

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Report Template Version: V05

Telephone: +86-755-26648640 Fax: +86-755-26648637

Website: <a href="https://www.cqa-cert.com">www.cqa-cert.com</a> Report Template Revision Date: 2021-11-03

# **Test Report**

**Report No.:** CQASZ20241102434E -01

Applicant: REESTAR INTERNATIONAL LIMITED

Address of Applicant: FLAT/RM 16 18/F SEAPOWER TOWER CONCORDIA PLAZA 1 SCIENCE

MUSEUM ROAD TSIM SHA TSUI KL

**Equipment Under Test (EUT):** 

Product: Charging Box
Model No.: ST 451828

Test Model No.: ST 451828

Brand Name: Renpho

FCC ID: 2A26P-ST451828

**Standards:** 47 CFR Part 15, Subpart C

**Date of Receipt:** 2024-11-20

**Date of Test:** 2024-11-20 to 2024-12-10

Date of Issue: 2025-02-10

Test Result: PASS\*

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

Reviewed By:

(Lewis Zhou)

(Lewis Zhou)

(Timo Lei)

Approved By:

( Jack Ai )

TEST I NG TECHNOLOGY

LEST I NG TECHNOLOGY





# 1 Version

## **Revision History Of Report**

Report No.	Version	Description	Issue Date
CQASZ20241102434E -01	Rev.01	Initial report	2025-02-10





# 2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215	ANSI C63.10 2013	N/A
Radiated Emission , Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.209	ANSI C63.10 2013	PASS



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Report No.: CQASZ20241102434E -01

## 4 General Information

### 4.1 Client Information

Applicant:	REESTAR INTERNATIONAL LIMITED
Address of Applicant:	FLAT/RM 16 18/F SEAPOWER TOWER CONCORDIA PLAZA 1 SCIENCE MUSEUM ROAD TSIM SHA TSUI KL
Manufacturer:	Shenzhen Ruiyi Business Technology Co., Ltd.
Address of Manufacturer:	No. 810-C063, 8th Floor, Xiangbin International Financial Centre, No.18, West Free Trade Street, China Special Economic Zone, Qianhai Bay, Shenzhen, Guangdong Province, 518000 China

## 4.2 General Description of EUT

	_ •
Product Name:	Charging Box
Model No.:	ST 451828
Test Model No.:	ST 451828
Brand Name:	Renpho
Software Version:	V1.0
Hardware Version:	V1.0
EUT Power Supply:	Li-ion battery DC 3.7V 200mAh, Charge by DC 5V for adapter

## 4.3 Product Specification subjective to this standard

Equipment Category:	Non-ISM frequency
Operation Frequency range:	115kHz~205kHz
Modulation Type:	ASK
Antenna Type:	Induction coil
Antenna Gain:	0dBi

#### Note:

1. In section 15.31(m), regards to the operating frequency range less 1 MHz.



## 4.4 Test Environment

Operating Environment		
Radiated Emissions:		
Temperature:	25.5 °C	
Humidity:	53 % RH	
Atmospheric Pressure:	1009 mbar	
Conducted Emissions:		
Temperature:	25.8 °C	
Humidity:	58 % RH	
Atmospheric Pressure:	100.9 mbar	
Radio conducted item to	est (RF Conducted test room):	
Temperature:	27.1 °C	
Humidity:	56 % RH	
Atmospheric Pressure:	100.9 mbar	
Test Mode:		
Mode a:	Keep the EUT Wireless Charging 5W	
Mode b:	Keep the EUT in charging+wireless charging 5W	
Note: The above test modes all include full load,empty load,and half load, The worst-case state reflected in this report is the fully loaded state		

## 4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Adapter	/	LPL-C010050200Z	/	CQA
2) Cable				

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
1	,	1		1





### 4.6 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 **Shenzhen Huaxia Testing Technology Co., Ltd.** guality 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 CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Occupied Bandwidth	1.1%	(1)
4	Temperature test	0.8℃	(1)
5	Humidity test	2.0%	(1)

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

#### 4.7 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

## 4.8 Test Facility

#### A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

#### • FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

#### 4.9 Deviation from Standards

None.

