

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

SSEG Type reference:		<i>Fronius IG 60; Fronius IG 60 HV</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>5000W (nom.4600W)</i>	

TEST HOUSE DETAILS

Name and address of test house	<i>Fronius R&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

Harmonic current emissions (A)								
Maximum permissible harmonic current as per BS EN 61000-3-2								
Harmonic	2 nd	3 rd	5 th	7 th	9 th	11 th	13 th	15 th – 39 th
Limit	1,08	2,3	1,14	0,77	0,4	0,33	0,21	0,15x(15/n)
Test value	<i>0,054</i>	<i>0,506</i>	<i>0,093</i>	<i>0,056</i>	<i>0,028</i>	<i>0,019</i>	<i>0,016</i>	<i>See TR LF 04002</i>

Voltage fluctuations and flicker see Fronius Test report LF 04004

	DJ injection*			Power factor		
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>19mA</i>	<i>3mA</i>	<i>17mA</i>	<i>0,983</i>	<i>0,976</i>	<i>0,967</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	207,4 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

Test	Voltage
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>	

A2.4 COMMENTS

This certificate summarises the results of test to G83/1 which are recorded in full in report no. TR7479/D. 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.