Test report no.: *Prüfbericht-Nr.:*	CN21MHN7 002	**Order No.:** *Auftragsnr.:*	168428105	**Page 1 of 9** *Seite 1 von 9*
Client reference no.: *Kunden-Referenz-Nr.:*	2026754	**Order date:** *Auftragsdatum:*	2023.05.24	
Client: *Auftraggeber:*	**Guangzhou Sanjing Electric Co., Ltd.** No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China			
Test item: *Prüfgegenstand:*	Grid-Connected PV Inverter			
Identification / Type no.: *Bezeichnung / Typ-Nr.:*	R5-6K-S2-IE, R5-6K-S2-15-IE			
Order content: *Auftrags-Inhalt*:	AK certificate			
Test specification *Prüfgrundlage:*	EN 50549-1 : 2019			
Date of sample receipt: *Wareneingangsdatum:*	2023.05.24			
Test sample no: *Prüfmuster-Nr.:*	Engineering samples			
Testing period: *Prüfzeitraum:*	2023.05.24 – 2023.05.26			
Place of testing: *Ort der Prüfung:*	See page 5			
Testing laboratory: *Prüflaboratorium:*	TÜV Rheinland (Shenzhen) Co.,Ltd.			
Test result*: *Prüfergebnis*:*	Pass			

created by: *erstellt von:*	Edward Li	**authorized by:** *genehmigt von:*	Zhiwei Yan
Date: 2023.05.26 *Datum:*	Edward Li	**Issue date:** 2023.05.26 *Ausstellungsdatum:*	Zhiwei Yan
Position / *Stellung*:	Project Engineer	**Position** / *Stellung*:	Reviewer

Other/*Sonstiges:* This report is based on the report CN21MHN7 001 and used with CN21MHN7 001, add new models: R5-6K-S2-IE, R5-6K-S2-15-IE, see report for details.

This report does not evidence compliance of the provided sample with the relevant standards but only with the referred tests. This test report documents the findings of examination conducted on the delivered product mentioned above only. This report does not entitle the applicant to carry any safety mark on this or similar products. Further for sales or other application purposes of the tested product, any reference to TÜV Rheinland or a test through TÜV Rheinland is only permissible with prior written consent of TÜV Rheinland.

Condition of the test item at delivery: *Zustand des Prüfgegenstandes bei Anlieferung*	Test item complete and undamaged: Prüfmuster vollständig und unbeschädigt

* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet

TUV Rheinland (Shenzhen) Co., Ltd. 1601-1604, 17-18F, Tower A Building 2, Shenzhen International Innovation Valley, Dashi 1st Road, Xili Street, Xili Community, Nanshan District, Shenzhen 518052, P. R. China
Mail: info@bi.chn.tuv.com Web: http://www.chn.tuv.com

Remarks
Anmerkungen

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. *Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.* *Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.*
2	As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. *Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.*
3	Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. *Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.*
4	The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019. *Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.*
5	

TEST REPORT
EN 50549-1 : 2019
Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network - Generating plants up to and including Type B

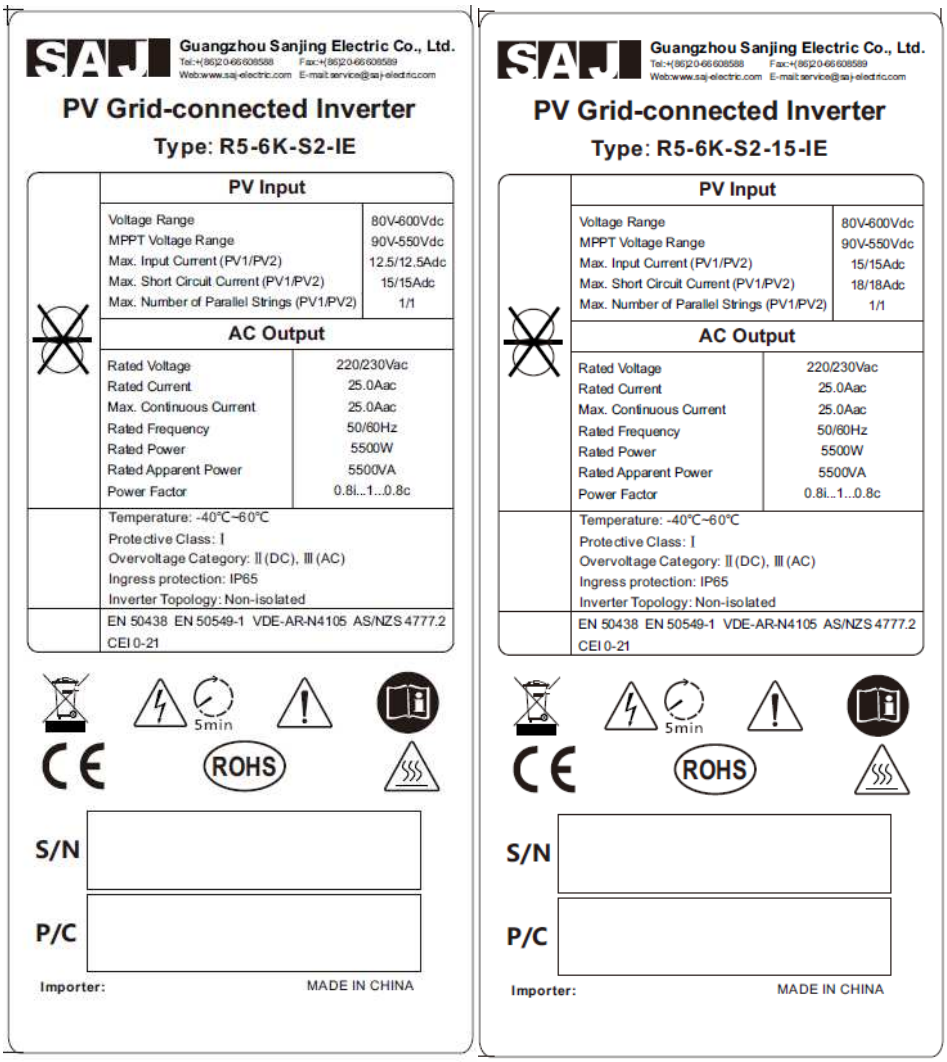
Report Reference No. ..... :	CN21MHN7 002
Tested by (name + signature) ..... :	See cover page
Witnessed by (name + signature)... :	N/A
Supervised by (name + signature).. :	N/A
Approved by (name + signature) .... :	See cover page
Date of issue..... :	See cover page
Testing Laboratory..... :	TÜV Rheinland (Shenzhen) Co., Ltd.
Address ..... :	1601-1604, 17-18F, Tower A Building 2, Shenzhen International Innovation Valley, Dashi 1st Road, Xili Street, Xili Community, Nanshan District, Shenzhen 518052, P. R. China
Testing location/ address ..... :	See page 5
Applicant's name ..... :	Guangzhou Sanjing Electric Co., Ltd.
Address ..... :	No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China
Test specification:	
Standard..... :	EN 50549-1 : 2019
Test procedure ..... :	AK certificate
Non-standard test method..... :	N/A
Test Report Form No. ..... :	MS-0024998-appendix 22 V.1
Test Report Form(s) Originator ..... :	TÜV Rheinland Group
Master TRF ..... :	2019-07

Test item description..... :	Grid-Connected PV Inverter
Trade Mark ..... :	SAJ
Manufacturer ..... :	Guangzhou Sanjing Electric Co., Ltd.
Model/Type reference..... :	See model list
Ratings..... :	See model list

Testing procedure and testing location:		
☒ **CB Testing Laboratory:**	See cover page	
Testing location/ address.....:	See cover page	
☐ **Associated CB Test Laboratory:**		
Testing location/ address.....:		
Tested by (name + signature) .....:		.....
Approved by (+ signature) .....:		.....
☐ Testing procedure: TMP		
Tested by (name + signature) .....:		
Approved by (+ signature) .....:		
Testing location/ address.....:		
☐ Testing procedure: WMT		
Tested by (name + signature) .....:		
Witnessed by (+ signature) .....:		
Approved by (+ signature) .....:		
Testing location/ address.....:		
☐ Testing procedure: SMT		
Tested by (name + signature) .....:		
Approved by (+ signature) .....:		
Supervised by (+ signature).....:		
Testing location/ address.....:		
☐ Testing procedure: RMT		
Tested by (name + signature) .....:		
Approved by (+ signature) .....:		
Supervised by (+ signature).....:		
Testing location/ address.....:		

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing	
Tests performed (name of test and test clause):	**Testing location:**
N/A	**Guangzhou Sanjing Electric Co., Ltd.** No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong P.R. China
Summary of compliance with National Differences List of countries addressed: None. ☒ The product fulfils the requirements of COMMISSION REGULATION (EU) 2016/631 (RfG).	

Copy of marking plate:



Guangzhou Sanjing Electric Co., Ltd.

PV Grid-connected Inverter

Type: R5-6K-S2-IE

PV Input	
Voltage Range	80V-600Vdc
MPPT Voltage Range	90V-550Vdc
Max. Input Current (PV1/PV2)	12.5/12.5Adc
Max. Short Circuit Current (PV1/PV2)	15/15Adc
Max. Number of Parallel Strings (PV1/PV2)	1/1

AC Output	
Rated Voltage	220/230Vac
Rated Current	25.0Aac
Max. Continuous Current	25.0Aac
Rated Frequency	50/60Hz
Rated Power	5500W
Rated Apparent Power	5500VA
Power Factor	0.8i...1...0.8c

Temperature: -40℃~60℃
Protective Class: I
Overvoltage Category: II (DC), III (AC)
Ingress protection: IP65
Inverter Topology: Non-isolated

EN 50438 EN 50549-1 VDE-AR-N4105 AS/NZS 4777.2
CEI 0-21

5min

ROHS

S/N

P/C

Importer: MADE IN CHINA

Guangzhou Sanjing Electric Co., Ltd.

PV Grid-connected Inverter

Type: R5-6K-S2-15-IE

PV Input	
Voltage Range	80V-600Vdc
MPPT Voltage Range	90V-550Vdc
Max. Input Current (PV1/PV2)	15/15Adc
Max. Short Circuit Current (PV1/PV2)	18/18Adc
Max. Number of Parallel Strings (PV1/PV2)	1/1

AC Output	
Rated Voltage	220/230Vac
Rated Current	25.0Aac
Max. Continuous Current	25.0Aac
Rated Frequency	50/60Hz
Rated Power	5500W
Rated Apparent Power	5500VA
Power Factor	0.8i...1...0.8c

Temperature: -40℃~60℃
Protective Class: I
Overvoltage Category: II (DC), III (AC)
Ingress protection: IP65
Inverter Topology: Non-isolated

EN 50438 EN 50549-1 VDE-AR-N4105 AS/NZS 4777.2
CEI 0-21

5min

ROHS

S/N

P/C

Importer: MADE IN CHINA

Equipment mobility ..... :	☐ movable ☐ hand-held ☐ stationary ☒ fixed ☐ transportable ☐ for building-in
Connection to the mains ..... :	☐ pluggable equipment ☐ direct plug-in ☒ permanent connection ☐ for building-in
Enviromental category ..... :	☒ outdoor ☐ indoor conditional ☐ indoor unconditional
Operating condition..... :	☒ continuous ☐ short-time ☐ intermittent
Over voltage category mains ..... :	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
Over voltage category PV ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV
Mains supply tolerance (%)..... :	According to specified supply range
Tested for IT power systems ..... :	☐ Yes ☒ No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Mass of equipment (kg) ..... :	See model list
Pollution degree ..... :	☐ PD 1 ☐ PD 2 ☒ PD 3
IP protection class ..... :	IP65

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

Testing:	
Date of receipt of test items ..... :	See cover page
Date(s) of performance of tests..... :	See cover page

General remarks:

"(see Attachment #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

The tests 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 testing laboratory.

List of test equipment must be kept on file and available for review.

Additional test data and/or information provided in the attachments to this report.

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

Determination of the test results includes consideration of measurement uncertainty from the test equipment and methods.

Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:

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

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

Name and address of factory (ies) : **Guangzhou Sanjing Electric Co., Ltd.**
No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R. China

General product information:

Brief description:

The models R5-6K-S2-IE, R5-6K-S2-15-IE are identical to original models in hardware, software and construction, except output power are different by software adjusting.

Description of changes:

1. Add new models R5-6K-S2-IE, R5-6K-S2-15-IE.

Change	Testing	Comment
1	N/A	No additional test for necessary.

Model list:

MODEL LIST 2		R5-6K-S2-IE	R5-6K-S2-15-IE
INPUT(PV)	V_{MAX} PV [Vdc]	600	
	I_{SC} PV [A]	15/15	18/18
	MPP Voltage Range V_{MPP}[Vdc]	90-550	
	Max. PV Input Current [A]	12.5/12.5	15/15
	Start PV Voltage [Vdc]	100	
	Backfeed Current [A]	0	
	Overvoltage Category (OVC)	OVC II	
GRID CONNECTION	Rated Output Voltage Ur [Vac]	230	
	Rated Output Frequency F_{NETZ} [Hz]	50	
	Rated power P_{Emax} [VA]	5500	
	Max. Apparent power S_{Emax} [VA]	5500	
	Rated Output Current Ir [A]	25	
	Max. Output Current Imax [A]	25	
	Power Factor cosφ [λ]	0.8 leading ~0.8lagging	
	Efficiency max. η_{max}[%]	98.2	
	Standby Power Consumption [W]	6	
	Night Power Consumption [W]	<0.2	
	THD [V / I] (100% full power)	<2	
	Acoustic Noise [dB]	<55	
	Overvoltage Category (OVC)	OVC III	
SYSTEM	Type of inverter	Non-isolated	
	Firmware [DSP]	V2.011	
	Software [version]	Main power board: V1.11, Control board: V1.1	

	Working frequency [Hz]	50
	Separated by	Transformerless
	MPPT strings	2
	MPPT tracking	2
	Protective Class	I
	Enclosure Protection (IP)	IP65
	Operating Temperature Range [°C]	-40°C to +60°C (45°C to 60°C with derating)
	Pollution degree (PD)	PD 3 (outside), PD 2 (inside)
	Altitude [m]	Up to 4000
	Weight [kg]	12.2
	Size [mm] (HxWxD)	389*367*143
Note:		

--End of the report--