TEST REPORT

Applicant	:	Shenzhen KNOX Energy Co., Ltd.
Address	:	No. 910, Building B, Fucheng Building, Kexing Park, Fuhua Road, Longhua District, Shenzhen, China. 518000
Manufacturer	:	Shenzhen KNOX Energy Co., Ltd.
Address	:	No. 910, Building B, Fucheng Building, Kexing Park, Fuhua Road, Longhua District, Shenzhen, China. 518000
Product Name	:	MPPT SOLAR INVERTER
Trade Mark	:	KnOx
Model No.	:	XZ-6.6kW-12000pV
Ratings	:	See the copy of marking plate on page 3
Standard	:	IEC 61683:1999 -Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
Date of Receiver	:	December 06, 2025
Date of Test	:	December 19, 2025 to December 22, 2025
Date of Issue	:	April 30, 2026
Test Report Form No	:	NTCS-IEC61683-A1
Test Result	:	Pass *

This Test Report is Issued Under the Authority of:

Compiled by

Kim

Kim Chen / Engineer

Approved by

Han Song / Manager

*Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of Shenzhen Nore Testing Center Co., Ltd. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Revision History of This Test Report

Report Number	Description	Issued Date
SZNTC2512054SV00	Initial Issue	2026-04-03
SZNTC2604068SV00	Derivative version	2026-04-30
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Copy of marking plate:

Remarks:

- For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

General product information:

1.This PV inverter can provide power to connected loads by utilizing PV power, utility power and battery Power. Depending on different power situations, this inverter is designed to generate continuous power from PV solar modules (solar panels), battery, and the utility. When MPPT input voltage of PV modules is within acceptable range (see specification for the details), this inverter is able to generate power to feed the grid(utility) and charge battery. Never connect the positive and negative terminals of the solar panel to the ground. See Figure 1 for a simple diagram of a typical solar system with this inverter.

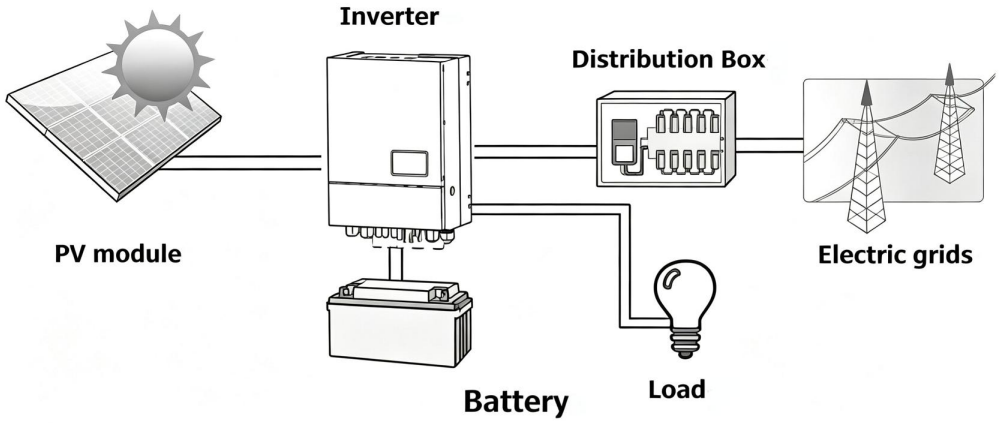
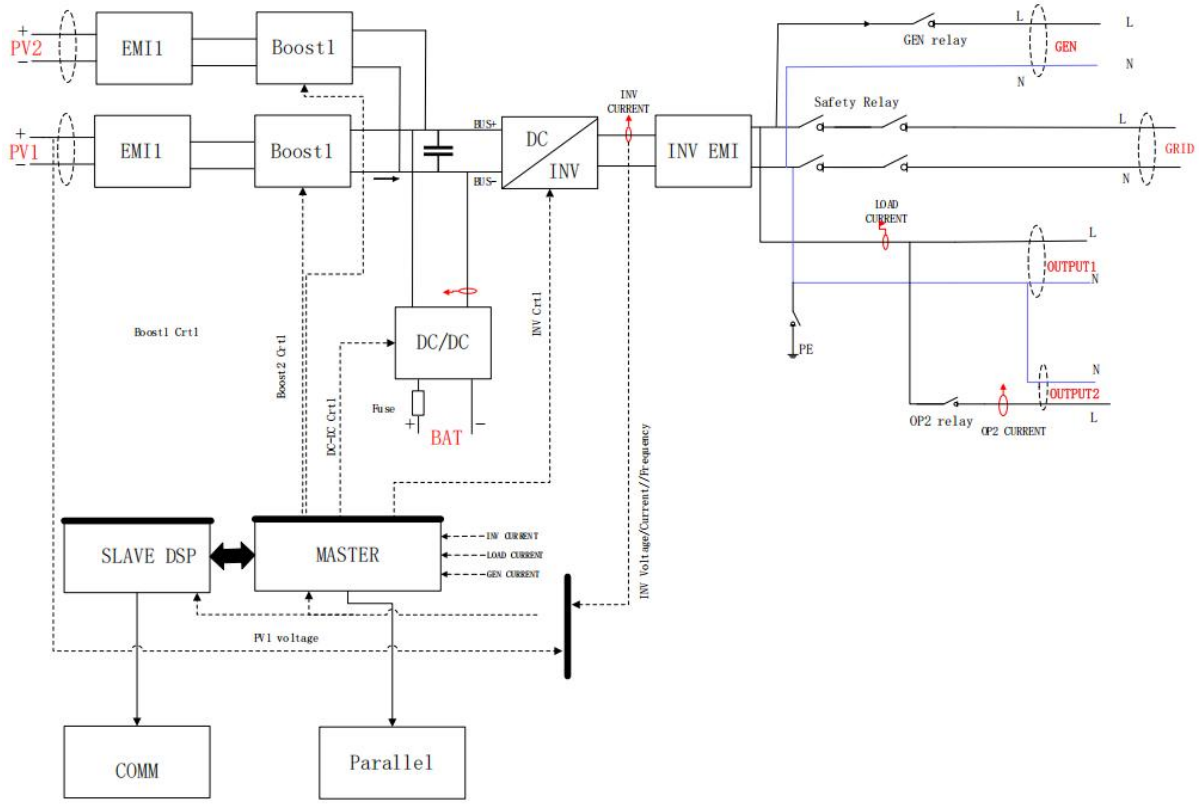
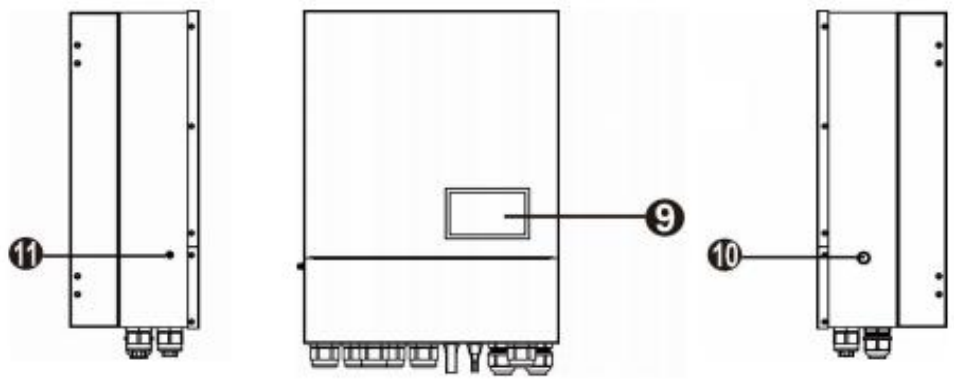


