Report No. 161008062GZU-005
Revision 1: 01 Jul 2019

TEST REPORT

AS/NZS 4777.2

Grid connection of energy systems via inverters
Part 2: Inverter requirements

Report Reference No. .....:	161008062GZU-005
Tested by (name + signature) .....:	Jason Fu Technical Team Leader
Approved by (name + signature) .....:	Tommy Zhong Technical Manager
Date of issue.....:	18 Nov 2016, Revision 1: 01 Jul 2019
Contents .....:	10 pages
Testing Laboratory .....:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address.....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GliETDD, Guangzhou, China
Testing location / procedure .....:	TL ☒ SMT ☐ TMP ☐
Testing location / address.....:	The same as testing laboratory
Applicant's name .....:	Shenzhen SOFAR SOLAR Co., Ltd.
Address.....:	5L,Fourth Building, Antongda Industrial Park,Liuxian Avenue No.1,Xinan Street, Baoan District, Shenzhen,P.R.China.
Test specification:	
Standard .....:	AS/NZS 4777.2: 2015
Test procedure.....:	Australia registration
Non-standard test method……..:	N/A
Test Report Form/blank test report	
Test Report Form No. .....:	TTRF_AS/NZS _4777.2B
TRF Originator .....:	Intertek Guangzhou
Master TRF.....:	Dated 2015-11

Test item description .....:	AC-coupled Storage Converter
Trade Mark .....:	SOFAR SOLAR
Manufacturer.....:	Same as applicant
Model/Type reference.....:	ME 3000SP

Ratings.....:	Battery Type: Lead-acid, Lithium-ion Battery Voltage Range: 42-58Vdc Max. Charging Current: 60A Max. Discharging Current: 60A Max. Charging & Discharging Power: 3000VA Nominal Grid Voltage: 230Vac Nominal output Voltage (stand-alone): 230Vac Max. output Current: 13A Nominal Grid frequency: 50Hz Power factor: 1 (adjustable +/-0.8) Ingress protection: IP65 Operating Temperature Range: -25℃ - 60℃ Protective Class: Class I Software version: V1.00 Hardware version: V1.00

Test item particulars ..... :	
Classification of installation and use ..... :	Mounting on wall and outdoor used
Supply Connection ..... :	Permanent 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 ..... :	28 Jun 2019
Date (s) of performance of tests ..... :	28 Jun 2019 – 29 Jun 2019

General remarks:

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 testing laboratory.

"(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 is used as the decimal separator.

When determining for test conclusion, measurement uncertainty of tests has been considered.
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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.
The test results presented in this report relate only to the item tested. The results indicate that the specimen complies with standard" AS/NZS 4777.2: 2015".

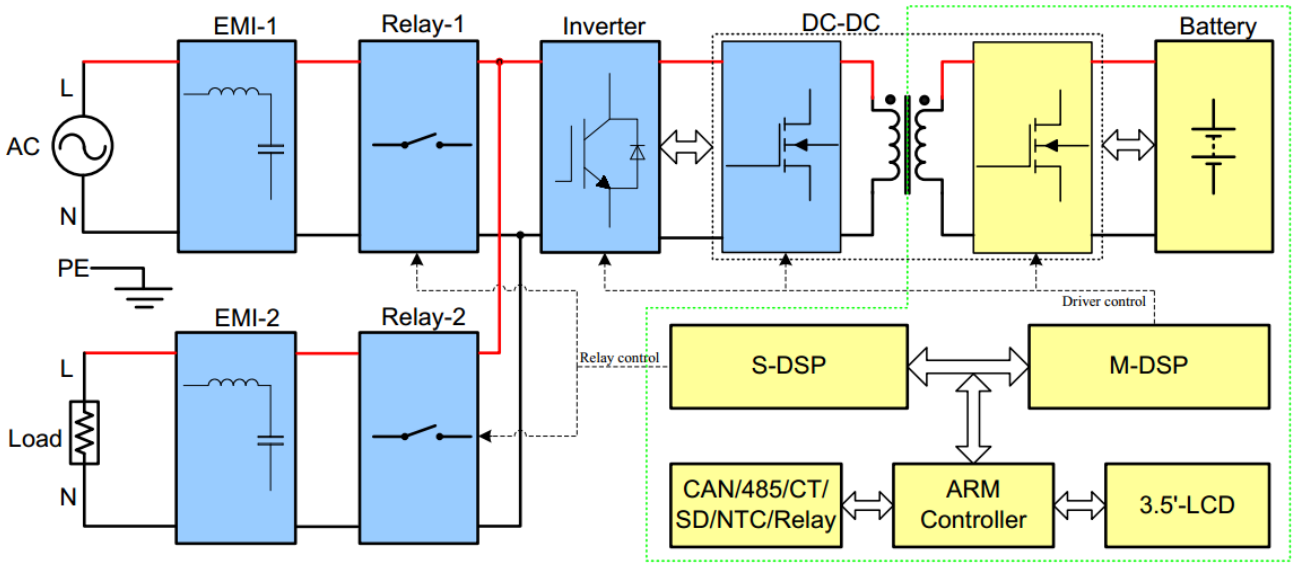
This report is based on original report No.161008062GZU-005, dated 18 Nov 2016 to have below revision

