

TEST REPORT

FCC ID: 2AHRWLED001

Product: 13x13 Premium Lighted Canopy

Model No.: G-LED-001

Additional Model: N/A

Trade Mark: N/A

Report No.: TCT160321E005

Issued Date: Apr. 11, 2016

Issued for:

Campvalley (Xiamen) Co., Ltd.
4th Building, No.18, West Road 3, Jinyuan, Jimei, Xiamen, China

Issued By:

Shenzhen Tongce Testing Lab.

1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

TEL: +86-755-27673339

FAX: +86-755-27673332

Note: This report shall not be reproduced except in full, without the written approval of Shenzhen Tongce Testing Lab.

This document may be altered or revised by Shenzhen Tongce Testing Lab. personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com





TABLE OF CONTENTS

1.	Test Certification		3
2.	Test Result Summary		4
3.	EUT Description	(c)	5
4.	Genera Information		
	4.1. Test Environment and Mode		
	4.2. Description of Support Units	(6)	6
5.	Facilities and Accreditations		7
	5.1. Facilities		7
	5.2. Location		
	5.3. Measurement Uncertainty		7
6.	Test Results and Measurement Data		8
	6.1. Antenna Requirement		8
	6.2. Conducted Emission	<u> </u>	9
	6.3. Radiated Emission Measurement		10
	6.4. Manually Activated Transmitter		21
	6.5. Occupied Bandwidth	(()	23
Аp	pendix A: Photographs of Test Setup		
Ар	pendix B: Photographs of EUT		



1. Test Certification

Product:	13x13 Premium Lighted Canopy		
Model No.:	G-LED-001		
Additional Model:	N/A (S) (S)		
Applicant:	Campvalley (Xiamen) Co., Ltd.		
Address:	4th Building, No.18, West Road 3, Jinyuan, Jimei, Xiamen, China		
Manufacturer:	Campvalley (Xiamen) Co., Ltd.		
Address:	4th Building, No.18, West Road 3, Jinyuan, Jimei, Xiamen, China		
Date of Test:	Mar. 21 - Apr. 10, 2016		
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.231		

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Date: Apr. 10, 2016

Beryl Zhao

Reviewed By: Date: Apr. 11, 2016

Joe Zhou

Approved By: Date: Apr. 11, 2016

Tomsin



2. Test Result Summary

Requirement	CFR 47 Section	Result
Conduction Emission, 0.15MHz to 30MHz	§15.207	PASS
Manually Activated Transmitter	§15.231(a)	PASS
Radiation Emission	§15.231(b), §15.205, §15.209, §15.35	PASS
Occupied Bandwidth	§15.231(c)	PASS

Note:

- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.



EUT Description 3.

. Lot bescription	
Product Name:	13x13 Premium Lighted Canopy
Model :	G-LED-001
Additional Model:	N/A
Trade Mark: N/A	
Operation Frequency: 433.92MHz	
Modulation Technology:	ASK
Antenna Type:	Internal Antenna
Antenna Gain:	3dBi
Power Supply:	Battery DC3.0V







4. Genera Information

4.1. Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

4.2. Description of Support Units

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.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
(E)	1 (3)	1	(3)1	

Note:

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





5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

• FCC - Registration No.: 572331

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

CNAS - Registration No.: CNAS L6165
 Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005

General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

Tel: 86-755-36638142

5.3. Measurement Uncertainty

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

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	
6	Temperature	±0.1°C
7	Humidity	±1.0%





6. Test Results and Measurement Data

6.1. Antenna Requirement

Standard requirement: FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

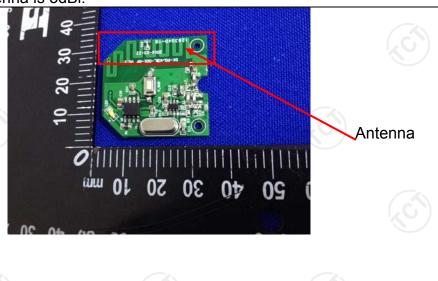
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

E.U.T Antenna:

The antenna is an internal PCB antenna which permanently attached, and the best case gain of the antenna is 3dBi.



