



EMC Test Report

Product Name: UMTS/GSM/GPRS Mobile Phone

Model Number: HUAWEI U2800/U2800-5

Report No: SYBH(Z-EMC)085062011-2

FCC ID: QISU2800-5

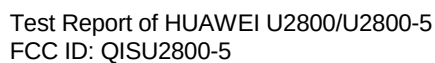
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1 General Information

1.1 EUT Description

EUT Description	
Product Name	UMTS/GSM/GPRS Mobile Phone
Model Number	HUAWEI U2800/U2800-5
Serials Number	020YQH9M0C000004
Working Voltage	120V/60Hz
TX Frequency	GSM850: 824MHz To 849MHz PCS1900: 1850MHz To 1910MHz WCDMA850: 824MHz To 849MHz WCDMA1900: 1850MHz To 1910MHz
RX Frequency	GSM850: 869MHz To 894MHz PCS1900: 1930MHz To 1990MHz WCDMA850: 869MHz To 894MHz WCDMA1900: 1930MHz To 1990MHz
HW Version	Ver.A
SW Version	U2800C27B101
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:BYAB31828616
Li-ion	Battery Model: HB5A2 Rated capacity: 1000mAh Nominal Voltage: $\overline{\text{---}}$ +3.7V Charging Voltage: $\overline{\text{---}}$ +4.2V Serials number: GAGAA11XC4008856

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> ☐ DC Power Port ☒ AC Power Port ☐ Telecommunication Ports	Mode1~ Mode4	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, ☒ The item has been tested; ☐ The item has not been tested.				

3 System Configuration during EMC Test

3.1 Test Mode

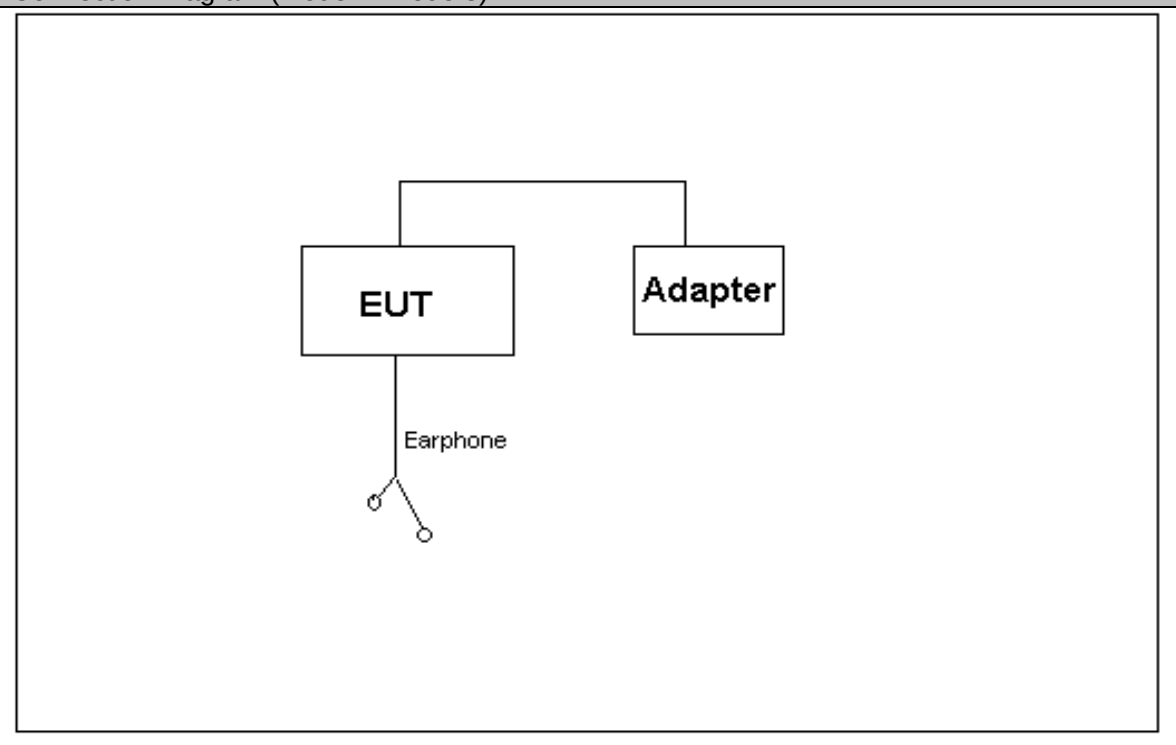
Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was in this test report and defined as:

