

RF TEST REPORT

For

Shenzhen Woxingkejiyouxiangongsi

Product Name: Skateboards Remote

Test Model(s): 2S MAX-90mm

Report Reference No. : POCE240123001RF001

FCC ID : 2BESA-2SMAX90

Applicant's Name : Shenzhen Woxingkejiyouxiangongsi

Address : 401, Building B3, South District, Baoneng Tech Park, Qinghu Industrial Zone, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong Province

Testing Laboratory : Shenzhen POCE Technology Co., Ltd.

Address : 101-102, H5 Building & floor 1, Building H, Hongfa Science and Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

Test Specification Standard : 47 CFR Part 15.249 & ANSI C63.10-2013

Date of Receipt : January 23, 2024

Date of Test : January 23, 2024 to January 31, 2024

Data of Issue : January 31, 2024

Result : **Pass**

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Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	POCE240123001RF001	January 31, 2024

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz

1.2 Summary of Test Result

Item	Method	Requirement	Result
Antenna requirement	/	47 CFR Part 15.203	Pass
Conducted Emission at AC power line	ANSI C63.10-2013 section 6.2	47 CFR 15.207(a)	Pass
Occupied Bandwidth	ANSI C63.10-2013, section 6.9.2	47 CFR 15.215(c)	Pass
Field strength of fundamental	ANSI C63.10-2013 section 6.6	47 CFR 15.249(a) 47 CFR 15.249(b)(1)	Pass
Band edge emissions (Radiated)	ANSI C63.10-2013 section 6.6.4	47 CFR 15.249(d)	Pass
Emissions in frequency bands (below 1GHz)	ANSI C63.10-2013 section 6.5	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass
Emissions in frequency bands (above 1GHz)	ANSI C63.10-2013 section 6.6	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass

Note: 1.N/A -this device(EUT) is not applicable to this testing item
2. RF-conducted test results including cable loss.

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : Shenzhenshi Woxingkejiyouxiangongsi
Address : 401, Building B3, South District, Baoneng Tech Park, Qinghu Industrial Zone, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong Province

Manufacturer : Shenzhenshi Woxingkejiyouxiangongsi
Address : 401, Building B3, South District, Baoneng Tech Park, Qinghu Industrial Zone, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong Province

2.2 Description of Device (EUT)

Product Name:	Skateboards Remote
Model/Type reference:	2S MAX-90mm
Series Model:	WOWGO 3E-90mm, 2S MAX-105mm, 2S MAX-90mm, WOWGO Remote-01, WOWGO Remote-02, Pioneer 4-90mm, WOWGO 3E-105mm, Mini 2S-90mm
Model Difference:	There are multiple models of products, and due to different customers, the appearance and name of the products may be slightly different. Other electrical structures such as BOM and PCB are the same, but these differences will not affect EMC and RF performance.
Trade Mark:	N/A
Product Description:	Skateboards Remote
Power Supply:	DC3.7V from battery / DC5.0V charging from usb port
Operation Frequency:	2404--2480MHz
Number of Channels:	16
Modulation Type:	GFSK
Antenna Type:	FPC ANTENNA
Antenna Gain:	0dBi
Hardware Version:	V1.1
Software Version:	V1.0

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2404MHz	05	2421MHz	09	2442MHz	13	2468MHz
2	2408MHz	06	2423MHz	10	2451MHz	14	2474MHz
3	2417MHz	07	2428MHz	11	2456MHz	15	2478MHz
4	2419MHz	08	2437MHz	12	2460MHz	16	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)
	2.4G

Lowest channel	2404MHz
Middle channel	2442MHz
Highest channel	2480MHz

2.3 Description of Test Modes

No	Title	Description
TM1	TX-GFSK	Keep the EUT in continuously transmitting mode (with GFSK modulation).
	Title	Description
	TX mode	Keep the EUT works in continuously transmitting mode.
		<input type="checkbox"/> Special software is used. <input type="checkbox"/> Through engineering command into the engineering mode. engineering command: <code>*##3646633#*##</code> <input checked="" type="checkbox"/> Other method: Combination key fixed frequency mode
		Special software: /

2.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Title	Manufacturer	Model No.	Serial No.
AC-DC adapter	HUAWEI	P0005	/
USB CABLE	/	/	/

2.5 Equipments Used During The Test

Conducted Emission at AC power line					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
loop antenna	EVERFINE	LLA-2	80900L-C	2023-02-27	2024-02-26
Power absorbing clamp	SCHWARZ BECK	MESS-ELEKTRONIK	/	2023-02-28	2024-02-27
Electric Network	SCHWARZ BECK	CAT5 8158	CAT5 8158#207	/	/
Cable	SCHWARZ BECK	/	/	2023-12-27	2024-12-26
Pulse Limiter	SCHWARZ BECK	VTSD 9561-F Pulse limiter 10dB Ateennator	561-G071	2023-02-27	2024-02-26
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/	/
Test Receiver	Rohde & Schwarz	ESPI TEST RECEIVER	ID:1164.6607K0 3-102109-MH	2023-06-13	2024-06-12
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2023-12-12	2024-12-11

Occupied Bandwidth Field strength of fundamental Band edge emissions (Radiated) Emissions in frequency bands (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	V1.1.42	/	/
Positioning Controller	/	MF-7802	/	/	/
High Pass filter	ZHINAN	OQHFP1-M1.5-18G-224	6210075	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2022-04-05	2025-04-04
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2023-04-05	2025-04-04
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2021-07-05	2024-07-04
Cable(LF)#2	Schwarzbeck	/	/	2023-02-27	2024-02-26
Cable(LF)#1	Schwarzbeck	/	/	2023-02-27	2024-02-26
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2023-02-28	2024-02-27
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2023-02-27	2024-02-26
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2023-06-13	2024-06-12
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2023-06-13	2024-06-12
Wideband radio communication tester	R&S	CMW500	113410	2023-06-13	2024-06-12
Spectrum Analyzer	R&S	FSP30	1321.3008K40-101729-jR	2023-06-14	2024-06-13
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023-05-13	2025-05-12
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2023-05-21	2025-05-20
Test Receiver	R&S	ESCI	102109	2023-06-13	2024-06-12

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	±3.41dB
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
Duty cycle	±3.1%
Conducted Spurious emissions	±1.98dB
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB

Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration No.:	778666
A2LA Certificate Number:	6270.01

2.8 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 POCE 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) We hereby declare that the laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. the laboratory is not responsible for the accuracy of the information provided by the client. When the information provided by the customer may affect the effectiveness of the results, the responsibility lies with the customer, and the laboratory does not assume any responsibility.

3 Evaluation Results (Evaluation)

3.1 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.
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3.1.1 Conclusion:



4 Radio Spectrum Matter Test Results (RF)

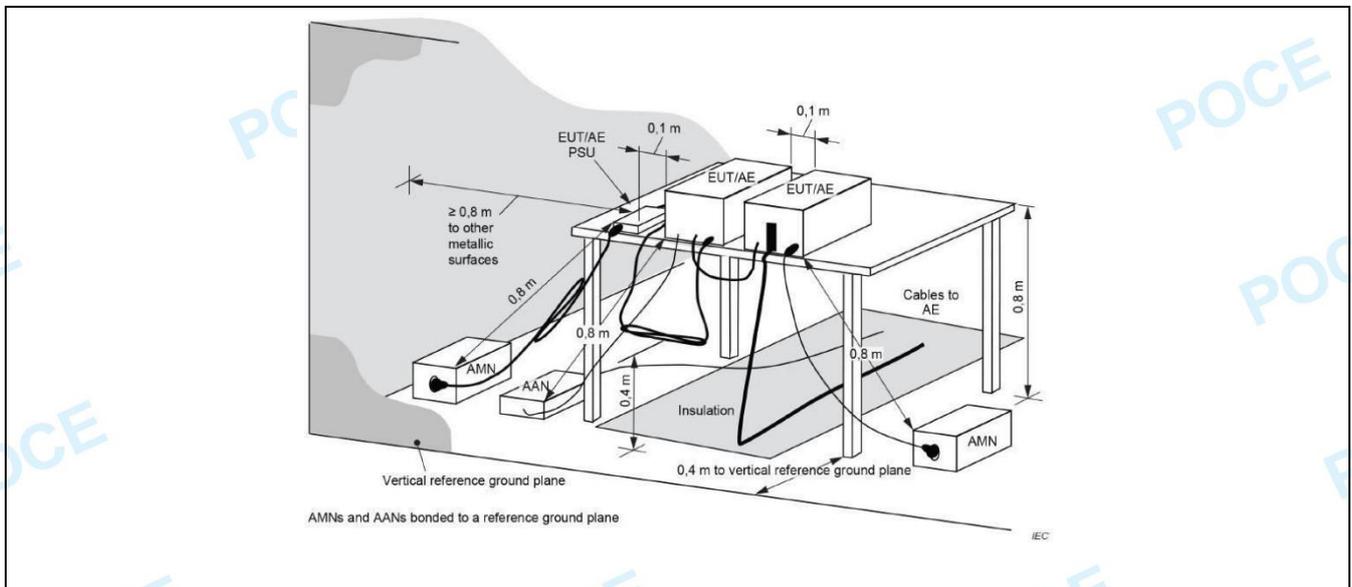
4.1 Conducted Emission at AC power line

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 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
	5-30	60	50
	*Decreases with the logarithm of the frequency.		
Test Method:	ANSI C63.10-2013 section 6.2		
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		

