



國立中央大學新世代光驅動電池模組
研究中心-太陽能電池效率驗證實驗室

CALIBRATION REPORT

Report No.: SSC0036002021040001

Date of Issue: May 11, 2021

Laboratory Photovoltaic Efficiency Verification Laboratory (PVEVL) of Research Center of New Generation Light Driven Photovoltaic Modules (RCNPV), National Central University
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Calibration
Signatory

Chia-Yuan Chen, Ph.D

Approved
Signatory

Chun-Guey Wu, Ph.D., Laboratory head



- Note 1. The report without signature and seal is invalid.
Note 2. The results presented in this report are only valid for the sample calibrated in the PVEVL.
Note 3. The report shall not be reproduced except in full, without the prior written approval of the laboratory.
Note 4. The report can not be used for commercial advertisement, merchandised activities and legal proceedings.

Applicant

Name: WAYS TECHNICAL CORP., LTD.

Address: No. 26, Gaoqing Rd., Yangmei Dist., Taoyuan City 32667, Taiwan (R.O.C.)

Date of Application: April 28, 2021

Sample for Calibration

Sample Name and PVEVL Identification: WAYS-OPV-MINI-MODULE-003 and 20210430-S1

Manufacturer (and Model): WAYS TECH / Nanobit (and WAYS-01)

Date of Receipt and Sample Type: April 29, 2021 and Organic Thin-Film Solar Mini-Module (16 cells)

Dates of Calibration: April 30, 2021 ~ May 7, 2021

Calibration Conditions

Location: Photovoltaic Efficiency Verification Laboratory (PVEVL) of RCNPV, NCU, Taiwan (R.O.C.)

Environmental Temperature and Relative Humidity: 20 °C ~ 26 °C and 30 % ~ 60 %

Calibration Method: IEC 60904-1 (Ed. 3.0) and IEC 60904-2 (Ed. 3.0)

Reference Solar Spectral Irradiance: IEC 60904-3 (Ed. 4.0) AM 1.5 Global

Irradiance Source: Steady-State Solar Simulator (HFSS) AAA-Class Conforms to IEC 60904-9 (Ed. 3.0); 300 nm to 1200 nm)

Spectral Mismatch Correction Factor (SMM): 0.9989 (Appendix-1)

Sample Temperature: (25 ± 1) °C (T-Type Thermocouple)

Calibration Results



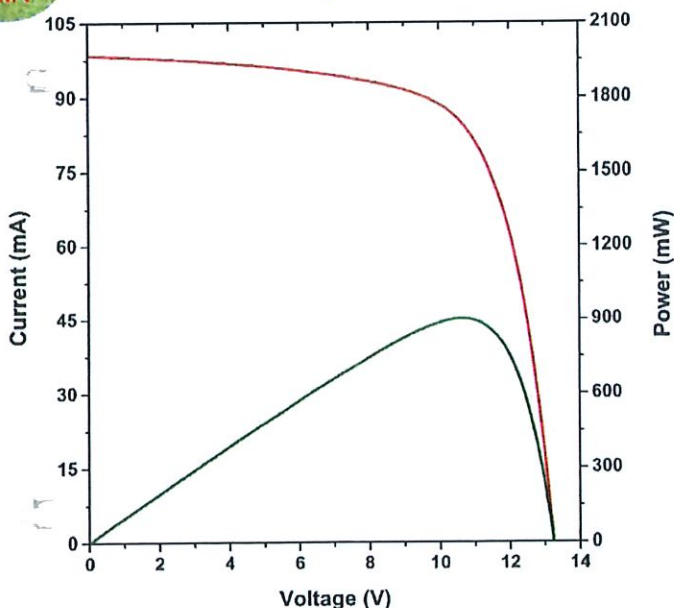
PV Parameters	Isc (mA)	Voc (V)	Pmax (mW)	Efficiency (%)
Calibration Results*	98.4 (± 1.7)	13.25 (± 0.12)	903 (± 18)	13.54 (± 0.28)

*The values in parentheses are expanded measurement uncertainty (k = 2 for approximate 95 % of confidence level).

Supplementary Information



PV Efficiency Verification Lab.



Date: 2021/05/01

Sample ID: WAYS-OPV-MINI-MODULE-003

Data No.: 20210430-S1-IV-7-F

Repeat Times: 9

Sweep Mode: Isc to Voc (Single Linear; Td = 0.1 s)

Irradiance: 100.0 mW·cm⁻²

MTemp.: 25.0 °C

Isc 98.4 mA

Voc 13.25 V

F.F. 69.25 %

Pmax 903 mW

Ipmax 85.1 mA

Vpmax 10.61 V

Area (ap) 66.664 cm²

Jsc 1.476 mA·cm⁻²

Efficiency 13.54 %