

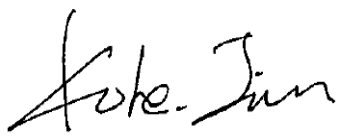

TEST REPORT

Application No.: GZEM2011016127AT
Applicant: Nanchang Smile Technology Co., Ltd
Address of Applicant: Room 1201, 12th Floor, MSQ Building, No.888 Gaoxin South Avenue, Qingshan Lake District, Nanchang 330096, Jiangxi, China
Manufacturer: The same as applicant
Address of Manufacturer: The same as applicant
Factory: The same as applicant
Address of Factory: The same as applicant
Equipment Under Test (EUT):
EUT Name: Wireless Mouthpiece Led Light
Model No.: IVI-040, IVI-040W, IVI-040B, IVI-040R
Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: /
Standard(s): EN IEC 55015:2019
EN IEC 61000-3-2:2019
EN 61000-3-3:2013+A1:2019
EN 61547:2009
Date of Receipt: 2020-11-03
Date of Test: 2020-11-07 to 2020-12-19
Date of Issue: 2020-12-28

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

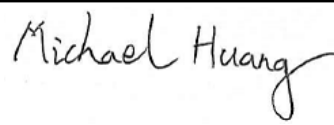
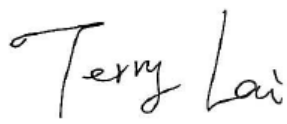
Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-28		Original

Authorized for issue by:			
Tested By			2020-11-07 to 2020-12-19
	Michael_Huang /Project Engineer		Date
Checked By			2020-12-28
	Terry_Lai /Reviewer		Date



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 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (9kHz-30MHz)	EN IEC 55015:2019	EN IEC 55015:2019	N/A	Pass
Radiated Emissions (30MHz-1GHz)	EN IEC 55015:2019	EN IEC 55015:2019	N/A	Pass
Radiated Emissions (Magnetic field Induced Current) (9kHz-30MHz)	EN IEC 55015:2019	EN IEC 55015:2019	N/A	Pass
Harmonic Current Emission	EN IEC 61000-3-2:2019	EN IEC 61000-3-2:2019	Class C	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3:2013 +A1:2019	EN 61000-3-3:2013 +A1:2019	Clause 5 of EN 61000-3-3	Pass

N/A: Not applicable

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 61547:2009	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)	EN 61547:2009	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients/Burst at Power Port	EN 61547:2009	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 61547:2009	EN 61000-4-5:2014	1.2/50µs Tr/Td 0.5kV Line to Line	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 61547:2009	EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass**
Voltage Dips and Interruptions	EN 61547:2009	EN 61000-4-11:2004	0 % UT for 0.5cycle 70 % UT for 10cycles UT is Supply Voltage	Pass

N/A: Not applicable

** : The EUT passed Conducted Immunity at Power Port (150kHz-80MHz) tests after modification.



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Guangzhou Branch Testing Center EEC Laboratory. 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

▣ **Declaration of EUT Family Grouping:**

Model No.: IVI-040, IVI-040W, IVI-040B, IVI-040R.

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the model name.

Therefore only one model IVI-040 was tested in this report.



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4 General Information

4.1 Details of E.U.T.

Power Supply: DC 5V (Supply power for the AC\DC adapter)
 Battery Operation(B/O):DC 3.7V Rechargeable Li-ion Battery

Test Voltage: DC 5V (Supply power for the AC\DC adapter)
 Battery Operation(B/O):DC 3.7V Rechargeable Li-ion Battery

Cable: 2 Pins, AC input
 2 wires x about 1.0m unscreened DC output cable.
 (The AC\DC adapter output cable to EUT).

Rated Power: Below 5W

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Use the AC\DC adapter, supply by the SGS.	/	Model: CX-4405(EU) INPUT: AC 230V 50Hz OUTPUT: DC 5V	/

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	3.63dB (9kHz to 150kHz)
		3.22dB (150kHz to 30MHz)
2	Disturbance Power	3.78dB
3	Radiated Emissions	5.0dB (30MHz-1GHz)
		5.2dB (1GHz-6GHz)
		5.5dB (6GHz-18GHz)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
 198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
 Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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4.5 Test Facility

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

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., 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 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: LED lighting of the EUT.

Audio: N/A

Other: N/A



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5 Equipment List

Conducted Emissions at Mains Terminals (9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2020-01-10	2021-01-09
LISN	Rohde & Schwarz	ENV216	EMC2135	2020-09-25	2021-09-24
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2020-11-13	2021-11-12
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Voltage Probe	SGS-EMC	N/A	EMC0106	2019-05-10	2021-05-09
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2020-04-19	2022-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2020-06-08	2023-06-07
Horn Antenna 1GHz-18GHz	Rohde & Schwarz	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
Amplifier	HP	8447F	EMC2065	2020-05-26	2021-05-25
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2020-11-13	2021-11-12
Active Loop Antenna	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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Radiated Emissions (Magnetic field Induced Current)(9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Loop Antenna	ZHINAN	ZN30401	EMC2187	2020-03-27	2022-03-26
Coaxial Cable	INFINITE	CC223N-10	EMC0703	2019-06-28	2021-06-27
MXE EMI Receiver	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2020-03-27	2021-03-26
Power Analyzer	California	PACS	EMC0607	2020-03-27	2021-03-26
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Simulator	TESEQ AG	NSG 435	EMC2071	2020-06-30	2021-06-30
ESD Simulator	EMTEST	NX30	EMC2186	2020-03-02	2021-03-01
ESD Ground Plane	SGS-EMC	3m x 3m	EMC0804	N/A	N/A
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2020-07-04	2021-07-03



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Radiated Immunity (80MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2019-10-20	2022-10-19
Laser Probe Interface	RF Microwave Instrumentation	FI7000	EMC2089	N/A	N/A
Open Switch And Control Unit	Rohde & Schwarz	OSP130	EMC2090	N/A	N/A
Broadband Amplifier(80MHz~1GHz/250W)	Rohde & Schwarz	BBA150	EMC2091	2020-01-10	2021-01-09
Broadband Amplifier(800MHz~3GHz/110W)	Rohde & Schwarz	BBA150	EMC2092	2020-01-10	2021-01-09
Signal Generator	Rohde & Schwarz	SMB100A	EMC2093	2020-01-10	2021-01-09
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2020-03-02	2021-03-21
NRP-Z91 Power Sensor 6GHz	Rohde & Schwarz	NPR-Z91	EMC2095	2020-01-10	2021-01-09
NRP-Z91 Power Sensor 6GHz	Rohde & Schwarz	NPR-Z91	EMC2096	2020-01-10	2021-01-09
High-Gain Log-periodic Antenna	Rohde & Schwarz	HL046E	EMC2097	2019-02-15	2022-02-14
Stacked Logarithmic-Periodic Broadband Antenna (0.7~9GHz)/300W	SCHWARZBECK MESS - ELEKTRONIK	STLP 9149	SEM003-21	2018-09-18	2021-09-17
Broadband Amplifier (2.5~6GHz/30W)	Rohde & Schwarz	BBA150	EMC2105	2020-09-18	2021-09-17
RI Cable	Rohde & Schwarz	7m	EMC2098	2020-05-24	2021-05-23
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17
Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A	N/A
Test Software EMC32	Rohde & Schwarz	Ver. 9.26.00	GZE100-63	N/A	N/A

Electrical Fast Transients/Burst at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A



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Surge at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Modular Impulse Surge Generator	EMC PARTNER	MIG0603EN	EMC2059	2020-01-10	2021-01-09
EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Test System for Conducted and Radiated Immunity	TESEQ AG	NSG 4070B-80	EMC2115	2020-11-30	2021-11-29
Test Software NSG4070_Ctrl1	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
CDN S502A	TESEQ AG	CDN S502A	EMC2113	2019-07-13	2021-07-12
CDN ST08A	TESEQ AG	CDN ST08A	EMC2112	2019-07-13	2021-07-12
CDN USB3.0	TESEQ AG	CDN USB3.0	EMC2114	2019-07-13	2021-07-12
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2020-05-26	2021-05-25
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2020-08-21	2022-08-20
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2020-10-23	2023-10-22
Current Probe	Schaffner Chase	CIP9136	EMC1116	2020-03-27	2022-03-26
Current Probe	Schaffner Chase	CSP8445	EMC1117	2020-03-27	2022-03-26
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMC Immunity Test System	TESEQ AG	NSG 3060CDN30611 NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2020-07-09	2021-07-08
DMM	Fluke	73	EMC0007	2020-07-09	2021-07-08



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6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (9kHz-30MHz)

Test Requirement:	EN IEC 55015:2019
Test Method:	EN IEC 55015:2019
Frequency Range:	9kHz to 30MHz
Limit:	
0.009MHz – 0.05MHz	110dB(μV) quasi-peak
0.05MHz – 0.15MHz	90dB(μV)-80dB(μV) quasi-peak
0.15MHz – 0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5MHz – 5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5MHz – 30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (200Hz resolution bandwidth) 0.009M to 0.15MHz Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

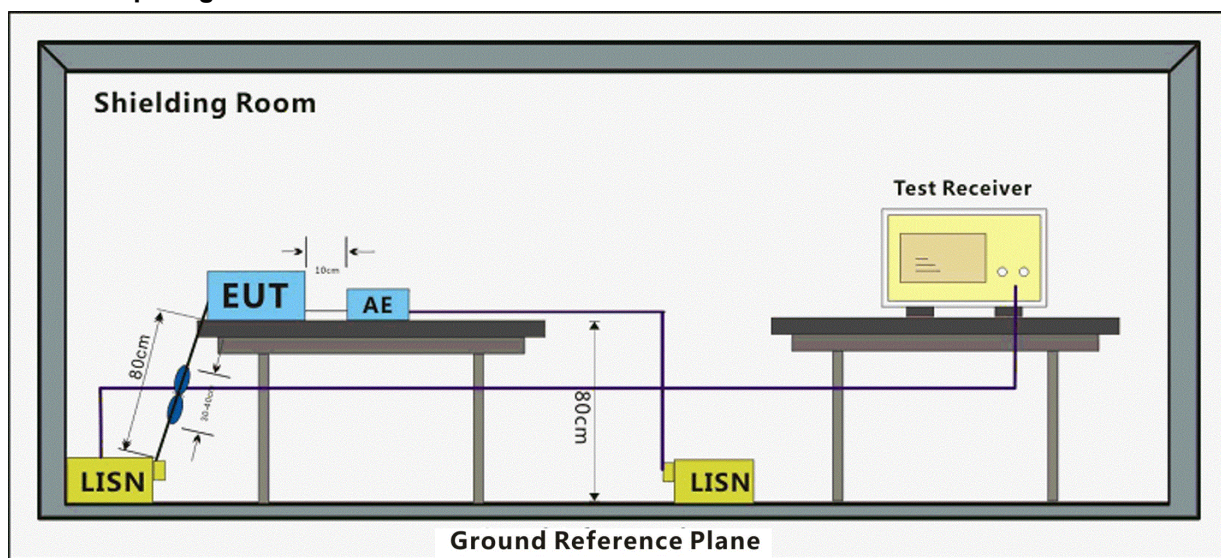
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.7 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

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.

