



Certificate of compliance

Applicant: AISWEI Technology(Shanghai) Co., Ltd.
Room 905B, 757 Mengzi Road, Huangpu District, 200023 Shanghai,
P.R.China

Product: Photovoltaic (PV) inverter

Model: ASW25K-LT-G3
ASW27K-LT-G3
ASW30K-LT-G3
ASW33K-LT-G3
ASW36K-LT-G3
ASW40K-LT-G3

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with Engineering Recommendation G99/1 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter. This serves as a replacement for the disconnection device with isolating function, which can be accessed the distribution network provider at any time.

Applied rules and standards:

Engineering Recommendation G99/1-9:2022

Requirements for the connection of generation equipment in parallel with public distribution networks

DIN VDE V 0124-100:2020 (5.5.2.1 Functional safety of network and system protection)

Grid integration of generator plants - Low-voltage - Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution networks

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

Report number: PVGB2204WDG0409-1

Certification program: NSOP-0032-DEU-ZE-V01

Certificate number: U22-0725

Date of issue: 2022-12-14

Certification body

Alf Assenkamp

Certification body Bureau Veritas Consumer Products Services Germany GmbH accredited according to DIN EN ISO/IEC 17065

Testing laboratory accredited according to DIN EN ISO/IEC 17025

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Type Approval and declaration of compliance with the requirements of Engineering Recommendation G99.

PGM Technology:	Photovoltaic (PV) inverter		
Manufacturer / applicant:	AISWEI Technology(Shanghai) Co., Ltd.		
Address:	Room 905B, 757 Mengzi Road, Huangpu District, 200023 Shanghai, P.R.China		
Tel	-	Fax:	-
Email:	-	Website:	-

Rated values	ASW25K-LT-G3	ASW27K-LT-G3	ASW30K-LT-G3	ASW33K-LT-G3
Max. input DC voltage [V]	1100			
Input DC voltage range [V]	180-1000			
Input DC current [A]	32,0 / 32,0 / 32,0	32,0 / 32,0 / 32,0	32,0 / 32,0 / 32,0	32,0 / 32,0 / 40,0
Output AC voltage [V]	3L/N/PE, 230/400V, 50Hz			
Max.Output AC current [A]	39,9	43,0	47,8	52,6
Nominal Output power [kW]	25,0	27,0	30,0	33,0
Maximum Output power [kVA]	25,0	27,0	30,0	33,0

Rated values	ASW36K-LT-G3	ASW40K-LT-G3	-	-
Max. input DC voltage [V]	1100		-	-
Input DC voltage range [V]	180-1000		-	-
Input DC current [A]	32,0 / 32,0 / 40,0	32,0 / 32,0 / 40,0	-	-
Output AC voltage [V]	3L/N/PE, 230/400V, 50Hz		-	-
Max.Output AC current [A]	57,4	63,8	-	-
Nominal Output power [kW]	36,0	40,0	-	-
Maximum Output power [kVA]	36,0	40,0	-	-

Firmware version	Main DSP Software version: V610-03041-08 Slave DSP Software version: V610-60009-00 Safety package (Flash) version: V610-11007-04
-------------------------	--

Description of the structure of the power generation unit:

The power generation unit is equipped with a PV and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Differences between Generating Units:

The models ASW25K-LT-G3, ASW27K-LT-G3 and ASW30K-LT-G3, ASW33K-LT-G3, ASW36K-LT-G3 and ASW40K-LT-G3 are almost identical in hardware and software, expected the components in below table. The output power derated by software.

	ASW25K-LT-G3, ASW27K-LT-G3, ASW30K-LT-G3		ASW33K-LT-G3, ASW36K-LT-G3, ASW40K-LT-G3	
Item	Type	Quantity	Type	Quantity
AC current sensor	NACGL.50T-P6/VN	3	NACGL.75T-P6/VN	3
Relay	CHS01-V-112HA2(60G)	6	HF-176F/12-H3F	6
BUS CAP	Jianghai/ECS2YBB321MN4P23555 E (2PIN)	10	Jianghai/ECS2YBB321MN4P23555 E (2PIN)	14
INV inductor	P- CHOKE Taurus 220uH 1.2mm*6mm FeSi NPH60 CLASS F 30K INV U Yunlu/02-05-096-00	1	P- CHOKE Taurus 200uH 1.5mm*8mm FeSi NPH60 CLASS F 40K INV U Yunlu/02-05-087-00	1
	P- CHOKE Taurus 220uH 1.2mm*6mm FeSi NPH60 CLASS F 30K INV V Yunlu/02-05-104-00	1	P- CHOKE Taurus 200uH 1.5mm*8mm FeSi NPH60 CLASS F 40K INV V Yunlu/02-05-091-00	1
	P- CHOKE Taurus 220uH 1.2mm*6mm FeSi NPH60 CLASS F 30K INV W Yunlu/02-05-105-00	1	P- CHOKE Taurus 200uH 1.5mm*8mm FeSi NPH60 CLASS F 40K INV W Yunlu/02-05-092-00	1

The above stated Generating Units are tested according the requirements in the Engineering Recommendation G99/1. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the Engineering Recommendation G99/1.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Operating Range.	
Test 1	Voltage = 85% of nominal (195,5V) Frequency = 47Hz Power Factor = 1 Period of test 20 s
Connection:	Always connected
Limit:	Always connected
Test 2	Voltage = 85% of nominal (195,5V) Frequency = 47,5Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 3	Voltage = 110% of nominal (253V) Frequency = 51,5Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 4	Voltage = 110% of nominal (253V) Frequency = 52,0Hz Power Factor = 1 Period of test 15 minutes
Connection:	Always connected
Limit:	Always connected
Test 5	Voltage = 100% of nominal (230 V) Frequency = 50,0 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 6	Confirm that the Power Generating Module is capable of staying connected to the Distribution Network and operate at rates of change of frequency up to 1 Hzs-1 as measured over a period of 500ms. Note that this is not expected to be demonstrated on site.
Connection:	Always connected
Limit:	Always connected

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Protection. Voltage tests.

Phase 1

Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	184,0	2,500	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	262,5	1,020	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	273,7	0,510	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Protection. Voltage tests.

Phase 2

Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	184,1	2,520	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	262,5	1,050	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	273,3	0,520	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Protection. Voltage tests.						
Phase 3						
Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	183,9	2,528	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	262,3	1,020	258,2V / 5,0s	No trip
O/V stage 2	273,7	0,5	273,3	0,518	269,7V / 0,95s	No trip
					277,7V / 0,45s	No trip

Note. For Voltage tests the Voltage required to trip is the setting $\pm 3,45V$. The time delay can be measured at a larger deviation than the minimum required to operate the protection. The No trip tests need to be carried out at the setting $\pm 4V$ and for the relevant times as shown in the table above to ensure that the protection will not trip in error.

Protection. Frequency tests.						
Function	Setting		Trip test		No trip test	
	Frequency [Hz]	Time delay [s]	Frequency [Hz]	Time delay [s]	Frequency / time	Confirm no trip
U/F stage 1	47,5	20	47,50	20,07	47,7Hz / 30s	No trip
U/F stage 2	47	0,5	46,97	0,565	47,2Hz / 19,5s	No trip
					46,8Hz / 0,45s	No trip
O/F stage 2	52	0,5	51,99	0,521	51,8Hz / 120s	No trip
					52,2Hz / 0,45s	No trip

Note. For Frequency Trip tests the Frequency required to trip is the setting $\pm 0,1Hz$. In order to measure the time delay a larger deviation than the minimum required to operate the projection can be used. The "No-trip tests" need to be carried out at the setting $\pm 0,2Hz$ and for the relevant times as shown in the table above to ensure that the protection will not trip in error.

The tests had been performed on the ASW40K-LT-G3 are valid for the ASW25K-LT-G3, ASW27K-LT-G3, ASW30K-LT-G3, ASW33K-LT-G3 and ASW36K-LT-G3 since it is almost same as in hardware and just power derated by software.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Protection. Loss of Mains.

Inverters tested according to BS EN 62116.

Balancing load on islanded network	33% of -5% Q Test 22	66% of -5% Q Test 12	100% of -5% P Test 5	33% of +5% Q Test 31	66% of +5% Q Test 21	100% of +5% P Test 10
Trip time. fuse removed [s]	225	225	493	225	200	469

Note. Trip time limit is 0,5s.

Protection. Re-connection timer.

Test should prove that the reconnection sequence starts in no less than 20 seconds for restoration of voltage and frequency to within the stage 1 settings of table 10.1.

Over Voltage				
Time delay setting		Measured delay		
20s		40,2s		
Under Voltage				
Time delay setting		Measured delay		
20s		40,9s		
Over Frequency				
Time delay setting		Measured delay		
20s		43,9s		
Under Frequency				
Time delay setting		Measured delay		
20s		44,2s		
	Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 1.			
	At 266,2V	At 180,0V	At 47,4Hz	At 52,1Hz
Confirmation that the Generating Unit does not re-connect.	No reconnection	No reconnection	No reconnection	No reconnection

Protection. Frequency change, Stability test.

