



# FCC Test Report

**Product Name: WCDMA/GPRS/GSM Mobile Phone with  
Bluetooth**

**Model Number: HUAWEI U1270/U1270**

**Report No: SYBHZ(R)E006092009EB-4  
FCC ID: QISU1250**

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**REPORT ON**                      **FCC Test of WCDMA/GPRS/GSM Mobile Phone with Bluetooth**

**M/N: HUAWEI U1270/U1270**

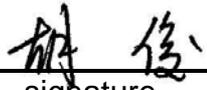
**Report No: SYBHZ(R)E006092009EB-4  
FCC ID:QISU1250**

**REGULATION**                      **FCC CFR47 Part 2: Subpart J;  
FCC CFR47 Part 24: Subpart E;**

**CONCLUSION**                      **PASS**

|                        |                   |      |   |
|------------------------|-------------------|------|---|
| <b>General Manager</b> | <b>2009.10.31</b> | 张兴海  |  |
|                        | Date              | Name | signature   |

|   |                   |      |   |
|---|-------------------|------|---|
| <b>Technical Responsibility<br/>For Area of Testing</b> | <b>2009.10.31</b> | 余 辉  |  |
|   | Date              | Name | signature   |

|                          |                   |      |  |
|--------------------------|-------------------|------|--|
| <b>Test Lab Engineer</b> | <b>2009.10.31</b> | 胡 俊  |  |
|                          | Date              | Name | signature  |



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# 1 Summary

The table below summarizes the measurements and results for the WCDMA/GPRS/GSM Mobile Phone with Bluetooth. Detailed results and descriptions are shown in the following pages.

Table 1 Summary of results

| <b>FCC Measurement Specification</b> | <b>FCC Limits Part(s)</b> | <b>Description</b>                             | <b>Result</b>     |
|--------------------------------------|---------------------------|--|-------------------|
| <b>2.1046</b>                        | <b>24.232</b>             | <b>Effective Radiated Power of Transmitter</b> | <b>PASS</b>       |
| <b>2.1046</b>                        | <b>24.232</b>             | <b>Conducted Power of Transmitter</b>          | <b>PASS</b>       |
| <b>2.1047</b>                        | <b>/</b>                  | <b>Modulation Characteristics</b>              | <b>PASS</b>       |
| <b>2.1049</b>                        | <b>/</b>                  | <b>Occupied Bandwidth</b>                      | <b>PASS</b>       |
| <b>2.1051</b>                        | <b>24.238</b>             | <b>Band Edges Compliance</b>                   | <b>PASS</b>       |
| <b>2.1051</b>                        | <b>24.238</b>             | <b>Spurious Emission at Antenna Terminal</b>   | <b>PASS</b>       |
| <b>2.1055</b>                        | <b>24.235</b>             | <b>Frequency Stability</b>                     | <b>PASS</b>       |
| <b>2.1053</b>                        | <b>24.238</b>             | <b>Radiated Spurious Emissions</b>             | <b>(See Note)</b> |

Note: The Radiated Spurious Emissions' test results are shown in the EMC report.

## 2 Product Description

### 2.1 Production Information

#### 2.1.1 General Description

WCDMA/GPRS/GSM Mobile Phone with Bluetooth - HUAWEI U1270/U1270 is subscriber equipment in the WCDMA/GSM system. The WCDMA frequency band is Band I, it can't be used in this report. The GSM/GPRS frequency band includes GSM900 and DCS1800 and PCS1900, but only PCS1900MHz band test data included in this report. The Mobile Phone implements such functions as RF signal receiving/Transmitting, WCDMA and GSM/GPRS protocol processing, voice, video and MMS service etc. Externally it provides micro SD card interface, earphone port(to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

**Note: Only tests for GSM/GPRS 1900MHz (PCS) band was included in this report for the requirement of FCC part 2 & 24.**

#### 2.1.2 Support function and Service

The WCDMA/GPRS/GSM Mobile Phone with Bluetooth support the function and service as follows:

Table 2 Service and Test mode List

| Service Name   | Characteristic   | Corresponding Test Mode | Note     |
|----------------|------------------|-------------------------|----------|
| Voice and data | Modulation: GMSK | TM1                     | GPRS/GSM |

Note: \* The specified GPRS test conditions & settings are defined in 3GPP TS51.010 V5.4.0.

