



EUROFINS ELECTRICAL TESTING SERVICE (SHANGHAI) CO., LTD.

EMC TEST- REPORT

TEST REPORT NUMBER: EFSH24090328-IE-02-E01



Eurofins Electrical Testing Service (Shanghai) Co., Ltd.
Building 18, No. 2168 Chenhong Highway, Minhang District,
Shanghai, P.R. China

Phone: +86-21-36202800
Fax: +86-21-61819180
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2 General Information

2.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter “EUT Information” and are not transferable to any other test items.

Eurofins Electrical Testing Service (Shanghai) Co., Ltd. is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

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<https://www.eurofins.cn/consumer-product-testing/industries/electrical-electronics/general-terms/>.

Operator:

2024-11-04

Jion Shen / Project Engineer



Date

Eurofins-Lab.

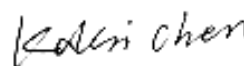
Name / Title

Signature

Technical responsibility for area of testing:

2024-11-04

Kalsi Chen / Supervisor



Date

Eurofins

Name / Title

Signature

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Building 18, No. 2168 Chenhang Highway, Minhang District, Shanghai, P.R. China

2.2 Testing laboratory

Eurofins Electrical Testing Service (Shanghai) Co., Ltd.

Building 18, No. 2168 Chenhang Highway, Minhang District, Shanghai, P.R. China

Telephone : +86-21-36202800

Telefax : +86-21-61819180

Test location, where different:

Subcontractor

Name : Zhejiang Kezheng Electronic Information Product Testing Co., Ltd.

Address : Xihu District Ma Cheng Lu Hangzhou city in Zhejiang province 36

Telephone : ./.

Fax : ./.

All tests were performed at the Subcontractor.

2.3 Details of approval holder

Name : NINGBO HOMEMATE PRODUCTS CO., LTD
Address : HOMEMATE PLAZA NO.1066 SANWU ROAD, ZHENGHAI,
NINGBO
Telephone : ./.
Fax : ./.

2.4 Application details

Date of receipt of test item : 2024-10-07
Date of test : 2024-10-08 to 2024-11-04

2.5 EUT information

Product type : 24KEY IR CONTROL 5V USB RGB LED STRIP
Model name : 638197, HM-RGB
Brand name : ./.
Serial number : ./.
Ratings : DC 5V (by peripheral adapter)
Test voltage : 230V, 50Hz (by peripheral adapter)
Additional information :

The product covered in this test report is 24KEY IR CONTROL 5V USB RGB LED STRIP

2.6 Test standards

EN IEC 55015:2019+A11:2020

EN IEC 61547:2023

3 Technical test

3.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified were ascertained in the course of the tests performed.



3.2 Test environment

Temperature	:	20	...	25°C
Relative humidity content	:	30	...	60%
Air pressure	:	100	...	103kPa

3.3 Test mode

Lighting mode

Test peripheral information:
USB adapter
Brand: HUAWEI
M/N: HW-050200C01
Input: 100-240V~50/60Hz
Output: 5VDC, 2A

3.4 Test equipment utilized

Measurement Equipment List Subcontractor				
No.	Name:	Type:	Manufacturer:	Cal due date:
1	EMI Test Receiver	ESR7	R&S	2025/8/4
2	EMI Test Receiver	ESW44	R&S	2025/3/3
3	EMI Test Receiver	ESW -26	R&S	2025/8/4
4	PRE/Amplifier	SCU08F1	R&S	2025/2/22
5	PRE/Amplifier	SCU-18	R&S	2025/8/4
6	Bilog Antenna	VULB 9163	Schwarzbeck	2025/11/30
7	Horn Antenna	EMCO3115	EMCO	2025/8/4
8	Loop Antenna	D-12623	TESEQ	2025/8/4
9	R&S/EMI Test Receiver	ESR3	R&S	2025/3/3
10	R&S/LISN	ENV216	R&S	2025/6/20
11	ESD Generator	ESD-202B	LIONCEL	2025/8/22
12	Generator	N5181A	Keysight	2025/3/4
13	Power Meter	E4419B	Keysight	2025/3/3
14	Power Amplifier	CBA1G	Milmega	2025/3/3
15	Power Amplifier	AS0102	Milmega	2025/3/3
16	Power Amplifier	AS0206	Milmega	2025/3/3
17	Probe	HI-6105	ETS	2025/3/3
18	EMS Antenna	VULP9118E	SCHWARZBECK	/

3.5 Test results

☒ 1st test

☐ test after modification

☐ production test

Test case	Subclause	Required	Test passed	Test failed
Conducted Emission	Clause 4.3 of EN IEC 55015	☒	☒	☐
Radiated electromagnetic disturbances	Clause 4.5.2 of EN IEC 55015	☐	☐	☐
Radiated disturbance	Clause 4.5.3 of EN IEC 55015	☒	☒	☐
Electrostatic Discharge	Clause 5.2 of EN 61547 & IEC 61000-4-2	☒	☒	☐
Radio frequency electromagnetic fields	Clause 5.3 of EN 61547 & IEC 61000-4-3	☒	☒	☐
Power frequency magnetic fields	Clause 5.4 of EN 61547 & IEC 61000-4-8	☐	☐	☐
Electrical Fast Transients	Clause 5.5 of EN 61547 & IEC 61000-4-4	☐	☐	☐
Injected currents (RF common mode)	Clause 5.6 of EN 61547 & IEC 61000-4-6	☐	☐	☐
Surge immunity	Clause 5.7 of EN 61547 & IEC 61000-4-5	☐	☐	☐
Voltage dips and short interruption	Clause 5.8 of EN 61547 & IEC 61000-4-11	☐	☐	☐

Note1: The EUT is incapable of generating a large magnetic dipole moment, thus deemed to comply with the radiated-field disturbance limits in the frequency range of 9 kHz to 30 MHz.

