Report No.: DGE210818001E

CE EMC Test Report



it.

(Declaration of Conformity)

For Electromagnetic compatibility Of

Product : LED Strip Light

Trade Mark : N/A

Model Number :

CJ-5V-5050-30L-RGB, CJ-5V-5050-50D-RGB, CJ-5V-5050-12D-RGB, CJ-5V-5050-60D-RGB, CJ-5V-5050-60D-RGB

Prepared for

Shenzhen Chengjie Lighting Co., Ltd.

2B-2-1101, Xingfu Fengjing, Meilong Road, Longhua District, Shenzhen, China

Prepared by

Dongguan NTEK Testing Service Co., Ltd.

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Version 2.0

Page 1 of 33

TEST RESULT CERTIFICATION

Applicant's Name	. Shenzhen Chengjie Lighting Co., Ltd.
Address	2B-2-1101, Xingfu Fengjing, Meilong Road, Longhua District, Shenzhen, China
Manufacturer's Name	. Shenzhen Chengjie Lighting Co., Ltd.
Address	2B-2-1101, Xingfu Fengjing, Meilong Road, Longhua District, Shenzhen, China
Factory's Name	. Shenzhen Chengjie Lighting Co., Ltd.
Address	2B-2-1101, Xingfu Fengjing, Meilong Road, Longhua District, Shenzhen, China
Product description	
Product name	LED Strip Light
Model and/or type reference:	CJ-5V-5050-30L-RGB, CJ-5V-5050-50D-RGB, CJ-5V-5050-12D-RGB, CJ-5V-5050-60D-RGB, CJ-5V-5050-60D-RGB
Standards	EN IEC 55015:2019+A11:2020 EN 61547:2009
This report shall not be repro	duced except in full, without the written approval of NTEK, this
document may be altered or r	evised by NTEK, personal only, and shall be noted in the revision of

document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

Date of Test

Date (s) of performance of tests..... Aug. 18, 2021 to Aug. 26, 2021

Date of Issue...... Aug. 27, 2021

Test Result. Pass

Testing Engineer

(Hins Zhang)

(Brian Yang) (Brian Yang) (Brian Yang) (Bart Fang) (Bart Fang)

Technical Manager

Authorized Signatory :

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1 . TEST SUMMARY

Test procedures according to the technical standards:

	EMC Emission	× 5 × 5	i sir	ST.
Standard	Test Item	Limit	Judgment	Remark
ENIEC	Conducted Emission	2 4	N/A	2
55015:2019+A11:20	020 Radiated Emission		PASS	S.C.
EN 61000-3-2:201	Harmonic Current Emission	+ +	N/A	t
EN 61000-3-3:201	13 Voltage Fluctuations & Flicke	r 🗧	N/A	2
	EMC Immunity			, Ar
Section EN 61547:2009	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2	Electrostatic Discharge	₹ ^B ₹	PASS	L'ÉV
EN 61000-4-3	RF electromagnetic field	A	PASS	A.
EN 61000-4-4	Fast transients	A CB C	N/A	2
EN 61000-4-5	Surges	SC 2	N/A	S.C.
EN 61000-4-6	Injected Current	A A	N/A	A.
EN 61000-4-8	Power Frequency Magnetic Field	A A	PASS	2
EN 61000-4-11	Volt. Interruptions Volt. Dips	B/C	N/A	NOTE (1)

NOTE:

- (1) Voltage Interruption: 100% reduction Performance Criteria B Voltage dip: 30% reduction – Performance Criteria C
- (2) "N/A" denotes test is not applicable in this Test Report.
- (3) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

Dongguan NTEK Testing Service Co., Ltd.

