



EMC Test Report

**Product Name:HSDPA/UMTS/GPRS/GSM/EDGE Mobile
Phone with Bluetooth**

Model Number:HUAWEI U8651T, U8651T, U8651, Astro

**Report No:SYBH(Z-EMC)028012012-2
FCC ID:QISU8651T
IC:6369A-U8651T**

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	HSDPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth;
Model Number	HUAWEI U8651T, U8651T, U8651, Astro
Serials Number	G9E2A11191600149
Working Voltage	120V/60Hz
TX Frequency	GSM850:824MHz To 849MHz; PCS1900:1850MHz To 1910MHz WCDMA850: 824MHz To 849MHz; WCDMA1900:1850MHz To 1910MHz WCDMA AWS:1710MHz To 1755MHz Bluetooth: 2400MHz To 2483.5MHz WIFI: 2400MHz To 2483.5MHz
RX Frequency	GSM850:869MHz To 894MHz; PCS1900:1930MHz To 1990MHz WCDMA850:869MHz To 894MHz; WCDMA1900:1930MHz To 1990MHz WCDMA AWS:2110MHz To 2155MHz Bluetooth: 2400MHz To 2483.5MHz WIFI: 2400MHz To 2483.5MHz GPS: 1575.42MHz
HW Version	HD4U865M
SW Version	U8651V100R001USAC85B865SP01
EUT Accessory	
Data cable	Data Cable USB A Male to Micro Usb, Black
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-050100U1W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rated Power: 5W S/N: TPABB2348678
Rechargeable Li-ion	Manufacturer: Huawei Technologies Co., Ltd. Battery Model: HB5K1H Rated capacity: 1400mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V S/N: WHCB304HI1030194

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

Site 1:	RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD.
Test Site Location:	Bantian Longgang District Shenzhen, P.R. China

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15:2010, Subpart B
CAN/CSA-CEI/IEC CISPR 22;
ICES-003 Issue 4

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~ Mode8	CLASS B	Pass	Site1
<u>Conducted Emissions</u> <input checked="" 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

