

Report No.: RZA1012-2086RF01



Part 22 TEST REPORT

FCC ID

WLPW110CBW

Model

W110

Shanghai Longcheer3g Technology Co.,Ltd

TA Technology (Shanghai) Co., Ltd. 报告专用章

GENERAL SUMMARY

Product Name	GSM /WCDMA dual mode mobile phone Model W110			
FCC ID	WLPW110CBW			
Report No.	RZA1012-2086RF01			
Client	Shanghai Longcheer3g Technology Co.,Ltd			
Manufacturer	Shanghai Longcheer3g Technology Co.,Ltd			
Reference Standard(s)	FCC CFR47 Part 2 (2010-12) Frequency Allocations And Radio Treaty Matters; General Rules And Regulations FCC CFR 47 Part 22H (2010-12) Public Mobile Services (850MHz) ANSI/TIA-603-C(2004) Land mobile FM or PM Communications Equipment Measurements and Performance Standards.			
Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards. General Judgment: Pass (Stamp) Date of issue: March 21st, 2011			
Comment	The test result only responds to the measured sample.			

Approved by Revised by Xu kai

Yang Weizhong

Xu kai

Performed by Kang Lingling

TA Technology (Shanghai) Co., Ltd. Test Report Registration Num:428261

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1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong

City: Shanghai Post code: 201201

Country: P. R. China

Contact: Yang Weizhong

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E-mail: yangweizhong@ta-shanghai.com

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1.3. Applicant Information

Address:

Company: Shanghai Longcheer3g Technology Co.,Ltd

No.1, Building 5, 299 Bisheng Rd, Zhangjiang Hi-Tech Park, Pudong,

Shanghai

City: Shanghai

Postal Code: 201204

Country: P.R. China

Contact Hu Zhengfang

Telephone: +86-21-64088898

Fax: +86-21-54970816

1.4. Manufacturer Information

Company: Shanghai Longcheer3g Technology Co.,Ltd

No.1, Building 5, 299 Bisheng Rd, Zhangjiang Hi-Tech Park, Pudong,

Shanghai

City: Shanghai

Postal Code: 201204

Country: P.R. China

Telephone: +86-21-64088898

Fax: +86-21-54970816

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1.5. Information of EUT

General information

Name of EUT:	GSM /WCDMA dual mode mobile phone			
IMEI:	355077010033420			
Hardware Version:	LQWM232A			
Software Version:	LQWHM01.1.0			
Antenna Type:	Internal Antenna			
Device Operating Configurations:				
Operating Mode(s):	GSM 850 (tested)			
GPRS Multi-slot Class:	10			
EGPRS Multi-slot Class:	10			
Maximum E.R.P.	26.61dBm			
Power Supply:	Battery or Charger			
Rated Power Supply Voltage:	3.8V			
Extreme Voltage:	Minimum: 3.5V Maximum: 4.2V			
Extreme Temperature:	Lowest: -30°C Highest: +50°C			
Operating Frequency Bongs(s)	Band	Tx (MHz)	Rx (MHz)	
Operating Frequency Range(s)	GSM850	824.2 ~ 848.8	869.2 ~ 893.8	

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Auxiliary equipment details

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AE1: Battery

Model: BL-4C-800mAh (UL)

Manufacturer: SHENZHEN BAK BATTERY CO.,LTD

S/N: BAK1101000123

Equipment Under Test (EUT) is GSM /WCDMA dual mode mobile phone with internal antenna. The EUT supports GSM 850 in this report.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. Test Date

The test date is from July 1, 2010 to July 13, 2010.

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2. Test Information

2.1. Summary of test results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Radiated Power	22.913(a)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	22.917	PASS
5	Frequency Stability	2.1055 / 22.355	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
7	Radiates Spurious Emission	2.1053 / 22.917 (a)	PASS

PASS: The EUT complies with the essential requirements in the standard.

FAIL: The EUT does not comply with the essential requirements in the standard.

