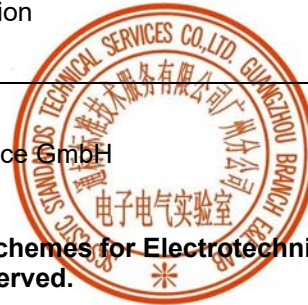
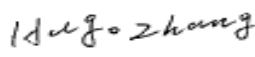





<p><b>TEST REPORT</b> <b>IEC 61683</b></p> <p><b>Photovoltaic systems – Power conditioners –</b> <b>Procedure for measuring efficiency</b></p>	
Report Number .....	GZES201103204503
Date of issue .....	09 / 12 / 2020
Total number of pages .....	27
Applicant's name .....	EVOLVE ENERGY GROUP CO., LIMITED
Address .....	RM 702,7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK
<b>Test specification:</b>	
Standard .....	IEC 61683:1999 (First Edition)
Test procedure .....	Characteristic Examination
Non-standard test method .....	N/A
Test Report Form No .....	IEC61683A
Test Report Form(s) Originator .....	TÜV SÜD Product Service GmbH
Master TRF .....	Dated 2014-10
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<b>General disclaimer:</b>	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.</p>	






<b>Testing procedure and testing location:</b>		
<input type="checkbox"/>	<b>CB Testing Laboratory:</b>	
<b>Testing location/ address.....:</b>		
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	
<input checked="" type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	Shenzhen SOFARSOLAR Co., Ltd.
<b>Testing location/ address.....:</b>		401, Building 4, AnTongDa Industrial Park, District 68, XingDong Community, XinAn Street, BaoAn District, Shenzhen, Guangdong, China
<b>Tested by (name + signature).....:</b>		Hugo zhang (Project Engineer) 
<b>Approved by (name + signature).....:</b>		Roger Hu (Project Engineer) 
<input type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	
<input type="checkbox"/>	<b>Testing procedure: SMT/CTF Stage 3 or 4:</b>	



<b>List of Attachments (including a total number of pages in each attachment):</b>		
50Hz		
Attachment #	Description	Pages
Attachment I	Pictures of the EUT and Electrical Schemes	18 pages
Attachment II	Testing Information	5 pages
<b>Summary of testing:</b>		
<p><b>Tests performed (name of test and test clause):</b></p> <p>The equipment has been tested according to the standard: IEC 61683:1999. Testing has been carried out at 50Hz.</p> <p>All applicable tests according to the above specified standard have been carried out.</p> <p>From the result of inspection and tests on the submitted sample, we conclude that it complies with the requirements of the standard.</p> <p><b>Remarks:</b> All the test results are from the report below:</p> <ul style="list-style-type: none"> <li>- IEC 61683:1999 (First Edition)</li> </ul> <p>Test Report No: GZES201203336803</p>	<p><b>Testing location:</b></p> <p>Shenzhen SOFARSOLAR Co., Ltd. 401, Building 4, AnTongDa Industrial Park, District 68, XingDong Community, XinAn Street, BaoAn District, Shenzhen, Guangdong, China (All clauses)</p>	
<b>Summary of compliance with National Differences</b>		
<b>List of countries addressed</b>		
No National Differences are addressed to this test report		

**Copy of marking plate(representative):**

<b>EVVO</b> Solar Grid-tied Inverter	
Model No:	E-100KTL
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/N/PE,380/400Vac
Max. Output Current	160A
Rated Grid Frequency	50/60Hz
Rated Output Power	100KW
Max. Output Power	110KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Factory - Shenzhen China	
Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK Global Head Quarters 371 Sidco Industrial Estate Chennai 600098 India	
VDE0126-1-1, VDE-AR-N4105, G99, IEC61727 IEC62116, AS4777	
	

**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 E- 100KTL's except the parameters of rating.



<b>Test item particulars</b> ..... : Solar Grid-tied Inverter (Three Phase Inverter)	
<b>Classification of installation and use</b> ..... : Fixed(permanent connection)	
<b>Supply Connection</b> ..... : DC; PV ..... : AC; Grid connection	
<b>Possible test case verdicts:</b> - 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)	
<b>Testing</b> ..... : CTF Stage 1 procedure	
<b>Date of receipt of test item</b> ..... : N/A	
<b>Date (s) of performance of tests</b> ..... : From 20/08/2020 to 15/09/2020	
<b>General remarks:</b> "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.  This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/terms_and_conditions.htm">www.sgs.com/terms_and_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/terms_e-document.htm">www.sgs.com/terms_e-document.htm</a> . Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.	
<b>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</b>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECCE 02:</b>	
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 .....	<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> ..... : Dongguan SOFARSOLAR Co., Ltd. 1F - 6F, Building E, No. 1 JinQi Road, Bihu Industrial Park, Wulian Village, Fenggang Town, Dongguan,Guangdong, China.	

**General product information:**

Product covered by this report is grid-connected PV inverter for indoor or outdoor installation. The connection to the DC input and AC output are through connectors.

The Solar inverter converts DC voltage into AC voltage.

The input and output are protected by varistors to Earth. The unit is providing EMC filtering at the output toward mains. The unit does not provide galvanic separation from input to output (transformerless). The output is switched off redundant by the high power switching bridge and a two relays. This assures that the opening of the output circuit can operate in case of one error.

**Equipment Under Testing:**

- E- 100KTL

**Variant models:**

- E- 75KTL
- E- 80KTL
- E- 110KTL
- E- 100KTL-HV
- E- 125KTL-HV
- E- 136KTL-HV

Model	E- 75KTL	E- 80KTL	E- 100KTL	E- 110KTL	E- 100KTL -HV	E- 125KTL -HV	E- 136KTL -HV
DC Input							
Max. DC voltage	1100V						
Rated input voltage	625V	625V	625V	625V	725V	725V	785V
Start-up operating voltage	200V						
MPPT voltage range	180V~1000V						
Full power MPPT voltage range	500V-850V				550V-850V		
Max. input current	8*26A	8*26A	10*26A	10*26A	10*26A	10*26A	12*26A
Max. input short circuit current	8*40A	8*40A	10*40A	10*40A	10*40A	10*40A	12*40A
AC Output							
Rated power	75kW	80kW	100kW	110kW	100kW	125kW	136kW
Max. AC power	75kVA	88kVA	110kVA	121kVA	110kVA	137kVA	150kVA

Max. output current	113A	128A	160A	175A	128A	160A	160A
Nominal grid voltage	3/N/PE, 380V/400Vac				3/PE, 500Vac		3/PE, 540Vac
Nominal output frequency	50Hz						
Output power factor	1 default (adjustable +/-0.8)						
Operating temperature range	-30°C ~60°C						
Ingress protection	IP66						
Protective class	Class I						

The variants models have been included in this test report without tests because the following features don't change regarding to the tested model:

- Same connection system and hardware topology
- Same control algorithm.
- Same Firmware Version

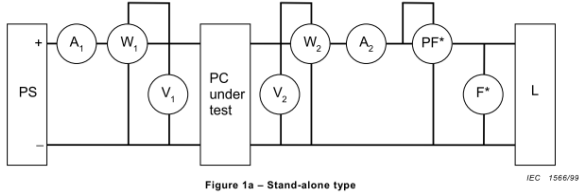
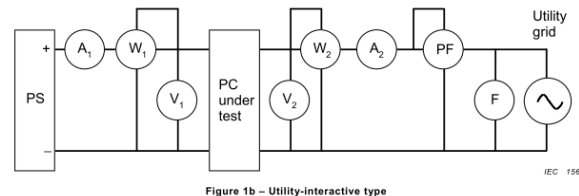


IEC 61683: 1999			
Clause	Requirement – Test	Measuring result – Remark	Verdict
4	Efficiency measurement conditions		P
	Efficiency is measured under the conditions in the following clauses.		P
	Specific conditions may be excluded by mutual agreement when those conditions are outside the manufacturer's 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 $25\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ .		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 have been carried out at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$	P
4.3	Output voltage and frequency		P
	The output voltage and frequency are maintained at the manufacturer's stated nominal values.	3/N/PE 380V/400V, 3/PE 500V and 540V, 50Hz	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
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		P

## IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
	factor adjustment, measure the efficiency for power levels of 10 %, 25 %, 50 %, 75 %, 100 % and 120 % of the inverter's rating.		
	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) = $(80 \pm 5) \%$ ) equal to $(25 \pm 5) \%$ 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 $(50 \pm 5) \%$ 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
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 = $(80 \pm 5) \%$ ) equal to $(50 \pm 5) \%$ 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

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
5.4	Efficiency tolerances		P
6	Conditions of loading for output ports		P
6.1	Test circuit		P
	Figure 1a is applied to standard-alone power conditioners		N/A
	 <p>Figure 1a – Stand-alone type</p> <p>IEC 1566/99</p>		N/A
	Figure 1b is applied to utility-interactive power conditioners		P
	 <p>Figure 1b – Utility-interactive type</p> <p>IEC 1567/9</p> <p>PC power conditioner PS variable voltage-current d.c. power supply A<sub>1</sub> DC ammeter A<sub>2</sub> AC or d.c. ammeter W<sub>1</sub> DC wattmeter W<sub>2</sub> AC or d.c. wattmeter L load F frequency meter V<sub>1</sub> DC voltmeter V<sub>2</sub> AC or d.c. voltmeter PF power factor meter</p>		P
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