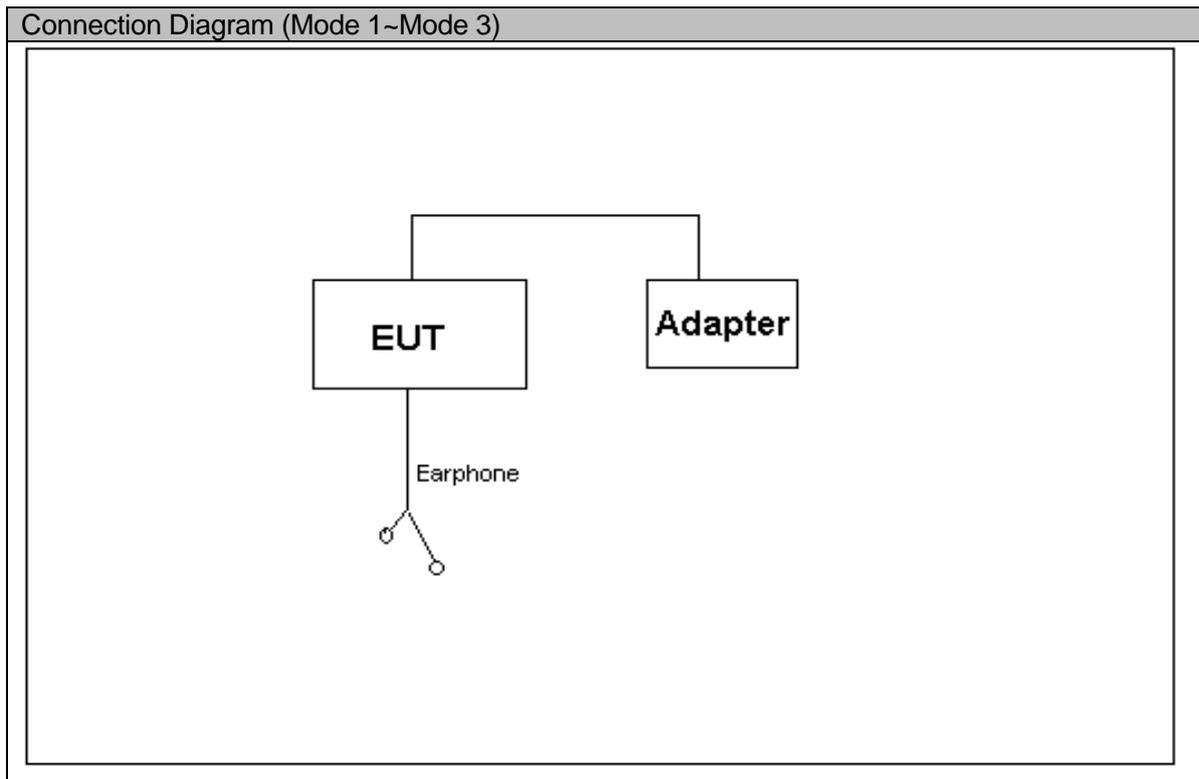
3.1 Test Mode

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:

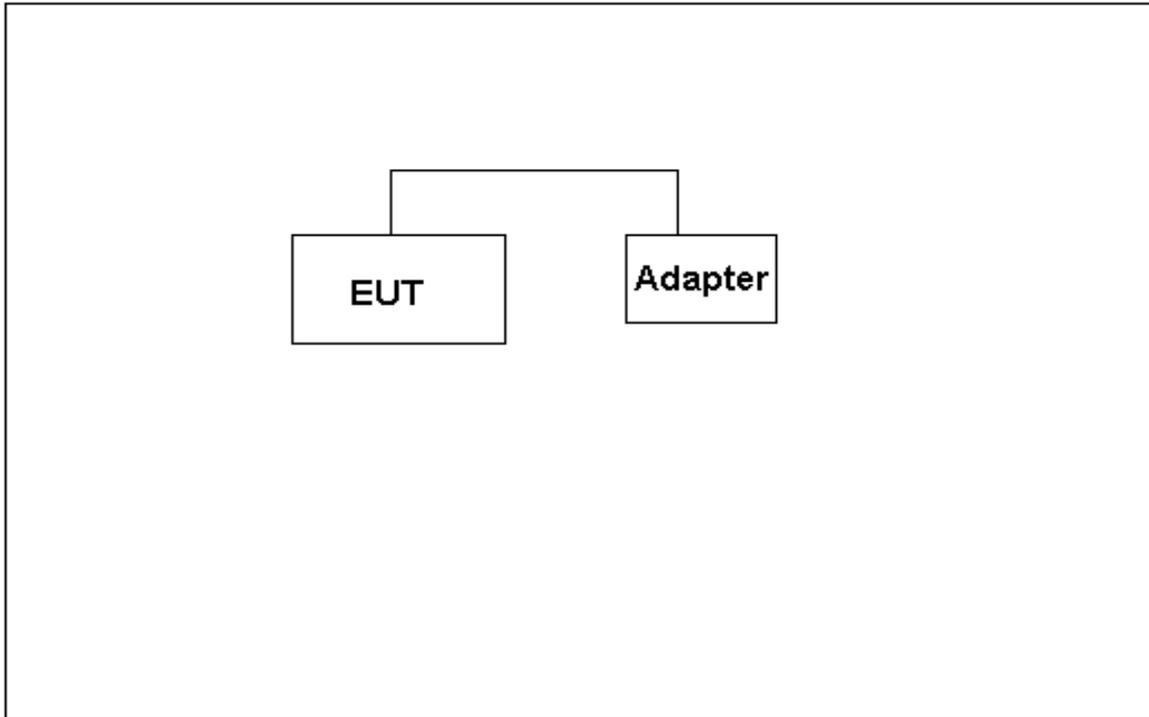
Test Mode	
Mode 1:	adapter+earphone+Camera On +Idle
Mode 2:	adapter+earphone+MP3 +Idle
Mode 3:	adapter+earphone+Traffic
Mode 4:	adapter+Traffic
Mode 5:	USB Copy(EUT with PC)+earphone +Idle
Mode 6:	Traffic
Mode 7:	Camera On+earphone+Idle
Mode 8:	earphone+MP3+Idle

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.

