



CONSUMER PRODUCTS SERVICES DIVISION

TECHNO SOURCE

Technical Report: (5211)154-0578
Date Received: June 07, 2011

June 13, 2011
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Sample Description: 20Q ASSORTMENT

1.) RED
2.) BLUE
3.) FUCHSIA

Vendor: N/A
Manufacturer: On File

Sample Size: 51
Style No(s): 1061, 1062, 1063

Buyer: N/A
Labeled Age Grade: 6+
Appropriate Age Grade: OVER 6 YEARS OF AGE
Client Specified Age Grade: NOT SPECIFIED

SKN/SKU No.: N/A
PO No.: N/A
Ref #: N/A
Country of Origin: CHINA

Grade:
Tested Age Grade: OVER 6 YEARS OF AGE
UPC Code: 801561010619, 801561010626,
801561010633
Rated Voltage: 3.0V

Assortment No.: (1060)

EXECUTIVE SUMMARY:

The sample(s) MEET the following requirement(s):

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

BUREAU VERITAS HONG KONG LIMITED

Law Yiu Tung
Assistant Manager
Electrical Department

LYT/ww



SUMMARY OF TEST RESULTS

The sample is classified as Class 1 Laser Product pursuant to IEC 60825-1.

Test Executed	Requirements	Test Standard	Limit	Result
Tests for Classification of Laser Products	Annex E, Sec. 20, EN 62115:2005	Sec. 8, Sec. 9, IEC 60825-1:1993 + A1:1997 + A2:2001	Table 1, IEC 60825-1:1993 + A1:1997 + A2:2001	Can be Classified as Class 1 Laser Product



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	∅0.5mm Field Stop Aperture	NIL	NIL
T032004L	∅5mm 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 IEC 60825-1.

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

Description of the lasers or LEDs under test:

Source No.	Feature
Led1	CW; Single-λ "Red Square Led"
Led2	CW; Single-λ "Red SMT Led"



Test Results:

I) TESTS DURING OPERATION

Basic Parameters of the lasers or LEDs

Single-wavelength source:

Parameters	Unit	Led1	Led2
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Red	Red
Wavelength (λ) measured / Given by manufacturer	(nm)	641	635
Time Base estimated	(sec)	100	100
Apparent source size (a) measured	(mm)	>10	>10
Angular subtense (α) estimated	(mrad)	>100	>100
Is the laser or LED continuous wave or pulsed?		CW	CW
Break Point (T_2)	(second)	100	100



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	Led1	Led2
Limiting angle of acceptance (γ_p)	(mrad)	NA	NA
Measurement aperture (d)	(mm)	NA	NA
Measurement distance (r)	(mm)	NA	NA
Exposure time (t)	(sec)	NA	NA
Radiant power (P)	(μ W)	NA	NA
Radiant energy (Q)	(μ J)	NA	NA
The corresponding RPH AEL for Class 1 Laser	< μ W or μ J>	NA	NA
Does the laser or LED meet the RPH AEL of Class 1 Laser?		NA	NA



B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	Led1	Led2
Angle of acceptance (γ)	(mrad)	100	100
Measurement aperture (d)	(mm)	7	7
Measurement distance (r)	(mm)	100	100
Exposure time (t)	(sec)	100	100
Radiant power (P)	(μ W)	NA	NA
Radiant energy (Q)	(μ J)	10.343	6.2589
The corresponding RTH AEL for Class 1 Laser	μ J	1475730	1475730
Does the laser or LED meet the RPH AEL of Class 1 Laser?		Meet	Meet



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	Led1	Led2
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Red	Red
Wavelength (λ) measured / Given by manufacturer	(nm)	641	635
Time Base estimated	(sec)	100	100
Apparent source size (a) measured	(mm)	0.25	0.25
Angular subtense (α) estimated	(mrad)	2.50	2.50
Is the laser or LED continuous wave or pulsed?		CW	CW
Break Point (T_2)	(second)	10.24	10.24



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	Led1	Led2
Limiting angle of acceptance (γ_p)	(mrad)	NA	NA
Measurement aperture (d)	(mm)	NA	NA
Measurement distance (r)	(mm)	NA	NA
Exposure time (t)	(sec)	NA	NA
Radiant power (P)	(μ W)	NA	NA
Radiant energy (Q)	(μ J)	NA	NA
The corresponding RPH AEL for Class 1 Laser	< μ W or μ J>	NA	NA
Does the laser or LED meet the RPH AEL of Class 1 Laser?		NA	NA



B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	Led1	Led2
Angle of acceptance (γ)	(mrad)	≥ 2.50	≥ 2.50
Measurement aperture (d)	(mm)	7	7
Measurement distance (r)	(mm)	17.20	17.20
Exposure time (t)	(sec)	100	100
Radiant power (P)	(μ W)	21.925	13.555
Radiant energy (Q)	(μ J)	NA	NA
The corresponding RTH AEL for Class 1 Laser	μ W	652.24	652.24
Does the laser or LED meet the RTH AEL of Class 1 Laser?		Meet	Meet



III) TESTS UNDER FAULT CONDITIONS

Details: Short circuit of electronic component to continuous light – on of led.

Basic Parameters of the lasers or LEDs

Single-wavelength source:

Parameters	Unit	Led1	Led2
Color of the laser/LED	(e.g. Red / Amber / Yellow / Green / Blue, etc.)	Red	Red
Wavelength (λ) measured / Given by manufacturer	(nm)	641	635
Time Base estimated	(sec)	100	100
Apparent source size (a) measured	(mm)	0.25	0.25
Angular subtense (α) estimated	(mrad)	2.50	2.50
Is the laser or LED continuous wave or pulsed?		CW	CW
Break Point (T_2)	(second)	10.24	10.24



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	Led1	Led2
Limiting angle of acceptance (γ_p)	(mrad)	NA	NA
Measurement aperture (d)	(mm)	NA	NA
Measurement distance (r)	(mm)	NA	NA
Exposure time (t)	(sec)	NA	NA
Radiant power (P)	(μ W)	NA	NA
Radiant energy (Q)	(μ J)	NA	NA
The corresponding RPH AEL for Class 1 Laser	< μ W or μ J>	NA	NA
Does the laser or LED meet the RPH AEL of Class 1 Laser?		NA	NA



B) TESTS AGAINST RETINAL THERMAL HAZARD (RTH):

Single-wavelength source:

Parameters	Unit	Led1	Led2
Angle of acceptance (γ)	(mrad)	≥ 2.50	≥ 2.50
Measurement aperture (d)	(mm)	7	7
Measurement distance (r)	(mm)	17.20	17.20
Exposure time (t)	(sec)	100	100
Radiant power (P)	(μ W)	28.111	17.344
Radiant energy (Q)	(μ J)	NA	NA
The corresponding RTH AEL for Class 1 Laser	μ W	652.24	652.24
Does the laser or LED meet the RTH AEL of Class 1 Laser?		Meet	Meet

N/A = Not Applicable



END