### 4.10 Other Information Requested by the Customer

None.





# 4.11 Equipment List

			Instrument	Calibration	Calibration
Test Equipment	Manufacturer	Model No.	No.	Date	Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800-29- 20P	CQA-036	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1





### 5 Test results and Measurement Data

### 5.1 Antenna Requirement

**Standard requirement:** 47 CFR Part 15C Section 15.203

15.203 requirement:

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.

#### **EUT Antenna:**



The antenna is Induction coil. The best case gain of the antenna is 0dBi.





## 5.2 Conducted Emissions

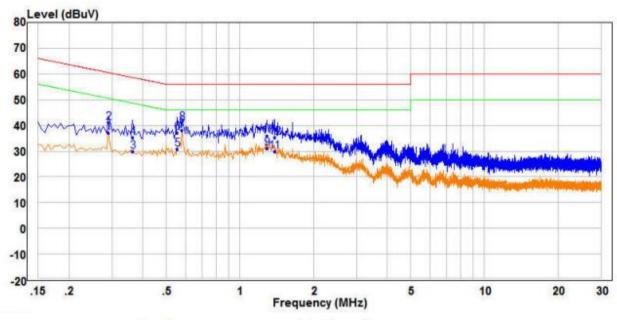
Test Requirement:	47 CFR Part 15C Section 15.2	207		
Test Method:	ANSI C63.10: 2013			
Test Frequency Range:	150kHz to 30MHz			
Limit:	130K112 to 30W1112	_ Limit (dBuV)		
Linne	Frequency range (MHz)	Quasi-peak	1	
	0.15.0.5		Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
Test Procedure:	<ul> <li>* Decreases with the logarithm of the frequency.</li> <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 50Ω/50μH + 5Ω 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. 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</li> </ul>			
Test Setup:	ANSI C63.10: 2013 on con	AE LISN2 AC Ma	Test Receiver	
Test Results:	Pass			
rost rosuits.	1 400			



#### **Measurement Data**

mode b

Live line:



			Read			Limit	Over		
		Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
	57	MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.290	27.79	9.50	37.29	50.52	-13.23	Average	Line
2		0.290	31.52	9.50	41.02	60.52	-19.50	QP	Line
3		0.365	20.36	9.57	29.93	48.61	-18.68	Average	Line
4		0.365	25.68	9.57	35.25	58.61	-23.36	QP	Line
5		0.555	21.15	9.76	30.91	46.00	-15.09	Average	Line
6		0.555	27.28	9.76	37.04	56.00	-18.96	QP	Line
7	PP	0.580	28.18	9.78	37.96	46.00	-8.04	Average	Line
8	QP	0.580	31.40	9.78	41.18	56.00	-14.82	QP	Line
9		1.295	20.79	10.42	31.21	46.00	-14.79	Average	Line
10		1.295	25.65	10.42	36.07	56.00	-19.93	QP	Line
11		1.385	19.35	10.61	29.96	46.00	-16.04	Average	Line
12		1.385	24.71	10.61	35.32	56.00	-20.68	QP	Line

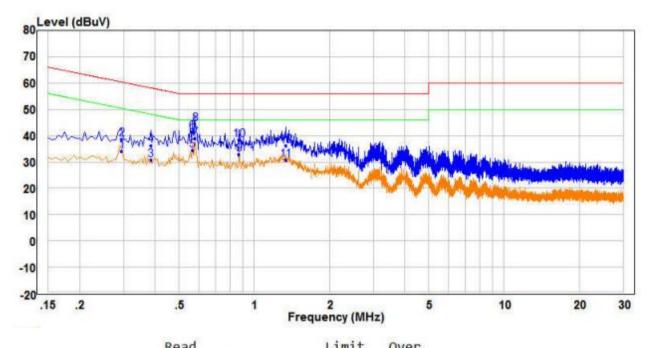
#### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.



