



## Certificate G83/1-1

### Engineering Recommendation

Manufacturer	<b>SMA Solar Technology AG</b>
Address	Sonnenallee 1
Postal code, place	34266 Niestetal
Country	Germany

Test house details	<b>SMA Solar Technology AG</b>
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Type reference	Max. AC power	Nominal AC power
STP 5000TL-20/WTP 5000TL-20	5,000 VA	5,000 W
STP 6000TL-20/WTP 6000TL-20	6,000 VA	6,000 W
STP 7000TL-20/WTP 7000TL-20	7,000 VA	7,000 W
STP 8000TL-20/WTP 8000TL-20	8,000 VA	8,000 W
STP 9000TL-20/WTP 9000TL-20	9,000 VA	9,000 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 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.

**SMA Solar Technology AG**  
Niestetal, 2012-09-13

ppa. Frank Greizer  
(Vice President MP T PD)

# Test Results

## Power Quality

Harmonic current emissions 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>	
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 value [A] (at rated power)	STP 5000TL-20	0.07	0.08	0.08	0.06	0.01	0.05	0.06	< limit BS EN 61000-3-2 A
	WTP 5000TL-20								
	STP 6000TL-20	0.05	0.03	0.08	0.07	0.02	0.04	0.05	
	WTP 6000TL-20								
	STP 7000TL-20	0.06	0.04	0.05	0.06	0.02	0.04	0.06	
	WTP 7000TL-20								
	STP 8000TL-20	0.07	0.03	0.07	0.06	0.02	0.04	0.05	
	WTP 8000TL-20								
	STP 9000TL-20	0.08	0.05	0.06	0.06	0.02	0.04	0.07	
	WTP 9000TL-20								

Voltage fluctuations and flicker				
	Starting	Stopping	Running (at rated power)	
BS EN 61000-3-3 Limit	4%	4%	$P_{st} = 1.0$	$P_{lt} = 0.65$
Test value	0.39%	0.37%	0.07	0.07

	DC injection		
G83/1-1 Limit	20 mA		
Test level (% of rated power)	10%	55%	100%
Test value	< 5.6 mA	< 11.1 mA	< 8.2 mA

	Power factor		
G83/1-1 Limit	0.95 lag - 0.95 lead at three voltage levels at $P_{rated}$		
Test level (AC voltage)	211 V	230 V	259 V
Test value (at rated power)	> 0.98	> 0.98	> 0.98

# Test Results

## Grid Monitoring and Reconnection Time

Undervoltage/Overvoltage				
	Undervoltage switch off		Overvoltage switch off	
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 value	209 V	4.96 s	261 V	4.96 s

Under/Over Frequency				
	Under frequency switch off		Over frequency switch off	
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 value	47.06 Hz	4.97 s	50.46 Hz	4.97 s

Loss of mains tests (method used: frequency shift)				
Test level (% of rated power)	10%	55%	100%	
G83/1-1 Limit	5 s	5 s	5 s	
Actual setting	5 s	5 s	5 s	
Trip value	2.2 s	2.2 s	2.2 s	

Reconnection times			
Test level (% of rated power)	Undervoltage/overvoltage	Under/over frequency	Loss of mains
Minimum value	180 s	180 s	180 s
Actual setting	180 s	180 s	180 s
Recorded value	> 185 s	> 185 s	> 185 s

### Fault Level Contribution

As SSEGs (small-scale embedded generators) for PV or wind turbine systems 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.