TEST REPORT

Report No.:	BCTC2207678047E
Applicant:	Nanning Jialong Optoeletronic Technology Co., Ltd.
Product Name:	LED Strip
Model/Type reference:	JLGD-2835
Tested Date:	2022-07-07 to 2022-07-12
Issued Date:	2022-07-15

Shenzhen BCTC Testing Co., Ltd.

Product Name:	LED Strip
Trademark:	N/A
Model /Type Ref.:	JLGD-2835 JLGD-XXXXX-X("XXXXX"shows for any number or letters; "X"can show for A, B, D, N (A:silicone tube; B:silicone glue sealing; D:silicone dropping; N:IP20 nonwaterproof)
Prepared For:	Nanning Jialong Optoeletronic Technology Co., Ltd.
Address:	No.416, Mugong Village, Qiaojian Town, Long'an County, Nanning City, Guangxi Province
Manufacturer:	Nanning Jialong Optoeletronic Technology Co., Ltd.
Address:	No.416, Mugong Village, Qiaojian Town, Long'an County, Nanning City, Guangxi Province
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China.
Sample Received Date:	2022-07-07
Sample tested Date:	2022-07-07 to 2022-07-12
Issue Date:	2022-07-15
Report No.:	BCTC2207678047E
Test Standards	EN IEC 55015:2019+A11:2020, EN 61547: 2009
Test Results	PASS

Tested by:

Sheldon. Sun

Sheldon Sun/ Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2207678047E	2022-07-15	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

Emission		
Standard	**Test Item**	**Test result**
EN IEC 55015	Disturbance voltages (CE)	N/A[1]
EN IEC 55015	Radiated disturbance in frequency range 9KHz to 30MHz (ME)	Pass
EN IEC 55015	Radiated disturbance in frequency range 30MHz to 300MHz (RE)	Pass
EN IEC 61000-3-2	Harmonic current emission(H)	N/A[3]
EN 61000-3-3	Voltage fluctuations & flicker(F)	N/A[3]

Immunity (EN 61547)		
Standard	**Test Item**	**Test result**
IEC 61000-4-2	Electrostatic discharge((ESD)	Pass
IEC 61000-4-3	Radio frequency electromagnetic fields(RS)	Pass
IEC 61000-4-4	Fast transients(EFT)	N/A[1]
IEC 61000-4-5	Surges	N/A[1]
IEC 61000-4-6	Injected currents(CS)	N/A[1]
IEC 61000-4-8	Power frequency magnetic fields(PFMF)	N/A[2]
IEC 61000-4-11	Voltage dips and interruptions(DIPS)	N/A[1]

Remark:
1. The EUT is powered by the DC only, the test item is not applicable.
2. The Product doesn't contain any device susceptible to magnetic fields.
3. The Product is not discharging lamp and its power is less than 25W, so it deems to fulfil this standard without testing.

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)
Radiated Emission(30MHz-1000MHz)	4.80
Conducted Emission (150K-30MHZ)	3.20
Conducted Emission (9K-30MHZ)	3.10
ME	2.80

4. Product Information And Test Setup

4.1 Product Information

Ratings: DC 24 From Battery
Model difference: All models are identical except for the appearance color and model named, the test model is JLGD-2835 and the test results are applicable to other tests.

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	--	--	Applicant	**---**	Yes/No	With a ferrite ring in mid Detachable
2	--	--	BCTC	--	Yes/No	--

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Radiated disturbance in frequency range 9KHz to 30MHz (ME)	Lighting	DC 24V
Radiated disturbance in frequency range 30MHz to 1000MHz (RE)	Lighting	DC 24V
Electrostatic discharge (ESD) B ☒Air Discharge: ±8kV ☒Contact Discharge: ±4kV ☒HCP & VCP: ±2,4kV	Lighting	DC 24V
Radio frequency electromagnetic fields(RS) A 80MHz-1000MHz, 3V/m,80% Front, Rear, Left, Right H/V	Lighting	DC 24V

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

ME Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
3-Loop Antenna	Zhinan/China	ZN30401	13017	May 24, 2022	May 23, 2023
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

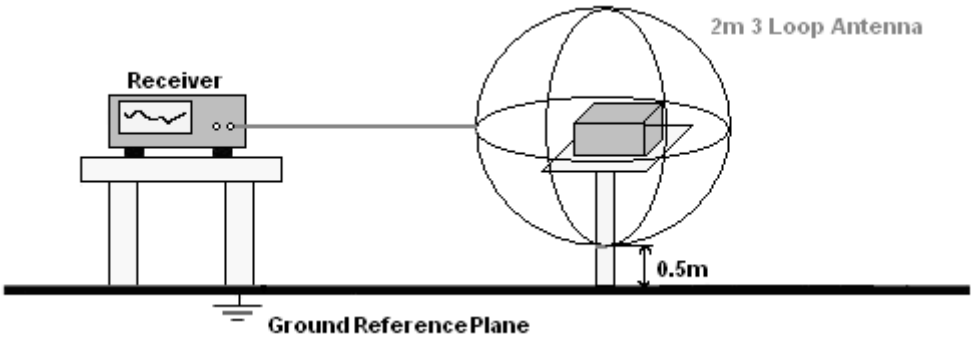
Radiated Emissions Test (966 Chamber#01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESRP	101154	May 24, 2022	May 23, 2023
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
Amplifier	SKET	LAPA_01G18G-45dB	\	May 24, 2022	May 23, 2023
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 24, 2022	May 23, 2023
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 26, 2022	May 25, 2023
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 26, 2022	May 25, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Electrostatic Discharge Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
ESD Tester	KIKUSUI	KES4201A	UH002321	May 26, 2022	May 25, 2023