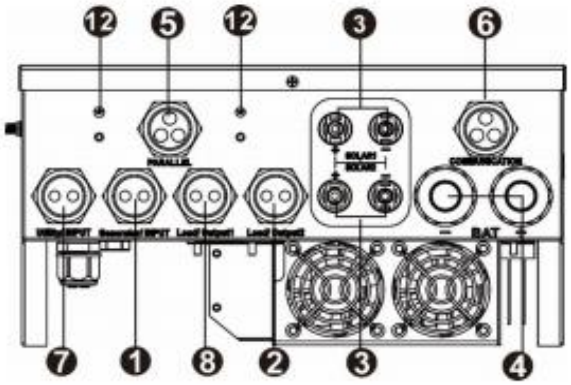
Figure 1 Basic PV Inverter System Overview

2.The inverter module shall be used at specified ambient conditions:
-- Temperature and humidity: -25℃ to +50℃, 4%~100%RH, Condensing
-- Environment pollution degree: PD2 for inter of unit, PD3 for outside of unit
-- Altitude: 2000m.
5.Software version: V00, Hardware version: V00.

Topological graph detail see follow figure:







NOTE: For information on installing and operating the parallel model, please refer to the separate parallel installation guide.

1. AC Generator connectors
2. AC output2 connectors
3. PV connectors
4. Battery connectors
5. Dry contact/USB/RS-232/BMS communication
6. Parallel communication ports
7. AC Grid Connectors
8. AC output1 connectors
9. LCD display
10. Cold start button
11. WIFI antenna
12. PE connectors (M4)

Ratings:

Model	XZ-6.6kW-12000pV
INVERTER Mode	
Input voltage (V)	48Vdc
Input current (A)	135A
Rated output Voltage (V)	230Vac

Max. output Current (A)	28.7A
Rated output Frequency (Hz)	50/60Hz
Rated output Power (W)	6600W
Out Voltage waveform	Pure Sine Wave
PV Mode	
Input voltage (V)	120-500Vdc
Normal voltage (V)	360Vdc
PV MAX INPUT CURRENT(A)	2 * 21A
Rated output Voltage (V)	230Vac
Max. output Current (A)	28.7A
Rated output Frequency (Hz)	50/60Hz
Rated output Power (W)	6600W
Output Voltage waveform	Pure Sine Wave
System	
Weight(kg)	15.275kg
Size (mm) (D×W×H)	170*325*435mm

Derivative version remark:
This report is based on the original report SZNTC2512054SV00(issued date April 03, 2026) in accordance with the agreement between the original report holder and the applicant. Update the application information, model, logo, LCD screen position and appearance color.

Factory : VOLTRONIC POWER TECHNOLOGY (SHENZHEN) CORP.
Address : 1-5F, Building 5 & 1F Building 7 & 1F Building 9, RunDongSheng Industrial Park, No.467, Section Xixiang, National Highway 107, LongTeng Community, Xixiang, Bao An District, Shenzhen, China

Possible test case verdicts:

- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	Pass (P)
- test object was not evaluated for the requirement…:	N/E
- test object does not meet the requirement ..... :	Fail (F)

