



SAFETY TEST REPORT

MEASUREMENT AND TEST REPORT

For

Hermesys Private Limited
42 Emerald Hill Road, 229318 Singapore

Models: See Page 3

April 08, 2022

This Report Concerns: ☒ Original Report	Equipment Type: Optical Transceiver Module
Test Standard:	IEC 60825- 1:2014
Report Number:	CTB220408037SX
Test Date:	April 01-08, 2022
Test category:	Consignment test
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd. Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China Tel: 4008-707-283 E-mail: ctb@ctb-lab.net Web: http://www.ctb-lab.net

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen CTB Technology Co., Ltd

TEST REPORT IEC 60825-1 Safety of laser products - Part 1: Equipment classification and requirements	
Report reference No.....	: CTB220408037SX
Date of issue.....	: April 08, 2022
Total number of pages.....	: 13
Testing laboratory	
Name.....	: Shenzhen CTB Testing Technology Co., Ltd.
Address.....	: Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China
Client	
Name.....	: Hermesys Private Limited
Address.....	: 42 Emerald Hill Road, 229318 Singapore
Test specification	
Standard.....	: IEC 60825-1:2014
Test procedure.....	: Safety report
Procedure deviation.....	: N.A.
Non-standard test method..	: N.A.
Test Report Form No.....	: IEC60825_1F
TRF originator	: OVE
Master TRF	: Dated 2019-10-14
Copyright © 2019 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.	
This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	

Test item description.....:	Optical Transceiver Module
Trade Mark(s).....:	HEMERSYS
Manufacturer.....:	Hermesys Private Limited
Address.....:	42 Emerald Hill Road, 229318 Singapore
Model/Type reference.....:	SFP-22200001Q5655W, SFP-22200001Q5685W, SFP-22200001Q5615W, SFP-22200001Q5625W, SFP-22200001Q5635W, SFP-22200001Q5645W, SFP-22200001Q5665W, SFP-22200001Q5675W, SFP-22200001Q5695W
Ratings.....:	5V---2A

Possible test case verdicts:

- test case does not apply to the test object..... : N/A(Not applicable)
- test object does meet the requirement..... : P(Pass)
- test object does not meet the requirement..... : F(Fail)

Testing:

Date of receipt of test items..... : April 01, 2022

Date(s) of performance of tests..... : April 01-08, 2022

Laboratory sample number..... : 220401013-3X

General remarks:

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

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

Laboratory CTB. The authenticity of this Test Report and its contents can be verified by contacting CTB, responsible for this Test Report.

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

These mark "*" test clauses are not within the scope of CNAS recognition

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

All test(s) were performed on model " SFP-22200001Q5655W" to represent other models also.

All models are identical except model name difference.

Summary of testing:

The submitted sample were tested and found to compliance with requirements of the standards

IEC 60825-1:2014

Testing procedure and testing location

Laboratory name..... : Shenzhen CTB Testing Technology Co., Ltd.

Testing location/address: : Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China

Tested By : Wu Liang
(Test Engineer)

Wu Liang

Reviewed By : Finerb Bai
(Supervisor)

finerb bai

Approved By : Kubo Lee
(Chief Engineer)



IEC 60825-1

Clause	Requirement + Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

4	CLASSIFICATION PRINCIPLES		
4.3	Classification rules		---
4.3 a	Radiation of a single wavelength		P
4.3 b	Radiation of multiple wavelengths		N/A
	1) Laser product emits at two or more wavelengths shown as additive in Table 1		N/A
	2) Laser product emits at two or more wavelengths not shown as additive in Table 1		N/A
4.3 c	Radiation from extended sources (see 5.4.3)		N/A
4.3 d	Non-uniform, non-circular or multiple apparent source		N/A
4.3 e	Time bases		---
	1) 0,25 s		N/A
	2) 100 s		P
	3) 30000 s		N/A
4.3 f	Repetitively pulsed or modulated lasers		N/A
	1) Any single pulse		N/A
	2) Average power for pulse trains		N/A
	3) Pulse duration $t \leq T_i$: Number of pulses N and C_5 :		N/A
	3) Pulse duration $t > T_i$: Number of pulses N and C_5 :		N/A
4.4	Laser products designed to function as conventional lamps.		N/A
	α measured at 200 mm distance from closest point of human access ($\alpha > 5$ mrad).		N/A
	Un-weighted radiance L measured at 200 mm distance (comparison with $L_T = 1 \text{ MWm}^{-2}\text{sr}^{-1}/\alpha$) under reasonably foreseeable single fault conditions.		N/A
	Evaluation of emission according to IEC 62471 series (optional): Standard applied (IEC 62471 series)..... : Risk Group..... : Labelling..... : Classification of product based on accessible laser radiation (if no laser radiation accessible: Class 1).		N/A

