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Test Report

EN IEC 55015:2019+A11:2020

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

EN IEC 61547:2023

Equipment for general lighting purposes - EMC immunity requirements

Report Reference No.: AOCE260509744-E

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Date of issue: 2026-06-11

Laboratory Name: Zhongshan AOCE Testing Technology Co., Ltd.

Address: 5/F, Building A, No.5 Jingdi Road, Henglan, Zhongshan, Guangdong, China.

Testing location/ procedure: Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing methods ☐

Applicant's name: ZHEJIANG ALITE LIGHTING CO., LTD

Address: 2nd Floor, 8th Building, No. 188 East Development Avenue, Taizhou City, Zhejiang, China

Test specification:

Standards: 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

Test Report Form No.: TRF.EN 55015C

TRF Originator: AOCE

Master TRF: Dated 2026-06

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Product Name: LED STREET LIGHT

Model/Type reference: ZS03 120W

Ratings: 85-265V~,50/60Hz;120W

Result: Pass

EMC -- TEST REPORT

Test Report No. : AOCE260509744-E	2026-06-11 Date of issue
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Equipment under Test : LED STREET LIGHT

Trade Mark : 

Model / Type : ZS03 120W

Listed Models : ZS03 60W, ZS03 75W, ZS03 80W, ZS03 100W, ZS03 120W, ZS03 150W, ZS03 160W, ZS03 180W

Applicant : ZHEJIANG ALITE LIGHTING CO., LTD

Address : 2nd Floor, 8th Building, No. 188 East Development Avenue, Taizhou City, Zhejiang, China

Manufacturer : ZHEJIANG ALITE LIGHTING CO., LTD

Address : 2nd Floor, 8th Building, No. 188 East Development Avenue, Taizhou City, Zhejiang, China

Test Result according to the standards on page 5:	Pass
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

History of this test report

Report No.	Version	Description	Issued Date
AOCE260509744-E	V1.0	Initial Issued Report	2026-06-11

Software version

Test item	Version
Conducted Disturbance	ES-K1 V1.71
Radiated Emission	ES-K1 V1.71
Magnetic Field Emission	ES-K1 V1.71
Harmonic Current	CTS4 V4.26.0
Voltage Fluctuation and Flicker	CTS4 V4.26.0
Electrical Fast Transient/Burst Test	HEFT 51 V1.3.2
Surge Test	HCOMPACT V1.0.1
Conducted Susceptibility Test	EN61000-4-6
Voltage Dips and Interruptions Test	HPFS161P V1.0.1
Electrostatic discharge	ONYX30 V1.21

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1. TEST STANDARDS

The tests were performed according to following standards:

[EN IEC 55015:2019+A11:2020](#) Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

[EN IEC 61547:2023](#) Equipment for general lighting purposes - EMC immunity requirements

[EN IEC 61000-3-2:2019+A1:2021+A2:2024](#) Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

[EN 61000-3-3: 2013+A1:2019+A2:2021](#) Electromagnetic compatibility (EMC) -- Part 3-3: Limits - 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

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : 2026-06-06

Testing commenced on : 2026-06-06

Testing concluded on : 2026-06-11

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ☒ 230V / 50 Hz ☐ 115V / 60Hz
☐ 12 V DC ☐ 24 V DC
☐ Other (specified in blank below)

/

2.3. Short description of the Equipment under Test (EUT)

The EUT is a LED STREET LIGHT.

Serial number: Prototype

2.4. EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test program (customer specific)

Emission tests.....:	According to EN 55015, searching for the highest disturbance.
Immunity tests.....:	According to EN 61547, searching for the highest susceptibility.
Harmonic current..... :	According to EN 61000-3-2, searching for the highest disturbance.
Voltage fluctuation..... :	According to EN 61000-3-3, searching for the highest disturbance.

2.5. EUT configuration:

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- o - supplied by the lab

2.6. Performance level

A functional description of performance criteria, during or as a consequence of the immunity testing, shall be provided by the manufacturer and noted in the test report.

The performance of lighting equipment shall be assessed by monitoring:

- the luminous intensity of the luminaire or of the lamp(s);
- the functioning of the control in the case of equipment which includes a regulating control or concerns the regulating control itself;
- the functioning of the starting device, if any.

Definition related to the performance level:

- based on the used product standard
- o based on the declaration of the manufacturer, requestor or purchaser

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.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Zhongshan AOCE Testing Technology Co., Ltd.
5/F, Building A, No.5 Jingdi Road, Henglan, Zhongshan, Guangdong, China.

There is one Shield Room and Two EMC Labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 15/EN 55015 requirements.

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.3. Test Description

Emission Measurement		
Magnetic Field Emission	EN IEC 55015:2019+A11:2020	PASS
Conducted Disturbance	EN IEC 55015:2019+A11:2020	PASS
Radiation Emission	EN IEC 55015:2019+A11:2020	PASS
Harmonic Current	EN IEC 61000-3-2:2019+A1:2021 +A2:2024	PASS
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013+A1:2019+A2:2021	PASS
Immunity Measurement		
Electrostatic Discharge	EN IEC 61547:2023 EN IEC 61000-4-2:2025	PASS
RF Field Strength Susceptibility	EN IEC 61547:2023 IEC 61000-4-3: 2010 #	PASS
Electrical Fast Transient/Burst Test	EN IEC 61547:2023 EN 61000-4-4:2012	PASS
Surge Test	EN IEC 61547:2023 EN 61000-4-5-2014AMD.1:2017	PASS
Conducted Susceptibility Test	EN IEC 61547:2023 EN IEC 61000-4-6:2023	PASS
Voltage Dips and Interruptions Test	EN IEC 61547:2023 EN IEC 61000-4-11:2020+COR1:2022	PASS

Remark:

1. The test result PASS and /or FAIL has no relationship with the measurement uncertainty.
2. “#” indicates the testing item(s) was(were) fulfilled by subcontracted lab .

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Zhongshan AOCE Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for AOCE laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Conducted Emission	9kHz ~ 30MHz	$\pm 3.80\text{dB}$	(1)
Magnetic Field Emission	9kHz ~ 30MHz	$\pm 3.08\text{dB}$	(1)
Radiation Emission CDNE	30MHz ~ 300MHz	$\pm 3.33\text{dB}$	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3.5. Equipments Used during the Test

Conducted Susceptibility (CS) :

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Conducted Disturbances test system	SCHLODER	CDG 6000	126A1348/2015	2025/07/01	2026/06/30
2	Attenuator	SCHLODER	CDG 60100	201411010011	2025/07/01	2026/06/30
3	CDN	SCHLODER	CDN M2+M3	A2210337/2015	2025/07/01	2026/06/30

Harmonic Current/ Voltage Fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Purified Power Source	California Instruments	5000IX-CTS-400	N/A	2025/07/01	2026/06/30
2	Harmonic And Flicker Analyzer	California Instruments	CTS PACS-1	N/A	2025/07/01	2026/06/30

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	1142.8007.03	2025/07/01	2026/06/30
2	CDNE	SCHWARZBECK	CDNE-M3	00222	2025/07/01	2026/06/30

Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	1142.8007.03	2025/07/01	2026/06/30
2	LISN	SCHWARZBECK	NSLK 8127	#825	2025/07/01	2026/06/30
3	10dB Limiter	Agilent	11947A	3107A03776	2025/07/01	2026/06/30

Electrical Fast Transient

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Electrical Fast Transient test system	HTEC	HEFT 51	154901	2025/07/01	2026/06/30

Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Surge test system	HTEC	HCWG 51	155201	2025/07/01	2026/06/30

Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Voltage Dips test system	HTEC	HPFS 161P	155202	2025/07/01	2026/06/30

Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ESD Simulator	HAEFELY	ONYX	176084	2025/07/01	2026/06/30

Magnetic Field Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	1142.8007.03	2025/07/01	2026/06/30
2	Triple-Loop Antenna	ZHINAN	ZN30401	13011	2025/07/01	2026/06/30

RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Signal generator	R&S	SMB 100A	102710	2025/07/01	2026/06/30
2	Power amplifier	BONN Elektronik	BLWA 0810-160/100D	149644	2025/07/01	2026/06/30
3	Isotropic Field Probe	Narda	EP-601	511WX30620	2025/07/01	2026/06/30
4	Log-periodic Antenna	SCHWARZBECK	STLP 9128D	078	2025/07/01	2026/06/30
5	Power Meter	FEANKONIA	PMS 1084	108B1289	2025/07/01	2026/06/30

4. TEST CONDITIONS AND RESULTS

4.1. Magnetic Field Emission

For test instruments and accessories used see section 3.5.

4.1.1. Description of the test location

Test location: SHIELD ROOM

4.1.2. Limits of disturbance

Frequency	Limit For Loop Diameter of 2m (dBμA)
9 kHz ~ 70 kHz	88
70 kHz ~ 150 kHz	88 ~58
150 kHz ~ 3.0 MHz	58~22
3.0 MHz ~ 30 MHz	22

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.1.3. Description of the test set-up

4.1.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum emanation are recorded.

4.1.3.2. Test Configuration and Procedure

EUT is placed in the center of triple-loop antenna (Diameter is 2m). Turn on the neon sign, and then the induced current in the loop antenna can be detected by a current probe and measured by the receiver. Three field directions shall be measured in sequence.