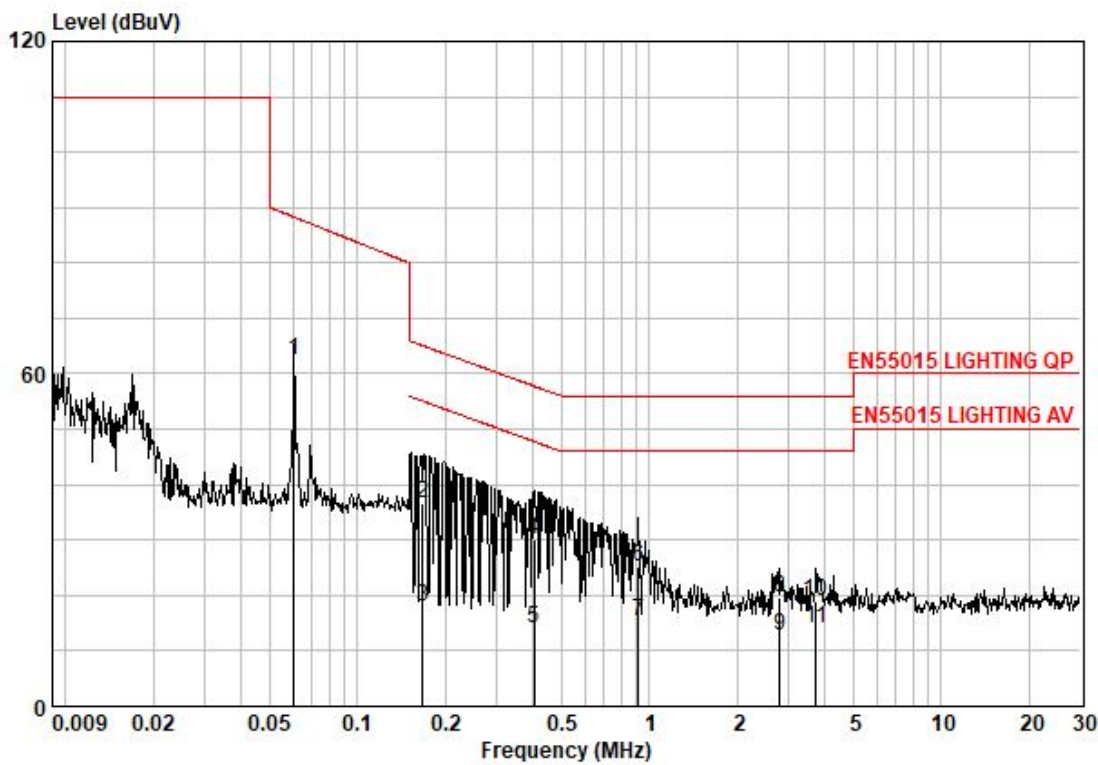
Measured Level = Read level + Cable Loss + LISN Factor



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Mode:a; Line:Live Line

Pol :LIVE
Mode :
Model :

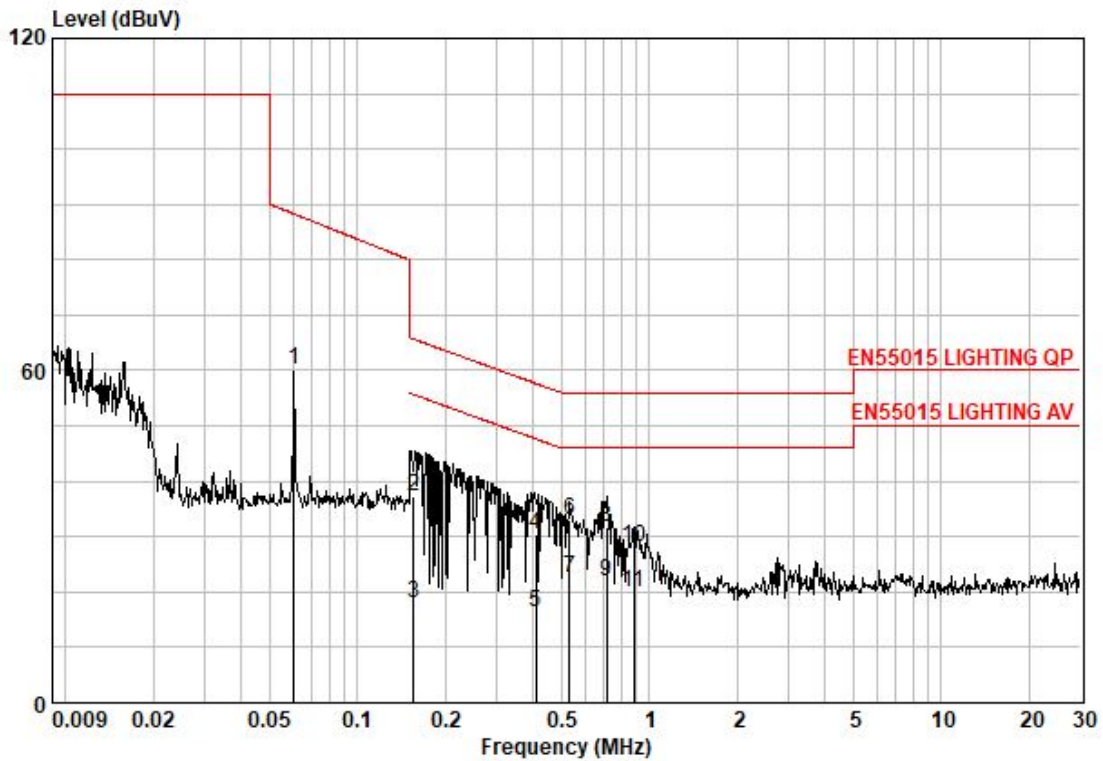
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.06	52.54	0.10	9.65	62.29	88.25	-25.96	QP
0.17	26.82	0.10	9.61	36.53	65.08	-28.55	QP
0.17	8.25	0.10	9.61	17.96	55.08	-37.12	AVERAGE
0.40	20.50	0.10	9.61	30.21	57.77	-27.56	QP
0.40	4.41	0.10	9.61	14.12	47.77	-33.65	AVERAGE
0.92	15.48	0.10	9.61	25.19	56.00	-30.81	QP
0.92	5.52	0.10	9.61	15.23	46.00	-30.77	AVERAGE
2.79	9.86	0.18	9.63	19.67	56.00	-36.33	QP
2.79	2.98	0.18	9.63	12.79	46.00	-33.21	AVERAGE
3.74	9.25	0.20	9.64	19.09	56.00	-36.91	QP
3.74	4.15	0.20	9.64	13.99	46.00	-32.01	AVERAGE



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Mode:a; Line:Neutral Line


Pol : NEUTRAL
Mode :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.06	50.35	0.10	9.63	60.08	88.25	-28.17	QP
0.16	27.72	0.10	9.61	37.43	65.69	-28.26	QP
0.16	8.31	0.10	9.61	18.02	55.69	-37.67	AVERAGE
0.41	20.77	0.10	9.64	30.51	57.68	-27.17	QP
0.41	6.48	0.10	9.64	16.22	47.68	-31.46	AVERAGE
0.53	23.18	0.10	9.64	32.92	56.00	-23.08	QP
0.53	12.83	0.10	9.64	22.57	46.00	-23.43	AVERAGE
0.71	21.95	0.10	9.66	31.71	56.00	-24.29	QP
0.71	12.10	0.10	9.66	21.86	46.00	-24.14	AVERAGE
0.88	18.28	0.10	9.67	28.05	56.00	-27.95	QP
0.88	10.17	0.10	9.67	19.94	46.00	-26.06	AVERAGE



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6.2 Radiated Emissions (30MHz-1GHz)

