



EMC Test Report

Product Name: UMTS/GSM/GPRS Mobile Phone

Model Number: HUAWEI U2800/U2800-8

Report No: SYBH(Z-EMC)083062011-2

FCC ID: QISU2800-8

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

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Applicant: Huawei Technologies Co., Ltd.
Address: Huawei Base, Bantian, Longgang District, Shenzhen
518129, P.R. China

Date of Receipt Test Item: Jun.20, 2011
Start Date of Test: Jun.28, 2011
End Date of Test: Jun.28, 2011

Test Result: Pass

Approved By

2010-06-28
Date

Liuchunlin
Name



Signature

Reviewed By

2010-06-28
Date

Dailinjun
Name



Signature

Operator

2010-06-28
Date

Wenjianfeng
Name



Signature

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	UMTS Mobile Phone
Model Number	HUAWEI U2800/U2800-8
Serials Number	020YQH9M0C000021
Working Voltage	120V/60Hz
TX Frequency	WCDMA850: 824MHz To 849MHz
RX Frequency	WCDMA850: 869MHz To 894MHz
HW Version	Ver.A
SW Version	U2800CAGB101
EUT Accessory	
Data cable	Data Cable USB A Male to Micro Usb ,Black,
Adapter	Manufacture: Huawei Technologies Co., Ltd. Model: HS-0500040U6 Input voltage: 100V-240V~50-60Hz, 0.2A Output voltage: +5V $\overline{\text{---}}$ 0.4A S/N:HKAAB0898148
Li-ion	Battery Model: HB5A2 Rated capacity: 1000mAh Nominal Voltage: $\overline{\text{---}}$ +3.7V Charging Voltage: $\overline{\text{---}}$ +4.2V Serials number: GAGB217XC0603850

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 Mode4~Mode6	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~ Mode3	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