#### mode b:

#### Neutral line:



	Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
-	MHz	dBuV	dB	dBuV	dBuV	dB	-	
1	0.295	24.59	9.49	34.08	50.38	-16.30	Average	Neutral
2	0.295	29.28	9.49	38.77	60.38	-21.61	QP	Neutral
3	0.385	21.11	9.59	30.70	48.17	-17.47	Average	Neutral
4	0.385	26.60	9.59	36.19	58.17	-21.98	QP	Neutral
5	0.565	24.54	9.77	34.31	46.00	-11.69	Average	Neutral
6	0.565	31.60	9.77	41.37	56.00	-14.63	QP	Neutral
7 PP	0.580	29.35	9.78	39.13	46.00	-6.87	Average	Neutral
8 QP	0.580	34.82	9.78	44.60	56.00	-11.40	QP	Neutral
9	0.870	23.10	9.79	32.89	46.00	-13.11	Average	Neutral
10	0.870	28.50	9.79	38.29	56.00	-17.71	QP	Neutral
11	1.335	21.06	9.72	30.78	46.00	-15.22	Average	Neutral
12	1.335	26.59	9.72	36.31	56.00	-19.69	QP	Neutral

#### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.





# 5.3 Radiated Spurious Emission & Restricted bands

5.3.1 Spurious Emissions								
Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205							
Test Method:	ANSI C63.10 2013							
Test Site:	Measurement Distance	: 3m	(Semi-Anech	noic Cham	ber)			
Receiver Setup:	Frequency		Detector	RBW	VBW	Remark		
	0.009MHz-0.090MH	z	Peak	10kHz	30kHz	Peak		
	0.009MHz-0.090MH	Z	Average	10kHz	30kHz	Average		
	0.090MHz-0.110MH	Z	Quasi-peak	10kHz	30kHz	Quasi-peak		
	0.110MHz-0.490MH	z	Peak	10kHz	30kHz	Peak		
	0.110MHz-0.490MH	Z	Average	10kHz	30kHz	Average		
	0.490MHz -30MHz		Quasi-peak	10kHz	30kHz	Quasi-peak		
	30MHz-1GHz		Quasi-peak	100 kH	lz 300kHz	Quasi-peak		
	Above 1GHz		Peak	1MHz	3MHz	Peak		
	Above 10112		Peak	1MHz	10Hz	Average		
Limit:	Frequency	l	eld strength crovolt/meter)	Limit (dBuV/m)	Remark	Measuremen distance (m)		
	0.009MHz-0.490MHz	24	400/F(kHz)	-	ı	300		
	0.490MHz-1.705MHz	24	000/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: 15.35(b), frequency emissions is limit applicable to the epeak emission level race	20d quip	B above the ment under t	maximum est. This p	permitted av	erage emission		



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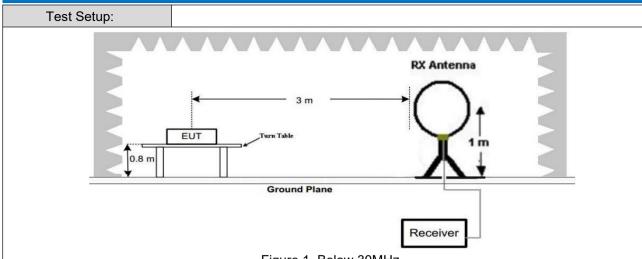
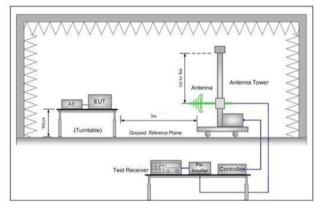