Continuous RF Electromagnetic Field Disturbances Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	\	May 24, 2022	May 23, 2023
Power sensor	Keysight	E9300A	\	May 24, 2022	May 23, 2023
Power sensor	Keysight	E9300A	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_801000-250W	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_0103-75W	\	May 24, 2022	May 23, 2023
Amplifier	SKET	HAP_0306-50W	\	May 24, 2022	May 23, 2023
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	\	\	\
Field Probe	Narda	EP-601	\	May 30, 2022	May 29, 2023
Signal Generator	Agilent	N5181A	MY50143748	May 24, 2022	May 23, 2023
Software	SKET	EMC-S	1.2.0.18	\	\

6. Radiated Disturbance (9KHz-30MHz)

6.1 Block Diagram Of Test Setup



6.2 Limits

Frequency	Limits For Loop Diameter (DbμA)
	2m
9khz ~ 70khz	88
70khz ~ 150khz	88 ~ 58*
150khz ~ 3.0mhz	58 ~ 22*
3.0mhz ~ 30mhz	22

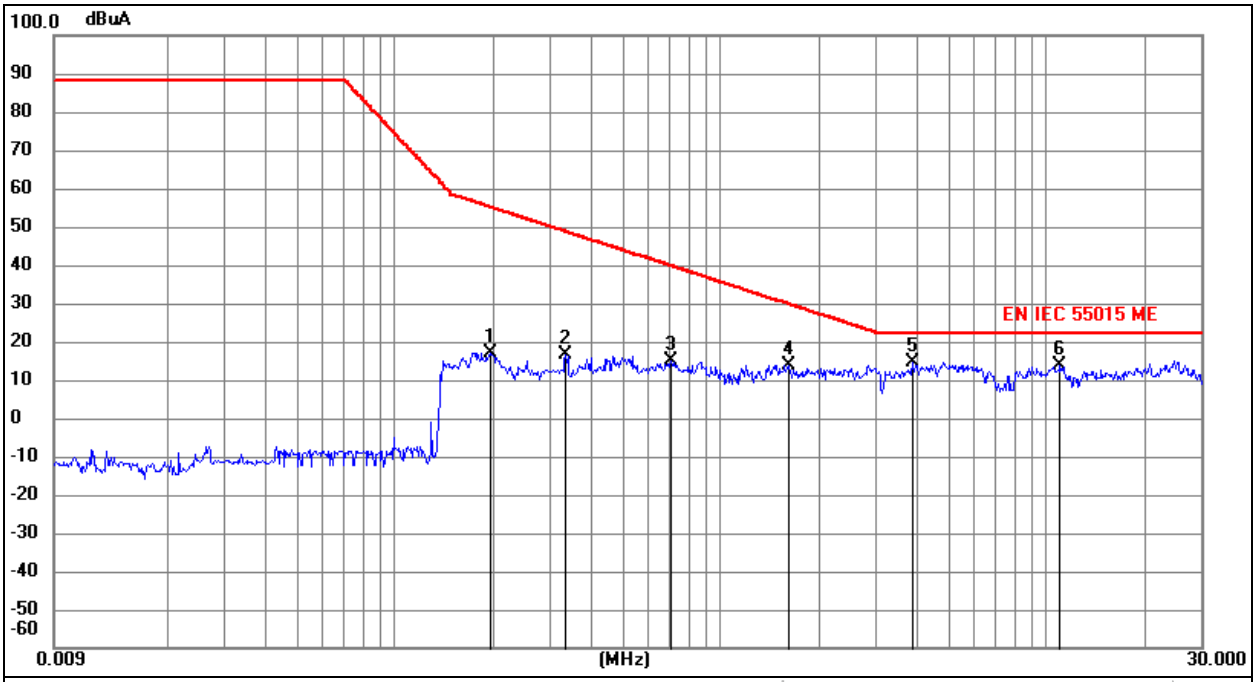
Note:
1. At the transition frequency the lower limit applies.
2. * Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaries, the limit in the frequency range of 2.2MHz to 3.0MHz is 58dB(μA) for 2m.

6.3 Test Procedure

a. The Product was placed on a wooden table in the center of a loop antenna.
b. The induced current in the loop antenna was measured by means of a current probe and the test receiver. Three field components were checked by means of a coaxial switch.
c. The frequency range from 9 KHz to 30MHz is investigated. The receiver was measured with the quasi-peak detector. The RBW of the receiver was set at 200Hz in 9 kHz ~150 kHz and 9 kHz in 150 kHz 30MHz.