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2.2. RF Power Output

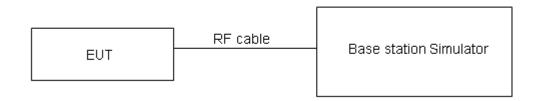
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation. These measurements have been tested at following channels: 128, 190, 251 for GSM 850.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U= 0.4 dB.

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Test Results

GSM 850		Conducted Power(dBm)			
		Channel 128	Channel 190	Channel 251	
		824.2 (MHz)	836.6 (MHz)	848.8 (MHz)	
GSM	Results	30.95	30.96	30.85	
GPRS	1TXslot	30.80	30.82	30.70	
(GMSK)	2TXslots	29.46	29.51	29.40	
EGPRS	1TXslot	27.20	27.22	27.13	
(GMSK)	2TXslots	25.68	25.72	25.62	

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2)The following testing in GPRS/EGPRS is set to 1TXslot based on the maximum RF Output Power.

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2.3. Effective Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The measurement procedures in TIA- 603C are used.

The radiated power was measured using ETS-LINDGREN OTA Chamber in "Peak" mode.

- 1. In an fully anechoic chamber, a sleeve dipole antenna for the frequency band of interest is placed on the reference centre of the turntable at a 5 meters test distance from the test receive antenna. An RF signal source is connected to the dipole with a Tx cable that has been constructed to not interfere with radiation pattern of the antenna. A known (measured) power (Pin) is applied to input of dipole, and the power received (P_r) is recorded from the spectrum analyzer.
- 2. The EUT substituted for the dipole at the reference centre of the chamber. A radio link shall be established between EUT and the Base Station Simulator. The EUT is controlled to ensure at its maximum power level and proper modulation.
- 3. A scan is performed to obtain the radiation pattern. A peak detector is used while RBW and VBW are both set to 3MHz. From these measurements, the maximum radiated power (P_{er}) was recorded from the spectrum analyzer from the 360 degrees rotation of the turntable and in both horizontally and vertically polarized orientations of the test antenna.

The Reference Path loss = Pin -Pr-Tx cable loss+ Substitution antenna gain

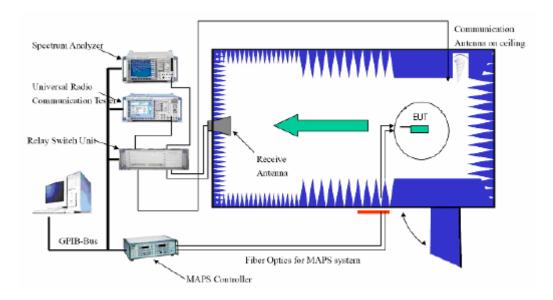
EIRP= Per + Path loss

- 4. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP =EIRP 2.15 dBi.
- 5. The measurement will be conducted at three channels No.128, No.190 and No.251 (Bottom, middle and top channels of GSM 850).

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Test Setup



Limits

Rule Part 22.913(a) specifies that "Mobile/portable stations are limited to 7 watts ERP".

Limit (ERP)	≤ 7 W (38.45 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U= 1.19 dB

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Test Results

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	Channel	Frequency (MHz)	LVL (EUT)	S.G	Gain (dBi)	Cable Loss	Pr (dBm)	Correction Factor (dBm)	ERP (dBm)
	128	824.2	-18.70	0	1.06	14.7	60.58	46.94	25.80
GSM 850	190	836.6	-18.43	0	1.20	14.72	60.49	46.97	26.02
	251	848.8	-18.84	0	1.38	14.77	60.54	47.15	26.12
GSM 850	128	824.2	-18.62	0	1.06	14.7	60.58	46.94	26.20
GPRS	190	836.6	-18.37	0	1.20	14.72	60.49	46.97	26.42
GFKS	251	848.8	-18.62	0	1.38	14.77	60.54	47.15	26.61
GSM 850 EGPRS	128	824.2	-23.75	0	1.06	14.7	60.58	46.94	25.48
	190	836.6	-23.63	0	1.20	14.72	60.49	46.97	25.76
	251	848.8	-23.60	0	1.38	14.77	60.54	47.15	25.94

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2.4. Occupied Bandwidth

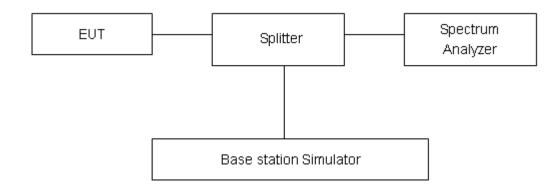
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 3kHz,VBW is set to 10kHz on spectrum analyzer. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2. U= 624Hz.