4.1.4. Test result

The requirements are **Fulfilled**

Band Width: 200Hz / 9kHz

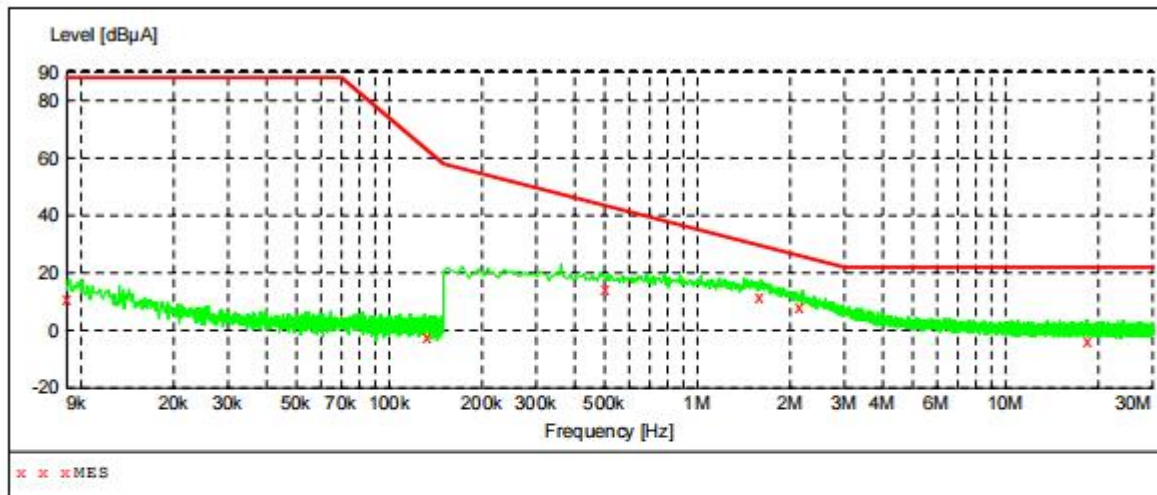
Frequency Range: 9kHz to 150kHz / 150kHz to 30MHz

Remarks: The limits are kept. For detailed results, please see the following page(s).

SCAN TABLE: "Macnetic test fin"

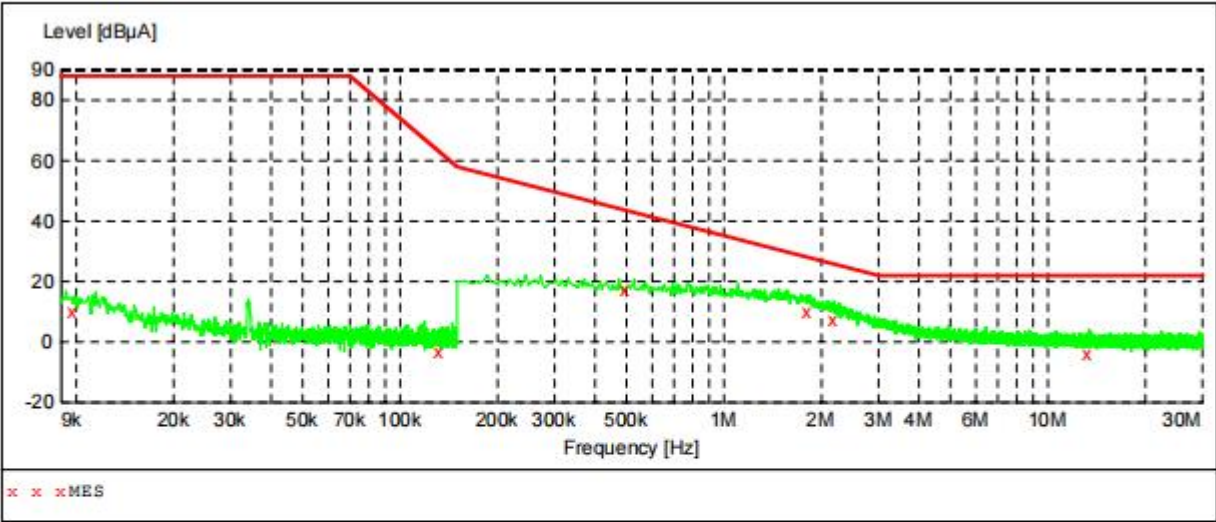
Short Description:

EN55015 Triple Loop

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμA	Transd dB	Limit dBμA	Margin dB	Det.	Loop	Azimuth deg
0.009000	10.70	0.0	88	77.3	QP	X	0.00
0.134300	-2.50	0.0	62	64.9	QP	X	0.00
0.505500	14.70	0.1	43	28.7	QP	X	0.00
1.599000	11.60	0.1	30	18.0	QP	X	0.00
2.161500	7.80	0.1	26	18.1	QP	X	0.00
18.568500	-3.60	0.2	22	25.6	QP	X	0.00

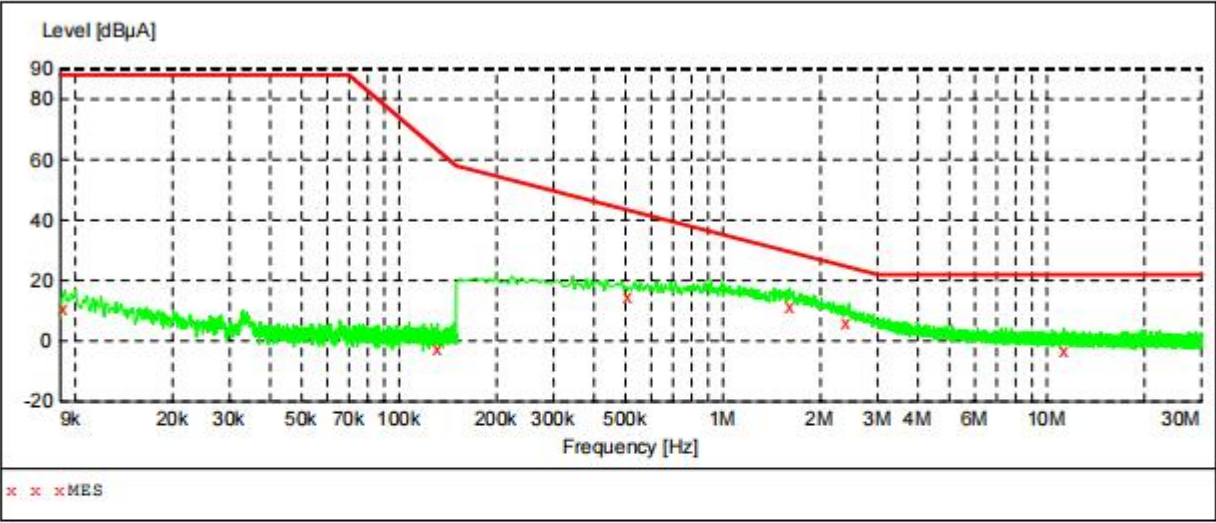
SCAN TABLE: "Magnetic test fin"
Short Description: EN55015 Triple Loop



MEASUREMENT RESULT:

Frequency MHz	Level dBµA	Transd dB	Limit dBµA	Margin dB	Det.	Loop	Azimuth deg
0.009700	10.40	0.0	88	77.6	QP	Y	0.00
0.132300	-3.20	0.0	63	66.1	QP	Y	0.00
0.496500	17.40	0.1	44	26.2	QP	Y	0.00
1.824000	10.10	0.1	28	17.9	QP	Y	0.00
2.188500	7.50	0.1	26	18.3	QP	Y	0.00
13.335000	-3.60	0.2	22	25.6	QP	Y	0.00

SCAN TABLE: "Magnetic test fin"
Short Description: EN55015 Triple Loop



MEASUREMENT RESULT:

Frequency MHz	Level dBμA	Transd dB	Limit dBμA	Margin dB	Det.	Loop	Azimuth deg
0.009200	10.80	0.0	88	77.2	QP	Z	0.00
0.132400	-2.60	0.0	63	65.5	QP	Z	0.00
0.510000	14.60	0.1	43	28.7	QP	Z	0.00
1.617000	11.30	0.1	29	18.1	QP	Z	0.00
2.422500	6.00	0.1	25	18.6	QP	Z	0.00
11.413500	-3.30	0.2	22	25.3	QP	Z	0.00

4.2. Conducted disturbance

For test instruments and accessories used see section 3.5.

4.2.1. Description of the test location

Test location: SHIELD ROOM

4.2.2. Limits of disturbance

Frequency Range	Limits (dBuV)	
	Quasi-Peak	Average
9 kHz ~ 50 kHz	110	—
50 kHz ~ 150 kHz	90~80	—
150 kHz ~ 0.5 MHz	66~56	56~46
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.2.3. Description of the test set-up

4.2.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum emanation are recorded.

4.2.3.2. Test Configuration and Procedure

EUT is placed on a nonmetal table which is 0.8 meter above the grounded reference plane. Connect the power line of the EUT to the LISN which is connected to receiver by coaxial line, then disturbance of the neutral line and live line can be detected by the receiver.