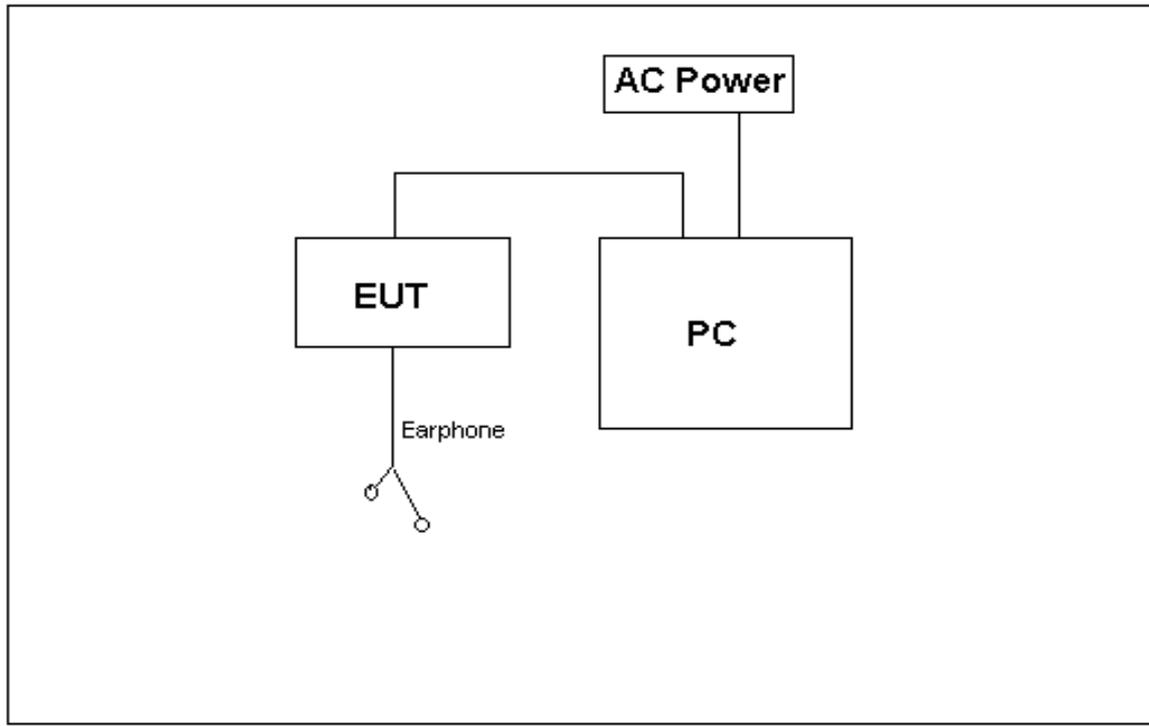
3.2 Configurations of Test System



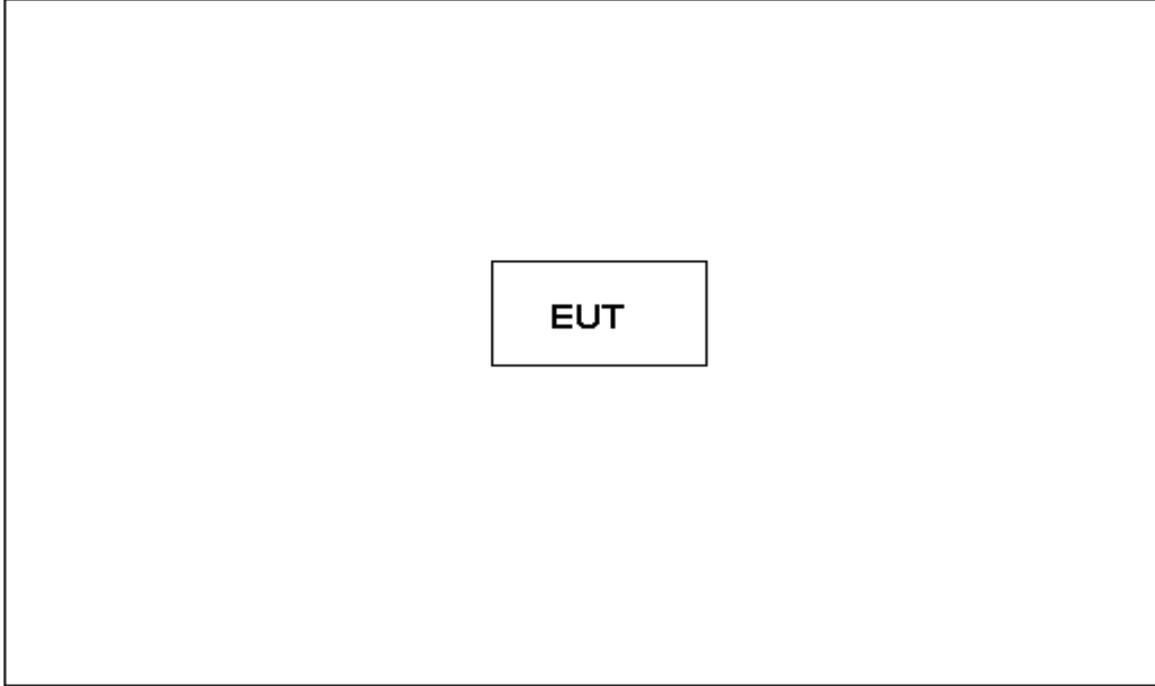
Connection Diagram (Mode 4)