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
4	**EFFICIENCY MEASUREMENT CONDITIONS**		P
	Efficiency is measured under the conditions in the following clauses.	Refer to Table 1.	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	Constant voltage power source used to maintain the input voltage.	P
	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.	(25.0-26.2)°C	P
	Other ambient temperatures may be allowed by mutual agreement. However, the temperature used must be clearly stated in all documentation.		N/A
4.3	Output voltage and frequency		P
	The output voltage and frequency are maintained at the manufacturer's stated nominal values.	230Vac, 50/60Hz	P
4.4	Input voltage		P
	Measurements performed in each of the following tests are repeated at three power conditioner input voltages:		P
	a) manufacturer's minimum rated input voltage;	120Vdc	P
	b) the inverter's nominal voltage or the average of its rated input range;	360Vdc	P
	c) 90 % of the inverter's maximum input voltage.	450Vdc	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.	48Vdc	P
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	Refer to Table.	P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	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.		
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
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
	Rated output eficiency shall be calculated from measued data as follows: $\eta_R = (P_o / P_i) \times 100$	Refer to Table.	P
5.2	Partial output efficiency		P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	Partial output efficiency shall be calculated from measured data as follows: $\eta_{par} = (P_{op} / P_{ip}) \times 100$	Refer to Table.	P
5.3	Energy efficiency		P
	Energy efficiency shall be calculated from measured data as follows: $\eta_E = (W_o / W_i) \times 100$	Refer to Table.	P
5.4	Efficiency tolerances		N/A
	When an efficiency value has been guaranteed, the tolerance of this value shall be within the value at rated conditions indicated in the table 2.		N/A
6	**Conditions of loading for output ports**		P
6.1	Test circuit		P
	Figure 1 shows recommended test circuits for power conditioners which have a single-phase a.c. output or d.c. output. It can as well as be regared as a single-phase representation of a test set-up for multiphase power conditioners.		P
	Figure 1a is applied to standard-alone power and ultity- interactive power conditionners respectively.		P
	The proposed test circuits in figure 1 are not mandatory, but together with the test descriptions, are intended to establish a base for mutual agreement between user and manufacturer.		P
	The type of power source shall be indicated on all tests and shall adhere to the requirements of 4.1		P
6.2	Measurement procedure		P
	a) Efficiency is calculated with equation (1) or (2) using measured Pi, Po or Pip, Pop. dc input power Pi, Pip can be measured by wattmeter W1, or determined by multiplying the d.c. voltmeter V1 and d.c. ammeter A1 readings. Output power Po, Pop is measured with wattmeter W2.		P
	b) dc input voltage, which is measured by d.c. voltmeter V1, shall be varied in the defined range where the output current, which is measured with a.c. ammeter A2, is varied from low output to the rated output.		P
	c) An average indicating instrument shall be used for the d.c. voltmeter and d.c. ammeter. A true r.m.s. type of indicating instrument shall be used for the a.c. voltmeter and a.c. ammeter. The d.c. wattmeter W1 shall be a d.c. measuring type. The wattmeter W2 shall be an a.c. or d.c. measuring type according to the output.		P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	d) Power factor (PF in per cent) can be measured by a power factor meter PF, or calculated from the readings of V2, A2, W2 and as follows: PF = (W2/(V2 x A2)) x 100		P
	e) Each meter may be an analogue type or a digital type. The measurement accruacy shall be better than 5 % of the full-scale value for each power measured. Digital power instruments for W1 and W2 are also recommended.		P
	f) An MPPT dynamically adjusts the input voltage so as to maximize the output power. In principle, the monitoring equipment shall sample all of the electrical parameters, such as input voltage and current, output power and current, within the update period of the MPPT. If the MPPT and input source (PV array or PV array simulator) interact in such a way that the input voltage varies by less than 5 %, then averaging of readings is acceptable. The averaging period shall be 30 s or longer.		P
7	**Loss measurement**		P
7.1	No-load loss		P
	No-load loss shall be measured as follows.		P
	If the power conditioner is a stand-alone type, the reading of d.c. input voltage, output voltage and frequency is given with meters V1, V2 and F respectively in figure 1a, and shall be adjusted to the rated values.		P
	The no-load loss is thus the indicated value of d.c. input wattmeter, W1, when the load is disconnected from the power conditioner.	Refer to Table.	P
	If the power conditioner is a utility-interactive type, the reading of d.c. input voltmeter V1, a.c. output voltmeter V2 and frequency meter F in figure 1b shall be adjusted to meet the specified voltages and frequency.		N/A
	No-load loss is thus the indicated value of d.c. input wattmeter, W1, when a.c. wattmeter, W2, indicates a zero value. For the measurement, allow the power conditioner time to transfer to its no-load operating state, if applicable.		N/A
7.2	Standby loss		P
	Standby loss shall be measured as follows.		P
	If the power conditioner is a utility-interactive type, standby loss is defined as the consumption of utility power when the power conditioner is not operating but is under standby condition. Standby loss is indicated with a.c. wattmeter, W2 in figure 1b at the rated a.c. output voltage.		P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	If the power conditioner is a stand-alone type, standby loss is defined as the consumption from the d.c. source when the power conditioner is not operating but is under standby condition. Standby loss is indicated with d.c. wattmeter, W1 in figure 1a (without a.c. or d.c. output voltage).	Refer to Table.	P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict

Annex A	**Power conditioner description**		P
	A power conditioner is defined in IEC 61277.		P
	Some types of photovoltaic system configurations relate to their purpose and size. Figure A.1 shows the generic system configuration proposed in IEC 61277. In figure A.1, the power conditioner (PC) is inside the dotted line. The power conditioner may consist of one or more of the following: d.c. conditioner, d.c./d.c. interface, inverter, a. c./a.c. interface, a.c. utility interface, and a part of master control and monitoring (MCM) subsystem. The power flows are indicated by the arrows. When a PV system has a d.c. storage subsystem, it is assumed that the storage is connected to the input of the power conditioner in parallel with the array (see figures A.2 and A.3).	This is a multi-function inverter/charger, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size.The comprehensive LCD display of the product offers user-configurable settings and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.	P
	Under normal conditions, the power conditioner a.c. output voltage and frequency are constant value when the system is connected to the utility grid (in a utility-interactive type) or to the a.c. loads (in a stand-alone type). However, when a.c. loads consist of pumps or blowers with variable speed induction motors, the a.c. voltage and frequency may be variable.	The a.c.output voltage and frequency are constant value.	P
	In this standard, systems with a constant a.c. output voltage and frequency as well as systems with a d.c. output are discussed. Figures A.2 and A.3 show the configuration of the PV system and the power conditioner described in this standard.	With a constant a.c. output voltage and frequency	P

Annex B	**Power efficiency and conversion factor**		P
	There are two types of efficiencies shown in IEC 60146- 2; one is a power efficiency, the other is a conversion factor. Power efficiency is defined as the ratio of active output power and active input power. Conversion factor is the ratio between output and input fundamental power levels. The formulae for these two parameters: $\eta_{iP} = (P_{aAC}/P_{aDC}) \times 100 \quad (\%)$ $\eta_C = (P_{fAC}/P_{fDC}) \times 100 \quad (\%)$		P
	Active power Pa is calculated as $P_a = \frac{1}{T}\int_0^T v(t)i(t)dt \text{ or } = \frac{1}{T}\int_0^T p(t)dt$		P

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	The difference between the above two efficiencies is due to the evaluation of the harmonic components. IEC 60146 unifies them into power efficiency. Their differences depend on their voltage and current waveforms as shown in table B.1 and are only meaningful in case 5. Considering the purpose of IEC standards and the illustration in table B.1, the power efficiency is used as the efficiency of power conditioners.		P
	As shown in table B.1, case 1 or case 4, the difference between C and P is only 0.1% when the d.c. voltage and current ripple are 10 %pp, or when a.c. 5th r.m.s. voltage content is 2 % and the 5th current content is 5 %. This means that the conversion factor is practically the same as the power efficiency. It shall, however, be noted that in the case of a square wave, as in case 5, the power efficiency shall be used because the difference is large, i. e., ηC/ηP = 0,81.		P
	The integration time (duration of one cycle) T shall be 30 s or more and the resultant mean power efficiency value shall be used as the efficiency of the power conditioner.		P
Annex C	**Weighted-average energy efficiency**		N/A
	The energy of a power conditioner depends on both the irradiance profile and the load profile. The energy efficiency of a power conditioner shall be calculated by the ratio of the output to the input energy actually measured over a certain period (such as a month or a year).		N/A
	For reference, a method of estimating the energy efficiency using a weighted-average energy efficiency is described.		N/A
	The weighted-average energy efficiency, ηWT , is calculated as the sum of the products of each power level efficiency and related weighting coefficient.		N/A
	When the system is a utility-interactive type without a storage subsystem, the weighting coefficients depend on a regional irradiance duration curve.		N/A
	When the system is a stand-alone type with a storage subsystem, the weighting coefficients depend on the load duration curve.		N/A
	Clauses C.1 and C.2 show the calculation procedures for ηWT for utility-interactive systems and stand-alone systems.		N/A
C.1	ηWT of power conditioner for utility-interactive PV systems		N/A
	Utility-interactive PV systems, which have no storage and for which reverse-power flow is		N/A

IEC 61683			
Clause	Requirement + Test	Result - Remark	Verdict
	accepted, are described. In this case, d.c. power generated by the PV array is supplied direct into the power conditioner (PC). Almost all of the input power to the PC is converted to a.c. power. A part of it is dissipated as the PC loss.		
	The weighted-average energy efficiency, WT, is an index to evaluate annual energy efficiency in which a weighting coefficient, Ki, is used for each input power level. Here, the irradiance is divided into several discrete levels. By using a duration time Ti, d.c. input power level, PIi, output power level, *P*Oi,and PC efficiency, i, for each level i, WT is defined as follows: $\eta_{WT} = \frac{\sum P_{Oi} \cdot T_i}{\sum P_{Ii} \cdot T_i} = \frac{P_{I1} \cdot \eta_1 \cdot T_1 + \cdots + P_{In} \cdot \eta_n \cdot T_n}{P_{I1} \cdot T_1 + \cdots + P_{In} \cdot T_n}$ $= K_1 \cdot \eta_1 + K_2 \cdot \eta_2 + \cdots + K_n \cdot \eta_n$		N/A
	If the irradiance duration curve is given as shown in figure C.1, equation (C.1) can be rewritten as follows: $\eta_{WT} = \frac{1T_1}{T_{WT}}\eta_{1/4} + \frac{2T_2}{T_{WT}}\eta_{2/4} + \frac{3T_3}{T_{WT}}\eta_{3/4} + \frac{4T_4}{T_{WT}}\eta_{4/4} \geq \eta_{ER}$ $T_{WT} = 1T_1 + 2T_2 + 3T_3 + 4T_4$		N/A
C.2	ηWT of power conditioner for stand-alone PV systems		N/A
	In stand-alone PV systems with a storage subsystem, power generated from the PV array is stored and stabilized by the batteries. dc power is converted into regulated d.c. power or constant-voltage and constant-frequency a.c. power by a power conditioner (PC) and supplied to the load. In this case, some fraction of the generated power is dissipated as a loss in the batteries and power conditioner.		N/A
	The calculation of the weighted-average energy efficiency, WT， for stand-alone PV systems requires weighting coefficients for respective load levels.		N/A
	By using a load duration time Ti, d.c. input power PIi, a.c output power POi and PC efficiency for respective load level i, WT isdefined as follows: $\eta_{WT} = \frac{\sum P_{Oi} \cdot T_i}{\sum P_{Ii} \cdot T_i} = \frac{\sum P_{O1} \cdot T_1 + \cdots + P_{On} \cdot T_n}{P_{I0} \cdot T_0 + P_{O1} \cdot T_1/\eta_1 + P_{On} \cdot T_n/\eta_n}$ $= \frac{1}{K_0 + K_1/\eta_1 + \cdots + K_n/\eta_n}$		N/A
Annex D	**Derivation of efficiency tolerance in table 2**		N/A