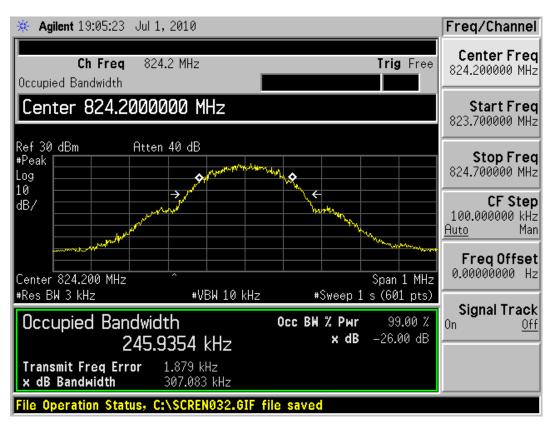
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Test Result

GSM 850

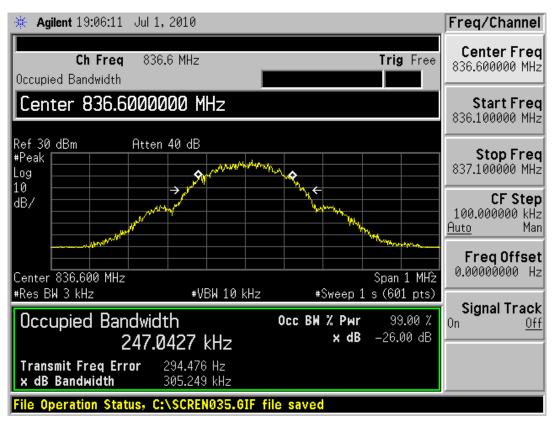
Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
128	824.2	245.94	307.08
190	836.6	247.04	305.25
251	848.8	247.25	313.42



GSM 850 CH128 Occupied Bandwidth

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GSM 850 CH190 Occupied Bandwidth



GSM 850 CH251 Occupied Bandwidth

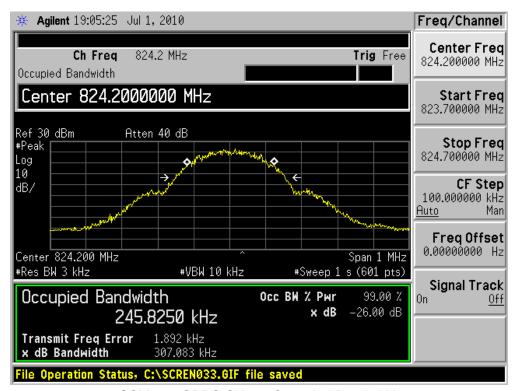
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GSM 850 GPRS

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30W 000 OF 100	20M 000 CF 110						
Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)				
128	824.2	245.83	307.08				
190	836.6	255.25	305.25				
251	848.8	308.72	313.42				



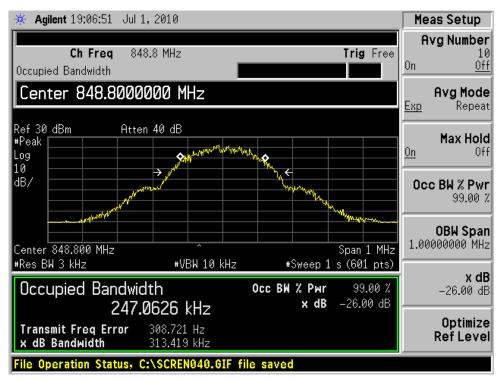
GSM 850 GPRS CH128 Occupied Bandwidth

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GSM 850 GPRS CH190 Occupied Bandwidth



