TEST REPORT

Report No.:	BCTC2505253209E
Applicant:	Shenzhen Xinrui Chuangsheng Electronics Co., Ltd
Product Name:	Intelligent battery power-off switch
Test Model:	ZNKG01
Tested Date:	2025-05-12 to 2025-05-15
Issued Date:	2025-06-20

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2BMAM-ZNKG

Product Name:	Intelligent battery power-off switch
Trademark:	N/A
Model/Type Reference:	Equipped with digital display: ZNKG01,ZNKG02,ZNKG03,ZNKG04,ZNKG10, ZNKG12,ZNKG14,ZNKG16, Standard LED indicator light: ZNKG05,ZNKG06,ZNKG07,ZNKG08,ZNKG09, ZNKG11,ZNKG13,ZNKG15,
Prepared For:	Shenzhen Xinrui Chuangsheng Electronics Co., Ltd
Address:	302, Building 11, No. 2, Hekeng Industrial Zone, Liulian Community, Pingdi Street, Longgang District, Shenzhen, China
Manufacturer:	Shenzhen Xinrui Chuangsheng Electronics Co., Ltd
Address:	302, Building 11, No. 2, Hekeng Industrial Zone, Liulian Community, Pingdi Street, Longgang District, Shenzhen, China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2025-05-12
Sample Tested Date:	2025-05-12 to 2025-05-15
Report No.:	BCTC2505253209E
Test Standards:	FCC PART 15B ANSI C63.4:2014
Test Results:	PASS

This device complies with part 15 of the FCC Rules, Operation is subject to the condition that this device does not cause harmful interference

Tested by:

Brave Zeng / Project Handler

Approved by:

Zero Zhou /Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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1. Version

Report No.	Issue Date	Description	Approved
BCTC2505253209E	2025-06-20	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

Standard	Test Item	Test result
FCC 15.107	Conducted Emission	N/A
FCC 15.109	Radiated Emission	Pass

Remark:
N/A is an abbreviation for not applicable.
1.The EUT is powered by the DC only, the test item is not applicable.

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product 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.

Test item	Value (dB)
Disturbance voltages (9KHz-150KHz)	3.50
Disturbance voltages (150KHz-30MHz)	3.20
Radiated disturbance (30MHz-200MHz)	4.60
Radiated disturbance (200MHz-1000MHz)	5.20
Radiated disturbance (1GHz -6GHz)	5.30
Radiated disturbance (6GHz -18GHz)	5.50

4. Product Information And Test Setup

4.1 Product Information

Ratings:	Input: DC 12V
Model differences:	The following equipment models we produce are identical in terms of electrical, mechanical, and physical structure; The difference lies in the casing and digital tube, which have been tested regardless of whether they have a display screen or not.
The highest frequency of the internal sources of the EUT is:	☐ less than 1.705 MHz, the measurement shall only be made up to 30 MHz. ☐ between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz. ☒ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. ☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. ☐ above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40GHz, whichever is less.

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord	Calibration
1.	DC Power	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Mode	
Mode 1:	Working

Test item	Test Mode	Test Voltage
Radiated Emission(30MHz-6GHz) Class B	Mode 1	DC 12V

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.
FCC Test Firm Registration Number: 712850
IC Registered No.: 23583

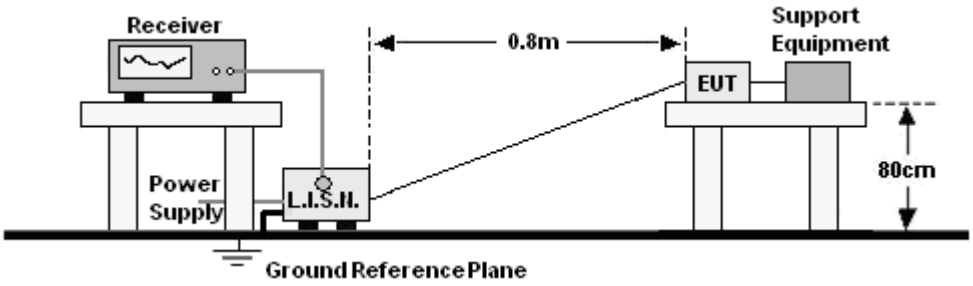
5.2 Test Instrument Used

Radiated disturbance					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 16, 2024	May 15, 2025
Receiver	R&S	ESR3	102075	May 16, 2024	May 15, 2025
Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 21, 2024	May 20, 2025
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 21, 2024	May 20, 2025
Amplifier	SKET	LAPA_01G18G-45 dB	SK2021040 901	May 16, 2024	May 15, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 16, 2024	May 15, 2025
Horn Antenn(18GHz -40GHz)	Schwarzbeck	BBHA9170	00822	May 21, 2024	May 20, 2025
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Conducted emissions at the mains ports of Class B MME

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,5 to 5	56	46
5 to 30	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

For mains ports:

a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

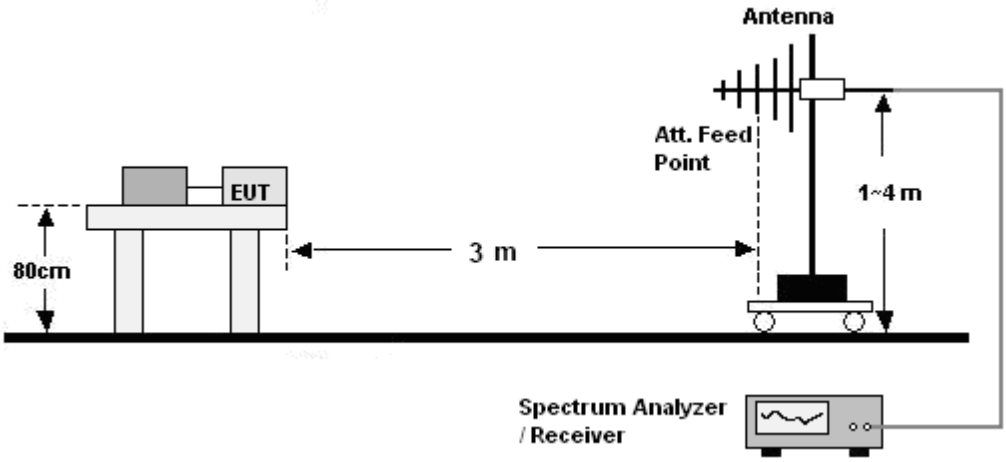
6.4 Test Result

The EUT is powered by the DC only, the test item is not applicable.

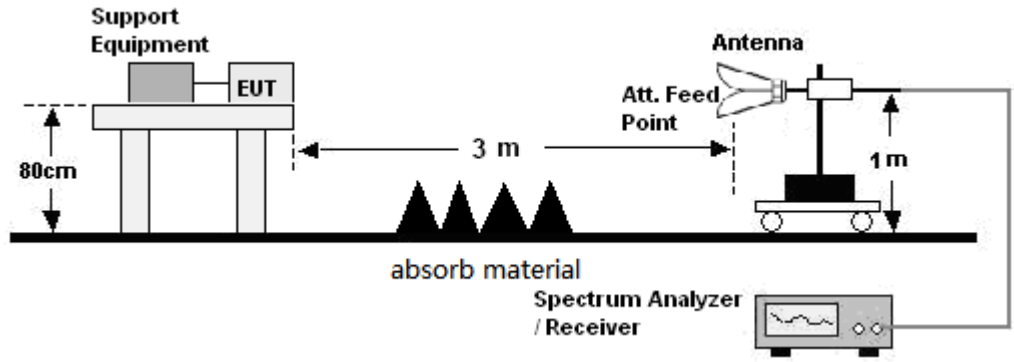
7. Radiated Disturbance Test

7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



Above 1GHz:



7.2 Limits

Limits for Class B devices

Frequency (MHz)	limits at 3m dB(μV/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Note: The lower limit shall apply at the transition frequencies.

7.3 Test Procedure

30MHz ~ 1GHz:

a. The Product was placed on the nonconductive turntable 0.8m above the ground in a semi anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 0.8 m above the ground in a full anechoic chamber..

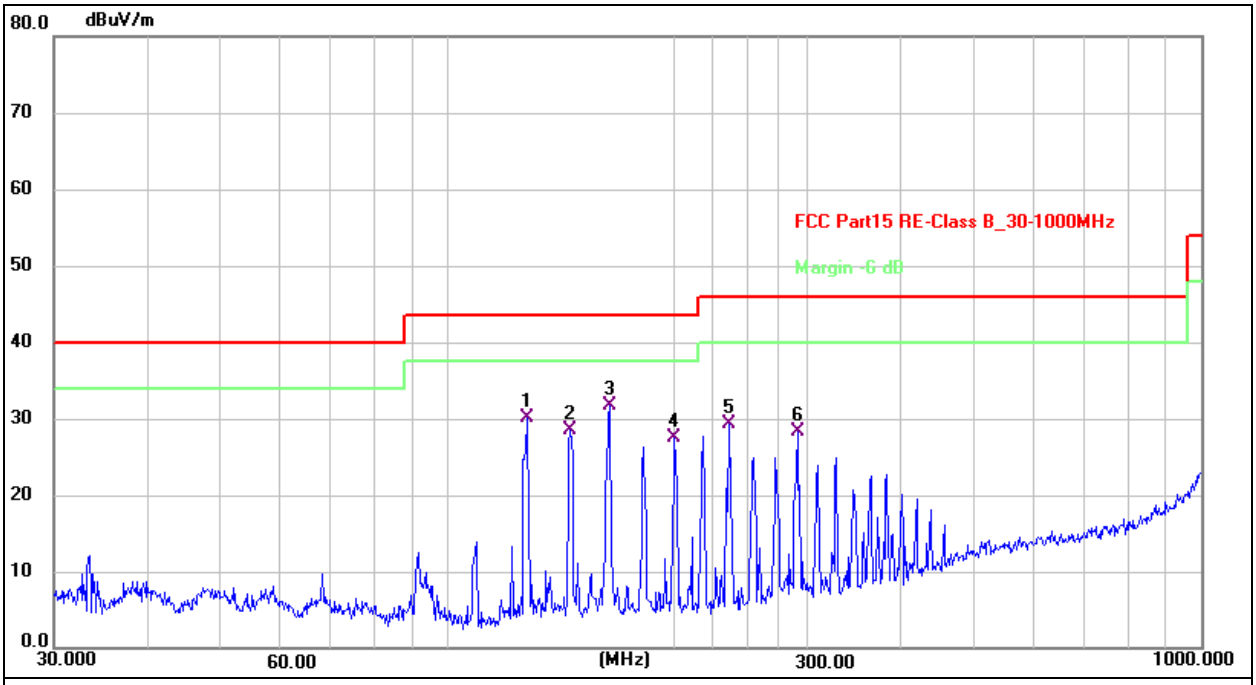
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Results