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 75KTL								
Parameters of power conditioner	Minimum full load input voltage:500V Nominal voltage:625V 90% of the inverter's maximum input voltage: 765V Rated output voltage: 230Vac Rated output frequency:50Hz Rated output power: <b>75000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 500V ( $\pm 7.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	508.0	499.0	498.0	498.2	499.3	/	/	/
Input voltage ripple (mV)	/	0.7	0.7	0.7	0.7	0.7	/	/	/
Input current (A)	/	16.5	39.4	77.3	115.7	154.3	/	/	/
Input current ripple (mA)	/	4.7	4.6	4.7	4.7	4.6	/	/	/
Input power (Pi) (W)	/	7752	19286	38272	57452	76916	/	/	/
Output power (Po) (W)	/	7535	18870	37563	56250	75086	/	/	/
Output efficiency(%)	/	97.19	97.85	98.15	97.91	97.62	/	/	/
Input energy (Wi) (Wh)	/	256.25	637.51	1265.12	1899.11	2563.89	/	/	/
Output energy (Wo) (Wh)	/	249.10	623.86	1242.10	1860.03	2503.75	/	/	/
Energy efficiency(%)	/	97.21	97.86	98.18	97.94	97.65	/	/	/
PV input voltage	b) The inverter's nominal voltage 625V ( $\pm 9.4V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	627.0	625.4	621.2	622.5	625.2	/	/	/

IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input voltage ripple (mV)	/	0.5	0.9	0.4	0.4	0.4	/	/	/
Input current (A)	/	12.4	30.6	61.5	91.7	122.1	/	/	/
Input current ripple (mA)	/	1.4	1.3	1.3	1.4	1.3	/	/	/
Input power (Pi) (W)	/	7697	19095	38192	57083	76327	/	/	/
Output power (Po) (W)	/	7564	18808	37711	56275	75114	/	/	/
Output efficiency(%)	/	98.28	98.49	98.74	98.58	98.41	/	/	/
Input energy (Wi) (Wh)	/	256.57	636.52	1273.09	1831.46	2544.25	/	/	/
Output energy (Wo) (Wh)	/	252.18	627.03	1257.47	1806.14	2504.70	/	/	/
Energy efficiency(%)	/	98.29	98.51	98.77	98.62	98.45	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	758.6	757.5	759.2	768.7	768.4	/	/	/
Input voltage ripple (mV)	/	0.4	0.4	0.4	0.4	0.4	/	/	/
Input current (A)	/	10.5	25.5	50.4	74.9	100.1	/	/	/
Input current ripple (mA)	/	2.0	2.0	2.2	2.2	2.8	/	/	/
Input power (Pi) (W)	/	7768	19137	38073	57281	76514	/	/	/
Output power (Po) (W)	/	7592	18851	37578	56308	75052	/	/	/
Output efficiency(%)	/	97.74	98.51	98.70	98.30	98.09	/	/	/
Input energy (Wi) (Wh)	/	256.77	635.23	1269.22	1877.54	2539.83	/	/	/
Output energy (Wo) (Wh)	/	251.00	625.84	1253.14	1846.29	2492.15	/	/	/
Energy efficiency(%)	/	97.75	98.52	98.73	98.34	98.12	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE		Efficiency recording and efficient calculation sheet							
power conditioner type	Grid-connected								
Model:	E- 80KTL								
Parameters of power conditioner	Minimum full load input voltage:500V Nominal voltage:625V 90% of the inverter's maximum input voltage:765V Rated output voltage: 230Vac Rated output frequency:50Hz Rated output power: <b>80000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 500V ( $\pm 7.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	500.4	499.5	502.9	506.1	497.0	/	/	/
Input voltage ripple (mV)	/	3.8	4.0	3.8	3.8	4.2	/	/	/
Input current (A)	/	16.9	41.4	81.4	123.1	165.6	/	/	/
Input current ripple (mA)	/	6.2	6.3	6.6	6.7	6.8	/	/	/
Input power (Pi) (W)	/	8248	20604	40921	61621	82260	/	/	/
Output power (Po) (W)	/	8018	20203	40171	60368	80340	/	/	/
Output efficiency(%)	/	97.21	98.06	98.17	97.97	97.67	/	/	/
Input energy (Wi) (Wh)	/	412.37	1030.08	2045.84	3080.77	4112.63	/	/	/
Output energy (Wo) (Wh)	/	400.95	1010.25	2009.19	3019.39	4018.28	/	/	/
Energy efficiency(%)	/	97.23	98.08	98.21	98.01	97.71	/	/	/
PV input voltage	b) The inverter's nominal voltage 625V ( $\pm 9.4V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	624.9	624.8	624.6	624.4	624.1	/	/	/

IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input voltage ripple (mV)	/	3.9	3.9	3.9	4.0	3.9	/	/	/
Input current (A)	/	13.1	32.5	64.9	97.6	130.5	/	/	/
Input current ripple (mA)	/	6.9	6.6	6.1	6.1	6.7	/	/	/
Input power (Pi) (W)	/	8162	20284	40506	60902	81418	/	/	/
Output power (Po) (W)	/	8036	20045	40019	60019	80038	/	/	/
Output efficiency(%)	/	98.46	98.82	98.80	98.55	98.30	/	/	/
Input energy (Wi) (Wh)	/	408.11	1014.21	2025.31	3045.14	4070.94	/	/	/
Output energy (Wo) (Wh)	/	401.91	1002.50	2001.86	3002.34	4003.70	/	/	/
Energy efficiency(%)	/	98.48	98.84	98.84	98.59	98.35	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	765.6	765.7	765.6	765.6	765.6	/	/	/
Input voltage ripple (mV)	/	4.0	4.1	4.0	3.9	3.9	/	/	/
Input current (A)	/	11.1	26.8	53.4	80.3	107.2	/	/	/
Input current ripple (mA)	/	6.9	7.1	7.4	6.9	7.0	/	/	/
Input power (Pi) (W)	/	8177	20331	40554	61053	81543	/	/	/
Output power (Po) (W)	/	8015	20053	39982	60050	79994	/	/	/
Output efficiency(%)	/	98.02	98.63	98.59	98.36	98.10	/	/	/
Input energy (Wi) (Wh)	/	408.80	1016.44	2027.50	3052.36	4076.75	/	/	/
Output energy (Wo) (Wh)	/	400.75	1002.77	1999.72	3003.47	4000.98	/	/	/
Energy efficiency(%)	/	98.03	98.65	98.63	98.40	98.14	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 100KTL								
Parameters of power conditioner	Minimum full load input voltage:500V Nominal voltage:625V 90% of the inverter's maximum input voltage: 765V Rated output voltage: 230Vac Rated output frequency:50Hz Rated output power: <b>100000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 500V ( $\pm 7.5V$ )								
Temperature ( $^{\circ}C$ )	$25^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	500.0	499.8	499.3	498.8	498.3	/	/	/
Input voltage ripple (mV)	/	4.2	4.3	4.2	3.9	4.0	/	/	/
Input current (A)	/	21.1	51.3	102.1	153.5	205.8	/	/	/
Input current ripple (mA)	/	6.6	6.9	6.5	7.0	6.5	/	/	/
Input power (Pi) (W)	/	10366	25481	50913	76531	102535	/	/	/
Output power (Po) (W)	/	10127	25007	50001	75066	100088	/	/	/
Output efficiency(%)	/	97.70	98.14	98.21	98.09	97.61	/	/	/
Input energy (Wi) (Wh)	/	518.28	1274.06	2545.67	3826.58	5126.77	/	/	/
Output energy (Wo) (Wh)	/	506.49	1250.86	2501.17	3755.02	5006.68	/	/	/
Energy efficiency(%)	/	97.73	98.18	98.25	98.13	97.66	/	/	/
PV input voltage	d) The inverter's nominal voltage 625V ( $\pm 9.4V$ )								
Temperature ( $^{\circ}C$ )	$25^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	624.9	624.8	624.5	624.2	623.8	/	/	/



IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input voltage ripple (mV)	/	4.1	4.0	4.1	4.1	4.1	/	/	/
Input current (A)	/	16.3	40.6	81.3	122.3	163.4	/	/	/
Input current ripple (mA)	/	7.1	6.9	6.5	6.5	6.7	/	/	/
Input power (Pi) (W)	/	10159	25323	50737	76321	101882	/	/	/
Output power (Po) (W)	/	10021	25016	50024	75056	100047	/	/	/
Output efficiency(%)	/	98.64	98.79	98.59	98.34	98.20	/	/	/
Input energy (Wi) (Wh)	/	507.96	1266.14	2536.90	3816.09	5094.17	/	/	/
Output energy (Wo) (Wh)	/	501.18	1251.33	2502.34	3754.50	5004.65	/	/	/
Energy efficiency(%)	/	98.67	98.83	98.64	98.39	98.24	/	/	/
PV input voltage	d) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	764.9	764.8	764.6	764.4	764.1	/	/	/
Input voltage ripple (mV)	/	4.1	3.9	4.0	4.2	4.2	/	/	/
Input current (A)	/	13.5	33.3	66.7	100.3	134.3	/	/	/
Input current ripple (mA)	/	6.5	6.6	6.3	6.8	5.7	/	/	/
Input power (Pi) (W)	/	10214	25384	50774	76386	102247	/	/	/
Output power (Po) (W)	/	9992	25017	49993	75027	100290	/	/	/
Output efficiency(%)	/	97.84	98.55	98.46	98.22	98.09	/	/	/
Input energy (Wi) (Wh)	/	510.68	1269.23	2538.71	3819.35	5112.43	/	/	/
Output energy (Wo) (Wh)	/	499.75	1251.40	2500.80	3753.05	5016.76	/	/	/
Energy efficiency(%)	/	97.86	98.60	98.51	98.26	98.13	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 110KTL								
Parameters of power conditioner	Minimum full load input voltage:500V Nominal voltage:625V 90% of the inverter's maximum input voltage: 765V Rated output voltage: 230Vac Rated output frequency:50Hz Rated output power: <b>110000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 500V ( $\pm 7.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	500.0	499.7	499.2	498.6	498.1	/	/	/
Input voltage ripple (mV)	/	4.1	4.1	4.1	4.0	4.0	/	/	/
Input current (A)	/	22.9	56.4	112.3	168.8	226.7	/	/	/
Input current ripple (mA)	/	7.1	7.2	7.0	6.8	6.9	/	/	/
Input power (Pi) (W)	/	11253	28049	55982	84135	112924	/	/	/
Output power (Po) (W)	/	11010	27545	54962	82490	110132	/	/	/
Output efficiency(%)	/	97.84	98.20	98.18	98.04	97.53	/	/	/
Input energy (Wi) (Wh)	/	375.02	935.01	1866.04	2804.36	3764.15	/	/	/
Output energy (Wo) (Wh)	/	367.12	918.61	1832.89	2750.94	3672.84	/	/	/
Energy efficiency(%)	/	97.89	98.25	98.22	98.09	97.57	/	/	/
PV input voltage	b) The inverter's nominal voltage 625V ( $\pm 9.4V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	624.8	624.6	624.3	624.0	623.6	/	/	/

