



**TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING**

**Photovoltaic (PV) systems – Characteristics of the utility interface  
IEC 61727:2004**

R = Required by Lab  
S = May be subcontracted

Clause	Testing	Testing / measuring equipment / material needed	Subcontracting
4.3	Flicker	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability and flicker function</li> </ul>	R
4.4	DC injection	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability</li> <li>- Oscilloscope</li> </ul>	R
4.6	Harmonics and waveform distortion	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability and harmonic function</li> <li>- Oscilloscope</li> </ul>	R



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Clause	Testing	Testing / measuring equipment / material needed	Subcontracting
4.7	Power factor	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability</li> </ul>	R
5.2	Over/under voltage and frequency	<ul style="list-style-type: none"> <li>- Programmable AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability</li> <li>- Oscilloscope</li> </ul>	R
5.3	Islanding protection	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Adjustable RLC Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability</li> <li>- Oscilloscope</li> </ul>	R
5.4	Response to utility recovery	<ul style="list-style-type: none"> <li>- AC power source (1 or 4 quadrant, variable voltage and frequency)</li> <li>- DC power sources (SAS – Solar Array Simulator)</li> <li>- Loads capable of sourcing and sinking the PCE input and output under rated conditions. (3 phase, min 5kVA /phase for all devices above)</li> <li>- Power analyser with data recording capability</li> <li>- Oscilloscope</li> </ul>	R