

TEST REPORT

Application No.: SHCR2202000400HS
Applicant: SUZHOU ARMOCON TECHNOLOGY CO.,LTD
Address of Applicant: No 77 SuHong Middle Road SIP Jiangsu China
Manufacturer: SUZHOU ARMOCON TECHNOLOGY CO.,LTD
Address of Manufacturer: No 77 SuHong Middle Road SIP Jiangsu China
Factory: SUZHOU ARMOCON TECHNOLOGY CO.,LTD
Address of Factory: No 77 SuHong Middle Road SIP Jiangsu China
Equipment Under Test (EUT):
EUT Name: Handheld Massager
Model No.: Ida Wave
Trade Mark: LELO
Standard(s) : EN 61000-3-3: 2013+A1: 2019
 EN IEC 55014-1: 2021
 EN IEC 61000-3-2: 2019+A1: 2021
 EN IEC 55014-2: 2021
Date of Receipt: 2022-02-23
Date of Test: 2022-02-23 to 2022-03-03
Date of Issue: 2022-03-08

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan

Parlam Zhan
Laboratory Manager



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Revision Record			
Version	Description	Date	Remark
00	Original	2022-03-08	

Authorized for issue by:			
		Bill Wu	
		Bill Wu / Project Engineer	
		Parlam Zhan	
		Parlam Zhan / Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013+A1: 2019	EN 61000-3-3: 2013+A1: 2019	Clause 5	Pass
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	EN IEC 55014-1: 2021	CISPR 16-2-1	Table 5	Pass
Disturbance Power		CISPR 16-2-2	Table 7 & 8	Pass
Radiated Emissions (30MHz-1GHz)		CISPR 16-2-3	Table 9	Pass
Harmonic Current Emission	EN IEC 61000-3-2: 2019+A1: 2021	EN IEC 61000-3-2: 2019+A1: 2021	Class A	N/A

N/A: Not applicable. Please refer to Section 6.5 of this report for details.

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN IEC 55014-2: 2021	EN 61000-4-2:2009	±4kV Contact Discharge, ±8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)		EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients Burst at AC Mains Power Port		EN 61000-4-4:2012	1kV, 5/50ns Tr/Td, 5kHz Repetition Frequency	Pass
Surge at AC Mains Power Port		EN 61000-4-5:2014+A1:2017	1.2/50µs Tr/Td, 1kV Line to Line	Pass
Conducted Immunity at AC Mains Power Port (150kHz-80MHz)		EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions		EN IEC 61000-4-11:2020	0 % UT for 0.5cycle, 40 % UT for 10cycles, 70 % UT for 25cycles, UT is Supply Voltage	Pass



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.7V 520mAh Rechargeable battery
Test Voltage:	AC 230V 50Hz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
AC Adapter	Aoepower	BSW0127-1210002	-

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	2.6dB (9kHz to 150kHz)
		2.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.8dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.2dB (150kHz to 30MHz)
4	Radiated Power	3.2dB
5	Radiated emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
6	Radiated disturbance (disturbance current in a LLAS)	2.4dB (9kHz to 30MHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center EMC/EMC/EMC

NO.588 West Jindu Road, Songjiang District, Shanghai, China 201612
中国·上海·松江区金都西路588号 邮编: 201612

t(86-21) 61915666 f(86-21) 61915678 www.sgsgroup.com.cn
t(86-21) 61915666 f(86-21) 61915678 e sgs.china@sgs.com

4.5 Test Facility

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

• **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

• **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

None

4.6 Abnormalities from Standard Conditions

None

4.7 EMS Monitor

Visual: Working status of EUT.



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5 Equipment List

Voltage Fluctuations and Flicker

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Harmonic&Flicker analyzer	AMETEK	PACS-1	SHEM024-2	2021/5/27	2022/5/26
AC Power Source 5KVA	AMETEK	5001iX	SHEM025-2	2021/5/27	2022/5/26
Test Software	AMETEK	CTS4	Version: 4.24.0	N/A	N/A
Harmonic&Flicker analyzer	EM TEST	DPA500	SHEM024-1	2021/8/13	2022/8/12
AC Power Source 6KVA	EM TEST	ACS500	SHEM025-1	2021/8/13	2022/8/12
Test Software	EM TEST	DPA	Version: 5.4.8.0	N/A	N/A

Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2021/12/20	2022/12/19
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2021/12/20	2022/12/19
Line impedance stabilization network	EMCO	3816_2	SHEM019-1	2021/12/20	2022/12/19
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2021/12/20	2022/12/19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2020/12/20	2023/12/19
CE test Cable	/	/	SHEM172-1	2022/1/7	2023/1/6
Test Software	ESE	e3	Version: 6.111221a	N/A	N/A

Disturbance Power

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2021/12/20	2022/12/19
Absorbing clamp	LUTHI	MDS21	SHEM014-1	2021/12/20	2022/12/19
DE coupling clamp	LUTHI	FTC101	SHEM027-2	N/A	N/A
Attenuator	HUAXIANG	TS2-6dB-2G-B	SHEM208-1	2021/12/20	2022/12/19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2020/12/20	2023/12/19
DP test Cable	/	/	SHEM179-1	2022/1/7	2023/1/6
Test Software	ESE	e3	Version: 6.111221a	N/A	N/A

Radiated Emissions (30MHz-1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2021/12/20	2022/12/19
EMI test receiver	Rohde & Schwarz	ESR7	SHEM201-1	2021/4/15	2022/4/14



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CONTROLLER	INNCO	CO2000	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2021/9/21	2023/9/20
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM202-1	2021/5/7	2023/5/6
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020/5/25	2023/5/24
Pre-amplifier	HP	8447D	SHEM236-1	2021/5/27	2022/5/26
Pre-amplifier	HP	8447D	SHEM143-1	2021/12/20	2022/12/19
RE test Cable	/	/	SHEM173-1&SHEM174-1	2022/1/7	2023/1/6
Test Software	ESE	e3	Version: 6.111221a	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2021/8/13	2022/8/12
Electrostatic Discharge Simulator	3CTEST	EDS20H	SHEM199-1	2021/9/29	2022/9/28

Radiated Immunity (80MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMB100A	SHEM194-1	2021/12/20	2022/12/19
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2021/4/15	2022/4/14
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2021/4/15	2022/4/14
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Antenna	SCHWARZBECK	STLP9149	SHEM131-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2021/12/20	2022/12/19
Amplifier	MILMEGA	80RF1000-250	SHEM132-1	2021/12/20	2022/12/19
Amplifier	Rohde & Schwarz	BBA150-E60	SHEM171-1	2021/12/20	2022/12/19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2021/4/15	2022/4/14
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2021/8/6	2022/8/5
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020/5/25	2023/5/24
Test Software	Rohde & Schwarz	EMC32	Version: 10.20.01	N/A	N/A



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Electrical Fast Transients Burst at AC Mains Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2021/12/20	2022/12/19
Test Software	EMC-PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021/4/15	2022/4/14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021/4/15	2022/4/14
EFT & Surge Generator	PRIMA	PRM61045TB	SHEM200-1	2021/8/13	2022/8/12
CDN for EFT & Surge	PRIMA	PRM-CDN	SHEM200-2	2021/8/13	2022/8/12

Surge at AC Mains Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2021/12/20	2022/12/19
Test Software	EMC-PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021/4/15	2022/4/14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021/4/15	2022/4/14
EFT & Surge Generator	PRIMA	PRM61045TB	SHEM200-1	2021/8/13	2022/8/12
CDN for EFT & Surge	PRIMA	PRM-CDN	SHEM200-2	2021/8/13	2022/8/12

