

FCC TEST REPORT

FOR

Shenzhen FeiCan Technology Co., Limited

LED Controller

Model No.: FC-L1B-R20Q

Additional model No.: FC-T2H-R5Q, FC-T1H-QH0Q, FC-PH-R3TD02, FC-TIH-QTC

Prepared for : Shenzhen FeiCan Technology Co., Limited
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Date of receipt of test sample : August 21, 2015
Number of tested samples : 1
Serial number : Prototype
Date of Test : August 21, 2015 - September 07, 2015
Date of Report : September 07, 2015

FCC TEST REPORT**FCC CFR 47 PART 15 Subpart B: 2014****Report Reference No. : LCS1509020138E**

Date Of Issue : September 07, 2015

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, ChinaTesting Location/ Procedure..... : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐**Applicant's Name : Shenzhen FeiCan Technology Co., Limited**Address : 5F, B Block of E Building, Lianchuang Industrial Area, Zhangge
Tangqian village, Guanlan Street, Longhua District, Shenzhen,
China**Test Specification**

Standard : FCC CFR 47 PART 15 Subpart B: 2014, ANSI C63.4-2014

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description..... : LED Controller

Trade Mark : FEICAN

Model/Type Reference : FC-L1B-R20Q

Ratings : DC 12~24V

Result : Positive**Compiled by:**

Jacky Li/ File administrators

Supervised by:

Glin Lu/ Technique principal

Approved by:

Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS1509020138ESeptember 07, 2015

Date of issue

Type / Model..... : FC-L1B-R20Q

EUT..... : LED Controller

Applicant..... : Shenzhen FeiCan Technology Co., LimitedAddress..... : 5F, B Block of E Building, Lianchuang Industrial Area, Zhangge
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China

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Test Result according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

Test Report Description	Page
1. SUMMARY OF STANDARDS AND RESULTS	5
1.1. Description of Standards and Results	5
2. GENERAL INFORMATION	6
2.1. Description of Device (EUT)	6
2.2. Description of Test Facility	6
2.3. Statement of the measurement uncertainty	7
2.4. Measurement Uncertainty	7
3. RADIATED EMISSION MEASUREMENT	8
3.1. Test Equipment	8
3.2. Block Diagram of Test Setup	8
3.3. Radiated Emission Limit (Class B)	9
3.4. EUT Configuration on Measurement	9
3.5. Operating Condition of EUT	9
3.6. Test Procedure	9
3.7. Radiated Emission Noise Measurement Result	10

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC CFR 47 PART 15 Subpart B: 2014	Class B	N/A
Radiated disturbance	FCC CFR 47 PART 15 Subpart B: 2014	Class B	PASS
N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : LED Controller

Model Number : FC-L1B-R20Q

Power Supply : DC 12~24V

Frequency Range : 433.87MHz

Modulation Technology : ASK

Antenna Type and Gain : Integral Antenna, 2.0 dBi(Max.)

Additional models No.			
FC-T2H-R5Q	FC-T1H-QH0Q	FC-PH-R3TD02	FC-TIH-QTC
Remark: PCB board, structure and internal of these model(s) are the same, So no additional models were tested.			

2.2. Description of Test Facility

EMC Lab. : CNAS Registration Number. is L4595.

FCC Registration Number. is 899208.

Industry Canada Registration Number. is 9642A-1.

VCCI Registration Number. is C-4260 and R-3804.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

2.3.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.4.Measurement Uncertainty

Test Item	Frequency Range	Expanded uncertainty (U _{lab})	Expanded uncertainty (U _{cispr})
Conducted Emission	(9kHz to 150kHz)	2.63 dB	4.0 dB
	(150kHz to 30MHz)	2.35 dB	3.6 dB
Radiated Emission	(9kHz to 30MHz)	3.68 dB	N/A
Radiated Emission	(30MHz to 1000MHz)	3.48 dB	5.2 dB
Radiated Emission	(above 1000MHz)	3.90 dB	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

