Test Report issued under the responsibility of:

TEST REPORT
IEC 61683

Photovoltaic systems – Power conditioners – Procedure for measuring efficiency

Report Number. .....:	**GZES230100085502**
Date of issue .....:	**2023-01-12**
Total number of pages	**49**
Name of Testing Laboratory preparing the Report.....:	Guangzhou SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch
Address .....:	198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China
Applicant's name.....:	AISWEI Technology Co., Ltd.
Address .....:	Room 905B, 757 Mengzi Road, Huangpu District, 200023 Shanghai, China
Test specification:	
Standard.....:	IEC 61683:1999 (First Edition)
Test procedure .....:	SGS-CSTC
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC 61683B
Test Report Form(s) Originator.....:	TÜV SÜD Product Service GmbH
Master TRF.....:	Dated 2017-11

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description .....:	Grid-connected PV Inverter
Trade Mark .....:	Solplanet
Manufacturer.....:	AISWEI Technology Co., Ltd.
Address .....:	Room 905B, 757 Mengzi Road, Huangpu District, 200023 Shanghai, China
Model/Type reference.....:	**ASW75K-LT, ASW80K-LT, ASW100K-LT, ASW110K-LT**
Ratings .....:	**Refer to the rating on page 6 of the report** Serial Number: **AQ011060322B0116** (The Equipment parameters were changed by software) Master Local version: V610-04001-02 Safety Local version: V610-12001-00

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
Testing Laboratory:	SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch	
Location/ address .....:	198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China	
Tested by (name, function, signature) .....:	Hugo Zhang (Project Engineer)	Hugo Zhang
Approved by (name, function, signature ....:	Roger Hu (Technical Reviewer)	Roger Hu

List of Attachments (including a total number of pages in each attachment):

50/60 Hz		
Attachment #	**Description**	**Pages**
Attachment I	Pictures of the EUT and Electrical Schemes	6 pages
Attachment II	Testing Information	5 pages

Summary of testing:

Tests performed (name of test and test clause):

The equipment has been tested according to the standard:
IEC 61683:1999. Testing has been carried out at 50/60 Hz.

All applicable tests according to the above specified standard have been carried out.

From the result of inspection and tests on the submitted sample, we conclude that it complies with the requirements of the standard.

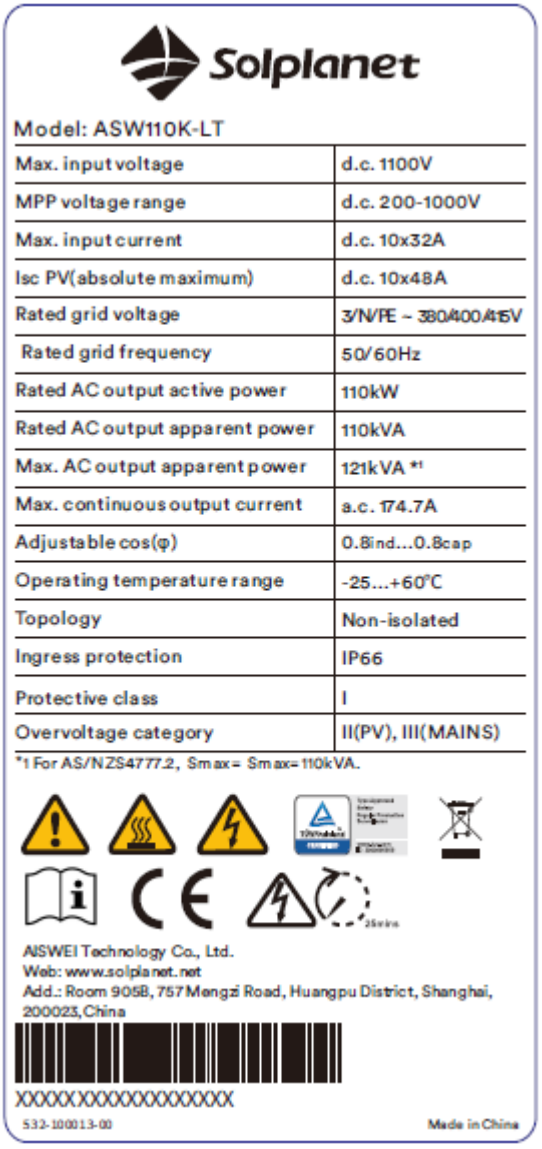
Note1: Output voltage is 230Va.c..

Testing location: See page 2

Summary of compliance with National Differences

No National Differences are addressed to this test report

Copy of marking plate(representative):



Note:

1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. Label is attached on the side surface of enclosure and visible after installation
3. Labels of other models are as the same with **ASW110K-LT**'s except for the parameters of rating.
4. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trademark and the postal address will be marked on the products before being place on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

Test item particulars.....:	Three Phase PV Grid-connected Inverter
Classification of installation and use .....:	Fixed (permanent connection)
Supply Connection .....:	DC; PV
.....:	AC; Grid connection
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement .....:	F (Fail)
Testing .....:	
Date of receipt of test item .....:	N/A
Date (s) of performance of tests .....:	From 2022-12-12 to 2023-01-05

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) .....:	AISWEI New Energy Technology (Yangzhong) Co., Ltd. No.588 Gangxing Road, Yangzhong, Jiangsu, China

General product information:

The product is a transformerless PV inverter with MPP trackers, which converts the direct current of the PV modules into grid-compliant alternating current and feeds it into the utility grid.