5	DETERMINATION OF THE ACCESSIBLE EMISSION LEVEL and PRODUCT CLASSIFICATION		
5.1	Tests		---
	Compliance under reasonably foreseeable single fault conditions.		P

IEC 60825-1

Clause	Requirement + Test	Result - Remark	Verdict
5.3	Determination of the class of the laser product : For Class 1C: vertical safety standard applied with requirements for Class 1C.		---
5.4	Measurement geometry		---
5.4.1	General		---
5.4.2	Default (simplified) evaluation		P
	Conditions applied	3	P
	Aperture diameter	7mm	P
	Reference point :		P
	Measurement distance	850mm	P
	(for each condition)		
5.4.3	Evaluation condition for extended sources		P
	Conditions applied	1	P
	Most restrictive position		P
	(distance from reference point)		
	Angular subtense of the apparent source α and C_6 : (for each condition)		P
5.4.3 a	Aperture diameters (for each condition)..... :		P
5.4.3 b	Angle of acceptance (for each condition).....:		P
6	ENGINEERING SPECIFICATIONS		
6.2	Protective housing		---
6.2.1	General		---
	Protective housing prevents access to energy levels in excess of the AEL for Class 1.		P
	Protective housing prevents access to energy levels equivalent to Class 4 and withstands exposures under reasonably foreseeable single fault conditions.		P
	Maintenance of Class 1, 1C, 1M, 2, 2M, or 3R (access to emissions of Class 3B or 4 is prevented).		P
	Maintenance of Class 3B product (access to emission of Class 4 is prevented).		P
6.2.2	Service		P
6.2.3	Removable laser system (laser system complies with requirements of Clauses 6 and 7).		N/A
6.3	Access panels and safety interlocks		---
6.3.1	Panel is intended to be removed during operation (or maintenance) and would give access to higher energy levels (see Table 13).		N/A
	Accessible emission (after removal of the panel) corresponds to product Class (designated by "X" in Table 13)		N/A

IEC 60825-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Emission through the opening if interlocked panel of Class 1, 1C, 1M, 2, or 2M is removed (Emission < AEL of Class 1M or 2M).		N/A
	Emission through the opening if interlocked panel of Class 3R, 3B, or 4 is removed (Emission < AEL of Class 3R).		N/A
	Requirements regarding reasonably foreseeable single fault condition.		N/A
6.3.2	Override mechanism		N/A
	Behaviour of override in operation when the panel is replaced.		N/A
	Visible or audible warning for override mode.		N/A
6.4	Remote interlock connector		N/A
6.5	Manual reset		N/A
6.6	Key control		P
6.7	Laser radiation emission warning		---
6.7.1	Laser product is a 3R ($\lambda < 400$ nm; $\lambda > 700$ nm), 1C, 3B or 4 laser systems.		N/A
6.7.2	Audible or visible warning.		N/A
	Warning is failsafe or redundant.		N/A
	Viewing of the visible warning does not require exposure to emissions > AEL for Class 1M and 2M.		N/A
6.7.3	Operational control and laser aperture are provided with a warning device when they are separated more than 2 m from warning device.		N/A
6.7.4	Visible indication of output aperture if laser emission may be distributed through more than one output.		N/A
6.7.5	Switch for handheld Class 3R device must be depressed for emission (in lieu of emission indicator).		N/A
6.8	Beam stop or attenuator		N/A
6.9	Controls		N/A
6.10	Viewing optics		N/A
	a) Human access to laser radiation in excess of Class 1M prevented when the shutter is opened or attenuation varied.		N/A
	b) Opening of the shutter or variation of the attenuation prevented when exposure to laser radiation in excess of Class 1M is possible.		N/A
6.11	Scanning safeguard		N/A
6.12	Safeguard for Class 1C products		N/A
	a) Human access to laser radiation in excess of AEL for Class 1 measured under Condition 3 is prevented.		N/A

