



EMC Test Report

Product Name: cdma2000 Digital Mobile Phone

Model Number: HUAWEI M866, M866

Report No: SYBH(Z-EMC)092052012-2
FCC ID: QISM866

Reliability Laboratory of Huawei Technologies Co., Ltd.

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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: Apr.26, 2012
Start Date of Test: Apr.26, 2012
End Date of Test: May.03, 2012

Test Result: Pass

**Approved By
(Lab Manager)**

2012-05-28
Date

Liuchunlin
Name

Signature

Operator

2012-05-28
Date

Daniel
Name

Signature



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1 General Information

1.1 EUT Description

EUT Description	
Product Name	cdma2000 Digital Mobile Phone;
Model Number	HUAWEI M866, M866
IMEI Number	N3L01A9232100354
TX Frequency	CDMA/EVDO 800: 824 MHz To 849MHz CDMA/EVDO 1900: 1850 MHz To 1910MHz CDMA/EVDO 1700: 1710 MHz To 1755MHz Bluetooth: 2400MHz To 2483.5MHz WIFI: 2400MHz To 2483.5MHz
RX Frequency	CDMA/EVDO 800: 869 MHz To 894MHz CDMA/EVDO 1900: 1930 MHz To 1990MHz CDMA/EVDO 1700: 2110 MHz To 2155MHz Bluetooth: 2400MHz To 2483.5MHz WIFI: 2400MHz To 2483.5MHz GPS: 1575.42MHz
HW Version	HC1C8655M
SW Version	M866V100R001C289B815
EUT Accessory	
Data cable	Data Cable USB A Male to Micro USB, Black
Adapter	Manufacturer: Huawei Technologies Co., Ltd. HW-050100U1W Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rated Power: 5W S/N:HKAB51963998 S/N:TPAB82321495
Rechargeable Li-ion	Manufacturer: Huawei Technologies Co., Ltd. Battery Model: HB5K1H Rated capacity: 1400mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V S/N: UAIC425X15300080 S/N: WHCBA10HI40E6250 S/N: UNDC418X03000873

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 Differences Description

The mobile phone HUAWEI M866, M866, is a cdma2000 Digital Mobile Phone, which supports BC0, BC1 and BC15.

The mobile phone HUAWEI H866C, H866C is a cdma2000 Digital Mobile Phone, which supports BC0 and BC1.

M866 and H866C is consistent with the hardware, H866C less than the M866 BC15 this band, by the way of software, the two differ only in the software; The PCB of them is the same.

The difference between M866 and H866C is showed in the following table.

	HUAWEI M866, M866	HUAWEI H866C, H866C
supports bands	BC0, BC1 and BC15.	BC0, BC1
FLASH	the same	the same
PCB	the same	the same
Appearance	the same	the same
Bluetooth mode	the same	the same
WLAN mode	the same	the same
BT/ WLAN antenna	the same	the same
GSM/ WCDMA antenna	the same	the same
External camera	the same	the same
internal camera	the same	the same
Adapter	the same	the same
Battery	the same	the same
Chipset	the same	the same
Memory	the same	the same
Form factor	Bar type, Internal antenna	Bar type, Internal antenna
RF Parameter	the same	the same
BT RF Parameter	the same	the same
Dimension	the same	the same
Weight	the same	the same
Bluetooth	the same	the same
External camera	the same	the same
Main Frequency NV	The same NV in the same band	The same NV in the same band
BT conducted power	the same	the same
WIFI conducted power	the same	the same



1.3 Test Site Information

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

1.4 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15:2011, Subpart B



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 Mode4 Mode6 Mode8~ Mode10	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~ Mode5	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.				

Test environment condition:

Item	Required
Ambient temperature	15°C ~ 35°C
Relative humidity	25% ~ 75%
Atmospheric pressure	86kPa ~ 106kPa

