Report No.: RZA1012-2086RF03

TESTING
No. L2264

Part 27

TEST REPORT

Product Name	GSM /WCDMA dual mode mobile phone
FCC ID	WLPW110CBW
Model	W110
Applicant	Shanghai Longcheer3g Technology Co.,Ltd

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	GSM /WCDMA dual mode mobile phone	**Model**	W110
FCC ID	WLPW110CBW	**Report No.**	RZA1012-2086RF03
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 CFR47 Part 27C (2010-12)** MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES **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 29th, 2011**		
Comment	The test result only responds to the measured sample.		

Approved by Yang Weizhong **Revised by** Xu Kai **Performed by** Kang Lingling

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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.

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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.
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Post code:	201201
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1.3. Applicant Information

Company:	Shanghai Longcheer3g Technology Co.,Ltd
Address:	No.1,Building 5, 299 Bisheng Rd, Zhangjiang Hi-Tech Park, Pudong, Shanghai
City:	Shanghai
Postal Code:	201204
Country:	P.R. China
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Telephone:	+86-21-64088898
Fax:	+86-21-54970816

1.4. Manufacturer Information

Company:	Shanghai Longcheer3g Technology Co.,Ltd
Address:	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

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):	WCDMA Band IV:（tested）		
Maximum E.I.R.P.	18.39dBm		
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 Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1712.4 ~ 1752.6	2112.4 ~ 2152.6

Auxiliary equipment details

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 WCDMA Band IV 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 is performed from March 11,2011 to March 15,2011.

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 Isotropic Radiated power	27.50(d)(4)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h)	PASS
5	Frequency Stability	2.1055 / 27.54	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 27.53(h)	PASS
7	Radiates Spurious Emission	2.1053 /27.53(h)	PASS

2.2. RF Power Output

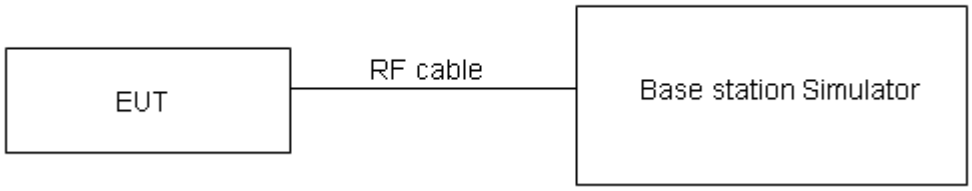
Ambient condition

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: 1312, 1413, 1513 for WCDMA Band IV.

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.

Test Results

WCDMA Band IV	Conducted Power(dBm)		
	Channel 1312	Channel 1413	Channel 1513
	1712.4(MHz)	1732.6(MHz)	1752.6(MHz)
Results	22.36	22.42	22.17