Note2: Power frequency magnetic fields test was not required as the EUT did not contained components susceptible to magnetic fields.

Note 3: Harmonic, Flick, Injected currents, EFT, Surge and Voltage dips tests are not applicable, due to tests only apply to input a.c. power ports.

4 Emission Test

4.1 Conducted Emission

This clause lays down the general requirements for the measurement of disturbance voltage produced at the terminals of apparatus.

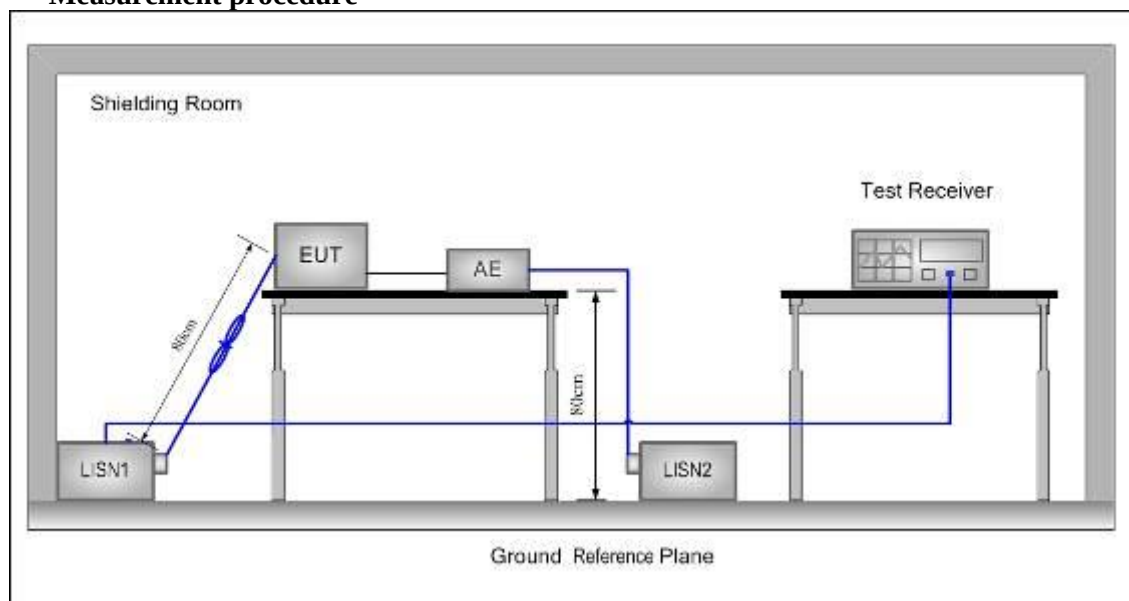
4.1.1 Limits

Frequency range MHz	At mains terminals dB (μV)	
	Quasi-peak	Average
0.009 to 0.05	110	--
0.05 to 0.15	90 to 80	--
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 50k to 150kHz and 150 kHz to 0.5 MHz.

Note2: The lower limit is applicable at the transition frequency.

4.1.2 Measurement procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN (Line Impedance Stabilization Network) which provides a $(50 \mu H + 5 \Omega) \parallel 50 \Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane but separated from metallic contact with the ground reference plane by 0.1m of insulation.

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4. Before get the final emission results with quasi-peak(QP) detector and average(AV) detector, a pre-scan was performed with the peak(PK) and average(AV) detector to find out the maximum emission data plots of the EUT.

