



**SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch**

Report No.: HR/2019/1002103

Page: 1 of 14

Human Exposure Report

Application No.: HR/2019/10021
Applicant: Huawei Technologies Co., Ltd.
Address of Applicant: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen, 518129, P.R.C
Manufacturer: Huawei Technologies Co., Ltd.
Address of Manufacturer: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen, 518129, P.R.C
Equipment Under Test (EUT):
EUT Name: Smart Phone
Model No.: VOG-L0J
Trade mark: HUAWEI
FCC ID: QISVOG-L0J
Standards: 47 CFR PART 1, Subpart I, Section 1.1310
Date of Receipt: 2019-01-28
Date of Test: 2019-01-31 to 2019-02-14
Date of Issue: 2019-02-19

Test Result :	Pass*
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* In the configuration tested, the EUT complied with the standards specified above

Keny Xu

Keny Xu
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch EMC Laboratory

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2 General Information

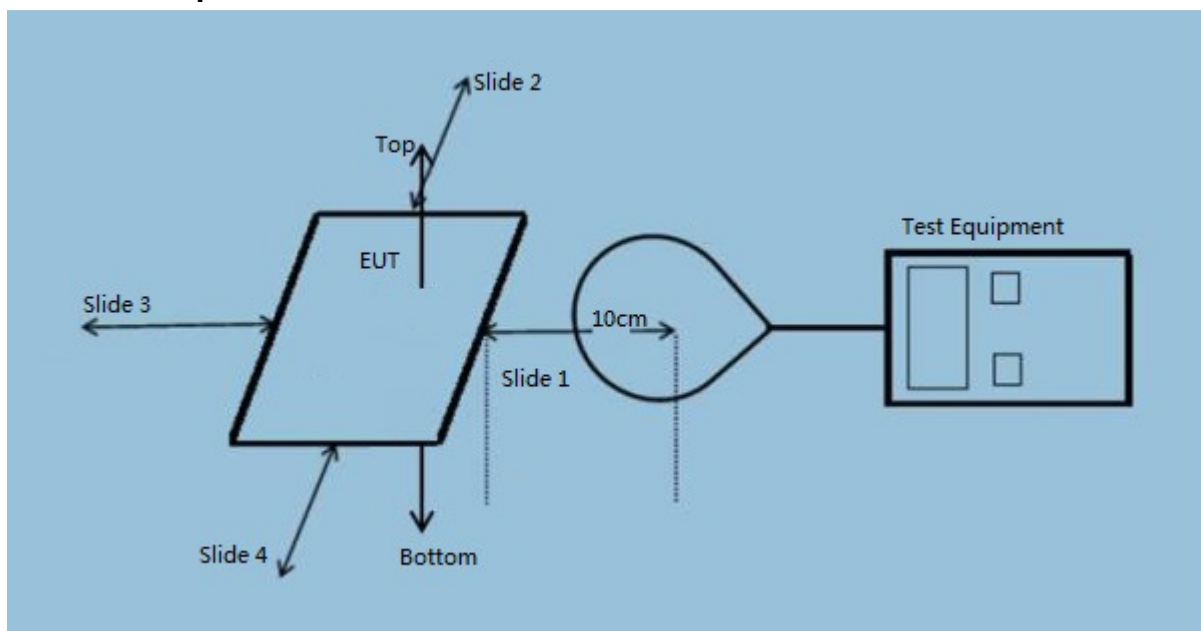
2.1 Details of E.U.T.

Power supply:	DC 3.82V from internal battery or AC/DC adapter
Antenna Type:	Loop Antenna
Modulation Type:	Load Modulation
Operation Frequency:	110kHz-148kHz

2.2 Description of Support Units

Description	Manufacturer	Model No.	Specification
Smart Phone	Huawei	VOG-L0J	---
Adapter	Huawei	HW-05045U00	---
USB Cable	Huawei	WA0009	100cm shielded

2.3 Test Setup



2.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

2.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

2.6 Deviation from Standards

None.

2.7 Abnormalities from Standard Conditions

None.



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Shenzhen Branch E&E Laboratory

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3 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Due date
1	Shielding Room	ChangZhou ZhongYu	JB88	SEM001-07	2020-05-09
2	Electric and Magnetic Field Analyzer	Narda	EHP-50F	EMC092	2019-02-06



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Shenzhen Branch Testing Center EEC Laboratory

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4 Test Results

4.1 RF Exposure test

Test Requirement: 47 CFR PART 1, Subpart I, Section 1.1310

Measurement Distance: 10cm

Limit:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density
RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

4.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 52 % RH Atmospheric Pressure: 1015 mbar

EUT Operation:

This device has been tested with load at 10% capacity battery, 50% capacity battery, and 90% capacity battery.



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4.1.2 Measurement Data

Electric Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50%Limit (V/m)
			10% capacity battery	50% capacity battery	90% capacity battery	
117.5 kHz	10	Side 1	0.86	0.74	0.71	307
		Side 2	1.08	0.93	0.89	307
		Side 3	1.13	0.98	0.74	307
		Side 4	0.99	0.82	0.69	307
		Top	0.91	0.77	0.81	307
		Bottom	1.27	0.96	0.85	307

Magnetic Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			10% capacity battery	50% capacity battery	90% capacity battery	
117.5 kHz	10	Side 1	0.0227	0.0182	0.0153	0.815
		Side 2	0.0254	0.0233	0.0215	0.815
		Side 3	0.0335	0.0292	0.0255	0.815
		Side 4	0.0273	0.0279	0.0247	0.815
		Top	0.0241	0.0204	0.0188	0.815
		Bottom	0.0429	0.0376	0.0348	0.815

5 Photographs- RF exposure Setup photos

Refer to setup photos



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6 Certificate fo Calibration



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广东省计量科学研究所
SOUTH CHINA NATIONAL CENTER OF METROLOGY
GUANGDONG INSTITUTE OF METROLOGY



中国认可
国际互认
校准
CALIBRATION
CNAS L0730

校准证书 CALIBRATION CERTIFICATE

证书编号 WWD201800360
Certificate No.

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Page of

委托方 通标标准技术服务有限公司广州分公司
Client

委托方地址 广州市经济技术开发区科学城科珠路198号
Add. of Client

计量器具名称 全频段电磁辐射分析仪
Description Electric and Magnetic Field Analyzer

型号规格 NBM-550/EHP-50F
Model/Type

制造厂 narda
Manufacturer

出厂编号 G-0569/000WX60415 设备编号 EMC2143
Serial No. Equipment No.

接收日期 2018 年 02 月 06 日
Date of Receipt Y M D

结果 见校准结果
Results Shown in the results of calibration

校准日期 2018 年 02 月 07 日
Date of Calibration Y M D

批准人
Approved Signatory

核 验 钟志忠
Checked by

校 准 张 宏
Calibrated by

证书专用章
Stamp



扫一扫查真伪

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SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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广东省计量科学研究院
SOUTH CHINA NATIONAL CENTER OF METROLOGY
GUANGDONG INSTITUTE OF METROLOGY



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CNAS L0730

说 明

证书编号 WWD201800360

Certificate No.

DIRECTIONS

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1. 本中心是国家质量监督检验检疫总局在华南地区设立的国家法定计量检定机构, 本中心的质量管理体系符合 ISO/IEC 17025:2005 标准的要求。

This laboratory is the National Legal Metrological Verification Institution in southern China set up by the General Administration of Quality Supervision. The quality system is in accordance with ISO/IEC 17025:2005.

2. 本中心所出具的数据均可溯源至国家计量基准和国际单位制(SI)。

All data issued by this laboratory are traceable to national primary standards and International System of Units (SI).

3. 本次校准的技术依据:

Reference documents for the calibration:

FFW1607-2016 工频电场测试仪校准方法

FFW1419-2014 磁场暴露计校准方法 Calibration Method of Exposure Level Tester

4. 本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

设备名称 Name of Equipment	编号 Serial No.	证书号/有效期 Certificate No. /Due Date	计量特性 Metrological Characteristic
标准场强发生器 Standard Field Generator	821043	WWC201701706 /2018-10-30	$U=0.5 \text{ dB} (k=2)$
磁场标准装置 Magnetic field standard device	83AA0525/00107237	WWD201701432 /2018-06-27	$U_{rel}=1.0\% (k=2)$
电场校准装置 Electric Field Calibration Device	0607	CJC201710039 /2018-06-14	$U=5 \text{ mm}, k=2$

5. 校准地点、环境条件:

Place and environmental conditions of the calibration:

地点 无线电室 (Radio Lab.)

Place

温度 $(20 \pm 5) ^\circ\text{C}$

Temperature

相对湿度

R.H.

<80 %

6. 被校准仪器限制使用条件:

Limiting condition of the instrument calibrated:

注: 1. 本证书校准结果只与受校准仪器有关。

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校准结果
RESULTS OF CALIBRATION

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Certificate No.

原始记录号 0201800360
Record No.

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- 1 磁场强度测量准确度 (见表1)
H-Field Strength Measuring Accuracy (Shown in Table 1)

表1 (Table 1)

频率	标准值	被检表示值	误差 (dB)	允许误差	结论
Frequency	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
20 Hz	20.00 μ T	20.36 μ T	+0.15	± 1.02 dB	Pass
50 Hz	20.00 μ T	19.85 μ T	-0.07	± 0.67 dB	Pass
100 Hz	20.00 μ T	19.77 μ T	-0.10	± 0.67 dB	Pass
200 Hz	20.00 μ T	19.67 μ T	-0.14	± 0.67 dB	Pass
500 Hz	20.00 μ T	19.75 μ T	-0.11	± 0.67 dB	Pass
1 kHz	20.00 μ T	19.95 μ T	-0.02	± 0.67 dB	Pass
2 kHz	2.000 μ T	2.014 μ T	+0.06	± 0.67 dB	Pass
5 kHz	2.000 μ T	2.034 μ T	+0.15	± 0.67 dB	Pass
10 kHz	2.000 μ T	2.066 μ T	+0.28	± 0.67 dB	Pass
20 kHz	2.000 μ T	2.051 μ T	+0.22	± 0.67 dB	Pass
50 kHz	2.000 μ T	2.066 μ T	+0.28	± 0.67 dB	Pass
100 kHz	2.000 μ T	2.081 μ T	+0.34	± 0.67 dB	Pass
200 kHz	2.000 μ T	2.084 μ T	+0.36	± 1.02 dB	Pass
400 kHz	2.000 μ T	2.112 μ T	+0.47	± 1.02 dB	Pass



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校准结果 RESULTS OF CALIBRATION

证书编号 WWD201800360
Certificate No.

原始记录号 0201800360
Record No.

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2 磁场强度示值线性 (见表2)

H-Field Strength Indication Linearity (Shown in Table 2)

表2 (Table 2)

频率	标准值	被检表示值	误差(dB)	允许误差	结论
Frequency	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
50 Hz	100 μ T	98.06 μ T	-0.17	± 0.67 dB	Pass
50 Hz	50 μ T	48.96 μ T	-0.18	± 0.67 dB	Pass
50 Hz	20 μ T	19.85 μ T	-0.07	± 0.67 dB	Pass
50 Hz	10 μ T	9.96 μ T	-0.03	± 0.67 dB	Pass
50 Hz	5 μ T	4.974 μ T	-0.05	± 0.67 dB	Pass
50 Hz	2 μ T	1.988 μ T	-0.05	± 0.67 dB	Pass

3 磁场探头各向同性 (见表3)

H-Field Probe Isotropy (Shown in Table 3)

表3 (Table 3)

轴向	标准值	被检表示值	误差(dB)	允许误差	结论
Axis	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
X	10.00 μ T	9.87 μ T	-0.11	± 0.67 dB	Pass
Y	10.00 μ T	9.96 μ T	-0.03	± 0.67 dB	Pass
Z	10.00 μ T	9.86 μ T	-0.12	± 0.67 dB	Pass



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4 电场强度测量准确度 (见表4)

E-Field Strength Measuring Accuracy (Shown in Table 4)

表4 (Table 4)

频率	标准值	被检表示值	误差 (dB)	允许误差	结论
Frequency	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
50 Hz	10.00 kV/m	10.08 kV/m	+0.07	±1.09 dB	Pass
50 Hz	5.00 kV/m	5.030 kV/m	+0.05	±1.09 dB	Pass
50 Hz	4.00 kV/m	4.036 kV/m	+0.08	±1.09 dB	Pass
50 Hz	2.00 kV/m	2.020 kV/m	+0.09	±1.09 dB	Pass
50 Hz	1.00 kV/m	0.986 kV/m	-0.12	±1.09 dB	Pass
50 Hz	500 V/m	498.3 V/m	-0.03	±1.09 dB	Pass
50 Hz	200 V/m	199.7 V/m	-0.01	±1.09 dB	Pass
50 Hz	100 V/m	97.17 V/m	-0.25	±1.09 dB	Pass

5 电场频率响应 (见表5)

E-Field Frequency Response (Shown in Table 5)

表5 (Table 5)

频率	标准值	被检表示值	误差 (dB)	允许误差	结论
Frequency	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
50 Hz	100 V/m	97.17 V/m	-0.25	±1.09 dB	Pass
100 Hz	100 V/m	97.52 V/m	-0.22	±1.09 dB	Pass
200 Hz	100 V/m	95.84 V/m	-0.37	±1.09 dB	Pass
500 Hz	100 V/m	96.02 V/m	-0.35	±1.09 dB	Pass
1 kHz	100 V/m	96.08 V/m	-0.35	±1.09 dB	Pass
2 kHz	100 V/m	95.29 V/m	-0.42	±1.09 dB	Pass
5 kHz	100 V/m	95.75 V/m	-0.38	±1.09 dB	Pass
10 kHz	100 V/m	95.76 V/m	-0.38	±1.09 dB	Pass



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6 电场探头各向同性 (见表6)

E-Field Strength Probe Isotropy (Shown in Table 6)

表6 (Table 6)

轴向	标准值	被检表示值	误差 (dB)	允许误差	结论
Axis	Reference Value	Indication Value	Error	MPE	Conclusion (Pass/Fail)
X	1.00 kV/m	0.986 kV/m	-0.12	±1.09 dB	Pass
Y	1.00 kV/m	0.971 kV/m	-0.26	±1.09 dB	Pass
Z	1.00 kV/m	0.940 kV/m	-0.54	±1.09 dB	Pass

说明:

Note:

1 测量结果的扩展不确定度:

Expanded uncertainty of measurement:

磁场: $U=0.13$ dB
H-Field

电场: $U=0.4$ dB
Electric Field

包含因子: $k=2$
Coverage factor

依据 “JJF 1059.1-2012 《测量不确定度评定与表示》”

In accordance with “JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement”

2 结论: 以上校准结果符合该仪器说明书技术要求。

Conclusion: The data of instrument calibrated above comply with the technical requirements in the manual.

3 为使被校准仪器计量特性处在技术指标范围内, 建议复校时间间隔不超过1年。

For assuring the metrological characteristic within the technical demand range,
next calibration for this instrument is proposed within 1 year.



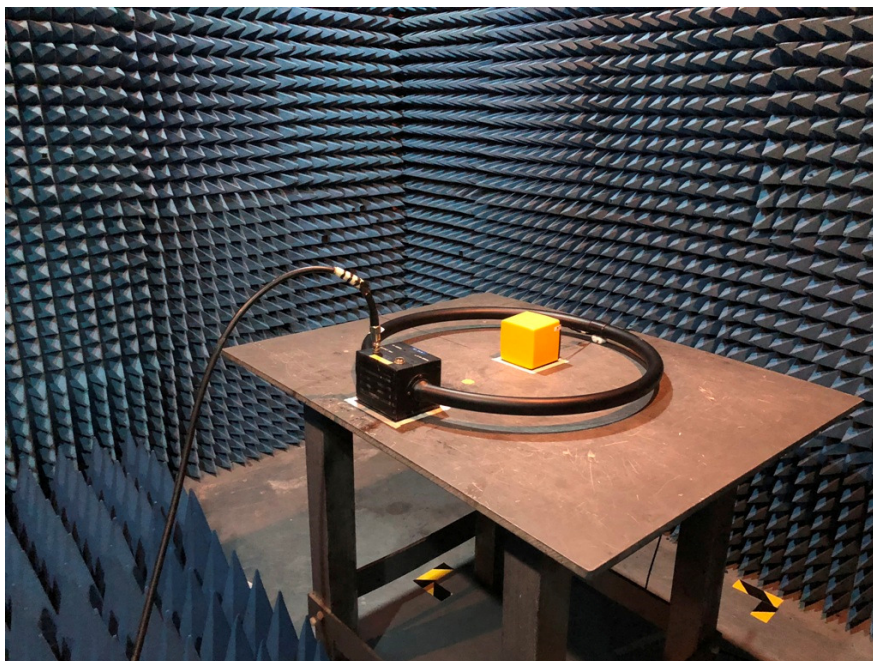
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7 System Validation



EHP-50F E-Field Validation			
Ref.(V/m)	Meas.(V/m)	Deviation(%)	Deviation Range(%)
0.6	0.58	3.33	10
0.8	0.79	1.25	11
1.0	1.03	-3.00	12
1.2	1.21	-0.83	13

- End of the Report -