2.3. Effective Isotropic Radiated Power

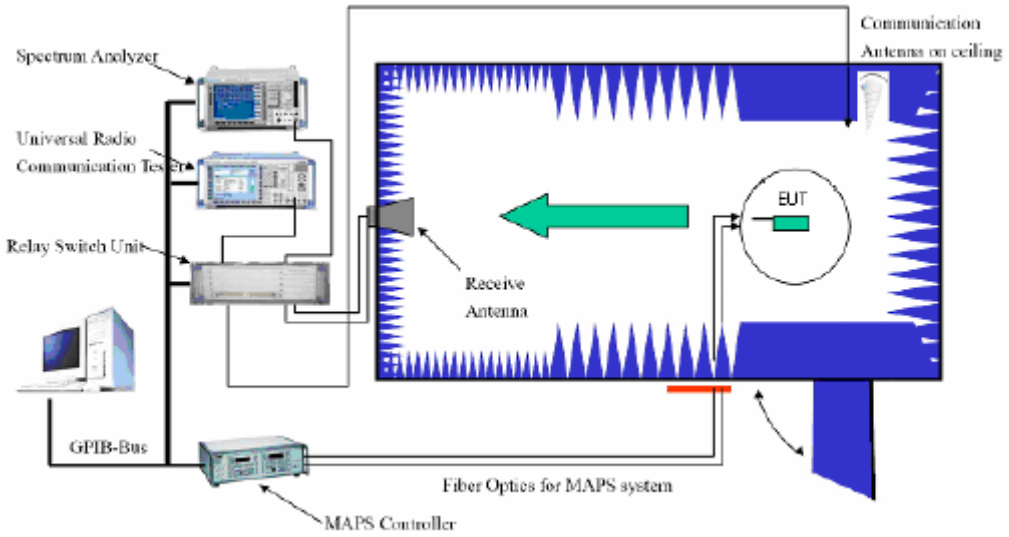
Ambient condition

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

Methods of Measurement

Test procedure:
The measurement was done according to TIA/EIA 603C.
Step 1:
The measurement is carried out in a fully anechoic chamber. EUT was placed on a 0.8 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
Step 2:
A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a known power S.G. applied through a Tx cable. Then the maximum Analyzer reading is recorded while the antenna was moving up and down. The E.R.P. /E.I.R.P. of the EUT 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.
The correction factor (in dB)=S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading – 2.15. Then the EUT's E.R.P. was calculated with the correction factor, E.R.P. = LVL + Correction factor. The measurement will be conducted at three channels No.1312, No.1413, No.1513 of WCDMA Band IV.

Test Setup



Limits

Rule Part 27.50(d)(4) specifies that " Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP" and Rule Part 27.50(d)(6) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage".

Limit (EIRP)	≤ 1 W (30 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

	Channel	LVL（EUT）	S.G	Gain (dBi)	Cable Loss	Pr (dBm)	Correction Factor (dBm)	EIRP (dBm)
WCDMA Band IV	1312	-36.7275	0	1.44	17.0588	-70.7363	55.1175	18.39
	1413	-38.0379	0	1.5654	17.0573	-70.7398	55.2479	17.21
	1513	-38.0455	0	1.7159	17.0971	-70.5167	55.1355	17.09

2.4. Occupied Bandwidth

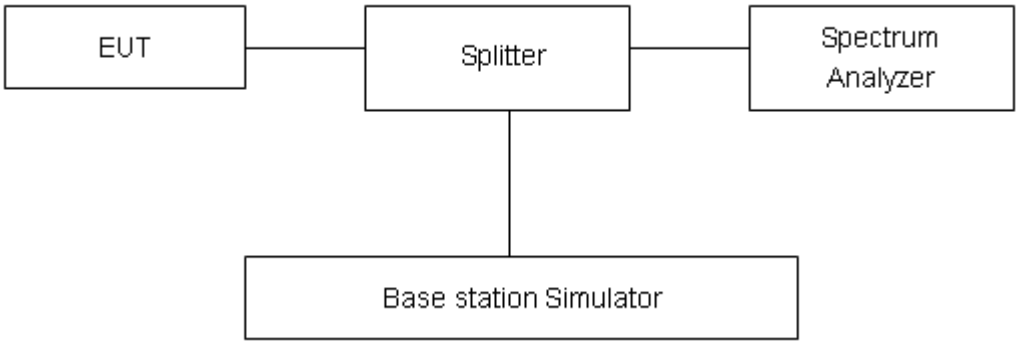
Ambient condition

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 51 kHz, VBW is set to 100 kHz 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.