	Start Frequency [Hz]	Change	Test Duration	Confirm no trip
Positive Vector Shift	49,5	+50 degrees		No trip
Negative Vector Shift	50,5	-50 degrees		No trip
Positive Frequency drift	49,0 to 51,0	+0,95Hz/sec	2,1s	No trip
Negative Frequency drift	51,0 to 49,0	-0,95Hz/sec	2,1s	No trip

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Limited Frequency Sensitive Mode – Over Frequency

1-min mean value [Hz]:	a) 50,00	b) 50,45	c) 50,70	d) 51,15	e) 50,70	f) 50,45	g) 50,00
1. Measurement a) to g): Active power output > 80% P_n							
Frequency [Hz]:	50,00	50,45	50,7	51,15	50,7	50,45	50,00
P_{expected} [kW]:	N/A	39,60	37,60	34,00	37,60	39,60	N/A
P_{measured} [kW]:	40,00	39,75	38,13	35,25	38,22	39,79	39,93
2. Measurement a) to g): Active power output 40% and 60% P_n							
Frequency [Hz]:	50,00	50,45	50,7	51,15	50,7	50,45	50,00
P_{expected} [kW]:	N/A	19,60	17,60	14,00	17,60	19,60	N/A
P_{measured} [kW]:	19,57	19,32	18,55	17,12	18,54	19,27	39,67

Output Power with falling Frequency

Frequency setpoint [Hz]:	50,00	49,50	49,00	48,00	47,60	47,10
Frequency [Hz]:	50,00	49,50	49,00	48,00	47,60	47,10
Active power [kW]:	39,809	39,808	39,783	39,821	39,811	39,832
ΔP/P_{max} [%]:		-0,480	-0,543	-0,448	-0,473	-0,420

Note.

For a CHP the test point a) at 50,00Hz is taken as Registered capacity (P_{max}) due to limited discrete operating points of the CHP's thermal process.

Electronic inverter no power reduction take place.

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1

Generating Unit rating per phase (rpp)			ASW25K-LT-G3			
	At 45-55% of rated output 13,463 kW		100% of rated output 25,73 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	17,866	--	35,861	--	--	--
2nd	0,125	0,345	0,136	0,377	8	8
3rd	0,083	0,228	0,081	0,225	21,6	N/A
4th	0,007	0,020	0,011	0,030	4	4
5th	0,224	0,619	0,181	0,500	10,7	10,7
6th	0,010	0,029	0,007	0,020	2,67	2,67
7th	0,146	0,403	0,122	0,336	7,2	7,2
8th	0,024	0,066	0,015	0,040	2	2
9th	0,016	0,045	0,011	0,029	3,8	N/A
10th	0,020	0,055	0,009	0,025	1,6	1,6
11th	0,086	0,237	0,094	0,260	3,1	3,1
12th	0,006	0,016	0,004	0,011	1,33	1,33
13th	0,274	0,757	0,322	0,888	2	2
14th	0,011	0,029	0,013	0,036	N/A	N/A
15th	0,023	0,064	0,016	0,045	N/A	N/A
16th	0,008	0,023	0,007	0,021	N/A	N/A
17th	0,142	0,393	0,193	0,534	N/A	N/A
18th	0,005	0,013	0,003	0,007	N/A	N/A
19th	0,086	0,238	0,173	0,478	N/A	N/A
20th	0,019	0,051	0,012	0,034	N/A	N/A
21th	0,006	0,017	0,016	0,045	N/A	N/A
22th	0,017	0,046	0,007	0,021	N/A	N/A
23th	0,053	0,145	0,110	0,303	N/A	N/A
24th	0,004	0,010	0,002	0,006	N/A	N/A
25th	0,082	0,226	0,100	0,276	N/A	N/A
26th	0,010	0,029	0,011	0,030	N/A	N/A
27th	0,018	0,049	0,014	0,038	N/A	N/A
28th	0,009	0,024	0,008	0,022	N/A	N/A
29th	0,050	0,137	0,066	0,183	N/A	N/A
30th	0,005	0,013	0,002	0,007	N/A	N/A
31th	0,032	0,088	0,054	0,149	N/A	N/A
32th	0,017	0,048	0,009	0,025	N/A	N/A
33th	0,006	0,018	0,008	0,021	N/A	N/A
34th	0,017	0,046	0,009	0,024	N/A	N/A
35th	0,022	0,061	0,041	0,114	N/A	N/A
36th	0,003	0,008	0,002	0,007	N/A	N/A
37th	0,045	0,125	0,032	0,088	N/A	N/A
38th	0,013	0,036	0,008	0,023	N/A	N/A
39th	0,007	0,019	0,003	0,009	N/A	N/A
40th	0,011	0,029	0,009	0,025	N/A	N/A
THD ₄₀ [%]	--	1,306	--	1,479	23	13
PWHD [%]	--	7,505	--	15,920	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2						
Generating Unit rating per phase (rpp)			ASW25K-LT-G3			
	At 45-55% of rated output 13,463 kW		100% of rated output 25,73 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	17,965	--	35,869	--	--	--
2nd	0,088	0,242	0,095	0,261	8	8
3rd	0,039	0,108	0,081	0,224	21,6	N/A
4th	0,018	0,051	0,007	0,020	4	4
5th	0,199	0,550	0,152	0,420	10,7	10,7
6th	0,005	0,015	0,008	0,021	2,67	2,67
7th	0,132	0,364	0,113	0,312	7,2	7,2
8th	0,019	0,053	0,009	0,024	2	2
9th	0,048	0,132	0,011	0,030	3,8	N/A
10th	0,012	0,033	0,009	0,026	1,6	1,6
11th	0,086	0,236	0,095	0,263	3,1	3,1
12th	0,005	0,014	0,007	0,019	1,33	1,33
13th	0,268	0,740	0,314	0,867	2	2
14th	0,007	0,020	0,006	0,017	N/A	N/A
15th	0,032	0,089	0,014	0,039	N/A	N/A
16th	0,015	0,042	0,008	0,023	N/A	N/A
17th	0,136	0,375	0,188	0,519	N/A	N/A
18th	0,003	0,008	0,005	0,013	N/A	N/A
19th	0,072	0,198	0,161	0,445	N/A	N/A
20th	0,016	0,044	0,008	0,021	N/A	N/A
21th	0,017	0,047	0,017	0,047	N/A	N/A
22th	0,015	0,043	0,011	0,030	N/A	N/A
23th	0,059	0,162	0,101	0,278	N/A	N/A
24th	0,003	0,008	0,004	0,010	N/A	N/A
25th	0,078	0,215	0,087	0,241	N/A	N/A
26th	0,010	0,028	0,009	0,024	N/A	N/A
27th	0,025	0,069	0,015	0,040	N/A	N/A
28th	0,013	0,036	0,011	0,031	N/A	N/A
29th	0,044	0,120	0,055	0,151	N/A	N/A
30th	0,005	0,013	0,004	0,011	N/A	N/A
31th	0,016	0,044	0,048	0,133	N/A	N/A
32th	0,016	0,044	0,009	0,026	N/A	N/A
33th	0,014	0,038	0,010	0,027	N/A	N/A
34th	0,019	0,052	0,011	0,029	N/A	N/A
35th	0,035	0,096	0,034	0,093	N/A	N/A
36th	0,003	0,007	0,003	0,009	N/A	N/A
37th	0,034	0,093	0,032	0,088	N/A	N/A
38th	0,012	0,033	0,009	0,025	N/A	N/A
39th	0,013	0,037	0,006	0,016	N/A	N/A
40th	0,013	0,035	0,010	0,029	N/A	N/A
THD ₄₀ [%]	--	1,205	--	1,375	23	13
PWHD [%]	--	6,823	--	13,734	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3						
Generating Unit rating per phase (rpp)			ASW25K-LT-G3			
	At 45-55% of rated output 13,463 kW		100% of rated output 25,73 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	17,715	--	35,661	--		
2nd	0,040	0,111	0,046	0,126	8	8
3rd	0,059	0,162	0,015	0,042	21,6	N/A
4th	0,016	0,045	0,009	0,026	4	4
5th	0,225	0,622	0,178	0,493	10,7	10,7
6th	0,011	0,030	0,006	0,018	2,67	2,67
7th	0,145	0,399	0,122	0,335	7,2	7,2
8th	0,018	0,050	0,014	0,039	2	2
9th	0,037	0,101	0,006	0,018	3,8	N/A
10th	0,013	0,037	0,012	0,033	1,6	1,6
11th	0,081	0,223	0,093	0,256	3,1	3,1
12th	0,010	0,028	0,008	0,021	1,33	1,33
13th	0,232	0,641	0,302	0,834	2	2
14th	0,013	0,035	0,010	0,026	N/A	N/A
15th	0,014	0,038	0,003	0,007	N/A	N/A
16th	0,016	0,044	0,010	0,029	N/A	N/A
17th	0,163	0,449	0,201	0,555	N/A	N/A
18th	0,006	0,016	0,005	0,013	N/A	N/A
19th	0,086	0,237	0,159	0,440	N/A	N/A
20th	0,016	0,045	0,009	0,026	N/A	N/A
21th	0,020	0,055	0,004	0,010	N/A	N/A
22th	0,014	0,038	0,010	0,029	N/A	N/A
23th	0,044	0,122	0,115	0,317	N/A	N/A
24th	0,004	0,010	0,004	0,011	N/A	N/A
25th	0,055	0,153	0,089	0,246	N/A	N/A
26th	0,011	0,032	0,008	0,023	N/A	N/A
27th	0,012	0,032	0,003	0,009	N/A	N/A
28th	0,015	0,043	0,010	0,027	N/A	N/A
29th	0,059	0,163	0,062	0,172	N/A	N/A
30th	0,006	0,016	0,004	0,011	N/A	N/A
31th	0,028	0,076	0,052	0,142	N/A	N/A
32th	0,017	0,046	0,008	0,022	N/A	N/A
33th	0,010	0,027	0,004	0,012	N/A	N/A
34th	0,015	0,041	0,009	0,024	N/A	N/A
35th	0,023	0,063	0,030	0,084	N/A	N/A
36th	0,002	0,006	0,003	0,009	N/A	N/A
37th	0,033	0,091	0,033	0,092	N/A	N/A
38th	0,012	0,034	0,008	0,022	N/A	N/A
39th	0,013	0,035	0,005	0,013	N/A	N/A
40th	0,014	0,040	0,008	0,022	N/A	N/A
THD ₄₀ [%]	--	1,195	--	1,369	23	13
PWHD [%]	--	7,450	--	14,980	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1

