



TEST REPORT

Report No..... : ZHT-230829021E

Product..... : Add-on Battery AB2000

Trademark..... : **ZENDURE**
SuperCharged[®]

Model(s)..... : ZDAB2000

Applicant..... : Zendure USA Inc.

Address..... : 1765 E BAYSHORE RD # 201 EAST PALO ALTO, CA 94303-5501

Manufacturer..... : ZENDURE TECHNOLOGY CO., LIMITED

Address..... : RM 517, NEW CITY CENTRE, 2 LEI YUE MUN ROAD, KWUN TONG, KOWLOON.HK

Prepared by..... : Guangdong Zhonghan Testing Technology Co., Ltd.

Address..... : Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Date of Receipt..... : Aug. 29, 2023

Date of Test(s)..... : Aug. 29, 2023 - Sep. 05, 2023

Date of Issue..... : Sep. 05, 2023

Test Standard(s)..... : 47CFR Part 15 Subpart B
ANSI C63.4:2014

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

Tested by:

Kevin Yang/ Engineer

Reviewed by:

Baret Wu/ Director

Approved by:



Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of ZHT. This document may be altered or revised by ZHT, personnel only, and shall be noted in the revision of the document.



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1. Revision History

Report No.	Issue Date	Description	Approved
ZHT-230829021E	Sep. 05, 2023	Original	Valid



2. Test Summary

Emission			
Requirement - Test	Test Method	Limit	Result
Conducted Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	N/A
Radiated Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	PASS

Remark: N/A is abbreviation for Not Applicable.



3. General Information

3.1. Description of EUT

Product:	Add-on Battery AB2000
Model Name:	ZDAB2000
Model Difference:	/
Rated Power Supply:	Capacity: 1920 Wh (40 Ah / 48 V) Input: 48 V $\overline{\text{---}}$ 25 A, 1200 W Max Output: 48 V $\overline{\text{---}}$ 25 A, 1200W Max
Normal Testing Voltage:	DC 48 V
DC Line	/
I/O Ports	Refer to User Manual
Highest Frequency Generated	Below 108 MHz

Note:

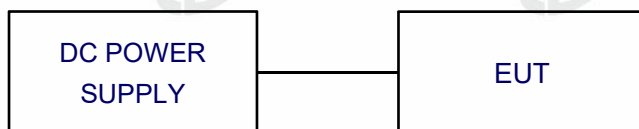
1) Other Accessory Device List and Details

Description	Manufacturer	Model	Note
Dummy Load	Dongguan Plit Technology Co., Ltd	BX9	AE
DC POWER SUPPLY	Sophpower Electronics Co., Ltd.	DSP100-100	AE

2) The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2. Block diagram of EUT configuration

Mode 1



Mode 2





3.3. Test Mode

Pre - Test mode	Mode 1: Charging mode Mode 2: Discharging mode		
Final Test mode	Conducted Emission		N/A
	Radiated Emission	Below 1 GHz	Mode 2
		Above 1 GHz	N/A

* Only the worst-case data is represented in the report.

3.4. Test Site Environment

Test Item	Required		Actual
Radiated Emission	Temperature (°C)	15-35	24.0
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	1004



4. Facilities

4.1. Test Facility

Test address : Guangdong Zhonghan Testing Technology Co., Ltd.

Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

4.2. Test Instruments

Radiated emissions Test (966 chamber)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 12, 2023	May 11, 2024
Loop antenna	EMCI	LAP600	May 12, 2023	May 11, 2024
Amplifier	Schwarzbeck	BBV 9743 B	May 12, 2023	May 11, 2024
Amplifier	Schwarzbeck	BBV 9718 B	May 12, 2023	May 11, 2024
Bilog Antenna	Schwarzbeck	VULB9162	May 17, 2023	May 16, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	May 17, 2023	May 16, 2024
Horn Antenna	A.H.SYSTEMS	SAS574	May 12, 2023	May 11, 2024
Amplifier	AEROFLEX	100KHz-40GHz	May 12, 2023	May 11, 2024
Spectrum Analyzer	R&S	FSV40	May 12, 2023	May 11, 2024
966 Anechoic Chamber	EMToni	9m6m6m	Nov. 25, 2021	Nov. 24, 2024