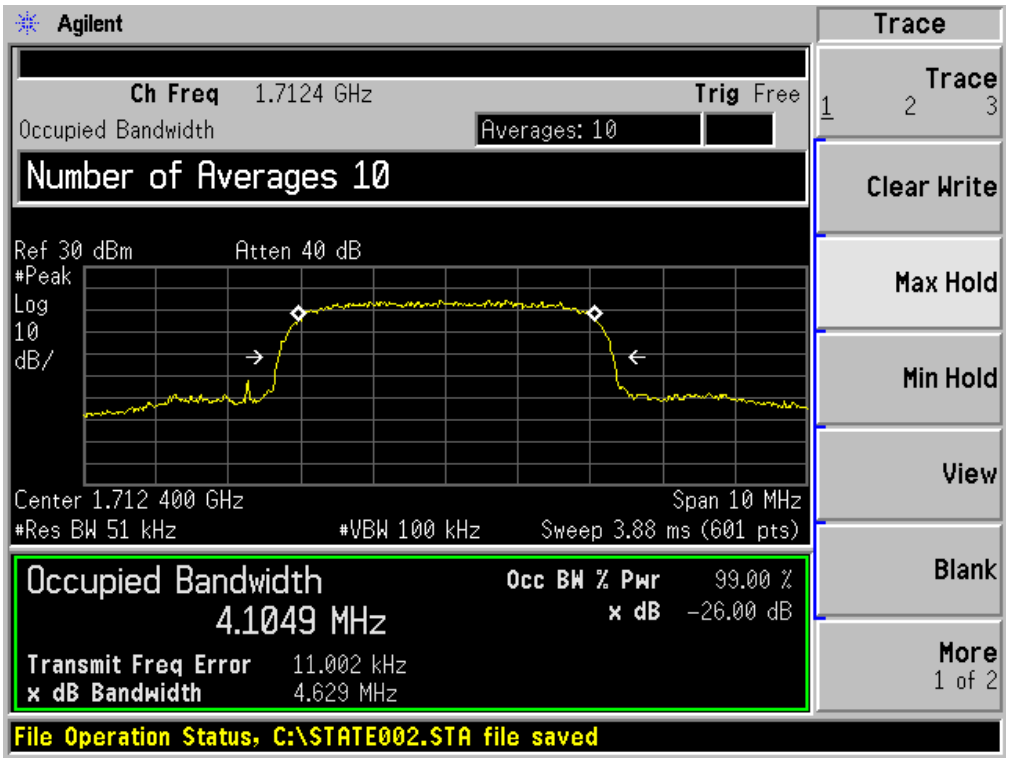
Measurement Uncertainty

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

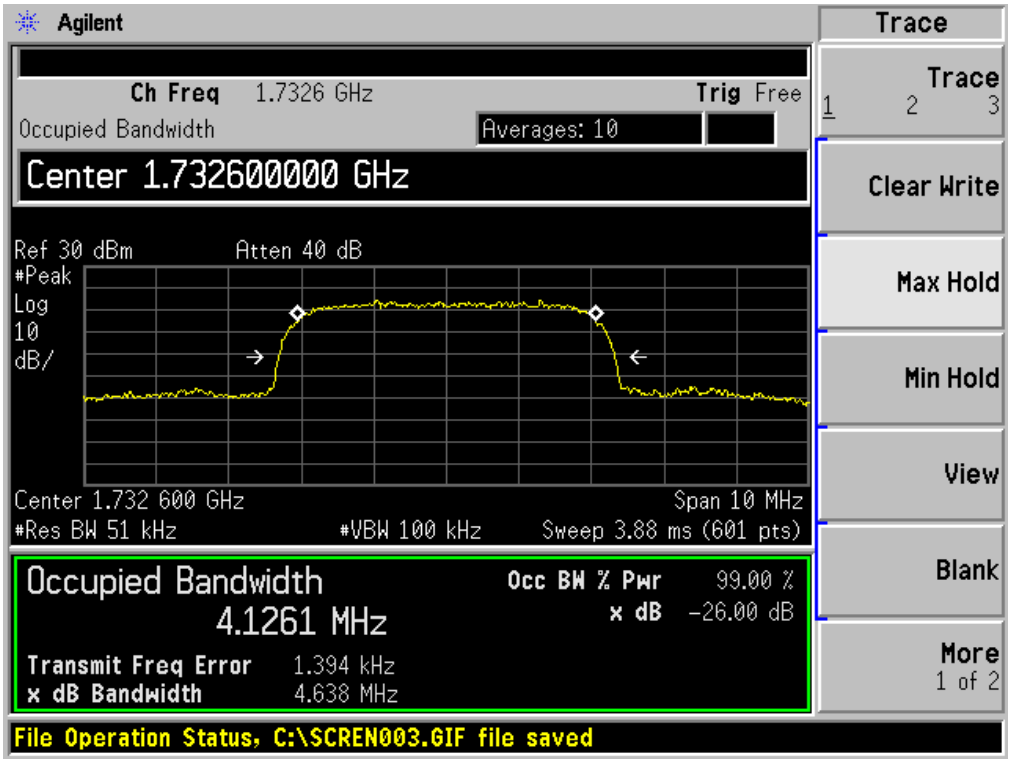
Test Result

WCDMA Band IV

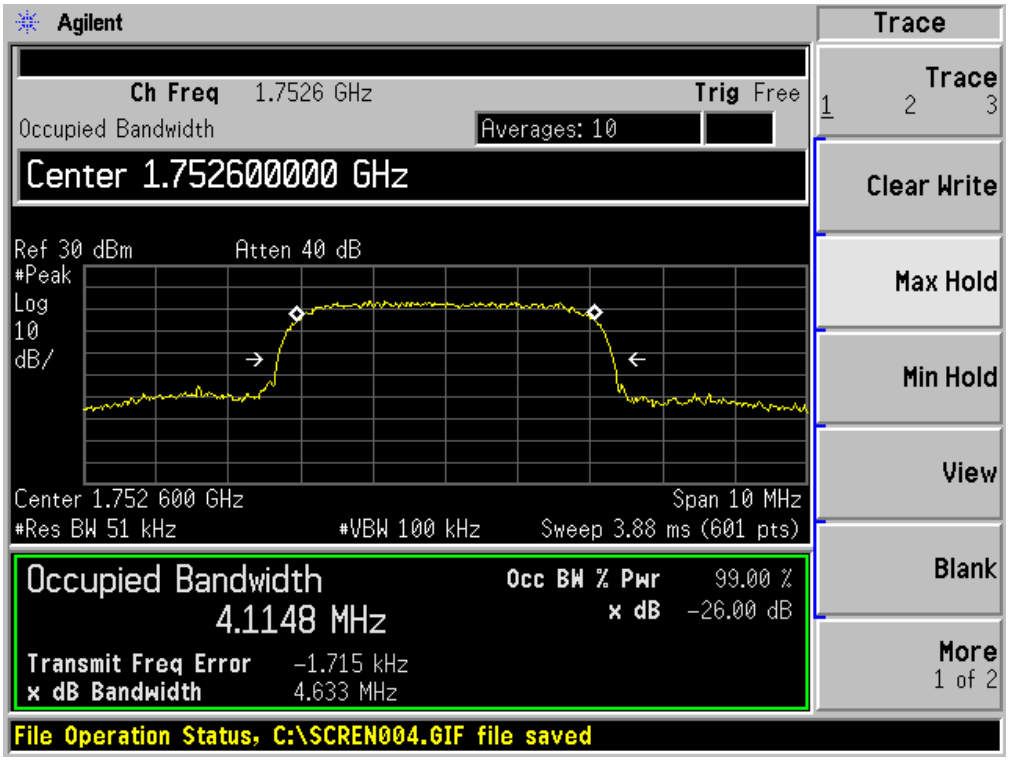
Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
1312	1712.4	4.1049	4.629
1413	1732.6	4.1261	4.638
1513	1752.6	4.1148	4.633



WCDMA Band IV CH1312 Occupied Bandwidth



