Test Report

Report No.: AGC07887190402SS01

PRODUCT DESIGNATION	:	4 AXIS DRONE
BRAND NAME	:	N/A
MODEL NAME	:	Refer to page 3
CLIENT	:	HONGDA TOYS FACTORY(BO JIANG TECHNOLOGY)
DATE OF ISSUE	:	Apr. 24, 2019
STANDARD(S)	:	EN 60825-1:1994+A1:2002+A2:2001
REPORT VERSION	:	V1.0

*A*ttestation of *G*lobal Compliance (Shenzhen) Co., Ltd.

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TEST REPORT

EN 60825-1

Safety of laser products – Part 1:Equipment classification and requirements

Report reference No	AGC07887190402SS01	
Tested by (+ signature)	Winston Wang	Winston Wang
Review by (+ signature)	Byron Wang	Byron Wang
Approved by (+ signature)	Matte He (Authorized Officer)	Matte He
Date of issue	Apr. 24, 2019	
Contents	Total 12 pages	

Testing laboratory

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Address	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China
Testing location	Same as above

Applicant

Name	HONGDA TOYS FACTORY(BO JIANG TECHNOLOGY)
Address	GUANGFENG INDUSTRIAL ZONE,DENGFENG ROAD,CHENGHAI,SHANTOU,GUANGDONG,CHINA

Test specification

Standard	EN 60825-1:1994+A1:2002+A2:2001
Test procedure	type test
Procedure deviation	N/A
Non-standard test method	N/A

Test Report Form/blank test report

Test Report Form No.	AGC60825-1A2
TTRF originator	AGC
Master TTRF	Dated 2014-12

Test item

Product designation	4 AXIS DRONE
Brand name	N/A

Model Name.....:	S11, F1, F2, F3, F4, F5, F6, S5, S5H, S5W, S5HW, S6, S6W, S7, S7W, S7G S8, S8W, S8G S9, S9H, S9W, S9MW , S9MG, S11W, S12, S12W, S13, S13W, S15, S15W, S17, S17W, S19, S19W, G01, G03, G05, G07, G09, G011, G013, G015, G017, G019
Rating(s)	For Control:3.0V(Installed 2 X 1.5V AAA batteries) For car: 3.7V(Installed 3.7V 220mAh lithium battery)
Protection Class of equipment.....:	Class 1

Test case verdicts

Test case does not apply to the test object.:	N(/A)
Test item does meet the requirement .....:	P(ass)
Test item does not meet the requirement ...:	F(ail)

Testing

Date of receipt of test item.....:	Apr.15, 2019
Date(s) of performance of test .....:	Apr. 23, 2019

Attachments

Attachment A .....:	Photos of product

General remarks

This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

Clause numbers between brackets refer to clauses in IEC 60825-1 (EN 60825-1).

"(see remark #)" refers to a remark appended to the report.

"(see Annex #)" refers to an annex appended to the report.

Throughout this report a comma is used as the decimal separator.

Report Revise Record				
Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Apr. 24, 2019	Valid	Initial release

Summary of testing

The test part of product was classified as Class 1 product.

4	**ENGINEERING SPECIFICATIONS**		—
4.1	General remarks		N
	Modification		N
4.2	Protective housing		N
4.2.1	General		N
4.2.2	Service		N
4.2.3	Removable laser system		N
4.3	Access panels and safety interlocks		N
4.3.1	Access panels of protective housing		N
	Product Class .....:		—
	Accessible emission during removal of access panel .....:		N
	The removal of the panel gives access to laser radiation levels designated by “X” in the table		N
	Accessible emissions after removal .....:		—
4.3.2	Deliberate override mechanism		N
4.4	Remote interlock connector		N
4.5	Manual reset		N
4.6	Key control		N
4.7	Laser radiation emission warning		N
4.7.1	Class 3R (λ<400 nm; λ>700 nm), 3B and 4		N
4.7.2	Audible or visible warning		N
4.7.3	Operational control and laser aperture		N
4.7.4	Laser emission distributed through more than one output		N
4.8	Beam stop or attenuation		N
4.9	Controls		N
4.10	Viewing optics		N
	a) Human access to laser radiation in excess of Class 1M prevented when the shutter is opened or attenuation varied		N
	b) Opening of the shutter or variation of the attenuation prevented when exposure to laser radiation in excess of Class 1M is possible		N
4.11	Scanning safeguard		N
4.12	Walk-in access		N

	a) Means provided so that any person inside the housing can prevent activation of a Class 3B or 4 laser hazard		N
	b) A warning device provides adequate warning of emission to any person within the housing		N
	c) Where “walk-in” access during operation is intended or reasonably foreseeable, emission of laser radiation that is equivalent to Class 3B or Class 4 while someone is present inside the enclosure of Class 1, Class 2 or Class 3R product shall be prevented by engineering means		N
4.13	Environmental conditions		N
	- climatic conditions		N
	- vibration and shock		N
4.14	Protection against other hazards		N
4.14.1	Non-optical hazards (product safety standard)		N
	- electrical hazards;		N
	- excessive temperature;		N
	- spread of fire from the equipment;		N
	- sound and ultrasonic;		N
	- harmful substances;		N
	- explosion;		N
4.14.2	Collateral radiation		N

