TEST REPORT

REPORT NUMBER: B07GE5079-FCC-EMC

ON

Type of Equipment: **Mobile Phone**
Type of Designation: **W100**
Manufacturer: **Firefly Mobile, Inc**

ACCORDING TO
FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS; e-CFR, March 23, 2006
PART 22, PUBLIC MOBILE SERVICES (Oct 1, 02 Edition)
PART 24, PERSONAL COMMUNICATIONS SERVICES (Oct 1, 97 Edition)

China Telecommunication Technology Labs.

Month date, year

08/07/2007

Signature

Ma Xin
Director

FCC ID:	R7C-W100
Report Date:	2007-08-09

Test Firm Name:	China Telecommunication Technology Labs
Registration Number:	840587

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22 and 24. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22 and 24.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex C.

1.2 Testers

Name:	luke
Position:	Engineer
Department:	Department of EMC test
Duration of the test:	From 2007-07-20 to 2007-07-25
Signature:	冯克

Name:	Wu Xiang
Position:	Engineer
Department:	Department of EMC test
Duration of the test:	From 2007-07-24 to 2007-08-08
Signature:	吴翔

Technical responsibility for area of testing:

Name:	Luke
Position:	Engineer
Department:	Department of EMC test
Date:	2007. 8. 9
Signature:	冯克

1.3 Testing Laboratory information

1.3.1 Location

Name:	China Telecommunication Technology Labs.
Address:	No. 11, Yue Tan Nan Jie, Xi Cheng District BEIJING P. R. CHINA, 100083
Tel:	+86 10 68094053
Fax:	+86 10 68011404
Email:	emc@chinattl.com

1.3.2 Details of accreditation status

Accredited by:	China National Accreditation for Laboratory (CNAL)
Registration number:	CNAL Registration No.L0570
Standard:	ISO/IEC 17025

1.3.3 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name:	Firefly Mobile, Inc
Address:	250 Parkway Drive Suite 220 Lincolnshire, IL 60069 United
Country:	USA
Telephone:	(847) 353-1984
Fax:	(847) 353-1820
Contact:	Shawn Novak
Telephone:	(847) 353-1984
Email:	Shawn.novak@fireflymobile.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name:	--
Address:	--
City:	--
Country:	--

2 Test Item

2.1 General Information

Manufacturer: Firefly Mobile, Inc

Name: Mobile Phone

Model Number: W100

Serial Number: 000000167

Production Status: Production

Receipt date of test item: 2007-07-20

2.2 Outline of EUT

EUT is a GSM850/ PCS1900 Dual-band Terminal Equipment. It supports GSM mode, with the frequency range of 824 MHz to 849 MHz for GSM/GPRS band 850 and 1 850 MHz to 1 910 MHz for GSM/GPRS band 1900. Its modulation type is GMSK.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Mobile phone	Firefly Mobile, Inc	W100	000000167	None
B	Adaptor	Firefly Mobile, Inc	DSA-5W-05 FUS 051055	PE1105221	None
C	Battery	Firefly Mobile, Inc	27-0000-001	XWD07040 00056	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	DC cable on Adapter	Unknown	1.20m	No	1	None

2.5 Other Information

(a) Multislot Class of GPRS

The multislot class of the GPRS mode is class 10 with 5 active timeslots.

(b) Emission Designator

The emission designator is 280KGXW.

(c) About Power Source

Items	Relative Information
Adaptor	Input: 100-240V AC, 50/60Hz, 0.2A Output: 5.1V DC, 0.55A
Battery	3.7V 800mAh

3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

Specification Clause	Name of Test	Result
GSM mode:		
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission (GSM mode)	Pass
2.1046,24.232	Radiated RF Power Output (GSM mode)	Pass
22.913(a)	Effective Radiated Power (ERP) (GSM mode)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth (GSM mode)	*Note 1
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation (GSM mode)	Pass
2.1046,22.809,24. 232(b)	Conducted RF Power Output(GSM mode)	Pass
2.1057,22.357,24. 238	Conducted spurious emissions(GSM mode)	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation (GSM mode)	Pass
GPRS mode:		
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission (GPRS mode)	Pass
2.1046,24.232	Radiated RF Power Output (GPRS mode)	Pass
22.913(a)	Effective Radiated Power (ERP)(GPRS mode)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth (GPRS mode)	*Note 1
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation (GPRS mode)	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation (GPRS mode)	Pass
2.1046,22.809,24. 232(b)	Conducted RF Power Output (GPRS mode)	Pass
2.1057,22.357,24. 238	Conducted spurious emissions	Pass
Note 1: No applicable performance criteria. Note 2: The Power Output Conducted is not tested since the antenna of the EUT is internal integrated and is not removable or can't readily access to the connection point.		