Generating Unit rating per phase (rpp)			ASW27K-LT-G3			
	At 45-55% of rated output 14,425 kW		100% of rated output 27,128 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	19,324	--	38,930	--	--	--
2nd	0,090	0,230	0,098	0,251	8	8
3rd	0,075	0,192	0,094	0,240	21,6	N/A
4th	0,010	0,026	0,009	0,023	4	4
5th	0,219	0,559	0,175	0,447	10,7	10,7
6th	0,005	0,013	0,010	0,026	2,67	2,67
7th	0,149	0,380	0,119	0,303	7,2	7,2
8th	0,021	0,053	0,015	0,038	2	2
9th	0,016	0,041	0,011	0,028	3,8	N/A
10th	0,018	0,047	0,013	0,032	1,6	1,6
11th	0,083	0,213	0,091	0,233	3,1	3,1
12th	0,003	0,009	0,005	0,012	1,33	1,33
13th	0,191	0,487	0,326	0,833	2	2
14th	0,011	0,029	0,013	0,032	N/A	N/A
15th	0,019	0,050	0,016	0,042	N/A	N/A
16th	0,011	0,027	0,009	0,024	N/A	N/A
17th	0,148	0,377	0,203	0,519	N/A	N/A
18th	0,003	0,009	0,004	0,011	N/A	N/A
19th	0,148	0,379	0,187	0,478	N/A	N/A
20th	0,015	0,040	0,012	0,030	N/A	N/A
21th	0,018	0,047	0,016	0,041	N/A	N/A
22th	0,014	0,036	0,010	0,024	N/A	N/A
23th	0,065	0,166	0,124	0,318	N/A	N/A
24th	0,003	0,007	0,003	0,009	N/A	N/A
25th	0,032	0,083	0,116	0,297	N/A	N/A
26th	0,013	0,033	0,011	0,027	N/A	N/A
27th	0,007	0,018	0,015	0,038	N/A	N/A
28th	0,015	0,037	0,010	0,025	N/A	N/A
29th	0,042	0,107	0,077	0,196	N/A	N/A
30th	0,002	0,006	0,003	0,008	N/A	N/A
31th	0,058	0,148	0,069	0,177	N/A	N/A
32th	0,013	0,034	0,010	0,025	N/A	N/A
33th	0,013	0,032	0,010	0,026	N/A	N/A
34th	0,012	0,030	0,010	0,024	N/A	N/A
35th	0,030	0,077	0,048	0,123	N/A	N/A
36th	0,003	0,008	0,003	0,007	N/A	N/A
37th	0,017	0,045	0,038	0,098	N/A	N/A
38th	0,014	0,036	0,009	0,022	N/A	N/A
39th	0,005	0,014	0,005	0,012	N/A	N/A
40th	0,016	0,040	0,009	0,024	N/A	N/A
THD40 [%]	--	1,103	--	1,400	23	13
PWHD [%]	--	7,717	--	16,722	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2						
Generating Unit rating per phase (rpp)			ASW27K-LT-G3			
	At 45-55% of rated output 14,425 kW		100% of rated output 27,128 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	19,414	--	38,950	--	--	--
2nd	0,116	0,296	0,131	0,335	8	8
3rd	0,026	0,067	0,099	0,252	21,6	N/A
4th	0,011	0,028	0,008	0,021	4	4
5th	0,193	0,494	0,145	0,372	10,7	10,7
6th	0,008	0,021	0,007	0,017	2,67	2,67
7th	0,135	0,344	0,111	0,285	7,2	7,2
8th	0,023	0,058	0,012	0,031	2	2
9th	0,052	0,132	0,010	0,026	3,8	N/A
10th	0,017	0,043	0,009	0,023	1,6	1,6
11th	0,080	0,203	0,093	0,237	3,1	3,1
12th	0,007	0,019	0,005	0,013	1,33	1,33
13th	0,209	0,535	0,318	0,813	2	2
14th	0,007	0,019	0,009	0,022	N/A	N/A
15th	0,032	0,081	0,014	0,035	N/A	N/A
16th	0,006	0,017	0,006	0,017	N/A	N/A
17th	0,159	0,407	0,200	0,511	N/A	N/A
18th	0,005	0,012	0,004	0,011	N/A	N/A
19th	0,129	0,330	0,178	0,454	N/A	N/A
20th	0,015	0,038	0,009	0,022	N/A	N/A
21th	0,028	0,072	0,016	0,042	N/A	N/A
22th	0,017	0,044	0,008	0,020	N/A	N/A
23th	0,042	0,109	0,119	0,303	N/A	N/A
24th	0,004	0,011	0,003	0,007	N/A	N/A
25th	0,039	0,100	0,104	0,265	N/A	N/A
26th	0,016	0,041	0,010	0,026	N/A	N/A
27th	0,012	0,031	0,016	0,041	N/A	N/A
28th	0,012	0,030	0,010	0,024	N/A	N/A
29th	0,051	0,131	0,069	0,175	N/A	N/A
30th	0,003	0,009	0,003	0,009	N/A	N/A
31th	0,045	0,114	0,061	0,155	N/A	N/A
32th	0,011	0,028	0,011	0,028	N/A	N/A
33th	0,019	0,048	0,011	0,029	N/A	N/A
34th	0,015	0,038	0,010	0,024	N/A	N/A
35th	0,020	0,050	0,038	0,097	N/A	N/A
36th	0,005	0,012	0,003	0,008	N/A	N/A
37th	0,018	0,045	0,035	0,089	N/A	N/A
38th	0,017	0,042	0,010	0,025	N/A	N/A
39th	0,009	0,024	0,006	0,016	N/A	N/A
40th	0,015	0,039	0,009	0,024	N/A	N/A
THD ₄₀ [%]	--	1,080	--	1,352	23	13
PWHD [%]	--	7,158	--	14,797	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3						
Generating Unit rating per phase (rpp)			ASW27K-LT-G3			
	At 45-55% of rated output 14,425 kW		100% of rated output 27,128 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	19,181	--	38,743	--	--	--
2nd	0,036	0,092	0,041	0,105	8	8
3rd	0,055	0,140	0,016	0,041	21,6	N/A
4th	0,016	0,041	0,007	0,018	4	4
5th	0,219	0,559	0,171	0,436	10,7	10,7
6th	0,007	0,019	0,006	0,016	2,67	2,67
7th	0,146	0,372	0,119	0,303	7,2	7,2
8th	0,018	0,046	0,012	0,031	2	2
9th	0,038	0,096	0,007	0,018	3,8	N/A
10th	0,014	0,035	0,011	0,027	1,6	1,6
11th	0,077	0,197	0,090	0,229	3,1	3,1
12th	0,005	0,012	0,005	0,014	1,33	1,33
13th	0,172	0,439	0,307	0,784	2	2
14th	0,013	0,033	0,008	0,020	N/A	N/A
15th	0,021	0,054	0,004	0,011	N/A	N/A
16th	0,011	0,029	0,010	0,024	N/A	N/A
17th	0,171	0,436	0,211	0,538	N/A	N/A
18th	0,003	0,007	0,004	0,009	N/A	N/A
19th	0,121	0,308	0,173	0,441	N/A	N/A
20th	0,012	0,030	0,008	0,020	N/A	N/A
21th	0,014	0,035	0,003	0,007	N/A	N/A
22th	0,016	0,041	0,010	0,026	N/A	N/A
23th	0,062	0,158	0,132	0,336	N/A	N/A
24th	0,003	0,008	0,003	0,007	N/A	N/A
25th	0,040	0,103	0,104	0,266	N/A	N/A
26th	0,016	0,040	0,008	0,020	N/A	N/A
27th	0,017	0,042	0,004	0,009	N/A	N/A
28th	0,013	0,033	0,010	0,026	N/A	N/A
29th	0,043	0,110	0,078	0,201	N/A	N/A
30th	0,003	0,007	0,003	0,007	N/A	N/A
31th	0,038	0,096	0,062	0,159	N/A	N/A
32th	0,012	0,030	0,008	0,021	N/A	N/A
33th	0,009	0,023	0,003	0,007	N/A	N/A
34th	0,015	0,038	0,010	0,027	N/A	N/A
35th	0,025	0,064	0,042	0,108	N/A	N/A
36th	0,003	0,007	0,002	0,006	N/A	N/A
37th	0,025	0,064	0,037	0,094	N/A	N/A
38th	0,015	0,037	0,008	0,021	N/A	N/A
39th	0,006	0,016	0,003	0,008	N/A	N/A
40th	0,014	0,037	0,010	0,026	N/A	N/A
THD ₄₀ [%]	--	1,046	--	1,313	23	13
PWHD [%]	--	7,295	--	15,852	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1

