



# EMC Test Report

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

**Model Number:HUAWEI U6150/U6150-5**

**Report No: SYBH(Z-EMC)078072011-2**

**FCC ID: QISU6150-5**

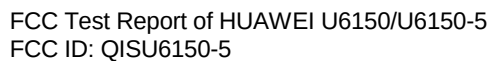
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2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
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## 1 General Information

### 1.1 EUT Description

| EUT Description |                                                                                                                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name    | UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth                                                                                                                                     |
| Model Number    | HUAWEI U6150/U6150-5                                                                                                                                                               |
| Serials Number  | H2B4CA1121704251                                                                                                                                                                   |
| Working Voltage | 120V/60Hz                                                                                                                                                                          |
| TX Frequency    | GSM850: 824MHz To 849MHz<br>PCS1900: 1850MHz To 1910MHz<br>WCDMA 850: 827MHz To 847MHz<br>WCDMA1900: 1853MHz To 1908MHz<br>Bluetooth:2400MHz To 2483.5MHz                          |
| RX Frequency    | GSM850: 869MHz To 894MHz<br>PCS1900: 1930MHz To 1990MHz<br>WCDMA 850: 872MHz To 892MHz<br>WCDMA1900: 1933MHz To 1988MHz<br>Bluetooth:2400MHz To 2483.5MHz                          |
| HW Version      | Ver.B                                                                                                                                                                              |
| SW Version      | U6150CCEB100                                                                                                                                                                       |
| EUT Accessory   |                                                                                                                                                                                    |
| Data cable      | Data Cable USB A Male to Micro Usb ,Black,                                                                                                                                         |
| Adapter         | Manufacture: Huawei Technologies Co., Ltd.<br>Model: HW-050040U6<br>Input voltage: ~100-240V 50/60Hz 0.2A<br>Output voltage: +5V $\overline{\text{---}}$ 400mA<br>S/N:BYAB31828630 |
| Adapter         | Manufacture: Huawei Technologies Co., Ltd.<br>Model: HW-050040U6<br>Input voltage: ~100-240V 50/60Hz 0.2A<br>Output voltage: +5V $\overline{\text{---}}$ 400mA<br>S/N:HKAB31895000 |
| Li-ion          | Battery Model: HB5I1<br>Rated capacity: 1100mAh<br>Nominal Voltage: $\overline{\text{---}}$ +3.7V<br>Charging Voltage: $\overline{\text{---}}$ +4.2V<br>S/N: GAGA610XC2415525      |

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 1:        | 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><br>Enclosure Port                                                                                                                                                                           | Mode1~ Mode2<br>Mode5~Mode7 | CLASS B                                           | Pass   | Site1 |
| <u>Conducted Emissions</u><br><input type="checkbox"/> DC Power Port<br><input checked="" type="checkbox"/> AC Power Port<br><input type="checkbox"/> Telecommunication Ports                                         | Mode1~ Mode4                | CLASS B                                           | Pass   | Site1 |
| Note:<br>1, Measurement taken is within the measurement uncertainty of measurement system.<br>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