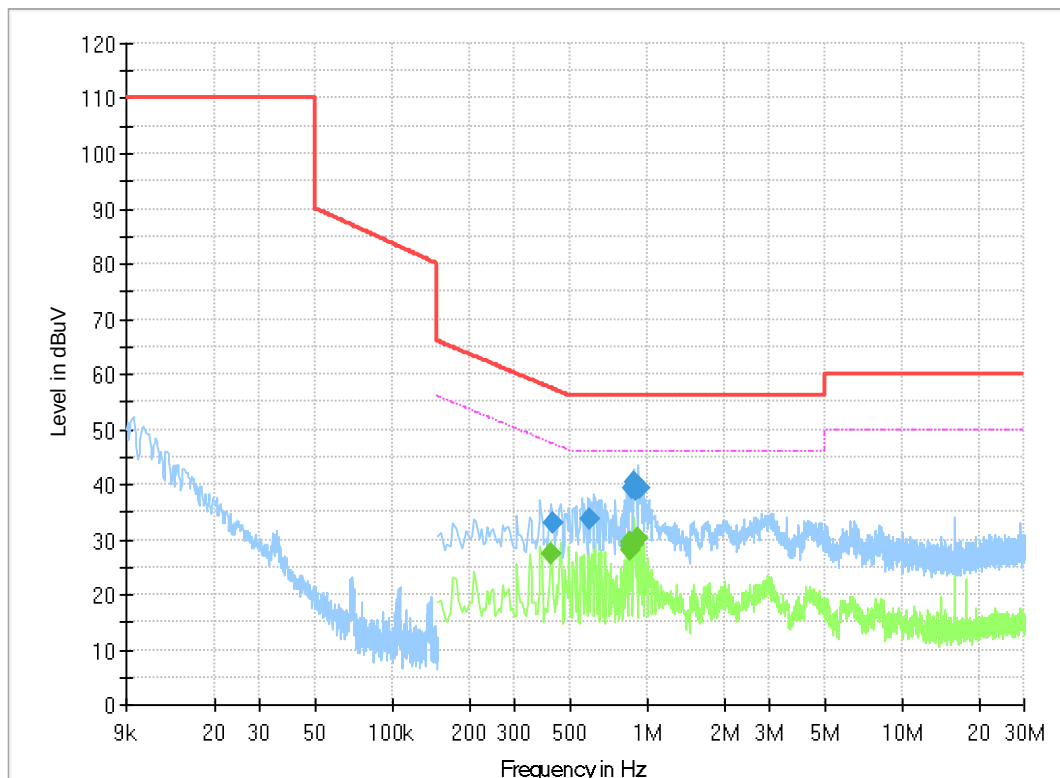
4.1.3 Measurement uncertainty

U_{lab}(cond) = 3.5 dB at confidence of 95%, k=2

4.1.4 Results

**Live Line:
Level**

Full Spectrum

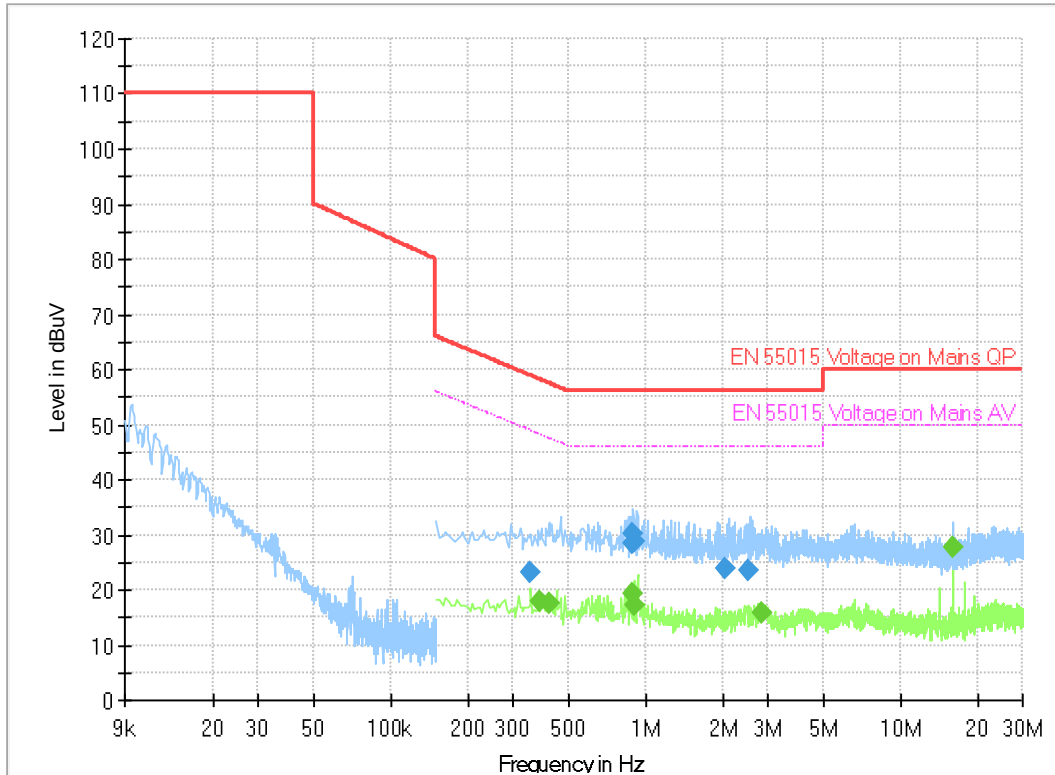


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.415500	---	27.23	47.54	20.30	1000.0	9.000	L1	ON	20.0
0.424500	33.03	---	57.36	24.33	1000.0	9.000	L1	ON	20.0
0.595500	33.79	---	56.00	22.21	1000.0	9.000	L1	ON	20.0
0.847500	---	28.91	46.00	17.09	1000.0	9.000	L1	ON	20.0
0.852000	---	29.52	46.00	16.48	1000.0	9.000	L1	ON	20.0
0.856500	---	28.00	46.00	18.00	1000.0	9.000	L1	ON	20.0
0.874500	39.37	---	56.00	16.63	1000.0	9.000	L1	ON	20.0
0.879000	---	29.20	46.00	16.80	1000.0	9.000	L1	ON	20.0
0.883500	40.44	---	56.00	15.56	1000.0	9.000	L1	ON	20.0
0.901500	38.83	---	56.00	17.17	1000.0	9.000	L1	ON	20.0
0.919500	---	30.09	46.00	15.91	1000.0	9.000	L1	ON	20.0
0.933000	39.39	---	56.00	16.61	1000.0	9.000	L1	ON	20.0

