



CONSUMER PRODUCTS SERVICES DIVISION

## SHANTOU CHENGHAI JINXINGDA PLASTIC TOYS FACTORY

**Technical Report:** (8515)065-0374  
Date Received: March 06, 2015

March 18, 2015

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FACTORY  
CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG  
PROVINCE, CHINA

Sample Description:	REMOTE CONTROL AIRCRAFT SERIES	Sample Size:	1
Vendor:	N/A	Style No(s):	393V, 388, 389, 390, 391, 391V, 391W, 392, 393, 395, 396, 396V, 396W, 398, 399, 500, 501, 502, 503, 505, 506, 508, 509, 510, 511, 512, 513, 515, 516, 518, 519, 520, 385
Manufacturer:	N/A		
Buyer:	N/A	SKN/SKU No.:	N/A
Labeled Age Grade:	8+	PO No.:	N/A
Appropriate Age Grade:	NOT REQUESTED	Ref #:	N/A
Client Specified Age Grade:	3+	Country of Origin:	N/A
Grade:			
Tested Age Grade:	OVER 3 YEARS OF AGE	Assortment No.:	N/A
UPC Code:	8711252989082	Rated Voltage:	6.00V 3.70V

### EXECUTIVE SUMMARY:

The sample(s) was tested to the following requirement(s) and the data provided is for informational purposes only:

- The classification in accordance with standard EN 60825-1 .

Note: At the requested of the client, EN 60825 testing was performed for item 393V.

BUREAU VERITAS SHENZHEN CO.,LTD

Tsang Chi Ho, Steven  
Manager  
Electrical Department

ST/mc



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**RESULTS:**

**SUMMARY OF TEST RESULTS**

The sample is classified as class 3B Laser Product according to EN60825-1.

Test Executed	Test Standard	Limit
Tests for Classification of Laser Products	Sec. 8, Sec. 9, EN 60825-1: 1994 + A11: 1996 + A2: 2001 + A1: 2002	Table 1, EN 60825-1: 1994 + A11: 1996 + A2: 2001 + A1: 2002

Remark:



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**RESULTS:**

Test method and equipment:

The following test equipment are applied for the tests:

Equip. No	Equipment Name	Brand Name	Model
M006003L	Digital Light Meter	TES	TES-1336A
M006004L	Digital Light Meter	Sper Scientific	840020
M008005L	Digital Caliper (0-12")	Mitutoyo	CD-12"C
M008006L	Digital Caliper (0-12")	Mitutoyo	CD-12"C
M015003L	Stainless Steel Ruler (0-12")	Endo Keiki	NIL
M019001L	Optical Sensor Head	Advantest	Q82214
M019002L	Optical Power Meter + Optical Sensor Interface Unit	Advantest	Q8221 / Q82203
M019003L	Optical Spectrum Analyzer	Advantest	Q8341
M019004L	Optical Sensor Head	Advantest	Q82214
M019005L	Optical Power Meter + Optical Sensor Interface Unit	Advantest	Q8221 / Q82203
T031001L	Laser Test Fixture + Sample Platform	NIL	NIL
T032001L	7mm Sensor Aperture Stop	NIL	NIL
T032003L	Ø0.5mm Field Stop Aperture	NIL	NIL
T032004L	Ø5mm Field Stop Aperture	NIL	NIL
T033001L	Filter (Yellow)	Lee Filter	101
T033002L	Filter (Green)	Lee Filter	124
T033003L	Filter (Red)	Lee Filter	182
T033004L	Filter (Blue)	Lee Filter	195

The measurements are carried out with the measurement set up following Section 9 of EN 60825-1.

The measurement condition 2 specified in Section 9.3 and Table 10 of EN 60825-1 is adopted.

Description of the lasers or LEDs under test:

Source No.	Feature
LED 1	CW / Single-λ / Blue LED at remote control
LED 2	CW / Single-λ / Blue LED at Frame of Aircraft
LED 3	CW / Single-λ / Red LED at Frame of Aircraft
LED 4	CW / Single-λ / Red LED at USB Cable
LED 5	CW / Single-λ / Red LED at Board of Aircraft
LED 6	CW / Single-λ / Blue LED at Board of Aircraft



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**RESULTS:**

Test Results:

I) TESTS DURING OPERATION

Basic Parameters of the lasers or LEDs

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3	LED 4	LED 5	LED 6
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Blue	Blue	Red	Red	Red	Blue
Wavelength ( $\lambda$ ) measured / Given by manufacturer	(nm)	466	466	641	627	631	466
Time Base estimated	(sec)	100	100	100	100	100	100
Apparent source size (a) measured	(mm)	8.92	0.37	0.37	8.92	0.09	0.09
Angular subtense ( $\alpha$ ) estimated	(mrad)	89.21	3.75	3.75	89.21	$\leq 1.5$	$\leq 1.5$
Is the laser or LED continuous wave or pulsed?		CW	CW	CW	CW	CW	CW
Break Point ( $T_2$ )	(second)	77.7	10.54	10.54	77.7	10	10



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**RESULTS:**

For continuous wave (CW) lasers or LEDs:

Note: a laser or LED operating with a continuous output for a period equal to or greater than 0.25 second.

A) TESTS AGAINST RETINAL PHOTOCHEMICAL HAZARD (RPH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3	LED 4	LED 5	LED 6
Limiting angle of acceptance ( $\gamma\beta$ )	(mrad)	11	11	N/A	N/A	N/A	11
Measurement aperture ( $d$ )	(mm)	7	7	N/A	N/A	N/A	7
Measurement distance ( $r$ )	(mm)	100	34.06	N/A	N/A	N/A	14
Exposure time ( $t$ )	(sec)	100	100	N/A	N/A	N/A	100
Radiant power ( $P$ )	( $\mu$ W)	N/A	N/A	N/A	N/A	N/A	N/A
Radiant energy ( $Q$ )	( $\mu$ J)	4.182	7109.4	N/A	N/A	N/A	167.3
The corresponding RPH AEL for Class 1 Laser	$\mu$ J	8148	8148	N/A	N/A	N/A	8148



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**RESULTS:**

B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3	LED 4	LED 5	LED 6
Angle of acceptance ( $\gamma$ )	(mrad)	$\geq 89$	$\geq 3.75$	$\geq 3.75$	$\geq 89.21$	$\geq 1.5$	$\geq 1.5$
Measurement aperture ( $d$ )	(mm)	7	7	7	7	7	7
Measurement distance ( $r$ )	(mm)	94.69	20.51	20.51	94.69	14	14
Exposure time ( $t$ )	(sec)	100	100	100	100	100	100
Radiant power ( $P$ )	( $\mu$ W)	2.789	3485	212.8	1.94	14.52	27.88
Radiant energy ( $Q$ )	( $\mu$ J)	N/A	N/A	N/A	N/A	N/A	N/A
The corresponding RTH AEL for Class 1 Laser	$\mu$ W	14022	970	970	14022	390	390



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**RESULTS:**

II) TESTS WITH PARTS SUCH AS LENSES, REFLECTORS OR FILTERS THAT COULD AFFECT FOCUSING  
REMOVED

Basic Parameters of the lasers or LEDs

Single-wavelength source:

Parameters	Unit	LED 1	LED 4
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Blue	Red
Wavelength ( $\lambda$ ) measured / Given by manufacturer	(nm)	466	627
Time Base estimated	(sec)	100	100
Apparent source size ( $a$ ) measured	(mm)	0.09	8.92
Angular subtense ( $\alpha$ ) estimated	(mrad)	$\leq 1.5$	87.21
Is the laser or LED continuous wave or pulsed?		CW	CW
Break Point ( $T_2$ )	(second)	10	77.7



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**RESULTS:**

For continuous wave (CW) lasers or LEDs:

Note: a laser or LED operating with a continuous output for a period equal to or greater than 0.25 second.

A) TESTS AGAINST RETINAL PHOTOCHEMICAL HAZARD (RPH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 4
Limiting angle of acceptance ( $\gamma_p$ )	(mrad)	11	N/A
Measurement aperture ( $d$ )	(mm)	7	N/A
Measurement distance ( $r$ )	(mm)	14	N/A
Exposure time ( $t$ )	(sec)	100	N/A
Radiant power ( $P$ )	( $\mu$ W)	N/A	N/A
Radiant energy ( $Q$ )	( $\mu$ J)	13.94	N/A
The corresponding RPH AEL for Class 1 Laser	$\mu$ J	8148	N/A





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**RESULTS:**

B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 4
Angle of acceptance ( $\gamma$ )	(mrad)	$\geq 1.5$	$\geq 1.5$
Measurement aperture ( $d$ )	(mm)	7	7
Measurement distance ( $r$ )	(mm)	14	14
Exposure time ( $t$ )	(sec)	100	100
Radiant power ( $P$ )	( $\mu W$ )	43	9.7
Radiant energy ( $Q$ )	( $\mu J$ )	N/A	N/A
The corresponding RTH AEL for Class 1 Laser	$\mu W$	390	390



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**RESULTS:**

III) TESTS UNDER FAULT CONDITIONS

Details: LED 1, LED 2, LED 3: Short circuited of electronic components to maximize the power of LED.  
LED 4, LED 5, LED 6: Short circuited of electronic components are no significant change of previous result.

Basic Parameters of the lasers or LEDs

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Blue	Blue	Red
Wavelength ( $\lambda$ ) measured / Given by manufacturer	(nm)	466	466	641
Time Base estimated	(sec)	100	100	100
Apparent source size ( $a$ ) measured	(mm)	0.09	0.37	0.37
Angular subtense ( $\alpha$ ) estimated	(mrad)	$\leq 1.5$	3.75	3.75
Is the laser or LED continuous wave or pulsed?		CW	CW	CW
Break Point ( $T_2$ )	(second)	10	10.54	10.09



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**RESULTS:**

For continuous wave (CW) lasers or LEDs:

Note: a laser or LED operating with a continuous output for a period equal to or greater than 0.25 second.

A) TESTS AGAINST RETINAL PHOTOCHEMICAL HAZARD (RPH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3
Limiting angle of acceptance ( $\gamma_p$ )	(mrad)	N/A	11	N/A
Measurement aperture ( $d$ )	(mm)	N/A	7	N/A
Measurement distance ( $r$ )	(mm)	N/A	34	N/A
Exposure time ( $t$ )	(sec)	N/A	100	N/A
Radiant power ( $P$ )	( $\mu$ W)	N/A	N/A	N/A
Radiant energy ( $Q$ )	( $\mu$ J)	N/A	3741	N/A
The corresponding RPH AEL for Class 1 Laser	$\mu$ J	N/A	8148	N/A



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**RESULTS:**

B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	LED 1	LED 2	LED 3
Angle of acceptance ( $\gamma$ )	(mrad)	$\geq 1.5$	$\geq 3.75$	$\geq 3.75$
Measurement aperture ( $d$ )	(mm)	7	7	7
Measurement distance ( $r$ )	(mm)	14	20.51	20.51
Exposure time ( $t$ )	(sec)	0.66	100	100
Radiant power ( $P$ )	( $\mu$ W)	N/A	1812	242
Radiant energy ( $Q$ )	( $\mu$ J)	30.668	N/A	N/A
The corresponding RTH AEL for Class 1 Laser	$\mu$ J	511.4	970	490

N/A = Not Applicable



**BUREAU  
VERITAS**

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**RESULTS:**



END