3 System Configuration during EMC Test

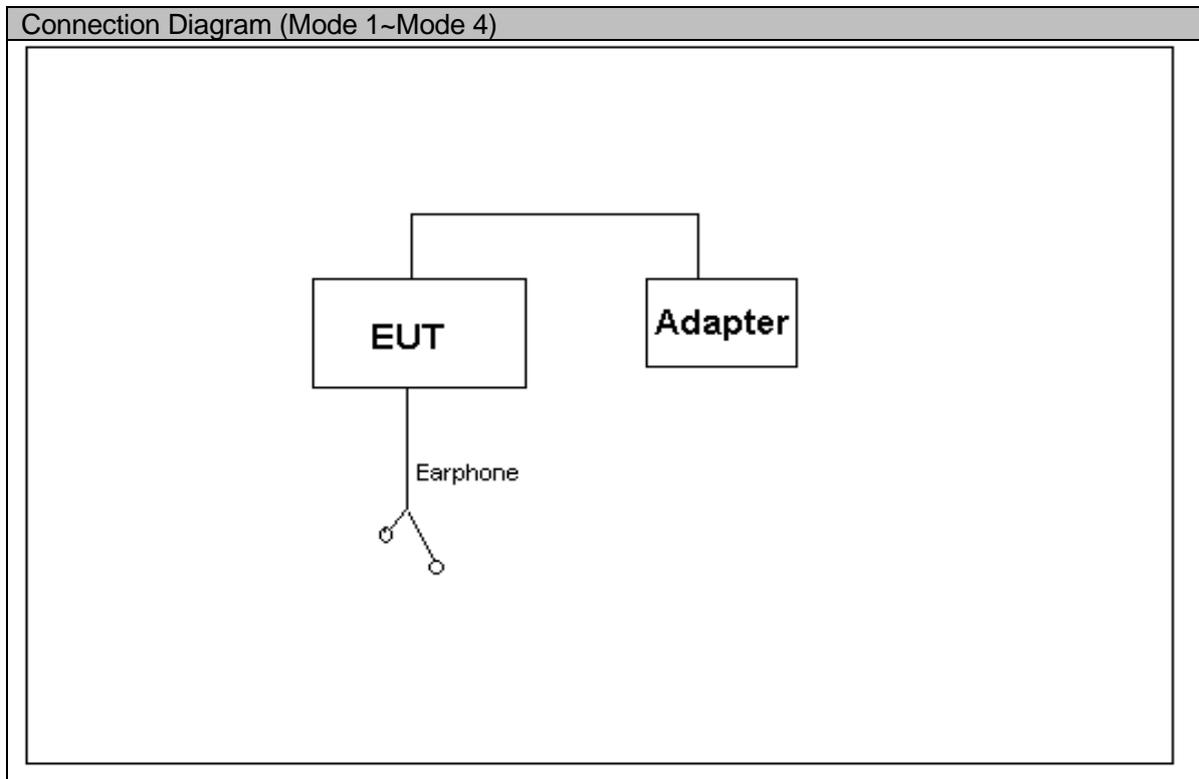
3.1 Test Mode

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:

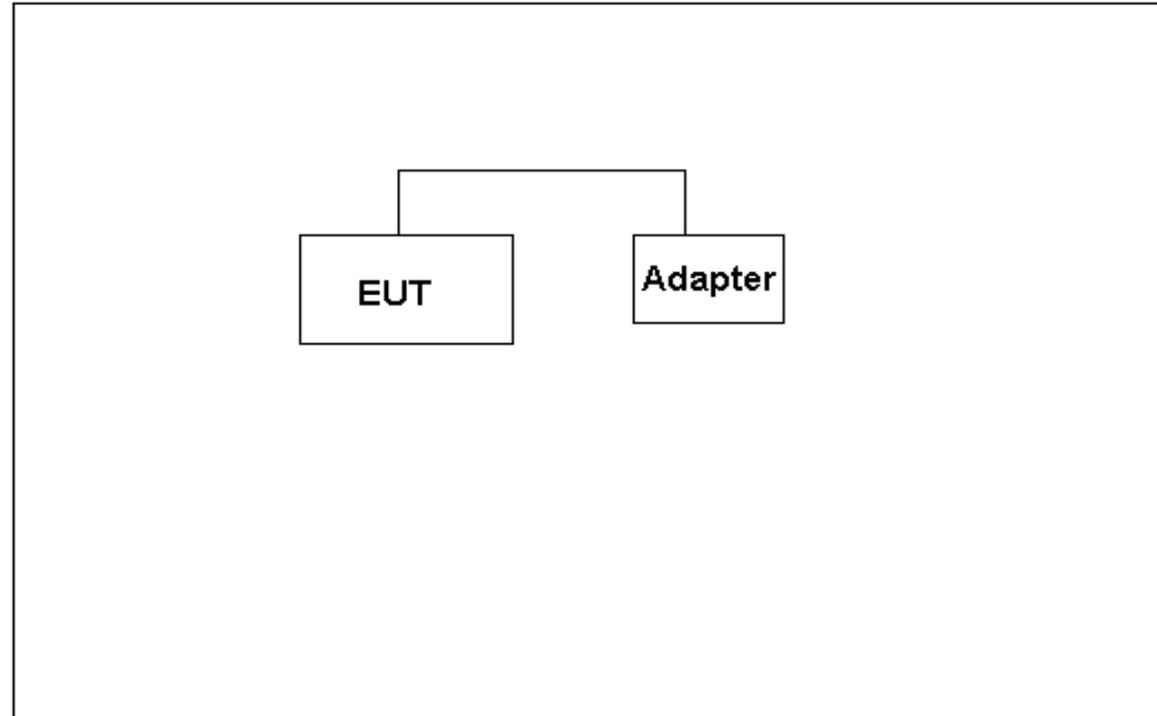
Test Mode	
Mode 1:	Adapter + earphone + Camera On + Idle
Mode 2:	Adapter + earphone + MP3 + Idle
Mode 3:	Adapter + earphone +Traffic
Mode 4:	Adapter + earphone + FM + Idle
Mode 5:	Adapter +Traffic
Mode 6:	USB Copy(EUT with PC) + earphone + Idle
Mode 7:	Traffic
Mode 8:	Camera On + earphone + Idle
Mode 9:	Earphone + MP3 + Idle
Mode 10:	Earphone + FM + 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.

