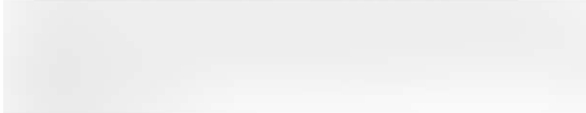



## VERIFICATION OF COMPLIANCE

Verification No.: GZEM2501000481LMV  
 Applicant: Lava Group S.C. /Reiter Polska Sp. Z o.o  
 Address of Applicant: Eugeniusza Romera 4b, 02-784 Warsaw, Poland  
 Manufacturer:   
 Address of Manufacturer:   
 Product Name: Flashlight  
 Model No.: MT05, MT06, MT07, MT08  
 Standard(s): EN IEC 55015: 2019+A11:2020  
 EN IEC 61547: 2023  
 EN IEC 61000-3-2: 2019+A1:2021+A2:2024  
 EN 61000-3-3: 2013+ A1:2019+A2:2021  
 Report Number(s): GZEM250100048101

This Verification of EMC Compliance has been granted to the applicant based on the results of the tests, performed by laboratory of SGS-CSTC Standards Technical Services Co., Ltd. on the sample of the above-mentioned product in accordance with the provisions of the relevant specific standards under Directive 2014/30/EU. The CE mark can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Jerry Chan  
 Technical Manager  
 SGS-CSTC Standards Technical Services Co., Ltd.

2025-02-24

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 Member of the SGS Group (SGS SA)

Client Name: LAVA GROUP S.C. /REITER POLSKA SP. Z O.O.  
 Client Address: EUGENIUSZA ROMERA 4B, 02-784 WARSAW, POLAND

Sample Name: Flashlight  
 Tested Basic Model No.: MT06  
 Tested Extended Model No.: MT03, MT04, MT05, MT07, MT08  
 The above sample(s) and information were provided by the client.

**THIS REPORT IS TO SUPERSEDE TEST REPORT NO.CANEC25001539001, DATE: Feb 18, 2025.**

SGS Job No.: SZP25-002973  
 Sample Receiving Date: Jan 20, 2025  
 Verification Period: Jan 20, 2025 ~ Feb 18, 2025  
 Verification Requested: With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.  
 Verification Method(s): Please refer to next page(s).  
 Verification Result(s): Please refer to next page(s).

**Test Result Summary:**

Test Items	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass

Signed for and on behalf of  
 SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch



Jenny Liao  
 Approved Signatory

Scan to see the report



B00D8528



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Photo of Submitted Sample



MT06



MT03





MT04



MT05





MT07



MT08

**Verification Method(s):**

1. With reference to IEC 62321-2:2021, disassembly and disjointment were performed for the submitted



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samples.

2. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.

(1) With reference to IEC 62321-3-1:2013, screening by EDXRF spectroscopy.

(2) Wet chemical test method: With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-12:2023, IEC 62321-6:2015 and IEC62321-8:2017 , analyzed by ICP-OES,UV-Vis and GC-MS.



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Verification Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	CAN25-0015390-0001.C001	Black rubber cover
SN2	A2	CAN25-0015390-0001.C002	Black surfaced metal part
SN3	A3	CAN25-0015390-0001.C003	Black rubber part
SN4	A4	CAN25-0015390-0001.C004	Black plastic ring
SN5	A5	CAN25-0015390-0001.C005	Black plastic ring
SN6	A6	CAN25-0015390-0001.C006	Black plastic part
SN7	A7	CAN25-0015390-0001.C007	Black plastic part
SN8	A8	CAN25-0015390-0001.C008	Black plastic part
SN9	A9	CAN25-0015390-0001.C009	Black plastic part
SN10	A10	CAN25-0015390-0001.C010	Black surfaced metal spring
SN11	A11	CAN25-0015390-0001.C011	Black surfaced metal spring
SN12	A12	CAN25-0015390-0001.C012.C001	Silvery metal wire (solder)
SN13	A13	CAN25-0015390-0001.C013	Green "PCB"
SN14	A14	CAN25-0015390-0001.C014	Black surfaced metal part
SN15	A15	CAN25-0015390-0001.C015	Black rubber ring
SN16	A16	CAN25-0015390-0001.C016	Black surfaced metal part
SN17	A17	CAN25-0015390-0001.C017	Transparent plastic part
SN18	A18	CAN25-0015390-0001.C018	Black plastic ring
SN19	A19	CAN25-0015390-0001.C019	Black rubber ring
SN20	A20	CAN25-0015390-0001.C020	Black rubber ring
SN21	A21	CAN25-0015390-0001.C021	Black "PCB"
SN22	A22	CAN25-0015390-0001.C022	Yellow body (LED)
SN23	A23#	CAN25-0015390-0001.C023.C001	Silvery metal wire (solder)
SN24	A24	CAN25-0015390-0001.C024	Black plastic (wire insulation)
SN25	A25	CAN25-0015390-0001.C025	Red plastic (wire insulation)
SN26	A26	CAN25-0015390-0001.C026	Translucent rubber part
SN27	A27	CAN25-0015390-0001.C027	Black rubber ring
SN28	A28	CAN25-0015390-0001.C028	Green "PCB"
SN29	A29	CAN25-0015390-0001.C029	Silvery metal part
SN30	A30#	CAN25-0015390-0001.C030.C001	Silvery metal wire (solder)
SN31	A31	CAN25-0015390-0001.C031	Silvery metal pin
SN32	A32	CAN25-0015390-0001.C032	Dark grey plastic part
SN33	A33	CAN25-0015390-0001.C033	Black plastic part
SN34	A34	CAN25-0015390-0001.C034	Silvery metal pin
SN35	A35#	CAN25-0015390-0001.C035.C001	Silvery metal wire (solder)
SN36	A36	CAN25-0015390-0001.C036	Black body
SN37	A37	CAN25-0015390-0001.C037	Green "PCB"
SN38	A38	CAN25-0015390-0001.C038	Transparent glass sheet
SN39	A39	CAN25-0015390-0001.C039	Translucent rubber ring
SN40	A40	CAN25-0015390-0001.C040	White plastic part
SN41	A41	CAN25-0015390-0001.C041	Silvery metal part
SN42	A42	CAN25-0015390-0001.C042	White "PCB"
SN43	A43#	CAN25-0015390-0001.C043.C001	Silvery metal wire (solder)



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SN ID	Sample No.	SGS Sample ID	Description
SN44	A44	CAN25-0015390-0001.C044	Black plastic part
SN45	A45	CAN25-0015390-0001.C045	Black surfaced metal screw
SN46	A46	CAN25-0015390-0001.C046	Black surfaced metal part
SN47	A47	CAN25-0015390-0001.C047	Golden surfaced metal ring
SN48	A48	CAN25-0015390-0001.C048	Black rubber ring
SN49	A49	CAN25-0015390-0001.C049	Red surfaced metal ring



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**Verification Result(s):**

In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified. (Unless otherwise specified, the unit is mg/kg).

Test Item(s)	A1	A2	A3	A4	A5	A6	A7	A8
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	BL	BL
PBB	BL	---	BL	BL	BL	ND	ND	ND
PBDE	BL	---	BL	BL	BL	ND	ND	ND
DEHP	BL	---	BL	BL	BL	ND	ND	ND
BBP	BL	---	BL	BL	BL	ND	ND	ND
DBP	BL	---	BL	BL	BL	ND	ND	ND
DIBP	BL	---	BL	BL	BL	ND	ND	ND
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A9	A10	A11	A12	A13	A14	A15	A16
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	BL	BL
PBB	ND	---	---	---	ND	---	BL	---
PBDE	ND	---	---	---	ND	---	BL	---
DEHP	ND	---	---	---	ND	---	BL	---
BBP	ND	---	---	---	ND	---	BL	---
DBP	ND	---	---	---	ND	---	BL	---
DIBP	ND	---	---	---	ND	---	BL	---
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A17	A18	A19	A20	A21	A22	A23#	A24
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	BL	BL
PBB	BL	BL	BL	BL	ND	BL	---	BL
PBDE	BL	BL	BL	BL	ND	BL	---	BL
DEHP	BL	BL	BL	BL	ND	BL	---	BL
BBP	BL	BL	BL	BL	ND	BL	---	BL
DBP	BL	BL	BL	BL	ND	BL	---	BL
DIBP	BL	BL	BL	BL	ND	BL	---	BL
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A25	A26	A27	A28	A29	A30#	A31	A32
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	ND	BL	BL	BL



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Test Item(s)	A25	A26	A27	A28	A29	A30#	A31	A32
PBB	BL	BL	BL	ND	---	---	---	BL
PBDE	BL	BL	BL	ND	---	---	---	BL
DEHP	BL	BL	BL	ND	---	---	---	BL
BBP	BL	BL	BL	ND	---	---	---	BL
DBP	BL	BL	BL	ND	---	---	---	BL
DIBP	BL	BL	BL	ND	---	---	---	BL
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A33	A34	A35#	A36	A37	A38	A39	A40
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	ND	BL	BL	BL
PBB	ND	---	---	BL	ND	BL	BL	BL
PBDE	ND	---	---	BL	ND	BL	BL	BL
DEHP	ND	---	---	BL	ND	BL	BL	BL
BBP	ND	---	---	BL	ND	BL	BL	BL
DBP	ND	---	---	BL	ND	BL	BL	BL
DIBP	ND	---	---	BL	ND	BL	BL	BL
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A41	A42	A43#	A44	A45	A46	A47	A48
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	ND	BL	BL	BL
PBB	---	BL	---	BL	---	---	---	BL
PBDE	---	BL	---	BL	---	---	---	BL
DEHP	---	BL	---	BL	---	---	---	BL
BBP	---	BL	---	BL	---	---	---	BL
DBP	---	BL	---	BL	---	---	---	BL
DIBP	---	BL	---	BL	---	---	---	BL
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Test Item(s)	A49
Pb	BL
Hg	BL
Cd	BL
Cr(VI)▼	BL
PBB	---
PBDE	---
DEHP	---
BBP	---
DBP	---
DIBP	---



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Test Item(s)	A49
Conclusion	PASS



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**Notes:**

- (1) Interpretation of screening results by X-ray fluorescence spectrometry (XRF):  
 (a) Screening limits in mg/kg for regulated elements in various matrices according to IEC 62321-3-1:2013 Annex A as below table.

Element	Polymers	Metals	Composite Materials
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	Not applicable	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

- (b) If the maximum allowed level restricts PBB/PBDE and Cr(VI) rather than Br and Cr, the exceptions are the XRF determinations of Br and Cr. If the quantitative results for the elements Br and/or Cr are higher than the limit (for Br calculated based on the stoichiometry of Br in the most common congeners of PBB/PBDE), the sample is "inconclusive".
- (c) Results are obtained by EDXRF for primary screening, LOD = Limit of Detection, BL = Below Limit, OL= Over Limit, IN (The symbol X marks the region)=Inconclusive, where further investigation is necessary, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBB/PBDE) are recommended to be performed.
- (d) The EDXRF screening test for elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (2) Screening results of Phthalates (PHTH) below the limits are shown as "BL". Further chemical testing by GC-MS is to be performed if the results exceed limits.

Test Items	CAS No.
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7
Butyl benzyl phthalate (BBP)	85-68-7
Dibutyl phthalate (DBP)	84-74-2
Diisobutyl phthalate (DIBP)	84-69-5

- (3) Interpretation of results by chemical tests:  
 (a) mg/kg = 0.0001%, MDL=Method detection Limit, ND = Not Detected (<MDL), --- = Not Applicable.  
 (b) Unit and MDL in wet chemical test

Test Items	Pb	Hg	Cd	DEHP	BBP	DBP	DIBP
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	10	10	10	100	100	100	100

The MDL for single compound of PBB and PBDE is 100 mg/kg,  
 MDL of Cr(VI) for polymer, composite and leather sample is 10 mg/kg.  
 MDL of Cr(VI) for metal sample is 0.10 µg/cm<sup>2</sup>.

- (c) ▼ =Metal sample
- The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI).
  - The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) based coating
  - The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive-unavoidable coating variations may influence the determination



Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

(4) Restricted substances and maximum concentration values tolerated by weight in homogeneous materials under RoHS Directive: Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE/DEHP/BBP/DBP/DIBP: 0.1%. The limit is quoted from RoHS Directive (EU) 2015/863.

(5) IEC 62321 series is equivalent to EN 62321 series.

(6) #=According to the declaration from applicant, the materials of No.A23, No.A30, No.A35, No.A43 are the same as those in No.A12, and its results for support the results of No.A23, No.A30, No.A35, No.A43. The applicant will take the responsibility of all discrepancy and risk.

(7) According to the declaration from applicant, the materials of other parts in Models "MT03, MT04, MT05, MT07, MT08" are the same as those in Model "MT06", and the results of Model "MT06" for support the results of other parts in Models "MT03, MT04, MT05, MT07, MT08". The applicant will take the responsibility of all discrepancy and risk.

The location of performance of the laboratory activities: A. No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong; B. Room 101, Building 3, No.1501, Kaichuang Avenue, Huangpu District, Guangzhou, Guangdong

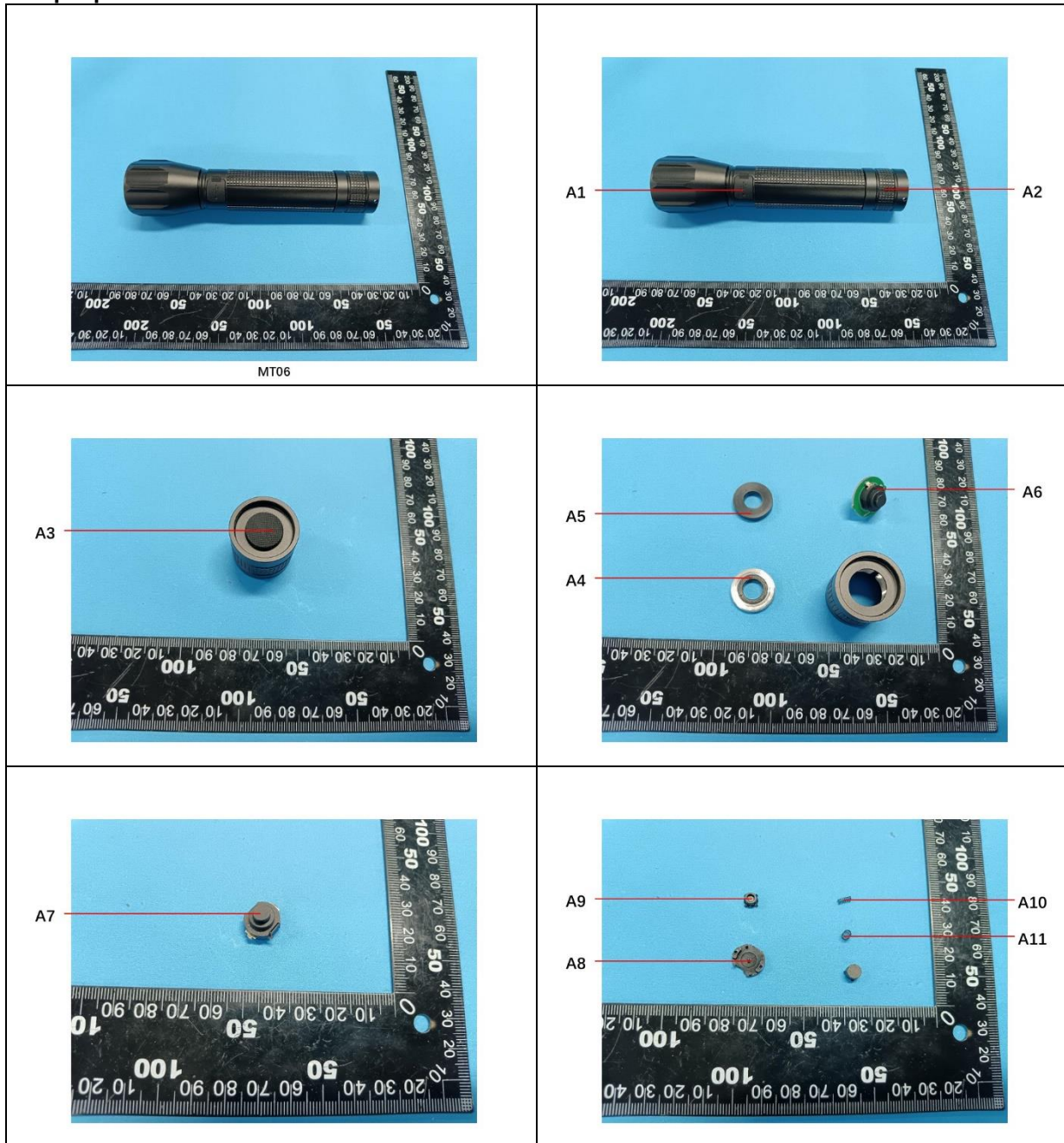
This report updates Client Name.

