



ITL Co., Ltd.

No.8, JinQianLing street 5, Huangjiang Town, Dongguan, Guangdong, China.

Telephone: +86-769-39001678  
Fax: +86-20-62824387  
Email: itl@i-testlab.com

Report Template Version: V02  
Report Template Revision Date: 2021-06-01

## FCC Test Report

**Report No. :** D220402001  
**Applicant:** Fotorama (Hong Kong) Limited  
**Address of Applicant:** Room: 07,10/F., Peninsula Centre, 67 Mody Road Tsimshatsui East, Kowloon, Hong Kong  
**Manufacturer:** Fotorama (Hong Kong) Limited  
**Address of Manufacturer:** Room: 07,10/F., Peninsula Centre, 67 Mody Road Tsimshatsui East, Kowloon, Hong Kong  
**Factory:** Shenzhen Yi Jin Electronics Science and Technology Company Limited  
**Address of Factory:** 101, Building 10, Dawang Industrial Park, No 66, Xin Xia Road, Shan Xia Community, Ping Hu Town , Long Gang District, Shen Zhen City, China

**Equipment Under Test (EUT):**  
**Product:** Shadow Fighter  
**Model No.:** 3086  
**Test Model No.:** 3086  
**Brand Name:** /  
**FCC ID:** ZNK3086C  
**Standards:** 47 CFR Part 15, Subpart C  
**Date of Test:** 2022-04-02 to 2022-04-11  
**Date of Issue:** 2022-04-11  
**Test Result :** **PASS\***

**Tested By:** Damon  
(Damon Deng)

**Reviewed By:** Chivas  
(Chivas Zeng)

**Approved By:** Victor  
(Victor Meng)

\* In the configuration tested, the EUT complied with the standards specified above.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
D220402001	Rev.01	Initial report	2022-04-11

## 2 Test Summary

Test Item	Test Requirement	Test method	Result
<b>Antenna Requirement</b>	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2013)	PASS
<b>AC Power Line Conducted Emission</b>	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	N/A
<b>Field Strength of the Fundamental Signal</b>	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
<b>Spurious Emissions</b>	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
<b>Restricted bands around fundamental frequency (Radiated Emission)</b>	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
<b>20dB Occupied Bandwidth</b>	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS

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## 4 General Information

### 4.1 Client Information

Applicant:	Fotorama (Hong Kong) Limited
Address of Applicant:	Room: 07,10/F., Peninsula Centre, 67 Mody Road Tsimshatsui East, Kowloon, Hong Kong
Manufacturer:	Fotorama (Hong Kong) Limited
Address of Manufacturer:	Room: 07,10/F., Peninsula Centre, 67 Mody Road Tsimshatsui East, Kowloon, Hong Kong
Factory:	Shenzhen Yi Jin Electronics Science and Technology Company Limited
Address of Factory:	101, Building 10, Dawang Industrial Park, No 66, Xin Xia Road, Shan Xia Community, Ping Hu Town , Long Gang District, Shen Zhen City, China

### 4.2 General Description of EUT

Name:	Shadow Fighter
Model No.:	3086
Trade Mark :	N/A
Hardware Version:	1.2
Software Version:	1.0
Frequency Range:	2401 MHz-2479 MHz
Modulation Type:	GFSK
Number of Channels:	79 (declared by the client)
Sample Type:	Portable production
Sample number:	20220402001
Test Software of EUT:	N/A
Antenna Type:	PCB antenna
Antenna Gain:	-8.0 dBi
Power Supply:	DC 3V from Battery

Operation Frequency each of channel							
Channel	Frequenc y	Channel	Frequenc y	Channel	Frequenc y	Channel	Frequenc y
0	2401MHz	21	2422MHz	42	2443MHz	63	2464MHz
1	2402MHz	22	2423MHz	43	2444MHz	64	2465MHz
2	2403MHz	23	2424MHz	44	2445MHz	65	2466MHz
3	2404MHz	24	2425MHz	45	2446MHz	66	2467MHz
4	2405MHz	25	2426MHz	46	2447MHz	67	2468MHz
5	2406MHz	26	2427MHz	47	2448MHz	68	2469MHz
6	2407MHz	27	2428MHz	48	2449MHz	69	2470MHz
7	2408MHz	28	2429MHz	49	2450MHz	70	2471MHz
8	2409MHz	29	2430MHz	50	2451MHz	71	2472MHz
9	2410MHz	30	2431MHz	51	2452MHz	72	2473MHz
10	2411MHz	31	2432MHz	52	2453MHz	73	2474MHz
11	2412MHz	32	2433MHz	53	2454MHz	74	2475MHz
12	2413MHz	33	2434MHz	54	2455MHz	75	2476MHz
13	2414MHz	34	2435MHz	55	2456MHz	76	2477MHz
14	2415MHz	35	2436MHz	56	2457MHz	77	2478MHz
15	2416MHz	36	2437MHz	57	2458MHz	78	2479MHz
16	2417MHz	37	2438MHz	58	2459MHz		
17	2418MHz	38	2439MHz	59	2460MHz		
18	2419MHz	39	2440MHz	60	2461MHz		
19	2420MHz	40	2441MHz	61	2462MHz		

Note:

The selected channel see below:

Channel	Frequency
The Lowest channel(CH0)	2401MHz
The Middle channel(CH40)	2441MHz
The Highest channel(CH78)	2479MHz

### 4.3 Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test Mode:	Use test software (RF test) to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

### 4.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Remark	FCC certification

### 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **ITL Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for **ITL** laboratory is reported:

Item	Uncertainty	Notes
All emissions, radiated(<1GHz)	±3.92dB	(1)
All emissions, radiated(>1GHz)	±4.28dB	(1)
Conducted Disturbance	±2.56dB	(1)
Spurious emissions, conducted	±0.11dB	(1)
RF power, conducted	±0.12dB	(1)
Temperature	±0.1°C	(1)
Humidity	±1.0%	(1)

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

## **4.6 Test Location**

All tests were performed at:

ITL Co., Ltd

No.8, JinQianLing street 5, Huangjiang Town, Dongguan,  
Guangdong, 523757 P.R.C

## **4.7 Test Facility**

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

- **CNAS( Lab code: L9342)**
- **NVLAP LAB CODE 600199-0**
- **FCC Designation Number: CN5035**
- **FCC Test Firm Registration Number: 239076**

## **4.8 Deviation from Standards**

None.

## **4.9 Abnormalities from Standard Conditions**

None.

## **4.10 Other Information Requested by the Customer**

None.



