



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_SB 240-10_10
Generating Unit technology	Single phase inverter
Test house details	SMA Solar Technology AG
Test period	From 2014-04-15 until 2014-08-29

Type reference	Max. apparent AC power (VA)	Rated AC power (W)	From FW Pack
SB 240-10 + Multigate -10	230	230	01.03/01.01

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.



Test Results

Power quality

Harmonics as per EN 61000-3-2						
Order	Frequency [Hz]	Thresholds [A]	P/Pn [%]		Max. NV / Limit [%]	
			50	100		
			MV [A]	MV [A]		
2	100	1,08	0,001042305	0,002291082	0,21%	✓
3	150	2,3	0,004550854	0,012694151	0,55%	✓
4	200	0,43	0,000478901	0,000714377	0,17%	✓
5	250	1,14	0,01715589	0,027113946	2,38%	✓
6	300	0,3	0,000382161	0,000793703	0,26%	✓
7	350	0,77	0,00146218	0,008205374	1,07%	✓
8	400	0,23	0,000333143	0,000586744	0,26%	✓
9	450	0,4	0,009441231	0,017703516	4,43%	✓
10	500	0,184	0,000246853	0,000351629	0,19%	✓
11	550	0,33	0,001991007	0,009280907	2,81%	✓
12	600	0,153	0,000264578	0,000491535	0,32%	✓
13	650	0,21	0,004806594	0,011376695	5,42%	✓
14	700	0,131	0,00031201	0,000489117	0,37%	✓
15	750	0,15	0,002603304	0,007764926	5,18%	✓
16	800	0,115	0,00020838	0,000402813	0,35%	✓
17	850	0,132	0,002253939	0,005721564	4,32%	✓
18	900	0,102	0,000209692	0,000382818	0,37%	✓
19	950	0,118	0,002682746	0,005529863	4,67%	✓
20	1000	0,092	0,000283889	0,000508592	0,55%	✓
21	1050	0,107	0,002600649	0,004826687	4,50%	✓
22	1100	0,084	0,000204596	0,00048361	0,58%	✓
23	1150	0,098	0,001194092	0,002153899	2,20%	✓
24	1200	0,077	0,000178767	0,000392962	0,51%	✓
25	1250	0,09	0,001250579	0,001258354	1,40%	✓
26	1300	0,071	0,000219678	0,000421871	0,60%	✓
27	1350	0,083	0,001277274	0,000887152	1,53%	✓
28	1400	0,066	0,000211381	0,0003902	0,59%	✓
29	1450	0,078	0,001556899	0,000441377	2,01%	✓
30	1500	0,061	0,000225169	0,000310633	0,51%	✓
31	1550	0,073	0,001130405	0,000828904	1,56%	✓
32	1600	0,058	0,000245005	0,000352091	0,61%	✓
33	1650	0,068	0,001156504	0,001362597	2,00%	✓
34	1700	0,054	0,000299972	0,000386698	0,71%	✓
35	1750	0,064	0,001653625	0,002165715	3,37%	✓
36	1800	0,051	0,0002426	0,000307489	0,60%	✓
37	1850	0,061	0,001090802	0,001257203	2,07%	✓
38	1900	0,048	0,00028952	0,000311464	0,64%	✓
39	1950	0,058	0,000673994	0,00144525	2,51%	✓
40	2000	0,046	0,000332911	0,000326532	0,72%	✓

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	0,0%	0,0%	0,13	0,13
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
	Magnitude	Time	Magnitude	Time	Magnitude	Time	
Undervoltage	207 V	500 ms	207 V	500 ms	207,14 V	486,02 ms	✓
Overvoltage	253 V	500 ms	253 V	500 ms	254,31 V	486 ms	✓
Underfrequency	48 Hz	500 ms	48 Hz	500 ms	48 Hz	465,72 ms	✓
Overfrequency	50,5 Hz	500 ms	50,5 Hz	500 ms	50,5 Hz	457,22 ms	✓

Loss of mains test according to the EN 62116							
Test power / imbalance	Time (ms)	L1 (ms) ¹	L2 (ms) ¹	L3 (ms) ¹	L1-L2-L3(ms) ¹²	Verification	
29% / -5%Q (Test 22)	500	101	N/A	N/A	N/A	✓	
58% / -5%Q (Test 12)	500	84	N/A	N/A	N/A	✓	
100% / -5%P (Test 5)	500	49	N/A	N/A	N/A	✓	
29% / +5%Q (Test 31)	500	114	N/A	N/A	N/A	✓	
58% / +5%Q (Test 21)	500	72	N/A	N/A	N/A	✓	
100% / +5%P (Test 10)	500	98	N/A	N/A	N/A	✓	

¹ indicates the stop of feed in

² only applicable for three phase inverters

Fault level contribution		
Time after fault	Voltage (V)	Current (A)
< 50 ms	231,1	1,002
100 ms	13,44	0,0015
250 ms	10,3	0,0014
500 ms	12,55	0,0026

Reconnection time			
Limit	Setting	MV	Verification
20 s	20 s	20,18 s	✓