



EMC Test Report

**Product Name: HUAWEI IDEOS X1;
HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with
Bluetooth; IDEOS X1;GAGA;Gaga**

Model Number: HUAWEI U8180-5/U8180-5

Report No: SYBH(Z-EMC)064052011-2

FCC ID: QISU8180-5

Reliability Laboratory of Huawei Technologies Co., Ltd.

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	HUAWEI IDEOS X1; HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; IDEOS X1;GAGA;Gaga
Model Number	HUAWEI U8180-5/U8180-5
Serials Number	Z4J4CD1161000125
Working Voltage	120V/60Hz
TX Frequency	GSM850: 824MHz To 849MHz PCS1900: 1850MHz To 1910MHz WCDMA850: 827 MHz To 847MHz WCDMA1900: 1853MHz To 1908MHz
RX Frequency	GSM850: 869MHz To 894MHz PCS1900: 1930MHz To 1990MHz WCDMA850: 872MHz To 892MHz WCDMA1900: 1933MHz To 1988MHz
HW Version	HD1U813M
SW Version	U8180-5V100R001C212B630
EUT Accessory	
Data cable	Data Cable USB A Male to Micro Usb ,Black,
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040E7 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA S/N: BYAB31828597
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040E7 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA S/N: TPAB30108784
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040B7 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA S/N: BYAAB1018352
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040B7 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA S/N: TPABA90824297
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040U6 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA S/N: HKAB41408017
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-050040U6 Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V $\overline{\text{---}}$ 400mA

	S/N: TPAB62902494
Li-ion	Battery Model: HB4J1 Rated capacity: 1050mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V Serials number: GAGB415XC4L6969
Li-ion	Battery Model: HB4J1 Rated capacity: 1050mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V Serials number: BAAB402XL1360564

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.2 Test Site Information

Test Site:	RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD.
Test Site Location:	Bantian Longgang District Shenzhen, P.R. China

1.3 Applied Standard

APPLIED STANDARD

FCC 47 CFR FCC Part 15 SubpartB

2 Summary of Results

Summary of Results				
Test Items	Test Mode	Performance Class & Required Performance Criteria	Result	Site
<u>Radiated Emissions</u> Enclosure Port	Mode1~ Mode2 Mode5~Mode7	CLASS B	Pass	Site1
<u>Conducted Emissions</u> <input type="checkbox"/> DC Power Port <input checked="" type="checkbox"/> AC Power Port <input type="checkbox"/> Telecommunication Ports	Mode1~ Mode4	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> The item has not been tested.				

3 System Configuration during EMC Test

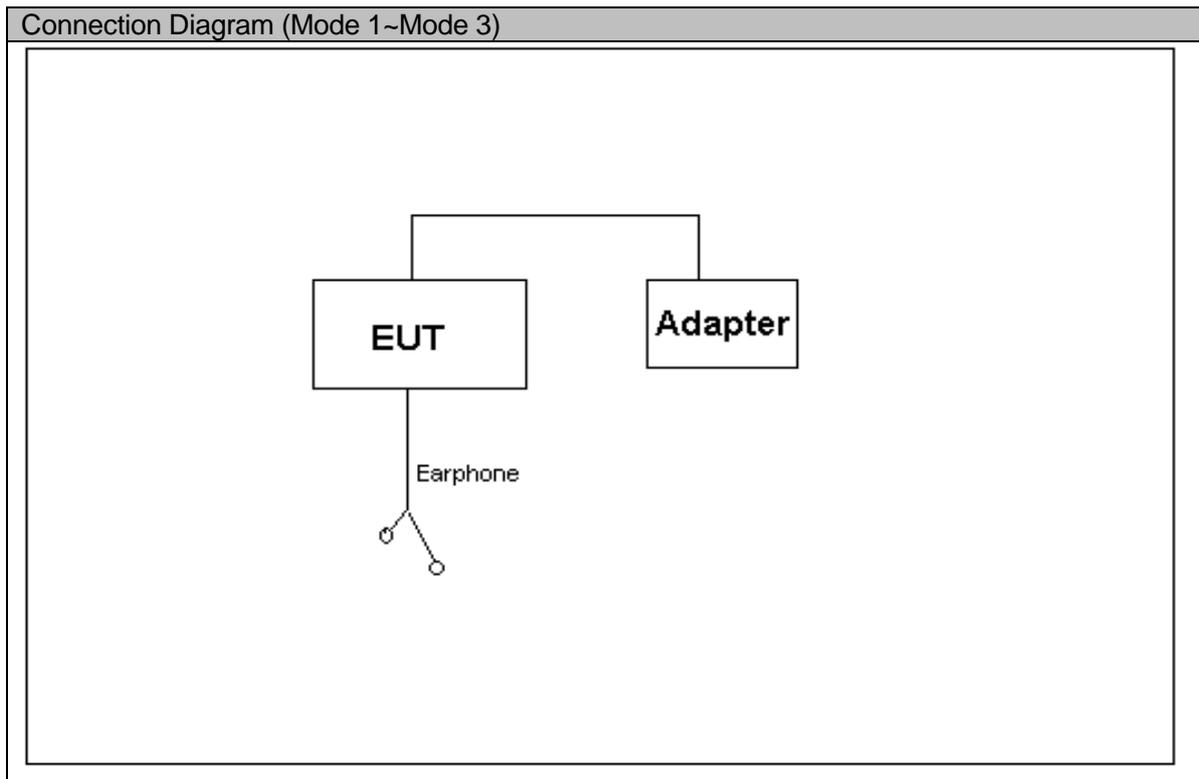
3.1 Test Mode

Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was in this test report and defined as:

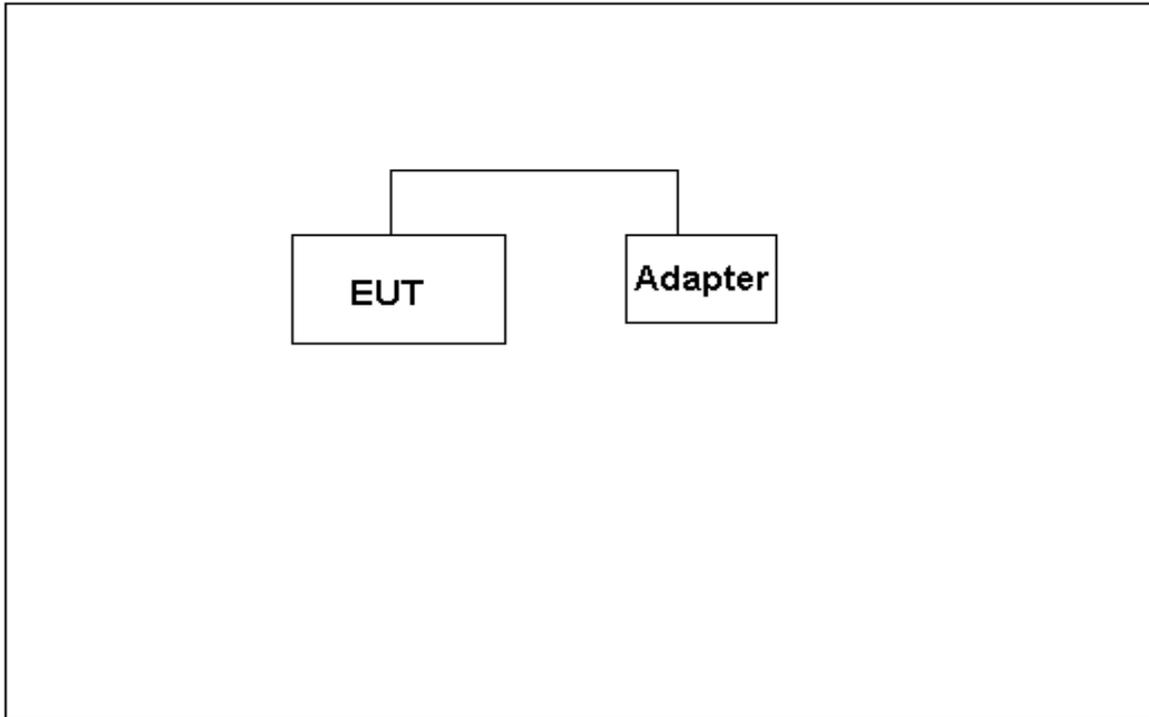
Test Mode	
Mode 1:	adapter+earphone+Camera On +Idle
Mode 2:	adapter+earphone+MP3 +Idle
Mode 3:	adapter+earphone+Traffic
Mode 4:	adapter+Traffic
Mode 5:	USB Copy(EUT with PC)+earphone +Idle
Mode 6:	Camera On+earphone+Idle
Mode 7:	earphone+MP3+Idle
Mode 8:	Traffic

Remark: When the EUT have multiple adapters, need separate test with multiple adapters . All test modes are performed, only the worst cases are recorded in this report.

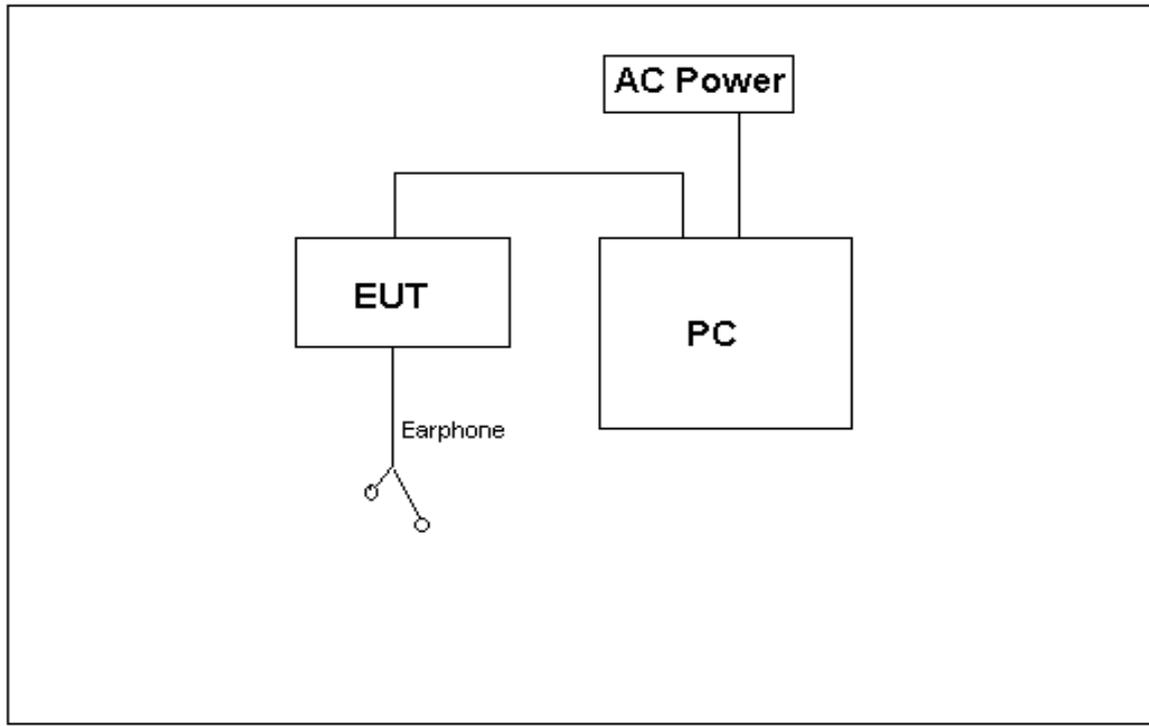
3.2 Configurations of Test System



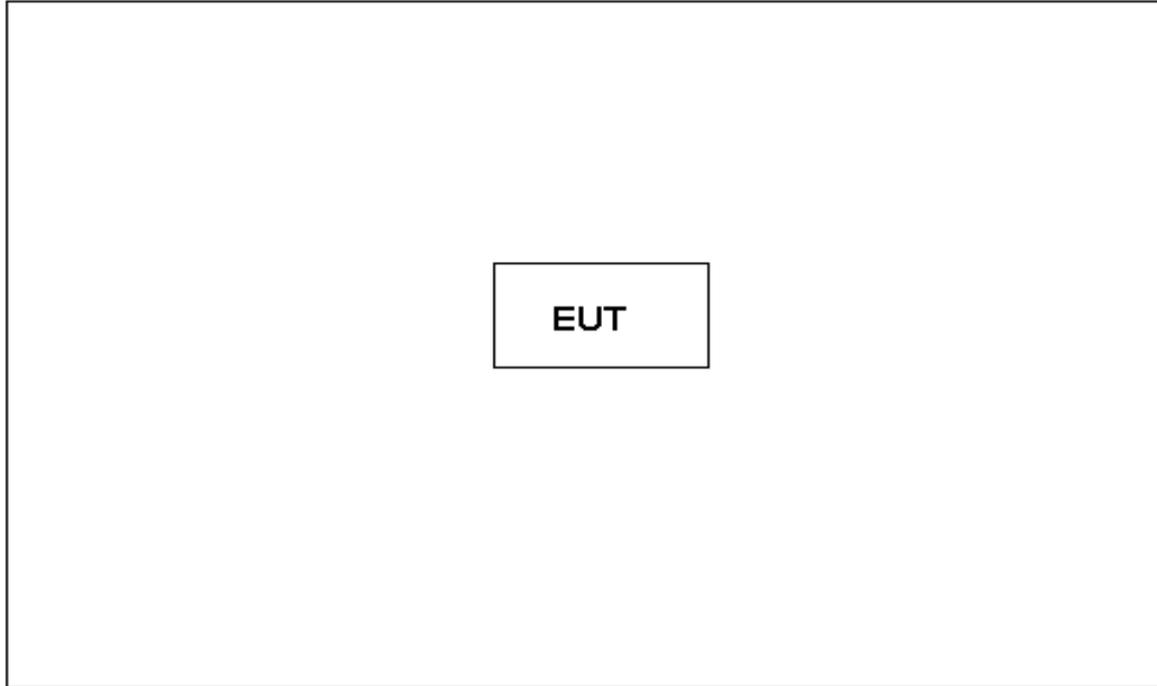
Connection Diagram (Mode 4)



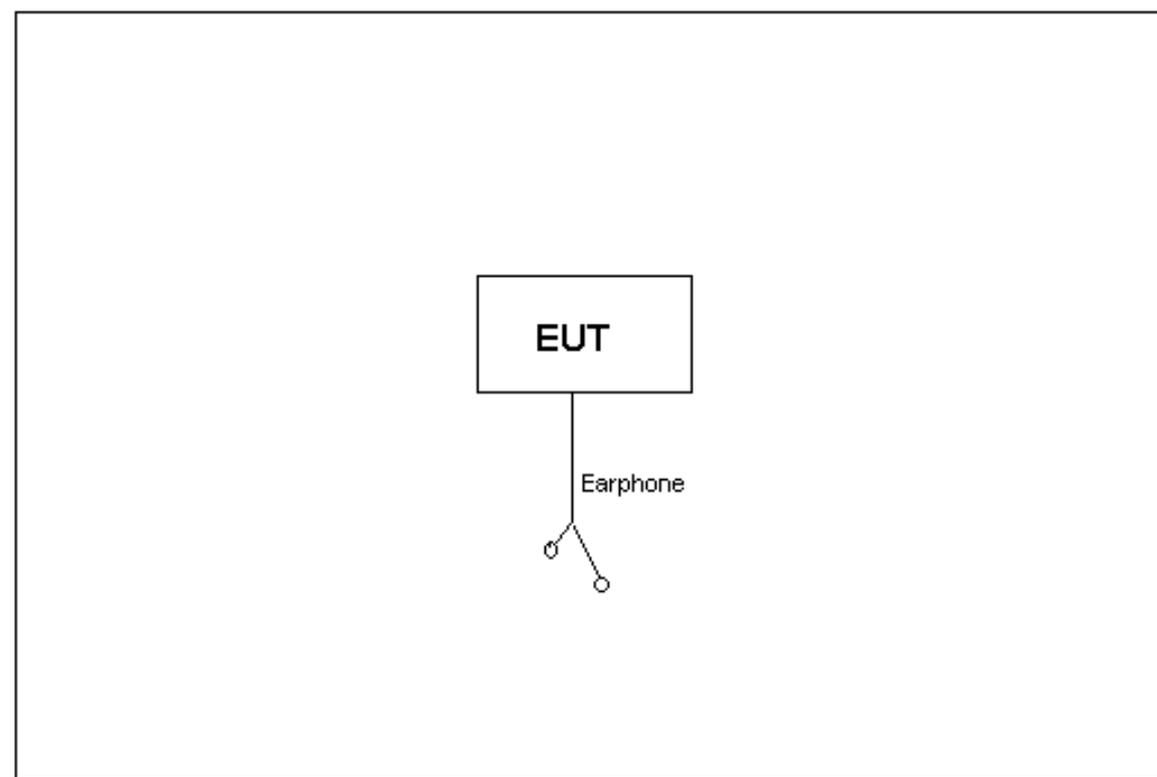
Connection Diagram (Mode 5)



Connection Diagram (Mode 6~ Mode 7)



Connection Diagram (Mode 8)



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	1	<3m	shielded
Earphone	1	<3m	Unshielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Cal Date
Radio Communication Tester	CMU200	R&S	3608082535	2010-08-04
Notebook	T61	IBM	3108052508	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4. The test distance was 3m. The set-up and test methods were according to ANSI C63.4 .

A preliminary scan and a final scan of the emissions were made from 30 MHz to 18 GHz by using test script of software; the emissions were measured using Quasi-Peak Detector (30MHz~1GHz) and AV/PK detector (above 1GHz). The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0°to 360°, The receive antenna has two polarizations V and H.

EUT was configured in idle mode and the test performed at worst emission state.

Test setup

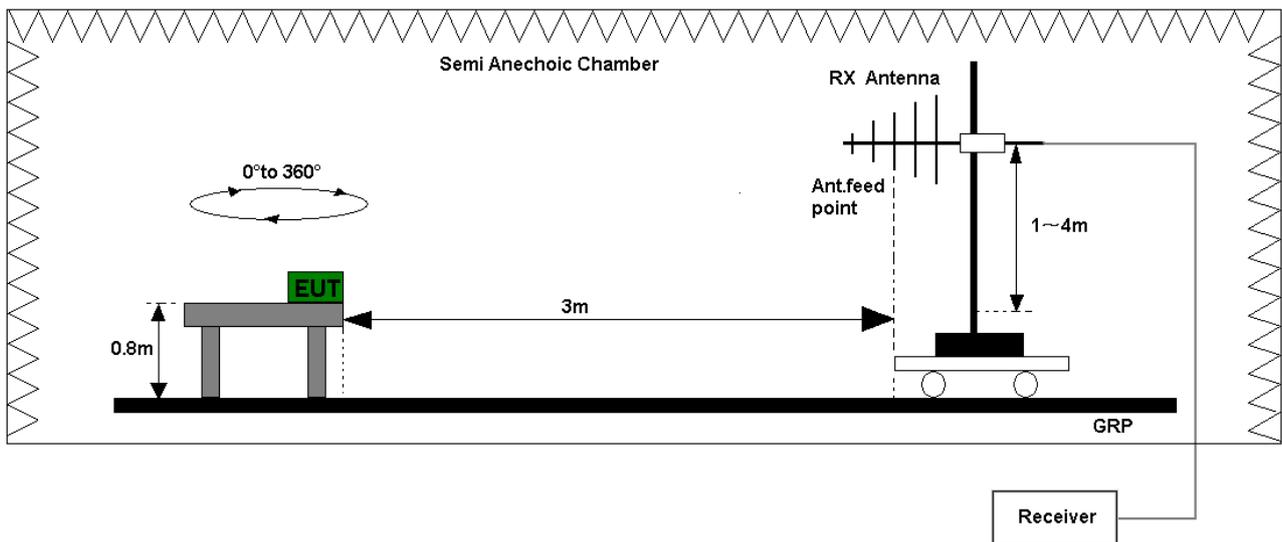


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

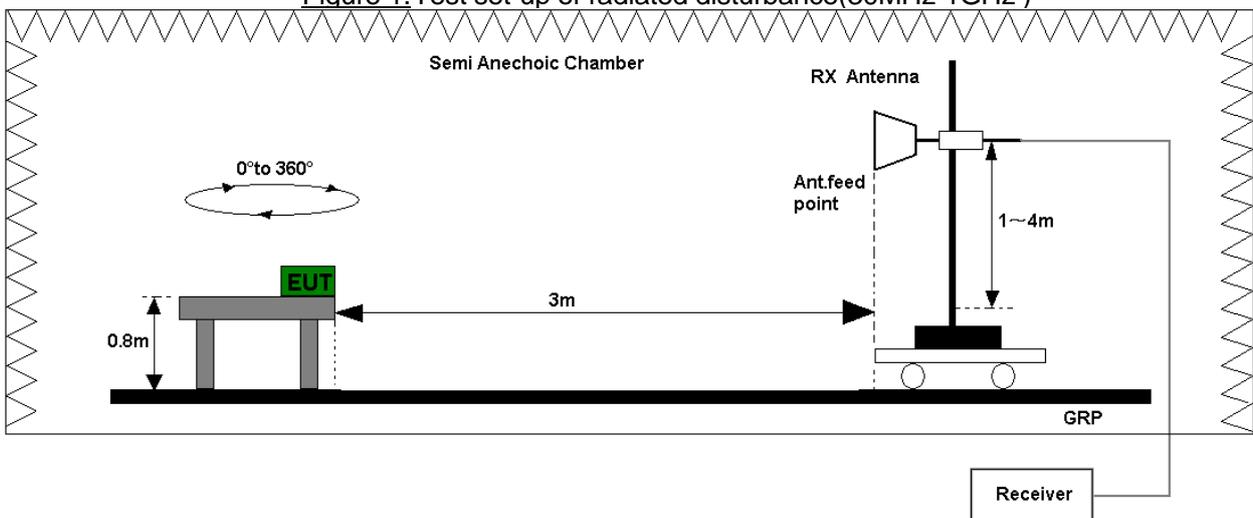


Figure 2. Test set-up of radiated disturbance(above 1GHz)

Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
The test data see section 7.1 of this report.

Test Limits				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μ V/m)		Unit(dB μ V/m)	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	AV	PK	AV	PK
	500	5000	54	74

Test environment condition:

Performed Item	Item	Required	Actual
Radiated Emission	Ambient temperature	15°C~35°C	22.5°C
	Relative humidity	25%~75%	55.5%
	Atmospheric pressure	86 kPa~106kPa	100kPa

4.2 Conducted Disturbance 0.15 MHz to 30MHz

Test Procedure

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4.

Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

Huawei Mobile Station was communicated with the BTS simulator through Air interface, the BTS simulator controls the Mobile Station to transmitter the maximum power which defined in specification of product. The Mobile Station operated on the typical channel.

Measurement bandwidth (RBW) for 150kHz to 30 MHz: 9 kHz;

The Mobile Station was setup in the screened chamber and operated under nominal conditions.

Test Setup

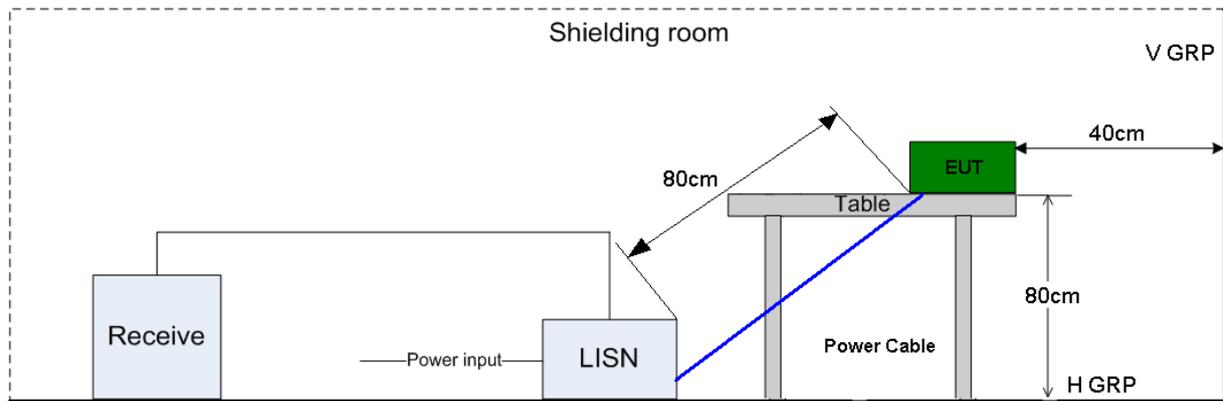


Figure 3. Test Set-up of conducted disturbance

Test Results

The EUT has met requirements for Conducted disturbance of power lines.

The test data see section 7.2 of this report.

Test Limit of AC Power Port		
Frequency range	150kHz ~ 30MHz	
Frequency	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	66-56dBμV	56-46 dBμV
0.5MHz-5MHz	56dBμV	46 dBμV
5MHz~30MHz	60dBμV	50 dBμV

Test environment condition:

Performed Item	Item	Required	Actual
Conducted Disturbance	Ambient temperature	15°C~35°C	22.5°C
	Relative humidity	25%~75%	55.5%
	Atmospheric pressure	86 kPa~106kPa	100kPa

5 Main Test Instruments

Main Test Equipments					
Test item	Test Instrument	Model	Manufacturer	Cal-Date	Cal Interval (month)
RE/CE	EMI Test receiver	ESU26	R&S	May.30, 2011	12
	Broadband Antenna	VULB 9163	SCHWARZBECK	May.16,2011	12
	Horn Antenna	HF906	R&S	May.16,2011	12
	Artificial Mains Network	ENV216	R&S	May.30, 2011	12
Software Information					
Test Item	Software Name	Manufacturer		Version	
RE/CE	ES-K1	R&S		1.7.1	

6 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

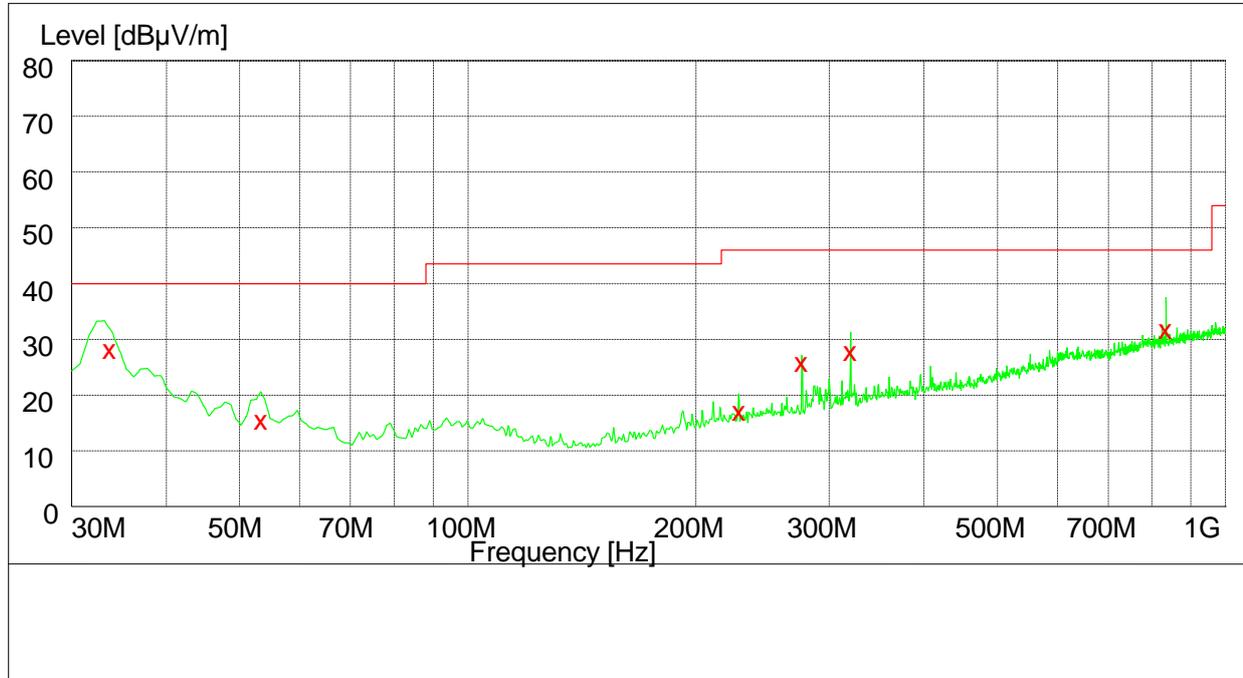
System Measurement Uncertainty		
Items		Extended Uncertainty
RE(30MHz-1GHz,)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=4.9dB; k=2
CE	Disturbance Voltage (dB μ V)	U=3.4dB; k=2

7 Graph and Data of Emission Test

7.1 Radiated Disturbance

This test was carried out in all the test modes, here only the worst test result was shown.

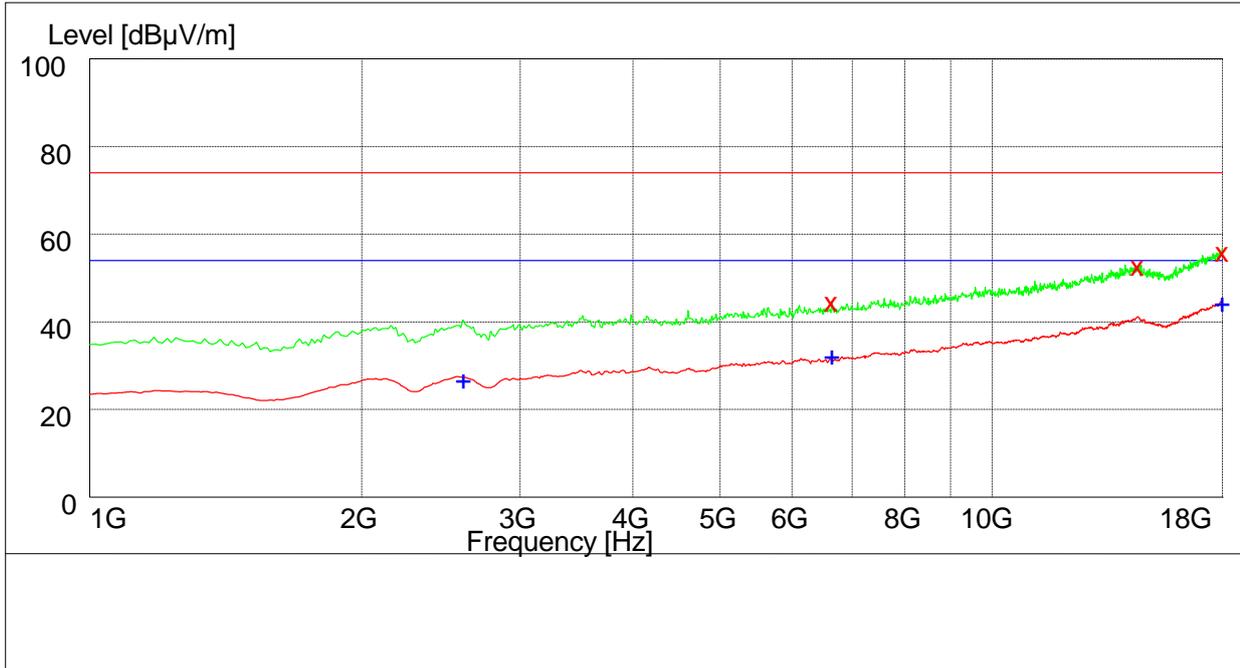
30MHz-1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
33.720000	29.50	11.7	40.0	10.5	121.0	210.00	VERTICAL
53.340000	16.80	12.7	40.0	23.2	100.0	303.00	VERTICAL
228.000000	18.40	13.4	46.0	27.6	127.0	118.00	HORIZONTAL
276.000000	27.10	14.8	46.0	18.9	102.0	148.00	HORIZONTAL
319.980000	29.20	16.0	46.0	16.8	100.0	133.00	HORIZONTAL
834.600000	33.20	25.3	46.0	12.8	188.0	89.00	HORIZONTAL

1GHz-18GHz



MEASUREMENT RESULT: PK Detector

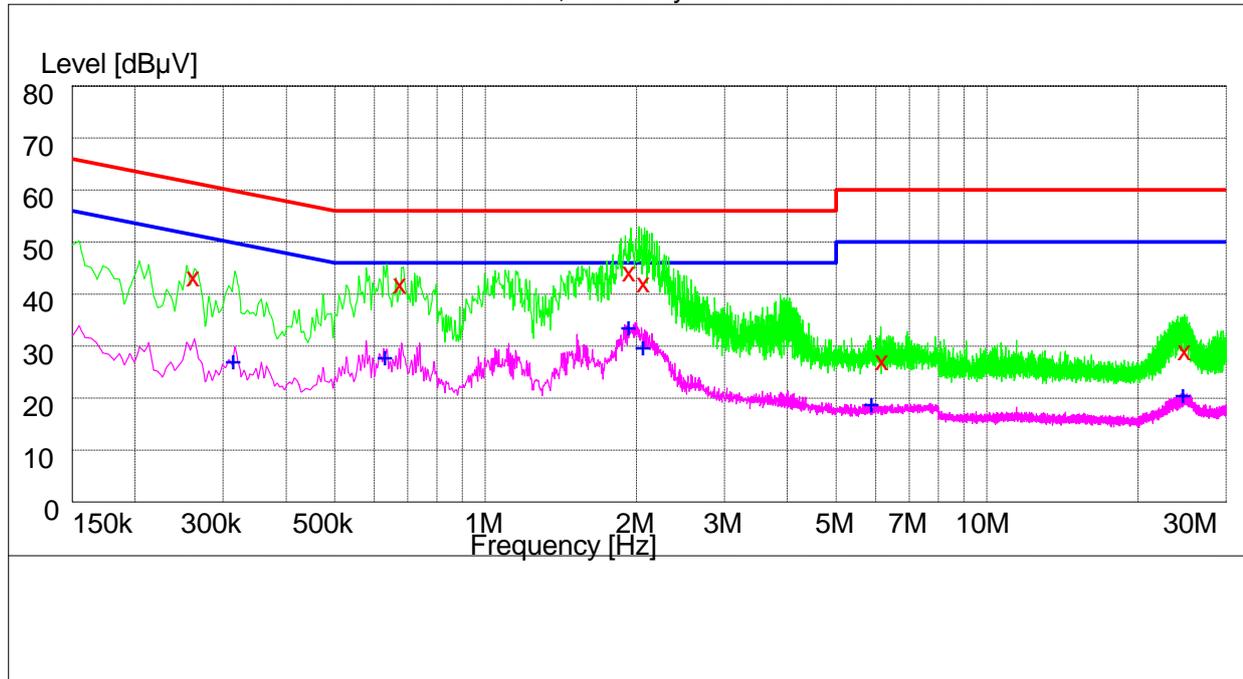
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
6645.500000	43.40	9.7	74.0	30.6	134.0	221.00	VERTICAL
14493.500000	53.10	22.7	74.0	20.9	100.0	91.00	VERTICAL
17993.500000	55.80	27.7	74.0	18.2	150.0	48.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2593.000000	26.70	0.4	54.0	27.3	100.0	16.00	VERTICAL
6643.500000	30.70	9.7	54.0	23.3	100.0	234.00	HORIZONTAL
17984.000000	43.20	27.6	54.0	10.8	150.0	0.00	VERTICAL

7.2 Conducted Disturbance

This test was carried out in all the test modes, here only the worst test result was shown.



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.262000	43.00	10.0	61	18.0	N	FLO
0.676000	41.90	10.1	56	14.1	N	FLO
1.938000	45.80	10.1	56	10.2	N	FLO
2.072000	43.80	10.1	56	12.2	N	FLO
6.202000	26.00	10.2	60	34.0	N	FLO
24.830000	28.20	10.4	60	31.8	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.314000	28.70	10.0	50	21.3	N	FLO
0.630000	28.80	10.1	46	17.2	N	FLO
1.930000	33.60	10.1	46	12.4	N	FLO
2.058000	31.40	10.1	46	14.6	N	FLO
5.870000	19.30	10.2	50	30.7	N	FLO
24.592000	20.70	10.4	50	29.3	N	FLO

-----END-----