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

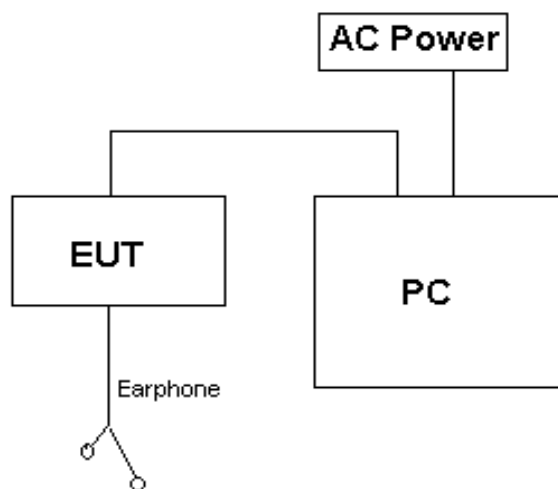
Connection Diagram (Mode 1~Mode 3)



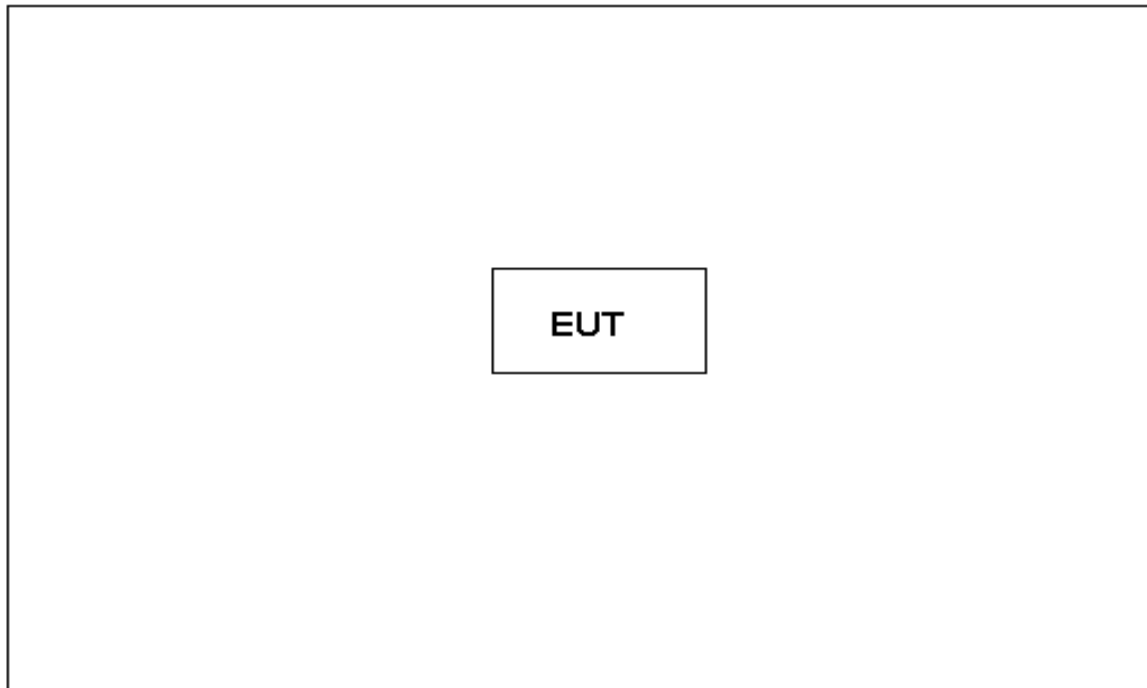
Connection Diagram (Mode 4)