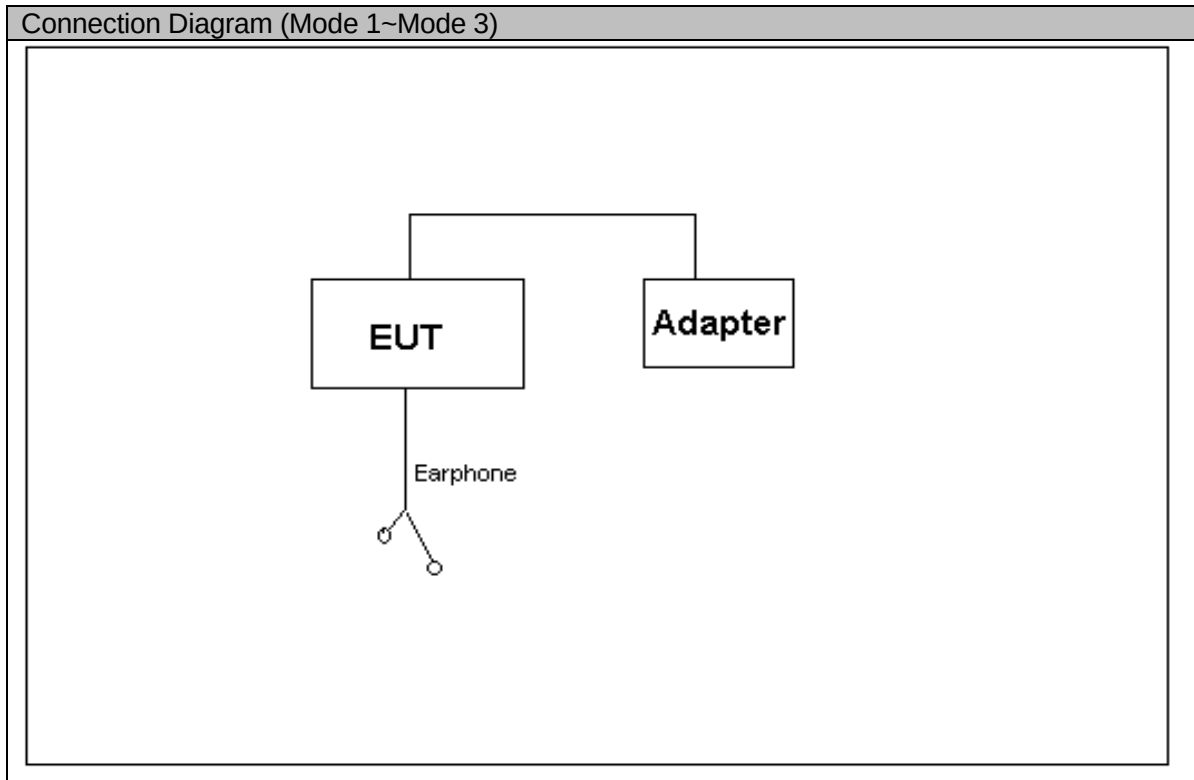
#### 3.1 Test Mode

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                              |

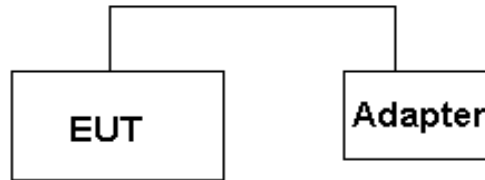
Remark: When the EUT have multiple adapters, need separate test with multiple adapters . All test modes are performed, only the worst cases are recorded in this report.