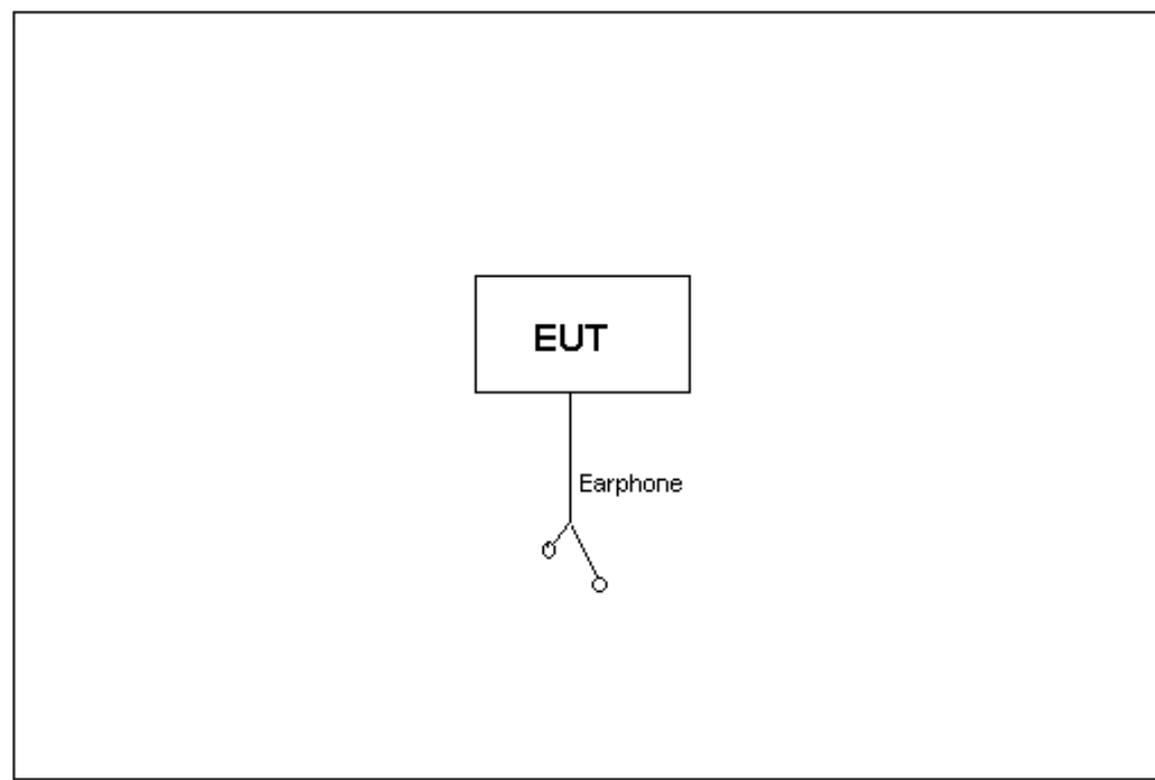
Connection Diagram (Mode 5)



Connection Diagram (Mode 6)



Connection Diagram (Mode 7-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	3607033573	2011-03-17
Notebook	T61	IBM	3108052508	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

