TEST REPORT

Report No.	:	ZHT-251017110E01
Product	:	Led display
Trademark	:	/
Model(s)	:	For detailed information, please refer to the model list in Chapter 3.1
Model Difference	:	P2.604 is the test model, while other models are derivative models. These models are the same on the circuit, only with different model names. Therefore, the test data of P2.604 can represent the remaining models.
Applicant	:	SHENZHEN LINSN LED CO., LTD
Address	:	Building 2, Hongfa High-tech Park, Shiyan Street, Baoan District, Shenzhen, China.
Manufacturer	:	SHENZHEN LINSN LED CO., LTD
Address	:	Building 2, Hongfa High-tech Park, Shiyan Street, Baoan District, Shenzhen, China.
Prepared by	:	Guangdong Zhonghan Testing Technology Co., Ltd.
Address	:	Room 104/201, Building 1, Yibaolai Industrial Park, Qiaotou, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Date of Receipt	:	Oct. 17, 2025
Date of Test(s)	:	Oct. 17, 2025 - Oct. 24, 2025
Date of Issue	:	Oct. 27, 2025
Test Standard(s)	:	EN 55032:2015 + A1:2020 EN 55035:2017 + A11:2020 EN IEC 61000-3-2:2019 + A1:2021 + A2:2024 EN 61000-3-3:2013 + A1:2019 + A2:2021

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

Prepared by:	Reviewed by:	Approved by:
Eric Jiang/ Engineer	Baret Wu/ Director	Levi Lee/ Manager

Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of ZHT. This document may be altered or revised by ZHT, personnel only, and shall be noted in the revision of the document.

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1. Revision History

Report No.	Issue Date	Description	Approved
ZHT-251017110E01	Oct. 27, 2025	Original	Valid

2. Test Summary

Emission			
Requirement - Test	Test Method	Limit	Result
Conducted Emission	EN 55032:2015 + A1:2020	Class A	PASS
Radiated Emission	EN 55032:2015 + A1:2020	Class A	PASS
Immunity			
Requirement - Test	Test Method	Performance criteria	Result
Electrostatic discharges	EN 61000-4-2:2009	B	PASS
Continuous RF electromagnetic field disturbances	EN 61000-4-3:2020	A	PASS
Electrical fast transients/burst (EFT/B)	EN 61000-4-4:2012	B	PASS
Surges	EN 61000-4-5:2014 + A1:2017	B	PASS
Continuous induced RF disturbances	EN IEC 61000-4-6:2023	A	PASS
Power frequency magnetic fields	EN 61000-4-8:2010	A	N/A
Voltage dips and short interruptions	EN 61000-4-11:2020	B & C & C	PASS

Requirement - Test	Test Method	Limit	Result
Harmonic current emissions	EN IEC 61000-3-2:2019 + A1:2021 + A2:2024	Class A	PASS
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3:2013 + A1:2019 + A2:2021	Clause 5	PASS

Remark: N/A is abbreviation for Not Applicable.

3. General Information

3.1. Description of EUT

Product	Led display
Model Name	P2.604
Rated Power Supply	AC 100 - 240 V, 50 / 60 Hz
Normal Testing Voltage	AC 230 V/ 50 Hz
DC Line	/
I/O Ports	AC input port, Wired network port (without network data transmission function)
Highest Frequency Generated	Below 108 MHz

Model List

P2.604 P0.625, P0.78, P0.9, P0.9375, P1.25, P1.538, P1.5625, P1.667, P1.86, P1.875, P1.953, P2, P2.5, P2.604, P2.976, P3, P3.076, P3.125, P3.33, P3.6, P3.79, P3.84, P3.91, P4, P4.44, P4.8, P4.81, P5, P5.71, P5.926, P5.95, P6, P6.25, P6.67, P6.94, P7.81, P8, P8.33, P10, P10.41, P12, P13.33, P15.56, P15.625, P20, P25, P31.25, P50

Note:

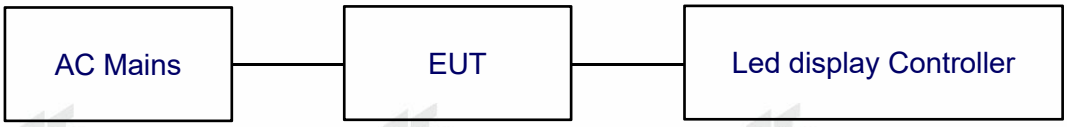
1) Other Accessory Device List and Details

Description	Manufacturer	Model	Note
Led display Controller	Xi'an NovaStar Tech Co.,Ltd.	MCTRL600	AE
/	/	/	/

2) The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2. Block diagram of EUT configuration

Mode 1



3.3. Test Mode

Pretest mode	Mode 1: Working mode		
Worst-case Test mode	Conducted Emission		Mode 1
	Radiated Emission	Below 1 GHz	Mode 1
		Above 1 GHz	N/A
	Harmonic current emissions		Mode 1
	Voltage changes, voltage fluctuations and flicker		Mode 1
	Electrostatic discharges		Mode 1
	Continuous RF electromagnetic field disturbances		Mode 1
	Electrical fast transients/burst (EFT/B)		Mode 1
	Surges		Mode 1
	Continuous induced RF disturbances		Mode 1
	Power frequency magnetic fields		N/A
	Voltage dips and short interruptions		Mode 1

* Only the worst-case data is represented in the report.

3.4. Test Site Environment

Test Item	Required		Actual
Conducted Emission	Temperature (°C)	15-35	23.6
	Humidity (%RH)	25-75	53.8
	Barometric pressure (mbar)	860-1060	1014
Radiated Emission	Temperature (°C)	15-35	24.0
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	1014
Harmonic current emissions	Temperature (°C)	--	23.8
	Humidity (%RH)	--	54.5
	Barometric pressure (mbar)	--	1014
Voltage Fluctuations & Flicker	Temperature (°C)	--	23.8
	Humidity (%RH)	--	54.5
	Barometric pressure (mbar)	--	1014
Electrostatic discharges	Temperature (°C)	15-35	24.0
	Humidity (%RH)	30-60	52.0
	Barometric pressure (mbar)	860-1060	1014
Continuous RF electromagnetic field disturbances	Temperature (°C)	15-35	24.1
	Humidity (%RH)	25-75	53.9
	Barometric pressure (mbar)	860-1060	1014
Fast transients	Temperature (°C)	15-35	24.1
	Humidity (%RH)	25-75	53.6
	Barometric pressure (mbar)	860-1060	1014
Surges	Temperature (°C)	15-35	24.1
	Humidity (%RH)	25-75	53.6
	Barometric pressure (mbar)	860-1060	1014
Continuous induced RF disturbances	Temperature (°C)	15-35	24.1
	Humidity (%RH)	25-75	53.6
	Barometric pressure (mbar)	860-1060	1014
Voltage dips and short interruptions	Temperature (°C)	15-35	24.1
	Humidity (%RH)	25-75	53.6
	Barometric pressure (mbar)	860-1060	1014

4. Facilities

4.1. Test Facility and Test Instrument Used

Test site 1: Guangdong Zhonghan Testing Technology Co., Ltd.
Room 104/201, Building 1, Yibaolai Industrial Park, Qiaotou, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Test site 2: Shenzhen Haiyun Testing Co., Ltd.
No. 2 Danzi North Road, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Conducted emissions Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 6, 2025	May 5, 2026
LISN	R&S	ENV216	May 6, 2025	May 5, 2026

Radiated emissions Test (966 chamber)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 6, 2025	May 5, 2026
Amplifier	Schwarzbeck	BBV 9743 B	May 6, 2025	May 5, 2026
Amplifier	Schwarzbeck	BBV 9718 B	May 7, 2025	May 6, 2026
Bilog Antenna	Schwarzbeck	VULB9162	May 15, 2025	May 14, 2026
Horn Antenna	Schwarzbeck	BBHA9120D	May 15, 2025	May 14, 2026

Harmonic / Flicker Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Power Analyzer	Li	AC2000A	May 7, 2025	May 6, 2026

Electrostatic discharge immunity Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
ESD TEST Generator	HTEC	HESD16	May 9, 2025	May 8, 2026

Continuous RF electromagnetic field disturbances (site 2)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Signal Generator	R&S	SMB100A	Oct. 14, 2024	Oct. 13, 2025
Signal Generator	R&S	SMR40	Oct. 14, 2024	Oct. 13, 2025
Power Amplifier	A&R	250W1000A	Oct. 14, 2024	Oct. 13, 2025
Power Amplifier	A&R	1150A100B	Oct. 14, 2024	Oct. 13, 2025
Power Amplifier	A&R	60S1G4	Oct. 14, 2024	Oct. 13, 2025
Communication antenna	Schwarzbeck	FPA3-0.8-6.0R/1329	Oct. 14, 2024	Oct. 13, 2025

Electrical fast transients/burst (EFT/B) and Surges and Voltage dips and short interruptions Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Surge Generator	HTEC	HCOMPACT5/HV1P 6T	May 7, 2025	May 6, 2026
DIPS Generator	HTEC	HCOMPACT5/HV1P 6T	May 7, 2025	May 6, 2026
EFT/B Generator	HTEC	HCOMPACT5/HV1P 6T	May 7, 2025	May 6, 2026
EFT/B Clamp	HTEC	H3C	May 7, 2025	May 6, 2026

Continuous induced RF disturbances

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Signal Generator	Schwarzbeck	CDG 7000-25	May 7, 2025	May 6, 2026
Attenuator	Schwarzbeck	6db	May 7, 2025	May 6, 2026
CDN	Schwarzbeck	CDN M2+M3-16A	May 7, 2025	May 6, 2026

4.2. Testing software

Project	Software name	Edition
Conducted Emission	EZ-EMC	EMC-CON 3A1.1+
Radiated Emission	EZ-EMC	FA-03A2 RE+
Conducted Susceptibility	IEC/EN 61000-4-6	1.4.1
Harmonic current emissions	Harmonic	121
Voltage changes, voltage fluctuations and flicker	Harmonic	121

4.3. Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	0.92
Radiated Emission(30MHz~1GHz)	5.10
Radiated Emission(1GHz~6GHz)	3.90

Decision Rule

☒ Uncertainty is not included

☐ Uncertainty is included

5. Emission

5.1. Conducted Emission

5.1.1. Limit

A.C. Mains Conducted Interference Limit

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note:

(1) The lower limit shall apply at the transition frequencies.