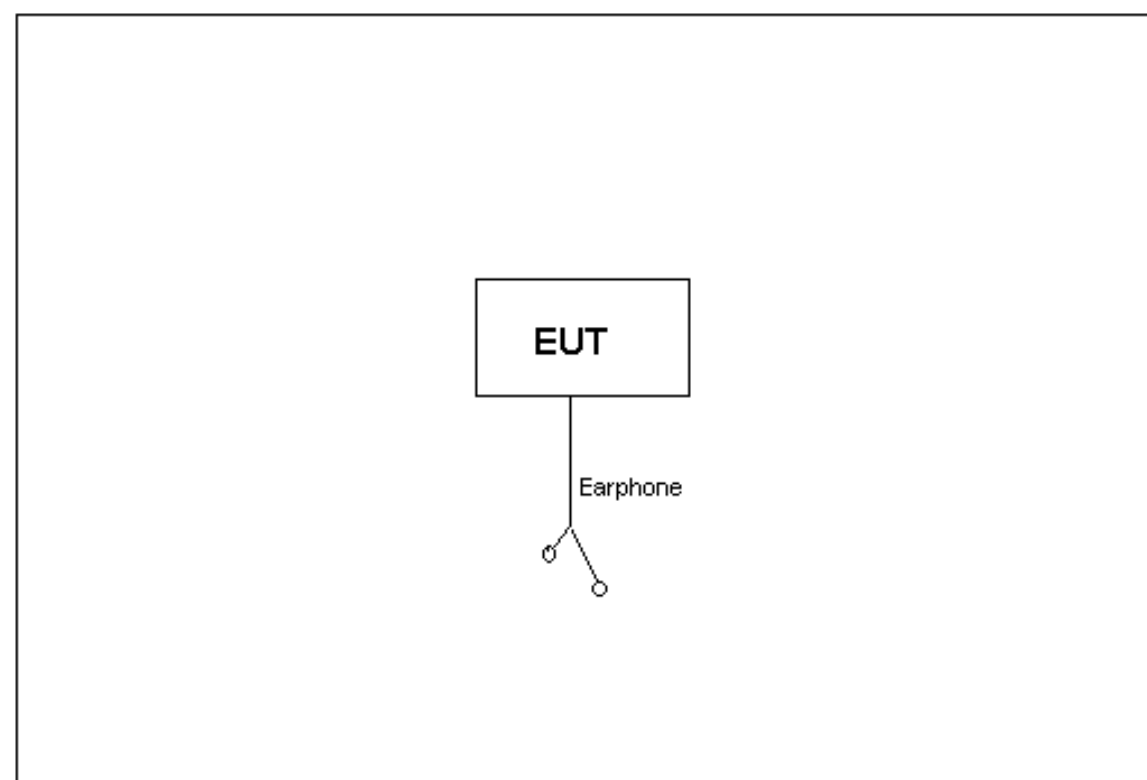
Connection Diagram (Mode 5)



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	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

