



Report No.: HR/2019/1002102 Page: 1 of 16

## **TEST 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
Factory:	Huawei Technologies Co., Ltd.
Address of Factory:	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
Standard(s) :	47 CFR Part 18
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*

\* In the configuration tested, the EUT complied with the standards specified above.

Ceny. XM

Keny Xu EMC Laboratory Manager



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Report No.: HR/2019/1002102 Page: 2 of 16

Revision Record						
Version	Chapter	Date	Modifier	Remark		
01		2019-02-19		Original		

Authorized for issue by:		
	later	
	Leo Lai /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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Report No.: HR/2019/1002102 Page: 3 of 16

## 2 Test Summary

Radio Spectrum Matter Part					
Item	Standard	Method	Requirement	Result	
Conducted disturbance	47 CFR Part 18	FCC MP-5	Part 18.307	Pass	
Radiated emission	47 CFR Part 18	FCC MP-5	Part 18.305	Pass	



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Report No.: HR/2019/1002102 4 of 16 Page:

#### 3 Contents

		Page
1	1 COVER PAGE	1
2	2 TEST SUMMARY	3
3	3 CONTENTS	4
4	4 GENERAL INFORMATION	5
	4.1 DETAILS OF E.U.T.	5
	4.2 DESCRIPTION OF SUPPORT UNITS	5
	4.3 Measurement Uncertainty	
	4.4 TEST LOCATION	
	4.5 TEST FACILITY	
	4.6 DEVIATION FROM STANDARDS	
	4.7 ABNORMALITIES FROM STANDARD CONDITIONS	
5	5 EQUIPMENT LIST	7
6	6 RADIO SPECTRUM MATTER TEST RESULTS	
-		
7	7 RADIO SPECTRUM MATTER TEST RESULTS	8
	7.1 CONDUCTED DISTURBANCE	
	7.1.1 E.U.T. Operation	
	7.1.2 Test Setup Diagram	8
	7.1.3 Measurement Procedure and Data	
	7.2 RADIATED EMISSION	
	7.2.1 E.U.T. Operation	
	7.2.2 Test Setup Diagram 7.2.3 Measurement Procedure and Data	
	7.2.3 Measurement Procedure and Data 7.2.4 Measurement Procedure and Data	
_		
8	8 PHOTOGRAPHS	16
	8.1 RADIATED EMISSION TEST SETUP	16
	8.2 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	



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Report No.: HR/2019/1002102 Page: 5 of 16

#### **General Information** 4

#### 4.1 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

## 4.2 Description of Support Units

Description	Manufacturer	Model No.	Specification
Smart Phone	Huawei	VOG-L04	
Adapter	Huawei	HW-05045U00	
USB Cable	Huawei	WA0009	100cm shielded

## 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10 <sup>-8</sup>
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.75dB
5	RF power density	± 2.84dB
6	Conducted Spurious emissions	± 0.75dB
7	DE Dedicted newer	± 4.5dB (below 1GHz)
/	RF Radiated power	± 4.8dB (above 1GHz)
8	Dedicted Courieus emission test	± 4.5dB (Below 1GHz)
0	Radiated Spurious emission test	± 4.8dB (Above 1GHz)
9	Temperature test	± 1 ℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%



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Report No.: HR/2019/1002102 Page: 6 of 16

## 4.4 Test Location

All tests were performed at:

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

#### 4.5 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.

## 4.6 Deviation from Standards

None

## 4.7 Abnormalities from Standard Conditions

None



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Report No.: HR/2019/1002102 Page: 7 of 16

## 5 Equipment List

Radiated emission					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2018-07-12	2019-07-11
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-04-02	2019-04-01
Trilog-Broadband Antenna(30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-28
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2018-04-13	2019-04-12
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21

Conducted disturbance					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2020-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2018-07-12	2019-07-11
LISN	Rohde & Schwarz	ENV216	SEM007-01	2018-09-25	2019-09-24
LISN	ETS-LINDGREN	3816/2	SEM007-02	2018-04-02	2019-04-01
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2018-04-02	2019-04-01

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07



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Report No.: HR/2019/1002102 Page: 8 of 16

## 6 Radio Spectrum Matter Test Results

## 7 Radio Spectrum Matter Test Results

## 7.1 Conducted disturbance

Test Requirement	Part 18.307
Test Method:	FCC MP-5
Limit:	

	Conducted limit (dBµV)				
Frequency of emission (MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

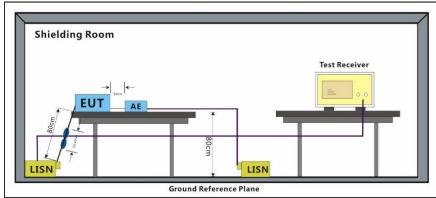
\*Decreases with the logarithm of the frequency.

### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature:21.7 °CHumidity:57.5 % RHAtmospheric Pressure:1000mbarTest modee: Charge mode\_Keep the EUT in charging and reverse charging

## 7.1.2 Test Setup Diagram



### 7.1.3 Measurement Procedure and Data



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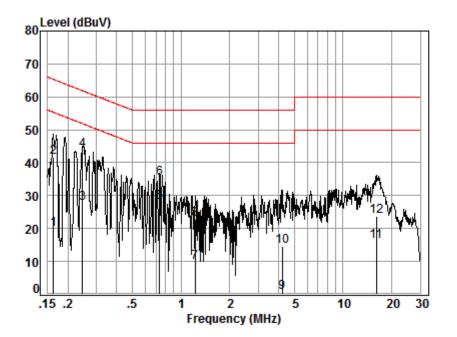
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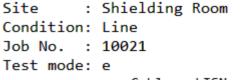
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Report No.: HR/2019/1002102 Page: 9 of 16

#### Mode:e; Line:Live Line





	-	Cable	LISN	Read		Limit	0ver	
	Freq	Loss	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.01	9.66	10.07	19.74	55.34	-35.60	Average
2	0.16	0.01	9.66	32.07	41.74	65.34	-23.60	QP
3	0.25	0.03	9.67	17.94	27.64	51.86	-24.22	Average
4	0.25	0.03	9.67	34.25	43.95	61.86	-17.91	QP
5	0.74	0.08	9.70	18.35	28.13	46.00	-17.87	Average
6	0.74	0.08	9.70	25.41	35.19	56.00	-20.81	QP
7	1.22	0.11	9.73	-0.02	9.82	46.00	-36.18	Average
8	1.22	0.11	9.73	12.95	22.79	56.00	-33.21	QP
9	4.20	0.16	9.72	-9.32	0.56	46.00	-45.44	Average
10	4.20	0.16	9.72	4.77	14.65	56.00	-41.35	QP
11	16.05	0.22	10.28	5.52	16.02	50.00	-33.98	Average
12	16.05	0.22	10.28	13.30	23.80	60.00	-36.20	QP



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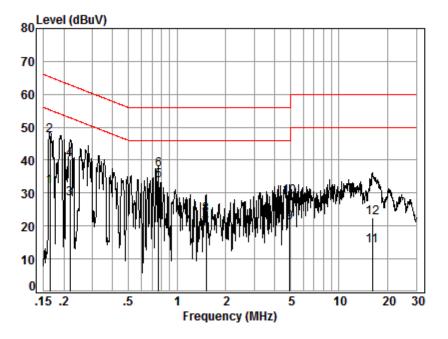
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Report No.: HR/2019/1002102 Page: 10 of 16

#### Mode:e; Line:Neutral Line



Site :	Shielding	Room
Condition:	Neutral	
Job No. :	10021	
Test mode:	e	

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.01	9.64	22.22	31.87	55.25	-23.38	Average
2	0.16	0.01	9.64	37.71	47.36	65.25	-17.89	QP
3	0.22	0.03	9.64	18.64	28.31	52.88	-24.57	Average
4	0.22	0.03	9.64	30.53	40.20	62.88	-22.68	QP
5	0.77	0.08	9.69	24.12	33.89	46.00	-12.11	Average
6	0.77	0.08	9.69	27.26	37.03	56.00	-18.97	QP
7	1.51	0.13	9.70	9.31	19.14	46.00	-26.86	Average
8	1.51	0.13	9.70	13.52	23.35	56.00	-32.65	QP
9	4.95	0.17	9.71	11.25	21.13	46.00	-24.87	Average
10	4.95	0.17	9.71	19.08	28.96	56.00	-27.04	QP
11	16.05	0.22	10.31	3.35	13.88	50.00	-36.12	Average
12	16.05	0.22	10.31	11.93	22.46	60.00	-37.54	QP



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Report No.: HR/2019/1002102 Page: 11 of 16

## 7.2 Radiated emission

Test Requirement Part 18.305 Test Method: FCC MP-5 Measurement Distance: 3m Limit:

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 × SQRT(power/500)	300 <sup>1</sup> 300
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 <sup>1</sup> 300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ( <sup>2</sup> )	1,600 ( <sup>2</sup> )
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz) × SQRT (power/500)	300 <sup>3</sup> 300
	490 to 1,600 kHz Above 1,600 kHz	-	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	<sup>4</sup> 30 <sup>4</sup> 30

<sup>1</sup>Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

<sup>2</sup>Reduced to the greatest extent possible.

<sup>3</sup>Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.

<sup>4</sup>Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.



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Report No.: HR/2019/1002102 Page: 12 of 16

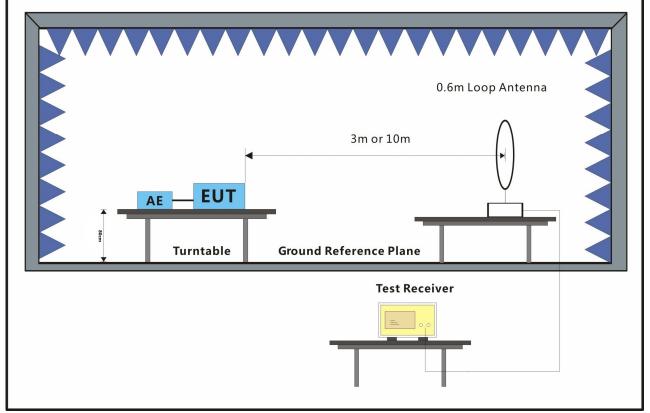
#### 7.2.1 E.U.T. Operation

**Operating Environment:** 

Temperature:25 °CHumidity:51 % RHAtmospheric Pressure:1020 mbarPretest these<br/>modes to find<br/>the worst case:e: Charge mode\_Keep the EUT in charging and reverse charging<br/>f: Charge mode\_Keep the EUT in reverse chargingf: Charge mode\_Keep the EUT in reverse chargingThe worst casef: Charge mode Keep the EUT in reverse charging

The worst case f: Charge mode\_Keep the EUT in reverse charging for final test:

#### 7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data





Report No.: HR/2019/1002102 Page: 13 of 16

#### 7.2.4 Measurement Procedure and Data

Test Procedure:

- re: a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber(30MHz-1000MHz) and 10 meter semi-anechoic chamber(9kHz-30MHz). The table was rotated 360 degrees to determine the position of the highest radiation.
  - b. The EUT was set 10 meters(30MHz-1000MHz) and 10 meter (9kHz-30MHz) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
  - c. Above 30MHz: The Analyzer/Receiver scanned from 30MHz to 1000MHz.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
  - d. Below 30MHz: The Analyzer/Receiver scanned from 9kHz to 30MHz.The antenna height is 2 meters above the ground to determine the maximum value of the field strength.
  - e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 2 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
  - f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
  - g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
  - h. Repeat above procedures until all frequencies measured was complete.
  - i. Measurement Requirement:

1)This product belongs to non-ISM equipment, the field strength limit is 15 uV/m at 300 meter distance.

2)Limit: 20log(15uV/m) +20log (300/3) =23.52+40=63.52dBuV/m at 3 meters distance



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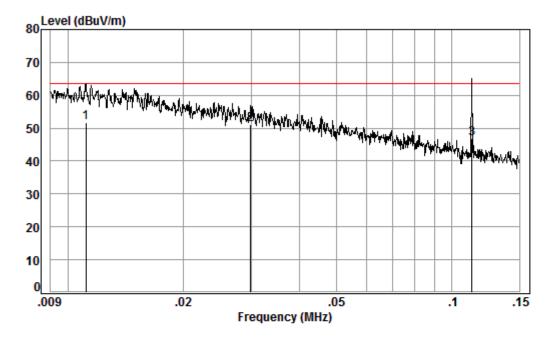
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Report No.: HR/2019/1002102 Page: 14 of 16

Mode f: 9kHz-150kHz



### Condition: 3m Job No. : 10021 Test Mode: f

	Freq			Preamp Factor					Remark
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2 3	0.03	0.18	13.86	32.00	68.93	50.97	63.52	-12.55	Average Average Average



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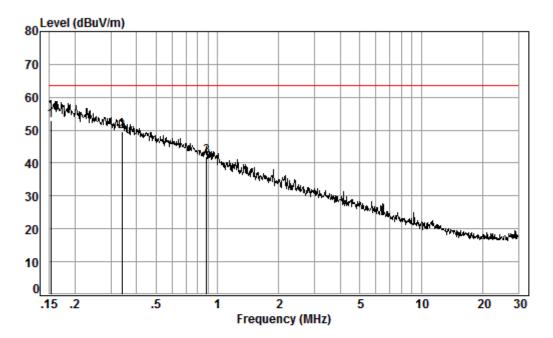
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Report No.: HR/2019/1002102 Page: 15 of 16

Mode f: 150kHz-30MHz



Condition: 3m Job No. : 10021 Test Mode: f

	Freq			Preamp Factor					
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2 3	0.34	0.10	11.87	32.66	70.30	49.61	63.52	-13.91	Average Average Average



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Report No.: HR/2019/1002102 Page: 16 of 16

## 8 Photographs

## 8.1 Test Setup

Please refer to setup photos.

8.2 EUT Constructional Details (EUT Photos) Please Refer to external and internal photos for details.

- End of the Report -



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