FCC RF Test Report

Product Name:
LTE/HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth

Model Number: HW-01E

Report No: SYBH(Z-RF)011082012-2006

Reliability Laboratory of Huawei Technologies Co., Ltd.

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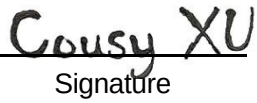
Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
4. The test report is invalid if not marked with "exclusive stamp for the test report".
5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.

Applicant:	Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
Date of Receipt Test Item:	Aug., 02, 2012
Start Date of Test:	Aug., 03, 2012
End Date of Test:	Aug., 18, 2012
Test Result:	Pass

	Date	Name	Signature
Approved By Senior Engineer	Aug., 20, 2012	Dai Linjun	
Reviewed By	Aug., 20, 2012	Cousy Xu	
Operated By	Aug., 20, 2012	Huang Qiuliang	

Contents

1 General Information

1.1 Applied Standard	
Applied Rules:	FCC Part 15 Subpart C (15.225)
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

Table 1 Summary of results

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE					
15.225 (a)	In-Band Emissions	15,848μV/m @ 30m 13.553 – 13.567 MHz	RADIATED	Pass	Section 4.2
2.1049	20 dB Bandwidth	N/A		Pass	Section 4.1
15.225(b)	In-Band Emissions	334μV/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz		Pass	Section 4.2
15.225(c)	In-Band Emissions	106μV/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		Pass	Section 4.2
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 4.3
15.225(e)	Frequency Stability Tolerance	± 0.01% of Operating Frequency	Temperature Chamber	Pass	Section 4.4
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

HW-01E is subscriber equipment in the LTE/WCDMA/GSM system. The LTE frequency band is Band I, not included in this report. The HSPA+/HSUPA/HSDPA/UMTS frequency band is Band V, Band VI and Band XIX, But only Band V included in this report. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850 test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/WCDMA/GSM protocol processing, voice, video, MMS service, GPS, AGPS 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.

3.1.2 Board Information

Table 2 Board Information

LTE/HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth		
HW-01E		
Board and Module		
Equipment Designation / Description	Hardware Version	Software Version
MAINBOARD	U9501L_VB	U9501LV100R001C341B126

3.1.3 Battery Technical Data

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB4T1HV Rated capacity: 1800mAh Nominal Voltage: ⎓ +3.8V Charging Voltage: ⎓ +4.35V

4 Main Test Instruments

Table 3 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Feb.13,2013
Spectrum analyzer	R&S	FSU3	200474	Mar. 05.2013
Spectrum analyzer	R&S	FSU43	100144	Mar. 05.2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	Apr. 05.2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	Apr. 05.2013
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	Jul.07.2013
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	Feb.27.2013
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	Feb.27.2013

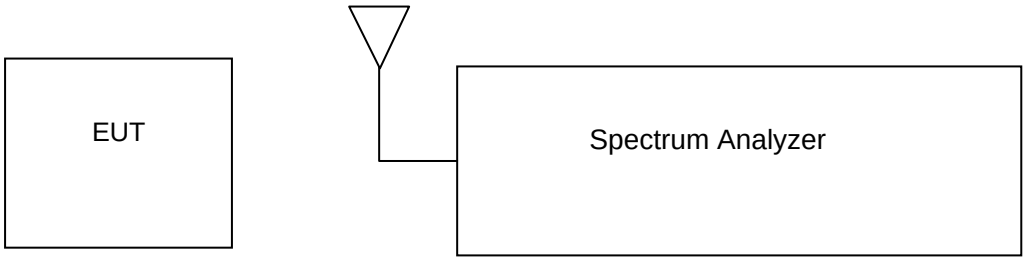
Note: All the equipments are calibrated once a year. When it's almost due, we will arrange calibration again before the calibration deadline.

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



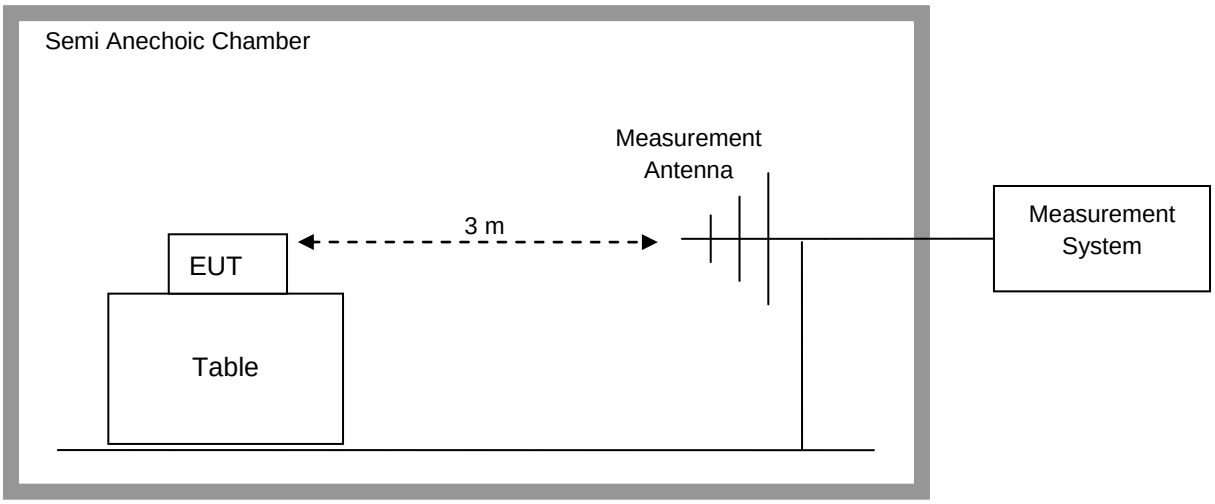
5.1.2 Test Result

Frequency	Occupied Bandwidth
13.56MHz	25.35KHz

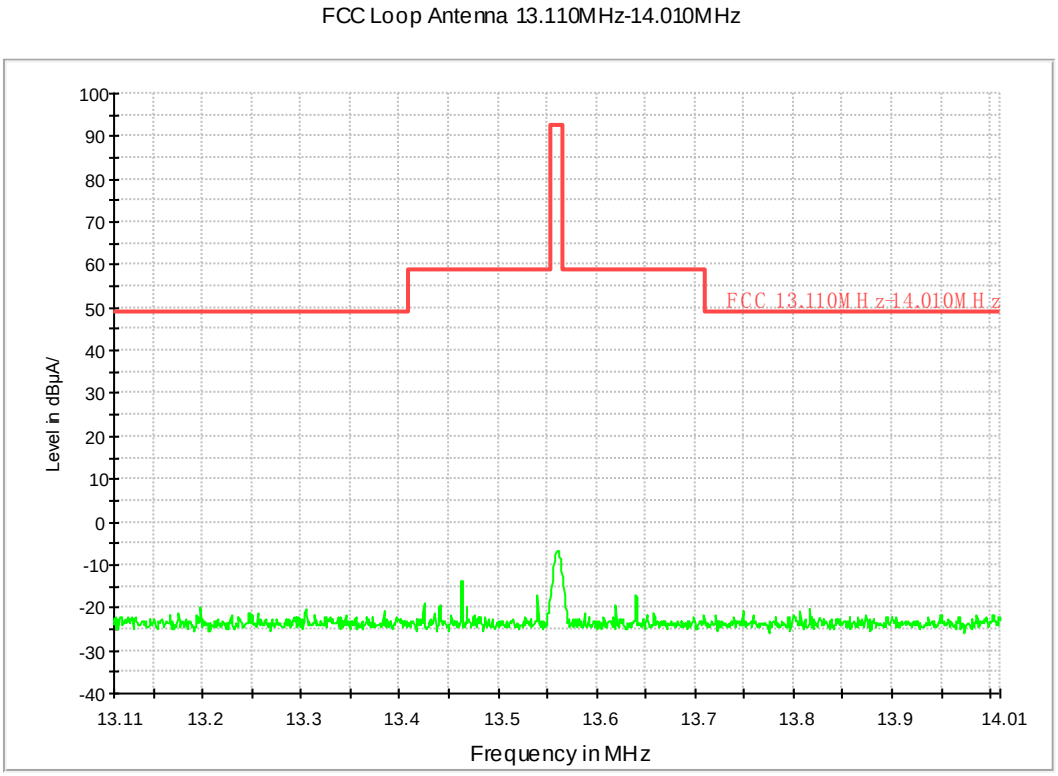
The result of the measurement is passed.

5.2 In-Band Radiated Spurious Emission Measurements

5.2.1 Test Setup



5.2.2 Test Result



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.

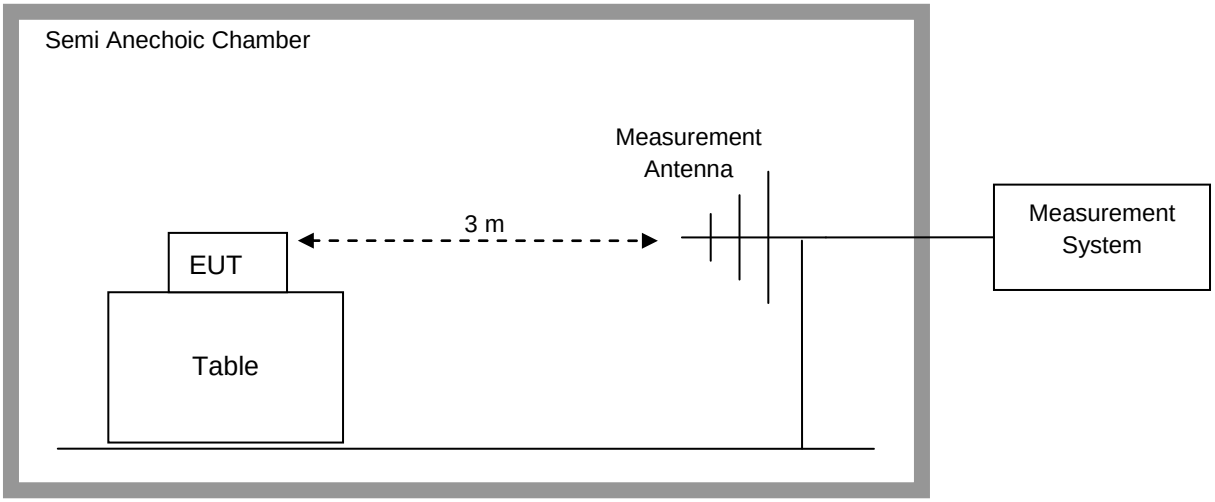
2. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor = 20 log10(30/3)2 = 40dB

3. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.

The result of the measurement is passed.

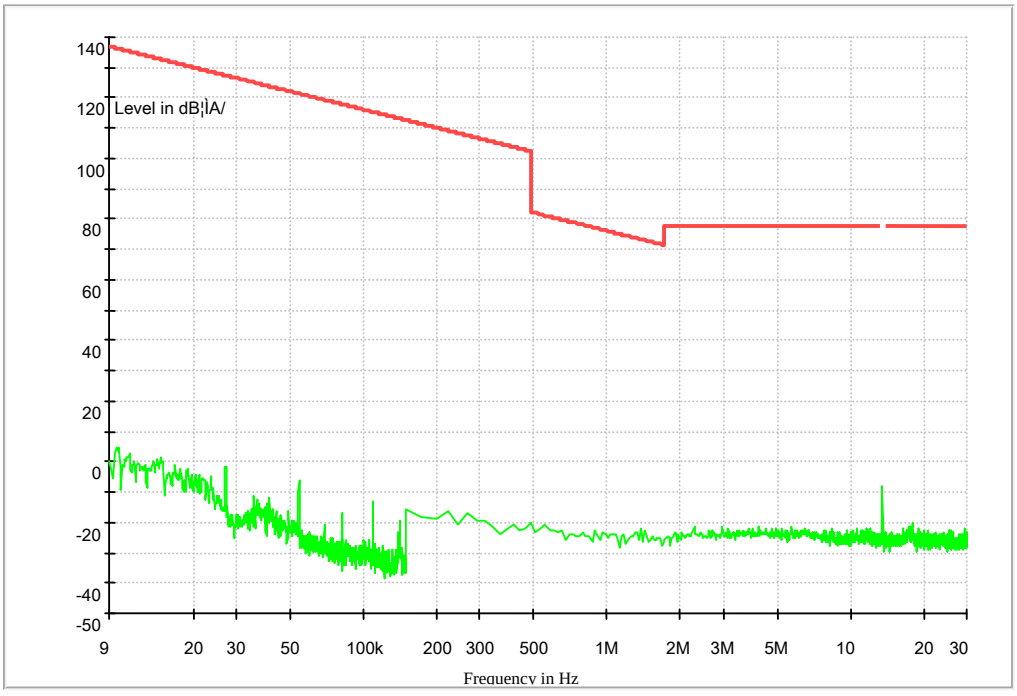
5.3 Radiated Spurious Emission Measurements, Out-of-Band

5.3.1 Test Setup

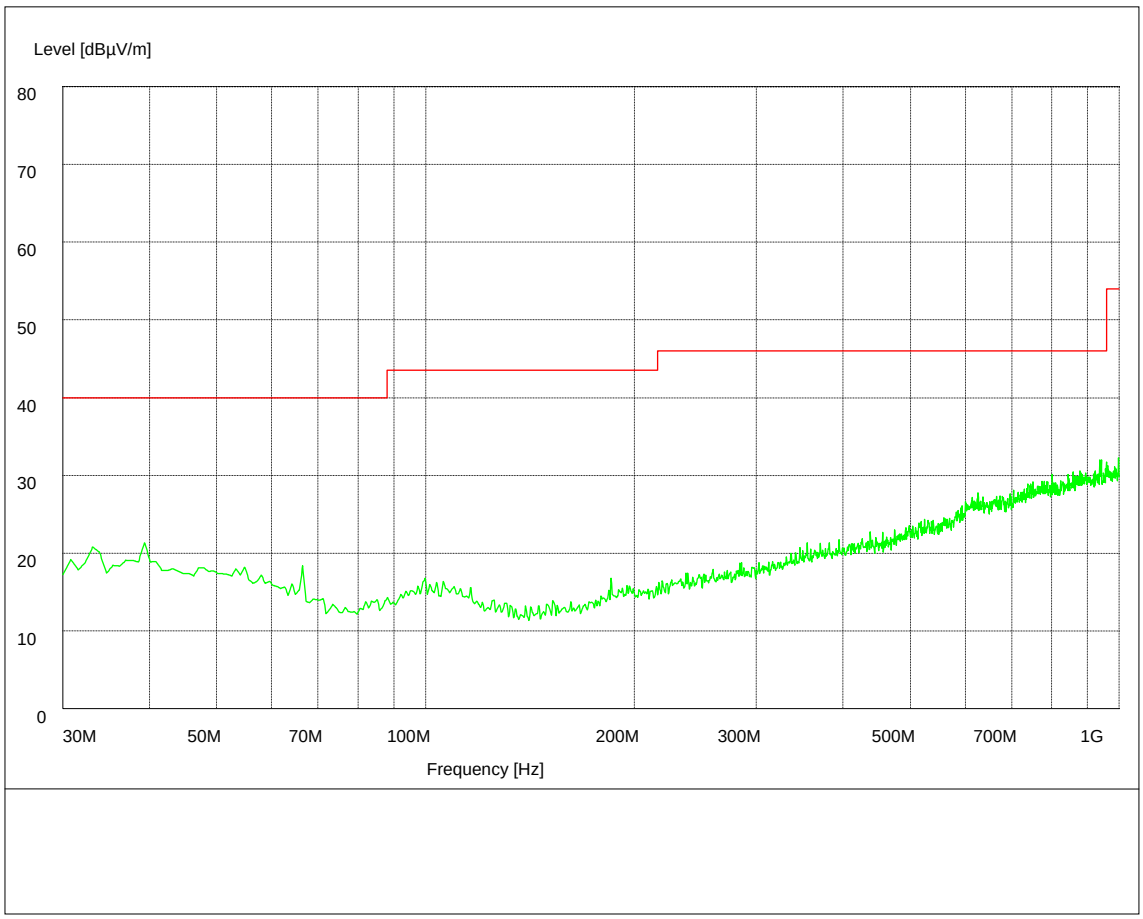


5.3.2 Test Result

9k~30MHz



30M~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	TEMP (ºC)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100%		-20	13.559983	-17.00	-0.000125
100%		-10	13.560012	12.00	0.000088
100%		0	13.560011	11.00	0.000081
100%		10	13.559991	-9.00	0.000066
100%		20	13.559992	-8.00	0.000059
100%		30	13.559985	-15.00	0.000111
100%		40	13.560011	11.00	0.000081
100%		50	13.559988	-12.00	-0.000088
Battery End Point	3.5	20	13.560011	11.00	0.000081
115%	4.35	20	13.56001	10.00	0.000074

The result of the measurement is passed.

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