IEC 61683: 1999									
Clause	Requirement – Test					Measuring result – Remark			Verdict
Input voltage ripple (mV)	/	4.0	4.0	4.0	4.0	4.1	/	/	/
Input current (A)	/	17.9	44.6	89.1	133.7	180.0	/	/	/
Input current ripple (mA)	/	6.7	7.0	6.7	6.9	7.1	/	/	/
Input power (Pi) (W)	/	11182	27860	55619	83385	112199	/	/	/
Output power (Po) (W)	/	11045	27539	54818	81965	110109	/	/	/
Output efficiency(%)	/	98.78	98.85	98.56	98.30	98.14	/	/	/
Input energy (Wi) (Wh)	/	372.81	920.89	1854.10	2779.60	3739.87	/	/	/
Output energy (Wo) (Wh)	/	368.28	910.76	1828.18	2733.52	3671.95	/	/	/
Energy efficiency(%)	/	98.78	98.90	98.60	98.34	98.18	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	764.8	764.6	764.4	764.1	763.7	/	/	/
Input voltage ripple (mV)	/	4.1	3.8	3.9	3.9	4.2	/	/	/
Input current (A)	/	14.8	36.6	73.3	110.4	148.3	/	/	/
Input current ripple (mA)	/	6.9	7.1	6.8	6.9	6.8	/	/	/
Input power (Pi) (W)	/	11211	27874	55827	84053	112891	/	/	/
Output power (Po) (W)	/	10986	27483	54957	82524	110685	/	/	/
Output efficiency(%)	/	97.99	98.59	98.44	98.18	98.05	/	/	/
Input energy (Wi) (Wh)	/	373.77	921.37	1860.95	2801.81	3762.90	/	/	/
Output energy (Wo) (Wh)	/	366.30	908.87	1832.78	2752.09	3691.16	/	/	/
Energy efficiency(%)	/	98.00	98.64	98.49	98.23	98.09	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 100KTL-HV								
Parameters of power conditioner	Minimum full load input voltage:550V Nominal voltage:725V 90% of the inverter's maximum input voltage: 765V Rated output voltage: 288Vac Rated output frequency:50Hz Rated output power: <b>100000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 550V ( $\pm 8.3V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	549.8	549.6	549.3	548.9	548.5	/	/	/
Input voltage ripple (mV)	/	5.0	5.2	5.1	4.6	5.3	/	/	/
Input current (A)	/	18.9	46.3	92.8	139.0	185.7	/	/	/
Input current ripple (mA)	/	7.7	7.6	7.4	7.6	7.4	/	/	/
Input power (Pi) (W)	/	10203	25307	50867	76251	101847	/	/	/
Output power (Po) (W)	/	9995	24953	50060	74887	99679	/	/	/
Output efficiency(%)	/	97.96	98.60	98.41	98.21	97.87	/	/	/
Input energy (Wi) (Wh)	/	510.17	843.57	1695.59	2541.73	3394.94	/	/	/
Output energy (Wo) (Wh)	/	499.90	832.00	1669.45	2497.40	3324.16	/	/	/
Energy efficiency(%)	/	97.99	98.63	98.46	98.26	97.92	/	/	/
PV input voltage	b) The inverter's nominal voltage 725V ( $\pm 10.9V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	724.6	724.5	724.2	723.9	723.6	/	/	/

IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input voltage ripple (mV)	/	5.4	4.8	5.1	4.9	5.0	/	/	/
Input current (A)	/	14.1	35.1	70.2	105.2	140.3	/	/	/
Input current ripple (mA)	/	7.7	7.4	7.0	7.3	7.2	/	/	/
Input power (Pi) (W)	/	10160	25380	50817	76155	101552	/	/	/
Output power (Po) (W)	/	10008	25092	50144	75039	99933	/	/	/
Output efficiency(%)	/	98.50	98.87	98.68	98.53	98.41	/	/	/
Input energy (Wi) (Wh)	/	338.67	846.03	1693.90	2538.51	3385.10	/	/	/
Output energy (Wo) (Wh)	/	333.69	836.64	1672.21	2502.45	3332.65	/	/	/
Energy efficiency(%)	/	98.53	98.89	98.72	98.58	98.45	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	764.5	764.4	764.1	763.9	763.6	/	/	/
Input voltage ripple (mV)	/	4.6	4.5	5.2	4.6	4.4	/	/	/
Input current (A)	/	13.4	33.2	66.6	99.8	133.2	/	/	/
Input current ripple (mA)	/	7.5	7.6	7.2	7.5	7.3	/	/	/
Input power (Pi) (W)	/	10177	25388	50865	76230	101709	/	/	/
Output power (Po) (W)	/	10008	25074	50181	75054	100022	/	/	/
Output efficiency(%)	/	98.34	98.76	98.66	98.46	98.34	/	/	/
Input energy (Wi) (Wh)	/	339.23	846.28	1695.51	2541.04	3390.34	/	/	/
Output energy (Wo) (Wh)	/	333.71	836.01	1673.46	2502.97	3335.60	/	/	/
Energy efficiency(%)	/	98.37	98.79	98.70	98.50	98.39	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 125KTL-HV								
Parameters of power conditioner	Minimum full load input voltage:550V Nominal voltage:725V 90% of the inverter's maximum input voltage: 765V Rated output voltage: 288Vac Rated output frequency:50Hz Rated output power: <b>125000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 550V ( $\pm 8.3V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	549.5	549.3	548.8	548.4	549.5	/	/	/
Input voltage ripple (mV)	/	4.6	4.9	4.7	4.7	4.9	/	/	/
Input current (A)	/	23.4	58.1	116.4	174.6	233.3	/	/	/
Input current ripple (mA)	/	7.5	7.3	7.5	7.1	7.0	/	/	/
Input power (Pi) (W)	/	12621	31776	63787	95706	127950	/	/	/
Output power (Po) (W)	/	12367	31330	62761	93989	125258	/	/	/
Output efficiency(%)	/	97.99	98.60	98.39	98.21	97.90	/	/	/
Input energy (Wi) (Wh)	/	420.70	1059.20	2126.25	3190.22	4265.02	/	/	/
Output energy (Wo) (Wh)	/	412.35	1044.82	2093.00	3134.42	4177.20	/	/	/
Energy efficiency(%)	/	98.01	98.64	98.44	98.25	97.94	/	/	/
PV input voltage	b) The inverter's nominal voltage 725V ( $\pm 10.9V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	724.8	724.7	724.3	724.0	723.9	/	/	/
Input voltage ripple (mV)	/	4.8	4.6	4.8	4.1	4.5	/	/	/

IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input current (A)	/	17.3	43.5	87.8	131.5	175.9	/	/	/
Input current ripple (mA)	/	7.4	7.6	7.6	7.5	7.8	/	/	/
Input power (Pi) (W)	/	12524	31523	63595	95222	127341	/	/	/
Output power (Po) (W)	/	12355	31193	62751	93810	125302	/	/	/
Output efficiency(%)	/	98.65	98.95	98.67	98.52	98.40	/	/	/
Input energy (Wi) (Wh)	/	417.48	1050.80	2119.84	3174.12	4244.73	/	/	/
Output energy (Wo) (Wh)	/	411.94	1040.24	2092.65	3128.43	4178.66	/	/	/
Energy efficiency(%)	/	98.67	99.00	98.72	98.56	98.44	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 765V ( $\pm 11.5V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	764.8	764.6	764.3	763.9	764.0	/	/	/
Input voltage ripple (mV)	/	4.9	4.8	4.8	5.3	5.4	/	/	/
Input current (A)	/	16.7	41.3	83.3	125.0	167.0	/	/	/
Input current ripple (mA)	/	7.4	7.3	7.1	7.4	7.2	/	/	/
Input power (Pi) (W)	/	12715	31585	63635	95456	127499	/	/	/
Output power (Po) (W)	/	12514	31189	62735	93940	125291	/	/	/
Output efficiency(%)	/	98.43	98.75	98.59	98.41	98.27	/	/	/
Input energy (Wi) (Wh)	/	423.82	1052.84	2121.18	3181.89	4250.01	/	/	/
Output energy (Wo) (Wh)	/	417.26	1040.13	2092.13	3132.76	4178.29	/	/	/
Energy efficiency(%)	/	98.45	98.79	98.63	98.46	98.31	/	/	/
Remark:	*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;								