Conducted Immunity at AC Mains Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMB100A	SHEM194-1	2021/12/20	2022/12/19
Power Amplifier	HAEFFLY	PAMP250	SHEM023-1	2021/12/20	2022/12/19
6dB Attenuator	HUAXIANG	DTS50-6dB-1G-A	SHEM123-2	2021/12/20	2022/12/19
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2021/4/15	2022/4/14
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2021/4/15	2022/4/14
Coupling and Decoupling Network (CDN)	LUTHI	L-801 M1	SHEM023-5	2021/12/20	2022/12/19
Coupling and Decoupling Network (CDN)	LUTHI	L-801 M2/M3	SHEM023-6	2021/12/20	2022/12/19
Shielding Room	ZHONGYU	5*3*3M	SHEM079-6	2021/12/20	2022/12/19
Coupling and Decoupling Network	Teseq	CDN M016	SHEM168-1	2021/8/13	2022/8/12
RF Generator	SCHAFFNER	NSG 2070	SHEM221-1	2021/5/27	2022/5/26
Test Software	Rohde & Schwarz	EMC32	Version: 10.20.01	N/A	N/A



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Voltage Dips and Interruptions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2021/12/20	2022/12/19
Test Software	EMC-PARTNER	GENECS	Version: 3.29	N/A	N/A
Immunity Test System	TESEQ	NSG 3060	SHEM224-1	2021/4/15	2022/4/14
Coupling / Decoupling Network (CDN)	TESEQ	CDN 3061	SHEM224-3	2021/4/15	2022/4/14
Manual step transformer	TESEQ	INA 6501	SHEM224-4	2021/4/15	2022/4/14

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2021-01-22	2024-01-21
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2021-09-07	2022-09-06
Digital Multimeter	FLUKE	17B	SHEM043-3	2021-09-04	2022-09-03
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2021-12-20	2022-12-19



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6 Emission Test Results

6.1 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3: 2013+A1: 2019

Test Method: EN 61000-3-3: 2013+A1: 2019

6.1.1 E.U.T. Operation

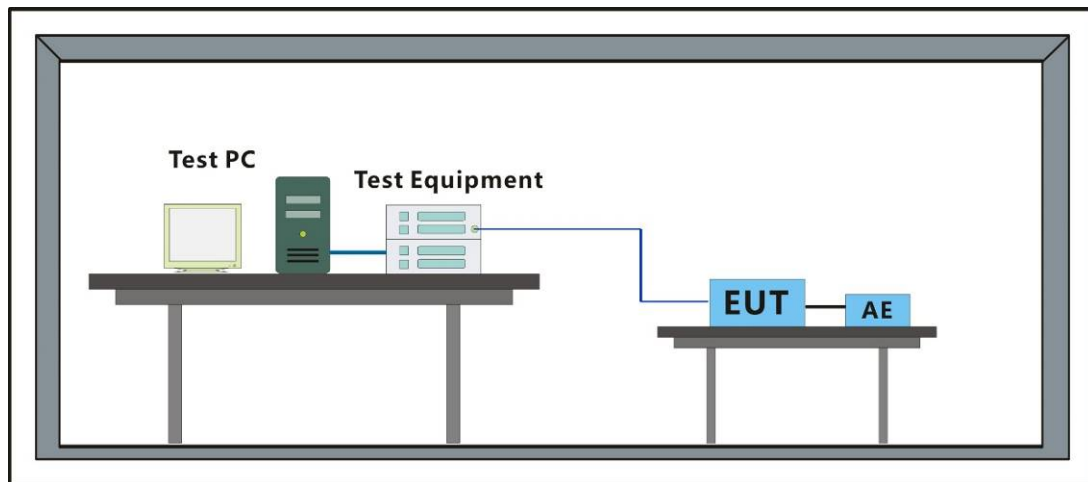
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

Mode 00

Vrms at the end of test (Volt): 230.18

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.263

Highest Plt (2 hr. period): 0.115

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass



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6.2 Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Test Requirement: EN IEC 55014-1: 2021

Test Method: CISPR 16-2-1

Limit:

0.15M-0.5MHz 66dB(μV)-56dB(μV) quasi-peak, 59dB(μV)-46dB(μV) average

0.5M-5MHz 56dB(μV) quasi-peak, 46dB(μV) average

5M-30MHz 60dB(μV) quasi-peak, 50dB(μV) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.2.1 E.U.T. Operation

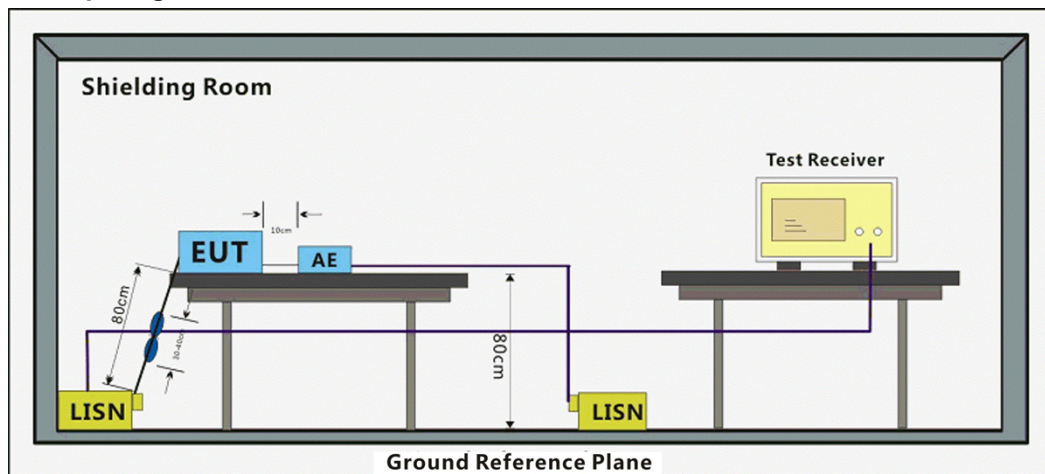
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

Frequency Range: 150kHz to 30MHz

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. The red line show in graphic is the limit in standard used in this section.

Measured Level = Read level + Cable Loss + LISN Factor



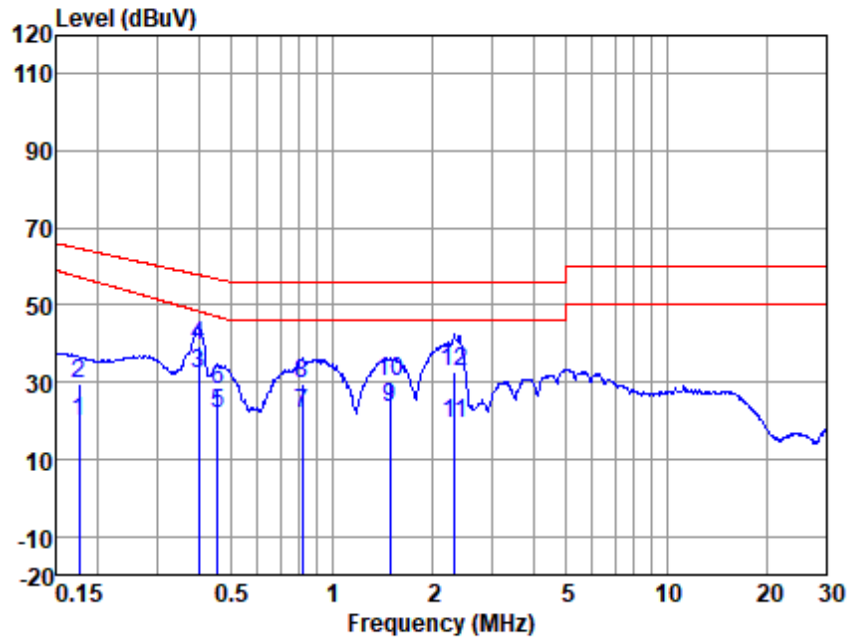
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Test Mode: 00; Line: Live line