6.4 Test Results

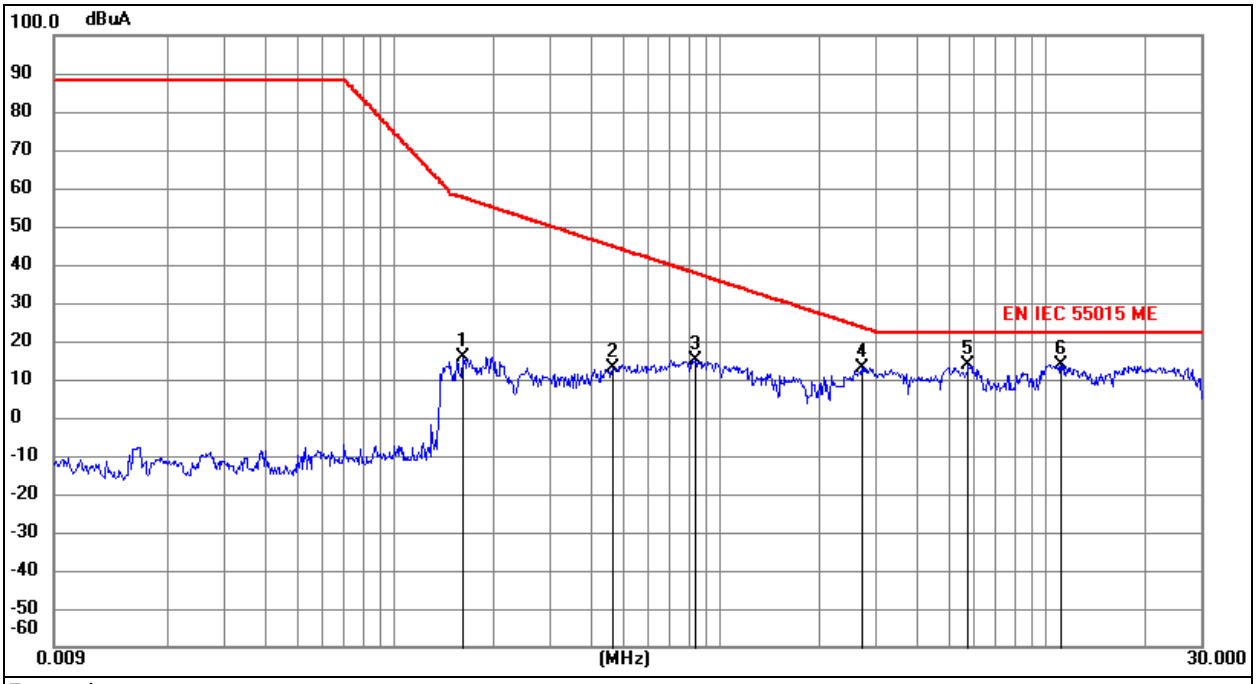
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	X
Test Voltage :	DC 24V	Test Mode:	Lighting



Remark:
1. All readings are Quasi-Peak values .
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1978	6.62	10.43	17.05	54.68	-37.63	QP
2		0.3351	6.25	10.45	16.70	48.34	-31.64	QP
3		0.7072	4.26	10.56	14.82	39.37	-24.55	QP
4		1.6169	2.66	11.07	13.73	29.43	-15.70	QP
5	*	3.8845	3.60	10.81	14.41	22.00	-7.59	QP
6		11.0609	4.07	9.92	13.99	22.00	-8.01	QP

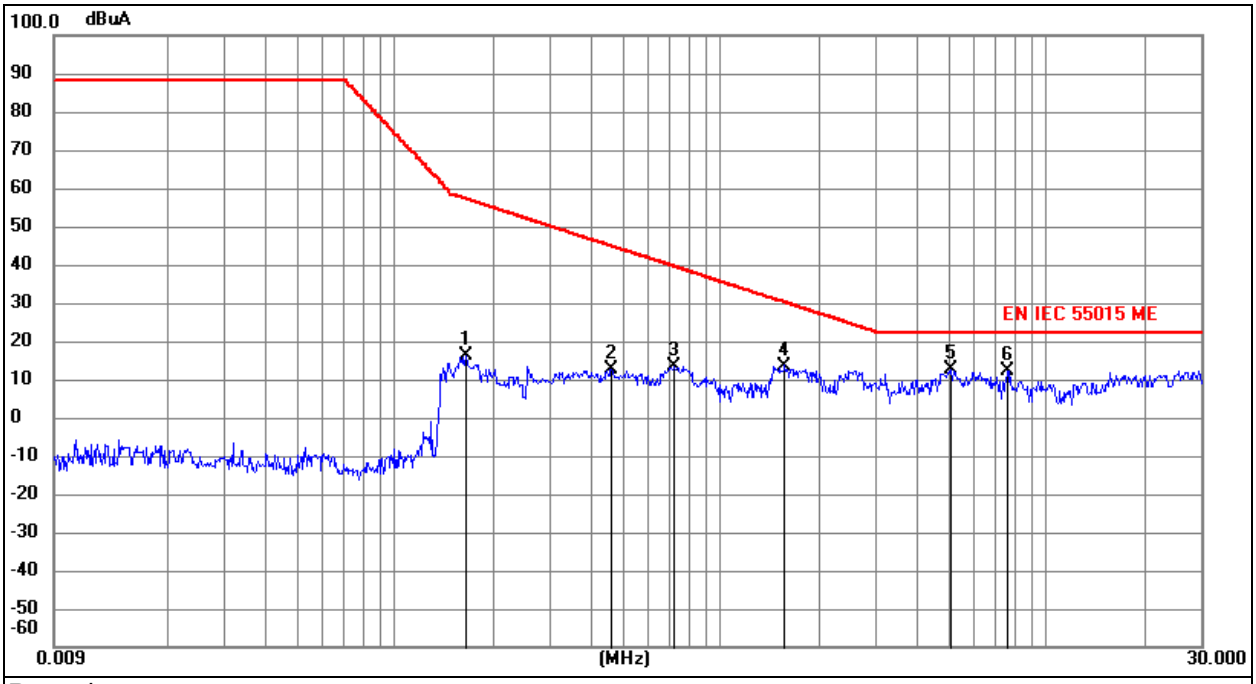
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Y
Test Voltage :	DC 24V	Test Mode:	Lighting



Remark:
1. All readings are Quasi-Peak values .
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1628	5.31	10.43	15.74	57.02	-41.28	QP
2		0.4676	2.72	10.47	13.19	44.34	-31.15	QP
3		0.8385	4.44	10.62	15.06	37.32	-22.26	QP
4		2.7185	1.48	11.48	12.96	23.18	-10.22	QP
5	*	5.7804	3.61	10.12	13.73	22.00	-8.27	QP
6		11.1514	3.80	9.91	13.71	22.00	-8.29	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Z
Test Voltage :	DC 24V	Test Mode:	Lighting

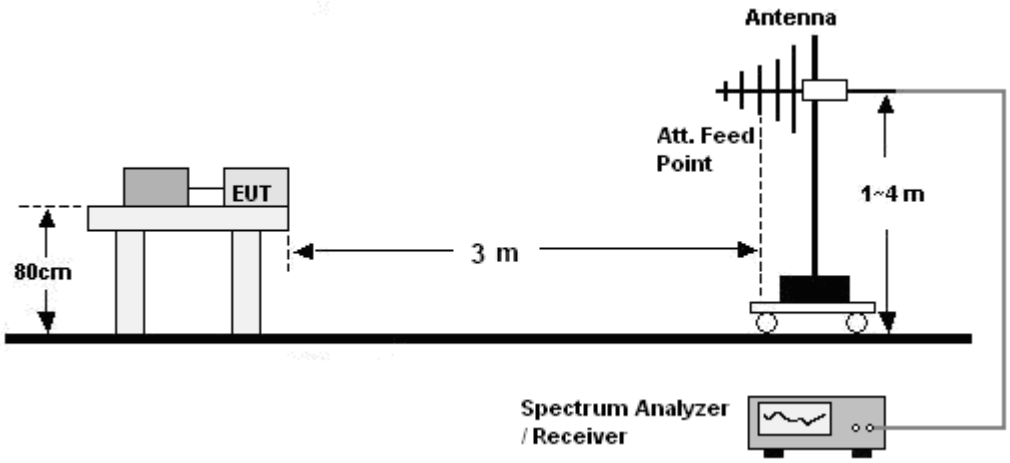


Remark:
1. All readings are Quasi-Peak values .
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1655	5.59	10.43	16.02	56.82	-40.80	QP
2		0.4637	2.30	10.47	12.77	44.44	-31.67	QP
3		0.7246	2.97	10.57	13.54	39.07	-25.53	QP
4		1.5786	2.56	11.04	13.60	29.72	-16.12	QP
5	*	5.1181	2.32	10.15	12.47	22.00	-9.53	QP
6		7.6162	2.07	10.03	12.10	22.00	-9.90	QP

7. Radiated Disturbance (30MHz -1000MHz)

7.1 Block Diagram Of Test Setup



7.2 Limits

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

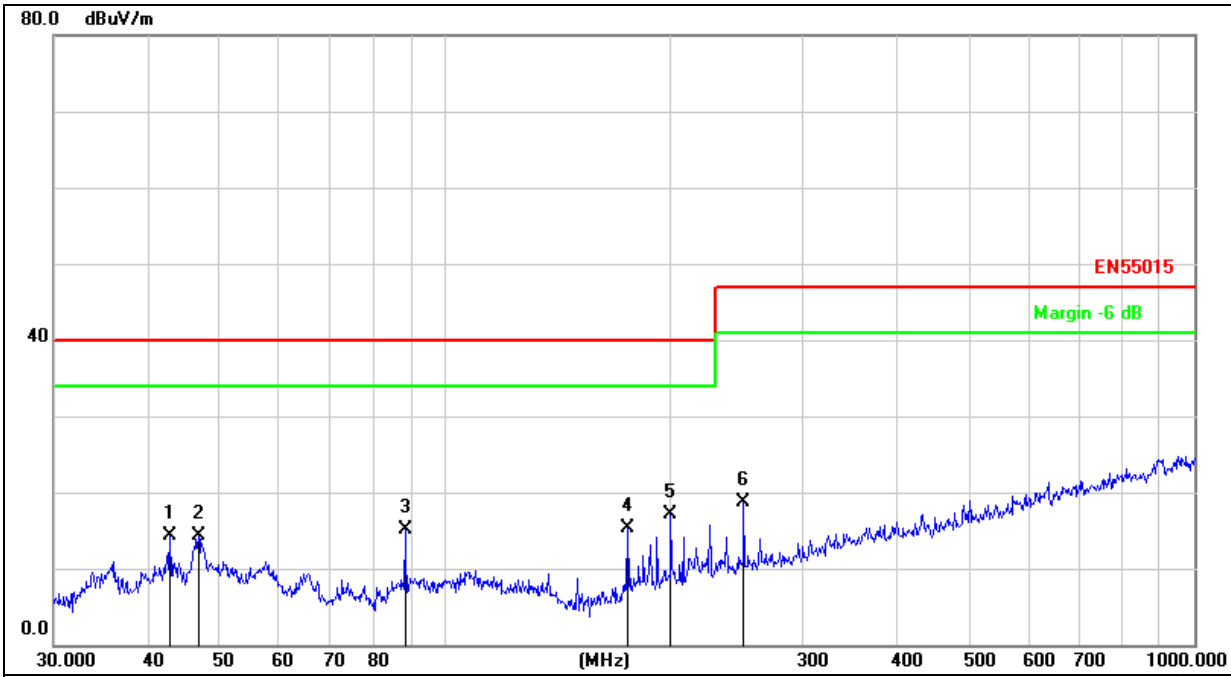
Note: The lower limit shall apply at the transition frequencies.

7.3 Test Procedure

a. The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Results

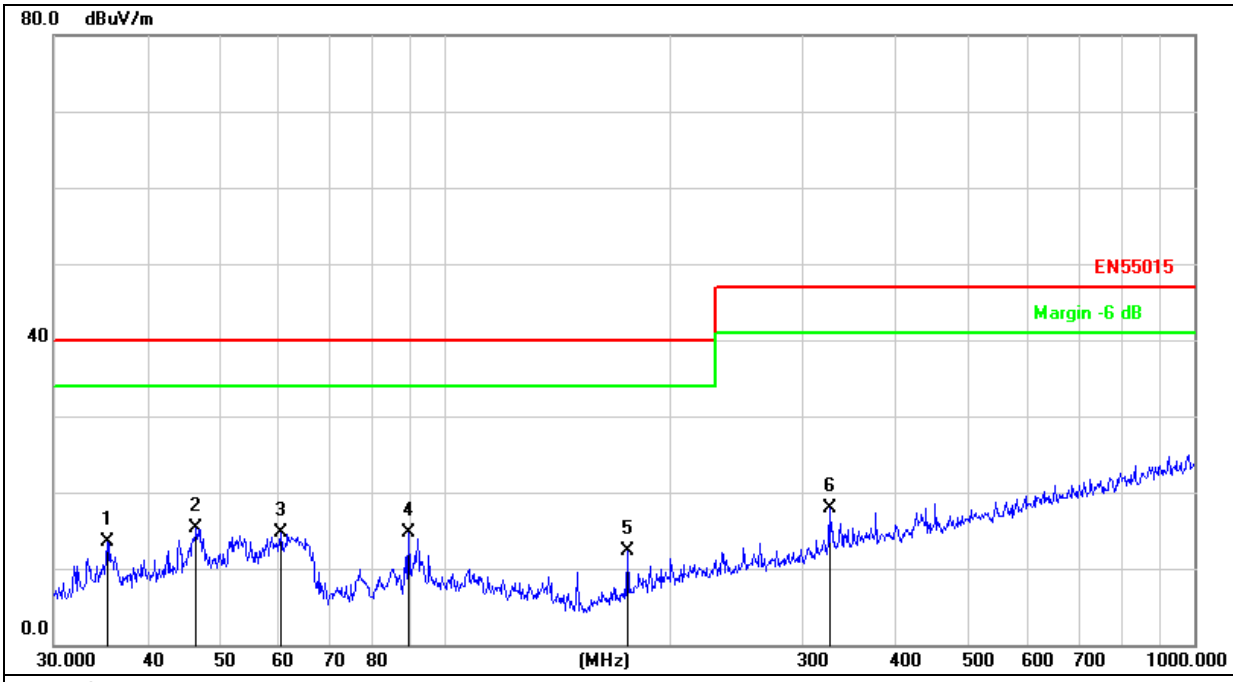
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	DC 24V	Test Mode:	Lighting



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.8998	30.12	-15.90	14.22	40.00	-25.78	QP
2		46.8303	29.63	-15.42	14.21	40.00	-25.79	QP
3		88.3421	33.83	-18.74	15.09	40.00	-24.91	QP
4		175.0365	33.22	-17.90	15.32	40.00	-24.68	QP
5	*	199.9856	33.12	-15.95	17.17	40.00	-22.83	QP
6		250.3012	32.89	-14.18	18.71	47.00	-28.29	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	DC 24V	Test Mode:	Lighting



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		35.3750	30.64	-17.13	13.51	40.00	-26.49	QP
2	*	46.5030	30.70	-15.46	15.24	40.00	-24.76	QP
3		60.2800	31.37	-16.60	14.77	40.00	-25.23	QP
4		89.2764	33.20	-18.51	14.69	40.00	-25.31	QP
5		175.0368	30.23	-17.90	12.33	40.00	-27.67	QP
6		325.5958	29.82	-11.93	17.89	47.00	-29.11	QP

8. Immunity Test Of General The Performance Criteria

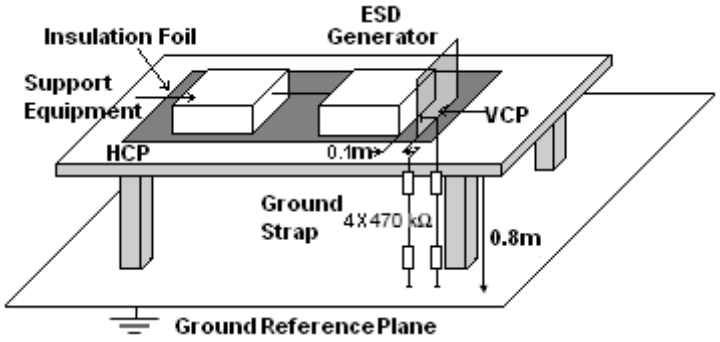
Product Standard	EN 61547: 2009 clause 4.2
CRITERION A	During the test, no change of the lumimous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
CRITERION B	During the test the luminous intensity may change to any value. After the test the luminous 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.

9. Electrostatic Discharge (ESD)

9.1 Test Specification

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

9.2 Block Diagram of Test Setup



9.3 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
c. The time interval between two successive single discharges was at least 1 second.
d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

9.4 Test Results

Temperature:	23 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	DC 24V		

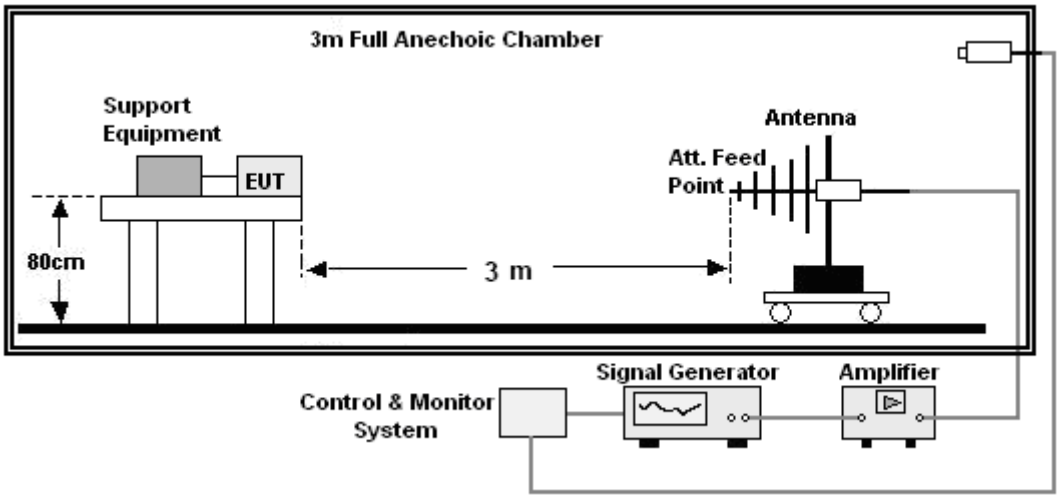
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A

10. Radio Frequency Electromagnetic Fields (RS)

10.1 Test Specification

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

10.2 Block Diagram of Test Setup



10.3 Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
b. The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1%.
c. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

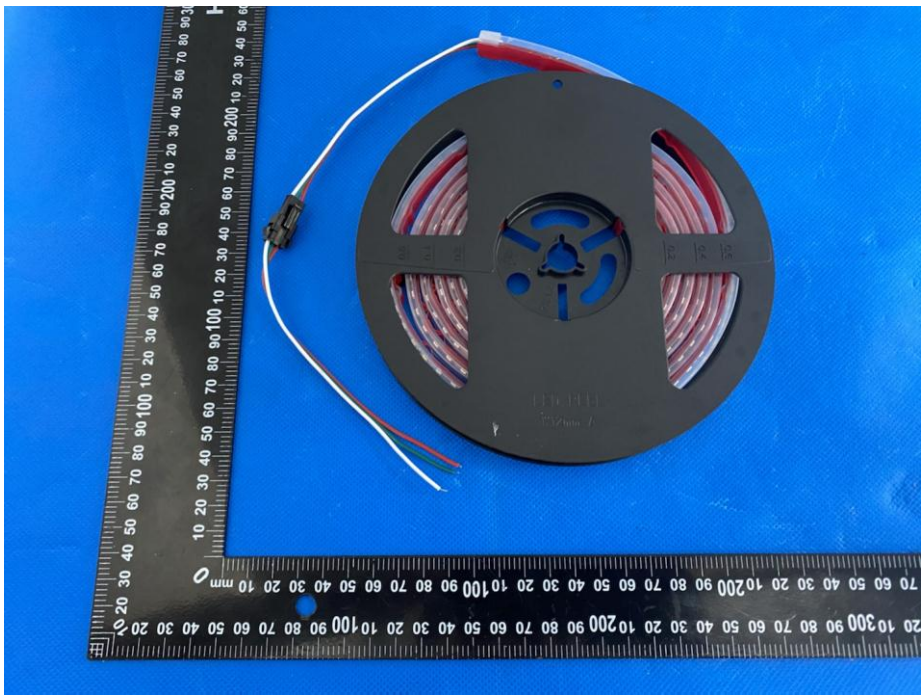
10.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	DC 24V		

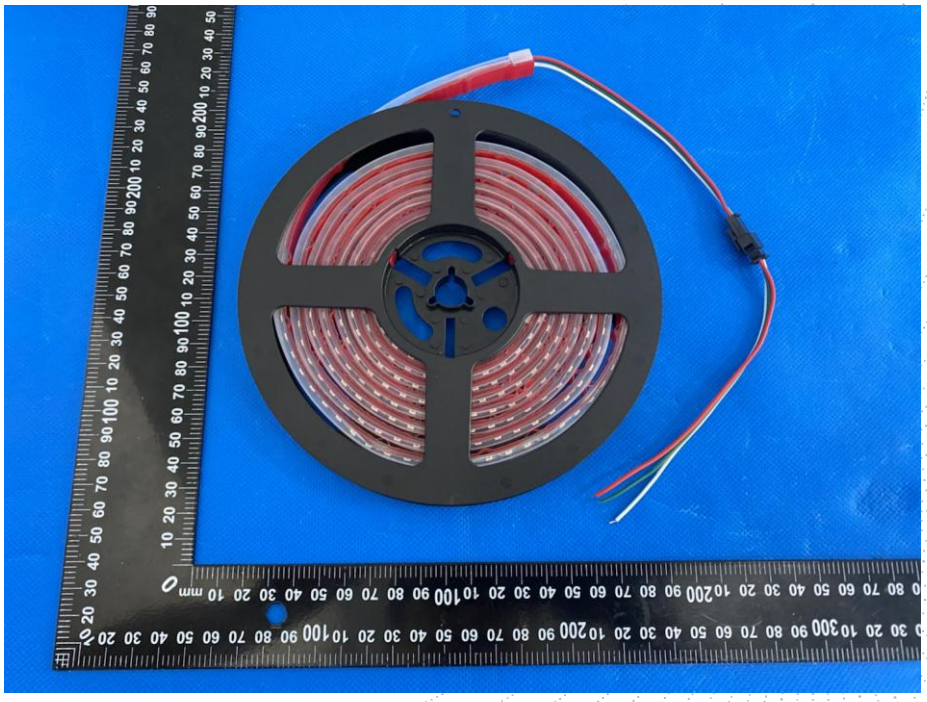
Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz	Front, Right, Back, Left	3	A	A

11. EUT Photographs

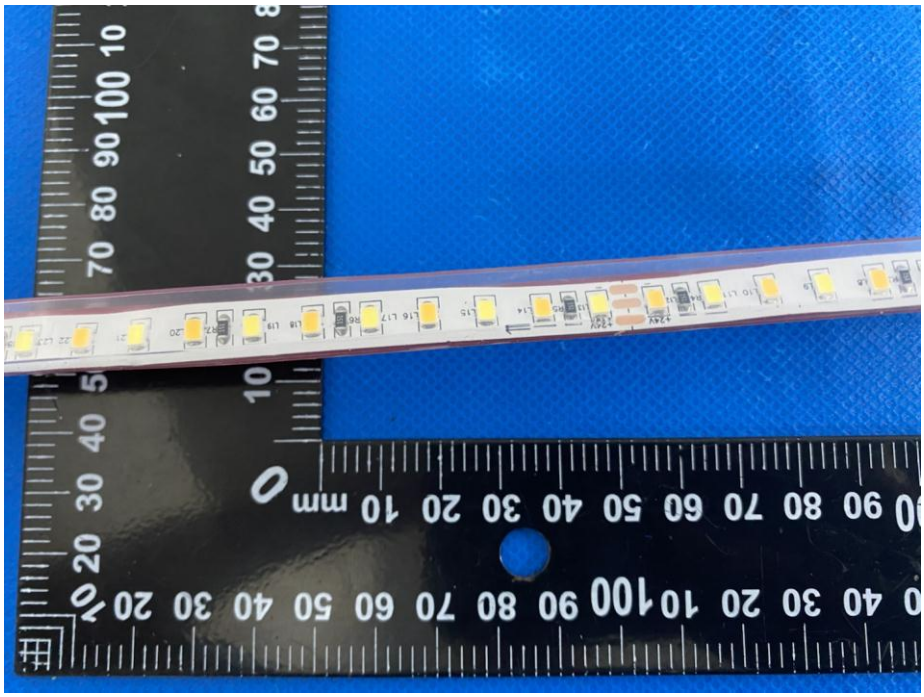
EUT Photo 1



EUT Photo 2

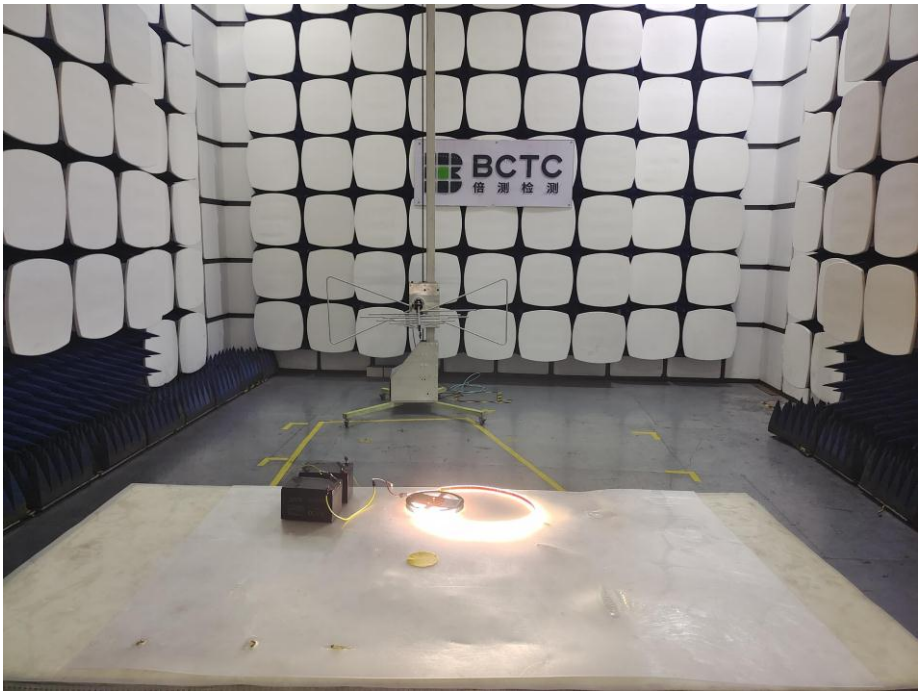


EUT Photo 3



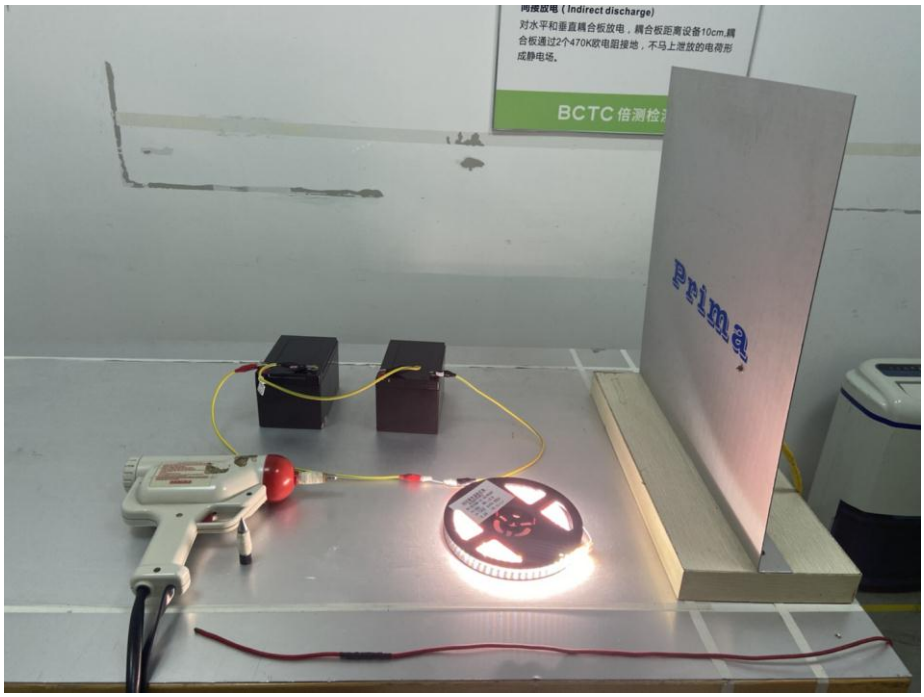
12. EUT Test Setup Photographs

RE

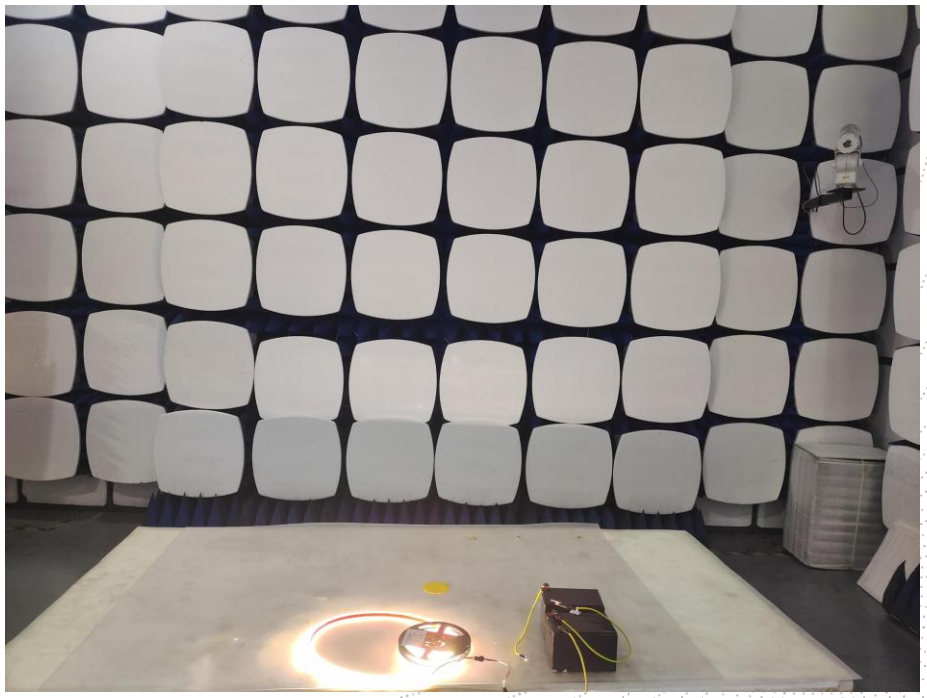


ME

ESD


(Indirect discharge)
对水平和垂直耦合板放电，耦合板距离设备10cm,耦
合板通过2个470K欧电阻接地，不马上泄放的电荷形
成静电场。
BCTC
Prima

RS



STATEMENT

The equipment lists are traceable to the national reference standards.

The test report can not be partially copied unless prior written approval is issued from our lab.

The test report is invalid without stamp of laboratory.

The test report is invalid without signature of person(s) testing and authorizing.

The test process and test result is only related to the Unit Under Test.

The quality system of our laboratory is in accordance with ISO/IEC17025.

If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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