4.2.4. Test result

The requirements are **Fulfilled**

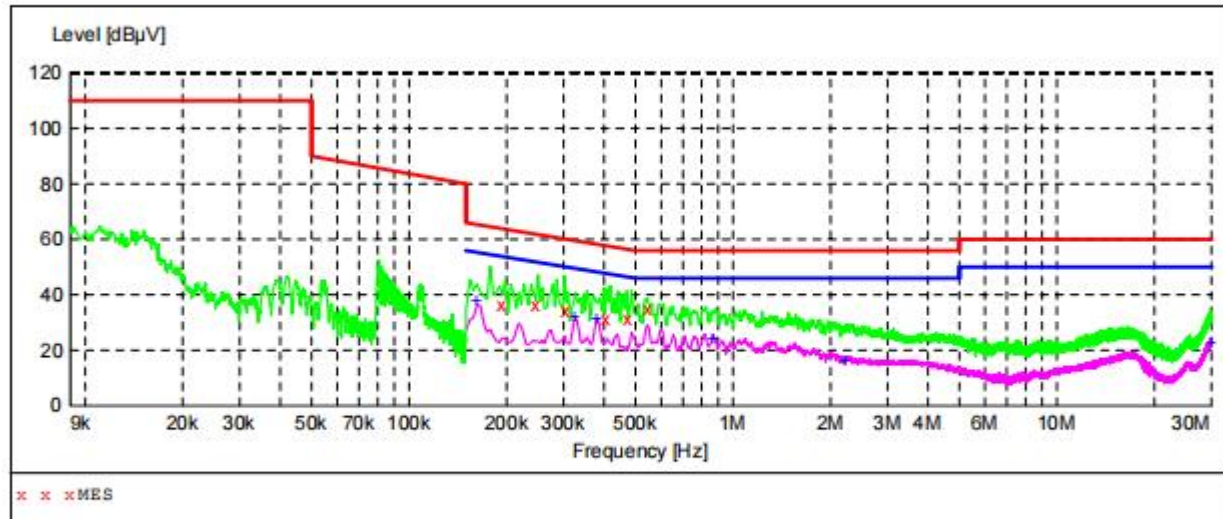
Band Width: 9kHz

Frequency Range: 9kHz to 30MHz

Remarks: The limits are kept. For detailed results, please see the following page(s).

SCAN TABLE: "Voltage (9K-30M) FIN"

Short Description: 9K-30M Voltage

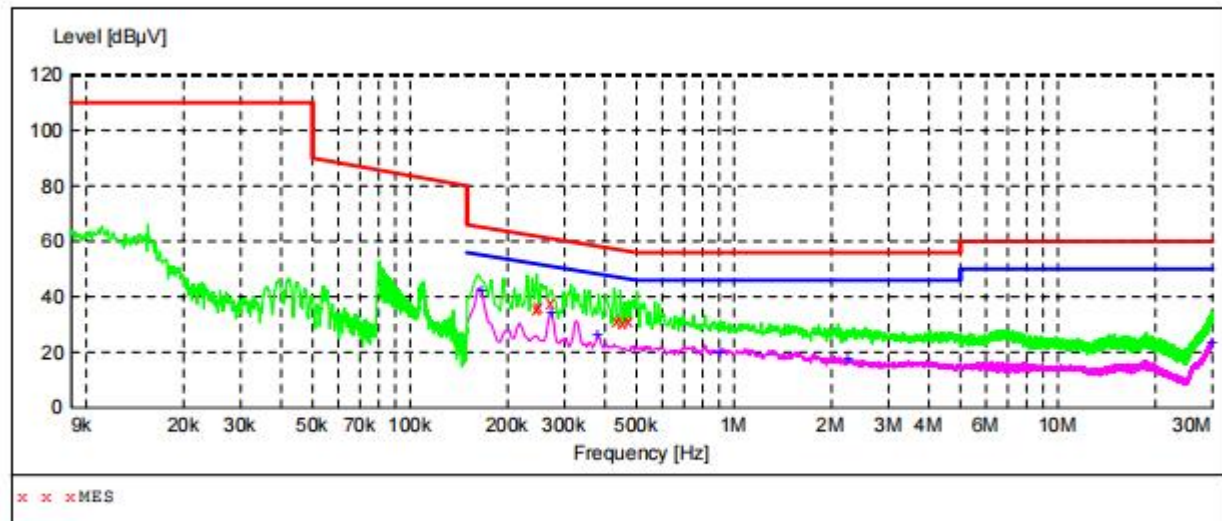
**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.194000	36.10	10.0	64	27.8	QP	L1	GND
0.246000	36.70	10.0	62	25.2	QP	L1	GND
0.306000	34.10	10.0	60	26.0	QP	L1	GND
0.406000	31.30	10.1	58	26.4	QP	L1	GND
0.474000	31.10	10.1	56	25.3	QP	L1	GND
0.550000	34.60	10.1	56	21.4	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.162000	37.80	10.0	55	17.6	AV	L1	GND
0.326000	32.20	10.0	50	17.4	AV	L1	GND
0.382000	31.50	10.0	48	16.7	AV	L1	GND
0.866000	24.30	10.1	46	21.7	AV	L1	GND
2.218000	16.40	10.0	46	29.6	AV	L1	GND
29.910000	22.70	10.3	50	27.3	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M) FIN"
Short Description: 9K-30M Voltage



MEASUREMENT RESULT:

6/10/2026 2:54PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.246000	35.90	10.0	62	26.0	QP	N	GND
0.250000	36.10	10.0	62	25.7	QP	N	GND
0.274000	38.10	10.0	61	22.9	QP	N	GND
0.438000	31.40	10.1	57	25.7	QP	N	GND
0.458000	30.40	10.1	57	26.3	QP	N	GND
0.474000	31.50	10.1	56	24.9	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.166000	42.40	10.0	55	12.8	AV	N	GND
0.274000	34.20	10.0	51	16.8	AV	N	GND
0.382000	26.50	10.0	48	21.7	AV	N	GND
0.906000	20.10	10.1	46	25.9	AV	N	GND
2.254000	17.40	10.0	46	28.6	AV	N	GND
29.862000	23.20	10.3	50	26.8	AV	N	GND

4.3. Radiation Emission

For test instruments and accessories used see section 3.5.

4.3.1. Description of the test location

Test location: SHIELD ROOM

4.3.2. Limit of Radiation Emission

Frequency Range (MHz)	Limits (dBuV)
	Quasi-Peak
30 ~ 100	64 ~ 54
100 ~ 200	54
200 ~ 300	54 ~ 51

Note: (1) At the transition frequency, the lower limit applies.

(2) Increasing linearly with the logarithm of the frequency.

4.3.3. Description of the test set-up

4.3.3.1 Operating Condition

The EUT is ON during the test, and the results of the maximum emanation are recorded.

4.3.3.2 Test Configuration and Procedure

The EUT is positioned $100 \text{ mm} \pm 2 \text{ mm}$ above the RGP and supported by non-conductive material that has relative permittivity ϵ_r less than 1,05 (e.g. polystyrene foam). The edge of the RGP shall be at least 200 mm beyond the perimeter of the EUT.

A distance of $200 \text{ mm} \pm 20 \text{ mm}$ shall be maintained between the CDNE and EUT. The CDNE shall be positioned on the side of the EUT at which the cable under test is connected, to minimize the cable length. The cable shall not be meandered or bundled.

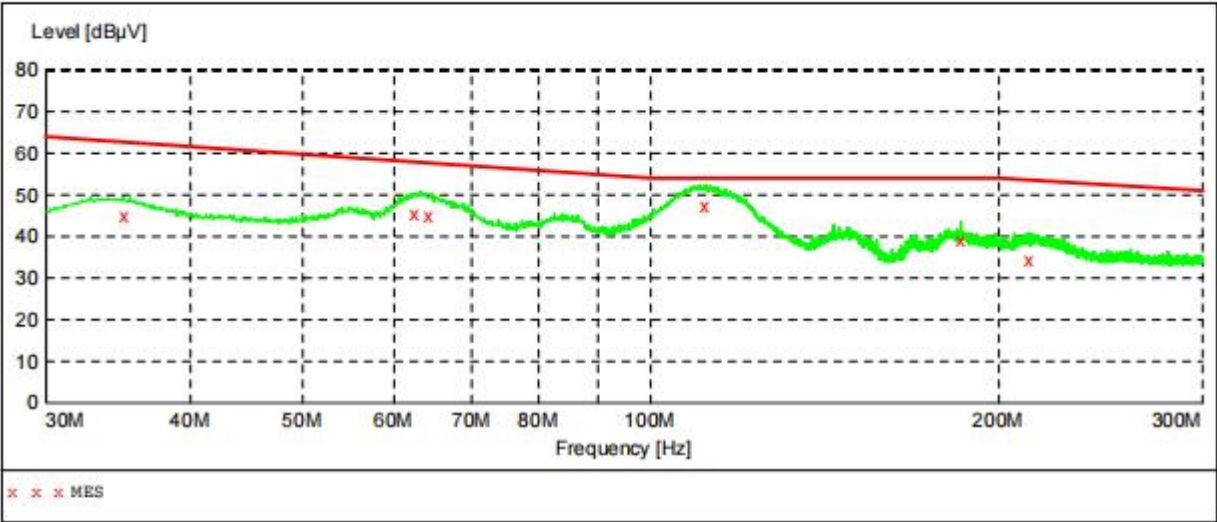
The cable connected to the EUT shall run down vertically from the EUT for a distance of about 30 mm to the RGP, and horizontally to the EUT port of the CDNE.

4.3.4. Test Result

The requirements are **Fulfilled**

Remarks: The limits are kept. For detailed results, please see the following page(s).