### 2.2 Modification Information

For original equipment, following table is not application.

Table 3 Modification Information

| Model Number   | Board/Module | Original Version | New Version | Modify Information |
|----------------|--------------|------------------|-------------|--------------------|
| Not applicable |              |                  |             |                    |
| Not applicable |              |                  |             |                    |
| Not applicable |              |                  |             |                    |



### **3 Test Site Description**

The test site of:

***Huawei Technologies Co. Ltd.  
P.O. Box 518129  
Huawei base, Bantian,  
Longgang District, Shenzhen, China***

#### **3.1 Testing Period**

The test have been performed during the period of

**Oct. 31, 2009 –Oct. 31, 2009**

#### **3.2 General Set up Description**

**TM1:** GPRS/GSM Mode with GMSK Modulation



## 4 Product Description

### 4.1 Technical Characteristics

#### 4.1.1 Frequency Range

Table 4 Frequency Range

|                |                  |
|----------------|------------------|
| Uplink band:   | 1850 to 1910 MHz |
| Downlink band: | 1930 to 1990 MHz |

#### 4.1.2 Channel Spacing / Separation

Table 5 Channel Spacing / Separation

|                  |          |
|------------------|----------|
|                  | GPRS/GSM |
| Channel Raster   | 200kHz   |
| Channel spacing: | 200kHz   |

#### 4.1.3 Type of Emission

Table 6 Type of Emission

|                       |          |
|-----------------------|----------|
|                       | GPRS/GSM |
| Emission Designation: | 300KGXW  |

According to CFR 47 (FCC) part 2, subpart C, section 2.201 and 2.202

#### 4.1.4 Environmental Requirements

Table 7 Environmental Requirements

|                      |          |
|----------------------|----------|
| Minimum temperature: | - 10 °C  |
| Maximum temperature: | + 55 °C  |
| Relative Humidity:   | 5%-95%RH |

#### 4.1.5 Power Source

Table 8 Power Source

|                     |                    |
|---------------------|--------------------|
| AC voltage nominal: | ~ 120 V            |
| AC voltage range    | ~ 100 V to ~ 240 V |
| AC current maximal: | 650mA              |

#### 4.1.6 Tune-up Procedure

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (9).

1

Please reference the document Tune-up Procedure in TCF.

#### 4.1.7 Applied DC Voltages and Currents

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8).

The voltage and current in the final RF stage is:

Table 9 Applied DC Voltages and Currents

|          |   |
|----------|---|
| Voltage: | == +2.8V  |
| Current: | 100mA According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8) |



## 4.2 EUT Identification List

### 4.2.1 Board Information

Table 10 Board Information

|  |                  |                |
|--|------------------|----------------|
| WCDMA/GPRS/GSM Mobile Phone with Bluetooth |                  |                |
| HUAWEI U1270/U1270                         |                  |                |
| Board and Module                           |                  |                |
| Equipment Designation / Description        | Serial Number    | Remarks        |
| MAINBOARD                                  | MK4CAB1973100124 | HD4U125M VER.B |

### 4.2.2 Adapter Technical Data

|                    |   |   |
|--------------------|---|---|
| AC/DCAdapter Model | : | HS-050040E5   |
| Manufacturer       | : | Huawei Technologies Co., Ltd.   |
| Input Voltage      | : | ~100-240V 50/60Hz 0.2A  |
| Output Voltage     | : |  +5.0V, 400mA |
| Rated Power        | : | 2W  |
| S/N                | : | HKA8A1754563  |