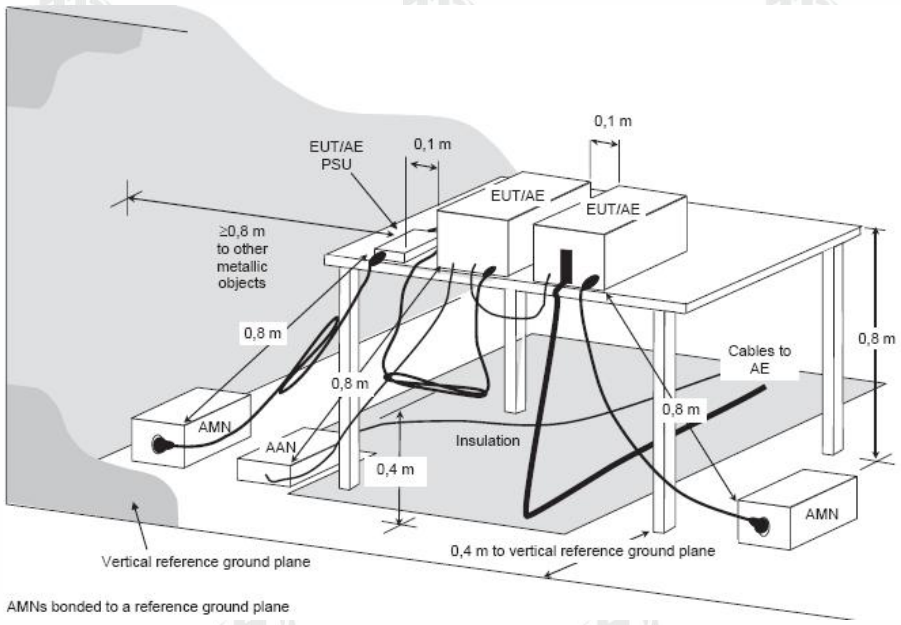
(2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

Telecommunication Port Asymmetric mode Conducted Interference Limit

Requirement (MHz)	Class A Equipment				Class B Equipment			
	Voltage Limit (dBμV)		Current Limit (dBμA)		Voltage Limit (dBμV)		Current Limit (dBμA)	
	QP	Avg.	QP	Avg.	QP	Avg.	QP	Avg.
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30	84 to 74	74 to 64	40 to 30	30 to 20
0.50 to 30	87	74	43	30	74	64	30	20

5.1.2. Test setup



5.1.3. Test procedure

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

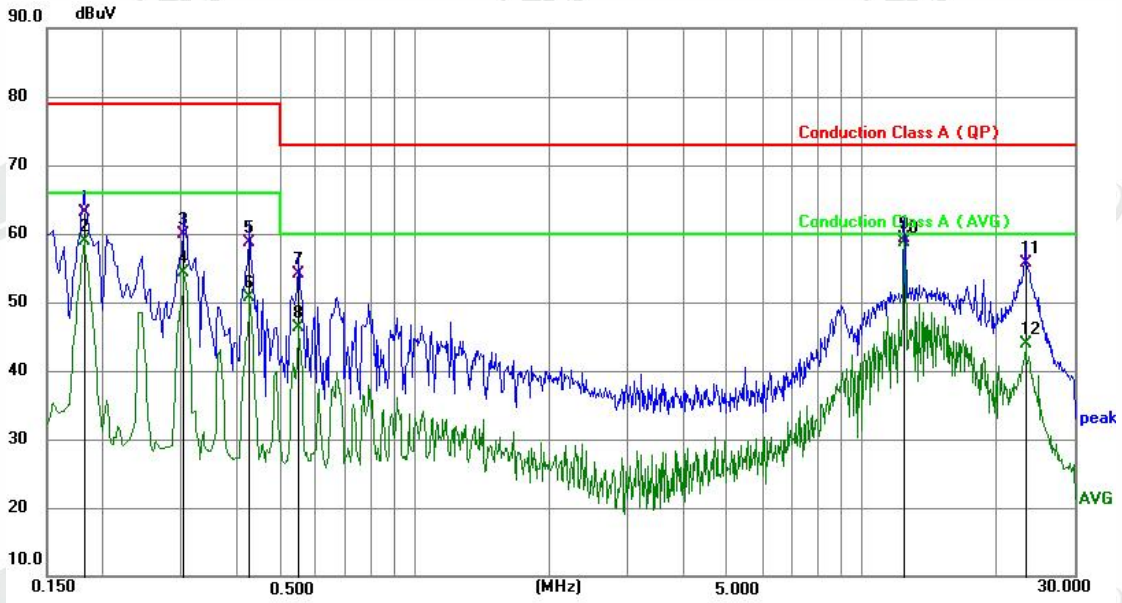
c. The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak(mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.
Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

5.1.4. Test results

PASS

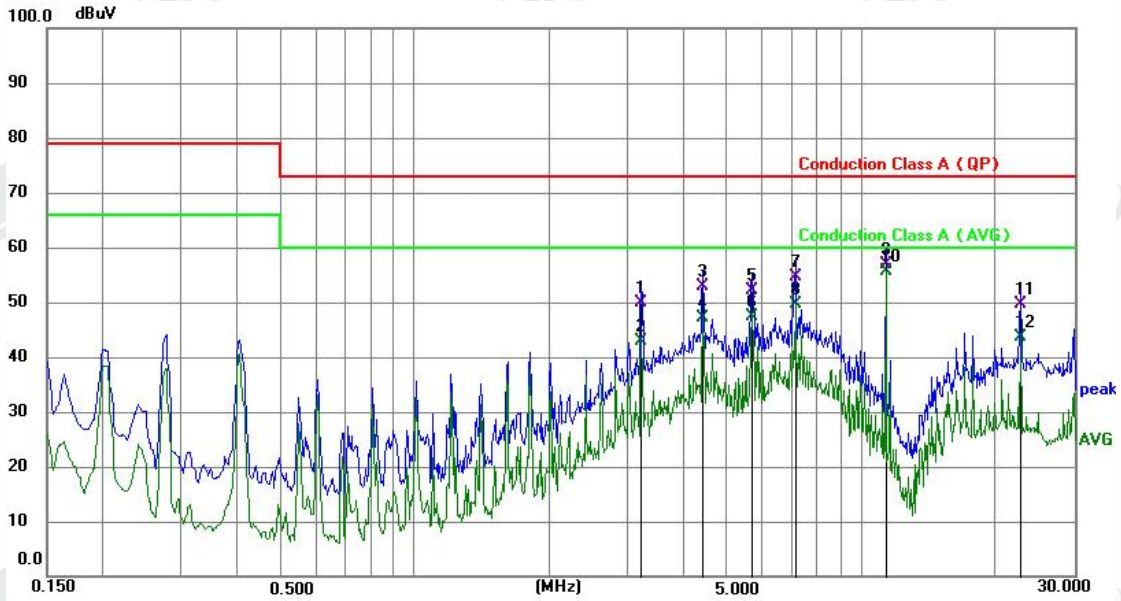
Please refer to pages 13 - 14 for data.

Phase: Live



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1815	53.30	9.90	63.20	79.00	-15.80	QP	P	
2	0.1815	48.98	9.90	58.88	66.00	-7.12	AVG	P	
3	0.3034	49.91	9.95	59.86	79.00	-19.14	QP	P	
4	0.3034	44.27	9.95	54.22	66.00	-11.78	AVG	P	
5	0.4260	48.64	9.99	58.63	79.00	-20.37	QP	P	
6	0.4260	40.81	9.99	50.80	66.00	-15.20	AVG	P	
7	0.5493	44.13	10.02	54.15	73.00	-18.85	QP	P	
8	0.5493	36.21	10.02	46.23	60.00	-13.77	AVG	P	
9	12.4495	49.22	10.09	59.31	73.00	-13.69	QP	P	
10 *	12.4495	48.55	10.09	58.64	60.00	-1.36	AVG	P	
11	23.2633	45.46	10.20	55.66	73.00	-17.34	QP	P	
12	23.2633	33.63	10.20	43.83	60.00	-16.17	AVG	P	

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1814	51.19	9.90	61.09	79.00	-17.91	QP	P	
2	0.1814	46.80	9.90	56.70	66.00	-9.30	AVG	P	
3	0.3050	48.35	9.95	58.30	79.00	-20.70	QP	P	
4	0.3050	44.14	9.95	54.09	66.00	-11.91	AVG	P	
5	0.5503	44.41	10.02	54.43	73.00	-18.57	QP	P	
6	0.5503	37.44	10.02	47.46	60.00	-12.54	AVG	P	
7	9.0195	44.78	10.09	54.87	73.00	-18.13	QP	P	
8	9.0195	38.00	10.09	48.09	60.00	-11.91	AVG	P	
9	12.5024	50.90	10.09	60.99	73.00	-12.01	QP	P	
10 *	12.5024	48.67	10.09	58.76	60.00	-1.24	AVG	P	
11	21.9973	45.17	10.17	55.34	73.00	-17.66	QP	P	
12	21.9973	36.60	10.17	46.77	60.00	-13.23	AVG	P	