4.1.1 E.U.T. Operation:

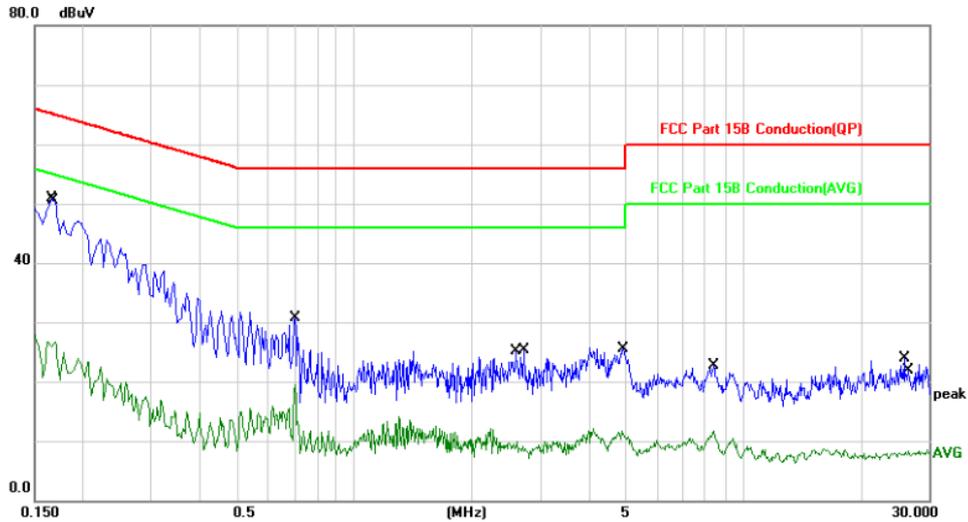
Operating Environment:					
Temperature:	23.5 °C	Humidity:	49.3 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



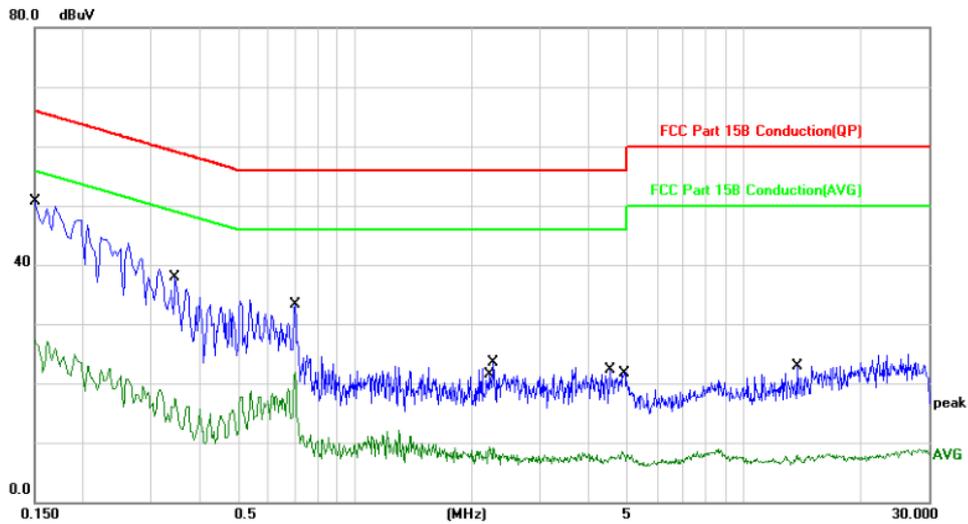
4.1.3 Test Data:

TM1 / Line: Line / Band: 2.4G / BW: 3 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1660	40.77	10.03	50.80	65.15	-14.35	QP	
2		0.1700	16.70	10.03	26.73	54.96	-28.23	AVG	
3		0.7019	20.76	9.96	30.72	56.00	-25.28	QP	
4		0.7019	9.51	9.96	19.47	46.00	-26.53	AVG	
5		2.6099	-0.04	10.01	9.97	46.00	-36.03	AVG	
6		2.7260	15.22	10.01	25.23	56.00	-30.77	QP	
7		4.8500	1.64	10.13	11.77	46.00	-34.23	AVG	
8		4.9060	15.45	10.13	25.58	56.00	-30.42	QP	
9		8.3940	12.30	10.33	22.63	60.00	-37.37	QP	
10		8.3940	1.37	10.33	11.70	50.00	-38.30	AVG	
11		25.9300	13.23	10.60	23.83	60.00	-36.17	QP	
12		26.5620	-2.38	10.62	8.24	50.00	-41.76	AVG	

TM1 / Line: Neutral / Band: 2.4G / BW: 3 / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	40.61	10.04	50.65	65.99	-15.34	QP	
2		0.1500	17.23	10.04	27.27	55.99	-28.72	AVG	
3		0.3460	27.86	10.01	37.87	59.06	-21.19	QP	
4		0.3460	7.51	10.01	17.52	49.06	-31.54	AVG	
5		0.7019	23.38	9.96	33.34	56.00	-22.66	QP	
6		0.7019	11.94	9.96	21.90	46.00	-24.10	AVG	
7		2.2340	-0.69	9.99	9.30	46.00	-36.70	AVG	
8		2.2740	13.51	9.99	23.50	56.00	-32.50	QP	
9		4.5300	12.16	10.12	22.28	56.00	-33.72	QP	
10		4.8500	-1.56	10.13	8.57	46.00	-37.43	AVG	
11		13.7620	12.45	10.46	22.91	60.00	-37.09	QP	
12		13.7620	-2.53	10.46	7.93	50.00	-42.07	AVG	

Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor, Over = Measurement - Limit

4.2 Occupied Bandwidth

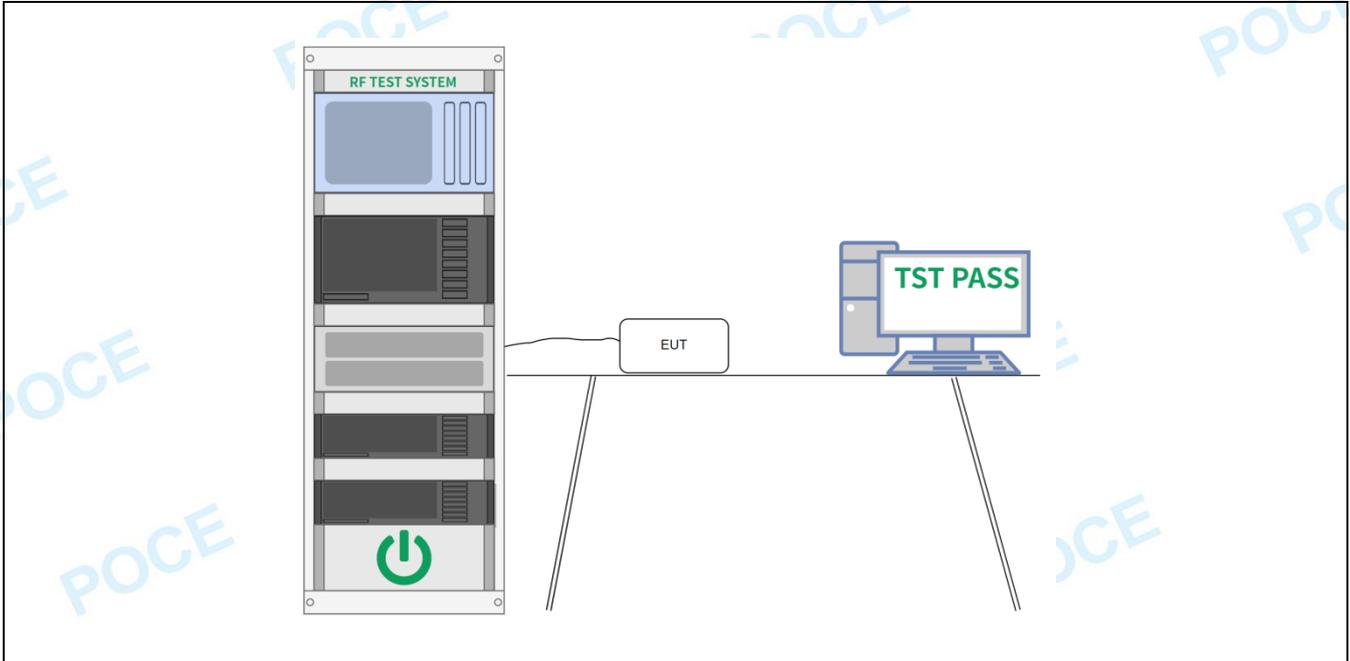
Test Requirement:	47 CFR 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the 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.
Test Method:	ANSI C63.10-2013, section 6.9.2
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 $[10 \log (OBW/RBW)]$ 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>

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	49.3 %	Atmospheric Pressure:	102 kPa

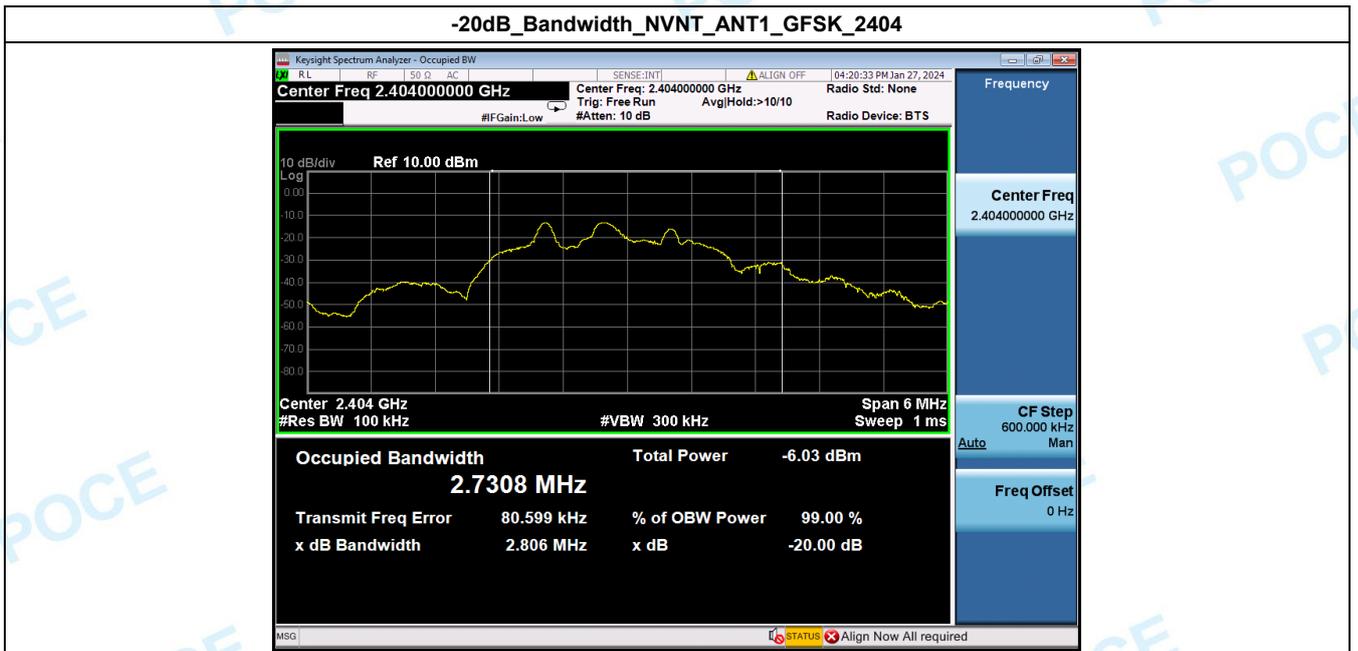
Pretest mode:	TM1
Final test mode:	TM1

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Condition	Antenna	Modulation	Frequency (MHz)	-20dB BW(MHz)
NVNT	ANT1	GFSK	2404MHz	2.806
NVNT	ANT1	GFSK	2442MHz	2.345
NVNT	ANT1	GFSK	2480MHz	2.478