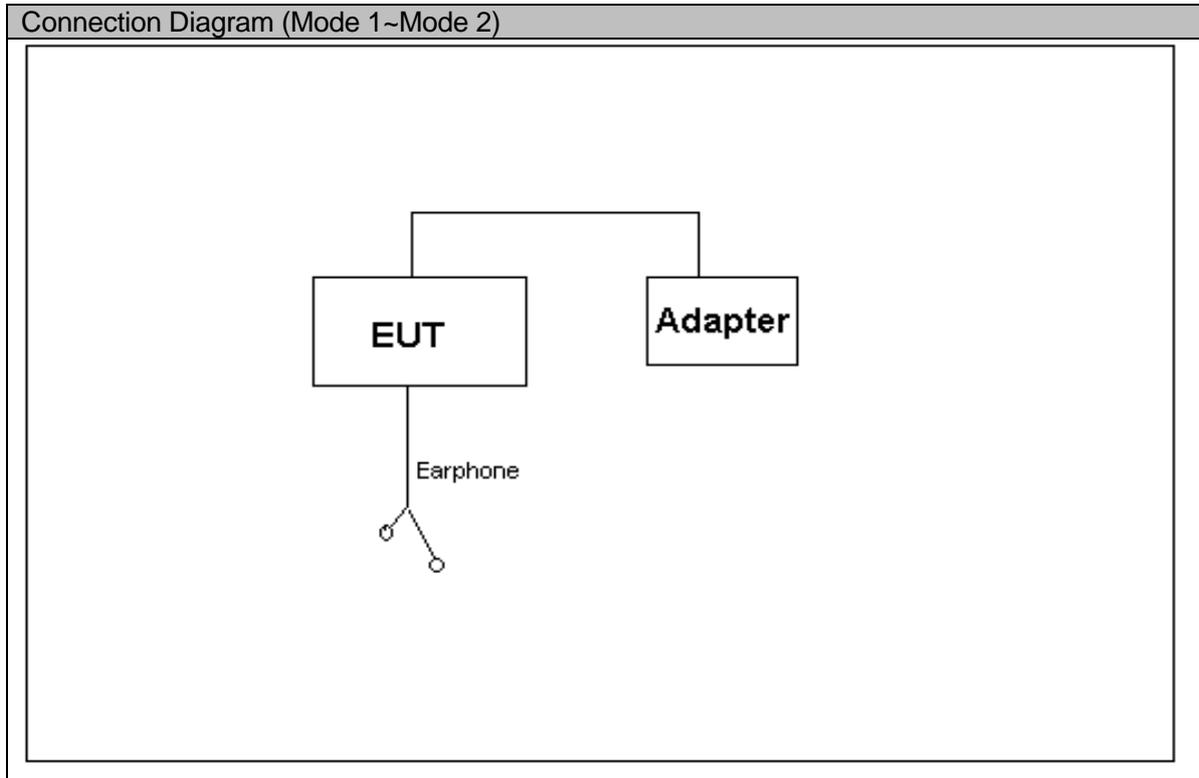
3.1 Test Mode

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:

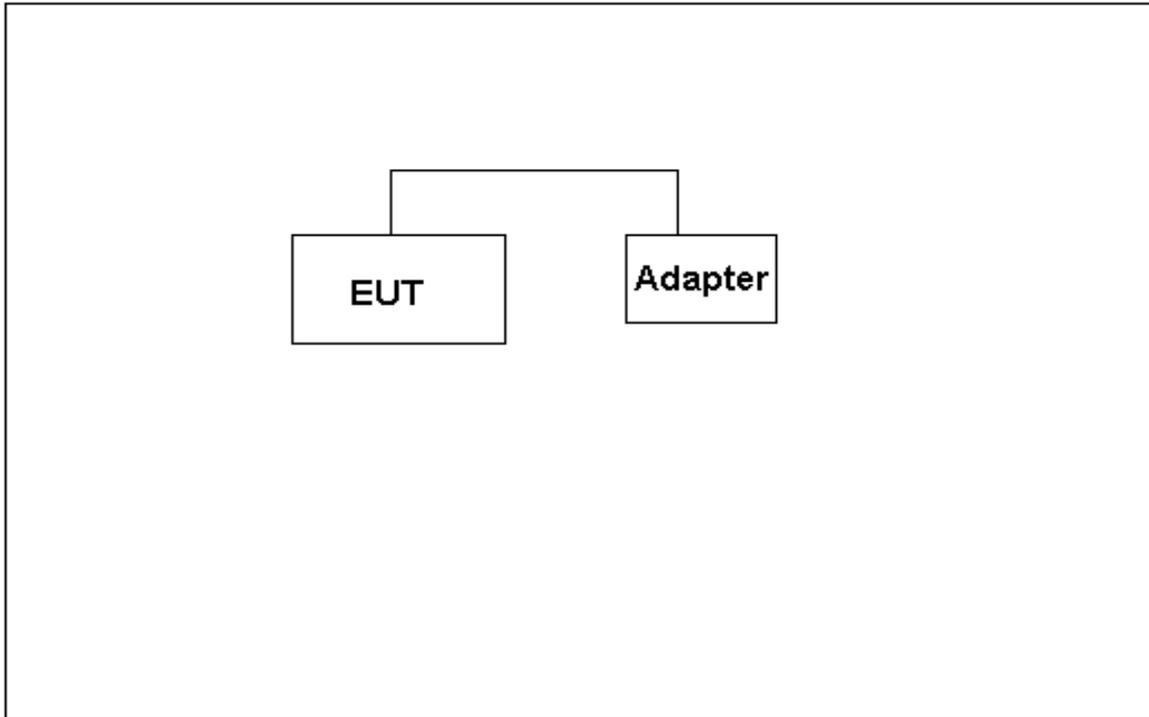
Test Mode	
Mode 1:	adapter+earphone+MP3 +Idle
Mode 2:	adapter+earphone+Traffic
Mode 3:	adapter+Traffic
Mode 4:	USB Copy(EUT with PC)+earphone +Idle
Mode 5:	earphone+MP3+Idle
Mode 6:	Traffic

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.