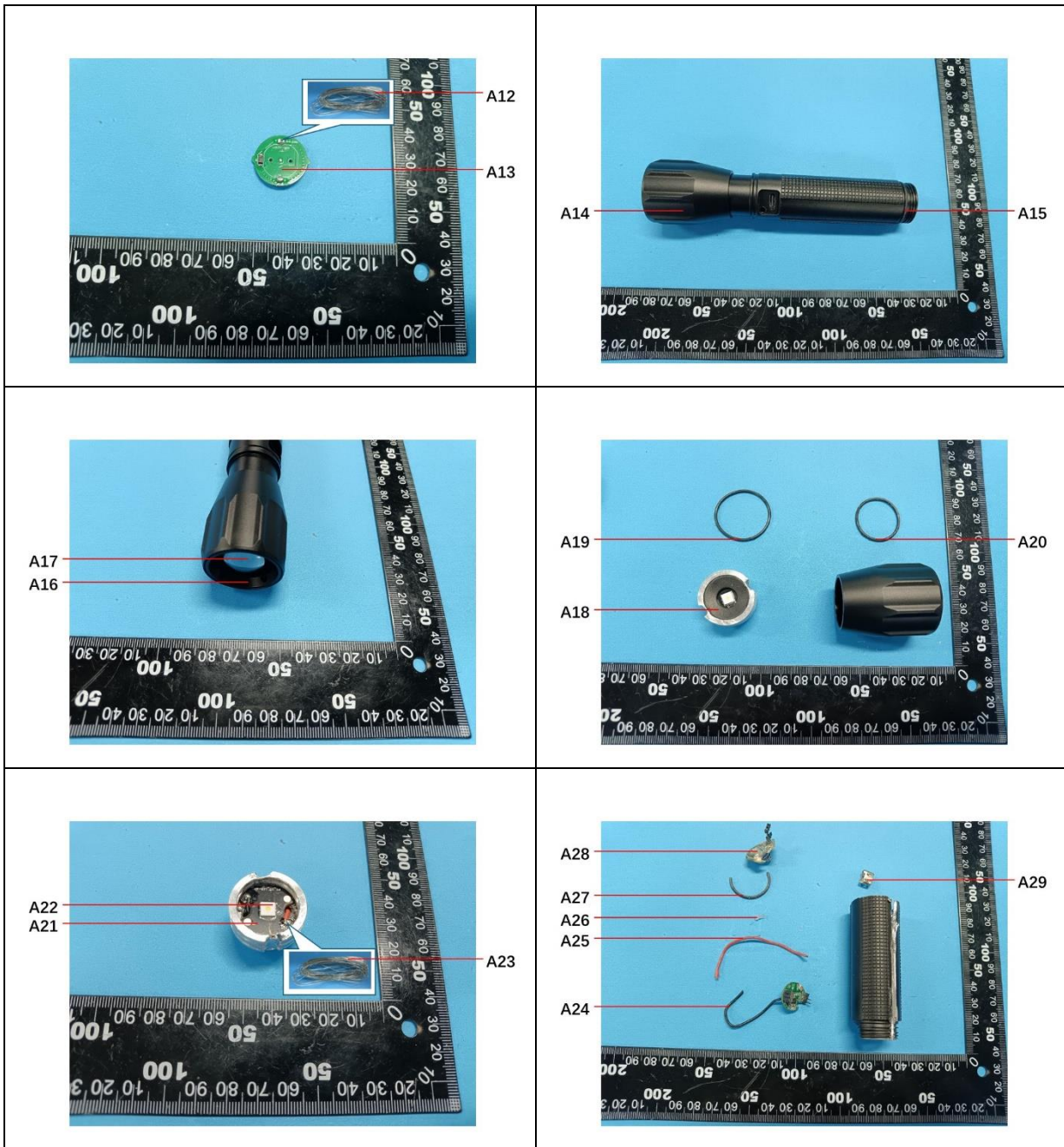
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.

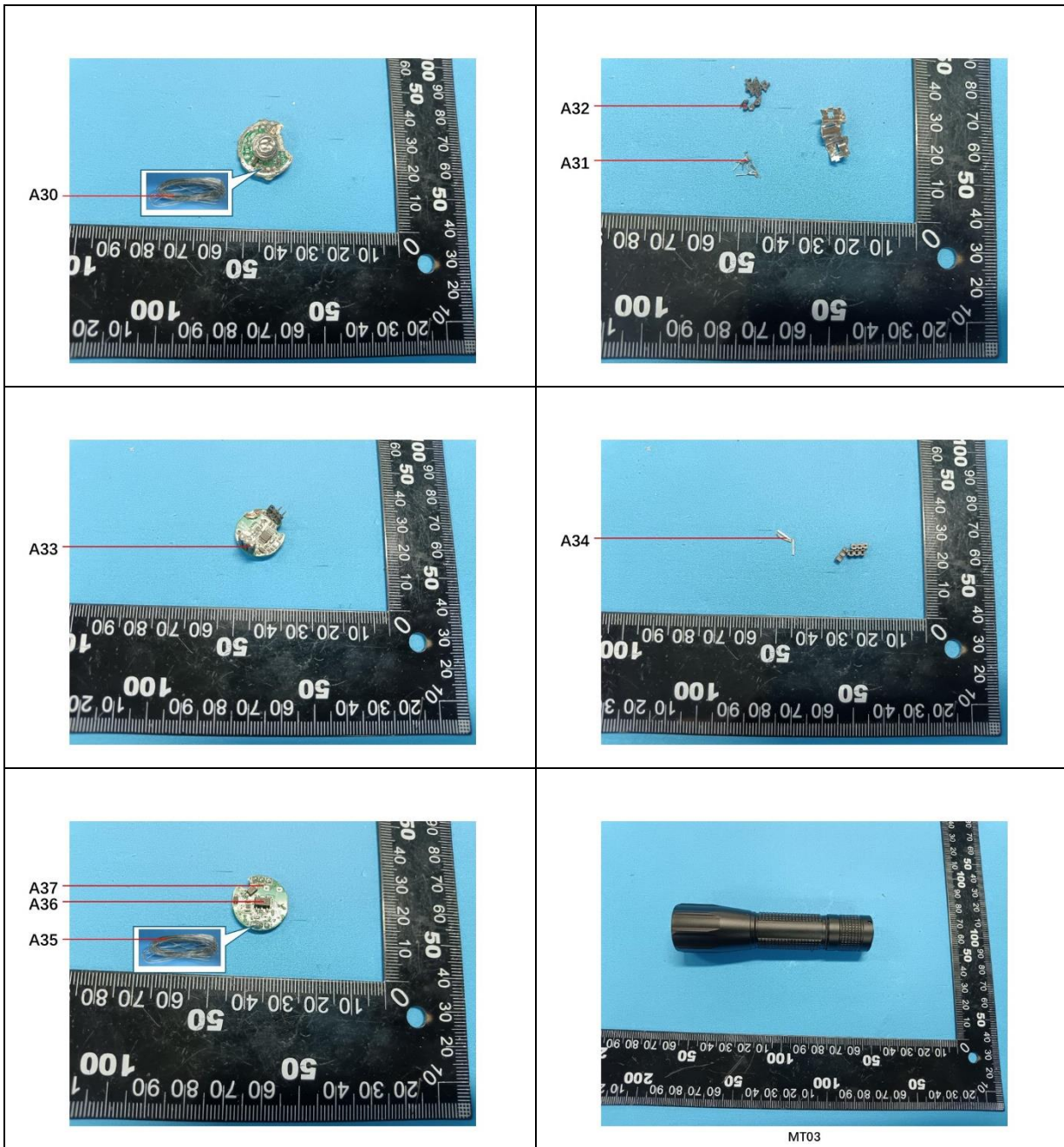


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Sample photos:







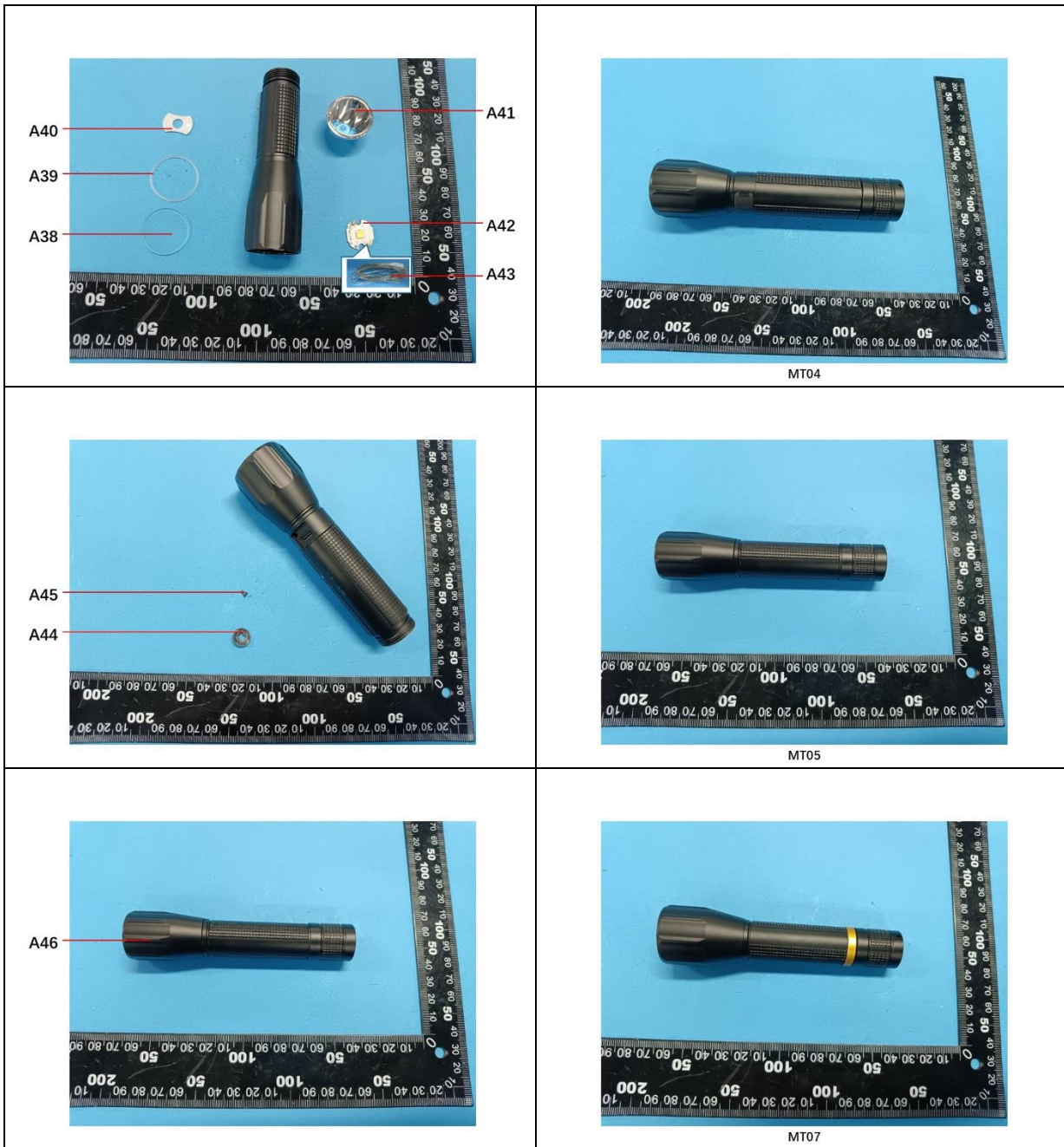
SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch Technical Laboratory

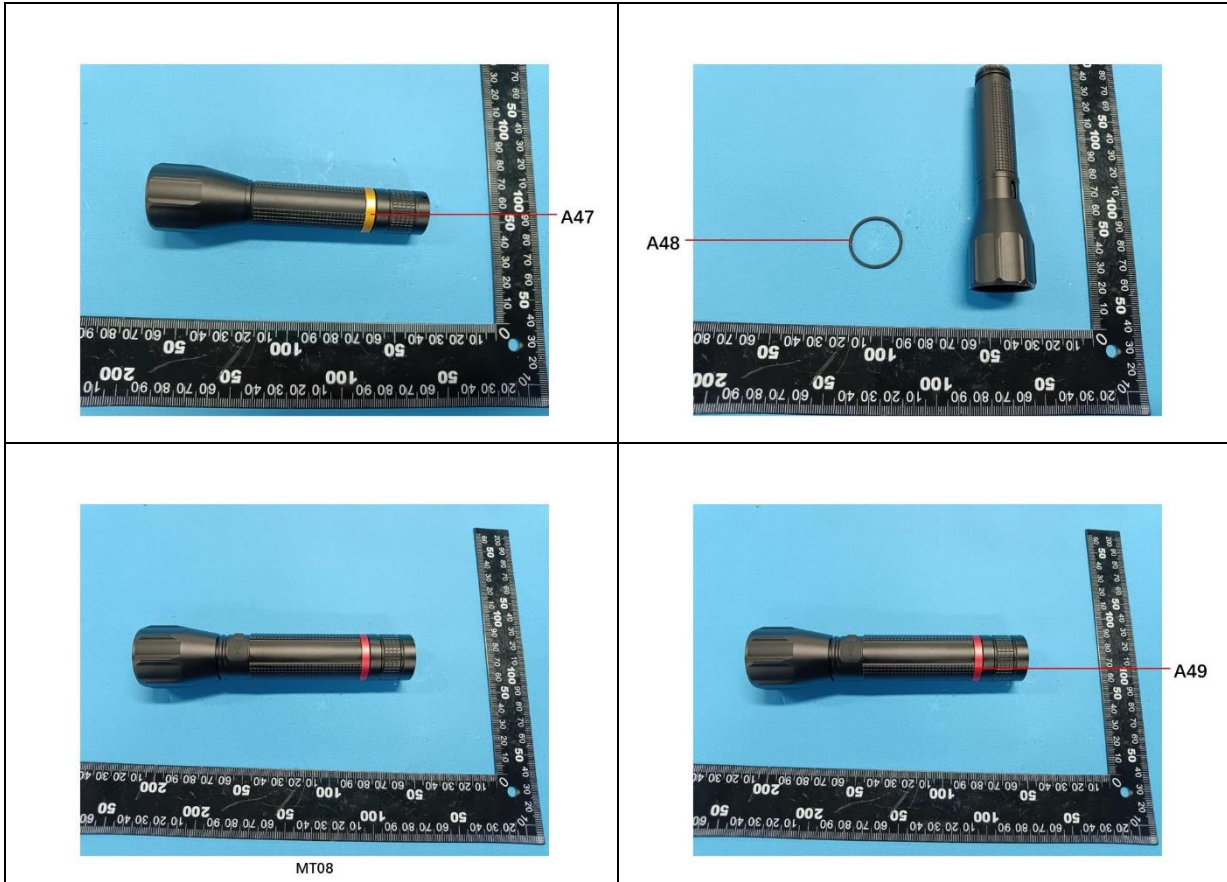
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\*\*\* End of Report \*\*\*



SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch, Technical Services CA, Guangzhou, China

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# TEST REPORT

**Application No.:** GZEM2501000481LM  
**Applicant:** Lava Group S.C. /Reiter Polska Sp. Z o.o  
**Address of Applicant:** Eugeniusza Romera 4b, 02-784 Warsaw, Poland  
**Manufacturer:**  
**Address of Manufacturer:**

**Product Name:** Flashlight  
**Model No.:** MT05, MT06, MT07, MT08 ♣  
♣ Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.  
**Standard(s) :** EN IEC 55015: 2019+A11:2020  
EN IEC 61547: 2023  
EN IEC 61000-3-2: 2019+A1:2021+A2:2024  
EN 61000-3-3: 2013+ A1:2019+A2:2021  
**Date of Receipt:** 2025-01-14  
**Date of Test:** 2025-01-15 to 2025-01-21  
**Date of Issue:** 2025-02-24

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------


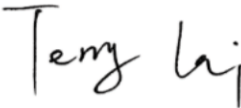
\* In the configuration tested, the EUT complied with the standards specified above.



