

**EUROPEAN COMMISSION**

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**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**

**D7.1: Intermediate indoor module characterization results**

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## 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 D7.1                                       |
| <b>Related WP</b>                   | WP7   |
| <b>Deliverable Title</b>            | Intermediate indoor module characterization results |
| <b>Deliverable Date</b>             | 01– April – 2021                                    |
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## Document history

| Date           | Revision | Prepared by         | Approved by            | Description |
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## 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

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EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)

EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)

EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

## Publishable summary

The intermediate indoor module characterization report presents the current results made within the HighLite project.

In detail the results on the quality, electrical, optical and thermal properties of the outdoor benchmark modules of WP6 will be shown. Those data lead to a high level analysis of the outdoor monitor within WP6. The power determination with  $P_{max}$  as a key information of modules was optimized in the report period. Thereby the focus was the reduction of the measurement uncertainty at the flasher by the introduction and the development of a device with which the light homogeneity can be determined with one flash. Furthermore, it is described how different encapsulation materials and solar cell technologies impact on the mismatch factor (MMF) of power measurements. Since HighLite addresses novel lightweight module designs with polymer front sheet with different optical properties, one needs to understand how the light can be coupled into the modules. For this, angle dependent measurements of those lightweight modules were done and compared to the ones of standard modules with ARC glass. The intermediate report ends up with a detailed analysis of the indoor characterization data of various commercial shingled PV-Modules. Finally, the report presents the current results towards the development of vibration tests for VIPV.