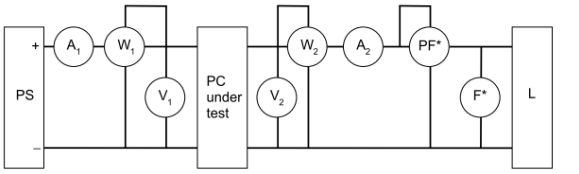
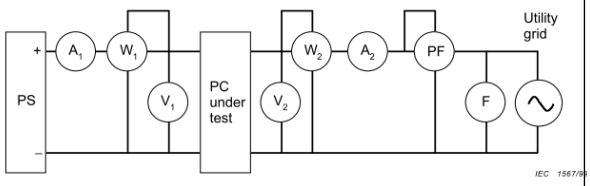
Equipment Under Testing:

- **ASW75K-LT**
- **ASW80K-LT**
- **ASW100K-LT**
- **ASW110K-LT**

Product Model	**ASW75K-LT**	**ASW80K-LT**	**ASW100K-LT**	**ASW110K-LT**
Input (DC)				
Maximum input voltage (V)	1100			
MPP voltage range (V)	200 ~ 1000			
MPP voltage range with full power (V)	460 ~ 850			
Initial input voltage(V)	250			
Min. input voltage (V)	200			
Rated input voltage (V)	630			
Max. input current (A)	8*32		10*32	
Max. short circuit current (A)	8*48		10*48	
Output (AC)				
Rated active power (W)	75000	80000	100000	110000
Max. apparent power (VA)	75000	88000	110000	121000
Rated Output Current (A)	108.7	116.0	145.0	159.5
Max. Output Current (A)	114	127	158.8	174.7
Nominal Grid Voltage (V)	230 V / 400 V [3/N/PE]			
Nominal Frequency (Hz)	50/60			
Power factor	0.8 inductive…. 0.8 capacitive			
Topology	Non-isolated			
Operating temperature range	-25 ºC ~ +60 ºC			
Degree of protection	IP66			

IEC 61683: 1999			
Clause	Requirement – Test	Measuring result – Remark	Verdict
4	Efficiency measurement conditions		P
	Efficiency is measured under the conditions in the following clauses.		P
	Specific conditions may be excluded by mutual agreement when those conditions are outside the manufacturer's allowable operating range.		P
4.1	DC power source for testing		P
	For power conditioners operating with fixed input voltage, the d.c. power source is a storage battery or constant voltage power source to maintain the input voltage.		N/A
	For power conditioners that employ maximum power point tracking (MPPT) and shunt-type power conditioners, either a photovoltaic array or a photovoltaic array simulator is utilized.		P
4.2	Temperature		P
	All measurements are to be made at an ambient temperature of 25 °C ± 2 °C.		N/A
	Other ambient temperatures may be allowed by mutual agreement. However, the temperature used must be clearly stated in all documentation.	By mutual agreement all measurements at 50 Hz/60 Hz have been carried out at 25ºC±5ºC	P
4.3	Output voltage and frequency		P
	The output voltage and frequency are maintained at the manufacturer's stated nominal values.	230 V,50 Hz/60 Hz	P
4.4	Input voltage		P
	Measurements performed in each of the following tests are repeated at three power conditioner input voltages: a) manufacturer's minimum rated input voltage; b) the inverter's nominal voltage or the average of its rated input range; c) 90 % of the inverter's maximum input voltage.		P
	In the case where a power conditioner is to be connected with a battery at its input terminals, only the nominal or rated input voltage may be applied.		N/A

IEC 61683: 1999			
Clause	Requirement – Test	Measuring result – Remark	Verdict
4.5	Ripple and distortion		P
	Record input voltage and current ripple for each measurement. Also record output voltage and current distortion (if a.c.) or ripple (if d.c.). Ensure that these measurements remain within the manufacturer's specified values.		P
4.6	Resistive loads/utility grid		P
	At unity power factor, or at the intrinsic power factor of grid-connected inverters without power factor adjustment, measure the efficiency for power levels of 10 %, 25 %, 50 %, 75 %, 100 % and 120 % of the inverter's rating.		P
	Stand-alone inverters are also measured at a power level of 5 % of rated. The power conditioner test is conducted with a specified resistive and reactive grid impedance.		N/A
4.7	Reactive loads		N/A
	For stand-alone inverters, measure the efficiency with a load which provides a power factor equal to the manufacturer's specified minimum level (or 0,25, whichever is greater) and at power levels of 25 %, 50 % and 100 % of rated VA.		N/A
	Repeat for power factors of 0,5 and 0,75 (do not go below the manufacturer's specified minimum PF) and power levels of 25 %, 50 %, and 100 % of rated VA.		N/A
4.8	Resistive plus non-linear loads		N/A
	For stand-alone inverters, measure the efficiency with a fixed non-linear load (total harmonic distortion (THD) = (80 ± 5) %) equal to (25 ± 5) % of the inverter's rated VA plus sufficient resistive load in parallel to achieve a total load of 25 %, 50 % and 100 % of rated VA.		N/A
	Repeat the measurements with a fixed non-linear load equivalent to (50 ± 5) % of the inverter's rated VA plus sufficient resistive load in parallel to achieve a total load of 50% and 100% of rated VA.		N/A
	The type of non-linear load must be clearly stated in all documentation.		N/A

IEC 61683: 1999			
Clause	Requirement – Test	Measuring result – Remark	Verdict
4.9	Complex loads		N/A
	When a non-linear plus a sufficient reactive load condition is specified for stand-alone inverters, measure the efficiency with a fixed non-linear load (THD = (80 ± 5) %) equal to (50 ± 5) % of the inverter's rated VA plus a sufficient reactive load (PF = 0,5) in parallel to achieve a total load of 50 % and 100 % of rated VA.		N/A
	The type of complex load is clearly stated in all documentation.		N/A
5	Efficiency calculations		P
5.1	Rated output efficiency		P
5.2	Partial output efficiency		P
5.3	Energy efficiency		P
5.4	Efficiency tolerances		P
6	Conditions of loading for output ports		P
6.1	Test circuit		P
	Figure 1a is applied to stand-alone power conditioners		N/A
	 Figure 1a – Stand-alone type		N/A
	Figure 1b is applied to utility-interactive power conditioners		P
	 Figure 1b – Utility-interactive type PC power conditioner PS variable voltage-current d.c. power supply A_1 DC ammeter A_2 AC or d.c. ammeter W_1 DC wattmeter W_2 AC or d.c. wattmeter L load F frequency meter V_1 DC voltmeter V_2 AC or d.c. voltmeter PF power factor meter		P