Add. : Room101/401, Building 3, No.8, Keji 8th Road, Songshan Lake High-Tech Industrial Development Zone, Dongguan, Guangdong, China

CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017) The Certificate Registration Number is L13824

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

Test Item	Measurement Frequency Range	ĸ	U(dB)
AC Mains Conducted Emission	0.009kHz ~ 0.15MHz	2	2.66
AC Mains Conducted Emission	0.15MH ~ 30MHz	2	2.80
Telecom Conducted Emission (Cat 3)	0.15MHz ~ 30MHz	2	2.40
Telecom Conducted Emission (Cat 5)	0.15MHz ~ 30MHz	2	2.58
Radiated Emission	30MHz ~ 1000MHz	2	2.64
Radiated Emission	1000MHz ~ 6000MHz	2	2.52
Radiated Emission	6000MHz ~ 18000MHz	2	2.52
Power Clamp	30MHz ~ 300MHz	2	2.20

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### 2 . GENERAL INFORMATION

### GENERAL DESCRIPTION OF EUT

Equipment < <	LED Strip Light	2 2 2 Z Z					
Model Name.	CJ-5V-5050-30L-RGB						
Additional Model Number(s)	CJ-5V-5050-50D-RGB, CJ CJ-5V-5050-60D-RGB, CJ						
Model Difference	All models are identical ex	cept model's power.					
	The EUT is a LED Strip L	ight.					
, , , , ,	Operating frequency:						
	Connecting I/O port:	N/A					
Product Description	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an LED Lighting Device. More details of EUT technical specification, please refer to the User's Manual.						
Power Source	DC Voltage	5. 5. 5. 5.					
Power Rating	DC 5V/2A, 5.9W	5 5 5 5					

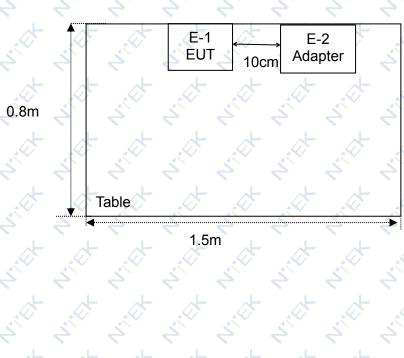
### 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

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	Pretest Mode			Description	on	2	1.
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	Final Test Mode	e e		Descripti	on		
	Mode 1	2 6	~	Lighting		2	7
Y		A.					4
	5 5 .	S 3	or EMS	Test	S	S	S
Ł	Final Test Mode	*	× .	Descripti	on 🗡	X	Å
	Mode 1			Lighting			1

2.3 DESCRIPTION OF TEST SETUP

Mode RE: Lighting



### 2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

										ヒート	- ~-	
Item	Item         Equipment           E-1         LED Strip Light		В	rand	N N	lodel/Typ	e No.		Series No.	Note	;	
E-1			Light	1	N/A	CJ-5V-5050-30L-RGB			3	N/A	EUT	-
E-2	L.	Adapte	ər 🏑		N/A	1	N/A	and the second s	,X	N/A	AE	
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Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in  $\[\]$  Length  $\[\]$  column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".

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### 2.5 MEASUREMENT INSTRUMENTS LIST

### Report No.: DGE210818001E

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Antenna Mast	SKET	N/A	ک N/A ک	N/A	N/A	📣 N/A 🚄
2	Test Cable	REBES	A50-NMNM-8 M-A	1810C35	Jun. 10, 2021	Jun. 09, 2022	1 year
3	Test Cable	REBES	A50-NMNM-3 M	1810C36	Jun. 10, 2021	Jun. 09, 2022	1 year
4	Test Cable	REBES	A50-NMNM-1 M	1810C37	Jun. 10, 2021	Jun. 09, 2022	1 year
5	Bilog Antenna	TESEQ	CBL6111D	186604	Jun. 10, 2021	Jun. 09, 2022	1 year
6	Low Noise Pre-Amplifier	SKET	LNPA_30M06 G-35	SK20190107 01	Aug. 31, 2020	Aug. 30, 2021	1 year
7	EMI Test Receiver	R&S	ESCI	101427	Aug. 31, 2020	Aug. 30, 2021	1 year

ESI	$\mathcal{C}$	$\rightarrow$ $\rightarrow$		2 2	2 7	2 2	2 2
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	ESD TEST GENERATOR	SHANGHAI LIONCELI	ESD-203A	ESD0230100 3	Dec. 19, 2020	Dec. 18, 2021	1 year

LC Item	OOP Kind of	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration
1	Equipment Triple Loop Antenna	EVERFINE	LLA-2	11020003	Jul. 13, 2021	Jul. 12, 2022	period 1 year
2	EMI Test Receiver	R&S	ESCI	101160	May. 11, 2021	May. 10, 2022	1 year
3	Low frequency cable	N/A	C-02	N/A N/A	Jun. 28, 2019	Jun. 27, 2022	3 years
4	50Ω Switch	Anritsu	MP59B	6200983704	May. 11, 2020	May. 10, 2023	3 years

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tem 1	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration
1					~		period
L	RF Test System Controller	AR	SC1000	0350156	Feb. 22, 2021	Feb. 21, 2024	3 years
2	3M Semi Anechoic Chamber	N/A	8*4*4	N/A	Aug. 07, 2020	Aug. 06, 2023	3 years
3	Broadband Amplifier	AR	60S1G6	0350414	Apr. 27, 2021	Apr. 26, 2022	1 year
4	Bilog Antenna	ETS	3142E	00214344	Dec. 13, 2020	Dec. 12, 2021	1 year
5	Power Amplifier	rflight	NTWPA-0081 0200	17063153	Jul. 13, 2021	Jul. 12, 2022	1 year
6	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	Jul. 13, 2021	Jul. 12, 2022	1 year
7	Power Meter	Agilent	E4419B	MY45102538	Jul. 13, 2021	Jul. 12, 2022	1 year
8	Power Sensor	Agilent	E9301A	MY41495644	Jul. 13, 2021	Jul. 12, 2022	1 year

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1 L	ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	1	Generator	EVERFINE	EMS61000-8K	1007001	Jun. 06, 2021	Jun. 05, 2022	1 year
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### 3 . EMC EMISSION TEST

#### 3.1 RADIATED EMISSION MEASUREMENT

#### 3.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	🛛 🖂 2m	🖸 3m	🖉 🖉 4m 📈
	dB(µA)	dB(µA)	dB(µA)
9kHz~ 70kHz	88	81	75
70kHz ~ 150kHz	🔶 88 to 58 🔶	🔶 81 to 51 🛛 🗧	75 to 45
150kHz ~ 3MHz	58 to 22	51 to 15	45 to 9
3MHz ~ 30MHz		15 to 16	9 to 12

S			🖸 At 10m	, A	, E	At 3m	A.
	FREQUENCY (MHz)	1	dBµV/m	~	1	dBµV/m	1
5	30 – 230		30			40	A.
	230 - 1000	~	37 🔶	2	~	47	1

Notes:

- (1) The limit for radiated test was performed according to as following:CISPR 15.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBµV/m)=20log Emission level (uV/m).

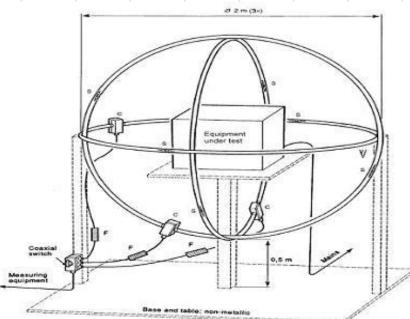
### 3.1.2 TEST PROCEDURE

- a. The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter
   open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item -EUT Test Photos.

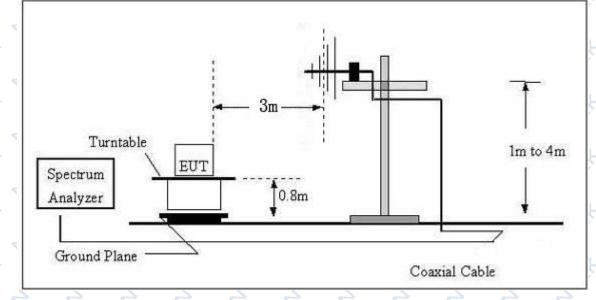
#### Report No.: DGE210818001E

#### 3.1.3 EST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 30 MHz



#### (B) Radiated Emission Test Set-Up Frequency Above 30 MHz



### 3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

### EK北测

3.1.5 TEST RESULTS (30-1000MHz)

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Test	Mod	de: <	Lighting	g 🕹	2	2	Test Po	ower:	ST.	DC 5V AC230			apter	Inpu
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					MAN Mur		non ma	antimo	(/ ₁₋ / ₁₋	444400 50		4NN-11 ¹⁴⁴⁴	10	
	000	40 50	N (RES) 3			(MHz)	-	31	578.C	400 50	2 (22	gyystar 18 ⁴⁶ 0 10 700	۵۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰	
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30.I	000	40 50	Reading	Correct	Measure-	(MHz)	Over	Jan Walk of the second	Antenn	a Table	e e	00 700		
⊔ 30.0	000	40 50 Freq.	Reading Level	Correct Factor	Measure- ment	(MHz) Limit	10000	1023	Antenn Height	a Table t Degre	e e		10	00.000
30.0 No.	000 Mk.	40 50 Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	(MHz) Limit dB/m	dB	Detector	Antenn Height	a Table t Degre	e e		10	00.000
30.0 No.	000 Mk.	40 50 Freq. MHz 30.8535	Reading Level dBuV 56.33	Correct Factor dB -21.11	Measure- ment dBuV/m 35.22	(MHz) Limit dB/m 40.00	dB -4.78	Detector QP	Antenn Height	a Table t Degre	e e		10	00.000
30.1 No. 1 2	000 Mk.	40 50 Freq. MHz 30.8535 40.1347	Reading Level dBuV 56.33 41.09	Correct Factor dB -21.11 -24.99	Measure- ment dBuV/m 35.22 16.10	(MHz) Limit dB/m 40.00 40.00	dB -4.78 -23.90	Detector QP QP	Antenn Height	a Table t Degre	e e		10	00.000
No. 1 2 3	000 . Mk. *	40 50 Freq. MHz 30.8535 40.1347 62.4313	Reading Level dBuV 56.33 41.09 48.71	Correct Factor dB -21.11 -24.99 -27.46	Measure- ment dBuV/m 35.22 16.10 21.25	(MHz) Limit dB/m 40.00 40.00	dB -4.78 -23.90 -18.75	Detector QP QP QP	Antenn Height	a Table t Degre	e e		10	00.000

Remark: Factor = Antenna Factor + Cable Loss - Amplifier.

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### 北测

### Report No.: DGE210818001E

EUT	1		LED SI	trip Light			Model Name:		C	CJ-5V-5050-30L-RGB				3
Tem	pera	iture :	23°C				Relativ	e Humidi	ty : 5	7%		<u>ک</u>		Y
Pres	ssure	e:	1010hF	Pa <	4	2	Polariza	ation :	V	ertical	Ś		Ś	4
Test	Mod	de:	Lightin				Test Pc	wer:		C 5V F C230V			oter	Inpu
4	2	~ ~		~ ~	~ ~ .	~	, <i>C</i>	7			2	4	2	
100.0	dBu	W/m	1								-			-
														ĺ
-											_			-
								EN55015 (	( 30-1000	M) 3M Ra	adiation	(QP)		
40		A. HANNING	MUNITER ANNUA		n dat						Marg	gin -6 (	dB	
40		and the state of t	MATTIN BURNE	myun	with my have	VIN THE	hours and the	M. ware worked	alevenant	the sector spectrum and	Marg		dB ~~~~~	~
40		pathone the second s	My IN HAMMAN	n nyar ha	n Amply My	VNW AVAL	holes and a second	Mudagu garage	herenand	han san dar sharen san da				~~~
20	.000	40 5		0 80	n Anny Anny Anny Anny Anny Anny Anny An	5 ////////////////////////////////////	holes and a second	300	400				nnm	
20 30.	.000 MK.	40 50	0 60 7 Reading	0 80 Correct	Measure-		Over	Ar	ntenna	) 500 Table		w.and	nnm	
20 30.			0 60 7	0 80		(MHz)		Ar	2016	) 500		700	nnm	
20 30.		40 5 Freq.	0 60 7 Reading Level	0 80 Correct Factor	Measure- ment	(MHz)	Over	Ar H	ntenna leight	500 Table Degree	600	700	nnm	
220 30.	Mk.	40 50 Freq. MHz	D 60 7 Reading Level dBuV	0 80 Correct Factor dB	Measure- ment dBuV/m	(MHz) Limit dB/m	Over	Ar H Detector	ntenna leight	500 Table Degree	600	700	nnm	
20 30. 1	Mk. * I	40 50 Freq. MHz 31.1798	0 60 7 Reading Level dBuV 58.19	0 80 Correct Factor dB -21.25	Measure- ment dBuV/m 36.94	(MHz) Limit dB/m 40.00	Over dB -3.06	Ar H Detector QP	ntenna leight	500 Table Degree	600	700	nnm	
20 30. 1 2	Mk. * I	40 50 Freq. MHz 31.1798 59.6493	D 60 7 Reading Level dBuV 58.19 61.48	0 80 Correct Factor dB -21.25 -26.69	Measure- ment dBuV/m 36.94 34.79	(MHz) Limit dB/m 40.00 40.00	Over dB -3.06 -5.21	Ar H Detector QP QP	ntenna leight	500 Table Degree	600	700	nnm	
220 30. 1 2 3	Mk. * !	40 50 Freq. MHz 31.1798 59.6493 106.7587	0 60 7 Reading Level dBuV 58.19 61.48 52.26	0 80 Correct Factor dB -21.25 -26.69 -24.97	Measure- ment dBuV/m 36.94 34.79 27.29	(MHz) Limit dB/m 40.00 40.00	Over dB -3.06 -5.21 -12.71	Ar H Detector QP QP QP	ntenna leight	500 Table Degree	600	700	nnm	

Remark: Factor = Antenna Factor + Cable Loss - Amplifier.

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3.1.6 TEST RESULTS (0.009-30MHz)

EUT	(š) (š)	LED Strip Light	i é é	Model Name:	CJ-5V-5050-30L-RGB
Tem	perature :	20°C /-	* *	Relative Humidity :	50%
Pres	ssure :	1010hPa	51 5	Polarization :	XXXXXXX
Test	t Mode:	Lighting	* &	Test Power:	DC 5V From Adapter Inp AC230V/50Hz
BO. 0	dBuA	2 2	2 2		2 2 2
70 60 40 30 20 10 -10 -20 -30 -30 -50 -50 -60	MMM	A May May	M.M.M.	Amm Mm Mund	MHz]_Loop Diameter-2M
	1		(MHz	:]	30.000
No.	Mk. Freq.	Reading Correct Level Factor	Measure- ment Limit	Over	
	MHz	dBuV dBS	dBuA dBuA		nment
1	0.0309	-5.98 0.02	-5.96 88.00	-93.96 QP	
		-7.20 0.05	-7.15 88.00	-95.15 QP	

 5
 1.8180
 -9.48
 0.37
 -9.11
 28.02
 -37.13

 6
 *
 3.3980
 -12.69
 0.47
 -12.22
 22.00
 -34.22

 **2 2 2 2 2 2 2 2**

0.17

3.45

41.54

-38.09

QP

QP

QP

Remark:

4

Factor = Antenna Factor + Cable Loss.

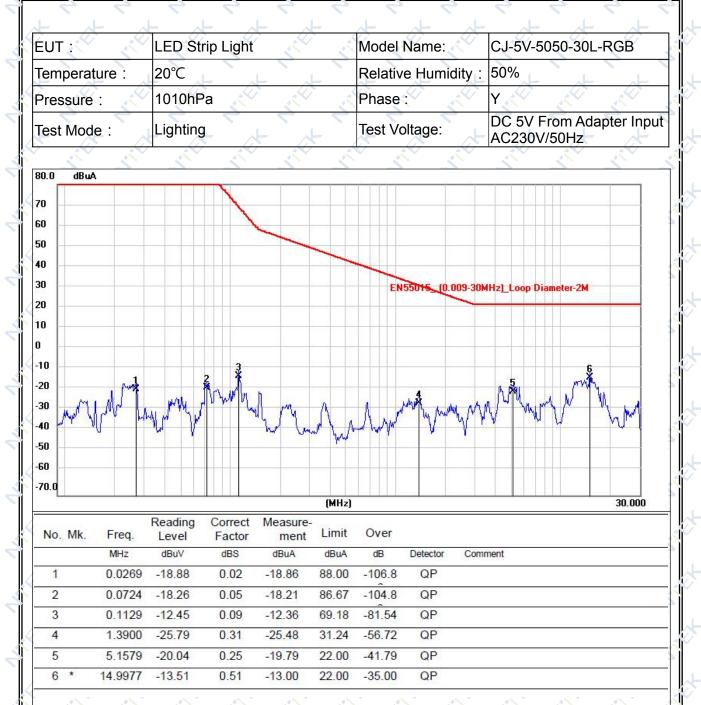
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Remark: Factor = Antenna Factor + Cable Loss.

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EUT :		LED St	rip Light		l de la companya de l	Model	Name: <	CJ-5V-508	50-30L-RGB
Temperat	ure :	20°C				Relativ	e Humidity	y : 50%	
Pressure	: X	1010hP	a 🧹			Polariz	ation :	Z	
Test Mod	e:	Lighting		t T	F Z	Test Vo	oltage:	DC 5V Fro AC230V/5	om Adapter Inpu 0Hz
						1			
80.0 dBuA				1		<u> </u>			· · · · · · · · · · · · · · · · · · ·
70			X						
60									
50									
40									
30						EN	155015_(0.009	-30MHz]_Loop Diam	eter-2M
20									
10									
D	_								5
10						e.			
20	the state of the second		\$		11	Ťγ		4	MV un
-30	Will I	N N N	Jun	WWW W	We My	M	the second of	Away In ward	MCMarquer
40	vv (4	V Martin	W y			m	MAR AN.	W. V.	
-50			· · · · · · · · · · · · · · · · · · ·		·				
-60									
70.0									
		D	<u> </u>		(MHz)				30.000
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dBS	dBuA	dBuA	dB	Detector C	Comment	
1	0.0119	-17.01	0.01	-17.00	88.00	-105.0	QP		
2	0.0844	-22.06	0.06	-22.00	80.64	-102.6	QP		
3	0.2993	-18.57	0.12	- <mark>18.4</mark> 5	49.70	-68.15	QP		
		-22.85	0.47	-22.38	22.00	-44.38	QP		
4	3.4460	-22.00	0.11						
	3.4460 12.5860	-6.25	0.47	-5.78	22.00	-27.78	QP		

Remark: Factor = Antenna Factor + Cable Loss.

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### 4 . EMC IMMUNITY TEST

-site

### 4.1 STANDARD COMPLIANCE/SEVERITY LEVEL/CRITERIA

Tests	TEST SPECIFICATION	Test Mode	Perform.
Standard No.	Level	Test Ports	Criteria
1. ESD	8kV air discharge 4kV contact discharge	Direct Mode	J. B J.
IEC/EN 61000-4-2	4kV HCP discharge 4kV VCP discharge	Indirect Mode	В
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz 1000Hz, 80%, AM modulated	Enclosure	A A
3. Power Frequency Magnetic Field IEC/EN 61000-4-8	50 Hz	Enclosure	A A

According	g to EN 61547 standard, the general performance criteria as following:
NIT	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below performance level specified by the manufacturer when the equipment is used as intended.
Criterion	A 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.
Criterion	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena 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. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.
Criterion	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

#### 4.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

### 4.4 ESD TESTING

#### 4.4.1 TEST SPECIFICATION

G SG SG SG	
Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330ohm / 150pF
Required Performance:	B
Discharge Voltage:	Air Discharge:2kV/4kV/8kV (Direct)
	Contact Discharge:2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point
2 2 2	Contact Discharge: min. 20 times at each test
	point of of of
Discharge Mode:	Single Discharge
Discharge Period:	second minimum

#### 4.4.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Indirect application of the discharge: Vertical Coupling Plane (VCP):

At least 10 single discharges (in the most sensitive polarity) shall be applied to the centre of one vertical edge of the coupling plane. The coupling plane, of dimensions  $0.5 \text{ m} \times 0.5 \text{ m}$ , is placed parallel to, and positioned at a distance of 0.1 m from, the EUT. Discharges shall be applied to the coupling plane, with sufficient different positions such that the four faces of the EUT are completely illuminated. One VCP position is considered to illuminate  $0.5 \text{ m} \times 0.5 \text{ m}$  area of the EUT surface.

#### Horizontal Coupling Plane (HCP):

- Discharge to the HCP shall be made horizontally to the edge of the HCP.
- At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the centre 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.
- The discharge electrode shall be in contact with the edge of the HCP before the discharge switch is operated
- b. Direct application of discharges to the EUT
  - The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied.
  - For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.

4.4.3 TEST SETUP

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Nearest Wall 10 cm 1m ESD Generator ESD Generator Discharge Return Discharge Cable to GRP Return Cable to GRP To AC Main (0.5 mm) EUT Isolation Support VCP 50 cm x 50 cm HCP Non-Conductive Table (1.6m x 0.8m) 470KΩ 80cm 470KΩ

Ground Reference Plane(GRP) Bonded to PE

#### Note: 🔗

#### TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

#### FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

### 4.4.4 TEST RESULTS

	2 5			~		~	2		2 5
EUT:	LED Strip Light						-	CJ-5V-5050-30L-RGB	
Temperature:	<b>23℃</b>			R	elative	Humidity:	53%	6	
Pressure:	1010hPa 🤿 🔿			Te	Test Mode:			Lighting < <	
Test Voltage:	DC 5V From	Adapte	er Input	AC230	0V/50⊦	Iz 🔥	-	0 0	- 7
Mode		Contact Discharge (Indirect)						2	~ ~ ~
Test level(kV)	Test Point		2		4 6		-	Criterion	Result
Test Location		+	- `	4	~	+ -	· ¿		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
t at a	Front	X	A	P	P	* *	-		Complies
HCP	Rear		Ś	Р	R		3		
	Left	1	L	P	P	4 4	_		
	Right	, C	N.	P	P				
	Front			P	Ρ		2		
	Rear			P	P				
	Left	>		P	R	2	Ś		
	Right	St.	5	P	Р				
Mode	Air Discharge			Ç	Contact Discharge				2 6
Test level(kV)	2 4	8	15	2	4	6	8	Criterion	Result
Test Location	+ < + -<	+ -	+ -	+ -	+ -	+ - +	- 2		
Gap	t X	ΡP	X	1			-	A B	Complies

Note:

1) +/- denotes the Positive/Negative polarity of the output voltage.

2) Test location(s) in which discharge (Air and contact discharge) to be applied illustrated by photos shown in next page(s)

3) In the table: 'P' represents 'PASS'; 'F' represents 'FAIL'.

4) Criteria A: Normal performance within limits specified by the manufacturer, requestor or purchaser.

5) Criteria B: Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the EUT recovers its normal performance, without operator intervention.

6) Criteria C: Temporary loss of function or degradation of performance, the correction of which requires operator intervention.

7) Criteria D: Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.

### 4.5 RS TESTING

#### 4.5.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-3
Required Performance:	Act at at at at
Frequency Range:	80 MHz - 1000 MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m 2 2 2 2 2
Antenna Height:	1.5 m / / / /
Dwell Time:	seconds 2 2 2 2

### 4.5.2 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.

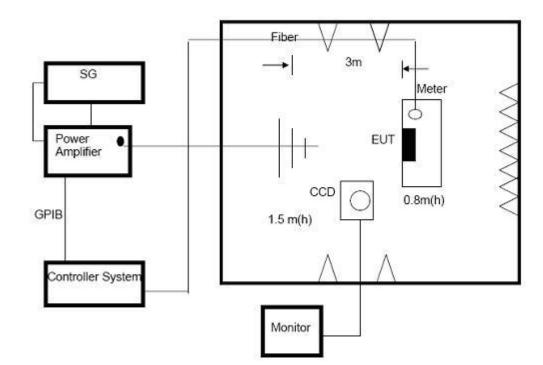
The testing distance from antenna to the EUT was 3 meters.

