EMC TEST REPORT

Product Name: Electric Vehicle Supply Equipment

Model Name: UPSE-16-XC-AS

FCC ID: 2BGH4UPSE-16-XC-AS

Issued For : Zhangjiagang Uchen New Energy Technology Co .,Ltd.

No.999 Yongjin Road ,Miaoqiao ,Tangqiao Town,Zhangjiagang City , Jiangsu Province 215611, China

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT24D177EM01
Sample Received Date:	May 14, 2024
Date of Test:	May 14, 2024 ~ May 23, 2024
Date of Issue:	May 23, 2024

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TEST REPORT CERTIFICATION

Applicant:	Zhangjiagang Uchen New Energy Technology Co .,Ltd.
Address:	No.999 Yongjin Road ,Miaoqiao ,Tangqiao Town,Zhangjiagang City , Jiangsu Province 215611, China
Manufacturer:	Zhangjiagang Uchen New Energy Technology Co .,Ltd.
Address:	No.999 Yongjin Road ,Miaoqiao ,Tangqiao Town,Zhangjiagang City , Jiangsu Province 215611, China
Product Name:	Electric Vehicle Supply Equipment
Trademark:	DUOSIDA
Model Name:	UPSE-16-XC-AS
Sample Status:	Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR Part 15 Subpart B ANSI C63.4-2014	PASS

Prepared by:

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Approved by:

Vita Li
Technical Director

SHENZHEN LGT TEST SERVICE CO., LTD. LGT 领冠检测

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Revision History

Rev.	Issue Date	Revisions
00	May 23, 2024	Initial Issue

1. TEST SUMMARY

EMC Emission				
Standard	Test Item	Limit	Judgement	Remark
FCC 47 CFR Part 15 Subpart B ANSI C63.4-2014	Conducted Emissions	Class B	PASS	
	Radiated Emissions Below 1GHz	Class B	PASS	
	Radiated Emissions Above 1GHz	Class B	N/A	Note 1 Note 2

Note:

1 “N/A” denotes test is not applicable in this Test Report

2 If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

3 The product is powered by built-in non-rechargeable battery and not directly connected to the public power network; Therefore, the test of AC power supply is not evaluated.

1.1 TEST LABORATORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

Test Item	Measurement Frequency Range MHz	Uncertainty dB
Conducted Emissions at AC mains power port	0.009 ~ 30	2.80
Radiated Emissions	0.009 ~ 30	2.16
Radiated Emissions	30 ~ 1000	4.40
Radiated Emissions	1000 ~ 6000	5.10
Radiated Emissions	6000 ~ 18000	5.49
Note: 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. 2: The measurement uncertainty is not included in the test result.		

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	Electric Vehicle Supply Equipment
Model Name:	UPSE-16-XC-AS
Series Model:	N/A
Model Difference:	N/A
Maximum operating frequency:	＜108MHz
Rating:	Input: AC 240V/60Hz 16A
Test voltage:	AC 240V/60Hz
Hardware Version:	N/A
Software Version:	N/A
Connecting I/O Port(s):	Please refer to the Note 1.

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operating mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Full Load

Conducted Emission Test	
Final Test Mode	Description
Mode 1	Full Load

For Radiated Test	
Final Test Mode	Description
Mode 1	Full Load

Note:
1. For conducted emission test, test mode 1 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 1 was the worst case and only this mode was presented in this report.

2.3 DESCRIPTION OF THE 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.

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Resistive Load Cabinet	PAKHENG RESISTORS	DZG30KW-5% D720 R	N/A	3 Phase AC 380-400V 30kW

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.4 MEASUREMENT INSTRUMENTS LIST

Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
LISN	COM-POWER	LI-115	02032	2024.03.09	2025.03.08
LISN	SCHWARZBECK	NNLK 8122	00160	2024.03.09	2025.03.08
Transient Limiter	CYBERTEK	EM5010A	E2250100049	2024.03.09	2025.03.08
Temperature & Humidity	KTJ	TA218B	N.A	2024.03.09	2025.03.08
Testing Software	EMC-I_V1.4.0.3_SKET				
Radiated Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
Spectrum Analyzer	Keysight	N9020A	MY50530994	2024.03.09	2025.03.08
Spectrum Analyzer	Keysight	N9010B	MY60242508	2023.08.14	2024.08.13
Active loop Antenna	ETS	6502	00049544	2023.10.13	2025.10.12
Bilog Antenna	SCHWARZBECK	VULB 9168	01447	2022.12.12	2025.12.11
Horn Antenna	SCHWARZBECK	3115	10SL0060	2022.06.02	2025.06.01
Pre-amplifier (9kHz-1GHz)	EMtrace	RP01A	02017	2024.03.09	2025.03.08
Pre-amplifier (1-26.5G)	Agilent	8449B	3008A4722	2024.03.09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Testing Software	EMC-I_V1.4.0.3_SKET				

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS

FREQUENCY (MHz)	Conducted Emission Limits (dBuV)			
	Class A		Class B	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.5 ~ 5	73.00	60.00	56.00	46.00
5 ~ 30	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor
Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