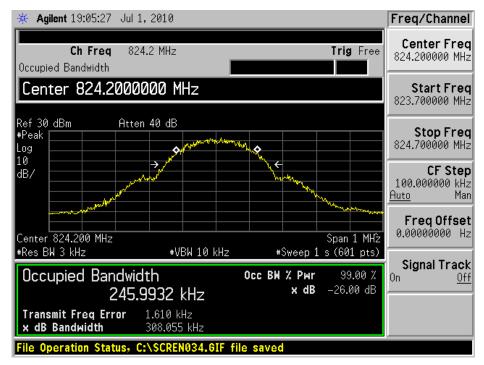
GSM 850 GPRS CH251 Occupied Bandwidth

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GSM 850 EGPRS

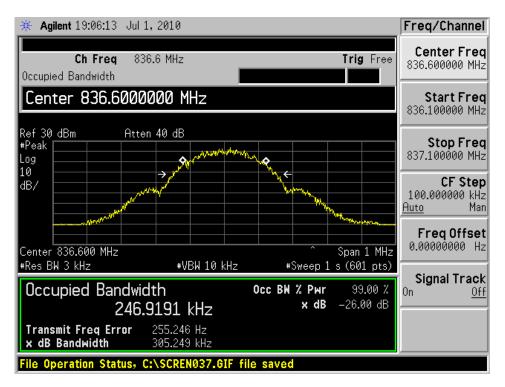
Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
128	824.2	245.99	308.06
190	836.6	255.25	305.25
251	848.8	247.01	313.42



GSM 850 EGPRS CH128 Occupied Bandwidth

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GSM 850 EGPRS CH190 Occupied Bandwidth



GSM 850 EGPRS CH251 Occupied Bandwidth

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2.5. Band Edge Compliance

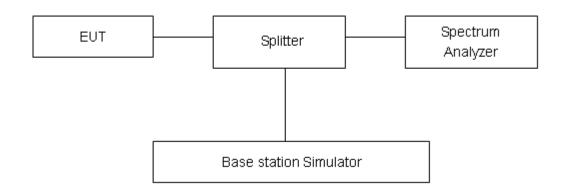
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The average detector is used. RBW is set to 3kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 22.917(a) specifies that "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."

Limit -13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U=0.684dB.

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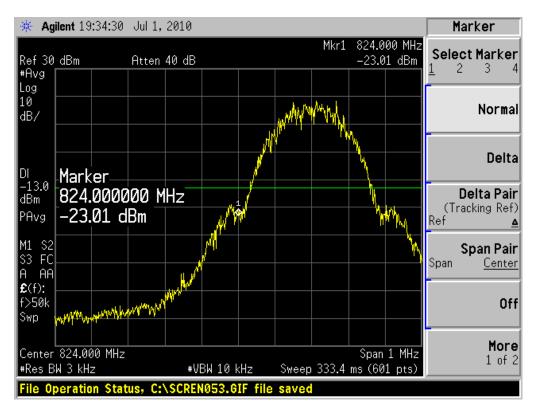
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Test Result

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	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
GSM 850	824.0	-23.01	-13	PASS
GSIVI 650	849.0	-20.83	-13	PASS
GSM	824.0	-22.23	-13	PASS
850+GPRS	849.0	-21.88	-13	PASS
GSM	824.0	-23.14	-13	PASS
850+EGPRS	849.0	-20.55	-13	PASS

GSM 850



GSM 850 CH128 Channel

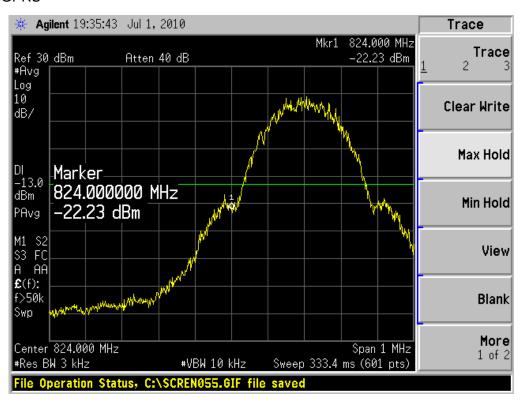
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GSM 850 CH251 Channel