Neutral Line: Level

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.352500	23.24	---	58.90	35.67	1000.0	9.000	N	ON	20.0
0.384000	---	17.96	48.19	30.24	1000.0	9.000	N	ON	20.0
0.420000	---	17.68	47.45	29.77	1000.0	9.000	N	ON	20.0
0.879000	28.45	---	56.00	27.55	1000.0	9.000	N	ON	20.0
0.883500	---	19.36	46.00	26.64	1000.0	9.000	N	ON	20.0
0.888000	30.15	---	56.00	25.85	1000.0	9.000	N	ON	20.0
0.892500	28.74	---	56.00	27.26	1000.0	9.000	N	ON	20.0
0.897000	---	17.23	46.00	28.77	1000.0	9.000	N	ON	20.0
2.053500	23.73	---	56.00	32.27	1000.0	9.000	N	ON	20.0
2.512500	23.53	---	56.00	32.47	1000.0	9.000	N	ON	20.0
2.836500	---	15.87	46.00	30.13	1000.0	9.000	N	ON	20.0
15.999000	---	27.84	50.00	22.16	1000.0	9.000	N	ON	20.1

4.2 Radiated disturbance

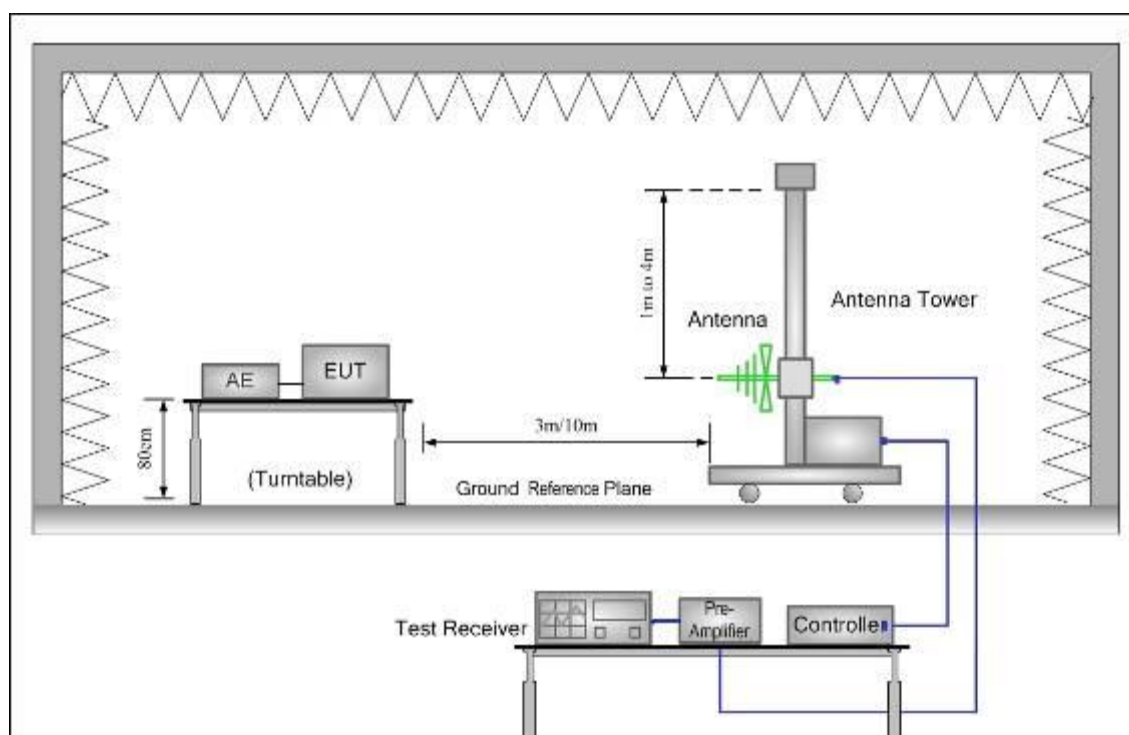
This clause lays down the general requirements for the measurement of Radiated disturbance produced at the space of apparatus.

4.2.1 Limits

Frequency range	Quasi-peak limits at 3m
MHz	dB ($\mu\text{V/m}$)
30 to 230	40
230 to 1000	47

At transitional frequencies the lower limit applies.

4.2.2 Measurement procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber. The EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
2. Before get the final emission results with quasi-peak(QP) detector, a pre-scan was performed with the peak(PK) detector to find out the maximum emission data plots of the EUT.
3. The frequencies of maximum emission were determined in the final radiated emissions measurement, the physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. Test was performed on subcontractor at 3 m distance.