### 4.2.3 Battery Technical Data

|                   |   |
|-------------------|---|
| Type:             | Rechargeable Li-ion   |
| Manufacturer:     | FMT Electronics Co.,Ltd.  |
| Battery Model:    | HBU83S  |
| Rated capacity:   | 800mAh  |
| Nominal Voltage:  |  +3.7V |
| Charging Voltage: |  +4.2V |

### 4.2.4 FCC Identification

Grantee Code: QIS  
Product Code: U1250  
FCC Identification: QISU1250



## 5 Main Test Instruments

Table 11 Main Test Equipments

| Equipment Description                      | Manufacturer | Model                       | Serial Number      | Calibrated until (MM.DD.YYYY) |
|--|--------------|-----------------------------|--------------------|-------------------------------|
| Receiver                                   | R&S          | ESIB 26                     | 100318             | 04.21.2010                    |
| BiLog Antenna                              | Schaffner    | CBL 6112B                   | 2747               | 11.16.2009                    |
| Horn Antenna                               | ETS-Lindgren | 3117                        | 00062553           | 08.15.2010                    |
| Horn Antenna                               | ETS-Lindgren | 3160                        | 00060006           | 08.03.2010                    |
| Dipole                                     | Schwarzbeck  | D69250-<br>UHAP/D69250-VHAP | 979/917            | 10.11.2010                    |
| Signal Generator                           | R&S          | SMR 40                      | 100325             | 05.11.2010                    |
| Signal Generator                           | R&S          | SMU200A                     | 101717             | 04.10.2010                    |
| Power Supply                               | Keithley     | 2306                        | 1045337            | 05.11.2010                    |
| Climate Chamber                            | WEISS        | WK11-180/170                | 5822604947001<br>0 | 10.23.2010                    |
| Universal Radio<br>Communication<br>Tester | R&S          | CMU200                      | 112347             | 03.30.2010                    |
| Wireless<br>communication test set         | Agilent      | 8960                        | GB43461081         | 05.10.2010                    |
| Spectrum Analyzer                          | R&S          | FSU26                       | 200245             | 08.27.2010                    |

## 6 Transmitter Measurements

### 6.1 Effective Isotropically Radiated Power of Transmitter (EIRP)

#### 6.1.1 Test Conditions

Table 12 Test Conditions

|                      |                                    |
|----------------------|------------------------------------|
| Preconditioning:     | 0.5 hour                           |
| Measured at:         | enclosure                          |
| Ambient temperature: | 25 °C                              |
| Relative humidity:   | 55%                                |
| Test Configurations: | TM1 at frequency Bottom,Middle,Top |

#### 6.1.2 Test Specifications and Limits

##### 6.1.2.1 Specification

CFR 47 (FCC) part 2.1046 and part 24.232

##### 6.1.2.2 Supporting Standards

Table 13 Supporting Standards:

|                      |   |
|----------------------|---|
| ANSI/TIA-603-C:2004  | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards           |
| 3GPP TS51.010 V5.4.0 | Digital cellular telecommunications system;<br>Mobile Station (MS) conformance specification; |

##### 6.1.2.3 Limits

Compliance with part 24.232, in no any case may the peak power of a mobile station transmitter exceed 2 W. And calculate longitude EIRP by following formula: $EIRP(dBm) = 10 * \log(EIRP \text{ in mwatts})$ .  
 $EIRP(dBm) = ERP(dBm) + 2.15dB$ .