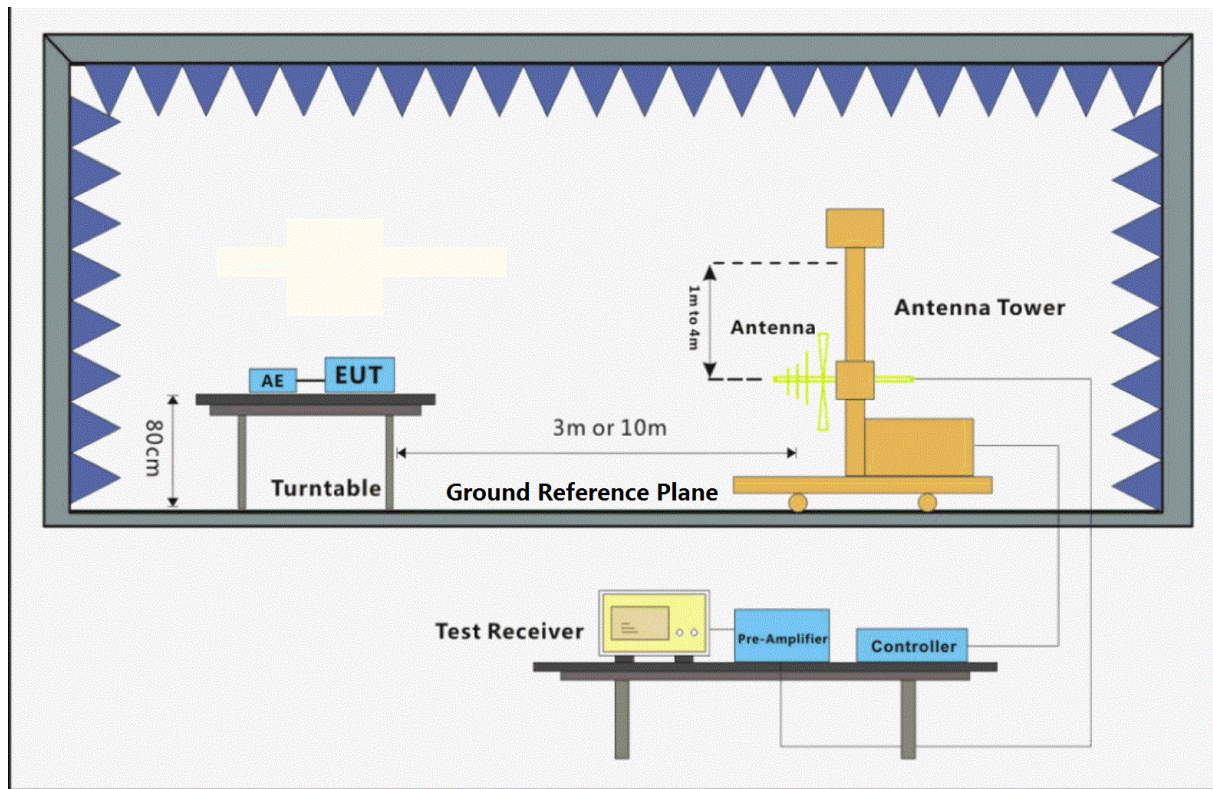
Test Requirement: EN IEC 55015:2019
 Test Method: EN IEC 55015:2019
 Frequency Range: 30MHz to 1GHz
 Measurement Distance: 10m
 Limit:
 30MHz-230MHz 30 dB(μ V/m) quasi-peak
 230MHz-1GHz 37 dB(μ V/m) quasi-peak
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
 Pretest these modes to find the worst case:
 a: Test the EUT in charging mode, supply power by the AC\DC adapter.
 b: Test the EUT in LED lighting mode with max output power, supply power by the DC battery.
 c: Test the EUT in LED lighting mode with low output power, supply power by the DC battery.
 The worst case for final test: b: Test the EUT in LED lighting mode with max output power, supply power by the DC battery.

6.2.2 Test Setup Diagram



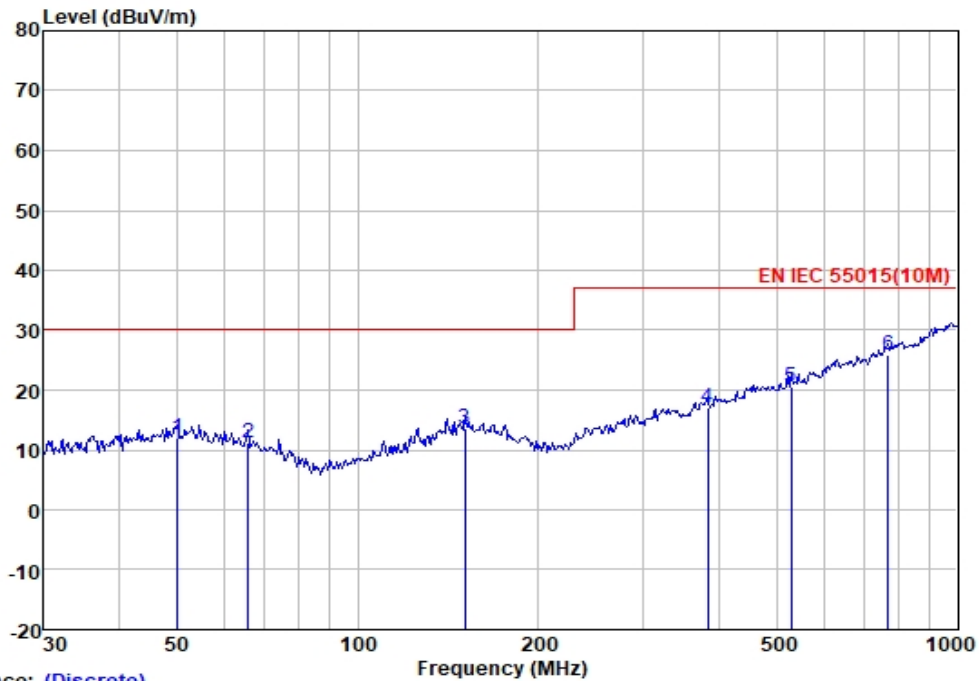
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6.2.3 Measurement Data

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.

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

Mode:b; Polarization:Horizontal



Trace: (Discrete)

Site : SGS
Condition: EN IEC 55015(10M) 10m HORIZONTAL
Job :
Model :
Power :
Test Mode: B0

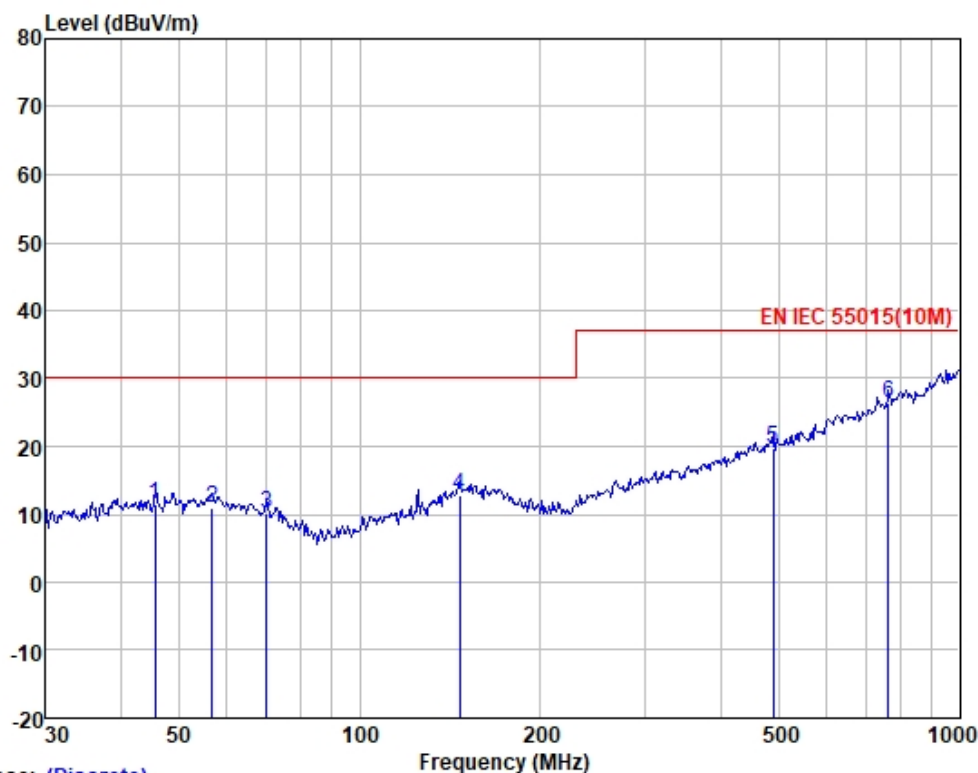
	Freq	ReadAntenna	Cable	Preamp	Limit	Over		
	MHz	Level	Factor	Loss	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	50.057	24.10	13.90	1.19	27.17	12.02	30.00	-17.98 HORIZONTAL QP
2	65.803	24.42	12.63	1.30	27.15	11.20	30.00	-18.80 HORIZONTAL QP
3	151.067	24.45	13.80	2.06	26.83	13.48	30.00	-16.52 HORIZONTAL QP
4	383.932	25.15	15.50	3.57	27.26	16.96	37.00	-20.04 HORIZONTAL QP
5	528.246	26.26	18.28	4.03	28.03	20.54	37.00	-16.46 HORIZONTAL QP
6	766.057	26.36	22.20	5.34	28.06	25.84	37.00	-11.16 HORIZONTAL QP



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Mode:b; Polarization:Vertical



Trace: (Discrete)

Site : SGS

Condition: EN IEC 55015(10M) 10m VERTICAL

Job :

Model :

Power :

Test Mode: B0

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	45.695	23.60	13.89	1.19	27.17	11.51	30.00	-18.49	VERTICAL	QP	
2	56.792	23.21	13.66	1.29	27.16	11.00	30.00	-19.00	VERTICAL	QP	
3	70.090	24.03	11.90	1.40	27.13	10.20	30.00	-19.80	VERTICAL	QP	
4	146.888	23.99	13.70	2.03	26.85	12.87	30.00	-17.13	VERTICAL	QP	
5	489.027	25.85	17.77	4.06	27.94	19.74	37.00	-17.26	VERTICAL	QP	
6	760.704	26.95	22.20	5.31	28.07	26.39	37.00	-10.61	VERTICAL	QP	



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6.3 Radiated Emissions (Magnetic field Induced Current)(9kHz-30MHz)

Test Requirement: EN IEC 55015:2019
 Test Method: EN IEC 55015:2019
 Frequency Range: 9kHz to 30MHz
 Measurement Distance: 3m
 Limit:
 0.009MHz-0.07MHz 88dB(μA) quasi-peak
 0.07MHz-0.15MHz 88dB(μA)-58dB(μA) quasi-peak
 0.15MHz-3MHz 58dB(μA)-22dB(μA) quasi-peak
 3MHz-30MHz 22dB(μA) quasi-peak
 Detector: Peak for pre-scan (200Hz resolution bandwidth) 0.009M to 0.15MHz
 Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.3.1 E.U.T. Operation