Figure 1. Below 30MHz



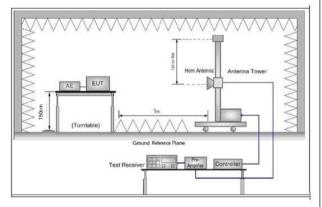


Figure 2. 30MHz to 1GHz

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 camber. 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 camber. 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

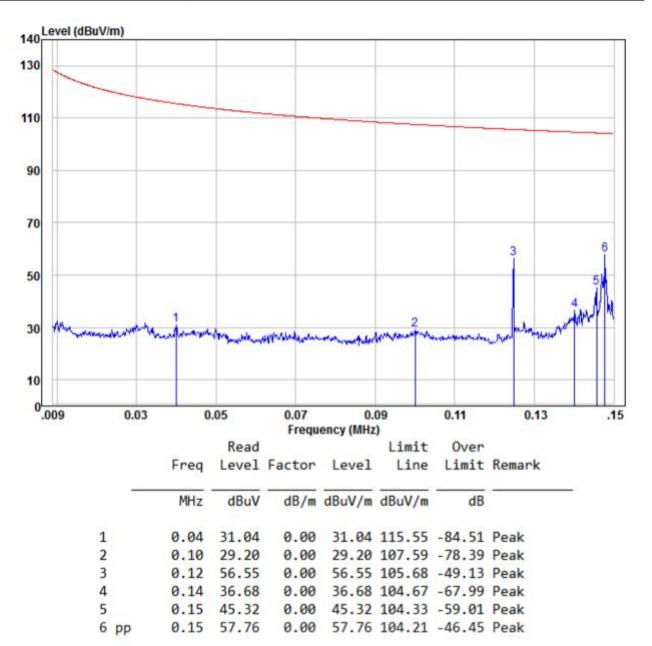


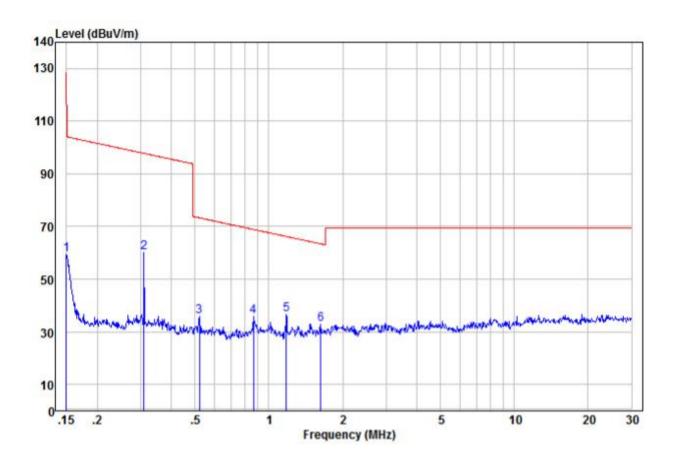
	measurement.
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to 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 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.
	g. Repeat above procedures until all frequencies measured was complete.
Test Results:	Pass





