

Solar Cells Reporting Summary

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► Experimental design

Please check: are the following details reported in the manuscript?

1. Dimensions

Area of the tested solar cells

☒ Yes

Methods – Solar cell characterization

☐ No

Method used to determine the device area

☒ Yes

Methods – Solar cell characterization

☐ No

2. Current-voltage characterization

Current density-voltage (J-V) plots in both forward and backward direction

☒ Yes

Figure S29

☐ No

Voltage scan conditions

For instance: scan direction, speed, dwell times

☒ Yes

Methods – Solar cell characterization

☐ No

Test environment

For instance: characterization temperature, in air or in glove box

☒ Yes

Methods – Solar cell characterization

☐ No

Protocol for preconditioning of the device before its characterization

☐ Yes

None.

☒ No

Stability of the J-V characteristic

Verified with time evolution of the maximum power point or with the photocurrent at maximum power point; see ref. 7 for details.

☐ Yes

No maximum power point data is included, as this is not the focus of our work.

☒ No

3. Hysteresis or any other unusual behaviour

Description of the unusual behaviour observed during the characterization

☒ Yes

Figure S29

☐ No

Related experimental data

☒ Yes

Figure S29

☐ No

4. Efficiency

External quantum efficiency (EQE) or incident photons to current efficiency (IPCE)

☐ Yes

EQE data was not included.

☒ No

A comparison between the integrated response under the standard reference spectrum and the response measure under the simulator

☐ Yes

Not applicable.

☒ No

For tandem solar cells, the bias illumination and bias voltage used for each subcell

☐ Yes

Not applicable.

☒ No

5. Calibration

Light source and reference cell or sensor used for the characterization

☒ Yes

Methods – Solar cell characterization

☐ No

Confirmation that the reference cell was calibrated and certified

☒ Yes

Methods – Solar cell characterization

☐ No

Calculation of spectral mismatch between the reference cell and the devices under test	☒ Yes ☐ No	Methods – Solar cell characterization
6. Mask/aperture		
Size of the mask/aperture used during testing	☒ Yes ☐ No	Methods – Solar cell characterization
Variation of the measured short-circuit current density with the mask/aperture area	☐ Yes ☒ No	No other masks were used.
7. Performance certification		
Identity of the independent certification laboratory that confirmed the photovoltaic performance	☐ Yes ☒ No	No independent certification laboratories were used.
A copy of any certificate(s) <i>Provide in Supplementary Information.</i>	☐ Yes ☒ No	Not applicable.
8. Statistics		
Number of solar cells tested	☒ Yes ☐ No	Methods – Solar cell characterization
Statistical analysis of the device performance	☐ Yes ☒ No	An in-depth statistical analysis of performance was not included.
9. Long-term stability analysis		
Type of analysis, bias conditions and environmental conditions <i>For instance: illumination type, temperature, atmosphere humidity, encapsulation method, preconditioning temperature</i>	☐ Yes ☒ No	The stability of the devices was not the focus of our work. That being stated, we measured the performance of devices after multiple days of exposure to air and found negligible variations in the performance.