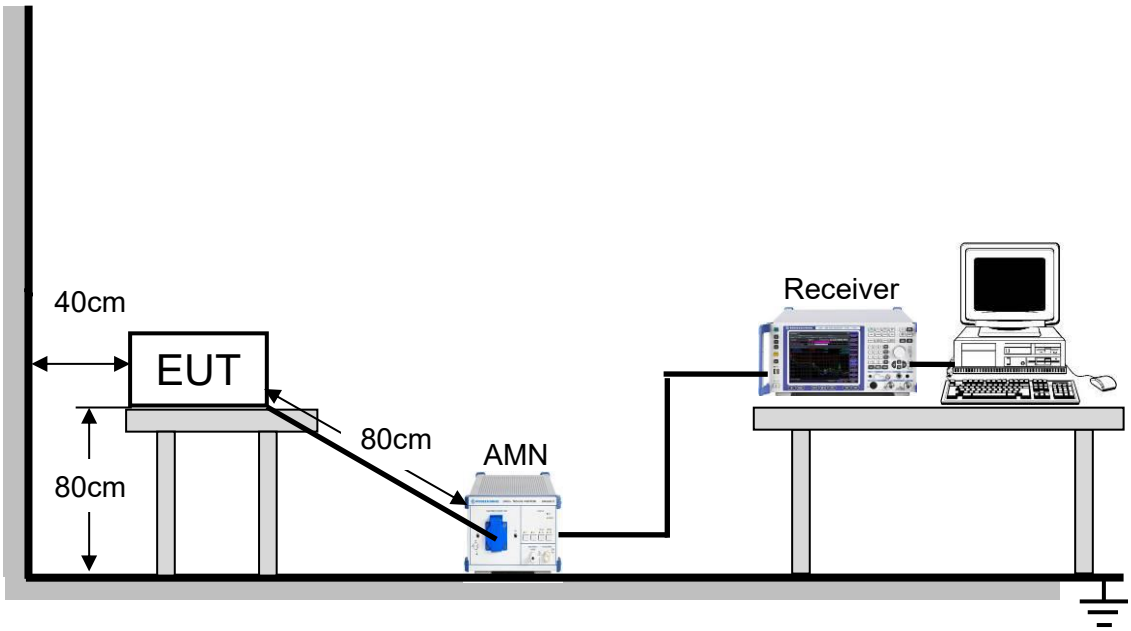
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.

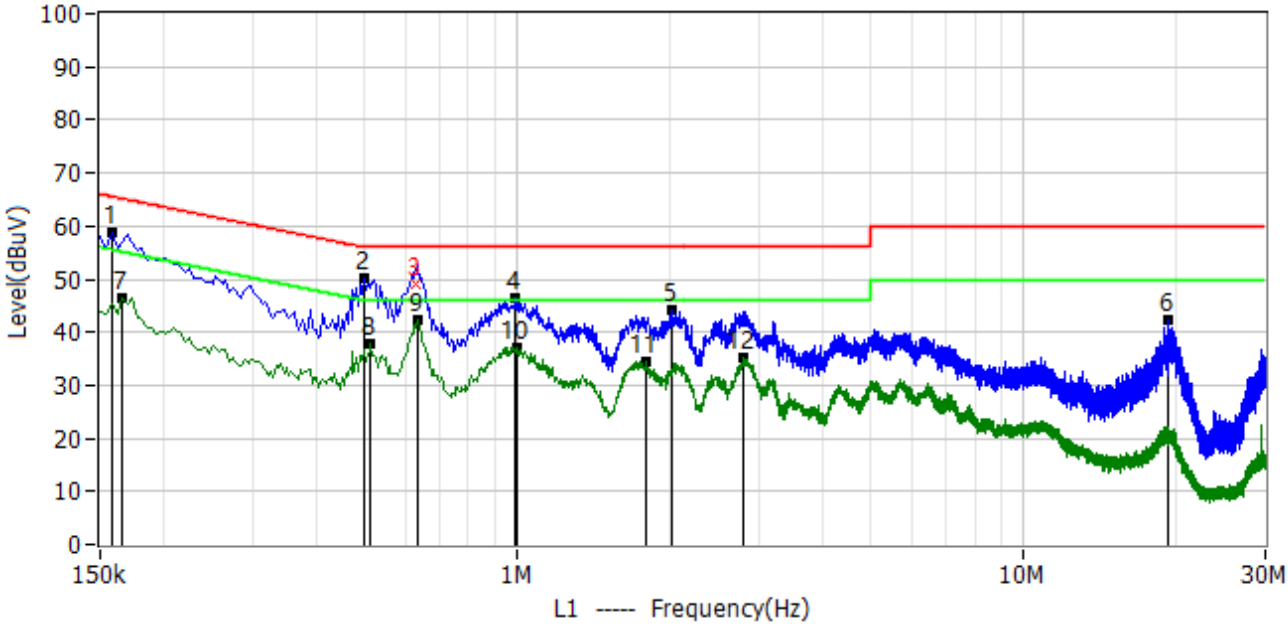
e. For the actual test configuration, please refer to the related Item - EUT Test Photos.