Radiated Emission below 9k~30MHz			
Test mode:	Mode a		



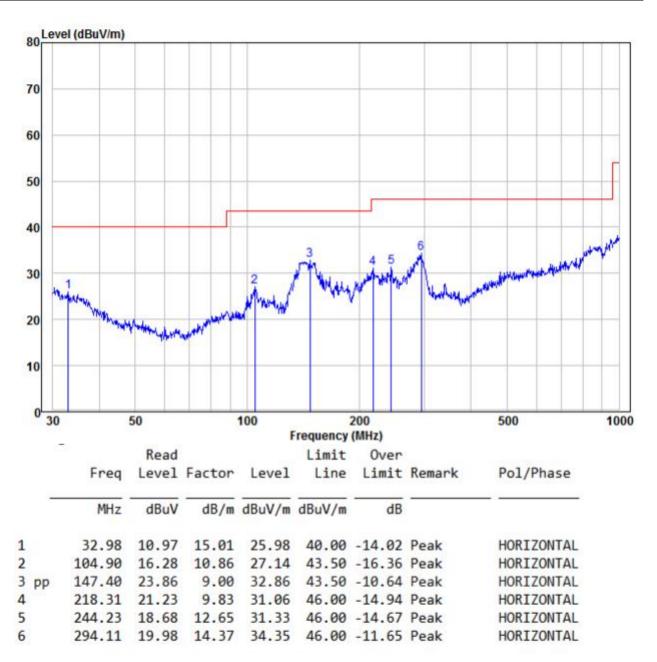


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
1	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.15	59.31	0.00	59.31	104.08	-44.77	Peak
2	0.31	60.06	0.00	60.06	97.78	-37.72	Peak
3	0.52	36.02	0.00	36.02	73.27	-37.25	Peak
4	0.87	35.92	0.00	35.92	68.86	-32.94	Peak
5 pp	1.18	36.74	0.00	36.74	66.20	-29.46	Peak
6	1.63	32.84	0.00	32.84	63.40	-30.56	Peak

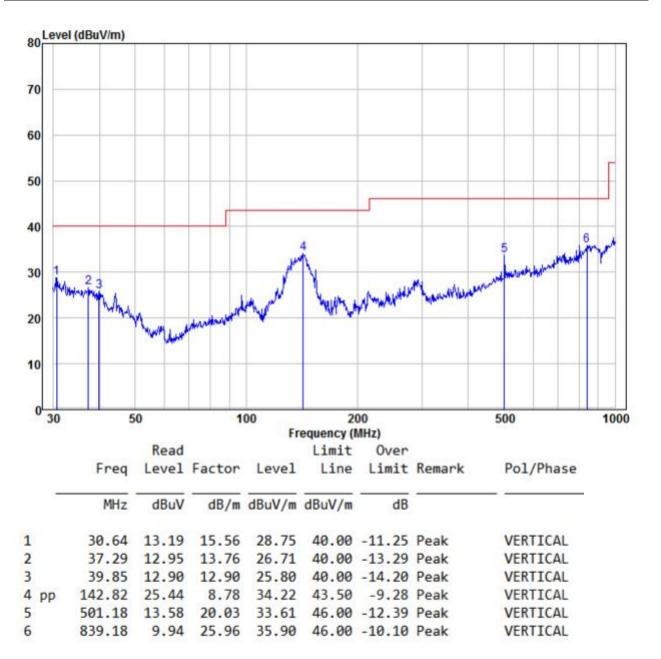




Radiated Emission					
30MHz~1GHz					
Test mode:	Mode a	Horizontal			



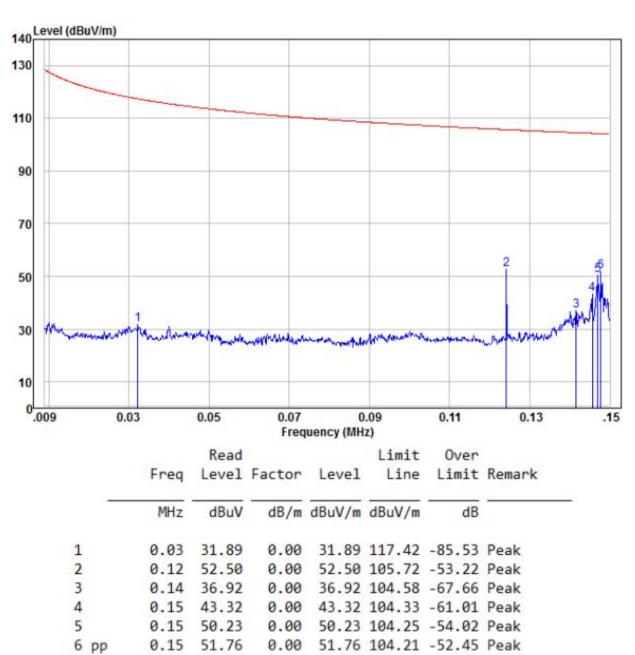
30MHz~1GHz, the worst case			
Test mode:	Mode a	Vertical	