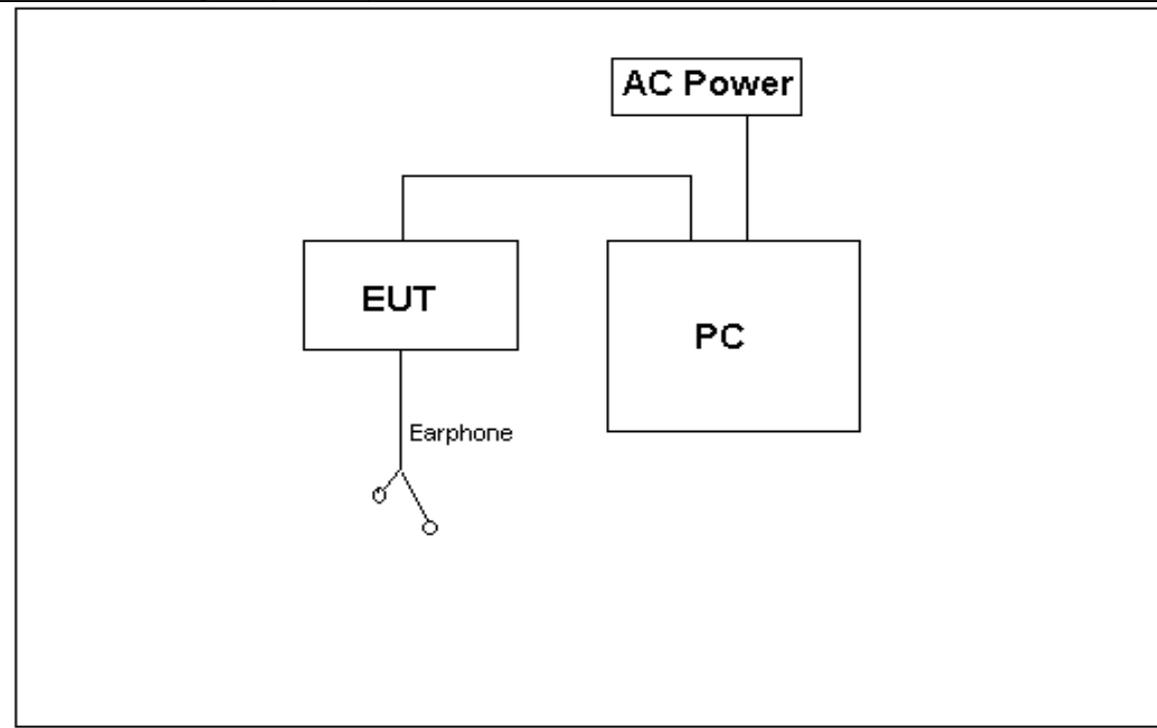
3.2 Test System Configuration



Connection Diagram (Mode 5)