4 Test Results

4.1 Radiated Spurious Emission

Specifications:	2.1051, 24.238,2.1053,22.917
Date of Tests	2007.07.21
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2007-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2007-11-17	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal

Limit Level Construction:
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB, so the limit level is:
P(dBm) – (43 + 10 log(P)) dB= -13dBm

Limits for Radiated spurious emissions(UE)	
Frequency range	**Limit Level /Resolution Bandwidth**
30 MHz to 20000 MHz	-13dBm/1MHz

Test Setup:

The EUT was placed in an anechoic chamber, see figure SP. The CMU 200 was used to set the TX channel and power level and modulate the TX signal with different bit patterns. The test was done using an automated test system, where all test equipments were controlled by a computer.

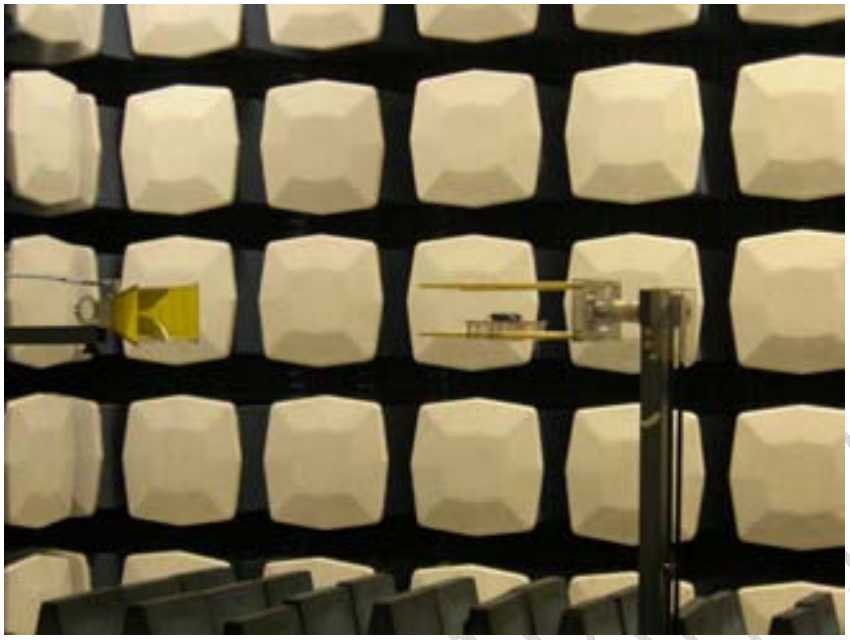


Figure SP

Test Method:

1 The maximum spurious emissions were searched by turning the azimuth of the turntable, shifting the polarization of the measuring antenna and changing the pose of the EUT.

2 Levels of EUT's transmitter harmonics and suspicious signals were recorded.

3 The recorded levels were corrected in the automated test system with the correction factors given by a substitution calibration made before the measurement. The calibration was made separately for vertical and horizontal polarization and the system uses different correction factors depending on the measuring antenna polarization.

4 The corrected values of radiated spurious emissions indicated as EIRP are reported.

Note:

1 A fully charged battery was used during the test.

2 The investigated ARFCNs are 190 (836.6 MHz) and 661 (1880.0 MHz), which are the middle channel of GSM 850 MHz band and PCS 1900 MHz band respectively.

3 The investigated frequency range is 30 MHz ~ 20 GHz, including out of band emission and band-edge emission measurements.

Test Results for GSM mode:

Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
3346.4	-46.2	V	H
3346.4	-45.2	V	V
4183.0	-52.9	V	V
3760.0	-52.6	V	H
9400.0	-39.2	V	H
5640.0	-40.5	H	H
9400.0	-40.4	V	V
7520.0	-47.0	H	V
9400.0	-42.2	H	V
Band-edge emission			
EUT Channel	Level [dBm]		
190	-13.51		
661	-14.38		

Test Results for GPRS mode:

Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
1673.3	-46.2	V	H
2509.8	-51.2	V	H
1673.3	-46.8	V	V
9202.6	-38.3	V	V
Band-edge emission			
EUT Channel	Level [dBm]		
190	-15.30		
661	-14.28		

4.2 Radiated RF Power Output and ERP

Specifications:	2.1046,24.232,22.913(a)
Date of Tests	2007.07.21
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2007-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2007-11-17	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal

Limit Level Construction:

(a) Radiated RF Power Output

According to Part 24.232(b), i.e., Mobile/portable stations are limited to 2 watts EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications, so the limit level is 2 W or 33 dBm.