3.1.3 TEST SETUP



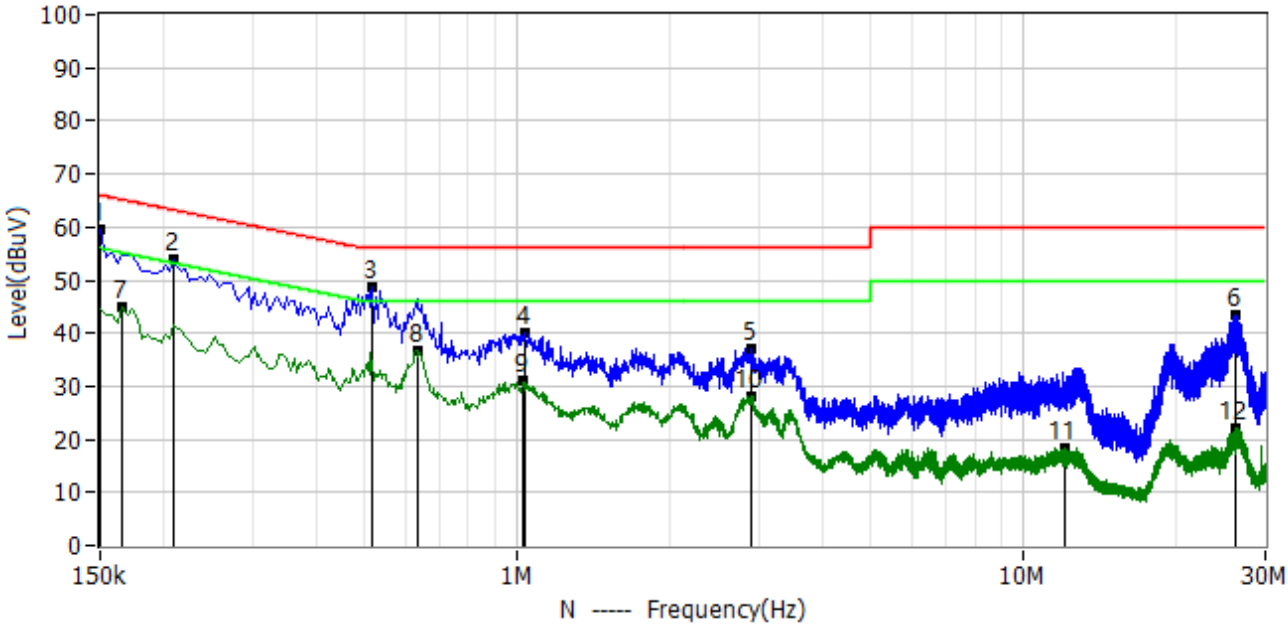
3.1.4 TEST RESULTS

Project: LGT24D177	Test Engineer: LiuH
EUT: Electric Vehicle Supply Equipment	Temperature: 24℃
M/N: UPSE-16-XC-AS	Humidity: 46%RH
Test Voltage: AC 240V/60Hz	Test Data: 2024-05-17
Test Mode: Full Load	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.158	48.27	10.49	58.76	65.57	-6.81	QP	L1
2*	0.498	39.79	10.50	50.29	56.03	-5.75	QP	L1
3	0.630	38.45	10.50	48.95	56.00	-7.05	QP	L1
4*	0.990	36.03	10.52	46.55	56.00	-9.45	QP	L1
5*	2.010	33.53	10.72	44.25	56.00	-11.75	QP	L1
6*	19.246	31.16	11.11	42.27	60.00	-17.73	QP	L1
7*	0.166	36.04	10.49	46.53	55.16	-8.63	AV	L1
8*	0.514	27.15	10.50	37.65	46.00	-8.35	AV	L1
9*	0.634	32.00	10.50	42.50	46.00	-3.50	AV	L1
10*	0.994	26.61	10.52	37.13	46.00	-8.87	AV	L1
11*	1.798	23.73	10.68	34.41	46.00	-11.59	AV	L1
12*	2.794	24.38	10.74	35.12	46.00	-10.88	AV	L1

Project: LGT24D177	Test Engineer: LiuH
EUT: Electric Vehicle Supply Equipment	Temperature: 24℃
M/N: UPSE-16-XC-AS	Humidity: 46%RH
Test Voltage: AC 240V/60Hz	Test Data: 2024-05-17
Test Mode: Full Load	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.150	48.93	10.49	59.42	66.00	-6.58	QP	N
2*	0.210	43.38	10.49	53.87	63.21	-9.33	QP	N
3*	0.518	38.19	10.50	48.69	56.00	-7.31	QP	N
4*	1.038	29.55	10.52	40.07	56.00	-15.93	QP	N
5*	2.890	26.42	10.74	37.16	56.00	-18.84	QP	N
6*	26.162	32.21	11.37	43.58	60.00	-16.42	QP	N
7*	0.166	34.62	10.49	45.11	55.16	-10.05	AV	N
8*	0.634	26.31	10.50	36.81	46.00	-9.19	AV	N
9*	1.026	20.38	10.52	30.90	46.00	-15.10	AV	N
10*	2.890	17.32	10.74	28.06	46.00	-17.94	AV	N
11*	12.022	7.25	11.00	18.25	50.00	-31.75	AV	N
12*	26.314	10.86	11.38	22.24	50.00	-27.76	AV	N

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS

Below 1 GHz

Frequency (MHz)	Class A	Class B
	Field strength (dBuV/m) (at 3m)	Field strength (dBuV/m) (at 3m)
30 - 88	49.5	40
88 - 216	53.9	43.5
216 - 960	56.9	46
Above 960	60	54

Above 1 GHz

Frequency (MHz)	Class A		Class B	
	Field strength (dBuV/m) (at 3m)		Field strength (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Frequency Range of Radiated Disturbance Measurement

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Note:

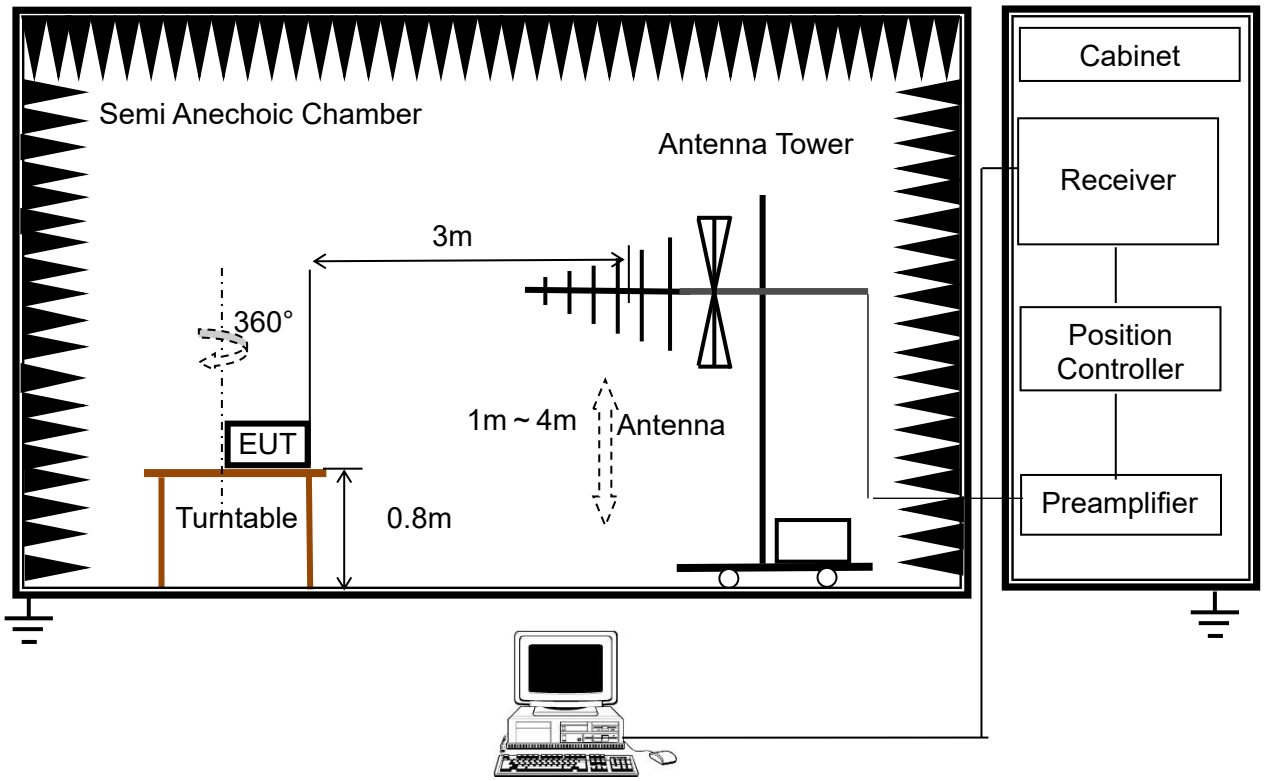
(1) The limit for radiated test was performed according to FCC Part 15, Subpart B;
(2) The tighter limit applies at the band edges;
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),
Margin Level = Measurement Value - Limit Value.

3.2.2 TEST PROCEDURE

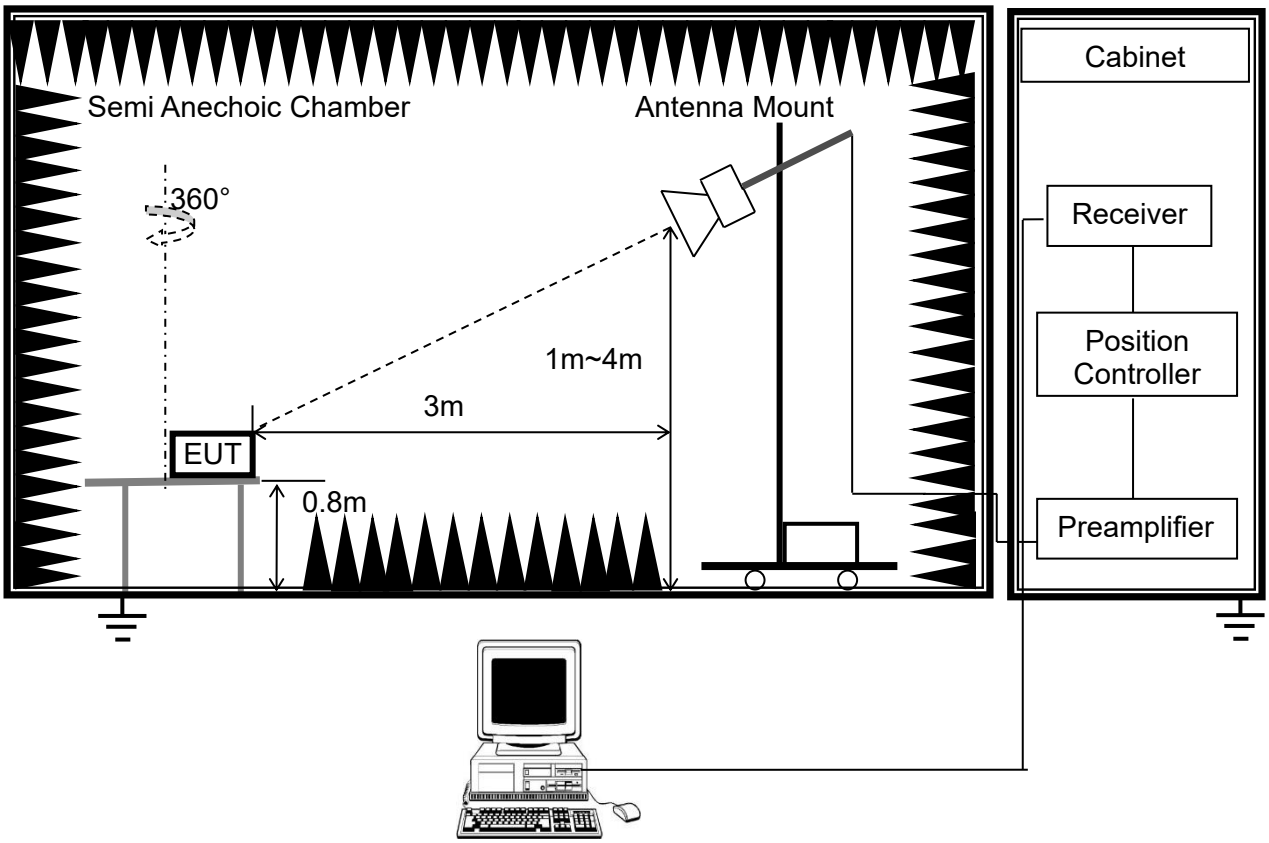
a. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. EUT as the center to the edge of the auxiliary device, the distance from the maximum edge to the center of the antenna is 3 meter.
c. The height of antenna is varied from 1 meter to 4 meter 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 meter and the rotatable table was turned from 0 degrees to 360 degree to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