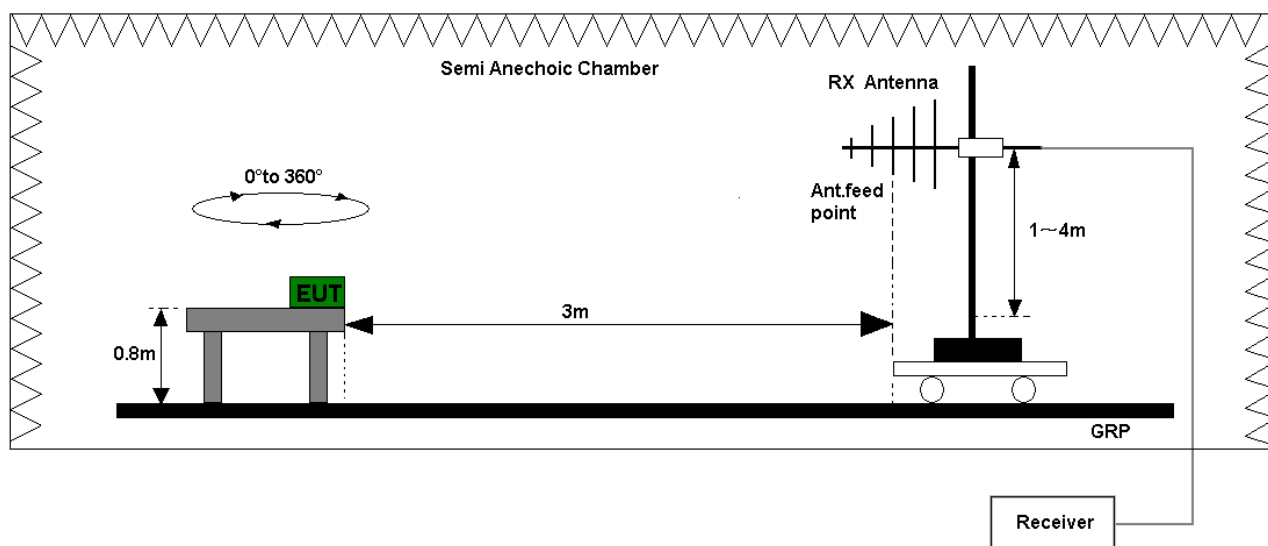


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

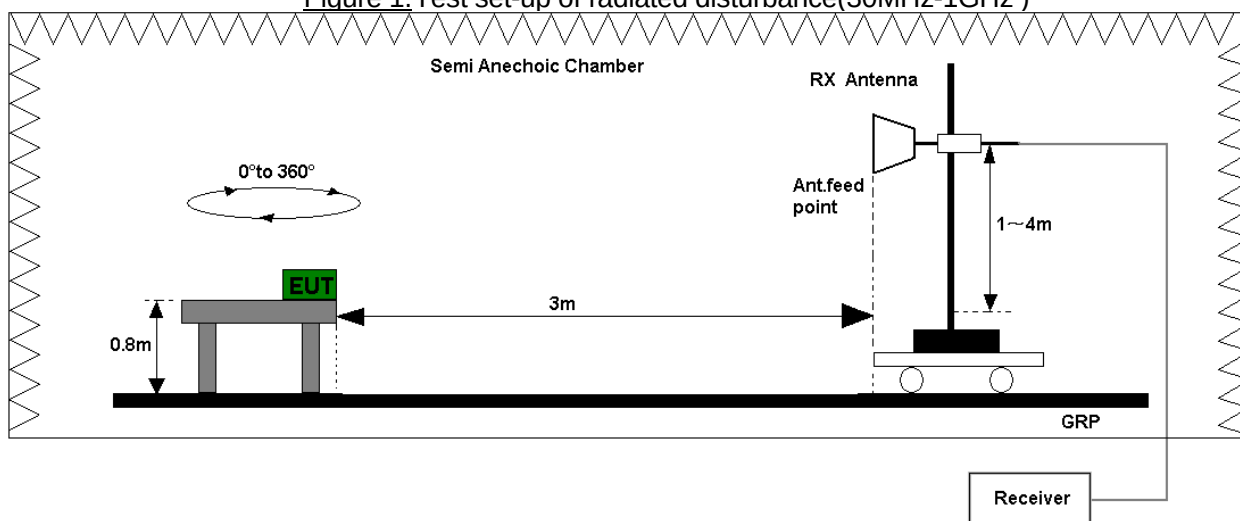


Figure 2. Test set-up of radiated disturbance(above 1GHz)

