TEST REPORT

Product Name:	LED soft light bar
Trademark:	N/A
Model Number:	2835-30LED-12V-IP65, 2835-30LED-12V-IP20, 2835-60LED-12V-IP65, 2835-60LED-12V-IP20, 2835-30LED-3V-IP20, 2835-30LED-3V-IP65, 2835-60LED-5V-IP65, 2835-60LED-5V-IP20, 5050-60LED-12V-IP65, 5050-60LED-12V-IP20, 5050-30LED-12V-IP65, 5050-30LED-12V-IP20, 5050-60LED-5V-IP65, 5050-60LED-5V-IP20, 5050-30LED-5V-IP65, 5050-30LED-5V-IP20
Prepared For:	Shenzhen Zhengxin Photoelectric Technology Co., Ltd.
Address:	7/F, Building A9, Xinghuaxiong Industrial Park, Baihuadong No.1 Industrial Zone, Guangming New District, Shenzhen City, Guangdong Province
Manufacturer:	Shenzhen Zhengxin Photoelectric Technology Co., Ltd.
Address:	7/F, Building A9, Xinghuaxiong Industrial Park, Baihuadong No.1 Industrial Zone, Guangming New District, Shenzhen City, Guangdong Province
Prepared By:	ShenZhen SJS Testing Technology Co., Ltd.
Address:	4th Floor, Building C, Youth E-commerce Center, No. 2 Lianwei Street, Hualian Community, Longhua Street, Longhua District, Shenzhen, China
Sample Received Date:	Feb. 26, 2020
Sample tested Date:	Feb. 26, 2020 to Mar. 03, 2020
Issue Date:	Mar. 03, 2020
Report No.:	SJS20200200204E01
Test Standards	EN 55015:2013+A1:2015, EN 61547: 2009
Test Results	PASS

Compiled by:	Reviewed by:	Approved by:
Cora Chan	Sam Zhu	Helen Lin/Manager

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(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
SJS20200200204E01	Mar. 03, 2020	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test result**
EN 55015	Disturbance voltages (CE)	N/A[1]
EN 55015	Radiated disturbance in frequency range 9KHz to 30MHz (ME)	Pass
EN 55015	Radiated disturbance in frequency range 30MHz to 300MHz (RE)	Pass

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[1]
IEC 61000-4-11	Voltage dips and interruptions(DIPS)	N/A[2]

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. 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

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Ratings: DC 12 V

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	--	--	Applicant	**---**	Shielded	--
2	--	--	SJS	--	Unshielded	--

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)	Working	DC 12*
Radiated disturbance in frequency range 30MHz to 300MHz (RE)	Working	DC 12
Electrostatic discharge (ESD) B ☒Air Discharge: ±8kV ☒Contact Discharge: ±4kV ☒HCP & VCP: ±4kV	Working	DC 12
Continuous RF electromagnetic field disturbances(RS) 80MHz-6000MHz, 3V/m,80%	Working	DC 12
All test mode were tested and passed, ME, Radiated disturbance, shows (*) is the worst case mode which were recorded in this report.		

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at SJS 4th Floor, Building C, Youth E-commerce Center, No. 2 Lianwei Street, Hualian Community, Longhua Street, Longhua District, Shenzhen, 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	ESR	102075	Aug. 14, 2019	Aug. 13, 2020
3-Loop Antenna	DAZE	ZN30401	13017	Aug. 14, 2019	Aug. 13, 2020

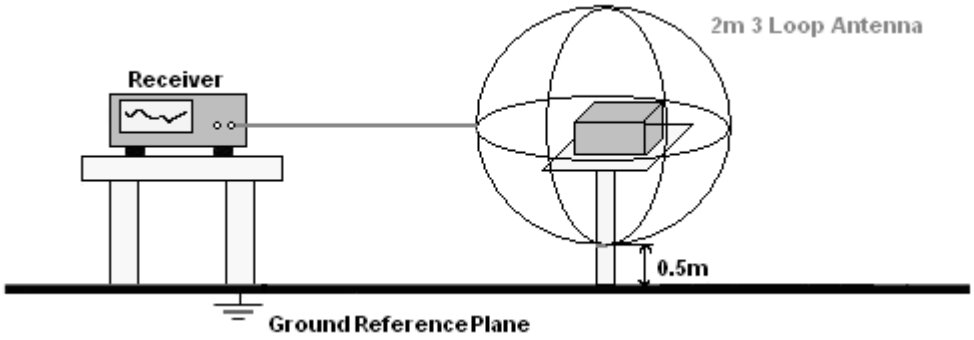
Radiated disturbance Test (966 chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Aug. 25, 2019	Aug. 24, 2020
Receiver	R&S	ESR	101154	Aug. 14, 2019	Aug. 13, 2020
Amplifier	Schwarzbeck	BBV9718	9718-309	Aug. 14, 2019	Aug. 13, 2020
Amplifier	Schwarzbeck	BBV9744	9744-0037	Aug. 14, 2019	Aug. 13, 2020
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Aug. 14, 2019	Aug. 13, 2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1201	Aug. 16, 2019	Aug. 15, 2020

Electrostatic discharge immunity Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
ESD Tester	KIKISUI	KES4201A	UH002321	Aug. 15, 2019	Aug. 14, 2020

Radio frequency electromagnetic fieldsTest					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	GB42421440	May 14, 2019	Aug. 13, 2020
Power sensor	Keysight	E9300A	US39211305	May 14, 2019	Aug. 13, 2020
Power sensor	Keysight	E9300A	US39211659	May 14, 2019	Aug. 13, 2020
Amplifier	SKET	HAP-801000M-250W	/	May 14, 2019	Aug. 13, 2020
Amplifier	SKET	HAP-801000M-75W	/	May 14, 2019	Aug. 13, 2020
Amplifier	SKET	HAP-801000M-50W	/	May 14, 2019	Aug. 13, 2020
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9149	00553	May 14, 2019	Aug. 13, 2020
Horn Antenna	TDK	VLA-8001	130979	May 14, 2019	Aug. 13, 2020
Field Probe	Narda	EP-601	80256	May 14, 2019	Aug. 13, 2020
Signal Generator	Aglilent	N5181A	MY50143748	May 14, 2019	Aug. 13, 2020

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

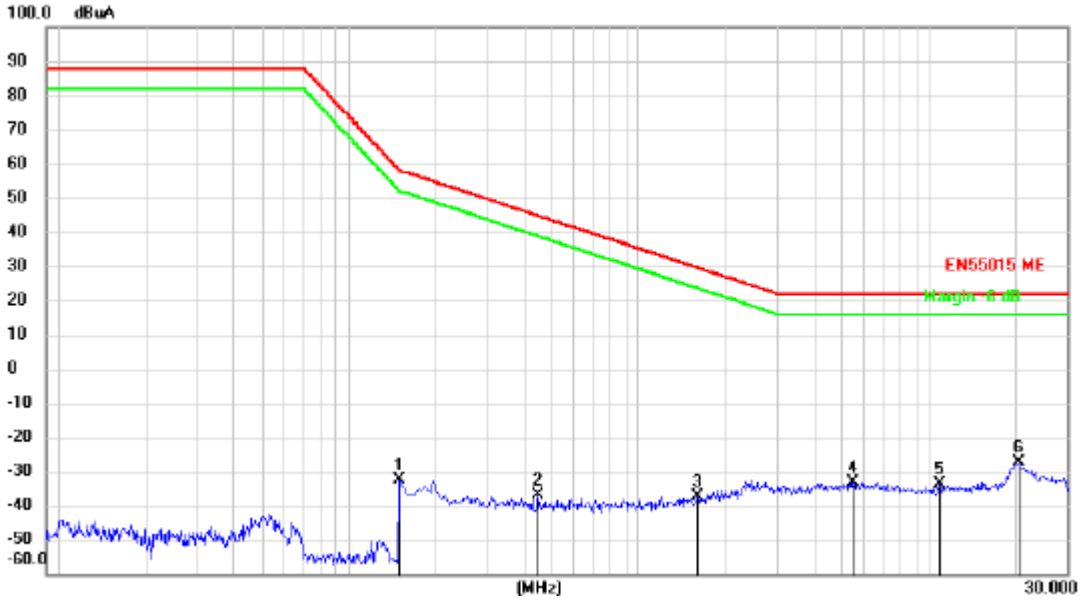
a. The Product was placed on a wooden table in the center of a loop antenna.

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.

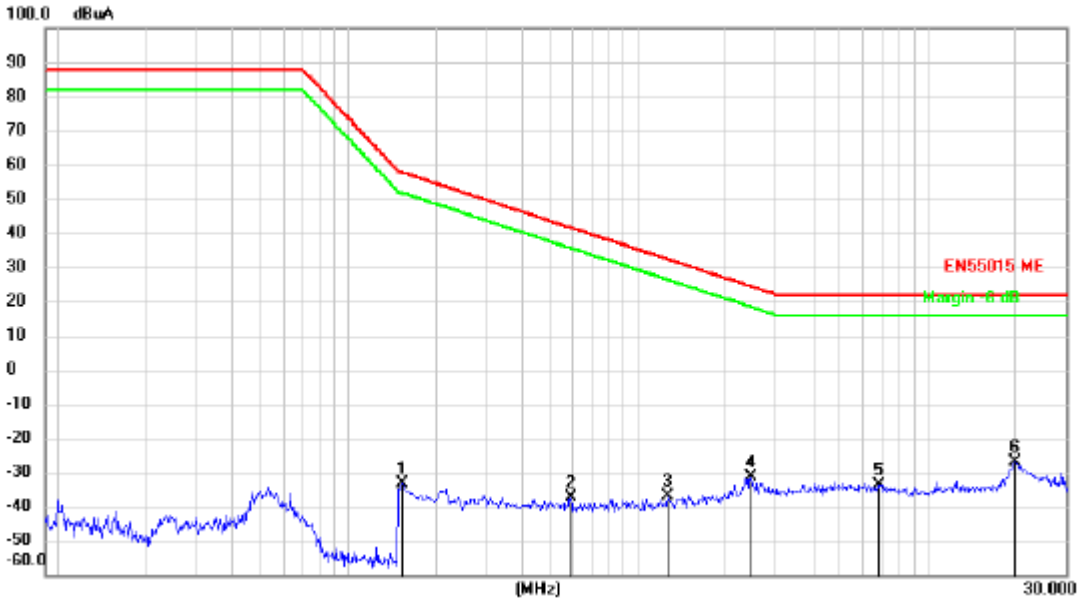
6.4 Test Results

Temperature:	24.6℃	Relative Humidity:	50%
Pressure:	101kPa	Ant. Polarity	X
Test Voltage :	DC 12V	Test Mode:	working



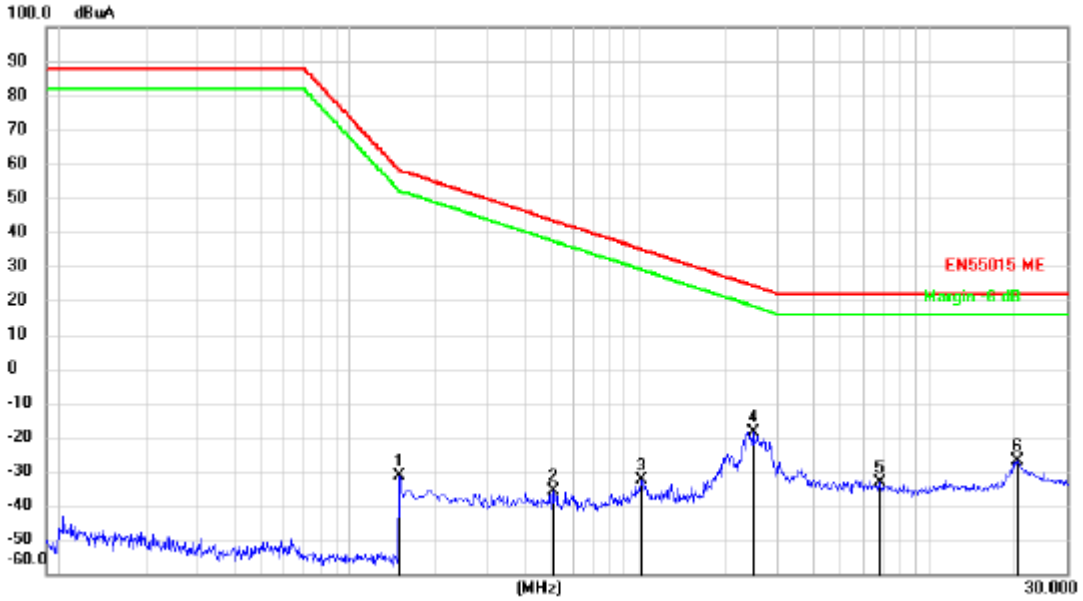
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.1500	-42.44	9.77	-32.67	58.00	-90.67	QP	
2		0.4516	-46.57	9.75	-36.82	44.76	-81.58	QP	
3		1.5991	-47.10	9.78	-37.32	29.56	-66.88	QP	
4		5.4646	-43.11	9.90	-33.21	22.00	-55.21	QP	
5		10.9096	-43.56	9.91	-33.65	22.00	-55.65	QP	
6	*	20.3506	-37.54	10.09	-27.45	22.00	-49.45	QP	

Temperature:	24.6℃	Relative Humidity:	50%
Pressure:	101kPa	Ant. Polarity	Y
Test Voltage :	DC 12 V	Test Mode:	working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.1546	-43.21	9.77	-33.44	57.64	-91.08	QP	
2		0.5911	-47.42	10.16	-37.26	41.52	-78.78	QP	
3		1.2706	-46.68	9.78	-36.90	32.32	-69.22	QP	
4		2.4496	-41.33	9.81	-31.52	24.44	-55.96	QP	
5		6.7606	-43.54	9.92	-33.62	22.00	-55.62	QP	
6	*	20.0310	-37.28	10.09	-27.19	22.00	-49.19	QP	

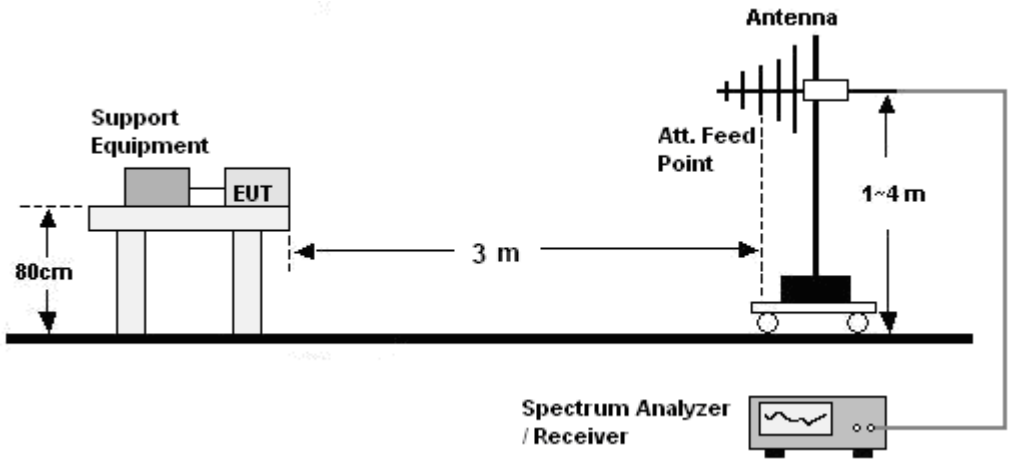
Temperature:	24.6℃	Relative Humidity:	50%
Pressure:	101kPa	Ant. Polarity	Z
Test Voltage :	DC 12 V	Test Mode:	working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.1500	-41.22	9.77	-31.45	58.00	-89.45	QP	
2		0.5101	-45.72	9.83	-35.89	43.29	-79.18	QP	
3		1.0231	-42.54	9.77	-32.77	34.93	-67.70	QP	
4	*	2.4720	-28.35	9.81	-18.54	24.33	-42.87	QP	
5		6.7516	-43.43	9.92	-33.51	22.00	-55.51	QP	
6		20.2246	-37.12	10.09	-27.03	22.00	-49.03	QP	

7. RADIATED DISTURBANCE (30MHZ -300MHZ)

7.1 Block Diagram Of Test Setup



7.2 Limits

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-300	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:	24.5℃	Relative Humidity:	50%
Pressure:	101kPa	Phase :	Horizontal
Test Voltage :	DC 12 V	Test Mode:	Working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		33.6606	30.32	-16.59	13.73	40.00	-26.27	QP			
2	*	46.1446	29.19	-14.02	15.17	40.00	-24.83	QP			
3		69.2023	27.60	-17.43	10.17	40.00	-29.83	QP			
4		105.2256	26.50	-15.65	10.85	40.00	-29.15	QP			
5		195.4885	25.58	-16.64	8.94	40.00	-31.06	QP			
6		267.9916	27.33	-14.95	12.38	47.00	-34.62	QP			

Temperature:	24.7℃	Relative Humidity:	50%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	DC 12 V	Test Mode:	Working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		37.7678	30.14	-15.51	14.63	40.00	-25.37	QP			
2	*	53.4714	30.01	-14.52	15.49	40.00	-24.51	QP			
3		68.8845	27.65	-17.37	10.28	40.00	-29.72	QP			
4		104.5012	27.81	-15.63	12.18	40.00	-27.82	QP			
5		191.9205	25.30	-16.93	8.37	40.00	-31.63	QP			
6		270.4713	25.93	-14.93	11.00	47.00	-36.00	QP			

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

8 IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

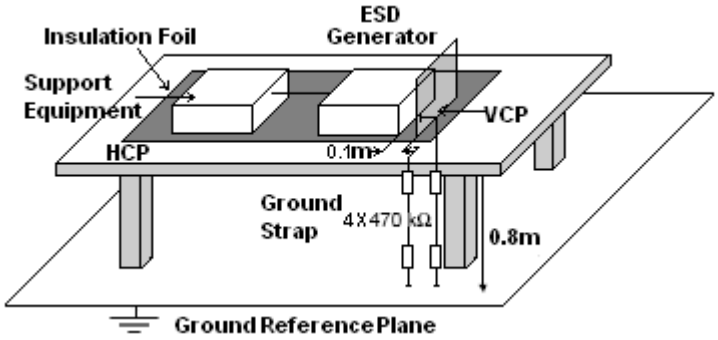
Product Standard	EN 61547: 2009
CRITERION A	During the test, no change of the lumimous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
CRITERION B	During the test the luminous intensity may change to any value. After the test the luminous intensity 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 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:	24.7℃	Relative Humidity:	50%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 12 V		

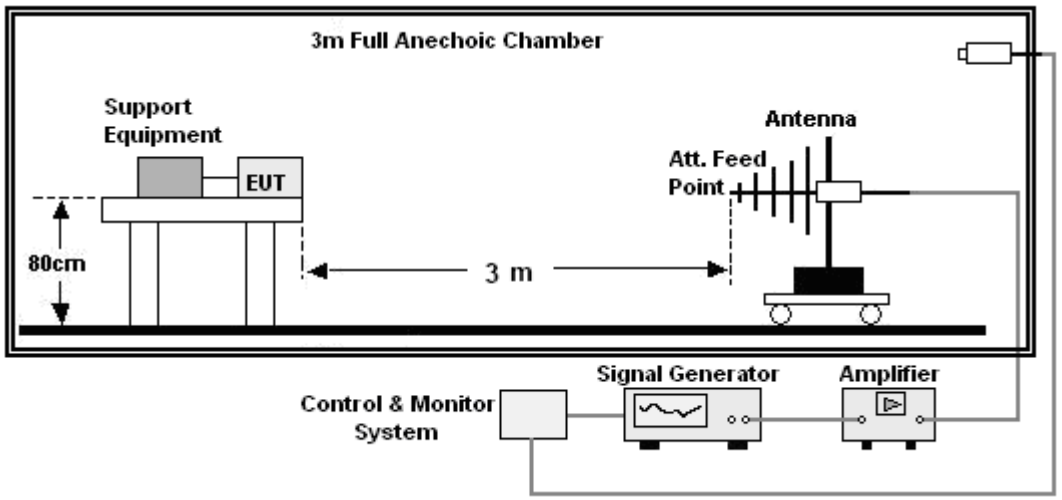
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces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

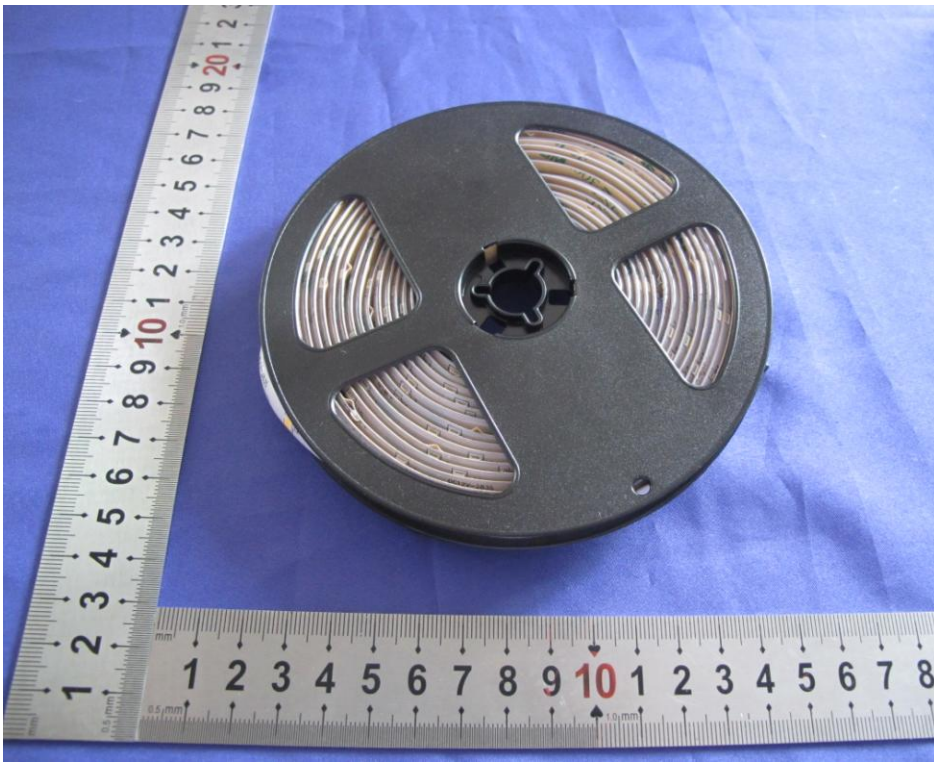
10.4 Test Results

Temperature:	24.6℃	Relative Humidity:	50%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 12 V		

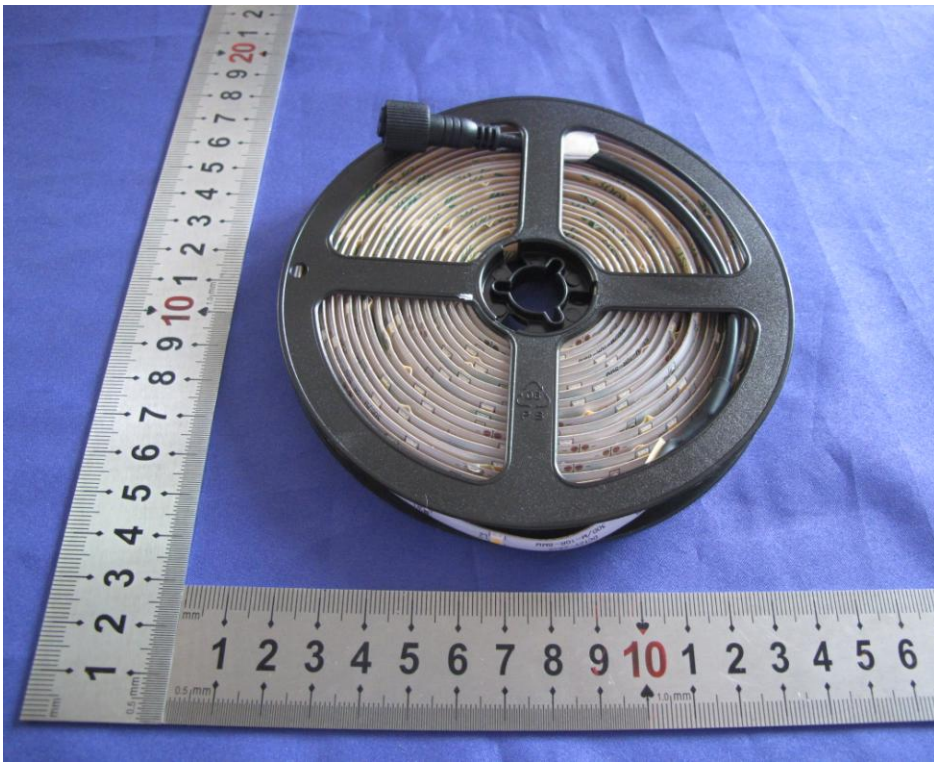
Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz	Front, Right, Back, Left	3	A	A
Note: N/A				

11 EUT PHOTOGRAPHS

EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4



※※※※※ END OF REPORT ※※※※※