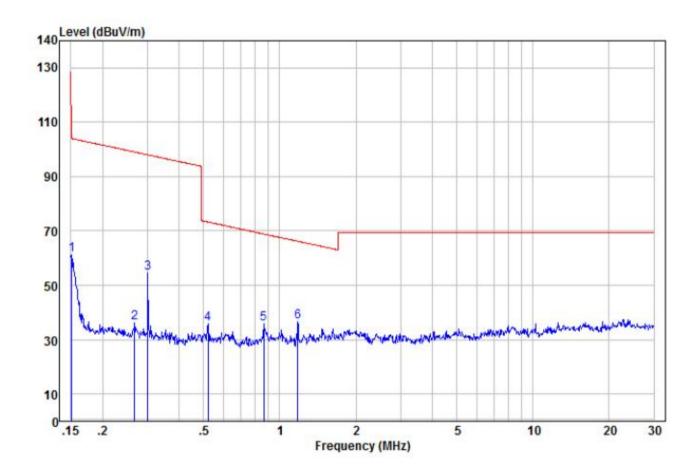




Radiated Emission below 9k~30MHz			
Test mode:	Mode b		





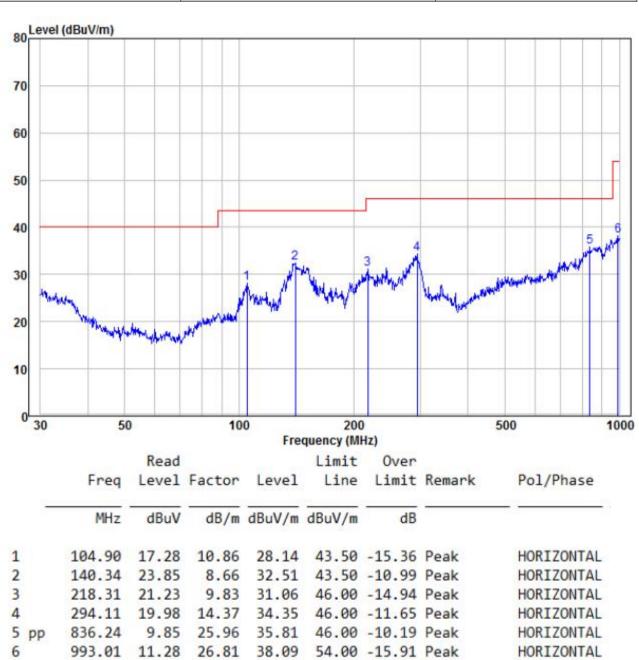


5	Freq	Read Level	Factor	Level	Limit Line	Over Limit		
7.5	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		7.00
1	0.15	61.13	0.00	61.13	104.03	-42.90	Peak	
2	0.27	36.09	0.00	36.09	99.06	-62.97	Peak	
3	0.30	54.59	0.00	54.59	98.01	-43.42	Peak	
4	0.52	36.02	0.00	36.02	73.27	-37.25	Peak	
5	0.87	35.92	0.00	35.92	68.86	-32.94	Peak	
6 pp	1.18	36.74	0.00	36.74	66.20	-29.46	Peak	