Equipped with digital display:

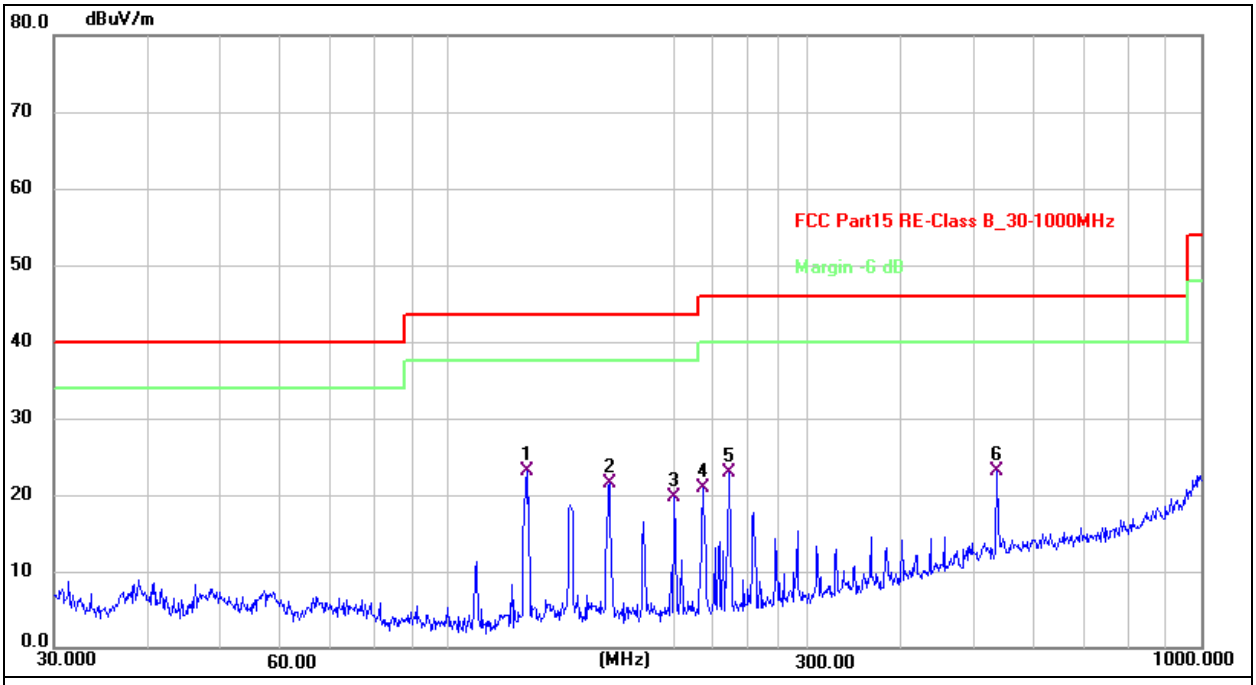
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V	Test Mode:	Mode 1



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	127.2176	49.86	-19.75	30.11	43.50	-13.39	QP
2	145.3506	47.50	-18.91	28.59	43.50	-14.91	QP
3 *	163.7550	50.66	-18.92	31.74	43.50	-11.76	QP
4	199.9856	46.95	-19.50	27.45	43.50	-16.05	QP
5	236.6447	48.37	-19.06	29.31	46.00	-16.69	QP
6	291.0360	45.96	-17.67	28.29	46.00	-17.71	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V	Test Mode:	Mode 1

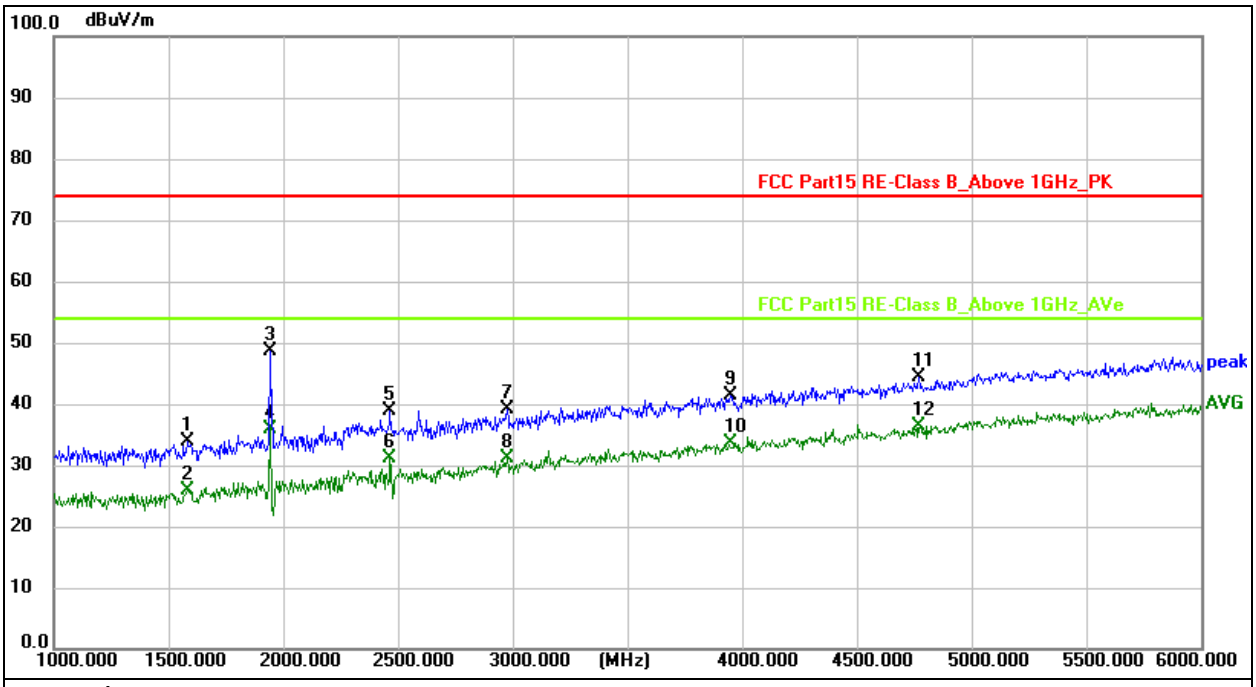


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	127.2176	42.87	-19.75	23.12	43.50	-20.38	QP
2	163.7550	40.43	-18.92	21.51	43.50	-21.99	QP
3	199.9856	39.22	-19.50	19.72	43.50	-23.78	QP
4	218.3085	40.16	-19.28	20.88	46.00	-25.12	QP
5	235.8164	41.91	-19.07	22.84	46.00	-23.16	QP
6	535.7073	34.65	-11.56	23.09	46.00	-22.91	QP

Above 1GHz:

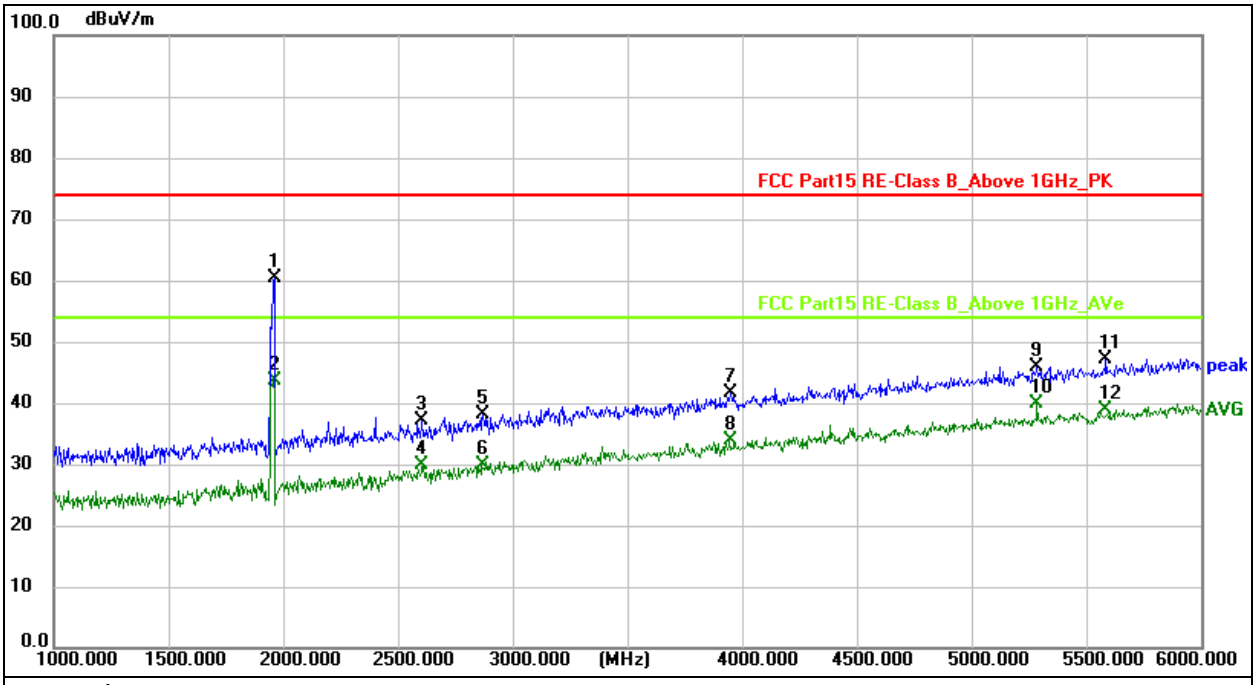
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V	Test Mode:	Mode 1