Page 8 of 30



6.2. Conducted Emission

6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section	15 207	
•			
Test Method:	ANSI C63.4:2014	(C)	(C)
Frequency Range:	150 kHz to 30 MHz		
Receiver setup:	RBW=9 kHz, VBW=30	kHz, Sweep time:	=auto
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	Limit (c Quasi-peak 66 to 56* 56 60	Average 56 to 46* 46 50
Test Setup:	Reference Plane LISN 40cm 80cm Filter AC power Equipment Test table/Insulation plane Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m		
Test Mode:	Transmitting Mode		
Test Procedure:	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement. 		
Test Result:	N/A; The EUT power not applicable	red by battery, so	this test item is



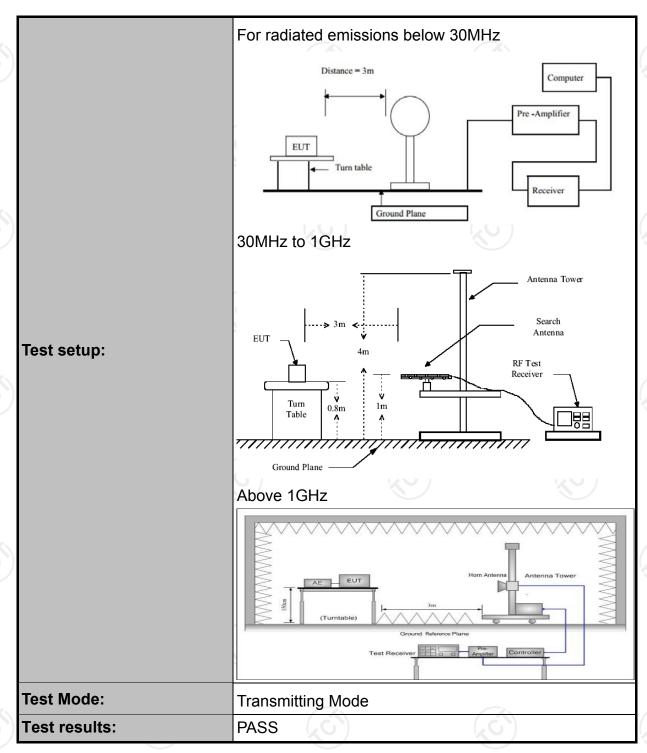


6.3. Radiated Emission Measurement

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.231(a) and 15.209				
Test Method:	ANSI C63.4: 2014 and ANSI C63.10:2013				
Frequency Range:	9 kHz to 5 G	Hz			
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal &	Vertical			
Receiver Setup:	Frequency 9kHz- 150kHz 150kHz- 30MHz 30MHz-1GHz Above 1GHz	Detector Quasi-peak Quasi-peak Quasi-peak Peak Peak	RBW 200Hz 9kHz 100KHz 1MHz 1MHz	VBW 1kHz 30kHz 300KHz 3MHz 10Hz	Remark Quasi-peak Value Quasi-peak Value Quasi-peak Value Peak Value Average Value
	meters a below 10 1GHz. To determine 2. The EU interference on the top 3. The anter meters all value of vertical position the meas 4. For each so to its work heights find the meas find	was placed bove the game, 1.5mm he table the position of a variation of a variati	on the to ground a a above was rot on of the et 3 m ag antend ble-heigh is varied ound to o strength s of the a emission d then the er to 4 m om 0 deg eading. ystem w ified Bai of the E imit spec- eak valuathe emis be re-te- average r	t a 3 m the gro tated 36 highest eters a ha, which tantenr from on determin Both intenna the EU e antenr eters ar grees to as set the cified, the es of the sions the sted one	otating table 0.8 leter camber in bund in above 50 degrees to radiation. way from the h was mounted