IEC 61683: 1999			
Clause	Requirement – Test	Measuring result – Remark	Verdict
6.2	Measurement procedure		P
7	Loss measurement		P
7.1	No-load loss		P
7.2	Standby loss		P
Annex A	Power conditioner description		P
Annex B	Power efficiency and conversion factor		P
Annex C	Weighted-average energy efficiency		P
Annex D	Derivation of efficiency tolerance in table 2		P

TABLE	Efficiency recording and efficient calculation sheet for 50 Hz								
power conditioner type	Grid-connected								
Model:	**ASW75K-LT**								
Parameters of power conditioner	Minimum rated input voltage: 200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 50 Hz Rated output power: 75000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	454.0	464.4	453.4	459.3	458.3	/	/	/
Input voltage ripple (V)	/	1.2	1.0	1.2	1.0	1.0	/	/	/
Input current (A)	/	17.6	40.8	85.4	126.0	172.1	/	/	/
Input current ripple (A)	/	2.0	2.0	2.0	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	8.001	18.933	38.732	57.865	78.886	/	/	/
Output power (Po) (kW)	/	7.523	18.233	37.670	56.505	77.158	/	/	/
Output efficiency (%)	/	94.0	96.3	97.3	97.6	97.8	/	/	/
Input energy (Wi) (Wh)	/	668	1581	3236	4844	6588	/	/	/
Output energy (Wo) (Wh)	/	628	1522	3147	4730	6444	/	/	/
Energy efficiency(%)	/	94.0	96.3	97.2	97.6	97.8	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	630.6	630.6	633.1	627.8	626.1	/	/	/
Input voltage ripple (V)	/	1.2	1.2	1.5	1.2	1.3	/	/	/
Input current (A)	/	12.9	30.1	59.7	90.7	120.9	/	/	/
Input current ripple (A)	/	2.0	2.0	4.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	8.162	18.982	37.763	56.920	75.710	/	/	/
Output power (Po) (kW)	/	7.727	18.564	37.196	56.220	74.801	/	/	/
Output efficiency (%)	/	94.7	97.8	98.5	98.8	98.8	/	/	/
Input energy (Wi) (Wh)	/	681	1585	3155	4760	6321	/	/	/
Output energy (Wo) (Wh)	/	645	1550	3108	4702	6246	/	/	/
Energy efficiency(%)	/	94.7	97.8	98.5	98.8	98.8	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	851.0	845.6	847.4	848.5	847.6	/	/	/
Input voltage ripple (V)		1.2	1.7	1.2	1.3	1.2	/	/	/
Input current (A)	/	9.6	22.4	45.4	68.1	90.9	/	/	/
Input current ripple (A)		1.7	3.0	2.3	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	8.165	18.903	38.454	57.752	77.019	/	/	/
Output power (Po) (kW)	/	7.564	18.247	37.558	56.573	75.510	/	/	/
Output efficiency(%)	/	92.6	96.5	97.7	98.0	98.0	/	/	/
Input energy (Wi) (Wh)	/	682	1580	3214	4828	6435	/	/	/
Output energy (Wo) (Wh)	/	632	1525	3139	4730	6309	/	/	/
Energy efficiency(%)	/	92.7	96.5	97.7	98.0	98.0	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 50 Hz								
power conditioner type	Grid-connected								
Model:	**ASW80K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 50 Hz Rated output power: 80000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	461.4	462.6	460.0	459.3	458.2	/	/	/
Input voltage ripple (V)	/	1.2	1.2	1.2	1.2	1.2	/	/	/
Input current (A)	/	18.4	47.1	89.8	135.2	183.0	/	/	/
Input current ripple (A)	/	2.0	2.0	2.0	2.3	2.3	/	/	/
Input power (Pi) (kW)	/	8.497	21.788	41.316	62.107	83.826	/	/	/
Output power (Po) (kW)	/	8.029	21.045	40.287	60.716	81.982	/	/	/
Output efficiency(%)	/	94.5	96.6	97.5	97.8	97.8	/	/	/
Input energy (Wi) (Wh)	/	710	1827	3458	5192	7025	/	/	/
Output energy (Wo) (Wh)	/	671	1765	3372	5076	6870	/	/	/
Energy efficiency(%)	/	94.5	96.6	97.5	97.8	97.8	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	631.8	634.2	627.4	627.7	627.7	/	/	/
Input voltage ripple (V)	/	1.2	1.5	1.0	1.3	1.3	/	/	/
Input current (A)	/	12.6	31.9	63.1	94.5	125.6	/	/	/
Input current ripple (A)	/	2.0	2.0	2.3	1.7	2.0	/	/	/
Input power (Pi) (kW)	/	7.981	20.220	39.609	59.318	78.870	/	/	/
Output power (Po) (kW)	/	7.608	19.753	39.074	58.553	77.931	/	/	/
Output efficiency(%)	/	95.3	97.7	98.7	98.7	98.8	/	/	/
Input energy (Wi) (Wh)	/	666	1687	3309	4958	6586	/	/	/
Output energy (Wo) (Wh)	/	635	1649	3264	4894	6507	/	/	/
Energy efficiency(%)	/	95.3	97.7	98.6	98.7	98.8	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	848.8	846.1	846.1	847.8	847.9	/	/	/
Input voltage ripple (V)	/	1.2	1.2	1.5	1.3	1.3	/	/	/
Input current (A)	/	10.2	25.0	49.6	72.4	96.2	/	/	/
Input current ripple (A)	/	1.2	1.2	1.5	1.3	1.3	/	/	/
Input power (Pi) (kW)	/	8.671	21.111	41.963	61.415	81.532	/	/	/
Output power (Po) (kW)	/	8.033	20.378	40.985	60.162	79.934	/	/	/
Output efficiency(%)	/	92.6	96.5	97.7	98.0	98.0	/	/	/
Input energy (Wi) (Wh)	/	724	1766	3506	5131	6810	/	/	/
Output energy (Wo) (Wh)	/	671	1705	3424	5026	6677	/	/	/
Energy efficiency(%)	/	92.7	96.5	97.7	98.0	98.0	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 50 Hz								
power conditioner type	Grid-connected								
Model:	**ASW100K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 50 Hz Rated output power: 100000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	463.3	463.4	457.5	457.9	458.0	/	/	/
Input voltage ripple (V)	/	1.2	2.2	1.2	1.3	1.2	/	/	/
Input current (A)	/	23.8	57.4	112.1	167.5	223.6	/	/	/
Input current ripple (A)	/	2.0	2.3	1.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	11.031	26.591	51.292	76.684	102.432	/	/	/
Output power (Po) (kW)	/	10.474	25.772	50.102	75.020	100.168	/	/	/
Output efficiency(%)	/	95.0	96.9	97.7	97.8	97.8	/	/	/
Input energy (Wi) (Wh)	/	922	2221	4291	6413	8567	/	/	/
Output energy (Wo) (Wh)	/	875	2152	4192	6273	8377	/	/	/
Energy efficiency(%)	/	94.9	96.9	97.7	97.8	97.8	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	628.4	626.4	624.8	625.7	626.8	/	/	/
Input voltage ripple (V)	/	1.2	1.8	1.3	1.0	1.2	/	/	/
Input current (A)	/	15.9	36.4	79.0	108.1	156.9	/	/	/
Input current ripple (A)	/	2.0	1.7	2.3	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	9.967	22.813	49.386	67.663	98.321	/	/	/
