

TEST REPORT

Report No.: DPHTL2503073025E

Date: Apr 2,2025

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Applicant : Mid Ocean Brands B.V.**Address:** 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

The following sample(s) and sample information was/were submitted and identified by client as:

Sample Name: Laser pointer touch pen, laser pointer in wooden box**Model:** MO8097, MO8193**Vendor code:** 107978**Receiving Date:** Mar 7,2025**Test Period:** From Mar 7,2025 to Mar 20,2025**Add Information:** -**Test Summary:**

#	Test Item(s)	Conclusion
1	EN 60825-1:2014 Safety of laser products - Part 1: Equipment classification and requirements	PASS

*****Please refer to the following page for detailed results*****

Authorized Signatory

Mark Mai
(Technical Director)

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Result(s):

1. Safety of laser products - Part 1: Equipment classification and requirements EN 60825-1:2014

EN 60825-1			
Clause	Requirement + Test	Result –Remark	Verdict
4	ENGINEERING SPECIFICATIONS		P
4.1	General remarks		P
	Modification	no, original part	P
4.2	Classification responsibility		P
4.3	Classification rules		P
	a) Radiation of a single wavelength		P
	b) Radiation of multiple wavelengths		N
	c) Radiation from extended sources		N
	d) Non-uniform, non-circular or multiple apparent sources		N
	e) time base		-
	1) 0,25 s for Class 2, Class 2M and Class 3R laser radiation in the wavelength range from 400 nm to 700 nm;		P
	2) 100 s for laser radiation of all wavelengths greater than 400 nm except for the cases listed in 1) and 3);		N
	3) 30 000 s for laser radiation of all wavelengths less than or equal to 400 nm and for laser radiation of wavelengths greater than 400 nm where intentional long-term viewing is inherent in the design or function of the laser product.		N
	f) Repetitively pulsed or modulated lasers	CW laser radiation	N
4.4	Laser products designed to function as conventional lamps.		N
5	Determination of the accessible emission level and product classification		P
5.1	Tests		P
	Test under single fault condition	Laser Power reduce	P
	Single fault eliminated		N
	Housing material withstanding degradation		N
	Fault detection		P

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Clause	Requirement + Test	Result –Remark	Verdict
5.2	Measurement of laser radiation		P
	Test conditions and procedures		-
	a) considering start-up, stabilized emission and shut-down of the laser product		P
	b) with all controls and settings adjusted in combination to result in the max. accessible level of radiation .		P
	c) for a laser product other than a laser system		N
	d) at points in space to which human access is possible during operation for measurement of accessible emission levels		P
	e) with the measuring instrument detector so positioned and so oriented with respect to the laser product as to result in the max. detection of radiation by the instrument.		P
	f) appropriate provision shall be made to avoid or to eliminate the contribution of collateral radiation to the measurement.	No other collateral radiation produced.	N
5.3	Determination of the class of the laser product		P
	a) Class 1 and 1M		N
	b) Class 1C (Class 1C is applicable when the laser radiation is intended to be applied in contact with the intended target and has safeguards that prevent leakage of laser radiation in excess of the AEL of Class 1.)		N
	c) Classes 2 and 2M (applicable to the wavelength range of 400 nm to 700 nm)	Class 2 laser product. 650 nm	P
	d) Class 3R		N
	e) Class 3B		N
	f) Class 4		N
5.4	Measurement geometry		P
5.4.1	General		P
	a) A simplified (default) method,		P
	b) method for extended sources ($C_6 > 1$)		N
5.4.2	Default (simplified) evaluation		P
5.4.3	Evaluation condition for extended sources		N
	a) Aperture diameter		N
	b) Angle of acceptance		N

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6	Engineering specifications		N
6.1	General remarks and modifications		N
6.2	Protective housing		P
6.2.1	General		P
6.2.2	Service (removal or displacement of housing requires to use a tool or tools)		P
6.2.3	Removable laser system		N
6.3	Access panels and safety interlocks		N
6.3.1	A safety interlock shall be provided for access panels of protective housings when both of the following conditions are met:		--
	a) the access panel is intended to be removed or displaced during maintenance or operation, and		N
	b) the removal or displacement of the panel would give access to laser radiation levels designated by "X" in Table 13.		N
6.3.2	Deliberate override mechanism		N
6.4	Remote interlock connector		--
	Each Class 3B and Class 4 laser system shall have a remote interlock connector. (except handheld, battery powered Class 3B laser systems)		N
6.5	Manual reset		N
	Each Class 4 laser system shall incorporate a manual reset to enable resumption of accessible Class 4 laser radiation emission after interruption of emission caused by the use of the remote interlock connector or an interruption of longer than 5 s of electrical mains power.		N
6.6	Key control		N
	Each Class 3B and Class 4 laser system shall incorporate a key-operated master control. The key shall be removable and the laser radiation shall not be accessible when the key is removed.		N
6.7	Laser radiation emission warning		N
6.7.1	Each Class 3R laser system in the wavelength range below 400 nm and above 1700 nm and each Class 1C, Class 3B and Class 4 laser system shall satisfy the following	650nm laser radiation	N
6.7.2	A warning device shall give an audible or visible signal when the laser system is switched on or if any capacitor banks of a pulsed laser are being charged or have not positively discharged.		N