Note: Level=Reading + Factor
Margin=Level – Limit

5.2. Radiated emissions

5.2.1. Limit

Radiated disturbance limits and testing methods – 30 MHz to 1 000 MHz

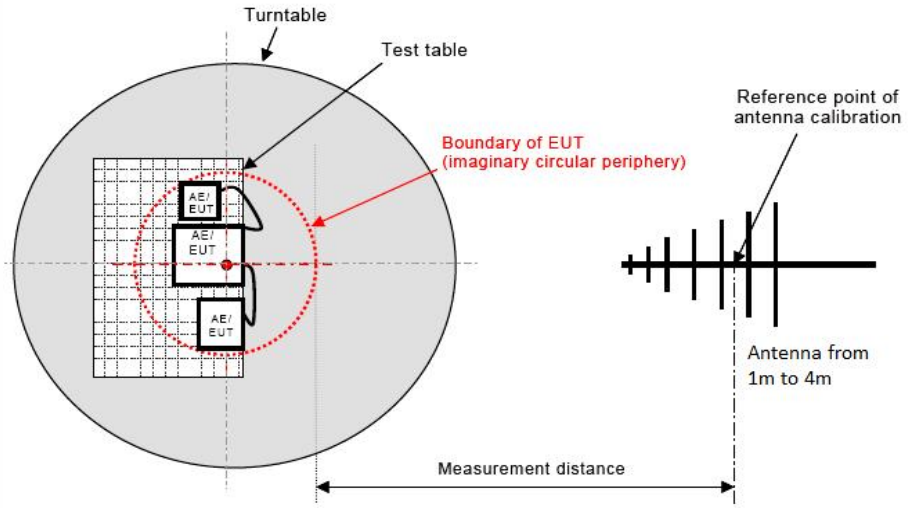
Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

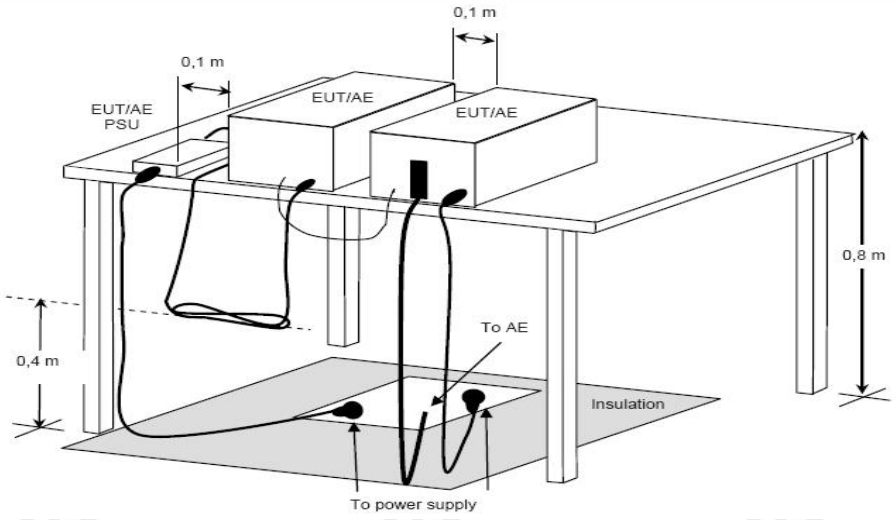
Radiated electric field disturbance limits and test methods - 1 GHz to 6 GHz

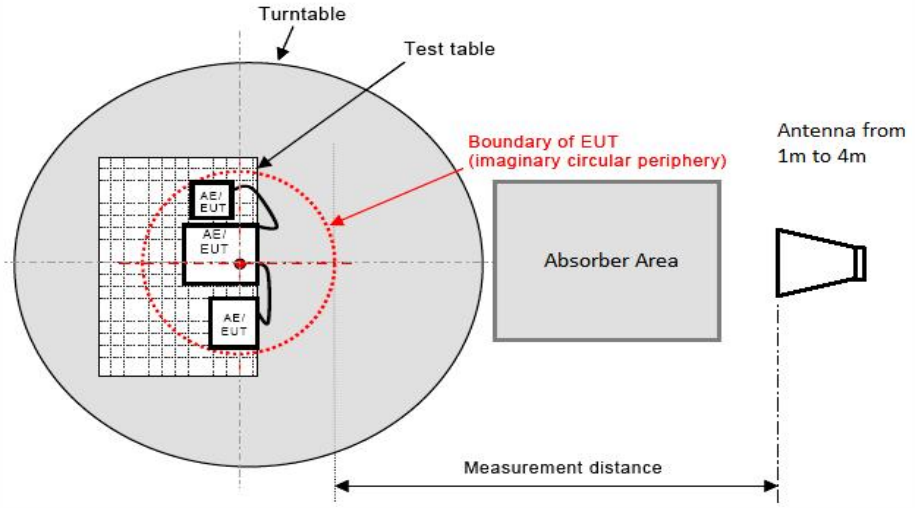
Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)	
	Peak	Average
1 000 to 3 000	74	54
3 000 to 6 000	74	54

5.2.2. Block diagram of test setup

Measurement distance







5.2.3. Test procedure

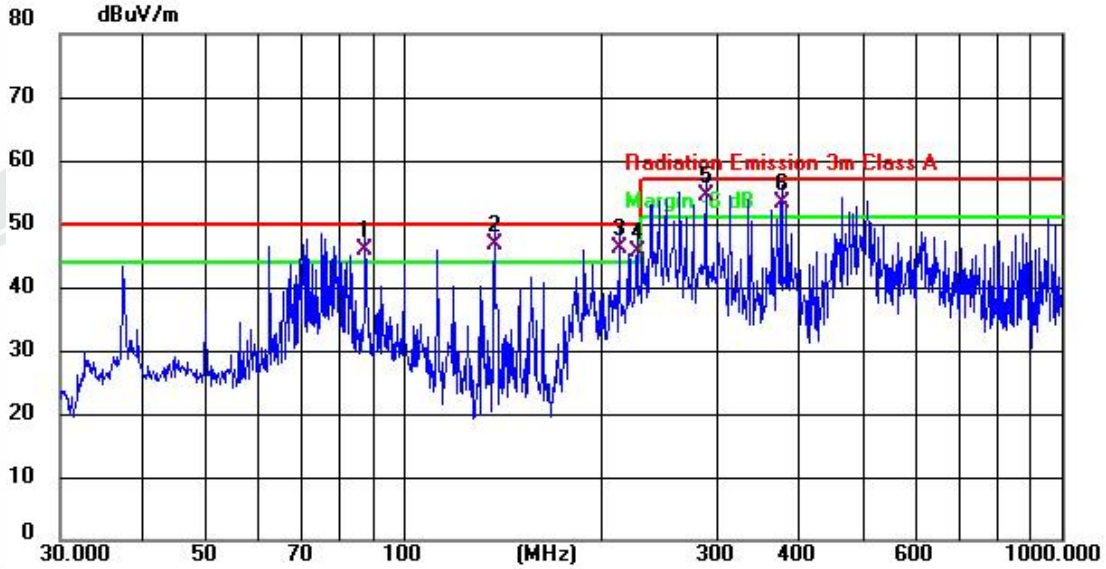
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

5.2.4. Test results

PASS

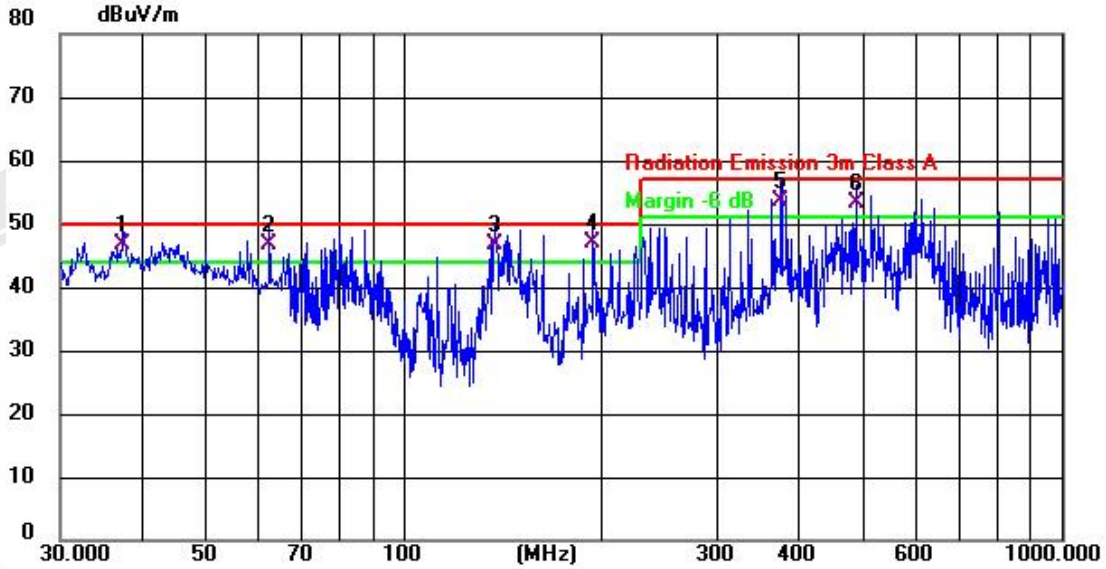
Please refer to pages 17 - 18 for data.

Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 !	87.4175	57.85	-11.97	45.88	50.00	-4.12	QP			P	
2 !	137.4200	59.01	-12.38	46.63	50.00	-3.37	QP			P	
3 !	212.2692	55.71	-9.53	46.18	50.00	-3.82	QP			P	
4 !	226.0994	54.52	-9.03	45.49	50.00	-4.51	QP			P	
5 *	287.9904	61.81	-7.44	54.37	57.00	-2.63	QP			P	
6 !	375.9384	58.84	-5.56	53.28	57.00	-3.72	QP			P	

Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 !	37.4164	56.16	-9.32	46.84	50.00	-3.16	QP			P	
2 !	62.4313	56.78	-10.05	46.73	50.00	-3.27	QP			P	
3 !	137.4201	59.14	-12.38	46.76	50.00	-3.24	QP			P	
4 *	193.7726	57.53	-10.40	47.13	50.00	-2.87	QP			P	
5 !	374.6225	59.19	-5.58	53.61	57.00	-3.39	QP			P	
6 !	487.3150	56.77	-3.57	53.20	57.00	-3.80	QP			P	

Note: Level=Reading + Factor
Margin=Level – Limit

5.3. Harmonic current emissions

5.3.1. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and the EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

A definition of the normal load or of the conditions for adequate heat discharge can usually be found in the EN publication corresponding to the equipment under test.

Equipment may have several separately controlled circuits. Each circuit is considered as a single piece of equipment if it can be operated independently and separately from the other circuits.

5.3.2. Limit

Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current (A)	Harmonics Order n	Maximum Permissible harmonic current (A)
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \leq n \leq 40$	0.23 * 8/n
11	0.33		
13	0.21		
$15 \leq n \leq 39$	0.15 * 15/n		

Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table which is the limit of Class A multiplied by a factor of 1.5.

Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency (%)
2	2
3	30．λ*
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3
* λ is the circuit power factor	

Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt (mA/W)	Maximum Permissible harmonic current (A)
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
11 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See limit of Class A

5.3.3. Test Result

PASS

5.4. Voltage changes, voltage fluctuations and flicker

5.4.1. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

5.4.2. Limit

Test Item	Limit
Pst (Short-term flicker indicator.)	1.0
Plt (Long-term flicker indicator.)	0.65
Td(t)(ms) (Maximum time that d(t) exceeds 3.3%)	500
dmax(%) (Maximum relative voltage change.)	4
dc(%) (Relative steady-state voltage change)	3.3

5.4.3. Test Result

PASS

The EUT is unlikely to produce significant voltage fluctuations or flicker by technical analysis and evaluation. So it is deemed to fulfil the requirements without testing.

6. Immunity

Performance criteria

Performance criterion **A**

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion **B**

The equipment shall continue to operate as intended after the test. No degradation of performance or loss function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from equipment if used as intended.

Performance criterion **C**

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls.

6.1. Electrostatic discharges

6.1.1. Test Specification

Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

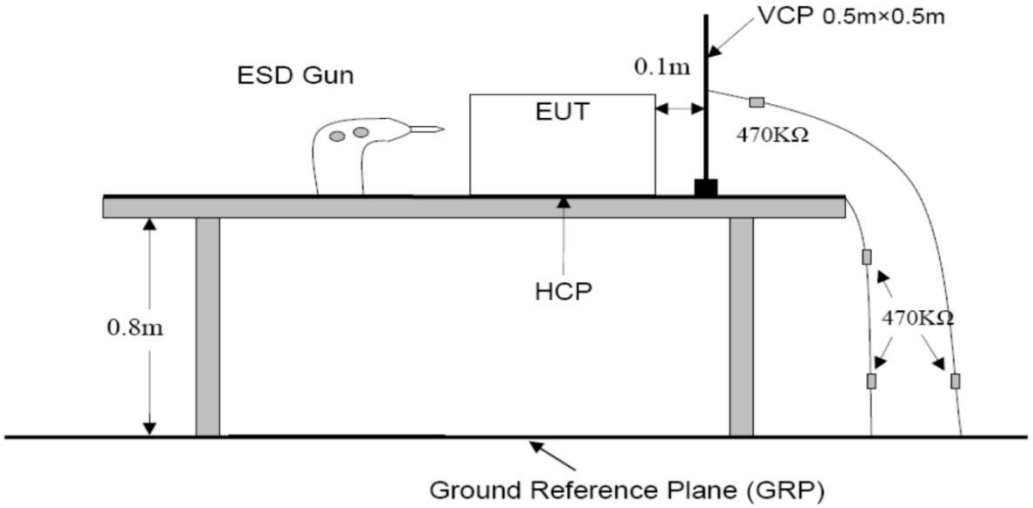
6.1.2. Test Levels and Performance Criterion

Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-2: 2009)

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

Performance criterion: **B**

6.1.3. Test setup



6.1.4. Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated (10 of each polarity) 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 Section Air Discharge except that the tip of the discharge electrode shall touch the EUT.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges(in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit(if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

Indirect discharge for vertical coupling plane:

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.1.5. Test Result

PASS

Test Point	Contact (C) Air (A)	Voltage (kV)	Performance Criterion	Result
Indirect Discharge (HCP)	C	± 4	☐A ☒B	A
Indirect Discharge (VCP)	C	± 4	☐A ☒B	A
Conductive Surfaces	C	± 4	☐A ☒B	A
Slots, Apertures, and Insulating Surfaces	A	± 8	☐A ☒B	A

6.2. Continuous RF electromagnetic field disturbances

6.2.1. Test Specification

Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

6.2.2. Test Levels and Performance Criterion

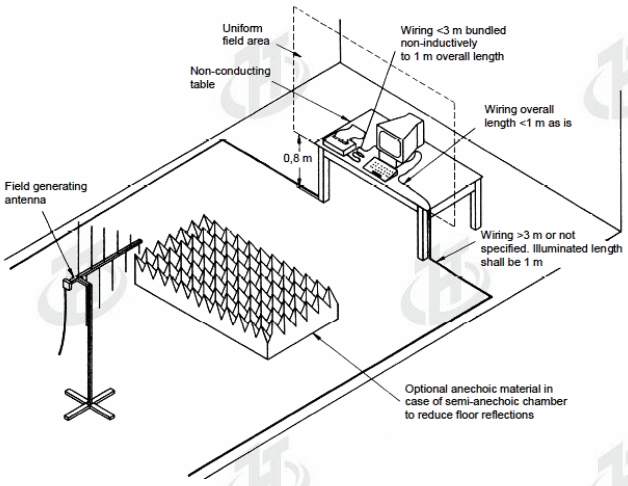
Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-3:2020)

Characteristics	Test levels
Frequency range	80 MHz to 1 000 MHz, 1 800 MHz, 2 600 MHz, 3 500 MHz, 5 000 MHz
Test level	3 V/m (unmodulated)
Modulation	1 kHz, 80 % AM, sine wave

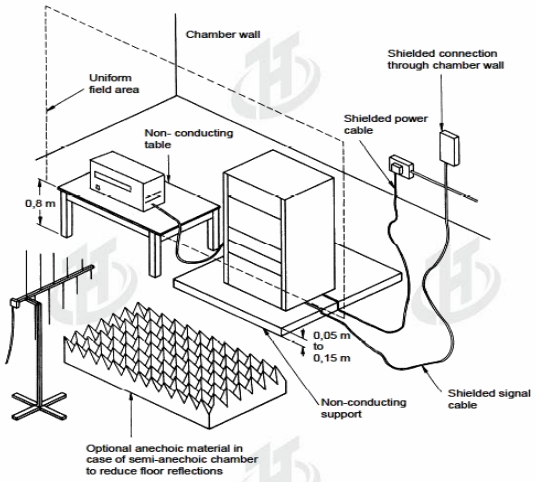
Performance criterion: **A**

6.2.3. Test setup

For table-top equipment



For floor standing equipment



6.2.4. Test Procedure

Measurement was performed in full-anechoic chamber.
Measurement procedure was applied according to EN 61000-4-3 clause 8.
The test method and equipment was specified by EN 61000-4-3.

6.2.5. Test Result

PASS

Frequency (MHz)	Polarization	Test level (V/m)	Modulation	Exposed location	Result
80-1 000, 1 800, 2 600, 3 500, 5 000	H & V	3	1 kHz, 80% AM, 1 % increment	All sides	A

6.3. Electrical fast transients/burst (EFT/B)

6.3.1. Test Specification

Test Port	:	input a.c. power port
Impulse Frequency	:	5 kHz
Impulse Wave-shape	:	5/50 ns
Burst Duration	:	15 ms
Burst Period	:	300 ms
Test Duration	:	2 minutes per polarity

6.3.2. Test Levels and Performance Criterion

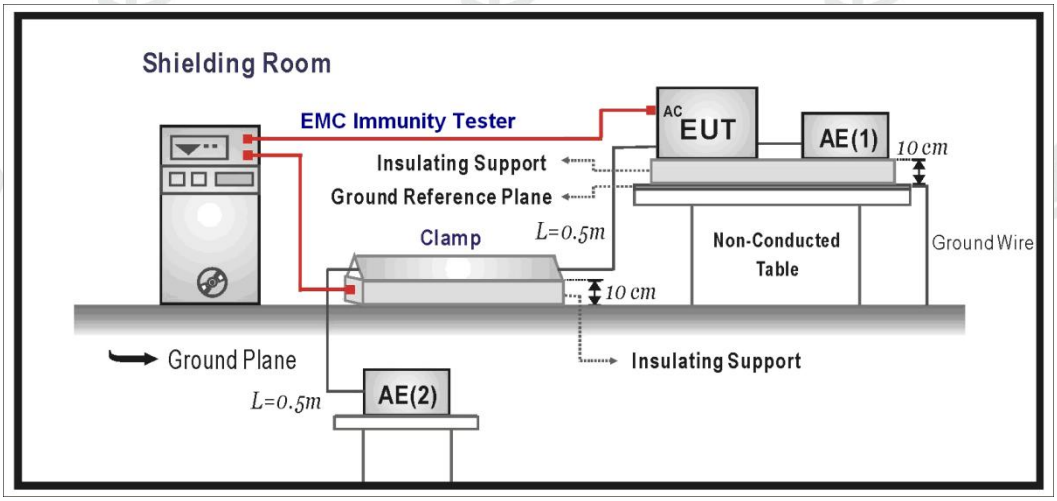
Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-4: 2012)

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (Input/Output) Signal data and control ports	
	Voltage peak KV	Repetition rate KHz	Voltage peak KV	Repetition rate KHz
1.	0.5	5 or 100	0.25	5 or 100
2.	1.0	5 or 100	0.5	5 or 100
3.	2.0	5 or 100	1.0	5 or 100
4.	4.0	5 or 100	2.0	5 or 100
X	Special	Special	Special	Special

Note 1 Use of 5 KHz repetition rates is traditional; however, 100 KHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types.
Note 2 With some products, there may be no clear distinction, between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.
Note 3 “X” is an open level. The level has to be specified in the dedicated equipment specification.