Generating Unit rating per phase (rpp)			ASW30K-LT-G3			
	At 45-55% of rated output 14,891 kW		100% of rated output 30,175 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	21,517	--	43,250	--	--	--
2nd	0,096	0,220	0,108	0,249	8	8
3rd	0,073	0,167	0,089	0,205	21,6	N/A
4th	0,007	0,015	0,010	0,024	4	4
5th	0,211	0,486	0,167	0,385	10,7	10,7
6th	0,016	0,037	0,010	0,022	2,67	2,67
7th	0,147	0,339	0,109	0,252	7,2	7,2
8th	0,019	0,043	0,011	0,026	2	2
9th	0,017	0,039	0,012	0,028	3,8	N/A
10th	0,017	0,039	0,010	0,023	1,6	1,6
11th	0,093	0,214	0,085	0,195	3,1	3,1
12th	0,005	0,012	0,008	0,019	1,33	1,33
13th	0,111	0,256	0,329	0,757	2	2
14th	0,017	0,039	0,009	0,021	N/A	N/A
15th	0,004	0,010	0,015	0,035	N/A	N/A
16th	0,013	0,031	0,007	0,015	N/A	N/A
17th	0,096	0,221	0,207	0,476	N/A	N/A
18th	0,004	0,009	0,006	0,013	N/A	N/A
19th	0,121	0,279	0,196	0,452	N/A	N/A
20th	0,009	0,020	0,009	0,021	N/A	N/A
21th	0,019	0,045	0,016	0,037	N/A	N/A
22th	0,007	0,017	0,007	0,016	N/A	N/A
23th	0,094	0,217	0,139	0,320	N/A	N/A
24th	0,007	0,017	0,005	0,011	N/A	N/A
25th	0,101	0,232	0,135	0,311	N/A	N/A
26th	0,008	0,019	0,009	0,022	N/A	N/A
27th	0,018	0,042	0,015	0,035	N/A	N/A
28th	0,010	0,024	0,008	0,019	N/A	N/A
29th	0,057	0,130	0,092	0,212	N/A	N/A
30th	0,006	0,013	0,005	0,010	N/A	N/A
31th	0,036	0,083	0,089	0,205	N/A	N/A
32th	0,013	0,030	0,010	0,022	N/A	N/A
33th	0,008	0,017	0,013	0,030	N/A	N/A
34th	0,014	0,033	0,008	0,019	N/A	N/A
35th	0,031	0,071	0,061	0,141	N/A	N/A
36th	0,003	0,007	0,004	0,010	N/A	N/A
37th	0,037	0,085	0,056	0,129	N/A	N/A
38th	0,013	0,030	0,009	0,020	N/A	N/A
39th	0,005	0,010	0,008	0,018	N/A	N/A
40th	0,012	0,028	0,009	0,021	N/A	N/A
THD ₄₀ [%]	--	0,906	--	1,301	23	13
PWHD [%]	--	6,212	--	16,673	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2

Generating Unit rating per phase (rpp)			ASW30K-LT-G3			
	At 45-55% of rated output 14,891 kW		100% of rated output 30,175 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	21,593	--	43,266	--	--	--
2nd	0,036	0,083	0,031	0,070	8	8
3rd	0,034	0,077	0,097	0,224	21,6	N/A
4th	0,015	0,034	0,006	0,014	4	4
5th	0,185	0,427	0,138	0,316	10,7	10,7
6th	0,010	0,023	0,008	0,019	2,67	2,67
7th	0,135	0,310	0,102	0,235	7,2	7,2
8th	0,010	0,023	0,011	0,026	2	2
9th	0,043	0,099	0,009	0,020	3,8	N/A
10th	0,016	0,036	0,012	0,028	1,6	1,6
11th	0,087	0,199	0,087	0,199	3,1	3,1
12th	0,005	0,012	0,005	0,011	1,33	1,33
13th	0,128	0,295	0,322	0,740	2	2
14th	0,013	0,031	0,007	0,017	N/A	N/A
15th	0,027	0,061	0,012	0,028	N/A	N/A
16th	0,012	0,027	0,010	0,023	N/A	N/A
17th	0,112	0,258	0,206	0,473	N/A	N/A
18th	0,003	0,006	0,003	0,007	N/A	N/A
19th	0,126	0,289	0,189	0,435	N/A	N/A
20th	0,012	0,028	0,007	0,015	N/A	N/A
21th	0,026	0,060	0,015	0,034	N/A	N/A
22th	0,011	0,025	0,010	0,023	N/A	N/A
23th	0,099	0,229	0,136	0,312	N/A	N/A
24th	0,005	0,012	0,003	0,007	N/A	N/A
25th	0,081	0,187	0,124	0,286	N/A	N/A
26th	0,012	0,027	0,007	0,017	N/A	N/A
27th	0,025	0,057	0,016	0,037	N/A	N/A
28th	0,015	0,034	0,011	0,026	N/A	N/A
29th	0,038	0,086	0,087	0,200	N/A	N/A
30th	0,003	0,007	0,003	0,006	N/A	N/A
31th	0,032	0,073	0,079	0,181	N/A	N/A
32th	0,012	0,028	0,008	0,018	N/A	N/A
33th	0,009	0,022	0,013	0,030	N/A	N/A
34th	0,016	0,036	0,011	0,026	N/A	N/A
35th	0,035	0,080	0,053	0,123	N/A	N/A
36th	0,002	0,005	0,003	0,006	N/A	N/A
37th	0,031	0,071	0,049	0,114	N/A	N/A
38th	0,012	0,028	0,008	0,018	N/A	N/A
39th	0,008	0,017	0,008	0,019	N/A	N/A
40th	0,014	0,031	0,011	0,026	N/A	N/A
THD ₄₀ [%]	--	0,845	--	1,226	23	13
PWHD [%]	--	6,095	--	15,135	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3						
Generating Unit rating per phase (rpp)			ASW30K-LT-G3			
	At 45-55% of rated output 14,891 kW		100% of rated output 30,175 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	21,370	--	43,061	--	--	--
2nd	0,111	0,255	0,124	0,285	8	8
3rd	0,038	0,087	0,021	0,049	21,6	N/A
4th	0,011	0,025	0,008	0,019	4	4
5th	0,211	0,484	0,163	0,376	10,7	10,7
6th	0,007	0,017	0,006	0,013	2,67	2,67
7th	0,144	0,331	0,109	0,252	7,2	7,2
8th	0,022	0,050	0,019	0,043	2	2
9th	0,026	0,060	0,008	0,017	3,8	N/A
10th	0,013	0,030	0,009	0,022	1,6	1,6
11th	0,089	0,204	0,083	0,192	3,1	3,1
12th	0,003	0,007	0,007	0,015	1,33	1,33
13th	0,136	0,314	0,312	0,717	2	2
14th	0,014	0,033	0,011	0,025	N/A	N/A
15th	0,021	0,048	0,005	0,012	N/A	N/A
16th	0,013	0,030	0,008	0,019	N/A	N/A
17th	0,094	0,216	0,214	0,493	N/A	N/A
18th	0,003	0,007	0,006	0,013	N/A	N/A
19th	0,097	0,223	0,182	0,418	N/A	N/A
20th	0,011	0,025	0,011	0,026	N/A	N/A
21th	0,012	0,028	0,002	0,005	N/A	N/A
22th	0,012	0,028	0,009	0,020	N/A	N/A
23th	0,112	0,258	0,147	0,338	N/A	N/A
24th	0,003	0,008	0,004	0,008	N/A	N/A
25th	0,078	0,180	0,122	0,281	N/A	N/A
26th	0,014	0,032	0,011	0,026	N/A	N/A
27th	0,008	0,019	0,003	0,008	N/A	N/A
28th	0,012	0,027	0,009	0,020	N/A	N/A
29th	0,053	0,123	0,098	0,225	N/A	N/A
30th	0,003	0,008	0,004	0,009	N/A	N/A
31th	0,038	0,087	0,079	0,181	N/A	N/A
32th	0,016	0,037	0,011	0,026	N/A	N/A
33th	0,011	0,024	0,003	0,006	N/A	N/A
34th	0,013	0,031	0,009	0,020	N/A	N/A
35th	0,020	0,046	0,061	0,140	N/A	N/A
36th	0,003	0,006	0,004	0,009	N/A	N/A
37th	0,028	0,064	0,050	0,115	N/A	N/A
38th	0,014	0,031	0,010	0,023	N/A	N/A
39th	0,011	0,026	0,002	0,004	N/A	N/A
40th	0,013	0,030	0,009	0,022	N/A	N/A
THD ₄₀ [%]	--	0,896	--	1,255	23	13
PWHD [%]	--	5,337	--	15,851	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1

