



# FCC Test Report

**Product Name: WCDMA/GPRS/GSM/EDGE Mobile Phone With Bluetooth**

**Model Number: U3317**

**Report No: SYBH(R)080072008EB-3  
FCC ID: QISU3307**

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

**M/N: U3317**

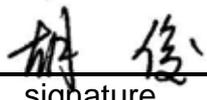
**Report No: SYBH(R)080072008EB-3**

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

**CONCLUSION**                      **PASS**

**General Manager**                      2008.08.29                      张兴海                        
Date                      Name                      signature

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# 1 Summary

U3317 has a different antenna with U3307, while the other components are the same, such as PA , Duplexer, SAW filter and other match Inductors, capacitors. The PCB is the same too. So only EIRP and Conducted Power of Transmitter is tested. U3307 was certified under FCC ID: QISU3307. U3317's radiated output power is lower, so U3317 can use the same FCC ID.

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

Table 1 Summary of results

FCC Measurement Specification	FCC Limits Part(s)	Description	Result
2.1046	24.232	Effective Isotropically Radiated Power of Transmitter	PASS
2.1046	24.232	Conducted Power of Transmitter	PASS
2.1047		Modulation Characteristics	refer to SYBH(R)051022008EB -3
2.1049		Occupied Bandwidth	refer to SYBH(R)051022008EB -3
2.1051	24.238	Band Edges Compliance	refer to SYBH(R)051022008EB -3
2.1051	24.238	Spurious Emission at Antenna Terminal	refer to SYBH(R)051022008EB -3
2.1055	24.235	Frequency Stability	refer to SYBH(R)051022008EB -3
2.1053	24.238	Radiated Spurious Emissions	PASS (Note)

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/EDGE Mobile Phone With Bluetooth - U3317 is subscriber equipment in the WCDMA/GSM system. The frequency band is WCDMA/GSM/DCS/PCS. The WCDMA frequency band is Band I and Band V, Band V can be used in the U.S.A. The GSM/GPRS/EDGE frequency band includes GSM900 and DCS1800 and PCS1900, PCS1900MHz bands can be used in the U.S.A. The Mobile Phone implements such functions as RF signal receiving /Transmitting, WCDMA protocol processing, voice, video and MMS service etc. Externally it provides micro SD card interface, earphone port(to provide voice service), 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/EDGE PCS 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/EDGE 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
Data	Modulation: 8PSK	TM2	EDGE

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



### **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

**Aug. 25 2008 – Aug.28, 2008**

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

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

**TM2:** EDGE Mode with 8PSK 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

	EDGE/GPRS/GSM
Channel Raster	200 kHz
Channel spacing:	200 kHz

#### 4.1.3 Type of Emission

Table 6 Type of Emission

	GPRS/GSM	EDGE
Emission Designation:	200KGXW	200KG7W

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

#### 4.1.6 Tune-up Procedure

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

|

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 RF module 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/EDGE Mobile Phone With Bluetooth		
U3317		
Board and Module		
Equipment Designation / Description	Serial Number	Remarks
MAINBOARD	VS2AB10870900089	HD1U330M Ver.B

### 4.2.2 Adapter Technical Data

AC/DCAdapter Model	:	TPCA-050065UY
Manufacturer	:	TECH-POWER INTERNATIONAL CO.,LTD
Input Voltage	:	~100-240V 50/60Hz 0.2A
Output Voltage	:	5.0V 650mA
Rated Power	:	4W
S/N	:	TP1752903536

AC/DCAdapter Model	:	CHG5065-3C
Manufacturer	:	Shenzhen Chi Yuan Industrial Co., Ltd
Input Voltage	:	~100-240V 50/60Hz 0.2A
Output Voltage	:	5.0V 650mA
Rated Power	:	4W
S/N	:	HKY811000046

### 4.2.3 Battery Technical Data

Type:	Rechargeable Li-ion
Manufacturer:	FMT Electronics Co.,Ltd.
Battery Model:	HBU570
Rated capacity:	900mAh
Nominal Voltage:	+3.7V
Charging Voltage:	+4.2V