#### 3.2 Configurations of Test System

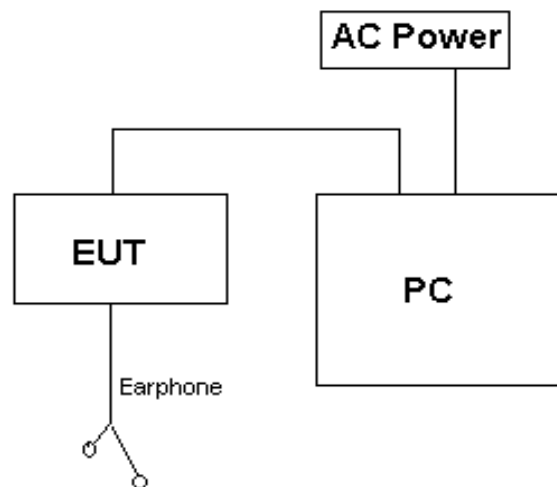




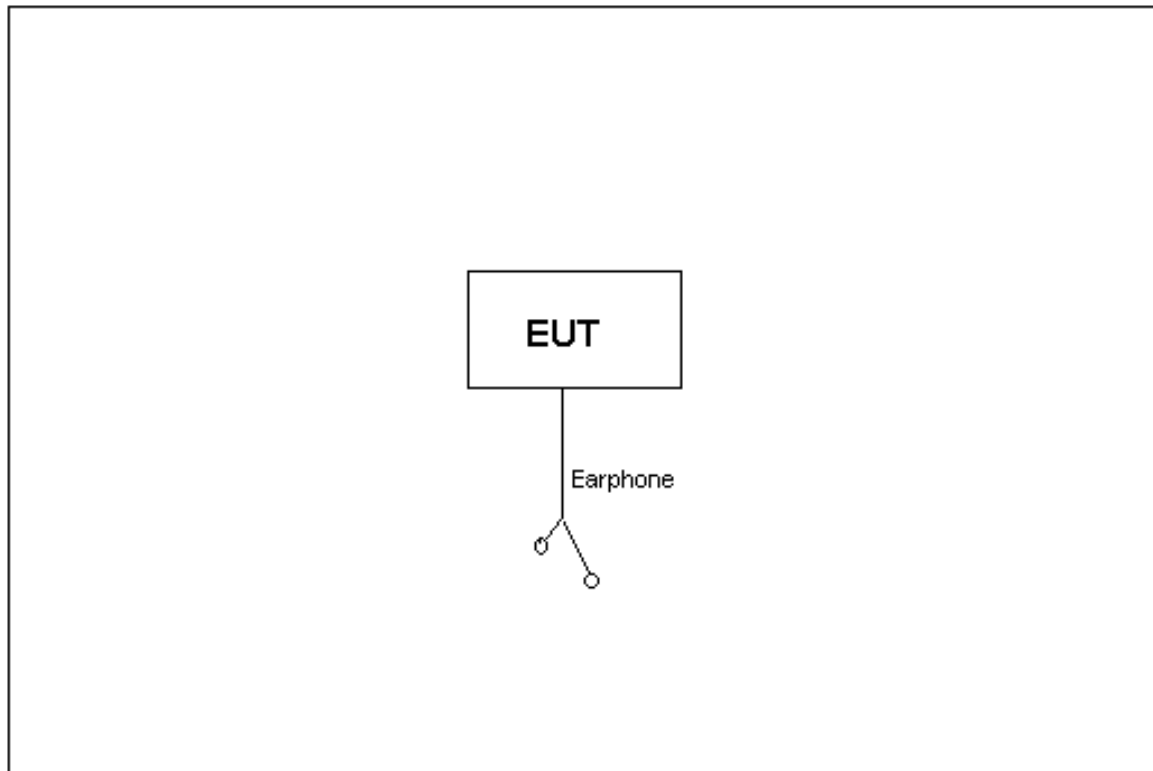
Connection Diagram (Mode 4)



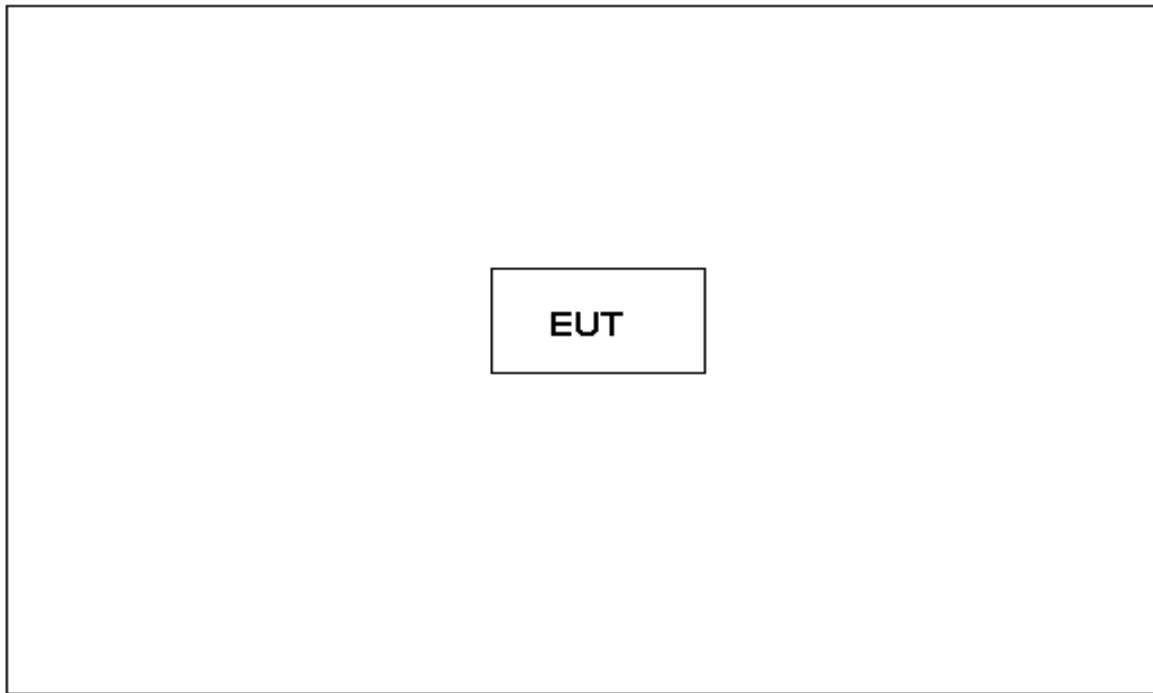
Connection Diagram (Mode 5)