1, Added the data of direct current injection test for stand-alone mode
2, Added Volt var response mode test
3, Added the data of Volt–watt response mode for charging of energy storage

This report shall be used together with report No. 161008062GZU-005, dated 18 Nov 2016, 161008062GZU-002, dated 18 Nov 2016 and 161008062GZU-003, dated 18 Nov 2016 .

General product information:

The equipment under test is single phase energy storage inverter. They are responsible for converting the direct current generated by battery into single-phase 230V, 50 Hz. It is basic insulation between grid and battery. Two mechanical disconnection device (relay) and high frequency isolated transformer are provided between grid and battery on line and neutral conductor



The inverters intended to operate at ambient temperature -25℃ - +60℃, which will be specified in the user manual, however, the inverters will output full power when operated at 45℃, if operated at higher than 45℃ temperature, the output power would derate.

The equipment has three working mode. Charge mode, Discharge mode, Stand-alone mode:
Charge mode: The AC voltage from mains charges the battery provided in the final system.
Discharge mode: The inverter converters the energy from the battery to 230Va.c.,50 Hz voltage and connected to AC mains. In this mode the inverter works as grid connected inverter.
Stand-alone mode: The inverter converter the energy from the battery to 230Va.c.,50 Hz voltage and feed the general load. In this mode the inverter worked as stand-alone inverter.

The product was tested on:

Version of software: V1.00

Version of hardware: V1.00

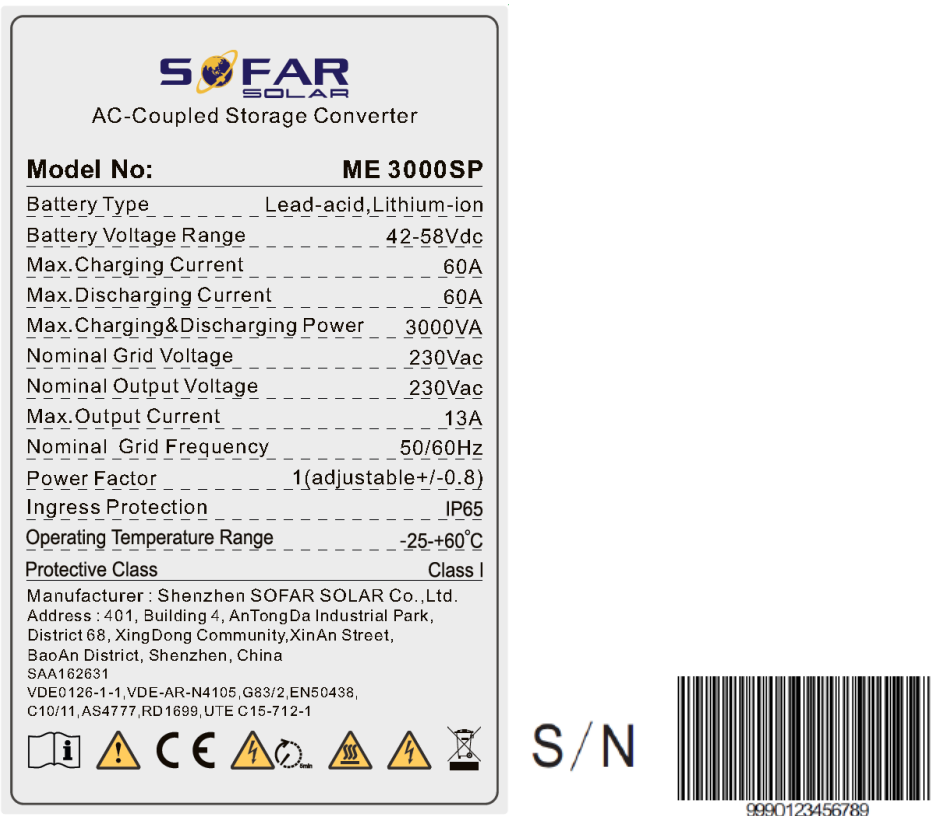
The type of grid source: simulated test grid

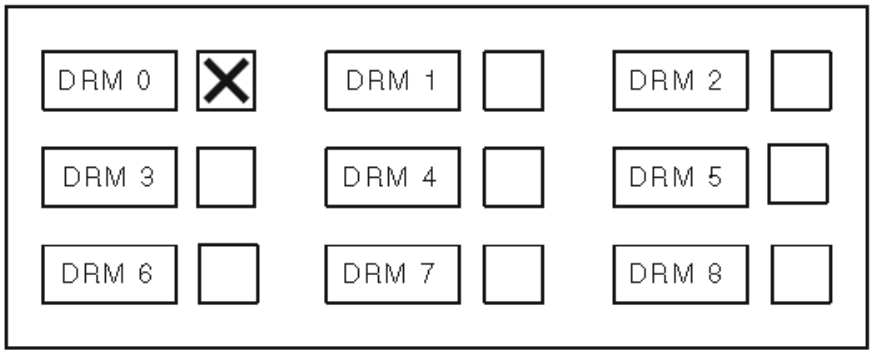
The impedance of the grid source:0.1Ω

Factory: Dongguan SOFAR SOLAR Co., Ltd.

Address: 1F-6F, Building E, No.1 JinQi Road, Bihu Industrial Park, Wulian Village, Fenggang Town, Dongguan City

Copy of marking plate(representative):





Note:

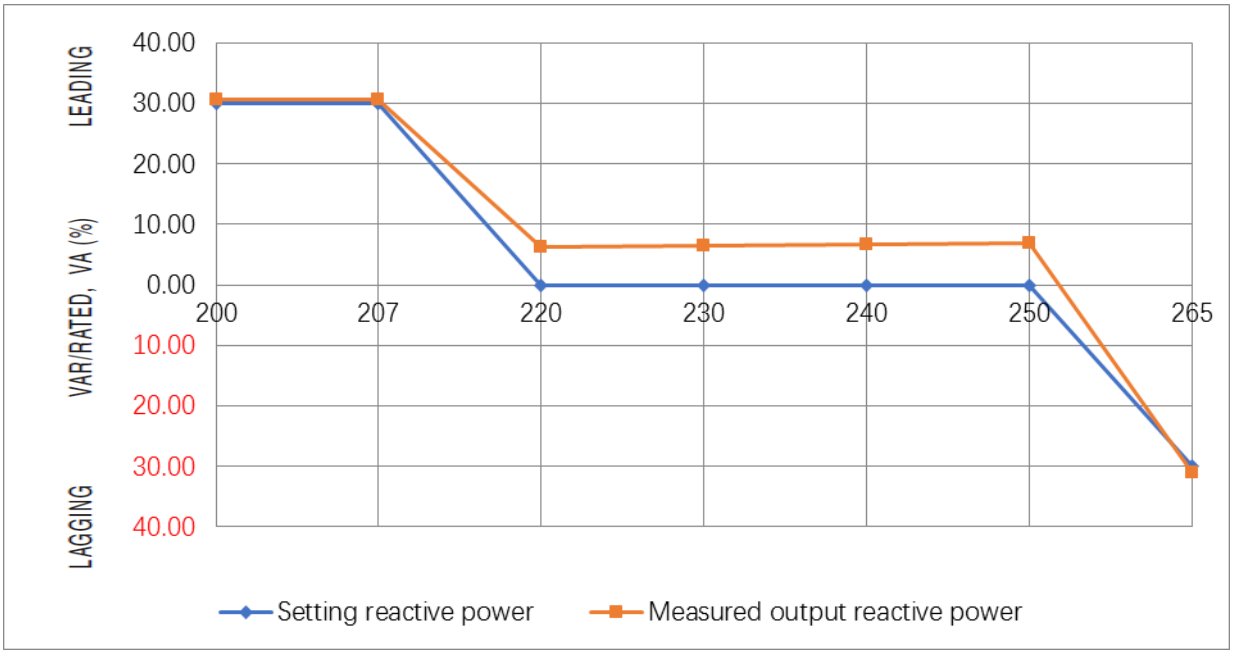
1. The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. Label is attached on the side surface of enclosure and visible after installation

AS/NZS 4777.2			
Clause	Requirement - Test	Result - Remark	Verdict
6.3.2.3	Volt – var response mode		P
	The volt – var response mode varies the reactive power output of the inverter in response to the voltage at its grid-interactive port. The inverter should have the volt – var response capability. If this mode is available, it shall be disabled by default.	See appended table	P
	The response curve required for the volt – var response is defined by the volt response reference values specified in Table 9 and corresponding var levels. The default values are listed in Table 11 and shown in Figure 3.		P

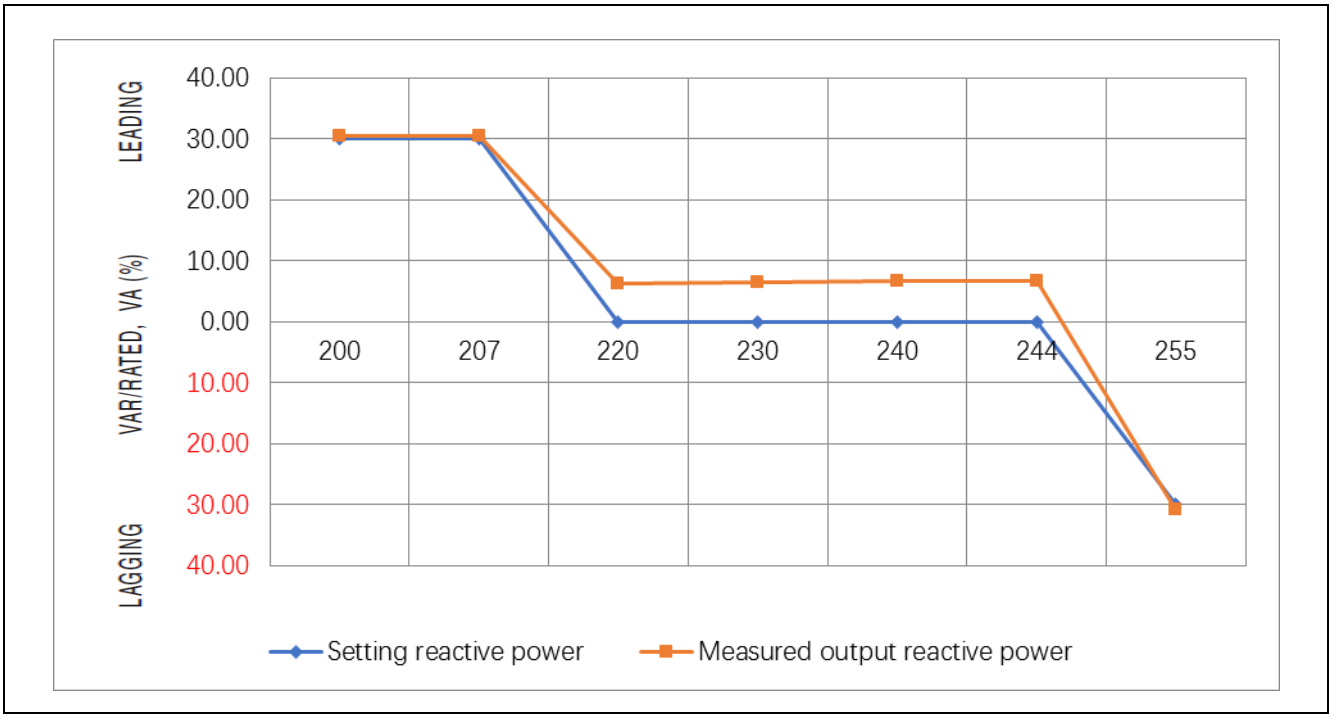
Appendix Table:

5.9	**TABLE: Direct current injection test**			**N/A**
Stand-alone mode				
		20%	60%	100%
Inverter current, A	Setting	2.60	7.80	13.10
	Actual	2.68	8.08	13.42
Limit(A)	0.5% × I_{rated} (A)	0.0652	0.0652	0.0652
Result	A	0.0031	0.0072	0.0115
Compliance	(P/F)	P	P	P

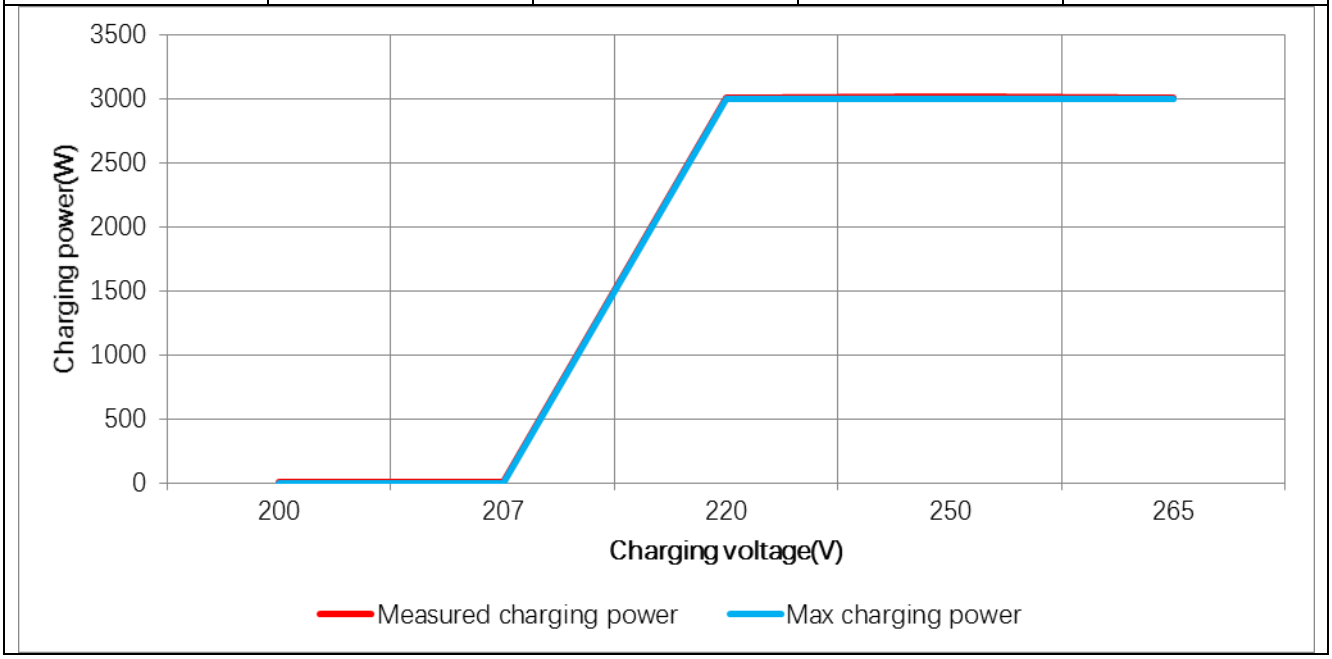
6.3.2.3	TABLE: Volt – Var response mode			P
Item	Aus. default Value, V	Default values for var level (var % rated VA)	Reactive measurement, Var	VAR/RATED, VA (%)
1	200	30% Leading	916.11	30.54
2	207	30% Leading	916.28	30.54
3	220	0	190.73	6.36
4	230	0	195.36	6.51
5	240	0	201.00	6.70
6	250	0	206.47	6.88
7	265	30% Lagging	-931.37	-31.05



Item	NZ. default Value, V	Default values for var level (var % rated VA)	Reactive measurement, K Var	VAR/RATED, VA (%)
1	200	30% Leading	916.24	30.54
2	207	30% Leading	916.31	30.54
3	220	0	190.70	6.36
4	230	0	195.13	6.50
5	240	0	199.65	6.66
6	244	0	201.61	6.72
7	255	30% Lagging	-921.89	-30.73


LEADING
VAR/RATED, VA (%)
LAGGING
40.00
30.00
20.00
10.00
0.00
10.00
20.00
30.00
40.00
200
207
220
230
240
244
255
Setting reactive power
Measured output reactive power

6.4.3	TABLE: Volt – watt response mode for charging of energy storage			P
Item	Default Value, V	Power measurement, W	Measurement value (P/Prated), %	Maximum value (P/Prated), %
1	200	5.25	0.18	0
2	207	5.08	0.17	0
3	220	3009.80	100.33	100
4	250	3014.61	100.49	100
5	265	3012.97	100.43	100



(End of report)