-20dB_Bandwidth_NVNT_ANT1_GFSK_2442



-20dB_Bandwidth_NVNT_ANT1_GFSK_2480



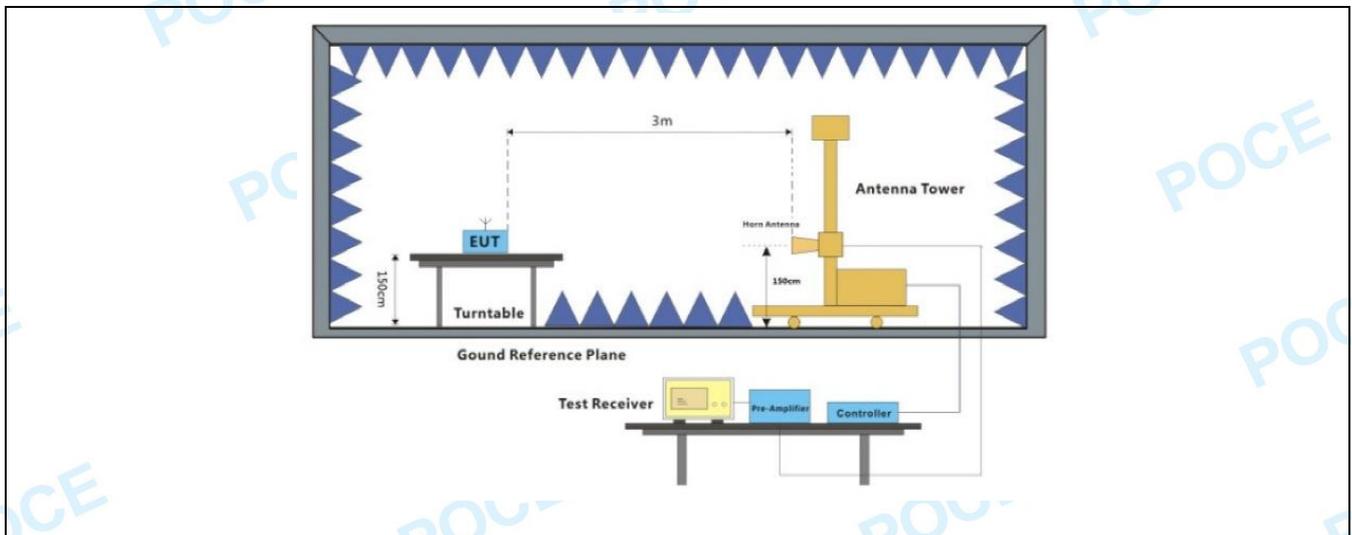
4.3 Field strength of fundamental

Test Requirement:	Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:		
	Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
	902-928 MHz	50	500
	2400-2483.5 MHz	50	500
	5725-5875 MHz	50	500
	24.0-24.25 GHz	250	2500
	The field strength of emissions in this band shall not exceed 2500 millivolts/meter.		
Test Method:	ANSI C63.10-2013 section 6.6		
Procedure:	ANSI C63.10-2013 section 6.6		

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	49.3 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Frequency	Emission Level	Limits	Margin	Detector	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(PK/AV)	(H/V)
2404	82.93	114.00	-31.07	PK	H
2404	78.32	94.00	-15.68	AV	H
2404	83.41	114.00	-30.59	PK	V
2404	78.77	94.00	-15.23	AV	V

Frequency	Emission Level	Limits	Margin	Detector	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(PK/AV)	(H/V)
2442	83.11	114.00	-30.89	PK	H
2442	77.95	94.00	-16.05	AV	H
2442	83.01	114.00	-30.99	PK	V
2442	78.71	94.00	-15.29	AV	V

Frequency	Emission Level	Limits	Margin	Detector	Polarization
(MHz)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(PK/AV)	(H/V)
2480	83.36	114.00	-30.64	PK	H
2480	77.97	94.00	-16.03	AV	H
2480	83.00	114.00	-31.00	PK	V
2480	78.70	94.00	-15.30	AV	V

Note: Margin = Emission Level - Limit

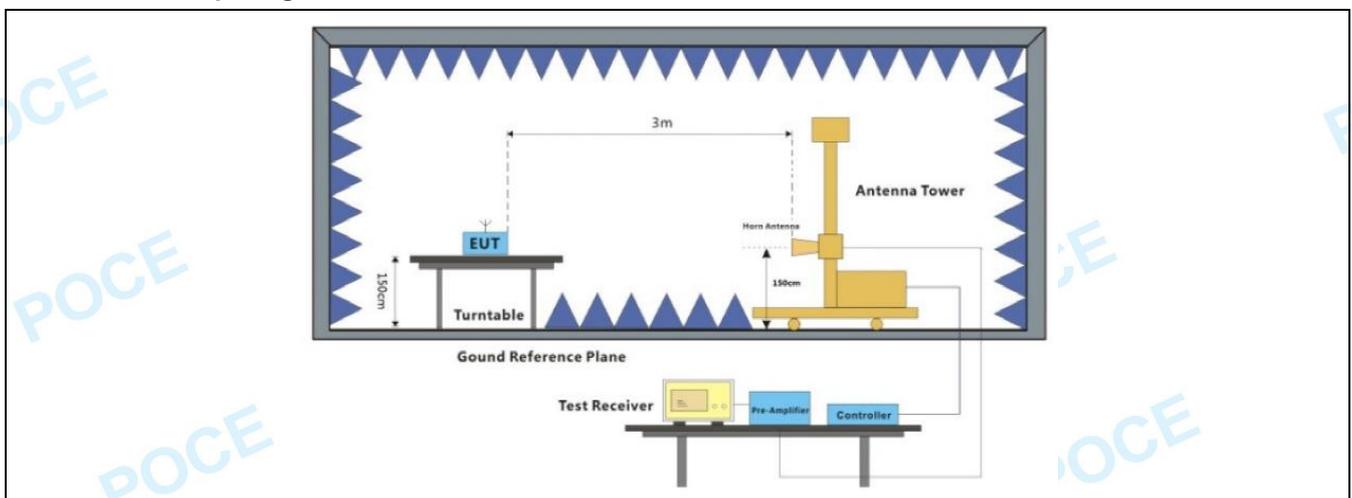
4.4 Band edge emissions (Radiated)

Test Requirement:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.		
Test Limit:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.		
	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. 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 C63.10-2013 section 6.6.4		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.4.1 E.U.T. Operation:

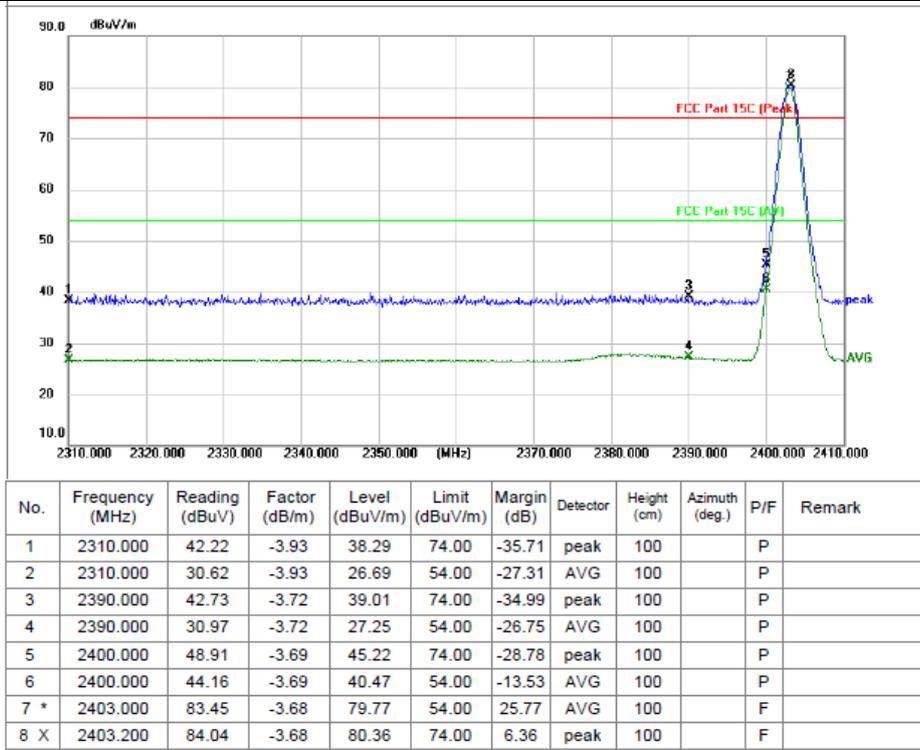
Operating Environment:			
Temperature:	23.5 °C	Humidity:	49.3 %
Pretest mode:		TM1	
Final test mode:		TM1	