Performance criterion: **B**

6.3.3. Test setup



6.3.4. Test Procedure

The E.U.T. is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the E.U.T. by at least 0.1m on all sides and the minimum distance between E.U.T. and all other conductive structure, except the ground plane beneath the E.U.T., shall be more than 0.5m.

For AC mains power ports:

Changes to occur at 0 degree crossover point of the voltage waveform. If the EUT does not demonstrate compliance when tested with 0 degree switching, the test shall be repeated with the switching occurring at both 90 degrees and 270 degrees. if the EUT satisfies these alternative requirements, then it fulfils the requirements. This condition shall be recorded in the test report.

For analogue/digital data ports:

Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.

For DC network power ports:

Applicable only to ports which, according to the manufacturer's specification, support cable lengths greater than 3 m.

6.3.5. Test Result

PASS

Test Point	Polarity	Test Level (kV)	Inject Time (Second)	Inject Method	Performance Criterion	Result (Performance Criterion)
L	±	1	60	Direct	☐A ☒B	A
N	±	1	60	Direct	☐A ☒B	A
PE	±	1	60	Direct	☐A ☒B	A
L+N	±	1	60	Direct	☐A ☒B	A
L+PE	±	1	60	Direct	☐A ☒B	A
N+PE	±	1	60	Direct	☐A ☒B	A
L+N+PE	±	1	60	Direct	☐A ☒B	A

Note 1: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

Criterion A: Operate as intended during and after the test

Criterion B: Operate as intended after the test

Criterion C: Loss/Error of function

6.4. Surges

6.4.1. Test Specification

Test Port	:	input a.c. power port
Wave-Shape	:	Open Circuit Voltage - 1.2 / 50 us Short Circuit Current - 8 / 20 us
Pulse Repetition Rate	:	1 pulse / min.
Phase Angle	:	90° / 270°
Test Events	:	5 pulses (positive & negative) for each polarity

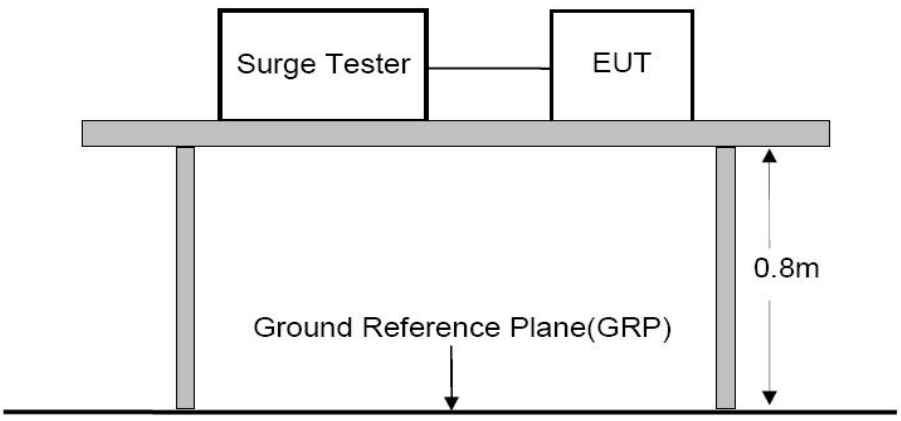
6.4.2. Test Levels and Performance Criterion

Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-5: 2014)

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

Performance criterion: **B**

6.4.3. Test setup



6.4.4. Test Procedure

1. Set up the EUT and test generator as shown on Section 12.1.
2. For line to line coupling mode, provide a 1.0KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3. Five positive pulses Line-to-neutral at 90°phase, five negative pulses Line-to-neutral at 270°phase. with a maximum 1/min repetition rate are conducted during test.
4. Different phase angles are done individually.
5. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

6.4.5. Test Result

PASS

Angle:		Positive pulses at 90° phase, Negative pulses at 270° phase				
Inject Line	Polarity	Voltage (kV)	Time Interval (Second)	Inject Method	Performance Criterion	Result (Performance Criterion)
L-N	±	1	60	Direct	☐A ☒B ☐C	A
L-PE	±	2	60	Direct	☐A ☒B ☐C	A
N-PE	±	2	60	Direct	☐A ☒B ☐C	A

Note 1: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

Criterion A: Operate as intended during and after the test
Criterion B: Operate as intended after the test
Criterion C: Loss/Error of function

6.5. Continuous induced RF disturbances

6.5.1. Test Specification

Test Port	:	input a.c. power port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second

6.5.2. Test Levels and Performance Criterion

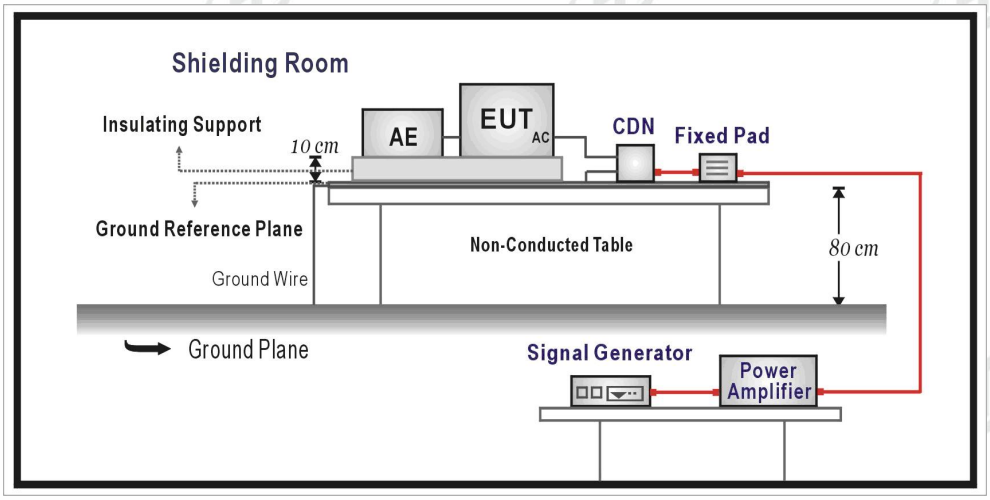
Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-6: 2014)

Frequency ranges MHz	Test level V	Modulation	Performance criterion
0,15 to 10	3	80% AM (1kHz)	A
10 to 30	3 to 1	80% AM (1kHz)	A
30 to 80	1	80% AM (1kHz)	A

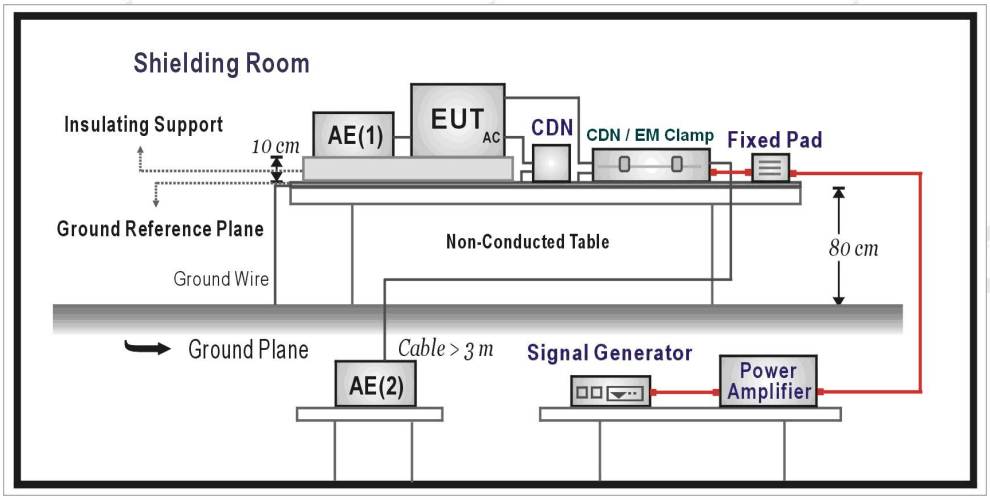
Performance criterion: **A**

6.5.3. Test setup

CDN Method



EM Clamp Method



6.5.4. Test Procedure

1. Set up the EUT, CDN and test generators as shown on Section 5.6.1.
2. Let the EUT work in test mode and measure it.
3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. 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).
4. The disturbance signal described below is injected to EUT through CDN.
5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6. The frequency range is swept from 150 KHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7. The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

6.5.5. Test Result

PASS

Frequency Band (MHz)	Field Strength (Vrms)	Inject Port	Inject Method	Performance Criterion	Result (Performance Criterion)
0.15 ~ 10	3	AC Mains	CDN	☒A☐B	A
10 ~ 30	3 to 1	AC Mains	CDN	☒A☐B	A
30 ~ 80	1	AC Mains	CDN	☒A☐B	A

Note 1: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

Criterion A: Operate as intended during and after the test

Criterion B: Operate as intended after the test

Criterion C: Loss/Error of function

Note 2: The display quality of a display output was evaluated by using a subjective by direct observation.

6.6. Power frequency magnetic fields

6.6.1. Test Levels and Performance Criterion

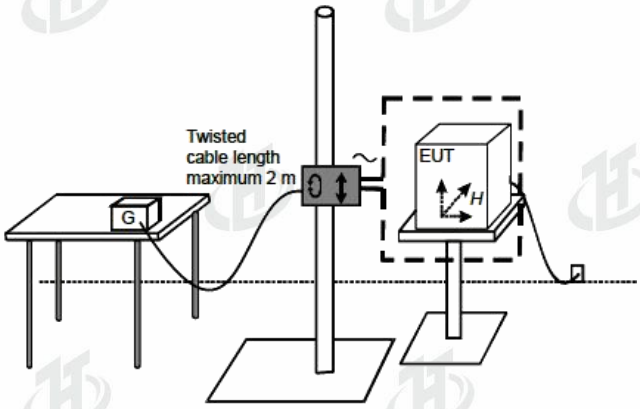
Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-8:2010)

Characteristics	Test levels
Field frequency	50/60 Hz
Test level	1 A/m

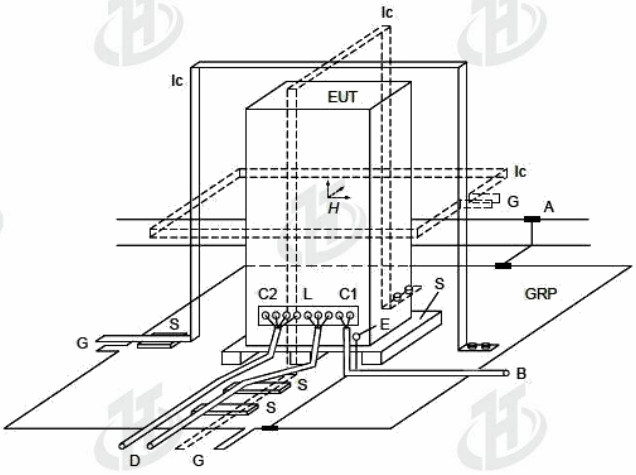
Performance criterion: **A**

6.6.2. Test setup

For table-top equipment



For floor standing equipment



6.6.3. Test Procedure

Measurement was performed in shielded room.
Measurement procedure was applied according to EN 61000-4-8 clause 8.
The test method and equipment was specified by EN 61000-4-8.

6.6.4. Test Result

N/A

The product is not a magnetically sensitive device

6.7. Voltage dips and interruptions

6.7.1. Test Specification

Test Port	:	input a.c. power port
Phase Angle	:	0°, 180°
Test cycle	:	3 times

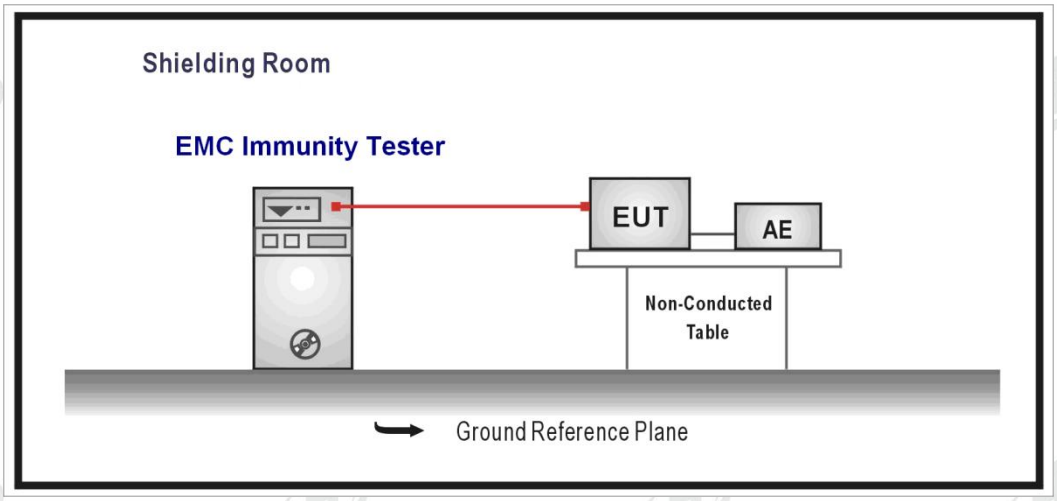
6.7.2. Test Levels and Performance Criterion

Test Standard
EN 55035:2017+A11:2020
(EN 61000-4-11: 2020)

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
< 5	95	0.5
70	30	25
< 5	95	250

Performance criterion: **B, C, C**

6.7.3. Test setup



6.7.4. Test Procedure

1. Set up the EUT and test generator as shown on Section 5.7.1.
2. The interruptions is introduced at selected phase angles with specified duration.Record any degradation of performance.

6.7.5. Test Result

PASS

Test Voltage (Vac)	Voltage Residual (%)	Test Duration (Periods)	Performance Criterion	Result (Performance Criterion)
230	< 5	0.5	☐A☒B☐C	B
	70	25	☐A☐B☒C	C
	< 5	250	☐A☐B☒C	C

Note 1: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

Criterion A: Operate as intended during and after the test

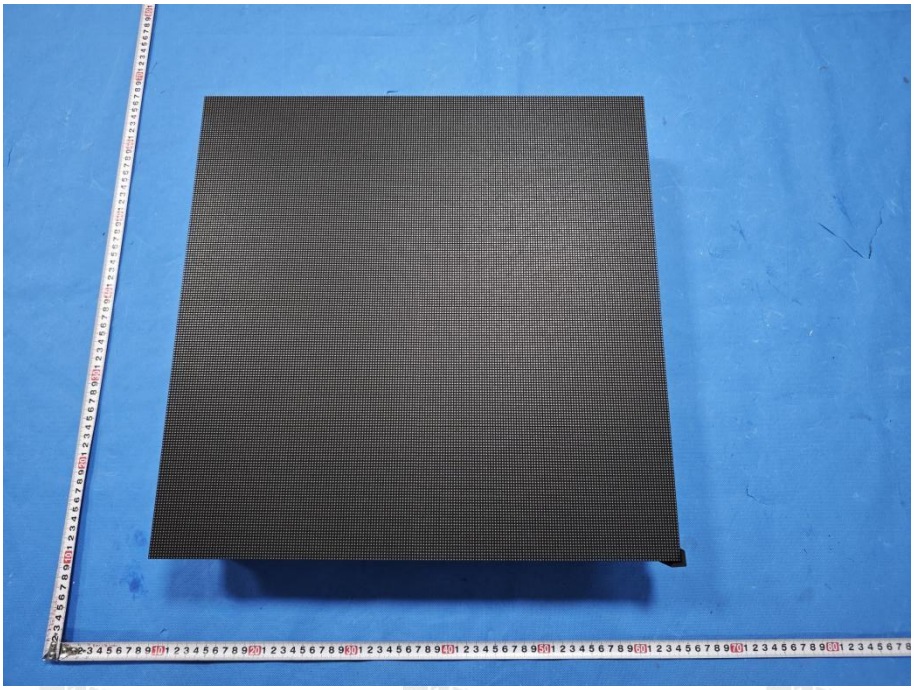
Criterion B: Operate as intended after the test

Criterion C: Loss/Error of function

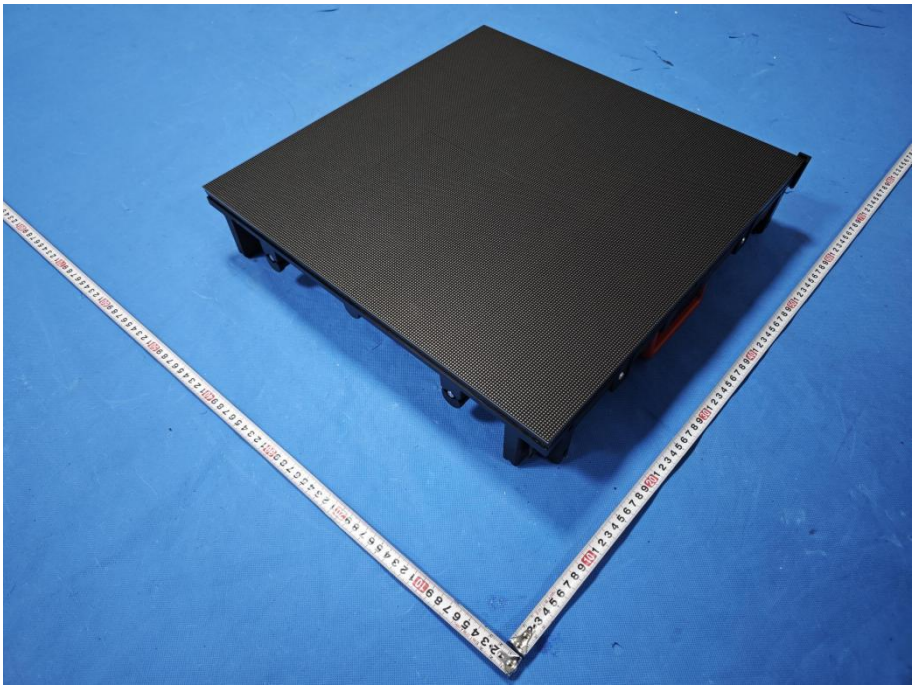
Note2: The power is temporary off and can be reset by the operator.

7. Photographs of EUT

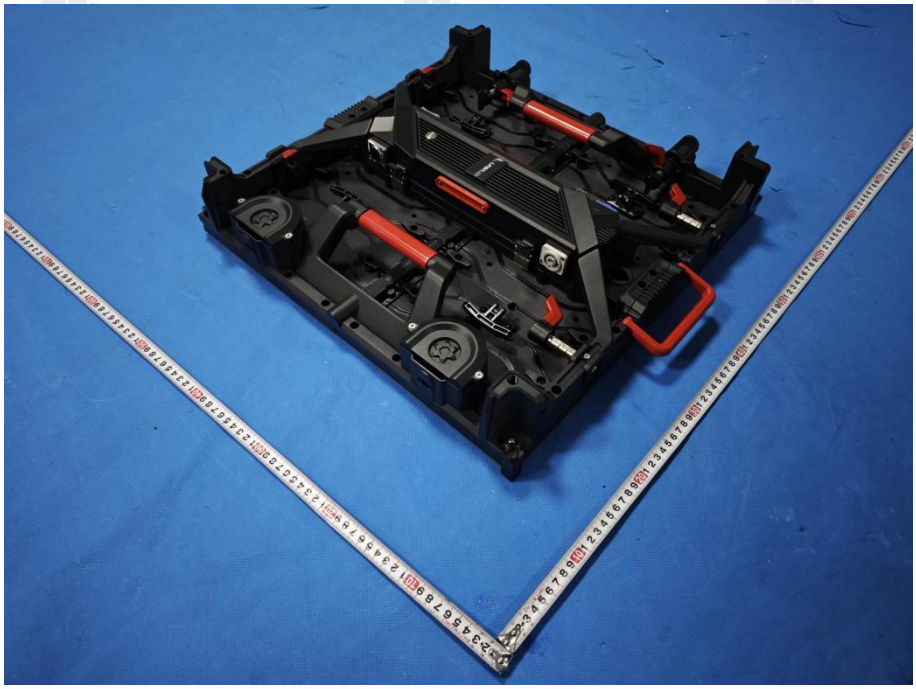
EUT Photo 1



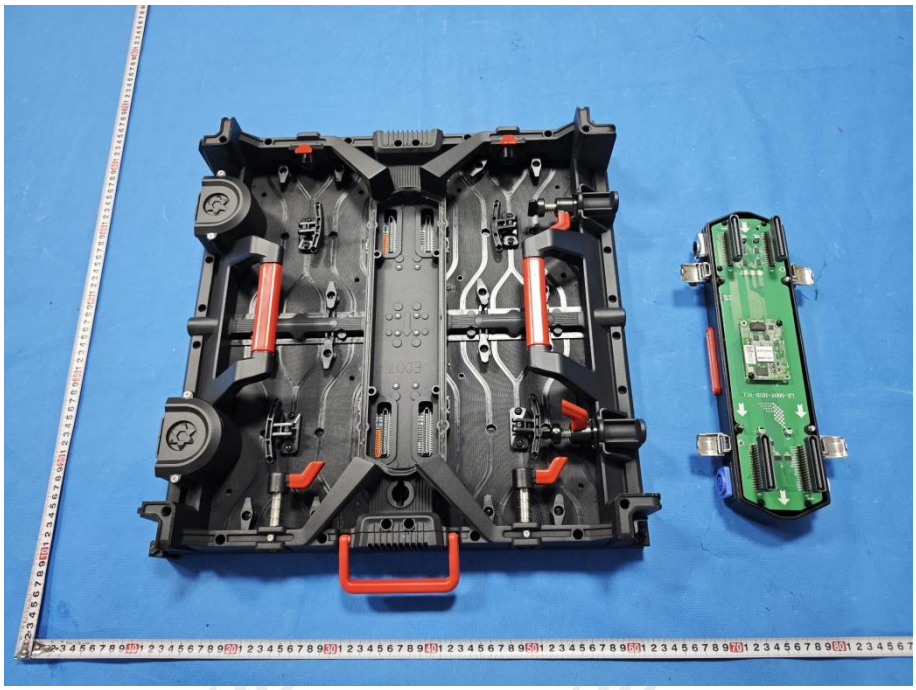
EUT Photo 2



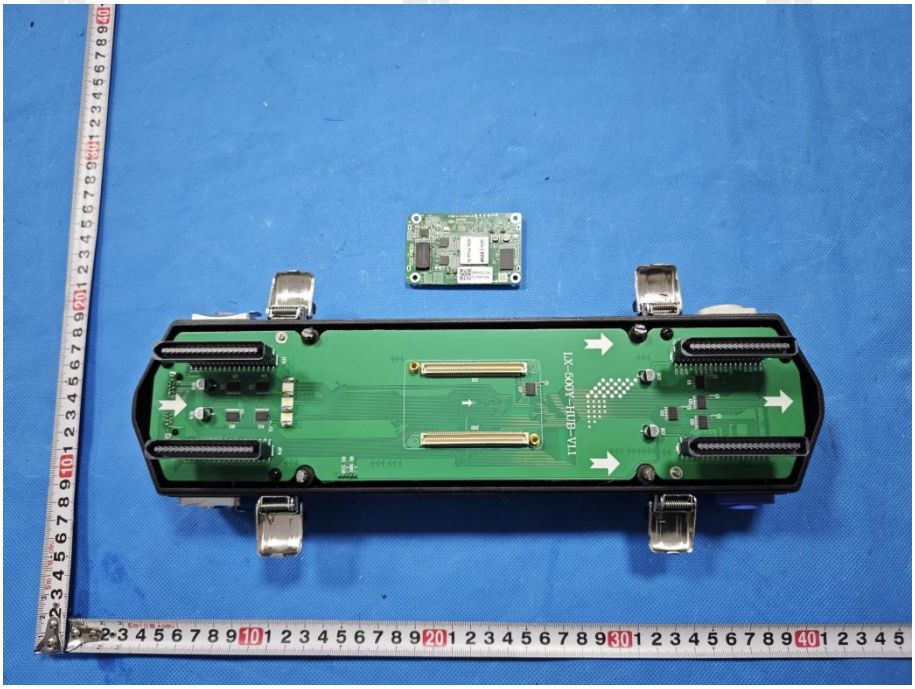
EUT Photo 3



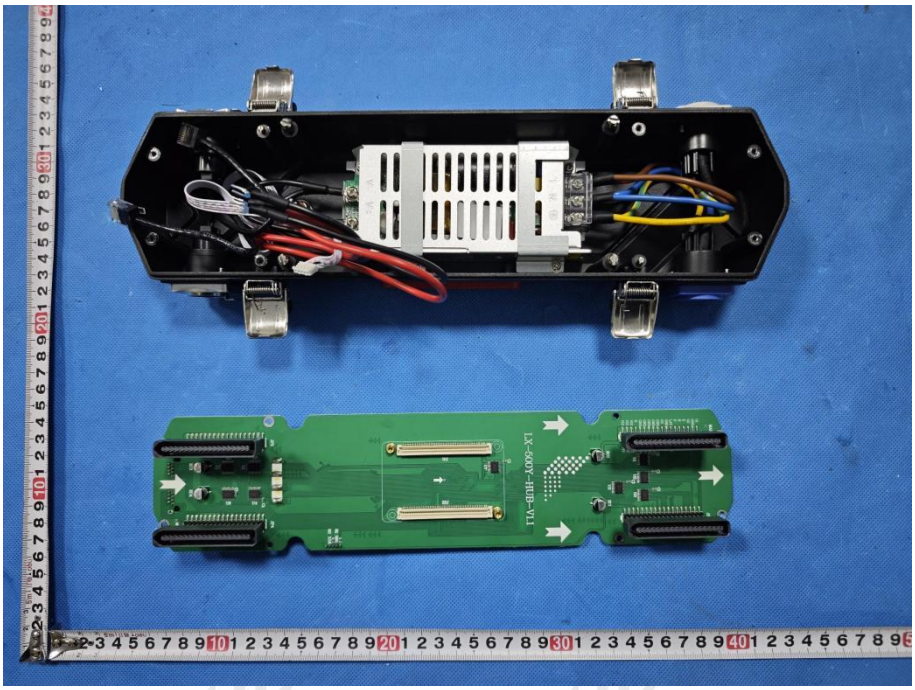
EUT Photo 4



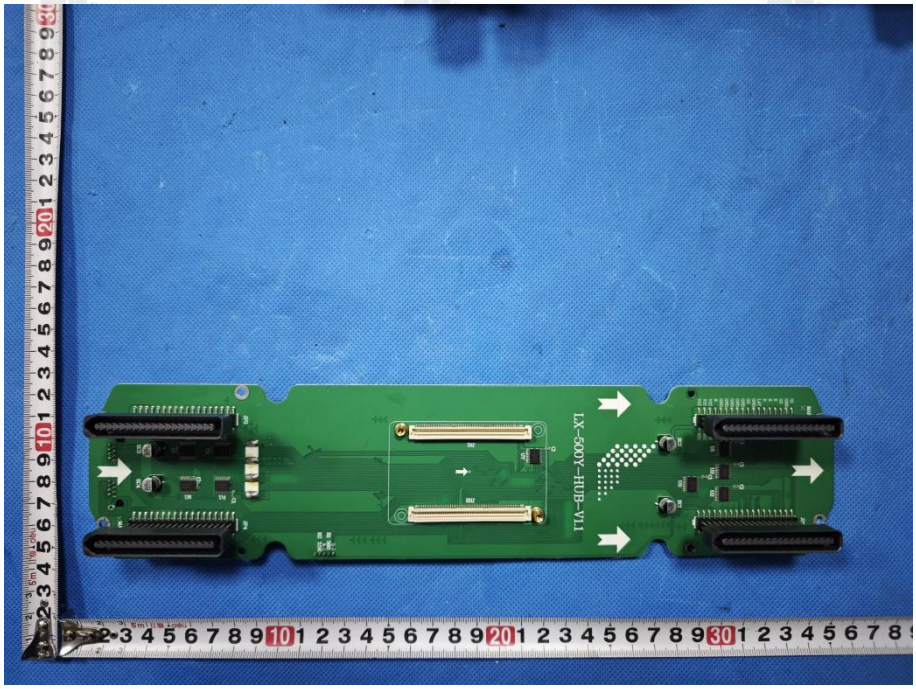
EUT Photo 5