4.3. Testing software

Project	Software name	Edition
Radiated Emission	EZ-EMC	FA-03A2 RE+



4.4. 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)
Radiated Emission(30MHz~1GHz)	4.60
Radiated Emission(1GHz~18GHz)	4.30

Decision Rule

- Uncertainty is not included
- Uncertainty is included

5. Emission

5.1. Conducted Emission

5.1.1. Limit

For Class B devices:

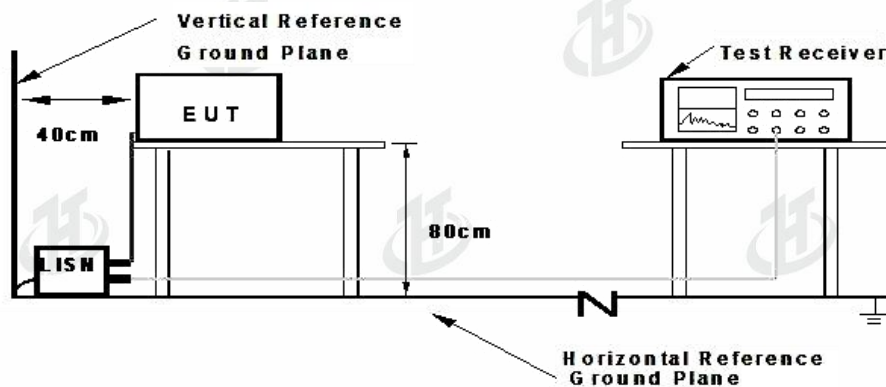
Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

For Class A devices:

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

5.1.2. Test setup



**Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes**

The setup of EUT is according with ANSI C63.4 measurement procedure. Specification used with FCC Part 15 limits.



5.2. Test procedure

Measurement was performed in shielded room, and instruments used were followed clause 4 of ANSI C63.4.

Detailed test procedure was following clause 7 of ANSI C63.4.

Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

5.3. Test results

N/A

EUT is a battery product and is not applicable to this test item

5.4. Radiated emissions

5.5. Limit

For Class B devices (at 3m):

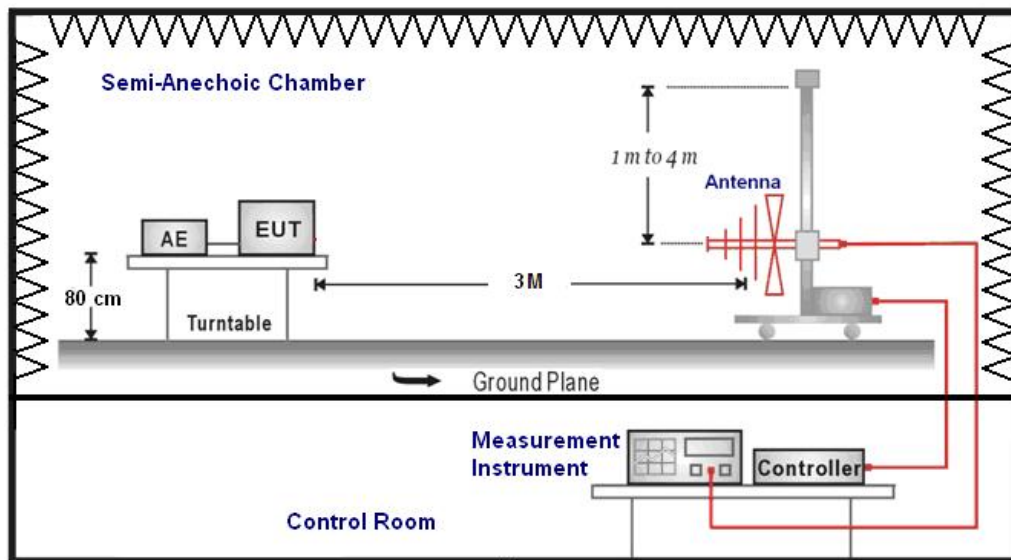
Frequency of emission (MHz)	(microvolts/meter)	(dB μ V/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

For Class A devices (at 10m):

Frequency of emission (MHz)	(microvolts/meter)	(dB μ V/m)
30-88	90	39
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