Jerry Chan  
Manager



Revision Record			
Version	Report No.	Date	Remark
01	GZEM250100048101	2025-02-24	Original

<b>Authorized for issue by:</b>			
			
		<hr/> <b>Damon Guan/Project Engineer</b>	
			
		<hr/> <b>Terry Lai/Reviewer</b>	



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## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (9kHz-30MHz)	EN IEC 55015: 2019+A11:2020	CISPR 16-2-1: 2014+A1:2017	Table 1	Pass
Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop		CISPR 16-2-3: 2016	Table 8	Pass
Radiated Emissions (30MHz-1GHz)		CISPR 16-2-3: 2016	Table 10	Pass
Harmonic Current Emission	EN IEC 61000-3-2: 2019+A1:2021 +A2:2024	EN IEC 61000-3-2: 2019+A1:2021 +A2:2024	Class C	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013 + A1:2019+A2:2021	EN 61000-3-3: 2013 + A1:2019+A2:2021	Clause 5	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN IEC 61547: 2023	EN 61000-4-2:2009	±4kV Contact Discharge, ±8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)		EN IEC 61000-4-3:2020	3V/m, 80%, 1kHz Amp. Mod, 1% increment	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 Power Port		EN 61000-4-5:2014+A1:2017	1.2/50µs Tr/Td, ±1.0kV 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, 70 % UT for 10cycles, UT is Supply Voltage	Pass

**Note:**

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.



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**✦Declaration of EUT Family Grouping:**

**Model No.:** MT05, MT06, MT07, MT08

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, only different on the size and outer appearance.

Therefore, only one model MT06 was tested in this report.



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### 3 Contents

	Page
<b>1 Cover Page</b> .....	<b>1</b>
<b>2 Test Summary</b> .....	<b>3</b>
<b>3 Contents</b> .....	<b>5</b>
<b>4 General Information</b> .....	<b>7</b>
4.1 Details of E.U.T. ....	7
4.2 Description of Support Units.....	7
4.3 Measurement Uncertainty .....	7
4.4 Test Location .....	8
4.5 Test Facility .....	8
4.6 Deviation from Standards.....	9
4.7 Abnormalities from Standard Conditions.....	9
4.8 EMS Monitor.....	9
<b>5 Equipment List</b> .....	<b>10</b>
<b>6 Emission Test Results</b> .....	<b>14</b>
6.1 Conducted Emissions at Mains Terminals (9kHz-30MHz).....	14
6.1.1 E.U.T. Operation .....	14
6.1.2 Test Mode Description .....	14
6.1.3 Test Setup Diagram .....	14
6.1.4 Measurement Procedure and Data.....	14
6.2 Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop.....	17
6.2.1 E.U.T. Operation .....	17
6.2.2 Test Mode Description .....	17
6.2.3 Test Setup Diagram .....	17
6.2.4 Measurement Procedure and Data.....	18
6.3 Radiated Emissions (30MHz-1GHz) .....	21
6.3.1 E.U.T. Operation .....	21
6.3.2 Test Mode Description .....	21
6.3.3 Test Setup Diagram .....	21
6.3.4 Measurement Procedure and Data.....	21
6.4 Harmonic Current Emission .....	24
6.4.1 Conclusion .....	24
6.5 Voltage Fluctuations and Flicker .....	25
6.5.1 E.U.T. Operation .....	25
6.5.2 Test Mode Description .....	25
6.5.3 Test Setup Diagram .....	25
6.5.4 Measurement Procedure and Data.....	25
<b>7 Immunity Test Results</b> .....	<b>28</b>
7.1 Electrostatic Discharge.....	29
7.1.1 Test Setup Diagram .....	29
7.1.2 E.U.T. Operation .....	29
7.1.3 Test Mode Description .....	29



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7.1.4	Test Condition and Results	30
7.2	Radiated Immunity (80MHz-1GHz)	31
7.2.1	Test Setup Diagram	31
7.2.2	E.U.T. Operation	31
7.2.3	Test Mode Description	31
7.2.4	Test Condition and Results	32
7.3	Electrical Fast Transients Burst at AC Mains Power Port	33
7.3.1	Test Setup Diagram	33
7.3.2	E.U.T. Operation	33
7.3.3	Test Mode Description	33
7.3.4	Test Condition and Results	33
7.4	Surge at Power Port	34
7.4.1	Test Setup Diagram	34
7.4.2	E.U.T. Operation	34
7.4.3	Test Mode Description	34
7.4.4	Test Condition and Results	35
7.5	Conducted Immunity at AC Mains Power Port (150kHz-80MHz)	36
7.5.1	Test Setup Diagram	36
7.5.2	E.U.T. Operation	36
7.5.3	Test Mode Description	36
7.5.4	Test Condition and Results	36
7.6	Voltage Dips and Interruptions	37
7.6.1	Test Setup Diagram	37
7.6.2	E.U.T. Operation	37
7.6.3	Test Mode Description	37
7.6.4	Test Condition and Results	37
8	Test Setup Photo	38
9	EUT Constructional Details (EUT Photos)	49



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: DC 5V for charging.  
DC 3.7V 1800mAh for internal rechargeable battery.  
Test voltage: AC 230V & DC 3.7V

Cable(s): About 0.6m unscreened USB charging cable supplied by SGS.

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
AC/DC Adapter	HUAWEI	Model: HW-110600C02; Input: AC 100-240V, 1.8A Max. 50/60Hz; Output: DC 5V/2A, 10V/4A, 11V/6A Max.	JL28L4NBM03275

### 4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at Mains Terminals (9kHz-30MHz)	3.30dB (9kHz to 150kHz); 3.22dB (150kHz to 30MHz)
Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop	3.08dB (9kHz to 150kHz); 3.19dB(150kHz to 30MHz): 2m loop
Radiated Emissions (30MHz-1GHz)	5.14dB (30MHz-1GHz):3m; 4.90dB (30MHz-1GHz):10m

Remark:  
The  $U_{lab}$  (lab Uncertainty) is less than  $U_{CISPR}$  (CISPR Uncertainty) or  $U_{ETSI}$ (ETSI Uncertainty).

Emission decision rule:

- Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report.
- Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.

Immunity decision rule:

- Pass means the observation meets the Performance Criterion requirement.
- Fail means the observation doesn't meet the Performance Criterion requirement.



### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,  
Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.

### 4.5 Test Facility

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

#### ● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

#### ● 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.

#### ● 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.

#### ● ISED (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-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 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-20107 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 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



### 4.6 Deviation from Standards

None

### 4.7 Abnormalities from Standard Conditions

None

### 4.8 EMS Monitor

Visual: LED lighting of the EUT.



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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
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-24	2025-08-23
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2024-09-02	2025-09-01
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-12-04	2025-12-03
Test Software E3r	Audix	Ver.6.191211	GZE100-77	N/A	N/A
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2024-04-18	2026-04-17

Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable (RE 2m Loop)	INFINITE	CC223N-10	EMC0703	2023-06-25	2025-06-24
2m Large Loop Antenna System (ZN3040)	ZHINAN	ZN3040	EMC2187	2024-03-22	2026-03-21
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2022-04-20	2025-04-19
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A
Coupling Decoupling Network M2	SCHWARZBECK	CDNE-M2	EMC2175	2024-12-04	2025-12-03
Coupling Decoupling Network M3	SCHWARZBECK	CDNE-M3	EMC2176	2024-12-04	2025-12-03



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Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital power analyzer for harmonics & flicker testing	EMTEST	DPA 500N	EMC2235	2024-12-04	2025-12-03
Programmable multifunctional ac/dc power source	EMTEST	NETWAVE 7-400	EMC2234	2024-12-04	2025-12-03
NET.Control	EMTEST	Ver 3.2.3	GZE100-80	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2024-06-12	2025-06-11
ESD Ground Plane	SGS-EMC	3m x 3m	EMC0804	N/A	N/A
Aneroid Barometer	Shanghai Meteorological Instrument Factory Co., Ltd.	YM3	EMC2181	2024-10-31	2025-10-30
ESD Simulator-E	EMTEST	NX30	EMC2186	2024-12-30	2025-12-29



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<b>Radiated Immunity (80MHz-1GHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
743 Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2022-10-16	2025-10-15
Oscilloscope	Tektronix	TDS3052C	EMC2055	2024-10-14	2025-10-13
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	2024-10-14	2025-10-13
Signal Generator (9kHz-6GHz)	Rohde & Schwarz	SMB100A	EMC2093	2024-10-14	2025-10-13
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2024-04-23	2025-04-22
NRP-Z91 Power Sensor (9kHz-6GHz)	Rohde & Schwarz	NPR-Z91	EMC2095	2024-10-14	2025-10-13
NRP-Z91 Power Sensor (9kHz-6GHz)	Rohde & Schwarz	NPR-Z91	EMC2096	2024-10-14	2025-10-13
High-Gain Log-preiodic Antenna	Rohde & Schwarz	HL046E	EMC2097	2022-02-14	2025-02-13
RI Cable	Rohde & Schwarz	7m	EMC2098	2024-05-16	2025-05-15
Test Software EMC32	Rohde & Schwarz	Ver. 10.60.10	GZE100-63	N/A	N/A

<b>Electrical Fast Transients Burst at AC Mains Power Port</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Oscilloscope	Tektronix	TDS3052C	EMC2055	2024-10-14	2025-10-13
EMC Immunity Test System	TESEQ AG	NSG 3060&CDN3061&INA 6502 CIB	EMC2072	2024-12-03	2025-12-02
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

<b>Surge at Power Port</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Oscilloscope	Tektronix	TDS3052C	EMC2055	2024-10-14	2025-10-13
EMC Immunity Test System	TESEQ AG	NSG 3060&CDN3061&INA 6502 CIB	EMC2072	2024-12-03	2025-12-02
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A



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Conducted Immunity at AC Mains Power Port (150kHz-80MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2024-12-04	2025-12-03
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2024-10-14	2026-10-13
CDN M2/M3	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2024-12-04	2025-12-03
Test System for Conducted and Radiated Immunity	TESEQ AG	NSG 4070B-80	EMC2115	2024-10-14	2025-10-13
Test Software NSG4070_Ctr11	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
Oscilloscope	Tektronix	TDS3052C	EMC2055	2024-10-14	2025-10-13
6dB Attenuator	Shanghai Huaxiang	WDT5150-6-2.5-B	EMC2116	2024-12-04	2026-12-03

Voltage Dips and Interruptions					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Oscilloscope	Tektronix	TDS3052C	EMC2055	2024-10-14	2025-10-13
EMC Immunity Test System	TESEQ AG	NSG 3060&CDN3061&INA 6502 CIB	EMC2072	2024-12-03	2025-12-02
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	2024-06-13	2025-06-12
DMM	Fluke	73	EMC0007	2024-06-13	2025-06-12



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## 6 Emission Test Results

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

Test Requirement:	EN IEC 55015: 2019+A11:2020
Test Method:	CISPR 16-2-1: 2014+A1:2017
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

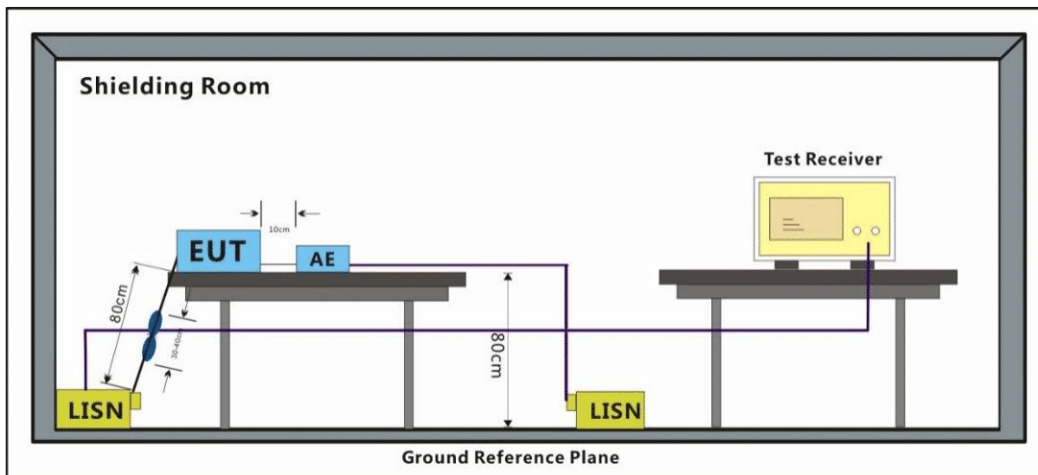
#### 6.1.1 E.U.T. Operation

Operating Environment:			
Temperature:	22.4 °C	Humidity:	56.3 % RH
		Atmospheric Pressure:	1020 mbar