TABLE 1	Efficiency recording and efficient calculation sheet								P
power conditioner type	Grid-connected								
Model:	XZ-6.6kW-12000pV								
Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W								
PV input voltage	a) the inverter's minimum voltage								
Temperature (°C)	25℃±5℃								
Operating period for energy measurement (min)	5.0								
Resistive load									
Percentage of rated output VA	--	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	--	10.1%	25.13%	50.04%	--	--	--	/	/
Output voltage (V)	--	230.75	230.37	230.21	--	--	--	/	/
Output current (A)	--	2.91	7.26	14.38	--	--	--	/	/
Output power (Po) (W)	--	667	1659	3303	--	--	--	/	/
PF	--	0.9967	0.9925	0.9982	--	--	--	/	/
Input voltage (V)	--	120.97	120.79	120.69	--	--	--	/	/
Input current (A)	--	6.25	14.82	29.49	--	--	--	/	/
Input power (Pi) (W)	--	755	1789	3559	--	--	--	/	/
Output efficiency [%]	--	88.34%	92.73%	92.80%	--	--	--	/	/
Uthd [%]	--	2.57%	2.60%	2.34%	--	--	--	/	/
Ithd [%]	--	31.94%	17.17%	10.25%	--	--	--	/	/
Output energy (Wo) (Wh) (5min)	--	55.42	138.17	275.60	--	--	--	/	/
Input energy (Wi) (Wh) (5min)	--	62.63	149.01	296.43	--	--	--	/	/
Energy efficiency	--	88.48%	92.72%	92.97%	--	--	--	/	/
Remark: *If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived; The inverter can not load to 75%, At This voltage.									

TABLE 2	Efficiency recording and efficient calculation sheet	P
power conditioner type	Grid-connected	
Model:	XZ-6.6kW-12000pV	

Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W								
PV input voltage	b) the inverter's nominal voltage or the average of its rated input range								
Temperature (°C)	25℃±5℃								
Operating period for energy measurement (min)	5.0								
Resistive load									
Percentage of rated output VA	--	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	--	10%	25.07%	49.95%	75.07%	100.01%	--	/	/
Output voltage (V)	--	230.22	230.33	230.69	231.07	231.46	--	/	/
Output current (A)	--	2.88	7.22	14.35	21.46	28.53	--	/	/
Output power (Po) (W)	--	660	1655	3297	4955	6601	--	/	/
PF	--	0.9988	0.9955	0.9963	0.9996	0.9999	--	/	/
Input voltage (V)	--	360.78	360.69	360.54	360.38	360.23	--	/	/
Input current (A)	--	2.09	4.85	9.58	14.36	19.12	--	/	/
Input power (Pi) (W)	--	751	1746	3451	5174	6887	--	/	/
Output efficiency [%]	--	87.88%	94.78%	95.53%	95.76%	95.84%	--	/	/
Uthd [%]	--	0.10%	0.12%	0.16%	0.24%	0.30%	--	/	/
Ithd [%]	--	18.56%	10.22%	6.70%	5.42%	4.62%	--	/	/
Output energy (Wo) (Wh) (5min)	--	55.02	138.08	274.86	412.87	550.05	--	/	/
Input energy (Wi) (Wh) (5min)	--	62.56	145.80	287.64	430.92	574.52	--	/	/
Energy efficiency	--	87.94%	94.70%	95.55%	95.81%	95.74%	--	/	/
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 3	Efficiency recording and efficient calculation sheet	P
power conditioner type	Grid-connected	
Model:	XZ-6.6kW-12000pV	
Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W	

PV input voltage	c) 90 % of the inverter's maximum input voltage								
Temperature (°C)	25℃±5℃								
Operating period for energy measurement (min)	5.0								
Resistive load									
Percentage of rated output VA	--	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	--	10.01%	25.01%	49.98%	74.96%	100.09%	--	/	/
Output voltage (V)	--	230.13	230.39	230.81	231.28	231.62	--	/	/
Output current (A)	--	2.88	7.21	14.34	21.41	28.54	--	/	/
Output power (Po) (W)	--	661	1651	3299	4948	6606	--	/	/
PF	--	0.9999	0.9950	0.9969	0.9996	0.9996	--	/	/
Input voltage (V)	--	450.78	450.69	450.55	450.43	450.31	--	/	/
Input current (A)	--	1.66	3.91	7.70	11.49	15.35	--	/	/
Input power (Pi) (W)	--	745	1759	3469	5174	6908	--	/	/
Output efficiency [%]	--	88.72%	93.86%	95.09%	95.63%	95.62%	--	/	/
Uthd [%]	--	0.09%	0.12%	0.15%	0.24%	0.30%	--	/	/
Ithd [%]	--	17.54%	9.42%	6.24%	5.09%	4.41%	--	/	/
Output energy (Wo) (Wh) (5min)	--	54.98	137.85	275.12	412.54	550.55	--	/	/
Input energy (Wi) (Wh) (5min)	--	61.90	146.56	288.86	431.48	575.64	--	/	/
Energy efficiency	--	88.82%	94.05%	95.24%	95.61%	95.64%	--	/	/
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 4	Efficiency recording and efficient calculation sheet	P
power conditioner type	Stand-alone(BAT to load)	
Model:	XZ-6.6kW-12000pV	
Parameters of power conditioner	Minimum rated input voltage: --Vdc Nominal voltage or the average of its rated input range: 48Vdc Maximum input voltage: --Vdc Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W	
PV input voltage	b) the inverter's nominal voltage or the average of its rated input range	
Temperature (°C)	25℃±5℃	
Operating period for energy measurement (min)	5.0	
Resistive load		

Percentage of rated output VA	5%	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	5%	10%	25%	50.01%	74.98%	99.98%	--	/	/
Output voltage (V)	230.06	229.88	229.74	229.68	229.39	229.15	--	/	/
Output current (A)	1.44	2.88	7.19	14.38	21.58	28.80	--	/	/
Output power (Po) (W)	330	660	1650	3301	4949	6599	--	/	/
PF	0.9996	1.0000	1.0000	1.0000	1.0000	1.0000	--	/	/
Input voltage (V)	48.88	48.77	48.56	48.41	48.33	55.71	--	/	/
Input current (A)	8.27	15.34	37.18	75.90	115.63	133.32	--	/	/
Input power (Pi) (W)	404	748	1805	3674	5588	7427	--	/	/
Output efficiency [%]	81.68%	88.23%	91.41%	89.84%	88.56%	88.85%	--	/	/
Uthd [%]	0.65%	0.56%	0.39%	0.43%	0.55%	0.57%	--	/	/
Ithd [%]	5.50%	3.06%	1.29%	0.78%	0.73%	0.64%	--	/	/
Output energy (Wo) (Wh) (5min)	27.53	55.09	137.53	274.87	412.53	549.66	--	/	/
Input energy (Wi) (Wh) (5min)	33.69	62.44	150.59	306.01	465.81	618.77	--	/	/
Energy efficiency	81.71%	88.22%	91.32%	89.82%	88.56%	88.83%	--	/	/
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 5	Efficiency recording and efficient calculation sheet								P
power conditioner type	Stand-alone(PV to load)								
Model:	XZ-6.6kW-12000pV								
Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W								
PV input voltage	a) the inverter's minimum voltage								
Temperature (°C)	25℃±5℃								
Operating period for energy measurement (min)	5.0								
Resistive load									
Percentage of rated output VA	5%	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	5.01%	9.96%	25.01%	49.95%	--	--	--	/	/
Output voltage (V)	229.92	229.65	229.83	229.57	--	--	--	/	/
Output current (A)	1.44	2.87	7.19	14.37	--	--	--	/	/
Output power (Po) (W)	331	658	1651	3297	--	--	--	/	/

PF	0.9998	0.9999	1.0000	1.0000	--	--	--	/	/
Input voltage (V)	120.79	120.69	120.39	120.08	--	--	--	/	/
Input current (A)	3.28	6.09	14.70	29.47	--	--	--	/	/
Input power (Pi) (W)	395	734	1769	3538	--	--	--	/	/
Output efficiency [%]	83.79%	89.64%	93.32%	93.18%	--	--	--	/	/
Uthd [%]	0.50%	0.61%	0.42%	0.42%	--	--	--	/	/
Ithd [%]	8.61%	4.25%	1.72%	0.95%	--	--	--	/	/
Output energy (Wo) (Wh) (5min)	27.50	55.02	137.47	274.93	--	--	--	/	/
Input energy (Wi) (Wh) (5min)	32.97	61.49	147.42	294.62	--	--	--	/	/
Energy efficiency	83.40%	89.47%	93.25%	93.31%	--	--	--	/	/
Remark: *If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived; The inverter can not load to 75%, At This voltage.									

TABLE 6	Efficiency recording and efficient calculation sheet							P	
power conditioner type	Stand-alone(PV to load)								
Model:	XZ-6.6kW-12000pV								
Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W								
PV input voltage	b) the inverter's nominal voltage or the average of its rated input range								
Temperature (°C)	25℃±5℃								
Operating period for energy measurement (min)	5.0								
Resistive load									
Percentage of rated output VA	5%	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	5%	10%	25%	50.04%	75.03%	99.87%	--	/	/
Output voltage (V)	229.99	229.89	229.84	229.73	229.52	229.19	--	/	/
Output current (A)	1.44	2.88	7.18	14.38	21.58	28.77	--	/	/
Output power (Po) (W)	330	660	1650	3303	4952	6592	--	/	/
PF	0.9999	0.9999	1.0000	1.0000	1.0000	1.0000	--	/	/
Input voltage (V)	360.83	360.78	360.70	360.51	360.32	360.15	--	/	/
Input current (A)	1.09	2.02	4.83	9.57	14.35	19.16	--	/	/
Input power (Pi) (W)	393	728	1740	3449	5167	6897	--	/	/
Output efficiency [%]	83.96%	90.65%	94.82%	95.76%	95.83%	95.57%	--	/	/

Uthd [%]	0.46%	0.69%	0.42%	0.48%	0.63%	0.72%	--	/	/
Ithd [%]	5.31%	1.74%	0.91%	0.53%	0.67%	0.80%	--	/	/
Output energy (Wo) (Wh) (5min)	27.54	55.01	137.46	275.02	412.51	549.73	--	/	/
Input energy (Wi) (Wh) (5min)	32.66	60.53	145.07	287.77	430.70	574.54	--	/	/
Energy efficiency	84.32%	90.88%	94.75%	95.56%	95.77%	95.68%	--	/	/
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 7	Efficiency recording and efficient calculation sheet							P
power conditioner type	Stand-alone(PV to load)							
Model:	XZ-6.6kW-12000pV							
Parameters of power conditioner	Minimum rated input voltage: 120Vdc Nominal voltage or the average of its rated input range: 360Vdc Maximum input voltage: 500Vdc (90% of Maximum input voltage: 450Vdc) Rated output voltage: 230Vac Rated output frequency: 50/60Hz Rated output power: 6600W							
PV input voltage	c) 90 % of the inverter's maximum input voltage							
Temperature (°C)	25℃±5℃							
Operating period for energy measurement (min)	5.0							
Resistive load								
Percentage of rated output VA	5%	10%	25%	50%	75%	100%	120%*	/	/
Pac/Pac,r [%]	5%	10%	25%	50%	75.03%	100.04%	--	/	/
Output voltage (V)	229.99	229.89	229.72	229.59	229.43	229.31	--	/	/
Output current (A)	1.44	2.88	7.19	14.38	21.59	28.80	--	/	/
Output power (Po) (W)	330	660	1650	3300	4952	6603	--	/	/
PF	0.9997	0.9999	1.0000	1.0000	1.0000	1.0000	--	/	/
Input voltage (V)	450.75	450.73	450.65	450.52	450.40	450.28	--	/	/
Input current (A)	0.91	1.65	3.87	7.70	11.50	15.34	--	/	/
Input power (Pi) (W)	409	740	1744	3468	5177	6906	--	/	/
Output efficiency [%]	80.68%	89.18%	94.61%	95.15%	95.65%	95.61%	--	/	/
Uthd [%]	0.54%	0.53%	0.47%	0.60%	0.76%	0.86%	--	/	/
Ithd [%]	7.12%	3.76%	1.72%	1.13%	0.91%	0.96%	--	/	/
Output energy (Wo) (Wh) (5min)	27.54	54.99	137.49	275.07	412.60	550.04	--	/	/
Input energy (Wi) (Wh) (5min)	33.80	61.45	145.66	288.61	431.58	575.24	--	/	/

Energy efficiency	81.47%	89.48%	94.39%	95.30%	95.60%	95.61%	--	/	/
Remark: *If limited by design, inverter is not capable to operate with the 120% of rated output load, test under this condition is waived;									

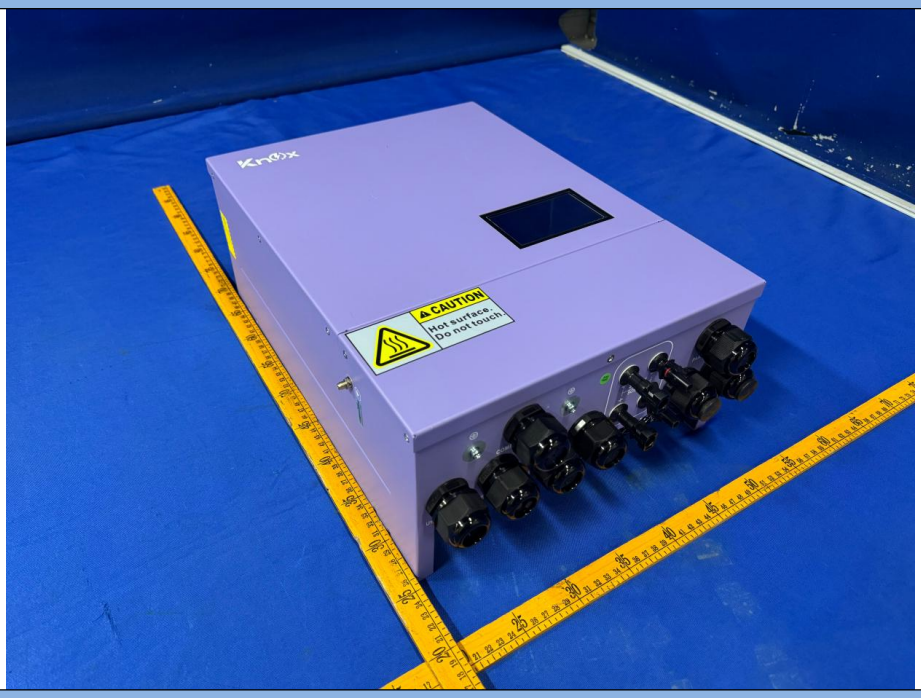
TABLE 8	No load loss	P
power conditioner type	(Grid mode)	
Measure input voltage (V)	120Vdc/360Vdc/450Vdc	
Measured input power(W)	44W/41W/64W	
power conditioner type	(Inverter mode)	
Measure input voltage (V)	48Vdc	
Measured input power(W)	64W	
power conditioner type	(PV mode)	
Measure input voltage (V)	120Vdc/360Vdc/450Vdc	
Measured input power(W)	44W/41W/64W	
Remark: No load loss is measured when the power conditioner works at rated input voltage and it's load is disconnected.		

TABLE 9	Standby loss	P
power conditioner type	(Grid mode)	
Measure input voltage (V)	120Vdc/360Vdc/450Vdc	
Measured input power(W)	15W/12W/19W	
power conditioner type	(Inverter mode)	
Measure input voltage (V)	48Vdc	
Measured input power(W)	24W	
power conditioner type	(PV mode)	
Measure input voltage (V)	120Vdc/360Vdc/450Vdc	
Measured input power(W)	15W/12W/19W	
Remark: Standby loss is measured when the power conditioner works at rated input voltage and in standby mode.		

Photo documentation
For model:XZ-6.6kW-12000pV

Over view-1

Over view-2


Over view-3

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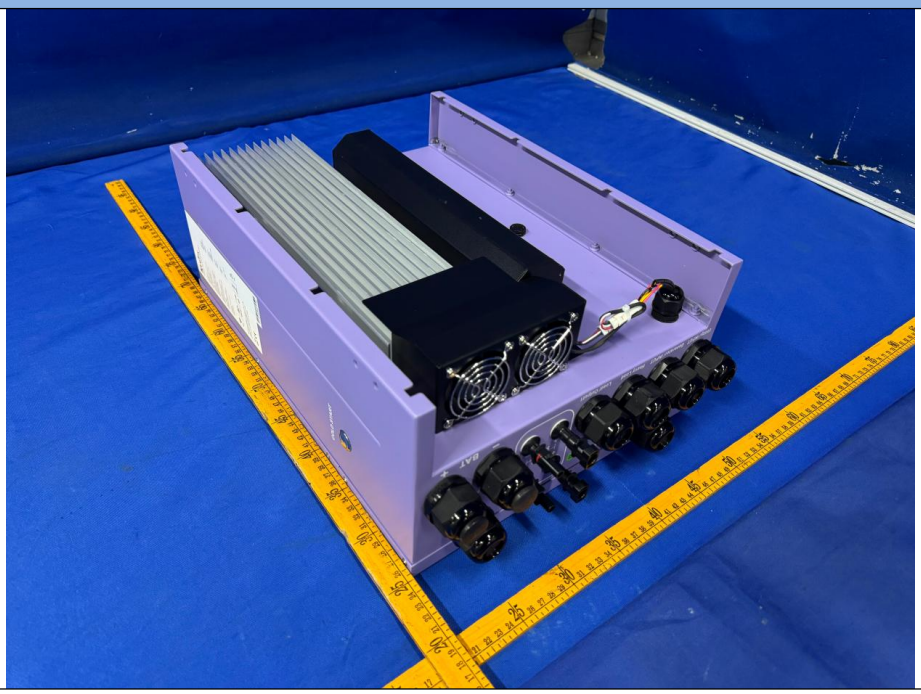
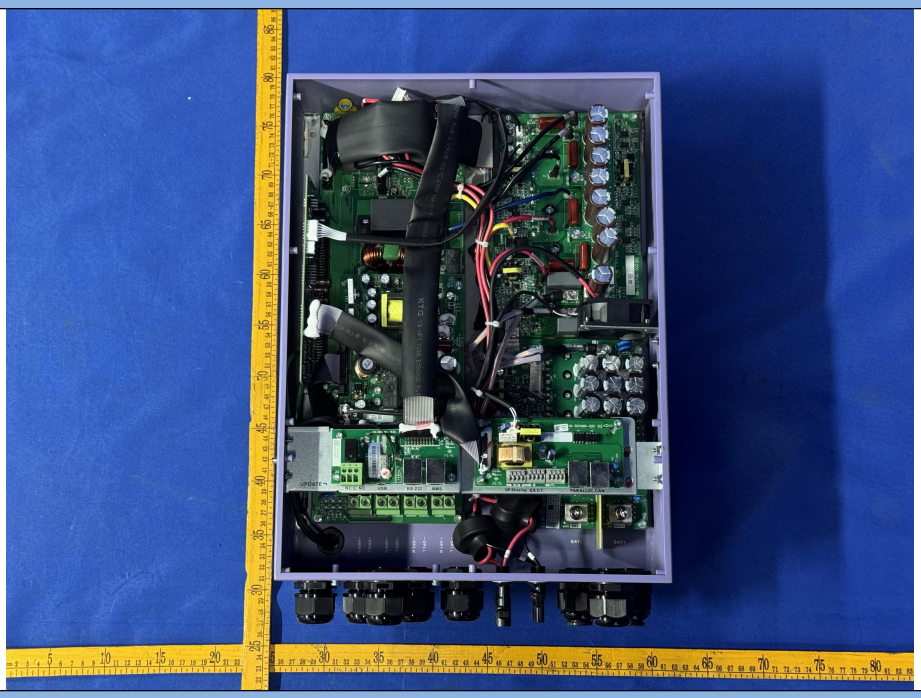
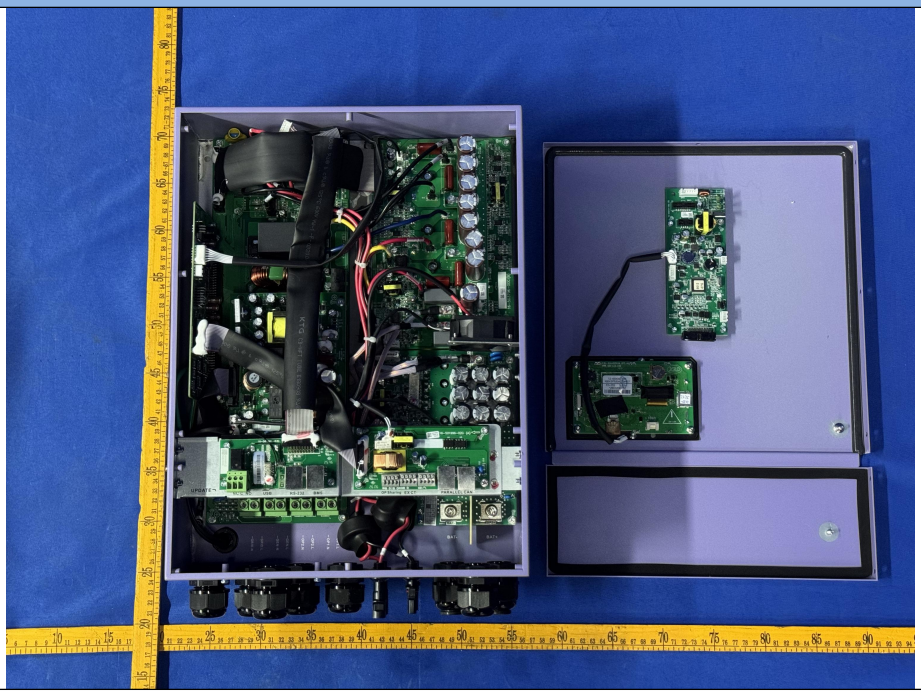


Over view-5

Over view-6


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