## 4.11 Equipment List

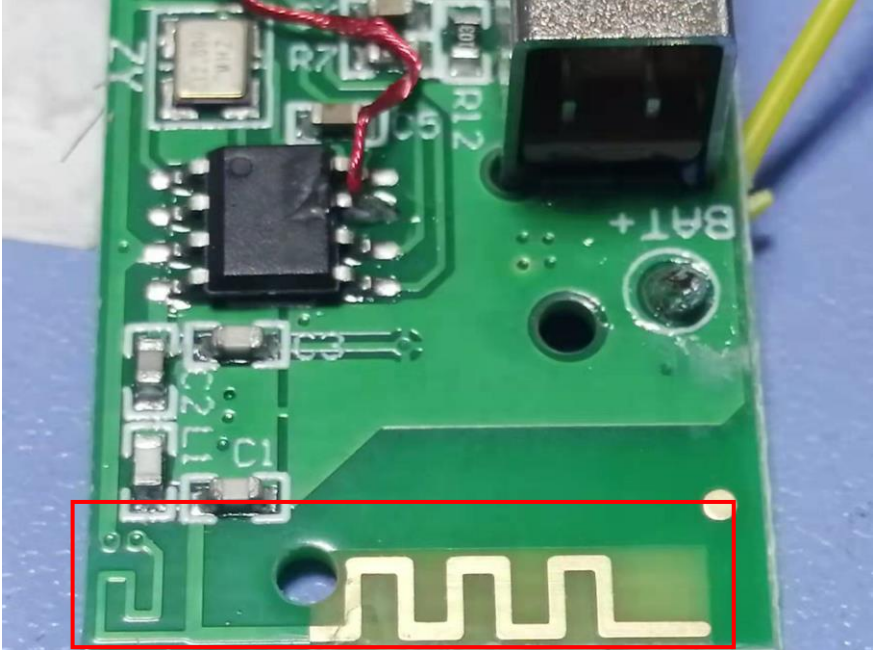
### 4.1 Equipment List

No.	Test Equipment	Manufacturer	Model	Serial No.	Cal Data	Due Date
DGITL-301	Semi-Anechoic chamber	ETS•Lindgren	9*6*6	CT000874-1181	2021.08.02	2022.08.01
DGITL-307	EMI test receiver	SCHWARZBECK	ESVS10	833616 /003	2021.05.11	2022.05.10
DGITL-376	Wideband Radio Communication Tester	SCHWARZBECK	CMW500	LR114195	2021.05.11	2022.05.10
DGITL-349	MXG Vector Signal Generator	Agilent Technologies	N5182A	MY47071034	2021.05.11	2022.05.10
DGITL-306	Spectrum Analyzer	Agilent Technologies	N9010A	MY54200334	2021.05.11	2022.05.10
DGITL-352	Pre Amplifier	MInI-CIrcuits	ZFC-1000HX	SN292801110	2021.05.11	2022.05.10
DGITL-375	Spectrum Analyzer	SCHWARZBECK	FSV40-N	6625-01-588-5515	2021.05.11	2022.05.10
DGITL-309	Horn Antenna	ETS Lindgren	3117	SN00152265	2021.05.11	2024.05.10
DGITL-308	Bilog Antenna	ETS- Lindgren	3142E	156975	2020.06.20	2023.06.19
DGITL-350	Wideband Amplifier Super Ultra	MInI-CIrcuits	ZVA-183X-S+	SN986401426	2021.05.11	2022.05.10
DGITL-365	Broad-band Horn Antenna	SCHWARZBECK	9170	795	2020.07.04	2022.07.04
DGITL-371	Pre Amplifier	teramicrowave	TALA-0040G35	18081001	2021.05.11	2022.05.10
DGITL-363	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	062	2020.07.04	2022.07.03

Software list			
Testing software	Manufacturer	Model	Version number
e3	AUDIX	e3.Ink	Version:6.2009-11-3c(itl)
MTS	MWRFTST	MTS 8310	Version:2.0

# 5 Test results and Measurement Data

## 5.1 Antenna Requirement

<b>Standard requirement:</b>	47 CFR Part 15C Section 15.203
<p>15.203 requirement:</p> <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p>	
<b>EUT Antenna:</b>	 A close-up photograph of a green printed circuit board (PCB) with various electronic components. A red box highlights a meandered antenna structure on the PCB. Other components visible include a black integrated circuit, a red wire, a black connector, and a yellow cable. Labels on the PCB include 'R7', 'R12', 'C1', 'C2', 'C3', 'C4', 'C5', 'C6', 'C7', 'C8', 'C9', 'C10', 'C11', 'C12', 'C13', 'C14', 'C15', 'C16', 'C17', 'C18', 'C19', 'C20', 'C21', 'C22', 'C23', 'C24', 'C25', 'C26', 'C27', 'C28', 'C29', 'C30', 'C31', 'C32', 'C33', 'C34', 'C35', 'C36', 'C37', 'C38', 'C39', 'C40', 'C41', 'C42', 'C43', 'C44', 'C45', 'C46', 'C47', 'C48', 'C49', 'C50', 'C51', 'C52', 'C53', 'C54', 'C55', 'C56', 'C57', 'C58', 'C59', 'C60', 'C61', 'C62', 'C63', 'C64', 'C65', 'C66', 'C67', 'C68', 'C69', 'C70', 'C71', 'C72', 'C73', 'C74', 'C75', 'C76', 'C77', 'C78', 'C79', 'C80', 'C81', 'C82', 'C83', 'C84', 'C85', 'C86', 'C87', 'C88', 'C89', 'C90', 'C91', 'C92', 'C93', 'C94', 'C95', 'C96', 'C97', 'C98', 'C99', 'C100', 'C101', 'C102', 'C103', 'C104', 'C105', 'C106', 'C107', 'C108', 'C109', 'C110', 'C111', 'C112', 'C113', 'C114', 'C115', 'C116', 'C117', 'C118', 'C119', 'C120', 'C121', 'C122', 'C123', 'C124', 'C125', 'C126', 'C127', 'C128', 'C129', 'C130', 'C131', 'C132', 'C133', 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The antenna is a meandered line structure on the PCB, highlighted by a red box.
<p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -8dBi.</p>	

## 5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150KHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test Procedure:	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a <math>50\Omega/50\mu\text{H} + 5\Omega</math> linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol>		
Test Setup:			

Test Mode:	N/A
Final Test Mode:	N/A
Instruments Used:	Refer to section 5.10 for details
Test Voltage:	N/A
Test Results:	N/A

Note: The device was powered by DC power.

