



Part 22

TEST REPORT

Product Name	CDMA vehicle tracking device
Model Name	TALONCV001
FCC ID	2AAQ6TALONCV001
Client	MONTAGE SYSTEMS, INC.
Manufacturer	Asiatelco Technologies Co.
Date of issue	September 23, 2013

TA Technology (Shanghai) Co., Ltd.

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 2 of 40

GENERAL SUMMARY

Reference Standard(s)	<p>FCC CFR47 Part 2 (2012) Frequency Allocations And Radio Treaty Matters; General Rules And Regulations</p> <p>FCC CFR 47 Part 22H (2012) Public Mobile Services(850MHz)</p> <p>ANSI/TIA-603-C(2004) Land mobile FM or PM Communications Equipment Measurements and Performance Standards.</p> <p>KDB 971168 D01 Power Meas License Digital Systems v02r01 Measurement Guidance for Certification of Licensed Digital Transmitters</p>
Conclusion	<p>This fixed 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.</p> <p>General Judgment: Pass</p>
Comment	<p>The test result only responds to the measured sample.</p>

Approved by 杨伟中
Director

Revised by 唐凯
RF Manager

Performed by 张生
RF Engineer

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 3 of 40

TABLE OF CONTENT

1. General Information	4
1.1. Notes of the test report	4
1.2. Testing laboratory	5
1.3. Applicant Information	5
1.4. Manufacturer Information	5
1.5. Information of EUT	6
1.6. Test Date	7
2. Test Information	8
2.1. Summary of test results	8
2.2. RF Power Output	9
2.3. Effective Radiated Power	11
2.4. Occupied Bandwidth	14
2.5. Band Edge Compliance	19
2.6. Peak-to-Average Power Ratio (PAPR)	23
2.7. Frequency Stability	28
2.8. Spurious Emissions at Antenna Terminals	30
2.9. Radiates Spurious Emission	34
3. Main Test Instruments	38
ANNEX A: EUT Appearance and Test Setup	39
A.1 EUT Appearance	39
A.2 Test Setup	40

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 4 of 40

1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

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.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 5 of 40

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
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company: MONTAGE SYSTEMS, INC.
Address: 65 ENTERPRISE
City: ALISO VIEJO
Postal Code: 92656
Country: UNITED STATES

1.4. Manufacturer Information

Company: Asiatelco Technologies Co.
Address: #289 Bisheng Road, Buidling-8,3F,Zhangjiang Hi-tech Park, Pudong, Shanghai
China 201204
City: Shanghai
Postal Code: 201204
Country: P. R. China

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 6 of 40

1.5. Information of EUT

General information

Name of EUT:	Module		
IMEI :	A1000032307042		
Hardware Version:	P2		
Software Version:	MC891G_NC_1.0.4T		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Operating Mode(s):	CDMA Cellular:(tested)		
Support mode:	1x RTT		
Test Modulation:	QPSK		
Maximum E.R.P.	21.61 dBm		
Rated Power Supply Voltage:	12V		
Extreme Voltage:	Minimum: 10V Maximum: 14V		
Extreme Temperature:	Lowest: -40°C Highest: +85°C		
Test Channel: (Low - Middle - High)	1013 - 384 - 777 (tested)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	CDMA Cellular	824.7 ~ 848.31	869.7 ~ 893.31

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 7 of 40

Equipment Under Test (EUT) is a Module with internal antenna. The EUT is tested CDMA Cellular 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 July 26, 2013 to July 28, 2013.

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 8 of 40

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	Peak-to-Average Power Ratio	KDB 971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 22.355	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
8	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.

2.2. RF Power Output

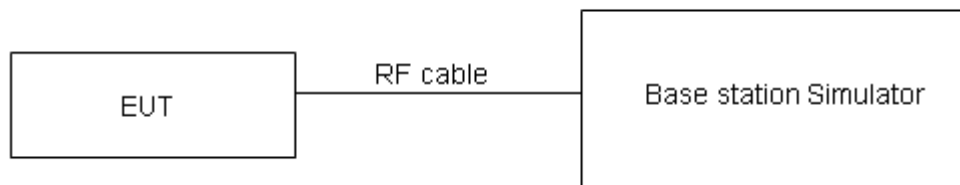
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

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.

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.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 10 of 40

Test Results

CDMA Cellular			Conducted Power(dBm)		
			Channel 1013	Channel 384	Channel 777
			824.7(MHz)	836.52(MHz)	848.31(MHz)
1x RTT	RC1	SO55(Loopback)	23.24	23.23	23.17
		SO2(Loopback)	23.25	23.21	23.22
	RC3	SO55(Loopback)	23.23	23.22	23.21
		SO2(Loopback)	23.26	23.26	23.23
		SO32(+FCH-SCH)	23.13	23.12	23.10
		SO32(+SCH)	23.11	23.11	23.08

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2) The following testing is set to RC3 SO2/ RC3 SO32 based on the maximum RF Output Power.

2.3. Effective Radiated Power

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

The measurement procedures in TIA- 603C are used.