IEC 60825-1

Clause	Requirement + Test	Result - Remark	Verdict
	b) Human access to laser radiation in excess of AEL for Class 3B measured through 3,5 mm aperture at 5 mm distance from applicator is prevented.		N/A
6.13	Walk-in access		N/A
	a) Means provided so that any person inside the housing can prevent activation of Class 3B or 4 laser hazards.		N/A
	b) A warning device provides adequate warning of emission to any person within the housing.		N/A
	c) Where "walk-in" access during operation is intended or reasonably foreseeable, emission of laser radiation that is equivalent to Class 3B or 4 while someone is present inside the enclosure of Class 1, Class 2 or Class 3R product is prevented by engineering means.		N/A
6.14	Environmental conditions		---
	- climatic conditions		N/A
	- vibration and shock		N/A
6.15	Protection against other hazards		---
6.15.1	Non-optical hazards (product safety standard)		N/A
	- electrical hazards;		N/A
	- excessive temperature;		N/A
	- spread of fire from the equipment;		N/A
	- sound and ultrasonics;		N/A
	- harmful substances;		N/A
	- explosion;		N/A
6.15.2	Collateral radiation		N/A
6.16	Power limiting circuit		N/A

7	LABELLING		
7.1	General		---
	Labels durable, permanently affixed		P
	Labels clearly visible		P
	Reading of labels is possible without exposure to laser radiation in excess of AEL for Class 1.	Class 1	P
	Colour combination		P
	Labelling impractical due to the size or design of the product.	Use product manual	N/A
	Warning label – Hazard symbol (Figure 3)		N/A
7.2 - 7.7	Text on explanatory label or pictogram (laser class, warning text)	Class 1	P
7.8	Aperture label		N/A

IEC 60825-1

Clause	Requirement + Test	Result - Remark	Verdict
7.9	Radiation output and standards information		---
	Max output of laser radiation		N/A
	Pulse duration		N/A
	Emitted wavelength(s)		N/A
	Name and publication date of the standard.....		N/A
7.10	Labels for access panels		---
7.10.1 a) – f)	Labels for panels - warning wording used		N/A
7.10.2	Labels for safety interlocked panels - Warning wording used		N/A
7.11	Warning for invisible laser radiation		P
7.12	Warning for visible laser radiation		N/A
7.13	Warning for potential hazard to the skin or anterior parts of the eye - warning wording used.....		N/A

8	OTHER INFORMATIONAL REQUIREMENTS		
8.1	Information for the user		---
	a) adequate instructions for assembly, maintenance and safe use and description of the classification limitations, if appropriate.		P
	b) additional warning for Class 1M and 2M		N/A
	c) laser beam parameters for radiation above the AEL of Class 1		---
	• Wavelength		N/A
	• Beam divergence		N/A
	• Pulse pattern		N/A
	(pulse duration, repetition rate, ...)		
	• Maximum power or energy output		N/A
	d) safety instruction for embedded laser products and other incorporated laser products.		N/A
	e) MPE and NOHD for Class 3B and 4 laser products; For collimated beam Class 1M and 2M lasers the extended NOHD (ENOHD).		N/A
	f) information for the selection of eye protection.		N/A
	g) reproduction of all required labels and warnings.		P
	h) location of laser apertures		N/A
	i) list of controls, adjustments of procedures for operation and maintenance - and warning statement.		P
	j) information (compatibility requirements) about laser energy source if not incorporated.		N/A