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Clause	Requirement + Test	Result –Remark	Verdict
6.7.3	Each operational control and laser aperture that can be separated by 2 m or more from a radiation warning device shall itself be provided with a radiation warning device. The warning device shall be clearly visible or audible to the person in the vicinity of the operational control or laser aperture		N
6.7.4	Where the laser emission may be distributed through more than one output aperture, then a visible warning device shall clearly indicate the output aperture or apertures through which laser emission can occur.		N
6.7.5	For a Class 3R handheld device, a momentary switch that needs to be continually depressed to allow emission may be used in lieu of the emission indicator requirement.		N
6.8	Beam stop or attenuator		N
	Each Class 3B and Class 4 laser system shall incorporate one or more permanently attached means of attenuation or termination of emission		N
6.9	Controls		N
	Each laser product shall have controls located so that adjustment and operation do not require exposure to laser radiation equivalent to Class 3R, Class 3B or Class 4.		N
6.10	Viewing optics		N
	a) prevent human access to laser radiation in excess of the AEL for Class 1M when the shutter is opened or the attenuation varied;		N
	b) prevent opening of the shutter or variation of the attenuator when exposure to laser radiation in excess of the AEL for Class 1M is possible.		N
6.11	Scanning safeguard	No scanning laser radiation.	N
6.12	Safeguard for Class 1C products		N
	a) Class 1 measured under Condition 3 and		N
	b) Class 3B measured through a 3,5 mm aperture placed at 5 mm distance from the applicator with the applicator moving laterally		N
6.13	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

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Clause	Requirement + Test	Result –Remark	Verdict
	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
6.14	Environmental conditions		N
	-climatic conditions		N
	-vibration and shock		N
6.15	Protection against other hazards		P
6.15.1	Non-optical hazards (product safety standard)		P
	-electrical hazards;		P
	-excessive temperature;		P
	-spread of fire from the equipment;		N
	-sound and ultrasonic;		N
	-harmful substances;		N
	-explosion;		N
6.15.2	Collateral radiation	No other collateral radiation except the 650nm laser radiation.	N
6.16	Power limiting circuit		N
	If a power-control circuit is employed to limit the electrical power to the laser emitting device such that the AEL of the specified laser class is not exceeded under operation, it shall limit emission under reasonably foreseeable single fault conditions as well, including considering the temperature dependence of the device.		N
7	Labeling		P
7.1	General		P
7.2	Class 1 and Class 1M		N
7.3	Class 1C		N
7.4	Class 2 and Class 2M	Class 2 laser product.	P
7.5	Class 3R		N
7.6	Class 3B		N
7.7	Class 4		N

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Clause	Requirement + Test	Result –Remark	Verdict
7.8	Aperture label		P
7.9	Radiation output and standards information		P
7.10	Labels for access panels		N
7.10.1	Labels for panels		N
	a) Class 1		N
	b) Class 2		N
	c) Class 2M		N
	d) Class 3R		N
	e) Class 3B		N
	f) Class 4		N
7.10.2	Labels for safety interlocked panels		N
7.11	Warning for invisible laser radiation		N
7.12	Warning for visible laser radiation		N
7.13	Warning for potential hazard to the skin or anterior parts of the eye		N
8	Other informational requirements		P
8.1	Information for the user		P
	a) Adequate instructions for proper assembly, maintenance, and safe use		N
	b) An additional warning for Class 1M and 2M laser products.		N
	c) statement in appropriate units of:		P
	Wavelength	650nm	P
	Beam divergence		N
	Pulse duration and repetition rate (or description of irregular pulse pattern)	CW	N
	Maximum power or energy output.	0.4mW (< 1mW)	P
	d) For embedded laser products and other incorporated laser products, information to describe the incorporated laser (see item c)).		N
	e) Where appropriate and relevant, the applicable MPE (see Annex A) and NOHD for Class 3B and Class 4 laser products		N
	f) Where appropriate, information for the selection of eye protection		N

