

**APPENDIX 4 TYPE VERIFICATION TEST SHEET****SSEG DETAILS**

SSEG Type reference:		<i>Fronius IG 15</i>	
SSEG Technology:		<i>Photo voltaic (Annex C)</i>	
Manufacturer:  <i>Fronius International GmbH</i>	Tel:	<i>+43-7242-241-0</i>	Address:  <i>Guenter Fronius Str 1 4600 Wels-Thalheim, Austria</i>
	Fax:	<i>+43-7242-241-224</i>	
Technical file reference No.:			
Maximum export capability (SSEG rating less parasitic load)		<i>1500W (nom. 1300W)</i>	

**TEST HOUSE DETAILS**

Name and address of test house	<i>Fronius R&amp;D Laboratories, Fronius International GmbH, Gunter-Fronius-Strasse 1, A-4600 Wels, Austria</i>
Telephone number	<i>+43-7242-241-0</i>
Facsimile number	<i>+43-7242-241-224</i>
E-mail address	<i>pv@fronius.com</i>

**POWER QUALITY**

<b>Harmonic current emissions (A)</b>								
Maximum permissible harmonic current as per BS EN 61000-3-2								
Harmonic	2 <sup>nd</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	7 <sup>th</sup>	9 <sup>th</sup>	11 <sup>th</sup>	13 <sup>th</sup>	15 <sup>th</sup> – 39 <sup>th</sup>
Limit	1,08	2,3	1,14	0,77	0,4	0,33	0,21	0,15x(15/n)
Test value	<i>0,0205</i>	<i>0,2332</i>	<i>0,0029</i>	<i>0,0262</i>	<i>0,0327</i>	<i>0,0283</i>	<i>0,025</i>	<i>See TR LF 04005</i>

Voltage fluctuations and flicker see Fronius Test report LF 04007

	<b>DJ injection*</b>			<b>Power factor</b>		
G83/1 Limit	20mA, tested at three power levels			0.95 lag–0,95 lead at three voltage levels		
Test level	10%	55%	100%	212 V (*)	230 V	248 V
Test value	<i>&lt;5mA</i>	<i>&lt;5mA</i>	<i>&lt;5mA</i>	<i>0,97</i>	<i>0,96</i>	<i>0,96</i>

\*Indicative values are shown for minimum, medium and maximum power levels

**UNDER / OVER FREQUENCY TESTS**

Parameter	Under Frequency		Over Frequency	
	Frequency (Hz)	Time (s)	Frequency (Hz)	Time (s)
G83/1 Limit	47 Hz	0,5 (5.0) sec	50,5 Hz	0,5 (5.0) sec
Actual setting	48,01Hz	---	50,49 Hz	---
Trip value	48 Hz	0,1s	50,5 Hz	0,1s

**UNDER / OVER VOLTAGE TESTS**

Parameter	Under Voltage		Over Voltage	
	Voltage (V)	Time (s)	Voltage (V)	Time (s)
G83/1 Limit	207 V	5.0 sec	264 V	5.0 sec
Actual setting	209 V	---	262 V	
Trip value	211 V	0,1 s	260,5 V	0,1 s

**LOSS OF MAINS TEST**

Method used	<i>Frequency shift and active power variation</i>		
Output power %	10%	55%	100%
Trip setting	---	---	---
Trip value	<0,5 s	<0,5 s	<0,5 s

\*indicative values are shown for minimum, medium and maximum power levels.

**RECONNECTION TIMES**

Parameter	Under/Over voltage	Under/Over Frequency	Loss of mains
G77/1 max value	180 seconds	180 seconds	180 seconds
Actual setting	185 seconds	185 seconds	185 seconds
Recorded value	185 seconds	185 seconds	185 seconds



## **SSEG SHORT CIRCUIT TEST**

*According §C4.6 Photovoltaic SSEG's are deemed to automatically comply with clause 5.8 and no further tests are required.*

## **SELF MONITORING – SOLID STATE SWITCHING**

<b>Test</b>	<b>Voltage</b>
Confirm that the AC output voltage collapses to a value below 50 volts in the event that the solid state switch fails to operate.	-----
<i>Comments: not applicable as electro-mechanical relays are used</i>	

## **COMMENTS**

This certificate summarises the results of test to G83/1 which are recorded in full in report no. G77/1/IG15/020821. These tests have been carried out with specifications and parameters set to meet the requirements of G83/1. It is hereby declared by the manufacturer that all units shipped to the UK will have identical parameter settings and that these parameters cannot be changed by a user, installer or by any person other than the manufacturer.