### 4.2.4 FCC Identification

**Grantee Code:** QIS  
**Product Code:** U3317  
**FCC Identification:** QISU3307



## 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	04.21.2009
BiLog Antenna	Schaffner	CBL 6112B	2536	03.17.2009
Horn Antenna	ETS-Lindgren	3117	00062553	08.18.2009
Horn Antenna	ETS-Lindgren	3160	00031541	08.03.2009
Dipole	Schwarzbeck	D69250- UHAP/D69250-VHAP	979/917	10.11.2008
Signal Generator	R&S	SMR 40	100325	05.11.2009
Signal Generator	R&S	SMU200A	101717	04.10.2009
Climate Chamber	WEISS	ACS-1	9777	08.14.2009
Universal Radio Communication Tester	R&S	CMU200	108035	07.15.2009
Wireless communication test set	Agilent	8960	GB43461081	05.10.2009
Spectrum Analyzer	R&S	FSU26	0036273	08.30.2009



## 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/TM2 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 Mobile Station (MS) conformance specification;

##### 6.1.2.3 Limits

Compliance with part 24.232, mobile/portable stations are limited to 2 watts EIRP peak power. And calculate longitude EIRP by following formula :  $EIRP(dBm) = 10 \cdot \log(EIRP \text{ in mwatts})$ .  
 $EIRP(dBm) = ERP(dBm) + 2.15dB$ .

Table 14 Limits

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

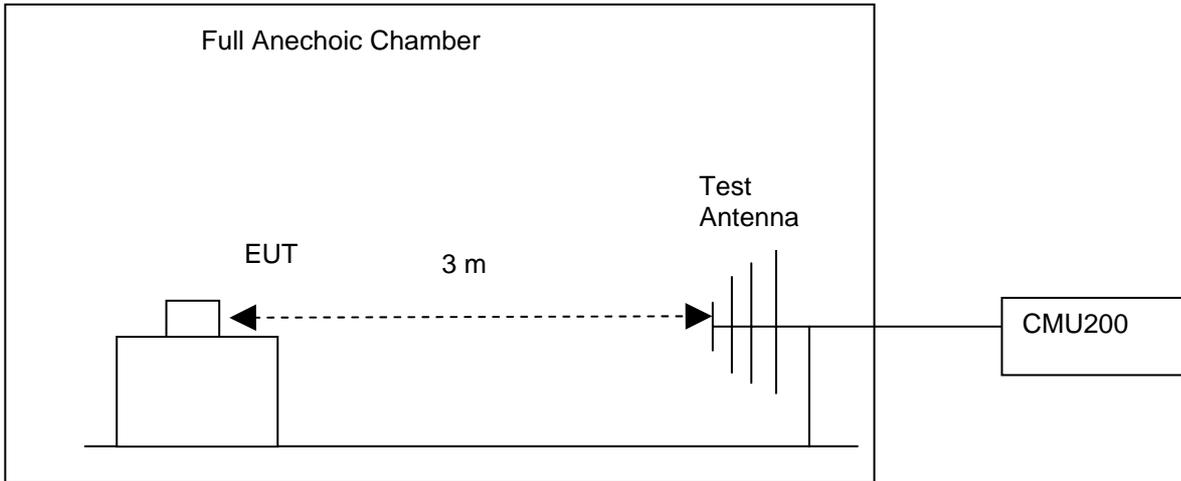
#### 6.1.3 Test Method and Setup

- 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 dipole 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

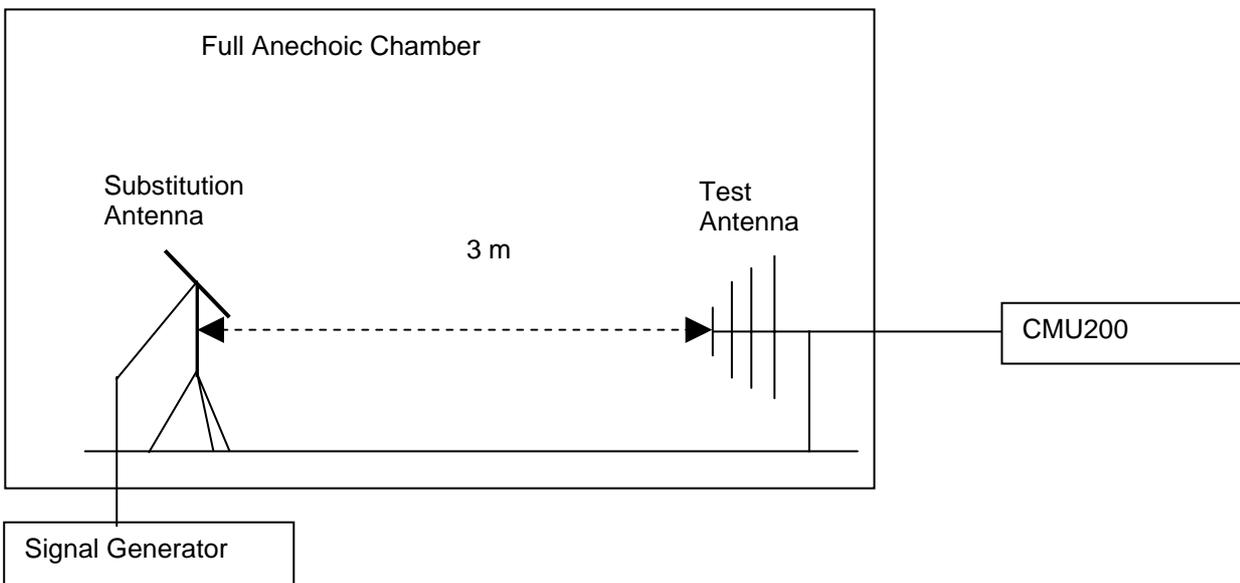


Figure 1. Test Set-up

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) 1850.2MHz		Channel661 (M) 1880MHz		Channel810(T) 1909.8MHz	
		dBm		dBm		dBm	
		Measured	Limit	Measured	Limit	Measured	Limit
TM1	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (3.7V)	31.03	33	31.11	33	31.07	33
TM2	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (3.7V)	27.12	33	27.23	33	27.31	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 (ERP) [dBm]	Limit [dBm]	Result
TM1	1850.2	31.03	Horn Ant.	26.96	4.6	1.0	30.56	33	Pass
TM1	1880.0	31.11	Horn Ant.	27.11	4.6	1.0	30.71	33	Pass
TM1	1909.8	31.07	Horn Ant..	26.82	4.8	1.0	30.62	33	Pass
TM2	1850.2	27.12	Horn Ant.	22.71	4.6	1.0	26.31	33	Pass
TM2	1880.0	27.23	Horn Ant.	22.44	4.6	1.0	26.04	33	Pass
TM2	1909.8	27.31	Horn Ant..	22.41	4.8	1.0	26.21	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 GSM signal with bandwidth of 200 kHz 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.

## 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/TM2 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:

$$EIRP(dBm) = 10 * \log (EIRP_{in\ mWts}).$$

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

$$P_{cod.}(dBm) = EIRP(dBm) - Gain(dBi).$$

and Gain (dBi) = Gain(dBd) + 2.15dB

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 PCS1900M.  
(b) Test the Conducted maximum output power by the CMU200.

### Test setup

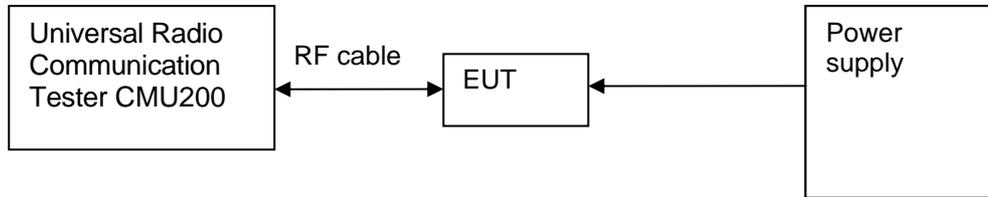


Figure 2. Test Set-up

### 6.2.4 Measurement Results

Table 20 Measurement Results

TEST CONDITIONS		RF Output Power(Conducted)					
		Channel512(B) 1850.2MHz		Channel661 (M) 1880MHz		Channel810(T) 1909.8MHz	
		dBm		dBm		dBm	
		Measured	Limit	Measured	Limit	Measured	Limit
TM1	T <sub>nom</sub> (25 °C)	28.47	30.5	28.31	30.5	28.52	30.5
	V <sub>nom</sub> (3.7V)						
TM2	T <sub>nom</sub> (25 °C)	24.97	30.5	25.08	30.5	25.16	30.5
	V <sub>nom</sub> (3.7V)						

### 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