### 5.3 Radiated Emission

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Note: For fundamental frequency, RBW=5MHz, VBW=5MHz, Peak detector is for PK value, RMS detector is for Average value.					
Limit: (Spurious Emissions and band edge)	Frequency	Field strength (microvolt/meter )	Limit (dBuV/m )	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
Note: 1) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. 2) 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 Section 15.209, whichever is the lesser attenuation.					
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.0		Average Value	
		114.0		Peak Value	

Test Setup:

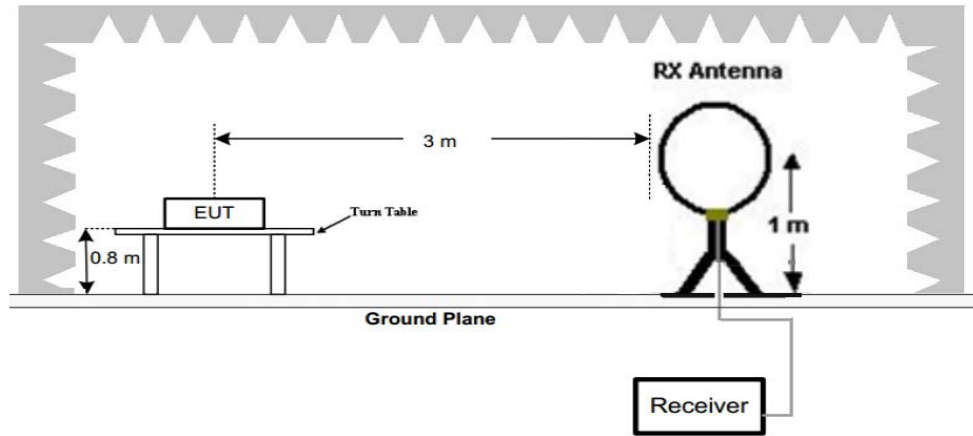


Figure 1. Below 30MHz

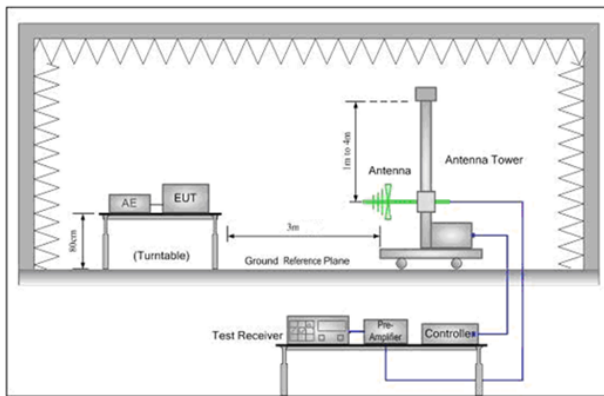


Figure 2. 30MHz to 1GHz

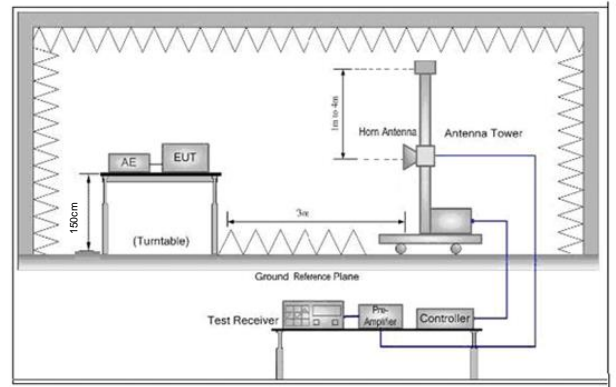


Figure 3. Above 1 GHz

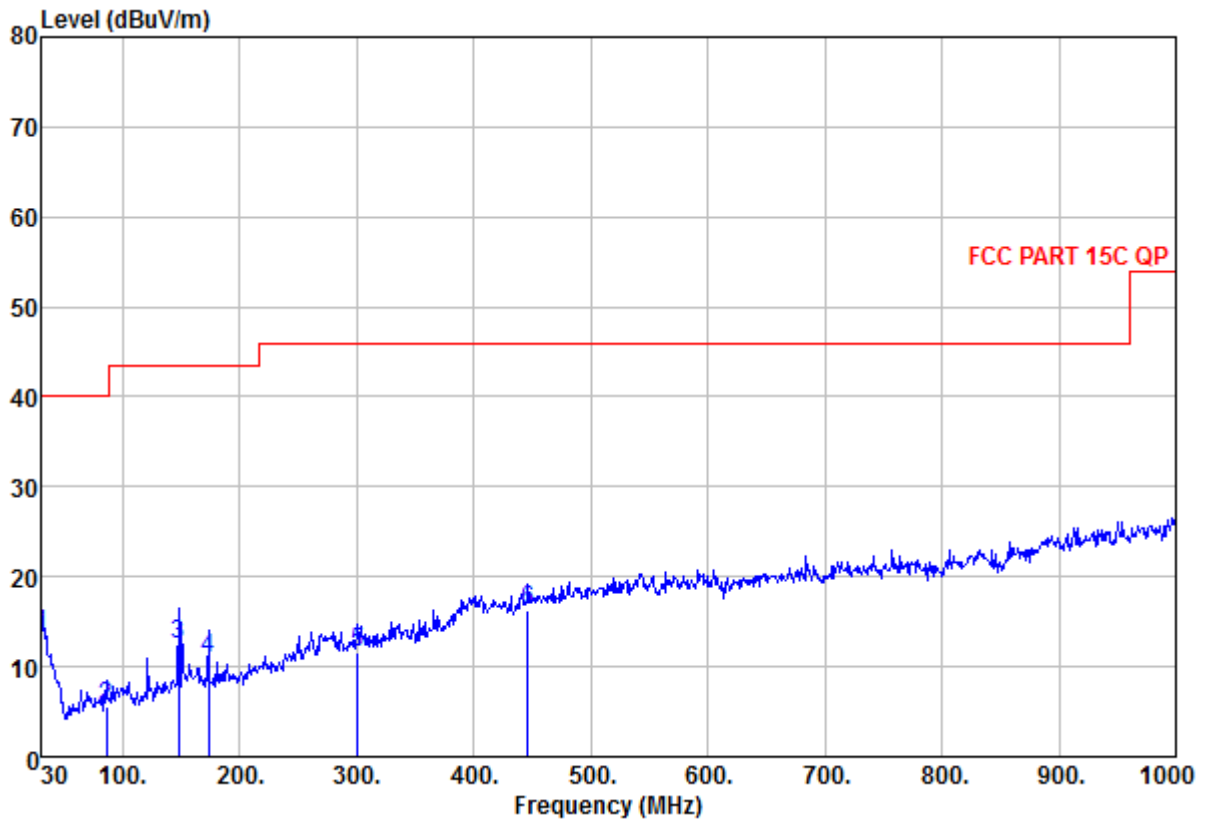
Test Procedure:

- a. 1) Below 1G: 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.  
 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 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.  
 Note: For the radiated emission test above 1GHz:  
 Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 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.
- 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.
- 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit

	<p>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, quasi-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 worse case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p>
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Charging+Transmitting mode
Final Test Mode:	<p>Pretest the EUT at Charging+Transmitting mode, found the Charging+Transmitting mode which it is worse case</p> <p>Pretest the EUT at Charging+Transmitting mode, For below 1GHz part, through pre-scan, the worst case is the lowest channel.</p> <p>Only the worst case is recorded in the report.</p>
Test Voltage:	DC120V/60Hz
Test Results:	Pass