LISN : LINE
EUT/Project No : 00400HS
Test Mode : 00

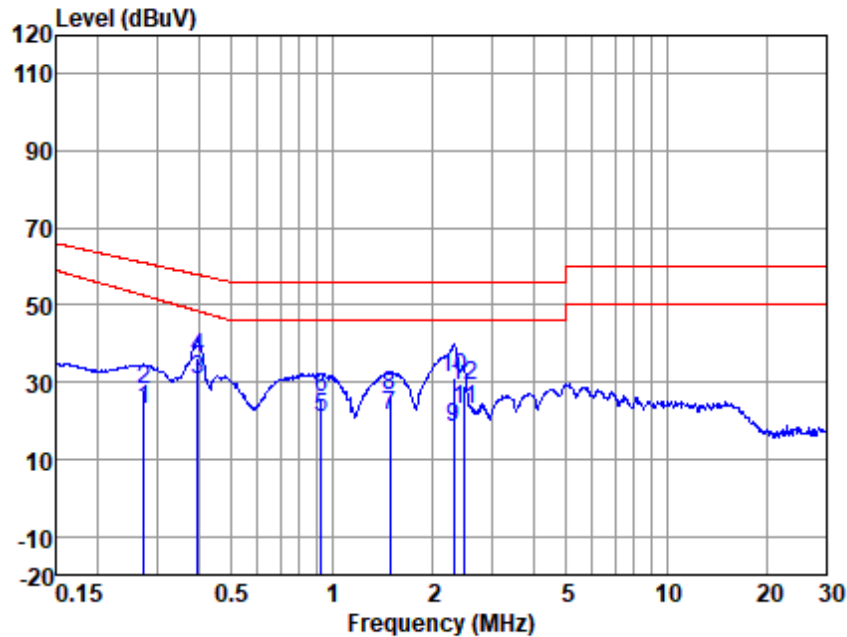
	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.17	9.59	0.10	10.02	19.71	57.34	-37.63	Average
2	0.17	19.54	0.10	10.02	29.66	64.72	-35.06	QP
3	0.40	22.02	0.10	10.07	32.19	48.42	-16.23	Average
4	0.40	29.26	0.10	10.07	39.43	57.86	-18.43	QP
5	0.46	11.46	0.10	10.07	21.63	46.99	-25.36	Average
6	0.46	18.10	0.10	10.07	28.27	56.76	-28.49	QP
7	0.81	11.90	0.10	10.09	22.09	46.00	-23.91	Average
8	0.81	19.32	0.10	10.09	29.51	56.00	-26.49	QP
9	1.49	12.99	0.10	10.15	23.24	46.00	-22.76	Average
10	1.49	19.61	0.10	10.15	29.86	56.00	-26.14	QP
11	2.32	9.23	0.10	10.18	19.51	46.00	-26.49	Average
12	2.32	22.31	0.10	10.18	32.59	56.00	-23.41	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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Test Mode: 00; Line: Neutral Line



LISN : NEUTRAL
EUT/Project No : 00400HS
Test Mode : 00

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.27	12.50	0.10	10.05	22.65	52.48	-29.83	Average
2	0.27	18.07	0.10	10.05	28.22	60.98	-32.76	QP
3	0.40	20.56	0.10	10.07	30.73	48.47	-17.74	Average
4	0.40	25.92	0.10	10.07	36.09	57.90	-21.81	QP
5	0.93	10.56	0.10	10.10	20.76	46.00	-25.24	Average
6	0.93	15.64	0.10	10.10	25.84	56.00	-30.16	QP
7	1.49	11.08	0.10	10.15	21.33	46.00	-24.67	Average
8	1.49	16.37	0.10	10.15	26.62	56.00	-29.38	QP
9	2.31	8.00	0.12	10.18	18.30	46.00	-27.70	Average
10	2.31	21.07	0.12	10.18	31.37	56.00	-24.63	QP
11	2.49	12.48	0.12	10.18	22.78	46.00	-23.22	Average
12	2.49	18.95	0.12	10.18	29.25	56.00	-26.75	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss



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6.3 Disturbance Power

Test Requirement: EN IEC 55014-1: 2021

Test Method: CISPR 16-2-2

Limit:

30MHz- 300MHz: 45dB(pW)-55dB(pW) quasi-peak, 35dB(pW)-45dB(pW) average

200MHz- 300MHz: 0dB(pW)-10dB(pW) quasi-peak (reduction limit)

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to 300MHz

6.3.1 E.U.T. Operation

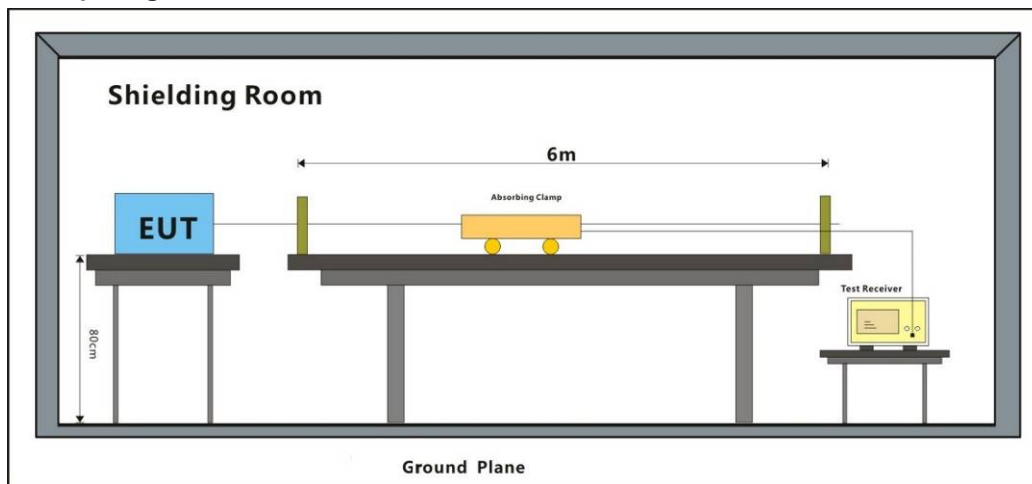
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

Frequency Range: 30MHz to 300MHz

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. The red line show in graphic is the limit in standard used in this section.