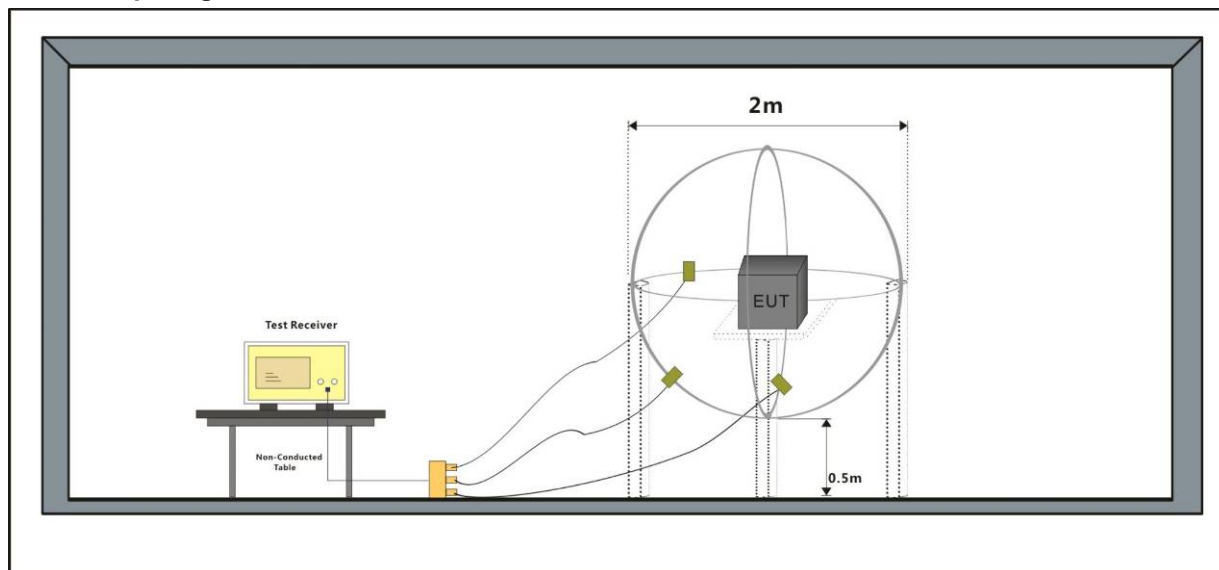
Operating Environment:

Temperature: 24.5 °C Humidity: 58.1 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:
 a: Test the EUT in charging mode, supply power by the AC\DC adapter.
 b: Test the EUT in LED lighting mode with max output power, supply power by the DC battery.
 c: Test the EUT in LED lighting mode with low output power, supply power by the DC battery.

The worst case for final test: a: Test the EUT in charging mode, supply power by the AC\DC adapter.

6.3.2 Test Setup Diagram



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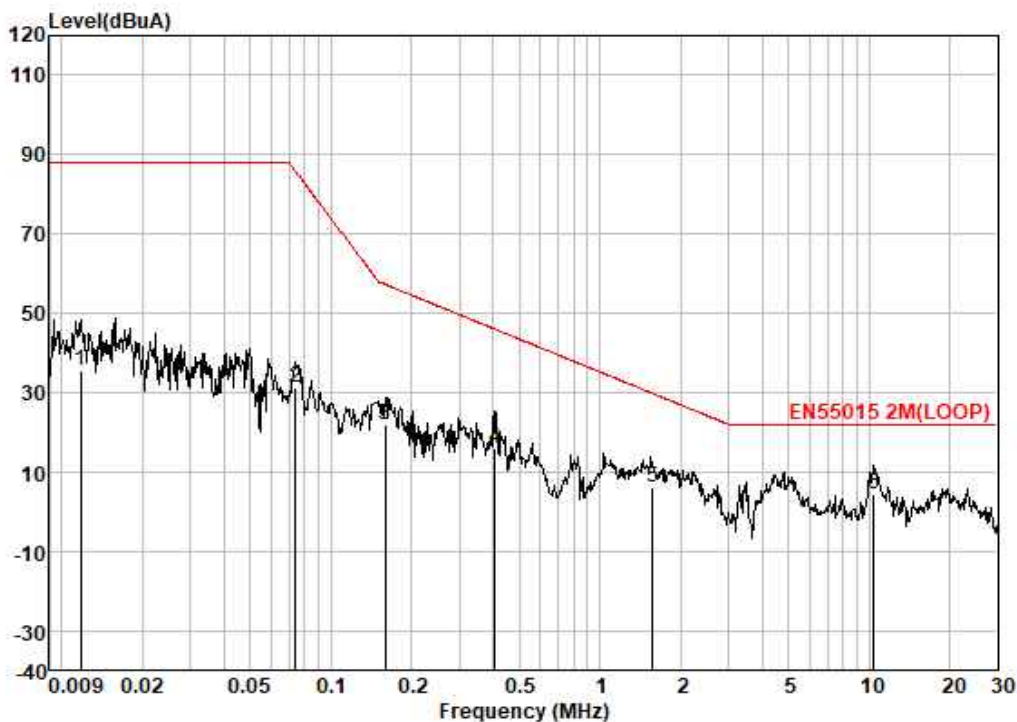
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6.3.3 Measurement Data

An initial pre-scan was performed in the 2m loop antenna using the spectrum analyser in peak detection mode. The EUT was measured for X(A), Y(B), Z(C) polarities.

Measured Level = Read Level + Antenna Factor + Cable Loss

Mode:a; Axial:X



loop : X
Test Mode:
Model :

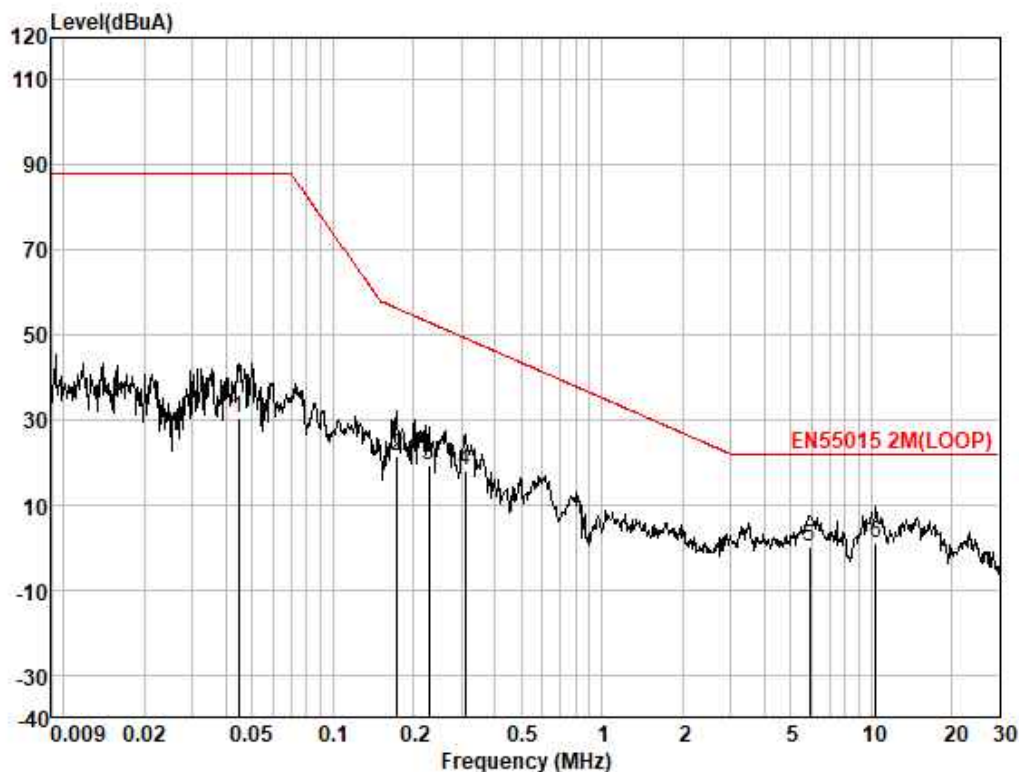
Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.01	35.48	0.00	-0.17	35.31	88.00	-52.69	QP
0.07	31.15	0.00	0.02	31.17	85.73	-54.56	QP
0.16	22.05	0.10	-0.18	21.97	57.30	-35.33	QP
0.41	15.96	0.10	0.00	16.06	45.99	-29.93	QP
1.57	5.73	0.17	0.30	6.20	29.81	-23.61	QP
10.45	2.65	0.60	0.91	4.16	22.00	-17.84	QP



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Mode:a; Axial:Y

loop : Y
Test Mode:
Model :

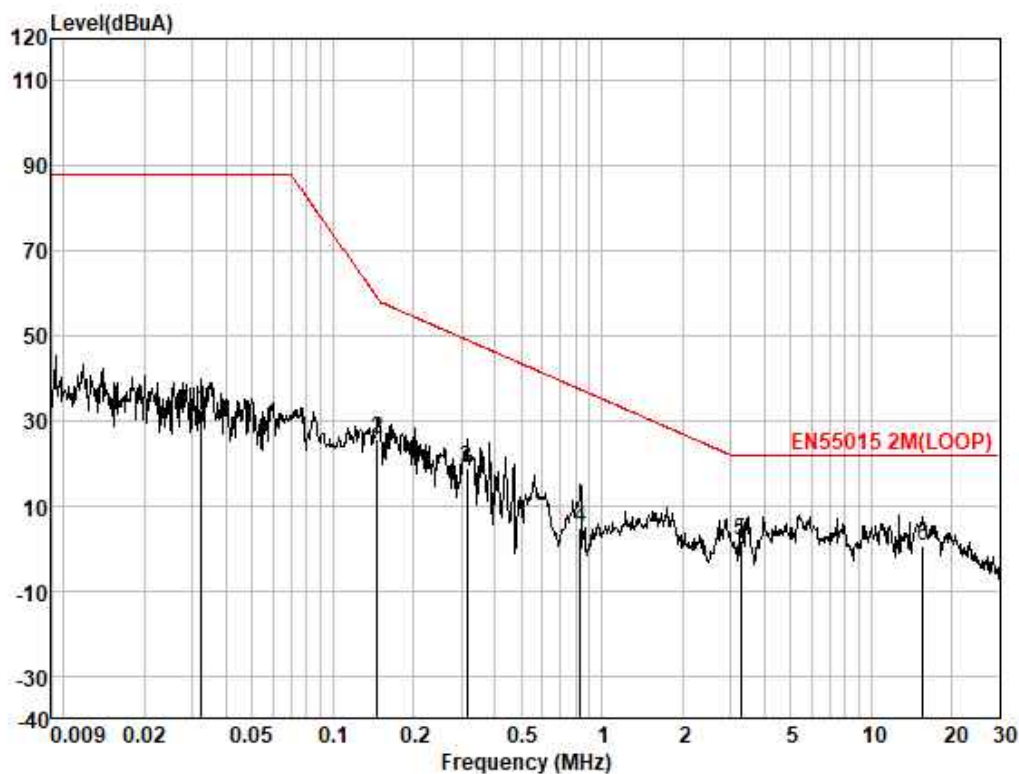
Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.04	30.95	0.00	-0.40	30.55	88.00	-57.45	QP
0.17	21.48	0.10	-0.21	21.37	56.23	-34.86	QP
0.23	19.59	0.10	-0.18	19.51	53.01	-33.50	QP
0.31	18.11	0.10	-0.06	18.15	49.31	-31.16	QP
5.92	-0.96	0.49	0.59	0.12	22.00	-21.88	QP
10.45	-0.37	0.60	0.72	0.95	22.00	-21.05	QP