(b) ERP

According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Limits for Radiated RF Power Output	
Frequency range	**Limit Level (EIRP)/Resolution Bandwidth**
TX channel	33dBm/1MHz
Limits for ERP	
Frequency range	**Limit Level (ERP)**
TX channel	7W

Test Setup:

The EUT was set in an anechoic chamber, see Figure P. In the corner of the chamber there is a communication antenna, which is connected to the CMU 200 located outside the chamber. The test was done using an automated test system,

where all test equipments were controlled by a computer.

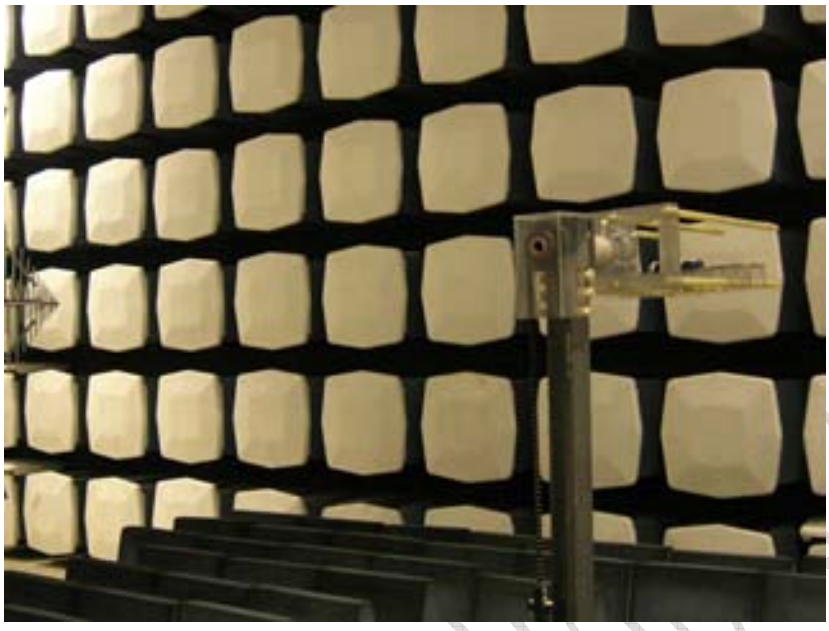


Figure P

Test Method

1 The maximum power was searched by turning the azimuth of the turntable, shifting the polarization of the measuring antenna and changing the pose of the EUT.
2 The measured levels are EIRP values corrected in the automated test system with the correction factors given by a substitution calibration made before the measurement. The calibration is made separately for vertical and horizontal polarization and the system uses different correction factors depending on the measuring antenna polarization.
3 The corrected maximum levels were reported for EIRP values, and ERP values can be calculated from EIRP values.

Note:

1 A fully charged battery was used during the test.
2 For GSM 850 MHz band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For PCS 1900 MHz band, the ARFCN 512 (1850.2 MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated, which are the lowest, middle and highest channel.
3 ERP dBm = EIRP dBm – 2.15dB.

ERP Value for GSM 850 band mode:

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.23	32.04
190	836.65	31.78
251	848.88	31.24

EIRP Value for PCS 1900 band mode:

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.10	32.79
661	1880.0	29.82
810	1909.8	27.02

ERP Value for GPRS 850 band mode:

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.60	31.06
190	836.58	30.66
251	848.88	27.68

EIRP Value for GPRS 1900 band mode:

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.13	25.78
661	1879.07	26.07
810	1909.77	25.89

4.3 Occupied bandwidth

Specifications:	2.1049,22.917(b),24.238(b)
Date of Test	2007.07.21
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2007-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2007-11-17	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal

Test Setup

The situation under which maximum EIRP values were found in the measurement of the radiated RF power output was used to determine the 99% occupied bandwidth. The CMU 200 was used to set the TX channel, power level and modulation.

Test Method

The 99% occupied bandwidth was calculated form the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power band, see screenshots.

Note:

1 A fully charged battery was used during the test.
2 The ARFCN 128, 190 and 251 for GSM 850 MHz band and 512, 661 and 810 for PCS 1900 MHz band are investigated.