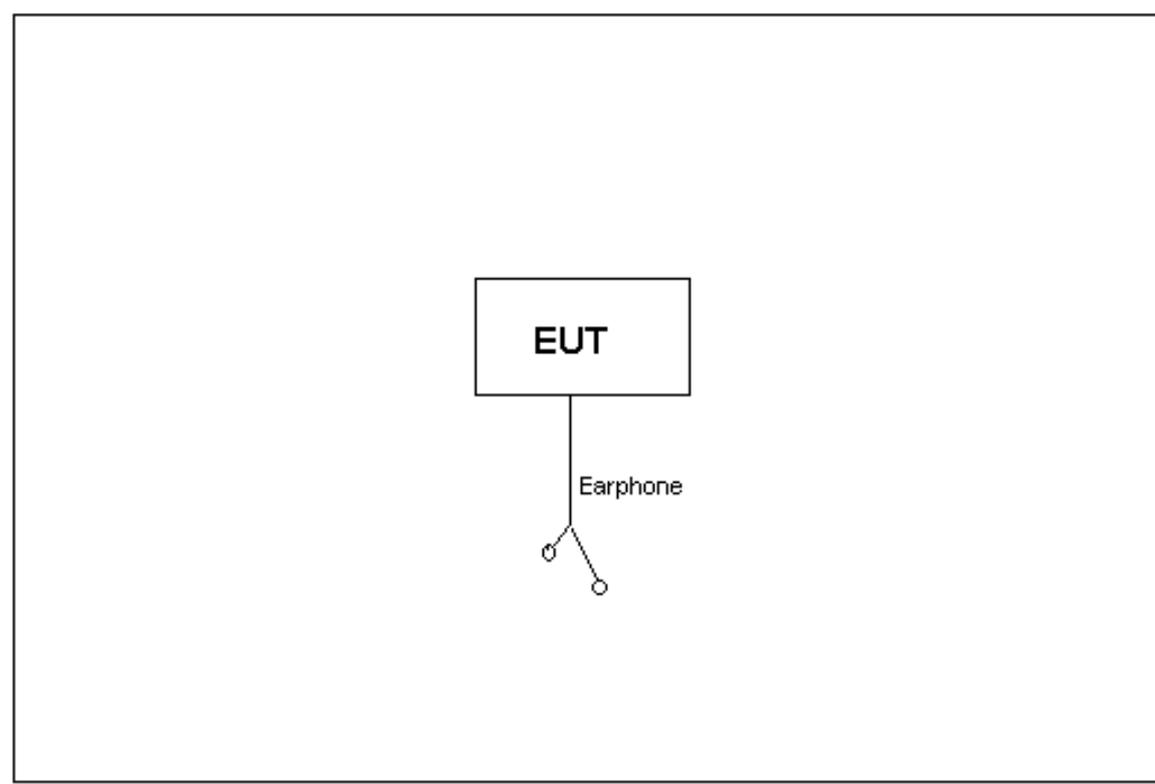
Connection Diagram (Mode 6)



Connection Diagram (Mode 7)



Connection Diagram (Mode 8~Mode 10)





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	Calibrated Deadline
Radio Communication Tester	CMU200	R&S	3608105673	2012-11-06
Notebook	T61	IBM	3108052508	N/A
Notebook	D630	DELL	3108060273	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

