



FCC Test Report

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

Model Number: U3317

**Report No: SYBH(R)080072008EB-2
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-2

REGULATION **FCC CFR47 Part 2: Subpart J;**
FCC CFR47 Part 22: Subpart H;

CONCLUSION **PASS**

General Manager 2008.08.29 张兴海
Date Name signature



**Technical Responsibility
For Area of Testing** 2008.08.29 余辉
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Test Lab Engineer 2008.08.29 胡俊
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 ERP 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	22.913	Effective Radiated Power of Transmitter	PASS
2.1046	22.913	Conducted Power of Transmitter	PASS
2.1047		Modulation Characteristics	refer to SYBH(R)051022008EB -2
2.1049		Occupied Bandwidth	refer to SYBH(R)051022008EB -2
2.1051	22.917	Band Edges compliance	refer to SYBH(R)051022008EB -2
2.1051	22.917	Spurious Emission at Antenna Terminal	refer to SYBH(R)051022008EB -2
2.1055	22.355	Frequency Stability	refer to SYBH(R)051022008EB -2
2.1053	22.917	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 WCDMA Band V was included in this report for the requirement of FCC part 2 & 22.

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
Data	Modulation: QPSK	TM1	WCDMA

Note: The specified WCDMA test conditions & settings are defined in 3GPP TS 34.121 V7.3.0.

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.
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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: WCDMA Mode with QPSK Modulation



4 Product Description

4.1 Technical Characteristics

4.1.1 Frequency Range

Table 4 Frequency Range

Uplink band:	824 to 849 MHz
Downlink band:	869 to 894 MHz

4.1.2 Channel Spacing / Separation

Table 5 Channel Spacing / Separation

	WCDMA
Channel Raster	200 kHz
Channel spacing:	5 MHz

4.1.3 Type of Emission

Table 6 Type of Emission

	WCDMA
Emission Designation:	5M00F9W

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 Radiated Power of Transmitter (ERP)

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 22.913

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 TS 34.121 V7.3.0	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD);

6.1.2.3 Limits

Compliance with part 22.913, mobile/portable stations are limited to 7 watts ERP peak power. The calculated longitude ERP by following formula : $ERP(dBm) = 10 \cdot \log(ERP_{in} \text{ mwatts})$.

Table 14 Limits

Maximum Output Power (Watts)	< 7 Watts
Maximum Output Power (dBm)	< 38.5 dBm

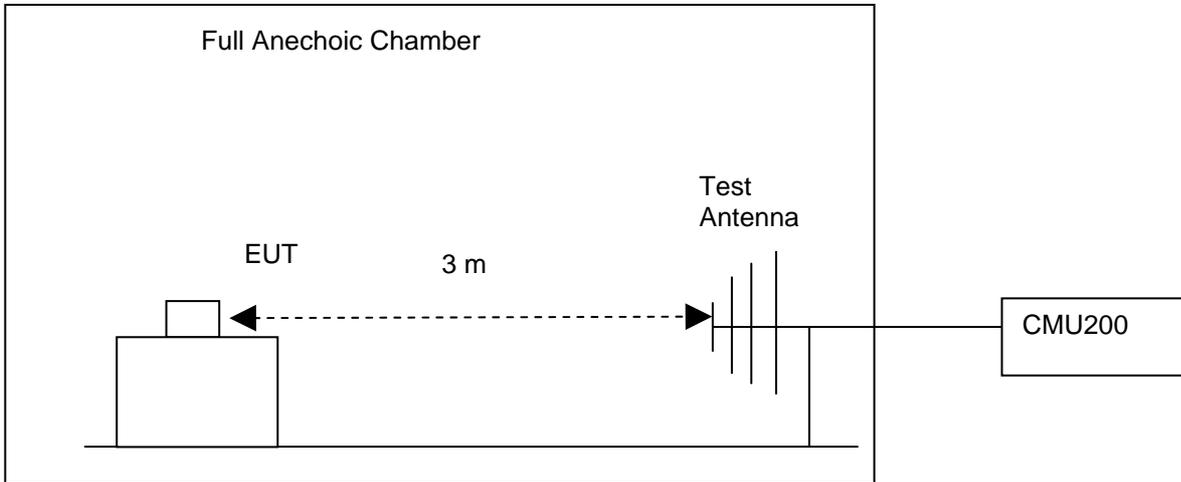
6.1.3 Test Method and Setup

- 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 class is set as WCDMA850M.
- 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 dipole 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 ERP