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

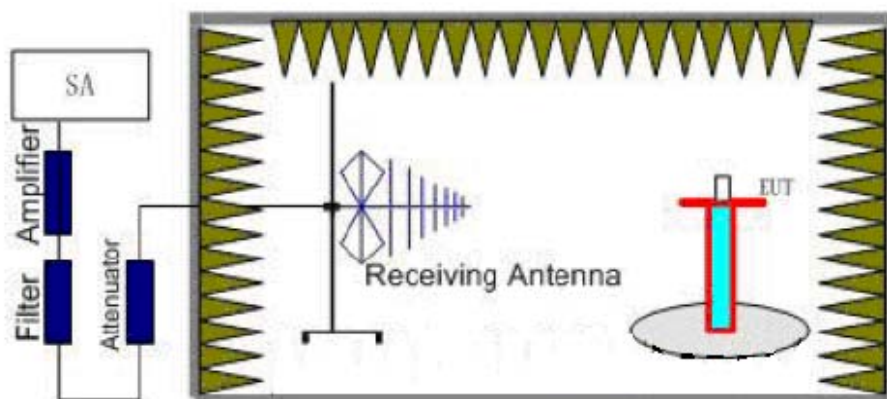
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in spectrum analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

Test Setup



TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 12 of 40

Limits

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

Limit	$\leq 7\text{ W}$ (38.45 dBm)
-------	-------------------------------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 1.19\text{ dB}$

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 13 of 40

Test Results: Pass

	Channel	Polarization	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	E.R.P. (dBm)
CDMA Cellular	1013	Vertical	-25.52	-45.69	0	1.06	19.08
	384	Vertical	-25.15	-45.46	0	1.24	19.40
	777	Vertical	-25.29	-45.19	0	1.68	19.43
	1013	Horizontal	-23.14	-45.53	0	1.06	21.30
	384	Horizontal	-22.95	-45.38	0	1.24	21.52
	777	Horizontal	-22.99	-45.07	0	1.68	21.61

Note: 1. EIRP= E.R.P+2.15

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 14 of 40

2.4. Occupied Bandwidth

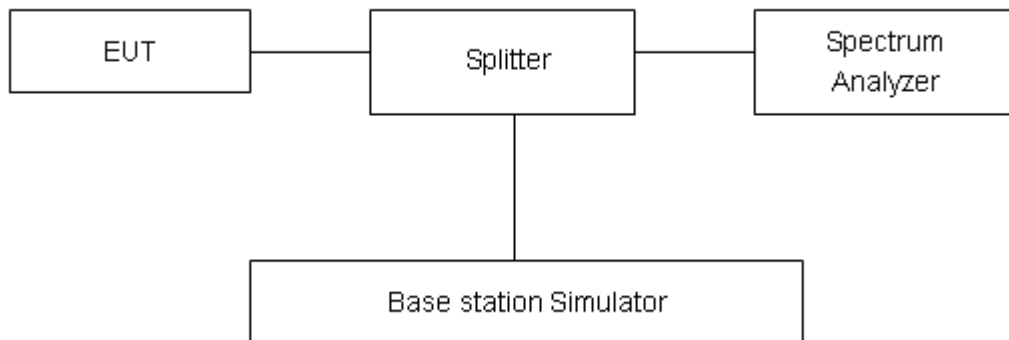
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

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 30kHz, VBW is set to 300kHz for CDMA Cellular. 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 $k = 2$, $U = 624\text{Hz}$.

TA Technology (Shanghai) Co., Ltd.