Generating Unit rating per phase (rpp)			ASW33K-LT-G3			
	At 45-55% of rated output 16,414 kW		100% of rated output 33,177 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	23,701	--	47,527	--	--	--
2nd	0,089	0,186	0,102	0,213	8	8
3rd	0,077	0,162	0,087	0,183	21,6	N/A
4th	0,007	0,016	0,012	0,025	4	4
5th	0,205	0,428	0,162	0,339	10,7	10,7
6th	0,016	0,033	0,010	0,021	2,67	2,67
7th	0,144	0,302	0,100	0,210	7,2	7,2
8th	0,012	0,024	0,007	0,016	2	2
9th	0,017	0,035	0,013	0,027	3,8	N/A
10th	0,014	0,029	0,011	0,024	1,6	1,6
11th	0,100	0,210	0,082	0,172	3,1	3,1
12th	0,008	0,018	0,009	0,020	1,33	1,33
13th	0,181	0,378	0,330	0,690	2	2
14th	0,014	0,030	0,007	0,015	N/A	N/A
15th	0,012	0,024	0,014	0,029	N/A	N/A
16th	0,013	0,028	0,008	0,017	N/A	N/A
17th	0,080	0,168	0,204	0,426	N/A	N/A
18th	0,002	0,005	0,007	0,015	N/A	N/A
19th	0,064	0,133	0,196	0,410	N/A	N/A
20th	0,013	0,026	0,008	0,017	N/A	N/A
21th	0,007	0,015	0,016	0,033	N/A	N/A
22th	0,010	0,022	0,008	0,017	N/A	N/A
23th	0,078	0,163	0,145	0,303	N/A	N/A
24th	0,004	0,009	0,007	0,014	N/A	N/A
25th	0,096	0,201	0,142	0,297	N/A	N/A
26th	0,009	0,019	0,009	0,018	N/A	N/A
27th	0,017	0,035	0,015	0,031	N/A	N/A
28th	0,008	0,018	0,009	0,019	N/A	N/A
29th	0,069	0,144	0,099	0,208	N/A	N/A
30th	0,005	0,011	0,005	0,011	N/A	N/A
31th	0,078	0,162	0,098	0,205	N/A	N/A
32th	0,007	0,014	0,009	0,018	N/A	N/A
33th	0,017	0,035	0,014	0,029	N/A	N/A
34th	0,009	0,020	0,009	0,018	N/A	N/A
35th	0,049	0,102	0,066	0,139	N/A	N/A
36th	0,006	0,012	0,006	0,012	N/A	N/A
37th	0,038	0,080	0,064	0,133	N/A	N/A
38th	0,009	0,019	0,008	0,016	N/A	N/A
39th	0,009	0,019	0,009	0,019	N/A	N/A
40th	0,012	0,025	0,010	0,021	N/A	N/A
THD ₄₀ [%]	--	0,844	--	1,186	23	13
PWHD [%]	--	4,691	--	14,686	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2						
Generating Unit rating per phase (rpp)			ASW33K-LT-G3			
	At 45-55% of rated output 16,414 kW		100% of rated output 33,177 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	23,763	--	47,550	--	--	--
2nd	0,060	0,125	0,073	0,153	8	8
3rd	0,050	0,105	0,104	0,218	21,6	N/A
4th	0,016	0,034	0,007	0,014	4	4
5th	0,179	0,375	0,131	0,275	10,7	10,7
6th	0,016	0,034	0,012	0,025	2,67	2,67
7th	0,133	0,278	0,092	0,191	7,2	7,2
8th	0,011	0,023	0,015	0,031	2	2
9th	0,031	0,064	0,007	0,015	3,8	N/A
10th	0,014	0,029	0,014	0,030	1,6	1,6
11th	0,095	0,200	0,084	0,175	3,1	3,1
12th	0,009	0,019	0,007	0,014	1,33	1,33
13th	0,165	0,346	0,324	0,676	2	2
14th	0,009	0,019	0,010	0,020	N/A	N/A
15th	0,026	0,054	0,011	0,023	N/A	N/A
16th	0,012	0,026	0,011	0,024	N/A	N/A
17th	0,068	0,143	0,204	0,426	N/A	N/A
18th	0,003	0,005	0,004	0,009	N/A	N/A
19th	0,078	0,163	0,190	0,397	N/A	N/A
20th	0,011	0,022	0,009	0,018	N/A	N/A
21th	0,018	0,038	0,012	0,026	N/A	N/A
22th	0,011	0,024	0,012	0,024	N/A	N/A
23th	0,092	0,192	0,142	0,297	N/A	N/A
24th	0,004	0,009	0,004	0,009	N/A	N/A
25th	0,093	0,195	0,134	0,279	N/A	N/A
26th	0,014	0,029	0,009	0,019	N/A	N/A
27th	0,023	0,047	0,015	0,032	N/A	N/A
28th	0,013	0,027	0,012	0,026	N/A	N/A
29th	0,072	0,150	0,095	0,199	N/A	N/A
30th	0,006	0,012	0,004	0,008	N/A	N/A
31th	0,062	0,130	0,088	0,184	N/A	N/A
32th	0,012	0,025	0,009	0,019	N/A	N/A
33th	0,020	0,042	0,014	0,029	N/A	N/A
34th	0,012	0,025	0,012	0,025	N/A	N/A
35th	0,034	0,072	0,060	0,125	N/A	N/A
36th	0,005	0,010	0,004	0,008	N/A	N/A
37th	0,029	0,060	0,056	0,116	N/A	N/A
38th	0,011	0,022	0,008	0,018	N/A	N/A
39th	0,010	0,022	0,008	0,018	N/A	N/A
40th	0,014	0,029	0,012	0,024	N/A	N/A
THD ₄₀ [%]	--	0,773	--	1,136	23	13
PWHD [%]	--	4,542	--	13,538	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3