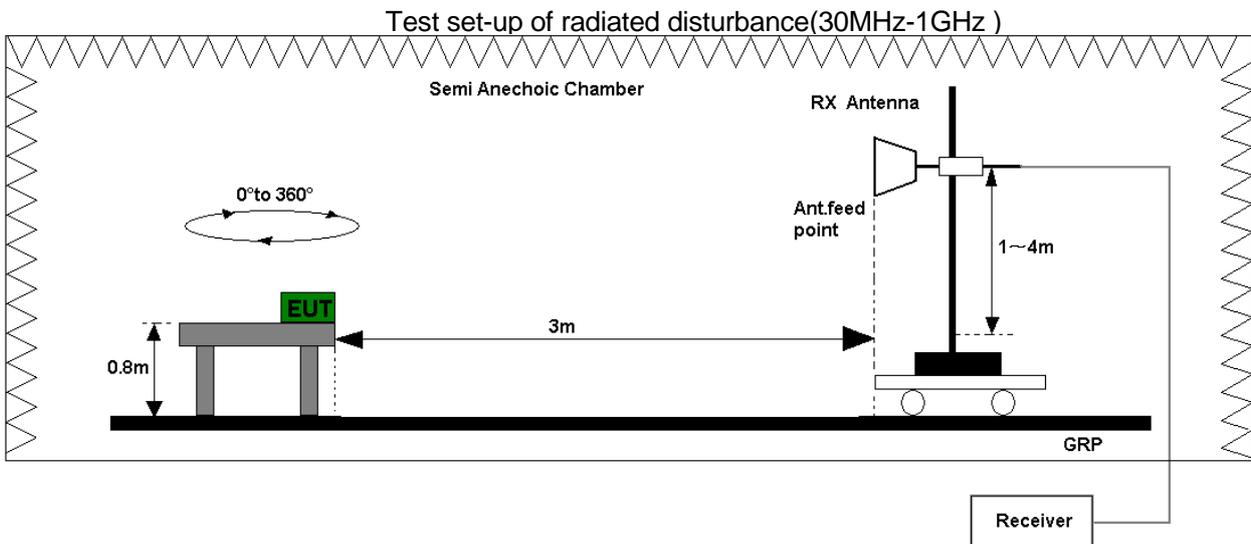
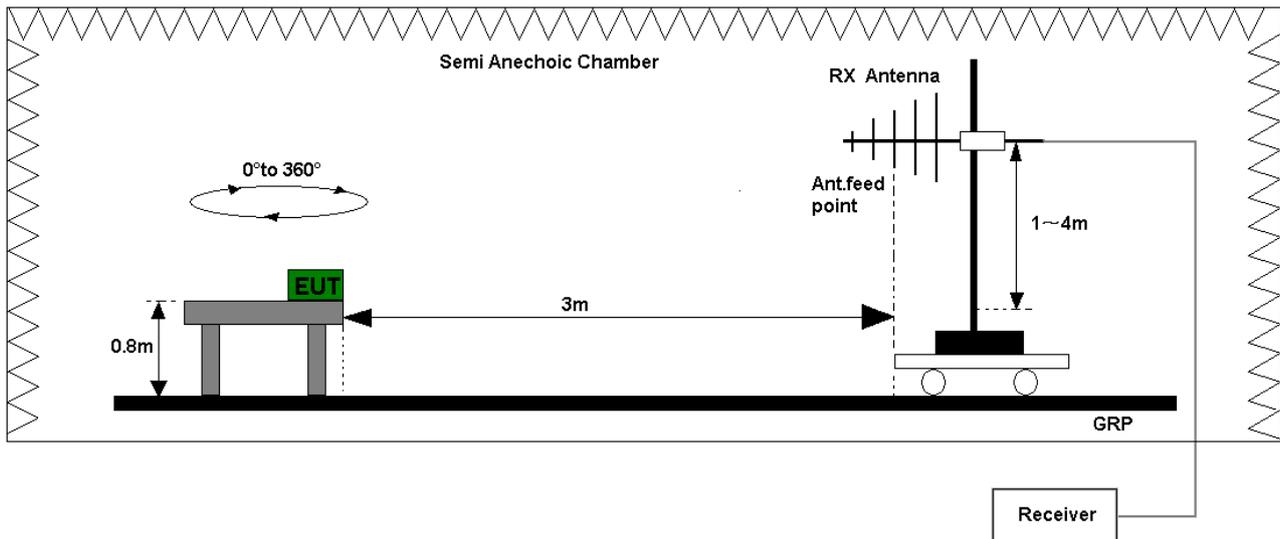
Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4-2009. The test distance was 3m. The set-up and test methods were according to ANSI C63.4-2009.

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 receiving antenna has two polarizations V and H.