Measured Level = Read level + Cable Loss + Clamp Factor

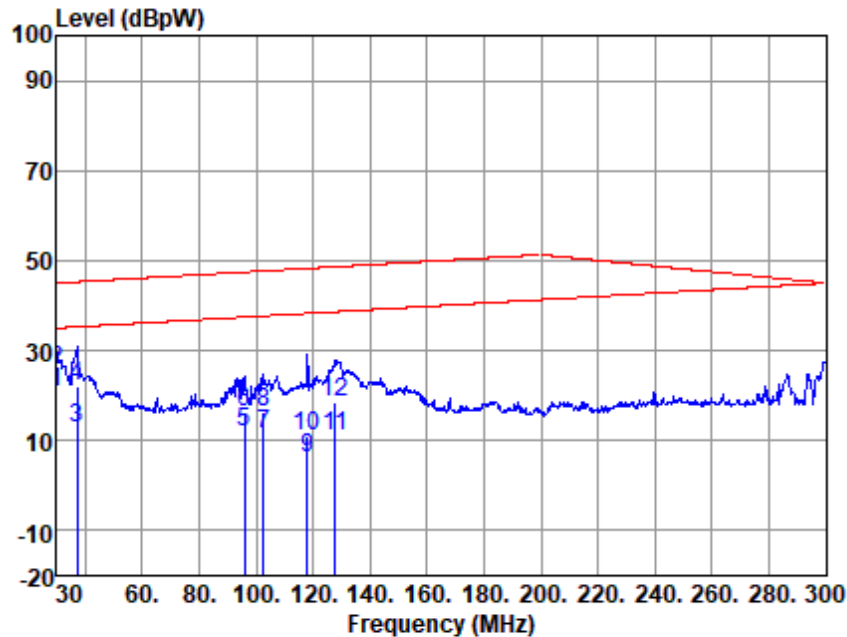


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Test Mode: 00



EUT/Project No : 00400HS

Test Mode : 00

	Freq (MHz)	Read level (dBpW)	Aux Factor (dB)	Cable Loss (dB)	Emission Level (dBpW)	Limit (dBpW)	Over Limit (dB)	Remark
1	30.00	-5.79	19.80	6.60	20.61	35.01	-14.40	Average
2	30.00	-0.88	19.80	6.60	25.52	45.01	-19.49	QP
3	37.29	-13.33	19.54	6.74	12.95	35.28	-22.33	Average
4	37.29	-4.00	19.54	6.74	22.28	45.28	-23.00	QP
5	95.88	-13.53	18.08	7.30	11.85	37.45	-25.60	Average
6	95.88	-9.08	18.08	7.30	16.30	47.45	-31.15	QP
7	102.63	-13.63	17.92	7.32	11.61	37.70	-26.09	Average
8	102.63	-9.07	17.92	7.32	16.17	47.70	-31.53	QP
9	118.02	-19.18	17.86	7.44	6.12	38.27	-32.15	Average
10	118.02	-14.18	17.86	7.44	11.12	48.27	-37.15	QP
11	127.74	-14.05	17.74	7.52	11.21	38.63	-27.42	Average
12	127.74	-6.89	17.74	7.52	18.37	48.63	-30.26	QP

Notes: Emission Level = Read Level + Aux Factor + Cable loss



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6.4 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN IEC 55014-1: 2021

Test Method: CISPR 16-2-3

Measurement Distance: 3m

Limit:

Test Distance: 10m

30MHz-230MHz 30 dB(μV/m) quasi-peak

230MHz-1GHz 37 dB(μV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

Test Distance: 3m

30MHz-230MHz 40 dB(μV/m) quasi-peak

230MHz-1GHz 47 dB(μV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C

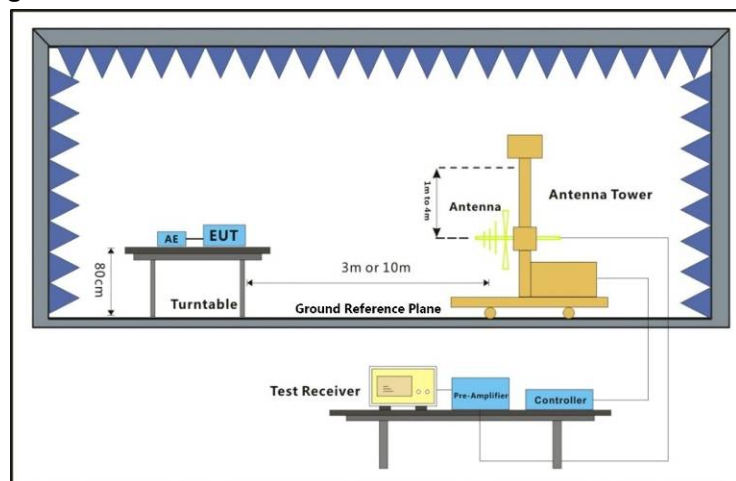
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

6.4.3 Test Setup Diagram



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6.4.4 Measurement Procedure and Data

Frequency Range: 30MHz to 1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

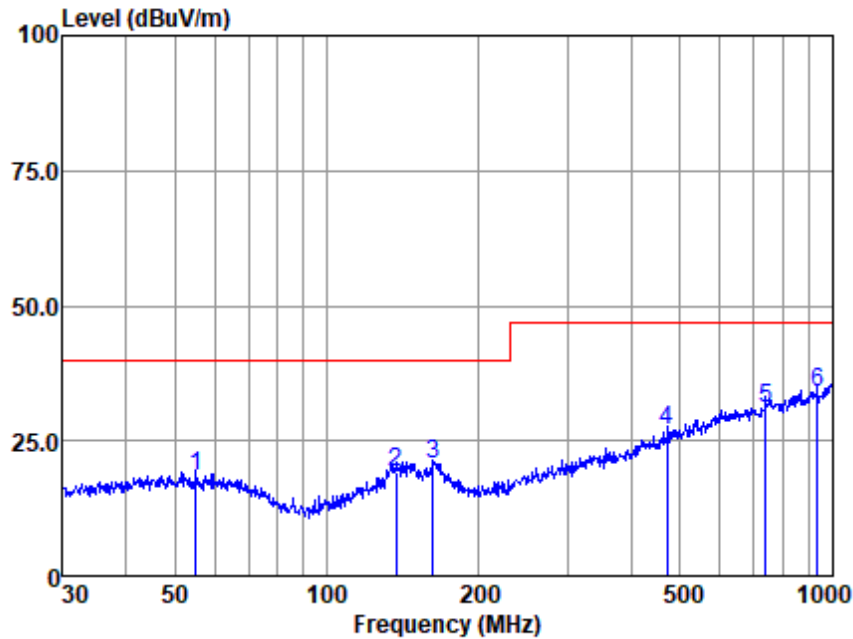
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Test Mode: 00; Polarity: Horizontal



Antenna Polarity :HORIZONTAL
EUT/Project :0400HS
Test mode :00

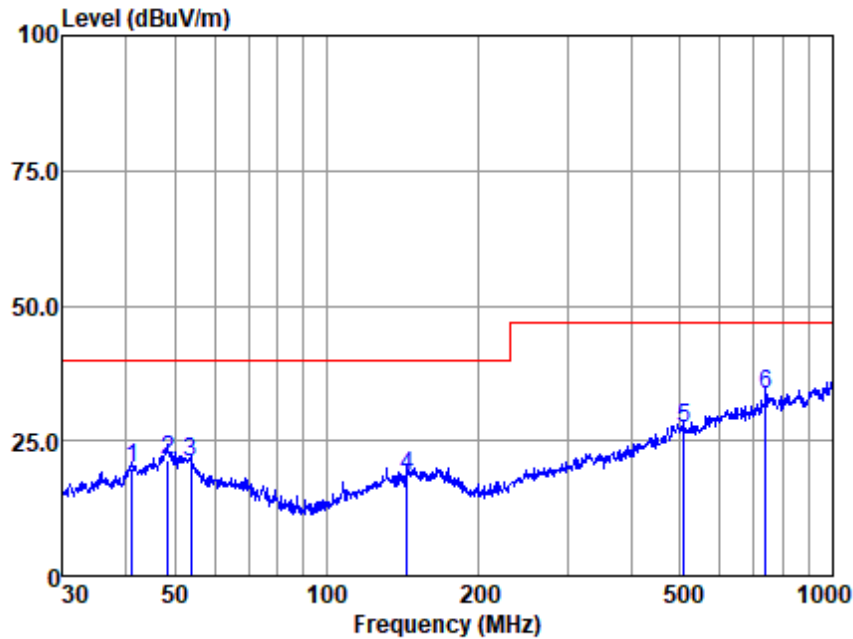
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	55.027	35.49	13.66	1.23	31.83	18.55	40.00	-21.45	QP
2	136.939	36.30	12.48	2.03	31.71	19.10	40.00	-20.90	QP
3	162.041	36.28	13.21	2.23	31.23	20.49	40.00	-19.51	QP
4	472.176	36.34	17.39	3.94	30.90	26.77	47.00	-20.23	QP
5	737.071	35.61	22.13	4.82	31.49	31.07	47.00	-15.93	QP
6	935.546	36.87	23.85	5.43	32.05	34.10	47.00	-12.90	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Test Mode: 00; Polarity: Vertical