Measurement Data

<b>30MHz~1GHz</b>		
Test mode:	Transmitting (lowest channel)	Vertical

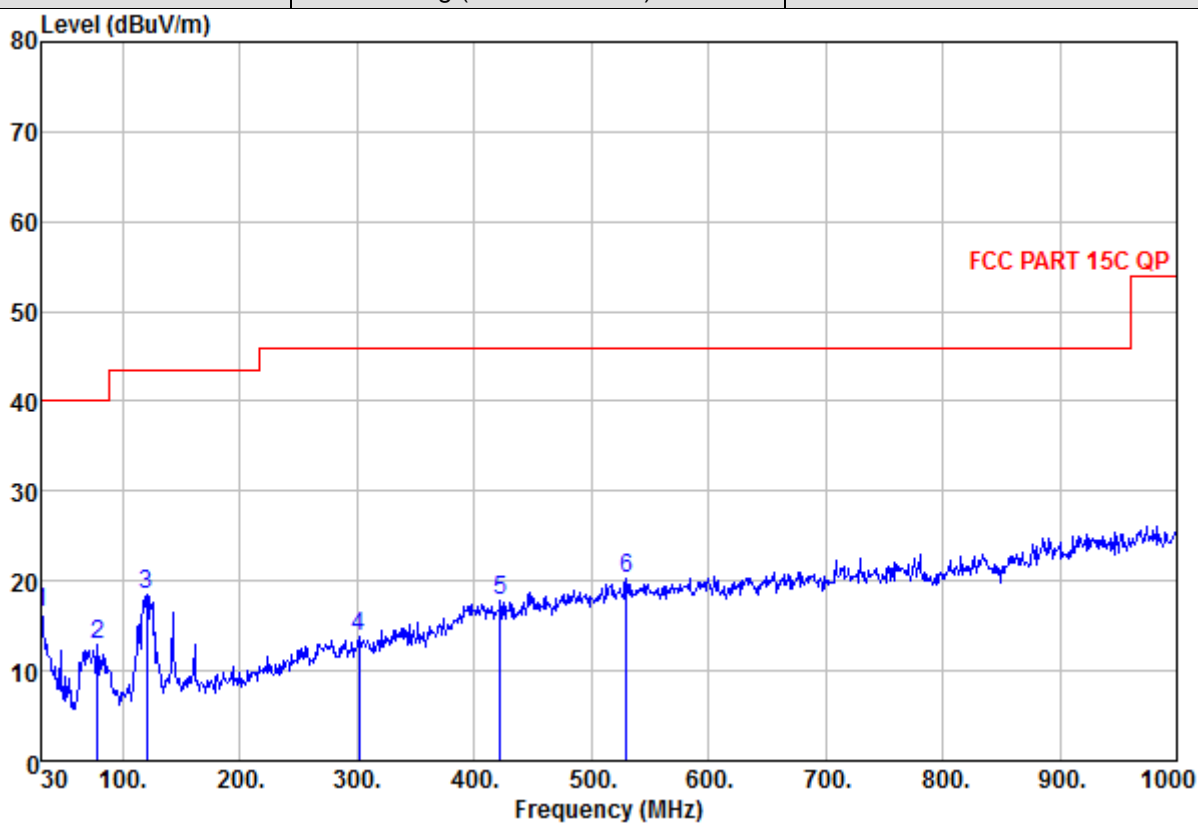


No.	Freq MHz	Reading dBuV	Antenna Factor dB/m	Cable Loss dB	Measured dBuV/m	Limit Line dBuV/m	Preamp Factor dB	Over limit dB	Remark
1	30.00	28.65	17.20	0.12	13.57	40.00	32.40	-26.43	QP
2	86.26	29.73	7.93	0.18	5.50	40.00	32.34	-34.50	QP
3	147.37	34.24	10.04	0.25	12.42	43.50	32.11	-31.08	QP
4	173.56	32.55	10.24	0.28	11.02	43.50	32.05	-32.48	QP
5	300.63	28.50	13.81	0.39	11.70	46.00	31.00	-34.30	QP
6	446.13	28.56	18.19	0.47	16.22	46.00	31.00	-29.78	QP

Note: 1. Standards need to read Quasi-peak values.  
 2. Measured= Antenna Factor + Cable Loss + Reading - Preamp Factor



Test mode:	Transmitting (lowest channel)	Horizontal
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No.	Freq MHz	Reading dBuV	Antenna Factor dB/m	Cable Loss dB	Measured dBuV/m	Limit Line dBuV/m	Preamp Factor dB	Over limit dB	Remark
1	30.00	31.51	17.20	0.12	16.43	40.00	32.40	-23.57	QP
2	78.50	37.24	7.89	0.17	12.88	40.00	32.42	-27.12	QP
3	120.21	41.97	8.42	0.22	18.45	43.50	32.16	-25.05	QP
4	301.60	30.69	13.82	0.39	13.90	46.00	31.00	-32.10	QP
5	421.88	30.66	17.69	0.46	17.81	46.00	31.00	-28.19	QP
6	529.55	31.03	19.79	0.51	20.36	46.00	30.97	-25.64	QP

Note: 1. Standards need to read Quasi-peak values.  
2. Measured= Antenna Factor + Cable Loss + Reading - Preamp Factor

Above 1-25GHz							
Test mode:		Transmitting		Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
2390	46.04	-4.36	41.68	74	-32.32	peak	H
2390	34.49	-4.36	30.13	54	-23.87	AVG	H
2400	54.07	-4.36	49.71	74	-24.29	peak	H
2400	40.63	-4.36	36.27	54	-17.73	AVG	H
<b>2401</b>	<b>104.17</b>	<b>-4.37</b>	<b>99.80</b>	<b>114</b>	<b>-14.20</b>	<b>peak</b>	<b>H</b>
2401	94.84	-4.37	90.47	94	-3.53	AVG	H
4802	49.39	-5.18	44.21	74	-29.79	peak	H
4802	37.19	-5.18	32.01	54	-21.99	AVG	H
7203	49.30	-6.45	42.85	74	-31.15	peak	H
7203	36.30	-6.45	29.85	54	-24.15	AVG	H
2390	48.39	-4.36	44.03	74	-29.97	peak	V
2390	35.77	-4.36	31.41	54	-22.59	AVG	V
2400	54.66	-4.36	50.30	74	-23.70	peak	V
2400	41.15	-4.36	36.79	54	-17.21	AVG	V
2401	100.82	-4.37	96.45	114	-17.55	peak	V
2401	93.07	-4.37	88.70	94	-5.30	AVG	V
4802	48.70	-5.18	43.52	74	-30.48	peak	V
4802	37.26	-5.18	32.08	54	-21.92	AVG	V
7203	49.58	-6.45	43.13	74	-30.87	peak	V
7203	35.92	-6.45	29.47	54	-24.53	AVG	V