4.4.2 Test Setup Diagram:

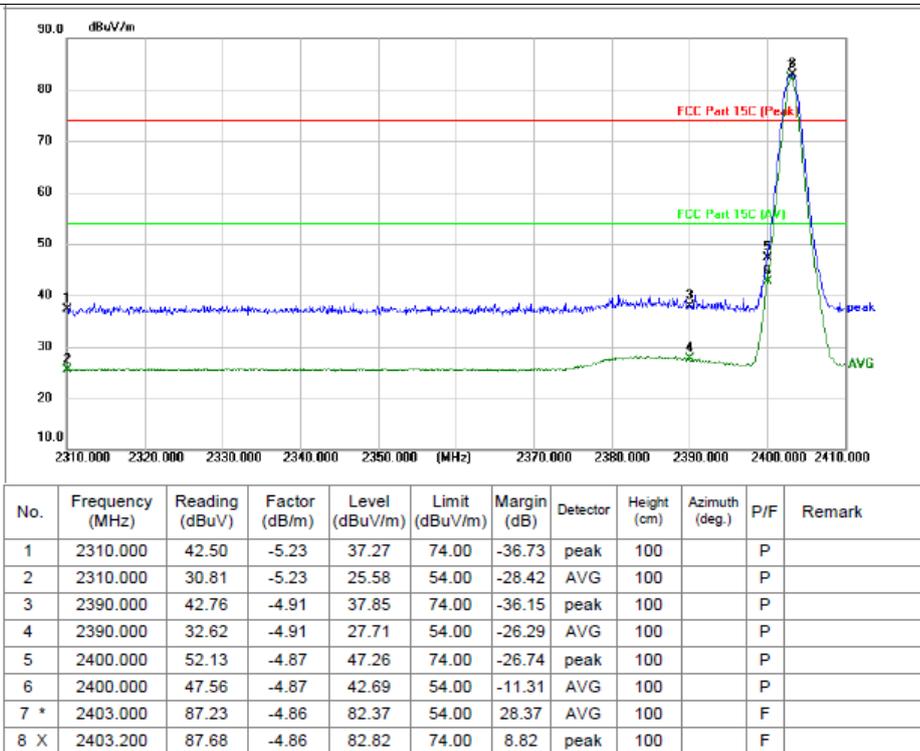


4.4.3 Test Data:

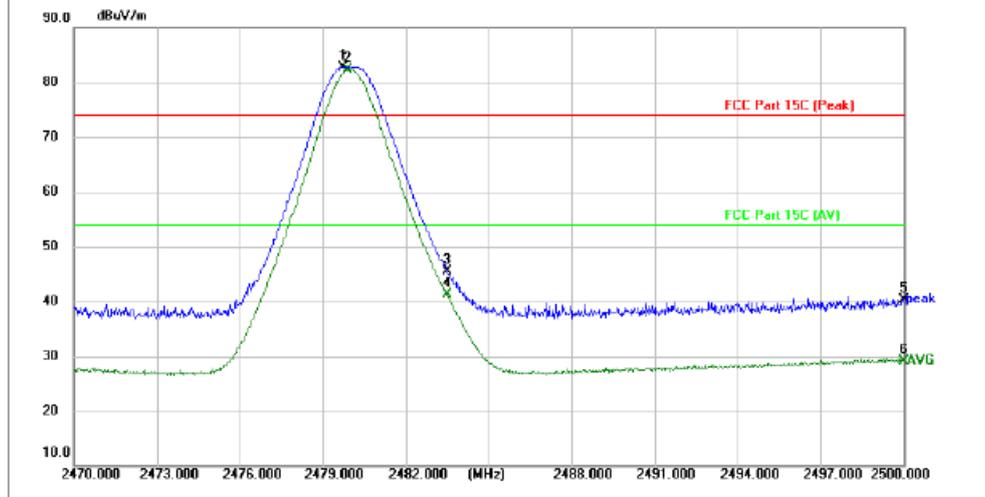
TM1 / Polarization: Horizontal / Band: 2.4G / BW: 3 / CH: L



TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: L

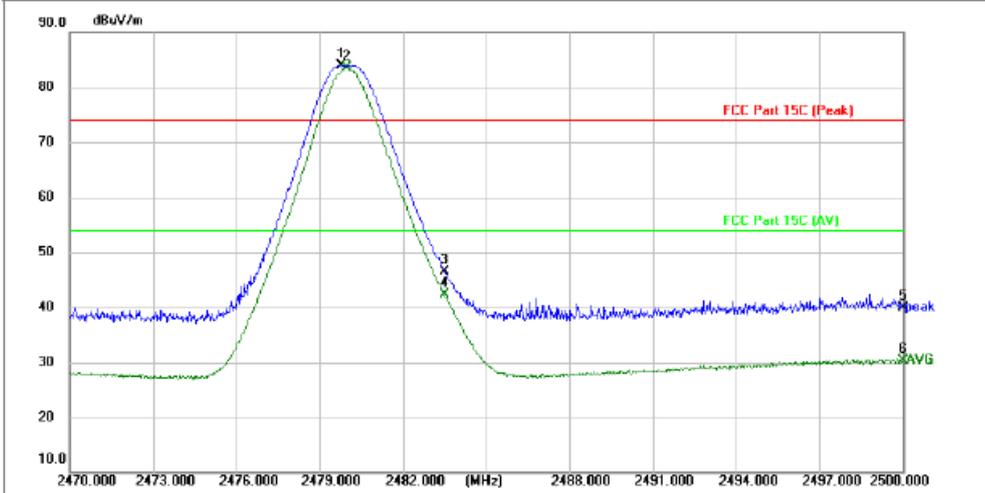


TM1 / Polarization: Horizontal / Band: 2.4G / BW: 3 / CH: H



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 X	2479.750	87.30	-4.56	82.74	74.00	8.74	peak	100		F	
2 *	2479.900	86.83	-4.56	82.27	54.00	28.27	AVG	100		F	
3	2483.500	50.07	-4.54	45.53	74.00	-28.47	peak	100		P	
4	2483.500	45.75	-4.54	41.21	54.00	-12.79	AVG	100		P	
5	2500.000	44.76	-4.48	40.28	74.00	-33.72	peak	100		P	
6	2500.000	33.50	-4.48	29.02	54.00	-24.98	AVG	100		P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: H



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 X	2479.780	88.51	-4.56	83.95	74.00	9.95	peak	100		F	
2 *	2479.990	88.09	-4.56	83.53	54.00	29.53	AVG	100		F	
3	2483.500	51.00	-4.54	46.46	74.00	-27.54	peak	100		P	
4	2483.500	46.76	-4.54	42.22	54.00	-11.78	AVG	100		P	
5	2500.000	44.35	-4.48	39.87	74.00	-34.13	peak	100		P	
6	2500.000	34.87	-4.48	30.39	54.00	-23.61	AVG	100		P	

Remark:

Measurement Level = Reading + Correct Factor, Margin= Measurement Level - Limit
 Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

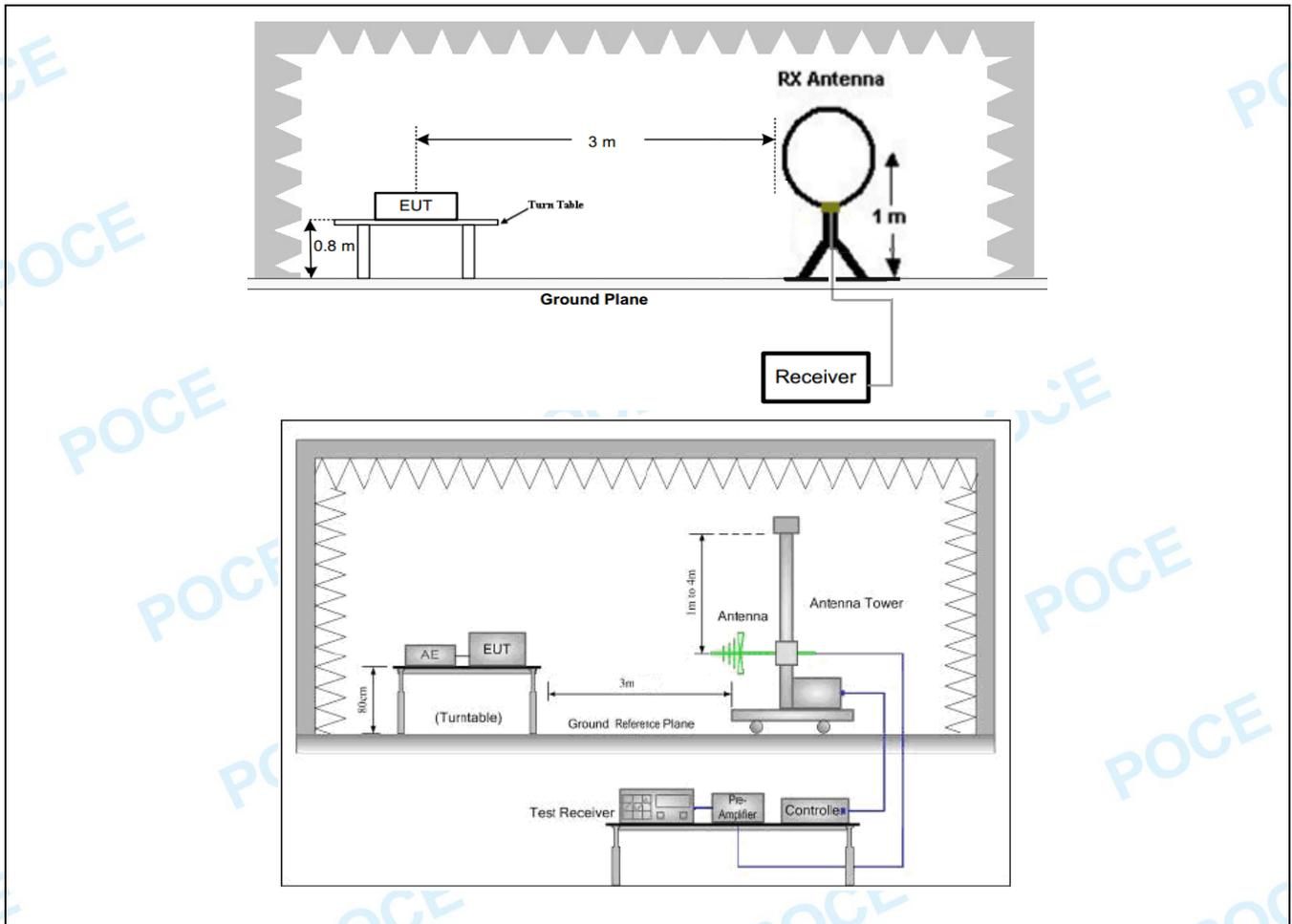
4.5 Emissions in frequency bands (below 1GHz)