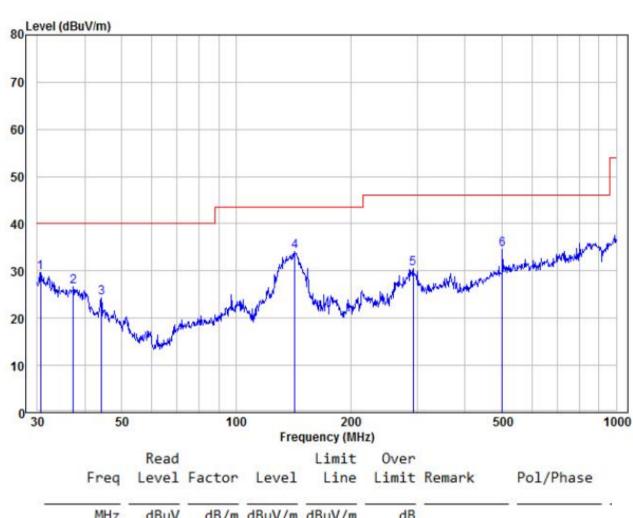
Radiated Emission					
30MHz~1GHz					
Test mode:	Mode b	Horizontal			







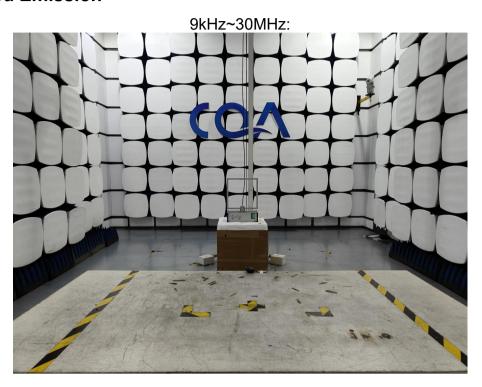
30MHz~1GHz, the worst case			
Test mode:	Mode b	Vertical	



	Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
_	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	30.64	14.19	15.56	29.75	40.00	-10.25	Peak	VERTICAL
2	37.29	12.95	13.76	26.71	40.00	-13.29	Peak	VERTICAL
3	44.28	13.57	10.85	24.42	40.00	-15.58	Peak	VERTICAL
4 pp	142.82	25.44	8.78	34.22	43.50	-9.28	Peak	VERTICAL
5	292.06	16.11	14.30	30.41	46.00	-15.59	Peak	VERTICAL
6	501 18	14.58	20.03	34 61	46 00	-11.39	Peak	VERTICAL

# 6 Photographs - EUT Test Setup

## 6.1 Radiated Emission

















## **6.2** Conducted Emission



# 7 Photographs - EUT Constructional Details















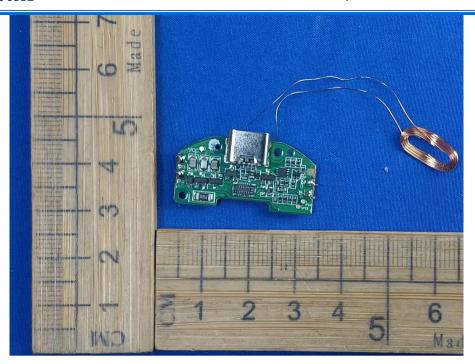


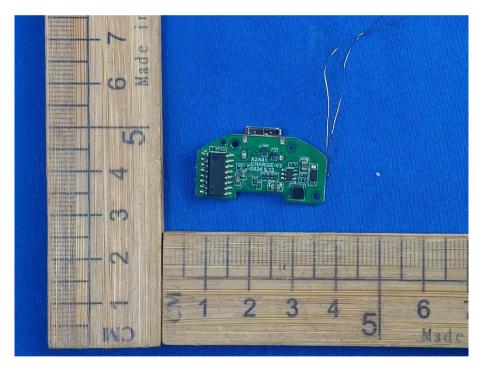




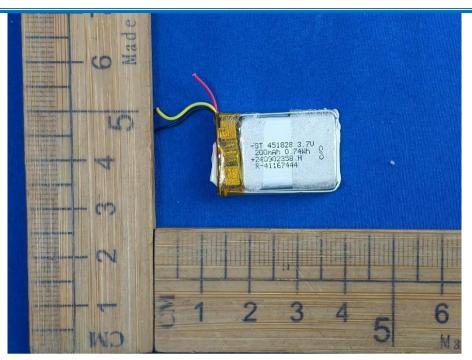












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