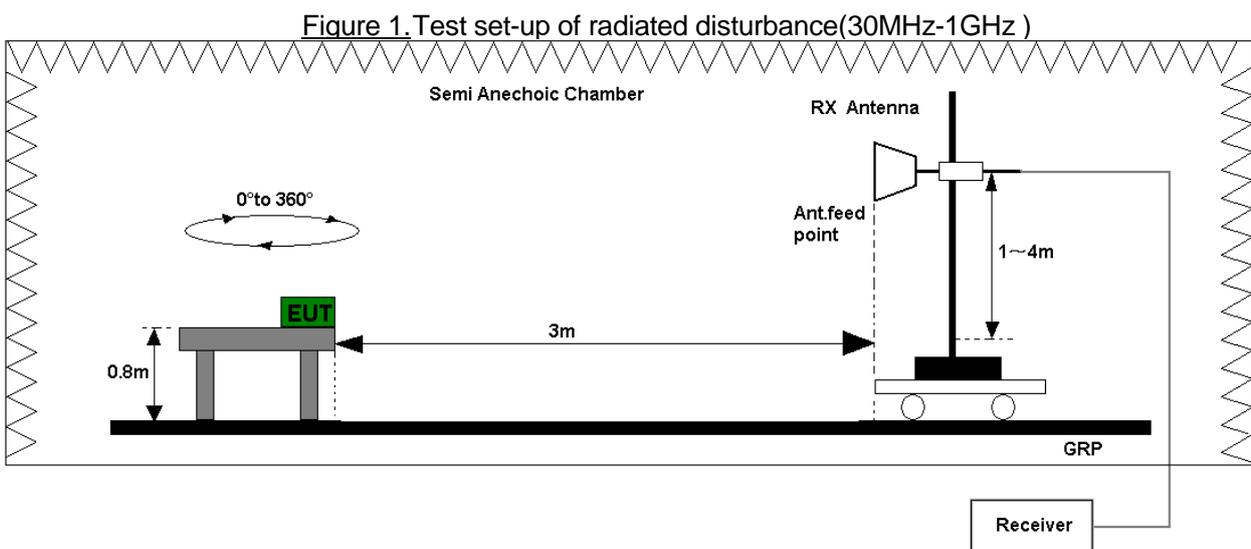
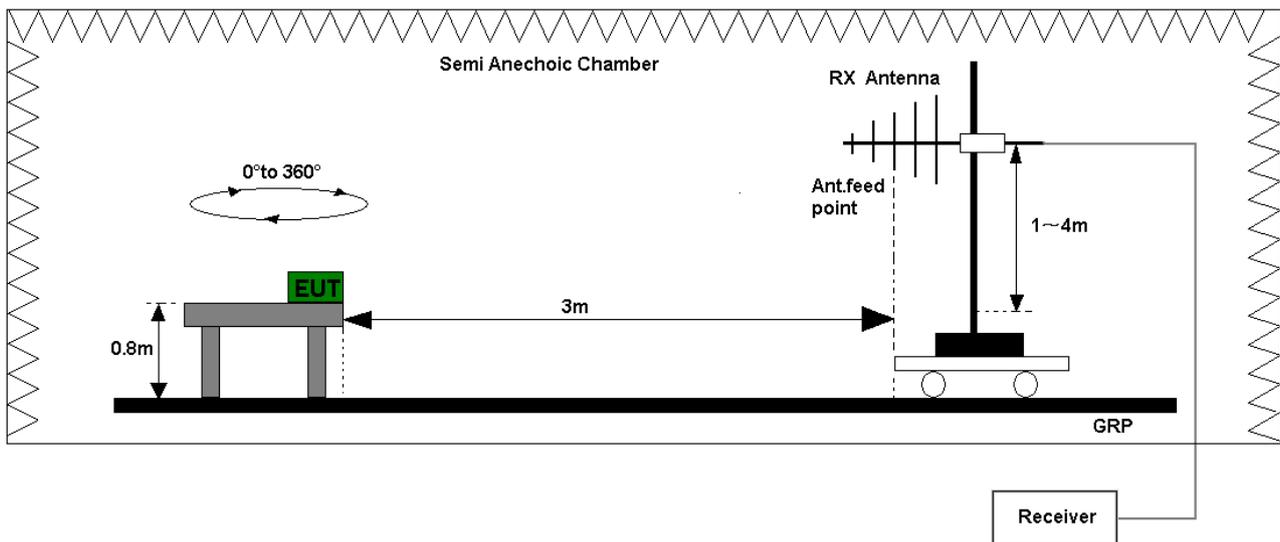
Test Procedure

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



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	23.0°C
	Relative humidity	25%~75%	53.5%
	Atmospheric pressure	86 kPa~106kPa	101kPa

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. EUT was communicated with the simulator through Air interface, the simulator controls the EUT to transmitter the maximum power which defined in specification of product. The EUT operated on the typical channel.
 Measurement bandwidth (RBW) for 150kHz to 30 MHz: 9 kHz;
 The EUT was setup in the screened chamber and operated under nominal conditions.