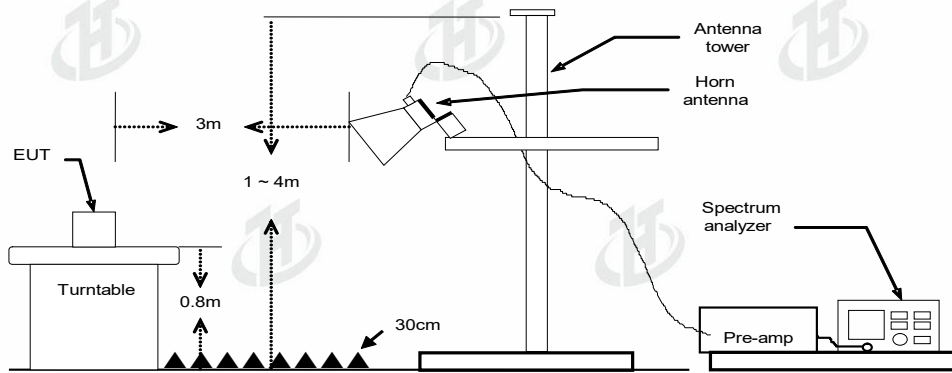
5.6. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz





Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in semi-anechoic(3m) test site, using the setup accordance with the ANSI C63.4:2014.

5.7. EMI Test Receiver Setup and Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz-1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	3 MHz	/	AVG

5.8. Test procedure

The measurement was performed in a 3m semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4.

Detailed test procedure was following clause 8 of ANSI C63.4.

Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

5.9. Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude

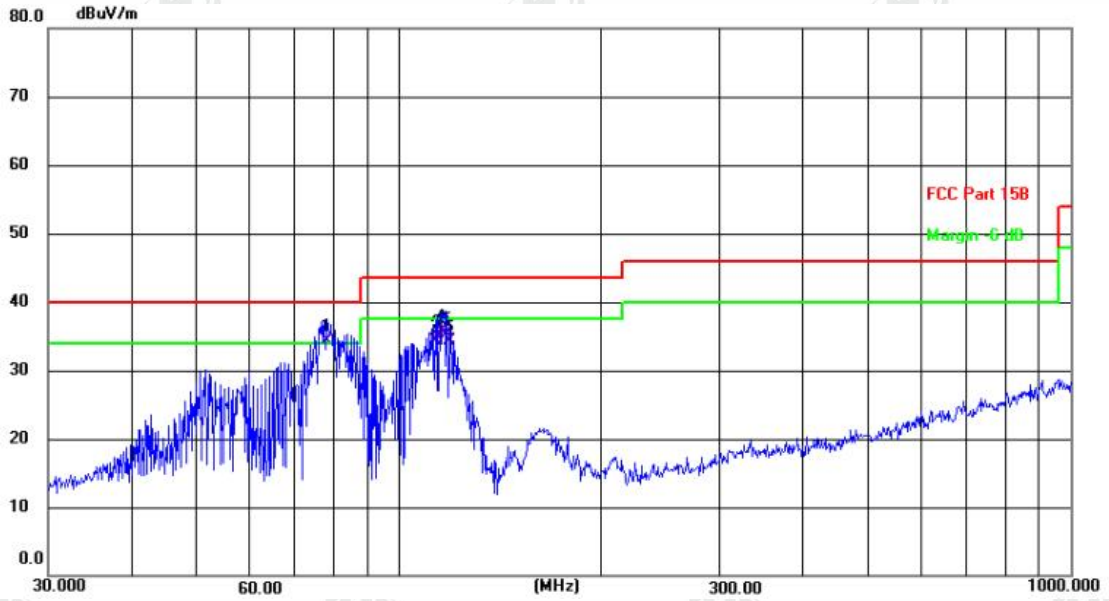
5.10. Test results

PASS

Please refer to pages 13-14 for data.