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

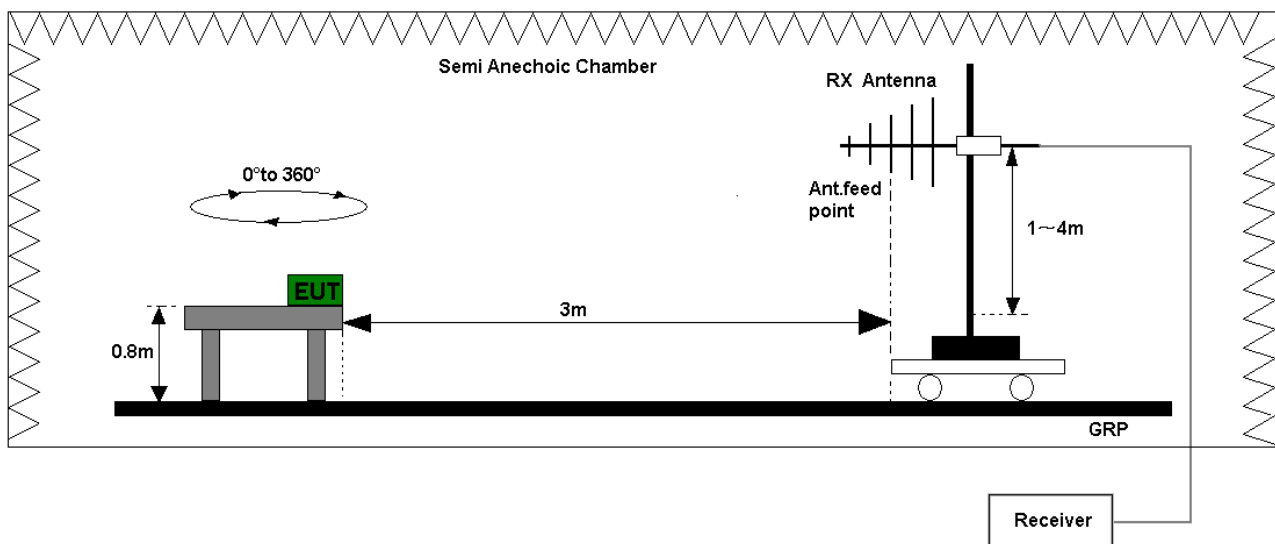


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz )

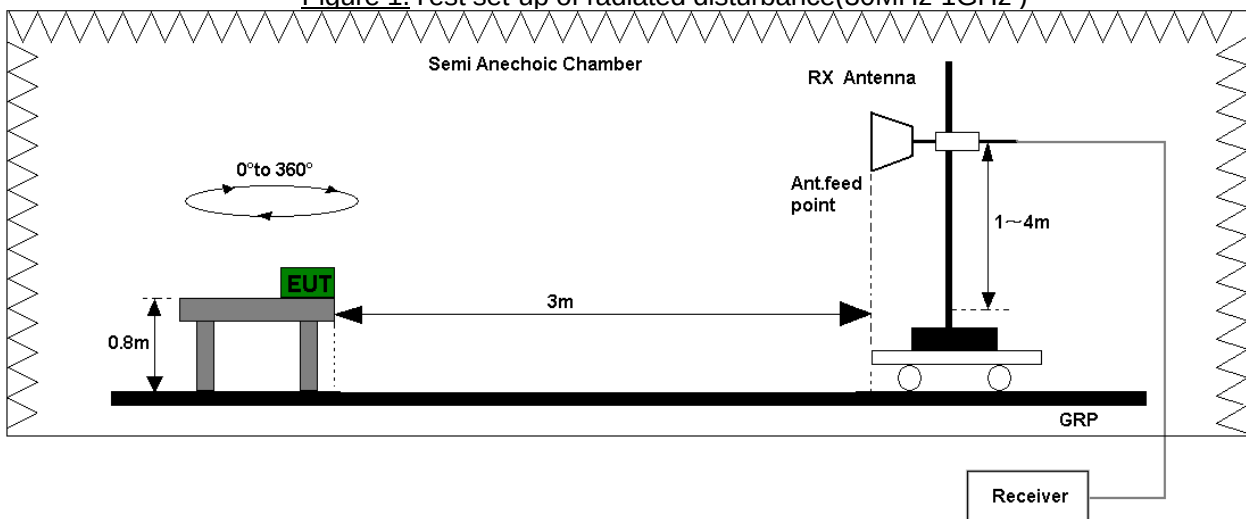


Figure 2. Test set-up of radiated disturbance(above 1GHz)

## 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<br>(MHz) | Radiated Limit   |      |                    |    |
|                                | Unit( $\mu$ V/m) |      | Unit(dB $\mu$ 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

