



Standard Test Method for Reporting Photovoltaic Non-Concentrator System Performance¹

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1. Scope

1.1 This test method provides measurement and analysis procedures for determining the capacity of a specific photovoltaic system built in a particular place and in operation under natural sunlight.

1.2 This test method is used for the following purposes:

1.2.1 acceptance testing of newly installed photovoltaic systems,

1.2.2 reporting of dc or ac system performance, and

1.2.3 monitoring of photovoltaic system performance.

1.3 This test method should not be used for:

1.3.1 testing of individual photovoltaic modules for comparison to nameplate power ratings,

1.3.2 testing of individual photovoltaic modules or systems for comparison to other photovoltaic modules or systems,

1.3.3 testing of photovoltaic systems for the purpose of comparing the performance of photovoltaic systems located in different places.

1.4 In this test method, photovoltaic system power is reported with respect to a set of reporting conditions (RC) including: solar irradiance in the plane of the modules, ambient temperature, and wind speed (see Section 6). Measurements under a variety of reporting conditions are allowed to facilitate testing and comparison of results.

1.5 This test method assumes that the solar cell temperature is directly influenced by ambient temperature and wind speed; if not the regression results may be less meaningful.

1.6 The capacity measured according to this test method should not be used to make representations about the energy generation capabilities of the system.

1.7 This test method is not applicable to concentrator photovoltaic systems; as an alternative, Test Method E2527 should be considered for such systems.

1.8 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D6176 Practice for Measuring Surface Atmospheric Temperature with Electrical Resistance Temperature Sensors

E772 Terminology of Solar Energy Conversion

E824 Test Method for Transfer of Calibration From Reference to Field Radiometers

E927 Specification for Solar Simulation for Photovoltaic Testing

E948 Test Method for Electrical Performance of Photovoltaic Cells Using Reference Cells Under Simulated Sunlight

E973 Test Method for Determination of the Spectral Mismatch Parameter Between a Photovoltaic Device and a Photovoltaic Reference Cell

E1036 Test Methods for Electrical Performance of Nonconcentrator Terrestrial Photovoltaic Modules and Arrays Using Reference Cells

E1040 Specification for Physical Characteristics of Nonconcentrator Terrestrial Photovoltaic Reference Cells

E1125 Test Method for Calibration of Primary Non-Concentrator Terrestrial Photovoltaic Reference Cells Using a Tabular Spectrum

E1362 Test Method for Calibration of Non-Concentrator Photovoltaic Secondary Reference Cells

E2527 Test Method for Electrical Performance of Concentrator Terrestrial Photovoltaic Modules and Systems Under Natural Sunlight

¹ This test method is under the jurisdiction of ASTM Committee E44 on Solar, Geothermal and Other Alternative Energy Sources, and is the direct responsibility of Subcommittee E44.09 on Photovoltaic Electric Power Conversion.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.