



Certificate G83/1-1

Engineering Recommendation

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

Test house details:	SMA Solar Technology AG
Date of test:	October / November 2010

Type reference:	Max. AC power:	Nominal AC power:
STP 17000TL-10	17000 VA	17000 VA
STP 15000TL-10	15000 VA	15000 VA
STP 12000TL-10	12000 VA	12000 VA
STP 10000TL-10	10000 VA	10000 VA
STP 8000TL-10	8000 VA	8000 VA

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 settings 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
- Voltage fluctuations and flicker as per BS EN 61000-3-3
- DC injection / Power factor
- Under / Over voltage switch off
- Under / Over frequency switch off
- Loss of mains test
- Reconnection time

SMA Solar Technology AG

Niestetal, 16.02.2011

i. V. Tobias Henne
Director T M PM

Test results

Power quality

Harmonic current emissions 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
BS EN 61000-3-2 Limit [A]			1.08	2.30	1.14	0.77	0.40	0.33	0.21	0.15 x (15/n)
Test values [A] (at rated power)	STP 17000TL-10	L1	0.03	0.03	0.21	0.12	0.01	0.14	0.07	< limit
		L2	0.04	0.03	0.21	0.11	0.01	0.14	0.06	
		L3	0.02	0.01	0.19	0.12	0.01	0.13	0.06	
	STP 15000TL-10	L1	0.02	0.03	0.25	0.11	0.01	0.16	0.07	< limit
		L2	0.02	0.04	0.23	0.09	0.01	0.16	0.06	
		L3	0.01	0.01	0.23	0.10	0.01	0.15	0.07	
	STP 12000TL-10	L1	0.02	0.06	0.05	0.05	0.07	0.01	0.02	< limit
		L2	0.03	0.07	0.05	0.05	0.05	0.02	0.02	
		L3	0.03	0.02	0.04	0.05	0.01	0.02	0.02	
	STP 10000TL-10	L1	0.02	0.02	0.04	0.05	0.04	0.02	0.02	< limit
		L2	0.02	0.03	0.04	0.04	0.04	0.02	0.02	
		L3	0.02	0.02	0.05	0.05	0.02	0.02	0.02	
	STP 8000TL-10	L1	0.02	0.02	0.06	0.11	0.01	0.01	0.05	< limit
		L2	0.02	0.02	0.05	0.12	0.01	0.01	0.05	
		L3	0.01	0.01	0.06	0.11	0.01	0.02	0.04	

Voltage Fluctuations and Flicker				
	starting	stopping	running (at rated power)	
BS EN 61000-3-3 Limit	4 %	4 %	P _{st} = 1.0	P _{fl} = 0.65
Test values	0.00 %	0.00 %	0.090	0.094

DC Injection			
G83/1-1 Limit	20 mA		
Test level (% of rated power)	10 %	55 %	100 %
Test values	10 mA	11 mA	11 mA

Power factor			
G83/1-1 Limit	0.95 lag – 0.95 lead		
Test level (AC voltage)	211 V	230 V	259 V
Test values (at rated power)	> 0.99	> 0.99	> 0.99

Test results

Grid monitoring and reconnection time

Under / Over voltage test				
	Under Voltage		Over Voltage	
Parameter	Voltage	Time	Voltage	Time
G83/1-1 Limit	207 V	5 s	264 V	5 s
Actual setting	207 V	5 s	264 V	5 s
Trip values	209 V	4.97 s	264 V	4.97 s

Under / Over frequency test				
	Under Frequency		Over Frequency	
Parameter	Frequency	Time	Frequency	Time
G83/1-1 Limit	47 Hz	5 s	50.5 Hz	5 s
Actual setting	47 Hz	5 s	50.5 Hz	5 s
Trip values	47 Hz	4.99 s	50.5 Hz	4.98 s

Loss of mains test (method used: frequencyshift)			
Test level (% of rated power)	10 %	55 %	100 %
G83/1-1 Limit	5 s	5 s	5 s
Actual setting	-	-	-
Trip values	< 2.5 s	< 2.5 s	< 2.5 s

Reconnection time			
	Under/Over Voltage	Under/Over Frequency	Loss of mains
G83/1-1 Limit	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded values	183 s	185 s	187 s

Fault level contribution

As SSEGs (small-scale embedded generators) for PV 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.