



Certificate G83/1-1

Engineering Recommendation

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

Test house details:	Masterpower Electronics Ltd, Aberdeen (UK) (a)
	SMA Solar Technology AG , R&D Department, Niestetal (D) (b)

Type reference:	Sunny Boy SB 2500 / SB 2800i / SB 3000
	Windy Boy WB 2500 / WB 2800i / WB 3000
Max. AC power:	2500 W / 2800 W / 3000 W
Nominal AC power:	2300 W / 2600 W / 2750 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

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	2 nd	3 rd	5 th	7 th	9 th	11 th	13 th	15 th ... 39 th
Limit [A]	1.08	2.3	1.14	0.77	0.4	0.33	0.21	0.15 x (15/n)
Test value [A]	0.03	0.07	0.08	0.03	0.09	0.06	0.07	< 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	< 0.9 %	< 2.0 %	0.082	0.01

	DC injection, tested by (a)			Power factor, tested by (a)		
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	2.286 mA	8.241 mA	5.895 mA	0.998	0.997	0.997

Under / Over frequency switch off

	Under frequency switch off, tested by (a)		Over frequency switch off, tested by (a)	
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	46.98 Hz	< 1 s	50.65 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	208 V	< 1 s	262 V	< 1 s

Loss of mains test, tested by (a)

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	0.13 s	0.1 s	0.1 s

Reconnection time measurement, tested by (a)

	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	210 s	200 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.