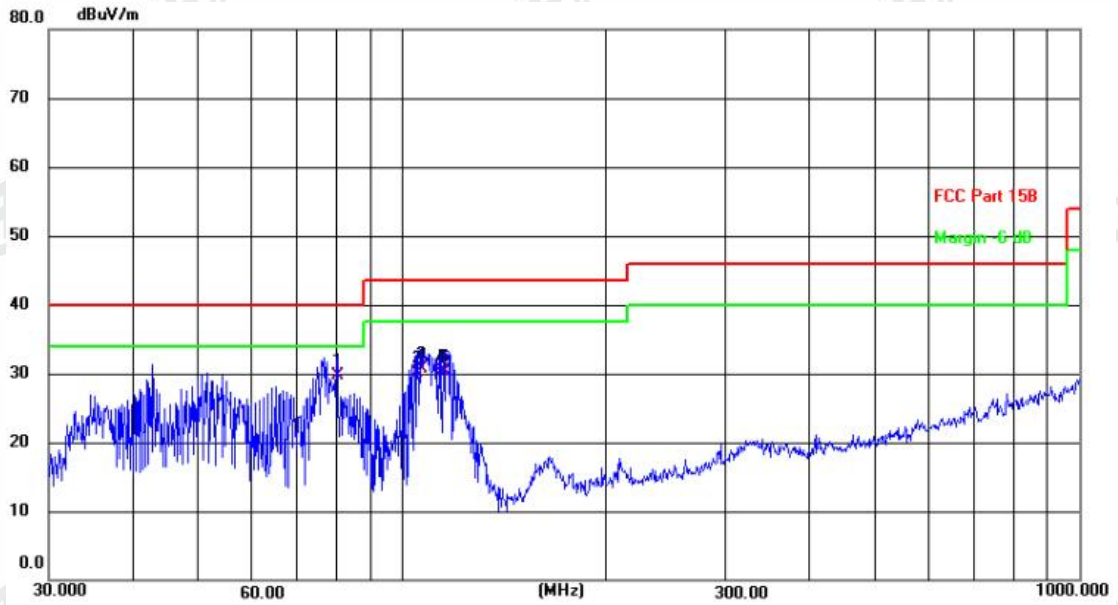
Polarization: Horizontal



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 *	78.1388	47.91	-13.70	34.21	40.00	-5.79	QP			P	
2	113.3162	46.26	-11.96	34.30	43.50	-9.20	QP			P	
3	114.1137	46.88	-12.05	34.83	43.50	-8.67	QP			P	
4	115.7256	47.96	-12.22	35.74	43.50	-7.76	QP			P	
5	117.7725	47.68	-12.45	35.23	43.50	-8.27	QP			P	
6	118.6013	46.75	-12.53	34.22	43.50	-9.28	QP			P	



Polarization: Vertical



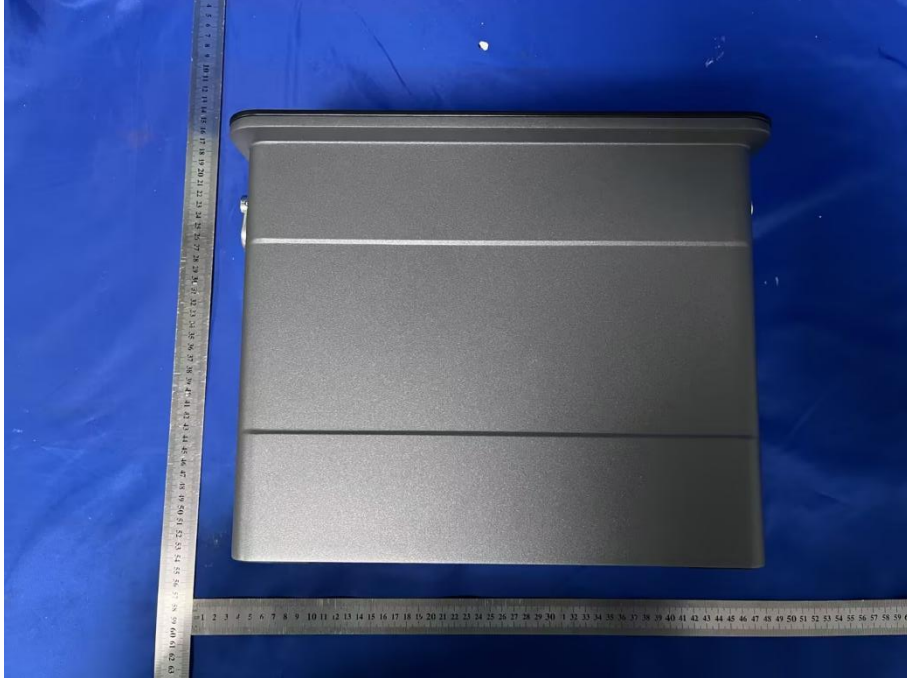
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	80.0805	43.71	-13.96	29.75	40.00	-10.25	QP			P	
2	105.2716	41.18	-11.10	30.08	43.50	-13.42	QP			P	
3	106.7587	42.05	-11.25	30.80	43.50	-12.70	QP			P	
4	114.1136	42.10	-12.05	30.05	43.50	-13.45	QP			P	
5	114.9167	42.44	-12.13	30.31	43.50	-13.19	QP			P	
6	115.7256	42.52	-12.22	30.30	43.50	-13.20	QP			P	