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

Test setup



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

4.2 Conducted Disturbance 0.15 MHz to 30MHz

Test Procedure

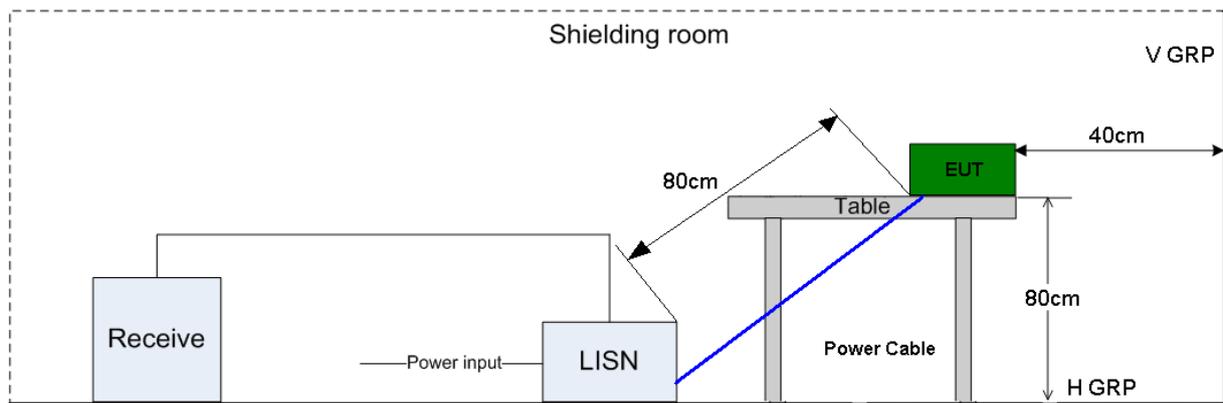
The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm away from LISN. The set-up and test methods were according to ANSI C63.4-2009. Conducted Disturbance 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 shielded chamber and operated under nominal conditions.

Test Setup



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

5 Main Test Instruments

Main Test Equipments					
Test item	Test Instrument	Model	S/N	Manufacturer	Calibrated Deadline
RE	EMI Test receiver	ESU26	100150	R&S	May.29, 2012
	Broadband Antenna	VULB 9163	9163-941	SCHWARZBEC K	Jul.07, 2013
	Horn Antenna	HF906	100683	R&S	May.15, 2013
CE	EMI Test receiver	ESCI	101163	R&S	Mar. 05, 2013
	Artificial Mains Network	ENV216	100382	R&S	May.29, 2012
Software Information					
Test Item	Software Name	Manufacturer		Version	
RE	ES-K1	R&S		1.7.1	
CE	EMC32	R&S		8.52.0	

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:

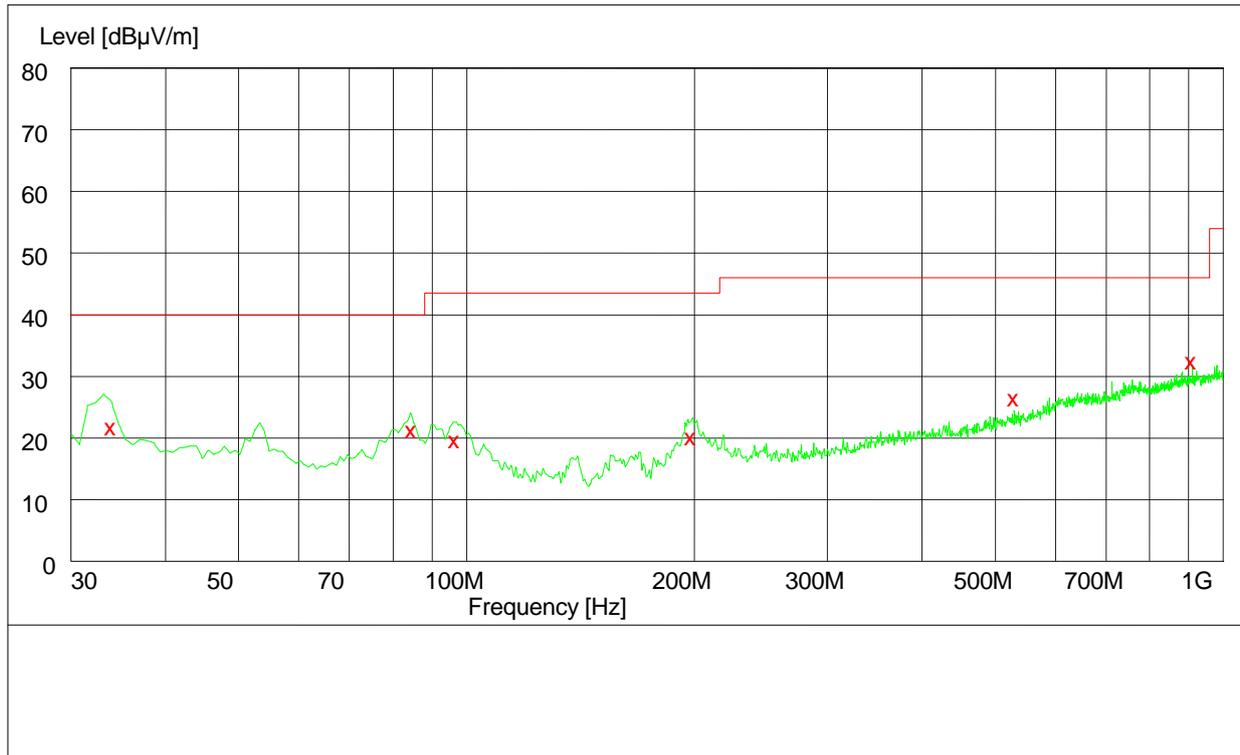
System Measurement Uncertainty		
Items	Extended Uncertainty	
RE(30MHz-1GHz)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=5.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.6dB; k=2