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

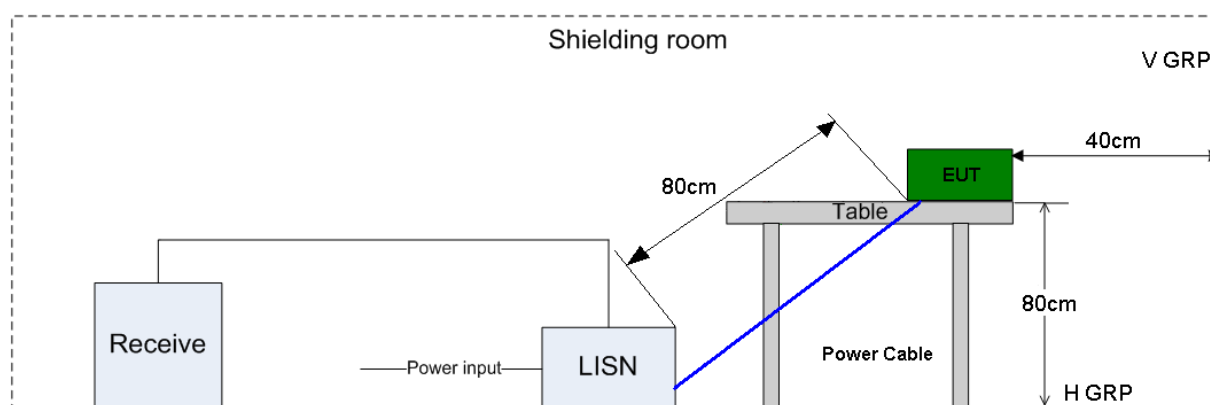


Figure 3. Test Set-up of conducted disturbance

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	66-56dBμV	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	23.4°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

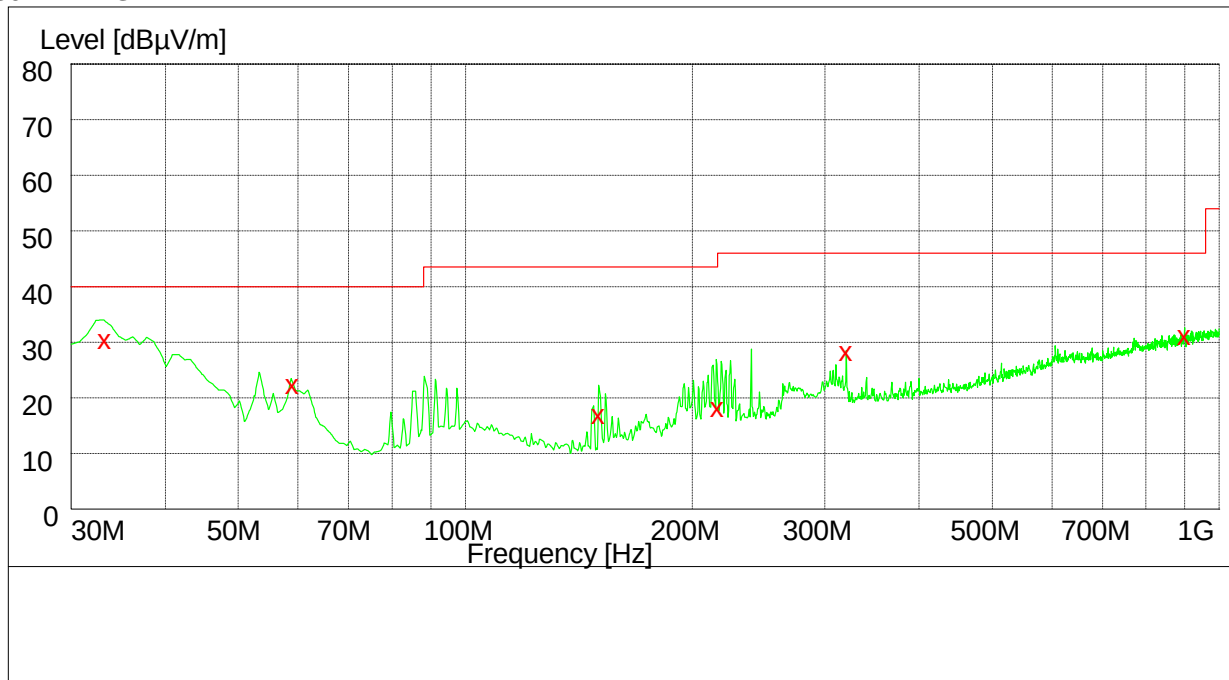
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