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1580.000	54.21	-20.28	33.93	74.00	-40.07	peak
2	1580.000	46.25	-20.28	25.97	54.00	-28.03	AVG
3	1940.000	67.82	-19.10	48.72	74.00	-25.28	peak
4	1940.000	55.02	-19.10	35.92	54.00	-18.08	AVG
5	2465.000	56.50	-17.57	38.93	74.00	-35.07	peak
6	2465.000	48.59	-17.57	31.02	54.00	-22.98	AVG
7	2975.000	54.64	-15.61	39.03	74.00	-34.97	peak
8	2975.000	46.65	-15.61	31.04	54.00	-22.96	AVG
9	3950.000	53.27	-11.90	41.37	74.00	-32.63	peak
10	3950.000	45.46	-11.90	33.56	54.00	-20.44	AVG
11	4770.000	53.40	-9.12	44.28	74.00	-29.72	peak
12 *	4770.000	45.38	-9.12	36.26	54.00	-17.74	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V	Test Mode:	Mode 1

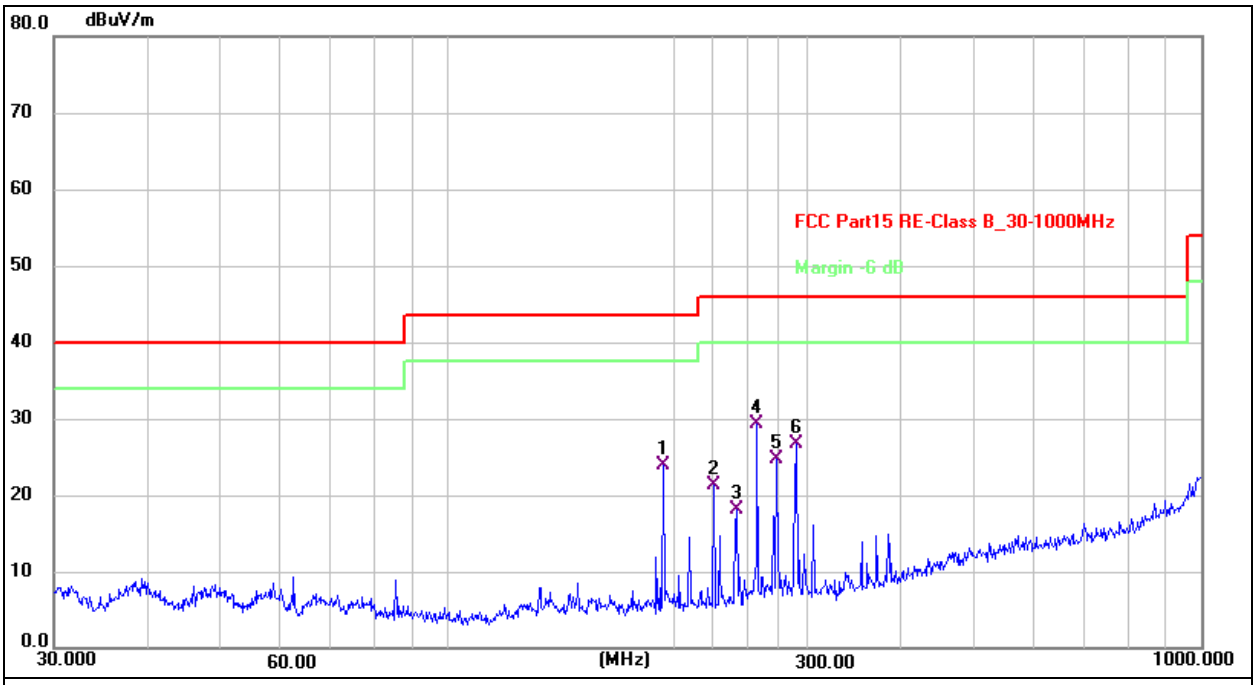


Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1960.000	79.31	-19.03	60.28	74.00	-13.72	peak
2 *	1960.000	62.65	-19.03	43.62	54.00	-10.38	AVG
3	2605.000	54.28	-17.04	37.24	74.00	-36.76	peak
4	2605.000	47.02	-17.04	29.98	54.00	-24.02	AVG
5	2870.000	54.14	-16.01	38.13	74.00	-35.87	peak
6	2870.000	45.96	-16.01	29.95	54.00	-24.05	AVG
7	3950.000	53.51	-11.90	41.61	74.00	-32.39	peak
8	3950.000	45.71	-11.90	33.81	54.00	-20.19	AVG
9	5285.000	53.78	-7.87	45.91	74.00	-28.09	peak
10	5285.000	47.68	-7.87	39.81	54.00	-14.19	AVG
11	5585.000	54.58	-7.40	47.18	74.00	-26.82	peak
12	5585.000	46.27	-7.40	38.87	54.00	-15.13	AVG

Standard LED indicator light:

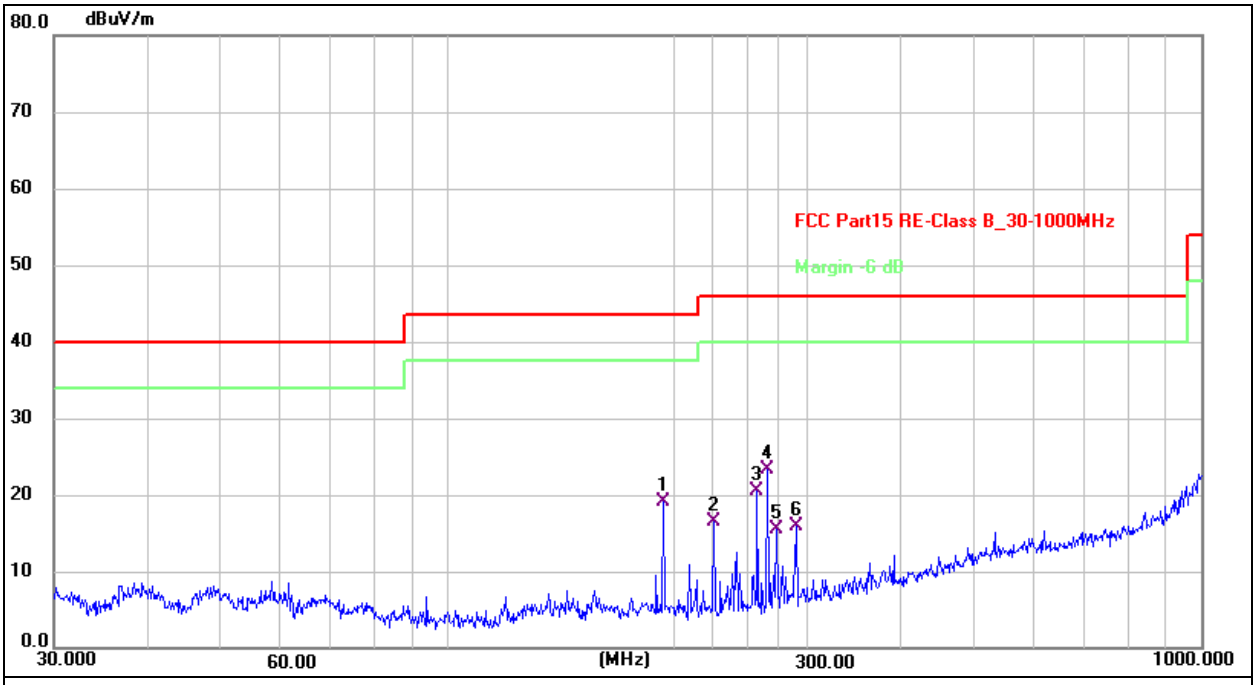
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V	Test Mode:	Mode 1



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	193.0945	43.33	-19.39	23.94	43.50	-19.56	QP
2	225.3080	40.51	-19.20	21.31	46.00	-24.69	QP
3	241.6763	37.11	-19.00	18.11	46.00	-27.89	QP
4 *	257.4222	48.01	-18.68	29.33	46.00	-16.67	QP
5	273.2341	42.90	-18.20	24.70	46.00	-21.30	QP
6	290.0172	44.44	-17.70	26.74	46.00	-19.26	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V	Test Mode:	Mode 1

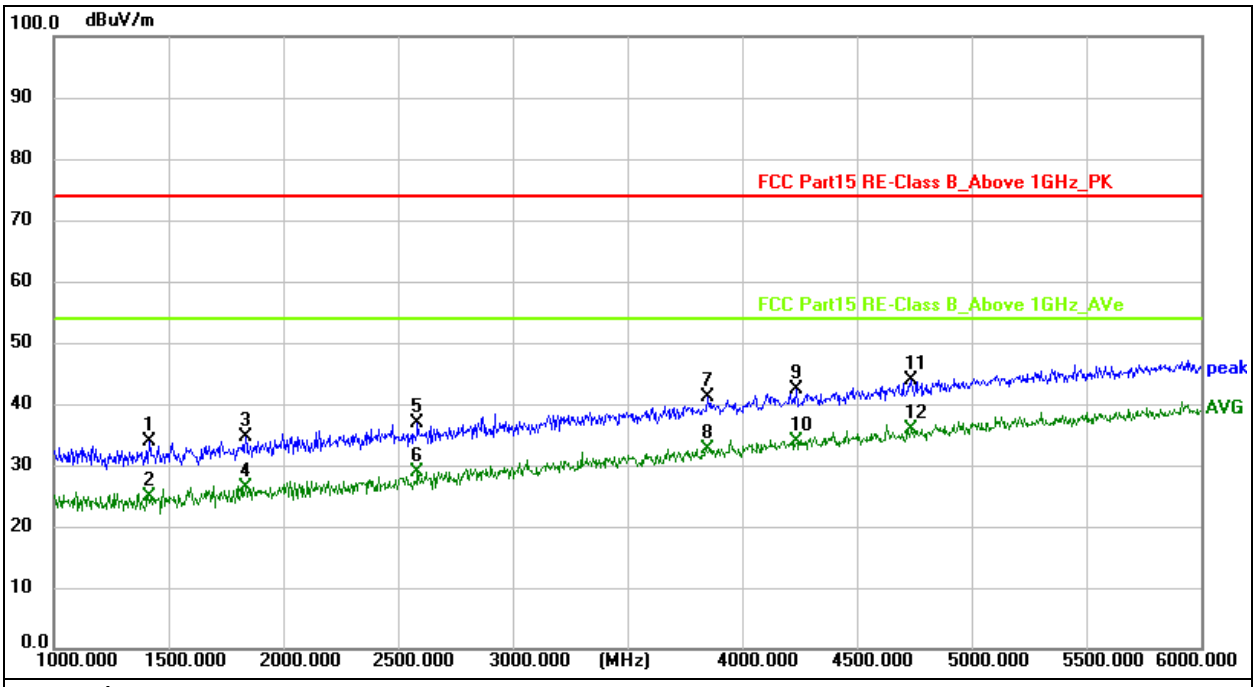


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	193.0945	38.56	-19.39	19.17	43.50	-24.33	QP
2	225.3080	35.65	-19.20	16.45	46.00	-29.55	QP
3	257.4222	39.19	-18.68	20.51	46.00	-25.49	QP
4 *	265.6757	41.77	-18.43	23.34	46.00	-22.66	QP
5	273.2341	33.66	-18.20	15.46	46.00	-30.54	QP
6	290.0172	33.60	-17.70	15.90	46.00	-30.10	QP

Above 1GHz:

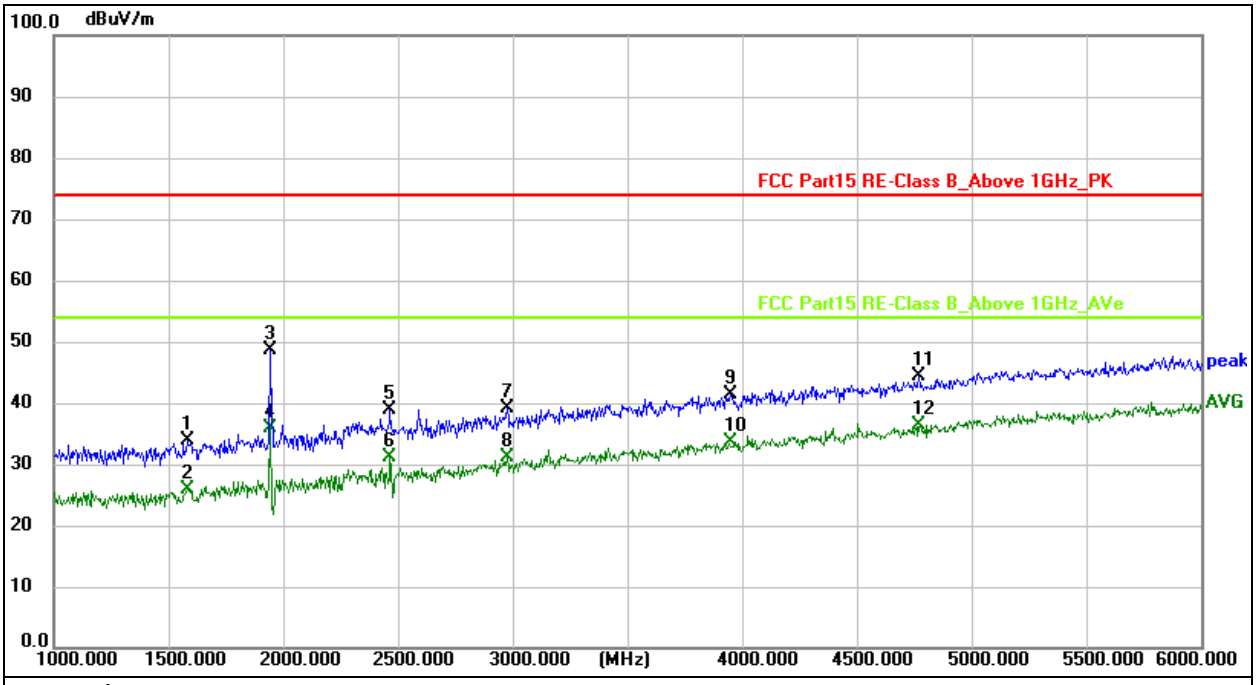
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 12V	Test Mode:	Mode 1



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1415.000	54.63	-20.66	33.97	74.00	-40.03	peak
2	1415.000	45.61	-20.66	24.95	54.00	-29.05	AVG
3	1835.000	54.03	-19.45	34.58	74.00	-39.42	peak
4	1835.000	45.90	-19.45	26.45	54.00	-27.55	AVG
5	2585.000	53.98	-17.11	36.87	74.00	-37.13	peak
6	2585.000	46.10	-17.11	28.99	54.00	-25.01	AVG
7	3850.000	53.51	-12.31	41.20	74.00	-32.80	peak
8	3850.000	44.91	-12.31	32.60	54.00	-21.40	AVG
9	4235.000	53.30	-10.95	42.35	74.00	-31.65	peak
10	4235.000	44.93	-10.95	33.98	54.00	-20.02	AVG
11	4735.000	53.10	-9.25	43.85	74.00	-30.15	peak
12 *	4735.000	45.25	-9.25	36.00	54.00	-18.00	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 12V	Test Mode:	Mode 1



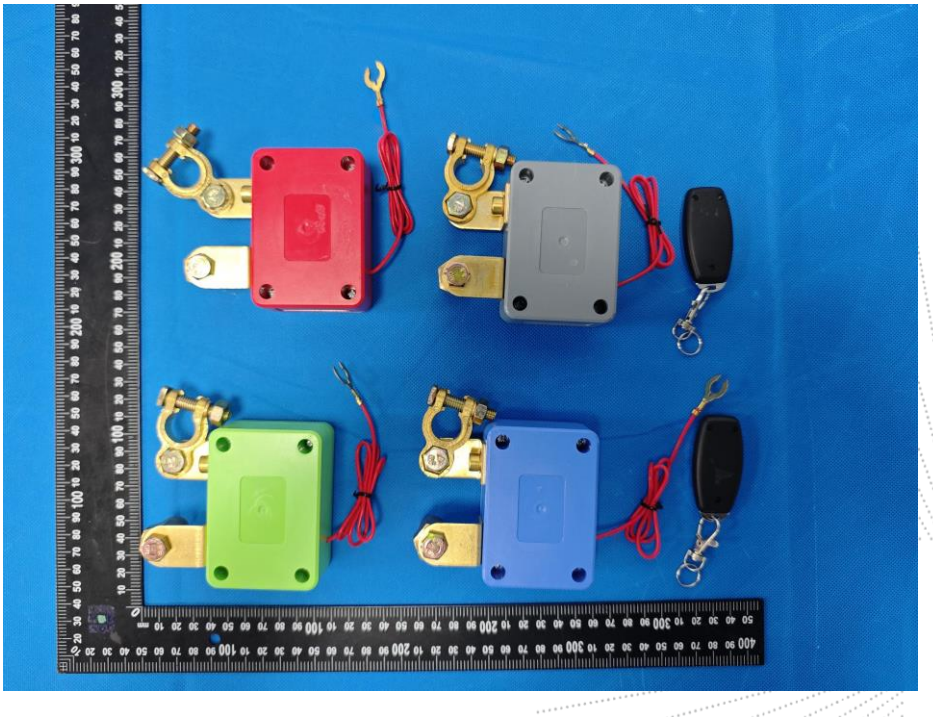
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1580.000	54.21	-20.28	33.93	74.00	-40.07	peak
2	1580.000	46.25	-20.28	25.97	54.00	-28.03	AVG
3	1940.000	67.82	-19.10	48.72	74.00	-25.28	peak
4	1940.000	55.02	-19.10	35.92	54.00	-18.08	AVG
5	2465.000	56.50	-17.57	38.93	74.00	-35.07	peak
6	2465.000	48.59	-17.57	31.02	54.00	-22.98	AVG
7	2975.000	54.64	-15.61	39.03	74.00	-34.97	peak
8	2975.000	46.65	-15.61	31.04	54.00	-22.96	AVG
9	3950.000	53.27	-11.90	41.37	74.00	-32.63	peak
10	3950.000	45.46	-11.90	33.56	54.00	-20.44	AVG
11	4770.000	53.40	-9.12	44.28	74.00	-29.72	peak
12 *	4770.000	45.38	-9.12	36.26	54.00	-17.74	AVG

8. EUT Photographs

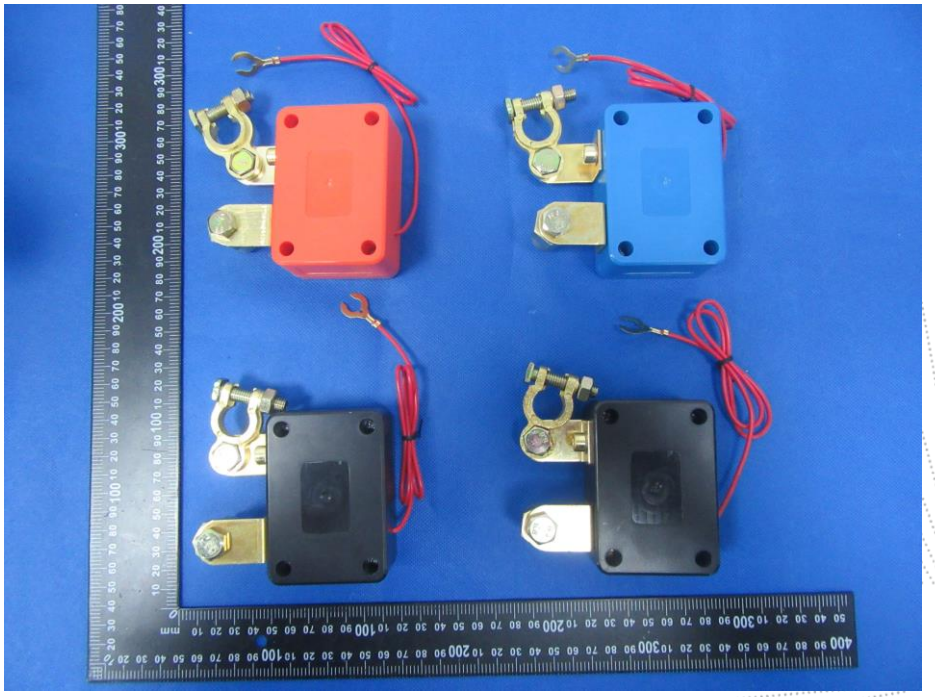
EUT Photo 1

EUT Photo 2



EUT Photo 3

EUT Photo 4



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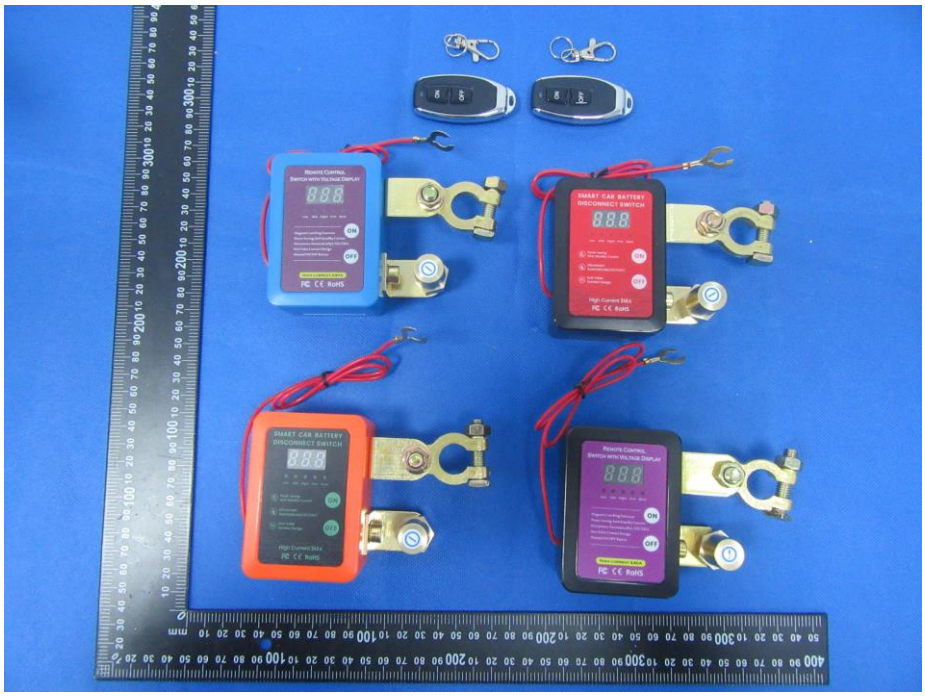

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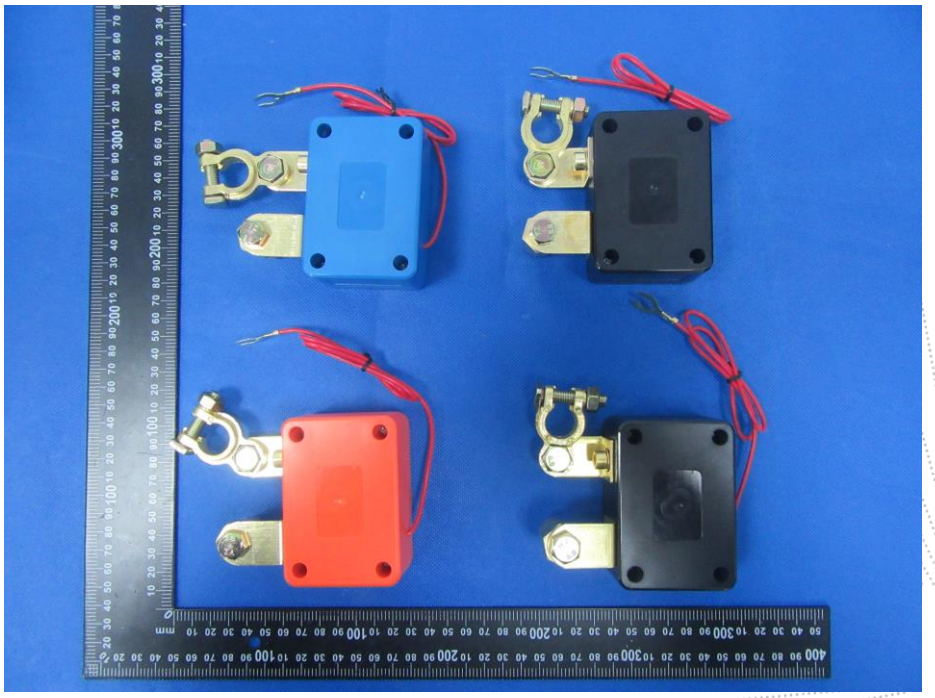
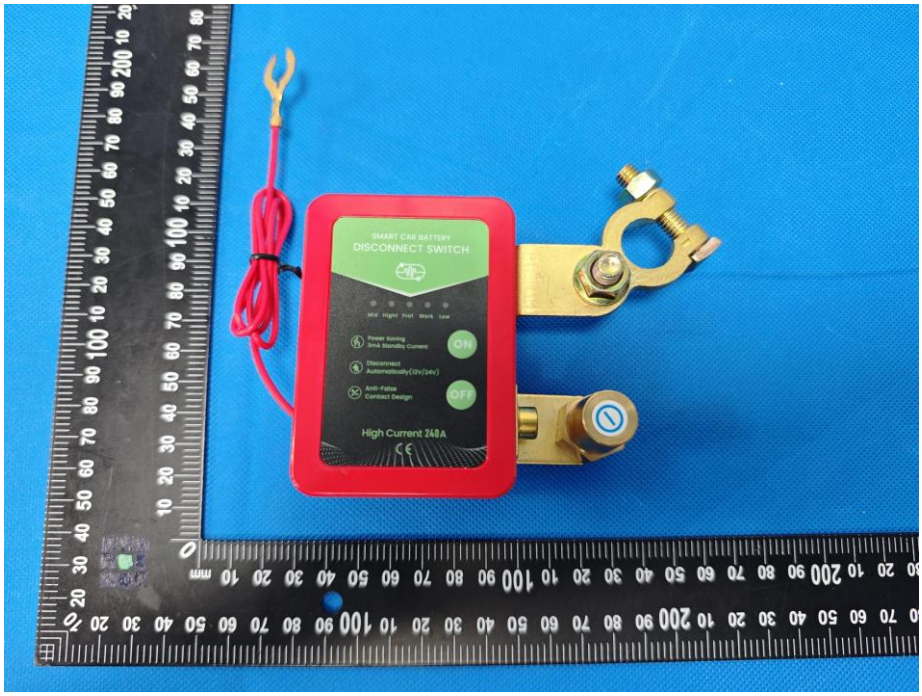


EUT Photo 7

EUT Photo 8

EUT Photo 9



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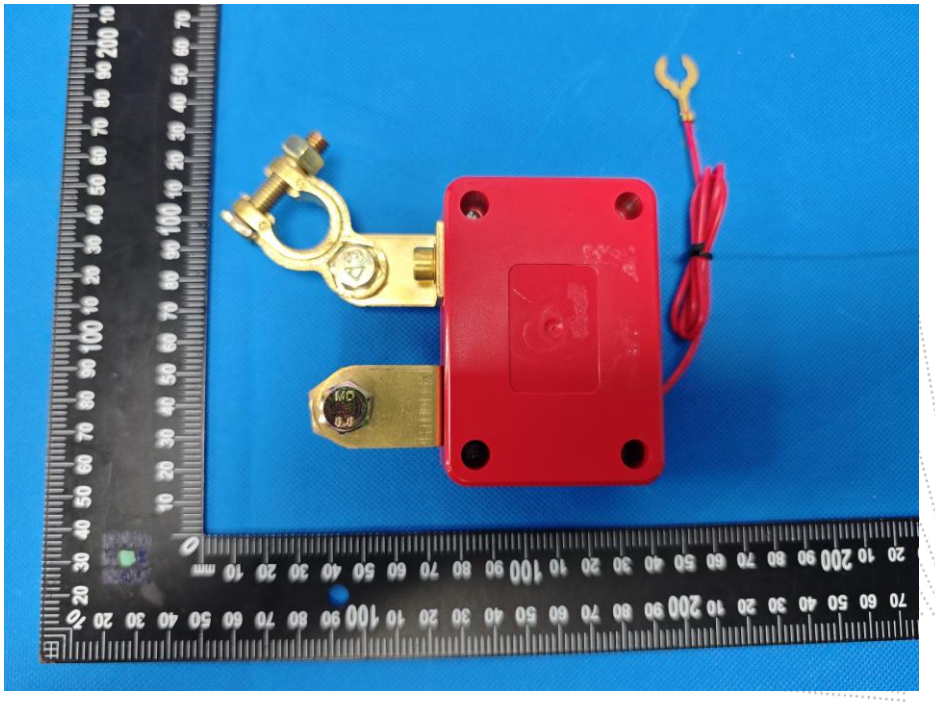

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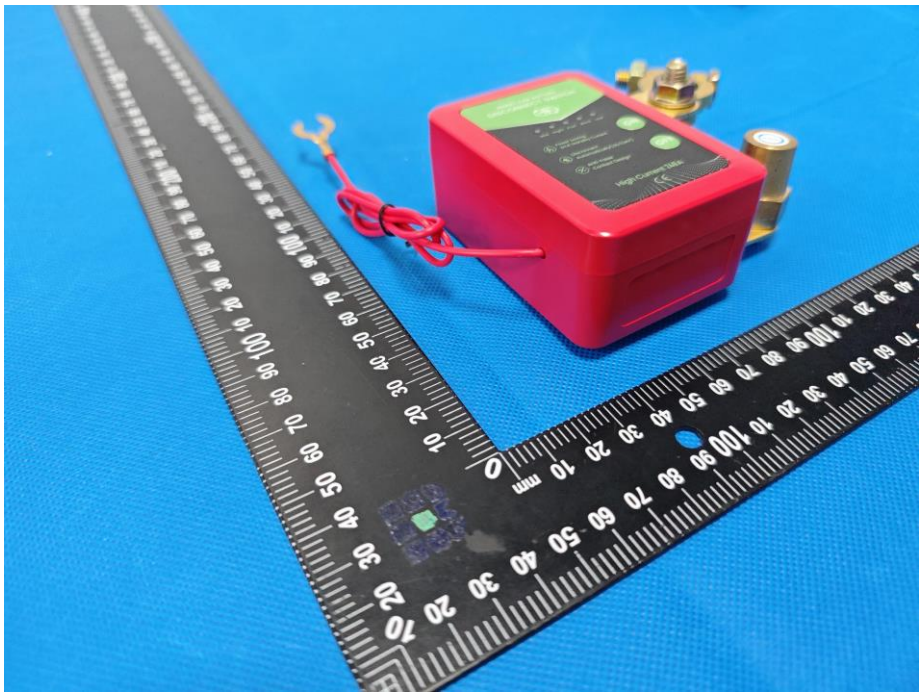