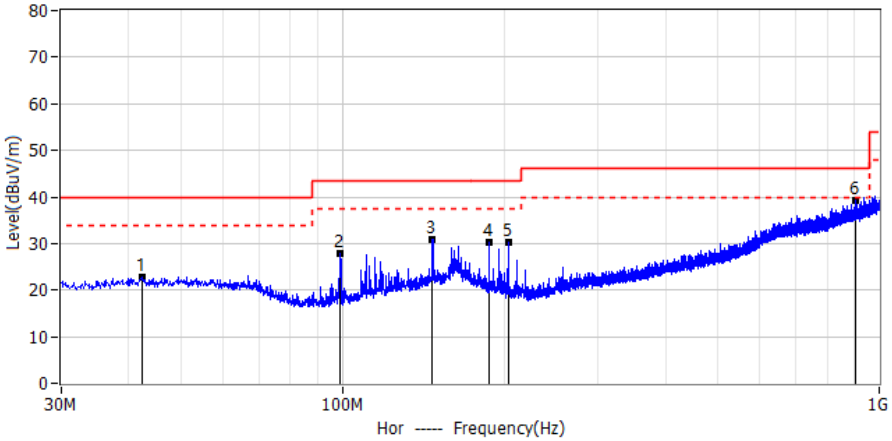
(B) Radiated Emission Test Set-Up Frequency Above 1GHz



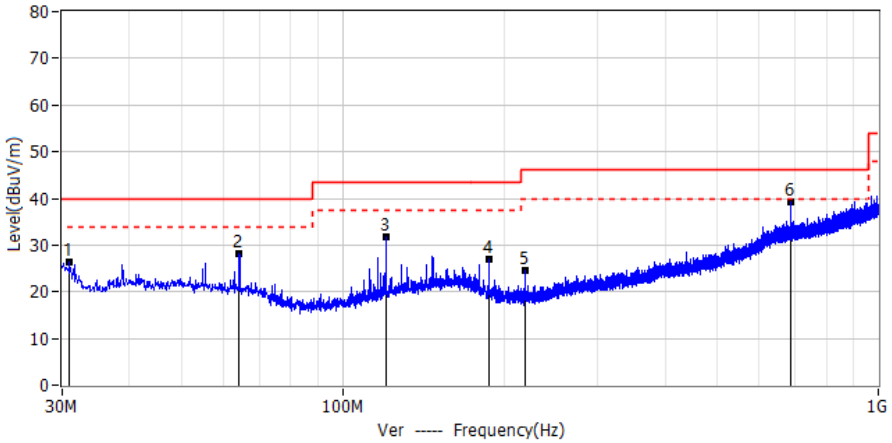
For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration

3.2.4 TEST RESULTS

Project: LGT24D177	Test Engineer: Xiangdong Ma
EUT: Electric Vehicle Supply Equipment	Temperature: 25.4℃
M/N: UPSE-16-XC-AS	Humidity: 50%RH
Test Voltage: AC 240V/60Hz	Test Data: 2024-05-15
Test Mode: Full Load	
Note:	



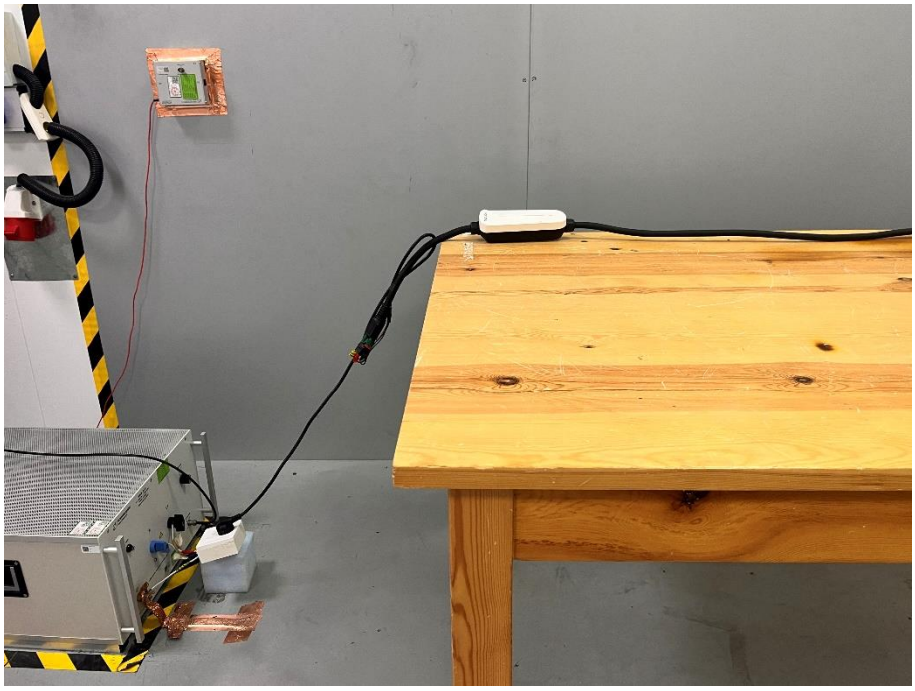
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	42.489	3.60	19.30	22.90	40.00	-17.10	QP	Hor
2*	99.355	12.36	15.58	27.94	43.50	-15.56	QP	Hor
3*	147.370	11.17	19.74	30.91	43.50	-12.59	QP	Hor
4*	188.110	12.44	17.89	30.33	43.50	-13.17	QP	Hor
5*	203.751	13.14	17.08	30.22	43.50	-13.28	QP	Hor
6*	904.455	5.93	33.26	39.19	46.00	-6.81	QP	Hor



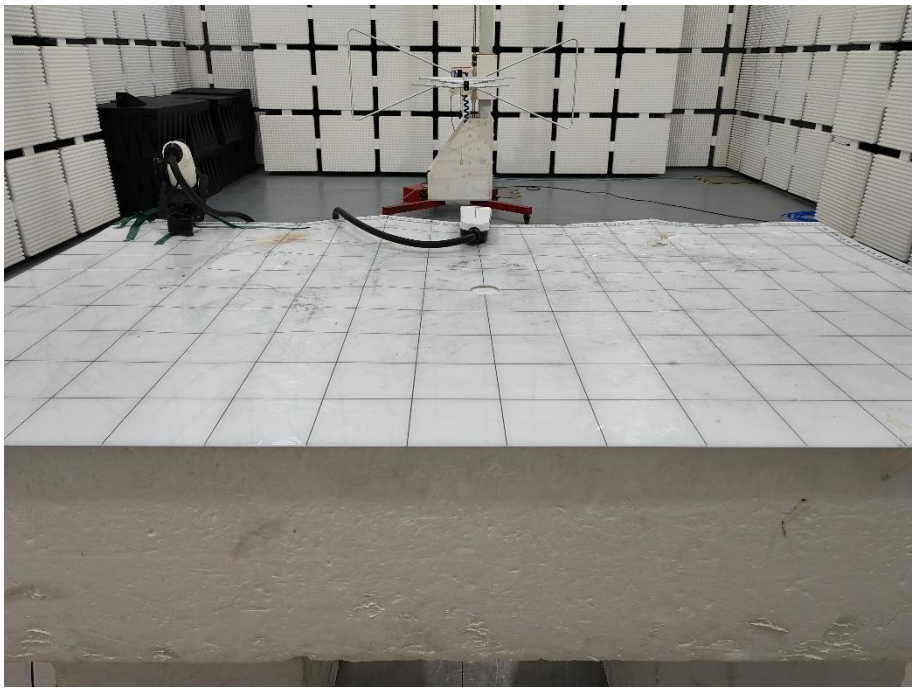
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	30.970	8.08	18.27	26.35	40.00	-13.65	QP	Ver
2*	64.193	9.92	18.38	28.30	40.00	-11.70	QP	Ver
3*	120.695	13.92	17.70	31.62	43.50	-11.88	QP	Ver
4*	188.110	9.04	17.89	26.93	43.50	-16.57	QP	Ver
5*	219.393	7.63	16.90	24.53	46.00	-21.47	QP	Ver
6*	687.539	9.42	29.69	39.11	46.00	-6.89	QP	Ver

APPENDIX I - TEST SETUP

Set-up for Conducted Emission on AC Mains (CE)