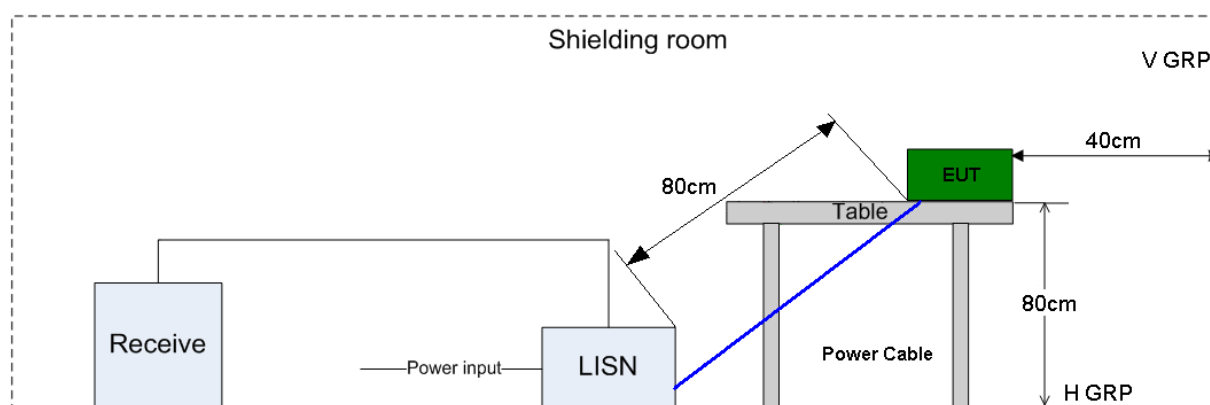


Figure 3. Test Set-up of conducted disturbance

### 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

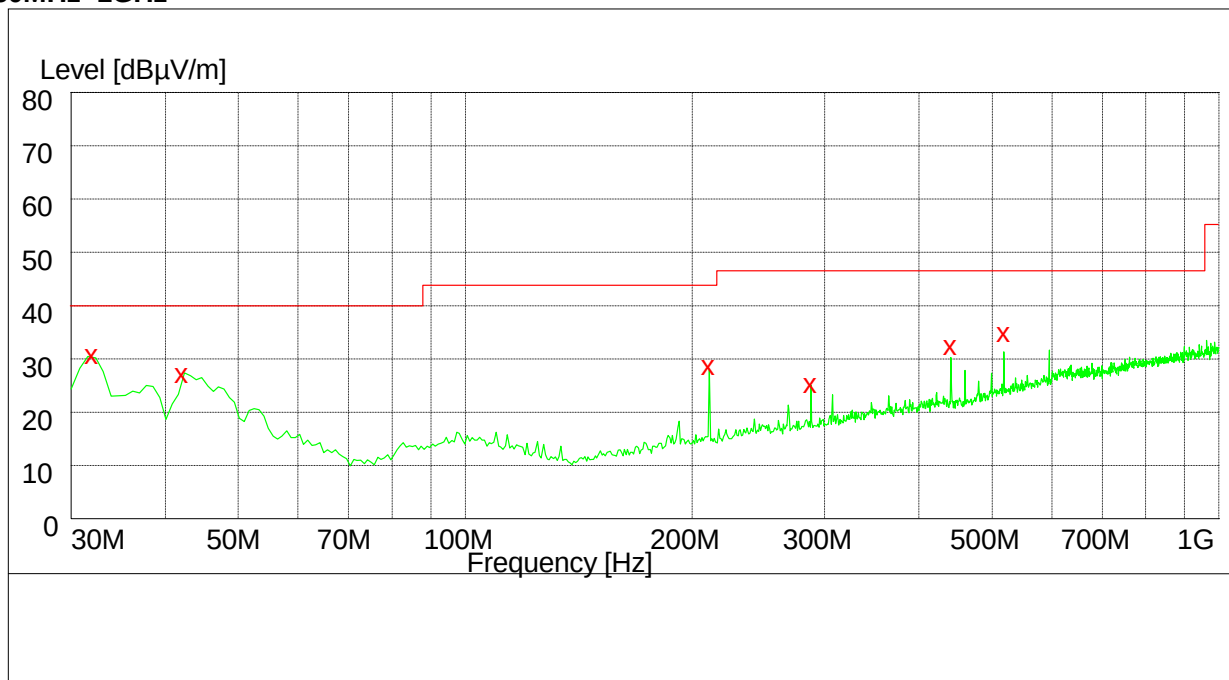
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

