

No. 2021688/EE Date : Aug 04 2010

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# **FCC REPORT**

**Application No.:** SZEMO100503180RF (2021688/EE)

Applicant: Shenzhen Xinzhensheng Electronics CO LTD

Product Name: RF Remote Controller

Operation Frequency: 433.92MHz FCC ID: VZB-CM6623

Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.231: 2008

**Date of Receipt:** 2010-06-01

**Date of Test:** 2010-06-02 to 2010-07-23

**Date of Issue:** 2010-08-04

Test Result : PASS \*

Jack Zhang Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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# **Test Summary**

Test Item	Section in CFR 47	Result	
Antenna requirement	15.203	Passed	
Field strength of the fundamental signal	15.231 (b)	Passed	
Spurious emissions	15.231 (b)/15.209	Passed	
20dB Bandwidth	15.231 (c)	Passed	
Dwell time	15.231 (a)	Passed	

Remark: Passed: The EUT complies with the essential requirements in the standard.

Failed: The EUT does not comply with the essential requirements in the standard.

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## **General Information**

## Client Information

Applicant:	ShenZhen Xinzhensheng electronics CO LTD
Manufacturer:	Ready2light limited
Factory:	SHENZHEN XINZHENSHENG ELECTRONICS CO., LTD
Address of Applicant:	Building 49, Baotian Industrial Zone Xixiang Town, Shenzhen, China
Address of Manufacturer:	FLAT/RM604-7 DOMINIAN CENTRE43-49 QUEEN'S ROAD EAST HONG KONG CHINA
Address of Factory:	Building 49, Baotian Industrial Zone Xixiang Town, Shenzhen, China

# General Description of E.U.T.

Product Name:	RF Remote Controller
Item No.:	CM6623
Operation Frequency:	433.92MHz
Antenna Type:	Integral
Antenna gain:	0dBi
Power supply:	DC12V(1*12V"23AE" Size Battery)

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# E.U.T Operation mode

## **Operating Environment:**

Temperature: 24.0 °C
Humidity: 52 % RH
Atmospheric Pressure: 1008 mbar

Test mode:

Transmitting mode: Keep the EUT in transmitting mode.

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# Test Facility

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

#### CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### **VCCI**

The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

#### FCC - Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682, June 27, 2008.

#### **Industry Canada (IC)**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

## Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

# Other Information Requested by the Customer

None.

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### Test Instruments list

RE in Chamber								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)		
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2009-06-17	2011-06-17		
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2009-11-05	2010-11-05		
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A		
4	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18		
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2009-11-05	2010-11-05		
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2009-11-10	2011-11-10		
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2010-06-02	2011-06-02		

RF conducted								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)		
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2009-10-22	2010-10-22		
2	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18		

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## **Test results and Measurement Data**

# Antenna requirement:

the antenna is 0dBi.

Standard requirement:	FCC Part15 C Section 15.203					
responsible party shall be us antenna that uses a unique o	be designed to ensure that no antenna other than that furnished by the ed with the device. The use of a permanently attached antenna or of an coupling to the intentional radiator, the manufacturer may design the unit so e replaced by the user, but the use of a standard antenna jack or electrical					
E.U.T Antenna:						
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of						

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## Radiated Emission

	Γ						
Test Requirement:	FCC Part15 C Section 15.231(b) and 15.209						
Test Method:	ANSI C63.4: 20	03					
Test Frequency Range:	30MHz to 5000	MHz					
Test site:	Measurement D	istance: 3m (	(Semi-Anecho	ic Chambei	·)		
Receiver setup:							
·	Frequency	Detector	RBW	VBW	Remark		
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value		
	Above 1GHz Peak		1MHz	3MHz	Peak Value		
Limit:				/ O			
(Field strength of the	Freque	ency	Limit (dBuV		Remark		
fundamental signal)	433.921	MHz	80.8 100.		Average Value Peak Value		
1		Peak value					
Limit:	Frequency Limit (dBuV/m @3m) Remark						
(Spurious Emissions)	30MHz-8		40.0		Quasi-peak Value		
	88MHz-21		43.5		Quasi-peak Value		
	216MHz-9		46.0		Quasi-peak Value		
	960MHz-		<u>)</u> )	Quasi-peak Value			
		)	Average Value				
	Above 1	GHZ	74.0	)	Peak Value		
				ssion level i	s 20 dB below the		
		rmitted funda					
	whichever limit	permits a higl	her field strenç	gth.			
Test Procedure:	above ground. 7 position of the n	The turn table naximum emi	can rotate 36 ssion level. Th	0 degrees the antenna	e which is 0.8meter to determine the can move up and aximum emission		
	Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.						
	The radiation measurements are performed in X, Y, Z axis positioning.  Only the worst case is shown in the report.						
Test Instruments:	Refer to section 4.7 for details						
Test mode:	Transmitting mode						
Test results:	Passed						

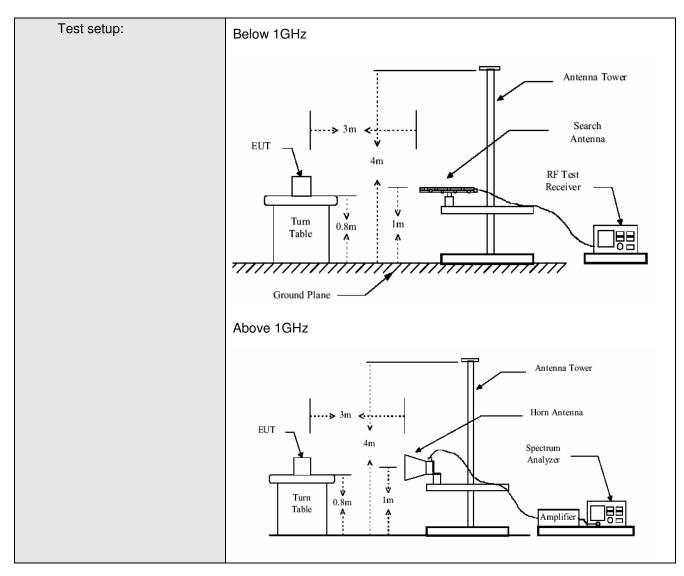
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#### Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

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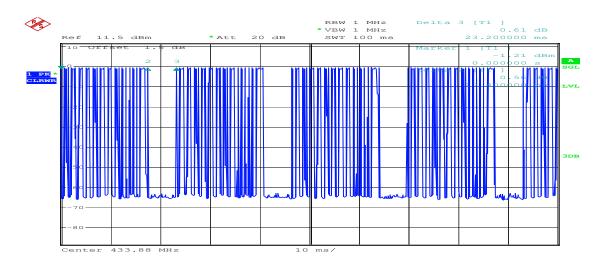
#### Measurement Data

# Field Strength Of The Fundamental Signal

Peak value:	Peak value:								
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
433.92	2.35	16.59	27.52	70.59	62.01	100.80	-38.79	Horizontal	
433.92	2.35	16.59	27.52	65.39	56.81	100.80	-43.99	Vertical	

Average value:	
	Average value=Peak value + PDCF
Calculate Formula:	PDCF=20 log(Duty cycle)=2.5dB
	Duty cycle= T on time / T period
	Ton time =17.4ms
Test data:	T period =23.2ms
	Average value= 59.51 dBuV/m
Limit Line	80.8 dBuV/m
Test result	Pass

## Test plot as follows:



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# **Spurious Emissions**

#### 30MHz~1GHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
86.260	1.10	8.36	27.97	41.04	22.53	40.00	-17.47	Vertical
322.940	1.98	14.76	26.90	31.14	20.98	46.00	-25.02	Vertical
567.380	2.67	19.03	27.65	33.23	27.28	46.00	-18.72	Vertical
700.270	2.90	21.60	27.28	32.93	30.15	46.00	-15.85	Vertical
867.695	3.48	22.85	26.58	48.99	48.74	60.80	-12.06	Vertical
960.230	3.66	23.60	26.44	33.01	33.83	54.00	-20.17	Vertical
339.430	2.03	15.16	27.02	31.24	21.41	46.00	-24.59	Horizontal
517.910	2.62	18.34	27.69	32.63	25.90	46.00	-20.10	Horizontal
637.220	2.78	20.55	27.48	31.91	27.76	46.00	-18.24	Horizontal
742.950	3.03	21.67	27.13	32.70	30.27	46.00	-15.73	Horizontal
867.700	3.48	22.85	26.58	54.99	54.74	60.80	-6.06	Horizontal
935.980	3.64	23.30	26.43	33.01	33.52	46.00	-12.48	Horizontal

Remark: the data above is tested with QP detector mode.