Table 14 Limits

|                              |           |
|------------------------------|-----------|
| Maximum Output Power (Watts) | < 2 Watts |
| Maximum Output Power (dBm)   | < 33 dBm  |

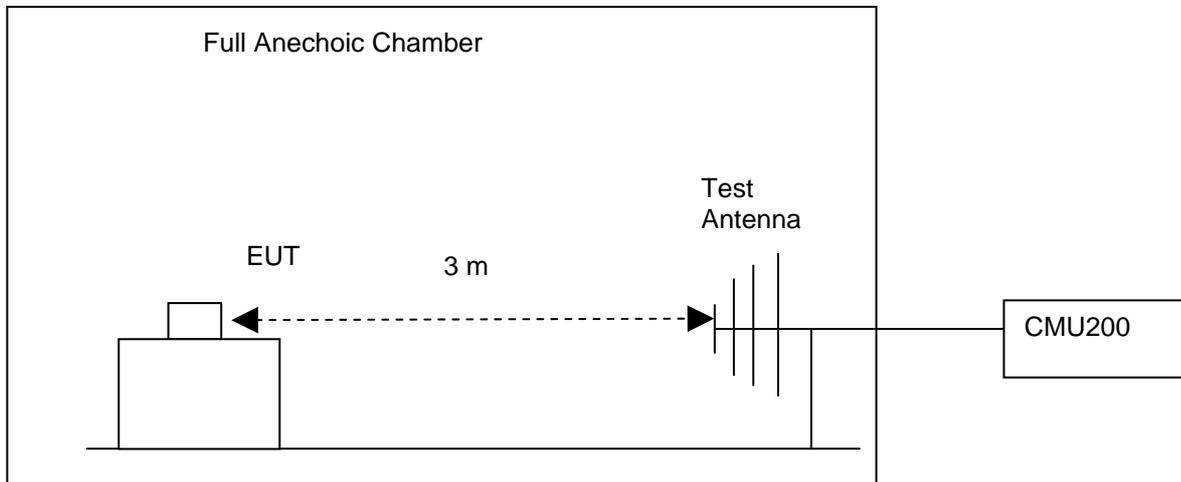
#### 6.1.3 Test Method and Setup

- For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, ERP shall be measured when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in 2.1033(c)(8). Connect the Mobile Phone to the wireless communication tester CMU200 via the air interface. The band is set as PCS1900M.
- Test the Radiated maximum output power by the CMU200 received from test antenna.
- Use substitution method to verify the maximum output power. The EUT is substituted by a horn antenna. The horn is connected to a signal generator. And then adjust the output level of the signal

generator to get the same received power recorded in step (b) on CMU200, and record the power level of Signal Generator. Of course, the cable loss at the test frequency should be compensated.