#### 6.1.2 Test Mode Description

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

#### 6.1.3 Test Setup Diagram



#### 6.1.4 Measurement Procedure and 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.

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

Remark: Level= Read Level+ Cable Loss+ LISN Factor

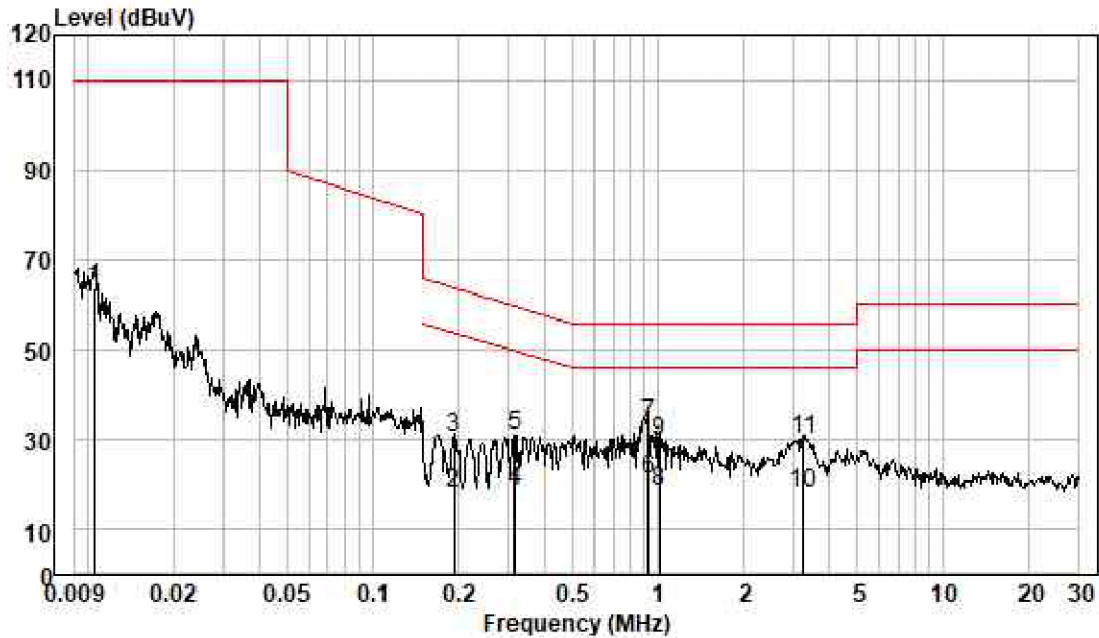


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Test Mode: 00; Line: Live line



Pol :LINE  
 Mode :  
 Model :  
 Power :

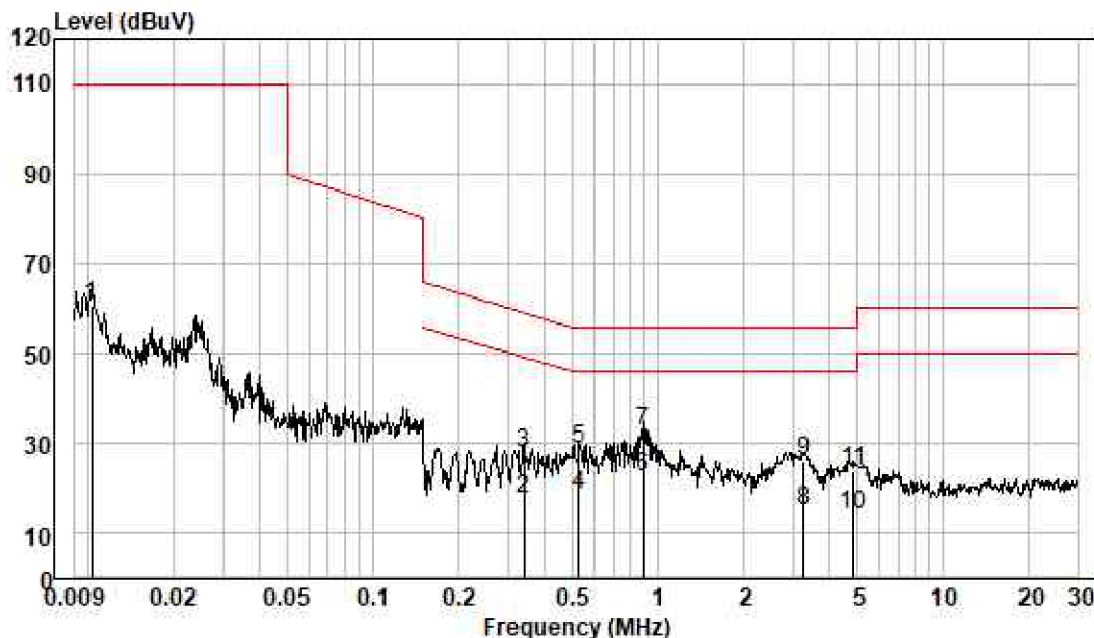
	Freque <sub>nc</sub> MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.011	53.65	0.02	10.05	63.72	110.00	-46.28	QP
2	0.193	8.36	0.04	9.55	17.95	53.89	-35.94	Average
3	0.193	21.17	0.04	9.55	30.76	63.89	-33.13	QP
4	0.317	9.08	0.04	9.56	18.68	49.80	-31.12	Average
5	0.317	21.31	0.04	9.56	30.91	59.80	-28.89	QP
6	0.928	11.59	0.07	9.59	21.25	46.00	-24.75	Average
7	0.928	23.79	0.07	9.59	33.45	56.00	-22.55	QP
8	1.021	8.83	0.07	9.54	18.44	46.00	-27.56	Average
9	1.021	20.18	0.07	9.54	29.79	56.00	-26.21	QP
10	3.276	8.58	0.16	9.58	18.32	46.00	-27.68	Average
11	3.276	20.18	0.16	9.58	29.92	56.00	-26.08	QP



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Test Mode: 00; Line: Neutral Line



Pol : NEUTRAL  
 Mode :  
 Model :  
 Power :

	Freque <sub>nc</sub> MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.010	50.51	0.02	10.09	60.62	110.00	-49.38	QP
2	0.339	8.27	0.05	9.52	17.84	49.22	-31.38	Average
3	0.339	18.47	0.05	9.52	28.04	59.22	-31.18	QP
4	0.529	9.15	0.05	9.58	18.78	46.00	-27.22	Average
5	0.529	19.13	0.05	9.58	28.76	56.00	-27.24	QP
6	0.894	12.80	0.07	9.54	22.41	46.00	-23.59	Average
7	0.894	22.96	0.07	9.54	32.57	56.00	-23.43	QP
8	3.258	5.15	0.16	9.57	14.88	46.00	-31.12	Average
9	3.258	16.29	0.16	9.57	26.02	56.00	-29.98	QP
10	4.900	4.36	0.19	9.65	14.20	46.00	-31.80	Average
11	4.900	14.28	0.19	9.65	24.12	56.00	-31.88	QP



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### 6.2 Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop

Test Requirement:	EN IEC 55015: 2019+A11:2020
Test Method:	CISPR 16-2-3: 2016
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

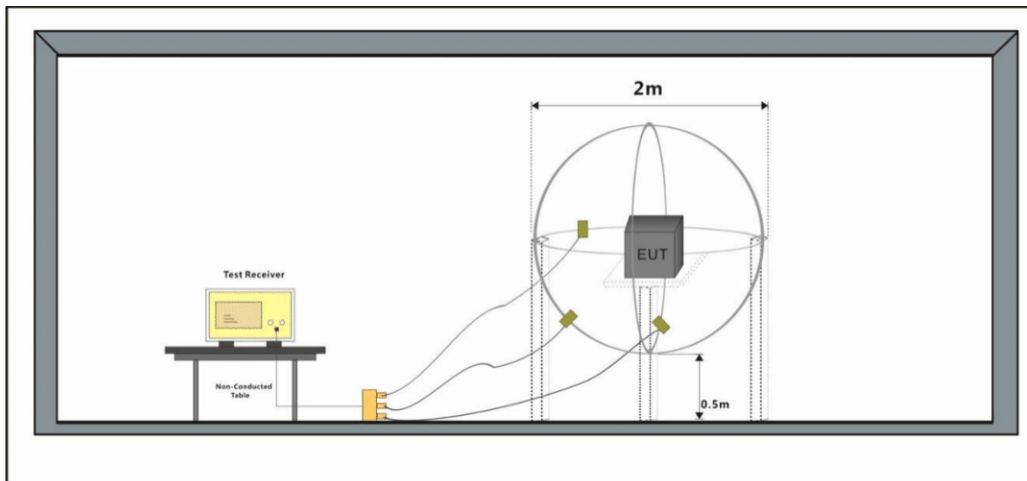
#### 6.2.1 E.U.T. Operation

Operating Environment:			
Temperature:	23.3 °C	Humidity:	51.8 % RH
		Atmospheric Pressure:	1020 mbar

#### 6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Test the EUT in charging mode.
Pre-scan	01	Test the EUT in LED lighting mode, setting at the maximum brightness.
Pre-scan	02	Test the EUT in LED lighting mode, setting at the medium brightness.
Pre-scan	03	Test the EUT in LED lighting mode, setting at the minimum brightness.

#### 6.2.3 Test Setup Diagram



### 6.2.4 Measurement Procedure and Data

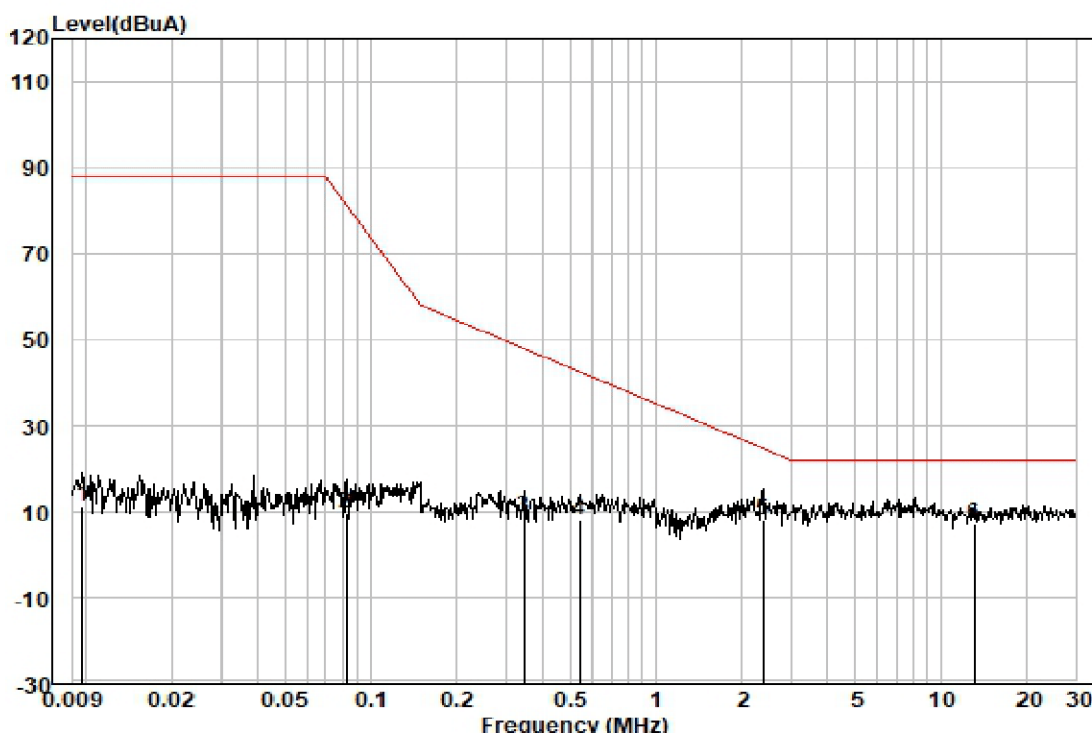
Frequency range: 9kHz-30MHz

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.

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

Measured Level= Read Level + Cable Loss + Antenna Factor(if applicable)

Test Mode: 00; Axial:X



loop : X  
Test Mode:  
Model :

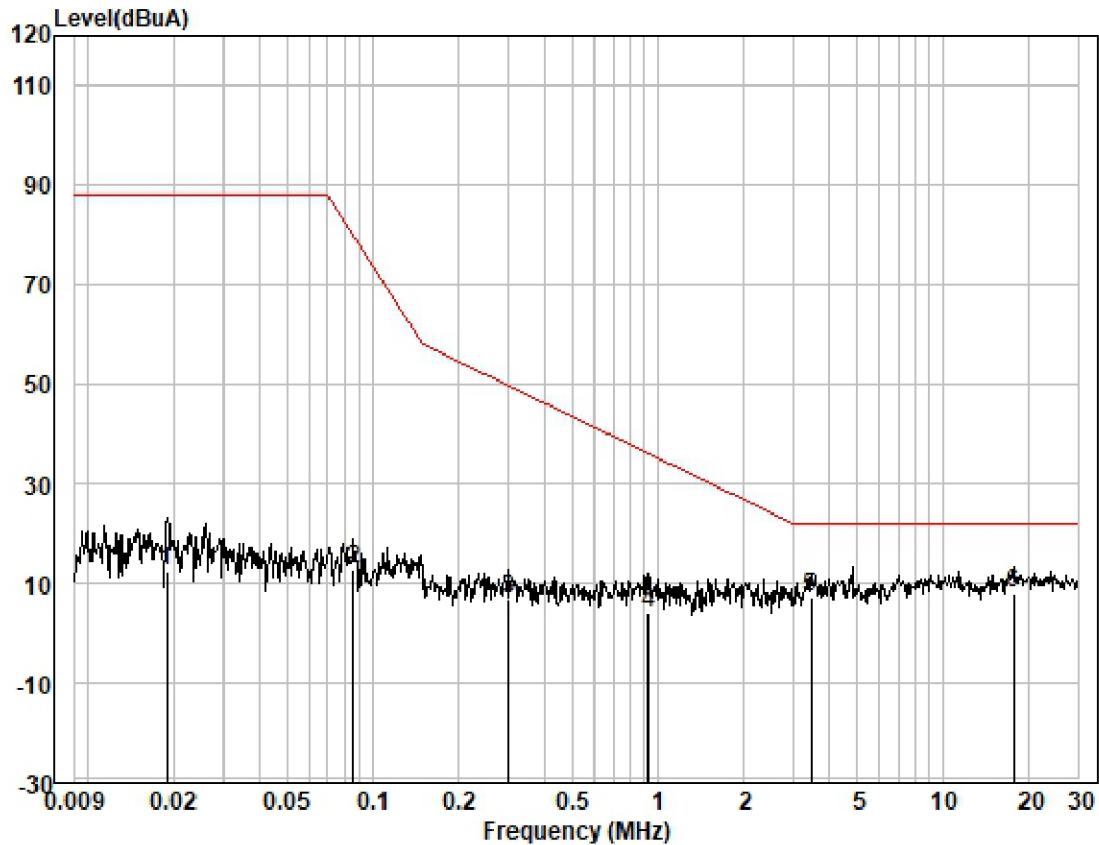
Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Preamp Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.01	9.88	0.00	1.15	0.00	11.03	88.00	-76.97	QP
0.08	9.53	0.00	0.07	0.00	9.60	81.57	-71.97	QP
0.35	9.00	0.10	-0.39	0.00	8.71	47.94	-39.23	QP
0.54	8.53	0.10	-0.56	0.00	8.07	42.58	-34.51	QP
2.39	7.62	0.24	0.20	0.00	8.06	24.74	-16.68	QP
13.12	5.24	0.70	1.16	0.00	7.10	22.00	-14.90	QP



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Test Mode: 00; Axial:Y



loop : Y  
 Test Mode:  
 Model :

