

EMC - TEST REPORT

Report Number	:	68.760.20.0930.01	Date of Issue:	2020-10-23
Model	:	SUN2000-15KTL-M3, SUN2000-17KTL-M3, SUN2000-20KTL-M3, SUN2000-23KTL-M3, SUN2000-29.9KTL-M3, SUN2000-30KTL-M3, SUN2000-36KTL-M3, SUN2000-40KTL-M3		
Product Type	:	Solar Inverter		
Applicant	:	Huawei Technologies Co., Ltd.		
Address	:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C		
Manufacturer	:	Huawei Technologies Co., Ltd.		
Address	:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C		
Test Result	:	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative		
Total pages including Appendices	:	73		

TÜV SÜD Certification and Testing (China) Co., Ltd. – Shenzhen Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. – Shenzhen Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. – Shenzhen Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. – Shenzhen Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval

Content

1	Report Version	3
2	General Information	4
2.1	Notes	4
2.2	Applied Standard	5
2.3	Test Location	5
2.4	Details of Applicant	6
2.5	Application Details	6
2.6	Test Environment Condition	6
3	Summary of Test Results	7
4	Equipment Specification	8
4.1	General Description	8
5	System Configuration during EMC Test	9
5.1	Ports and Cables	9
5.2	Auxiliary Equipment	9
5.3	Test Configurations and mode	10
5.4	Test Condition and Connection	10
6	Immunity Performance Criteria	11
7	Electromagnetic Interference (EMI)	13
7.1	Radiated Emission 30 MHz to 6 GHz	13
7.2	Conducted Disturbance 0.15 MHz to 30 MHz	16
7.3	Current Harmonics Emissions	20
7.4	Voltage Fluctuations and Flicker	21
8	Electromagnetic Susceptibility (EMS)	22
8.1	Electrostatic Discharge	22
8.2	Immunity to Radiated Electric Fields 80 MHz to 6000 MHz	23
8.3	Immunity to Electrical Fast Transient Bursts	24
8.4	Immunity to Surges	26
8.5	Immunity to Continuous Conducted Interference 0.15 MHz to 80 MHz	28
8.6	Immunity to Power Frequency Magnetic Field	30
8.7	Immunity to Voltage Dips and Short Interruption of AC Power Port	31
9	Main Test Instruments	32
10	System Measurement Uncertainty	34
11	Graph and Data of Emission Test	35
11.1	Radiated Emission	35
11.2	Conducted Disturbance	39
11.3	Current Harmonics	52
11.4	Voltage Fluctuation and Flicker	55
12	Photographs of Test Set-up	57
12.1	Emissions	57
12.2	Immunity	60
13	Photographs of Product	67
14	Appendix: Abbreviation	73



1 Report Version

Issue	Description of Change	Date of Issue
1	First Issue	2020-10-23





2 General Information

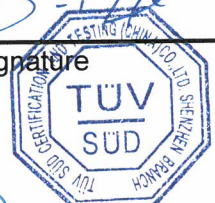
2.1 Notes

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.

Prepared by Project Manager	2020-10-23 Date	Dawi Xu Name	 Signature
Approved by Project Manager	2020-10-23 Date	Jessie He Name	 Signature



2.2 Applied Standard

Applied Product Standard:	CISPR 11:2015+A1:2016/ EN55011:2016*
	CISPR 11:2015+A1:2016+A2:2019/EN 55011:2016+A1:2017*
	IEC 62920:2017/ EN 62920:2017*
	IEC 61000-6-1:2005/EN 61000-6-1:2007
	IEC 61000-6-1:2016/EN IEC 61000-6-1:2019
	IEC 61000-6-2:2005/EN 61000-6-2:2005
	IEC 61000-6-2:2016/EN IEC 61000-6-2:2019
	IEC 61000-3-11:2000/EN 61000-3-11:2000
	IEC 61000-3-11:2017/EN IEC 61000-3-11:2019
	IEC 61000-3-12:2011/EN 61000-3-12:2011
The manufacture specific requirements	ETSI EN 301 489-1 V2.2.3:2019*
	ETSI EN 301 489-17 V3.2.4:2020*
Test Methods:	IEC 61000-6-3:2006+A1:2010/EN 61000-6-3:2007+A1:2011**
	IEC 61000-6-4:2006+A1:2010/EN 61000-6-4:2007+A1:2011**
	IEC 61000-6-4:2018/EN IEC 61000-6-4:2019**
	IEC 61000-4-2:2008
	IEC 61000-4-3:2010
	IEC 61000-4-4:2012
	IEC 61000-4-5:2014+A1:2017
IEC 61000-4-6:2013	
Remark:	IEC 61000-4-8:2009
	IEC 61000-4-34:2009
	<ol style="list-style-type: none"> the output voltages 254Vac/440Vac,3W+PE and 277Vac/480Vac,3W+PE of product are only applicable to medium-voltage grid connection scenarios and non-low-voltage grid connection scenarios (industrial environment); *According to EN 303 446-2 V1.2.1 (2019-10) Clause 4.2.1 & 4.2.2, For radiated emissions and conducted emissions, the EUT shall be assessed against the applicable non-radio EMC standard(s) as listed in clause 2.1.3 of EN 303 446-2. The exclusion band(s) defined in the applicable radio EMC standard(s) listed in clause 2.1.2 of EN 303 446-2 shall be applied. So EUT was assessed radiated emissions and conducted emissions with standards CISPR 11 and IEC 62920 for the non-radio function. The product exclusion band(s) is (WLAN: 2280MHz-2603.5MHz). Only the Telecommunication/network port limit is met.

2.3 Test Location

Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	No.2222, Xin Jinqiao Road, Pudong New Area, Shanghai, 201206, P.R.C
Test Location 2:	Shanghai Electrical Apparatus Research Institute(Group)Co, Ltd.
Address:	505# Wuning Road, Shanghai, China. Pd code 200063

2.4 Details of Applicant

Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Product Name:	Solar Inverter
Product Model:	SUN2000-15KTL-M3, SUN2000-17KTL-M3, SUN2000-20KTL-M3, SUN2000-23KTL-M3, SUN2000-29.9KTL-M3, SUN2000-30KTL-M3, SUN2000-36KTL-M3, SUN2000-40KTL-M3

2.5 Application Details

Date of Receipt Test Item:	2020-05-26
Start Date of Test:	2020-05-26
End Date of Test:	2020-10-10

2.6 Test Environment Condition

Ambient Temperature:	22~26°C
Relative Humidity:	40~57%
Atmospheric Pressure:	100.5~101.6kPa

3 Summary of Test Results

Table 1 Test summary

EUT Classification: Radio Equipment				
Test Items	Test Configuration	Limit or Performance Criteria	Test Result	Location
<u>Radiated Emissions</u> Enclosure Port	TC1(TM1-TM5)	Class A or B	Pass	Location1
<u>Conducted Emissions</u> <input checked="" type="checkbox"/> DC Input Power Port <input checked="" type="checkbox"/> AC Output Power Port <input checked="" type="checkbox"/> Wired network Ports	TC1(TM1-TM5)	Class A or B	Pass	Location1
<u>Current Harmonics Emissions</u> AC Power Port	TC1(TM1-TM5)	Refer to section 11.3	Pass	Location1
<u>Voltage Fluctuations and Flickers</u> AC Power Port	TC1(TM1-TM5)	Refer to section 11.4	Pass	Location1
<u>Electrostatic Discharge</u> Enclosure Port	TC1(TM1-TM5)	B	Pass	Location1
<u>Immunity to Radiated Electromagnetic Fields</u> Enclosure Port	TC1(TM1-TM5)	A	Pass	Location1
<u>Immunity to Electrical Fast Transient Bursts</u> <input checked="" type="checkbox"/> Outdoor Signal Port <input type="checkbox"/> Indoor Signal Port <input checked="" type="checkbox"/> AC Output Power Port <input checked="" type="checkbox"/> DC Input Power Port	TC1(TM1-TM5)	B	Pass	Location1
<u>Immunity to Surges</u> <input checked="" type="checkbox"/> Outdoor Signal Port <input type="checkbox"/> Indoor Signal Port <input checked="" type="checkbox"/> AC Output Power Port <input checked="" type="checkbox"/> DC Input Power Port	TC1(TM1-TM5)	B	Pass	Location1
<u>Immunity to Continuous Conducted Interference</u> <input checked="" type="checkbox"/> Outdoor Signal Port <input type="checkbox"/> Indoor Signal Port <input checked="" type="checkbox"/> AC Output Power Port <input checked="" type="checkbox"/> DC Input Power Port	TC1(TM1-TM5)	A	Pass	Location1
<u>Immunity to Power Frequency Magnetic Field</u> Enclosure Port	TC1(TM1-TM5)	A	Pass	Location1
<u>Immunity to Voltage Dips and Short Interruption</u> AC Power Port	TC1(TM1-TM4)	B/B/C/C/C	Pass	Location2
Note: 1. Measurement taken is within the uncertainty of measurement system. 2. TC is short for test configuration. 3. <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> The item has not been tested or not applicable.				