WCDMA Band IV CH1413 Occupied Bandwidth



WCDMA Band IV CH1513 Occupied Bandwidth

2.5. Band Edge Compliance

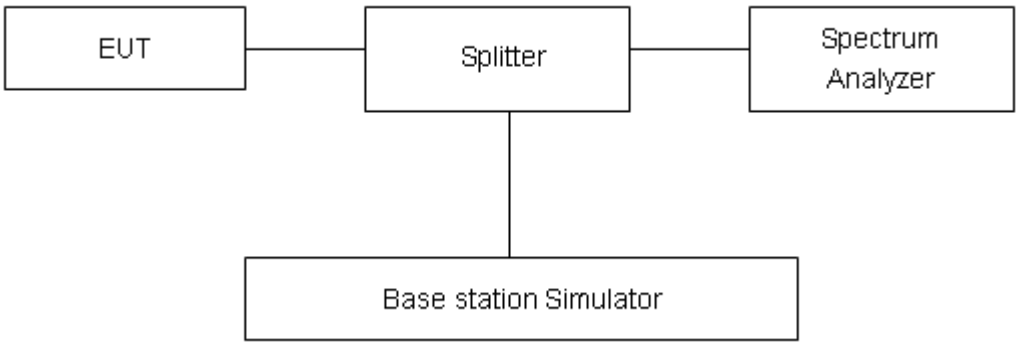
Ambient condition

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 and RBW is set to 51 kHz and VBW is set to 100 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 27.53(h) specifies that “the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