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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TABLE	Efficiency recording and efficient calculation sheet								
power conditioner type	Grid-connected								
Model:	E- 136KTL-HV								
Parameters of power conditioner	Minimum full load input voltage:550V Nominal voltage:785 maximum input voltage: 850V Rated output voltage: 311Vac Rated output frequency:50Hz Rated output power: <b>136000W</b>								
PV input voltage	a) Manufacturer's minimum rated input voltage 550V ( $\pm 8.3V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	550.0	549.8	549.5	549.1	548.7	/	/	/
Input voltage ripple (mV)	/	5.4	5.3	5.1	4.9	4.9	/	/	/
Input current (A)	/	25.6	63.0	125.9	189.5	253.5	/	/	/
Input current ripple (mA)	/	7.4	7.3	7.6	7.3	7.6	/	/	/
Input power (Pi) (W)	/	13922	34494	69061	104007	139087	/	/	/
Output power (Po) (W)	/	13643	33995	67954	102049	135989	/	/	/
Output efficiency(%)	/	98.00	98.55	98.40	98.12	97.77	/	/	/
Input energy (Wi) (Wh)	/	464.06	1149.81	2302.04	3466.94	4636.29	/	/	/
Output energy (Wo) (Wh)	/	454.91	1133.45	2266.17	3403.19	4535.04	/	/	/
Energy efficiency(%)	/	98.03	98.58	98.44	98.16	97.82	/	/	/
PV input voltage	b) The inverter's nominal voltage 785V ( $\pm 11.8V$ )								
Temperature ( $^{\circ}C$ )	25 $^{\circ}C \pm 5^{\circ}C$								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	784.9	784.8	784.6	784.3	784.0	/	/	/
Input voltage ripple (mV)	/	4.4	4.7	3.9	3.9	4.1	/	/	/



IEC 61683: 1999									
Clause	Requirement – Test						Measuring result – Remark		Verdict
Input current (A)	/	17.8	43.9	88.0	132.1	176.3	/	/	/
Input current ripple (mA)	/	7.3	7.4	6.2	6.4	6.8	/	/	/
Input power (Pi) (W)	/	13876	34372	68958	103555	138176	/	/	/
Output power (Po) (W)	/	13697	34028	68094	102125	136054	/	/	/
Output efficiency(%)	/	98.71	99.00	98.75	98.62	98.46	/	/	/
Input energy (Wi) (Wh)	/	462.53	1145.75	2279.49	3451.86	4605.90	/	/	/
Output energy (Wo) (Wh)	/	456.69	1134.57	2251.93	3405.72	4537.22	/	/	/
Energy efficiency(%)	/	98.74	99.02	98.79	98.66	98.51	/	/	/
PV input voltage	c) 90% of the inverter's maximum input voltage 850V (±12.8V)								
Temperature (°C)	25°C ± 5°C								
Operating period for energy measurement (min)	1.5								
Percentage of rated output VA	/	10%	25%	50%	75%	100%	120%*	/	/
Input voltage (V)	/	849.9	849.8	849.6	849.3	849.1	/	/	/
Input voltage ripple (mV)	/	4.0	3.9	3.8	3.8	4.0	/	/	/
Input current (A)	/	16.3	40.7	81.3	122.3	163.4	/	/	/
Input current ripple (mA)	/	6.4	7.0	7.3	7.0	6.8	/	/	/
Input power (Pi) (W)	/	13728	34506	69028	103730	138610	/	/	/
Output power (Po) (W)	/	13529	34071	68051	102091	136173	/	/	/
Output efficiency(%)	/	98.55	98.74	98.58	98.42	98.24	/	/	/
Input energy (Wi) (Wh)	/	457.60	1150.20	2300.95	3457.69	4235.36	/	/	/
Output energy (Wo) (Wh)	/	451.10	1135.99	2269.41	3404.59	4162.77	/	/	/
Energy efficiency(%)	/	98.58	98.76	98.63	98.46	98.29	/	/	/
Remark:									
*If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
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<b>TABLE</b>	No load loss	<b>P</b>
power conditioner type	Utility-interactive	
E- 75KTL		
Measure input voltage (V)	230.0	
Measured input power(W)	0.0	
E- 80KTL		
Measure input voltage (V)	230.1	
Measured input power(W)	0.0	
E- 100KTL		
Measure input voltage (V)	230.1	
Measured input power(W)	0.0	
E- 110KTL		
Measure input voltage (V)	230.1	
Measured input power(W)	0.0	
E- 100KTL-HV		
Measure input voltage (V)	288.5	
Measured input power(W)	0.4	
E- 125KTL-HV		
Measure input voltage (V)	288.5	
Measured input power(W)	0.4	
E- 136KTL-HV		
Measure input voltage (V)	311.1	
Measured input power(W)	0.5	
Remark: No load loss is measured when the power conditioner works at rated input voltage and it's load is disconnected.		

IEC 61683: 1999

Clause	Requirement – Test	Measuring result – Remark	Verdict
--------	--------------------	---------------------------	---------

TABLE	Standby loss	P
power conditioner type	Utility-interactive	
E- 75KTL		
Measure input voltage (V)	625	
Measured input power(W)	0.0	
E- 80KTL		
Measure input voltage (V)	612.8	
Measured input power(W)	19.8	
E- 100KTL		
Measure input voltage (V)	612.8	
Measured input power(W)	17.4	
E- 110KTL		
Measure input voltage (V)	612.8	
Measured input power(W)	18.6	
E- 100KTL-HV		
Measure input voltage (V)	656.6	
Measured input power(W)	17.8	
E- 125KTL-HV		
Measure input voltage (V)	656.6	
Measured input power(W)	17.6	
E- 136KTL-HV		
Measure input voltage (V)	656.6	
Measured input power(W)	4.9	
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 view (E-75KTL, E-80KTL)



**Back view**  
**(E- 100KTL, E- 100KTL-HV, E-110KTL, E- 125KTL-HV)**



**Back view (E- 136KTL-HV)**



DC Connection interface (E-75KTL, E-80KTL)

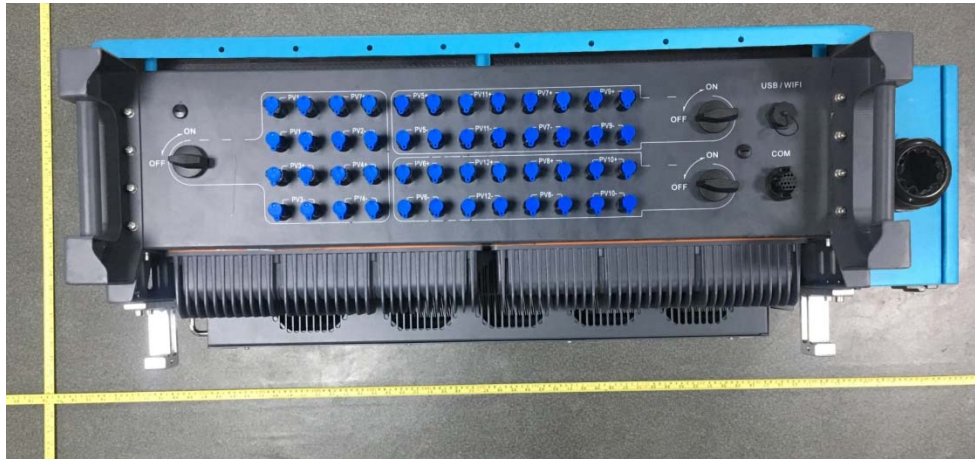


DC Connection interface  
(E-100KTL, E-100KTL-HV, E-110KTL, E-125KTL-HV)





DC Connection interface (E-136KTL-HV)

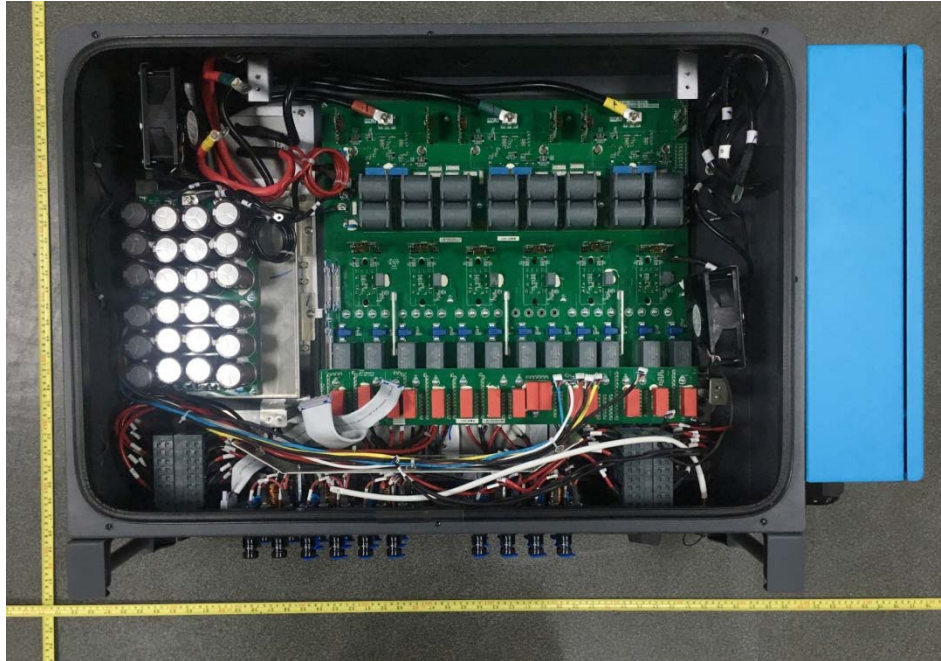


Internal View 1

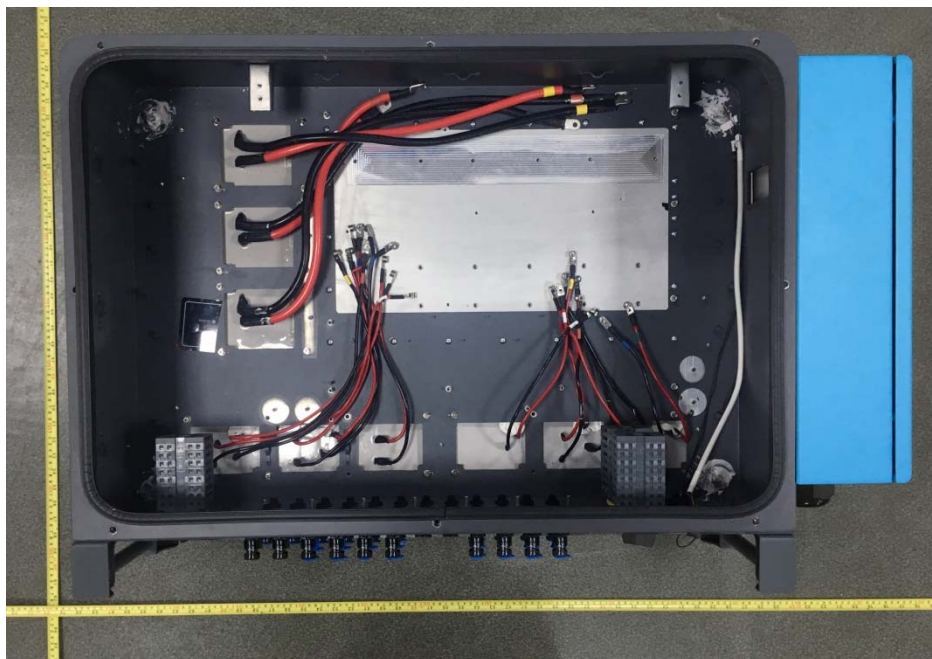




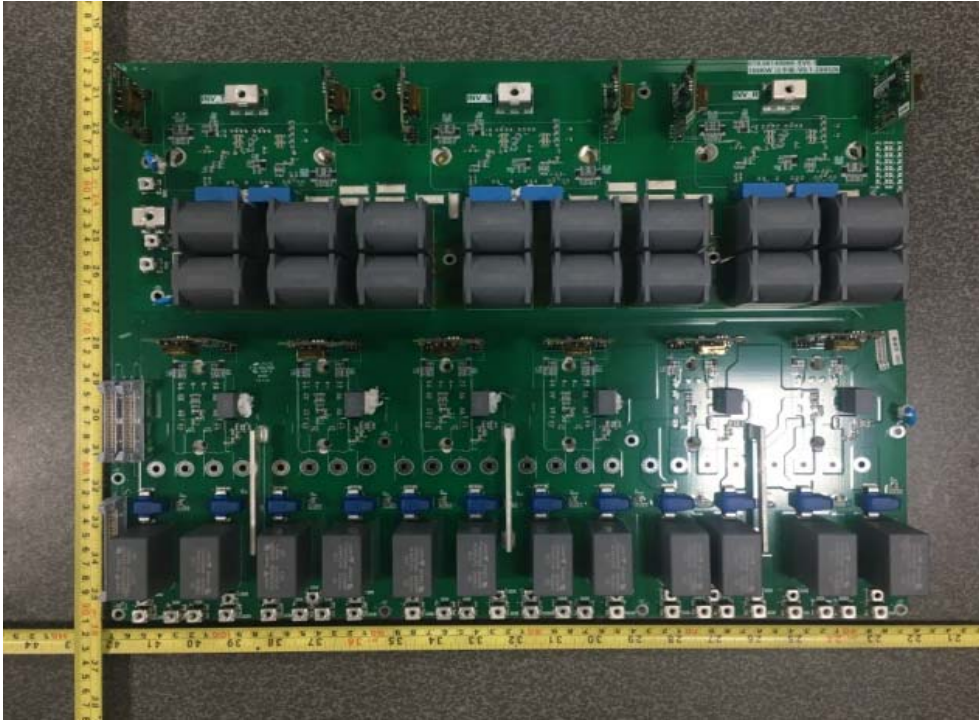
**Internal View 2**



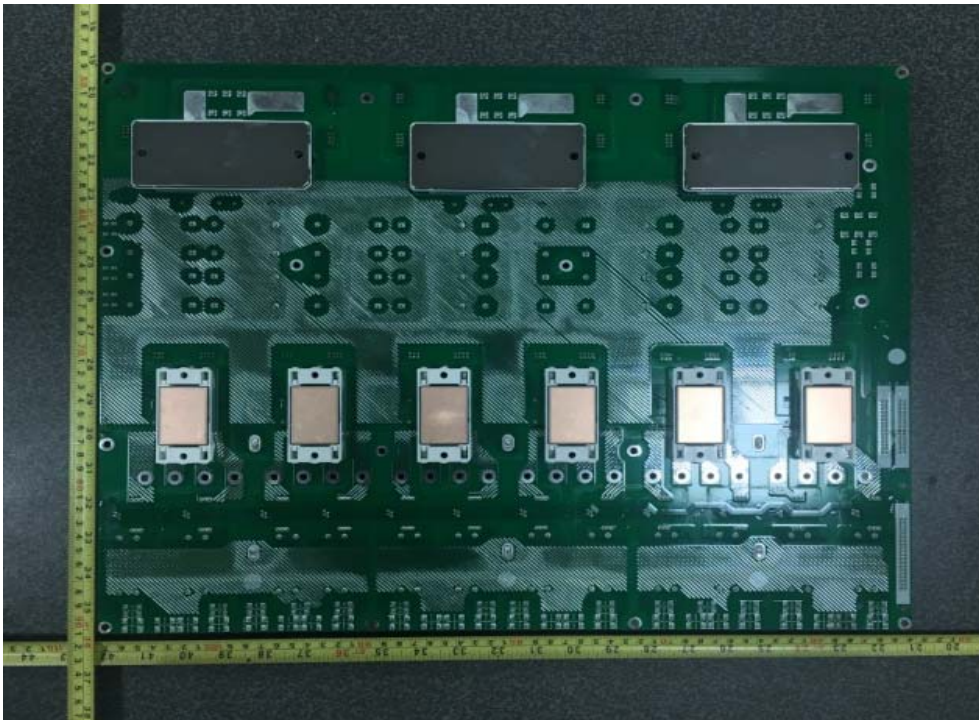
**Internal View 3**



**Front side of Power board**

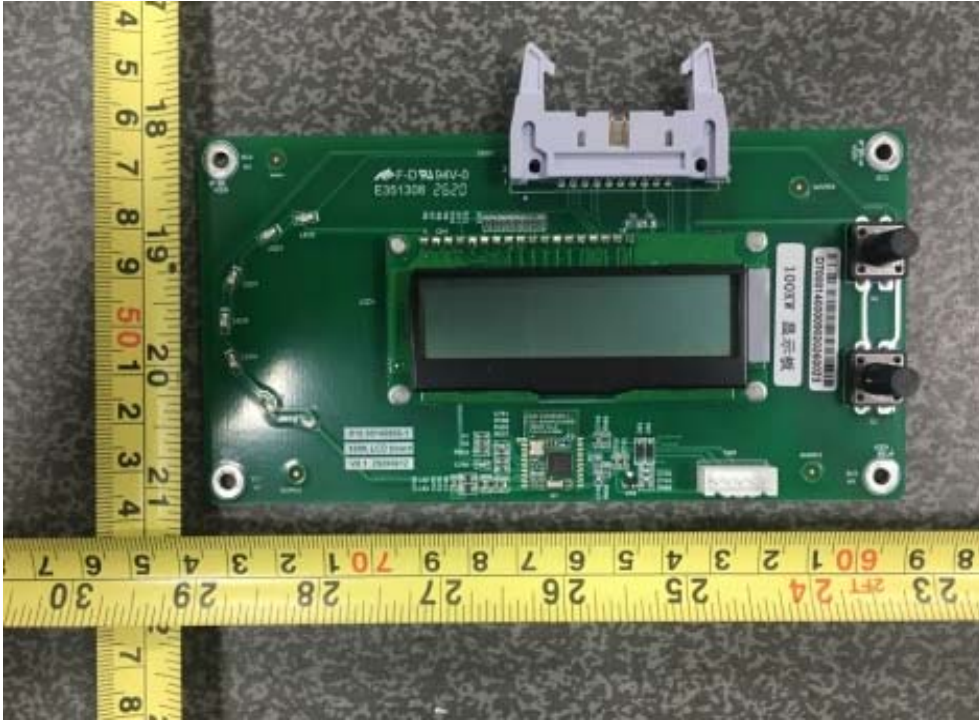


**Back side of Power board**





Front side of Display board



Back side of Display board



**Front side of Control board**

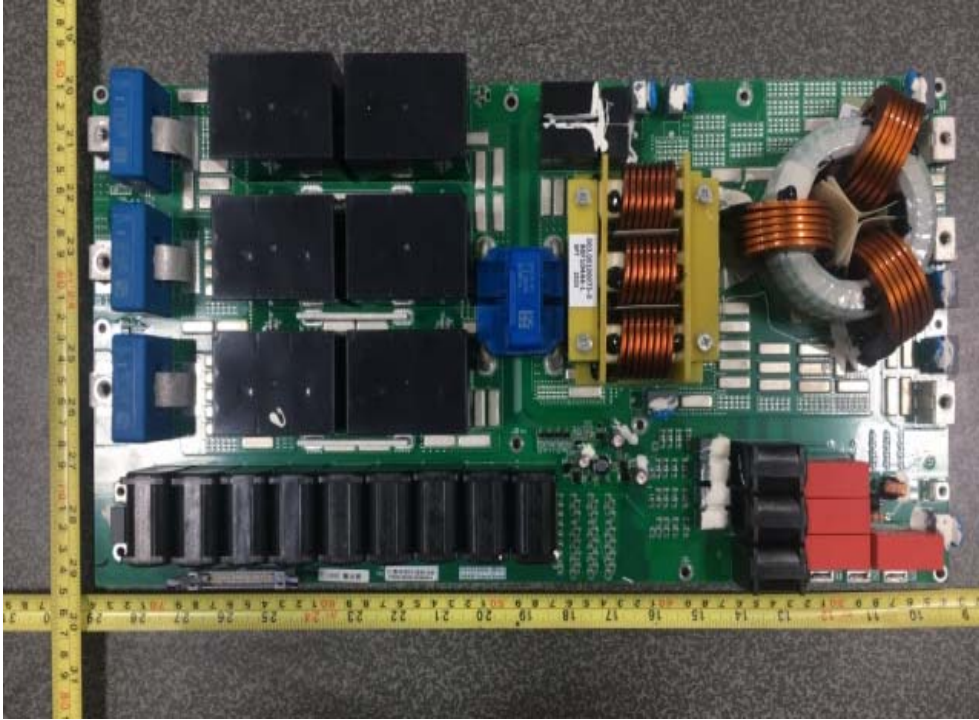


**Back side of Control board**





**Front side of output board**



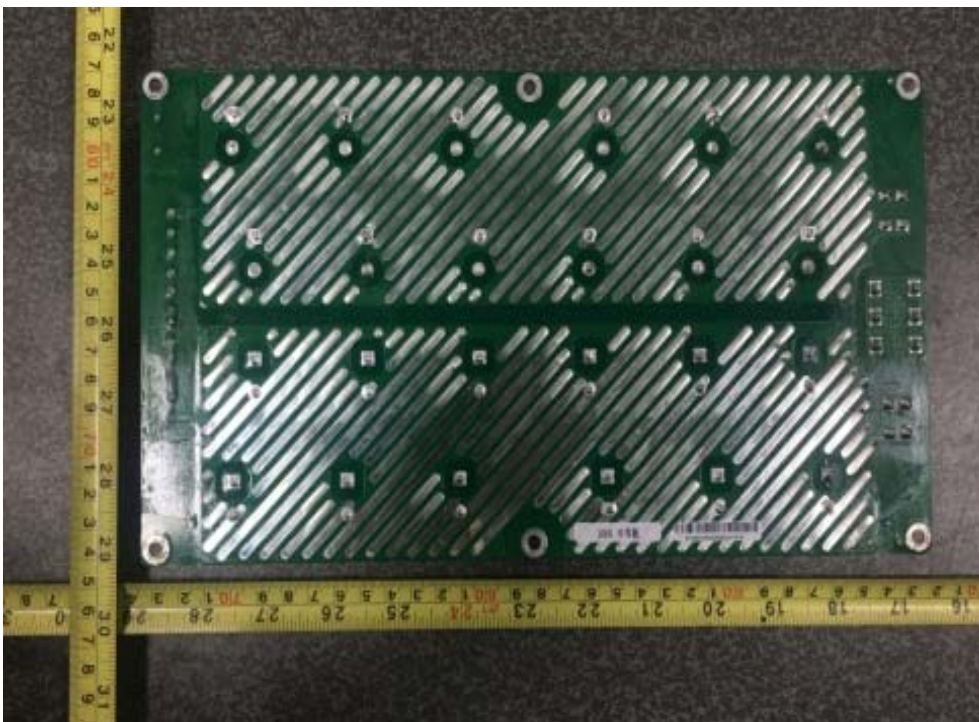
**Back side of output board**



**Front side of BUS Capacitor plate**

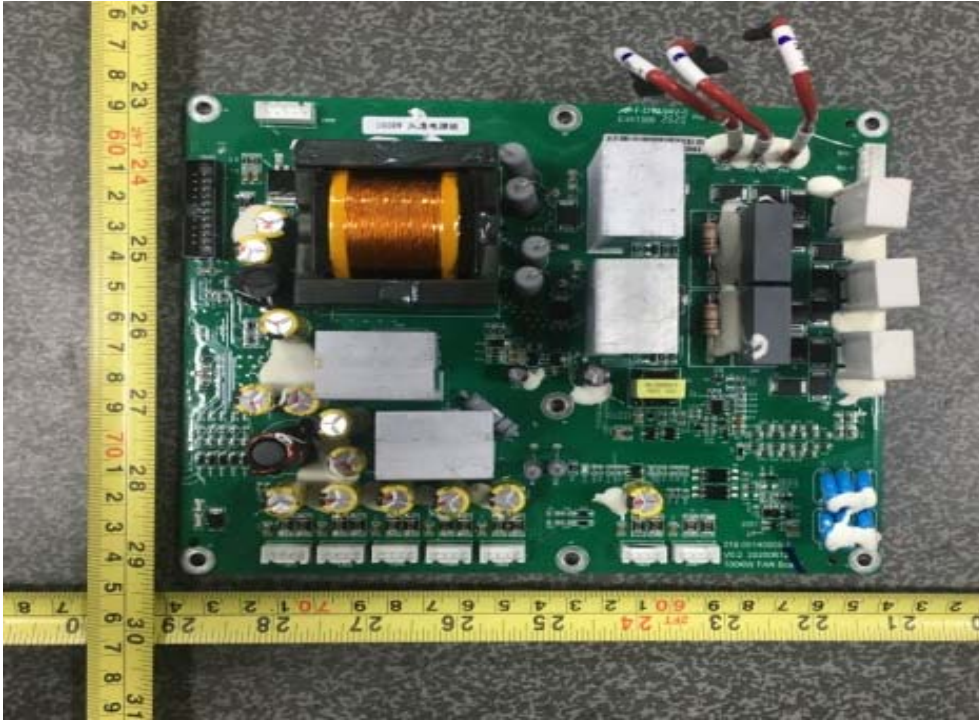


**Back side of BUS Capacitor plate**

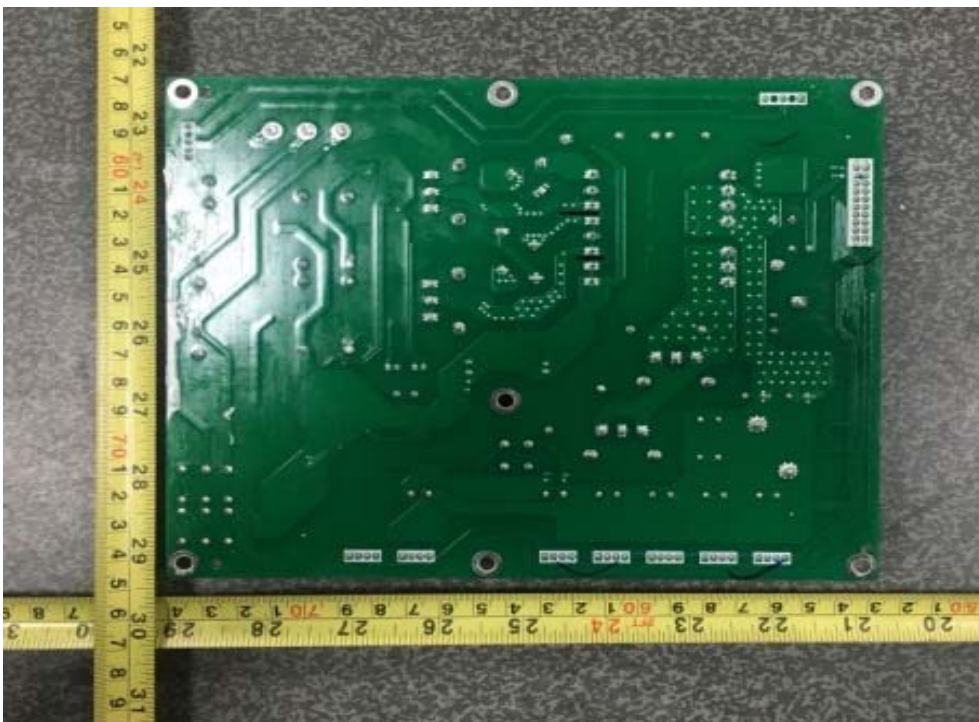




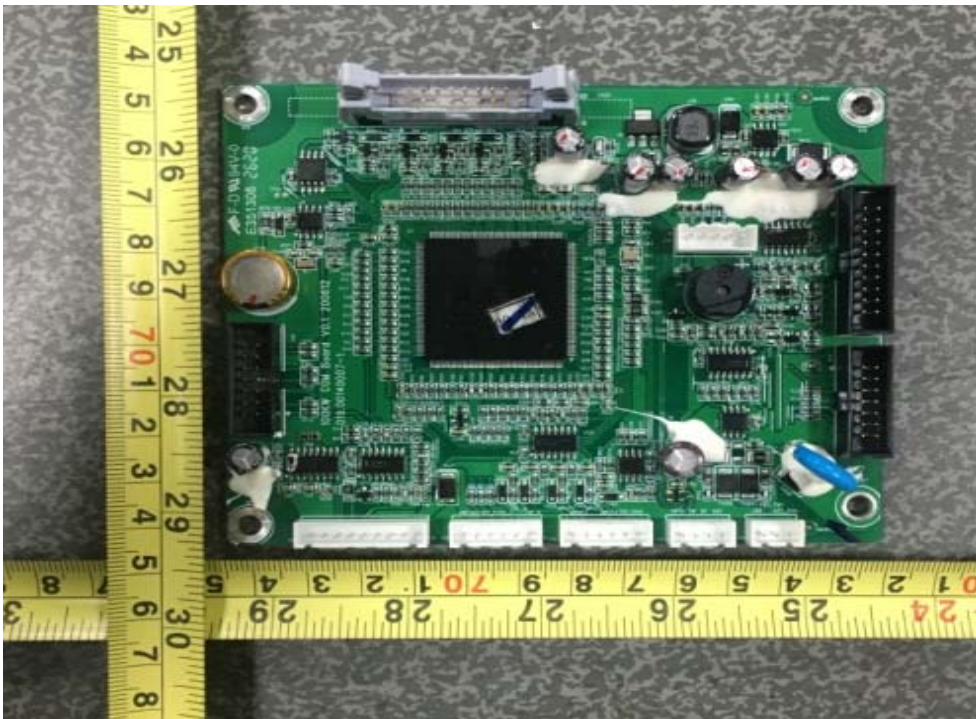
**Front side of power supply board**



**Back side of power supply board**



Front side of Communication board

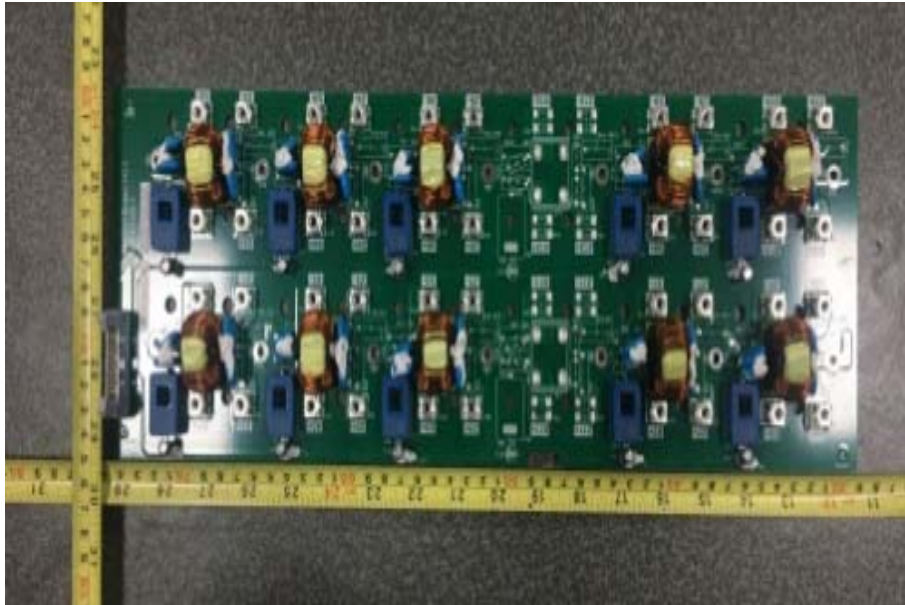


Back side of Communication board

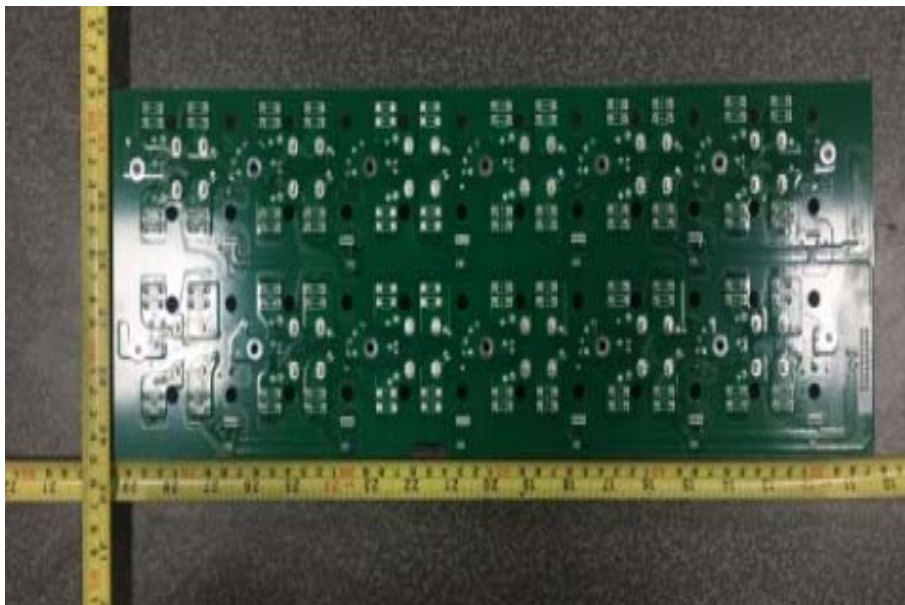




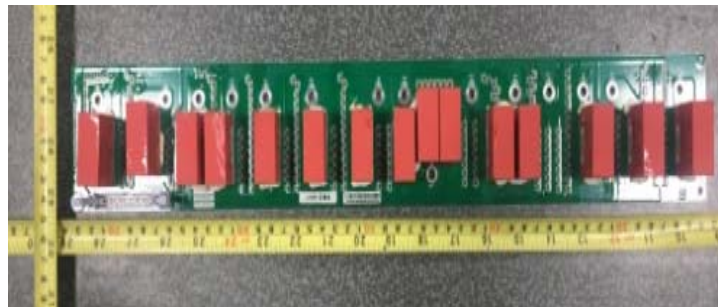
Front side of EMI input filter board



Back side of EMI input filter board



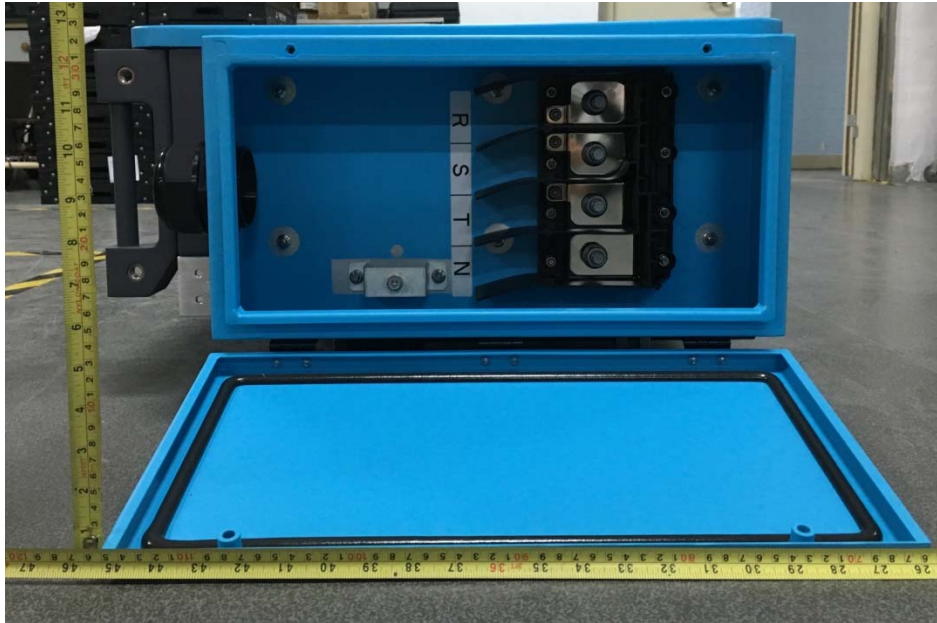
Front side of Lightning protection board



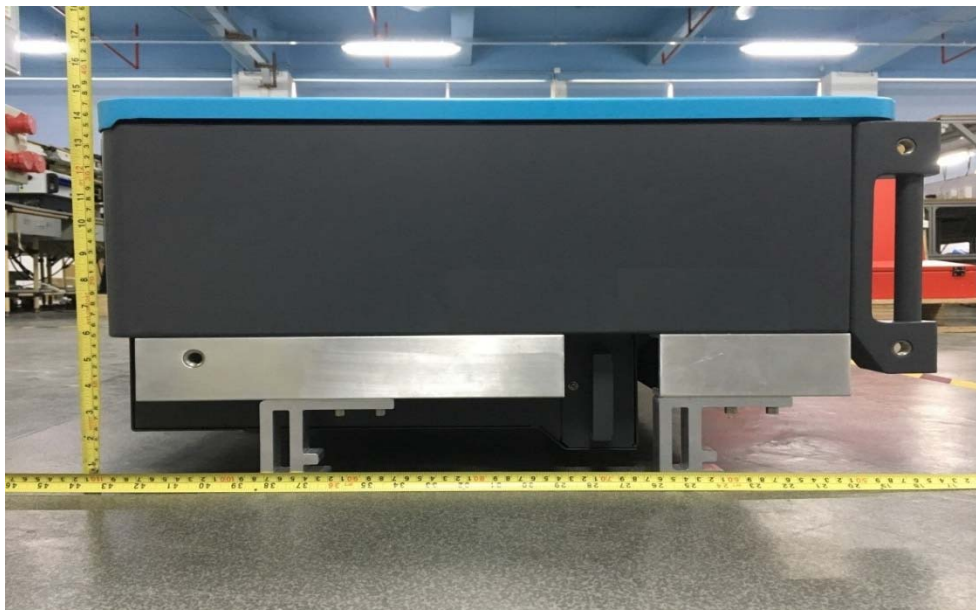
Back side of Lightning protection board



AC Connection interface

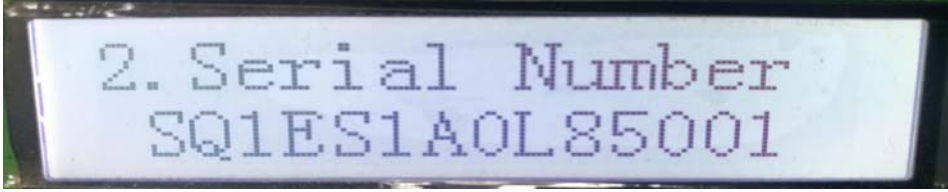


Side view




IEC 61683: 1999 (50Hz)