IEC 60825-1			
Clause	Requirement + Test	Result - Remark	Verdict
	k) additional warning for Class 1, 1M, 2, 2M, and 3R regarding skin or corneal burns.		N/A
	l) Information for Class 1C products (e.g. warning that repeated application may pose a risk).		N/A
8.2	Purchasing and service information		P
	a) safety classification of each laser product stated in all descriptive material (e.g. brochures).		P
	b) adequate instructions for servicing available: - warnings and precautions regarding exposure of laser emission above Class 1 - maintenance schedule - list of controls and procedures that could increase accessible emissions - description of displaceable parts - protective procedures for service personnel - reproduction of labels and hazard warnings		P

9	ADDITIONAL REQUIREMENTS FOR SPECIFIC LASER PRODUCTS		
9.1	Applicable other parts of the standard series IEC 60825		---
	IEC 60825-2 (Safety of optical communication systems)		N/A
	IEC 60825-4 (Laser guards)		N/A
	IEC 60825-12 (Safety of free space optical communication systems used for transmission of information)		N/A
9.2	Medical laser products: Class 3B and Class 4 medical laser products comply with IEC 60601-2-22		N/A
9.3	Laser processing machines: Comply with IEC/ISO 11553 series.		N/A
9.4	Electric toys: Comply with IEC 62115		N/A
9.5	Consumer electronic products: Comply with IEC 60950 (IT-equipment) or IEC 60065 (AV equipment)		N/A

ATTACHMENT



Photo 1: Description front view

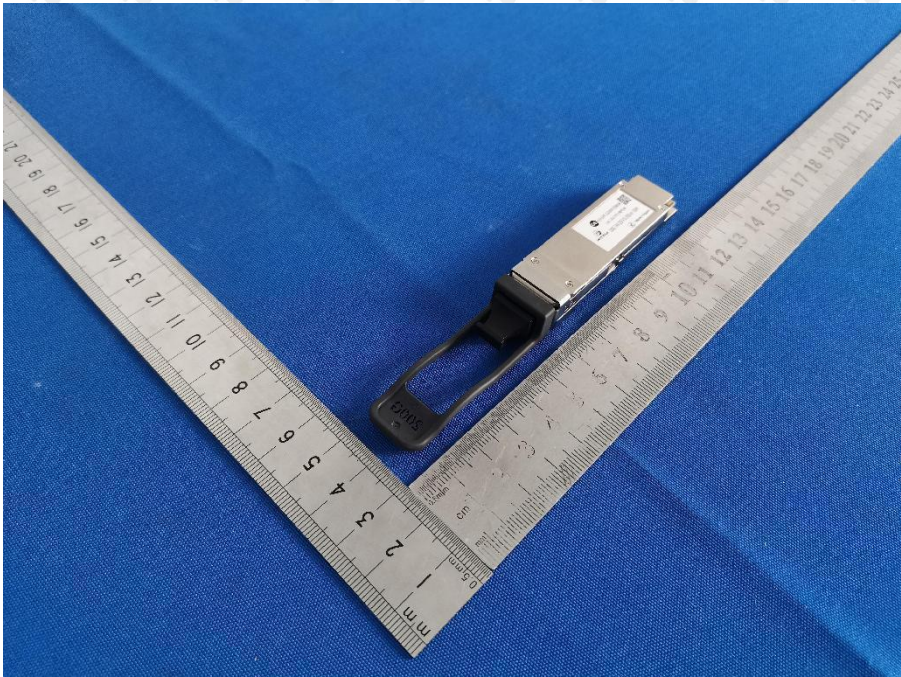


Photo 2: Description front view

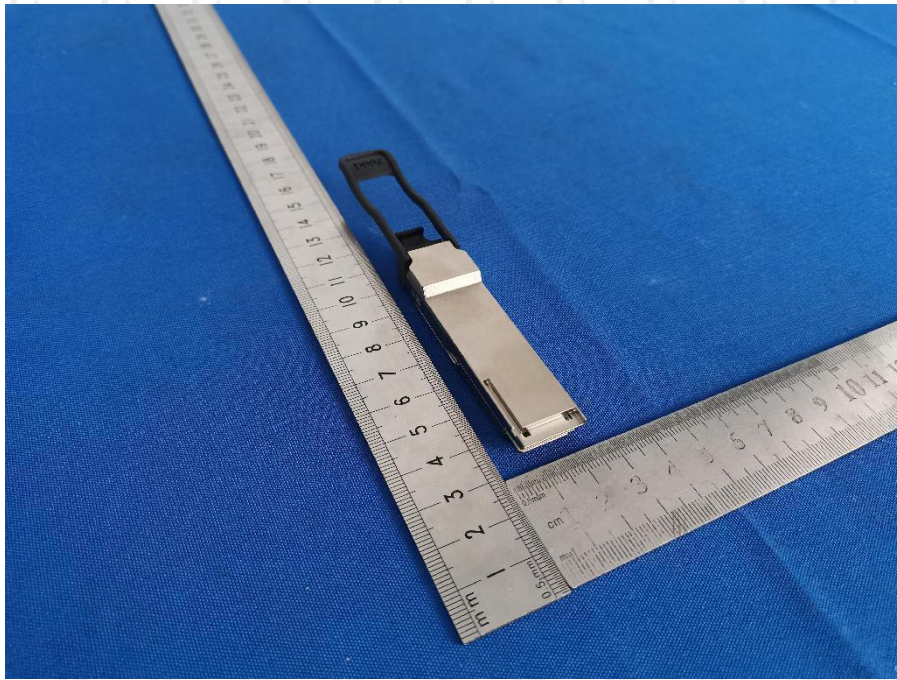


Photo 3: Description rear view

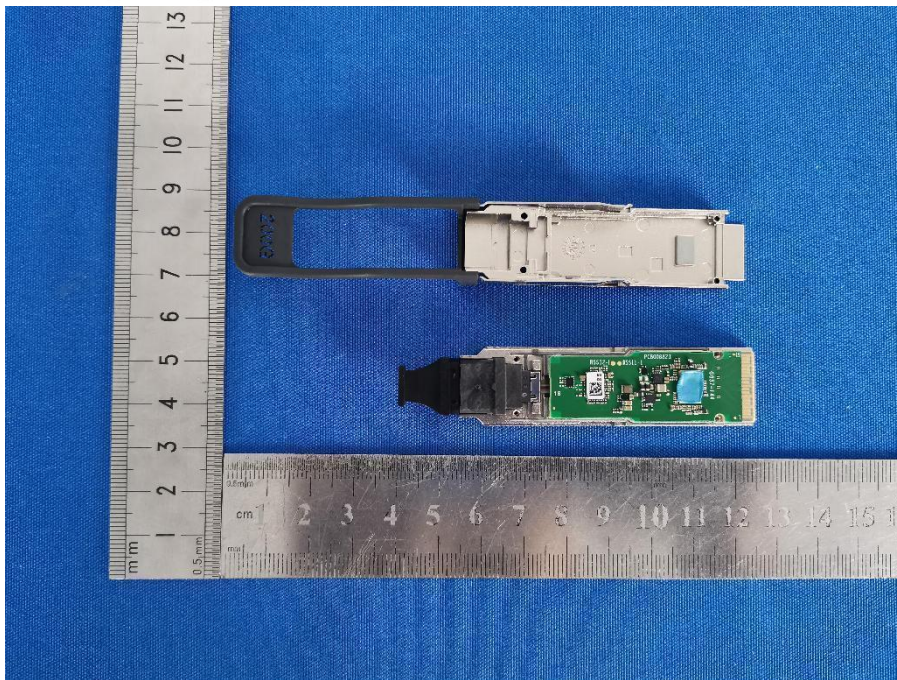


Photo 4: Internal view

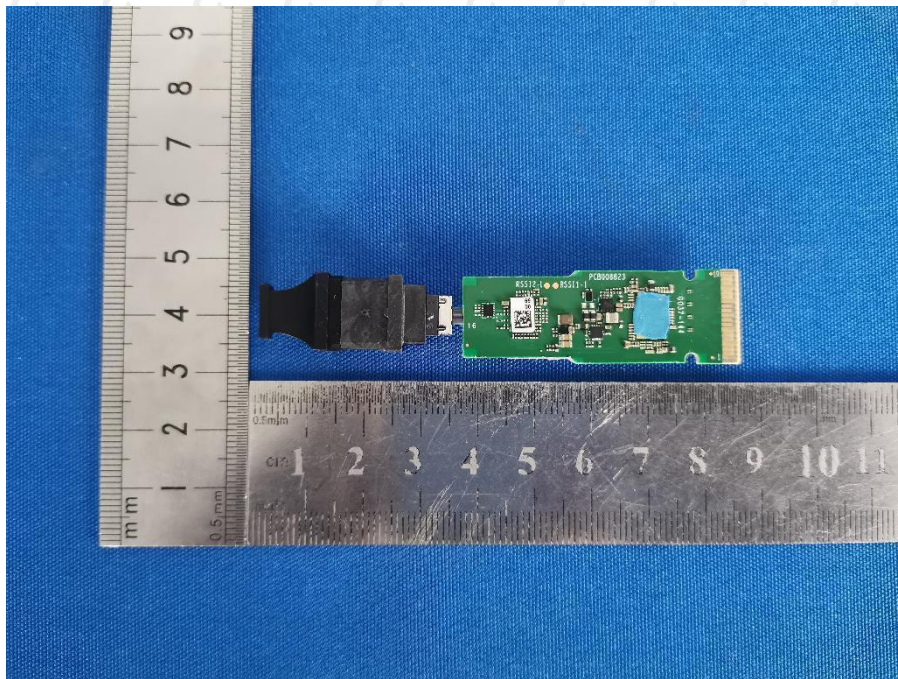


Photo 5: PCB view

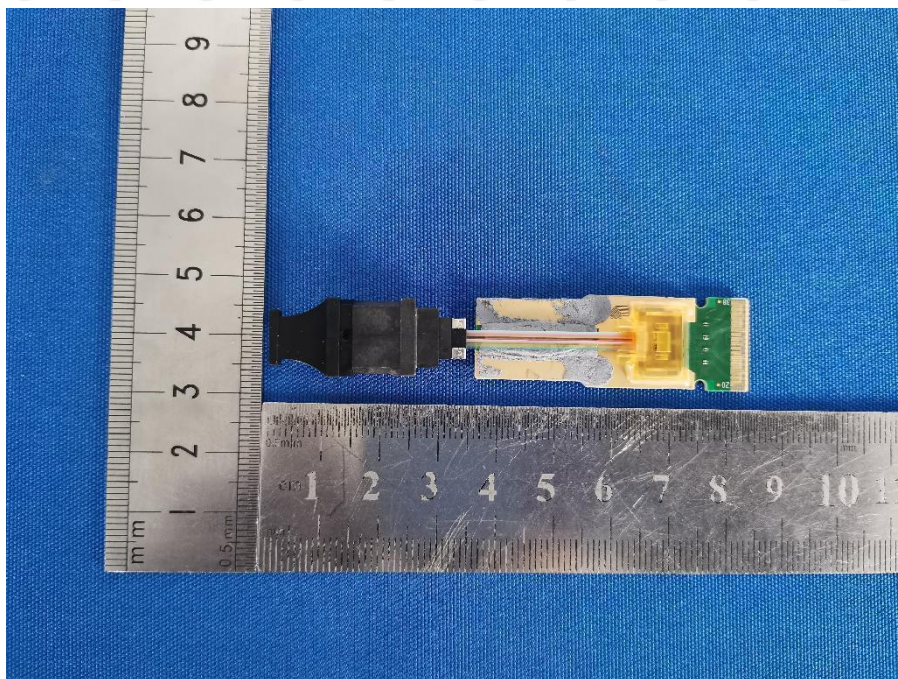


Photo 6: PCB view

*****End of this report*****