Output power (Po) (kW)	/	9.566	22.341	48.778	66.845	97.092	/	/	/
Output efficiency(%)	/	96.0	97.9	98.8	98.8	98.8	/	/	/
Input energy (Wi) (Wh)	/	833	1905	4128	5654	8213	/	/	/
Output energy (Wo) (Wh)	/	799	1866	4077	5585	8110	/	/	/
Energy efficiency(%)	/	95.9	98.0	98.8	98.8	98.7	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	848.4	849.8	848.7	848.2	847.3	/	/	/
Input voltage ripple (V)	/	1.3	1.3	1.2	1.5	1.2	/	/	/
Input current (A)	/	12.6	30.4	60.5	90.3	120.3	/	/	/
Input current ripple (A)	/	2.0	1.7	1.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	10.657	25.824	51.355	76.558	101.903	/	/	/
Output power (Po) (kW)	/	10.009	25.026	50.235	75.035	99.896	/	/	/
Output efficiency(%)	/	93.9	96.9	97.8	98.0	98.0	/	/	/
Input energy (Wi) (Wh)	/	893	2157	4291	6393	8508	/	/	/
Output energy (Wo) (Wh)	/	839	2091	4198	6266	8341	/	/	/
Energy efficiency(%)	/	94.0	96.9	97.8	98.0	98.0	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 50 Hz								
power conditioner type	Grid-connected								
Model:	**ASW110K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 50 Hz Rated output power: 110000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	460.1	458.0	458.6	456.9	458.2	/	/	/
Input voltage ripple (V)	/	1.2	1.3	1.3	1.2	1.2	/	/	/
Input current (A)	/	24.8	59.0	120.2	179.7	241.4	/	/	/
Input current ripple (A)	/	2.0	1.7	1.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	11.406	27.033	55.105	82.103	110.613	/	/	/
Output power (Po) (kW)	/	10.869	26.224	53.832	80.288	108.091	/	/	/
Output efficiency(%)	/	95.3	97.0	97.7	97.8	97.7	/	/	/
Input energy (Wi) (Wh)	/	952	2258	4605	6857	9238	/	/	/
Output energy (Wo) (Wh)	/	908	2190	4498	6705	9027	/	/	/
Energy efficiency(%)	/	95.4	97.0	97.7	97.8	97.7	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	630.3	635.7	622.3	628.5	629.3	/	/	/
Input voltage ripple (V)	/	1.2	1.3	1.2	1.0	1.2	/	/	/
Input current (A)	/	17.3	43.3	89.8	131.9	177.3	/	/	/
Input current ripple (A)	/	2.0	2.0	2.0	1.7	1.7	/	/	/
Input power (Pi) (kW)	/	10.935	27.499	55.856	82.884	111.544	/	/	/
Output power (Po) (kW)	/	10.534	26.954	55.163	81.882	110.149	/	/	/
Output efficiency(%)	/	96.3	98.0	98.8	98.8	98.7	/	/	/
Input energy (Wi) (Wh)	/	920	2297	4663	6944	9311	/	/	/
Output energy (Wo) (Wh)	/	887	2252	4605	6860	9195	/	/	/
Energy efficiency(%)	/	96.4	98.0	98.8	98.8	98.8	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	850.1	847.8	849.2	847.9	846.6	/	/	/
Input voltage ripple (V)	/	1.2	1.3	1.2	1.0	1.3	/	/	/
Input current (A)	/	13.9	33.9	66.4	96.5	132.3	/	/	/
Input current ripple (A)	/	2.0	2.0	2.0	1.7	1.7	/	/	/
Input power (Pi) (kW)	/	11.828	28.706	56.422	81.786	112.038	/	/	/
Output power (Po) (kW)	/	11.042	27.730	55.226	80.175	109.808	/	/	/
Output efficiency(%)	/	93.4	96.6	97.9	98.0	98.0	/	/	/
Input energy (Wi) (Wh)	/	989	2401	4713	6836	9115	/	/	/
Output energy (Wo) (Wh)	/	923	2319	4613	6701	8934	/	/	/
Energy efficiency(%)	/	93.3	96.6	97.9	98.0	98.0	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 60 Hz								
power conditioner type	Grid-connected								
Model:	**ASW75K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 60 Hz Rated output power: 75000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	458.9	464.2	456.5	459.1	457.9	/	/	/
Input voltage ripple (V)	/	1.0	1.5	1.3	1.0	1.2	/	/	/
Input current (A)	/	17.4	40.8	84.9	126.0	172.4	/	/	/
Input current ripple (A)	/	1.7	1.7	1.7	1.7	1.7	/	/	/
Input power (Pi) (kW)	/	8.004	18.941	38.763	57.845	78.963	/	/	/
Output power (Po) (kW)	/	7.519	18.222	37.662	56.428	77.155	/	/	/
Output efficiency(%)	/	93.9	96.2	97.2	97.6	97.7	/	/	/
Input energy (Wi) (Wh)	/	670	1583	3243	4842	6599	/	/	/
Output energy (Wo) (Wh)	/	629	1522	3150	4723	6448	/	/	/
Energy efficiency(%)	/	93.9	96.1	97.1	97.5	97.7	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	634.1	638.1	630.8	632.0	629.4	/	/	/
Input voltage ripple (V)	/	1.2	1.3	1.0	1.2	1.2	/	/	/
Input current (A)	/	12.8	29.4	59.9	90.2	120.4	/	/	/
Input current ripple (A)	/	2.0	1.7	2.0	1.7	2.3	/	/	/
Input power (Pi) (kW)	/	8.125	18.782	37.803	57.019	75.787	/	/	/
Output power (Po) (kW)	/	7.685	18.350	37.198	56.261	74.809	/	/	/
Output efficiency(%)	/	94.6	97.7	98.4	98.7	98.7	/	/	/
Input energy (Wi) (Wh)	/	679	1570	3159	4200	6333	/	/	/
Output energy (Wo) (Wh)	/	642	1533	3108	4144	6251	/	/	/
Energy efficiency(%)	/	94.6	97.6	98.4	98.7	98.7	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	851.7	846.8	847.7	850.6	847.0	/	/	/
Input voltage ripple (V)	/	1.0	1.0	1.2	1.2	1.2	/	/	/
Input current (A)	/	9.6	22.3	45.3	67.9	91.0	/	/	/
Input current ripple (A)	/	2.0	6.0	2.3	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	8.170	18.922	38.439	57.741	77.043	/	/	/
Output power (Po) (kW)	/	7.562	18.246	37.505	56.505	75.456	/	/	/
Output efficiency(%)	/	92.6	96.4	97.6	97.9	97.9	/	/	/
Input energy (Wi) (Wh)	/	683	1581	3212	4823	6438	/	/	/
Output energy (Wo) (Wh)	/	632	1524	3134	4720	6305	/	/	/
Energy efficiency(%)	/	92.5	96.4	97.6	97.9	97.9	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 60 Hz								
power conditioner type	Grid-connected								
Model:	**ASW80K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 60 Hz Rated output power: 80000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	464.7	458.7	459.3	459.7	458.0	/	/	/
Input voltage ripple (V)	/	1.2	1.2	2.0	1.2	2.0	/	/	/
Input current (A)	/	18.3	47.5	90.2	135.3	183.2	/	/	/
Input current ripple (A)	/	2.0	2.0	3.3	2.0	4.3	/	/	/
Input power (Pi) (kW)	/	8.517	21.808	41.433	62.174	83.909	/	/	/
Output power (Po) (kW)	/	8.042	21.043	40.360	60.719	81.979	/	/	/
Output efficiency(%)	/	94.4	96.5	97.4	97.7	97.7	/	/	/
Input energy (Wi) (Wh)	/	712	1821	3461	5194	7009	/	/	/