## Serial Number




2. Serial Number  
SQ1ES1A0L85001




SQ1ES075L74030


## Software Version



3. SoftVersion  
ARM:V020010



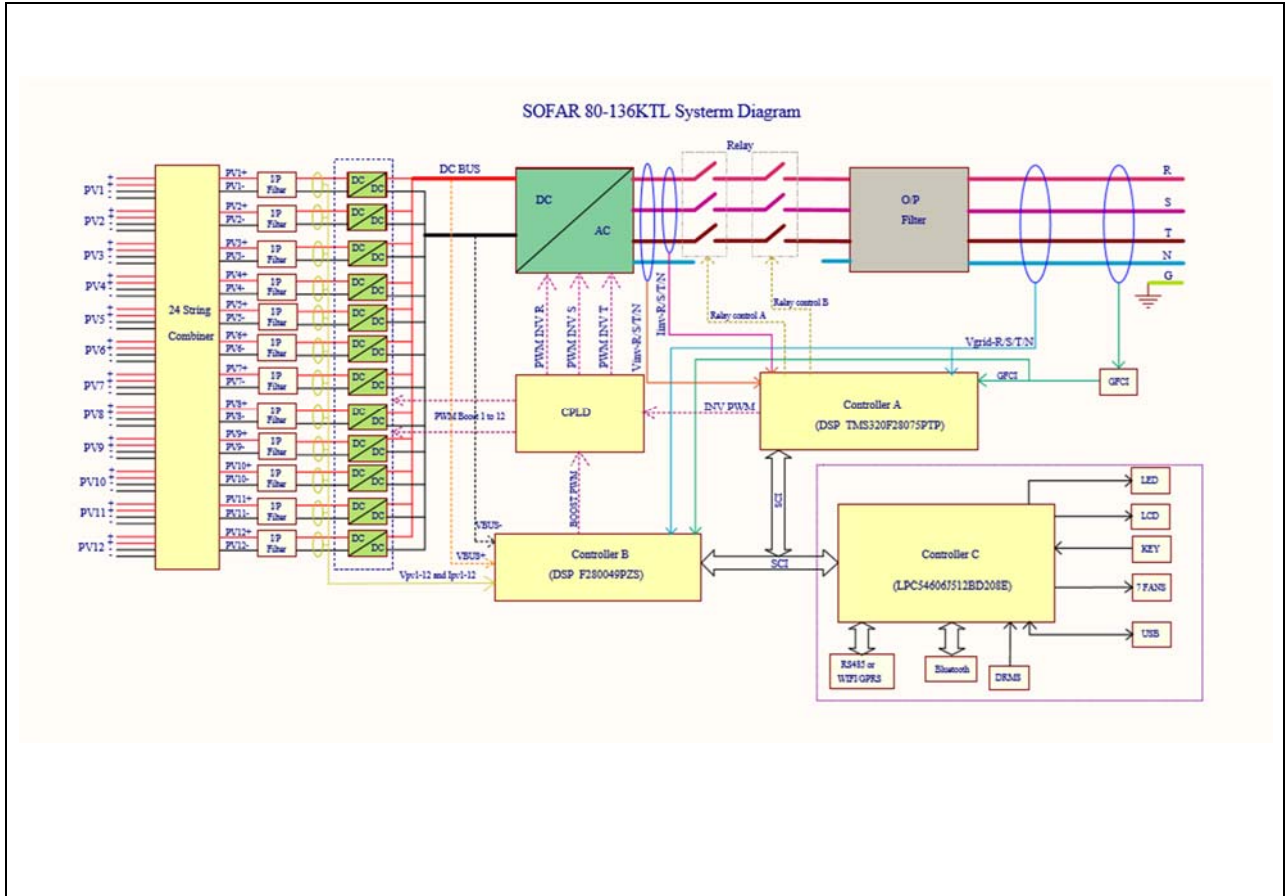
3. SoftVersion  
DSPS:V020010



3. SoftVersion  
DSPM:V020010



2 ELECTRICAL SCHEMES



## **ATTACHMENT II**

**(Testing information)**

**1 TESTING CIRCUIT**

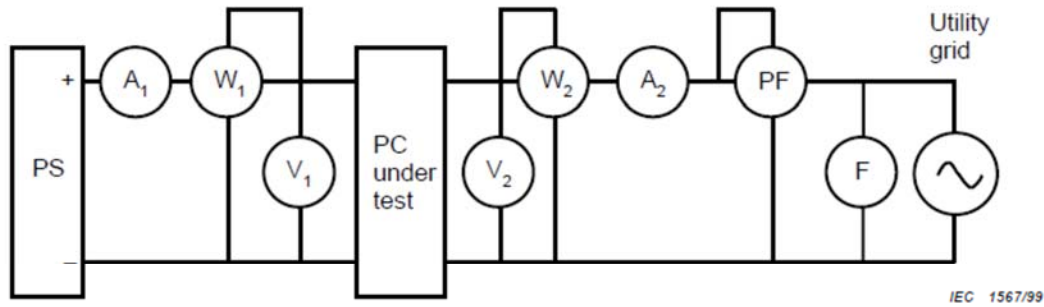


Figure 1b – Utility-interactive type

IEC 1567/99

- |   |                                     |
|---|-------------------------------------|
| PC power conditioner                          | L load                              |
| PS variable voltage-current d.c. power supply | F frequency meter                   |
| A <sub>1</sub> DC ammeter                     | V <sub>1</sub> DC voltmeter         |
| A <sub>2</sub> AC or d.c. ammeter             | V <sub>2</sub> AC or d.c. voltmeter |
| W <sub>1</sub> DC wattmeter                   | PF power factor meter               |
| W <sub>2</sub> 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	MARK/Model No.	Equipment No.	Equipment calibration due date
BALUN	1	Digital oscilloscope	Tektronix / MS04054B	BZ-DGD-L064	2020-03-04 to 2021-03-03
	2	Current clamp	HIOKI / CT6863-05	BZ-DGD-L026-1	2020-03-04 to 2021-03-03
	3	Current clamp	HIOKI / CT6863-05	BZ-DGD-L026-2	2020-03-04 to 2021-03-03
	4	Current clamp	HIOKI / CT6863-05	BZ-DGD-L026-3	2020-03-04 to 2021-03-03
	5	Current clamp	HIOKI / CT6863-05	BZ-DGD-L026-4	2020-03-04 to 2021-03-03
	6	Power analyzer	HIOKI / PW6001-16	BZ-DGD-L025	2020-03-04 to 2021-03-03
	7	Power analyzer	DEWETRON / DEWE2-A4	BZ-DGD-L119	2020-03-04 to 2021-03-03
	8	Chamber	OK/OK-TS-6000	BZ-DGB-L028	2019-10-22 to 2020-10-21
	9	Temperature and Humidity meter	HIOKI /DT-322	BZ-DGD-L005	2020-03-07 to 2021-03-06
	10	Power analyzer	ZhiYuan / PA6000H	BZ-DGD-L059	2019-11-07 to 2020-11-06
SGS	11	True RMS Multimeter	Fluke / 187	GZE012-8	2019-12-05 to 2020-12-04



Items	Specifications
1) PV array simulator	
a) Voltage range	0 – 1000Vdc ( 0.01V step)
b) Current range	0 – 40A ( 0.01A step)
2) AC power source	
a) Output wiring	Three phase
b) Output capacity	30KVA
c) Output voltage	10-300Vrms
d) Output frequency	45-65Hz
e) Voltage stability	± 100ppm/°C
f) Output voltage distortion	0.05% max.
3) Digital meter	
a) Voltage range	0 – 1000Vdc, 0 – 600Vrms
b) Current range	0 – 30A
c) Frequency range ( accuracy)	0.2%
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) Waveform recorder	
a) Sampling speed	1M/s
b) Recording device	Memory record and USB reading
c) Time accuracy	± 500ppm
5) AC load	
a) Resistive load	Maximum voltage: 300Vrms Current range: 0 – 100A Capacity: 30KW
b) Inductive load	Maximum voltage: 300Vrms Current range: 0 – 100A Capacity: 30KVA
c) Capacitive load	Maximum voltage: 300Vrms Current range: 0 – 100A Capacity: 30KVA

**3 MEASUREMENT UNCERTAINTY**

<b>Magnitude</b>	<b>Uncertainty</b>
Voltage measurement	$\pm 1.5 \%$
Current measurement	$\pm 2.0 \%$
Frequency measurement	$\pm 0.2 \%$
Time measurement	$\pm 0.2 \%$
Power measurement	$\pm 2.5 \%$
Phase Angle	$\pm 1^\circ$
Temperature	$\pm 3^\circ \text{C}$

Note1: Measurements 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.