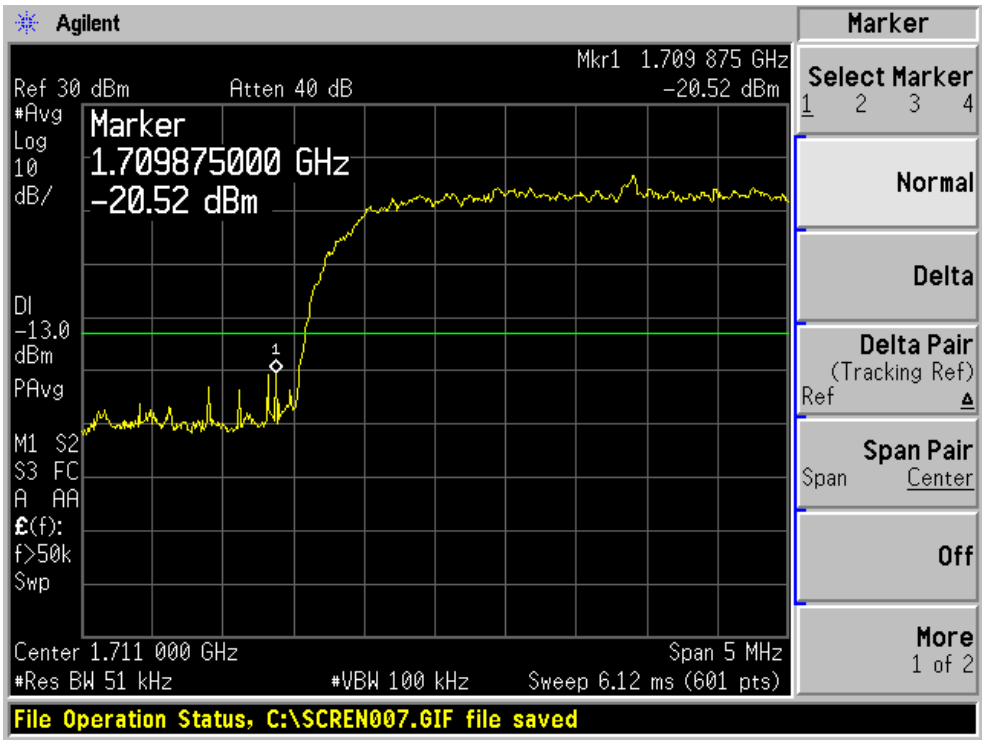
Limit	-13 dBm

Measurement Uncertainty

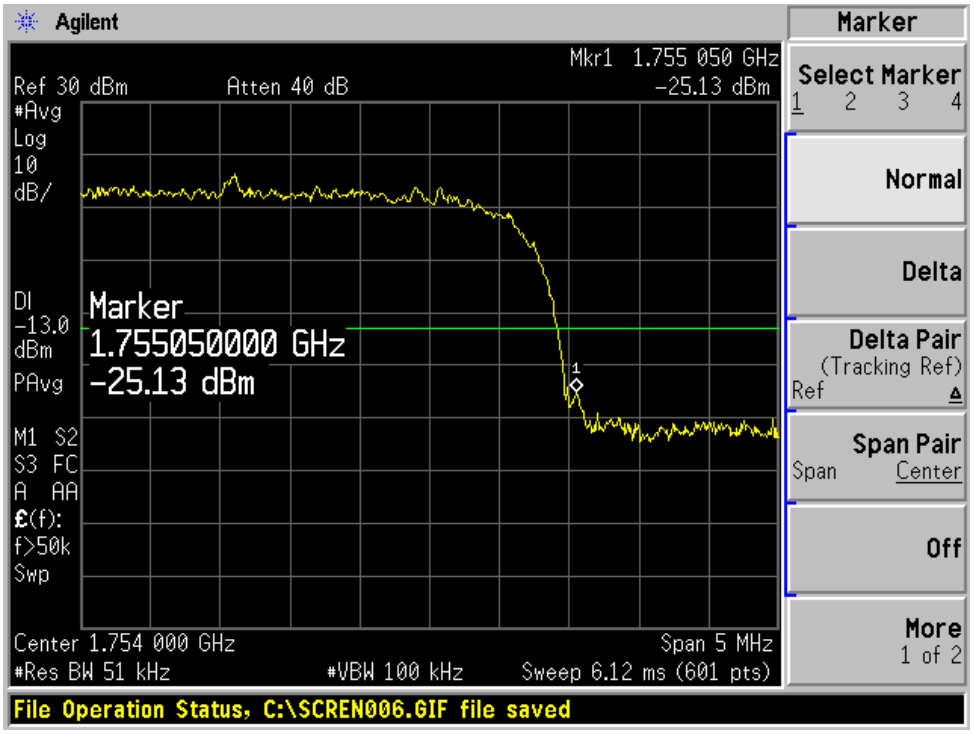
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U=0.684dB.