Set-up for Radiated Emission (RE), Below 1GHz



APPENDIX II - PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

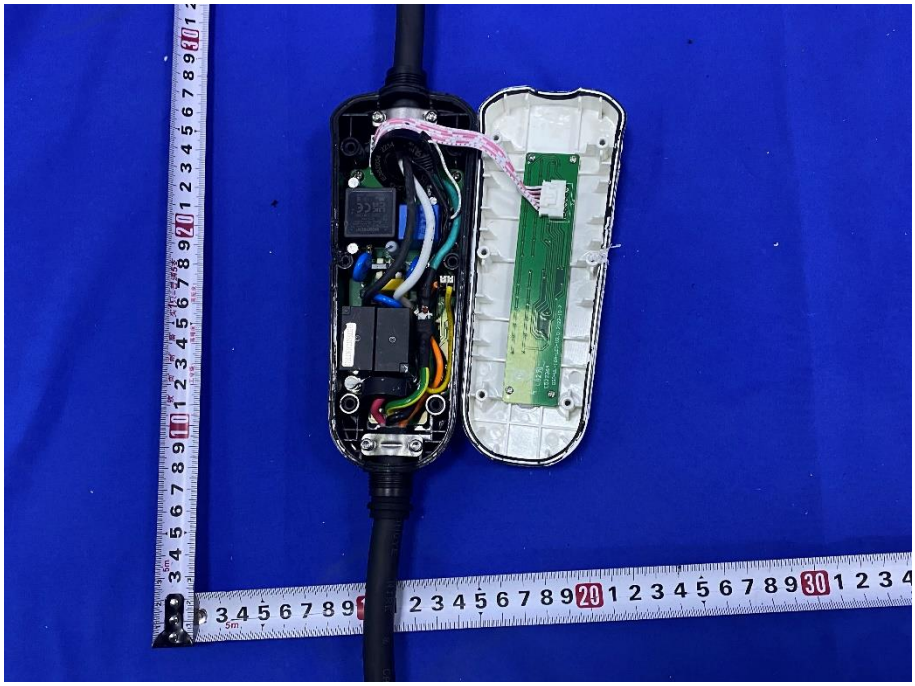


Photo 12

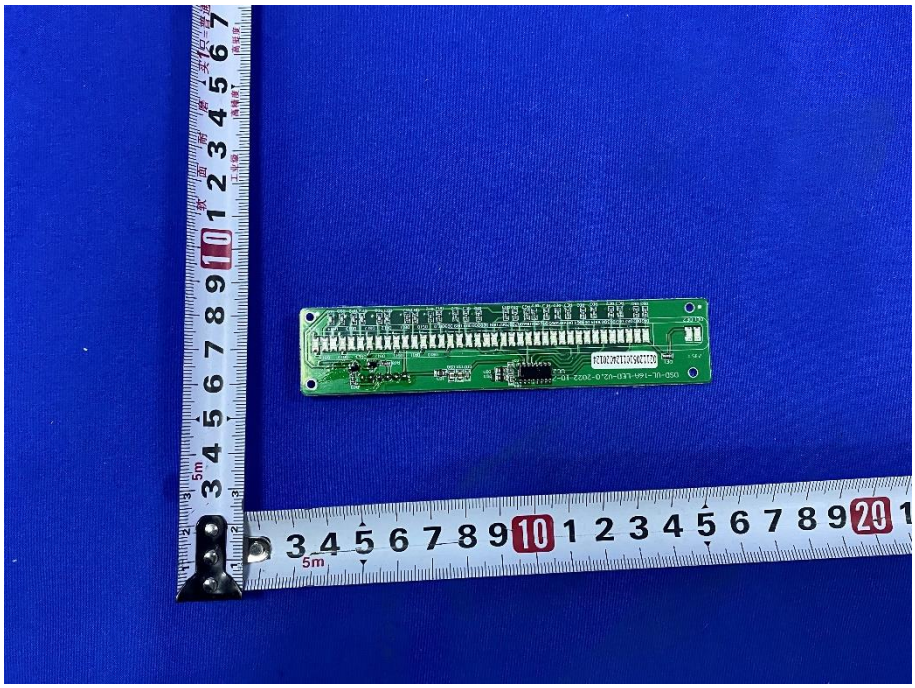


Photo 13