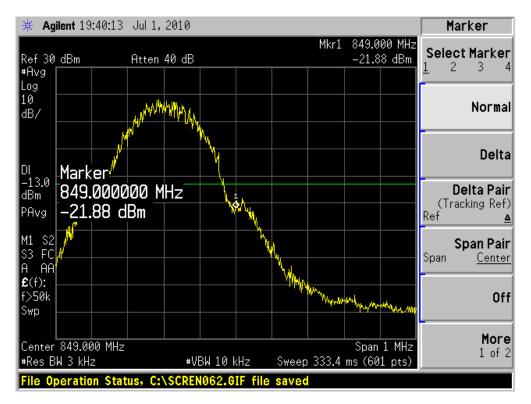
GSM 850 GPRS



GSM 850 GPRS CH128 Channel

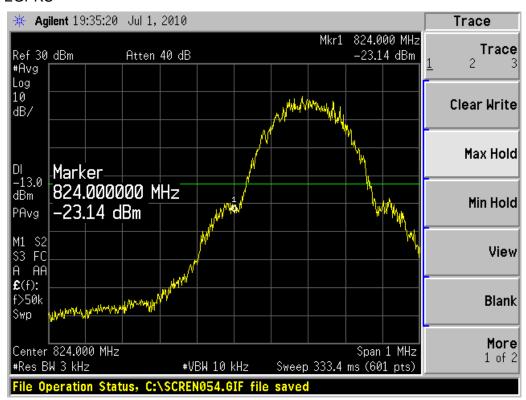
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GSM 850 GPRS CH251 Channel

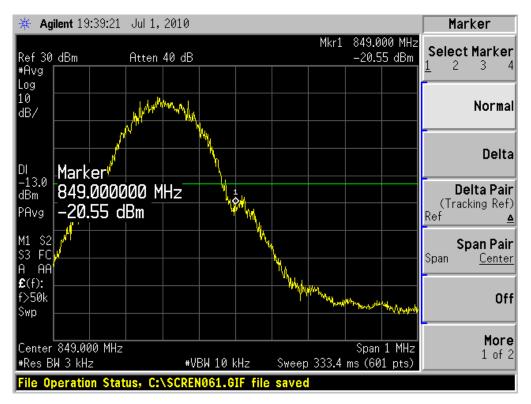
GSM 850 EGPRS



GSM 850 EGPRS CH128 Channel

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GSM 850 EGPRS CH251 Channel

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2.6. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°C in 10°C step size,

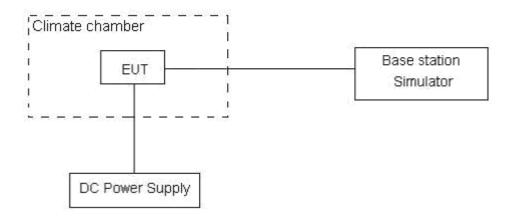
- (1) With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours.
- (2) Measure the carrier frequency with the test equipment in a "call mode". These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.
- (3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.
- 2. Frequency Stability (Voltage Variation)

The frequency stability shall be measured with variation of primary supply voltage as follows:

- (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.5 V and 4.2 V, with a nominal voltage of 3.8V.

Test setup



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Limits

The frequency stability of the carrier shall be accurate to within 2.5 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 22.355 Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Limits	≤ 2. 5 ppm
	'''

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor k = 3. U= 0.01ppm.