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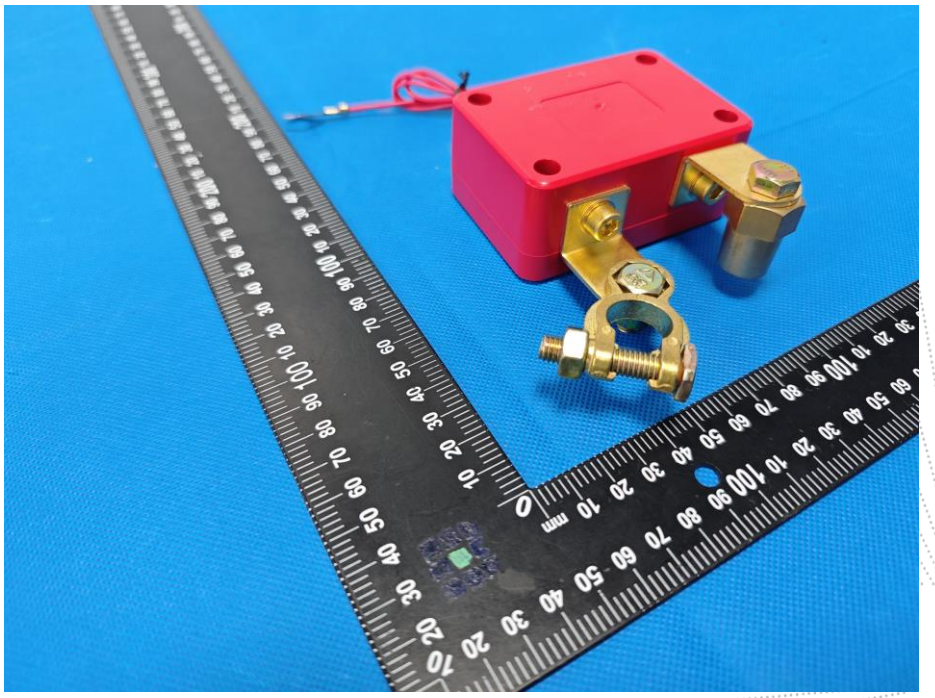

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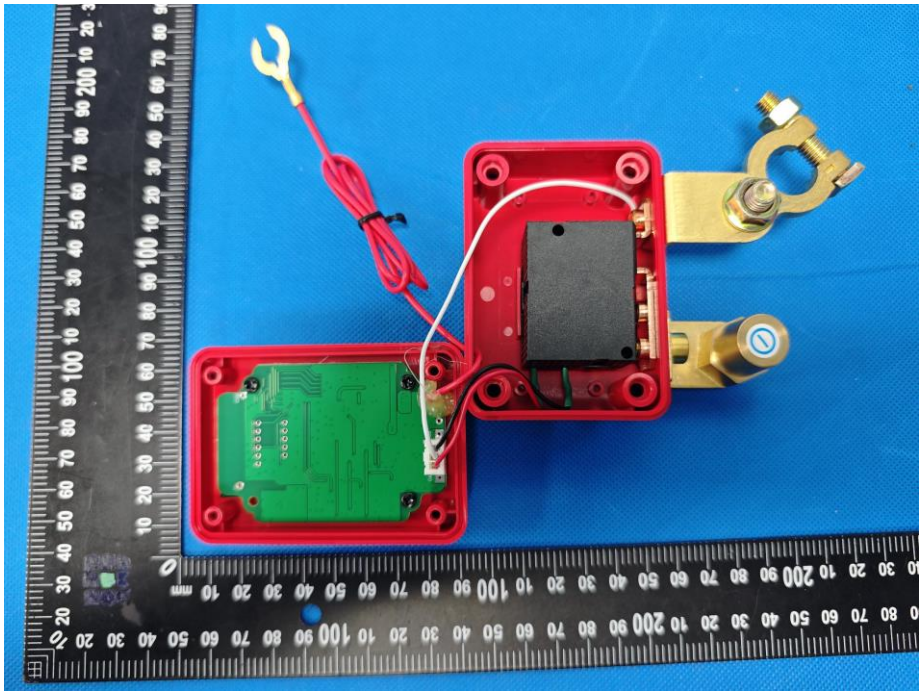

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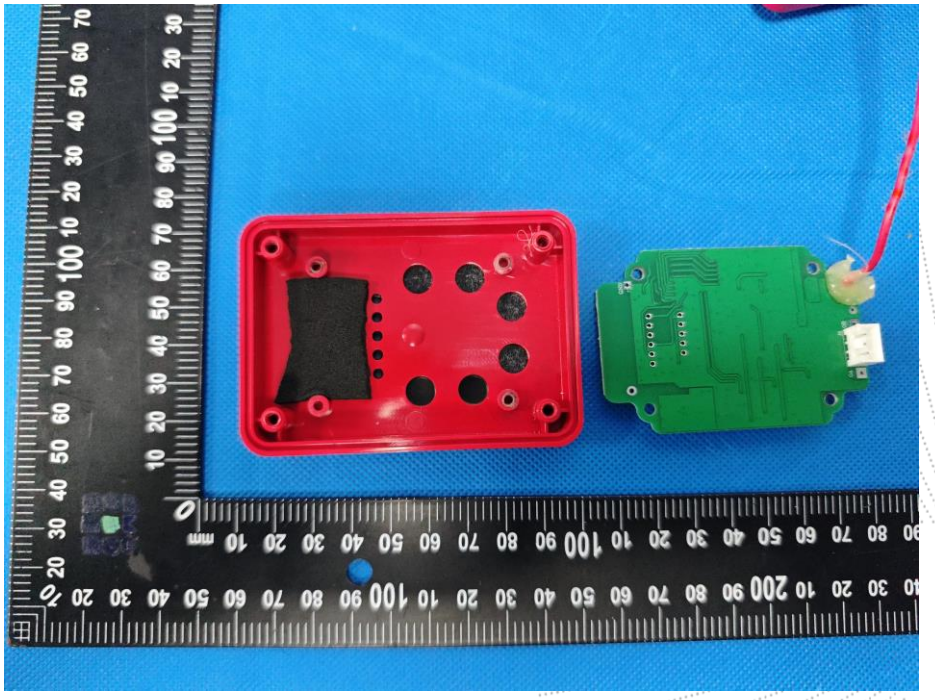

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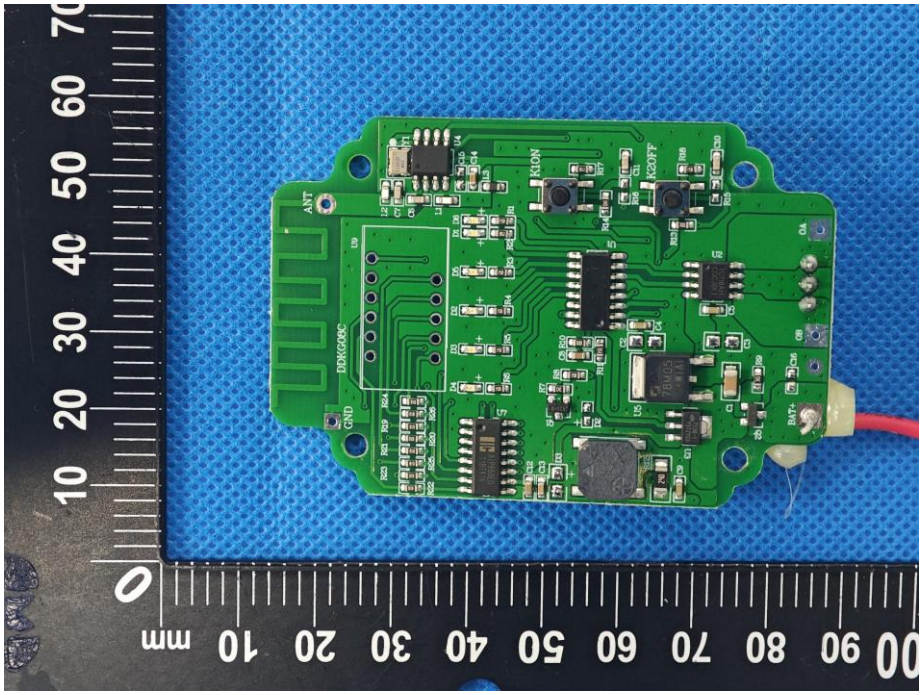