Output energy (Wo) (Wh)	/	672	1757	3371	5072	6848	/	/	/
Energy efficiency(%)	/	94.4	96.5	97.4	97.7	97.7	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	632.7	634.2	627.7	626.2	627.5	/	/	/
Input voltage ripple (V)	/	1.3	1.3	1.3	1.2	1.3	/	/	/
Input current (A)	/	12.9	31.9	63.2	94.8	125.8	/	/	/
Input current ripple (A)	/	2.0	2.0	2.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	8.185	20.238	39.638	59.374	78.951	/	/	/
Output power (Po) (kW)	/	7.794	19.750	39.071	58.555	77.948	/	/	/
Output efficiency(%)	/	95.2	97.6	98.6	98.6	98.7	/	/	/
Input energy (Wi) (Wh)	/	683	1691	3314	4959	6596	/	/	/
Output energy (Wo) (Wh)	/	650	1650	3267	4891	6512	/	/	/
Energy efficiency(%)	/	95.2	97.6	98.6	98.6	98.7	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	850.0	845.4	849.4	848.7	849.1	/	/	/
Input voltage ripple (V)	/	1.2	1.2	2.7	1.2	1.2	/	/	/
Input current (A)	/	10.2	25.0	49.3	72.4	96.1	/	/	/
Input current ripple (A)	/	2.0	3.0	4.7	2.3	2.0	/	/	/
Input power (Pi) (kW)	/	8.663	21.131	41.910	61.422	81.604	/	/	/
Output power (Po) (kW)	/	8.018	20.376	40.892	60.108	79.931	/	/	/
Output efficiency(%)	/	92.6	96.4	97.6	97.9	97.9	/	/	/
Input energy (Wi) (Wh)	/	723	1765	3500	5134	6821	/	/	/
Output energy (Wo) (Wh)	/	669	1702	3415	5024	6681	/	/	/
Energy efficiency(%)	/	92.5	96.4	97.6	97.9	97.9	/	/	/
Remark: (*)If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 60 Hz								
power conditioner type	Grid-connected								
Model:	**ASW100K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 60 Hz Rated output power: 100000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	462.8	462.0	457.7	457.9	456.7	/	/	/
Input voltage ripple (V)	/	1.2	1.2	1.2	1.2	1.0	/	/	/
Input current (A)	/	23.9	57.6	112.2	167.7	224.5	/	/	/
Input current ripple (A)	/	1.7	2.0	2.3	2.0	1.7	/	/	/
Input power (Pi) (kW)	/	11.040	26.626	51.335	76.779	102.532	/	/	/
Output power (Po) (kW)	/	10.473	25.777	50.083	75.021	100.164	/	/	/
Output efficiency (%)	/	94.9	96.8	97.6	97.7	97.7	/	/	/
Input energy (Wi) (Wh)	/	922	2227	4289	6415	8562	/	/	/
Output energy (Wo) (Wh)	/	874	2156	4184	6268	8364	/	/	/
Energy efficiency(%)	/	94.8	96.8	97.6	97.7	97.7	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	636.0	629.3	627.4	629.0	626.0	/	/	/
Input voltage ripple (V)	/	1.3	1.7	1.0	1.2	1.8	/	/	/
Input current (A)	/	15.6	40.6	78.8	107.7	157.2	/	/	/
Input current ripple (A)	/	2.0	1.7	1.7	2.0	2.0	/	/	/
Input power (Pi) (kW)	/	9.927	25.548	49.470	67.757	98.417	/	/	/
Output power (Po) (kW)	/	9.518	24.991	48.807	66.869	97.089	/	/	/
Output efficiency (%)	/	95.9	97.8	98.7	98.7	98.7	/	/	/
Input energy (Wi) (Wh)	/	829	2135	4132	5660	8210	/	/	/
Output energy (Wo) (Wh)	/	795	2088	4076	5586	8099	/	/	/
Energy efficiency(%)	/	95.9	97.8	98.6	98.7	98.6	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	845.6	846.4	847.9	848.6	848.3	/	/	/
Input voltage ripple (V)		1.3	1.3	1.2	1.2	1.2	/	/	/
Input current (A)	/	12.6	30.6	60.6	90.3	120.2	/	/	/
Input current ripple (A)		2.0	1.7	1.7	2.0	1.7	/	/	/
Input power (Pi) (kW)	/	10.695	25.860	51.389	76.617	101.938	/	/	/
Output power (Po) (kW)	/	10.035	25.035	50.217	75.015	99.828	/	/	/
Output efficiency(%)	/	93.8	96.8	97.7	97.9	97.9	/	/	/
Input energy (Wi) (Wh)	/	894	2160	4304	6431	8516	/	/	/
Output energy (Wo) (Wh)	/	838	2091	4206	6297	8340	/	/	/
Energy efficiency(%)	/	93.7	96.8	97.7	97.9	97.9	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	Efficiency recording and efficient calculation sheet for 60 Hz								
power conditioner type	Grid-connected								
Model:	**ASW110K-LT**								
Parameters of power conditioner	Minimum rated input voltage:200 V Nominal voltage: 630 V Maximum input voltage: 1100 V MPPT voltage range: 200 ~ 1000 V MPPT voltage range with full power: 460 ~ 850 V Rated output voltage: 230 V Rated output frequency: 60 Hz Rated output power: 110000 W Note: According to the user manual, the minimum rated input voltage is 200 V, and 90% of the inverter's maximum input voltage is 90%*1100 V=990 V. However, in this range, the inverter can't output full power. So, for this test, 460 V were used instead of 200 V, and 850 V were used instead of 990 V.								
PV input voltage	a) Manufacturer's minimum rated input voltage 460 V (±6.90 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	458.3	456.2	456.9	459.9	456.5	/	/	/
Input voltage ripple (V)	/	2.0	1.2	1.3	1.0	1.0	/	/	/
Input current (A)	/	24.9	59.6	120.7	184.1	242.6	/	/	/
Input current ripple (A)	/	2.0	2.0	2.0	1.7	2.0	/	/	/
Input power (Pi) (kW)	/	11.404	27.172	55.143	84.662	110.731	/	/	/
Output power (Po) (kW)	/	10.856	26.333	53.814	82.697	108.095	/	/	/
Output efficiency(%)	/	95.2	96.9	97.6	97.7	97.6	/	/	/
Input energy (Wi) (Wh)	/	952	2266	4602	7070	9251	/	/	/
Output energy (Wo) (Wh)	/	906	2196	4491	6906	9031	/	/	/
Energy efficiency(%)	/	95.2	96.9	97.6	97.7	97.6	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	b) The inverter's nominal voltage 630 V (±9.45 V)								
Temperature (°C)	25 ºC ± 5 ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	629.0	628.8	628.5	632.2	623.6	/	/	/
Input voltage ripple (V)	/	1.2	1.2	1.3	1.0	1.2	/	/	/
Input current (A)	/	17.9	44.0	86.6	132.1	176.3	/	/	/
Input current ripple (A)	/	1.7	2.0	2.0	2.3	2.0	/	/	/
Input power (Pi) (kW)	/	11.286	27.640	54.423	83.518	109.924	/	/	/
Output power (Po) (kW)	/	10.861	27.065	53.695	82.424	108.465	/	/	/
Output efficiency(%)	/	96.2	97.9	98.7	98.7	98.7	/	/	/
Input energy (Wi) (Wh)	/	943	2310	4541	7083	9685	/	/	/
Output energy (Wo) (Wh)	/	907	2262	4481	6990	9557	/	/	/
Energy efficiency(%)	/	96.2	97.9	98.7	98.7	98.7	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