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Test Result

GSM 850

Temperature	Test Results (ppm) / 3.8 V Power supply
(° C)	GSM 850 Channel 190
-30	0.016
-20	0.041
-10	0.036
0	0.015
10	0.036
20	0.021
30	0.032
40	0.039
50	0.028

Voltage	Test Results(ppm) / 20° C
(V)	GSM 850 Channel 190
3.5	0.036
3.8	0.021
4.2	0.017

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2.7. Spurious Emissions at Antenna Terminals

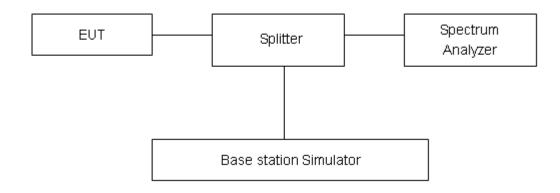
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

Test setup



Limits

Rule Part 22.917(a) specifies that "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."

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty	
100kHz-2GHz	0.684 dB	
2GHz-12.75GHz	1.407 dB	

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GMS 850

Harmonic	TX ch.128 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	1648.5	-46.12	-13
3	2472.6	-53.14	-13
4	3296.8	Nf	-13
5	4121	Nf	-13
6	4945.2	Nf	-13
7	5769.4	Nf	-13
8	6593.6	Nf	-13
9	7417.8	Nf	-13
10	8242	Nf	-13
Nf: noise floor			

Harmonic	TX ch.190	Level	Limit		
Tiaimonic	Frequency (MHz) (dBm)		(dBm)		
2	1673.1 -4		-13		
3	2509.5	-53.79	-13		
4	4 3346.4		-13		
5	5 4183 Nf		-13		
6	5019.6	Nf	-13		
7 5856.2		Nf	-13		
8	6692.8	Nf	-13		
9	7529.4	Nf	-13		
10 8366		Nf -13			
Nf: noise floor					

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Harmonic	TX ch.251	Level	Limit		
Tiaimonio	Frequency (MHz) (dBm)		(dBm)		
2	1697.6	-45.21	-13		
3	2546.6	-52.76	-13		
4	3395.2	Nf	-13		
5	4244	Nf	-13		
6	5092.8	Nf	-13		
7	7 5941.6		-13		
8	6790.4	Nf	-13		
9	7639.2	Nf	-13		
10 8488		Nf	-13		
Nf: noise floor					

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2.8. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The measurements procedures in TIA -603C are used.

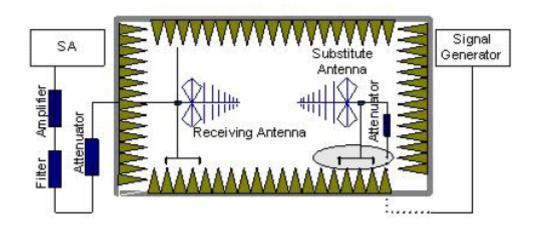
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The measurement will be conducted at three channels 128, 190, 251 of GSM850.

The procedure of Radiates Spurious Emission is as follows:

1. Pre-calibration

In an fully anechoic chamber, A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted at a 3 meter test distance from the receive antenna. An RF signal source is connected to the dipole with a Tx cable that has been constructed to not interfere with radiation pattern of the antenna. A known (measured) power (Pin) is applied to input of dipole, and the power received (Pr) is recorded from the spectrum analyzer.

"Reference Path loss" is established as Pin –Pr-Tx cable loss+ Substitution antenna gain.



2. EUT Test

EUT was placed on a 1.5 meter high non – conductive table at a 3 meter test distance from the receive antenna. The height of receiving antenna is 1.5 m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the table and adjusting the receiving antenna polarization. The measurement is carried out using a spectrum analyzer .The radiated emission measurements of all non-harmonic and harmonic of the transmit frequency from 30MHz to the 10th harmonic were measured with peak detector. RBW is set to 100kHz and VBW is set to 300kHz for 30MHz to 1GHz. RBW is set to 100kHz,VBW is set to 30kHz for the carrier frequency, RBW is set to 1MHz and VBW is set to 3MHz for other frequency above 1GHz. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the

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distortion of the testing equipment in the band above the carrier frequency. If the harmonic could not be detected above the noise floor, the ambient level was recorded.