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	g) Legible reproductions (black mono tone or in the appropriate colours stated in Clause 7) of all required labels and hazard warnings		N
	h) A clear indication in the manual of all locations of laser apertures through which laser radiation exceeding the Class 1 AEL is emitted		N
	i) List of controls, adjustments and procedures for operation and maintenance, including the warning "Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure"		N
	j) In the case of laser products that do not incorporate the laser energy source necessary for laser emission, a statement of the compatibility requirements for a laser energy source to ensure safety.		N
	k) For Class 1, 1M, 2, 2M and 3R an additional warning may be required (see 5.3 a), 5.3 c) and 5.3 d)).		N
	l) Vertical standards specify applicable requirements regarding user information for Class 1C products.		N
8.2	Purchasing and servicing information		P
	a) In all catalogues, specification sheets and descriptive brochures, the classification of each laser product and any warning shall be stated, including those specified by 8.1 b) and 8.1 k), if appropriate.		P
	b) To servicing dealers and distributors, and to others upon request, adequate instructions for service adjustments and service procedures for each laser product model		N
9	Additional requirements for specific laser products		N
9.1	Other parts of the standard series IEC 60825		N
	– IEC 60825-2, Safety of laser products – Part 2: Safety of optical fiber communication systems (OFCS)		N
	– IEC 60825-4, Safety of laser products – Part 4: Laser guards		N
	– IEC 60825-12, Safety of laser products – Part 12: Safety of free space optical communication systems used for transmission of information		N
	– IEC/TR 60825-3, Safety of laser products – Part 3: Guidance for laser displays and shows		N

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	– IEC/TR 60825-5, Safety of laser products – Part 5: Manufacturer's checklist for IEC 60825-1		N
	– IEC/TR 60825-8, Safety of laser products – Part 8: Guidelines for the safe use of laser beams on humans;		N
	– IEC/TR 60825-9, Safety of laser products – Part		N
	9: Compilation of maximum permissible exposure to incoherent optical radiation (broadband sources);		
	– IEC/TR 60825-13, Safety of laser products – Part 13: Measurements for classification of laser products;		N
	– IEC/TR 60825-14, Safety of laser products – Part 14: A user's guide;		N
	– IEC 62471 (CIE S 009), Photobiological safety of lamps and lamp systems		N
9.2	Medical laser products		N
9.3	Laser processing machines		N
9.4	Electric toys		N
9.5	Consumer electronic products		N

Note:

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

List of test equipment used

Measurement / testing	Testing / measuring equipment / material used	Series no.	Range used
Laser power meter	LP1	07110200148	400-1100nm, 40w max.
Detector	LP1-D	-	400-1100nm, 40w max.

Note: The equipment has been tested against the calibrated item with no significant difference (at the same wavelength).

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5.1 General test condition

Test conditions	Value
Temperature	17-27℃
Relative humidity	55%-70%
Input voltage of power supply	4.5 VDC
Conditions for measurement	The conditions start up, stabilized emission and shut-down of the product are considered.

5.2 measurement of laser radiation

The product is simulated normal operation to emit intentional laser radiation, in order to minimize the effect, a DC power supply used as the laser source for the test; all controls and adjustment are set to the default position by manufacturer and are combined to emit a maximum output of laser power.

5.3 determination of the class of the laser product

The product is assigned to Class 2; please refer to the measurement result for laser radiation below.

5.4.1 Test Method

The laser product emits 650nm CW laser radiation, the laser beam is collimated and it can be regarded as a small source, it has an angular subtense α less than, or equal to the minimum angular subtense α_{min} . The simplified (default) method is used for assessing the laser radiation for this product. Condition 3, 100mm distance and 7mm diameter stop aperture, therefore the C6 is set equal to 1.

5.4.2 Evaluation result

Input voltage 5V dc (fault condition)		Class 1 AEL	Class 2 AEL
		0.39 mW	1 mW
Input voltage 4.5V dc (normal voltage)			