Test Setup

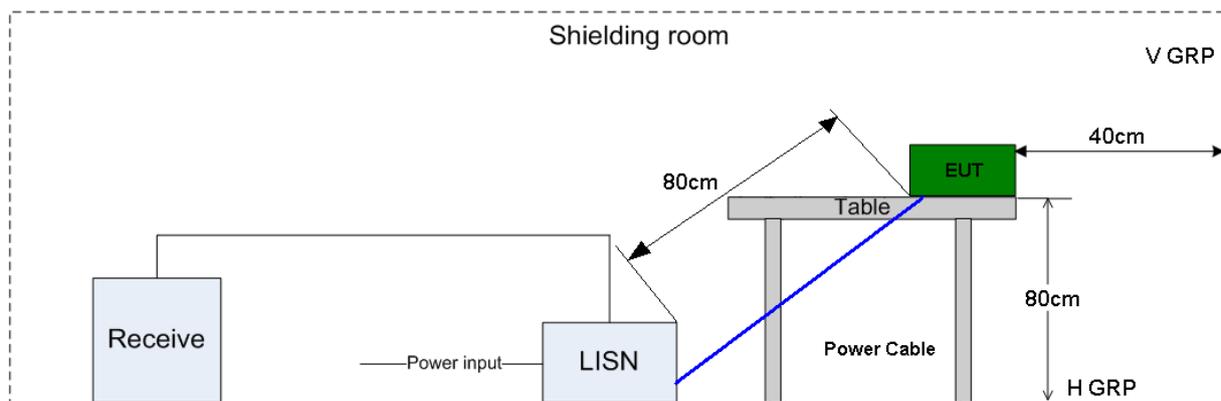


Figure 3. Test Set-up of conducted disturbance

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	23.0°C
	Relative humidity	25%~75%	53.5%
	Atmospheric pressure	86 kPa~106kPa	101kPa

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:

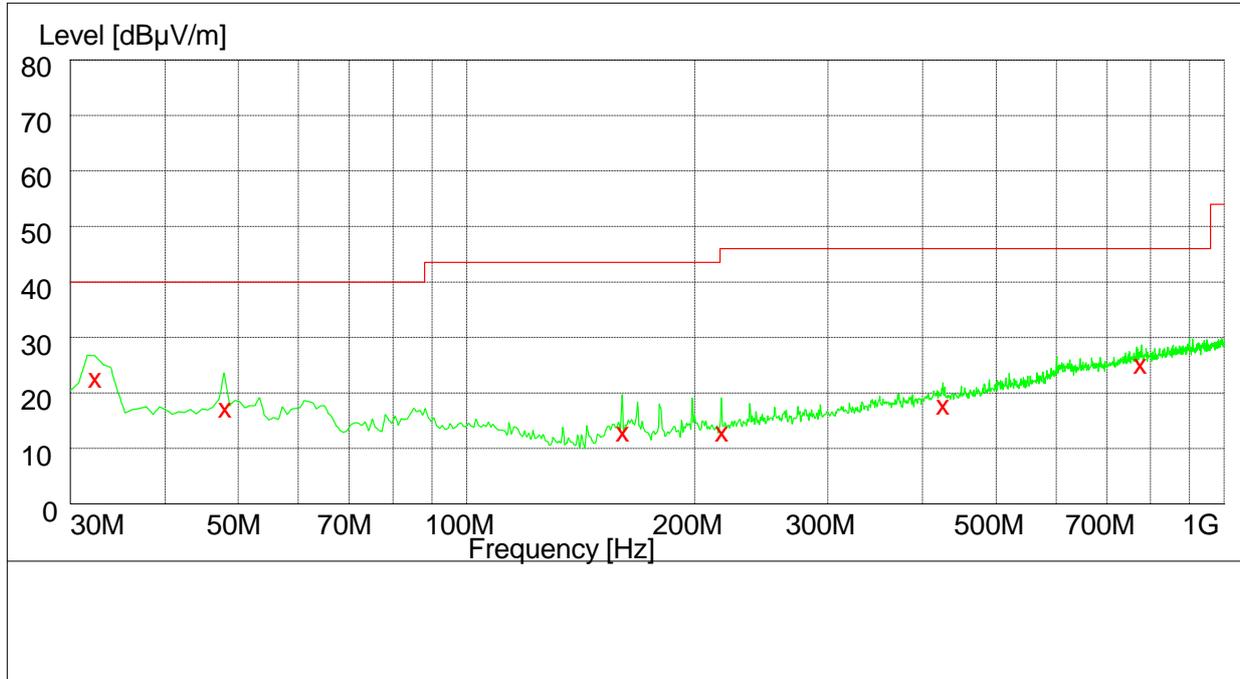
System Measurement Uncertainty		
Items		Extended Uncertainty
RE(30MHz-1GHz,)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=4.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=3.4dB; k=2