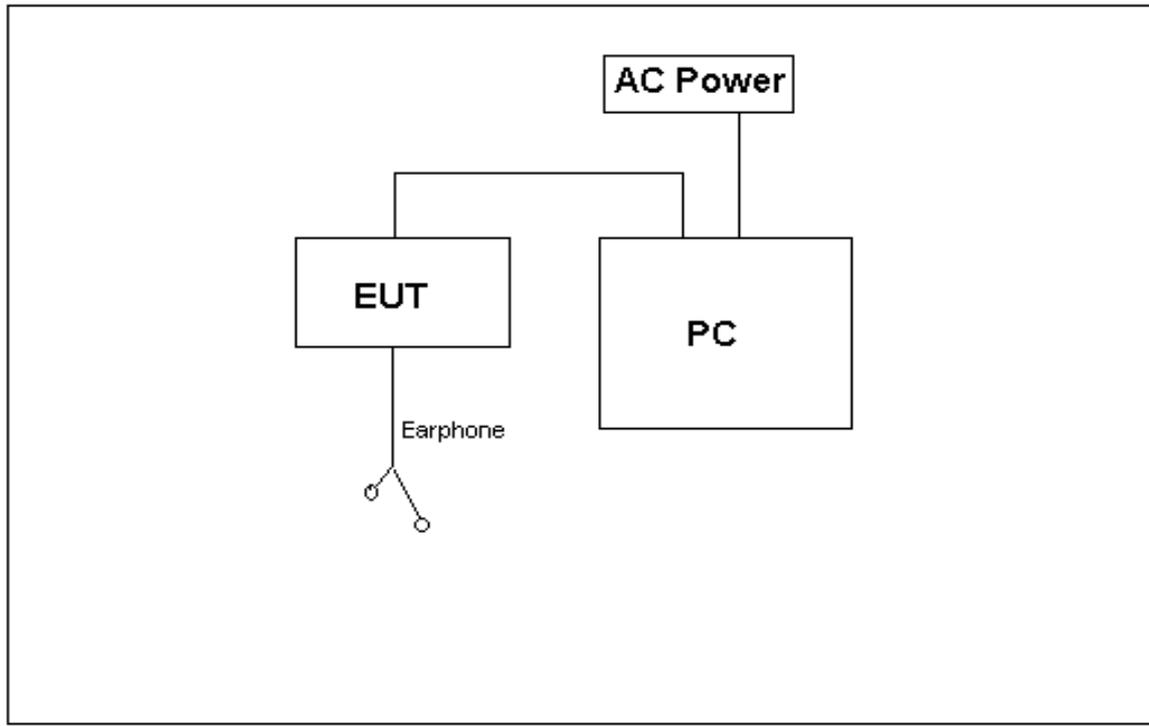
3.2 Configurations of Test System



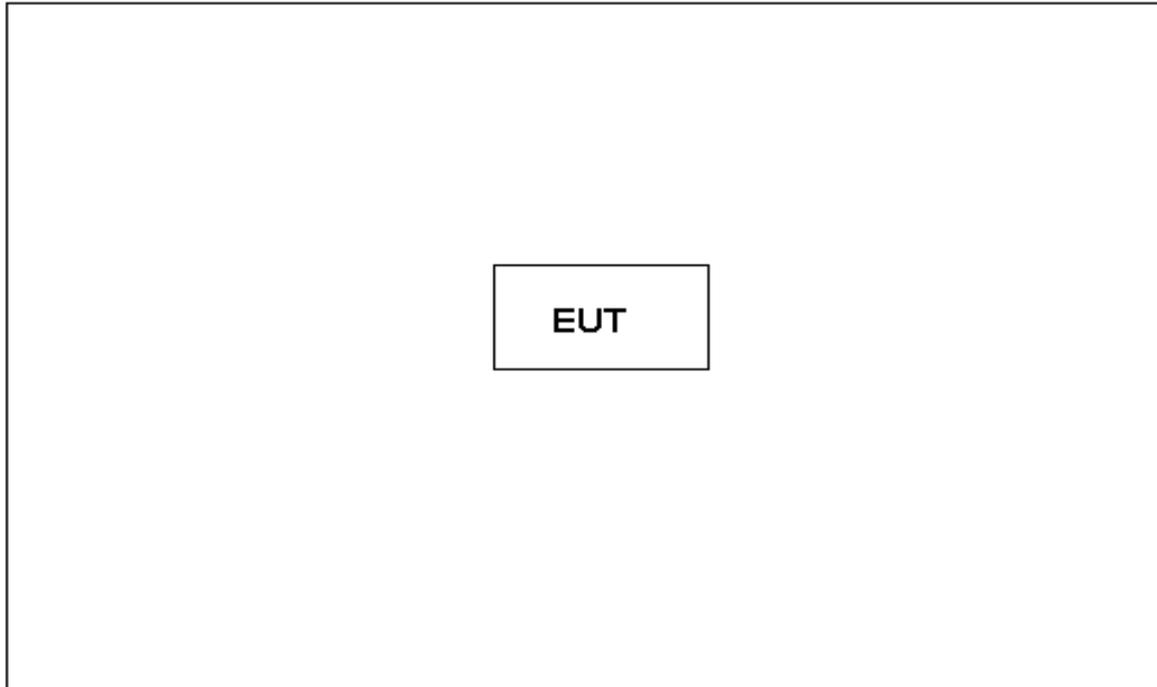
Connection Diagram (Mode 3)