Note: Level=Reading + Factor
Margin=Level – Limit



6. Photographs of EUT

EUT Photo 1



EUT Photo 2





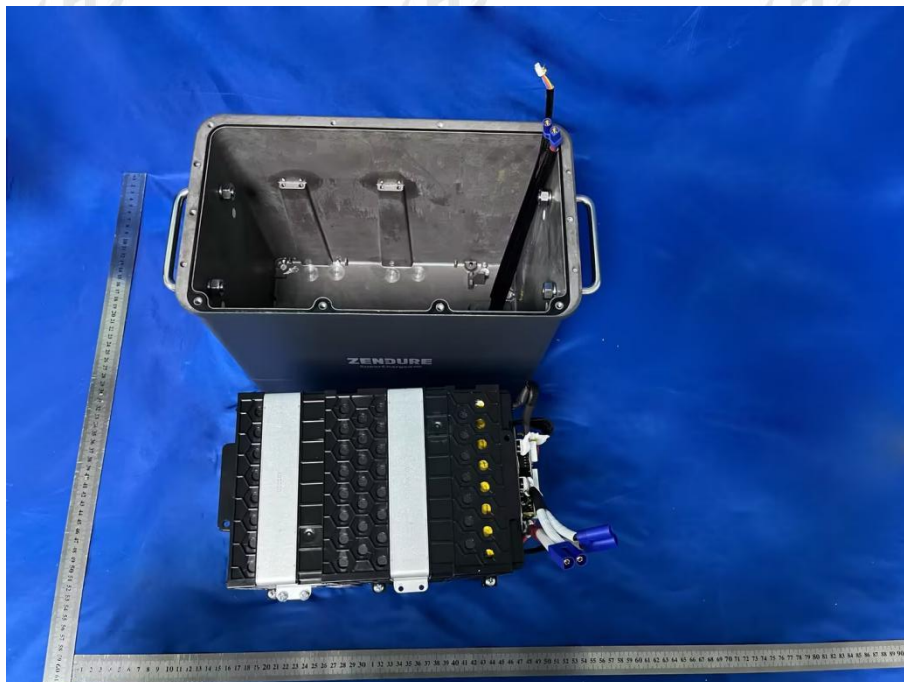
EUT Photo 3