7 Graph and Data of Test

Only the worst test result was shown in this report.

7.1 Radiated Disturbance

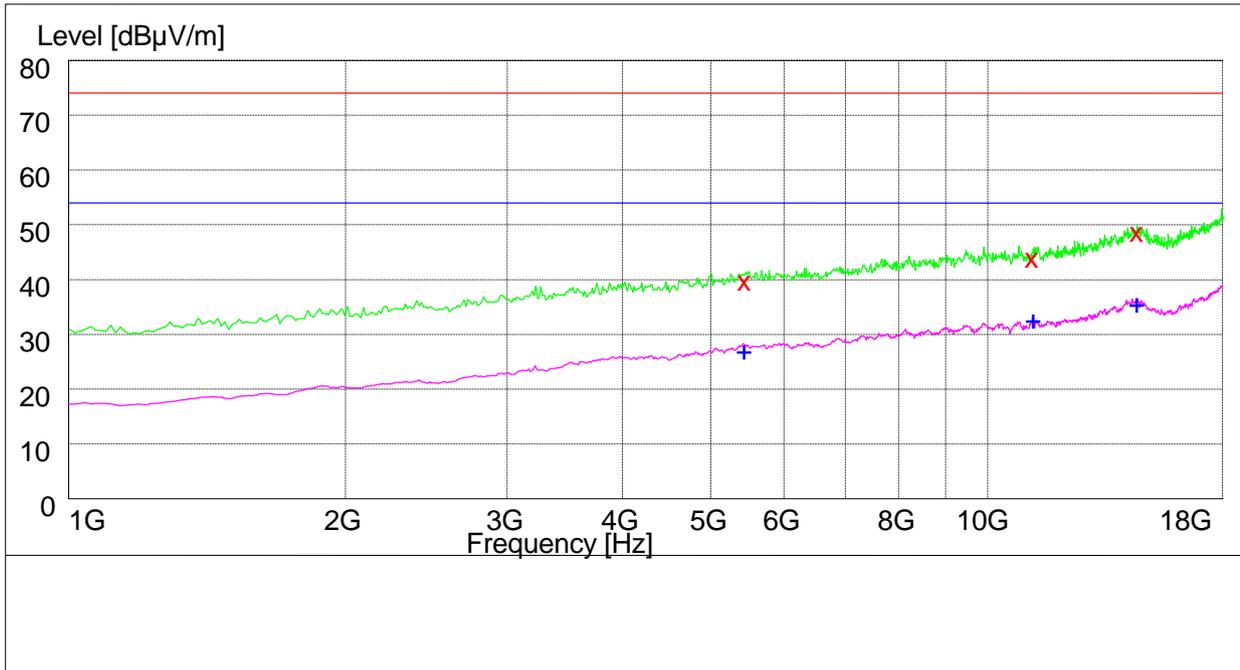
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
32.400000	21.10	14.7	40.0	18.9	100.0	75.00	VERTICAL
48.120000	16.40	15.0	40.0	23.6	100.0	359.00	VERTICAL
160.980000	11.40	10.1	43.5	32.1	100.0	106.00	VERTICAL
217.560000	11.40	12.8	46.0	34.6	100.0	32.00	VERTICAL
426.420000	17.00	18.1	46.0	29.0	138.0	88.00	HORIZONTAL
777.720000	24.30	23.4	46.0	21.7	162.0	48.00	HORIZONTAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

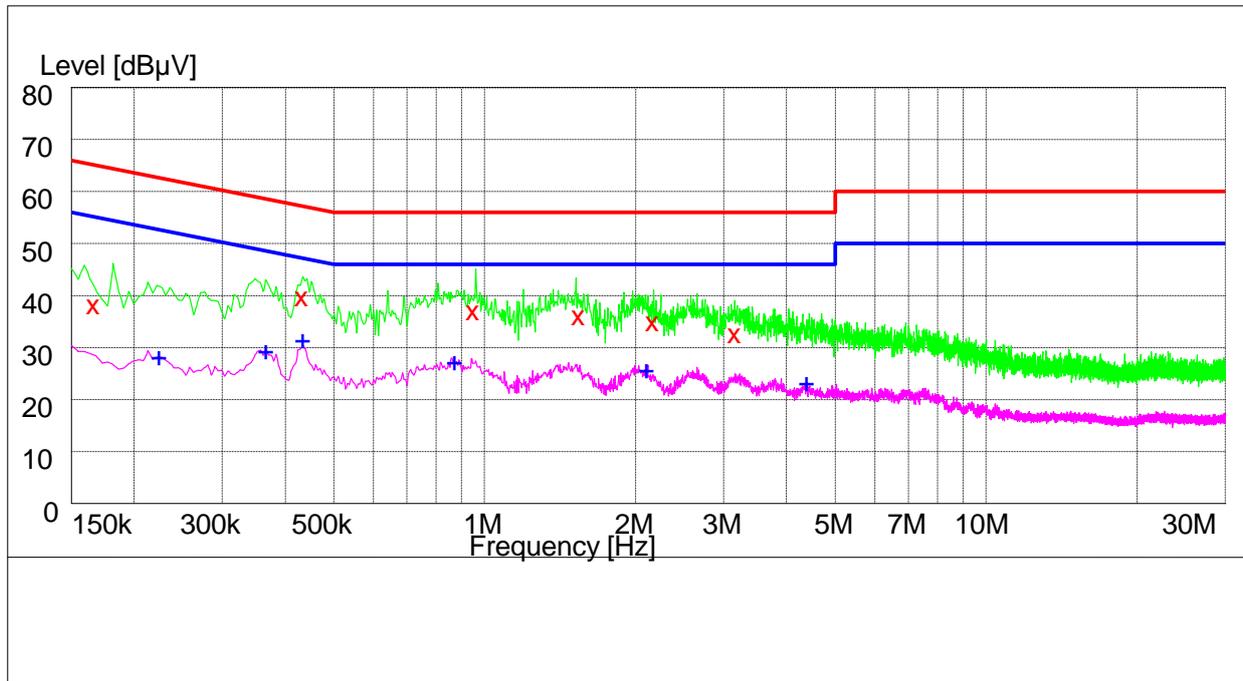
Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
5442.000000	39.60	-0.5	74.0	34.4	135.0	77.00	HORIZONTAL
11181.000000	43.90	10.0	74.0	30.1	114.0	105.00	VERTICAL
14524.500000	48.20	14.5	74.0	25.8	103.0	123.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
5424.000000	26.90	-0.6	54.0	27.1	100.0	348.00	VERTICAL
11192.000000	31.50	10.1	54.0	22.5	100.0	134.00	VERTICAL
14517.000000	35.50	14.5	54.0	18.5	133.0	125.00	VERTICAL

7.2 Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.166000	37.90	10.1	65	27.1	L1	FLO
0.432000	39.70	10.1	57	17.3	L1	FLO
0.950000	35.10	10.1	56	20.9	L1	FLO
1.540000	34.10	10.1	56	21.9	L1	FLO
2.166000	33.00	10.1	56	23.0	L1	FLO
3.156000	31.20	10.2	56	24.8	L1	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.224000	28.20	10.0	53	24.8	L1	FLO
0.366000	29.70	10.0	49	19.3	L1	FLO
0.434000	30.40	10.1	47	16.6	L1	FLO
0.870000	27.20	10.1	46	18.8	L1	FLO
2.100000	25.80	10.1	46	20.2	L1	FLO
4.380000	22.50	10.2	46	23.5	N	FLO

-----END-----