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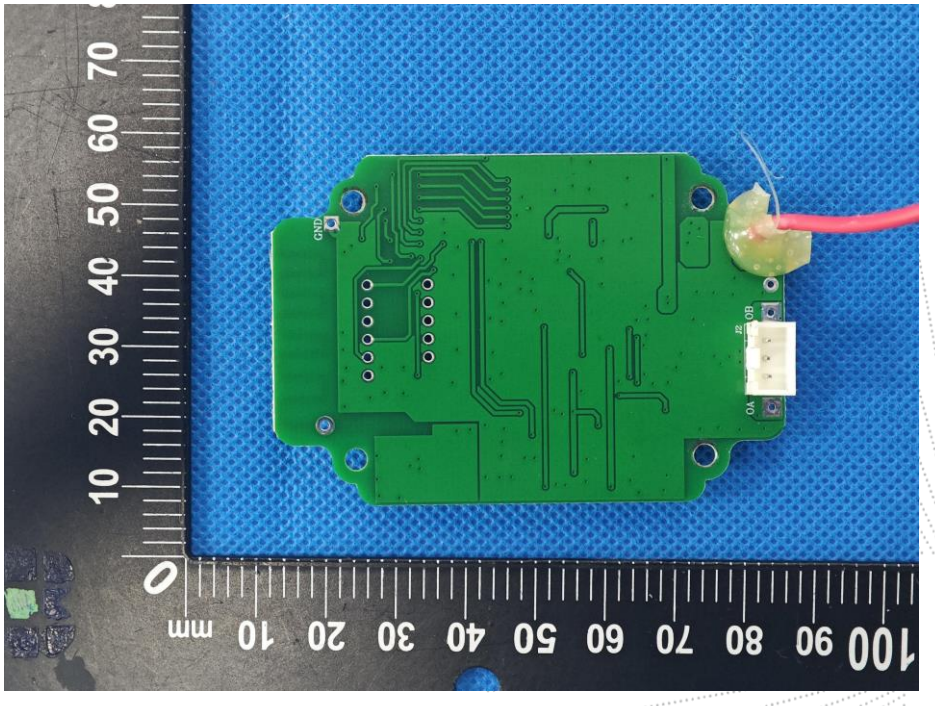

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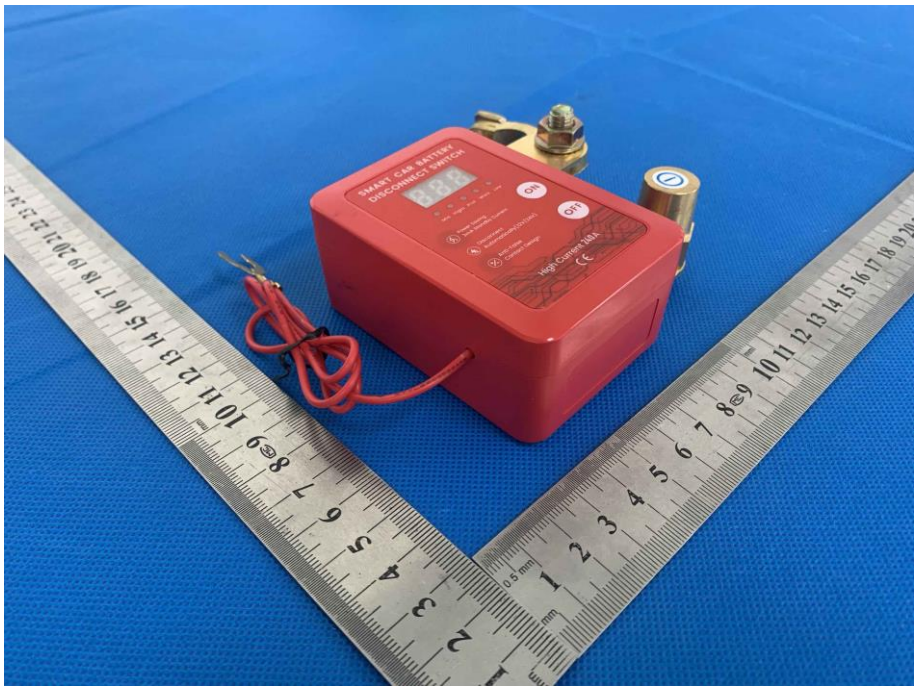

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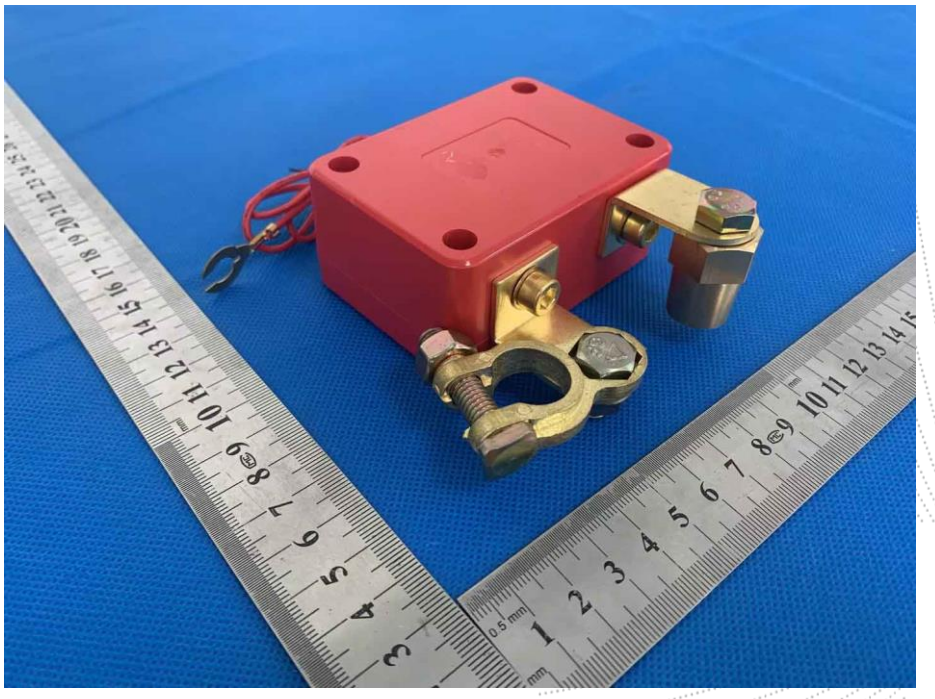

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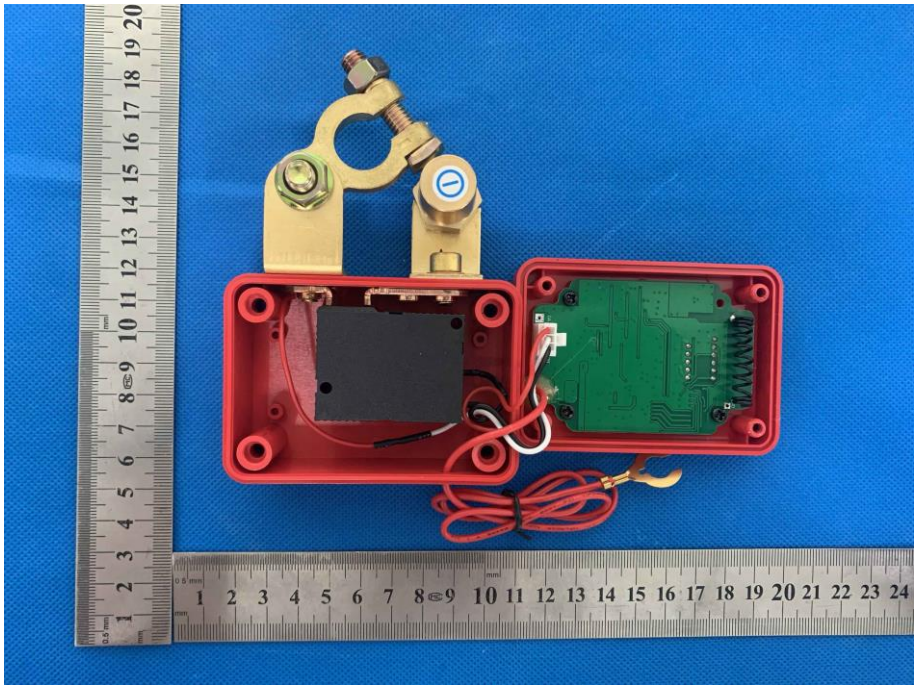

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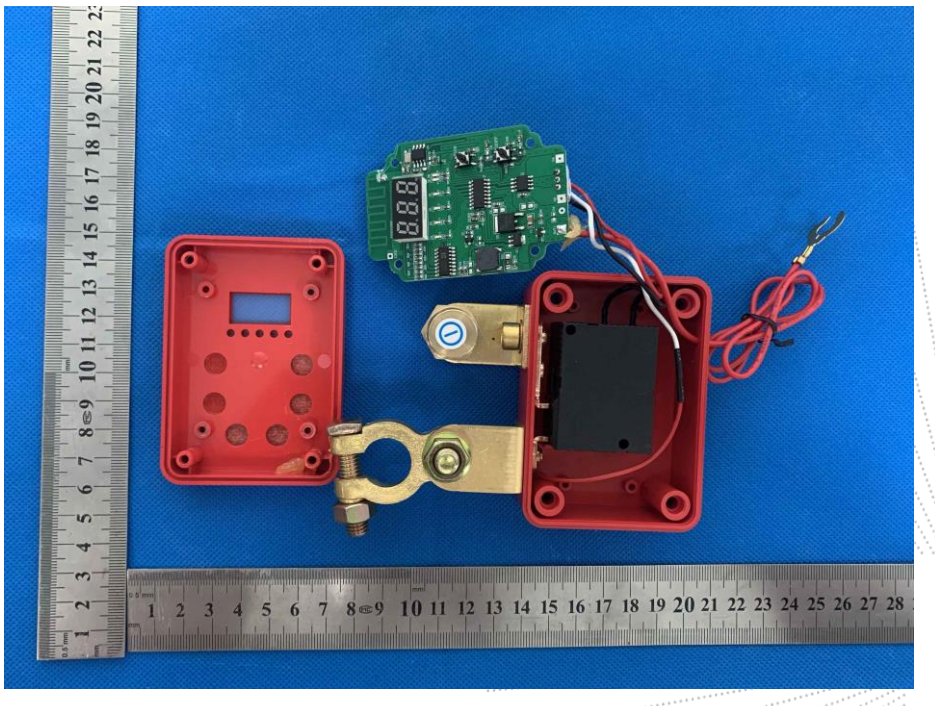