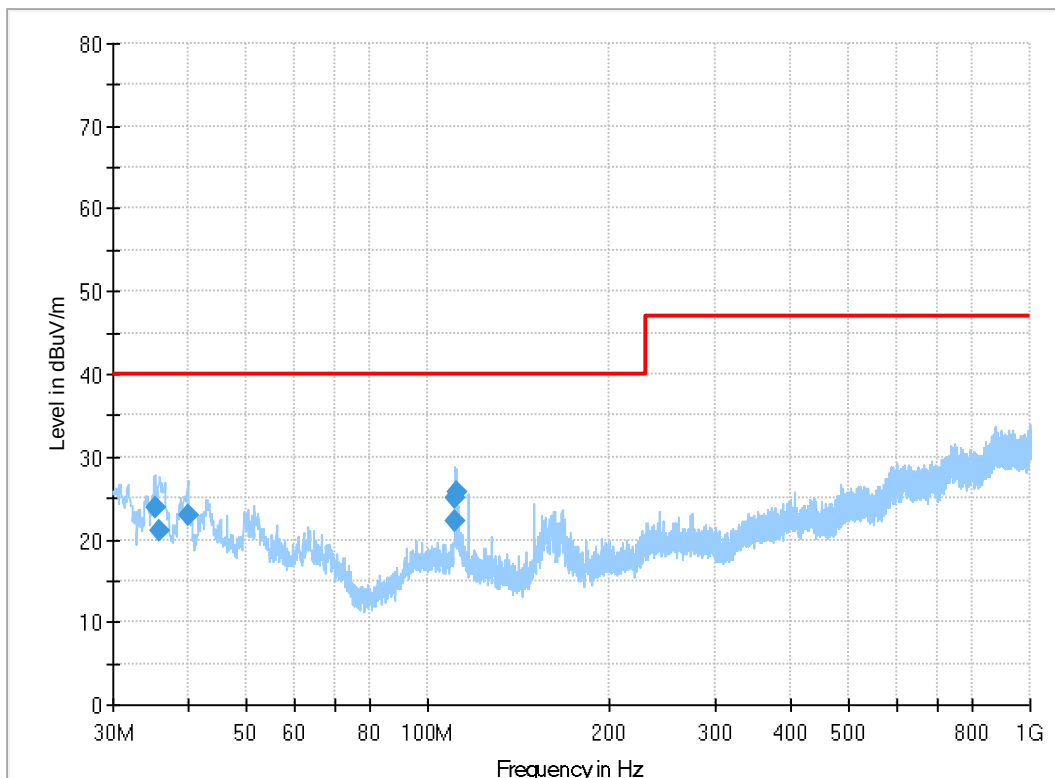
4.2.3 Measurement uncertainty

The maximum measurement uncertainty is evaluated as:
30MHz~1GHz: 4.3 dB

4.2.4 Results

**Horizontal:
Level**

Full Spectrum

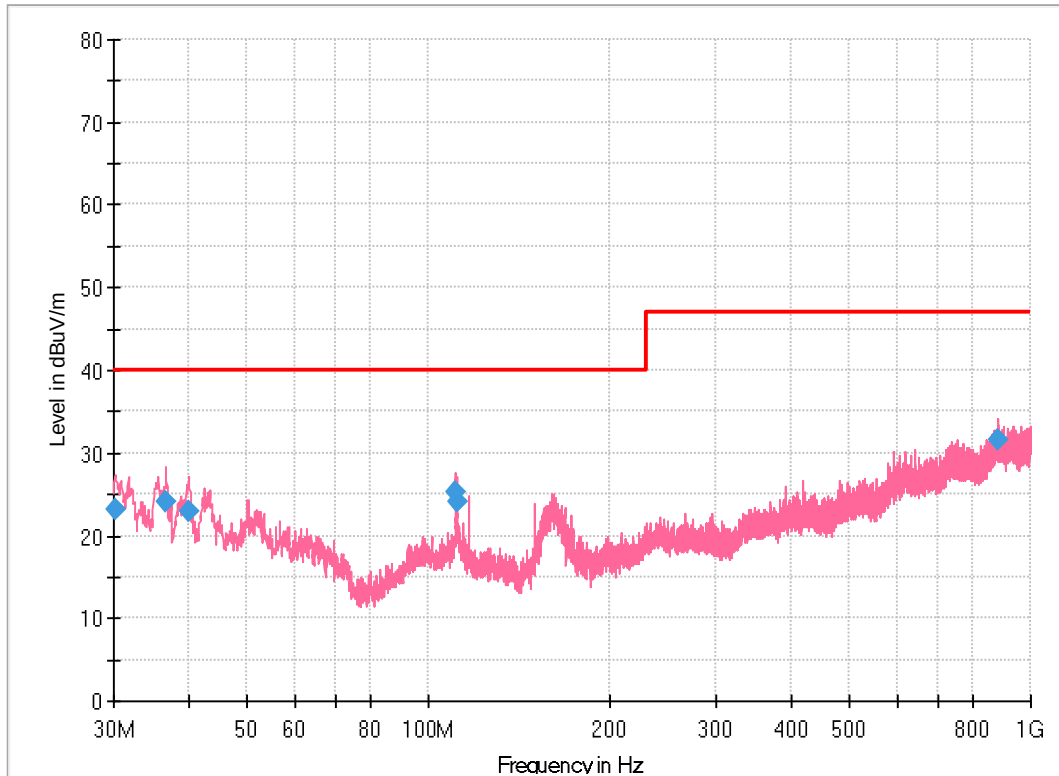


Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.189500	23.82	40.00	16.18	1000.0	120.000	100.0	H	281.0	17.7
35.868500	21.05	40.00	18.95	1000.0	120.000	136.0	H	209.0	17.9
39.942500	22.94	40.00	17.06	1000.0	120.000	119.0	H	217.0	19.3
110.898000	22.33	40.00	17.67	1000.0	120.000	111.0	H	185.0	18.0
111.140500	24.95	40.00	15.05	1000.0	120.000	100.0	H	224.0	18.0
111.237500	25.64	40.00	14.36	1000.0	120.000	100.0	H	44.0	17.9