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

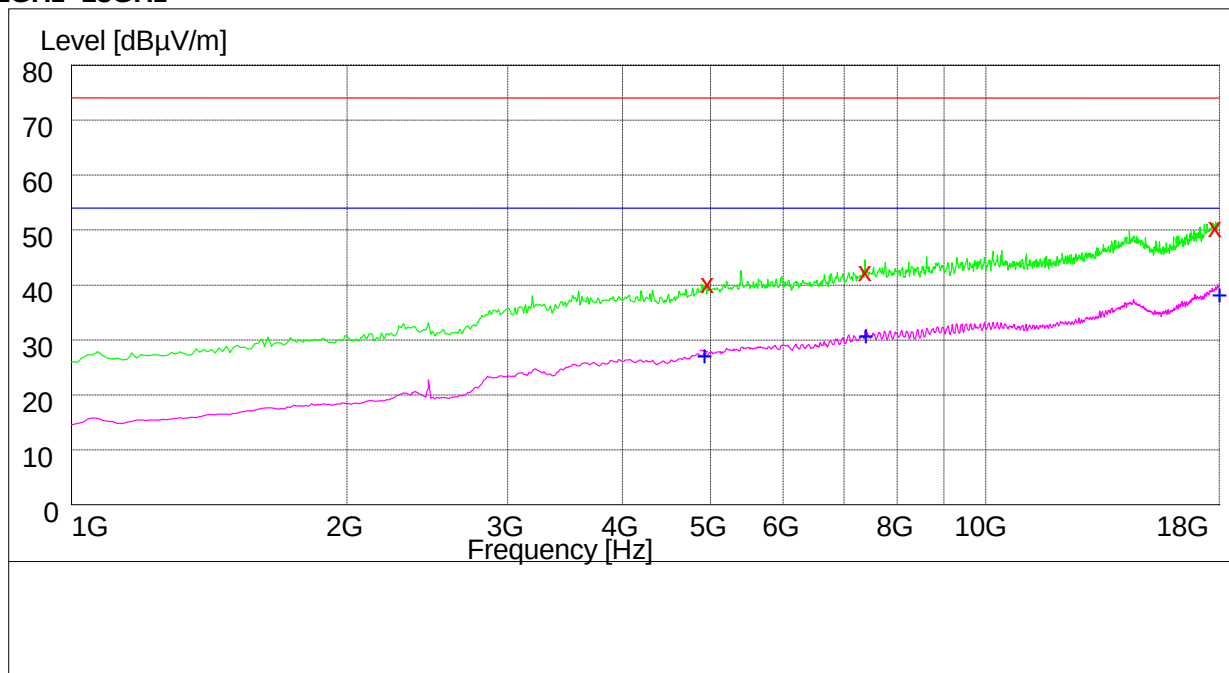
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBμV/m	dB	dBμV/m	dB	cm	deg	
33.300000	30.00	11.7	40.0	10.0	100.0	128.00	VERTICAL
59.040000	21.90	12.4	40.0	18.1	172.0	89.00	VERTICAL
150.300000	18.30	9.0	43.5	25.2	200.0	200.00	HORIZONTAL
216.000000	18.90	12.8	43.5	24.6	149.0	243.00	HORIZONTAL
319.980000	28.50	16.0	46.0	17.5	100.0	233.00	HORIZONTAL
900.000000	30.40	26.2	46.0	15.6	127.0	142.00	HORIZONTAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