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Mode:a; Axial:Z



loop : Z
Test Mode:
Model :

Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.03	32.44	0.00	-0.06	32.38	88.00	-55.62	QP
0.15	25.80	0.10	-0.40	25.50	58.90	-33.40	QP
0.31	18.79	0.10	-0.05	18.84	49.11	-30.27	QP
0.83	4.93	0.10	-0.19	4.84	37.42	-32.58	QP
3.28	1.26	0.32	0.36	1.94	22.00	-20.06	QP
15.55	-1.93	0.75	1.63	0.45	22.00	-21.55	QP



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6.4 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2:2019

Test Method: EN IEC 61000-3-2:2019

Frequency Range: 100Hz to 2kHz

Remark:

Since the EUT was belong to exception of clause 7 and Annex B, according to EN IEC 61000-3-2 figure 1, it was deemed to conform to the requirements of this standard without further testing.

“7 Harmonic current limits

The procedure for applying the limits and assessing the results is shown in Figure 1.

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

NOTE 1 Limits may be defined in a future amendment or revision of the standard.

- lighting equipment with a rated power less than but not equal to 5 W;
- equipment with a rated power of 75 W or less, other than lighting equipment;

NOTE 2 This value may be reduced from 75 W to 50 W in the future, subject to approval by National Committees at that time.

- professional equipment with a total rated power greater than 1 kW;
- symmetrically controlled heating elements with a rated power less than or equal to 200 W;
- independent phase control dimmers

with a rated power less than or equal to 1 kW when operating incandescent lamps;

with a rated power less than or equal to 200 W for trailing edge dimmers, and universal phase control dimmers with the default mode set to trailing edge, when operating lighting equipment other than incandescent lamps;

with a rated power less than or equal to 100 W for leading edge dimmers, and universal phase control dimmers without default mode set to trailing edge, when operating lighting equipment other than incandescent lamps.

and

Kitchen machines as listed in the scope of IEC 60335-2-14 are deemed to conform to the harmonic current limits of this standard without further testing.

Please read clause 7 & Annex B of this standard for reference.



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6.5 Voltage Fluctuations and Flicker

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

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

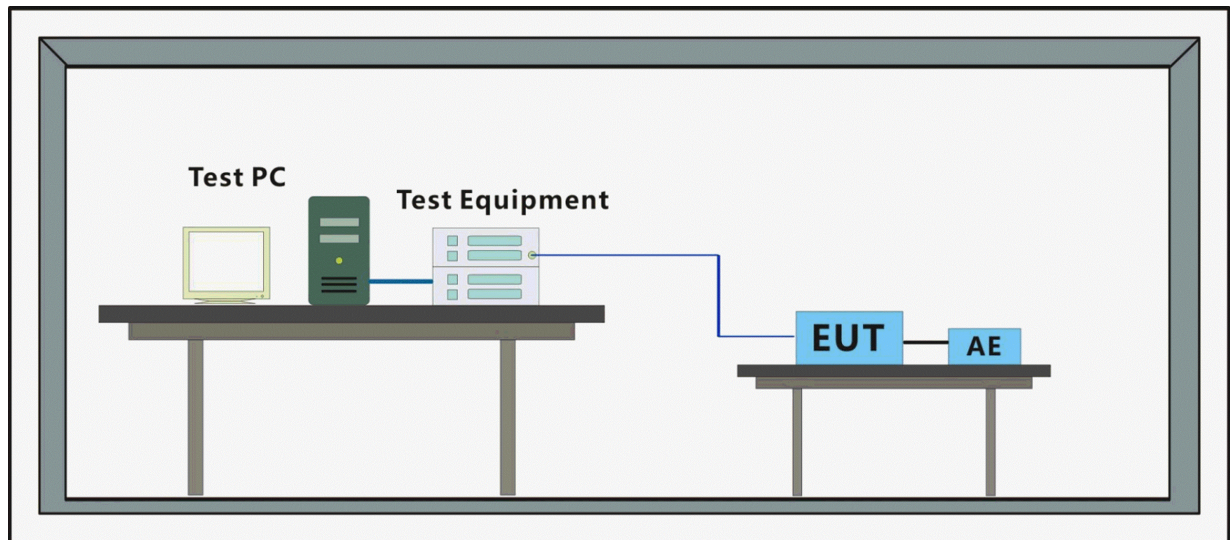
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Mode:a

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Test category: dt,dmax,dc and Pst (European limits)

Test Margin: 100

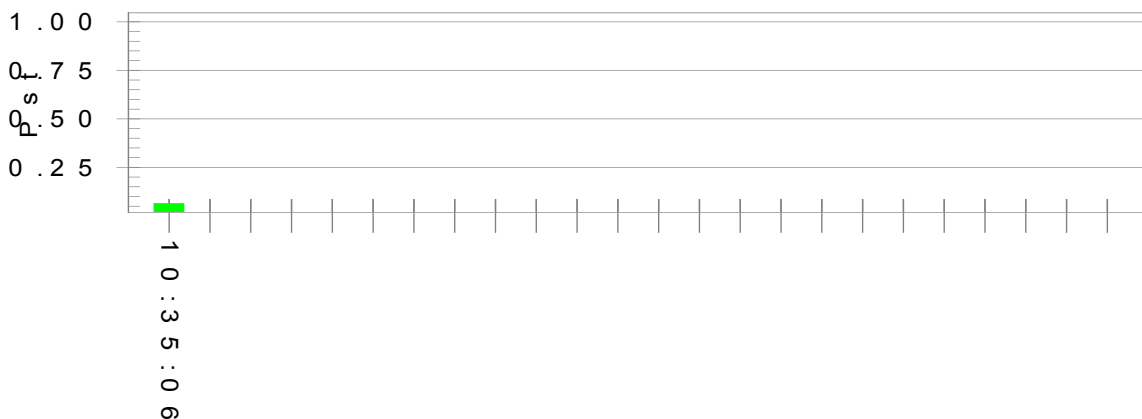
Test duration (min): 10

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.98

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass



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7 Immunity Test Results

7.1 Performance Criteria Description in EN 61547:2009

- Criterion A** During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
- Criterion B** During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min.
- Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
- Criterion C** During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control.



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7.2 Electrostatic Discharge

Test Requirement: EN 61547:2009
 Test Method: EN 61000-4-2:2009
 Performance Criterion: B
 Discharge Impedance: 330Ω/150pF
 Number of Discharge: Minimum 10 times at each test point
 Discharge Mode: Single Discharge
 Discharge Period: 1 second minimum

7.2.1 E.U.T. Operation

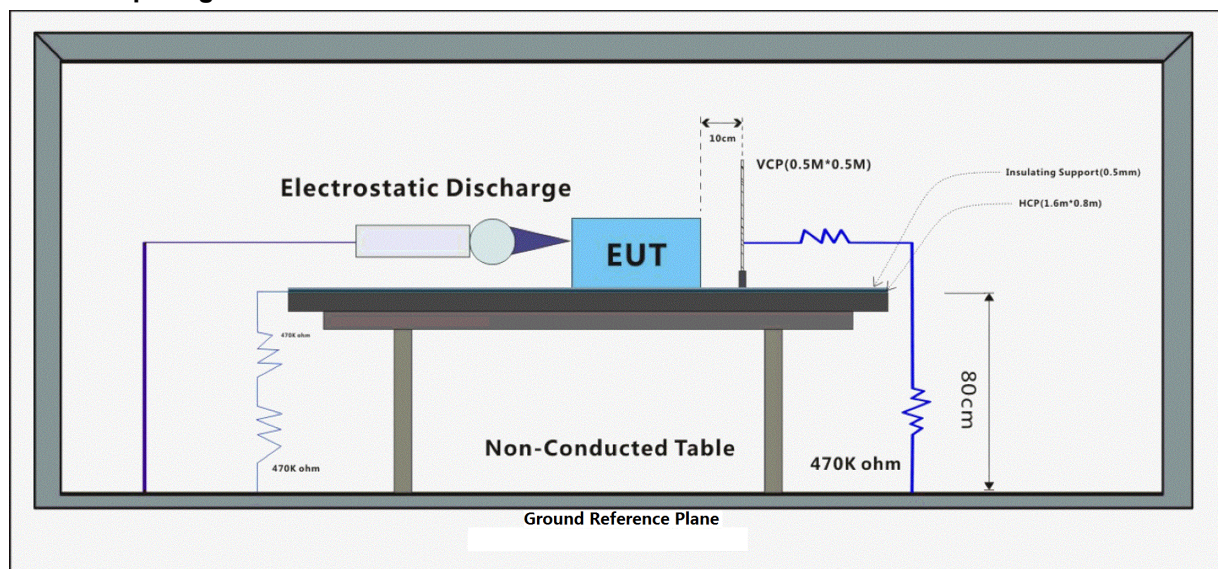
Operating Environment:

Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode:

- a: Test the EUT in charging mode, supply power by the AC\DC adapter.
- b: Test the EUT in LED lighting mode with max output power, supply power by the DC battery.
- c: Test the EUT in LED lighting mode with low output power, supply power by the DC battery.
- d: Test the EUT in standby mode.