SCAN TABLE: "CDNE-SC(30M-300M)FIN"
Short Description: 30 - 300 MHz CDNE



MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
35.040000	45.00	20.1	63	17.7	QP	---	---
62.580000	45.50	19.9	58	12.4	QP	---	---
64.260000	44.90	19.9	58	12.8	QP	---	---
111.240000	47.30	19.7	54	6.7	QP	---	---
185.460000	39.10	19.5	54	14.9	QP	---	---
212.880000	34.60	19.5	54	18.9	QP	---	---

4.4. Harmonic current

For test instruments and accessories used see section 3.5.

4.4.1. Description of the test location

Test location: 1# EMC Test Room

4.4.2. Limits of Harmonic Current

Limits of Harmonic Current see clause 7 of standard EN IEC 61000-3-2:2019+A1:2021+A2:2024.

4.4.3. Description of the test set-up

4.4.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum emanation are recorded.

4.4.3.2. Test Configuration and Procedure

Test configuration and procedure see clause 6.2.2 and Appendix C of standard EN IEC 61000-3-2:2019+A1:2021+A2:2024.

4.4.4. Test result

The requirements are **Fulfilled**

Remarks: The limits are kept. For detailed results, please see the following page(s).

Harmonics – Class-C per IEC 61000-3-2:2018/AMD1:2020(Run time)

EUT: ZS03 120W

Test category: Class-C (European limits)

Test date: 2026/6/10

Test duration (min): 2.5

Comment: Comment

Customer: Customer information

Tested by: Tested by Lu

Test Margin: 100

End time: 15:04:21

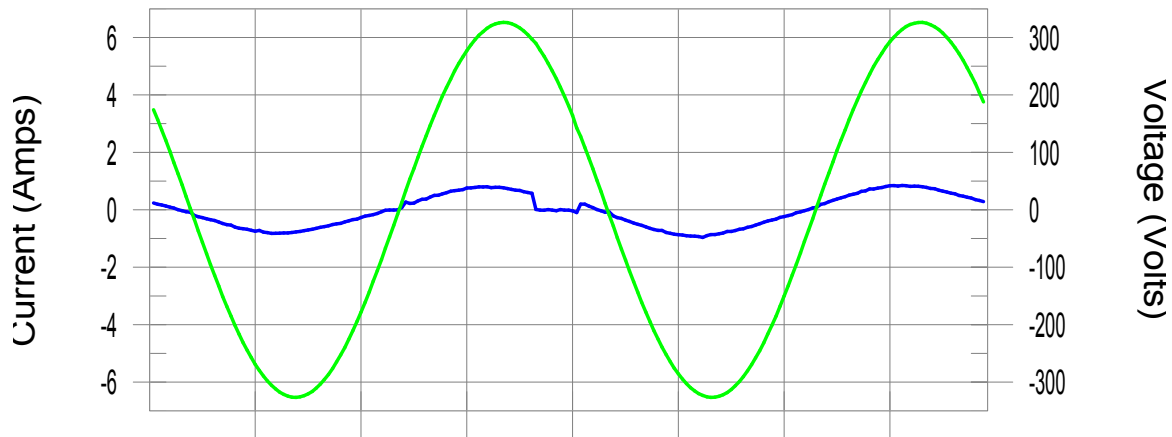
Start time: 15:01:40

Data file name: H-001104.cts_data

Test Result: Pass

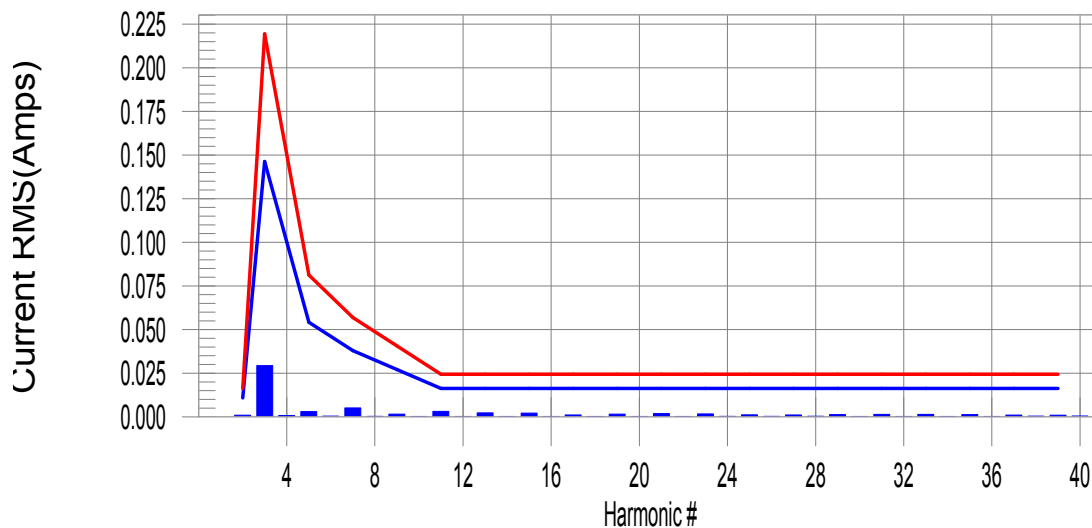
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass **Worst harmonics H3-14.0% of 150% limit, H3-20% of 100% limit**

Current Test Result Summary (Run time)

EUT: ZS03 120W

Tested by: Tested by Lu

Test category: Class-C (European limits)

Test Margin: 100

Test date: 2026/6/10

Start time: 15:01:40

End time: 15:04:21

Test duration (min): 2.5

Data file name: H-001104.cts_data

Comment: Comment

Customer: Customer information

Test Result: Pass

Source qualification: Normal

THC(A): 0.031

I-THD(%): 5.7

POHC(A): 0.004

POHC Limit(A): 0.051

Highest parameter values during test:

V_RMS (Volts): 230.86

Frequency(Hz): 50.00

I_Peak (Amps): 4.698

I_RMS (Amps): 0.591

I_Fund (Amps): 0.542

Crest Factor: 8.575

Power (Watts): 122.4

Power Factor: 0.978

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.011	N/A	0.004	0.016	N/A	Pass
3	0.029	0.146	20.0	0.031	0.219	14.0	Pass
4	0.001	0.000	N/A	0.003	0.000	N/A	Pass
5	0.003	0.054	N/A	0.007	0.081	N/A	Pass
6	0.000	0.000	N/A	0.003	0.000	N/A	Pass
7	0.005	0.038	13.4	0.007	0.057	11.4	Pass
8	0.000	0.000	N/A	0.002	0.000	N/A	Pass
9	0.002	0.027	N/A	0.003	0.041	N/A	Pass
10	0.000	0.000	N/A	0.001	0.000	N/A	Pass
11	0.003	0.016	N/A	0.004	0.024	N/A	Pass
12	0.000	0.000	N/A	0.001	0.000	N/A	Pass
13	0.002	0.016	N/A	0.003	0.024	N/A	Pass
14	0.000	0.000	N/A	0.001	0.000	N/A	Pass
15	0.002	0.016	N/A	0.002	0.024	N/A	Pass
16	0.000	0.000	N/A	0.001	0.000	N/A	Pass
17	0.001	0.016	N/A	0.002	0.024	N/A	Pass
18	0.000	0.000	N/A	0.001	0.000	N/A	Pass
19	0.002	0.016	N/A	0.002	0.024	N/A	Pass
20	0.000	0.000	N/A	0.001	0.000	N/A	Pass
21	0.002	0.016	N/A	0.002	0.024	N/A	Pass
22	0.000	0.000	N/A	0.001	0.000	N/A	Pass
23	0.002	0.016	N/A	0.002	0.024	N/A	Pass
24	0.000	0.000	N/A	0.001	0.000	N/A	Pass
25	0.001	0.016	N/A	0.002	0.024	N/A	Pass
26	0.000	0.000	N/A	0.001	0.000	N/A	Pass
27	0.001	0.016	N/A	0.001	0.024	N/A	Pass
28	0.000	0.000	N/A	0.001	0.000	N/A	Pass
29	0.001	0.016	N/A	0.002	0.024	N/A	Pass
30	0.000	0.000	N/A	0.001	0.000	N/A	Pass
31	0.001	0.016	N/A	0.002	0.024	N/A	Pass
32	0.000	0.000	N/A	0.001	0.000	N/A	Pass
33	0.001	0.016	N/A	0.002	0.024	N/A	Pass
34	0.000	0.000	N/A	0.001	0.000	N/A	Pass
35	0.001	0.016	N/A	0.002	0.024	N/A	Pass
36	0.000	0.000	N/A	0.001	0.000	N/A	Pass
37	0.001	0.016	N/A	0.001	0.024	N/A	Pass
38	0.000	0.000	N/A	0.001	0.000	N/A	Pass
39	0.001	0.016	N/A	0.001	0.024	N/A	Pass
40	0.001	0.000	N/A	0.001	0.000	N/A	Pass

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Voltage Source Verification Data (Run time)

EUT: ZS03 120W

Tested by: Tested by Lu

Test category: Class-C (European limits)

