



FCC Test Report

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

Model Number: U5715

**Report No: SYBH(R)017062008EB-3
FCC ID: QISU5705**

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

M/N: U5715

Report No: SYBH(R)017062008EB-3

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

CONCLUSION **PASS**

General Manager

2008.07.14

Date

张兴海

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**Technical Responsibility
For Area of Testing**

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1 Summary

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 Radiated Power of Transmitter	PASS
2.1046	24.232	Conducted Power of Transmitter	refer to SYBH(R)181082007EB -2
2.1047		Modulation Characteristics	refer to SYBH(R)181082007EB -2
2.1049		Occupied Bandwidth	refer to SYBH(R)181082007EB -2
2.1051	24.238	Band Edges Compliance	refer to SYBH(R)181082007EB -2
2.1051	24.238	Spurious Emission at Antenna Terminal	refer to SYBH(R)181082007EB -2
2.1055	24.235	Frequency Stability	refer to SYBH(R)181082007EB -2
2.1053	24.238	Radiated Spurious Emissions	refer to SYBH(R)181082007EB -2

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 – U5715 is subscriber equipment in the WCDMA/GSM system. The frequency band is WCDMA/GSM/DCS/PCS. The WCDMA frequency band is Band II and Band V, both can be used in the U.S.A. The GSM/GPRS/EDGE frequency band includes GSM850、DCS1800 and PCS1900, GSM850MHz and 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.

The PCB (include IC) and software of U5715 is the same with U5705. But the keyboard,shape,camera and antenna will be changed in U5715 based on U5705. The PART 24 report number of U5705 is SYBH(R)181082007EB-2.

We did the test of EIRP again in security in this report, other test results can refer to SYBH(R)181082007EB-2.So only the result of EIRP for U5715 was included in this report.

Note: Only tests for WCDMA Band II and PCS/GPRS/EDGE 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
Data	Modulation: QPSK	TM3	WCDMA

Note: * The specified GPRS test conditions & settings are defined in 3GPP TS51.010 V5.4.0
The specified EDGE test conditions & settings are defined in 3GPP TS51.010 V5.4.0.
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
U5715	HD1U720H	Ver.C	Ver.C	PCB and software has no change, antenna changed

3 Test Site Description

The test site of:

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

The test site description has been submitted to  and registration granted under the registration number **97456** on April of 2006. The test site has been accredited by



and the accredited number is **2174.01** in June of 2006.

3.1 Testing Period

The test have been performed during the period of

Jul. 11, 2008 –Jul. 14, 2008

3.2 General Set up Description

TM1: GPRS/GSM Mode with GMSK Modulation

TM2: EDGE Mode with 8PSK Modulation

TM3: WCDMA Mode with QPSK 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	WCDMA
Channel Raster	200k Hz	200k Hz
Channel spacing:	200k Hz	5M Hz

4.1.3 Type of Emission

Table 6 Type of Emission

	GPRS/GSM	EDGE	WCDMA
Emission Designation:	300kGXW	300KG7W	5M0F9W

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 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		
U5715		
Board and Module		
Equipment Designation / Description	Serial Number	Remarks
MAINBOARD	V92AC10812300024	HD1U720H Ver.C

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	:	TPI732800987

AC/DCAdapter Model	:	CHG5065-3C
Manufacturer	:	Shen Zhen Huntkey Power Technology Co.,Ltd
Input Voltage	:	~100-240V 50/60Hz 0.2A
Output Voltage	:	5.0V 650mA
Rated Power	:	4W
S/N	:	HKY7C2200015

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: U5705
FCC Identification: QISU5705



