# MANUAL – PROCEDURE OF GUARANTEE OF MODULES

Requests will be assessed and evaluated in accordance with the warranty term and contractual agreements, as follows:

- Ku&HiKu SERIES: 12-year product warranty and 25-year performance warranty.
- TOPBIHIKU SERIES under the sales contract or purchase order signed on and after December 1, 2022: 12 years product warranty and 30 years performance warranty.
- BiKu&BiHiKu SERIES under the sales contract or purchase order signed on and after February 1, 2022: 12 years product warranty and 30 years performance warranty.

## TERM OF GUARANTEE TO MODULES:

- Single-Facial (Ku&HiKu SERIES): support.csisolar.com/hc/en-us · Modules · Warranties · Warranty Statement for Monofacial Modules

- Bifacials (TOPBIHIKU and BiKu&BiHiKu SERIES): support.csisolar.com/hc/pt-br · Modules ➔ Guarantees · Warranty Statement for Bifacial Modules

## Points that **invalidate** the equipment warranty:

The warranties set forth herein do NOT apply to any Products:

1. That has been subject to negligence in transportation, handling, storage or use.
2. That has been repaired without authorization from CSI Solar or have been tampered with in any way.
3. Those who have been subjected to extraordinary exposure to heat, salt or chemicals.
4. That has been subject to unauthorized installation, application, alteration or service in accordance with local laws and regulations or CSI Solar standard product documentation, or improper system design that has caused constant shadowing of the Products.
5. That has been subject to power failures or surges, floods, fires, direct or indirect lightning strikes, accidental breakdowns, vandalism, explosions, acts of war or other events beyond CSI Solar's control.
6. That have been moved from their original installation location.

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7. Installed on mobile units (except photovoltaic tracking systems), such as vehicles, ships or offshore structures.
8. Furthermore, the limited warranties do not apply to any deterioration in the appearance of the Products (including, without limitation, any scratches, stains, rust, discoloration or mold) or any other change in the appearance of the Products resulting from the normal wear and tear of the product materials over time.
9. Additionally, no warranty claim may be made if the label, type or serial number of the applicable Product has been altered, removed or made illegible.

## Index

1. "Hotspot" or hot spot
2. Glass breakage
3. Low performance
4. Other damages

If the above faults are detected in Canadian Solar photovoltaic modules, **contact the CSI technical team through the following official means of communication, sending the requested evidence described for each type of fault:**

E-mail: service.latam@csisolar.com

Telephone: 0800 878 3587 (Mon. to Fri. – 9am to 5pm)

WhatsApp: +55 11 4637-2276

## Documentsuseful:

- **Installation manual: support.csisolar.com/hc/en-us➔** Modules · Quick Guides · Installation Manual of CSI Photovoltaic Module
- **Module Handling Manual: support.csisolar.com/hc/en-us➔** Modules · Quick Guides · Handling Modules – Good Practices

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## 1. “*Hotspot*” (or hot spot)

The Hot spot occurs in a PV module when its operating current exceeds the reduced short-circuit current of a shaded or defective cell or group of cells within it. We at CSI Solar recommend the use of thermographic analysis to detect the presence of possible hot spot defects.

### 1.1. Criterion

For the product warranty to be validated, the cell(s) of the module that presents a hot spot must present a temperature T > 70°C and a temperature difference △T >30°C with the other cells.


**T > 70°C* and△T >30°C***

*Evidence without clear information will not be accepted o*f the measured temperature. The photo on the side is for illustration purposes only.*

### 1.2 Evidences

Should you detect the possible presence of hot spot heating on your PV module(s), please provide the CSI Solar Technical Team with the following documentation and information regarding each potentially affected PV module:

1. Photo of the label with the serial number of the photovoltaic module;
2. Close-up photo of the hot spot from the front of the module;
3. Close-up photo of the hot spot from the rear of the module;
4. Full frontal photo of the photovoltaic module;
5. Full rear photo of the photovoltaic module;
6. Photo/video of the installation as a whole (possible shadows visible);
7. Photo/video of thermography, with clear temperature information.

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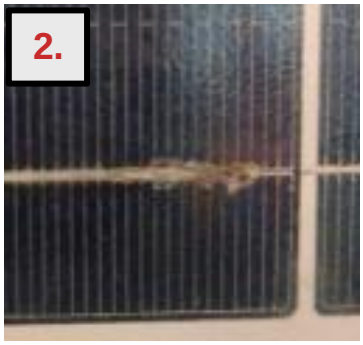
Below are examples of the evidence to be submitted:

1.


2.