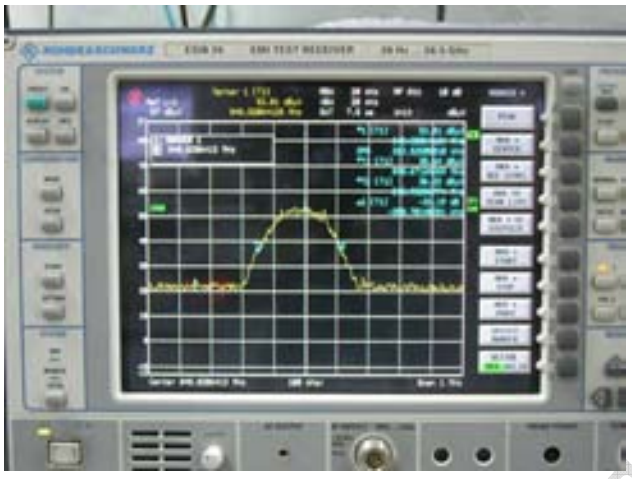
4.3.1 Results for GSM mode:

EUT channel	99% occupied bandwidth [kHz]
128	278.56
190	279.26
251	260.521
512	246.49
661	246.49
810	248.49

Screenshots:

Screenshot 1 Channel 128

Screenshot 2 Channel 190



Screenshot 3 Channel 251

Screenshot 4 Channel 512

Screenshot 5 Channel 661

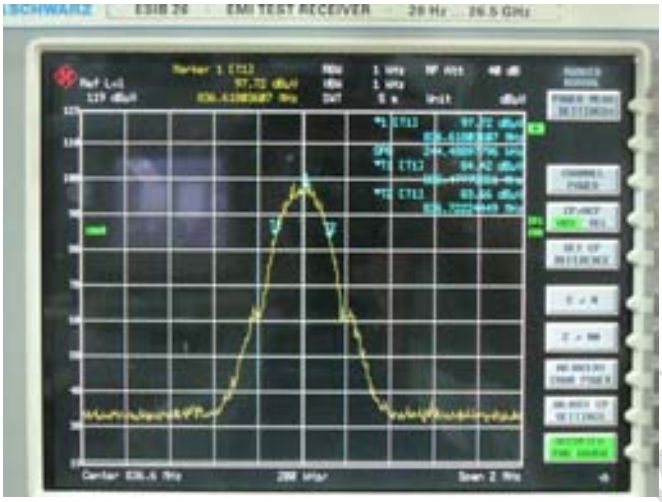
Screenshot 6 Channel 810

4.3.2 Results for GPRS mode:

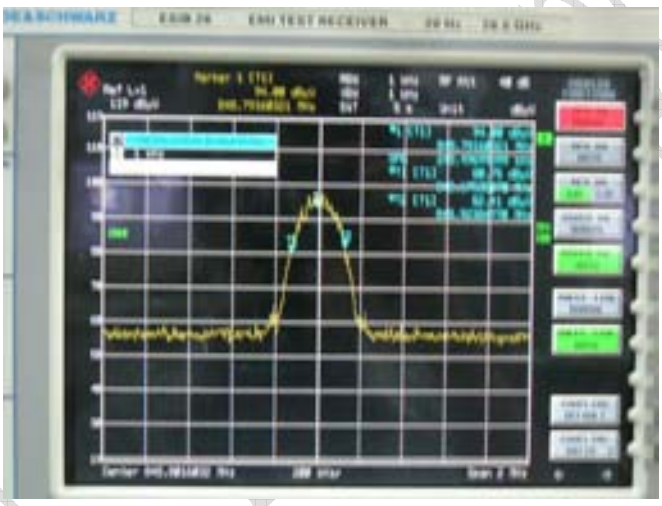
EUT channel	99% occupied bandwidth [kHz]
128	252.505
190	244.489
251	248.497
512	246.493
661	244.489
810	248.497

Screenshots:

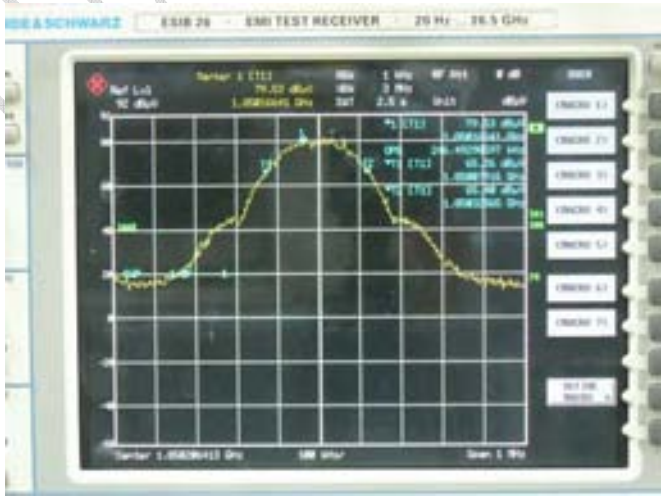
Screenshot 7 Channel 128



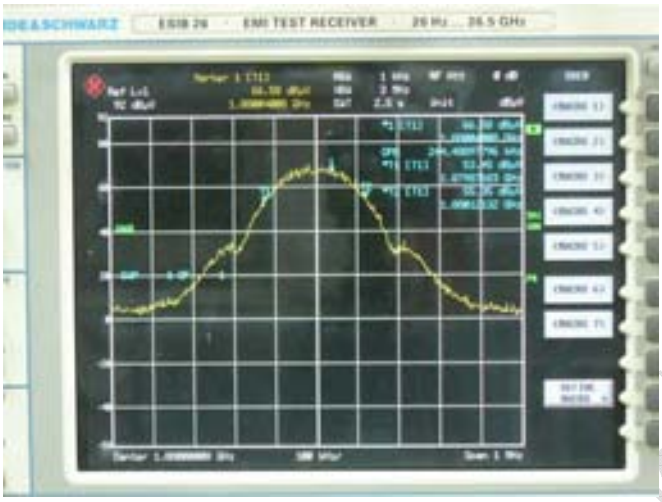
Screenshot 8 Channel 190



Screenshot 9 Channel 251



Screenshot 10 Channel 512



Screenshot 11 Channel 661

Screenshot 12 Channel 810

4.4 Frequency Stability over Temperature Variation

Specifications:	2.1055,22.355,24.235
Date of Test	2007.07.21~2007.07.25
Test conditions:	Ambient Temperature:-30℃-50℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal

7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal
7353-2	DC power	Agilent.	66319B	MY43000149	2008-03-03	Normal
Limit						
Frequency deviation [ppm]	±2.5					

Test Setup

The EUT was placed in a temperature chamber, demonstrated as figure T. The CMU 200 was used to set the TX channel and power level, modulate the TX signal with different bit patterns and measure the frequency of TX. A dummy battery powered by a DC power supply is used to provide a constant power source.

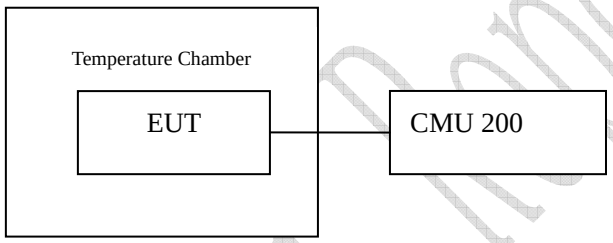


Figure T: setup for measurement of frequency stability over temperature variation

Test Method

1. The EUT was turned off and placed in the temperature chamber.
2. The temperature of the chamber was set to -30℃ and allowed to stabilize.
3. The EUT temperature was allowed to stabilize for 45 minutes.
4. The EUT was turned on and set to transmit with CMU 200.
5. The maximum transmit frequency deviation during one minute period was measured by CMU 200.
6. The steps 3-5 were repeated for -20℃, -10℃, 0℃, 10℃, 20℃, 30℃, 40℃ and 50℃.

4.4.1 Test results for GSM mode

The frequency deviation from the centre frequency over temperature variation is showed as table T1 and T2 for channel 190 and 661 respectively.

Table T1: frequency deviation from the centre frequency over temperature variation for channel 190

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	836	1.0	Pass
-20	669	0.8	Pass
-10	585	0.7	Pass

0	585	0.7	Pass
10	585	0.7	Pass
20	418	0.5	Pass
30	334	0.4	Pass
40	585	0.7	Pass
50	669	0.8	Pass

Table T2: frequency deviation from the centre frequency over temperature variation for channel 661

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	2068	1.1	Pass
-20	1504	0.8	Pass
-10	1504	0.8	Pass
0	1504	0.8	Pass
10	1316	0.7	Pass
20	1316	0.7	Pass
30	1128	0.6	Pass
40	1128	0.6	Pass
50	1504	0.8	Pass

4.4.2 Test results for GPRS mode

The frequency deviation from the centre frequency over temperature variation is showed as table T3 and T4 for channel 190 and 661 respectively.

Table T3: frequency deviation from the centre frequency over temperature variation for channel 190

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	669	0.8	Pass
-20	669	0.8	Pass
-10	585	0.7	Pass
0	585	0.7	Pass
10	418	0.5	Pass
20	418	0.5	Pass
30	334	0.4	Pass
40	585	0.7	Pass
50	669	0.8	Pass

Table T4: frequency deviation from the centre frequency over temperature variation for channel 661

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	1880	1.0	Pass
-20	1504	0.8	Pass
-10	1504	0.8	Pass
0	1504	0.8	Pass
10	1316	0.7	Pass
20	1316	0.7	Pass
30	1128	0.6	Pass
40	1128	0.6	Pass
50	1504	0.8	Pass

4.5 Frequency Stability over Voltage Variation

Specifications:	2.1055,22.355,24.235
Date of Test	2007.07.24
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal
7353-2	DC power	Agilent.	66319B	MY43000149	2008-03-03	Normal

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a shielding chamber and powered by an adjustable DC power supply, demonstrated as figure V. The CMU 200 was used to set the TX channel and power level, modulate the TX signal with different bit patterns and measure the frequency of TX.

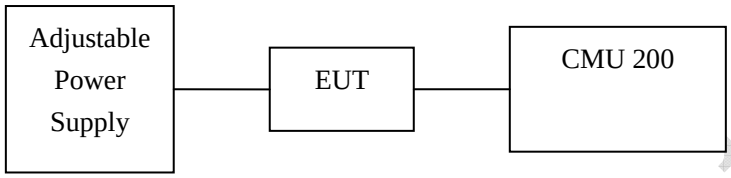


Figure V: test setup for measurement of frequency stability over voltage variation

Test Method

The EUT battery was replaced with an adjustable DC power supply. The frequency stability measured at nominal voltage and at the cut-off point.

Test Results for GSM mode:

The frequency deviation from the centre frequency over voltage variation is showed as table V1 and V2 for channel 190 and 661 respectively.

Table V1: frequency deviation from the centre frequency over temperature variation for channel 190

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	3.7	-12	-0.01	Pass
Cut-off point	3.3	44	0.05	Pass

Table V2: frequency deviation from the centre frequency over temperature variation for channel 661

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	3.7	-28	-0.01	Pass
Cut-off point	3.4	-38	-0.02	Pass

Test Results for GPRS mode:

The frequency deviation from the centre frequency over voltage variation is showed as table V3 and V4 for channel 190 and 661 respectively.

Table V3: frequency deviation from the centre frequency over temperature variation for 190

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	3.7	93	0.11	Pass
Cut-off point	3.3	-97	-0.12	Pass

Table V4: frequency deviation from the centre frequency over temperature variation for 661

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	3.7	24	0.01	Pass
Cut-off point	3.4	-31	-0.02	Pass

4.6 Conducted RF Power Output

Specifications:	24.232（b）
Date of Tests	2007.08.08
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810
Test Results:	Pass

Test equipment Used:

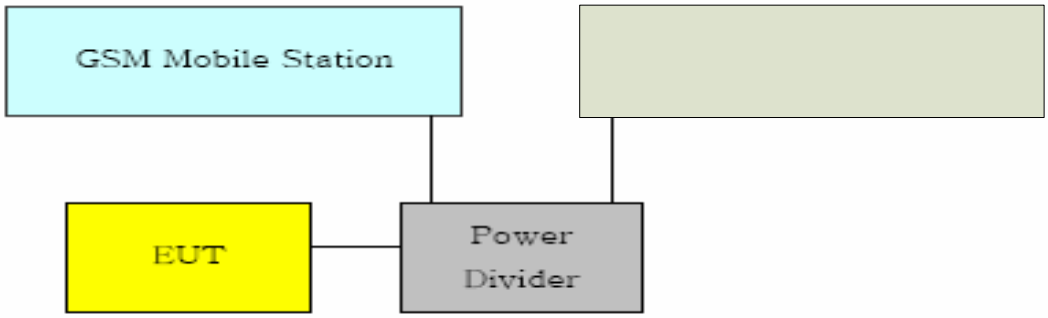
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal
---	Power spliter	Jie sai	---	1000132	2008-01-04	Normal

Limits for conducted RF Power Output	
Frequency range	**Nominal Peak output power(dBm)**
TX channel	30dBm/1MHz

Test Setup:

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio

Communication tester (CMU-200) to ensure max power transmission and proper modulation and measured by Rhode & Schwarz EMI test receiver (ESI26)



Test Method

1) The EUT was coupled to the EMI and the base station simulator through a power divider. The radio frequency load attached to the EUT antenna terminal was 50 Ohm. The lost of the cables the test system is calibrated to correct the reading.
2) The spectrum analyzer was set to Maxpeak Detector function and Maximum hold mode.
3) The resolution banswidth of the spectrum analyzer was comparable to the emission bandwidth.