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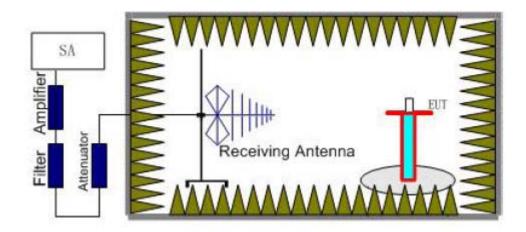
The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:

RSE = Rx (dBm) + Reference Path loss

Rx: reading of the receiver

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis) and docking mode. The worst emission was found in stand-up position (Z axis) and the antenna is vertical.



Limits

Rule Part 22.917(a) specifies that "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."

Limit -13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U=3.16 dB.

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Test Result

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GSM 850

Harmonic	TX ch.128 Level		Limit	
Hamionic	Frequency (MHz) (dBm)		(dBm)	
2	1648.3	-47.11	-13	
3	2472.2	-41.28	-13	
4	3296.3	-49.18	-13	
5	4121.3	-47.99	-13	
6	4944.8	-47.08	-13	
7	5770.1	-48.29	-13	
8	6593.6	Nf	-13	
9	7417.8	Nf	-13	
10	10 8242		-13	
Nf: noise floor				

Harmonic	TX ch.190 Frequency (MHz)	Level (dBm)	Limit (dBm)		
2	1672.69	-44.75	-13		
3	2509.7	-39.66	-13		
4	3346.1	-48.41	-13		
5	4183.1	-42.79	-13		
6	5020.1	-45.21	-13		
7	5856.4	-47.05	-13		
8	6692.8	Nf	-13		
9	7529.4	7529.4 Nf			
10	10 8366		-13		
Nf: noise floor					

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Harmonia	TX ch.251	Level	Limit		
Harmonic	Frequency (MHz) (dBm)		(dBm)		
2	1697.6	-42.37	-13		
3	2546.6	-41.17	-13		
4	3395.3	-48.13	-13		
5	5 4244.3 -47.70		-13		
6	5092.5	-48.38	-13		
7	5942.3	-47.98	-13		
8	6790.4	Nf	-13		
9	7639.2	Nf	-13		
10	10 8488		-13		
Nf: noise floor					

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3. Main Test Instruments

		I	I	ı		
No. Name	Name	me Type Manufacturer	Manufacturer	Serial	Calibration	Valid
				Number	Date	Period
01	Base Station Simulator	CMU200	R&S	118133	2010-05-27	One year
02	Signal Analyzer	FSV	R&S	100815	2010-06-28	One year
03	Signal generator	SMR27	R&S	1606.6000.02	2010-06-28	One year
04	EMI Test Receiver	ESCI	R&S	100948	2010-07-01	One year
05	Trilog Antenna	VUBL 9163	SCHWARZB ECK	9163-201	2010-06-29	Two years
06	Horn Antenna	HF907	R&S	100126	2009-07-02	Two years
07	Power Splitter	11667A	Agilent	52960	NA	NA
08	DC Power Supply	GPS-3030D	GM	E877677	NA	NA
09	Climatic Chamber	ESS-SDH401	YIN HE	2006001	2010-02-22	One year
10	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
11	EMI test software	ES-K1	R&S	NA	NA	NA

*****END OF REPORT BODY*****

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ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance

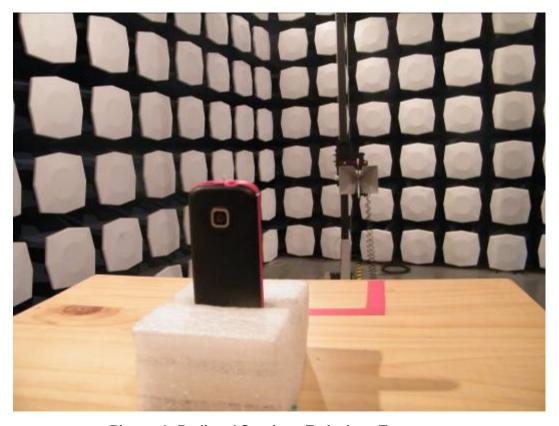


Picture 1 EUT

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A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup