



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

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RF Exposure Evaluation Report

Application No.: SZEM1807006710CR
Applicant: Xiamen Huoshiquan Import & Export CO., LTD
Address of Applicant: Room 703, No. 813-2 Xiahe Road, Siming District, XIAMEN China
Equipment Under Test (EUT):
Product Name: RC quadcopter
Model No.: HS700, HS700D, HS700G, HS710, HS165, HS165G, HS165G, HS120D, HS120G, HS130D, HS130G, HS500, HS600, HS800, HS900, HS510, HS610, HS810, HS910, HS550, HS650, HS760, HS770, HS880, HS660, HS9001, CD200D, CD600, HS500G, HS600G, HS800G, HS900G, HS510G, HS550G, HS610G, HS650G, HS660G, HS760G, HS770G, HS880G, HS910G, HS500D, HS600D, HS800D, HS900D, HS510D, HS610D, HS810D, HS910D, HS650D, HS660D, HS760D, HS770D, HS880D, HS410, HS510, HS175, HS176, HS320, HS330 ♣

♣ Please refer to section 4.1 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID: 2AJ55HOLYSTONEMJ
Standards: 47 CFR Part 1.1307 (2016)
47 CFR Part 1.1310 (2016)
Date of Receipt: 2018-07-26
Date of Test: 2018-07-26 to 2018-09-04
Date of Issue: 2018-09-12

Test Result :	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
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.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-09-12		Original

Authorized for issue by:				
				
		<hr/>		
		Bill Chen /Project Engineer		
				
		<hr/>		
		Eric Fu /Reviewer		



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4 General Information

4.1 General Description of EUT

Power supply:	DC 7.4V			
Frequency Range:	UNII Band III	IEEE 802.11a	5745-5825	5
		IEEE 802.11n 20MHz	5745-5825	5
Data Modulation:	For 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) For 802.11n: OFDM(8PSK/QPSK/16QAM/64QAM)			
Antenna Type:	Monopole			
Antenna Gain:	Antenna 1 : 2dBi Antenna 2 : 2dBi Two antennas can not simultaneous transmission.			

Power supply:	RX: Rechargeable battery 7.4V 2800mAh (Charge by USB)
Operation Frequency	2417MHz to 2466MHz
Modulation Type:	GFSK
Number of Channels:	50
Channel Spacing:	1MHz
Antenna Type:	Monopole
Antenna Gain:	Antenna 1 : 2dBi Antenna 2 : 2dBi Two antennas can not simultaneous transmission.

Remark:

The 5GHz camera needs to be used with the drone, 5GHz camera and drone can simultaneous transmission, 5GHz camera has an FCC ID: 2AJ55HOLYSTONEJX.



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Declaration of EUT Family Grouping:

Model No.: HS700, HS700D, HS700G, HS710, HS165, HS165G, HS165G, HS120D, HS120G, HS130D, HS130G, HS500, HS600, HS800, HS900, HS510, HS610, HS810, HS910, HS550, HS650, HS760, HS770, HS880, HS660, HS9001, CD200D, CD600, HS500G, HS600G, HS800G, HS900G, HS510G, HS550G, HS610G, HS650G, HS660G, HS760G, HS770G, HS880G, HS910G, HS500D, HS600D, HS800D, HS900D, HS510D, HS610D, HS810D, HS910D, HS650D, HS660D, HS760D, HS770D, HS880D, HS410, HS510, HS175, HS176, HS320, HS330

Only the model HS700 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only the colour, appearance, package and assort is different.



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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 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 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.



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4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.



5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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4.1.3 EUT RF Exposure Evaluation

For 2.4GHz

Antenna 1 Gain: 2dBi

Antenna 2 Gain: 2dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.59 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Lowest	2417	-10.4	0.09	0.00003	1.0	PASS

Note: Refer to report No. SZEM180700671002 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For 5GHz

Antenna 1 Gain: 2dBi

Antenna 2 Gain: 2dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.59 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Lowest	5745	12.75	18.84	0.006	1.0	PASS

Note: Refer to report No. SZEM180700671004 for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

So, Simultaneous transmission SAR test is not required, because the Max. sum of the MPE ratios is $0.00003+0.006=0.00603<1$.

- End of the Report -