Antenna Polarity : VERTICAL
EUT/Project : 0400HS
Test mode : 00

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	41.132	37.35	13.47	1.11	32.03	19.90	40.00	-20.10	QP
2	48.502	38.46	13.83	1.15	32.08	21.36	40.00	-18.64	QP
3	53.882	37.97	13.73	1.23	31.88	21.05	40.00	-18.95	QP
4	144.335	34.83	12.98	2.06	31.60	18.27	40.00	-21.73	QP
5	510.044	36.15	17.93	4.02	30.74	27.36	47.00	-19.64	QP
6	739.661	38.08	22.21	4.82	31.36	33.75	47.00	-13.25	QP

Note: Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



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6.5 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2: 2019+A1: 2021

Test Method: EN IEC 61000-3-2: 2019+A1:2021

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN IEC 61000-3-2: 2019+A1: 2021.

For further details, please refer to Clause 7 of EN IEC 61000-3-2 which states:

“For the following categories of equipment, limits are not specified in this standard.

- equipment with a rated power of 75W or less, other than lighting equipment”



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7 Immunity Test Results

Performance Criteria Description

- Criterion A:** The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
- Criterion B:** The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual operating state or stored data is allowed to persist after the test. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.
- Criterion C:** Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.



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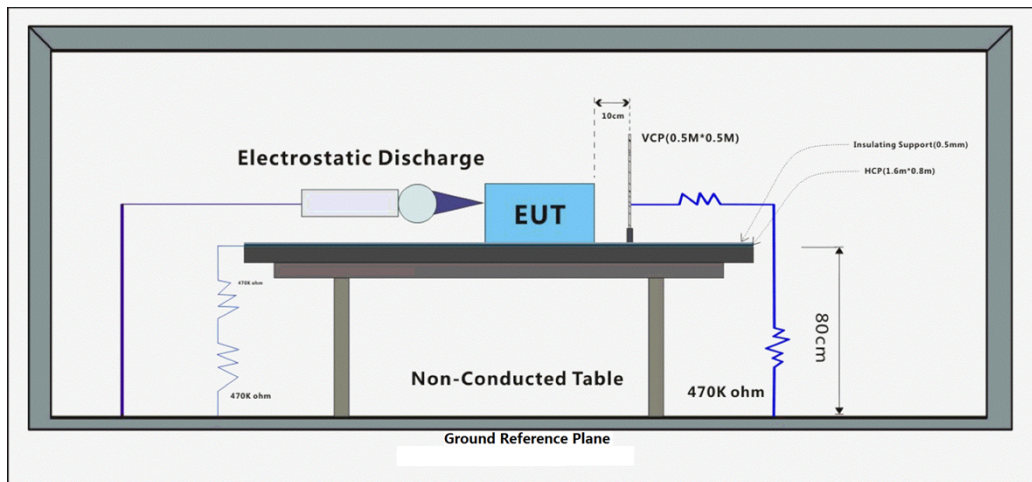
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7.1 Electrostatic Discharge

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN 61000-4-2:2009

7.1.1 Test Setup Diagram



7.1.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

7.1.4 Test Condition and Results:

Performance Criterion: B

Discharge Impedance: 330 Ω / 150 pF

Discharge Voltage: Air Discharge: 8 kV; Contact Discharge: 4 kV; VCP/HCP: 4 kV.

Polarity: Positive & Negative

Number of Discharge: Minimum 10 times at each test point

Discharge Mode: Single Discharge

Discharge Period: 1 second minimum

Test Point 1: All insulated enclosure & seams.

Test Point 2: All accessible metal parts of the enclosure.

Test Point 3: All sides.



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Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	8	+	1	A
Air Discharge	8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A
A: No degradation in the performance of the EUT was observed				



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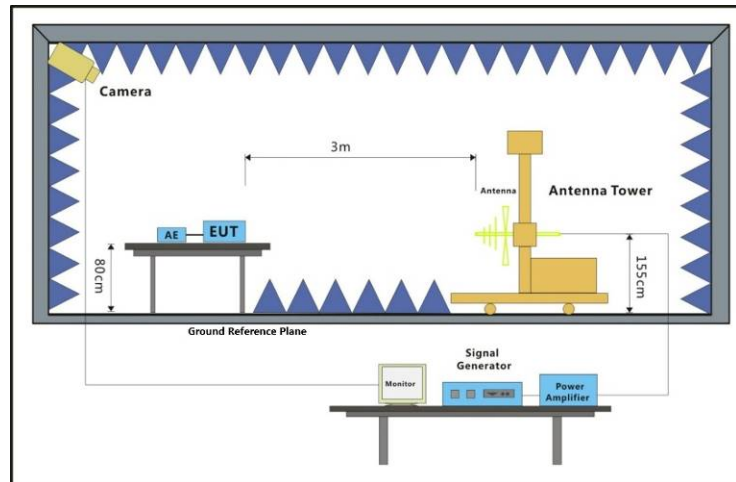
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7.2 Radiated Immunity (80MHz-1GHz)

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010

7.2.1 Test Setup Diagram



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.2.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

7.2.4 Test Condition and Results:

Performance Criterion: A

Frequency Range: 80MHz to 1GHz

Antenna Polarisation: Vertical and Horizontal

Modulation 1kHz, 80% Amp. Mod,1% increment

Test Distance:3m



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Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A

A: No degradation in the performance of the EUT was observed

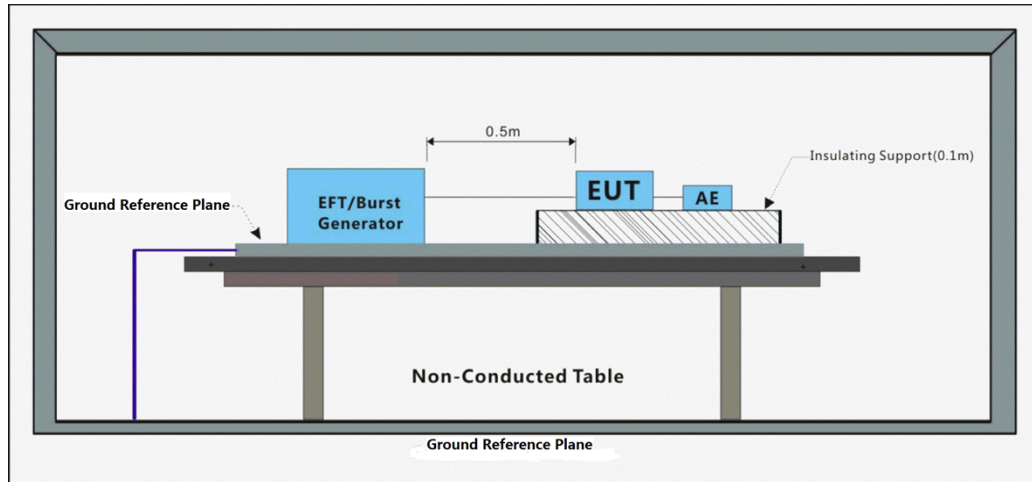


7.3 Electrical Fast Transients Burst at AC Mains Power Port

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN 61000-4-4:2012

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.3.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

7.3.4 Test Condition and Results:

Performance Criterion: B

Repetition Frequency: 5kHz

Burst Period: 300ms

Test Duration: 2 minute per level & polarity

Test Level: 1.0kV

Polarity: Positive & Negative

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

A: No degradation in the performance of the EUT was observed



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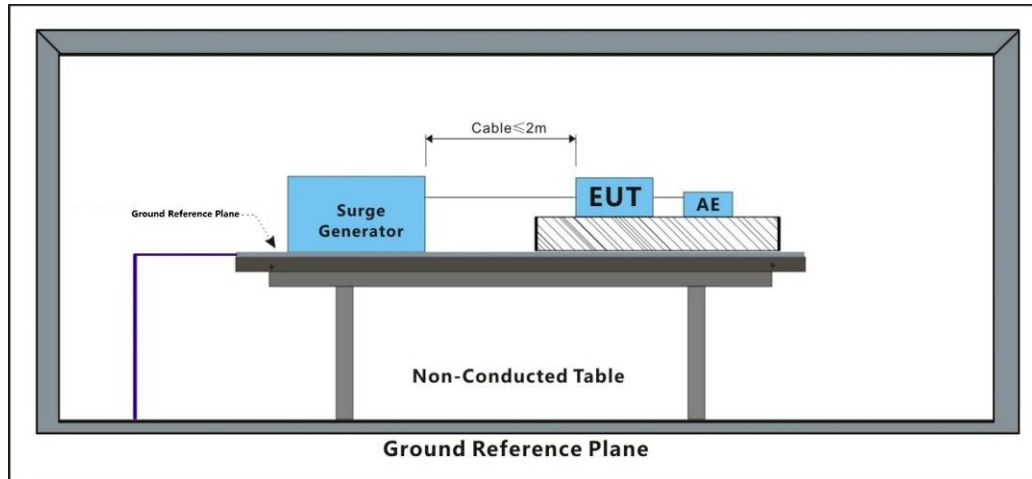
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7.4 Surge at AC Mains Power Port

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN 61000-4-5:2014+A1:2017

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.4.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

7.4.4 Test Condition and Results:

Performance Criterion: B

Interval: 60s between each surge

Generator source impedance: 2Ω

CDN coupling impedance(Line-to-ground):10Ω

Trigger Mode: Internal

No. of surges: 5 positive at 90°, 5 negative at 270°.

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	90°	A
L-N	1	-	270°	A

A: No degradation in the performance of the EUT was observed



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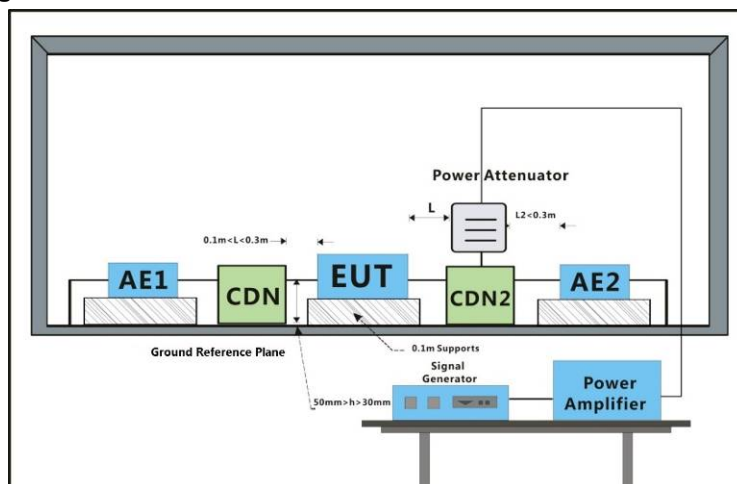
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7.5 Conducted Immunity at AC Mains Power Port (150kHz-80MHz)

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN 61000-4-6:2014

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.5.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode. Keep the EUT in charging continuously.

7.5.4 Test Condition and Results:

Performance Criterion: A

Step Size: 1%

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Cable Port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A
A: No degradation in the performance of the EUT was observed				



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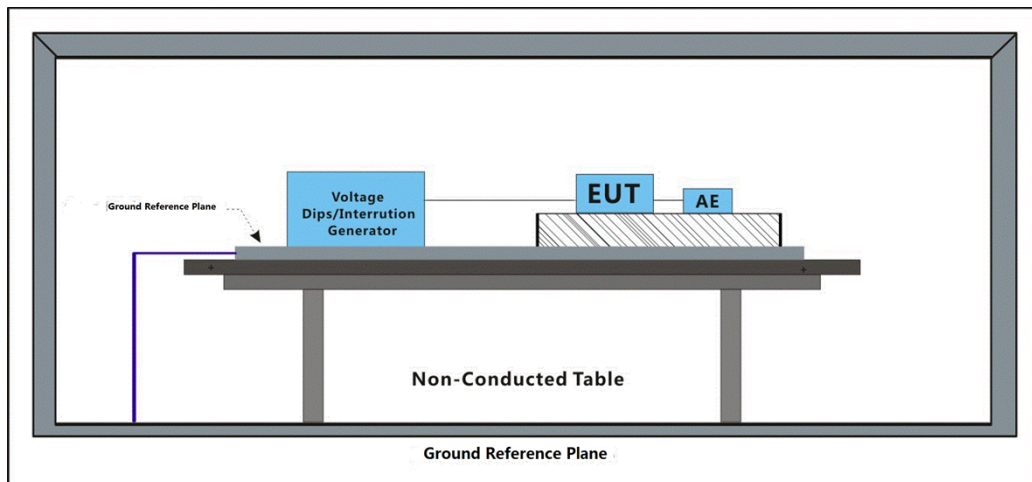
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7.6 Voltage Dips and Interruptions

Test Requirement: EN IEC 55014-2: 2021

Test Method: EN IEC 61000-4-11:2020

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.6.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charging mode_Keep the EUT in charging continuously.

7.6.4 Test Condition and Results:

Performance Criterion:

For 50Hz: 0% of UT (Rated Voltage) for 0.5 Cycle: C; 40% of UT for 10 Cycles: C; 70% of UT for 25 Cycles: C.

For 60Hz: 0% of UT (Rated Voltage) for 0.5 Cycle: C; 40% of UT for 12 Cycles: C; 70% of UT for 30 Cycles: C.

No. of Dips / Interruptions: 3 per Level

Time between dropout: 10s



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Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycle for 50Hz	3	A
0	180°	0.5 Cycle for 50Hz	3	A
40	0°	10 Cycles for 50Hz	3	A
40	180°	10 Cycles for 50Hz	3	A
70	0°	25 Cycles for 50Hz	3	A
70	180°	25 Cycles for 50Hz	3	A