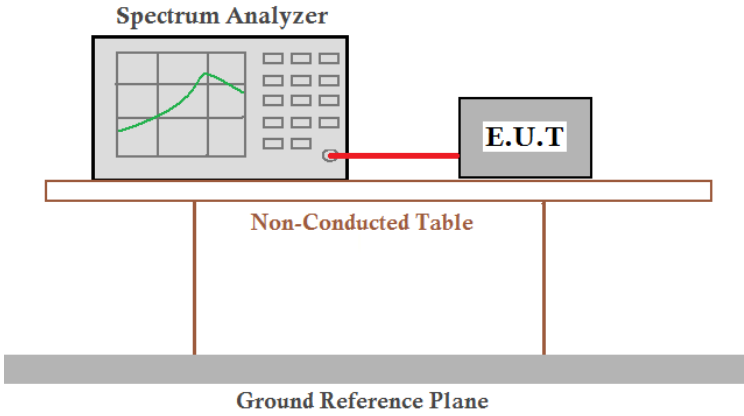
Test mode:		Transmitting		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)		H/V
2441	102.63	-4.39	98.24	114	-15.76	peak	H
2441	93.33	-4.39	88.94	94	-5.06	AVG	H
4882	49.79	-5.19	44.60	74	-29.40	peak	H
4882	36.46	-5.19	31.27	54	-22.73	AVG	H
7323	49.96	-6.47	43.49	74	-30.51	peak	H
7323	35.33	-6.47	28.86	54	-25.14	AVG	H
2441	99.85	-4.39	95.46	114	-18.54	peak	V
2441	90.15	-4.39	85.76	94	-8.24	AVG	V
4882	49.68	-5.19	44.49	74	-29.51	peak	V
4882	37.13	-5.19	31.94	54	-22.06	AVG	V
7323	48.68	-6.47	42.21	74	-31.79	peak	V
7323	36.11	-6.47	29.64	54	-24.36	AVG	V

Test mode:		Transmitting		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
2479	101.84	-4.22	97.62	114	-16.38	peak	H
2479	92.90	-4.22	88.68	94	-5.32	AVG	H
2483.5	56.44	-4.22	52.22	74	-21.78	peak	H
2483.5	44.99	-4.22	40.77	54	-13.23	AVG	H
4958	51.20	-5.2	46.00	74	-28.00	peak	H
4958	38.45	-5.2	33.25	54	-20.75	AVG	H
7437	49.58	-6.47	43.11	74	-30.89	peak	H
7437	37.40	-6.47	30.93	54	-23.07	AVG	H
2479	96.89	-4.22	92.67	114	-21.33	peak	V
2479	88.85	-4.22	84.63	94	-9.37	AVG	V
2483.5	56.20	-4.22	51.98	74	-22.02	peak	V
2483.5	44.86	-4.22	40.64	54	-13.36	AVG	V
4958	50.55	-5.2	45.35	74	-28.65	peak	V
4958	37.92	-5.2	32.72	54	-21.28	AVG	V
7437	50.33	-6.47	43.86	74	-30.14	peak	V
7437	37.90	-6.47	31.43	54	-22.57	AVG	V

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 2) Scan from 9kHz to 25GHz, The disturbance above 10GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

## 5.4 20dB Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Instruments Used:	Refer to section 5.10 for details
Test Mode:	Transmitting with OQPSK modulation.
Limit:	N/A
Test Results:	Pass

### Test information

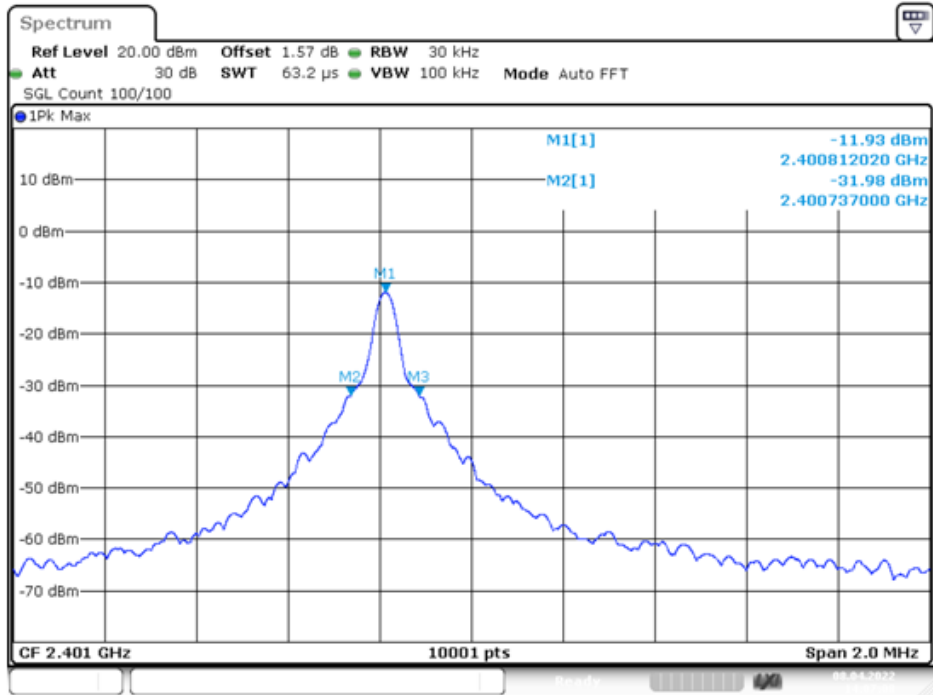
Temperature	humidity	Test by
25 °C	48%	Damon Deng

### Measurement Data

Test channel	20dB bandwidth (MHz)	Results
Lowest	0.148	Pass
Middle	0.157	Pass
Highest	0.162	Pass

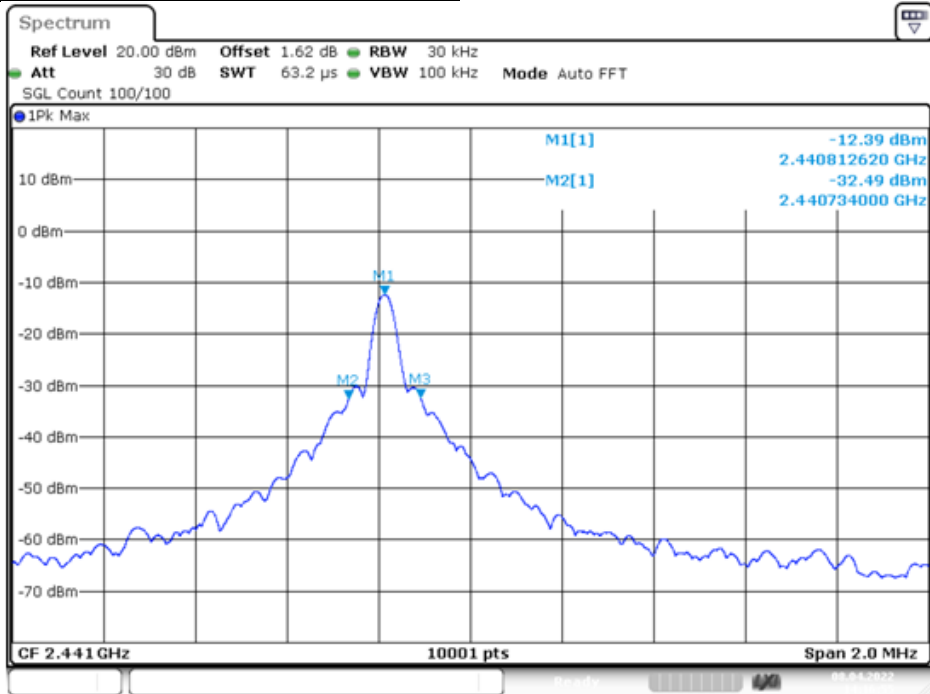
Test plot as follows:

Test channel: Lowest



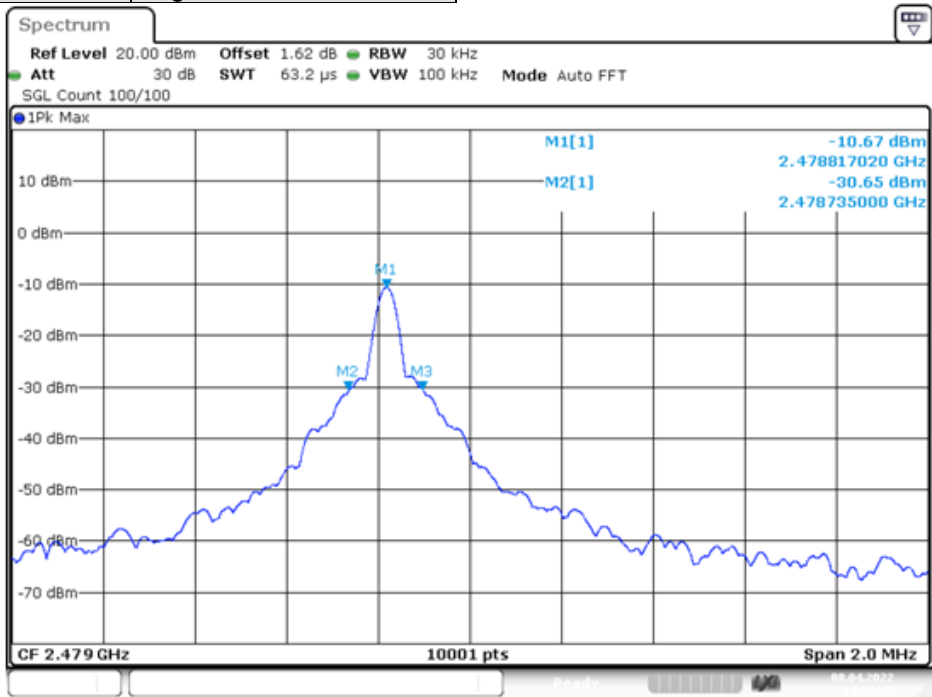
Date: 8.APR.2022 14:07:08

Test channel: Middle



Date: 8.APR.2022 14:16:54

Test channel: Highest

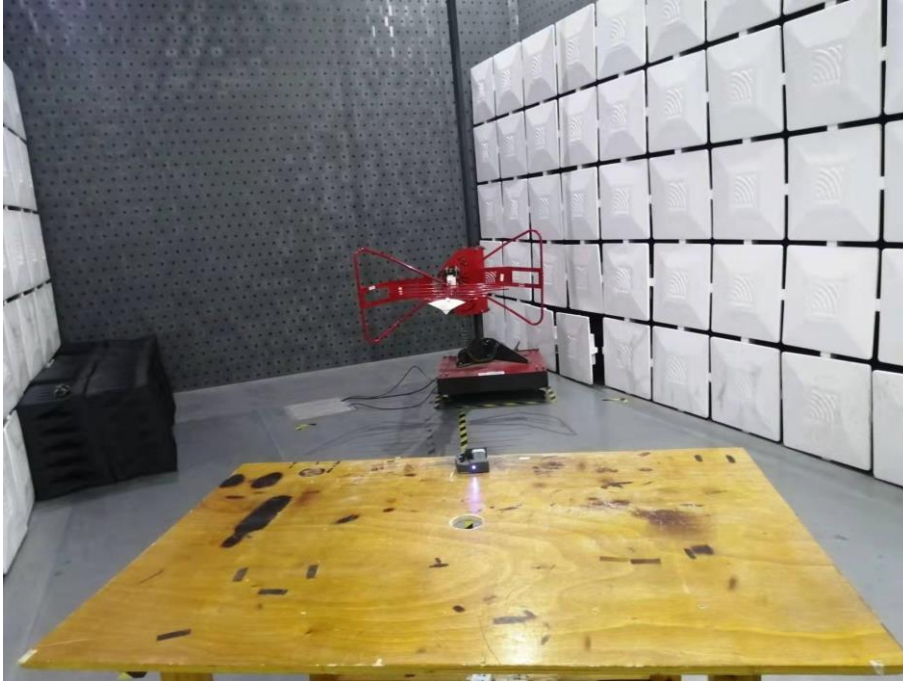


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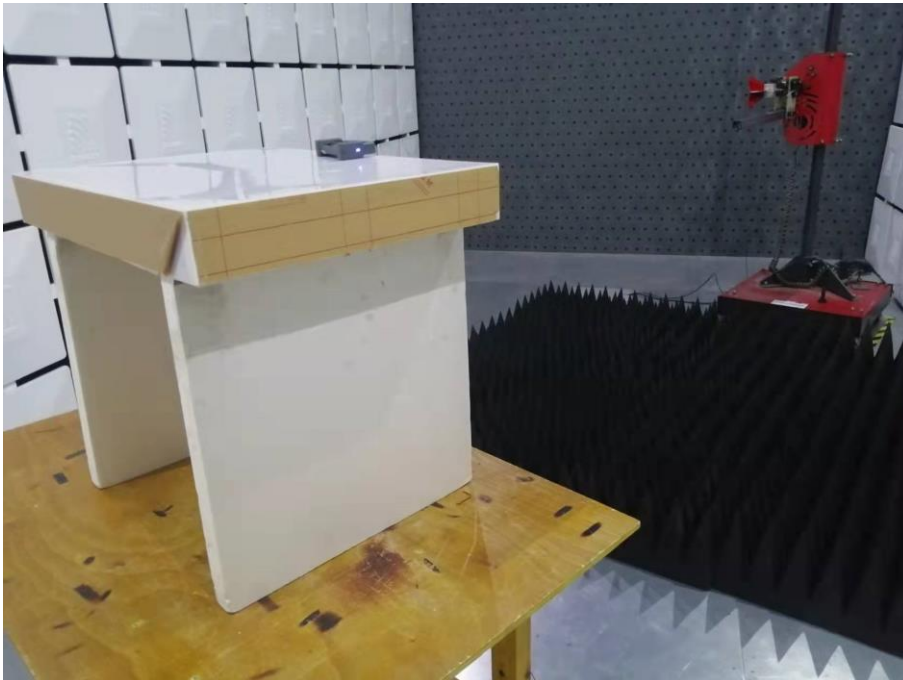
## 6 Photographs

### 6.1 Radiated Emission Test Setup

Below 1GHz:

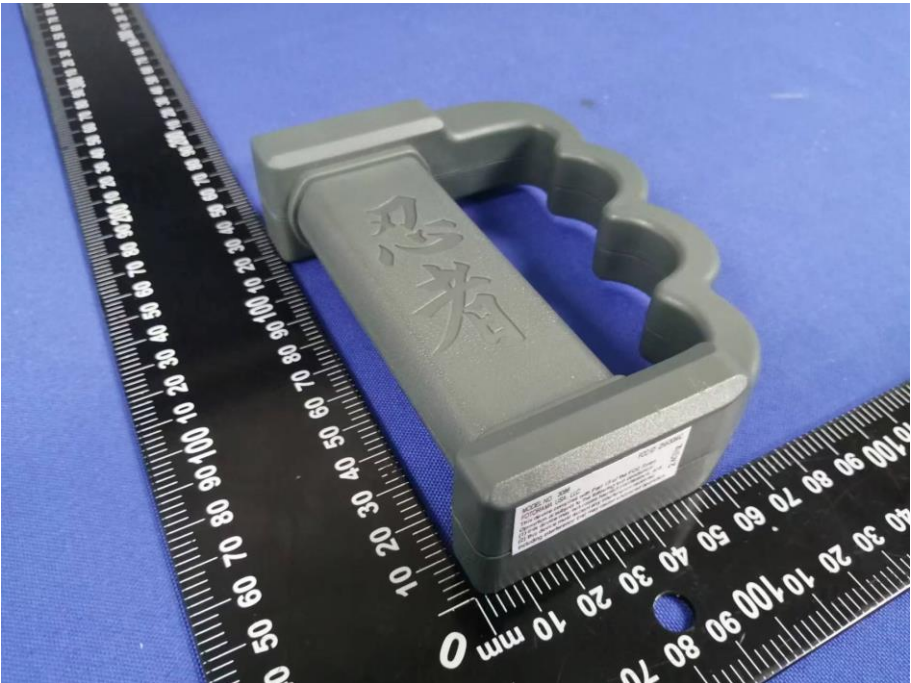
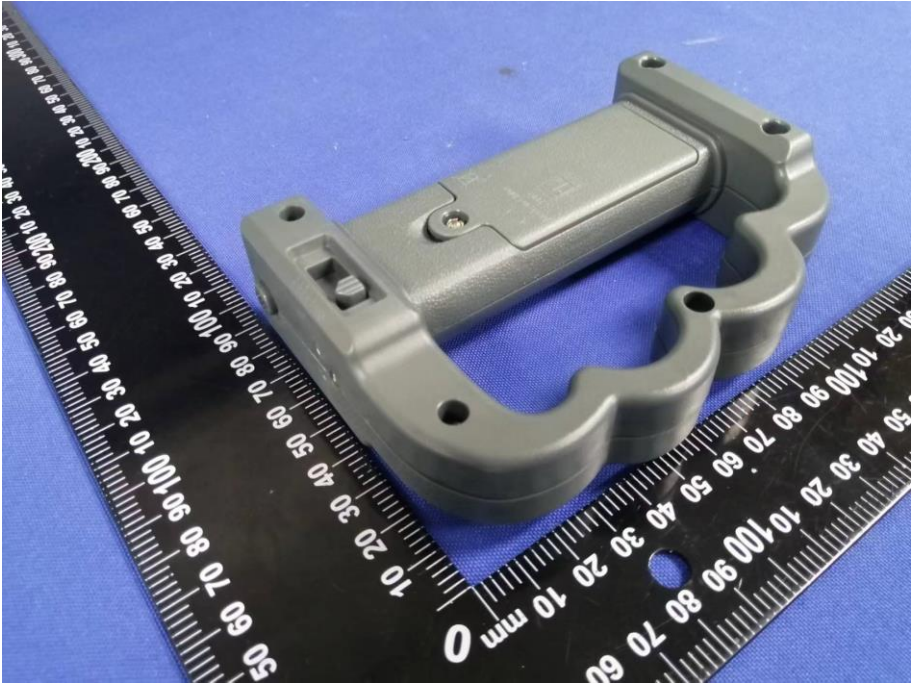


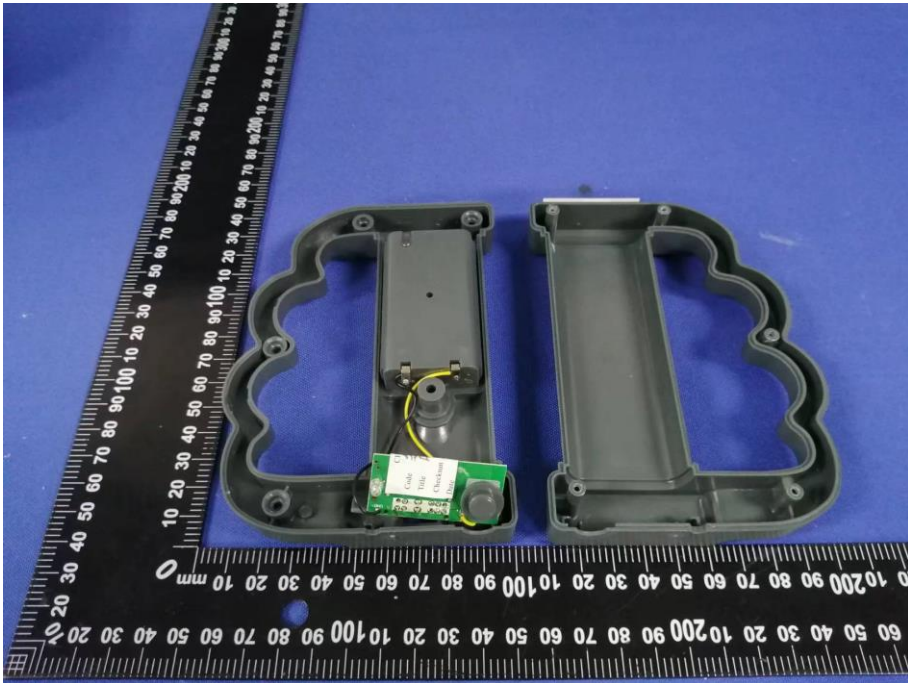
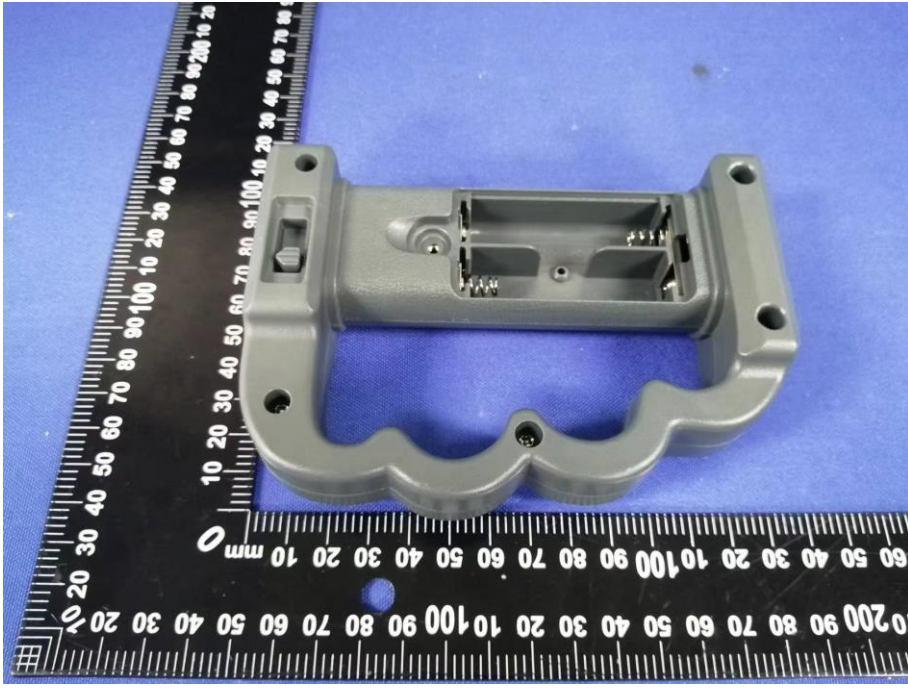
Above 1GHz:

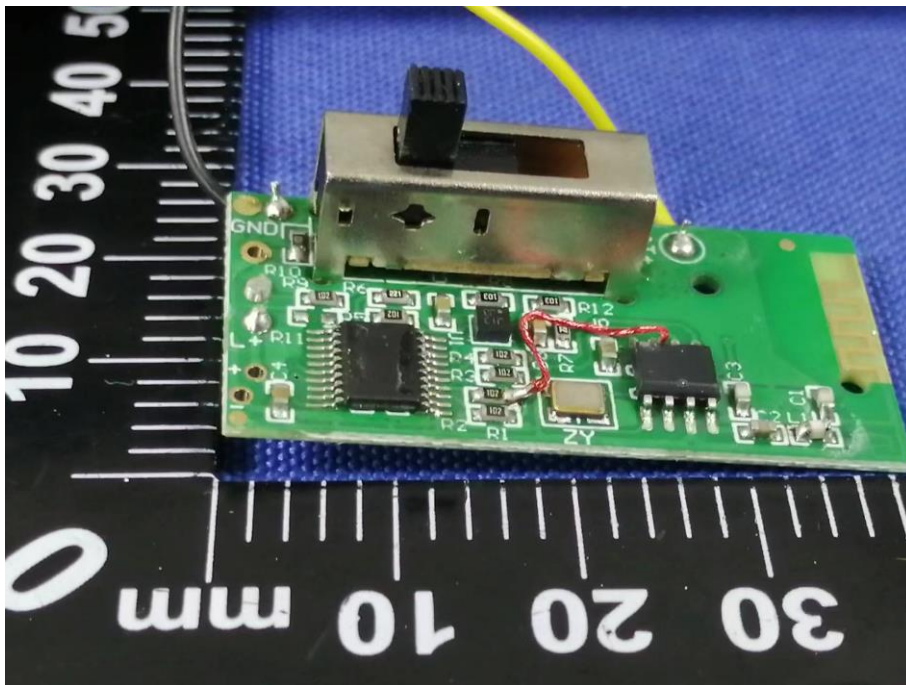
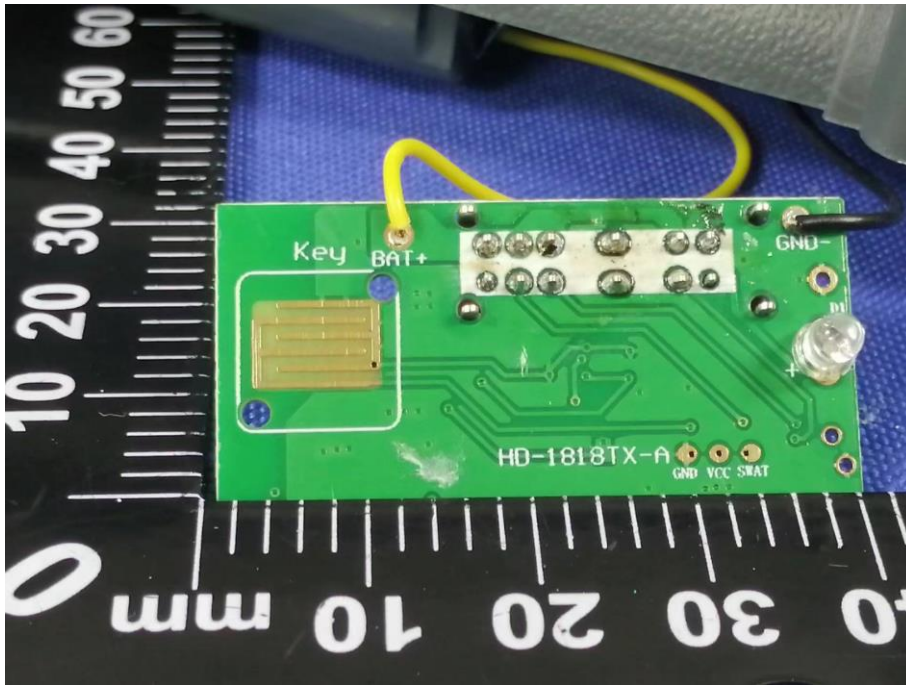


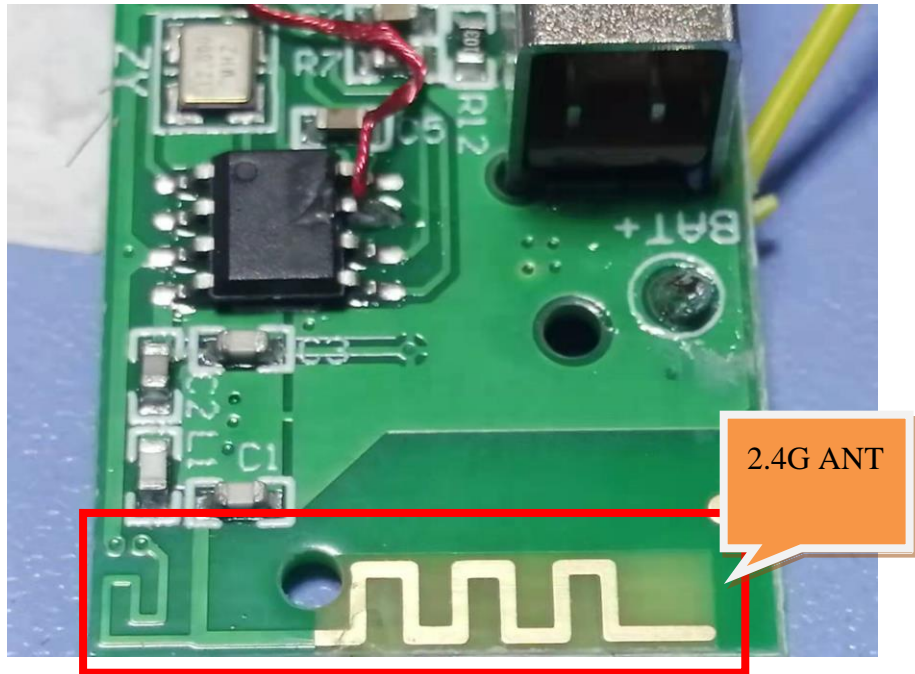


## 6.2 EUT Constructional Details









**END OF THE REPORT**