PV input voltage	c) 90% of the inverter's maximum input voltage 850 V (± 12.75 V)								
Temperature (°C)	25ºC ± 5ºC								
Operating period for energy measurement (min)	5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%(*)	/	/
Input voltage (V)	/	849.3	846.6	847.9	848.2	849.5	/	/	/
Input voltage ripple (V)	/	1.0	1.2	1.2	1.3	1.0	/	/	/
Input current (A)	/	13.9	33.9	66.7	96.5	132.2	/	/	/
Input current ripple (A)	/	2.0	1.7	2.0	2.3	2.3	/	/	/
Input power (Pi) (kW)	/	11.811	28.734	56.513	81.848	112.316	/	/	/
Output power (Po) (kW)	/	11.015	27.729	55.260	80.156	109.971	/	/	/
Output efficiency(%)	/	93.3	96.5	97.8	97.9	97.9	/	/	/
Input energy (Wi) (Wh)	/	987	2405	4724	6836	9107	/	/	/
Output energy (Wo) (Wh)	/	921	2321	4619	6697	8923	/	/	/
Energy efficiency(%)	/	93.3	96.5	97.8	98.0	98.0	/	/	/
Remark: (*) If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived.									

TABLE	No load loss for 50 Hz	P
power conditioner type	Utility-interactive	
ASW75K-LT		
Measure input voltage (V)	650.7	
Measured input power (W)	15.5	
ASW80K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	13.0	
ASW100K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	11.3	
ASW110K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	9.1	
Remark: No load loss is measured when the power conditioner works at rated input voltage and its load is disconnected.		