Test Margin: 100

Test date: 2026/6/10

Start time: 15:01:40

End time: 15:04:21

Test duration (min): 2.5

Data file name: H-001104.cts_data

Comment: Comment

Customer: Customer information

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.86

Frequency(Hz): 50.00

I_Peak (Amps): 4.698

I_RMS (Amps): 0.591

I_Fund (Amps): 0.542

Crest Factor: 8.575

Power (Watts): 122.4

Power Factor: 0.978

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.068	0.462	14.67	OK
3	0.380	2.077	18.29	OK
4	0.044	0.462	9.60	OK
5	0.030	0.923	3.21	OK
6	0.025	0.462	5.40	OK
7	0.033	0.692	4.78	OK
8	0.013	0.462	2.83	OK
9	0.025	0.462	5.38	OK
10	0.014	0.461	2.99	OK
11	0.014	0.231	6.22	OK
12	0.015	0.231	6.40	OK
13	0.014	0.231	6.01	OK
14	0.008	0.231	3.54	OK
15	0.013	0.231	5.61	OK
16	0.007	0.231	3.17	OK
17	0.007	0.231	3.18	OK
18	0.010	0.231	4.13	OK
19	0.009	0.231	3.97	OK
20	0.010	0.231	4.18	OK
21	0.005	0.231	2.31	OK
22	0.005	0.231	2.14	OK
23	0.006	0.231	2.64	OK
24	0.004	0.231	1.60	OK
25	0.007	0.231	3.18	OK
26	0.004	0.231	1.77	OK
27	0.008	0.231	3.39	OK
28	0.005	0.231	2.34	OK
29	0.007	0.231	2.95	OK
30	0.006	0.231	2.50	OK
31	0.005	0.231	2.08	OK
32	0.005	0.231	2.22	OK
33	0.005	0.231	2.12	OK
34	0.005	0.231	2.12	OK
35	0.009	0.231	3.87	OK
36	0.005	0.231	2.27	OK
37	0.006	0.231	2.67	OK
38	0.005	0.231	2.28	OK
39	0.005	0.231	2.25	OK
40	0.007	0.231	3.15	OK

4.5. Voltage Fluctuation and Flicker

For test instruments and accessories used see section 3.5.

4.5.1. Description of the test location

Test location: 1# EMC Test Room

4.5.2. Limits of Voltage Fluctuation and Flicker

Limits of Voltage Fluctuation and Flicker see clause 5 of standard EN 61000-3-3: 2013+A1:2019+A2:2021

4.5.3. Description of the test set-up

4.5.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum emanation are recorded.

4.5.3.2. Test Configuration and Procedure

Test configuration and procedure see clause 6 and Annex A or Annex B of standard EN 61000-3-3: 2013+A1:2019+A2:2021.

4.5.4. Test result

The requirements are **Fulfilled**

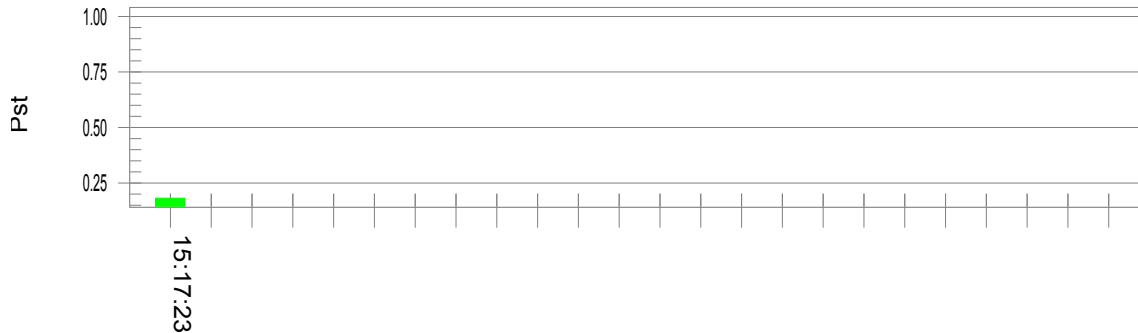
Remarks: The limits are kept. For detailed results, please see the following page(s).

Flicker Test Summary per IEC61000-3-3:2013/AMD1:2017 (Run time)

EUT: ZS03 120W**Test category: All parameters (European limits)****Test date: 2026/6/10****Start time: 15:07:02****Test duration (min): 10****Data file name: F-001105.cts_data****Comment: Comment****Customer: Customer information****Tested by: Tested by Lu****Test Margin: 100****End time: 15:17:29****Test Result: Pass****Status: Test Completed**

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.61**Highest dt (%):****T-max (mS): 0****Highest dc (%): 0.00****Highest dmax (%): 0.00****Highest Pst (10 min. period): 0.182****Highest Plt (2 hr. period): 0.079****Test limit (%):****Test limit (mS): 500.0 Pass****Test limit (%): 3.30 Pass****Test limit (%): 4.00 Pass****Test limit: 1.000 Pass****Test limit: 0.650 Pass**

4.6. Electrostatic discharge

For test instruments and accessories used see section 3.5.

4.6.1. Description of the test location and date

Test location: 1# EMC Test Room

Date of test: 2026-06-11

Operator: Alex Lin

4.6.2. Severity levels of electrostatic discharge

4.6.2.1. Severity level: Contact Discharge at $\pm 4\text{kV}$ Air Discharge at $\pm 8\text{kV}$

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

4.6.2.2. Performance criterion: **B**

4.6.3. Description of the test set-up

4.6.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.6.3.2. Test Configuration and Procedure:

Direct Discharge:

Air Discharge:

—This test is done on a non-conductive surfaces. The round discharge tip of the Electrostatic Discharge simulator shall be approached as fast as possible then to touch the EUT. After each discharge, the simulator shall be removed from the EUT. The simulator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

Contact Discharge:

—All the procedure shall be same as air discharge, except using the acute discharge tip. The top end of the Electrostatic Discharge simulator is touch the EUT all the time when the simulator is re-triggered for a new single discharge and repeated 10 times for each pre-selected test point.

Indirect Discharge:

—The vertical coupling plane(VCP) is placed 0.1m away from EUT. The top end of Electrostatic Discharge simulator should aim at the center of one border of the VCP for at least 10 times discharge.

—The top end of Electrostatic Discharge simulator should place at the point 0.1m away from EUT on the horizontal coupling plane(HCP). At least 10 times discharge should be done for every pre-selected point around EUT.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.6.4. Test specification:Contact discharge voltage:☒ 2 kV ☒ 4 kV ☒ 8 kVAir discharge voltage:☒ 2 kV ☒ 4 kV ☒ 8 kV ☒ 15kVNumber of discharges:☒ 10 ☐ 25Type of discharge:

Direct discharge ☒ Air discharge
 ☒ Contact discharge
Indirect discharge ☒ Contact discharge

Polarity:☒ Positive ☒ NegativeDischarge location:

☒ all external locations accessible by hand
☒ horizontal coupling plane (HCP)
☒ vertical coupling plane (VCP)

4.6.5. Test resultThe requirements are **Fulfilled**Performance Criterion: **B****Remarks:** During the test no deviation was detected to the selected operation mode(s).

4.7. Radio-frequency electromagnetic fields

For test instruments and accessories used see section 3.5.

4.7.1. Description of the test location and date

Test location: Subcontracted Lab

Date of test: 2026-06-11

Operator: Alex Lin

4.7.2. Severity levels of Radio-frequency electromagnetic fields

4.7.2.1 Severity level: 3 V/m

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X	Special

4.7.2.2 Performance criterion: **A**

4.7.3. Description of the test set-up

4.7.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.7.3.2. Test Configuration and Procedure

EUT is placed on a table which is 0.8 meter above ground. The center of the transmitting antenna mounted on an antenna mast is set 3 meter away from the EUT. During the test, each of four sides of EUT will face the transmitting antenna with the turntable cycled. Both horizontal and vertical polarization of the antenna are set on test and measured individually.

In order to judge the performance of the EUT, a set of monitor system is used.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.7.4. Test specification:

Frequency range: ■ 80 MHz to 1000 MHz

Field strength: ■ 3 V/m

EUT - antenna separation: ■ 3 m

Modulation: ■ AM: 80 %
■ sinusoidal 1000Hz

Frequency step: ■ 1 % with 1 s dwell time

Antenna polarisation: ■ horizontal ■ vertical

4.7.5. Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.8. Electrical fast transients / Burst

For test instruments and accessories used see section 3.5.

4.8.1. Description of the test location and date

Test location: 2# EMC Test Room

Date of test: 2026-06-11

Operator: Alex Lin

4.8.2. Severity levels of electrical fast transients / Burst

4.8.2.1 Severity level: $\pm 1\text{kV}$ for AC power supply lines

Open circuit output test voltage and repetition rate of the impulses		
Level	On power port, PE	
	V peak(kV)	Repetition rate (kHz)
1.	0.5	5 or 100
2.	1	5 or 100
3.	2	5 or 100
4.	4	5 or 100
X	Special	Special

4.8.2.2 Performance criterion: B

4.8.3. Description of the test set-up

4.8.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.8.3.2. Test Configuration and Procedure

For AC power input ports:

—The EUT is connected to coupling/decoupling network which couples the EFT signal to power input lines. During the test, both polarities of the test voltage should be applied and the duration of the test can't be less than 1mins.

Without signal / control lines and DC power lines, The EUT is unnecessary to test on these mentioned ports.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.8.4. Test specification:

Coupling network: ☐ 0.5 kV ☒ 1 kV ☐ 2 kV

Coupling clamp: ☐ 0.5 kV ☐ 1 kV

Burst frequency: ☒ 5.0 kHz

Coupling duration: ☒ 60 s

Polarity: ☒ positive ☒ negative

4.8.5. Coupling points

Cable description:

AC power line: L-N, L-PE

Screening:

☐ screened ☒ unscreened

Status:

☐ passive ☒ active

Signal transmission:

☒ analogue ☐ digital

Length:

☒ 0.8 m

4.8.6. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.9. Surge

For test instruments and accessories used see section 3.5.

