



**National Institute of Metrology (Thailand)**  
Ministry of Higher Education, Science, Research and Innovation

**Certificate of Calibration**



**Certificate No. :** EL-0016-23  
**Issued by :** Laser Power Laboratory, Electrical Metrology Department

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**MEASUREMENT ITEM :** Laser Power / Energy Meter

**MANUFACTURER :** Ophir

**MODEL/TYPE :** VEGA

**SERIAL NUMBER :** 3096631

**CUSTOMER :** Treat Med Co., Ltd.  
70 Soi Rattanathibet 28 Yaek 2, Bangkrasor Muangnonthaburi  
Nonthaburi 11000

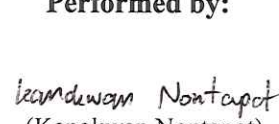
**MEASUREMENT DATE :** 20 September 2023

*The reported measurement result relates only to the measurand and applies only at the time of measurement.*

**Reference:**  
EMC0454-01/23

**Date:**  
22 September 2023

**Approved by:**  
  
(Sivinee Sawatdiaree)

**Performed by:**  
  
(Kanokwan Nontapot)

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### ENVIRONMENTAL CONDITIONS

The measurement was carried out in an ambient temperature of  $(23.0 \pm 1.0) ^\circ\text{C}$  and relative humidity of  $(50 \pm 15) \%$ .

### MEASUREMENT METHOD

The unit under calibration (UUC) was calibrated by comparing its reading against the power measured by NIMT's reference standard.

### UNCERTAINTY OF MEASUREMENT

The stated measurement uncertainties are the expanded measurement uncertainty obtained from the combined standard measurement uncertainties multiplied by the coverage factor  $k = 2$ . They are determined in accordance with JCGM 100: 2008 "Evaluation of measurement data - Guide to the expression of uncertainty in measurement". The values of the measurand lie within the assigned range of values with a probability of approximately 95 %.

### TRACEABILITY

This certificate provides traceability of measurement to recognized national standards, and to the realization of the International System of Units (SI).



## MEASUREMENT RESULTS

50(150)A-BB-26

Wavelength (nm)	Power Level	Calibration Factor (UUC/STD)	Uncertainty
1 064	1 W	0.997	4.0 %
10 600	1 W	1.055	2.0 %
	3 W	1.076	2.0 %
	8 W	1.089	2.0 %

3A

Wavelength (nm)	Power Level	Calibration Factor (UUC/STD)	Uncertainty
10 600	1 W	0.818	2.0 %
	3 W	0.826	2.0 %

Calibration Conditions :

- 1) Beam diameter ( $1/e^2$ ) : approximately 9 mm
- 2) Incident laser beam position : detector's mechanical center

End of Certificate of Calibration