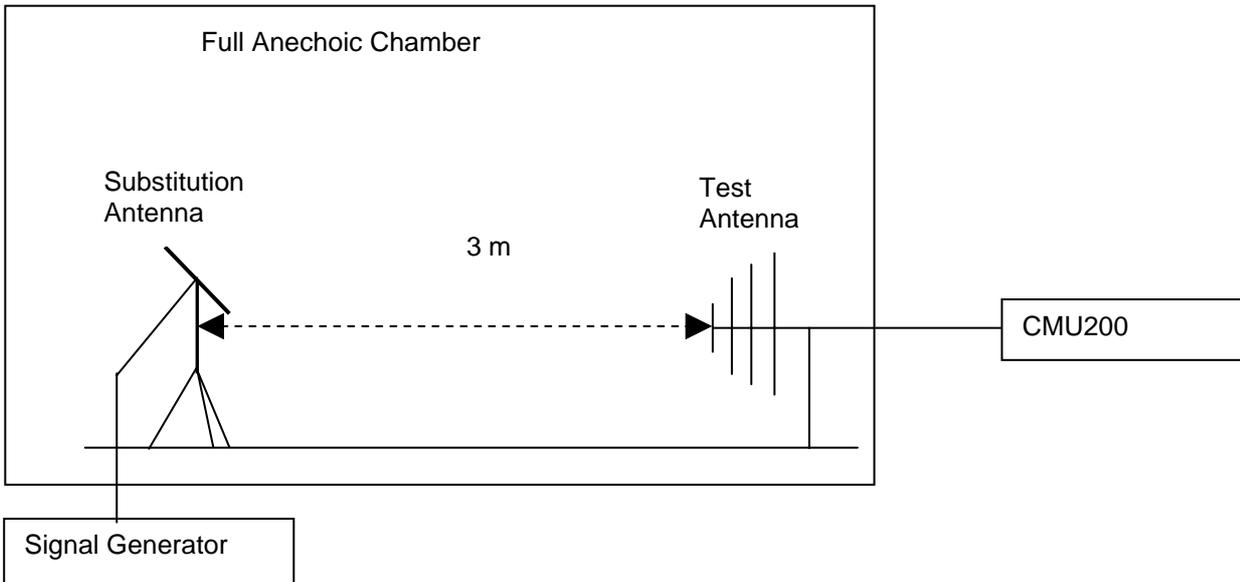


Figure 1. Test Set-up

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

6.1.4 Measurement Results

6.1.4.1 Pre-test Results

Table 15 Measurement Results

	RF Output Power (ERP)
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TEST CONDITIONS		Channel4132(B) 826.4MHz		Channel4182(M) 836.4MHz		Channel4233(T) 846.6MHz	
		dBm		dBm		dBm	
		Measured	Limit	Measured	Limit	Measured	Limit
TM1	T _{nom} (25 °C) V _{nom} (3.7V)	22.31	38.5	22.46	38.5	22.37	38.5

6.1.4.2 Substitution Results

Table 16 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBd]	Cable Loss [dB]	Substitution Level (ERP) [dBm]	Limit [dBm]	Result
TM1	826.4	22.21	Dipole Ant.	25.67	-2.95	0.6	22.12	33	Pass
TM1	836.4	23.46	Dipole Ant.	25.89	-3.06	0.6	22.23	33	Pass
TM1	846.6	22.17	Dipole Ant.	25.89	-3.11	0.6	22.18	33	Pass

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

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

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 5MHz for TM1

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 22 subpart H

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 TS 34.121 V7.3.0	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD);

6.2.2.3 Limits

Compliance with part 22.913, in no any case may the peak power of a mobile station transmitter exceed 7 W. The calculated longitude ERP by following formula:

$$ERP(\text{dBm}) = 10 \cdot \log(ERP_{\text{in mwatts}}).$$

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

$$P_{\text{cod}}(\text{dBm}) = ERP(\text{dBm}) - \text{Gain}(\text{dBd}).$$

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

Table 19 Limits

Maximum Output Power (Watts)	< 7 Watts (38.5dBm)
Antenna Gain(dBi):	2.75dB
Antenna Gain(dBd):	0.6dB
Maximum Conducted Output Power (dBm)	< 37.9dBm

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 class is set as WCDMA850M.

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

Test setup

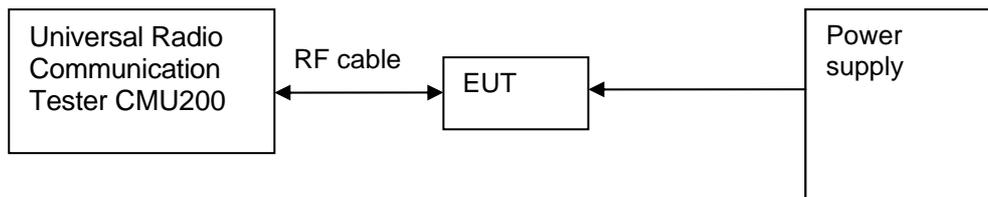


Figure 2. Test Set-up

6.2.4 Measurement Results

Table 20 Measurement Results

TEST CONDITIONS		RF Output Power (Conducted)					
		Channel4132(B) 826.4MHz		Channel4182(M) 836.4MHz		Channel4233(T) 846.6MHz	
		dBm		dBm		dBm	
		Measured	Limit	Measured	Limit	Measured	Limit
TM3	T _{nom} (25 °C) V _{nom} (3.7V)	21.71	37.9	21.86	37.9	21.77	37.9

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 Radiated Power of Transmitter	ERP (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
Field Strength of Spurious Radiation	ERP(dBm)	U=2.2dB; k=2