7.2.2 Test Setup Diagram



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7.2.3 Test Results

Test Point:

Observations:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	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

Results:

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



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7.3 Radiated Immunity (80MHz-1GHz)

Test Requirement: EN 61547:2009
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Performance Criterion: A
 Frequency Range: 80MHz to 1GHz
 Antenna Polarisation: Vertical and Horizontal
 Modulation: 1kHz,80% Amp. Mod,1% increment

7.3.1 E.U.T. Operation

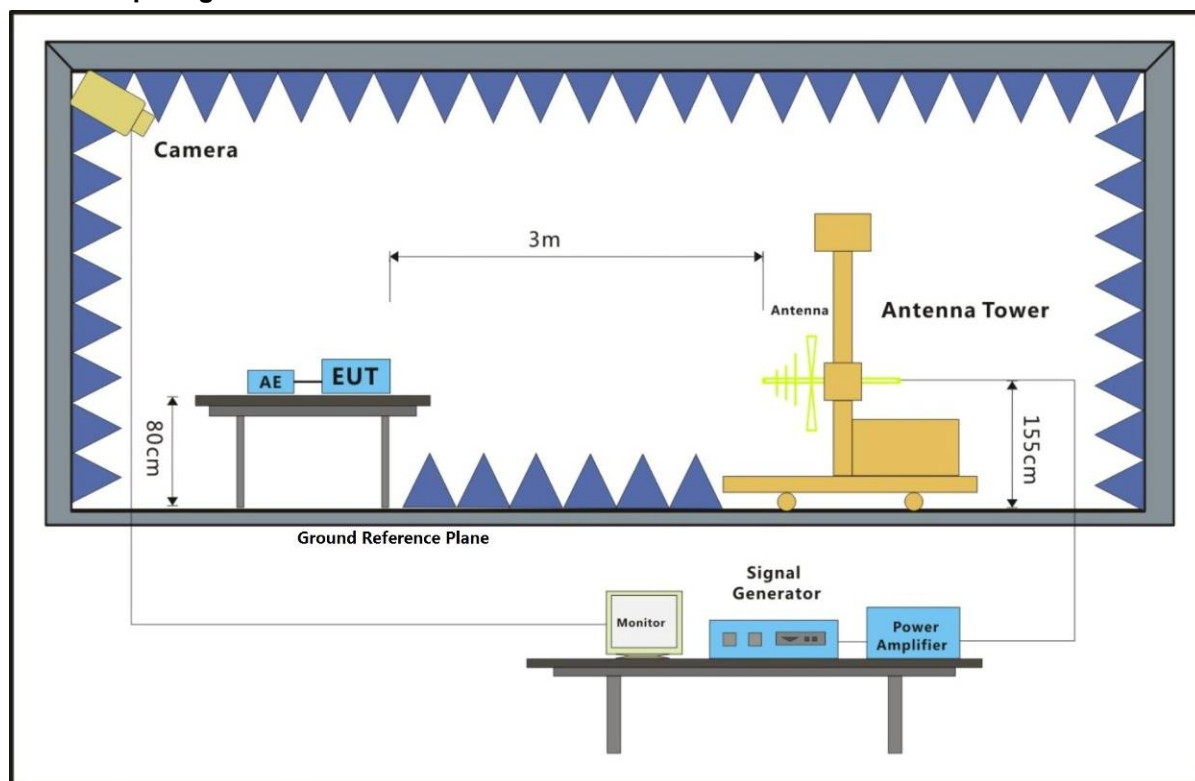
Operating Environment:

Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode:

- a: Test the EUT in charging mode, supply power by the AC\DC adapter.
- b: Test the EUT in LED lighting mode with max output power, supply power by the DC battery.
- c: Test the EUT in LED lighting mode with low output power, supply power by the DC battery.
- d: Test the EUT in standby mode.

7.3.2 Test Setup Diagram



7.3.3 Test Results

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

Results:

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



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7.4 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 61547:2009
 Test Method: EN 61000-4-4:2012
 Performance Criterion: B
 Repetition Frequency: 5kHz
 Burst Period: 300ms
 Test Duration: 2 minute per level & polarity

7.4.1 E.U.T. Operation

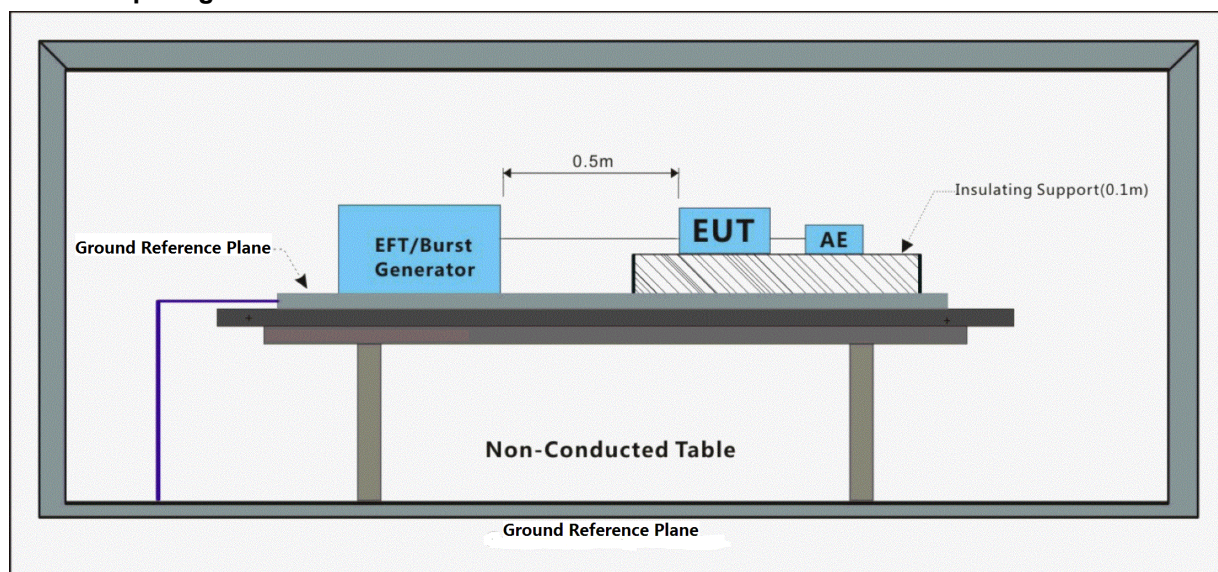
Operating Environment:

Temperature: 23.4 °C Humidity: 55.9 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.

d: Test the EUT in standby mode.

7.4.2 Test Setup Diagram



7.4.3 Test Results

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

Results:

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



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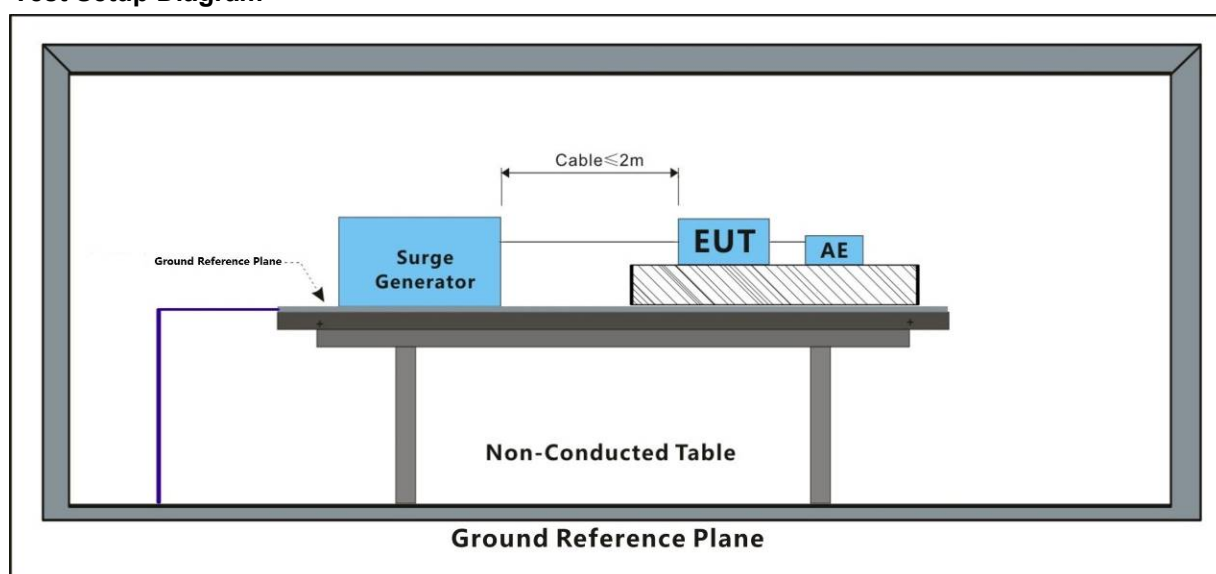
7.5 Surge at Power Port

Test Requirement: EN 61547:2009
Test Method: EN 61000-4-5:2014
Performance Criterion: C
No. of surges: 5 positive at 90°, 5 negative at 270°.

7.5.1 E.U.T. Operation

Operating Environment:
Temperature: 23.4 °C Humidity: 55.8 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.
d: Test the EUT in standby mode.