## Test setup

### Step 1: Pre-test



### Step 2: Substitution method to verify the maximum EIRP

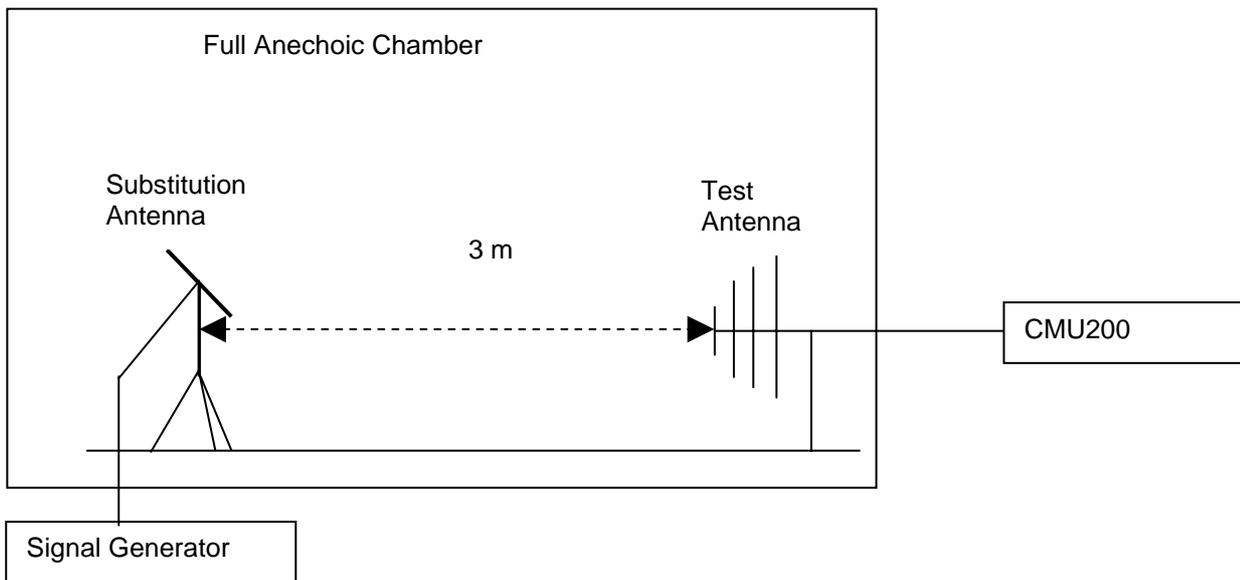


Figure 1. Test Set-up

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from horn antennas.

There is a constant difference of 2.15 dB between EIRP and ERP.

$EIRP (dBm) = ERP (dBm) + 2.15$  (ITU-R Recommendation SM.329-10).

## 6.1.4 Measurement Results

### 6.1.4.1 Pre-test Results

Table 15 Measurement Results

| TEST CONDITIONS |   | RF Output Power (EIRP)     |       |                           |       |                            |       |
|-----------------|---|----------------------------|-------|---------------------------|-------|----------------------------|-------|
|                 |   | Channel512(B)<br>1850.2MHz |       | Channel661 (M)<br>1880MHz |       | Channel810(T)<br>1909.8MHz |       |
|                 |   | dBm                        |       | dBm                       |       | dBm                        |       |
|                 |   | Measured                   | Limit | Measured                  | Limit | Measured                   | Limit |
| TM1             | T <sub>nom</sub> (25 °C)<br>V <sub>nom</sub> (3.7V) | 30.91                      | 33    | 30.84                     | 33    | 30.69                      | 33    |

### 6.1.4.2 Substitution Results

Table 16 Substitution Results

| Test Mode | Freq. [MHz] | Meas. Level [dBm] | Substitution Antenna Type | SGP [dBm] | Substitution Gain [dBi] | Cable Loss [dB] | Substitution Level (EIRP) [dBm] | Limit [dBm] | Result |
|-----------|-------------|-------------------|---------------------------|-----------|-------------------------|-----------------|---------------------------------|-------------|--------|
| TM1       | 1850.2      | 30.91             | Horn Ant.                 | 27.12     | 4.6                     | 1.0             | 30.72                           | 33          | Pass   |
| TM1       | 1880.0      | 30.84             | Horn Ant.                 | 27.36     | 4.6                     | 1.0             | 30.96                           | 33          | Pass   |
| TM1       | 1909.8      | 30.69             | Horn Ant..                | 26.77     | 4.8                     | 1.0             | 30.57                           | 33          | Pass   |

Note: a, For get the EIRP (Efficient Isotropically Radiated Power) in substitution method, the following formula should take to calculate it,

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

NOTE: SGP- Signal Generator Level

b, A wcdma signal with bandwidth of 5MHz are created by the vector generator R&S SMU200A.

c, RBW=10kHz, VBW=300kHz, and integrated by the instrument to 200kHz for TM1 and TM2. 5MHz for TM3.

## 6.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.

## 6.2 Conducted Power of Transmitter

### 6.2.1 Test Conditions

Table 17 Test Conditions



|                      |                                    |
|----------------------|------------------------------------|
| Preconditioning:     | 0.5 hour                           |
| Measured at:         | Antenna connector                  |
| Ambient temperature: | 25 °C                              |
| Relative humidity:   | 52 %                               |
| Test Configurations: | TM1 at frequency Bottom,Middle,Top |