**Vertical:
Level**

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.194000	23.07	40.00	16.93	1000.0	120.000	122.0	V	89.0	16.8
36.644500	24.17	40.00	15.83	1000.0	120.000	100.0	V	204.0	18.2
39.942500	22.86	40.00	17.14	1000.0	120.000	106.0	V	289.0	19.3
111.092000	25.27	40.00	14.73	1000.0	120.000	117.0	V	251.0	18.0
111.237500	24.01	40.00	15.99	1000.0	120.000	111.0	V	183.0	17.9
882.436000	31.47	47.00	15.53	1000.0	120.000	150.0	V	40.0	29.8

5 Immunity Test

5.1 Performance Criteria Description in Clause 4 of EN 61547

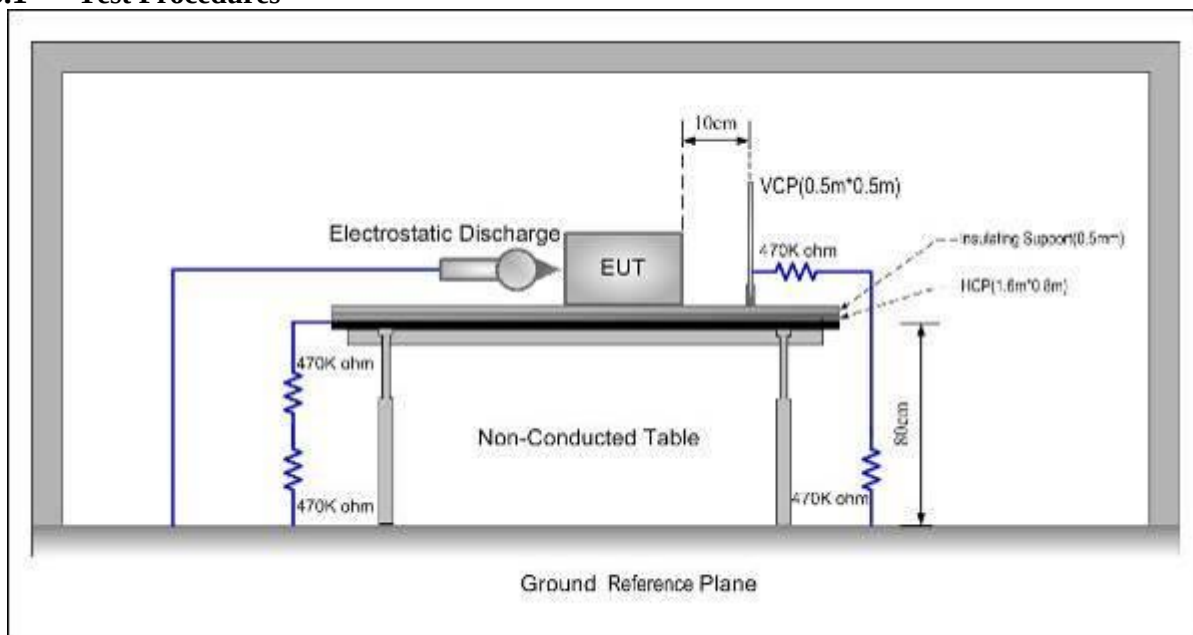
Criterion A:	During the test, no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
Criterion B:	During the test, the luminous intensity may change to any value. After the test, the luminous intensity shall be restored to 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. Additional requirement for lighting equipment incorporating a starting device: After the test, the lighting equipment is switched off. After half an hour, it is switched on again. The lighting equipment shall start and operate as intended.

5.2 Conditions during testing

The test shall be applied while the equipment is operated as intended under the normal operating conditions as laid down in the relevant product standard at stabilized luminous (radiant) flux and at normal laboratory conditions. Testing is only required at one combination of supply voltage and frequency, as specified by the manufacturer. Equipment including a regulating control shall be tested at a light output level of $50 \% \pm 10 \%$. The lamp load of the equipment under test shall be the maximum allowed. Luminaires and independent auxiliaries shall be tested with lamps for which they are intended. Where equipment can operate with lamps of different wattages, lamps of maximum wattage shall be applied. For independent auxiliaries, the length of the cables between device and lamp shall be 3 m unless the manufacturer prescribes another length.

5.3 Electrostatic discharge

5.3.1 Test Procedures



1. Contact discharge was applied only to conductive surfaces of the EUT. Air discharge was applied only to non-conducted surfaces of the EUT.
2. The EUT was put on a 0.8m high wooden table for table-top equipment or 0.1m high for floor standing equipment standing on the ground reference plane (GRP).
3. A horizontal coupling plane(HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size while HCP were constructed from the same material type and thickness as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end. The distance between EUT and any of the other metallic surfaces excepted the GRP, HCP and VCP was greater than 1m.
4. During the contact discharges, the tip of the discharge electrode was touching the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the ESD generator was removed from the EUT, the generator is then retriggered for a new single discharge. For ungrounded product, a discharge cable with two resistances was used after each discharge to remove remnant electrostatic voltage. 10 times of each polarity single discharge were applied to HCP and VCP.

