SMA Solar Technology AG | Sonnenallee 1 | 34266 Niestetal | Germany
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Amtsgericht Kassel (District Court) HRB (registration number) 3972
Vorsitzender des Aufsichtsrats (Chairman of the Supervisory Board): Günther Cramer
Managing Board: Roland Grebe, Dr.-Ing. Jürgen Reinert, Lydia Sommer, Pierre-Pascal Urbon

Certificate EN 50438/2007 with Irish deviations

European Standard

Manufacturer	**SMA Solar Technology AG**
Address	Sonnenallee 1, 34266 Niestetal (Germany)

Type Tested reference number	ZE_EN50438_2007_IE_STP xx000TL-10_en_10
Generating Unit technology	Three phase inverter
Test house details	**SMA Solar Technology AG**
Test period	From 2014-09-23 until 2014-09-27

Type reference	Max. apparent AC power (VA)	Rated AC power (W)	From FW Pack
STP 17000TL-10	17000	17000	2.60.01.R
STP 15000TL-10	15000	15000	2.60.01.R
STP 12000TL-10	12000	12000	2.60.01.R
STP 10000TL-10	10000	10000	2.60.01.R

The results of the EN 50438/2007 are summarized in this certificate. SMA declares that all units shipped to Ireland, with at least the aforementioned FW version, are within the specifications and parameters set by the EN 50438/2007 European Standard with the Irish deviations. Note that all tests were carried out in the biggest inverter of the family under test. The results for the other inverters of the family are equivalent.

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Test Results

Power quality

Harmonics as per BS EN 61000-3-12								
Order	Frequency [Hz]	Thresholds I/In [%]	P/Pn [%]					
			50		100		Max. MV / Limit [%]	
			MV		MV			
2	100	8,00%	0,022 A	0,09%	0,03 A	0,12%	1,50%	✓
3	150	-	0,037 A	0,15%	0,042 A	0,17%	-	-
4	200	4,00%	0,032 A	0,13%	0,015 A	0,06%	3,25%	✓
5	250	10,70%	0,172 A	0,70%	0,135 A	0,55%	6,54%	✓
6	300	2,67%	0,012 A	0,05%	0,01 A	0,04%	1,87%	✓
7	350	7,20%	0,049 A	0,20%	0,066 A	0,27%	3,75%	✓
8	400	2,00%	0,01 A	0,04%	0,01 A	0,04%	2,00%	✓
9	450	-	0,012 A	0,05%	0,012 A	0,05%	-	-
10	500	1,60%	0,007 A	0,03%	0,01 A	0,04%	2,50%	✓
11	550	3,10%	0,069 A	0,28%	0,064 A	0,26%	9,03%	✓
12	600	1,33%	0,007 A	0,03%	0,007 A	0,03%	2,26%	✓
13	650	2,00%	0,047 A	0,19%	0,084 A	0,34%	17,00%	✓
14	700	-	0,007 A	0,03%	0,007 A	0,03%	-	-
15	750	-	0,007 A	0,03%	0,01 A	0,04%	-	-
16	800	-	0,007 A	0,03%	0,007 A	0,03%	-	-
17	850	-	0,025 A	0,10%	0,017 A	0,07%	-	-
18	900	-	0,005 A	0,02%	0,007 A	0,03%	-	-
19	950	-	0,034 A	0,14%	0,062 A	0,25%	-	-
20	1000	-	0,005 A	0,02%	0,005 A	0,02%	-	-
21	1050	-	0,005 A	0,02%	0,007 A	0,03%	-	-
22	1100	-	0,005 A	0,02%	0,005 A	0,02%	-	-
23	1150	-	0,012 A	0,05%	0,022 A	0,09%	-	-
24	1200	-	0,005 A	0,02%	0,005 A	0,02%	-	-
25	1250	-	0,022 A	0,09%	0,034 A	0,14%	-	-
26	1300	-	0,005 A	0,02%	0,005 A	0,02%	-	-
27	1350	-	0,005 A	0,02%	0,005 A	0,02%	-	-
28	1400	-	0,005 A	0,02%	0,005 A	0,02%	-	-
29	1450	-	0,012 A	0,05%	0,025 A	0,10%	-	-
30	1500	-	0,002 A	0,01%	0,005 A	0,02%	-	-
31	1550	-	0,012 A	0,05%	0,017 A	0,07%	-	-
32	1600	-	0,002 A	0,01%	0,005 A	0,02%	-	-
33	1650	-	0,002 A	0,01%	0,005 A	0,02%	-	-
34	1700	-	0,002 A	0,01%	0,005 A	0,02%	-	-
35	1750	-	0,012 A	0,05%	0,022 A	0,09%	-	-
36	1800	-	0,002 A	0,01%	0,002 A	0,01%	-	-
37	1850	-	0,007 A	0,03%	0,015 A	0,06%	-	-
38	1900	-	0,002 A	0,01%	0,005 A	0,02%	-	-
39	1950	-	0,005 A	0,02%	0,007 A	0,03%	-	-
40	2000	-	0,002 A	0,01%	0,005 A	0,02%	-	-

MV=Measured Value

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Test Results

Power quality

Voltage fluctuations and flicker as per EN 61000-3-3				
	Starting	Stopping	Running	
	dmax	dmax	Pst	Plt (2hours)
Limit	4,0%	4,0%	1	0,65
MV	3,2%	3,7%	0,11	0,11
Verification	✓	✓	✓	✓

Power factor			
	Voltage [V]		
	218,2	230	253
Limit	0,95	0,95	0,95
MV	1,00	1,00	1,00
Verification	✓	✓	✓

MV - Measured value

Protection - Grid monitoring and reconnection time

Trip Tests	EN 50438:2007_IE		Setting		Measures Values		Verification
Function	Magnitude	Time	Magnitude	Time	Magnitude	Time	
Undervoltage	207 V	500 ms	207 V	500 ms	207,81 V	492 ms	✓
Overvoltage	253 V	500 ms	253 V	500 ms	251,86 V	476 ms	✓
Underfrequency	48 Hz	500 ms	48 Hz	500 ms	48,06 Hz	441 ms	✓
Overfrequency	50,5 Hz	500 ms	50,5 Hz	500 ms	50,46 Hz	454 ms	✓

Loss of mains test according to the EN 62116				
Test power / imbalance	Time (ms)[1]	L1 (ms)[2]	L1-L2-L3 (ms)[3]	Verification
29% / –5%Q (Test 22)	500	N/A	68	✓
58% / –5%Q (Test 12)	500	N/A	66	✓
100% / –5%P (Test 5)	500	N/A	58	✓
29% / +5%Q (Test 31)	500	N/A	83	✓
58% / +5%Q (Test 21)	500	N/A	103	✓
100% / +5%P (Test 10)	500	N/A	78	✓

[1] indicates the stop of feed in
[2] applicable to single phase inverters
[3] applicable to three phase inverters

Fault level contribution		
Time after fault	Voltage (V)	Current (A)
< 50 ms	231,06	25,4
100 ms	11,51	0,04
250 ms	11,49	0,04
500 ms	11,5	0,04

Reconnection time			
Limit	Setting	MV	Verification
20 s	20 s	24 s	✓

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