4.9.1. Description of the test location and date

Test location: 2# EMC Test Room

Date of test: 2026-06-11

Operator: Alex Lin

4.9.2. Severity levels of surge

4.9.2.1

Severity level: Line to line: $\pm 1\text{kV}$

Level	Test Voltage (kV)
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

4.9.2.2 Performance criterion: **B**

4.9.3. Description of the test set-up

4.9.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.9.3.2. Test Configuration and Procedure

In this test, the 1.2/50us & 8/20us surge generator must be used for AC power ports. The voltage for line to earth coupling mode is 1 time more than that for line to line. Pulses shall be applied to the a.c. voltage wave as follows; five positive polarity pulses at the 90° phase angle, five negative polarity pulses at the 270° phase angle. Two test levels are given for different types of lighting equipment.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.9.4. Test specification:

Pulse amplitude-Power line sym.:

Source impedance: 2 Ω

☐ 0.5 kV ☐ 1 kV ☒ 2 kV ☐ 4 kV

Pulse amplitude-Power line unsym.:

Source impedance: 12 Ω

☐ 0.5 kV ☐ 1 kV ☐ 2 kV ☐ 4 kV

Number of surges:

☒ 5 Surges/Phase angle

Phase angle:

☐ 0 ° ☒ 90 ° ☐ 180 ° ☒ 270 °

Repetition rate:

☒ 60 s

Polarity:

☒ positive ☒ negative

4.9.5. Coupling points

Cable description:

AC power line: L-N

Screening:

☐ screened

☒ unscreened

Status:

☐ passive

☒ active

Signal transmission:

☒ analogue

☐ digital

Length:

☒ 0.8 m

4.9.6. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.10. Conducted disturbances induced by radio-frequency fields

For test instruments and accessories used see section 3.5.

4.10.1. Description of the test location date

Test location: SHIELD ROOM

Date of test: 2026-06-11

Operator: Alex Lin

4.10.2. Severity levels of conducted disturbances induced by radio-frequency fields

4.10.2.1

Severity Level: 3V

Level	Field Strength (V)
1.	1
2.	3
3.	10
X	Special

4.10.2.2 Performance criterion: **A**

4.10.3. Description of the test set-up

4.10.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.10.3.2. Test Configuration and Procedure

EUT is placed on an insulating support of 0.1m high above a ground reference plane. It must be 0.3m away the CDN (coupling and decoupling network) of which the bottom is made of metallic material and placed directly on the ground plane. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). The disturbance signal amplified by amplifier is injected to EUT through CDN.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.10.4. Test specification:

<u>Frequency range:</u>	■ 0.15 MHz to 80 MHz
<u>Test voltage:</u>	■ 3 V
<u>Modulation:</u>	■ AM: 80 % ■ sinusoidal 1000Hz
<u>Frequency step:</u>	■ 1 % with 1 s dwell time

4.10.5. Coupling points

Cable description (Port1):	<u>AC power line</u>	
Screening:	o screened	■ unscreened
Status:	o passive	■ active
Signal transmission:	■ analogue	o digital
Length:	■ 0.8 m	

4.10.6. Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.11. Voltage Dips and Interruptions

For test instruments and accessories used see section 3.5.

4.11.1. Description of the test location and date

Test location: 2# EMC Test Room

Date of test: 2026-06-11

Operator: Alex Lin

4.11.2. Severity levels of voltage Dips and Interruptions

Test Level (%Ut)	Voltage Dip And Short Interruptions (%Ut)	Performance Criterion	Duration (In Period)
0	100	B	0.5
70	30	B	10

4.11.3. Description of the test set-up

4.11.3.1. Operating Condition

The EUT is ON during the test, and the results of the maximum susceptible results are recorded.

4.11.3.2. Test Configuration and Procedure

EUT is connected to the simulator according to the setup outline of 12.3. When conducting the test level of 0.5 period duration, make sure that it shall start at the phase angle of 0° and 180°

4.11.4. Test specification:

Nominal Mains Voltage (V_N): ■ 230 V AC

Number of voltage fluctuations: ■ 3

Level of reduction(dip) / duration: ■ 100 % / 10ms ■ 30 % / 200ms

4.11.5. Test result

The requirements are **Fulfilled**

Performance Criterion **See section 6.2**

Remarks: During the test no deviation was detected to the selected operation mode(s).

5. Test Setup Photos

Photo 1 Magnetic Emission Test Setup

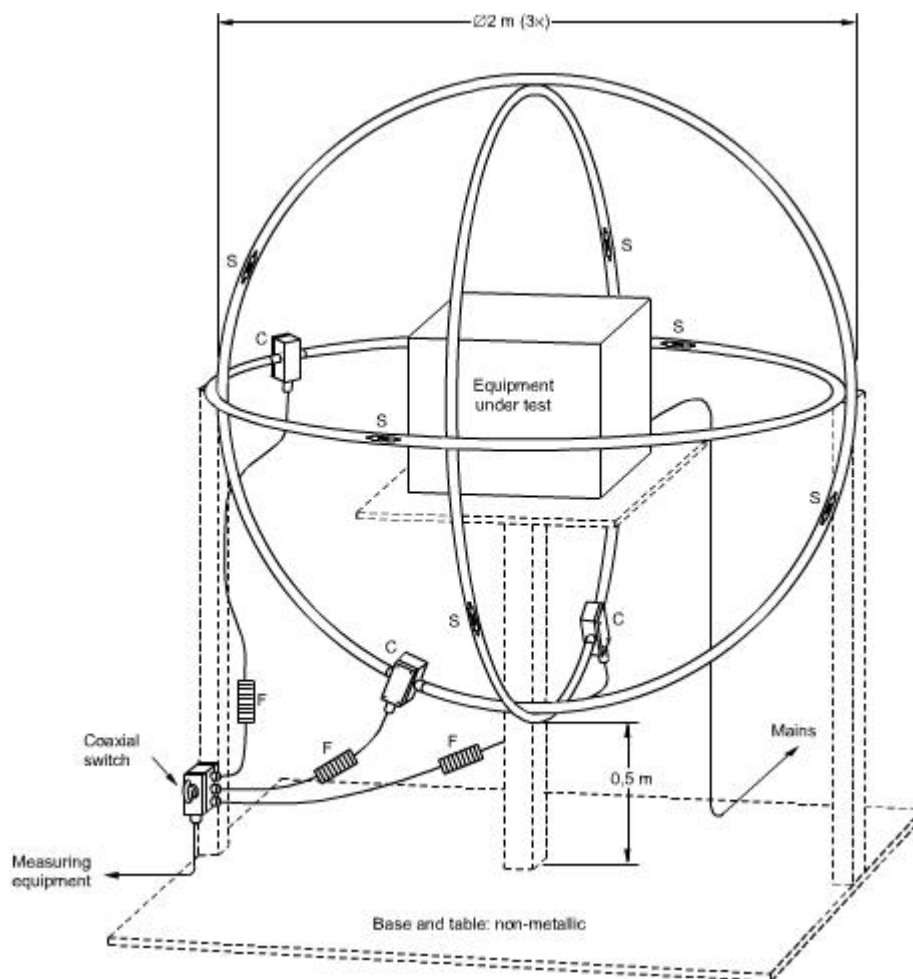


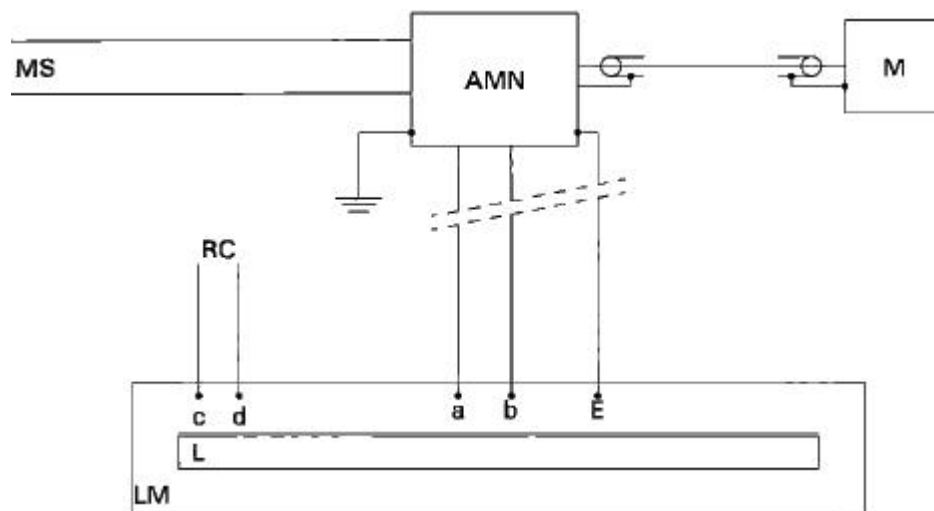
Photo 2 Conducted Emission Test Setup

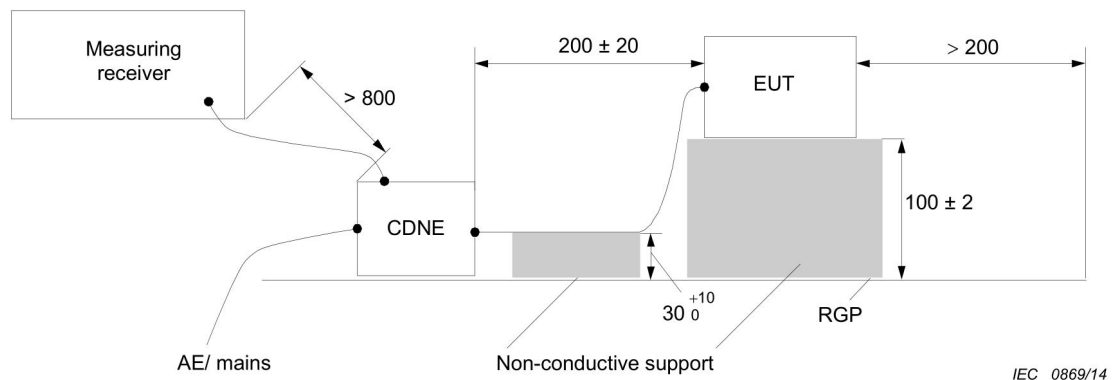
Photo 3 Radiated Emission CDNE Test Setup