A: No degradation in the performance of the EUT was observed

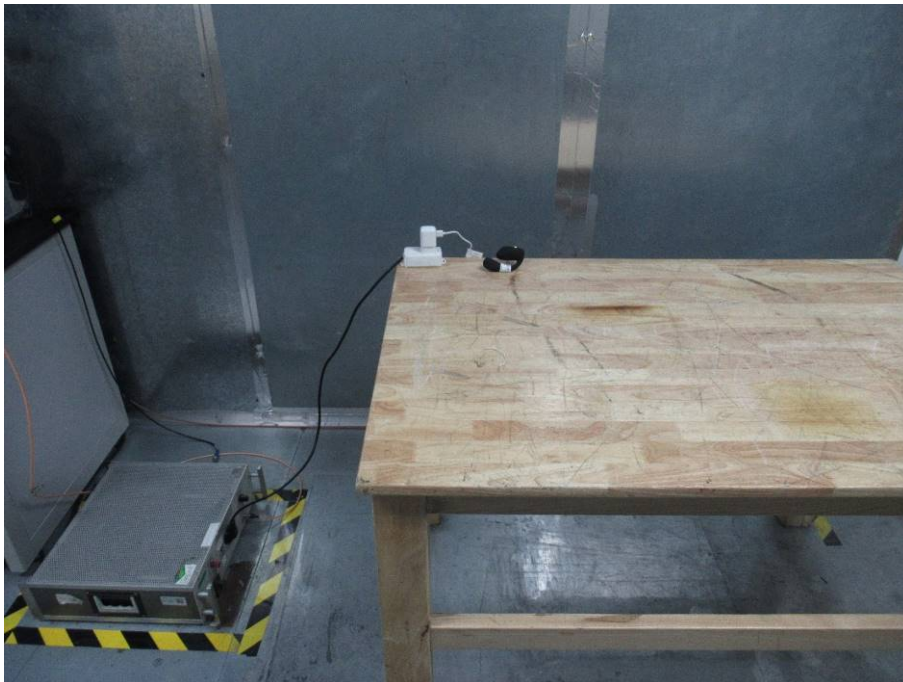


8 Test Setup Photo

Voltage Fluctuations and Flicker



Conducted Emissions at AC Mains Power Port (150kHz-30MHz)



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Disturbance Power



Radiated Emissions (30MHz-1GHz)



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Electrostatic Discharge



Radiated Immunity (80MHz-1GHz)



Electrical Fast Transients Burst at AC Mains Power Port



Surge at AC Mains Power Port



Conducted Immunity at AC Mains Power Port (150kHz-80MHz)



Voltage Dips and Interruptions



9 EUT Constructional Details (EUT Photos)

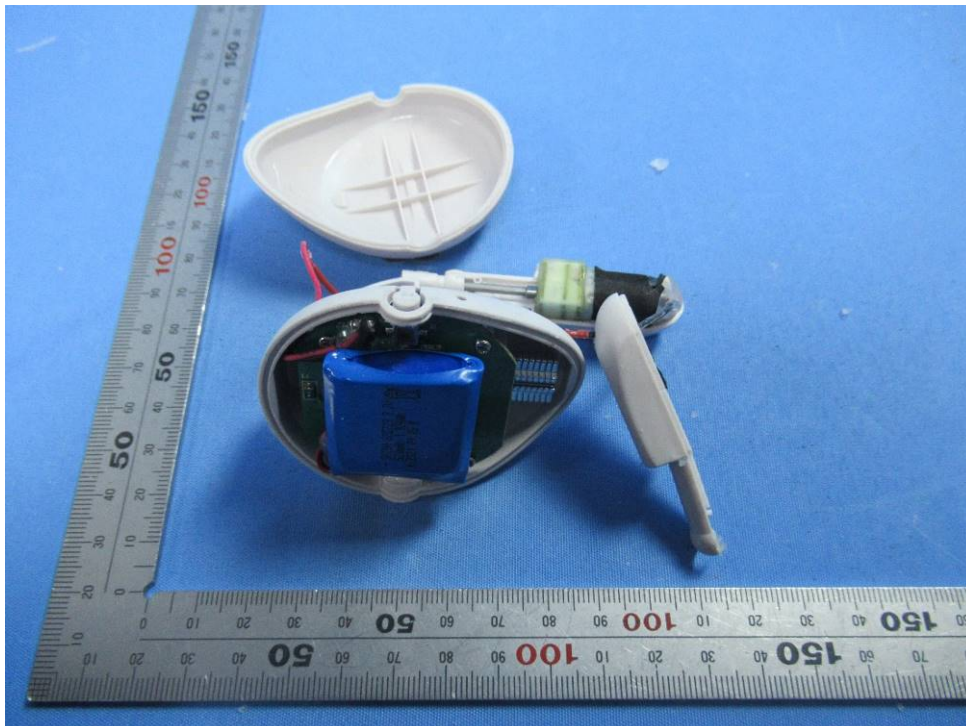


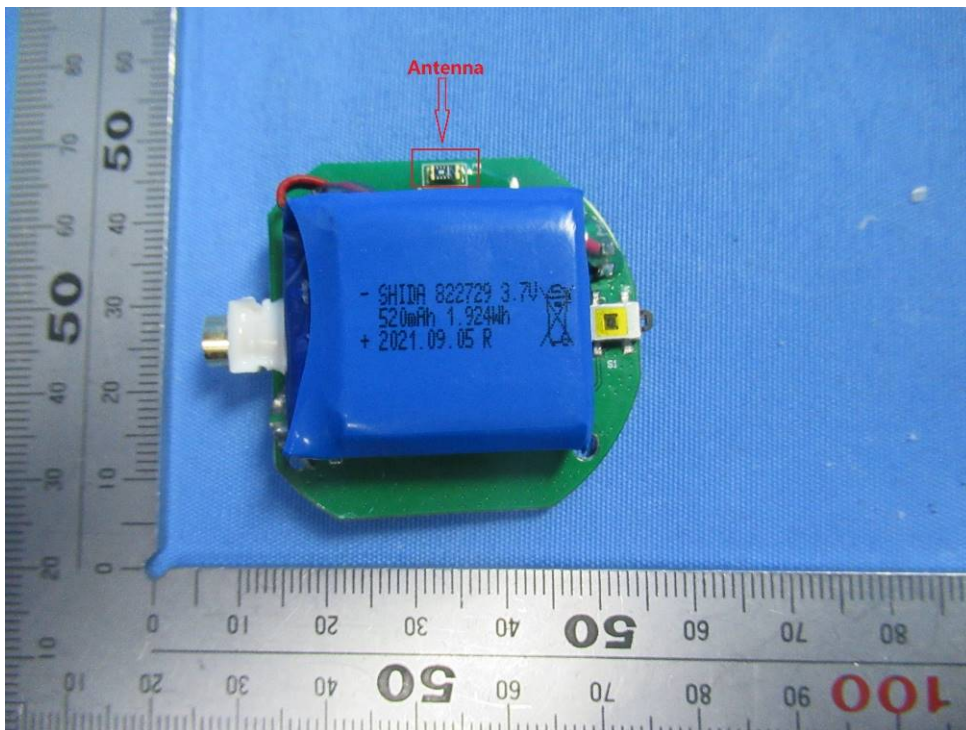
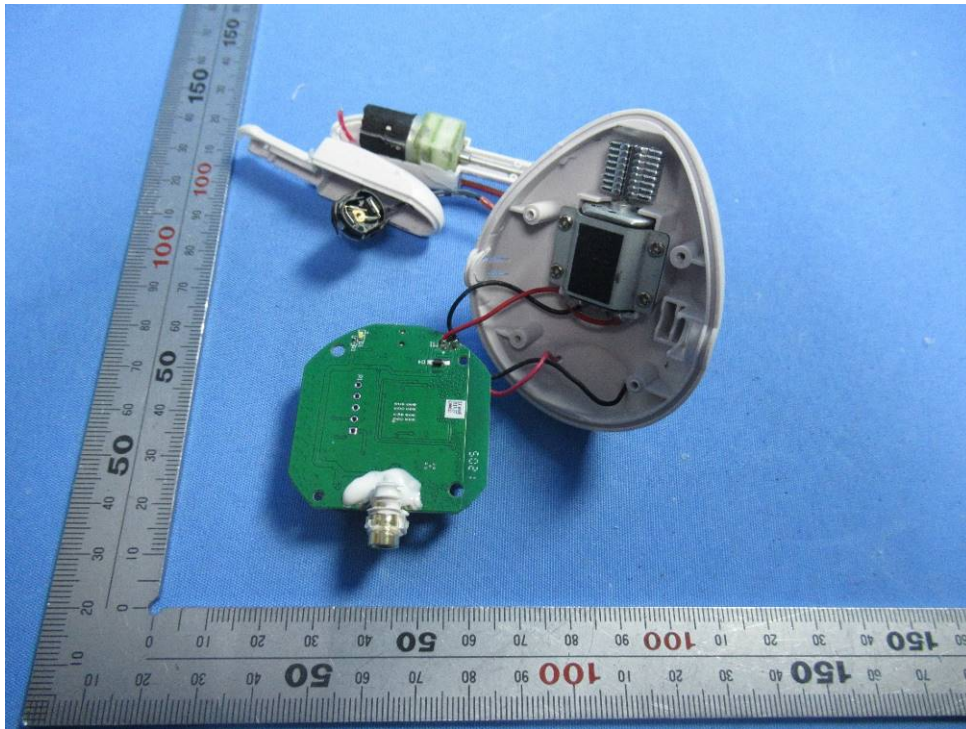


