

**EUROPEAN COMMISSION**

**HORIZON 2020 PROGRAMME**

**TOPIC H2020-LC-SC3-2019-RES-IA-CSA**

**Increase the competitiveness of the EU PV manufacturing industry**

**GA No. 857793**

**High-performance low-cost modules with excellent environmental profiles for a competitive EU PV manufacturing industry**



**HighLite- Deliverable report**

**D7.2: Intermediate module reliability testing results.**

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857793. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.

## About HighLite

The HighLite project aims to substantially improve the competitiveness of the EU PV manufacturing industry by developing knowledge-based manufacturing solutions for high-performance low-cost modules with excellent environmental profiles (low CO<sub>2</sub> footprint, enhanced durability, improved recyclability). In HighLite, a unique consortium of experienced industrial actors and leading institutes will work collectively to develop, optimize, and bring to high technology readiness levels (TRL 6-7) innovative solutions at both cell and module levels.

## HighLite consortium members



## Document information

<b>Deliverable No.</b>	HighLite D7.2
<b>Related WP</b>	WP7
<b>Deliverable Title</b>	Intermediate module reliability testing results
<b>Deliverable Date</b>	01– April - 2021
<b>Deliverable Type<sup>1</sup></b>	Report
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## Document history

Date	Revision	Prepared by	Approved by	Description
15/03/2021	1	Stefan Wendlandt		First draft
18/03/2021	2	Antonin Faes	Stefan Wendlandt	Second draft
22/03/2021	3	Liesbeth Theunissen	Stefan Wendlandt	Second draft
24/03/2021	4	Andreas Halm	Stefan Wendlandt	Second draft
25/03/2021	5	Martin Heinrich	Stefan Wendlandt	Second draft
25/03/2021	6	Jarno Kaakkunen	Stefan Wendlandt	Second draft
26/03/2021	7	Matevž Bokalič	Stefan Wendlandt	Second draft
30/03/2021	8	Stefan Wendlandt	Project Coordinator	Final

## Dissemination level<sup>2</sup>

PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	X

### <sup>1</sup> Deliverable Type

Please indicate the type of the deliverable using one of the following codes:

R Document, report

DEM Demonstrator, pilot, prototype

DEC Websites, patent fillings, videos, etc.

OTHER

ETHICS Ethics requirement

ORDP Open Research Data Pilot

DATA data sets, microdata, etc.

### <sup>2</sup> Dissemination level

Please indicate the dissemination level using one of the following codes:

PU Public

CO Confidential, only for members of the consortium (including the Commission Services)

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## Publishable summary

D7.2 - “Intermediate module reliability testing results”, is the confidential deliverable report related to the work package 7 (WP7) of the HighLite project.

On building applied photovoltaics (BAPV) the report presents the reliability testing of silicon heterojunction (SHJ) shingled modules. The work started from mini modules and was extended up to full size modules. Special attention was paid to the reduction of solar cell thickness from 160  $\mu\text{m}$  down to 120  $\mu\text{m}$ . The challenge of minimizing the cell overlap in order to increase the cell to module (CTM) power coefficient is addressed as well.

To reach the goal to produce a module with long-term stability over 35 years, the extended test matrix with different kinds of raw materials in combination with interdigitated back contact (IBC) cells was analysed. The test sequence consists of a combination of UV, thermal cycling (TC) and damp heat (DH) cycles and was applied to small samples. Based on the results a most resistant bill of materials (BOM) was identified and the first full-size module with IBC cells was produced.

Concerning building integrated PV (BIPV) modules the stability of coloured glass was evaluated and benchmarked to commercially available products. To test the reliability, the samples were UV, TC and DH stressed and periodically characterized. Furthermore, the test results of a module prototype design with IBC cells are presented.

In a third section the report describes the work on VIPV modules. The development and reliability of three different designs is described.