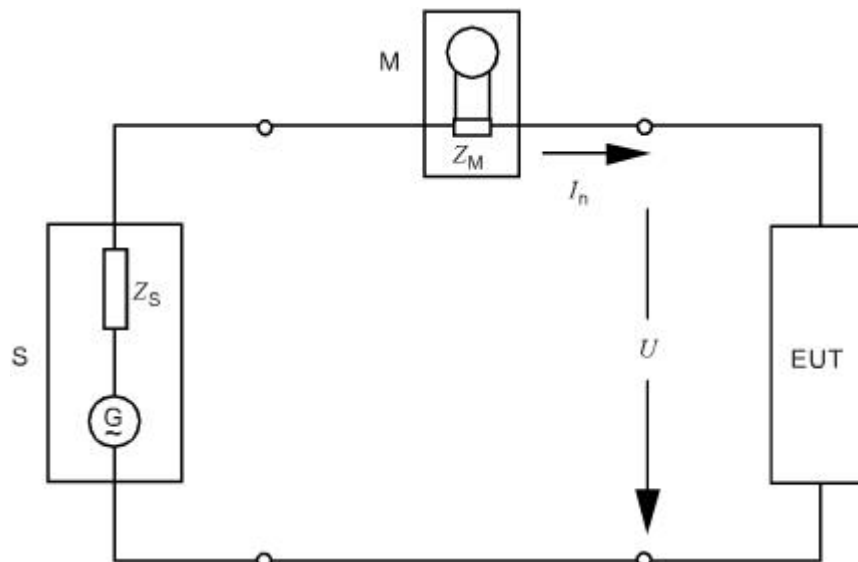
Photo 4 Harmonic & Flicker Test Setup

Photo 5 Electrostatic Discharge Test Setup

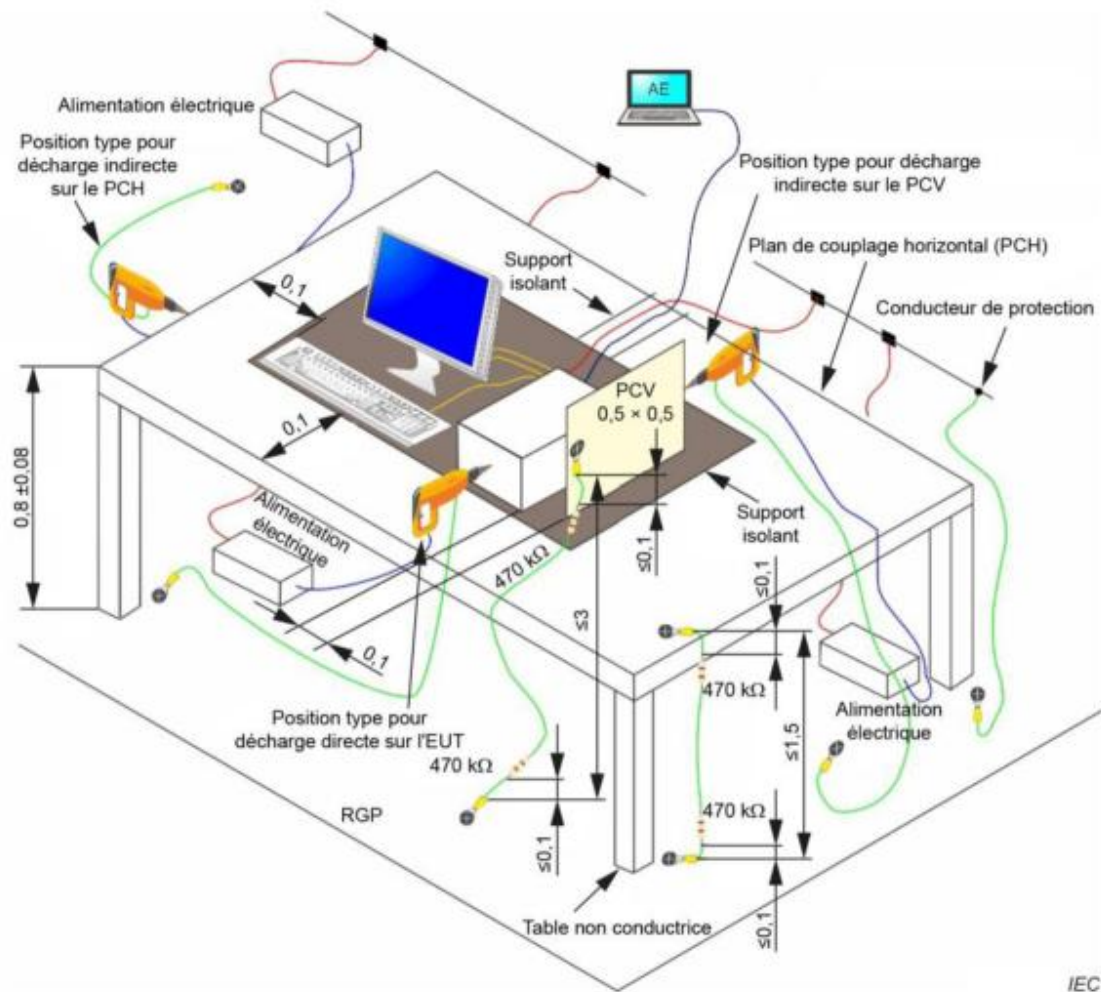


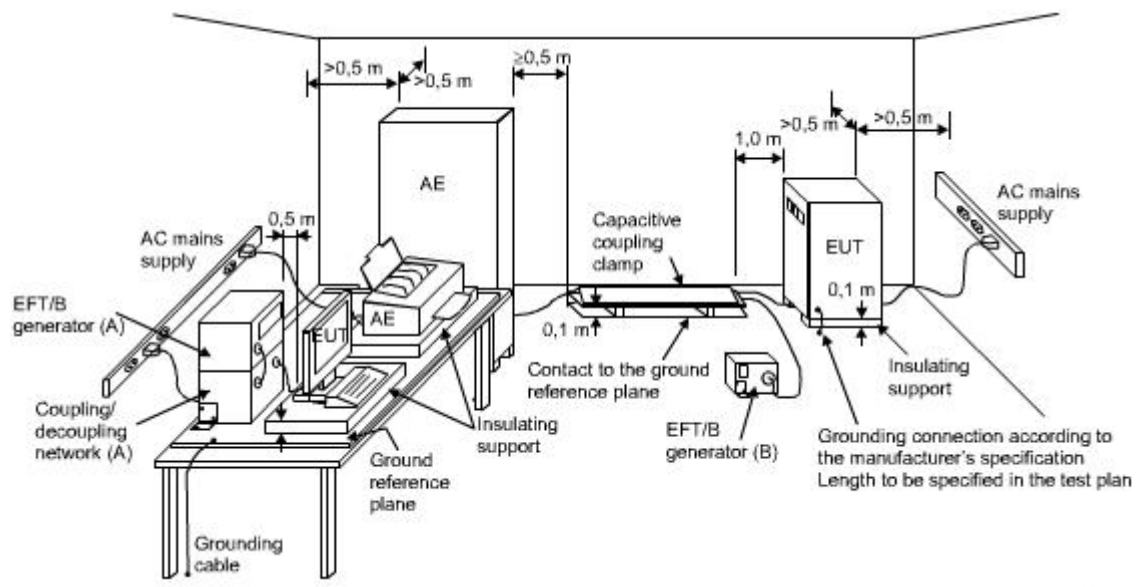
Photo 6 EFT Immunity Test Setup

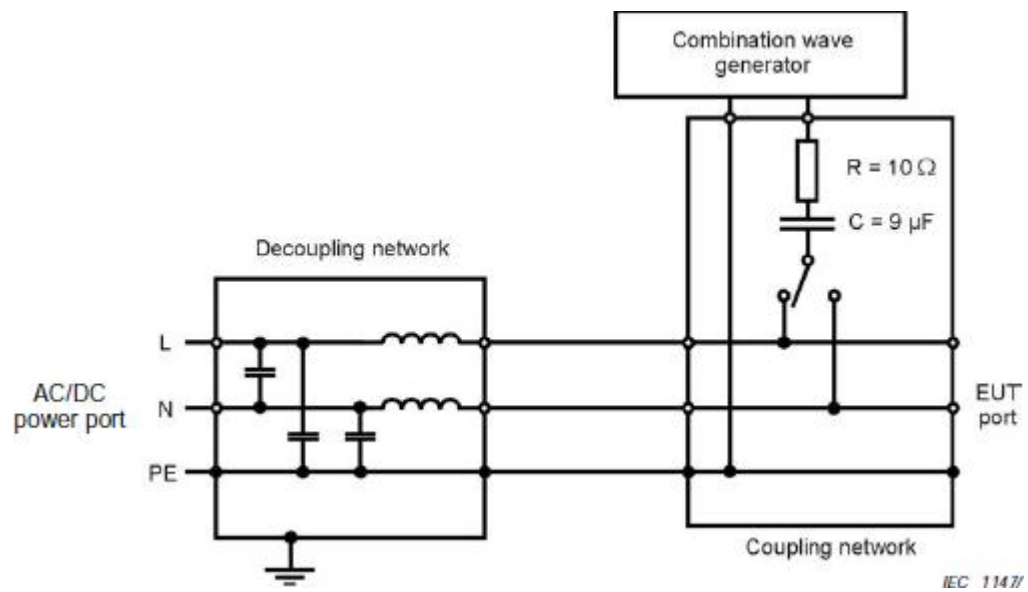
Photo 7 Surge Immunity Test Setup

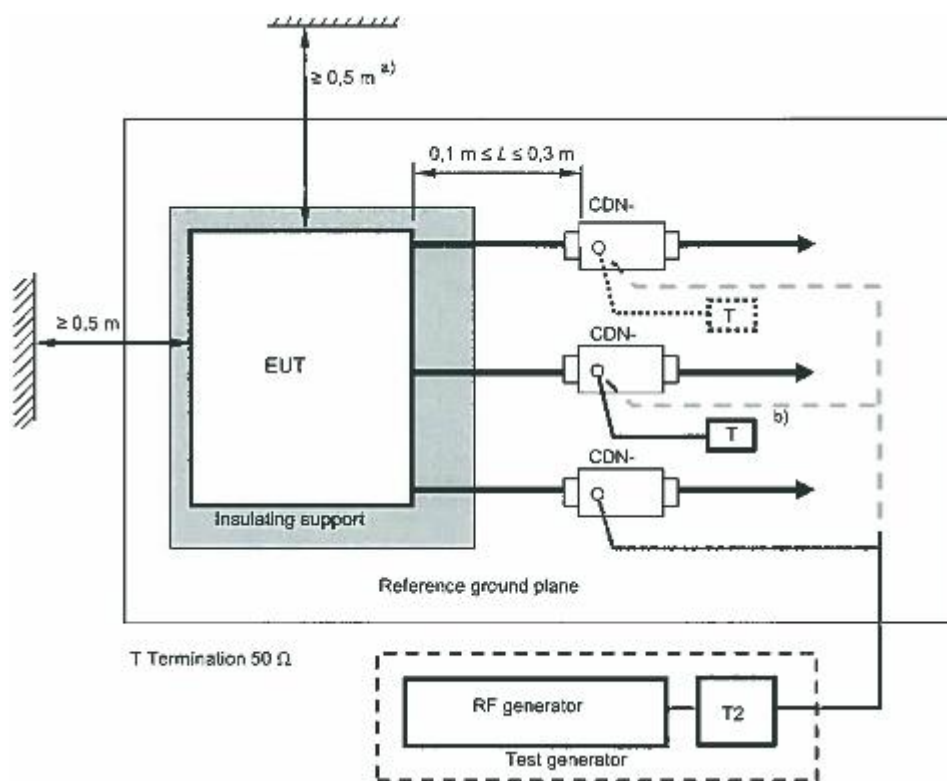
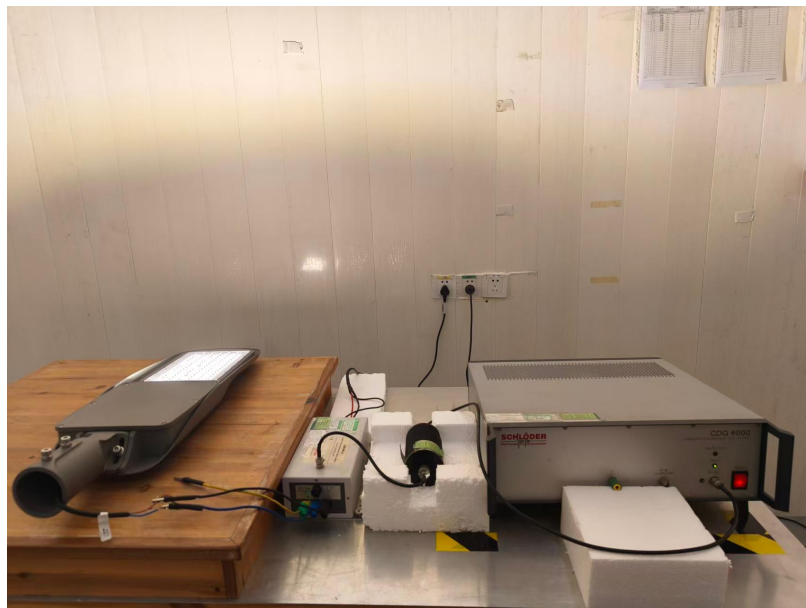
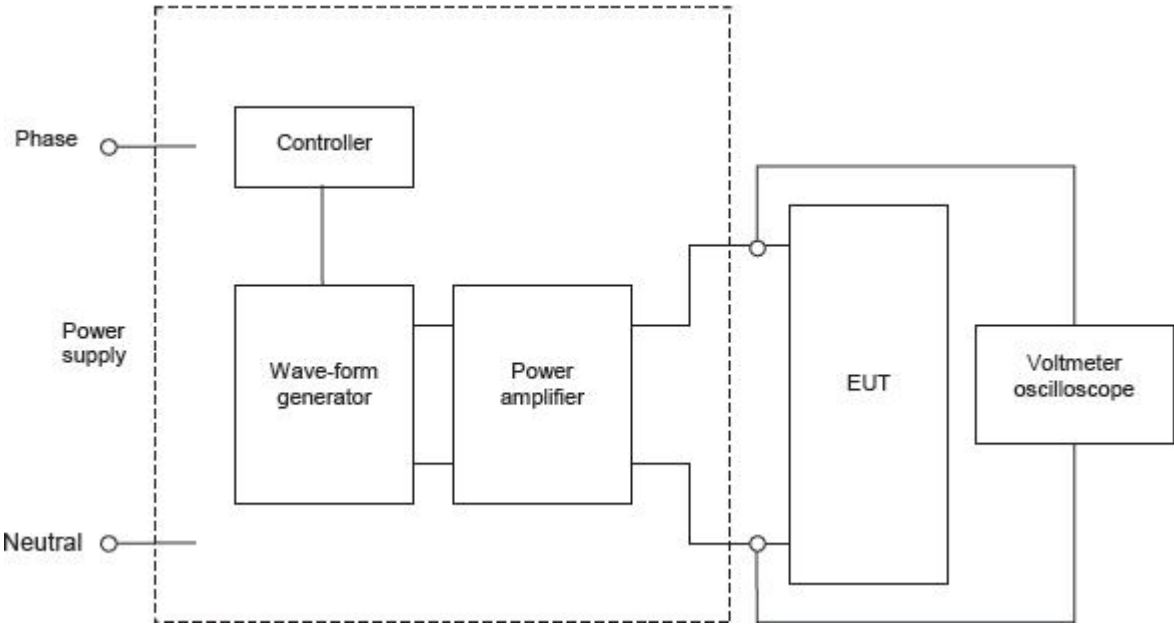