6.3.2. Limit

Fundamental Frequency (MHz)	Filed Strength of Fundamental	Filed Strength of Spurious Emission
(11112)	(microvolts/meter)	(microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750*	125 to 375*
174-260	3750	375
260-470	3750 to 12500*	375 to 1250*
Above 470	12500	1250
Horn Antenna	Schwarzbeck	BBHA 9120D

^{*}Linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

For the band 130-174 MHz, μ V/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, μ V/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

For EUT

Fundamental Frequency (MHz)	Filed Strength of Fundamental (microvolts/meter)	Filed Strength of Spurious Emission(dBµV/m)	
433.92	80.8	60.8	

Note:

- Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions.
- 2.According to 15.35, on any frequency or frequencies below or equal to 1000 MHz, the limits Shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test.
- 3. According to 15.231(b), The limits on the field strength of the spurious emissions in the above table is based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits one higher field strength.



Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	20log 2400/F (kHz) + 80
0.490-1.705	3	20log 24000/F (kHz) + 40
1.705-30	3 (0)	20log 30 + 40
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5. If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula Ld1 = Ld2 * (d2/d1)

6.3.3. Test Instruments

	Radiated Emissi	on Test Site	(966)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 11, 2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Sep. 11, 2016
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 11, 2016
Pre-amplifier	HP	8447D	2727A05017	Sep. 11, 2016
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 13, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 13, 2016
Coax cable	TCT	N/A	N/A	Sep. 12, 2016
Coax cable	TCT	N/A	N/A	Sep. 12, 2016
Coax cable	ТСТ	N/A	N/A	Sep. 12, 2016
Coax cable	TCT	N/A	N/A	Sep. 12, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



6.3.4. Test Data

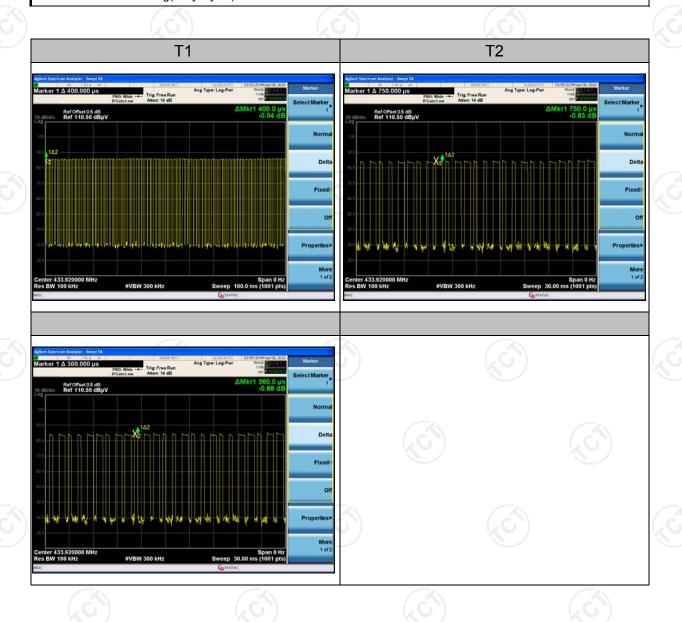
Duty Cycle Test Data:

Total time one cycle(ms)	Effective time one cycle(ms)	Duty Cycle	AV Factor(dB)
100	42.58	0.43	-7.33

Note: Effective time one cycle=38*0.75+0.36*38+0.4=42.58

Duty Cycle= Effective time one cycle/ Total time one cycle=0.43

AV Factor = 20 log(Duty Cycle)



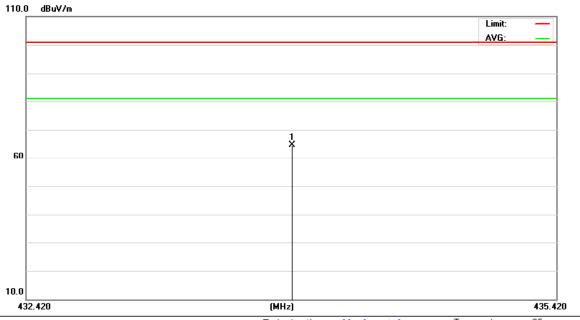


Field Strength of Fundamental

	Frequency (MHz)	Emission PK (dBuV/m)	Horizontal /Vertical	Limits PK (dBuV/m)	Margin (dB)
	433.92	64.63	Н	100.8	-36.17
	433.92	66.42	V	100.8	-34.38
•	(0)	((0))	K	3)	((0)

Frequency (MHz)	Emission PK (dBuV/m)	AV Factor(dB)	Horizontal /Vertical	Emission AVG (dBuV/m)	Limits AV (dBuV/m)	Margin (dB)
433.92	64.63	-7.33	Н	57.30	80.8	-23.50
433.92	66.42	-7.33	V	59.09	80.8	-21.27

Horizontal:



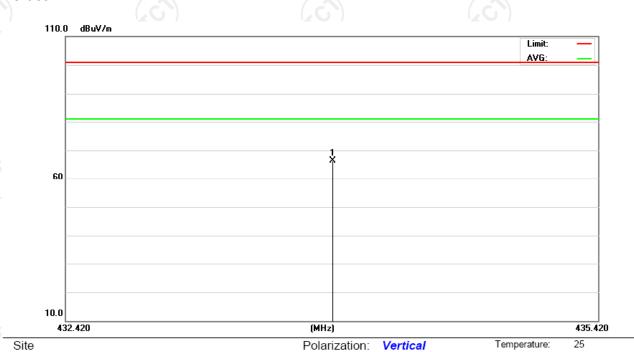
Site Polarization: Horizontal Temperature: 25
Limit: 15.231 Power: DC 3V Humidity: 54 %

)	No. M	k. Fr	eq.	Reading Level	Correct Factor	Measure- ment		Over		Antenna Height	Table Degree	
Ī		М	Hz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
	1 *	433.9	200	69.73	-5.10	64.63	100.8	-36.17	peak		0	



Vertical:

Limit: 15.231



No. Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 *	433.9200	71.52	-5.10	66.42	100.8	-34.38	peak		0	

Power:

DC 3V

Humidity:

54 %



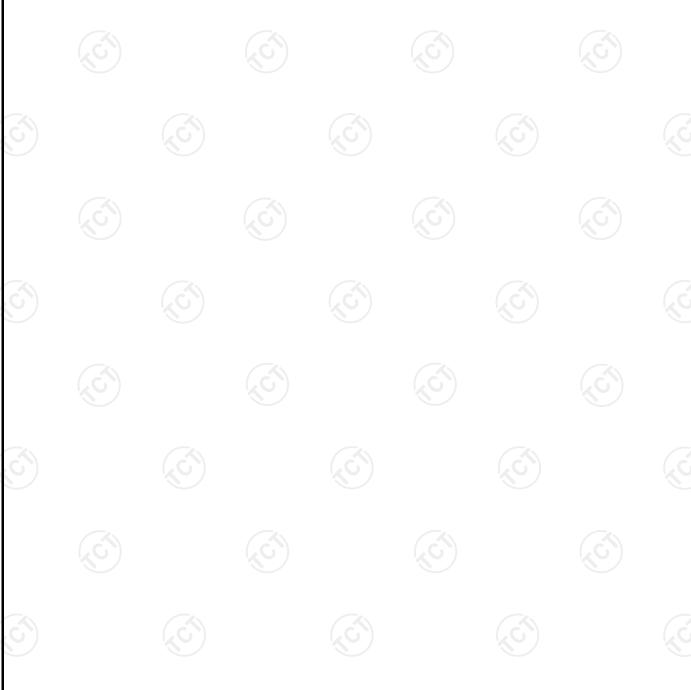
Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBµV/m)	Limit@3m (dBµV/m)
	(h)	(
(6)	(6)	- (,G')
	<u> </u>	