WCDMA Band IV

	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
WCDMA Band IV	1712.4	-20.52	-13	PASS
	1752.6	-25.13	-13	PASS



WCDMA Band IV 1312 Channel



WCDMA Band IV 1513 Channel

2.6. Frequency Stability

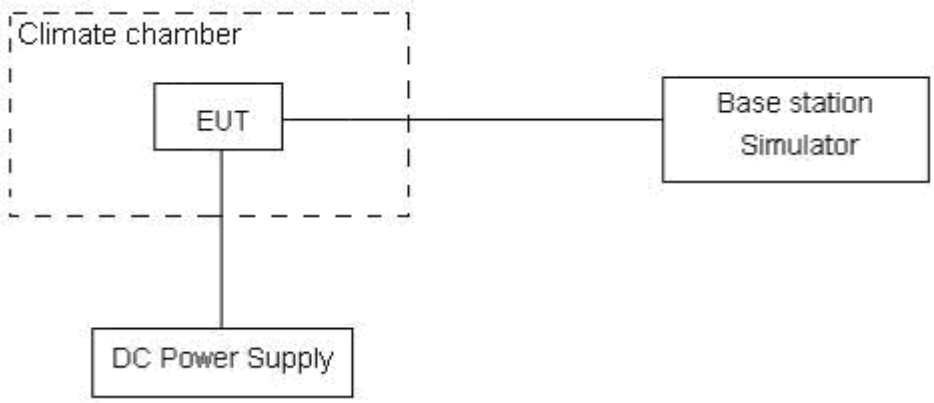
Ambient condition

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



Limits

No specific frequency stability requirements in part 27.54

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.

Test Result

WCDMA Band IV

Temperature (° C)	Test Results (ppm) / 3.8 V Power supply
	WCDMA Band IV Channel 1413
-30	16.68
-20	16.35
-10	16.35
0	15.02
10	15.31
20	16.08
30	16.15
40	16.18
50	16.49

Voltage (V)	Test Results(ppm) / 20° C
	WCDMA Band IV Channel 1413
3.5	16.91
3.8	16.08
4.2	15.72

2.7. Spurious Emissions at Antenna Terminals

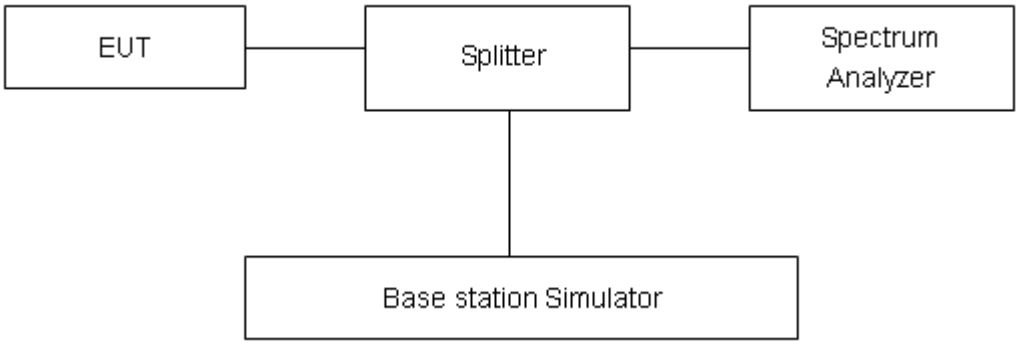
Ambient condition

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 for the carrier frequency, or RBW and VBW are set to 1MHz(other frequency), Sweep is set to ATUO.

Test setup



Limits

Rule Part 27.53(h) specifies that “the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB.”

