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(JEMA)

**Terrestrial photovoltaic (PV) modules —
Design qualification and type approval —
Part 1-4: Special requirements for testing
of thin-film Cu(In, Ga) (S, Se)₂ based
photovoltaic (PV) modules**

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In the event of any doubts arising as to the contents,
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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Electrical Manufacturers' Association (JEMA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS C 61215-1-4** : 2020), which has been technically revised.

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Cu(In, Ga) (S, Se)₂ based photovoltaic (PV) modules**

Introduction

This Japanese Industrial Standard has been prepared based on **IEC 61215-1-4** : 2021, Edition 2 and Amendment 1 : 2022, with some modifications of the technical contents. The amendment(s) to the said International Standard has been incorporated into this Standard.

This Standard is to be used in conjunction with **JIS C 61215-1** and **JIS C 61215-2**.

In addition, the dotted underlines in this Standard indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex **JA**.

1 Scope

This Standard specifies requirements for the design qualification of all terrestrial flat plate photovoltaic (PV) modules suitable for long-term operation in open-air climates (hereafter referred to as modules), particularly thin-film Cu(In, Ga) (S, Se)₂ based modules. The useful service life of modules so qualified will depend on their design, their environment and the conditions under which they are operated. Test results are not construed as a quantitative prediction of module lifetime.

In climates where 98th percentile operating temperatures exceed 70 °C, users are recommended to consider testing to higher temperature test conditions as described in **IEC TS 63126**. Users desiring qualification of modules with lesser lifetime expectations are recommended to consider testing designed for PV in consumer electronics, as described in **IEC TS 63163**. Users wishing to gain confidence that the characteristics tested in the **JIS C 61215** series appear consistently in a manufactured product may wish to utilize **IEC 62941** regarding quality systems for module manufacturing.

This Standard is intended to apply to all thin-film Cu(In, GA) (S, Se)₂ based terrestrial flat plate modules. As such, it addresses special requirements for testing of this technology supplementing **JIS C 61215-1** and **JIS C 61215-2** requirements for testing.

This Standard does not apply to modules used with concentrated sunlight although it may be utilized for low concentrator modules (1 to 3 suns). For low concentration modules, all tests are performed using the irradiance, current, voltage and power levels expected at the design concentration.

The object of this test sequence is to determine the electrical characteristics of the module and to show, as far as possible within reasonable constraints of cost and time,