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement



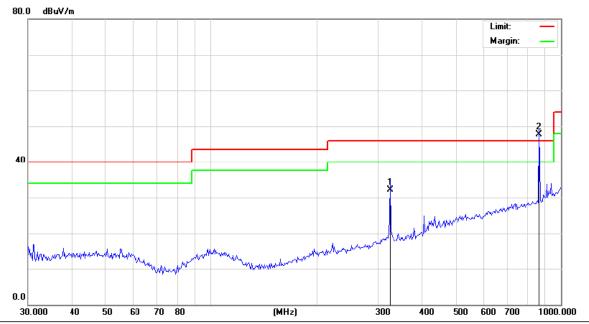
Page 17 of 30

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com



Frequency Range (30MHz-1GHz)

Horizontal:



Limit: FCC Part 15B Class B RE_3 m

Site

Polarization: Horizontal DC 3V Power:

Temperature:

25

54 %

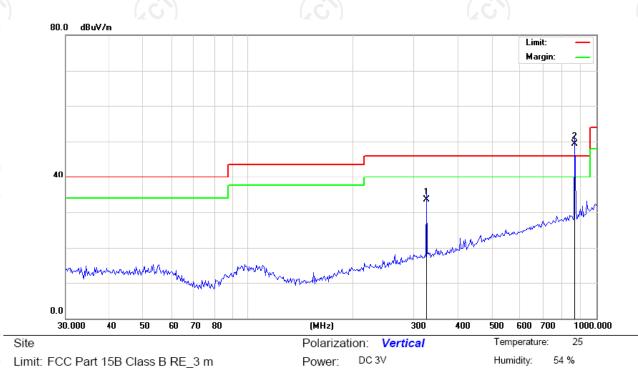
Humidity:

	Frequency (MHz)	Emission Level@3m (dBµV/m)	Antenna Polarity	Limit@3m (dBµV/m)	Remark	Margin (dB)
	325.47	32.18	Н	46.0	QP	-13.82
1	867.84	47.61	Н	60.8	QP	-13.19





Vertical:



Frequency (MHz)	Emission Level@3m (dBµV/m)	Antenna Polarity	Limit@3m (dBµV/m)	Remark	Margin (dB)
325.47	33.57	V	46.0	QP	-12.43
867.84	49.33	V	60.8	QP	-11.47





Frequency Range (1GHz-5GHz)

Frequency (MHz)	Emission Level@3m (dBµV/m)	Antenna Polarity	Limit@3m (dBµV/m)	Remark	Margin (dB)
1301.76	23.84	Н	74.0	Peak	-50.16
1735.68	24.96) Н	80.8	Peak	-55.84
1301.76	26.83	V	74.0	Peak	-47.17
1735.68	22.77	V	80.8	Peak	-58.03

	Frequency (MHz)	Emission Level@3m (dBµV/m)	AV Factor (dB)	Antenna Polarity	Limit@3m (dBµV/m)	Remark	Margin (dB)
	1301.76	23.84	-7.33	Н	54.0	AV	-37.49
	1735.68	24.96	-7.33	Н	60.8	AV	-43.17
I	1301.76	26.83	-7.33	V	54.0	AV	-34.50
	1735.68	22.77	-7.33	G V	60.8	AV	-45.36

Note:

- 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor AV=Average
 - AV Emission level = Peak Emissions level +AV Factor
- **2.** Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 5GHz.
- 3. Data of measurement which is not shown in the above table mean that the reading of emissions is attenuated more than 40 dB below the limits or the field strength is too small to be measured.