TABLE	No load loss for 60 Hz	**P**
power conditioner type	Utility-interactive	
ASW75K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	15.7	
ASW80K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	15.3	
ASW100K-LT		
Measure input voltage (V)	650.6	
Measured input power (W)	15.3	
ASW110K-LT		
Measure input voltage (V)	650.5	
Measured input power (W)	15.4	
Remark: No load loss is measured when the power conditioner works at rated input voltage and its load is disconnected.		

TABLE	Standby loss for 50 Hz	**P**
power conditioner type	Utility-interactive	
ASW75K-LT		
Measure input voltage (V)	230.4	
Measured input power (W)	-54.1	
ASW80K-LT		
Measure input voltage (V)	230.4	
Measured input power (W)	-54.1	
ASW100K-LT		
Measure input voltage (V)	230.4	
Measured input power (W)	-54.1	
ASW110K-LT		
Measure input voltage (V)	230.4	
Measured input power (W)	-54.1	
Remark: Standby loss is measured when the power conditioner works at rated input voltage and in standby mode.		

TABLE	Standby loss for 60 Hz	P
power conditioner type	Utility-interactive	
ASW75K-LT		
Measure input voltage (V)	230.5	
Measured input power (W)	-49.6	
ASW80K-LT		
Measure input voltage (V)	230.5	
Measured input power (W)	-49.6	
ASW100K-LT		
Measure input voltage (V)	230.5	
Measured input power (W)	-49.6	
ASW110K-LT		
Measure input voltage (V)	230.5	
Measured input power (W)	-49.6	
Remark: Standby loss is measured when the power conditioner works at rated input voltage and in standby mode.		

--- End of test report---

ATTACHMENT I

(Pictures of the EUT and Electrical Schemes)

1 PICTURES

Front view

Back Side

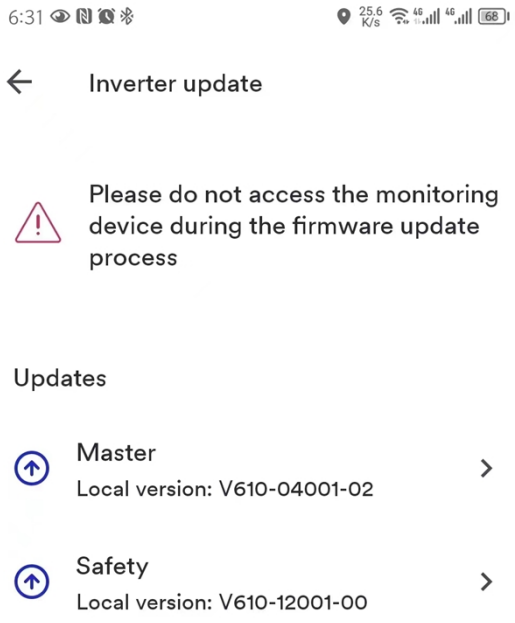

Connection interface

Top Side

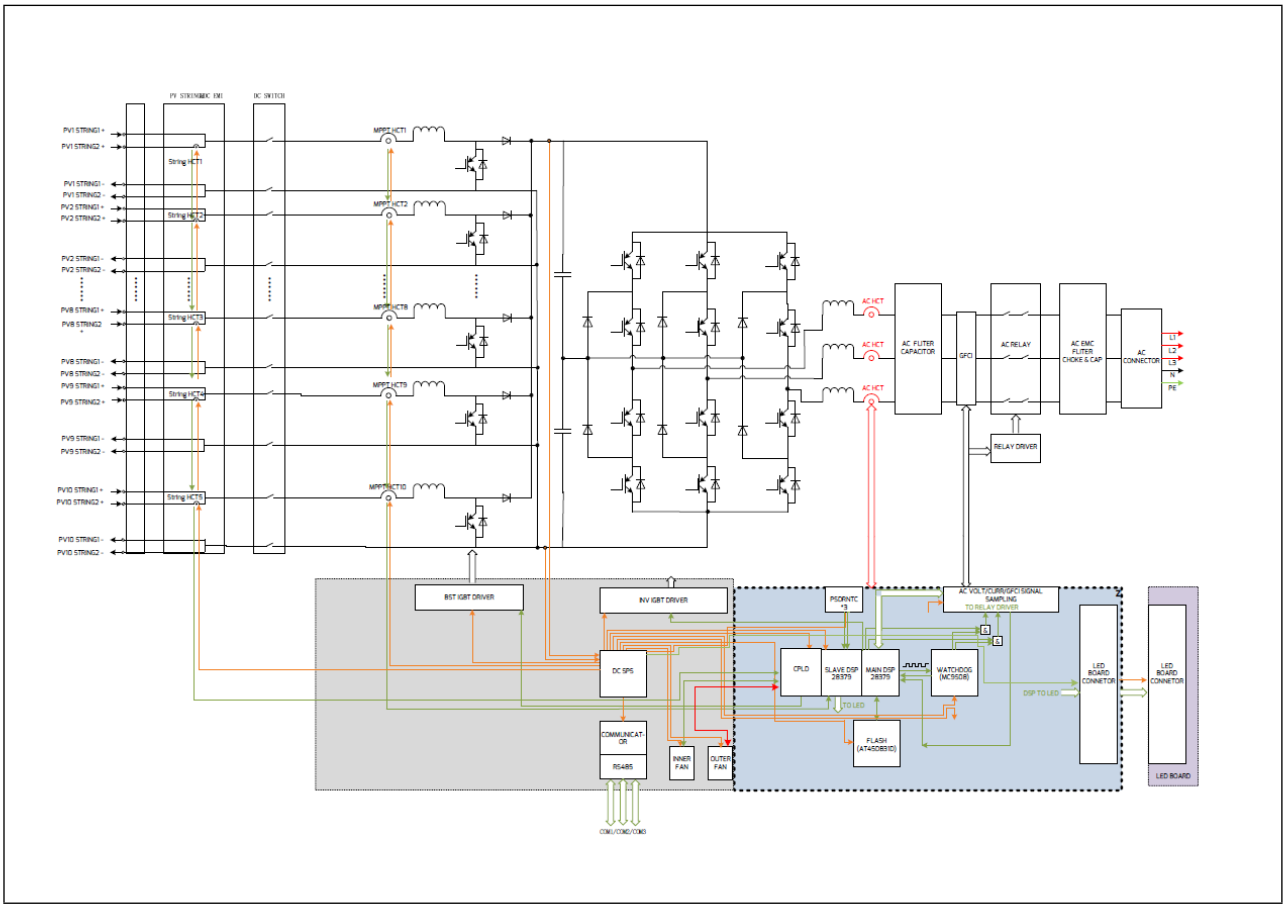

Left Side

Right side


Serial number

Software version


2 ELECTRICAL SCHEMES



ATTACHMENT II

(Testing information)