Generating Unit rating per phase (rpp)			ASW33K-LT-G3			
	At 45-55% of rated output 16,414 kW		100% of rated output 33,177 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	23,542	--	47,343	--	--	--
2nd	0,148	0,310	0,171	0,357	8	8
3rd	0,025	0,053	0,030	0,063	21,6	N/A
4th	0,012	0,025	0,010	0,022	4	4
5th	0,204	0,427	0,160	0,334	10,7	10,7
6th	0,004	0,008	0,005	0,011	2,67	2,67
7th	0,141	0,294	0,099	0,207	7,2	7,2
8th	0,021	0,043	0,020	0,042	2	2
9th	0,015	0,031	0,009	0,018	3,8	N/A
10th	0,009	0,018	0,009	0,019	1,6	1,6
11th	0,098	0,206	0,081	0,169	3,1	3,1
12th	0,006	0,012	0,006	0,012	1,33	1,33
13th	0,185	0,386	0,316	0,660	2	2
14th	0,015	0,032	0,011	0,024	N/A	N/A
15th	0,016	0,034	0,005	0,010	N/A	N/A
16th	0,011	0,023	0,008	0,016	N/A	N/A
17th	0,059	0,124	0,211	0,442	N/A	N/A
18th	0,002	0,005	0,005	0,011	N/A	N/A
19th	0,068	0,142	0,183	0,382	N/A	N/A
20th	0,011	0,023	0,012	0,025	N/A	N/A
21th	0,017	0,035	0,003	0,007	N/A	N/A
22th	0,013	0,026	0,009	0,018	N/A	N/A
23th	0,083	0,173	0,151	0,316	N/A	N/A
24th	0,002	0,005	0,004	0,008	N/A	N/A
25th	0,075	0,157	0,130	0,271	N/A	N/A
26th	0,011	0,022	0,013	0,026	N/A	N/A
27th	0,010	0,020	0,003	0,006	N/A	N/A
28th	0,011	0,024	0,009	0,018	N/A	N/A
29th	0,082	0,172	0,106	0,221	N/A	N/A
30th	0,003	0,005	0,003	0,006	N/A	N/A
31th	0,060	0,125	0,087	0,181	N/A	N/A
32th	0,012	0,026	0,013	0,027	N/A	N/A
33th	0,005	0,010	0,004	0,007	N/A	N/A
34th	0,010	0,021	0,009	0,018	N/A	N/A
35th	0,046	0,095	0,069	0,144	N/A	N/A
36th	0,003	0,006	0,003	0,007	N/A	N/A
37th	0,036	0,074	0,055	0,115	N/A	N/A
38th	0,014	0,030	0,012	0,025	N/A	N/A
39th	0,004	0,009	0,003	0,006	N/A	N/A
40th	0,011	0,022	0,009	0,018	N/A	N/A
THD ₄₀ [%]	--	0,850	--	1,178	23	13
PWHD [%]	--	4,053	--	14,018	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1						
Generating Unit rating per phase (rpp)			ASW36K-LT-G3			
	At 45-55% of rated output 17,965 kW		100% of rated output 35,701 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	25,879	--	51,791	--	--	--
2nd	0,120	0,231	0,128	0,246	8	8
3rd	0,082	0,157	0,085	0,162	21,6	N/A
4th	0,007	0,014	0,013	0,024	4	4
5th	0,200	0,383	0,156	0,299	10,7	10,7
6th	0,007	0,014	0,008	0,016	2,67	2,67
7th	0,141	0,270	0,089	0,171	7,2	7,2
8th	0,017	0,033	0,012	0,022	2	2
9th	0,014	0,027	0,015	0,028	3,8	N/A
10th	0,008	0,015	0,013	0,024	1,6	1,6
11th	0,103	0,198	0,079	0,151	3,1	3,1
12th	0,004	0,008	0,006	0,011	1,33	1,33
13th	0,247	0,473	0,337	0,646	2	2
14th	0,014	0,027	0,011	0,021	N/A	N/A
15th	0,016	0,030	0,012	0,023	N/A	N/A
16th	0,010	0,020	0,009	0,018	N/A	N/A
17th	0,107	0,205	0,205	0,394	N/A	N/A
18th	0,003	0,005	0,004	0,008	N/A	N/A
19th	0,070	0,133	0,198	0,380	N/A	N/A
20th	0,011	0,022	0,011	0,022	N/A	N/A
21th	0,005	0,010	0,015	0,029	N/A	N/A
22th	0,009	0,018	0,009	0,017	N/A	N/A
23th	0,061	0,118	0,151	0,289	N/A	N/A
24th	0,003	0,005	0,004	0,007	N/A	N/A
25th	0,063	0,120	0,151	0,289	N/A	N/A
26th	0,008	0,014	0,011	0,021	N/A	N/A
27th	0,007	0,014	0,014	0,027	N/A	N/A
28th	0,010	0,020	0,009	0,018	N/A	N/A
29th	0,062	0,119	0,111	0,212	N/A	N/A
30th	0,003	0,005	0,004	0,007	N/A	N/A
31th	0,077	0,147	0,109	0,210	N/A	N/A
32th	0,009	0,016	0,012	0,023	N/A	N/A
33th	0,013	0,025	0,013	0,025	N/A	N/A
34th	0,008	0,016	0,008	0,016	N/A	N/A
35th	0,056	0,108	0,077	0,147	N/A	N/A
36th	0,003	0,005	0,004	0,007	N/A	N/A
37th	0,065	0,125	0,075	0,143	N/A	N/A
38th	0,009	0,017	0,012	0,022	N/A	N/A
39th	0,012	0,022	0,012	0,022	N/A	N/A
40th	0,009	0,017	0,008	0,015	N/A	N/A
THD ₄₀ [%]	--	0,848	--	1,120	23	13
PWHD [%]	--	3,953	--	13,765	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2

Generating Unit rating per phase (rpp)			ASW36K-LT-G3			
	At 45-55% of rated output 17,965 kW		100% of rated output 35,701 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	25,936	--	51,821	--	--	--
2nd	0,060	0,116	0,059	0,113	8	8
3rd	0,065	0,125	0,110	0,210	21,6	N/A
4th	0,006	0,011	0,010	0,018	4	4
5th	0,173	0,332	0,126	0,242	10,7	10,7
6th	0,005	0,010	0,007	0,013	2,67	2,67
7th	0,130	0,249	0,079	0,152	7,2	7,2
8th	0,008	0,016	0,009	0,017	2	2
9th	0,023	0,044	0,005	0,010	3,8	N/A
10th	0,013	0,024	0,011	0,021	1,6	1,6
11th	0,100	0,191	0,080	0,153	3,1	3,1
12th	0,005	0,010	0,004	0,008	1,33	1,33
13th	0,226	0,434	0,332	0,636	2	2
14th	0,009	0,017	0,007	0,014	N/A	N/A
15th	0,025	0,048	0,009	0,018	N/A	N/A
16th	0,015	0,028	0,009	0,017	N/A	N/A
17th	0,085	0,163	0,206	0,395	N/A	N/A
18th	0,004	0,007	0,004	0,007	N/A	N/A
19th	0,065	0,125	0,193	0,369	N/A	N/A
20th	0,010	0,020	0,007	0,013	N/A	N/A
21th	0,017	0,032	0,011	0,020	N/A	N/A
22th	0,010	0,019	0,009	0,018	N/A	N/A
23th	0,062	0,120	0,148	0,284	N/A	N/A
24th	0,003	0,005	0,004	0,007	N/A	N/A
25th	0,071	0,137	0,144	0,276	N/A	N/A
26th	0,009	0,018	0,008	0,015	N/A	N/A
27th	0,014	0,027	0,014	0,026	N/A	N/A
28th	0,009	0,017	0,011	0,021	N/A	N/A
29th	0,075	0,144	0,107	0,205	N/A	N/A
30th	0,002	0,004	0,004	0,007	N/A	N/A
31th	0,072	0,137	0,100	0,193	N/A	N/A
32th	0,009	0,018	0,009	0,018	N/A	N/A
33th	0,017	0,032	0,013	0,026	N/A	N/A
34th	0,008	0,015	0,012	0,023	N/A	N/A
35th	0,059	0,112	0,071	0,136	N/A	N/A
36th	0,003	0,005	0,004	0,008	N/A	N/A
37th	0,053	0,102	0,066	0,127	N/A	N/A
38th	0,009	0,018	0,009	0,017	N/A	N/A
39th	0,014	0,026	0,010	0,019	N/A	N/A
40th	0,012	0,022	0,011	0,021	N/A	N/A
THD ₄₀ [%]	--	0,759	--	1,066	23	13
PWHD [%]	--	3,789	--	12,772	23	22