6.4. Manually Activated Transmitter

6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(a)
Test Method:	ANSI C63.10: 2013
Limit:	According to 15.231(a), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
	 According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings. VBW = 1MHz, VBW ≥ RBW; Span = 0; Sweep Time = 5s; Detector function = peak; Measure and record the results in the test report.
Test setup:	Spectrum Analyzer EUT
Test Mode:	Transmitting Mode
Test results:	PASS

6.4.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Page 21 of 30





6.4.3. Test data

Test Channel (MHz)	Manually Activated Transmitter (s)	Limit (s)	Conclusion
433.92	0.27	5	PASS

Test plots as follows:





6.5. Occupied Bandwidth

6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(c)		
Test Method:	ANSI C63.10: 2013		
Limit:	According to 15.231(c), The bandwidth of the emiss shall be no wider than 0.25% of the centre frequency devices operating above 70 MHz and below 900 M For devices operating above 900 MHz, the emiss shall be no wider than 0.5% of the centre frequer Bandwidth is determined at the points 20 dB down for the modulated carrier.		
	 According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold. Measure and record the results in the test report. 		
Test setup:	Spectrum Analyzer EUT		
Test Mode:	Transmitting Mode		
Test results:	PASS		

6.5.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

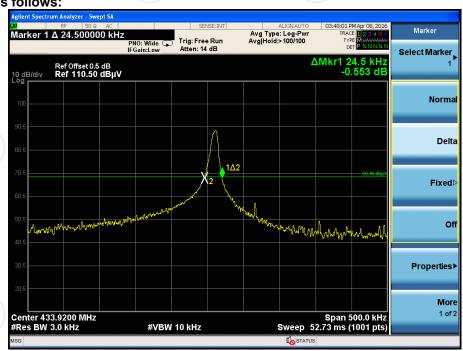


6.5.3. Test data

)	Test Channel (MHz)	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Conclusion
	433.92	24.5	1084.8	PASS

Note: Limit = 433.92MHz *0.25% = 1084.8 kHz

Test plots as follows:





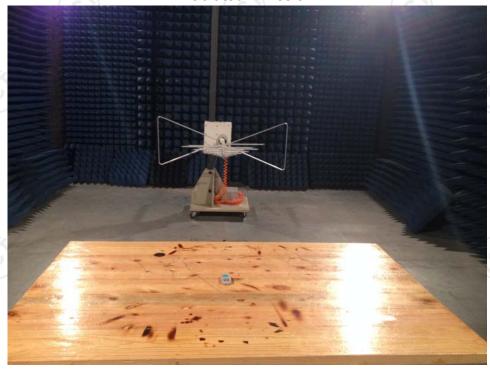


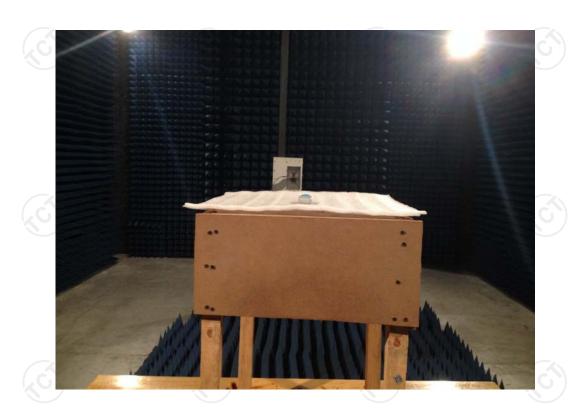
Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com



Appendix A: Photographs of Test Setup

Radiated Emission

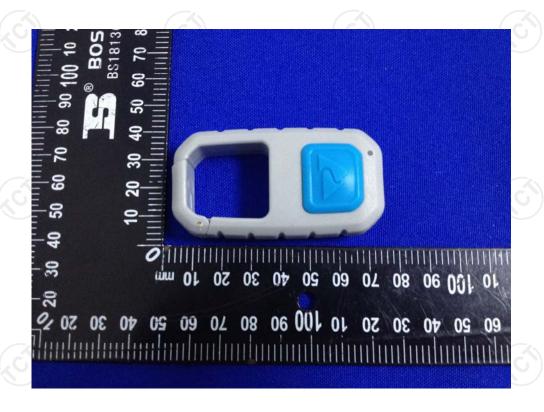






Appendix B: Photographs of EUT Model: G-LED-001 External Photos

























Model: G-LED-001 Internal Photos