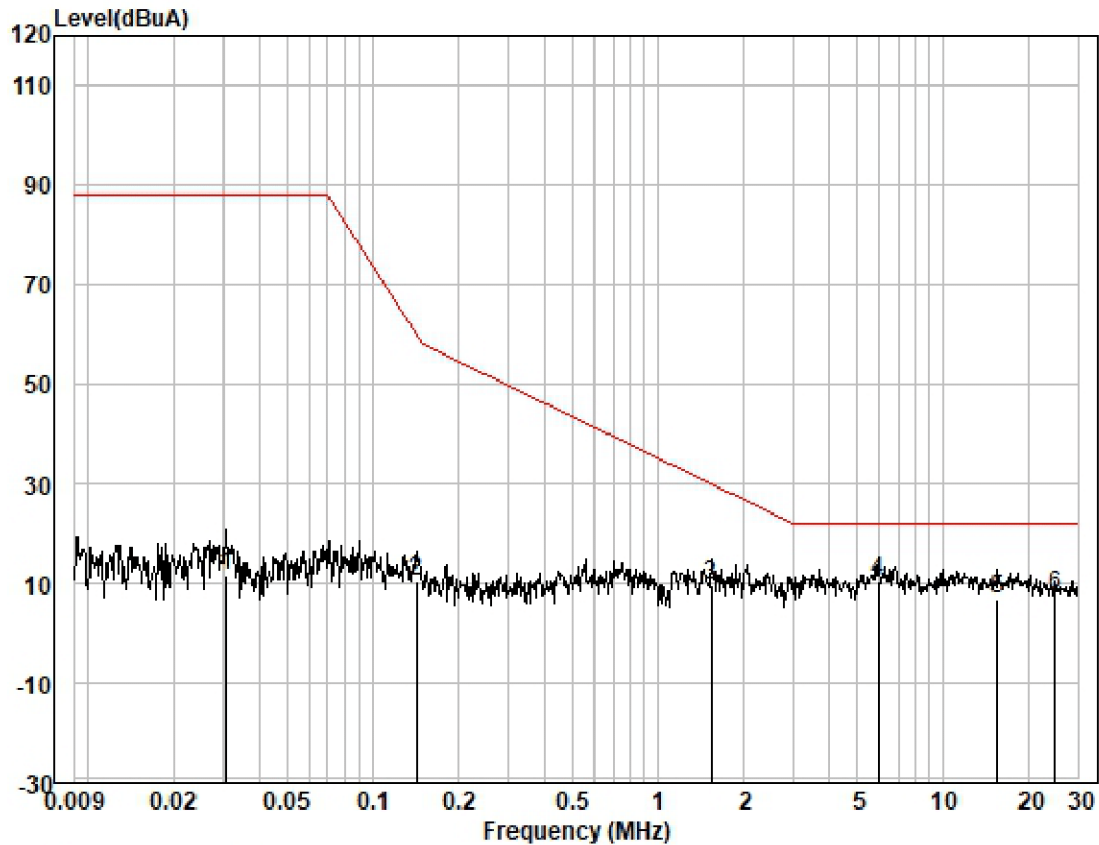
Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Preamp Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.02	11.42	0.00	0.91	0.00	12.33	88.00	-75.67	QP
0.09	12.86	0.00	0.10	0.00	12.96	79.98	-67.02	QP
0.30	6.48	0.10	0.07	0.00	6.65	49.60	-42.95	QP
0.93	3.82	0.10	0.00	0.00	3.92	36.05	-32.13	QP
3.47	6.20	0.35	0.49	0.00	7.04	22.00	-14.96	QP
17.85	6.86	0.80	0.53	0.00	8.19	22.00	-13.81	QP



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Test Mode: 00; Axial:Z



loop : Z  
 Test Mode:  
 Model :

Frequency MHz	Read level dBuV	Cable Loss dB	Antenna Factor dB	Preamp Factor dB	Measured level dBuA	Limit Line dBuA	Over limit dB	Remark
0.03	11.71	0.00	0.07	0.00	11.78	88.00	-76.22	QP
0.14	10.68	0.10	-0.20	0.00	10.58	59.86	-49.28	QP
1.54	9.56	0.17	0.01	0.00	9.74	30.01	-20.27	QP
5.97	9.47	0.50	0.30	0.00	10.27	22.00	-11.73	QP
15.55	4.94	0.75	1.30	0.00	6.99	22.00	-15.01	QP
24.89	5.22	0.98	1.20	0.00	7.40	22.00	-14.60	QP



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### 6.3 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN IEC 55015: 2019+A11:2020  
 Test Method: CISPR 16-2-3: 2016  
 Limit:  
 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

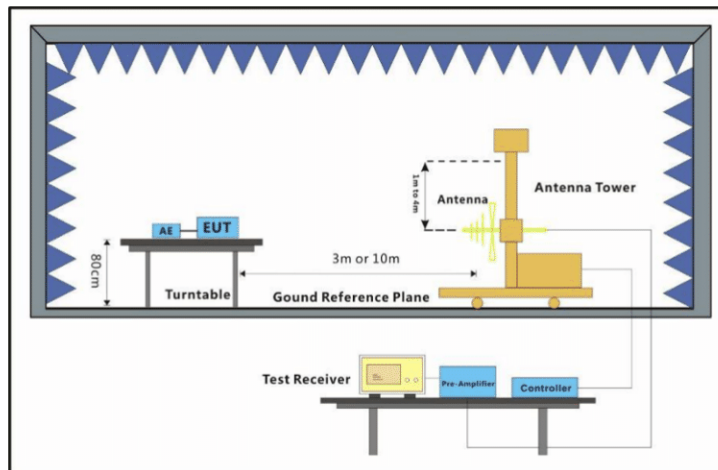
#### 6.3.1 E.U.T. Operation

Operating Environment:  
 Temperature: 23.3 °C Humidity: 51.8 % RH Atmospheric Pressure: 1020 mbar

#### 6.3.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	Test the EUT in charging mode.
Pre-scan 01	Test the EUT in LED lighting mode, setting at the maximum brightness.
Pre-scan 02	Test the EUT in LED lighting mode, setting at the medium brightness.
Pre-scan 03	Test the EUT in LED lighting mode, setting at the minimum brightness.

#### 6.3.3 Test Setup Diagram



#### 6.3.4 Measurement Procedure and 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.

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

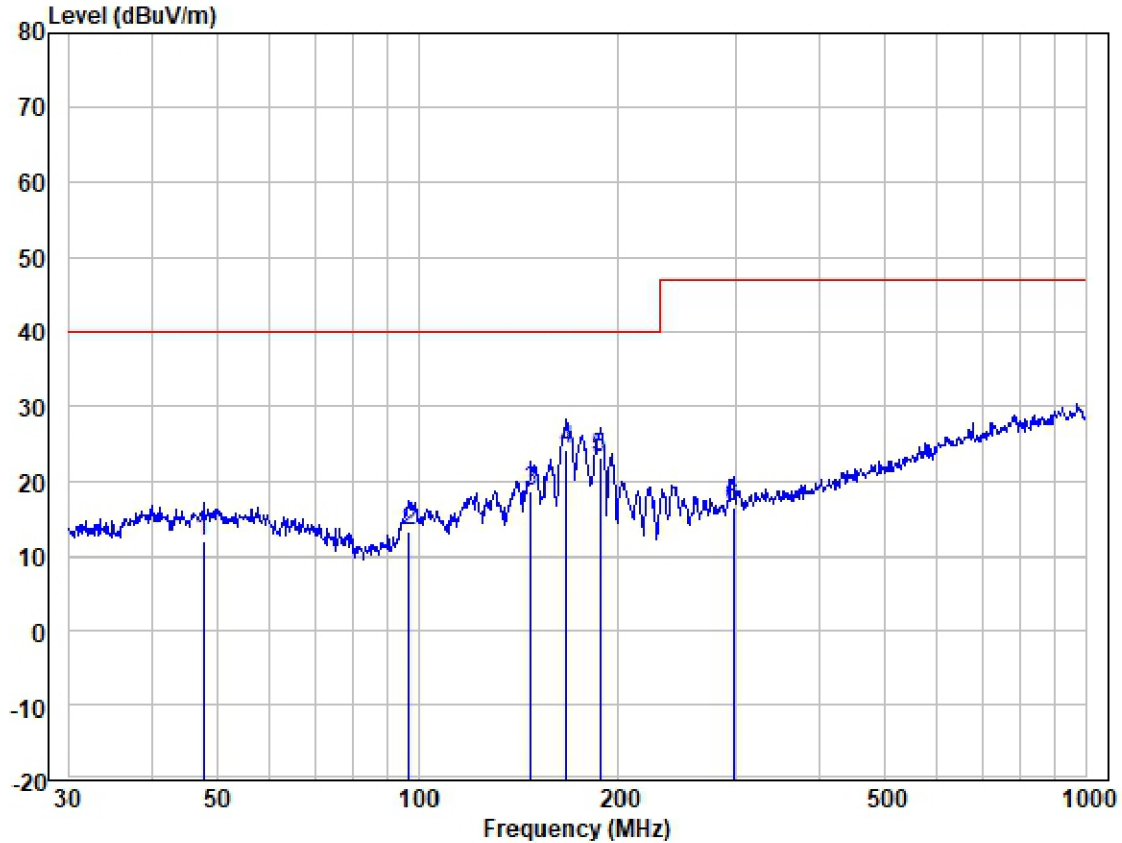
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber  
 Job :  
 Model :  
 Power :  
 Test Mode : CHARING

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	47.659	25.11	19.50	0.38	32.88	12.11	40.00	-27.89	HORIZONTAL	QP
2	97.115	31.41	14.14	0.53	32.80	13.28	40.00	-26.72	HORIZONTAL	QP
3	147.404	31.96	18.91	0.66	32.82	18.71	40.00	-21.29	HORIZONTAL	QP
4	167.237	37.53	18.93	0.72	32.83	24.35	40.00	-15.65	HORIZONTAL	QP
5	187.096	38.46	16.70	0.76	32.84	23.08	40.00	-16.92	HORIZONTAL	QP
6	296.184	29.29	19.18	0.98	32.88	16.57	47.00	-30.43	HORIZONTAL	QP

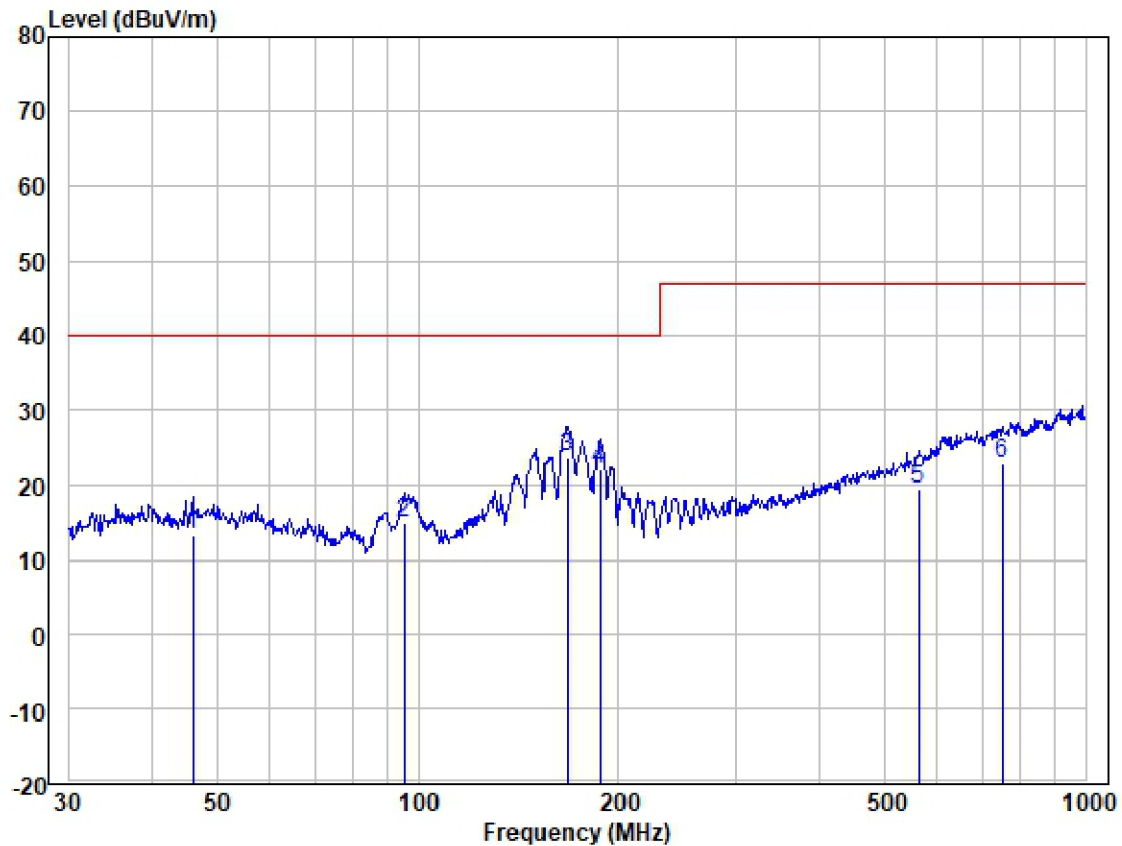


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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber  
 Job :  
 Model :  
 Power :  
 Test Mode : CHARING

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	46.016	26.47	19.48	0.37	32.87	13.45	40.00	-26.55	VERTICAL	QP
2	95.427	33.34	13.86	0.53	32.80	14.93	40.00	-25.07	VERTICAL	QP
3	167.824	37.08	18.88	0.72	32.83	23.85	40.00	-16.15	VERTICAL	QP
4	187.096	37.46	16.70	0.76	32.84	22.08	40.00	-17.92	VERTICAL	QP
5	560.693	26.47	24.56	1.39	32.94	19.48	47.00	-27.52	VERTICAL	QP
6	750.108	25.50	28.23	1.60	32.47	22.86	47.00	-24.14	VERTICAL	QP



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### 6.4 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2: 2019+A1:2021+A2:2024

Test Method: EN IEC 61000-3-2: 2019+A1:2021+A2:2024

#### 6.4.1 Conclusion

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.



### 6.5 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3: 2013+ A1:2019+A2:2021

Test Method: EN 61000-3-3: 2013+ A1:2019+A2:2021

#### 6.5.1 E.U.T. Operation

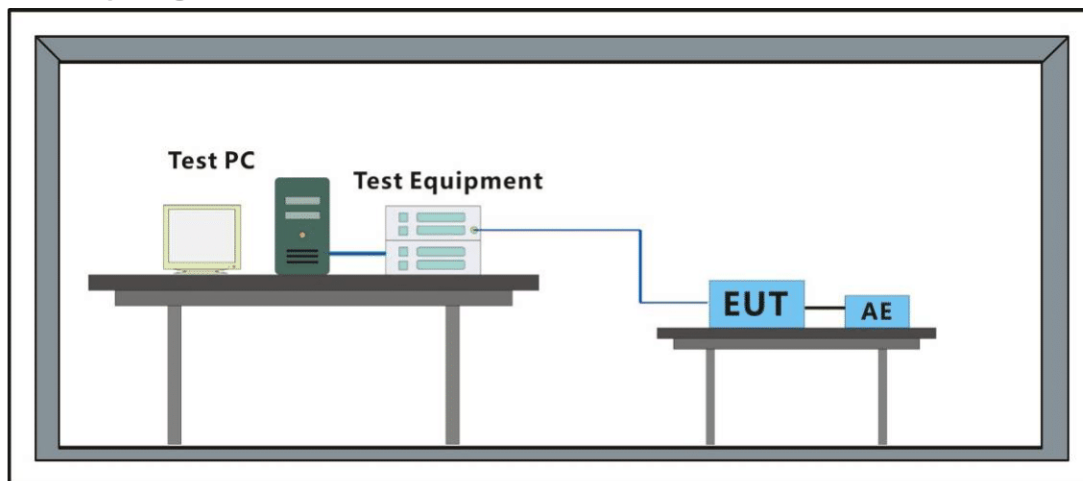
Operating Environment:

Temperature: 21.7 °C Humidity: 40.7 % RH Atmospheric Pressure: 1020 mbar

#### 6.5.2 Test Mode Description

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

#### 6.5.3 Test Setup Diagram



#### 6.5.4 Measurement Procedure and Data



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Test Mode: 00

**Flicker Results**

**Standard Specific Results for IEC 61000-3-3 (Edition 3)**

Standard Group: Industry

Standard Name: IEC 61000-3-3 (Edition 3)  
 Limitation of voltage changes, voltage fluctuations and flicker  
 in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase  
 and not subject to conditional connection

Test Condition: General Test Conditions

Analysis Status: **PASS**

Flicker Measurements Settings	
Main Line:	230V, 50Hz
Flicker Meter:	230V / 50Hz
Flicker Impedance:	Zref
Observation Time:	1 × 10 min
Measurements:	1

Flicker Measurements					
	P <sub>st</sub>	Max P <sub>st</sub>	Max d <sub>c</sub>	Max d <sub>max</sub>	Max T <sub>max</sub>
Line 1:	0.048	0.108	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

Flicker Individual Measurements												
Measurement	P <sub>st</sub> [ ]			d <sub>c</sub> [%]			d <sub>max</sub> [%]			T <sub>max</sub> [s]		
	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result
#1	0.11	1.00	PASS	0.00	3.30	PASS	< 0.2	4.00	PASS	0.00	0.50	PASS

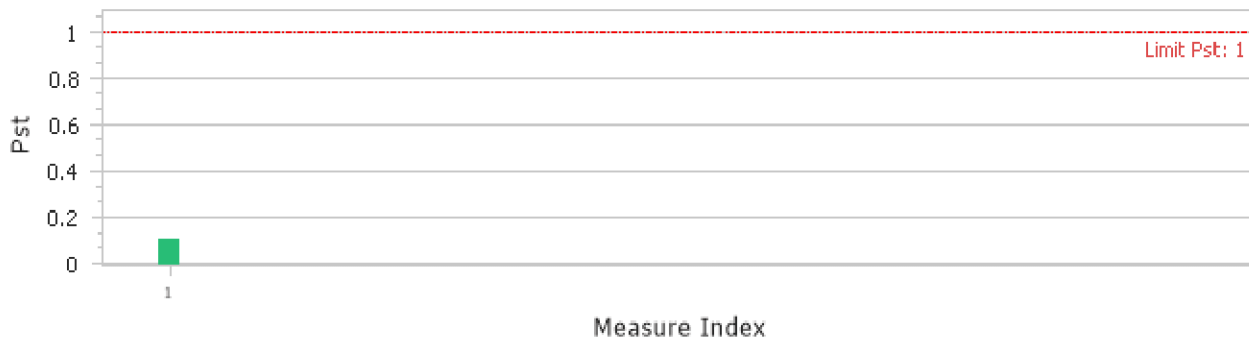


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### Pst Data

Short-term Flicker Severity (Pst) (Line 1)



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## 7 Immunity Test Results

### Performance Criteria Description in EN IEC 61547

- 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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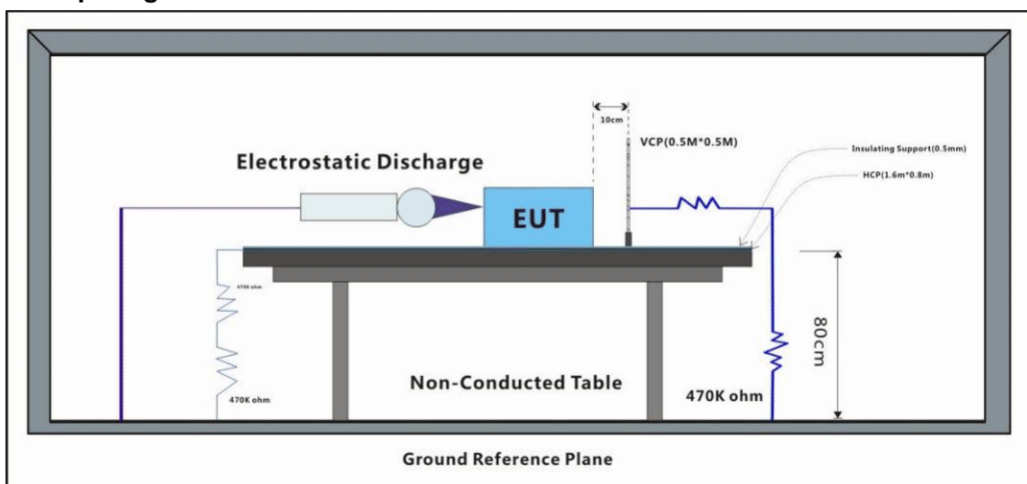
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### 7.1 Electrostatic Discharge

Test Requirement: EN IEC 61547: 2023

Test Method: EN 61000-4-2:2009

#### 7.1.1 Test Setup Diagram



#### 7.1.2 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C      Humidity: 40.7 % RH      Atmospheric Pressure: 1020 mbar

#### 7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Test the EUT in charging mode.
Final test	01	Test the EUT in LED lighting mode, setting at the maximum brightness.
Final test	02	Test the EUT in LED lighting mode, setting at the medium brightness.
Final test	03	Test the EUT in LED lighting mode, setting at the minimum brightness.
Final test	04	Test the EUT in idle mode.



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**7.1.4 Test Condition and Results**

Performance Criterion: B for other than Road and street lighting equipment;  
 Performance Criterion: C for Road and street lighting equipment.  
 Discharge Impedance: 330 Ω / 150 pF  
 Discharge Voltage: Air Discharge: ±2,4,8 kV; Contact Discharge: ±4 kV; VCP/HCP: ±4 kV for other than Road and street lighting equipment;  
 Air Discharge: ±2,4,8,15 kV; Contact Discharge: ±4,8 kV; VCP/HCP: ±4,8 kV for Road and street lighting equipment.  
 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.

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

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



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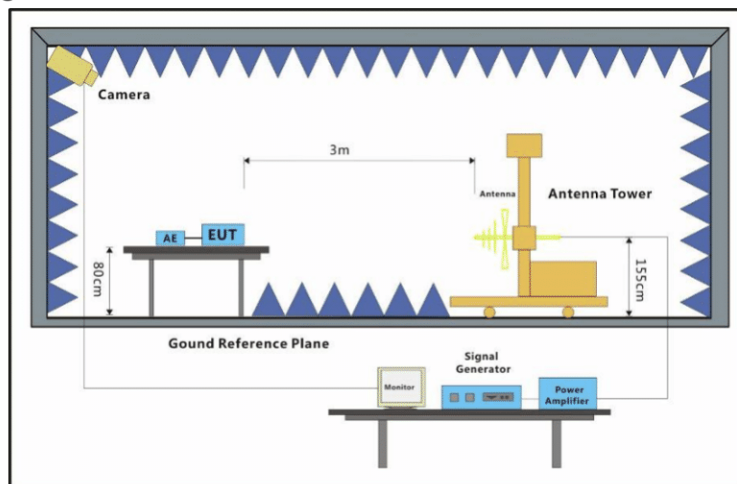
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### 7.2 Radiated Immunity (80MHz-1GHz)

Test Requirement: EN IEC 61547: 2023  
 Test Method: EN IEC 61000-4-3:2020

#### 7.2.1 Test Setup Diagram



#### 7.2.2 E.U.T. Operation

Operating Environment:  
 Temperature: 21.2 °C      Humidity: 42.7 % RH      Atmospheric Pressure: 1020 mbar

#### 7.2.3 Test Mode Description

Pre-scan / Final test	Mode / Code	Description
Final test	00	Test the EUT in charging mode.
Final test	01	Test the EUT in LED lighting mode, setting at the maximum brightness.
Final test	02	Test the EUT in LED lighting mode, setting at the medium brightness.
Final test	03	Test the EUT in LED lighting mode, setting at the minimum brightness.
Final test	04	Test the EUT in idle mode.



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**7.2.4 Test Condition and Results**

Performance Criterion: A  
 Frequency Range:80MHz to 1GHz  
 Test Distance:3m  
 Antenna Polarisation: Vertical and Horizontal  
 Modulation1kHz,80% Amp. Mod,1% increment

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

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



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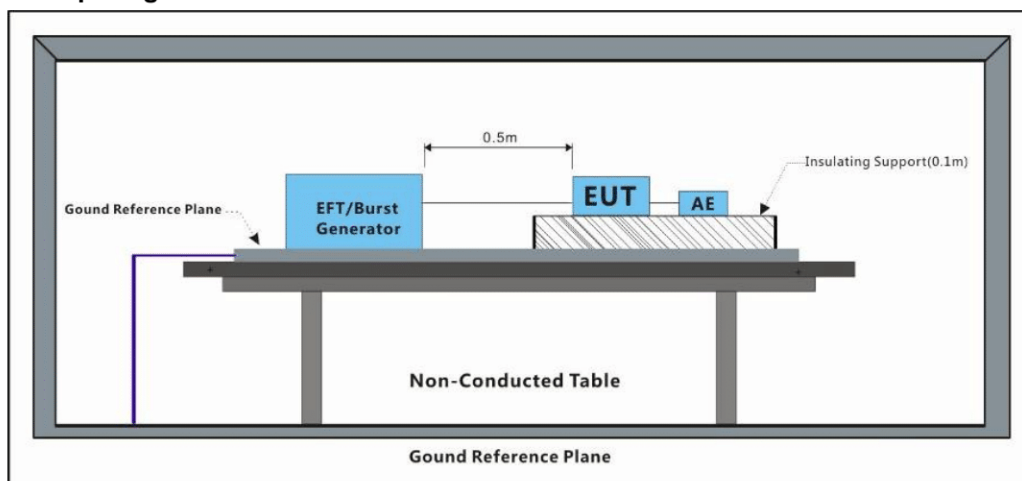
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### 7.3 Electrical Fast Transients Burst at AC Mains Power Port

Test Requirement: EN IEC 61547: 2023

Test Method: EN 61000-4-4:2012

#### 7.3.1 Test Setup Diagram



#### 7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C

Humidity: 44.1 % RH

Atmospheric Pressure: 1020 mbar

#### 7.3.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	Description
Final test 00	Test the EUT in charging mode.
Final test 04	Test the EUT in idle mode.

#### 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

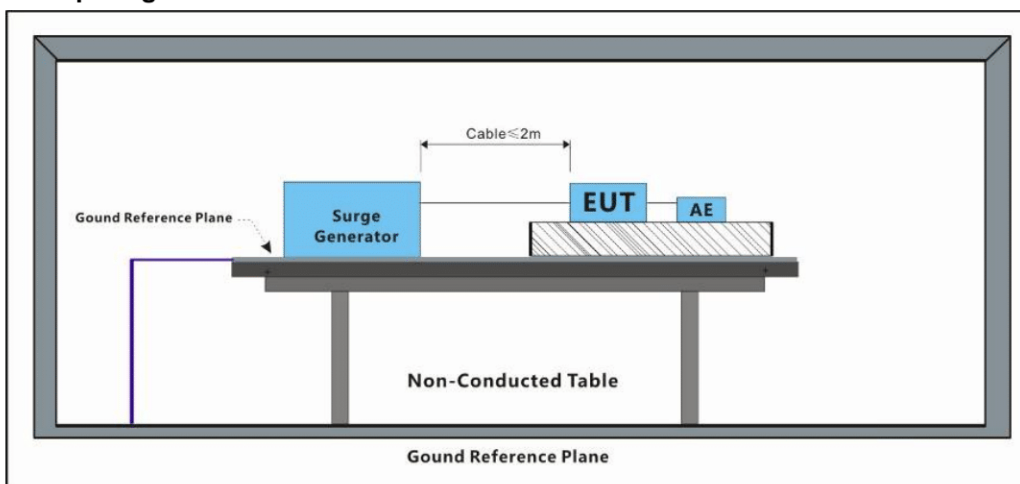
A: No degradation in the performance of the EUT was observed



### 7.4 Surge at Power Port

Test Requirement: EN IEC 61547: 2023  
 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: 21.7 °C      Humidity: 44.1 % RH      Atmospheric Pressure: 1020 mbar

#### 7.4.3 Test Mode Description

Pre-scan /	Mode	Description
Final test	Code	
Final test	00	Test the EUT in charging mode.
Final test	04	Test the EUT in idle mode.



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**7.4.4 Test Condition and Results**

Performance Criterion: B (Luminaire for emergency lighting),

Performance Criterion: C (for others lighting equipment).

Interval: 60s between each surge

Test Level:  $\pm 0.5\text{kV}$  Live to Neutral for Self-ballasted lamps  $\leq 25\text{W}$ ;

$\pm 1\text{kV}$ ,  $\pm 2\text{kV}$  Live to Neutral;  $\pm 2\text{kV}$ ,  $\pm 4\text{kV}$  Live, Neutral to Earth for Road and street lighting equipment;

$\pm 1\text{kV}$  Live to Neutral;  $\pm 2\text{kV}$  Live, Neutral to Earth for others lighting equipment.

Polarity: Positive & Negative

Generator source impedance:  $2\Omega$

CDN coupling impedance(Line-to-ground):  $10\Omega$

Trigger Mode: Internal

No. of surges: 5 positive at  $90^\circ$ , 5 negative at  $270^\circ$ .

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1.0	+	$90^\circ$	A
L-N	1.0	-	$270^\circ$	A

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



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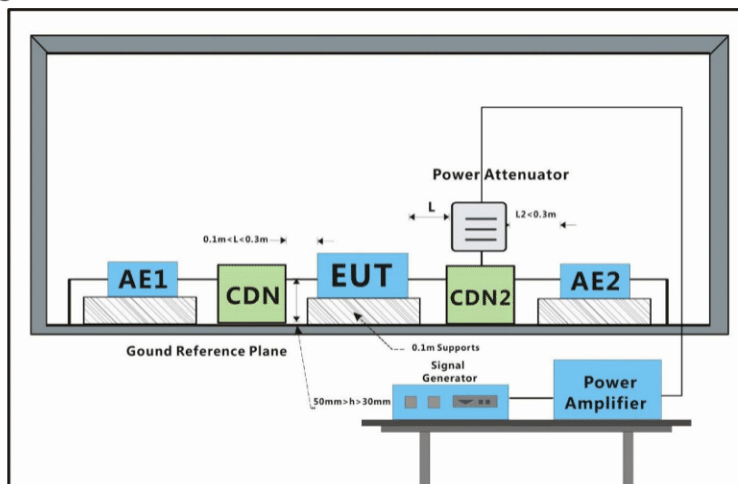
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### 7.5 Conducted Immunity at AC Mains Power Port (150kHz-80MHz)

Test Requirement: EN IEC 61547: 2023

Test Method: EN 61000-4-6:2014

#### 7.5.1 Test Setup Diagram



#### 7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C Humidity: 44.1 % RH Atmospheric Pressure: 1020 mbar

#### 7.5.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	Test the EUT in charging mode.
Final test 04	Test the EUT in idle mode.