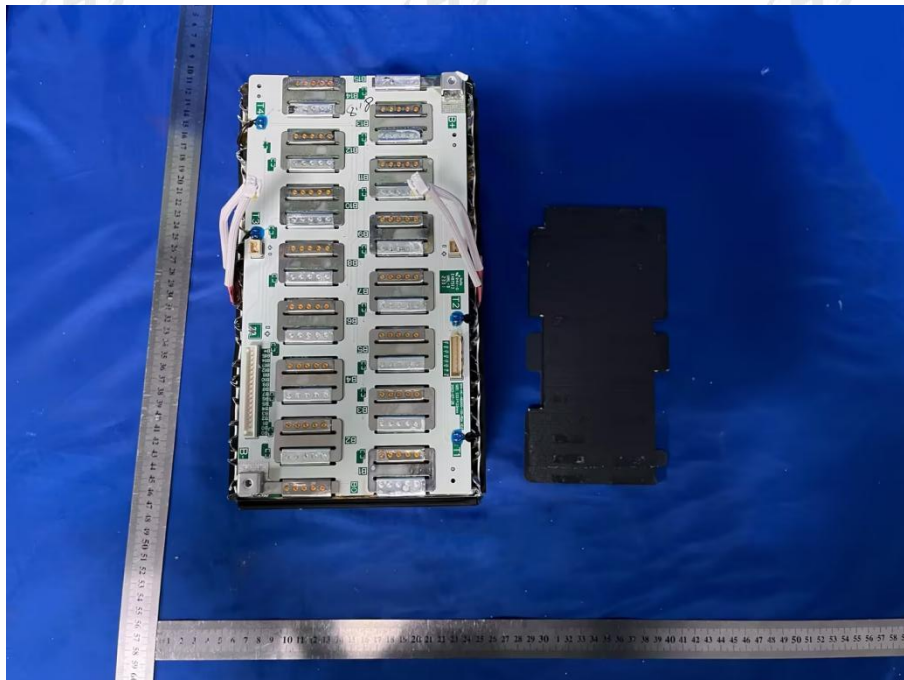
EUT Photo 4



EUT Photo 5



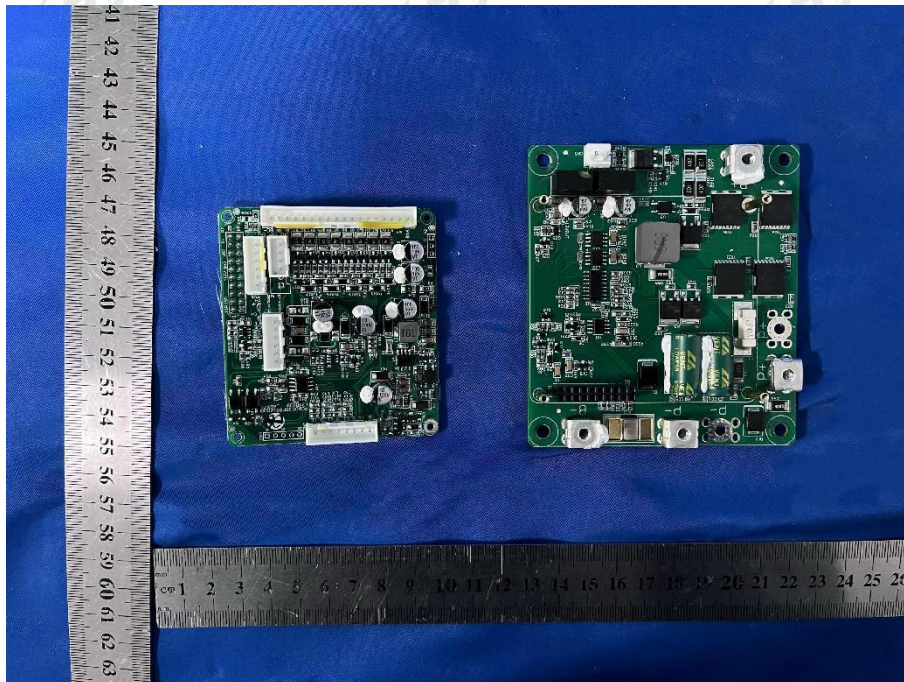
EUT Photo 6



EUT Photo 7

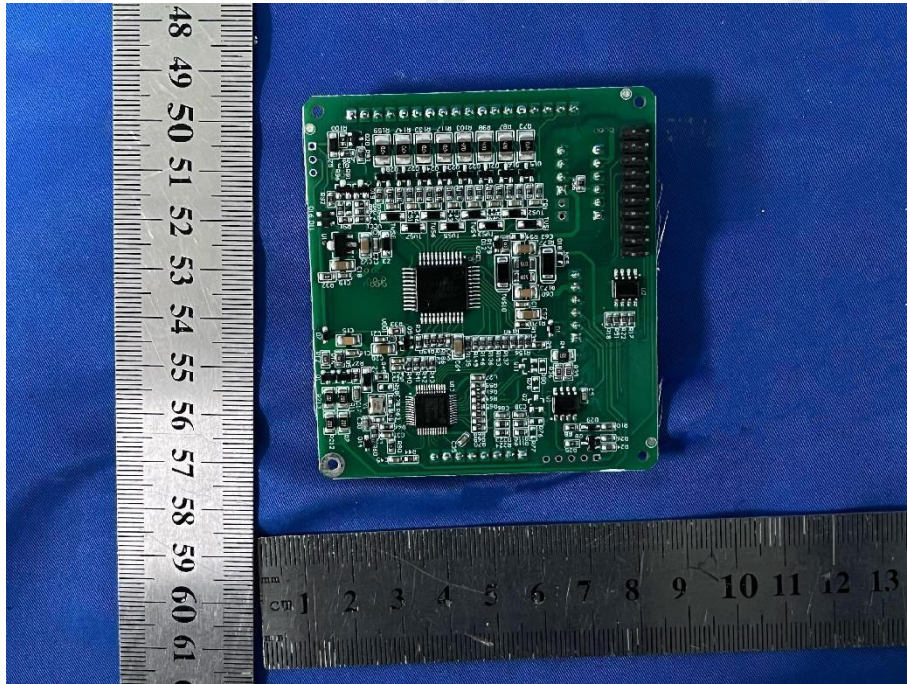