7.5.2 Test Setup Diagram



7.5.3 Test Results

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	0.5	+	90°	A
L-N	0.5	-	270°	A

Results:

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



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

Test Requirement: EN 61547:2009
 Test Method: EN 61000-4-6:2014
 Performance Criterion: A
 Frequency Range: 0.15MHz to 80MHz
 Modulation: 80%, 1kHz Amplitude Modulation
 Step Size: 1%

7.6.1 E.U.T. Operation

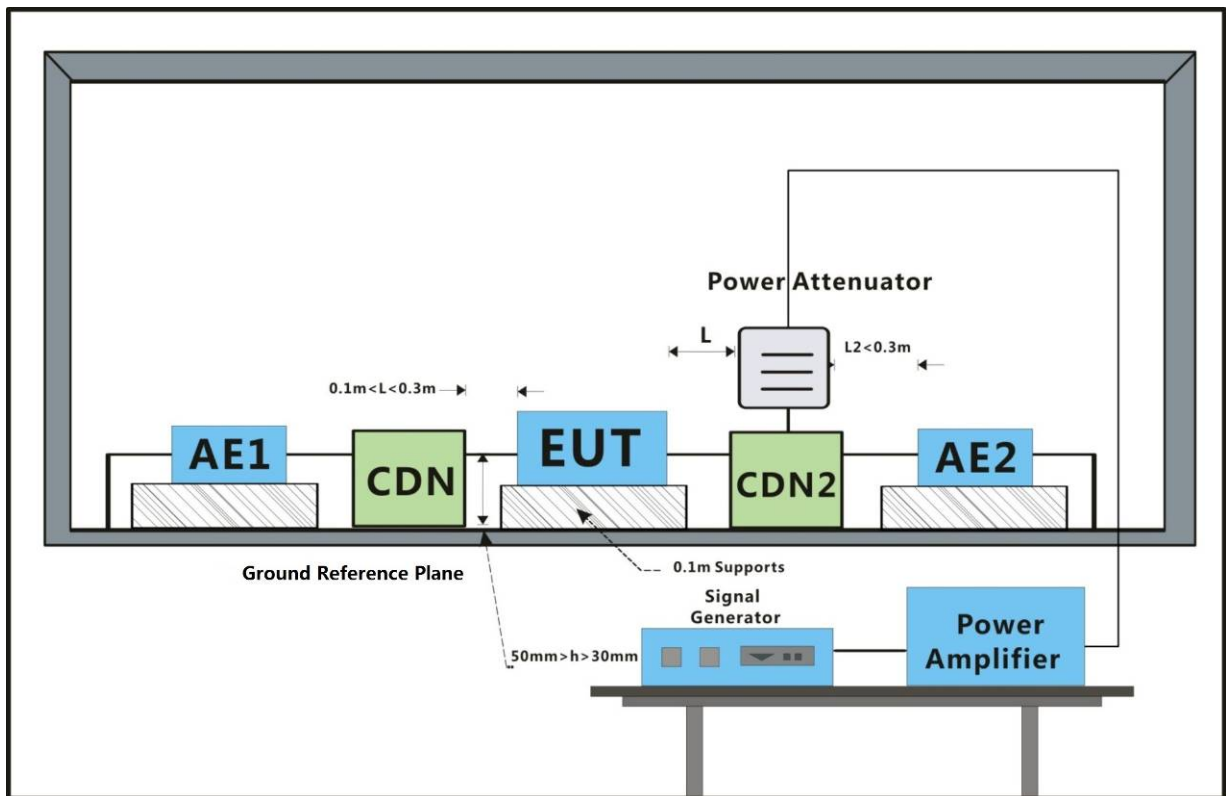
Operating Environment:

Temperature: 23.4 °C Humidity: 55.1 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.

d: Test the EUT in standby mode.

7.6.2 Test Setup Diagram



7.6.3 Test Results

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

Results:

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



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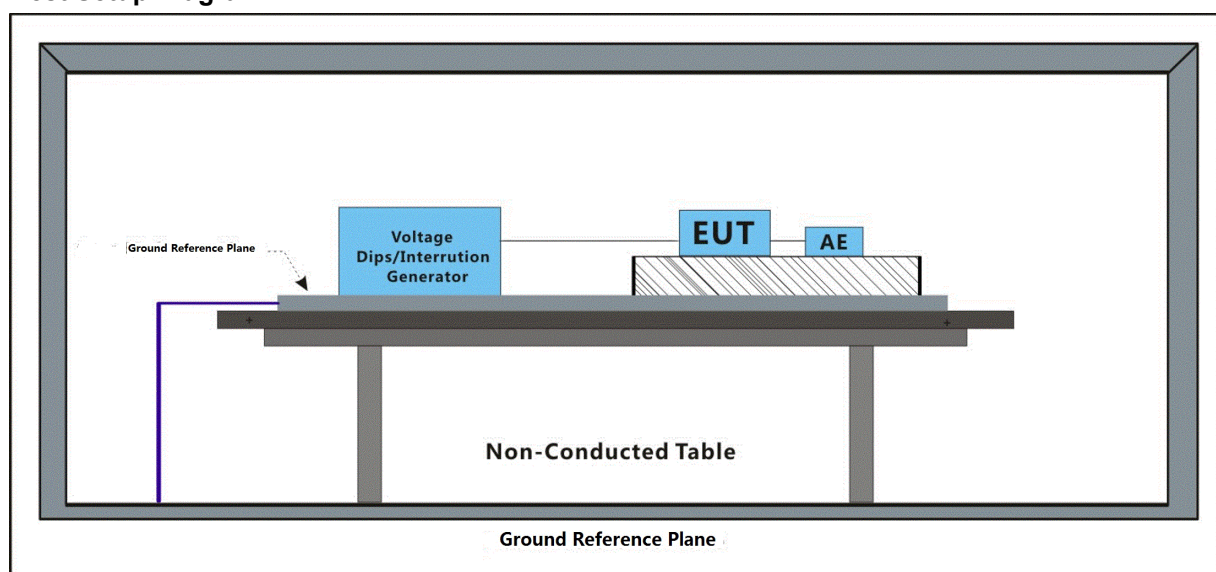
7.7 Voltage Dips and Interruptions

Test Requirement: EN 61547:2009
 Test Method: EN 61000-4-11:2004
 Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Cycle:B;
 70 % of UT for 10 Cycles:C
 No. of Dips / Interruptions: 3 per Level
 Time between dropout 10s

7.7.1 E.U.T. Operation

Operating Environment:
 Temperature: 23.4 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar
 Test Mode: a: Test the EUT in charging mode, supply power by the AC\DC adapter.
 d: Test the EUT in standby mode.

7.7.2 Test Setup Diagram



7.7.3 Test Results

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

Results:

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

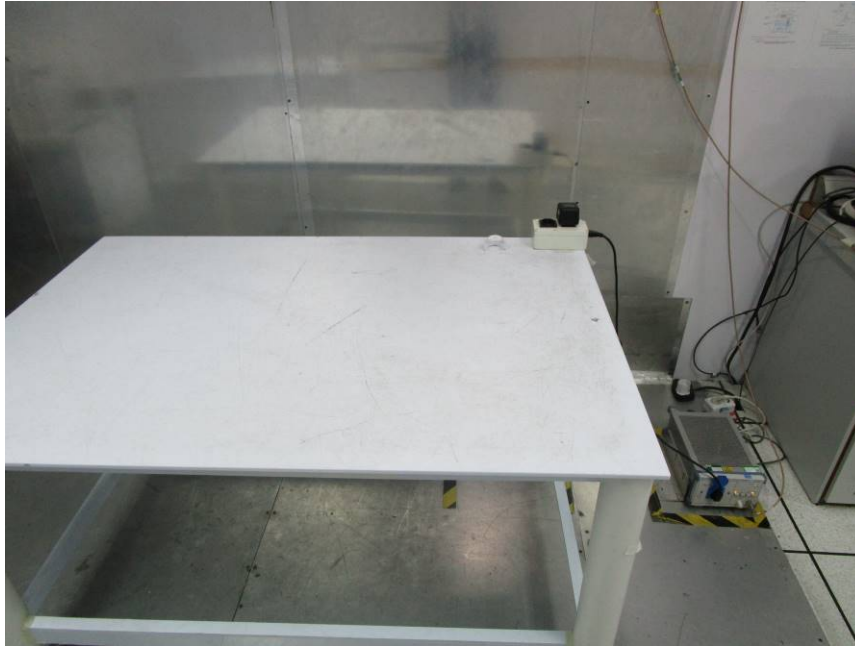


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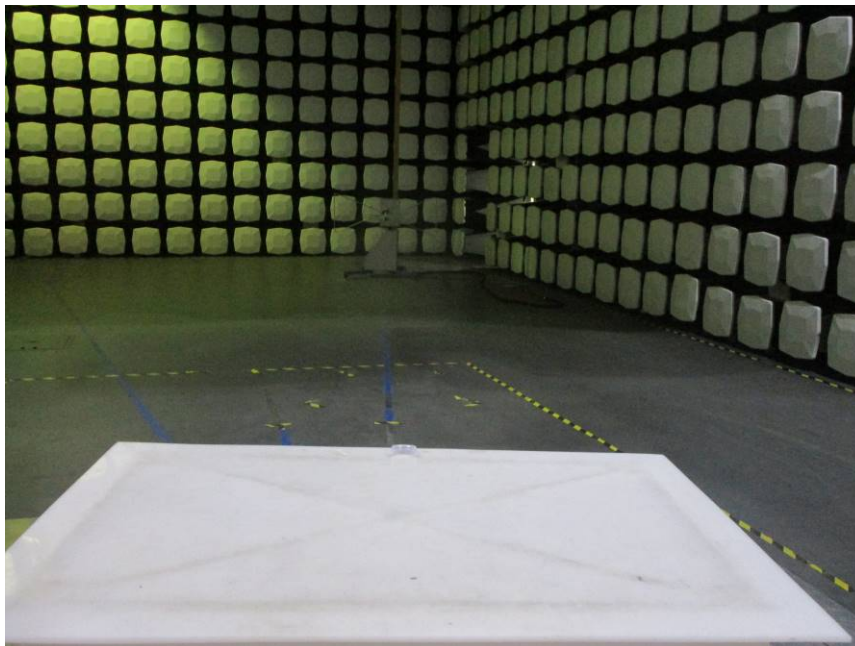
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8 Photographs

8.1 Conducted Emissions at Mains Terminals (9kHz-30MHz) Test Setup



8.2 Radiated Emissions (30MHz-1GHz) Test Setup



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8.3 Radiated Emissions (Magnetic field Induced Current)(9kHz-30MHz) Test Setup



8.4 Voltage Fluctuations and Flicker Test Setup



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8.5 Electrostatic Discharge Test Setup