BUREAU
VERITAS

Annex to the G99/1 certificate of compliance No. U22-0725

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3

Generating Unit rating per phase (rpp)			ASW36K-LT-G3			
	At 45-55% of rated output 17,965 kW		100% of rated output 35,701 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	25,715	--	51,609	--	--	--
2nd	0,066	0,127	0,076	0,146	8	8
3rd	0,015	0,028	0,040	0,076	21,6	N/A
4th	0,009	0,018	0,008	0,015	4	4
5th	0,199	0,381	0,157	0,302	10,7	10,7
6th	0,010	0,019	0,006	0,011	2,67	2,67
7th	0,138	0,264	0,086	0,165	7,2	7,2
8th	0,015	0,029	0,016	0,030	2	2
9th	0,010	0,019	0,010	0,020	3,8	N/A
10th	0,013	0,025	0,012	0,023	1,6	1,6
11th	0,102	0,195	0,078	0,149	3,1	3,1
12th	0,007	0,014	0,006	0,012	1,33	1,33
13th	0,235	0,450	0,326	0,624	2	2
14th	0,012	0,022	0,010	0,019	N/A	N/A
15th	0,012	0,023	0,004	0,008	N/A	N/A
16th	0,009	0,018	0,009	0,018	N/A	N/A
17th	0,098	0,189	0,213	0,408	N/A	N/A
18th	0,004	0,008	0,006	0,012	N/A	N/A
19th	0,076	0,146	0,186	0,357	N/A	N/A
20th	0,009	0,017	0,011	0,021	N/A	N/A
21th	0,013	0,024	0,004	0,008	N/A	N/A
22th	0,008	0,015	0,011	0,020	N/A	N/A
23th	0,047	0,089	0,156	0,299	N/A	N/A
24th	0,003	0,005	0,005	0,009	N/A	N/A
25th	0,059	0,114	0,139	0,267	N/A	N/A
26th	0,009	0,018	0,011	0,022	N/A	N/A
27th	0,010	0,020	0,003	0,005	N/A	N/A
28th	0,008	0,015	0,011	0,022	N/A	N/A
29th	0,069	0,133	0,116	0,223	N/A	N/A
30th	0,002	0,005	0,004	0,008	N/A	N/A
31th	0,061	0,117	0,098	0,189	N/A	N/A
32th	0,009	0,017	0,011	0,022	N/A	N/A
33th	0,008	0,016	0,004	0,008	N/A	N/A
34th	0,011	0,020	0,011	0,022	N/A	N/A
35th	0,065	0,125	0,081	0,155	N/A	N/A
36th	0,003	0,006	0,004	0,008	N/A	N/A
37th	0,051	0,097	0,066	0,127	N/A	N/A
38th	0,011	0,021	0,011	0,021	N/A	N/A
39th	0,005	0,010	0,004	0,007	N/A	N/A
40th	0,012	0,022	0,011	0,022	N/A	N/A
THD40 [%]	--	0,784	--	1,070	23	13
PWHD [%]	--	3,495	--	13,200	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 1						
Generating Unit rating per phase (rpp)			ASW40K-LT-G3			
	At 45-55% of rated output 19,825 kW		100% of rated output 39,660 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	28,770	--	57,527	--	--	--
2nd	0,077	0,134	0,121	0,209	8	8
3rd	0,086	0,148	0,039	0,067	21,6	N/A
4th	0,010	0,018	0,097	0,167	4	4
5th	0,192	0,331	0,261	0,451	10,7	10,7
6th	0,010	0,017	0,018	0,032	2,67	2,67
7th	0,136	0,235	0,055	0,095	7,2	7,2
8th	0,014	0,024	0,067	0,116	2	2
9th	0,011	0,019	0,022	0,037	3,8	N/A
10th	0,012	0,021	0,039	0,066	1,6	1,6
11th	0,103	0,177	0,056	0,096	3,1	3,1
12th	0,005	0,009	0,015	0,026	1,33	1,33
13th	0,295	0,508	0,290	0,501	2	2
14th	0,011	0,019	0,035	0,060	N/A	N/A
15th	0,018	0,030	0,013	0,022	N/A	N/A
16th	0,010	0,017	0,028	0,048	N/A	N/A
17th	0,146	0,252	0,175	0,301	N/A	N/A
18th	0,005	0,008	0,013	0,022	N/A	N/A
19th	0,113	0,195	0,234	0,403	N/A	N/A
20th	0,009	0,015	0,027	0,046	N/A	N/A
21th	0,013	0,023	0,016	0,027	N/A	N/A
22th	0,009	0,015	0,034	0,058	N/A	N/A
23th	0,069	0,120	0,168	0,290	N/A	N/A
24th	0,004	0,007	0,013	0,023	N/A	N/A
25th	0,048	0,082	0,154	0,266	N/A	N/A
26th	0,006	0,011	0,032	0,055	N/A	N/A
27th	0,004	0,007	0,018	0,031	N/A	N/A
28th	0,008	0,013	0,032	0,055	N/A	N/A
29th	0,049	0,084	0,137	0,236	N/A	N/A
30th	0,003	0,005	0,016	0,027	N/A	N/A
31th	0,052	0,090	0,117	0,202	N/A	N/A
32th	0,006	0,011	0,036	0,062	N/A	N/A
33th	0,005	0,009	0,022	0,038	N/A	N/A
34th	0,007	0,013	0,036	0,062	N/A	N/A
35th	0,050	0,086	0,094	0,163	N/A	N/A
36th	0,003	0,006	0,021	0,037	N/A	N/A
37th	0,061	0,106	0,151	0,261	N/A	N/A
38th	0,008	0,014	0,035	0,061	N/A	N/A
39th	0,008	0,013	0,023	0,040	N/A	N/A
40th	0,008	0,014	0,049	0,085	N/A	N/A
THD ₄₀ [%]	--	0,810	--	1,101	23	13
PWHD [%]	--	3,514	--	15,964	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 2						
Generating Unit rating per phase (rpp)			ASW40K-LT-G3			
	At 45-55% of rated output kW		100% of rated output kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	28,825	--	57,553	--	--	--
2nd	0,147	0,254	0,194	0,335	8	8
3rd	0,080	0,138	0,079	0,137	21,6	N/A
4th	0,008	0,013	0,084	0,146	4	4
5th	0,165	0,285	0,226	0,390	10,7	10,7
6th	0,004	0,008	0,017	0,030	2,67	2,67
7th	0,126	0,217	0,054	0,093	7,2	7,2
8th	0,015	0,025	0,069	0,118	2	2
9th	0,016	0,027	0,019	0,032	3,8	N/A
10th	0,008	0,013	0,038	0,065	1,6	1,6
11th	0,101	0,173	0,058	0,101	3,1	3,1
12th	0,004	0,007	0,014	0,024	1,33	1,33
13th	0,278	0,480	0,288	0,497	2	2
14th	0,013	0,022	0,033	0,057	N/A	N/A
15th	0,021	0,037	0,019	0,032	N/A	N/A
16th	0,009	0,015	0,027	0,046	N/A	N/A
17th	0,128	0,221	0,174	0,299	N/A	N/A
18th	0,004	0,006	0,012	0,021	N/A	N/A
19th	0,096	0,166	0,223	0,384	N/A	N/A
20th	0,012	0,021	0,027	0,047	N/A	N/A
21th	0,019	0,032	0,016	0,027	N/A	N/A
22th	0,009	0,015	0,031	0,054	N/A	N/A
23th	0,053	0,091	0,172	0,296	N/A	N/A
24th	0,003	0,005	0,012	0,021	N/A	N/A
25th	0,049	0,084	0,150	0,259	N/A	N/A
26th	0,010	0,017	0,035	0,060	N/A	N/A
27th	0,012	0,021	0,020	0,035	N/A	N/A
28th	0,008	0,015	0,032	0,056	N/A	N/A
29th	0,055	0,094	0,133	0,230	N/A	N/A
30th	0,003	0,004	0,017	0,029	N/A	N/A
31th	0,057	0,098	0,110	0,190	N/A	N/A
32th	0,009	0,016	0,035	0,060	N/A	N/A
33th	0,011	0,018	0,028	0,049	N/A	N/A
34th	0,010	0,017	0,034	0,060	N/A	N/A
35th	0,061	0,105	0,098	0,169	N/A	N/A
36th	0,003	0,005	0,024	0,042	N/A	N/A
37th	0,058	0,101	0,138	0,238	N/A	N/A
38th	0,008	0,013	0,034	0,059	N/A	N/A
39th	0,010	0,018	0,028	0,049	N/A	N/A
40th	0,009	0,015	0,043	0,075	N/A	N/A
THD ₄₀ [%]	--	0,783	--	1,096	23	13
PWHD [%]	--	3,192	--	15,063	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Harmonics.

Phase 3						
Generating Unit rating per phase (rpp)			ASW40K-LT-G3			
	At 45-55% of rated output 19,825 kW		100% of rated output 39,660 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12	
					1 phase	3 phase
1st	28,602	--	57,356	--	--	--
2nd	0,073	0,125	0,078	0,135	8	8
3rd	0,008	0,014	0,056	0,097	21,6	N/A
4th	0,006	0,010	0,082	0,141	4	4
5th	0,191	0,330	0,272	0,469	10,7	10,7
6th	0,010	0,017	0,017	0,030	2,67	2,67
7th	0,134	0,231	0,058	0,100	7,2	7,2
8th	0,008	0,014	0,064	0,110	2	2
9th	0,008	0,013	0,018	0,031	3,8	N/A
10th	0,010	0,018	0,037	0,065	1,6	1,6
11th	0,102	0,175	0,059	0,102	3,1	3,1
12th	0,007	0,011	0,014	0,024	1,33	1,33
13th	0,275	0,475	0,287	0,495	2	2
14th	0,007	0,012	0,028	0,049	N/A	N/A
15th	0,007	0,013	0,015	0,026	N/A	N/A
16th	0,010	0,018	0,028	0,049	N/A	N/A
17th	0,147	0,254	0,178	0,307	N/A	N/A
18th	0,004	0,007	0,011	0,019	N/A	N/A
19th	0,106	0,183	0,219	0,377	N/A	N/A
20th	0,008	0,014	0,024	0,042	N/A	N/A
21th	0,007	0,013	0,012	0,021	N/A	N/A
22th	0,010	0,017	0,031	0,054	N/A	N/A
23th	0,056	0,096	0,178	0,307	N/A	N/A
24th	0,003	0,006	0,011	0,019	N/A	N/A
25th	0,054	0,093	0,148	0,255	N/A	N/A
26th	0,010	0,017	0,034	0,059	N/A	N/A
27th	0,009	0,015	0,012	0,021	N/A	N/A
28th	0,009	0,015	0,031	0,054	N/A	N/A
29th	0,040	0,068	0,143	0,246	N/A	N/A
30th	0,002	0,004	0,014	0,025	N/A	N/A
31th	0,050	0,086	0,105	0,181	N/A	N/A
32th	0,009	0,016	0,042	0,073	N/A	N/A
33th	0,008	0,013	0,015	0,027	N/A	N/A
34th	0,008	0,014	0,033	0,057	N/A	N/A
35th	0,054	0,093	0,109	0,189	N/A	N/A
36th	0,002	0,004	0,019	0,033	N/A	N/A
37th	0,051	0,088	0,133	0,229	N/A	N/A
38th	0,008	0,014	0,048	0,084	N/A	N/A
39th	0,008	0,013	0,019	0,033	N/A	N/A
40th	0,008	0,014	0,040	0,069	N/A	N/A
THD40 [%]	--	0,763	--	1,082	23	13
PWHD [%]	--	3,201	--	15,312	23	22

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. Power factor.