EUT Photo 8

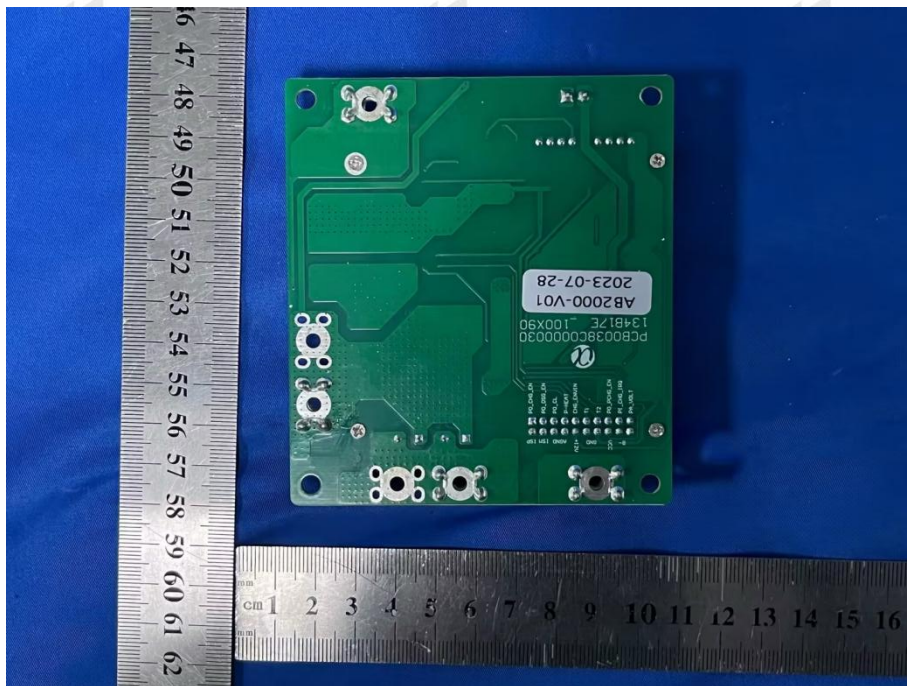




EUT Photo 9

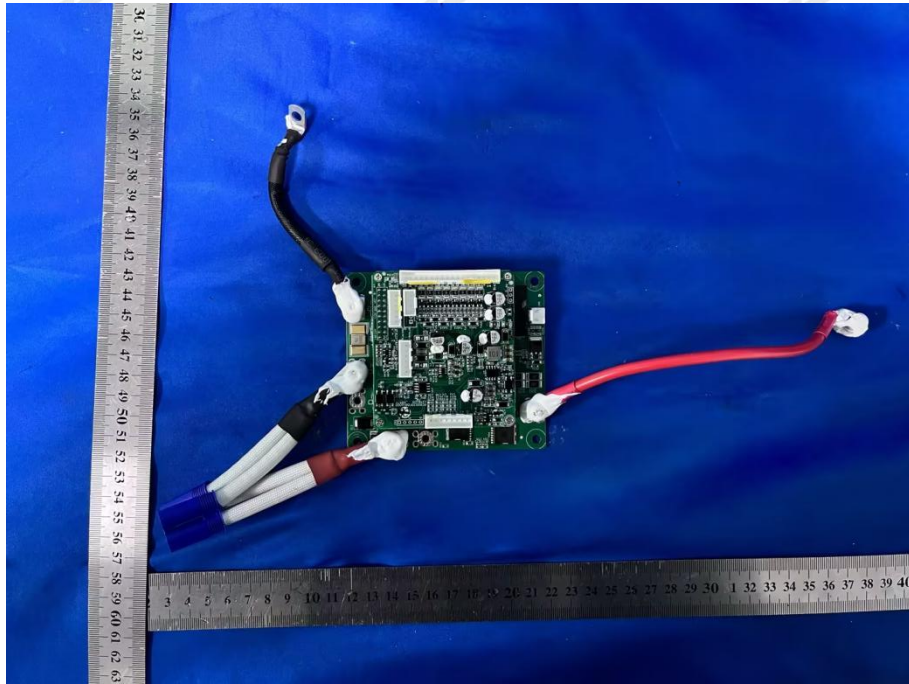


EUT Photo 10