8.6 Radiated Immunity (80MHz-1GHz) Test Setup



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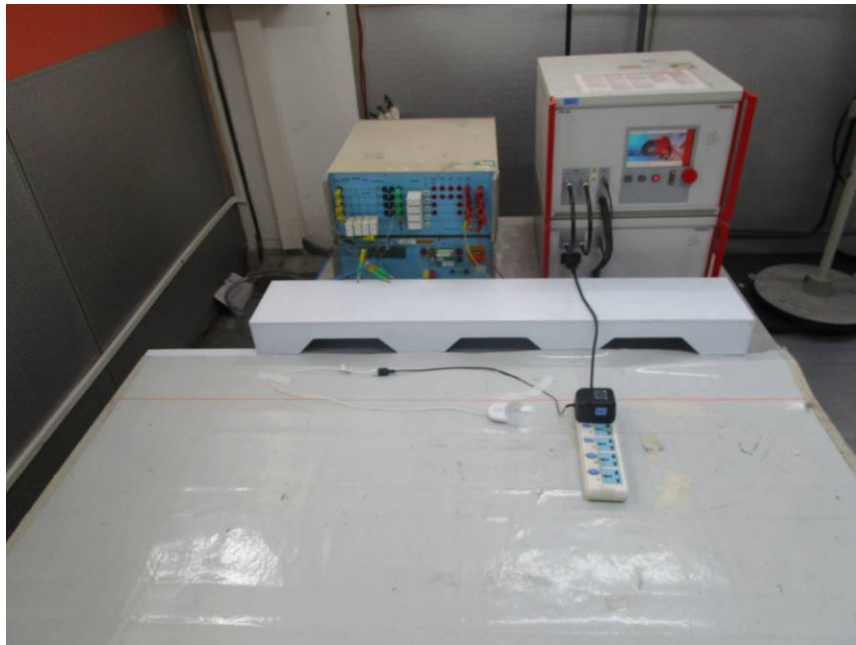
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8.7 Electrical Fast Transients/Burst at Power Port Test Setup



8.8 Surge at Power Port Test Setup



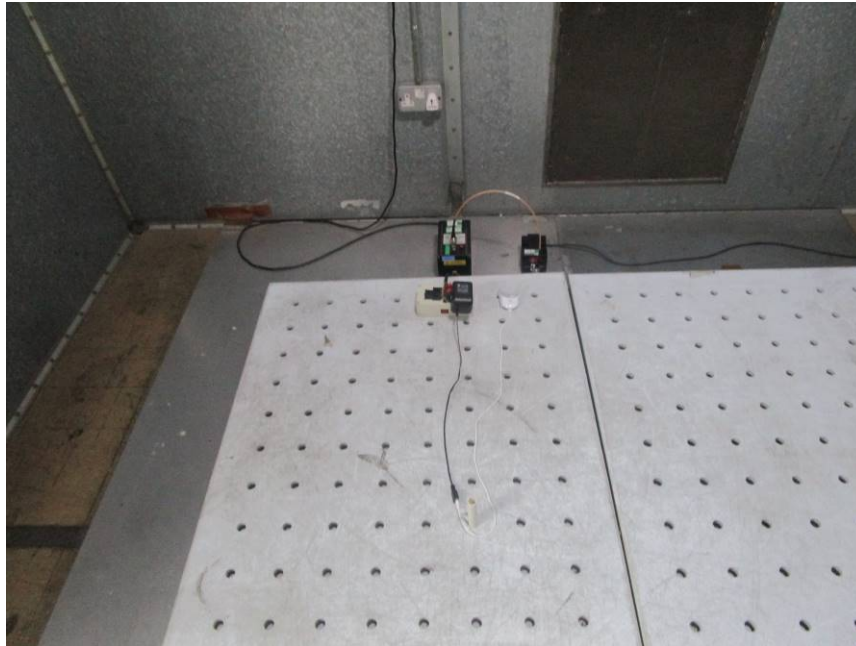
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8.9 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



8.10 Voltage Dips and Interruptions Test Setup



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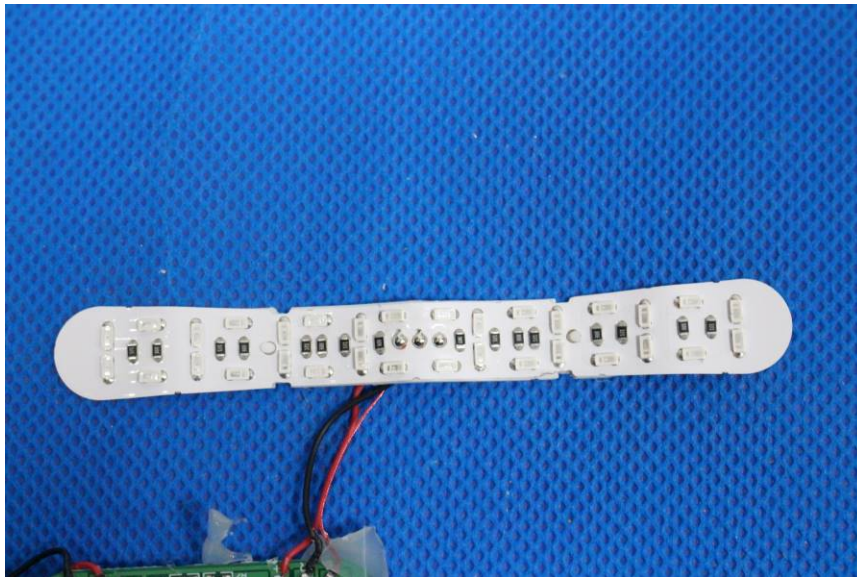
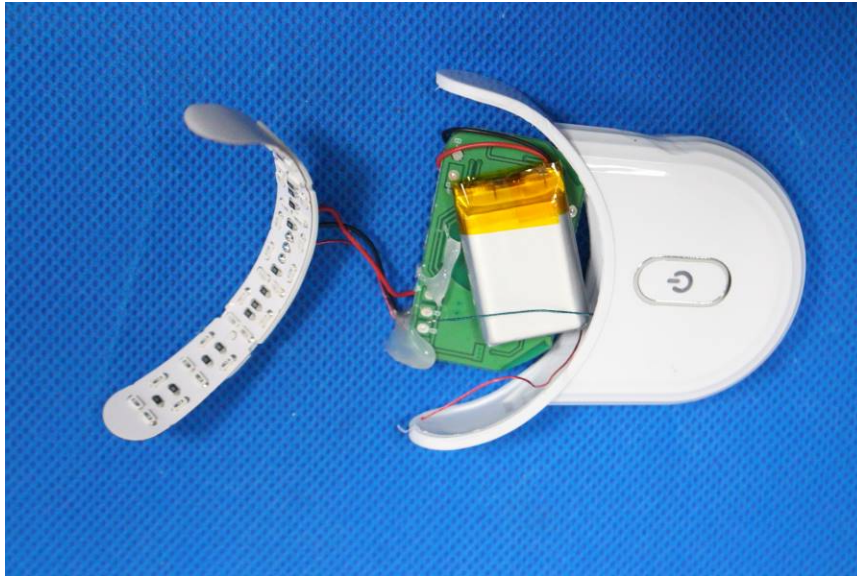
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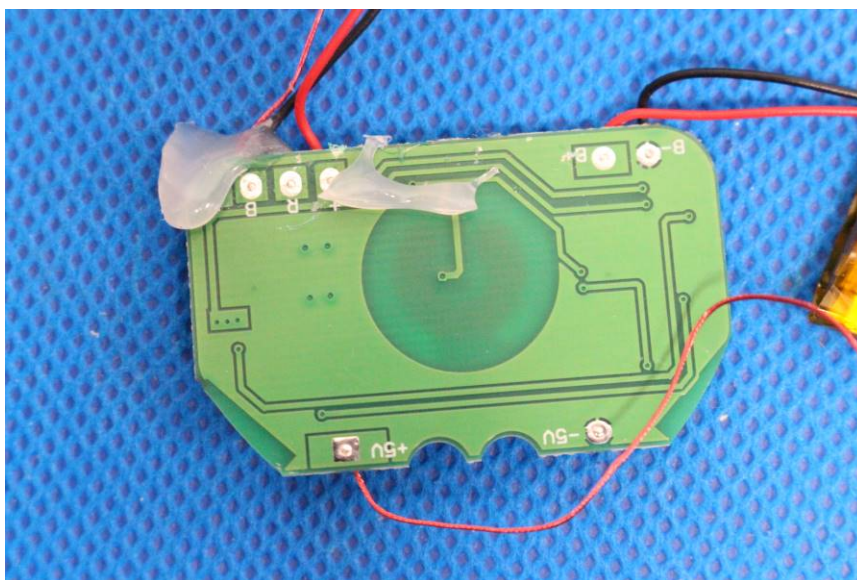
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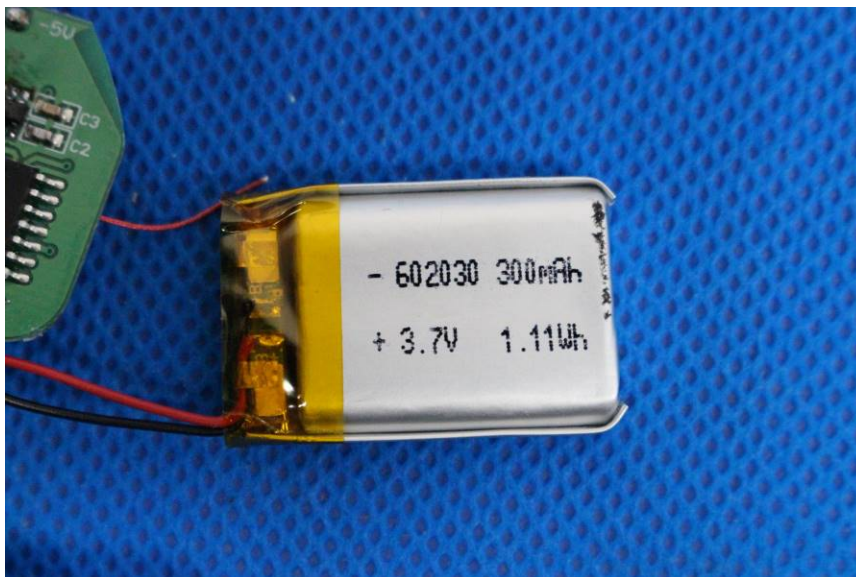
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