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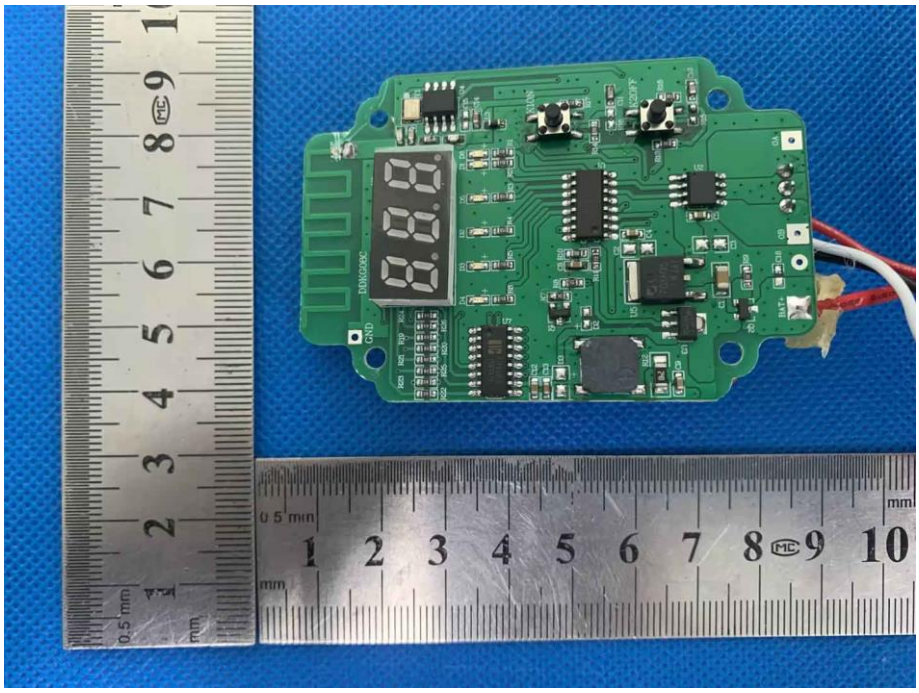

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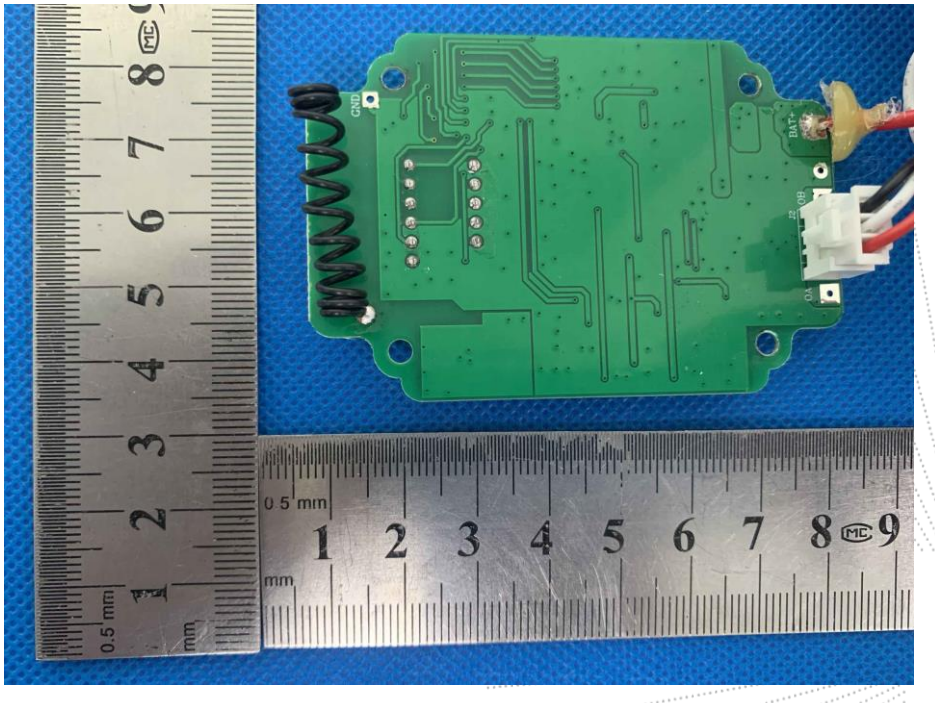
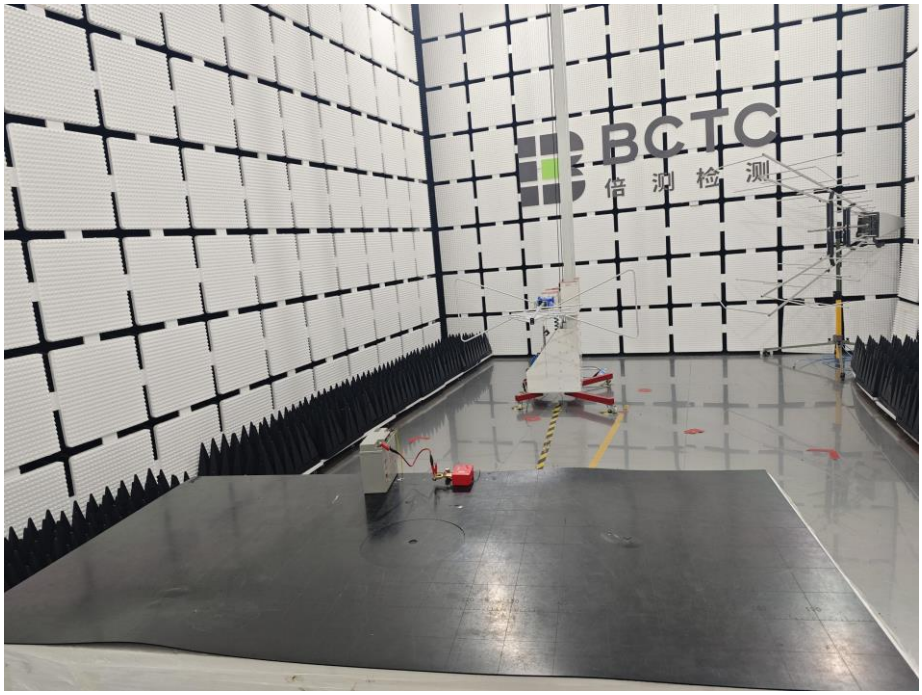
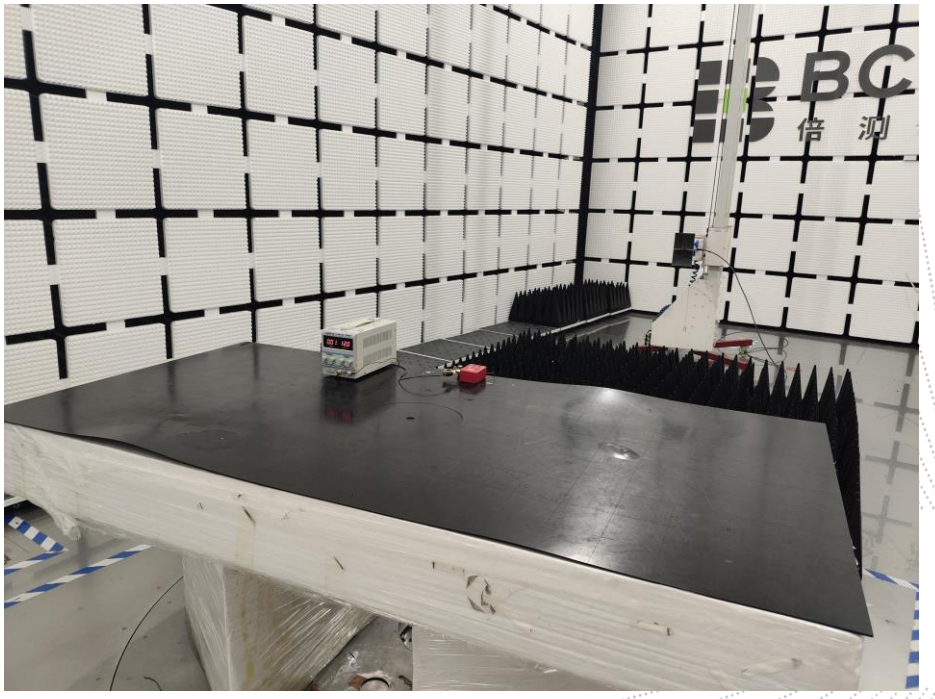


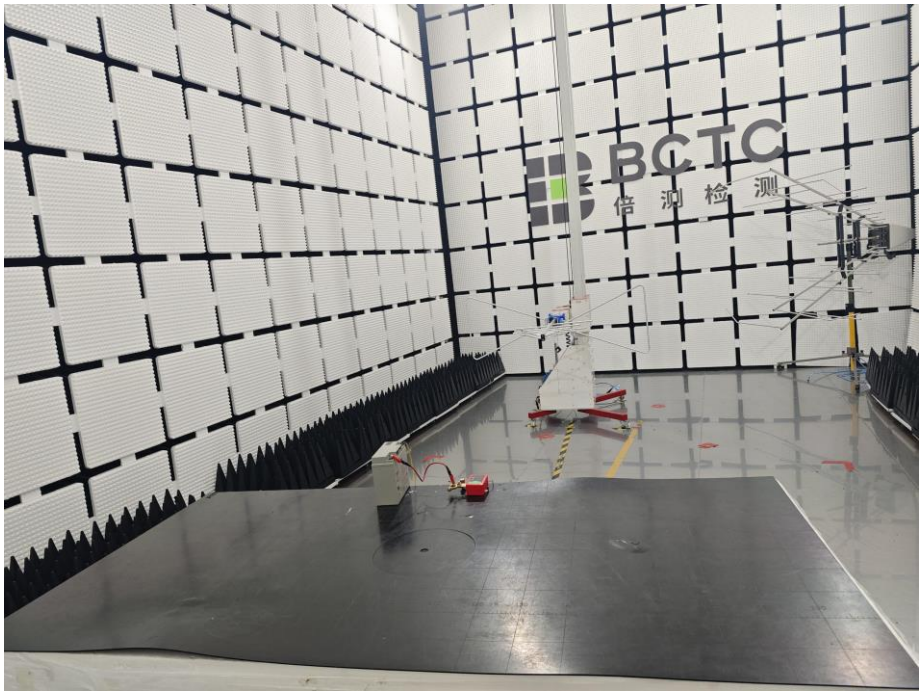
9. EUT Test Setup Photographs

Equipped with a display screen:
Radiated Emissions





Standard LED indicator light:
Radiated Emissions



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
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TEL: 400-788-9558

P.C.: 518116

FAX: 0755-33229357

Website: http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn

Complaint/Advice E-mail: advice@bctc-lab.com.cn

※※※※※ **END** ※※※※※