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Register court: Amtsgericht Kassel HRB 3972

Certificate G83/1-1

Engineering Recommendation

Manufacturer:	**SMA Solar Technology AG**
Address:	Sonnenallee 1
Postal code, place:	34266 Niestetal
Country:	Germany

Test house details:	Phoenix Testlab, Blomberg (D) (a)
	SMA Solar Technology AG, department R&D, Niestetal (D) (b)

Type reference:	Sunny Boy SB 3300 / SB 3800
	Windy Boy WB 3300 / WB 3800
Max. AC power:	3600 W / 3800 W
Nominal AC power:	3300 W / 3800 W

The results of the G83/1-1 tests are summarized in this certificate. SMA declares that all devices (with G83 setting) that are shipped to the UK comply with the requirements defined in engineering recommendation G83/1-1. These setting cannot be changed by an installer, user or by any other person without the use of a tool (password protected). The complete documentation can be viewed at SMA (headquarters) after prior announcement.

Test details

- Power quality
- Harmonic current emissions as per BS EN 61000-3-2 A
- Voltage fluctuations and flicker as per BS EN 61000-3-3 A
- DC injection / Power factor
- Under / Over frequency switch off
- Under / Over voltage switch off
- Loss of mains test

SMA Solar Technology AG
Niestetal, 11.02.2010

Frank Greizer

i. V. Frank Greizer
Vice President T MP

Test results

Power quality

Harmonic current emissions as per BS EN 61000-3-2 A, tested by (b)								
Harmonic	2nd	3rd	5th	7th	9th	11th	13th	15th ... 39th
Limit [A]	1.08	2.3	1.14	0.77	0.4	0.33	0.21	0.15 x (15/n)
Test value [A]	0.07	0.15	0.10	0.09	0.09	0.06	0.05	< limit BS EN 61000-3-2 A

Voltage Fluctuations and Flicker, tested by (a)				
Harmonic	starting	stopping	running	
Limit	4 %	4 %	P_{st} = 1.0	P_{it} = 0.65
Test value	0.22 %	0.27 %	0.129	0.077

	DC injection, tested by (b)			Power factor, tested by (b)		
G83/1-1 Limit	20 mA, tested at three levels			0.95 lag – 0.95 lead at three voltage levels at P_{rated}		
Test level	10 %	55 %	100 %	212 V	230 V	248 V
Test value	< 1 mA	< 1 mA	< 1 mA	0.99	0.99	0.99

Under / Over frequency switch off

	Under frequency switch off, tested by (b)		Over frequency switch off, tested by (b)	
Parameter	Frequency (Hz)	Time (s)	Frequency (Hz)	Time (s)
G83/1-1 Limit	47 Hz +/- 0.5 %	5 s	50.5 Hz +/- 0.5 %	5 s
Actual setting	47.0 Hz	–	50.5 Hz	–
Trip value	47.01 Hz	< 1 s	50.50 Hz	< 1 s

Under / Over voltage switch off

	Under voltage switch off, tested by (b)		Over voltage switch off, tested by (b)	
Parameter	Voltage (V)	Time (s)	Voltage (V)	Time (s)
G83/1-1 Limit	207 V	5 s	264 V	5 s
Actual setting	209 V	–	261 V	–
Trip value	210 V	< 1 s	262 V	< 1 s

Loss of mains test, tested by (b)

Method used	Resonant Circuit as per Annex C		
Output power level	10 % P_{rated}	55 % P_{rated}	100 % P_{rated}
G83/1-1 Limit	0.5 (5) s	0.5 (5) s	0.5 (5) s
Trip setting	–	–	–
Trip value	1.76 s	0.84 s	0.72 s

Reconnection time measurement, tested by (b)

	Under / Over voltage	Under / Over frequency	Loss of mains
Minimum value	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded value	200 s	210 s	200 s

Fault level contribution

As Photovoltaic SSEGs are inverter connected, they are deemed to automatically comply with regulations and no further tests are required.

Self monitoring – solid state switching

Not applicable as electro-mechanical relays used.