5 Main Test Instruments

Table 11 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until (MM.DD.YYYY)
Test Receiver Display Unit	R&S	ESMI 804.8932.52	829214/011	07.30.2008
Test Receiver RF Unit	R&S	ESMI 1032.5640.53	829550/008	07.30.2008
Receiver	R&S	ESIB 26	100318	08.17.2008
Receiver	R&S	ESCS30	830245/018	07.30.2008
Pre-Amplifier	Agilent	8447D	2944A10146	07.30.2008
Pre-Amplifier	Agilent	83017A	3950M00246	07.03.2009
Loop Antenna	Schwarzbeck	FMZB1516	1516115	08.08.2008
BiLog Antenna	Schaffner	CBL 6112B	2536	08.30.2008
Horn Antenna	ETS-Lindgren	3117	00062533	09.14.2008
Horn Antenna	ETS-Lindgren	3117	00062549	09.14.2008
Horn Antenna	ETS-Lindgren	3116	00031541	07.15.2009
Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	08.28.2008
Signal Generator	R&S	SMT06	830264/009	09.29.2008
Signal Generator	R&S	SMR 40	100325	12.09.2008
Signal Generator	R&S	SMU200A	101717	10.20.2008
Power Supply	Keithley	2306	1045337	07.20.2008
Climate Chamber	WEISS	ACS-1	3604040034	08.14.2008
Universal Radio Communication Tester	R&S	CMU200	108035	07.04.2009
Wireless communication test set	Agilent	8960	GB43461081	06.15.2009
Spectrum Analyzer	R&S	FSQ26	0036273	08.30.2008



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
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3 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;
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 24.232, mobile/portable stations are limited to 2 watts EIRP peak power.
 $W(\text{dBm}) = 10 \cdot \log(W_{\text{In mwatts}})$.

Table 14 Limits

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

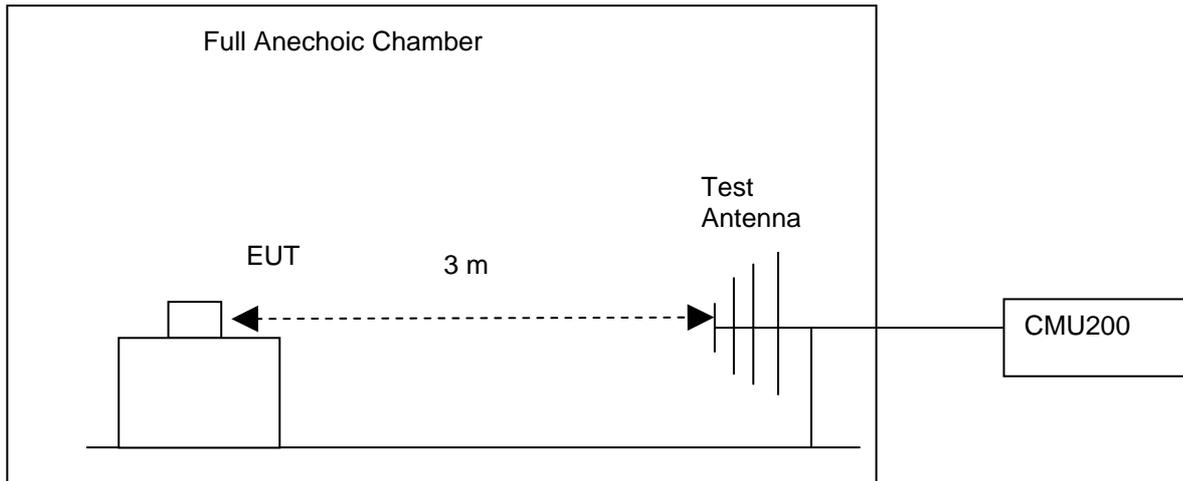
6.1.3 Test Method and Setup

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, EIRP 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 PCS and WCDMA1900M.
- (b) Test the Radiated maximum output power by the CMU200 received from test antenna.

- (c) Use substitution method to verify the maximum output power. The EUT is substituted by a horn antenna. The substitution antenna 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

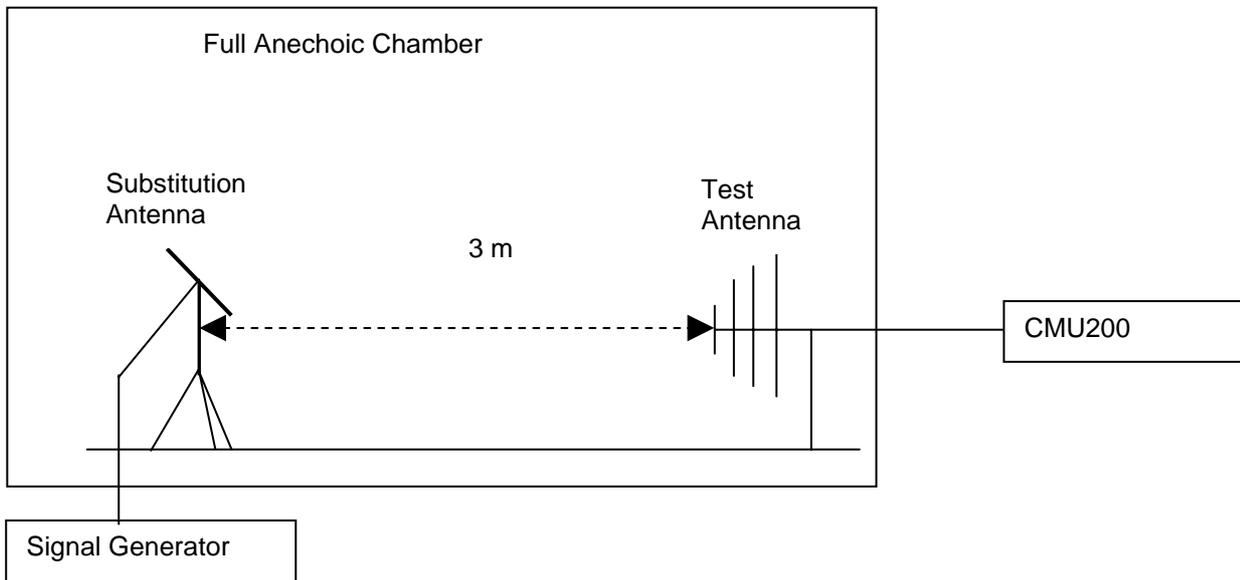


Figure 1. Test Set-up

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole 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 _{nom} (25 °C) V _{nom} (3.7V)	31.07	33	31.23	33	31.08	33
TM2	T _{nom} (25 °C) V _{nom} (3.7V)	27.52	33	27.15	33	27.61	33
TEST CONDITIONS		Channel9262(B) 1852.4MHz		Channel9400(M) 1880MHz		Channel9538(T) 1907.6MHz	
		dBm		dBm		dBm	
		Measured	Limit	Measured	Limit	Measured	Limit
TM3	T _{nom} (25 °C) V _{nom} (3.7V)	22.42	33	22.59	33	23.07	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	31.07	Horn Ant.	27.32	4.6	1.0	30.92	33	Pass
TM1	1880.0	31.23	Horn Ant.	27.43	4.6	1.0	31.03	33	Pass
TM1	1909.8	31.08	Horn Ant..	27.19	4.8	1.0	30.99	33	Pass
TM2	1850.2	27.52	Horn Ant.	23.86	4.6	1.0	27.46	33	Pass
TM2	1880.0	27.15	Horn Ant.	23.46	4.6	1.0	27.06	33	Pass
TM2	1909.8	27.61	Horn Ant..	23.72	4.8	1.0	27.52	33	Pass
TM3	1852.4	22.42	Horn Ant.	18.77	4.6	1.0	22.37	33	Pass
TM3	1880.0	22.59	Horn Ant.	18.86	4.6	1.0	22.46	33	Pass
TM3	1907.6	23.07	Horn Ant..	19.22	4.8	1.0	23.02	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.

6.1.5 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 17 System Measurement Uncertainty

Items		Extended Uncertainty
Effective Radiated Power of Transmitter	EIRP (dBm)	U=3dB; k=2