1 TESTING CIRCUIT

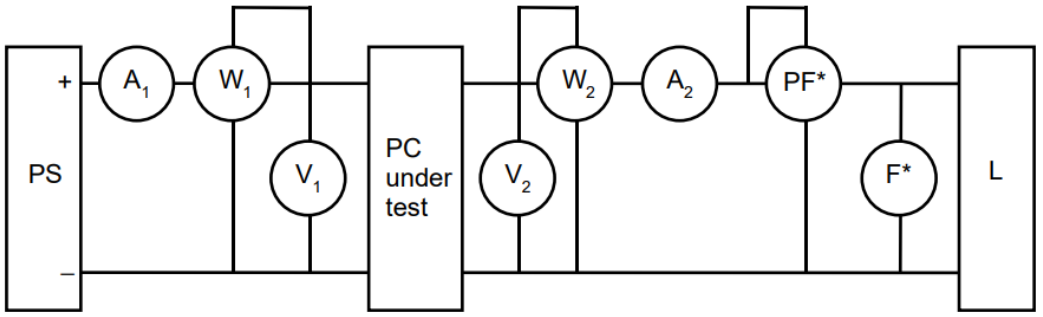


Figure 1a – Stand-alone type

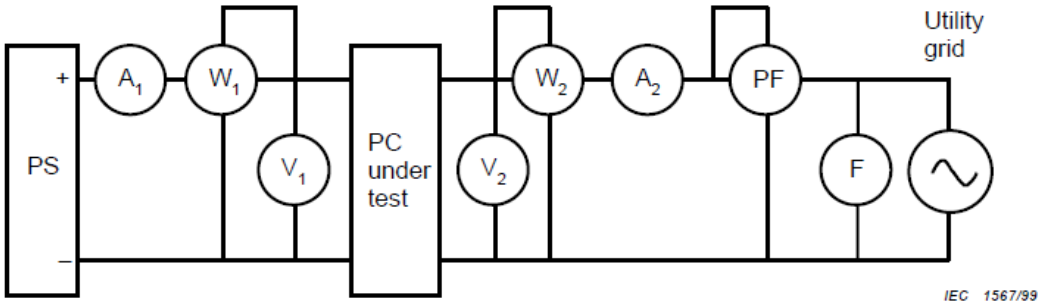


Figure 1b – Utility-interactive type

PC	power conditioner	L	load
PS	variable voltage-current d.c. power supply	F	frequency meter
A_1	DC ammeter	V_1	DC voltmeter
A_2	AC or d.c. ammeter	V_2	AC or d.c. voltmeter
W_1	DC wattmeter	PF	power factor meter
W_2	AC or d.c. wattmeter		

Current and voltage clamps have been connected to the inverter input/output for all the tests.

All the tests and checks have been performed in accordance with the reference standard under testing.

2 TESTING EQUIPMENT

From	No.	Equipment Name	Trademark / Model	Equipment No.	Calibration Period
SGS	1	Digital Oscilloscope	Tektronix/ MDO3022	GZE007-41	2022/10/08 to 2023/10/07
	2	Differential probe	Tektronix/ P5210A	GZE007-25	2022/01/20 to 2023/01/19
	3	Current probe	CA/PAC 12	GZE007-31	2022/10/18 to 2023/10/17
	4	Power Analyzer	Yokogawa/ WT3000	GZE006-72	2022/06/23 to 2023/06/22
	5	Temperature & Humidity meter	KTJ/ TA218D	GZE020-67	2022/05/05 to 2023/05/04

Items	Specifications
1) PV array simulator	
a) Voltage range	0 – 1500 Vdc
b) Current range	0 – 200 A
2) AC Source	
a) Output wiring	Three phase
b) Output capacity	200 kVA
c) Output voltage	0 - 300 Vrms
d) Output frequency	30 - 100 Hz
e) Voltage stability	/
f) Output voltage distortion	/
3) Power Analyzer	
a) Voltage range	0 – 1000 Vdc, 0 – 1000 Va.c.
b) Current range	0 – 200 A
c) Frequency range (accuracy)	0 – 999.99 kHz (0.005%)
d) Measurement items	Voltage (V) Current (A) Active power (W) Reactive power (Var) Volt-ampere (VA) Power factor (PF) Frequency (Hz) Electric energy (Wh)
4) Digital Oscilloscope	
a) Sampling speed	2.5GS/s
b) Recording device	Memory record and USB reading
c) Time accuracy	± 10 ppm
5) AC load	
a) Resistive load	Capacity: 150.36 kW
b) Inductive load	Capacity: 150.36 kVAr
c) Capacitive load	Capacity: 150.36 kVAr

3 MEASUREMENT UNCERTAINTY

Magnitude	Uncertainty
Voltage measurement uncertainty	±1.5 %
Current measurement uncertainty	±2.0 %
Frequency measurement uncertainty	±0.2 %
Time measurement uncertainty	±0.2 %
Power measurement uncertainty	±2.5 %
Phase Angle	±1º
Temperature	±3º C
Note1: Measurement uncertainties showed in this table are maximum allowable uncertainties. The measurement uncertainties associated with other parameters measured during the tests are in the laboratory at disposal of the petitioner. Note2: Where the standard requires lower uncertainties that those in this table. Most restrictive uncertainty has been considered.	