-10-25	2025-10-24
V-LISN	Schwarzbeck	NSLK 8127	01073	2024-10-25	2025-10-24
Coaxial Switcher	Schwarzbeck	CX210	CX210	/	/
Pulse Limiter	Schwarzbeck	VTSD 9561-F	00953	/	/
Test Software	Frad	EZ EMC	Version: EMC-CON 3A1.1+	/	/

20dB Occupied Bandwidth					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020A	MY50410020	2024-10-25	2025-10-24

Emissions in frequency bands (below 30MHz) Emissions in frequency bands (30MHz - 1GHz)					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2024-10-25	2025-10-24
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2024-10-25	2025-10-24
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2024-10-28	2025-10-27
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2024-09-24	2025-09-23
Test Software	Frad	EZ EMC	Version: FA-03A2 RE+	/	/

4.2 Test Auxiliary Equipment

No.	Description	Manufacturer	Model	Serial Number	Certification
1	mobile phone	XIAOMI	XIAOMI 14	N/A	N/A

4.3 Test Modes

No.	Test Modes
TM1	EUT stand alone, standby.powered by AC input.
TM2	Direct contact duringcharging/operating
TM3	between theEUT& Mobile phone is
TM4	poweredby AC input.
Remark: @120kHz-205kHz (144.5KHz)	

5 Evaluation Results (Evaluation)

5.1 Antenna requirement

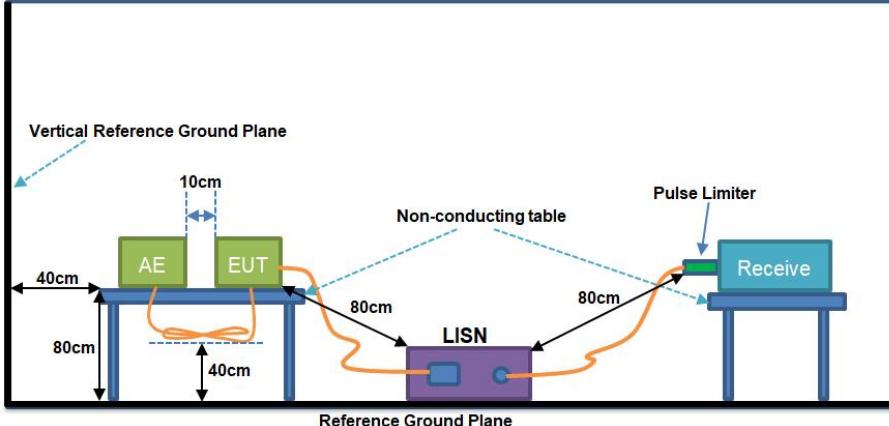
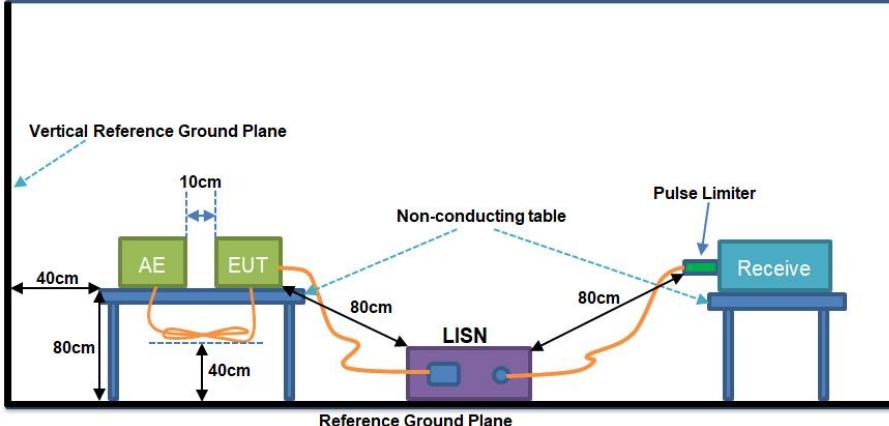
Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
Operating Environment:	
Temperature:	24.3 °C
Humidity:	49.7 %
Atmospheric Pressure:	1010 mbar
Test voltage:	AC 120V 60Hz

5.1.1 Conclusion

The antenna is a permanently fixed coil antenna and meets the standard requirements. Please refer to the EUT photos for the antenna.

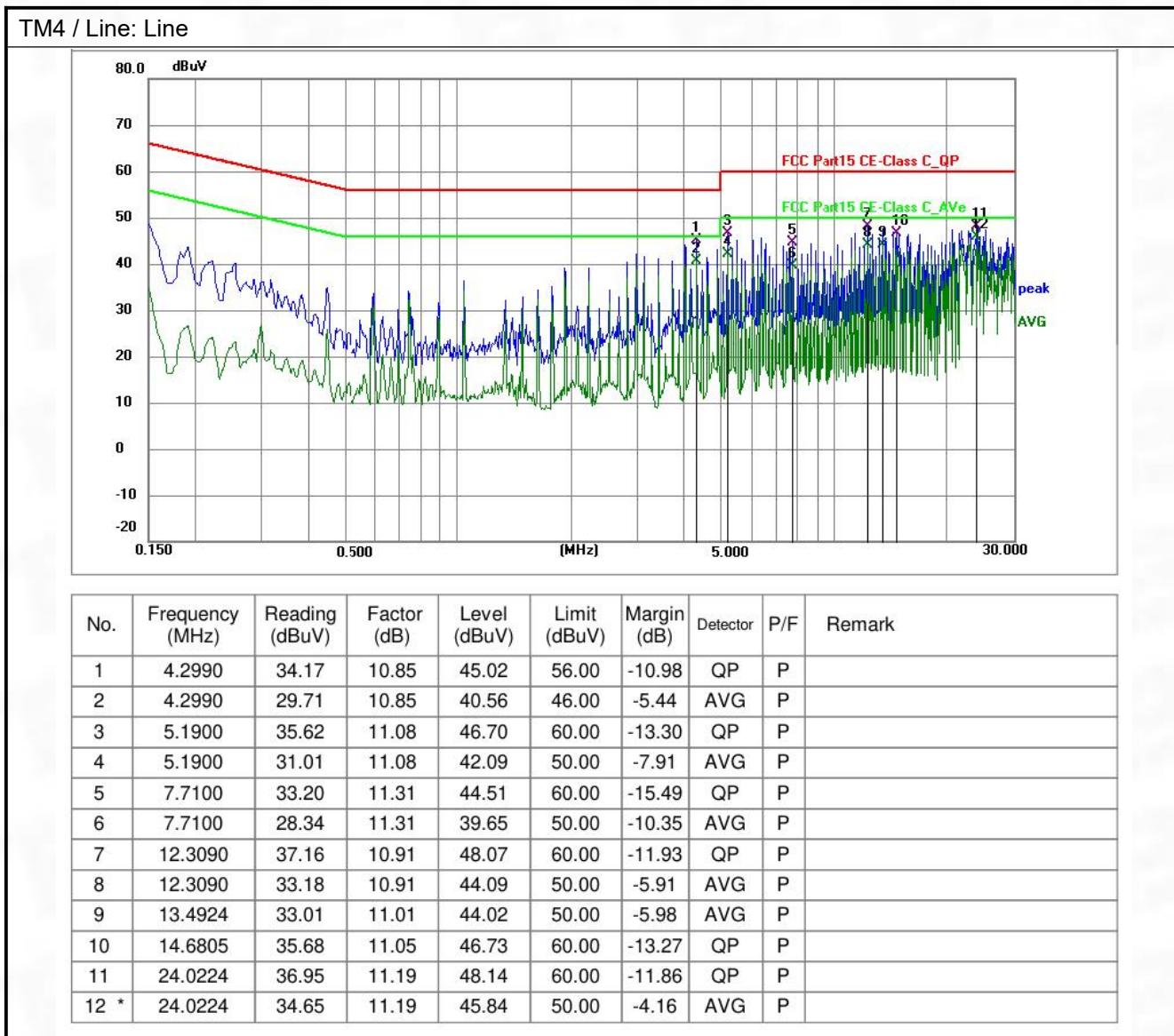
6 Radio Spectrum Matter Test Results (RF)

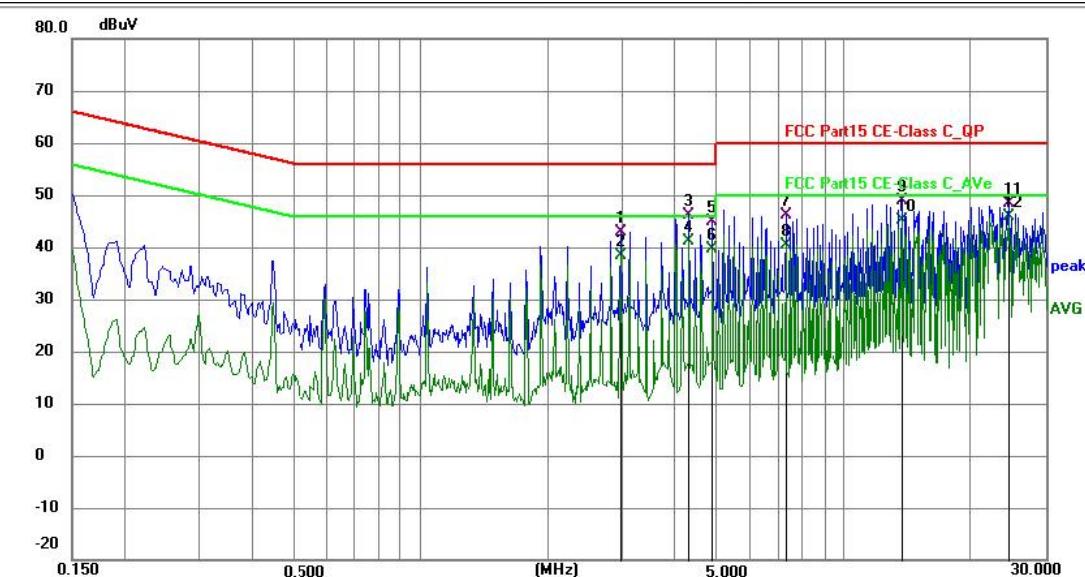
6.1 Conducted Emission at AC power line

Test Requirement:	Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Method:	ANSI C63.10-2020 section 6.2		
Test Limit:	Frequency of emission (MHz)		Conducted limit (dB μ V)
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
Procedure:	Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		
	 <p>The diagram illustrates the test setup for conducted emissions. A 'Vertical Reference Ground Plane' is shown at the top, with a 'Non-conducting table' below it. A 'Reference Ground Plane' is at the bottom. A 'Pulse Limiter' is connected to a 'Receive' device. An 'LISN' (Line Impedance Stabilization Network) is connected between the 'Reference Ground Plane' and the 'Non-conducting table'. A 'EUT' (Equipment Under Test) and an 'AE' (Antenna Equipment) are placed on the 'Non-conducting table'. The distance between the 'AE' and 'EUT' is 10cm. The distance from the 'AE' to the 'Reference Ground Plane' is 40cm. The distance from the 'EUT' to the 'Reference Ground Plane' is 80cm. The distance from the 'LISN' to the 'Reference Ground Plane' is 80cm. The distance from the 'LISN' to the 'Receive' device is 80cm. The 'AE' is connected to the 'EUT' and the 'LISN'.</p>		
	*Decreases with the logarithm of the frequency.		
Test Setup:	 <p>The diagram illustrates the test setup for conducted emissions. A 'Vertical Reference Ground Plane' is shown at the top, with a 'Non-conducting table' below it. A 'Reference Ground Plane' is at the bottom. A 'Pulse Limiter' is connected to a 'Receive' device. An 'LISN' (Line Impedance Stabilization Network) is connected between the 'Reference Ground Plane' and the 'Non-conducting table'. A 'EUT' (Equipment Under Test) and an 'AE' (Antenna Equipment) are placed on the 'Non-conducting table'. The distance between the 'AE' and 'EUT' is 10cm. The distance from the 'AE' to the 'Reference Ground Plane' is 40cm. The distance from the 'EUT' to the 'Reference Ground Plane' is 80cm. The distance from the 'LISN' to the 'Reference Ground Plane' is 80cm. The distance from the 'LISN' to the 'Receive' device is 80cm. The 'AE' is connected to the 'EUT' and the 'LISN'.</p>		
Operating Environment:			
Temperature:	24.3 °C		
Humidity:	49.7 %		
Atmospheric Pressure:	1010 mbar		
Test voltage:	AC 120V 60Hz		

6.1.1 Test Data

Remark: The report only reflects the test data of worst mode.

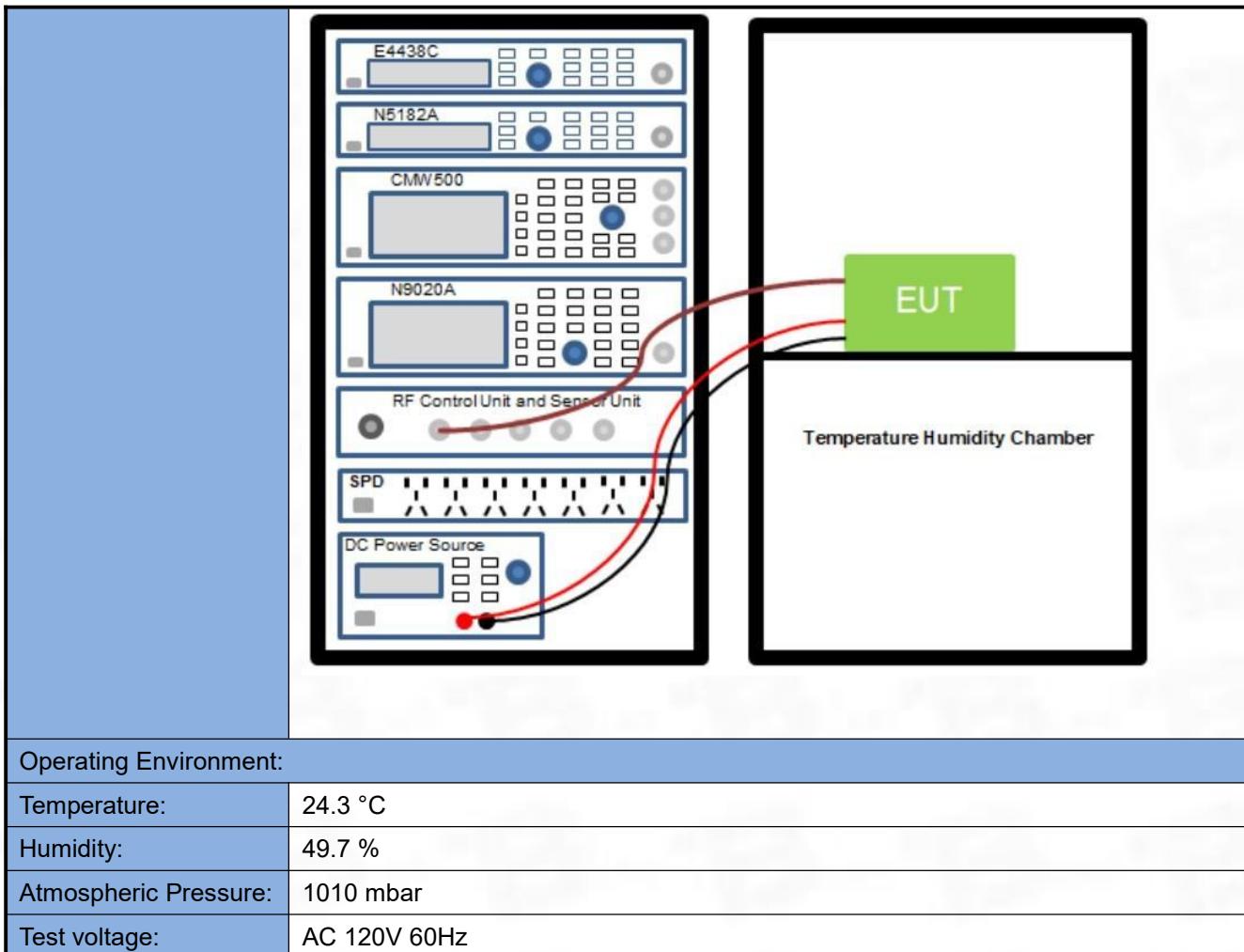


TM4 / Line: Neutral


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	2.9670	31.91	10.93	42.84	56.00	-13.16	QP	P	
2	2.9670	27.56	10.93	38.49	46.00	-7.51	AVG	P	
3	4.2990	35.12	10.94	46.06	56.00	-9.94	QP	P	
4	4.2990	30.08	10.94	41.02	46.00	-4.98	AVG	P	
5	4.8930	33.85	11.07	44.92	56.00	-11.08	QP	P	
6	4.8930	28.47	11.07	39.54	46.00	-6.46	AVG	P	
7	7.2644	34.65	11.44	46.09	60.00	-13.91	QP	P	
8	7.2644	29.01	11.44	40.45	50.00	-9.55	AVG	P	
9	13.7895	38.02	10.96	48.98	60.00	-11.02	QP	P	
10	13.7895	34.05	10.96	45.01	50.00	-4.99	AVG	P	
11	24.6120	37.10	11.30	48.40	60.00	-11.60	QP	P	
12 *	24.6120	34.46	11.30	45.76	50.00	-4.24	AVG	P	

6.2 20dB Bandwidth

Test Requirement:	47 CFR Part 15.215(c)
Test Method:	ANSI C63.10-2020, section 6.9.2
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Procedure:	<p>a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five 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 video bandwidth (VBW) shall be approximately three times 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 $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.5.2.</p> <p>d) Steps a) through c) might require iteration to adjust within the specified tolerances.</p> <p>e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.</p> <p>f) Set detection mode to peak and trace mode to max hold.</p> <p>g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).</p> <p>h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - \text{xx}]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument.</p> <p>i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).</p> <p>j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.</p> <p>k) 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>
Test Setup:	

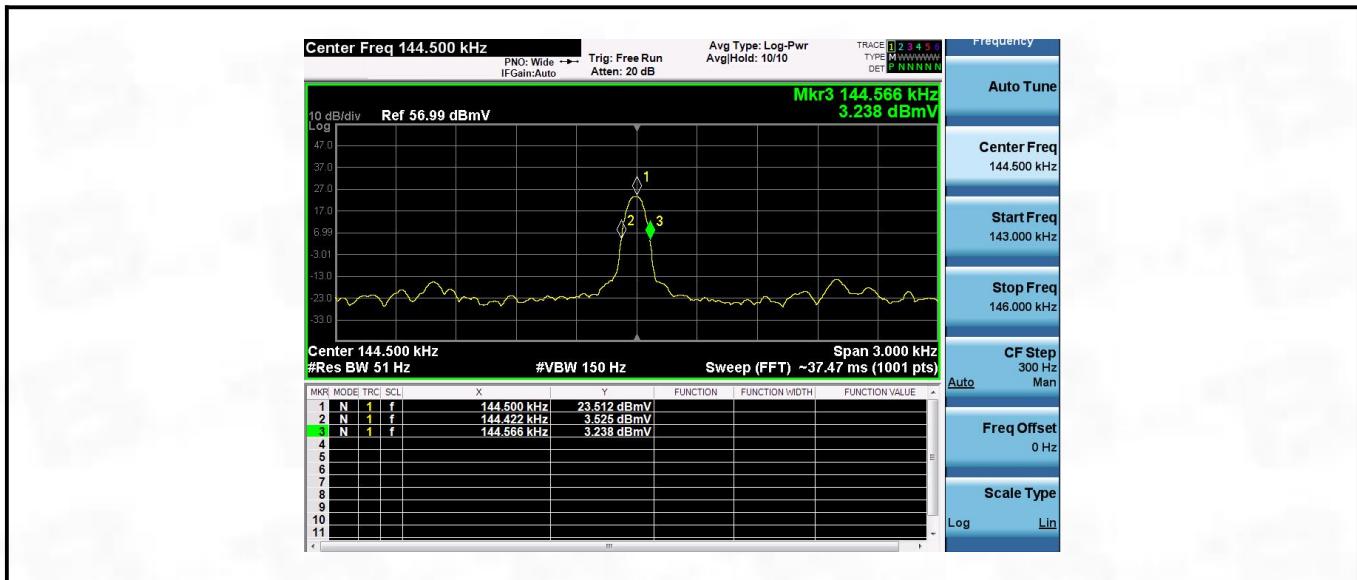


6.2.1 Test Data

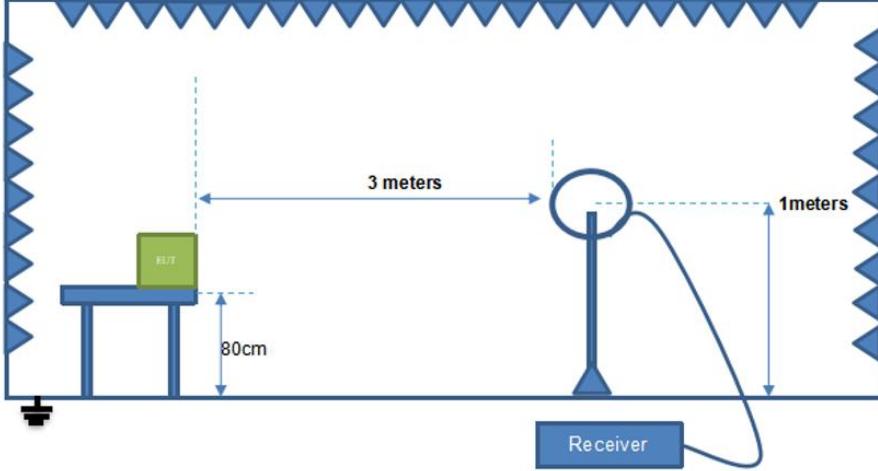
Test Frequency (kHz)	f_L (kHz)	f_H (kHz)	20dB Bandwidth (Hz)	Limits
144.500	144.422	144.566	144	N/A

Remark: The CW signal varies with the change of RBW, and it fails to meet the requirements of RBW ranging from 1% to 5%.

Test Plot as Follows:



6.3 Emissions in frequency bands (below 30MHz)

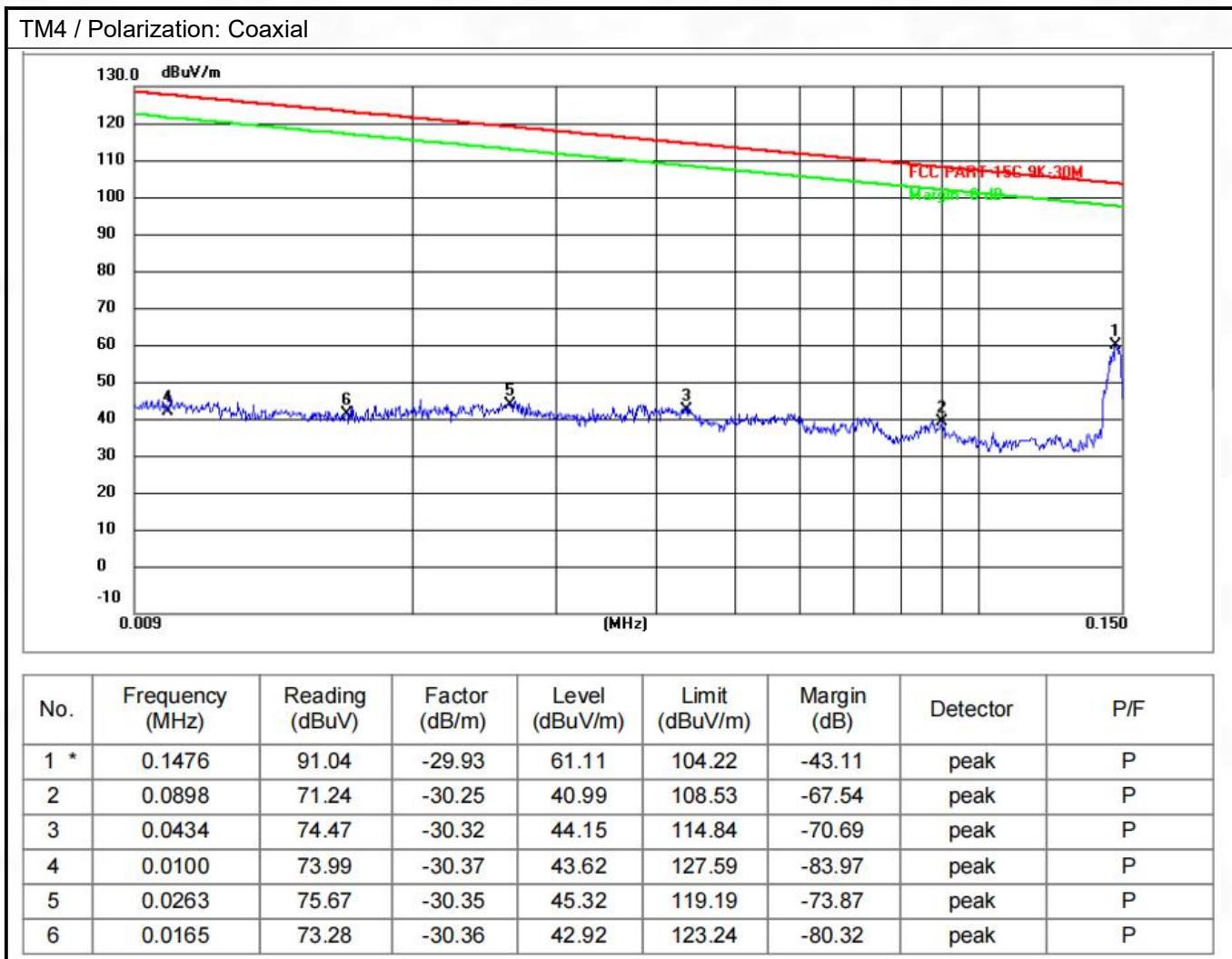
Test Requirement:	47 CFR Part 15.209			
Test Method:	ANSI C63.10-2020 section 6.4			
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	
	0.009-0.490	2400/F(kHz)	300	
	0.490-1.705	24000/F(kHz)	30	
	1.705-30.0	30	30	
	30-88	100 **	3	
	88-216	150 **	3	
	216-960	200 **	3	
	Above 960	500	3	
Test Limit:	<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> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section 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 point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p>			
Procedure:	ANSI C63.10-2020 section 6.4			
Test Setup:				
Operating Environment:				
Temperature:	24.3 °C			
Humidity:	49.7 %			

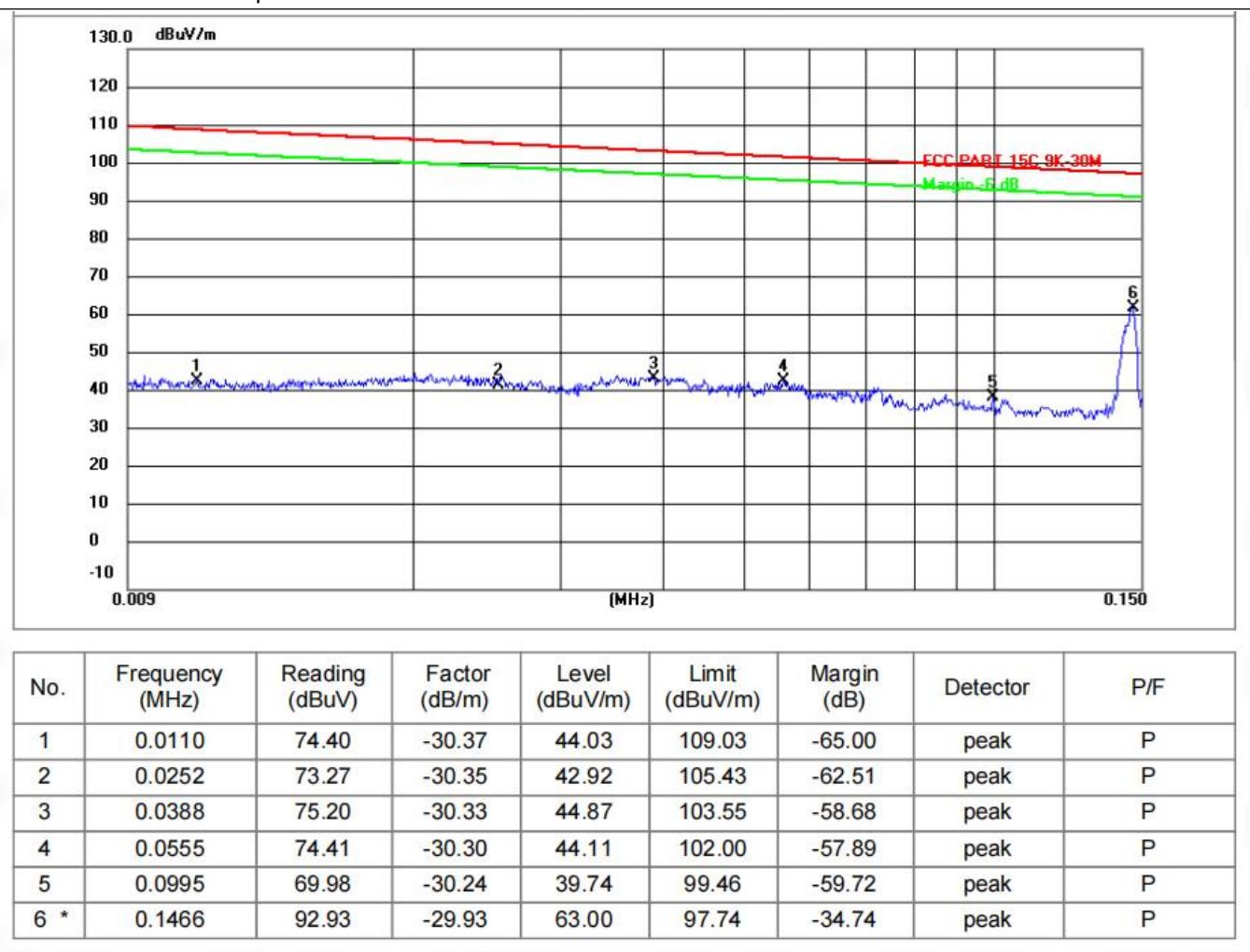
Atmospheric Pressure:	1010 mbar
Test voltage:	AC 120V 60Hz

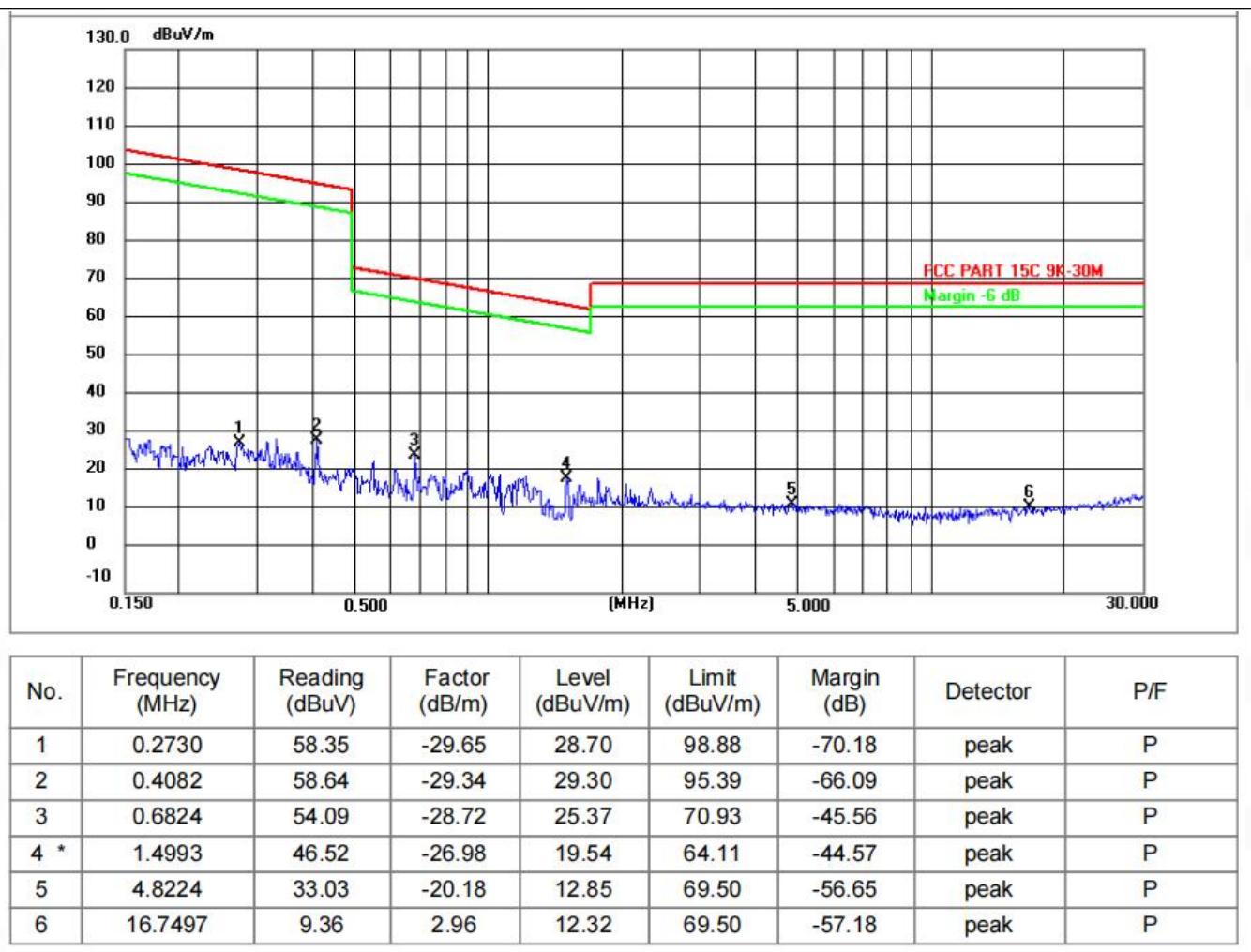
6.3.1 Test Data

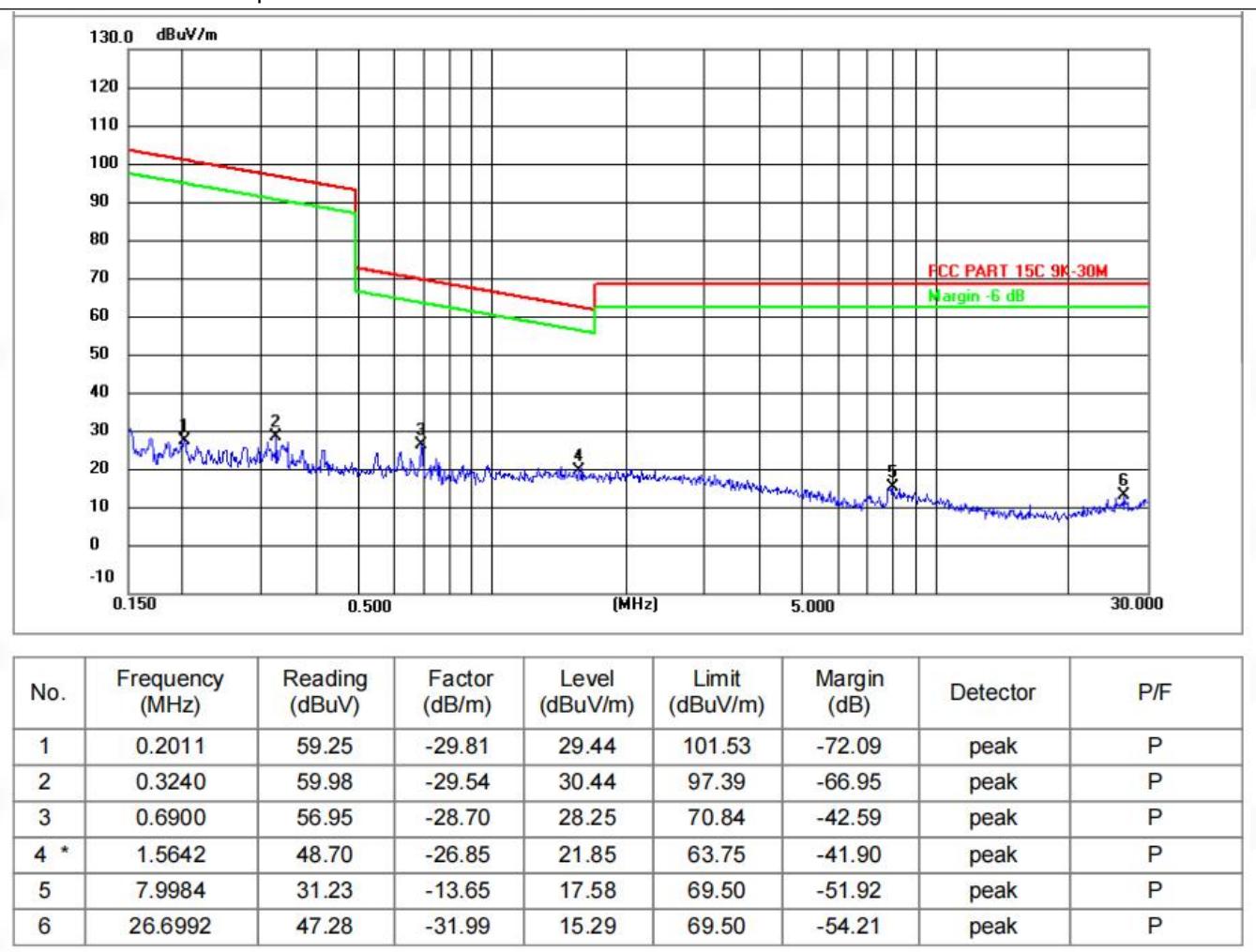
Test Frequency (MHz)	Field strength(dBuV/m)	Limits
0.1476	61.11	104.22

Remark: The report only reflects the worst test data.

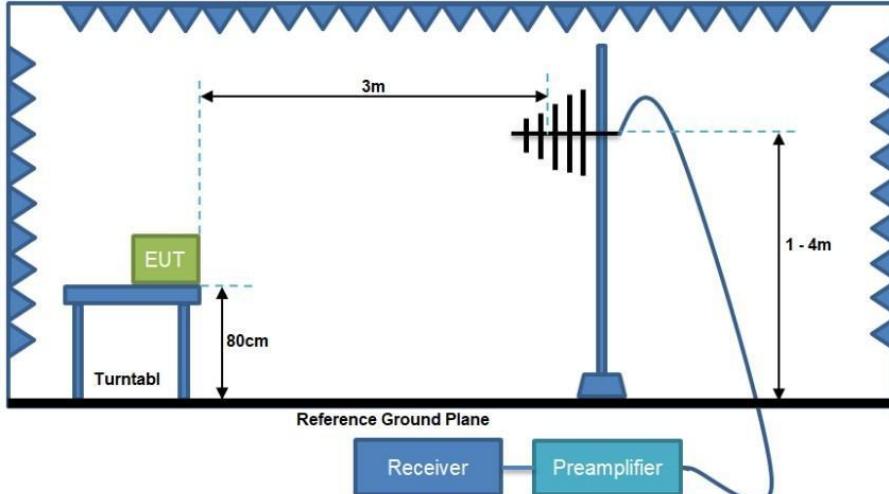


TM4 / Polarization: Coplanar


TM4 / Polarization: Coaxial


TM4 / Polarization: Coplanar


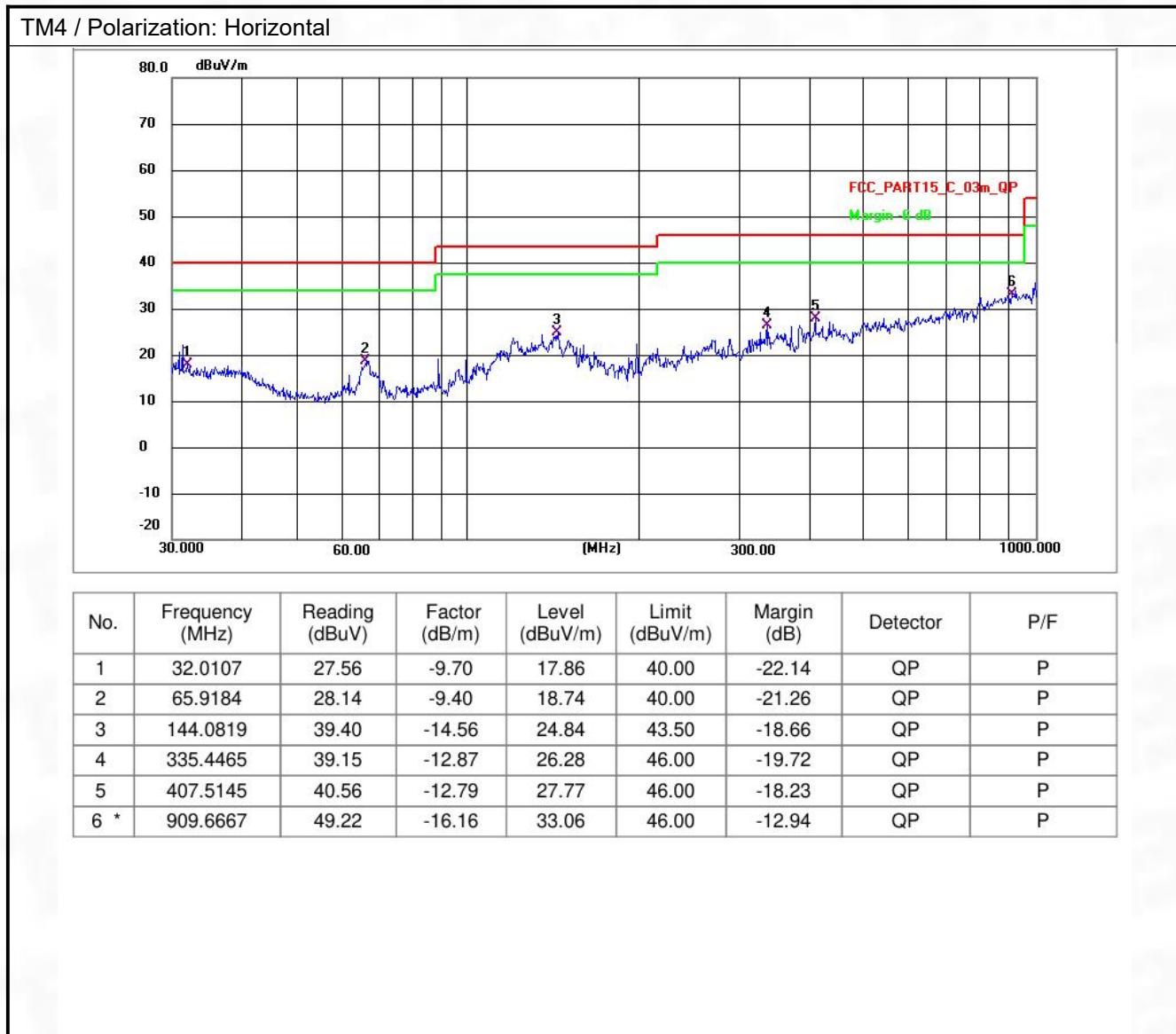
6.4 Emissions in frequency bands (30MHz - 1GHz)

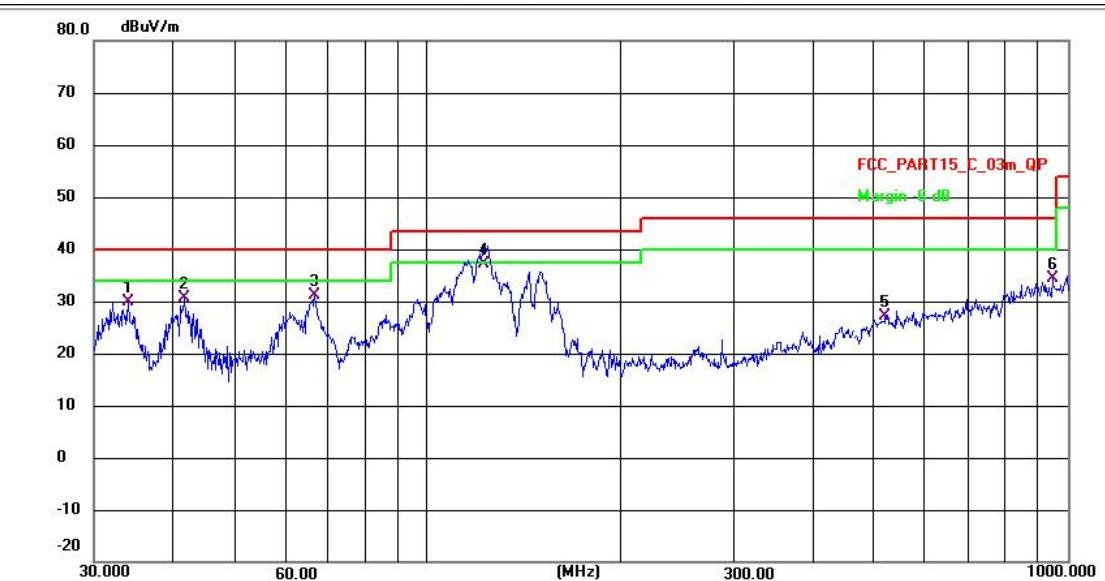
Test Requirement:	47 CFR Part 15.209			
Test Method:	ANSI C63.10-2020 section 6.5			
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	
	0.009-0.490	2400/F(kHz)	300	
	0.490-1.705	24000/F(kHz)	30	
	1.705-30.0	30	30	
	30-88	100 **	3	
	88-216	150 **	3	
	216-960	200 **	3	
	Above 960	500	3	
Test Limit:	<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> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section 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 point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p>			
Procedure:	ANSI C63.10-2020 section 6.5			
Test Setup:				
Operating Environment:				
Temperature:	24.3 °C			
Humidity:	49.7 %			

Atmospheric Pressure:	1010 mbar
Test voltage:	AC 120V 60Hz

6.4.1 Test Data

Remark: The report only reflects the worst test data.



TM4 / Polarization: Vertical


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	33.9174	39.51	-9.68	29.83	40.00	-10.17	QP	P
2	41.5670	40.28	-9.61	30.67	40.00	-9.33	QP	P
3	66.2662	40.42	-9.39	31.03	40.00	-8.97	QP	P
4 *	122.4040	50.73	-13.53	37.20	43.50	-6.30	QP	P
5	519.9758	39.04	-12.02	27.02	46.00	-18.98	QP	P
6	947.0990	50.30	-15.93	34.37	46.00	-11.63	QP	P

7 Test Setup Photos

Please refer to the Appendix I Test Setup Photos

8 EUT Constructional Details (EUT Photos)

Please refer to the Appendix II External Photos & Appendix III External Photos



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