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

No. 1 Workshop, M-10, Middle section, Science & Technology Park,
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SAR Evaluation Report

Application No.:	SZEM1710010942CR
Applicant:	SHENZHEN FATSHARK ELECTRONIC CO., LTD.
Address of Applicant:	2/F, Bldg8, Block1, Guangyayuan Industrial Zone, Guangyayuan Road, Wuhe Community, Bantian Longgang, Shenzhen, China
Manufacturer:	SHENZHEN FATSHARK ELECTRONIC CO., LTD.
Address of Manufacturer:	2/F, Bldg8, Block1, Guangyayuan Industrial Zone, Guangyayuan Road, Wuhe Community, Bantian Longgang, Shenzhen, China
Factory:	Dongguan Flysky RC Model technology Co., Ltd
Address of Factory:	West building 3, Huangjinyuan Ind Park, Qiaoli North Gate, Changping Town, Dongguan, China
Equipment Under Test (EUT):	
EUT Name:	Fat Shark 101 Radio Controller
Model No.:	FSV2704
Trade mark:	FATSHARK
FCC ID:	2AN5RFSV2704
Standard(s) :	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2017-10-24
Date of Test:	2017-10-30 to 2017-10-31
Date of Issue:	2017-11-07
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC 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.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2017-11-07		Original

Authorized for issue by:				
				
		Harry Wu /Project Engineer		
				
		Eric Fu /Reviewer		

3 Contents

4 General Information

4.1 General Description of EUT

Power supply:	DC 6.0V (4 x 1.5V "AA" batteries)
Modulation technique:	FHSS
Operation Frequency:	2408MHz~2475MHz
Modulation Type:	GFSK
Number of Channel:	135
Antenna Type:	Integral
Antenna Gain:	Antenna 1: 2dBi; Antenna 2: 2dBi Two antennas can not synchronous transmission.

Frequency List:

2408	2408.5	2409	2409.5	2410	2410.5	2411	2411.5	2412	2412.5
2413	2413.5	2414	2414.5	2415	2415.5	2416	2416.5	2417	2417.5
2418	2418.5	2419	2419.5	2420	2420.5	2421	2421.5	2422	2422.5
2423	2423.5	2424	2424.5	2425	2425.5	2426	2426.5	2427	2427.5
2428	2428.5	2429	2429.5	2430	2430.5	2431	2431.5	2432	2432.5
2433	2433.5	2434	2434.5	2435	2435.5	2436	2436.5	2437	2437.5
2438	2438.5	2439	2439.5	2440	2440.5	2441	2441.5	2442	2442.5
2443	2443.5	2444	2444.5	2445	2445.5	2446	2446.5	2447	2447.5
2448	2448.5	2449	2449.5	2450	2450.5	2451	2451.5	2452	2452.5
2453	2453.5	2454	2454.5	2455	2455.5	2456	2456.5	2457	2457.5
2458	2458.5	2459	2459.5	2460	2460.5	2461	2461.5	2462	2462.5
2463	2463.5	2464	2464.5	2465	2465.5	2466	2466.5	2467	2467.5
2468	2468.5	2469	2469.5	2470	2470.5	2471	2471.5	2472	2472.5
2473	2473.5	2474	2474.5	2475					

4.2 Test Location

All tests were performed at:

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

4.3 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.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

5.1.3 EUT RF Exposure

The Max Averaged output power is	9.34	dBm on the lowest channel	2.408	GHz
9.34 dBm logarithmic terms convert to numeric result is nearly 8.59 mW				
According to the formula. calculate the test exclusion thresholds:				
[(max. power of channel, including tune-up tolerance, mW)/				
(min. test separation distance, mm)] · [√f(GHz)]				
General RF Exposure = (8.59 mW / 5 mm) x √2.408 GHz = 2.67			(1)	
SAR requirement:				
S = 3.0			(2)	
(1) < (2)				
So the SAR report is not required.				

Remark: Max Averaged output power is included the tune-up tolerance.