5.3.2 Results

During normal operation

Test point	Table (T) Floor (F)	Contact (C) Air (A)	Voltage (kV)	Number of discharge	Polarity (+ / -)	Opinion
Air discharge	T	A	8	20	+ / -	A
Contact discharge	T	C	4	20	+ / -	N/A
HCP	T	C	4	20	+ / -	A
VCP	T	C	4	20	+ / -	A

A: no loss of function.

Note: No contact direct discharge point can be found during the test.

During handling (EUT not powered)

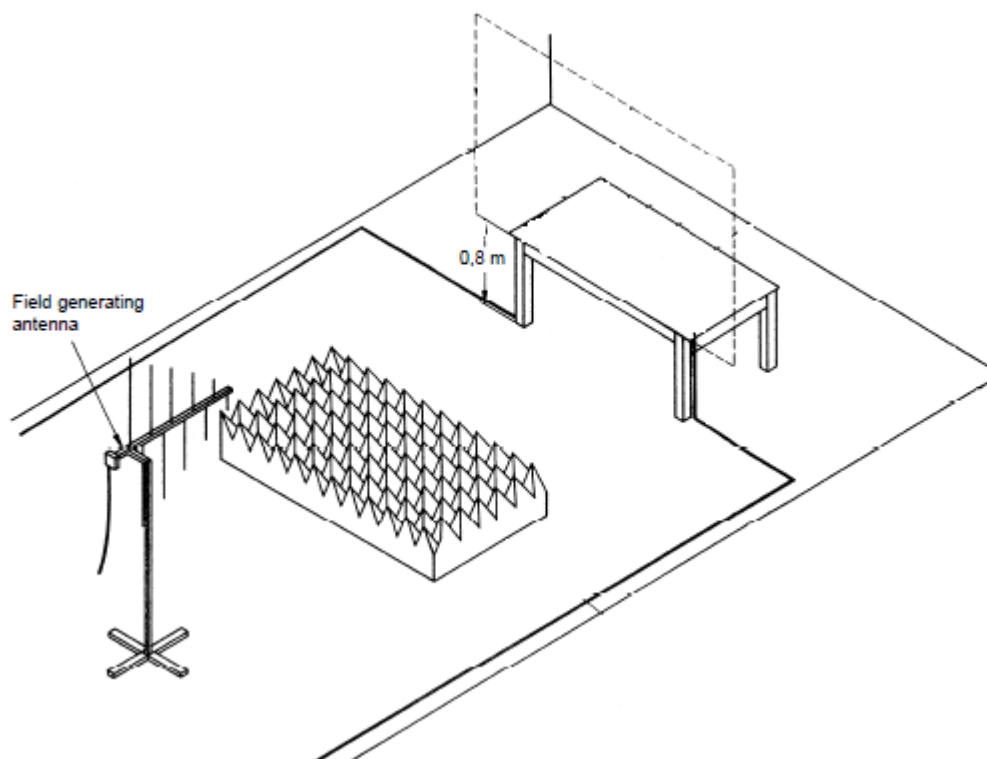
Test point	Table (T) Floor (F)	Contact (C) Air (A)	Voltage (kV)	Number of discharge	Polarity (+ / -)	Opinion
Air discharge	T	A	8	20	+ / -	A
Contact discharge	T	C	4	20	+ / -	N/A
HCP	T	C	4	20	+ / -	A
VCP	T	C	4	20	+ / -	A

A: no loss of function.

Note: No contact direct discharge point can be found during the test.

5.4 Radio frequency electromagnetic fields

5.4.1 Measurement procedure



1. The EUT was placed on 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP. The tests normally shall be performed with the generating antenna facing each of four sides of the EUT. When equipment can be used in different orientations (e.g. vertical or horizontal) the test shall be performed on all possible sides of the EUT.
2. The tests are carried out with a field strength by 3 V/m (measured in the unmodulated field) with amplitude modulated signal by a depth of 80 % by a sinusoidal audio signal of 1 kHz. The logarithmic step was 1% and the dwell time was 3s dependent of the EUT cycle time. Test was performed on subcontractor.