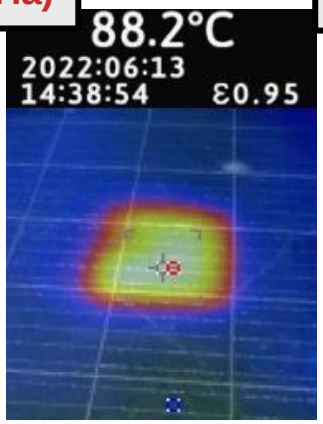
3.

4.

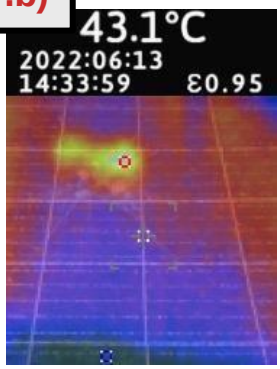
5.

6.

7.a)




7.b)




*Please note that the information and documentation provided should not be considered as proof of the defect, CSI Solar reserves the right to request further measurements/documents/information to perform a more accurate analysis regarding the potentially affected photovoltaic module(s).

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## 2. Glass breakage

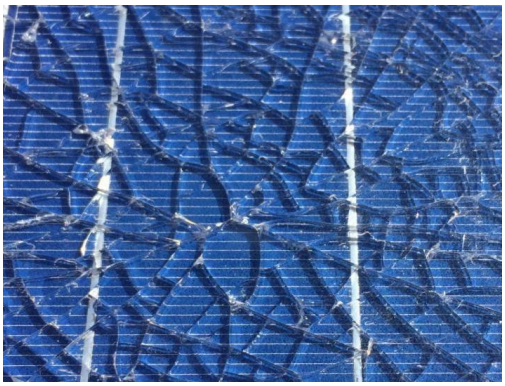
In most cases, glass breakages are caused by external conditions, such as poor handling during transport, during installation or, less frequently, by hail and/or acts of third parties (such as stone throwing).

### 2.1. Criterion

Visual criteria are used to detect glass breakage:

#### 2.1.1. Spontaneous breakage

No point of origin of the break and no deformation of the panel. Starting point with the outline of a butterfly, radial flow lines. Modules affected by the breakspontaneous must be replaced.



#### 2.1.2. External impact (not covered by warranty)

Glass breakage due to impact by external forces, with possible deformation of the panel. It is possible to locate the point of origin of the impact, in addition to shattering of the glass pieces. Panels with broken glass must be replaced.

### 2.2. Evidences

Should you detect the possible presence of spontaneous glass breakage on the PV module(s), please provide the CSI Solar Technical Team with the following documentation and information regarding each potentially affected PV module:

1. Photo of the label with visible serial number;
2. Detailed photo/video of the initial point of the glass break, if available;
3. Photo/video of the installation as a whole (possible shadowing visible), pointing out the affected module;
4. Photo/video of module failure on the front side up close;
5. Photo/video of the entire front of the photovoltaic module;
6. Photo/video of the entire back of the PV module;

Examples of evidence to be submitted are as follows:

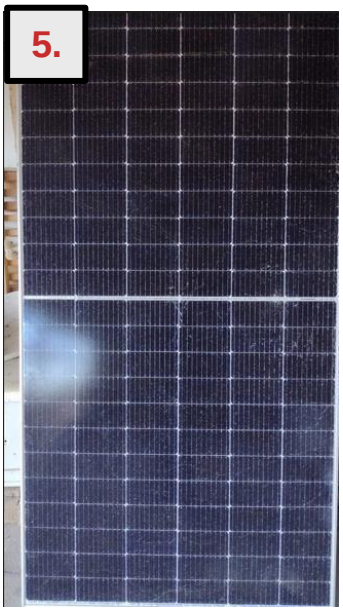
1.


2.

3

4.

5.



6.

*Please note that the information and documentation provided should not be considered as proof of the defect, CSI Solar reserves the right to request further measurements/documents/information to perform a more accurate analysis regarding the potentially affected photovoltaic module(s).

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## 3. Low performance

Presence of low power performance of the potentially affected photovoltaic module.

### 3.1. Criterion

It will be warrantable if the voltage is below 2/3 of the open circuit voltage (Voc) stated in the datasheet. If the performance of the single PV modules below the minimum guaranteed value, CSI Solar technical team will investigate the root cause and provide support.

### 3.2. Evidences

1. Photo of the label with visible serial number;
2. Photo/video of PV module voltage measurement, in the sun, with multimeter test leads visible;
3. Photo/video of the installation as a whole (possible shadows visible);
4. Photo/video of the entire front of the photovoltaic module;
5. Photo/video of the entire rear of the photovoltaic module;
6. Photo of the open junction box (without the cover) of the photovoltaic module, showing the silicone;
7. Inform the string and position of the photovoltaic module;
8. If possible, perform the IV curve for each photovoltaic module.

Below are examples of the evidence to be sent:




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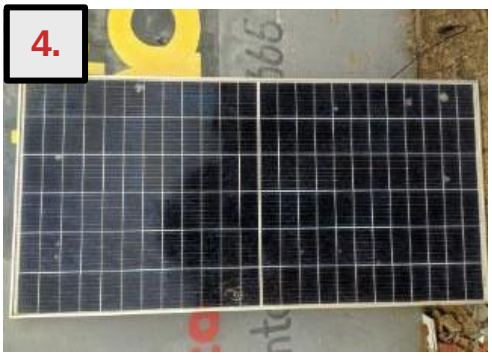
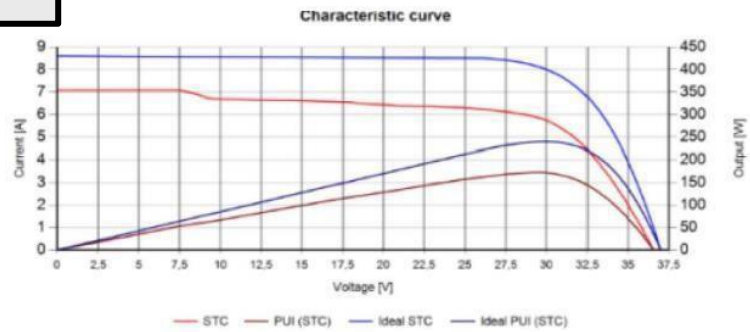
4.



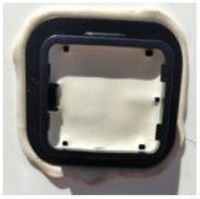
5.

6.

8.




When the volume of panels is high, we recommend using a spreadsheet for organization as per example:

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | NS Módulo | Etiqueta do número de série do módulo | Foto da medição Voc | Foto frontal inteira do módulo | Foto traseira inteira do módulo | Foto da caixa de junção sem a tampa | string | posição |
| 2 | 12010310160633 |  |  |  |  |  | 2 | 4 |

*Please note that the information and documentation provided should not be considered as proof of the defect, CSI Solar reserves the right to request further measurements/documents/information to perform a more accurate analysis regarding the potentially affected photovoltaic module(s).

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## 4. Too much breakdowns

In case of failure found in the photovoltaic module, it does not fit into any of the of the faults described above.

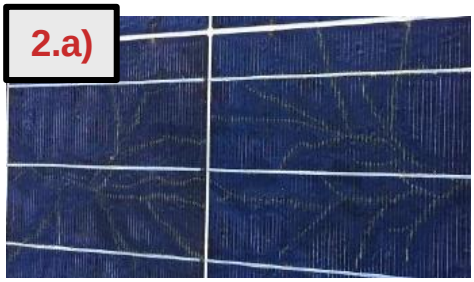
### 4.1. Evidences

1. Photo of the label with visible serial number;
2. Photo/video of the photovoltaic module failure up close;
3. Photo/video of the installation as a whole (possible shadowing visible), pointing out the affected module;
4. Photo/video of the entire front of the photovoltaic module;
5. Photo/video of the entire rear of the photovoltaic module;
6. Inform the string and position of the photovoltaic module.

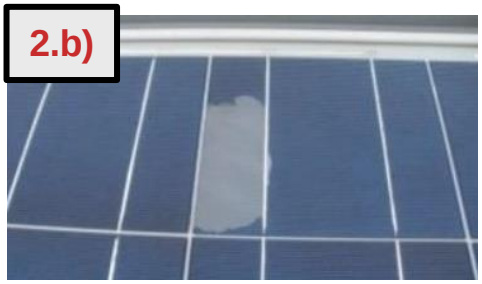
Below are examples of the evidence to be submitted:

1.


2.a)



2.b)



3.

4.

5.

*Please note that the information and documentation provided should not be considered as proof of the defect, CSI Solar reserves the right to

*right to request more measurements/documents/information to carry out a more accurate analysis in relation to the photovoltaic module(s) potentially affected.*

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# VERSION UPDATEHISTORY

| Version | Date | Update | Author |
|---|---|---|---|
| V1.0 | 06-2023 | Creation | Erika Grasnoff |
| V2.0 | 06-2023 | Review | Eric Maeda |
| V3.0 | 07-2024 | Review | Caio Pacheco |
| V4.0 | 11-2024 | Review | Priscilla Baptista |

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