Limit	-13 dBm

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

Test Result: PASS

WCDMA Band IV

Harmonic	TX ch.1312 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3426.8	-52.25	-13
3	5137.2	Nf	-13
4	6849.6	Nf	-13
5	8562	Nf	-13
6	10274.4	Nf	-13
7	11986.8	Nf	-13
8	13699.2	Nf	-13
9	15411.6	Nf	-13
10	17124	Nf	-13
Nf: noise floor			

Harmonic	TX ch.1413 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3466.9	-49.87	-13
3	5197.8	Nf	-13
4	6930.4	Nf	-13
5	8663	Nf	-13
6	10395.6	Nf	-13
7	12128.2	Nf	-13
8	13860.8	Nf	-13
9	15593.4	Nf	-13
10	17326	Nf	-13
Nf: noise floor			

Harmonic	TX ch.1513 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3503.3	-53.59	-13
3	5257.8	Nf	-13
4	7010.4	Nf	-13
5	8763	Nf	-13
6	10515.6	Nf	-13
7	12268.2	Nf	-13
8	14020.8	Nf	-13
9	15773.4	Nf	-13
10	17526	Nf	-13
Nf: noise floor			

2.1. Radiates Spurious Emission

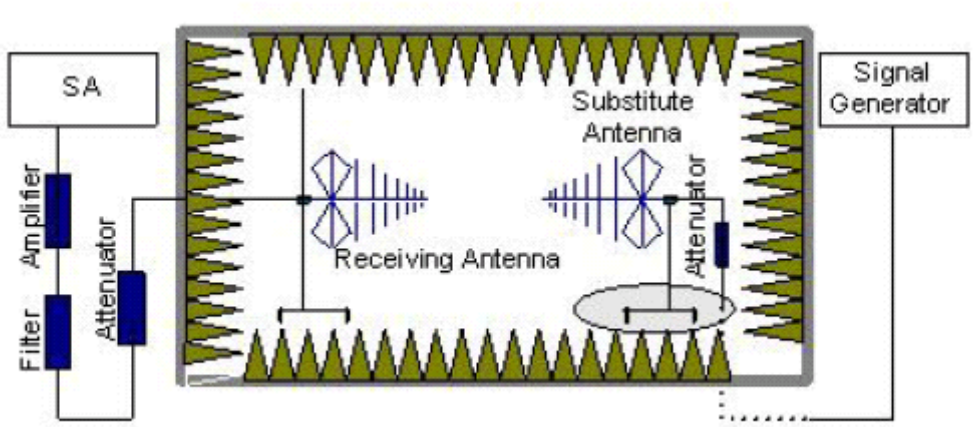
Ambient condition

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 channels 1312,1412,1513 of WCDMA Band IV.
. 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 and VBW are set to 100 kHz for the carrier frequency, or RBW and VBW are set to 1MHz(other frequency) A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the 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.

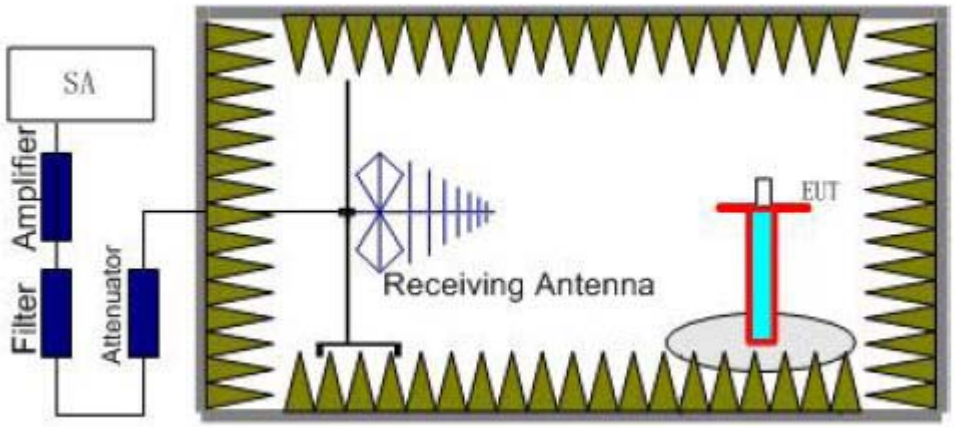
The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

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 27.53(h) specifies that “the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(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.