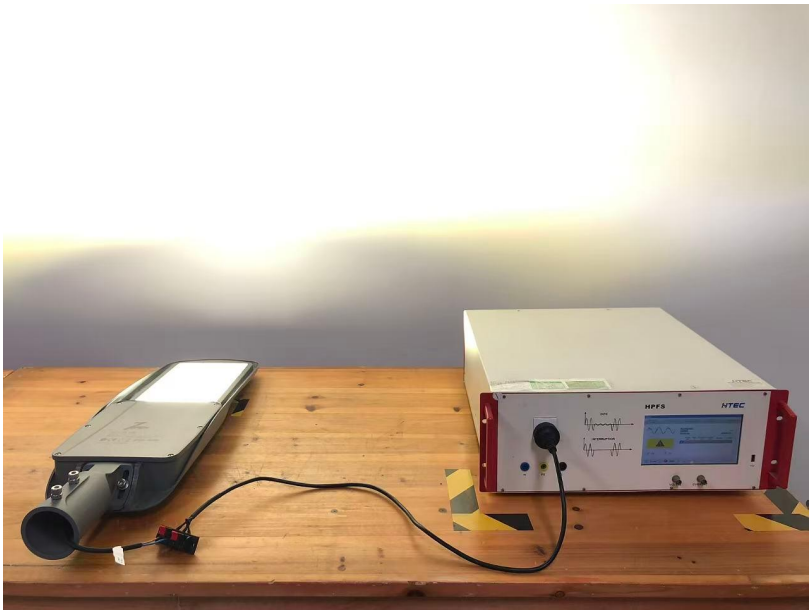
Photo 8 CS Immunity Test Setup

Photo 9 Voltage Dips Test Setup



6. Photos of the EUT

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



.....End of Report.....

STATEMENT

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

If you have any objection to this report, please submit it to the test unit within 15 days from the date of receipt of the report.

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