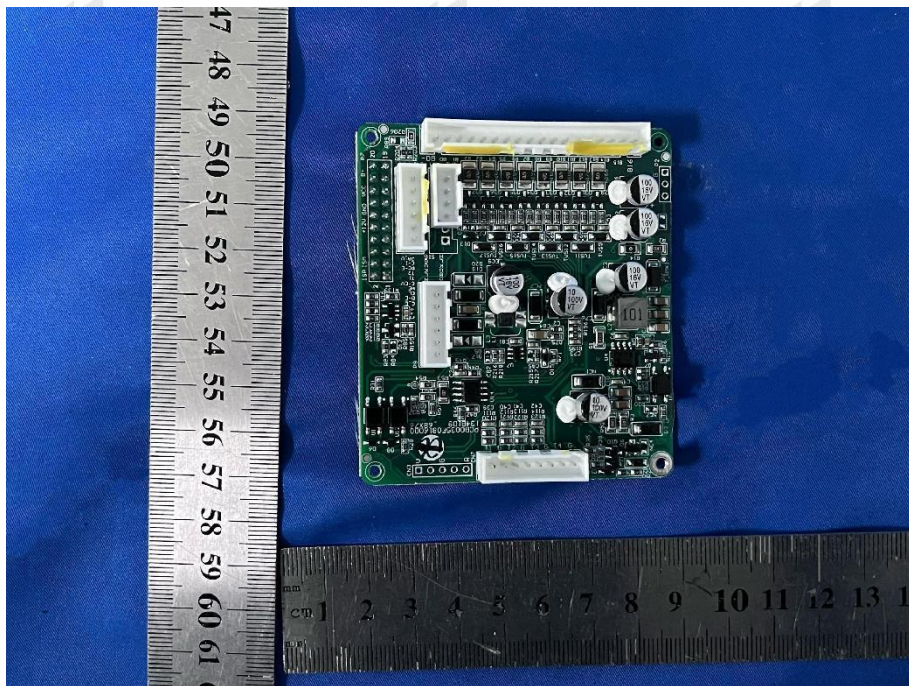




EUT Photo 11



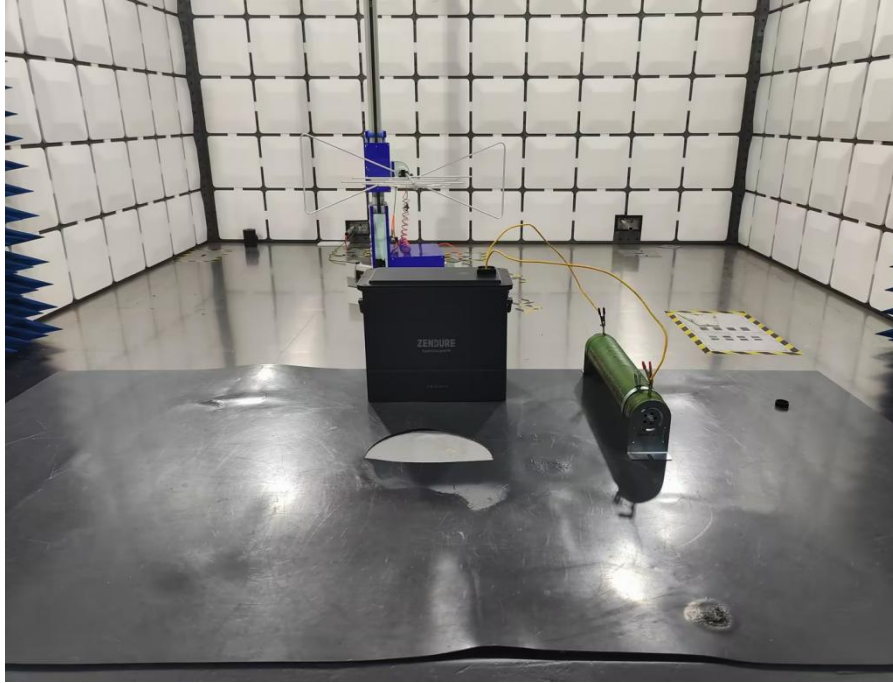
EUT Photo 12





7. Test Setup Photographs

Radiated Emission



End of report