7 Test Graph and Data

Only the worst test result was shown in this report.

7.1 Radiated Disturbance

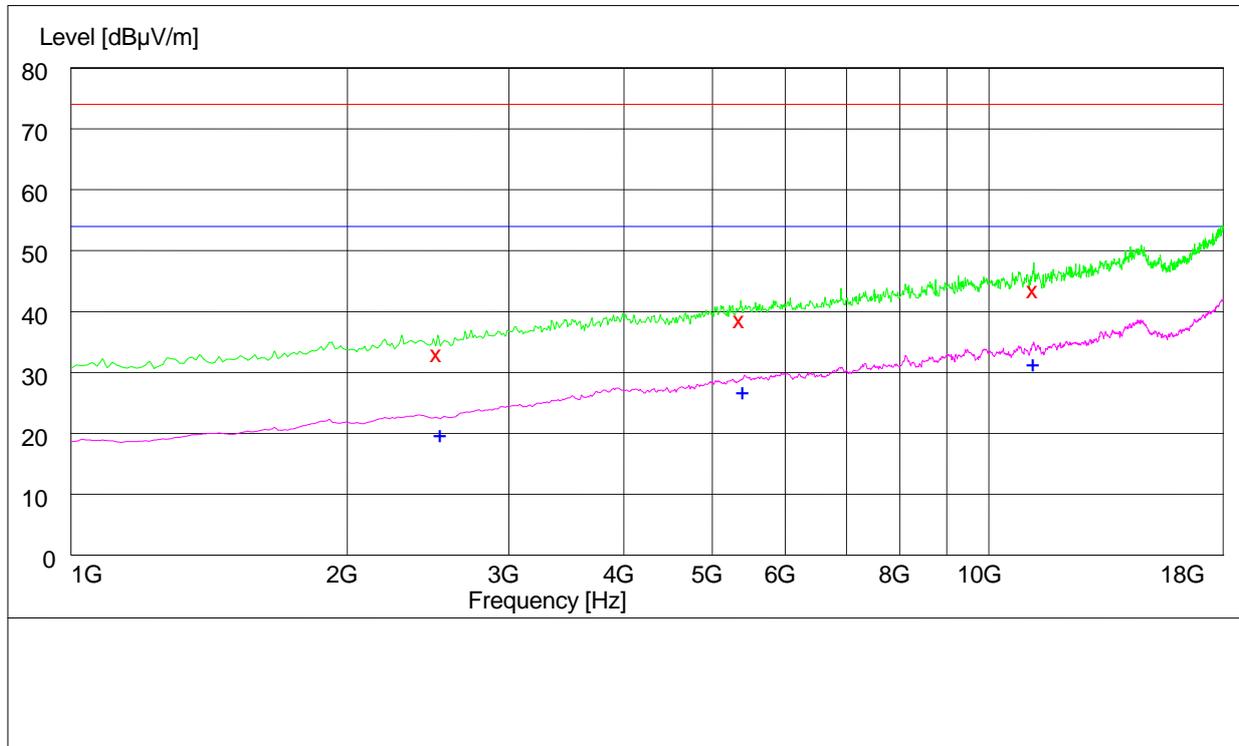
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
33.960000	22.40	14.8	40.0	17.6	100.0	48.00	VERTICAL
84.720000	21.90	11.0	40.0	18.1	128.0	86.00	VERTICAL
96.720000	20.30	13.1	43.5	23.2	107.0	100.00	VERTICAL
198.420000	20.70	12.3	43.5	22.8	170.0	320.00	HORIZONTAL
530.040000	27.10	19.7	46.0	18.9	200.0	35.00	VERTICAL
910.980000	33.00	25.0	46.0	13.0	103.0	33.00	HORIZONTAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