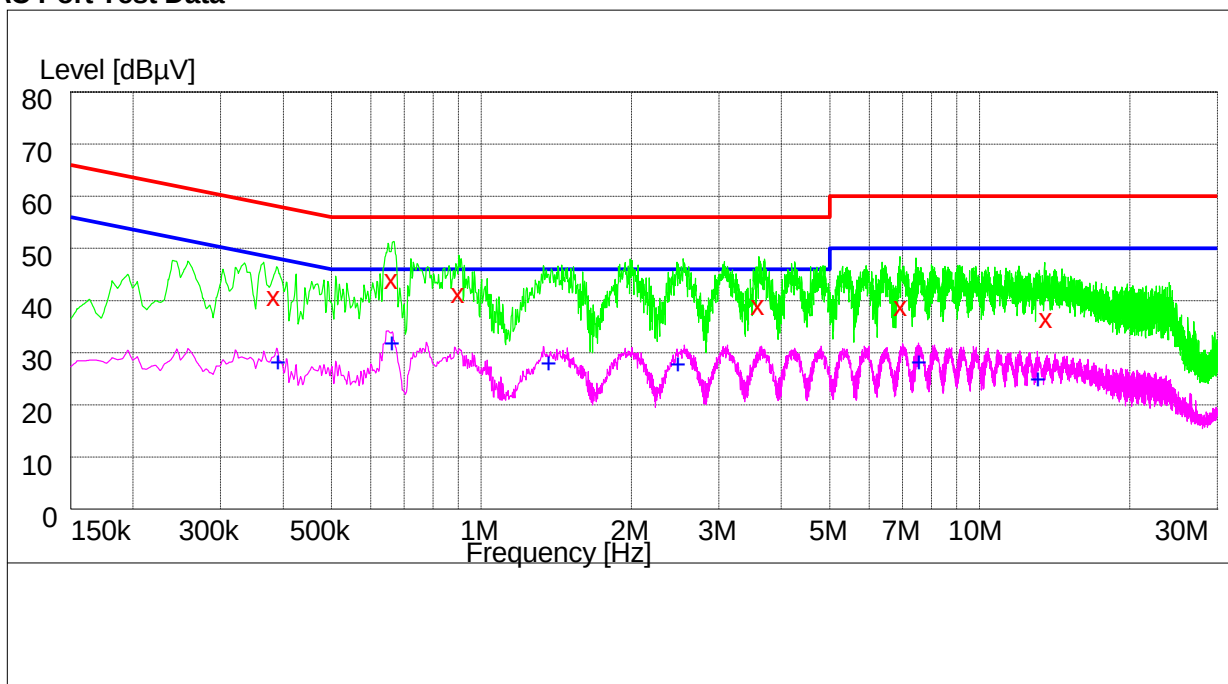
Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBμV/m	dB	dBμV/m	dB	cm	deg	
4954.000000	40.20	-3.2	74.0	33.8	141.0	251.00	HORIZONTAL
7385.000000	43.60	1.8	74.0	30.4	125.0	214.00	VERTICAL
17843.000000	51.90	18.5	74.0	22.1	102.0	309.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBμV/m	dB	dBμV/m	dB	cm	deg	
4934.000000	26.40	-3.3	54.0	27.6	101.0	298.00	HORIZONTAL
7385.000000	31.50	1.8	54.0	22.5	109.0	14.00	VERTICAL
17995.500000	39.40	19.4	54.0	14.6	141.0	65.00	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
0.384000	42.30	10.0	58	15.7	N	FLO
0.662000	45.60	10.1	56	10.4	N	FLO
0.898000	42.90	10.1	56	13.1	N	FLO
3.600000	40.60	10.2	56	15.4	N	FLO
6.968000	40.40	10.2	60	19.6	N	FLO
13.578000	38.10	10.3	60	21.9	N	FLO