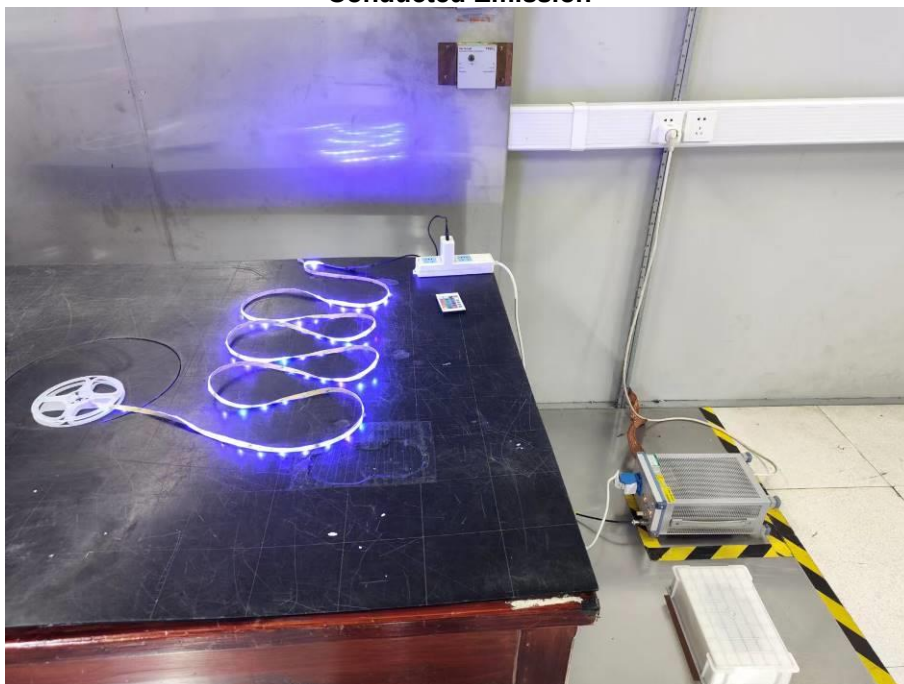
5.4.2 Results

Frequency Range	Field Strength	Modulation	Opinion
80MHz to 1GHz	3V/m	80% AM 1kHz	A

A: no loss of function.

6 Test Setup Photos

Conducted Emission



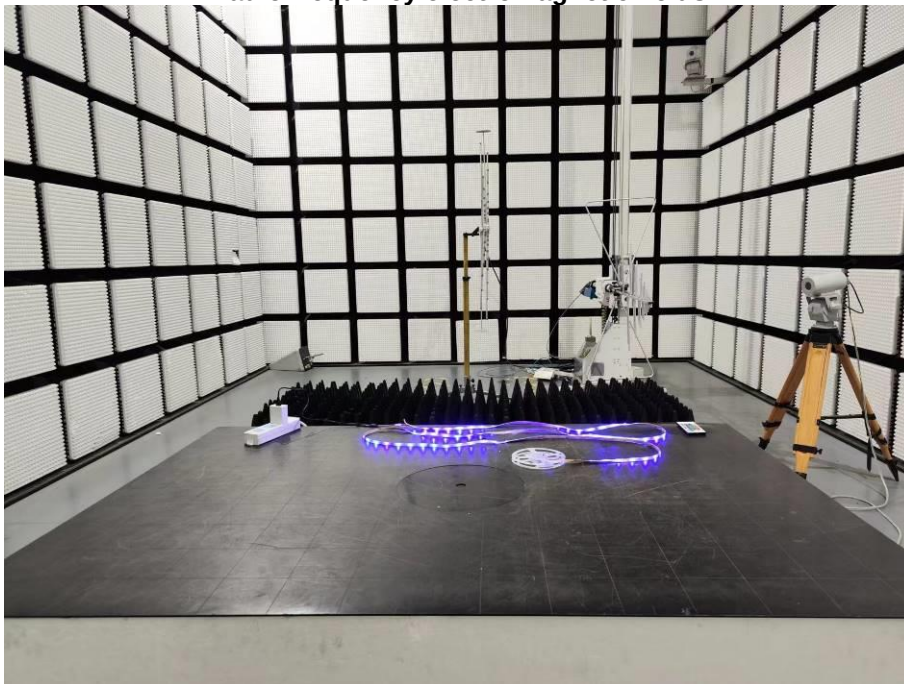
Radiated disturbance



Electrostatic Discharge



Radio frequency electromagnetic fields



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Building 18, No. 2168 Chenhang Highway, Minhang District, Shanghai, P.R. China

7 EUT Photos

Photo 1
Description: Overall view

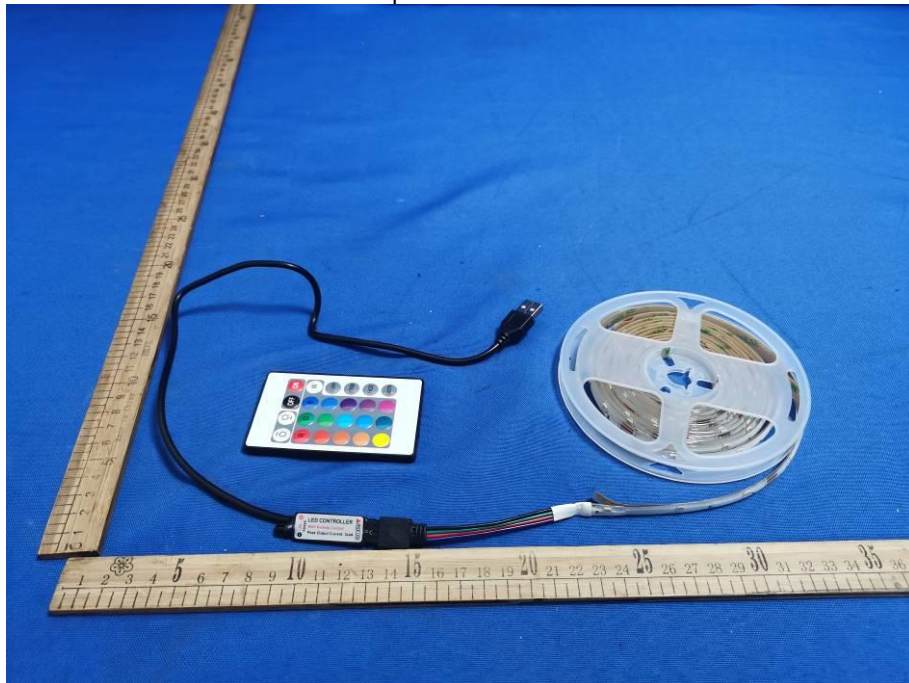


Photo 2
Description: Overall view