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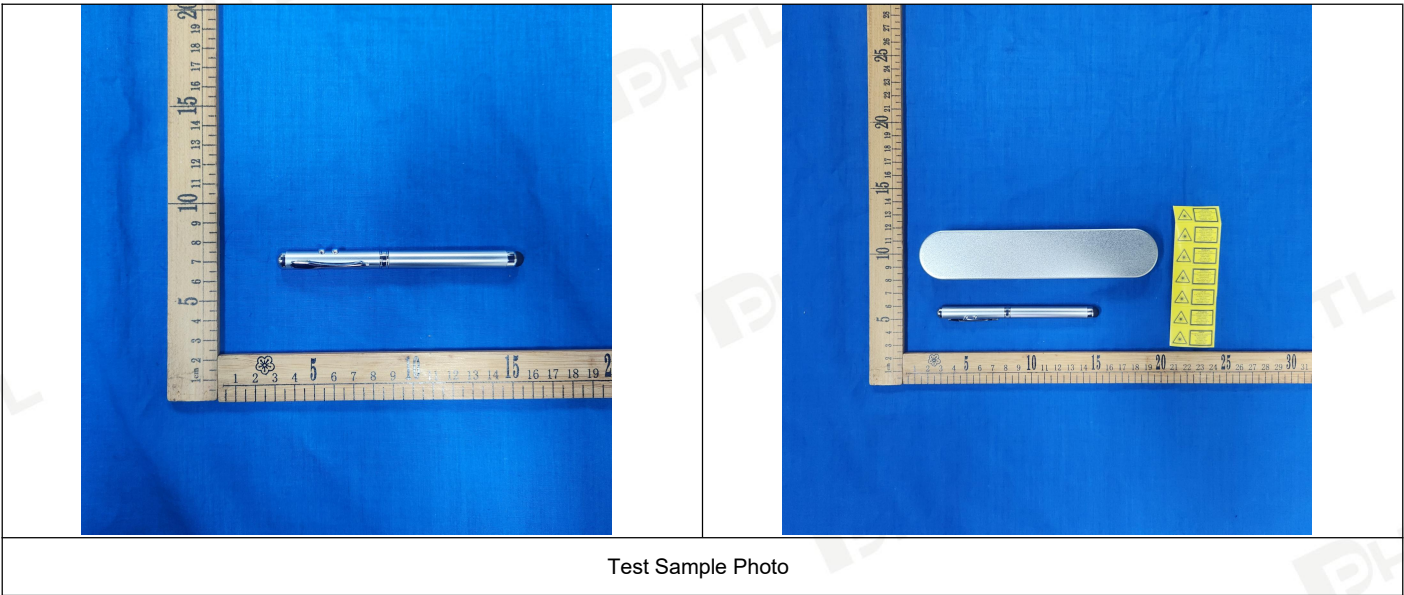
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	0.39 mW	1 mW
Max. 0.551 mW		

The maximum accessible emission determined is 0.551 mW, it's greater than the AEL for Class 1, and less than the AEL for Class 2, this laser product is assigned to Class 2.

Photo(s):

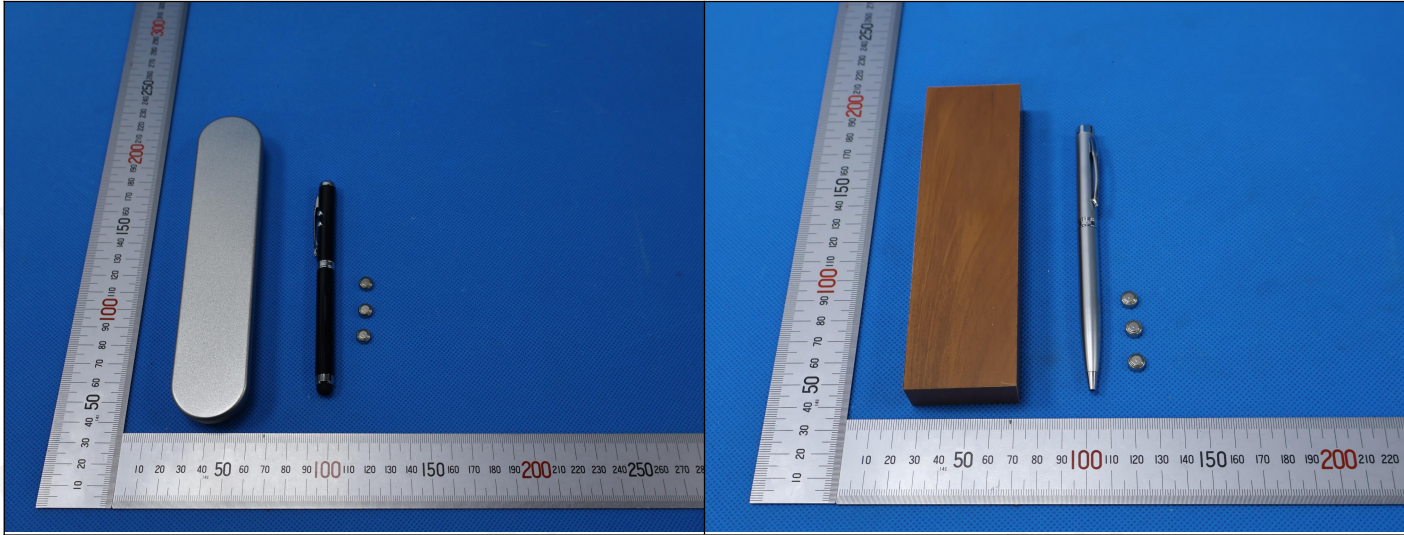


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Product Photo,For reference only

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