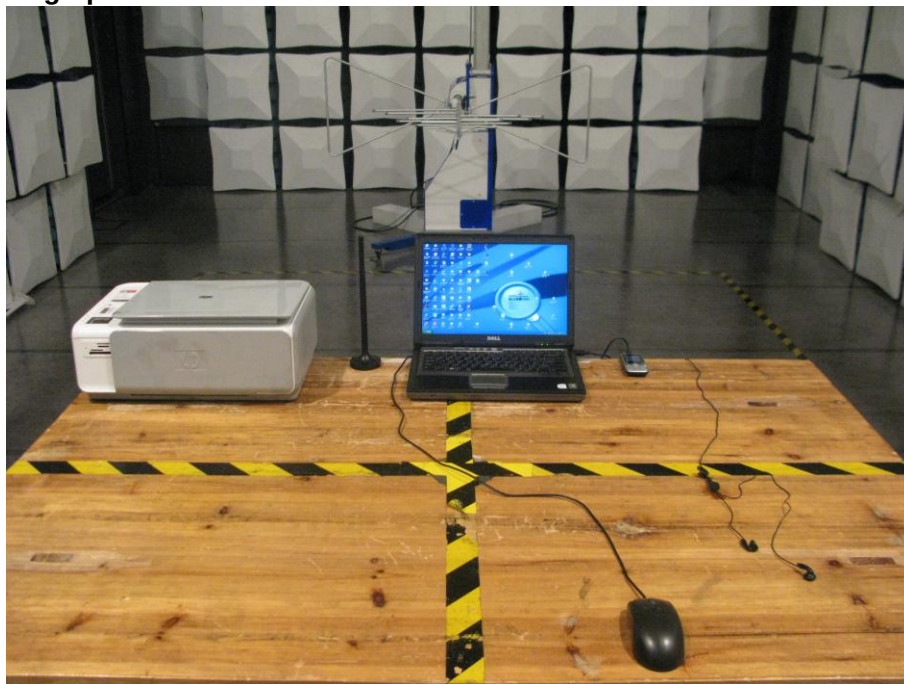
MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.390000	29.60	10.0	48	18.4	N	FLO
0.662000	33.30	10.1	46	12.7	N	FLO
1.362000	29.40	10.1	46	16.6	N	FLO
2.478000	29.30	10.1	46	16.7	N	FLO
7.544000	29.70	10.2	50	20.3	N	FLO
13.080000	26.50	10.3	50	23.5	N	FLO

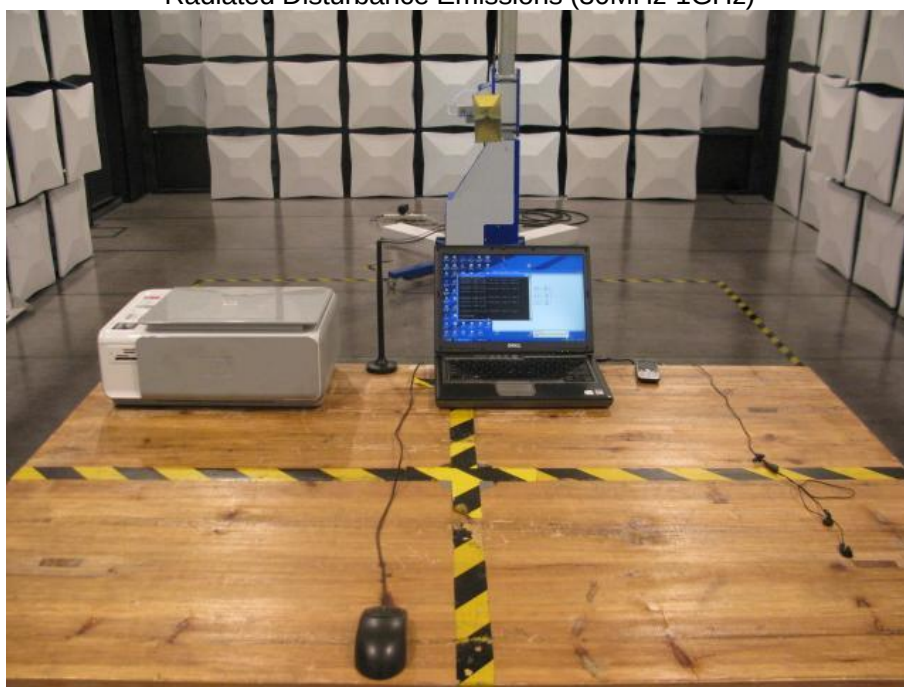
8 Attachment

8.1 Setup Photographs of EUT

RE Setup Photograph:



Radiated Disturbance Emissions (30MHz-1GHz)



Radiated Disturbance Emissions (above 1GHz)

CE Setup Photograph:



8.2 Photographs of EUT



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