#### 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	3s	A

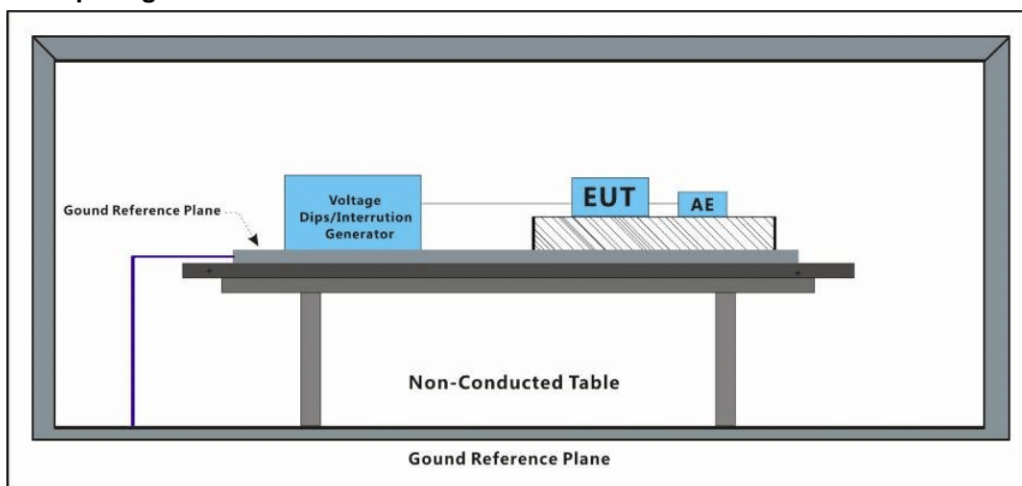
A: No degradation in the performance of the EUT was observed



### 7.6 Voltage Dips and Interruptions

Test Requirement: EN IEC 61547: 2023  
 Test Method: EN IEC 61000-4-11:2020

#### 7.6.1 Test Setup Diagram



#### 7.6.2 E.U.T. Operation

Operating Environment:  
 Temperature: 21.7 °C      Humidity: 44.1 % RH      Atmospheric Pressure: 1020 mbar

#### 7.6.3 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	Test the EUT in charging mode.
Final test 04	Test the EUT in idle mode.

#### 7.6.4 Test Condition and Results

Performance Criterion: 0% of UT (Rated Voltage) for 0.5 Cycle: B; 70% of UT for 10 Cycles: B.  
 No. of Dips / Interruptions: 3 per Level  
 Time between dropout: 10s

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

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



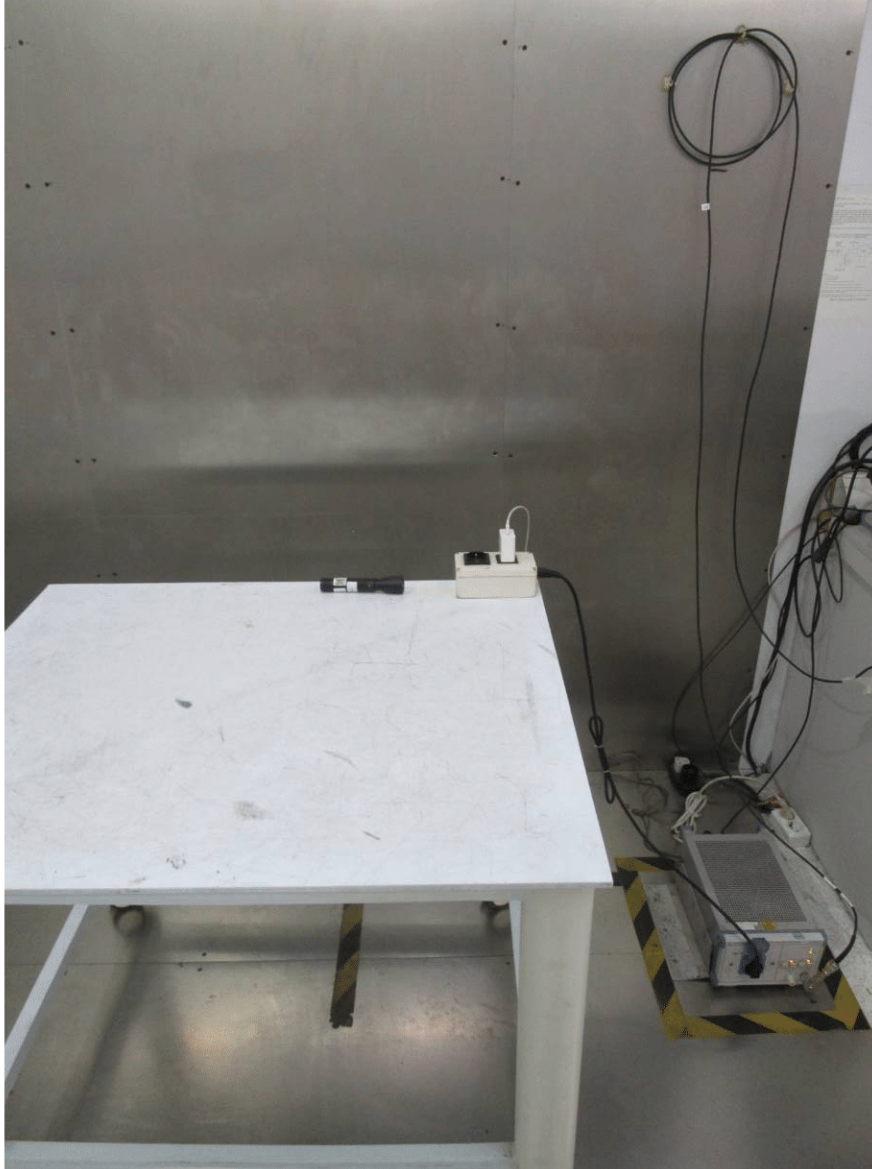
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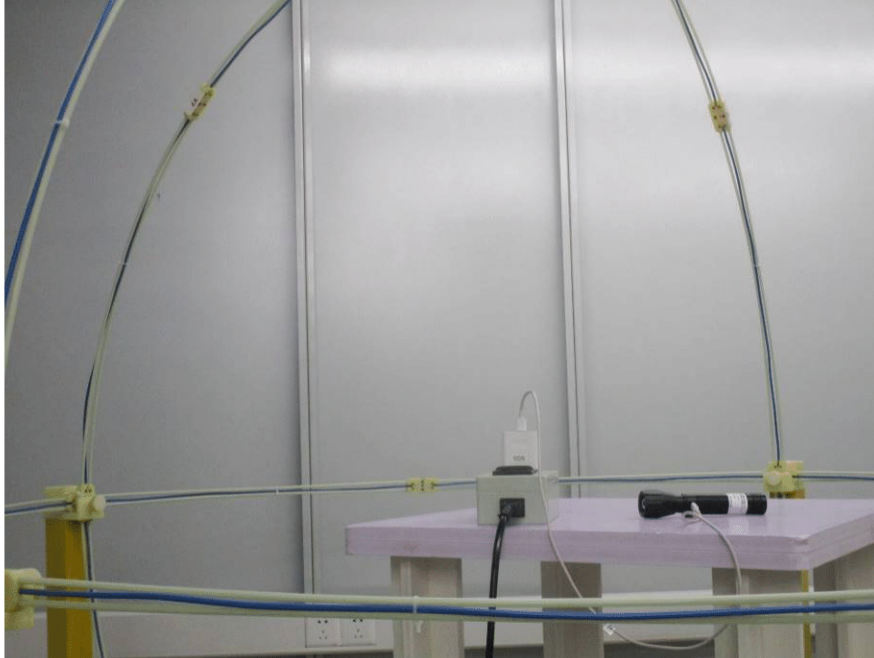
### 8 Test Setup Photo

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





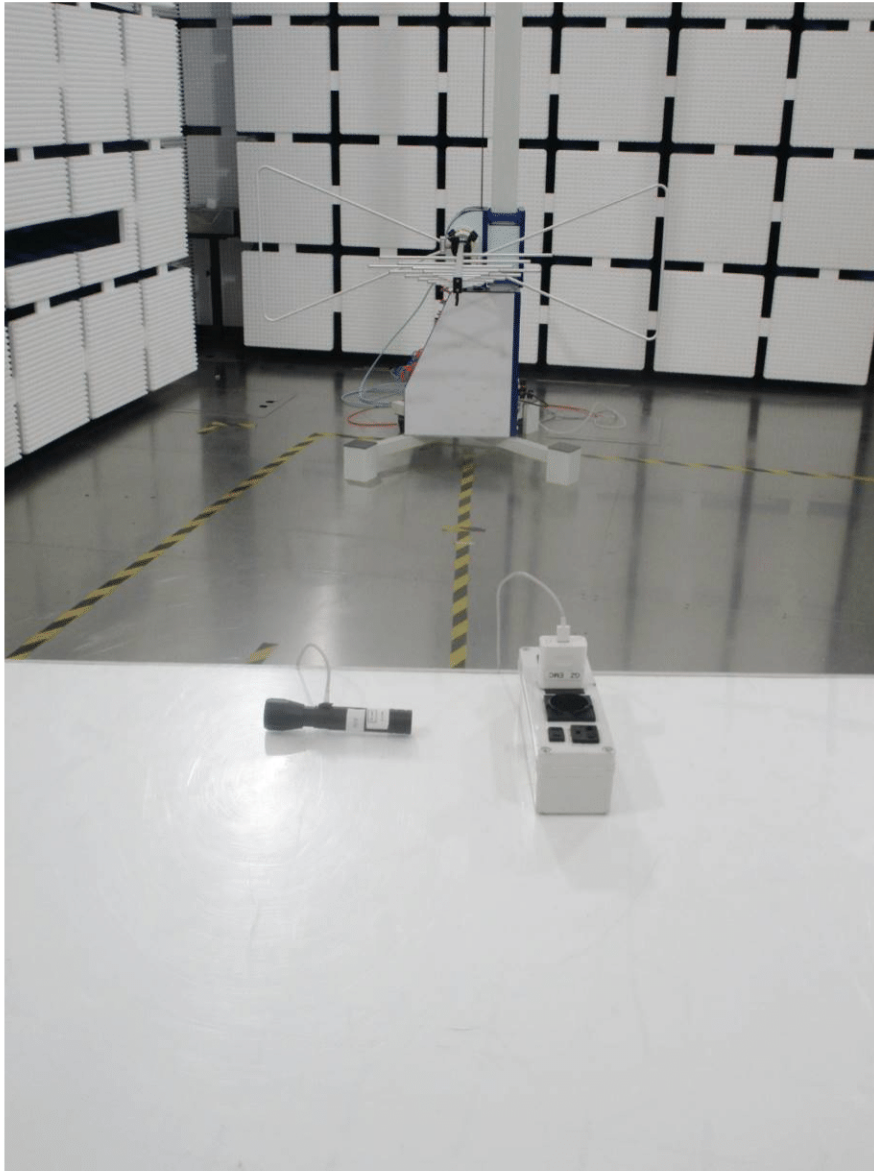
### Radiated Emissions (Magnetic Field Induced Current)(9kHz-30MHz) 2m loop



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### Radiated Emissions (30MHz-1GHz)



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### Voltage Fluctuations and Flicker



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### Electrostatic Discharge

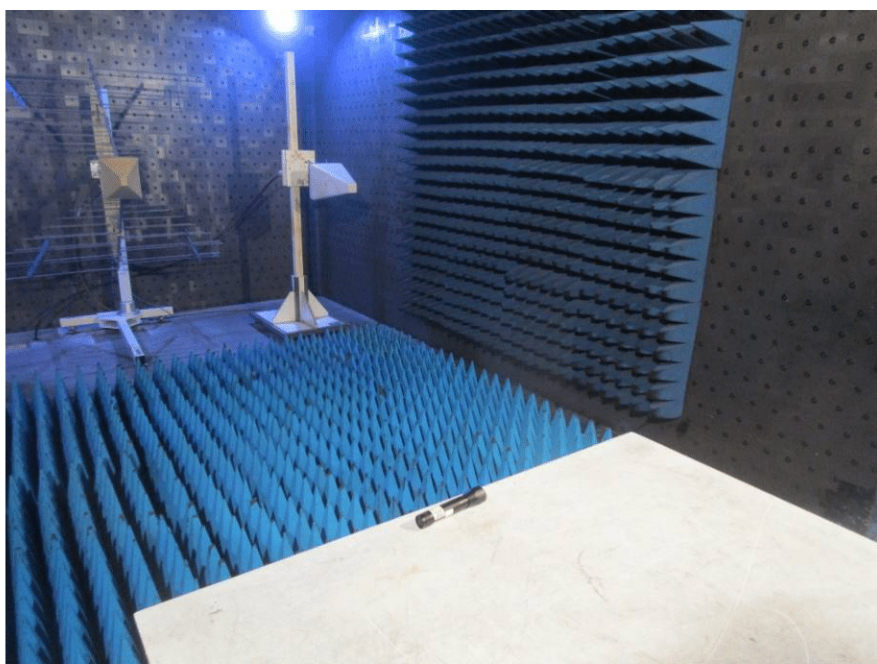
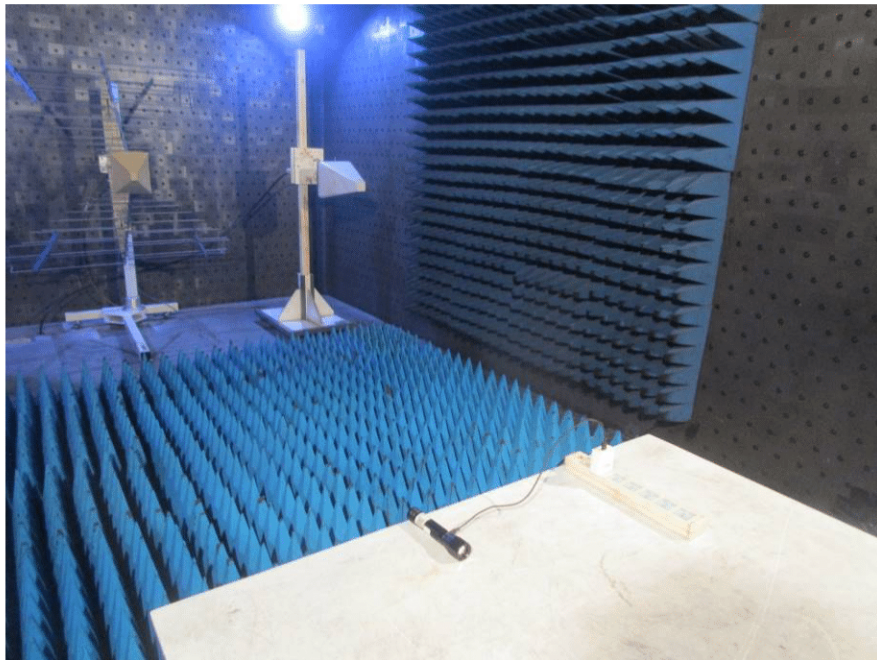


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### Radiated Immunity (80MHz-1GHz)