5	**LABELLING**		—
5.1	General		P
	LASER PRODUCT CLASS .....:	Class 1	—
	Labelling location (Product / User instruction / Package)		P
	Warning label – Hazard symbol (Figure 1)		N
	Explanatory label (Figure 2)		N
5.2-5.6	Text on explanatory label .....:	See “copy of marking plate”	N
5.7	Aperture label		N
5.8	Radiation output and standards information		N
	Max output of laser radiation .....:		—
	Pulse duration .....:	--	—
	Emitted wavelength .....:		—
	The name and publication date of the standard.....:		N

5.9	Labels for access panels		N
5.9.1 a) – f)	Warning wording used .....:		N
5.9.2	Labels for safety interlocked panels		N
	Warning wording used .....:		N
5.10	Warning for invisible laser radiation .....:		N
5.11	Warning for visible laser radiation .....:		N

6	**OTHER INFORMATIONAL REQUIREMENTS**		—
6.1	Information for the user		N
	a) adequate instructions for proper assembly, maintenance and safe use and description of the classification limitations, if appropriate		N
	b) warning for Class 1M and 2M		N
	c) laser beam parameters for radiation above the AEL of Class 1		N
	• Wavelength .....:		N
	• Beam divergence .....:		N
	• Pulse duration .....:		N
	• Maximum power or energy output .....:		N
	d) embedded laser products and other incorporated laser products		N
	e) MPE and NOHD for Class 3B and Class 4 laser products For collimated beam Class 1M and 2M lasers the extended NOHD (ENOHD)		N
	f) information for the selection of eye protection		N
	g) reproduction of labels		N
	h) location of laser apertures		N
	i) listing of controls, adjustment of procedures and warning statement		N
	j) information about laser energy source if not incorporated in the manual		N
6.2	Purchasing and service information		N
	a) safety classification of each laser product stated in descriptive material		N
	b) adequate instructions for servicing available		N
7	**ADDITIONAL REQUIREMENTS FOR SPECIFIC LASER PRODUCTS**		—

7.1	Applicable other parts of the standard series IEC/EN 60825		N
	IEC 60825-2 (Safety of optical communication systems)		N
	IEC 60825-4 (Laser guards)		N
	IEC 60825-12 (Safety of free space optical communication systems used for transmission of information)		N
	Further information may be found in:		N
	IEC/TR 60825-3 (Guidance for laser displays and shows)		—
	IEC/TR 60825-5 (Manufacturer's checklist for IEC 60825-1)		—
	IEC/TR 60825-8 (Guidelines for the safe use of laser beams on humans)		—
	IEC/TR 60825-9 (Compilation of maximum permissible exposure to incoherent optical radiation)		—
	IEC/TR 60825-10 (Application guidelines and explanatory notes to IEC 60825-1)		—
	IEC/TR 60825-13 (Measurements for classification of laser products)		—
	IEC/TR 60825-14 (A user's guide)		—
	IEC 62471 (CIE S 009) (Photobiological safety of lamps and lamp system)		—
7.2	Medical laser products		N
	Class 3B and Class 4 medical laser products comply with IEC 60601-2-22		N
7.3	Laser processing machines		N
	Comply with IEC/ISO 11553-1		N
7.4	Electric toys		N
	Comply with IEC 62115		N
7.5	Consumer electronic products		N
	Complying with IEC 60950 or IEC 60065		N

8	**CLASSIFICATION**		—
8.3	Classification responsibilities		P
8.4	Classification rules		P
8.4a	Radiation of a single wavelength		P
8.4b	Radiation of multiple wavelengths		N

	1) Laser product emission two or more wavelengths in spectral regions shown as additive in Table 5 ..:		N
	2) Laser product emission two or more wavelengths in spectral regions not shown as additive in Table 5 .....:		N
8.4c	Radiation from extended sources .....:		P
	Value of angular subtense α (mrad) .....:	50mrad (assumed)	P
8.4d	Non-uniform retinal image radiance profile, non-circular and multiple sources		N
8.4e	Time basis		P
	1) 0.25s		N
	2) 100s		P
	3) 30000s		N
8.4f	Repetitively pulsed or modulated lasers		N
	1) Exposure from any single pulse not exceeding the AEL for a single pulse		N
	2) Average power for a pulse train		N
	3a) Constant pulse energy and pulse duration		N
	3b) Varying pulse widths or varying pulse durations		N