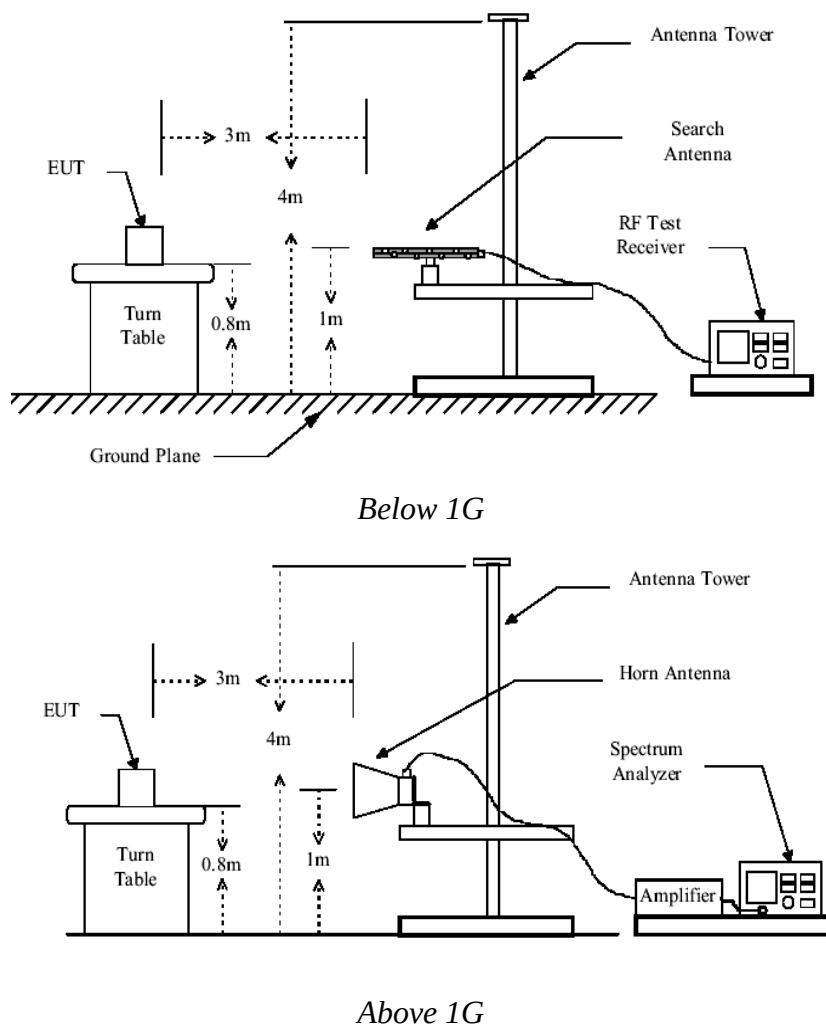
3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2015/02/04
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18
3	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2015/06/18
4	EMI Test Software	AUDIX	E3	N/A	2015/06/18
5	Positioning Controller	MF	MF-7082	/	2015/06/18

3.2. Block Diagram of Test Setup



3.3. Radiated Emission Limit (Class B)

Limits for radiated disturbance Blow 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54
Remark: (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$ (2) The smaller limit shall apply at the cross point between two frequency bands. (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.			

3.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2.

4.5.2. Let the EUT work in test mode (on) and measure it.

3.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Below 1G:

The bandwidth of the EMI test receiver is set at 120kHz, 1000kHz.

The frequency range from 30MHz to 1000MHz is checked.