### Electrical Fast Transients Burst at AC Mains Power Port



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### Surge at Power Port

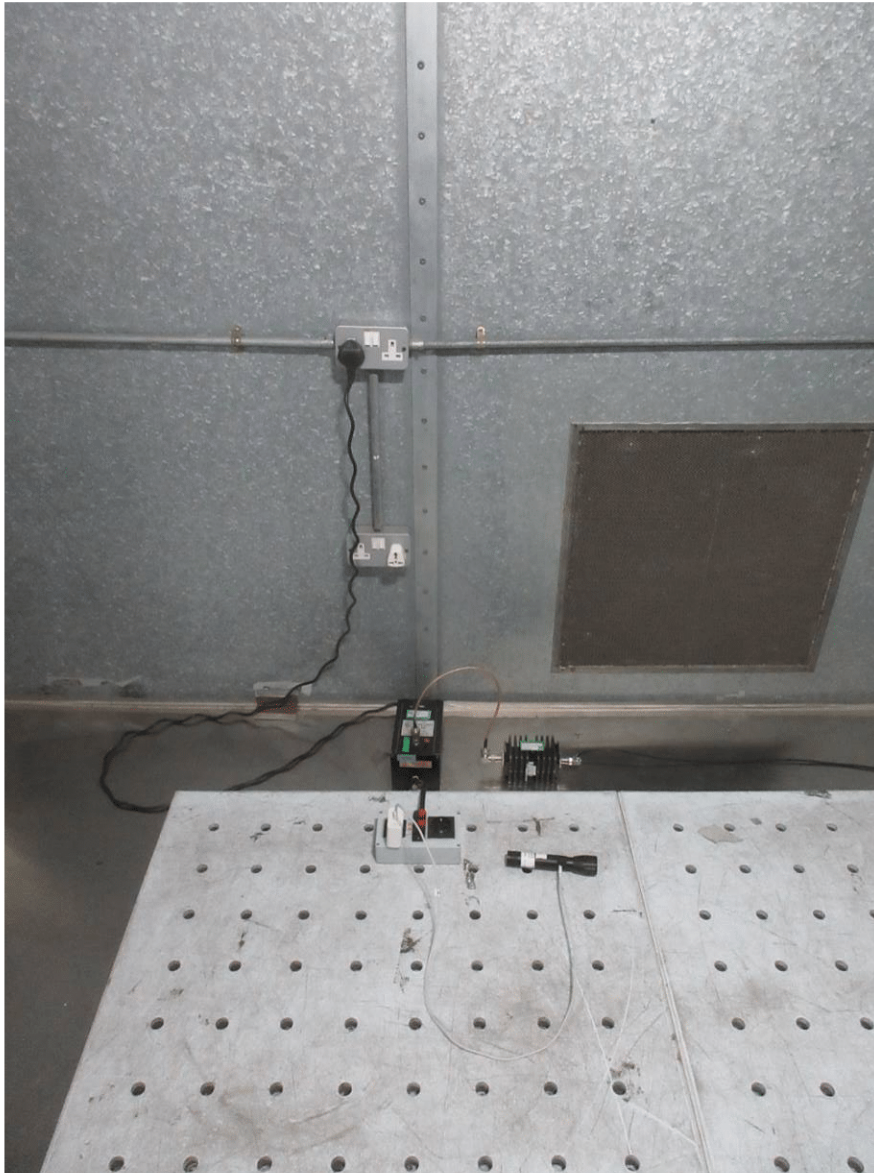


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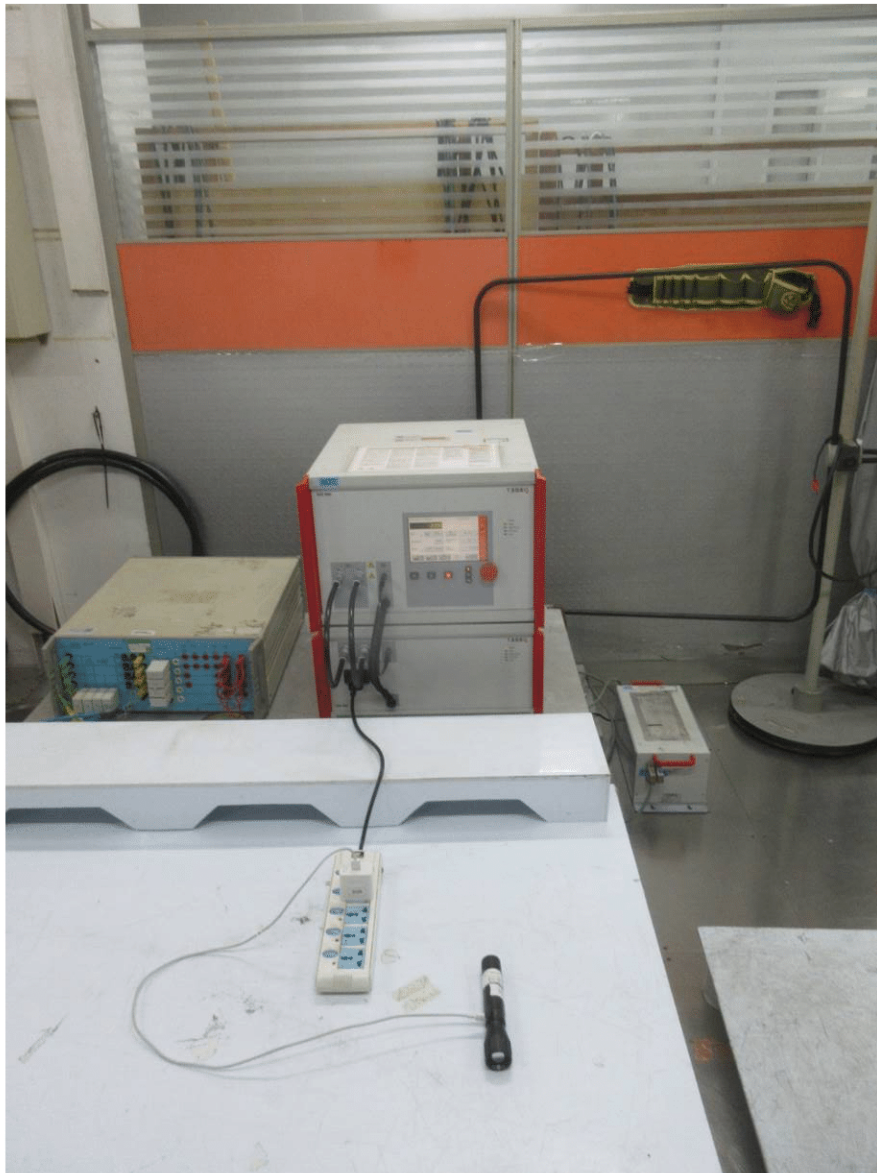
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### Conducted Immunity at AC Mains Power Port (150kHz-80MHz)



### Voltage Dips and Interruptions



### 9 EUT Constructional Details (EUT Photos)



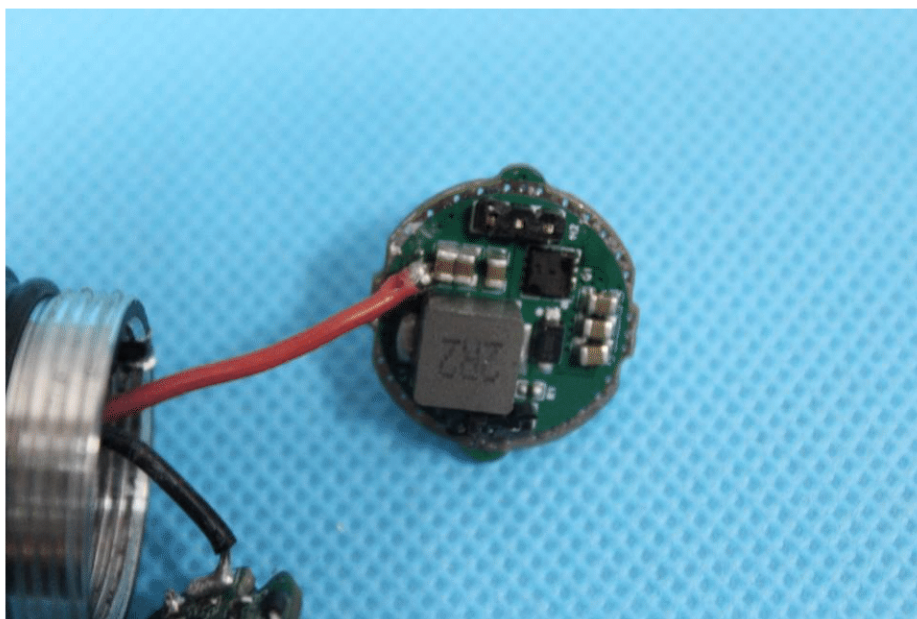
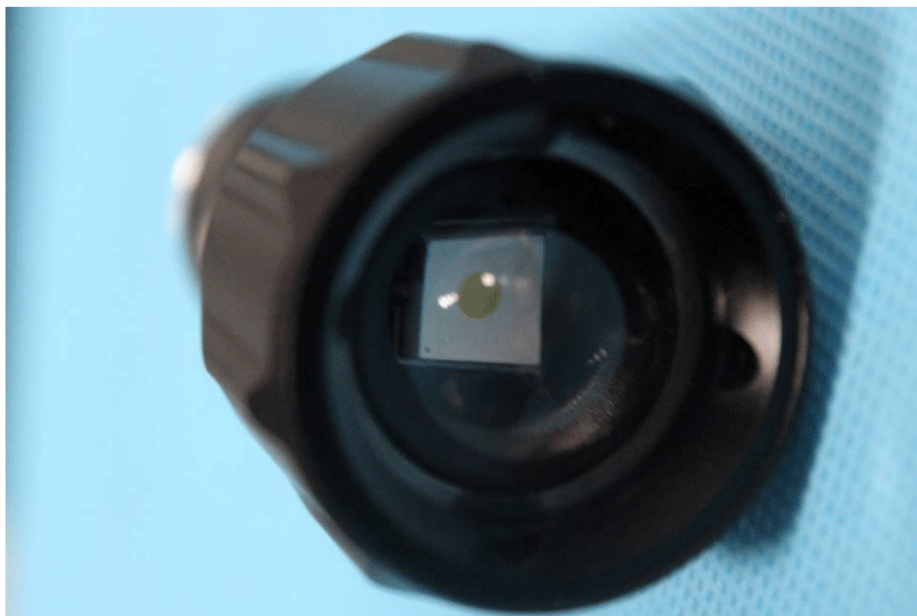
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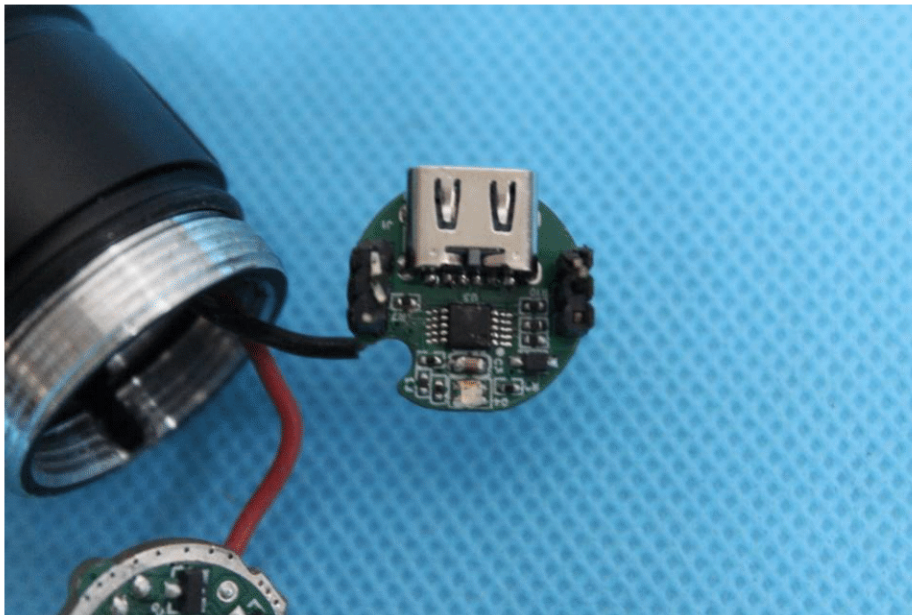
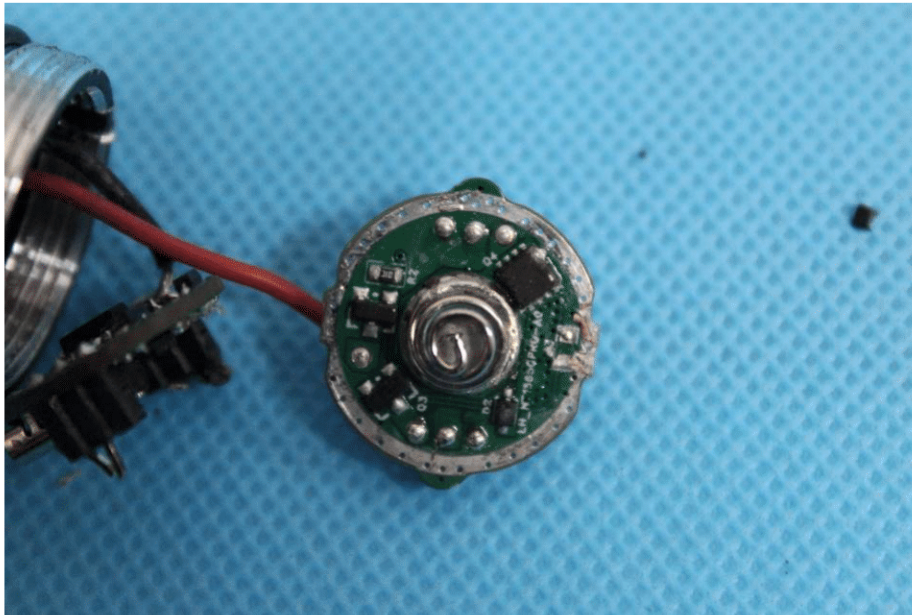
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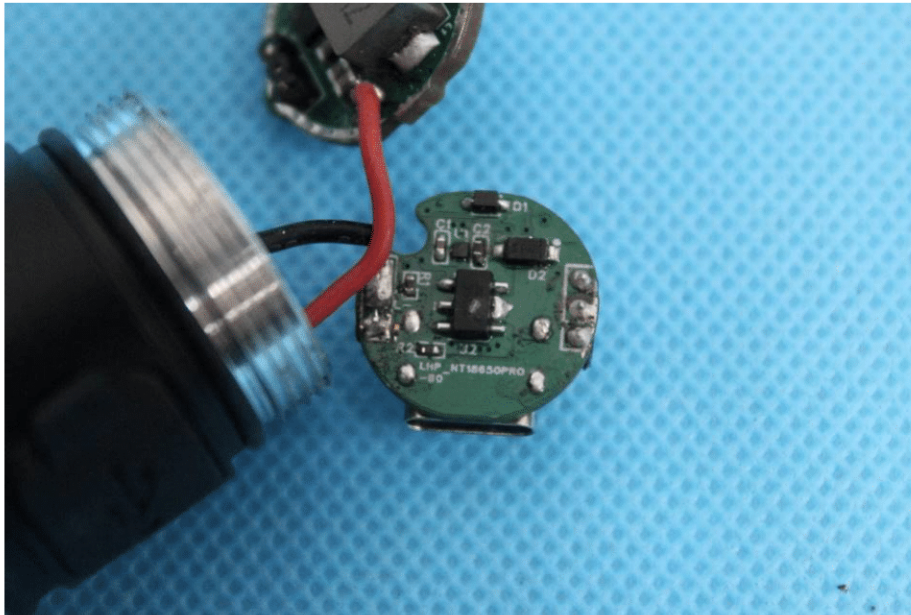
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- End of the Report -