Test Result

WCDMA Band IV

Harmonic	TX ch.1312 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3424.8	Nf	-13
3	5137.9	-44.56	-13
4	6849.6	Nf	-13
5	8562	Nf	-13
6	10274.4	Nf	-13
7	11986.8	Nf	-13
8	13699.2	Nf	-13
9	15411.6	Nf	-13
10	17124	Nf	-13
Nf: noise floor			

Harmonic	TX ch.1413 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3466.5	-51.39	-13
3	5201.3	-39.79	-13
4	6930.4	Nf	-13
5	8663	Nf	-13
6	10395.6	Nf	-13
7	12128.2	Nf	-13
8	13860.8	Nf	-13
9	15593.4	Nf	-13
10	17326	Nf	-13
Nf: noise floor			

Harmonic	TX ch.1513 Frequency (MHz)	Level (dBm)	Limit (dBm)
2	3505.2	Nf	-13
3	5260.5	-41.87	-13
4	7010.4	Nf	-13
5	8763	Nf	-13
6	10515.6	Nf	-13
7	12268.2	Nf	-13
8	14020.8	Nf	-13
9	15773.4	Nf	-13
10	17526	Nf	-13
Nf: noise floor			

3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid 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	SCHWARZBECK	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	2011-02-21	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

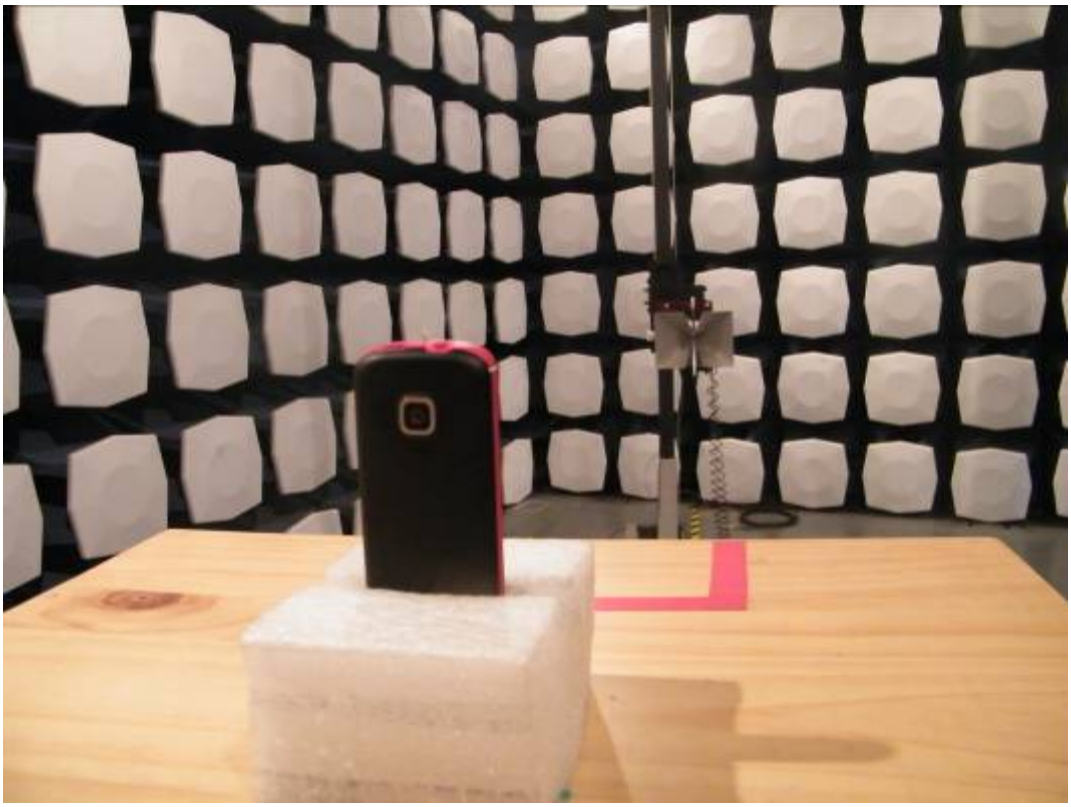
*******END OF REPORT BODY*******

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance

Picture 1 EUT

A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup