

FrSky Electronic Co., Ltd.

2.4G Receiver

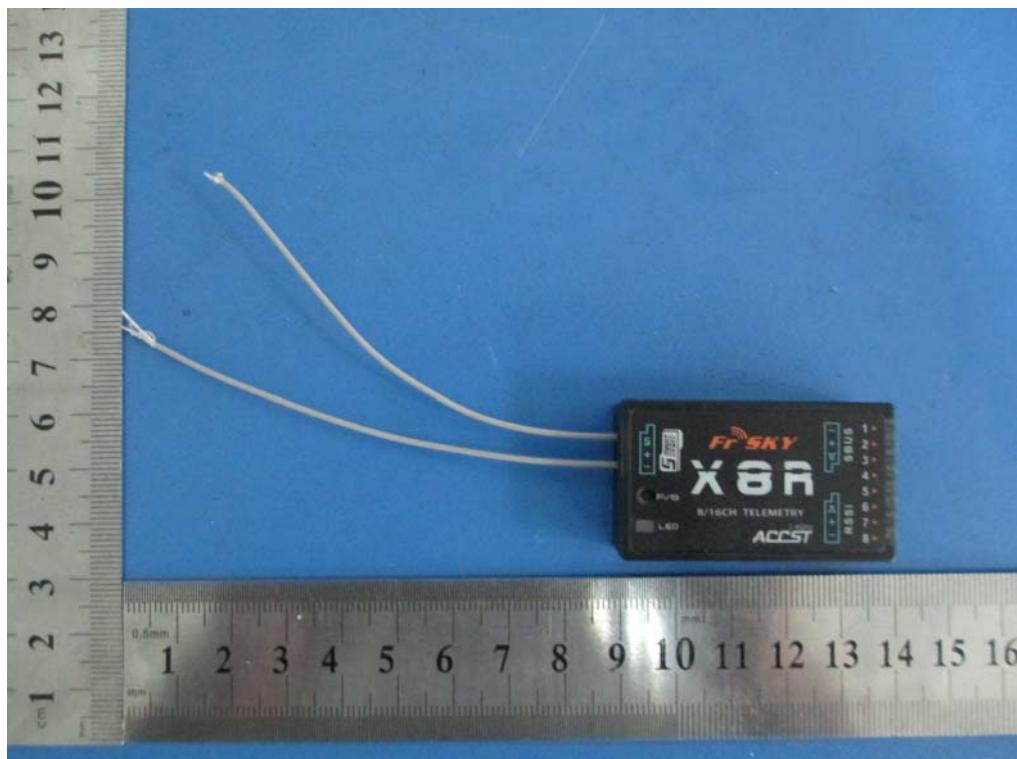
Main Model: X8R

Serial Model: XSR, X4R, X6R, X12R, L9R, L12R, S3R, S4R, S6R

May 15, 2013

Report No.: 13020316-FCC-H1

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

Deon Dai Compliance Engineer	Alex Liu Technical Manager	

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Test result presented in this test report is applicable to the representative sample only.**

RF Exposure Evaluation Report

To: FCC 2.1091: 2012

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Laboratory Introduction

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Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless , Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

Accreditations for Product Certifications

Country/Region	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC, (RCB 208)	RF , Telecom
Hong Kong	OFTA (US002)	RF , Telecom



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Main Model: X8R
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1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the FrSky Electronic Co., Ltd., 2.4G Receiver and model: X8R against the current Stipulated Standards. The 2.4G Receiver has demonstrated compliance with the FCC 2.1091: 2012.

EUT Information

EUT Description : 2.4G Receiver

Main Model : X8R

Serial Model : XSR, X4R, X6R, X12R, L9R, L12R, S3R, S4R, S6R

Antenna Gain : 2 dBi

Input Power : DC: 4~10V

Maximum Conducted Peak Power to Antenna : 15.23 dBm

Classification Per Stipulated Test Standard : FCC 2.1091: 2012

NOTE: in this report, we choice the model X8R to test, and the differences of them are only different mode name and shape, like all the other.

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2. TECHNICAL DETAILS

Purpose	Compliance testing of 2.4G Receiver with stipulated standard
Applicant / Client	FrSky Electronic Co., Ltd. No.100 Jinxi Road ,Wuxi,Jiangsu,China
Manufacturer	FrSky Electronic Co., Ltd. No.100 Jinxi Road ,Wuxi,Jiangsu,China
Laboratory performing the tests	SIEMIC Nanjing (China) Laboratories NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com
Test report reference number	13020316-FCC-H1
Date EUT received	April 23, 2013
Standard applied	FCC 2.1091: 2012
Dates of test	May 09 to May 13, 2013
No of Units	#1
Equipment Category	DSS
Trade Name	Frsky
RF Operating Frequency (ies)	2404-2479 MHz(Rx)
Number of Channels	47CH
Modulation	2-FSK
FCC ID	XYFW2409R

3. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)



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Maximum peak output power at antenna input terminal: 15.23 (dBm)
Maximum peak output power at antenna input terminal: 33.34 (mW)

Prediction distance: >20 (cm)
Prediction frequency: 2404 (MHz)
Antenna Gain (typical): 2 (dBi)
Antenna Gain (typical): 1.585 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.011 (mW/cm²)
MPE limit for general population exposure at prediction frequency: 1.0 (mW/cm²)

0.011(mW/cm²) < 1.0(mW/cm²)

Result: Pass