In GSM 850 band these measurements were done at 3 channels, channel 128, 190 and 251.
In GSM 1900 band these measurements were done at 3 channels, channel 512, 661 and 810.

Note:

1 A fully charged battery was used during the test.
2 For GSM 850 MHz band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For PCS 1900 MHz band, the ARFCN 512 (1850.2 MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated, which are the lowest, middle and highest channel.

ERP Value for GSM 850 band mode:

ARFCN	Peak output power [dBm]
128	30.2
190	31.6
251	30.1

EIRP Value for PCS 1900 band mode:

ARFCN	Peak output power [dBm]
512	30.19
661	28.61
810	29.50

ERP Value for GPRS 850 band mode:

ARFCN	Peak output power [dBm]
128	30.0
190	30.8
251	31.2

EIRP Value for GPRS 1900 band mode:

ARFCN	Peak output power [dBm]
512	30.02
661	29.71
810	29.56

4.7 Conducted Spurious Emission

Specifications:	2.1057,22.359,24.238
Date of Tests	2007.08.08
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal

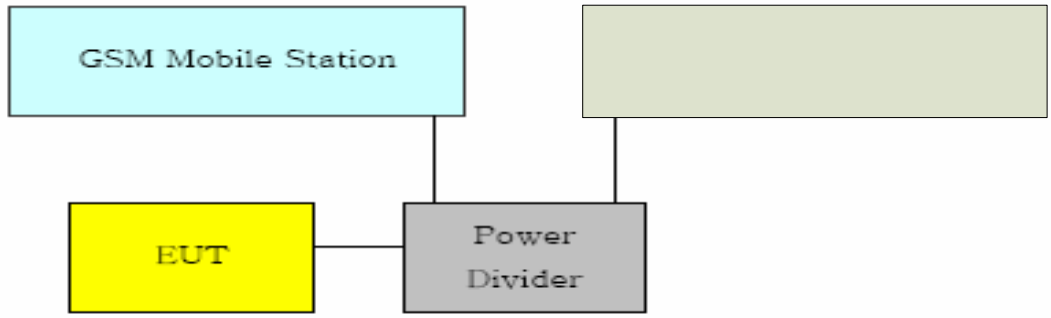
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2008-02-23	Normal
---	Power spliter	Jie sai	---	1000132	2008-01-04	Normal

Limit Level Construction:
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB, so the limit level is:
P(dBm) – (43 + 10 log(P)) dB= -13dBm

Limits for Radiated spurious emissions(UE)	
Frequency range	**Limit Level /Resolution Bandwidth**
30 MHz to 20000 MHz	-13dBm/1MHz

Test Setup:

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation and measured by Rhode & Schwarz EMI test receiver (ESI26)



Test Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.
1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment under test, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

In GSM 850 band these measurements were done at 3 channels, channel 128, 190 and 251.
In GSM 1900 band these measurements were done at 3 channels, channel 512, 661 and 810.

Note:

1 A fully charged battery was used during the test.
2 For GSM 850 MHz band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For PCS 1900 MHz band, the ARFCN 512 (1850.2 MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated, which are the lowest, middle and highest channel.

Test Results for GSM mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
3346.4	nf
4183.0	nf
3760.0	nf
9400.0	nf
5640.0	nf
7520.0	nf
9400.0	nf
11101.2	nf
12591.4	nf
14801.6	nf
16651.8	nf
18502.0	nf
Band-edge emission	
EUT Channel	Level [dBm]
190	-15.51
661	-16.23
nf: noise floor	

Test Results for GPRS mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
3346.4	nf
4183.0	nf
3760.0	nf
9400.0	nf
5640.0	nf
7520.0	nf
9400.0	nf
11101.2	nf
12591.4	nf
14801.6	nf
16651.8	nf
18502.0	nf
Band-edge emission	
EUT Channel	Level [dBm]
190	-15.89

661	-16.28

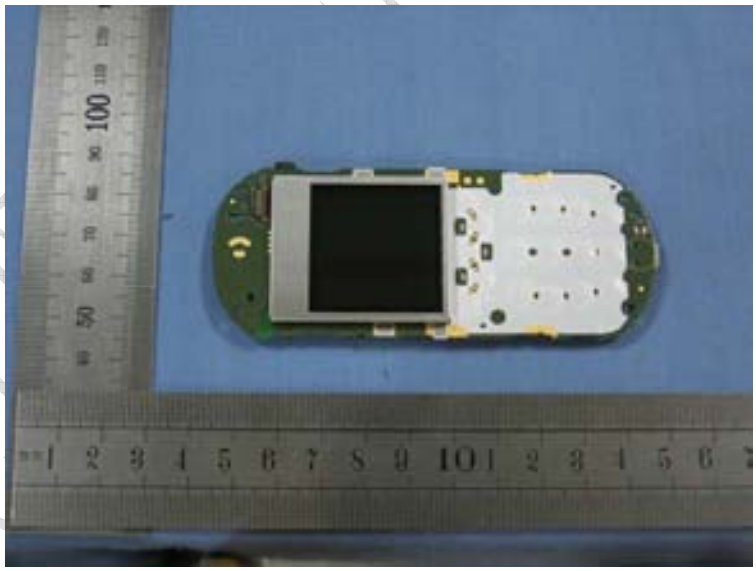
Annex A External Photos

Picture 1 Front view of the handset

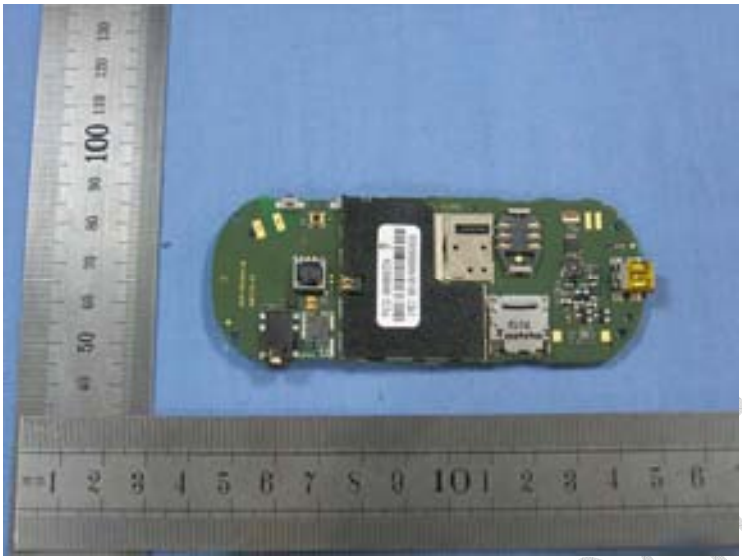
Picture 2 Back view of the handset

Picture 3 Front view of the adaptor

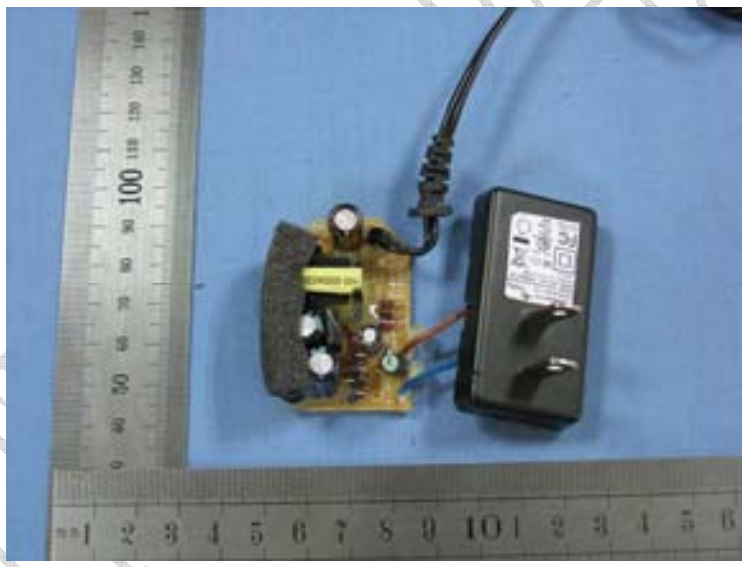
Annex B Internal Photos



Picture 5 Front view of the internal structure



Picture 6 Back view of the internal structure



Picture 7 Internal front view of adaptor

Picture 8 Internal back view of the adaptor

ANNEX C Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

The End of this Report