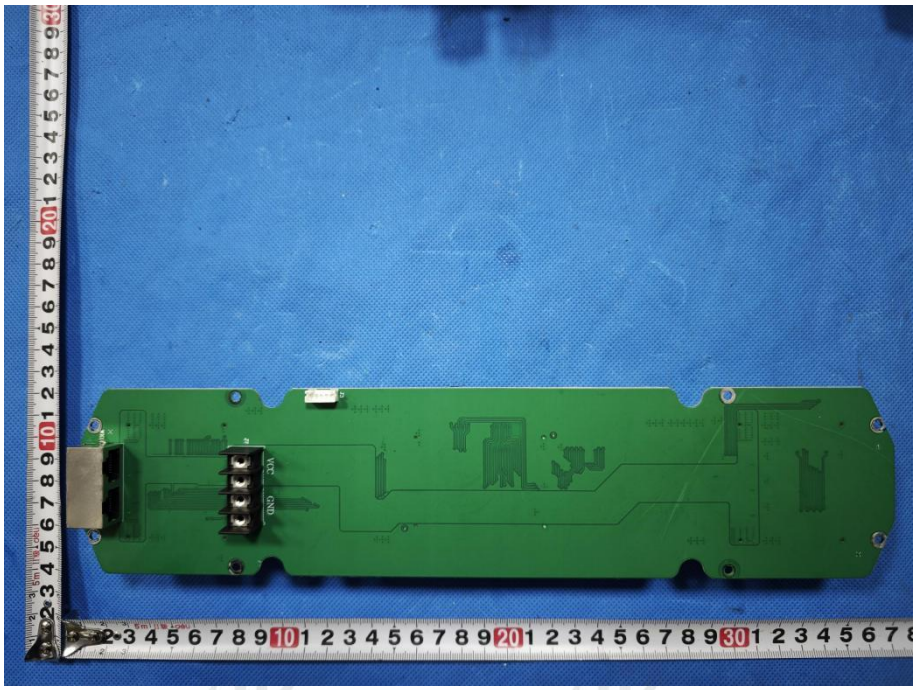
EUT Photo 6



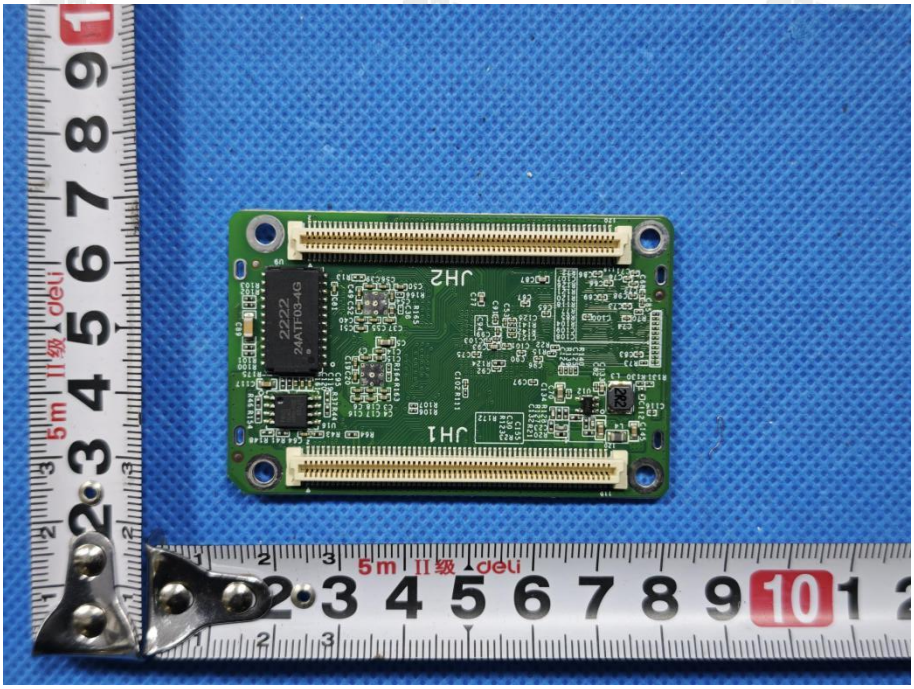
EUT Photo 7



EUT Photo 8



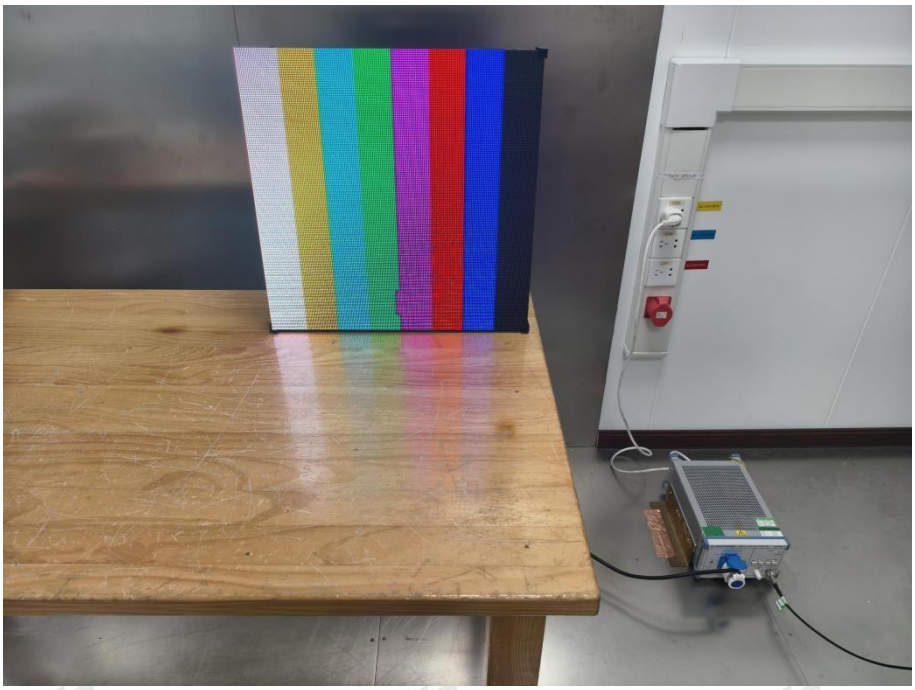
EUT Photo 9



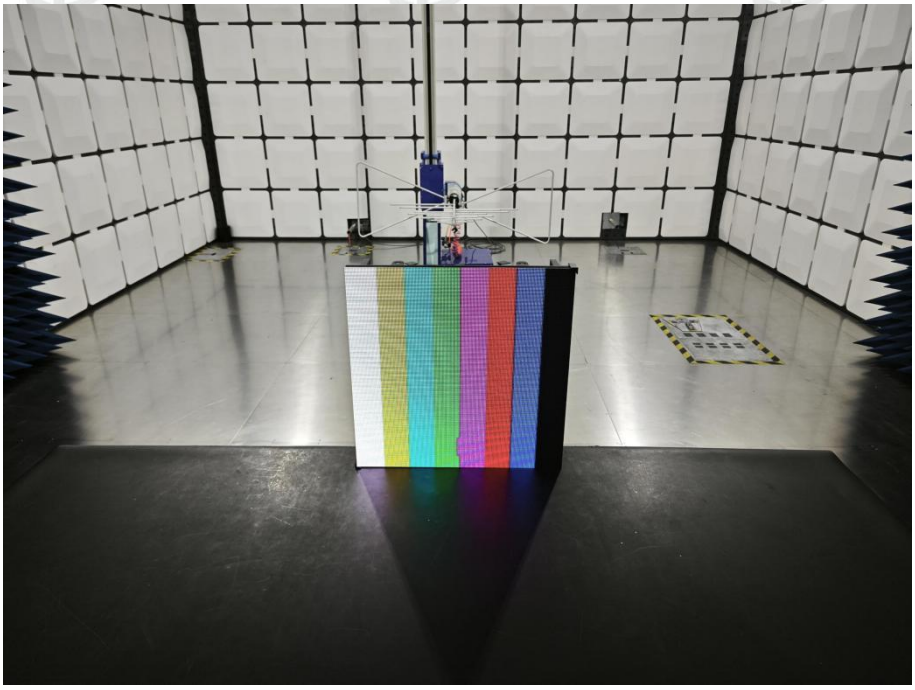
EUT Photo 10

8. Test Setup Photographs

Conducted Emission



Radiated Emission



End of report