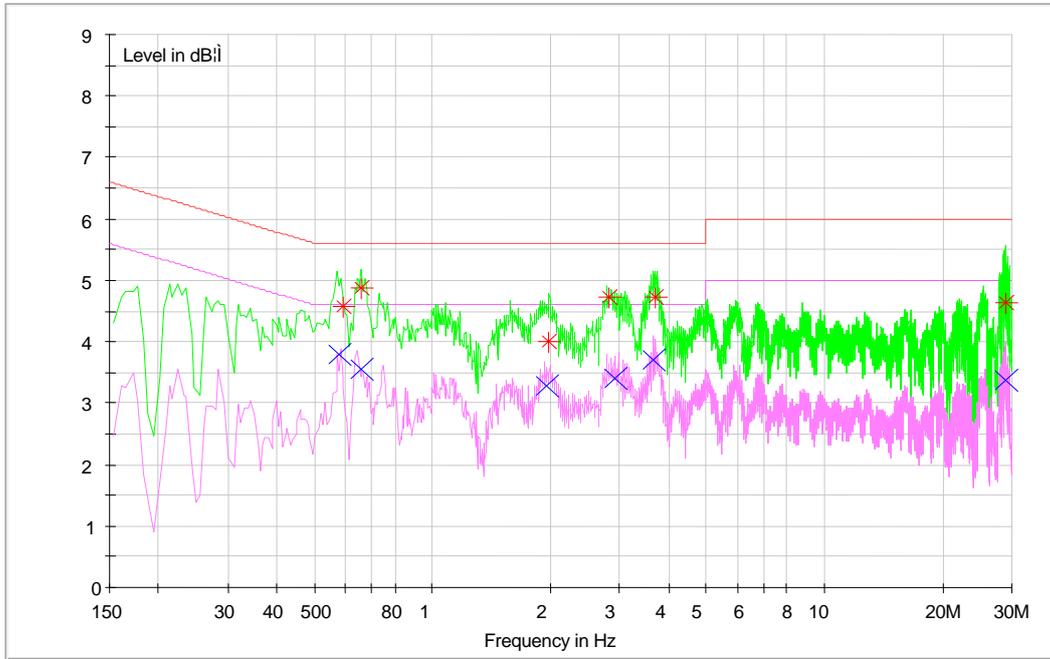
Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2511.000000	33.70	-10.2	74.0	40.3	100.0	45.00	HORIZONTAL
5362.000000	39.30	-1.0	74.0	34.7	110.0	218.00	VERTICAL
11195.500000	44.20	10.1	74.0	29.8	120.0	128.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2527.500000	20.40	-10.2	54.0	33.6	172.0	262.00	HORIZONTAL
5402.500000	27.50	-0.6	54.0	26.5	199.0	34.00	HORIZONTAL
11203.000000	32.00	10.1	54.0	22.0	200.0	49.00	HORIZONTAL

7.2 Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.588574	45.7	9.7	56.0	10.3	L1	FLO
0.659966	48.7	9.7	56.0	7.3	N	FLO
1.975290	39.9	9.7	56.0	16.1	L1	FLO
2.811638	47.1	9.7	56.0	8.9	N	FLO
3.680917	47.1	9.7	56.0	8.9	N	FLO
28.817884	46.5	10.3	60.0	13.6	L1	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.579750	37.9	9.7	46.0	8.1	N	FLO
0.658425	35.4	9.7	46.0	10.6	N	FLO
1.950300	32.7	9.7	46.0	13.3	N	FLO
2.924404	34.0	9.7	46.0	12.0	N	FLO
3.635928	37.0	9.7	46.0	9.0	N	FLO
28.933110	33.8	10.3	50.0	16.2	L1	FLO

-----**END**-----