9	**DETERMINATION OF ACCESSIBLE EMISSION LEVELS**		—
9.1	Tests		P
	Single fault eliminated		P
	Housing material withstanding degradation		N
	Fault detection		N
9.2	Measurement conditions .....:	a, b, c, d, e, f, h	P
	Measured laser radiation .....:	See table “measured laser radiation, calculations and comparison with AEL limits”	P
9.3	Measurement geometry		P
9.3.1	General, evaluation scheme		—
	a) Simplified (default) method		P
	b) Increased AEL by parameter C_6		N
9.3.2	Default (simplified) evaluation		P
	Condition applied .....:	Condition 3	P
	Aperture stop diameter (mm) .....:	5mm	P
	Measurement distance (mm) .....:	100mm	P

9.3.3	Extended sources		P
	C_6 .....:	C_6= 33.3	P
9.3.3a	Aperture diameters		P
	Condition applied .....:	2	P
	Aperture stop diameter (mm). .....:	5mm	P
	Angular subtense of the apparent source α .....:	50mrad	P
9.3.3b	Angle of acceptance		N
	Condition applied .....:		N
	1) Photochemical retinal limits .....:		N
	Angel of acceptance .....:		N
	2) All other retinal limits.....:		N
	Angel of acceptance .....:		N

EN 60825-1			
Clause	Requirement – Test	Result	Verdict

Measured laser radiation, calculations and comparison with AEL limits:

1. Measuring condition

- The radiant power is measured under normal condition.
- Measurement condition 3 is measured.

2. Measured Results

Test parts	Peak Wavelength (nm)	RTH-71mm test Power (μW)	RPH-100mm test Power (μW)
LED(red)	651	8.34	--
LED(blue)	448	9.25	7.66

3. AEL (Accessible Emission Limit)

Part	Emission duration	Peak Wavelength (nm)	Photochemical hazard class 1 Limit (RTH) (μW)	Photochemical hazard (RPH) class 1 Limit (μW)	Class
LED(red)	100s	651	9873	--	1
LED(blue)	100s	448	9873	39	1

4. Classification

The test part of product is classified as Class 1.