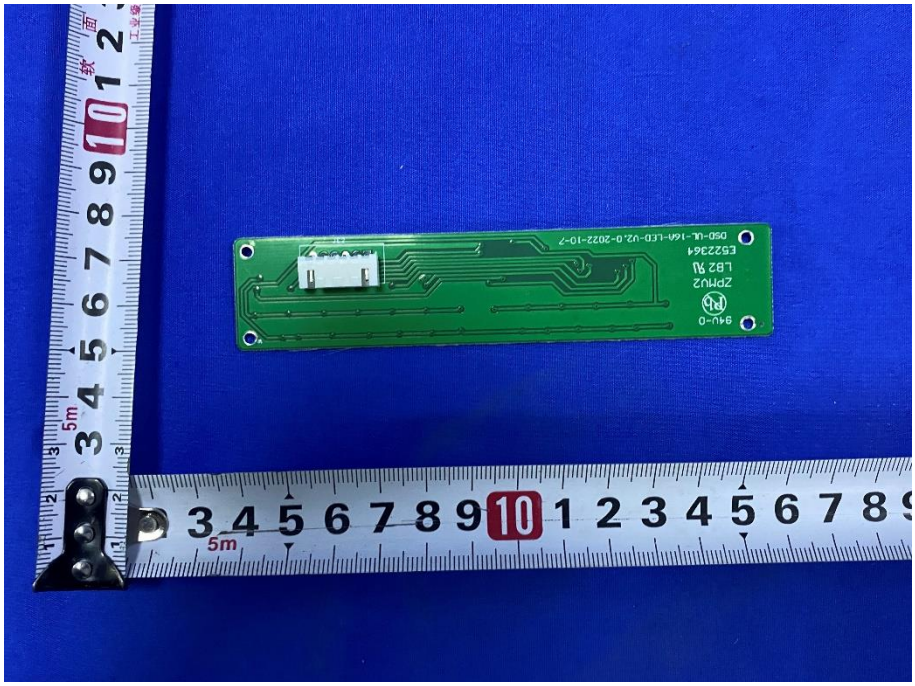


Photo 14

Photo 15

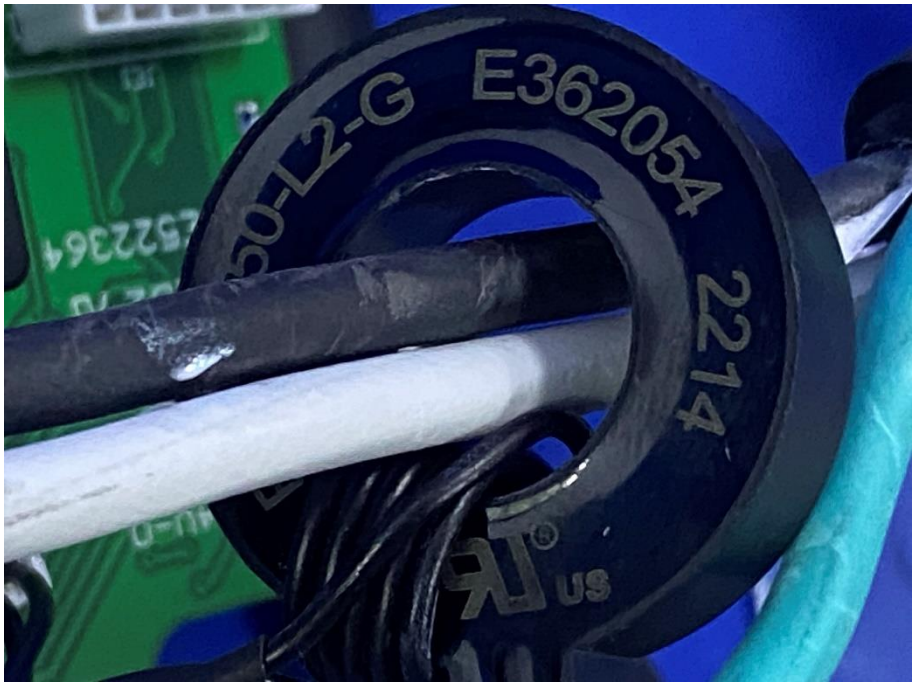


Photo 16

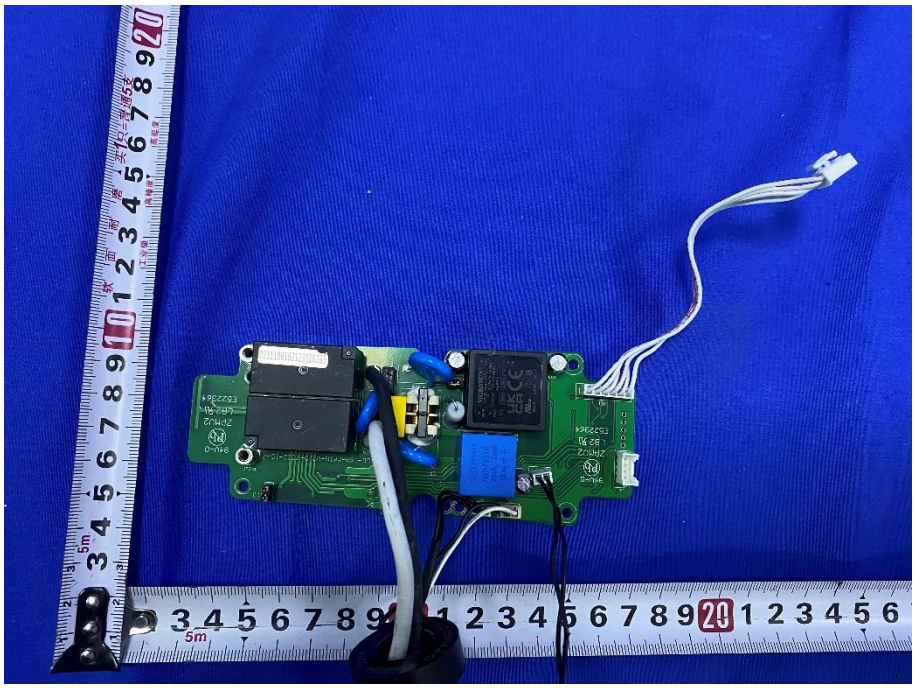
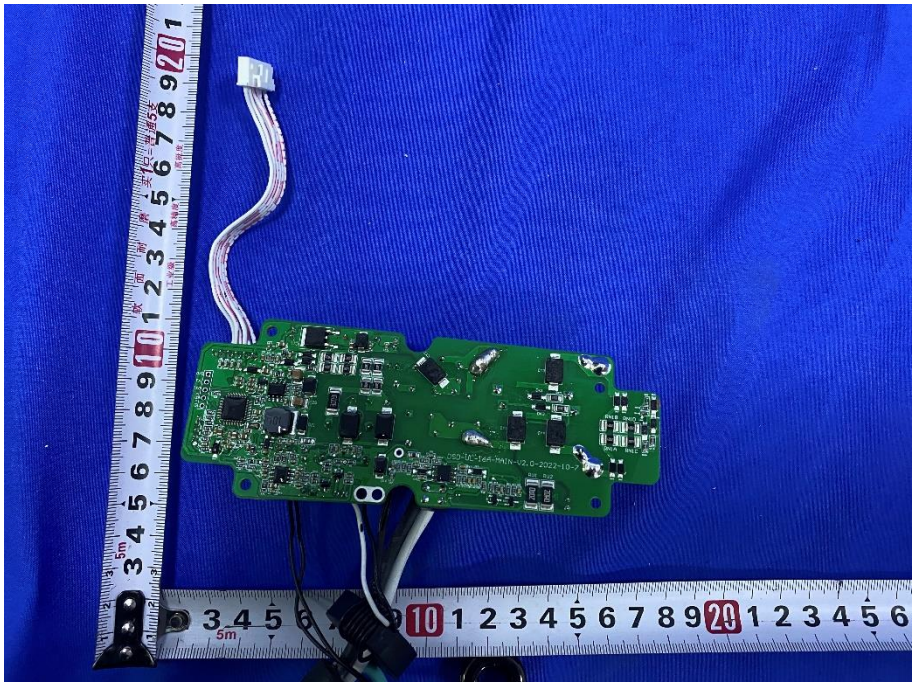


Photo 17



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