## 6.2.2 Test Specifications and Limits

### 6.2.2.1 Specification

CFR 47 (FCC) part 2.1047 and part 24 subpart E

### 6.2.2.2 Supporting Standards

Table 18 Supporting Standards:

|                      |  |
|----------------------|--|
| ANSI/TIA-603-C:2004  | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards        |
| 3GPP TS51.010 V5.4.0 | Digital cellular telecommunications system; Mobile Station (MS) conformance specification; |

### 6.2.2.3 Limits

Compliance with part 24.232, in no any case may the peak power of a mobile station transmitter exceed 2 W. The calculated longitude EIRP by following formula:

$$\text{EIRP (dBm)} = 10 \cdot \log (\text{EIRP}_{\text{in mWatts}}).$$

And for conducted power, we can use Antenna Gain to calculate the limit. So the conducted power:

$$\text{P}_{\text{cod.}}(\text{dBm}) = \text{EIRP}(\text{dBm}) - \text{Gain}(\text{dBi}).$$

$$\text{and Gain (dBi)} = \text{Gain}(\text{dBd}) + 2.15\text{dB}$$

Table 19 Limits

|                                      |                  |
|--------------------------------------|------------------|
| Maximum Output Power (Watts)         | < 2 Watts(33dBm) |
| Antenna Gain(dBi):                   | 2.5              |
| Maximum Conducted Output Power (dBm) | < 30.5dBm        |

## 6.2.3 Test Method and Setup

(a)For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, Conducted maximum power shall be measured when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in 2.1033(c)(8). Connect the Mobile Phone to the wireless communication tester CMU200 via the antenna connector. The band is set as PCS.

(b)Test the Conducted maximum output power by the CMU200.

### Test setup

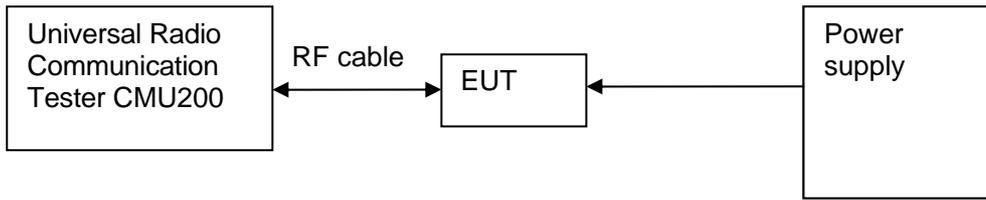


Figure 2. Test Set-up

### 6.2.4 Measurement Results

Table 20 Measurement Results

| TEST CONDITIONS |   | RF Output Power(Conducted) |       |                           |       |                            |       |
|-----------------|---|----------------------------|-------|---------------------------|-------|----------------------------|-------|
|                 |   | Channel512(B)<br>1850.2MHz |       | Channel661 (M)<br>1880MHz |       | Channel810(T)<br>1909.8MHz |       |
|                 |   | dBm                        |       | dBm                       |       | dBm                        |       |
|                 |   | Measured                   | Limit | Measured                  | Limit | Measured                   | Limit |
| TM1             | T <sub>nom</sub> (25 °C)<br>V <sub>nom</sub> (3.7V) | 28.41                      | 30.5  | 28.34                     | 30.5  | 28.19                      | 30.5  |

### 6.2.5 Conclusion

The equipment **PASSED** the requirement of this clause.



## 7 System Measurement Uncertainty

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

Table 21 System Measurement Uncertainty

| Items   |                         | Extended Uncertainty |
|---|-------------------------|----------------------|
| Effective Isotropically Radiated Power of Transmitter | EIRP (dBm)              | U=3dB; k=2           |
| Band Width  | Magnitude (%)           | U=0.2%; k=2          |
| Band Edge Compliance                                  | Disturbance Power(dBm)  | U=2.0dB; k=2         |
| Conducted Spurious Emission at Antenna Terminal       | Disturbance Power(dBm)  | U=2.0dB; k=2         |
| Frequency Stability                                   | Frequency Accuracy(ppm) | U=0.21ppm; k=2       |

(END OF REPORT)