Output power	216,2V	230V	253V	Measured at three voltage levels and at full output. Voltage to be maintained within $\pm 1,5\%$ of the stated level during the test.
20%	0,997	0,996	0,996	
50%	0,999	0,999	0,999	
75%	0,999	0,999	0,999	
100%	0,999	0,999	0,999	
Limit	>0,95	>0,95	>0,95	

Power Quality. Voltage fluctuation and Flicker.

	Starting			Stopping			Running	
	d _{max}	d _c	d _(t)	d _{max}	d _c	d _(t)	P _{st}	P _{lt} 2 hours
Measured values at test impedance (L1)	0,692	0,12	0,000	0,644	0,085	0,000	0,414	0,376
Normalised to standard impedance (L1)	0,692	0,12	0,000	0,644	0,085	0,000	0,414	0,376
Measured values at test impedance (L2)	0,687	0,144	0,000	0,675	0,143	0,000	0,311	0,308
Normalised to standard impedance (L2)	0,687	0,144	0,000	0,675	0,143	0,000	0,311	0,308
Measured values at test impedance (L3)	0, 716	0117	0,000	0,748	0,017	0,000	0,306	0,304
Normalised to standard impedance (L3)	0, 716	0117	0,000	0,748	0,017	0,000	0,306	0,304
Values for maximum impedance	4,00%	3,30%	3,3% 500ms	4,00%	3,30%	3,3% 500ms	1,0	0,65
Limits set under BS EN 61000-3-11	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65
Test impedance	R	0,240	Ω	XI		0,150	Ω	
	Z	0,283	Ω					
Standard impedance	R	0,240	Ω	XI		0,150	Ω	
	Z	0,283	Ω					
Maximum impedance	R	0,240	Ω	XI		0,150	Ω	
	Z	0,283	Ω					

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. DC injection.

ASW25K-LT-G3

Phase 1

Test level power [%]	10	55	100
Recorded value [mA]	63,1	60,9	57,2
Recorded value [%]	0,174	0,168	0,158
Limit [%]	0,25	0,25	0,25

Phase 2

Test level power [%]	10	55	100
Recorded value [mA]	61,8	63,9	65,0
Recorded value [%]	0,171	0,176	0,179
Limit [%]	0,25	0,25	0,25

Phase 3

Test level power [%]	10	55	100
Recorded value [mA]	67,6	60,4	66,8
Recorded value [%]	0,187	0,167	0,184
Limit [%]	0,25	0,25	0,25

Note. Informative measurement of DC-injection of each phase of the inverter and a limit of 0,25% per phase of the rated current per phase as pass criteria.

Sum of all Phases

Tests are carried out at three defined power levels $\pm 5\%$. At 230 V a 25 kW three phase Inverter has a current output of 36,2 A so DC limit is 90,6 mA. These tests is undertaken in accordance with Annex A.7.1.4.4.

The % DC injection ("as % of rated AC current" below) is calculated as follows:

% DC injection = Recorded DC value in Amps / Base current where the base current is the Registered Capacity (W) / V phase.

The % DC injection should not be greater than 0,25%.

Sum of all Phases

Test level power [%]	10	55	100
Recorded value [mA]	64,1	61,8	63,0
Recorded value [%]	0,177	0,171	0,174
Limit [%]	0,25	0,25	0,25

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Power Quality. DC injection.

ASW40K-LT-G3

Phase 1

Test level power [%]	10	55	100
Recorded value [mA]	78,5	83,0	93,8
Recorded value [%]	0,135	0,143	0,162
Limit [%]	0,25	0,25	0,25

Phase 2

Test level power [%]	10	55	100
Recorded value [mA]	83,1	86,1	97,4
Recorded value [%]	0,143	0,149	0,168
Limit [%]	0,25	0,25	0,25

Phase 3

Test level power [%]	10	55	100
Recorded value [mA]	80,4	92,3	95,6
Recorded value [%]	0,139	0,159	0,165
Limit [%]	0,25	0,25	0,25

Note. Informative measurement of DC-injection of each phase of the inverter and a limit of 0,25% per phase of the rated current per phase as pass criteria.

Sum of all Phases

Tests are carried out at three defined power levels $\pm 5\%$. At 230 V a 40 kW three phase Inverter has a current output of 58,0 A so DC limit is 144,9 mA. These tests is undertaken in accordance with Annex A.7.1.4.4.

The % DC injection ("as % of rated AC current" below) is calculated as follows:

% DC injection = Recorded DC value in Amps / Base current where the base current is the Registered Capacity (W) / V phase.

The % DC injection should not be greater than 0,25%.

The tests had been performed on the ASW25K-LT-G3 and ASW40K-LT-G3 are valid for the ASW27K-LT-G3, ASW30K-LT-G3, ASW33K-LT-G3 and ASW36K-LT-G3 since it is almost same as in hardware and just power derated by software.

Sum of all Phases

Test level power [%]	10	55	100
Recorded value [mA]	64,1	61,8	63,0
Recorded value [%]	0,177	0,171	0,174
Limit [%]	0,25	0,25	0,25

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Fault level Contribution.

For a directly coupled SSEG			For a Inverter SSEG		
Phase 1					
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I _p	N/A	20ms	8,17Vac	-2,10A
Initial Value of aperiodic current	A	N/A	100ms	N/A	N/A
Initial symmetrical short-circuit current*	I _k	N/A	250ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i _{DC}	N/A	500ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	--	--
Phase 2					
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I _p	N/A	20ms	5,82Vac	0,57A
Initial Value of aperiodic current	A	N/A	100ms	N/A	N/A
Initial symmetrical short-circuit current*	I _k	N/A	250ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i _{DC}	N/A	500ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	--	--
Phase 3					
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I _p	N/A	20ms	-13,73Vac	0,57A
Initial Value of aperiodic current	A	N/A	100ms	N/A	N/A
Initial symmetrical short-circuit current*	I _k	N/A	250ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i _{DC}	N/A	500ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	0,078s	In seconds

For rotating machines and linear piston machines the test should produce a 0s – 2s plot of the short circuit current as seen at the Generating Unit terminals.

* Values for these parameters should be provided where the short circuit duration is sufficiently long to enable interpolation of the plot.

The tests had been performed on the ASW40K-LT-G3 are valid for the ASW25K-LT-G3, ASW27K-LT-G3, ASW30K-LT-G3, ASW33K-LT-G3 and ASW36K-LT-G3 since it is almost same as in hardware and just power derated by software.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering
Recommendation G99

Nr. PVGB2204WDG0409-1

Self Monitoring – Solid state switching.	N/A
It has been verified that in the event of the solid state switching device failing to disconnect the Power Park Module, the voltage on the output side of the switching device is reduced to a value below 50 volts within 0,5 seconds.	N/A
Note. Unit do not provide solid state switching relays. In case the semiconductor bridge is switched off, then the voltage on the output drops to 0. In this case the relays on the output will also open (5.5.2.1 Functional safety of the internal automatic disconnection device according to VDE 0124-100).	

Cyber security	P
Confirm that the Manufacturer or Installer of the Micro-generator has provided a statement describing how the Micro-generator has been designed to comply with cyber security requirements, as detailed in 9.7.	Yes
Note. Different levels of access, all are password protected, only certain parameters can be changed on maintenance level. Manufacturer information provided, see test report.	

Wiring functional tests if required by para. 15.2.1	N/A
Confirm that the relevant test schedule is attached (tests to be undertaken at time of commissioning).	N/A
Note: The inverter was tested in a test laboratory. The correct wiring functional test in the field has to be done by the responsible person for the installation of the plant.	

Logic Interface (input port) Required by paragraph 11.1.3.1	P
Confirm that an input port is provided and can be used to reduce the Active Power output to zero	Yes
Note. Manufacturer information provided.	
Provide high level description of logic interface, e.g. details in 11.1.3.1 such as AC or DC signal	Yes
Note. Manufacturer information provided.	

Additional comments
--