Attachment A

Photos of product

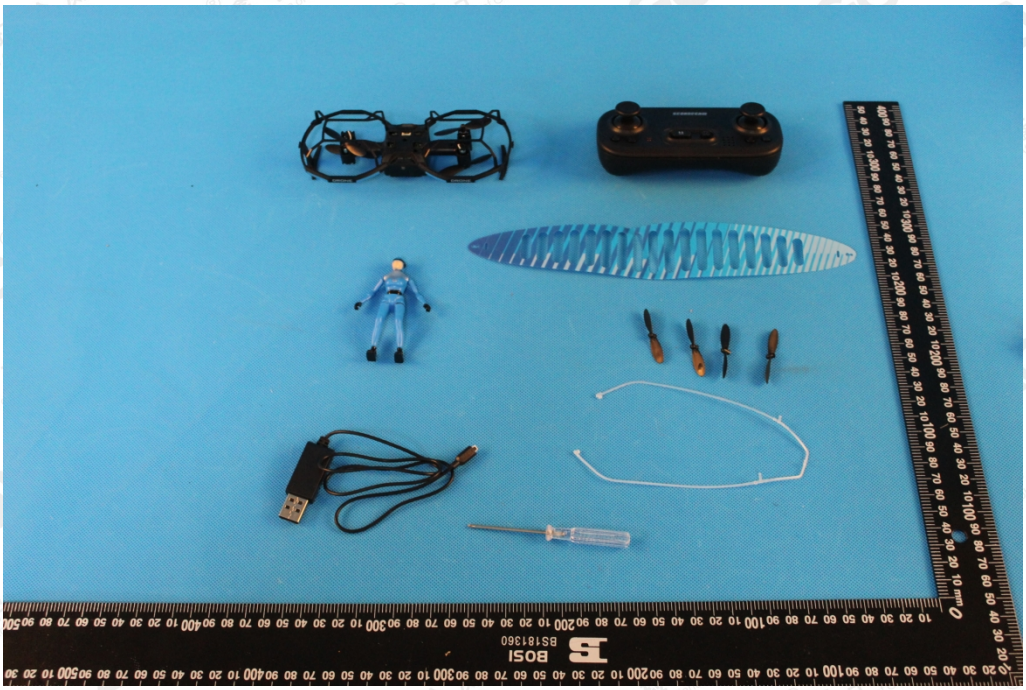

Fig.1. – overview

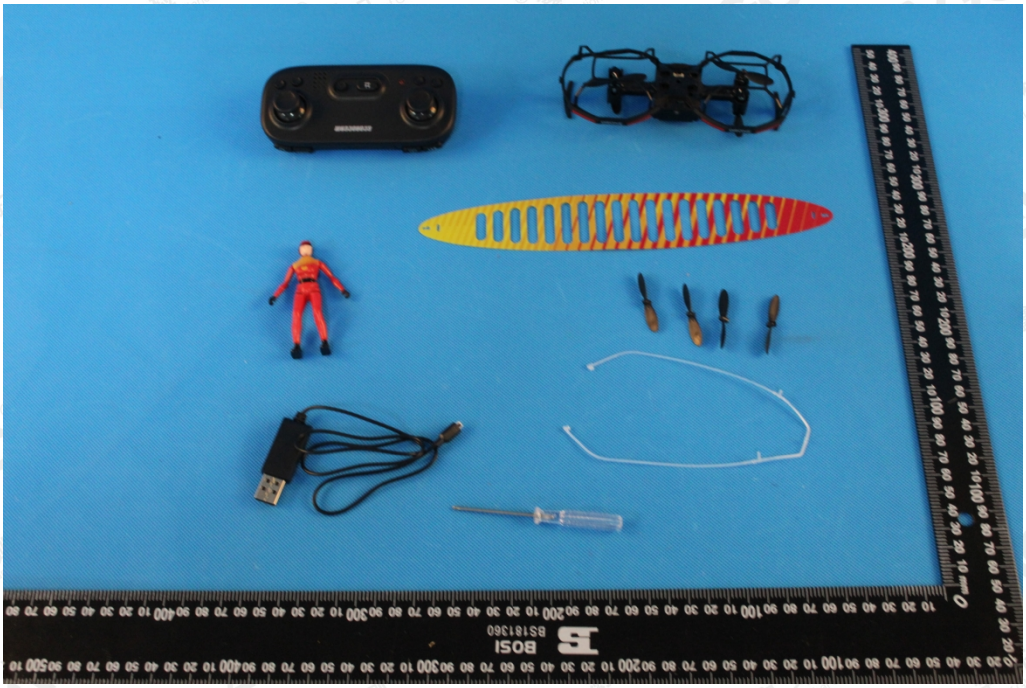

Fig.2. – overview

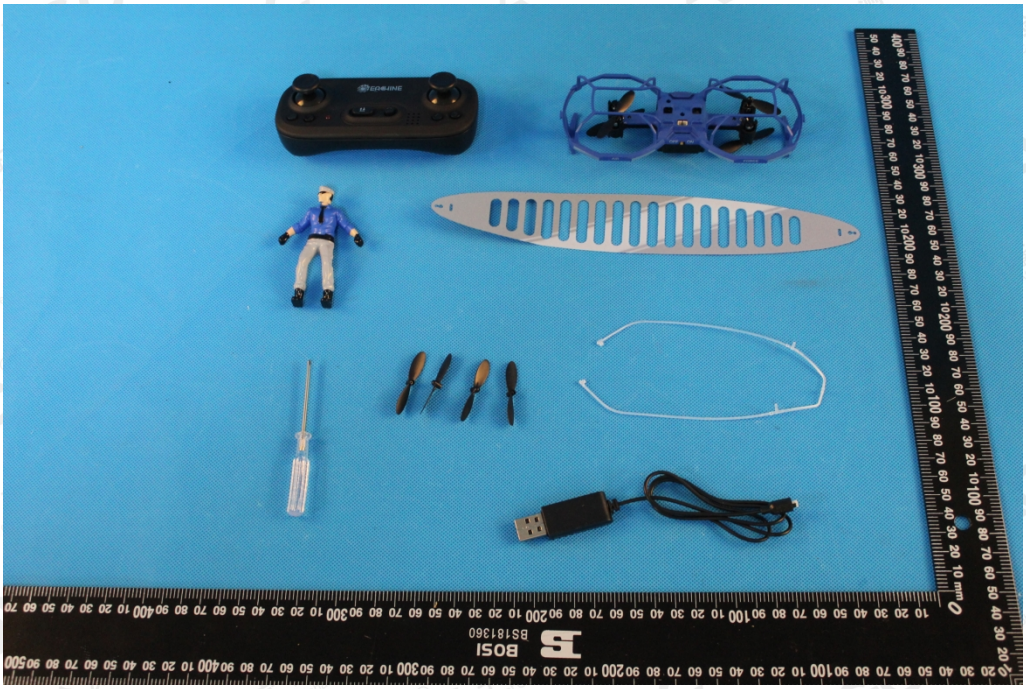

Fig.3. – overview

Fig.4. – overview

---End of Report---