

FCC RF Test Report

Product Name: Smart Phone; HUAWEI Ascend G7

Model Number: HUAWEI G7-L01, G7-L01

Report No: SYBH(Z-RF)002082014-2005

FCC ID: QISG7-L01

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

1. The laboratory has Passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-2.
5. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. The test report is only valid for the test samples.
8. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



Applicant: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt Sample: 2014-08-27
Start Date of Test: 2014-08-28
End Date of Test: 2014-09-22

Test Result: Pass

Approved by Senior Engineer:	2014-09-22	Liu Chunlin
	Date	Name
	Signature	

Prepared by:	2014-09-22	Zhang Guocai
	Date	Name
	Signature	



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1 General Information

1.1 Applied Standard	
Applied Rules:	47 CFR FCC Part 02: 2013 FCC Part 15 Subpart C (15.225): 2013
1.2 Test Location	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
1.3 Test Environmental Condition	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa



2 Summary

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE					
15.225 (a)	In-Band Emissions	15,848 μ V/m @ 30m 13.553 – 13.567 MHz	RADIATED	Pass	Section 5.2
2.1049	20 dB Bandwidth	N/A		Pass	Section 5.1
15.225(b)	In-Band Emissions	334 μ V/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz		Pass	Section 5.2
15.225(c)	In-Band Emissions	106 μ V/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		Pass	Section 5.2
15.225(d) 15.209	Out-of-Band Emissions	Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in 15.209		Pass	Section 5.3
15.225(e)	Frequency Stability Tolerance	\pm 0.01% of Operating Frequency	Temperature Chamber	Pass	Section 5.4
15.207	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits	LINE CONDUCTED	Pass	Part 15B report



3 Product Description

3.1 Product Information

3.1.1 General Description

HUAWEI G7-L01, G7-L01, is subscriber equipment in the LTE/WCDMA/GSM system. The HSPA+/UMTS frequency band is Band I and Band VIII. The LTE frequency band is B1, B3 and B7, B8 and B20. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, NFC and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 Board

Board		
Description	Hardware Version	Software Version
Main Board	HL1G760SM	G7-L01V100R001C00B245

1.3.1 Sub-Assembly

Name	Manufacture	Description
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100U2W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rated Power: 5W
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100E2W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rated Power: 5W
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100B2W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A



		Rated Power: 5W
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100A2W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rated Power: 5W
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB3748B8EBC Rated capacity: 3000mAh Nominal Voltage:  +3.8V Charging Voltage:  +4.35V



4 Main Test Instruments

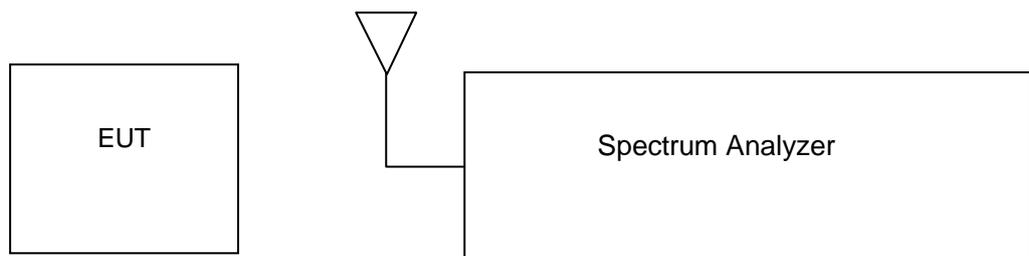
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Power supply	KEITHLEY	2303	1288003	2012-11-19	2014-11-18
Wireless Communication Test set	Agilent	N4010A	MY49081592	2013-10-29	2014-10-28
Universal Radio Communication Tester	R&S	CMU200	117341	2014-02-25	2015-02-24
Spectrum Analyzer	Agilent	N9020A	MY52090652	2014-07-11	2015-07-10
Universal Radio Communication Tester	R & S	CMW500	126855	2013-08-08	2015-08-09
Spectrum Analyzer	Agilent	E4440A	MY48250119	2014-07-11	2015-07-10
Signal Analyzer	R&S	FSQ31	200021	2013-10-29	2014-10-28
Spectrum Analyzer	Agilent	N9030A	MY49431698	2013-10-29	2014-10-28
Temperature Chamber	WEISS	WKL64	56246002940010	2014-02-25	2015-02-24
Temperature Chamber	ESPEC	MW3030	06114003	2014-05-09	2015-05-08
Signal generator	Agilent	E8257D	MY51500314	2014-05-09	2015-05-08
Vector Signal Generator	R&S	SMU200A	104162	2013-10-29	2014-10-28
Test receiver	R&S	ESU26	100150	2014-05-09	2015-05-08
Spectrum analyzer	R&S	FSU3	200474	2013-12-24	2014-12-23
Spectrum analyzer	R&S	FSU43	100144	2013-12-24	2014-12-23
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2013-02-02	2015-02-01
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-490	2013-02-02	2015-02-01
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2013-03-23	2015-03-22
Pyramidal Horn Antenna(18GHz-26-5GHz)	ETS-LINDGREN	3160-09	5140299	2013-03-05	2015-03-04
Artificial Mains Network	R&S	ENV4200	100134	2013-12-24	2014-12-23
Artificial Mains Network	R&S	ENV216	100382	2013-12-24	2014-12-23

5 Test Results

5.1 20dB Bandwidth Measurement

The 20dB bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

5.1.1 Test Setup



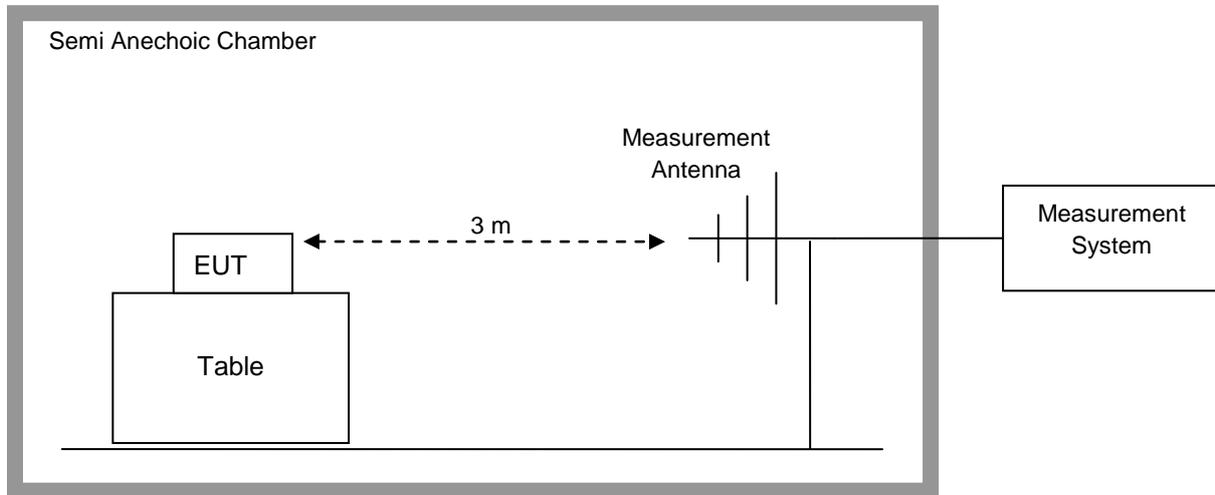
5.1.2 Test Result

Frequency	Occupied Bandwidth
13.56MHz	200KHz

The result of the measurement is passed.

5.2 In-Band Radiated Spurious Emission Measurements

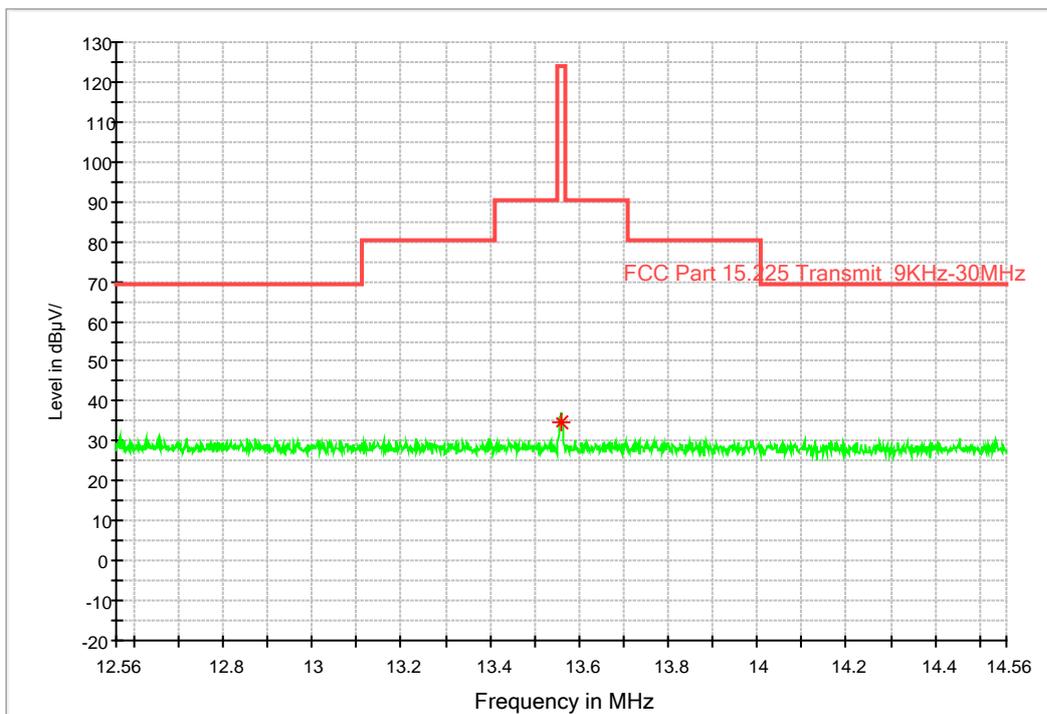
5.2.1 Test Setup



Measurement parameters	
Detector:	Quasi Peak
Sweep time:	-/-
Resolution bandwidth:	10 kHz
Video bandwidth:	10 kHz
Span:	-/-
Trace-Mode:	Max Hold

5.2.2 Test Result

FCC Loop Antenna 9KHz-30MHz



Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V/m)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB µ V/m)	Comment
13.560848	34.6	9.000	V	-6.0	21.0	89.4	124.0	

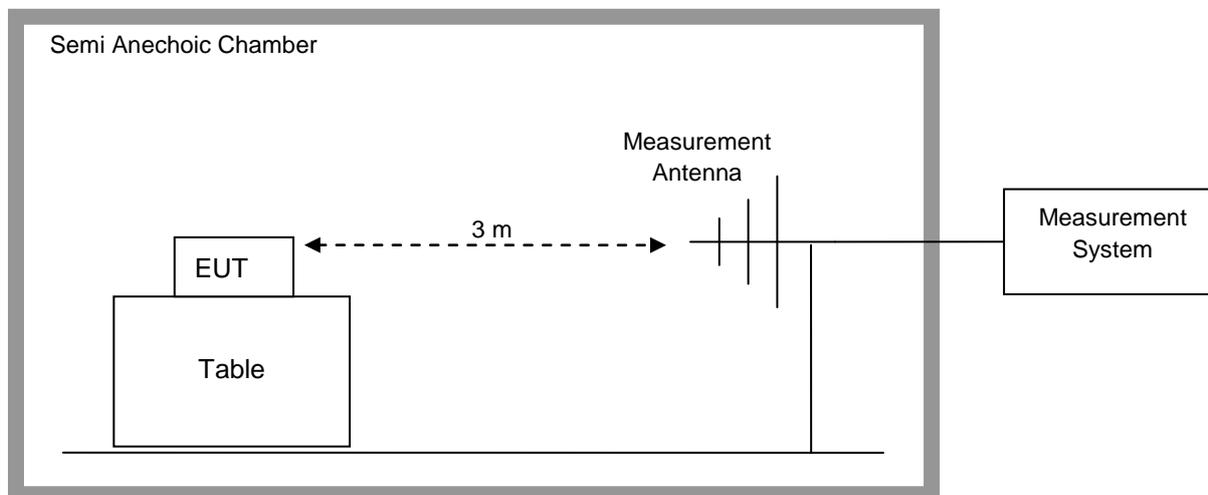
NOTES:

1. All measurements were performed using a loop antenna. The antenna was positioned in three orthogonal positions (X front, Y side, Z top) and the position with the highest emission level was recorded.
2. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor = $20 \log_{10}(30/3)^2 = 40\text{dB}$
3. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.

The result of the measurement is passed.

5.3 Radiated Spurious Emission Measurements, Out-of-Band

5.3.1 Test Setup



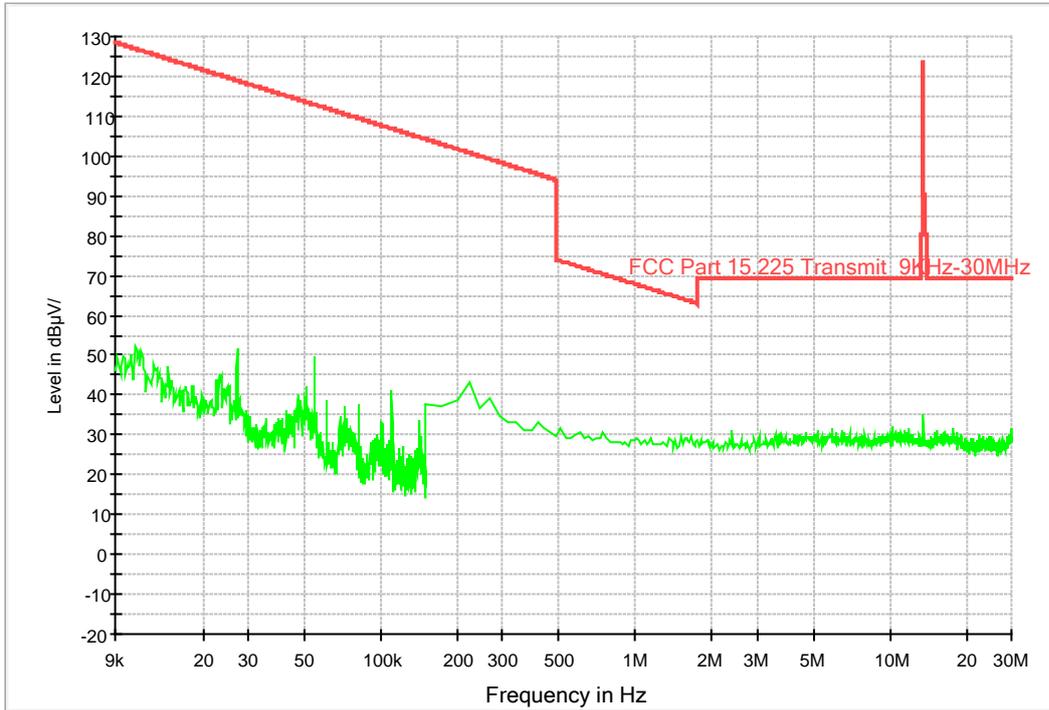
Measurement parameters	
Detector:	Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Video bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Span:	See Plots
Trace-Mode:	Max Hold



5.3.2 Test Result

9k~30MHz

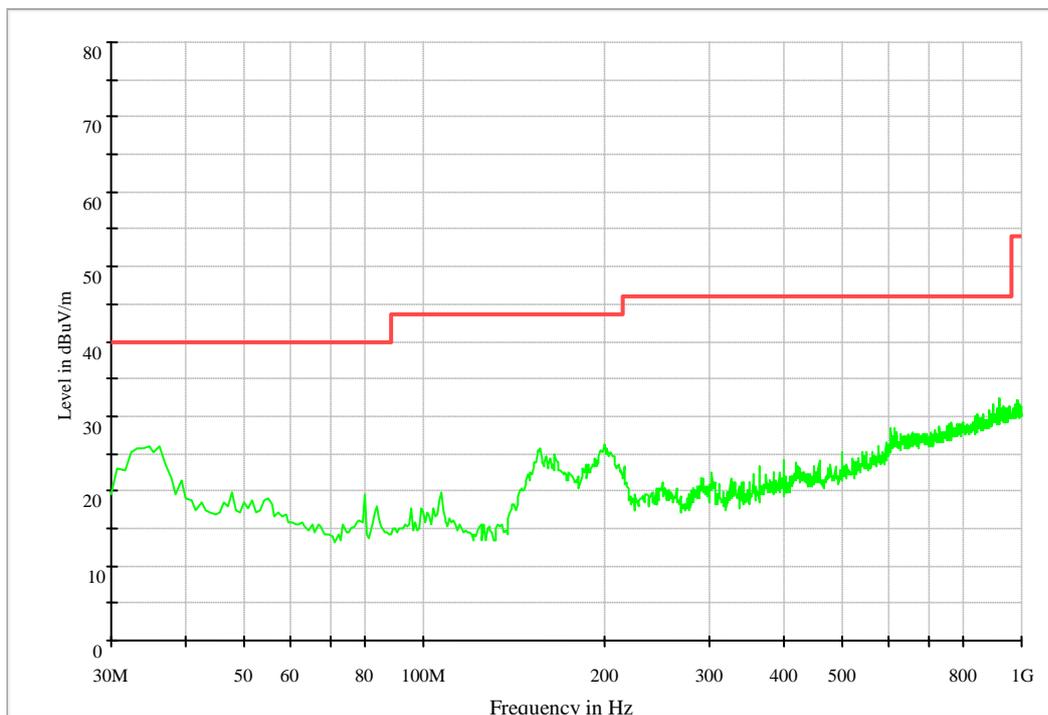
Loop Antenna_Transmit 9KHz-30MHz





30M~1GHz

FCC CLASS B RE 30MHz-1GHz



NOTES:

1. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector for emissions below 960MHz.
2. Both Vertical and Horizontal polarities of the receive antenna were evaluated with the worst case emissions being reported. Below 30MHz the Loop antenna was positioned in 3 separate radials.
3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
4. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.

The result of the measurement is passed.



5.4 Frequency Stability

5.4.1 Test Setup

The EUT was placed in a Climatic Chamber. A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer. Measurement performed without modulation on TX.

5.4.2 Test Result

VOLTAGE (%)	POWER Battery(V)	TEMP (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100%	3.8	-20	13559980	-20	-0.00000147
100%		-10	13559984	-16	-0.00000118
100%		0	13559987	-13	-0.00000096
100%		10	13560011	11	0.00000081
100%		20	13560008	8	0.00000059
100%		30	13560012	12	0.00000088
100%		40	13560015	15	0.00000111
100%		50	13559987	-13	-0.00000096
Battery End Point	3.6	20	13560010	10	0.00000074
115%	4.35	20	13560016	16	0.00000118

The result of the measurement is passed.

-----The END-----