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#### Above 1GHz

#### Peak measurement:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1301.760	4.54	27.66	39.64	62.58	55.14	74.00	-18.86	Vertical
1735.000	5.27	29.94	39.51	57.80	53.50	74.00	-20.50	Vertical
2169.500	5.51	32.11	38.93	53.13	51.82	74.00	-22.18	Vertical
2603.520	6.08	32.54	38.98	50.64	50.28	74.00	-23.72	Vertical
3037.440	7.00	33.38	39.32	47.19	48.25	74.00	-25.75	Vertical
3471.000	7.26	33.21	39.44	47.69	48.72	74.00	-25.28	Vertical
1301.760	4.54	27.66	39.64	60.58	53.14	74.00	-20.86	Horizontal
1735.680	5.27	29.94	39.51	57.76	53.46	74.00	-20.54	Horizontal
2169.600	5.51	32.11	38.93	53.77	52.46	74.00	-21.54	Horizontal
2603.520	6.08	32.54	38.98	51.88	51.52	74.00	-22.48	Horizontal
3037.440	7.00	33.38	39.32	50.92	51.98	74.00	-22.02	Horizontal
3471.000	7.26	33.21	39.44	50.48	51.51	74.00	-22.49	Horizontal

Average measurement:

Fraguency	Peak level	PDCF	Average	Limit Line	Over Limit	
Frequency (MHz)	(dBuV/m)	(dB)	Level (dBuV/m)	(dBuV/m)	(dB)	Polarization
1301.760	55.14	2.5	48.22	54.00	-5.78	Vertical

Note: As shown in this section, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

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## 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.231 (c)		
Test Method:	ANSI C63.4:2003		
Limit:	The bandwidth of the emission shall be no wider than 0.25% of the centre frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the centre frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.		
Test Procedure:	According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.		
	<ol> <li>Set the EUT to proper test channel.</li> <li>Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>Read 20dB bandwidth.</li> </ol>		
Test setup:			
	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Test Instruments: Refer to section 4.7 for details		
Test mode:	Transmitting mode		
Test results:	Passed		

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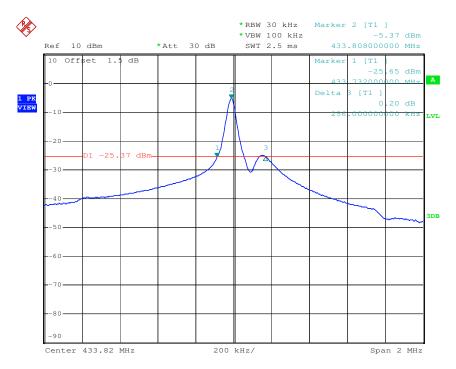
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#### Measurement Data

20dB bandwidth (kHz)	Limit (kHz)	Results
256	1085	pass

#### Test plot as follows:



Date: 23.JUL.2010 13:14:52

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## **Dwell Time:**

Test Requirement:	FCC Part15 C Section 15.231 (a)		
Test Method:	ANSI C63.4:2003		
Limit:	Not more than 5 seconds		
Test Procedure:	According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.		
	2. Set the EUT to proper test channel.		
	3. Single scan the transmitter, and read the transmission time.		
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane		
Test Instruments:	Refer to section 4.7 for details		
Test mode:	Transmitting mode		
Test results:	Passed		

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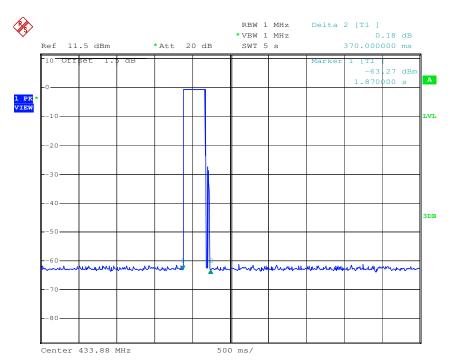
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#### Measurement Data

Dwell Time (ms)	Limit (s)	Results	
370	≤ 5 s	Pass	

#### Test plot as follows



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