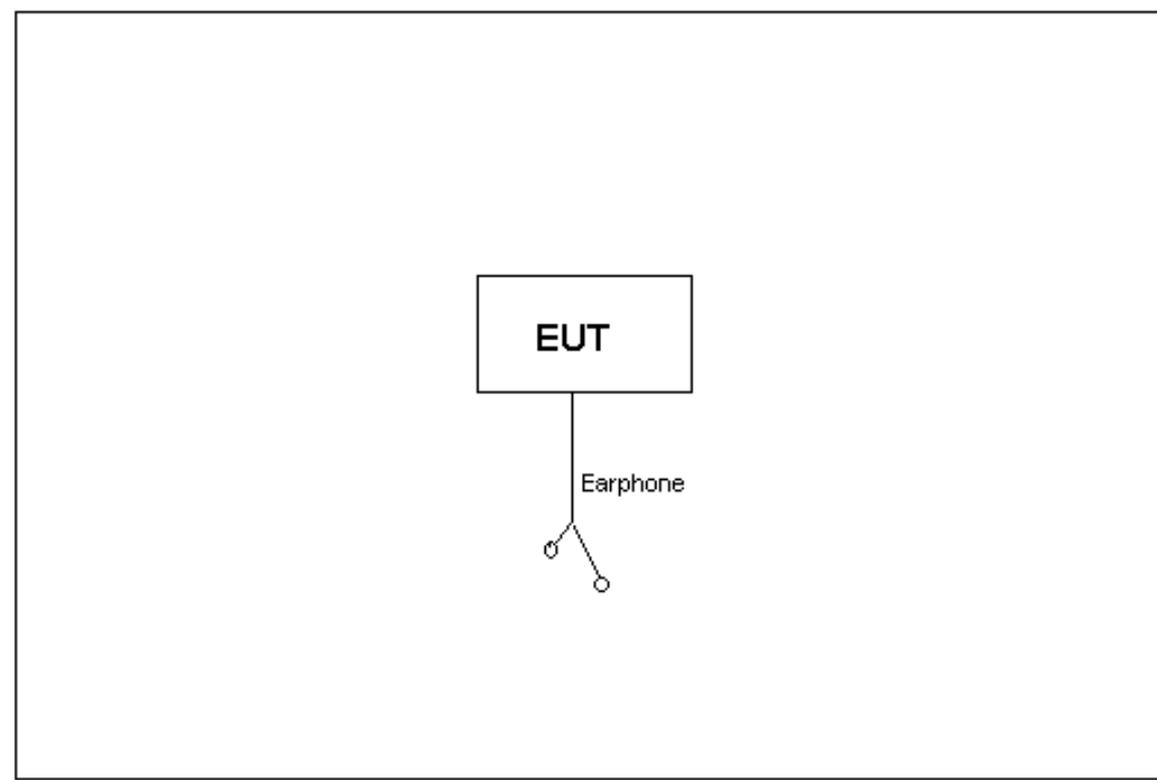
Connection Diagram (Mode 4)



Connection Diagram (Mode 5)



Connection Diagram (Mode 6)



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	D620	DELL	3106085412	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

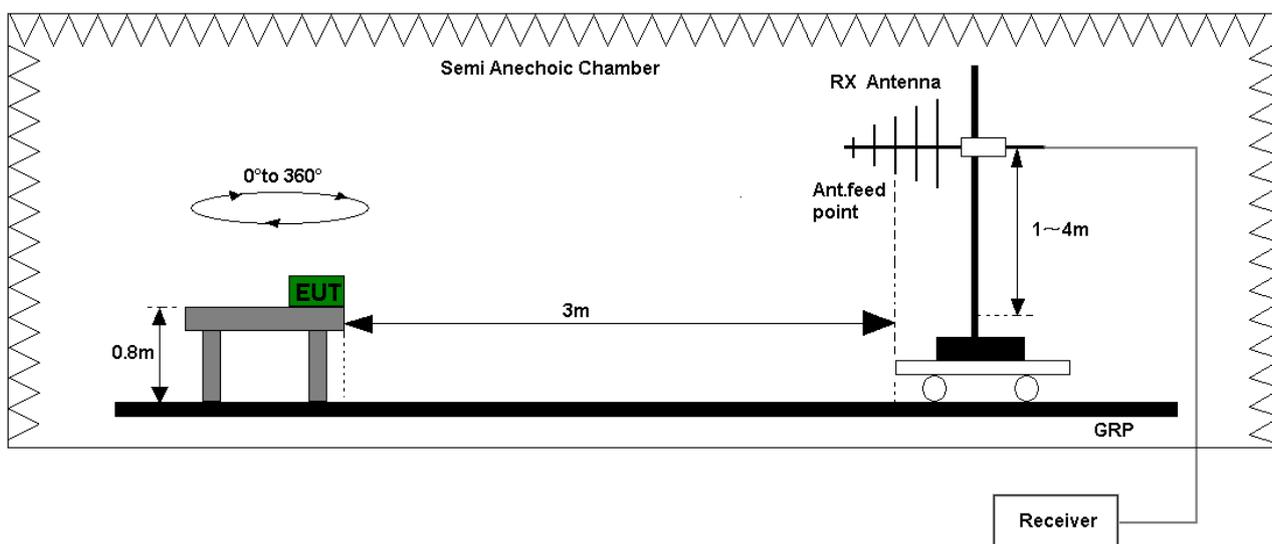


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

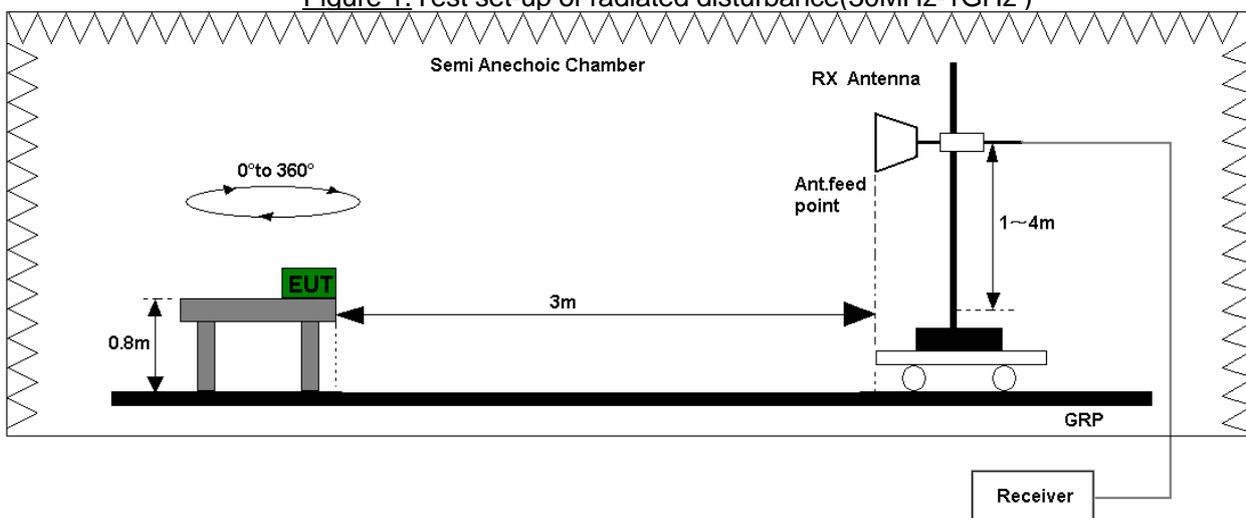


Figure 2. Test set-up of radiated disturbance(above 1GHz)

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	23.4°C
	Relative humidity	25%~75%	54.5%
	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

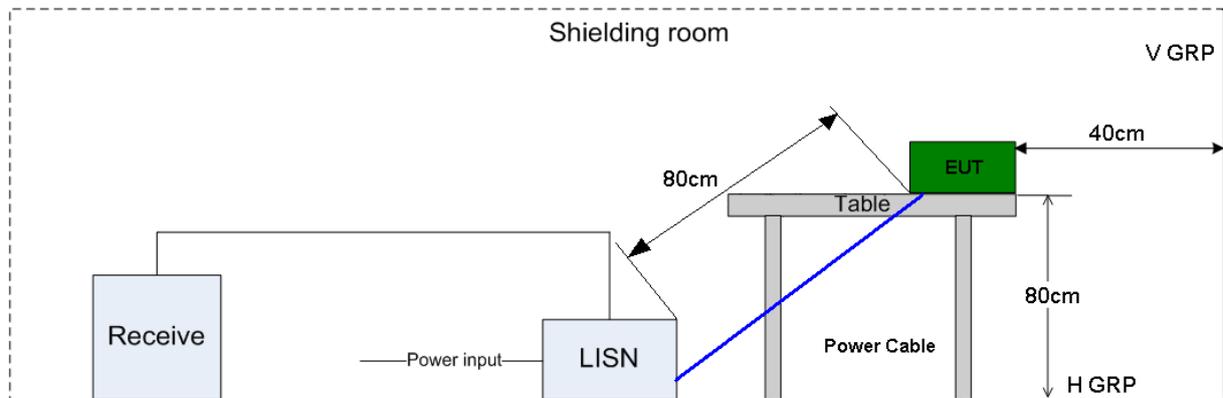


Figure 3. Test Set-up of conducted disturbance

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	66-56dB μ V	56-46 dB μ V
0.5MHz-5MHz	56dB μ V	46 dB μ V
5MHz~30MHz	60dB μ V	50 dB μ V

Test environment condition:

Performed Item	Item	Required	Actual
Conducted Disturbance	Ambient temperature	15°C~35°C	23.4°C
	Relative humidity	25%~75%	54.5%
	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

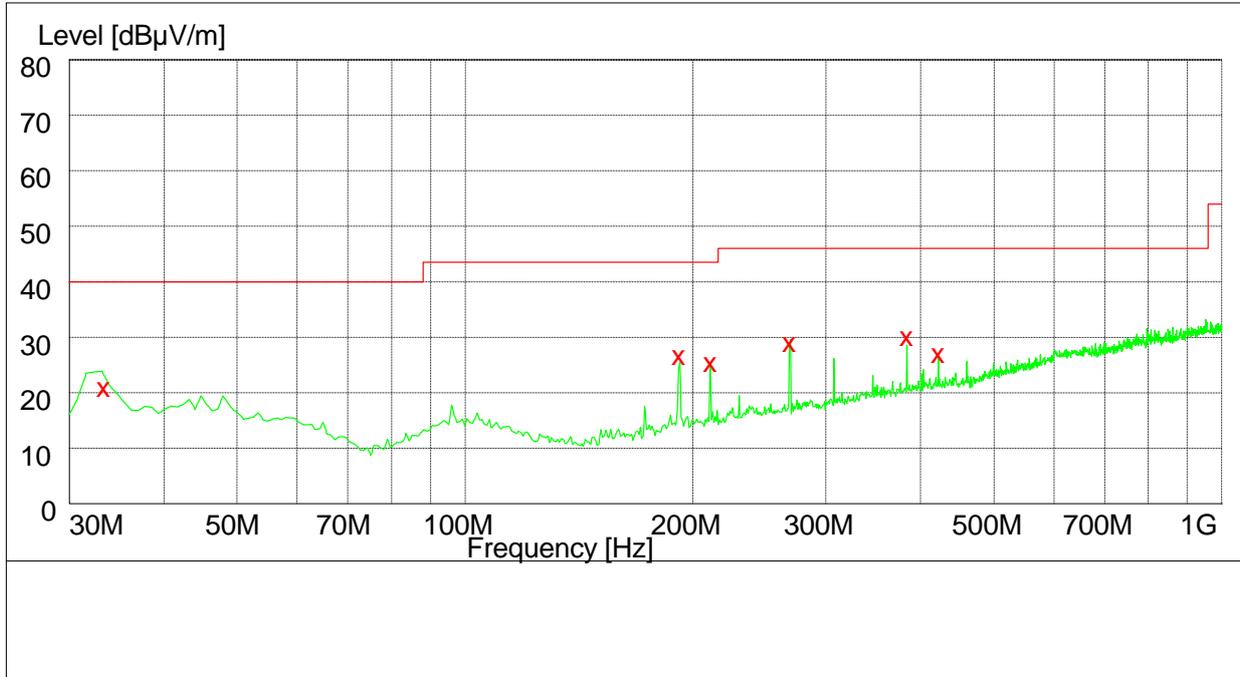
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

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

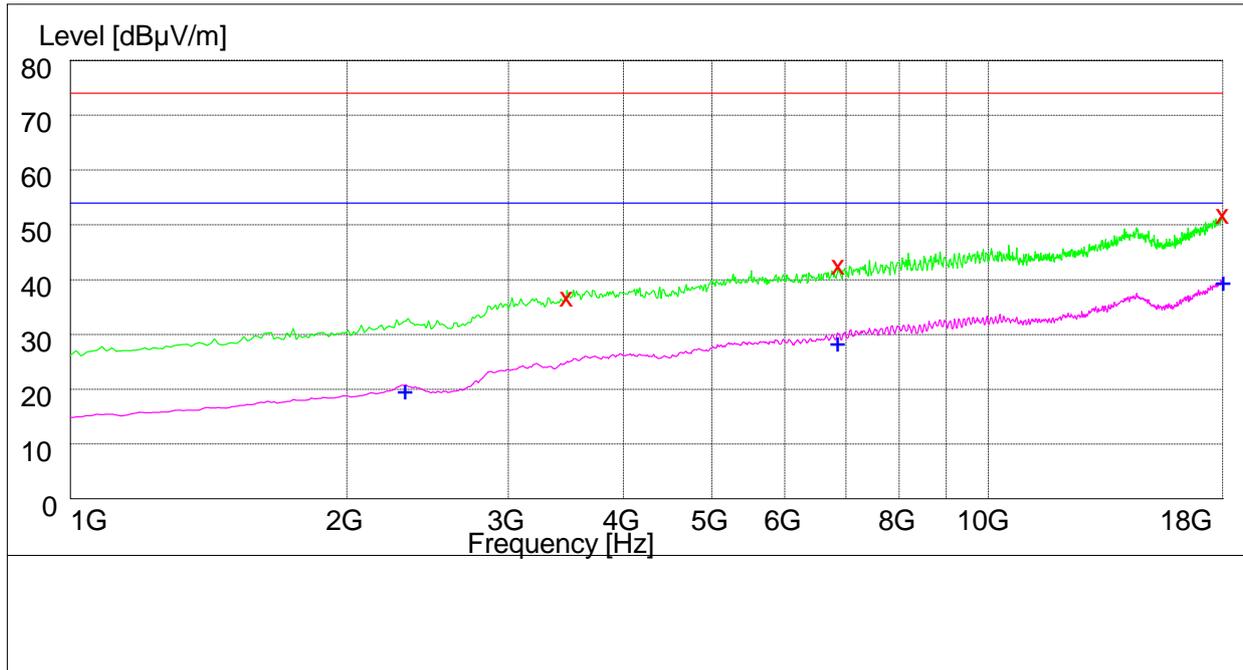
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dBµV/m	dB	cm	deg	
33.360000	20.10	11.7	40.0	19.9	100.0	97.00	VERTICAL
192.000000	27.10	11.9	43.5	16.4	100.0	51.00	HORIZONTAL
211.200000	25.80	12.6	43.5	17.7	148.0	61.00	HORIZONTAL
268.800000	29.10	14.5	46.0	16.9	128.0	33.00	HORIZONTAL
384.000000	30.00	17.7	46.0	16.0	100.0	226.00	HORIZONTAL
422.400000	28.10	18.8	46.0	17.9	100.0	24.00	HORIZONTAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

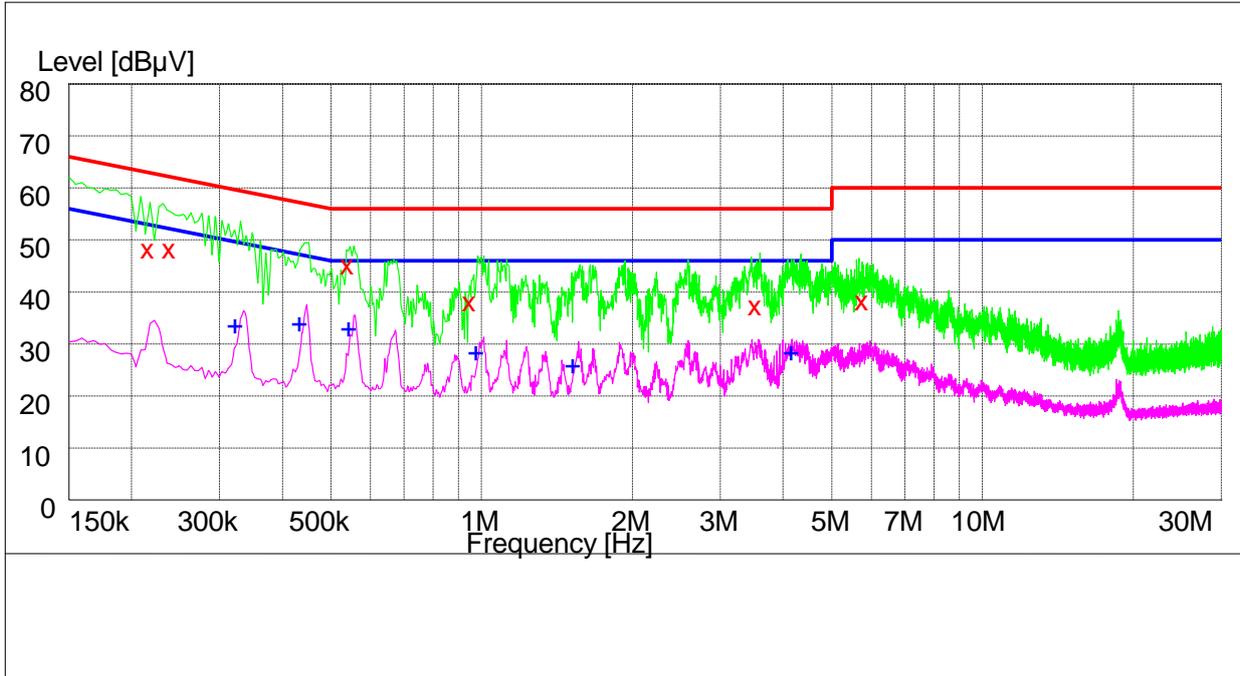
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
3474.500000	38.20	-5.5	74.0	35.8	142.0	348.00	HORIZONTAL
6865.500000	43.40	0.6	74.0	30.6	112.0	304.00	VERTICAL
17994.000000	52.40	19.4	74.0	21.6	150.0	172.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2315.500000	20.50	-10.7	54.0	33.5	135.0	353.00	HORIZONTAL
6850.000000	29.80	1.0	54.0	24.2	111.0	31.00	VERTICAL
18000.000000	39.70	19.5	54.0	14.3	150.0	319.00	HORIZONTAL

7.2 Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.216000	49.80	10.0	63	13.2	L1	FLO
0.248000	49.80	10.0	63	13.1	L1	FLO
0.540000	46.80	10.1	56	9.2	N	FLO
0.946000	39.70	10.1	56	16.3	N	FLO
3.518000	38.90	10.2	56	17.1	N	FLO
5.754000	39.90	10.2	60	20.1	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.322000	35.20	10.0	50	14.5	N	FLO
0.432000	35.70	10.1	47	11.5	N	FLO
0.542000	34.60	10.1	46	11.4	N	FLO
0.974000	30.00	10.1	46	16.0	N	FLO
1.518000	27.50	10.1	46	18.5	N	FLO
4.146000	30.10	10.2	46	15.9	N	FLO