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

## 7 Graph and Data of Emission Test

### 7.1 Radiated Disturbance

#### 30MHz~1GHz

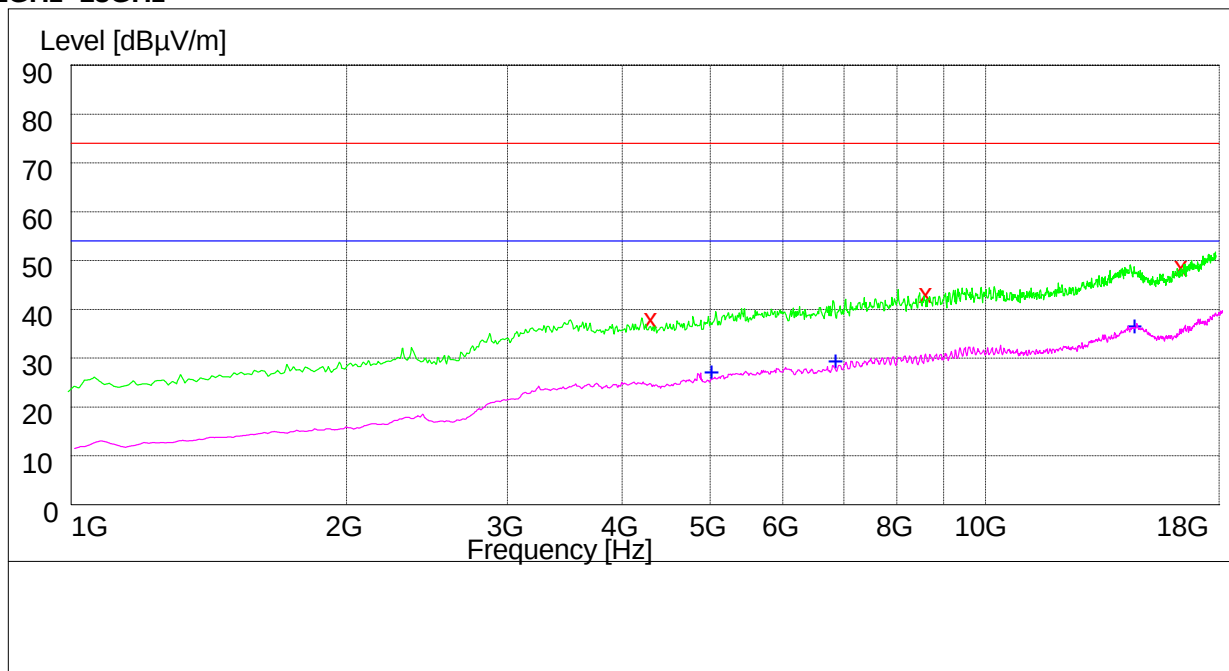


#### MEASUREMENT RESULT: QP Detector

| Frequency  | Level  | Transd | Limit  | Margin | Height | Azimuth | Polarisation |
|------------|--------|--------|--------|--------|--------|---------|--------------|
| MHz        | dBμV/m | dB     | dBμV/m | dB     | cm     | deg     |              |
| 31.980000  | 30.80  | 11.8   | 40.0   | 9.2    | 102.0  | 233.00  | HORIZONTAL   |
| 42.060000  | 28.80  | 13.1   | 40.0   | 11.2   | 132.0  | 186.00  | HORIZONTAL   |
| 210.300000 | 29.60  | 12.5   | 43.5   | 13.9   | 142.0  | 253.00  | VERTICAL     |
| 287.300000 | 26.90  | 15.1   | 46.0   | 19.1   | 149.0  | 304.00  | VERTICAL     |
| 441.180000 | 32.20  | 18.9   | 46.0   | 13.8   | 117.0  | 310.00  | VERTICAL     |
| 518.780000 | 34.60  | 20.7   | 46.0   | 11.4   | 154.0  | 250.00  | HORIZONTAL   |