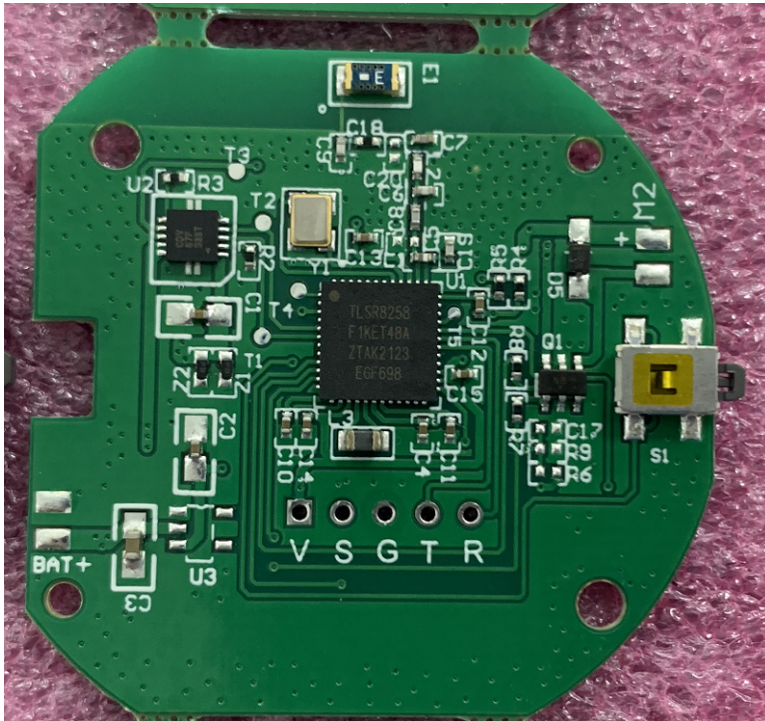
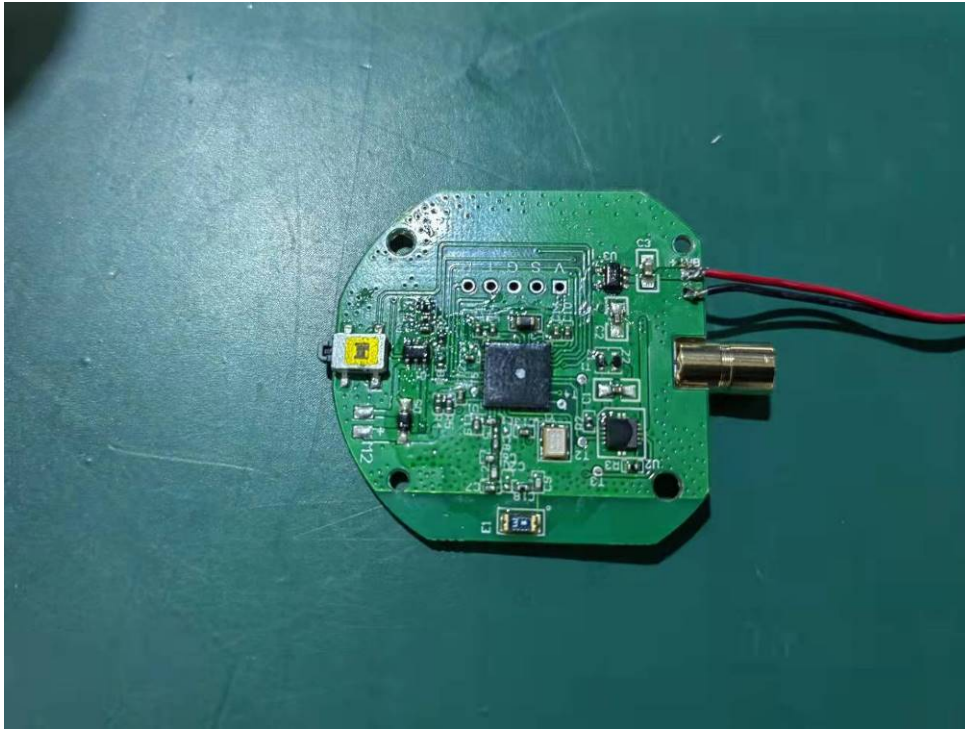


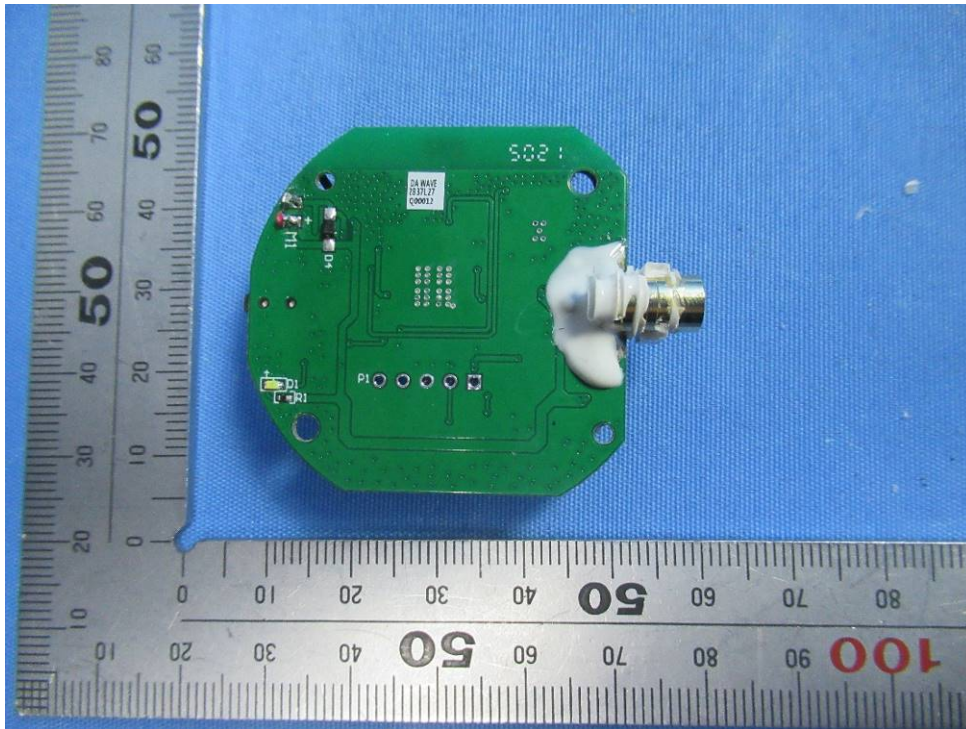
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-- End of the Report --