Test Requirement:	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)																																								
Test Limit:	<p>Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table border="1"> <thead> <tr> <th>Fundamental frequency</th> <th>Field strength of fundamental (millivolts/meter)</th> <th>Field strength of harmonics (microvolts/meter)</th> </tr> </thead> <tbody> <tr> <td>902-928 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>2400-2483.5 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>5725-5875 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>24.0-24.25 GHz</td> <td>250</td> <td>2500</td> </tr> </tbody> </table> <p>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.</p> <table border="1"> <thead> <tr> <th>Frequency (MHz)</th> <th>Field strength (microvolts/meter)</th> <th>Measurement distance (meters)</th> </tr> </thead> <tbody> <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> </tbody> </table> <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. 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. 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>		Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)	902-928 MHz	50	500	2400-2483.5 MHz	50	500	5725-5875 MHz	50	500	24.0-24.25 GHz	250	2500	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
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)																																							
902-928 MHz	50	500																																							
2400-2483.5 MHz	50	500																																							
5725-5875 MHz	50	500																																							
24.0-24.25 GHz	250	2500																																							
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 Method:	ANSI C63.10-2013 section 6.5																																								
Procedure:	ANSI C63.10-2013 section 6.5																																								

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	49.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Between 30MHz—1000MHz:

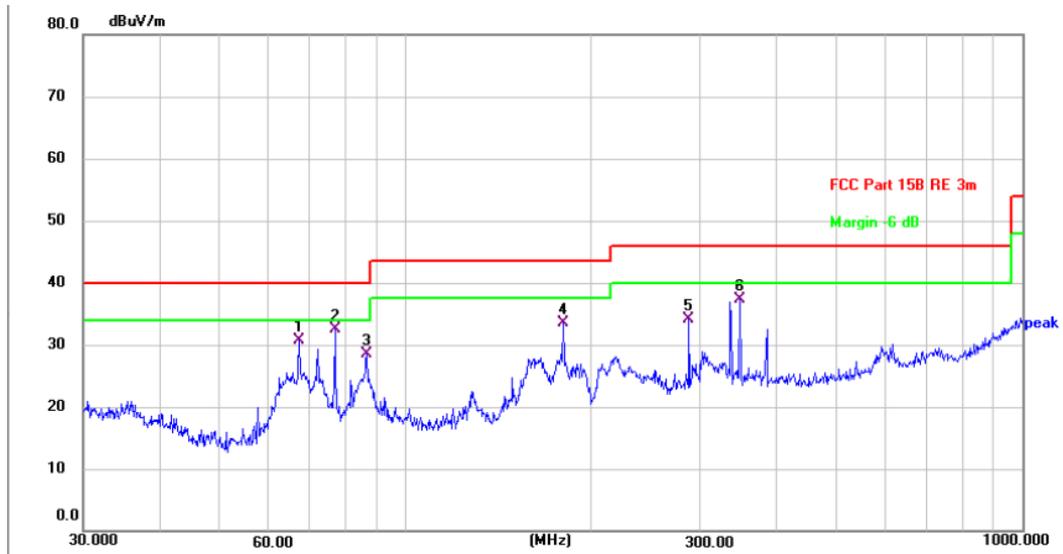
NOTE: The test results only show the worst mode or worst channel.

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 3 / CH: L



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 *	76.7808	33.51	-8.00	25.51	40.00	-14.49	QP	100		P	
2	86.5029	29.51	-6.57	22.94	40.00	-17.06	QP	100		P	
3	164.9075	31.37	-3.42	27.95	43.50	-15.55	QP	100		P	
4	208.5803	31.51	-2.80	28.71	43.50	-14.79	QP	100		P	
5	307.8313	30.63	0.86	31.49	46.00	-14.51	QP	100		P	
6	370.7023	29.24	1.61	30.85	46.00	-15.15	QP	100		P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: L



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	67.2022	39.32	-8.70	30.62	40.00	-9.38	QP	100		P	
2 *	76.7808	40.49	-8.00	32.49	40.00	-7.51	QP	100		P	
3	86.5029	35.15	-6.57	28.58	40.00	-11.42	QP	100		P	
4	180.0165	36.58	-3.12	33.46	43.50	-10.04	QP	100		P	
5	287.9904	34.74	-0.60	34.14	46.00	-11.86	QP	100		P	
6	348.0274	36.53	0.73	37.26	46.00	-8.74	QP	100		P	

Remark: Margin= Measurement Level - Limit

Measurement Level=Test reading + correction factor

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

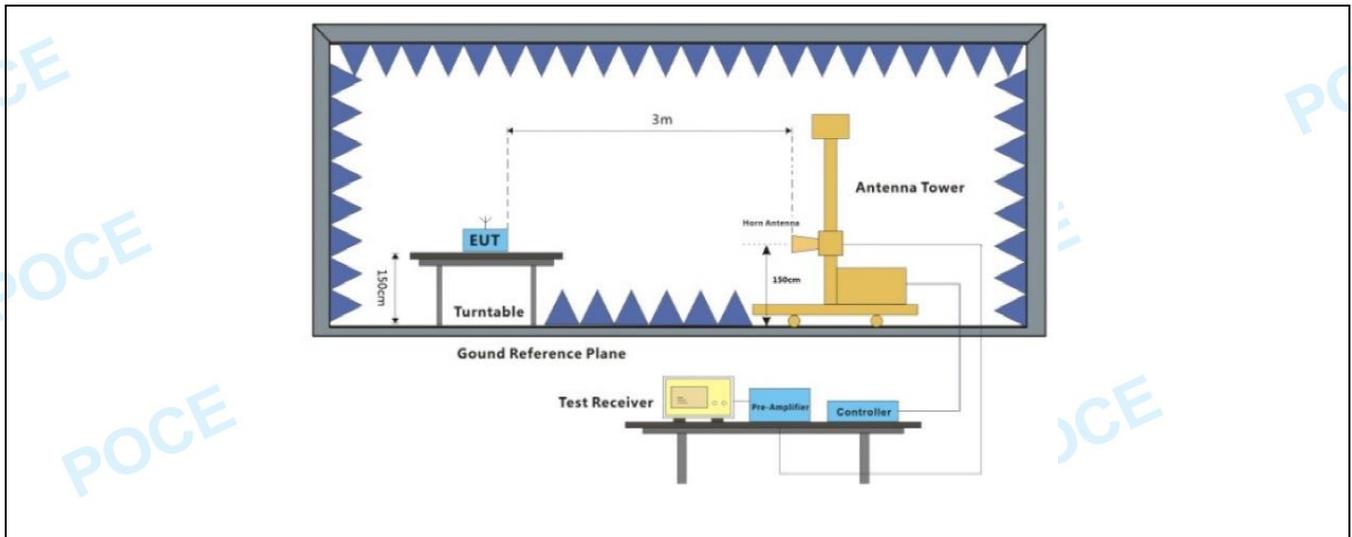
4.6 Emissions in frequency bands (above 1GHz)

Test Requirement:	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)																																								
Test Limit:	<p>Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table border="1"> <thead> <tr> <th>Fundamental frequency</th> <th>Field strength of fundamental (millivolts/meter)</th> <th>Field strength of harmonics (microvolts/meter)</th> </tr> </thead> <tbody> <tr> <td>902-928 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>2400-2483.5 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>5725-5875 MHz</td> <td>50</td> <td>500</td> </tr> <tr> <td>24.0-24.25 GHz</td> <td>250</td> <td>2500</td> </tr> </tbody> </table> <p>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.</p> <table border="1"> <thead> <tr> <th>Frequency (MHz)</th> <th>Field strength (microvolts/meter)</th> <th>Measurement distance (meters)</th> </tr> </thead> <tbody> <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> </tbody> </table> <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. 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. 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>		Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)	902-928 MHz	50	500	2400-2483.5 MHz	50	500	5725-5875 MHz	50	500	24.0-24.25 GHz	250	2500	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
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)																																							
902-928 MHz	50	500																																							
2400-2483.5 MHz	50	500																																							
5725-5875 MHz	50	500																																							
24.0-24.25 GHz	250	2500																																							
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 Method:	ANSI C63.10-2013 section 6.6																																								
Procedure:	ANSI C63.10-2013 section 6.6																																								

4.6.1 E.U.T. Operation:

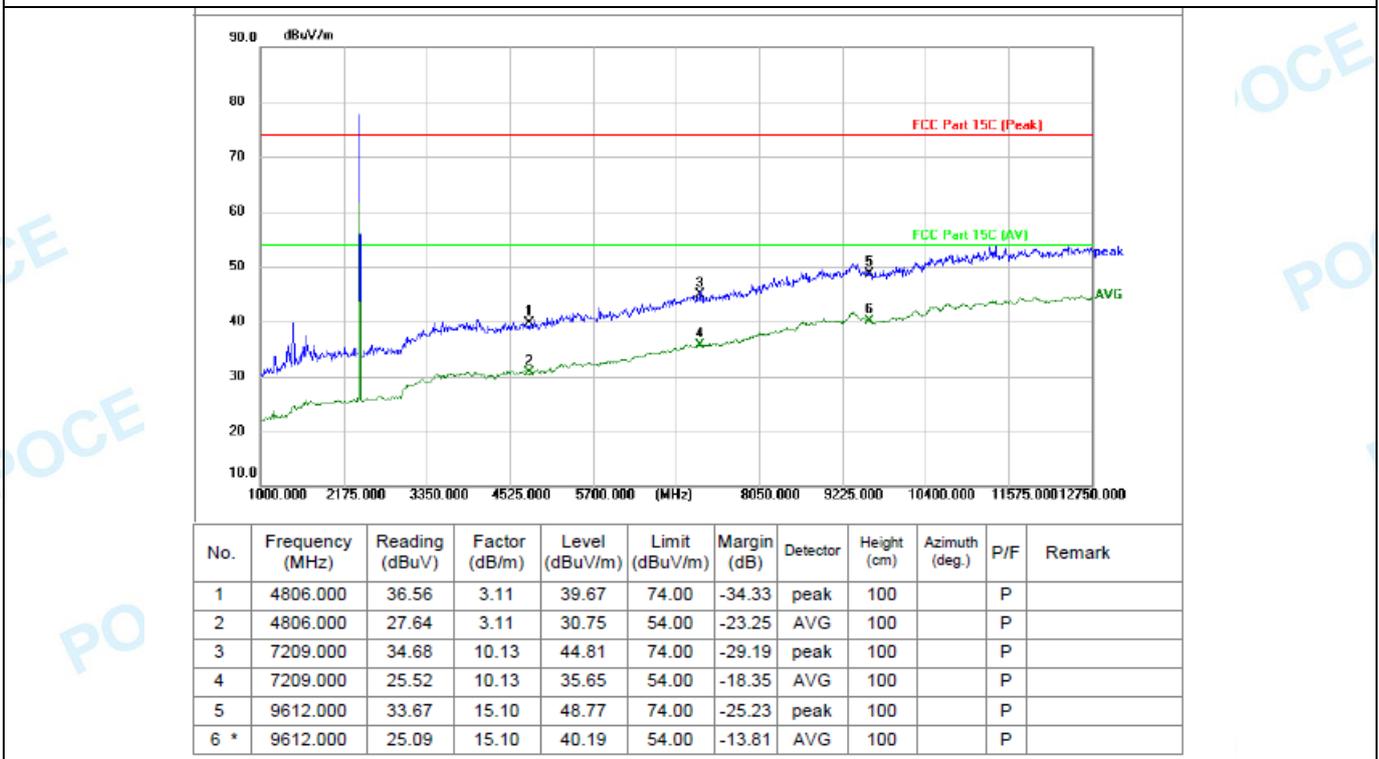
Operating Environment:					
Temperature:	23.5 °C	Humidity:	49.3 %	Atmospheric Pressure:	102 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.6.2 Test Setup Diagram:

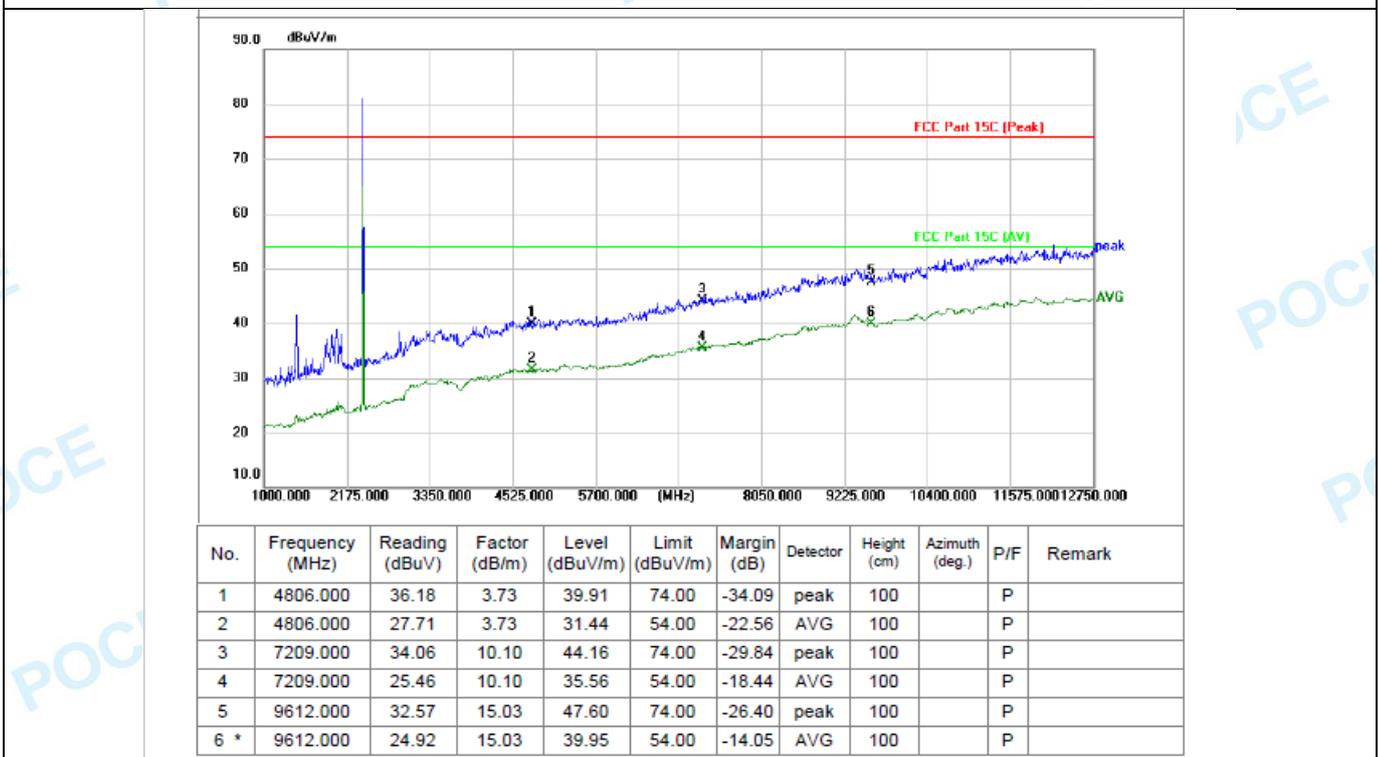


4.6.3 Test Data:

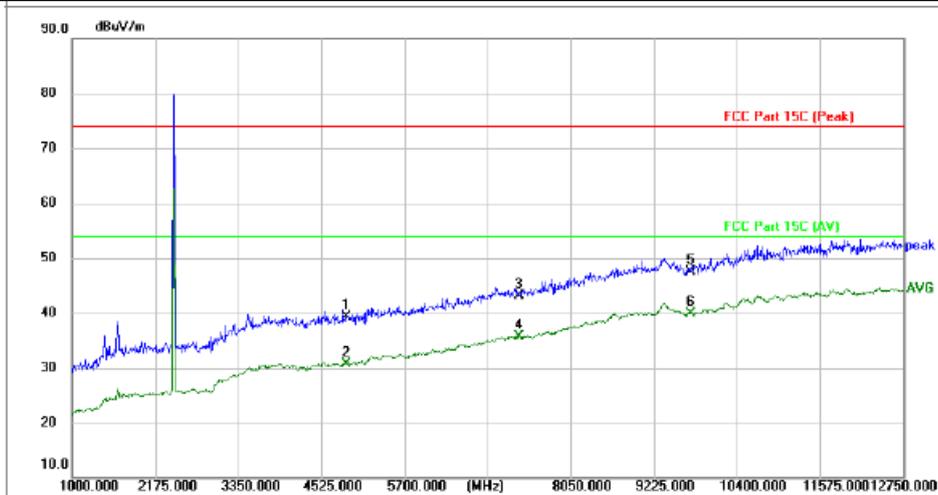
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TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: L

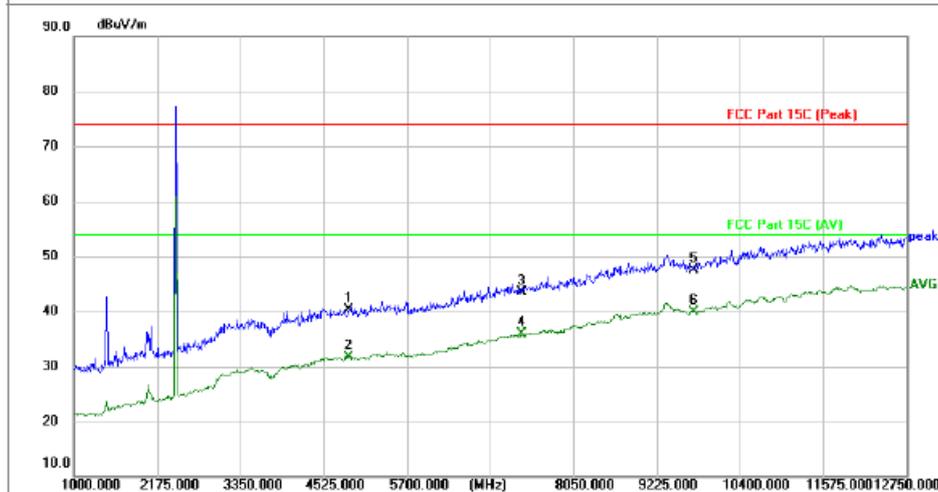


TM1 / Polarization: Horizontal / Band: 2.4G / BW: 3 / CH: M



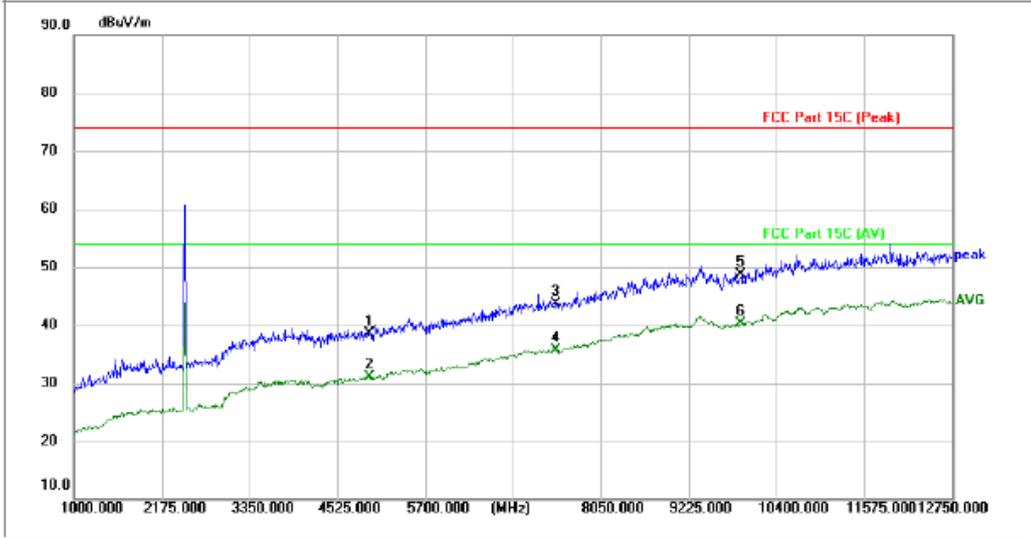
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4882.000	35.96	3.36	39.32	74.00	-34.68	peak	100		P	
2	4882.000	27.43	3.36	30.79	54.00	-23.21	AVG	100		P	
3	7323.000	32.85	10.32	43.17	74.00	-30.83	peak	100		P	
4	7323.000	25.40	10.32	35.72	54.00	-18.28	AVG	100		P	
5	9764.000	32.39	15.09	47.48	74.00	-26.52	peak	100		P	
6 *	9764.000	24.85	15.09	39.94	54.00	-14.06	AVG	100		P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: M



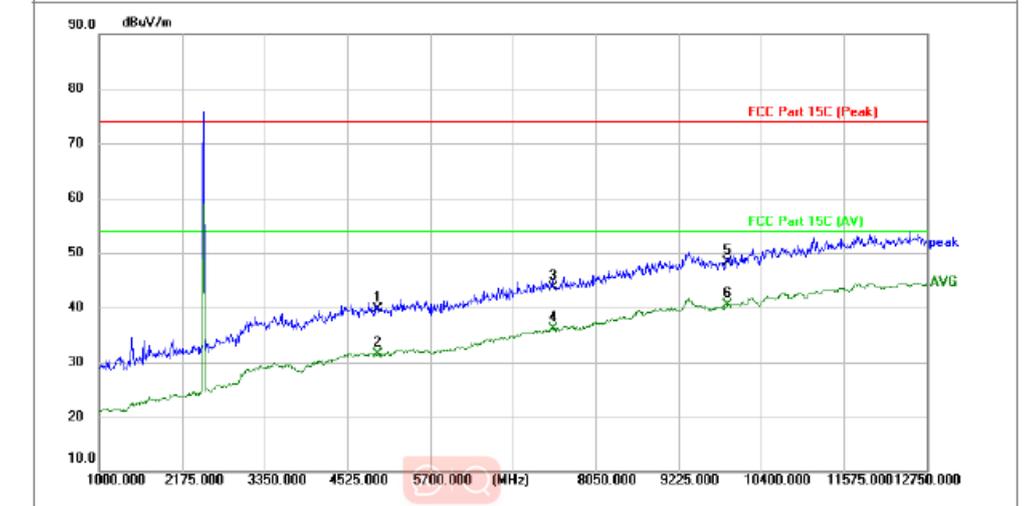
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4882.000	36.36	3.97	40.33	74.00	-33.67	peak	100		P	
2	4882.000	27.76	3.97	31.73	54.00	-22.27	AVG	100		P	
3	7323.000	33.23	10.37	43.60	74.00	-30.40	peak	100		P	
4	7323.000	25.52	10.37	35.89	54.00	-18.11	AVG	100		P	
5	9764.000	32.35	15.13	47.48	74.00	-26.52	peak	100		P	
6 *	9764.000	24.74	15.13	39.87	54.00	-14.13	AVG	100		P	

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 3 / CH: H



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	4960.000	34.85	3.63	38.48	74.00	-35.52	peak			P	
2	4960.000	27.40	3.63	31.03	54.00	-22.97	AVG			P	
3	7440.000	33.19	10.49	43.68	74.00	-30.32	peak			P	
4	7440.000	25.13	10.49	35.62	54.00	-18.38	AVG			P	
5	9920.000	33.55	15.08	48.63	74.00	-25.37	peak			P	
6 *	9920.000	25.18	15.08	40.26	54.00	-13.74	AVG			P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 3 / CH: H

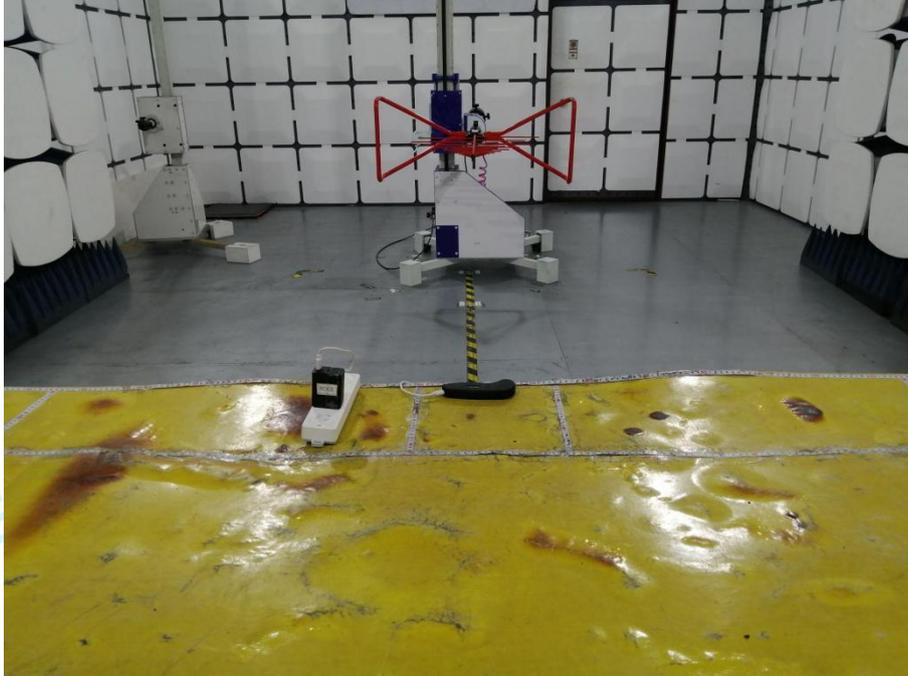


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4960.000	35.44	4.23	39.67	74.00	-34.33	peak			P	
2	4960.000	27.18	4.23	31.41	54.00	-22.59	AVG			P	
3	7440.000	33.09	10.64	43.73	74.00	-30.27	peak			P	
4	7440.000	25.55	10.64	36.19	54.00	-17.81	AVG			P	
5	9920.000	33.15	15.23	48.38	74.00	-25.62	peak			P	
6 *	9920.000	25.31	15.23	40.54	54.00	-13.46	AVG			P	

Remark: Margin= Measurement Level - Limit
 Measurement Level=Test reading + correction factor
 Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

5 TEST SETUP PHOTOS

Emissions in frequency bands (below 1GHz)



Emissions in frequency bands (above 1GHz)



Conducted Emission at AC power line

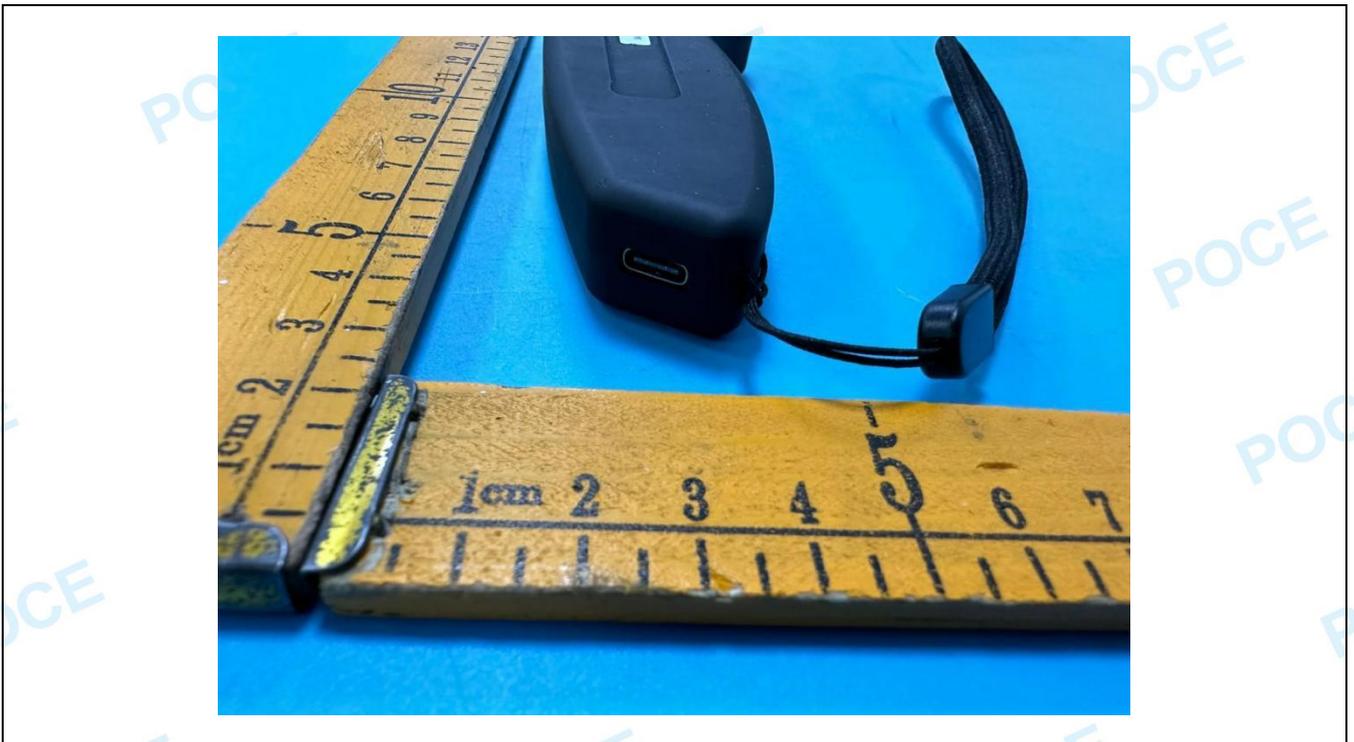


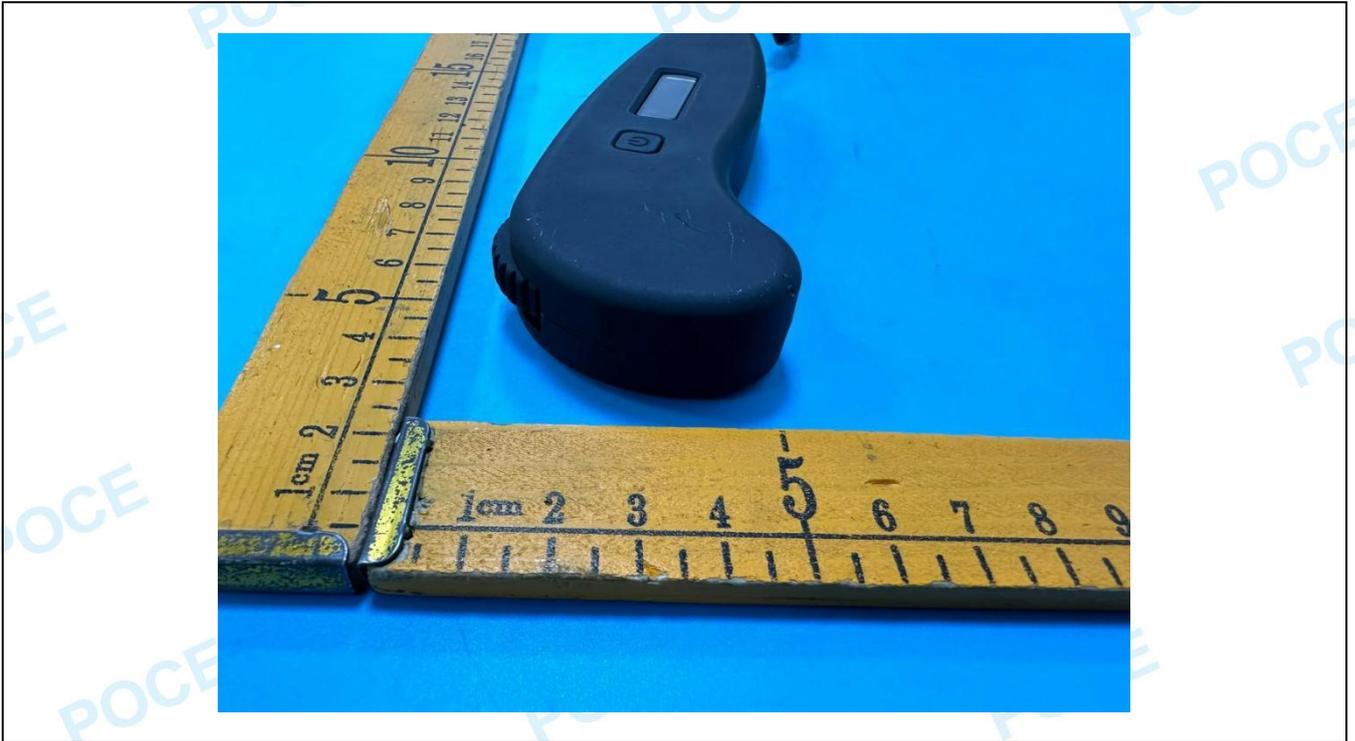
6 PHOTOS OF THE EUT

External



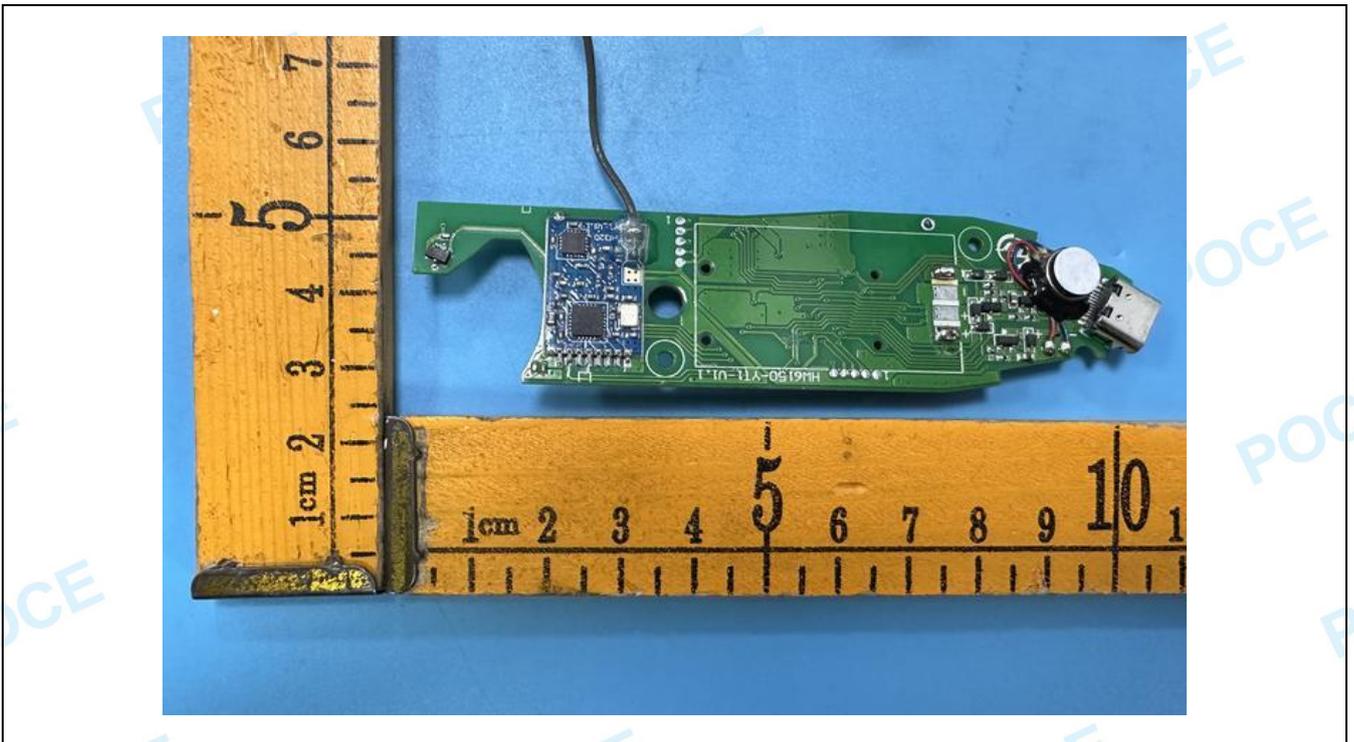
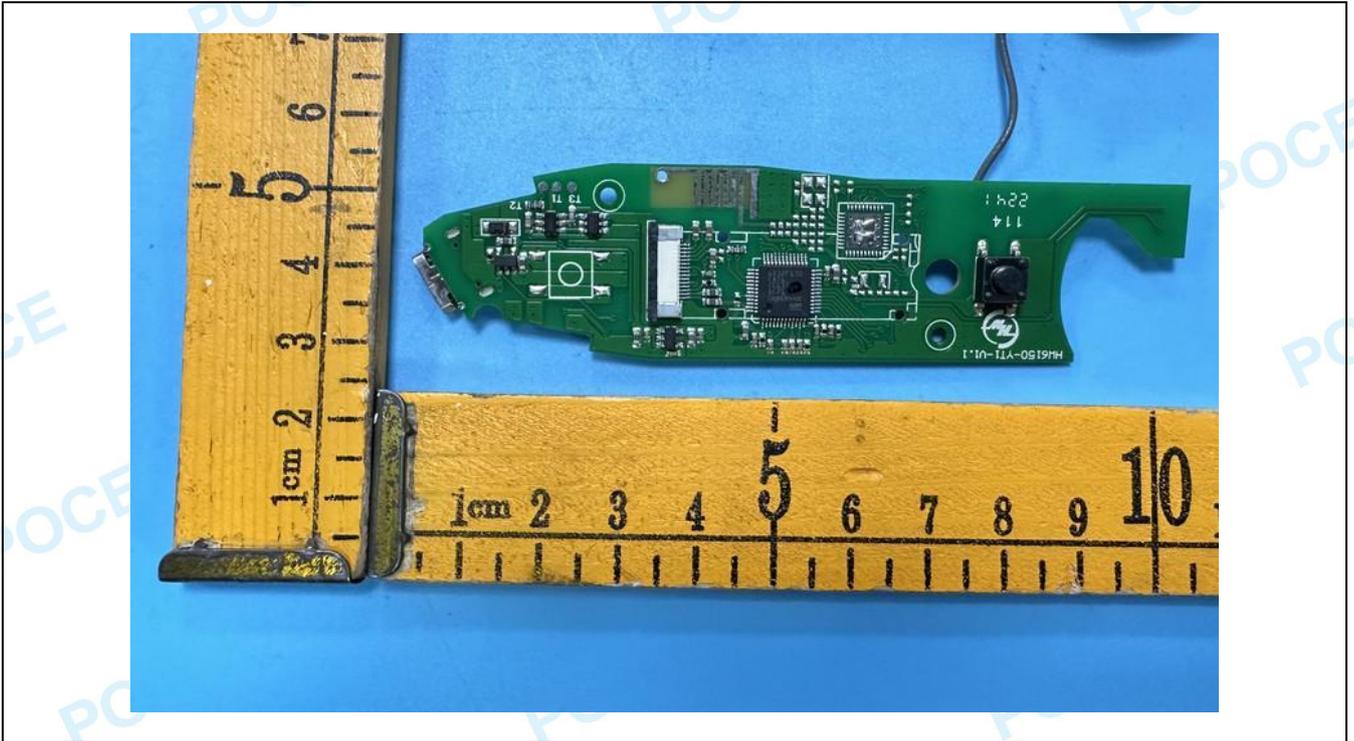






Internal







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