

File No. 313-12/3/2025-S AND QC
Government of India
Ministry of New and Renewable Energy
(Standard & Quality Control Division)

Atal Akshay Urja Bhawan,
CGO, Complex, Lodhi Road
New Delhi-110003
Dated: 27th May, 2025

OFFICE MEMORANDUM

Subject: Circulation of draft Guidelines for series approval of SPV Modules for conducting testing in Test Labs for implementation of "Solar Systems, Devices and Components Goods Order, 2025".

The undersigned is directed to forward the draft Guidelines for series approval of SPV Modules for conducting testing in Test Labs for implementation of "Solar Systems, Devices and Components Goods Order, 2025" for comments of the Stakeholders. The comments, if any, may be sent to birinchi.bora@nise.res.in and rajkumarb.mnre@gov.in within 15 days from the notification of this OM.

Yours faithfully


(Rajkumar Bhawariya) 27/5/25
Scientist C

To:
Director (NIC), MNRE – for uploading on website of the Ministry.

Draft Guidelines for series approval of SPV Modules for conducting testing in Test Labs for implementation of Solar Systems, Devices and Components Goods Order, 2025

The guidelines are issued to facilitate labs/manufacturers in formation of series of products for approval of product family including change in design, materials, etc. for performance testing of SPV Modules in test labs for compulsory registration with BIS for implementation of the Solar Systems, Devices and Components Goods Order, 2025. The following series guidelines will now be followed for conducting tests on SPV Modules by test labs.

Definition of Product Family

A product family can be defined by the maximum configuration of components/sub-assemblies plus a description of how the models are constructed from the maximum configuration using these component and sub-assemblies. All models which are included in the family typically have common design, construction, parts or assemblies essential to ensure conformity with applicable requirements.

For qualification of multiple bins of power classes within the boundaries given in IEC TS 62915 at least 2 modules each, from the lower end, median and higher end power class shall be used for testing. If median power class does not exist the next higher class shall be used. If qualification of a single power class shall be extended to further bins of power classes within the boundaries given in IEC TS 62915 (then at least 2 modules each, from the lower end and higher end power class shall be used for label verification (Gate No.1). If a power class is extended only towards higher (or lower) bins, then modules only from the higher (or lower) bins, respectively, shall be used for verification of rated label values.

For IV measurement of high capacitance PV module hysteresis loss need to minimize, as per IEC 60904-1:2020 hysteresis shall less than 0.5%. Or the following results shall be reported for an investigation of the high capacitance of PV module as per IEC 60904-1:2020

- dI/dt and dV/dt for $I_{P_{max}}$ and $V_{P_{max}}$, err_{cap} , etc.

If there is a change in BOM in the family then the retesting guidelines will be followed for submitting samples to test Labs, and for which appropriate testing charges will be made by test lab.

Guidelines for Quantitative Selection of Samples

- a. IS 14286: 2023

A total twelve modules shall be taken at random from a production batch or batches, in accordance with the procedure given in IS 14286. The modules shall have been manufactured from specified materials and components in accordance with the relevant drawings and process sheets and have been subjected to the manufacturer's normal quality control and production acceptance procedures. The modules shall be complete in every detail and shall be accompanied by the manufacturer's handling, mounting and connection instructions, including the maximum permissible system voltage. The modules should contain the bypass diode wherever applicable. In case of the modules with sealed junction box the client should provide one extra module having access to the diode for conducting the bypass diode test.

All the modules should contain the following clear and indelible marking laminated inside the glass

- i. Name, Registered Trade Name, or Registered trademark of manufacturer
- ii. Model number
- iii. Unique serial number
- iv. Nominal wattage + tolerance%
- v. Date and place of manufacture; alternatively serial number assuring traceability of date and place of manufacture
- vi. Brand name if applicable

Tolerance up to $\pm 3\%$ will be acceptable.

Other details as per IS 14286 (Part 1) :2023 clause 5.1 and IS/IEC 61730-1 clause 6.2.2 should be provided at appropriate place. The actual Power Output P_{max} shall be mentioned on the label pasted on the back side of PV Module. In case of thin film modules information need not be provided laminated inside the glass, however, it should be provided as per IS 14286 (Part 1) :2023 clause 5.1 and IS/IEC 61730-1 clause 6.2.2 at an appropriate place with clear and indelible marking.

The Test laboratory should not accept the modules for testing without above detail. The testing sequence and the pass criterion should be strictly followed in accordance with the test standard

b. IS/IEC 61730-1: 2023

The client should submit all the details of Bill of materials & fabrication etc. in accordance with the standard IS/IEC 61730-1: 2023. The necessary IS/IEC compliance certificates where available and applicable for the pre-certified bill of material should also be submitted to the Laboratory for review. For components, the certification should be as per IS/IEC where available and applicable, and, in case such standards are not available, other IEC harmonized standards shall be acceptable.

c. IS/IEC 61730-2: 2023

The selection of sample should be as per clause 6 of IS/IEC 61730-2: 2023. All these modules should fulfil the requirement as stated above for IS 14286. A minimum of 10 PV modules and two unframed PV modules are used for safety testing (plus spares as desired). In order to prove reduction of Pollution Degree to PD 1, one additional PV module is required. If tests of Sequence F are performed in parallel, between one and three additional modules are required.

If cemented joints according to MST 35 or MST 36 are to be qualified, one of the following is required:

- Two unframed PV modules are tested in sequence B, one with the front-side facing the light and one with the backside facing the light. The front-side exposed specimen shall be used in the evaluation. One additional unframed PV module is required to test initial adhesion strength if a peel test (MST 35) is used for evaluation.
- For Glass/Glass constructions 20 additional samples according to 10.25.2 are required for the lap shear strength test (MST 36) to prove cemented joints.

All specimens shall be technically identical (same components). For MST 24, and MST 32 PV modules which are complete in every detail, but not functioning or of low power, etc., are acceptable. All test specimens except for MST 35 and MST 36, should be taken at random from a production batch or batches. Additional PV modules for MST 23 might be necessary (PV modules which are complete in every detail, but not functioning or of low power, etc., are acceptable).

The PV modules shall have been manufactured from specified materials and components in accordance with the relevant drawings and process sheets and have been subjected to the module manufacturer's normal inspection, quality control and production acceptance procedures. The PV modules shall be complete in every detail and shall be accompanied by the manufacturer's handling, mounting, and connection instructions.

d. Retesting guide lines:

In case of any changes in the PV module or process modifications to maintain the certification retesting as per IS/IEC 62915: 2023 is required. The manufacturer shall have the responsibility of disclosing changes in the design, materials, components, material combinations, manufacturers or processing of the PV module type family from the last tested version. Such changes may require a repetition of some or all of the qualification tests according to the clauses that follow in order to maintain type and safety approval. The manufacturer is also responsible for providing any necessary data to support component level changes which may reduce re-test requirements. For any assessment of a new thickness or dimension of a material or component, the initially tested thickness or dimension shall be used as reference. Any variation of a parameter may be assessed as a change if the new value is out of the tolerance from the nominal value of this parameter. If the declared tolerance of the manufacturer exceeds the relative percentage change that would trigger a required re-test (e.g. 10 % reduction in thickness of glass front sheet), then the component under question shall be submitted for testing with the extreme worst-case value.