## 1GHz~18GHz



### MEASUREMENT RESULT: PK Detector

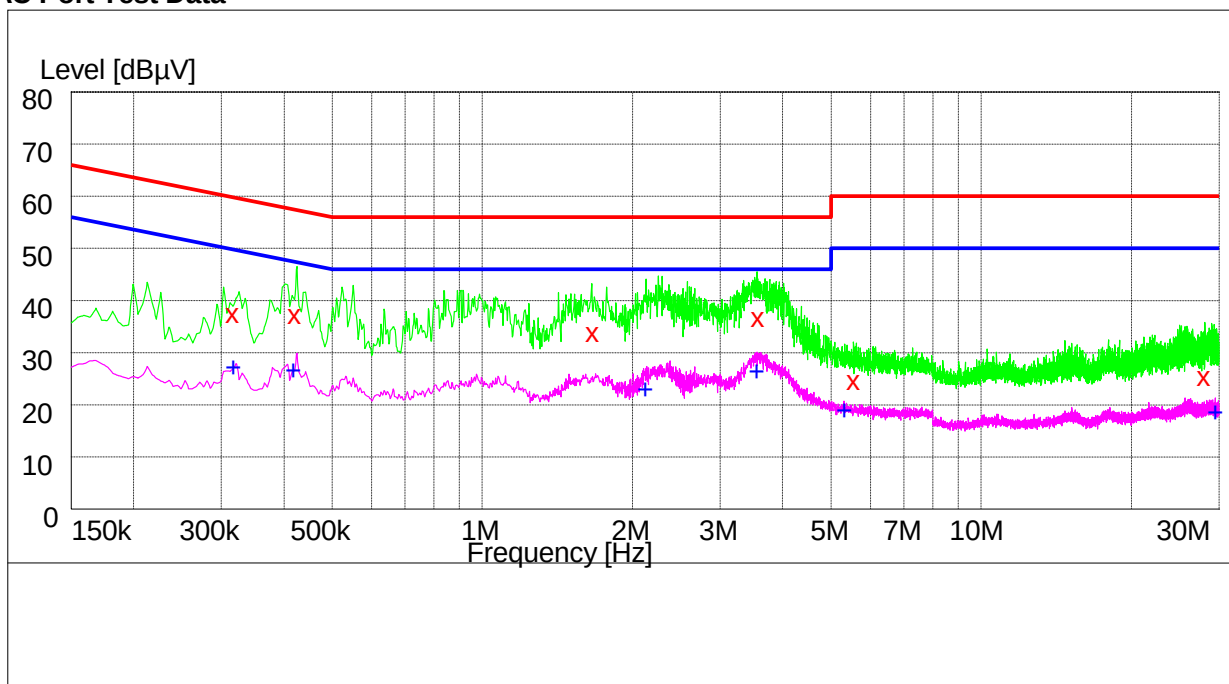
| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | Height<br>cm | Azimuth<br>deg | Polarisation |
|------------------|-----------------|--------------|-----------------|--------------|--------------|----------------|--------------|
| 4310.500000      | 38.50           | -4.6         | 74.0            | 35.5         | 141.0        | 220.00         | HORIZONTAL   |
| 8620.000000      | 44.50           | 4.5          | 74.0            | 29.5         | 145.0        | 313.00         | VERTICAL     |
| 16375.500000     | 49.60           | 15.7         | 74.0            | 24.4         | 120.0        | 216.00         | VERTICAL     |

### MEASUREMENT RESULT: AV Detector

| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | Height<br>cm | Azimuth<br>deg | Polarisation |
|------------------|-----------------|--------------|-----------------|--------------|--------------|----------------|--------------|
| 5015.000000      | 27.70           | -2.5         | 54.0            | 26.3         | 124.0        | 304.00         | VERTICAL     |
| 6851.000000      | 29.60           | 1.0          | 54.0            | 24.4         | 110.0        | 141.00         | VERTICAL     |
| 14521.000000     | 36.90           | 14.9         | 54.0            | 17.1         | 158.0        | 266.00         | VERTICAL     |

## 7.2 Conducted Disturbance

### AC Port Test Data



#### MEASUREMENT RESULT: QP Detector

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|------|-----|
|                  |               |              |               |              |      |     |
| 0.316000         | 39.10         | 10.0         | 60            | 20.9         | N    | FLO |
| 0.422000         | 38.80         | 10.0         | 57            | 18.2         | N    | FLO |
| 1.670000         | 35.50         | 10.1         | 56            | 20.5         | N    | FLO |
| 3.578000         | 38.20         | 10.2         | 56            | 17.8         | N    | FLO |
| 5.558000         | 26.20         | 10.2         | 60            | 33.8         | N    | FLO |
| 28.058000        | 27.00         | 10.4         | 60            | 33.0         | N    | FLO |

#### MEASUREMENT RESULT: AV Detector

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|------|-----|
|                  |               |              |               |              |      |     |
| 0.316000         | 28.80         | 10.0         | 50            | 21.2         | N    | FLO |
| 0.418000         | 28.10         | 10.0         | 48            | 19.9         | N    | FLO |
| 2.116000         | 24.50         | 10.1         | 46            | 21.5         | N    | FLO |
| 3.544000         | 28.00         | 10.2         | 46            | 18.0         | N    | FLO |
| 5.316000         | 20.40         | 10.2         | 50            | 29.6         | N    | FLO |
| 29.446000        | 20.10         | 10.4         | 50            | 29.9         | N    | FLO |

-----END-----