The other condition as following manner:

- a. The frequency range is swept from 80 MHz to 1000 MHz with the signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s.
  - Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

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4.5.3 TEST SETUP



### Note:

### TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions. FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

### 4.5.4 TEST RESULTS

5 6 6	5	6 6	~ ~ ~	5 6		2 5	
EUT: LED Strip Light			Model Name: CJ-5V-5050-30L-RGB				
Temperature: 23°C			Relative Humidity: 53%				
Pressure: 💙 1010hPa 🤜 🤜			Test Mode: C Lighting C C C				
Test Voltage: DC	5V From Ada	pter Input AC2	30V/50Hz	0 1		- 7	
	N 51	2 2		1 S	- Str	5	
Frequency Range	RF Field	R.F.		Perform.	Result		
(MHz)	Position Field Streng		Azimuth	Criteria	s	Judgment	
	· t · t	- 4 -	Front	4	4 4	- 4	
		3 V/m (r.m.s)	Rear		A	AN A	
80MHz - 1000MHz	H/V	AM Modulated	t	A	F P	Complies	
		1000Hz, 80%	Left	\$`\$`	ST ST	ST .	
	AA	·	Right	1 t	t Y	- ,* ,	

#### Note:

- 1) N/A denotes test is not applicable in this test report.
- 2) In the table: 'P' represents 'PASS'; 'F' represents 'FAIL'.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

### 4.6 POWER FREQUENCY MAGNETIC FIELD TESTING

### 4.6.1 TEST SPECIFICATION

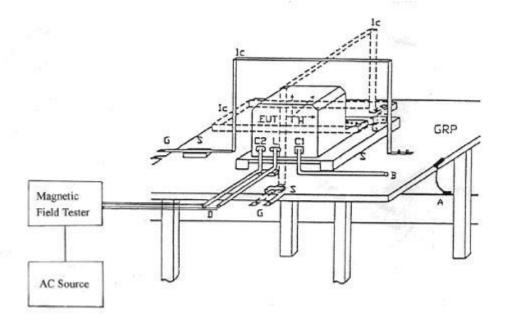
Basic Standard:	IEC/EN 61000-4-8
Required Performance:	Act of at at at
Frequency Range:	50Hz
Field Strength:	3 A/m
Observation Time:	5 minutes
Inductance Coil:	Rectangular type, 1mx1m

### 4.6.2 TEST PROCEDURE

- The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
- The other condition as following manner:
- a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.



4.6.3 TEST SETUP



#### Note:

#### TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 % of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

### 4.6.4 TEST RESULTS

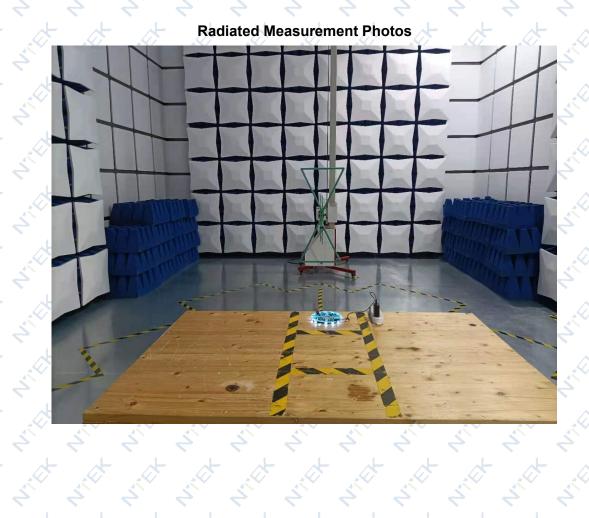
EUT: LED Strip Light			Model N	ame:	CJ-5V-5050-30L-RGB		
Temperature: 23°C			Relative	Humidity:	53%		
Pressure: C 1010hPa C C C			Test Mo	Test Mode: C Lighting C C			
Test Voltage:	DC 5V Fro	om Adapter In	put AC230V/50F	tz st	0 D		
					<u></u>		
Test Mode	Test Level	Antenna aspect	Duration (s)	Perform Criteria	Results	Judgment	
Enclosure	3 A/m	X	- 300 s		P		
Enclosure	3 A/m	ζ γ ζ	300 s	A	P	Complies	
Enclosure	3 A/m	2 Z	300 s 🞺	Â	P-		

#### Note:

- 1) N/A denotes test is not applicable in this test report
- 2) In the table: 'P' represents 'PASS'; 'F' represents 'FAIL'.
- 3) Criteria A: There was no change operated with initial operating during the test.
- 4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
- 5) Criteria C: The system shut down during the test.

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5. EUT TEST PHOTO



### ATTACHMENT PHOTOGRAPHS OF EUT

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