Above 1G:

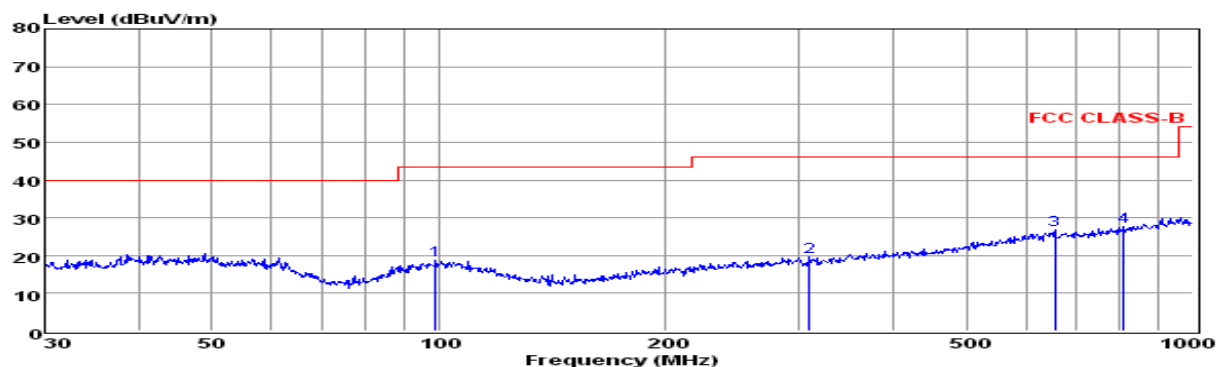
The bandwidth of the EMI test receiver is set at 1MHz, 3MHz for Peak detector.

The bandwidth of the EMI test receiver is set at 1MHz, 3MHz for Average detector

The frequency range from 1GHz to 26.5GHz is checked.

3.7. Radiated Emission Noise Measurement Result

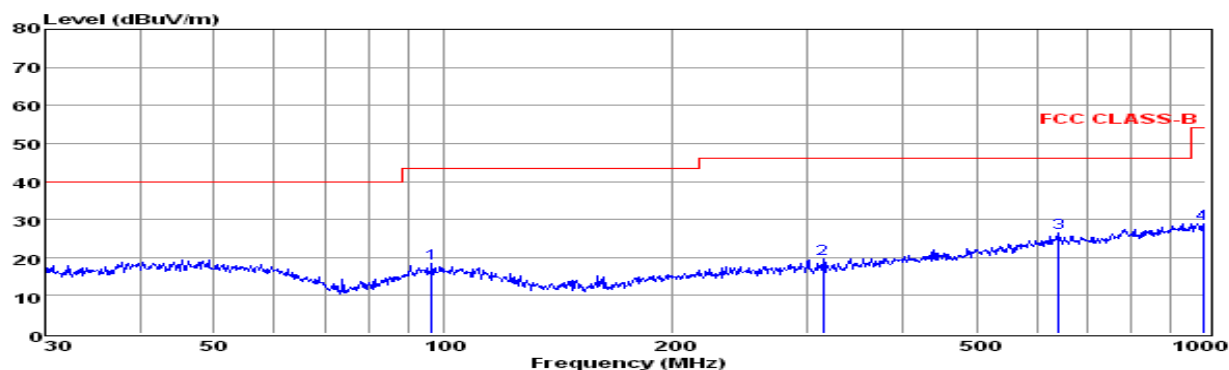
PASS.



Env./Ins: 24°C/56%
 EUT: LED Controller
 M/N: FC-L1B-R20Q
 Power Rating: DC 24V
 Test Mode: Receive
 Operator: Jacky
 Memo:
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	98.83	4.98	0.61	13.09	18.68	43.50	-24.82	QP
2	310.00	5.33	1.08	13.19	19.60	46.00	-26.40	QP
3	656.53	6.64	1.50	18.65	26.79	46.00	-19.21	QP
4	810.27	5.64	1.71	20.17	27.52	46.00	-18.48	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported



Env./Ins: 24°C/56%
 EUT: LED Controller
 M/N: FC-L1B-R20Q
 Power Rating: DC 24V
 Test Mode: Receive
 Operator: Jacky
 Memo:
 pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	96.44	5.03	0.58	12.93	18.54	43.50	-24.96	QP
2	314.38	5.36	1.09	13.25	19.70	46.00	-26.30	QP
3	640.61	6.22	1.55	18.60	26.37	46.00	-19.63	QP
4	993.01	5.38	1.88	21.69	28.95	54.00	-25.05	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported

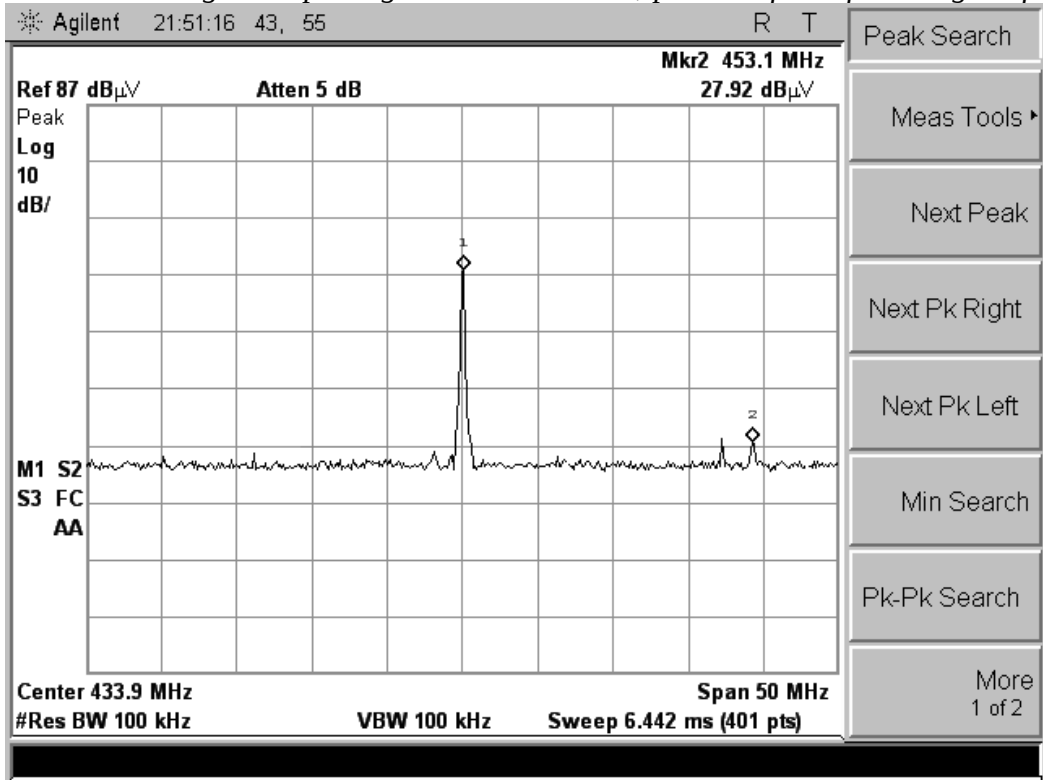
Test Mode: Receive	Tested by: Jacky
Test voltage: DC 24V	Test Distance: 3m
Detector Function: Peak+AV	Test Results: Passed

Polarization	Frequency MHz	Emission Level dB μ V/m		Limits dB μ V/m		Margin dB μ V/m	
		Peak	AVG	Peak	AVG	Peak	AVG
Horizontal	1257.41	58.52	44.41	74.00	54.00	-15.48	-9.59
	2963.58	56.78	41.77	74.00	54.00	-17.22	-12.23
	4821.05	57.26	42.58	74.00	54.00	-16.74	-11.42
Vertical	1357.18	56.14	40.23	74.00	54.00	-17.86	-13.77
	3257.49	58.95	42.16	74.00	54.00	-15.05	-11.84
	5102.36	57.31	40.93	74.00	54.00	-16.69	-13.07

Notes:

1. Measuring frequencies from 9k~26.5GHz , No emission found between lowest internal used/generated frequency to 30MHz.
2. Radiated emissions measured in frequency range from 9k~26.5GHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measure

Receiver Type:
The receiver not belongs to Super regenerative Receiver; please refer to following confirm plots.



-----THE END OF REPORT-----