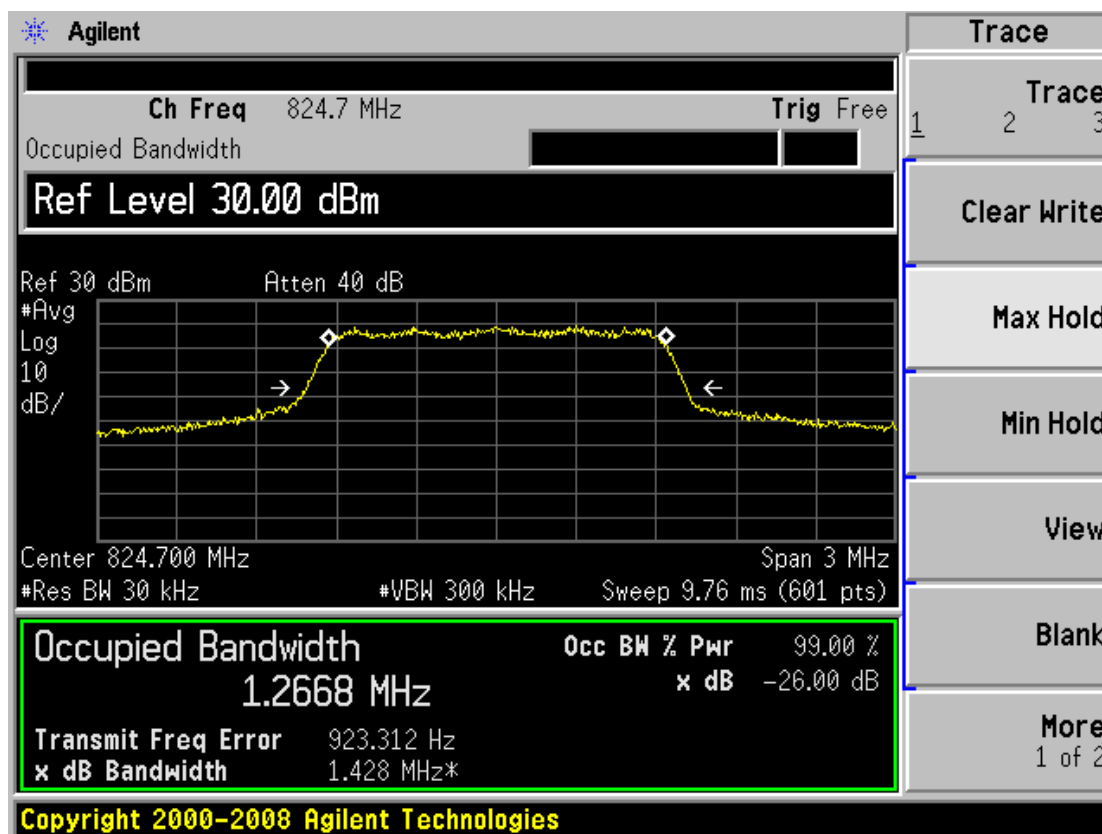
Test Report

Report No.: RXA1307-0096RF01R1

Page 15 of 40

Test Result

CDMA Cellular	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
RC3 (SO2)	1013	824.7	1.2668	1.428
	384	836.52	1.2626	1.424
	777	848.31	1.2548	1.422
RC3 (SO32)	1013	824.7	1.2606	1.418
	384	836.52	1.2591	1.410
	777	848.31	1.2553	1.419

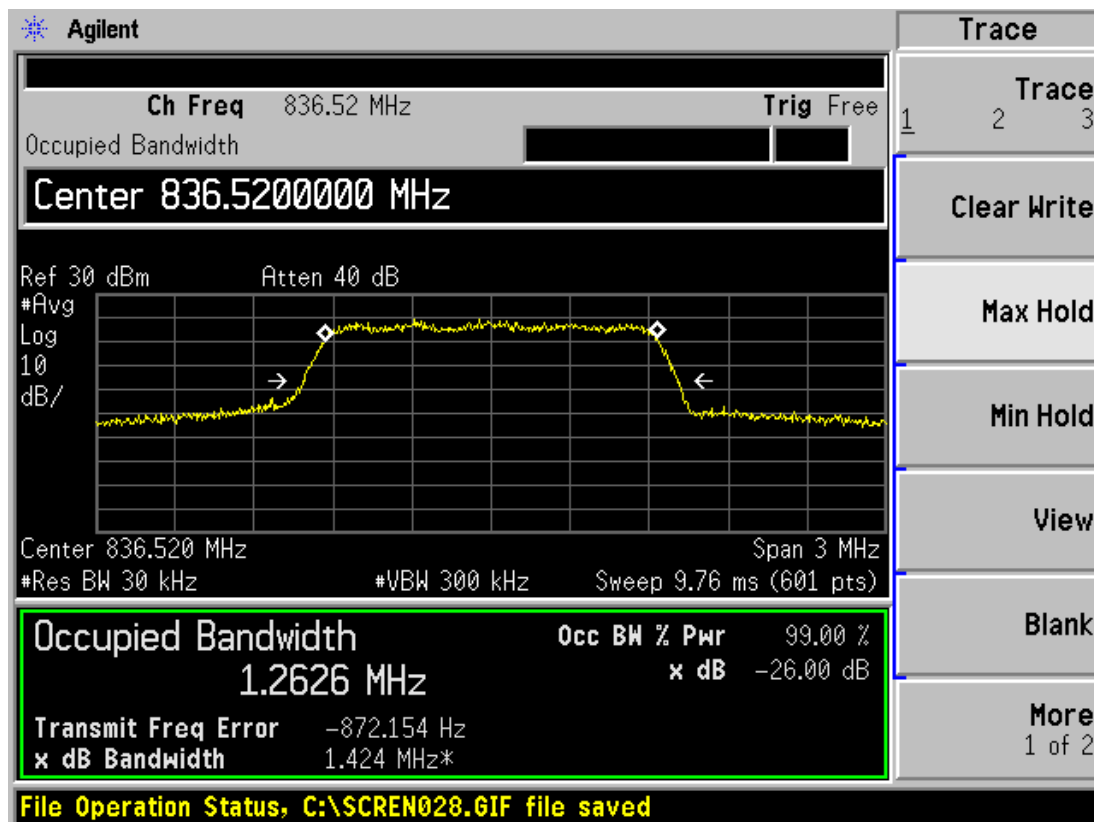


CDMA Cellular RC3 (SO2) CH1013 Occupied Bandwidth

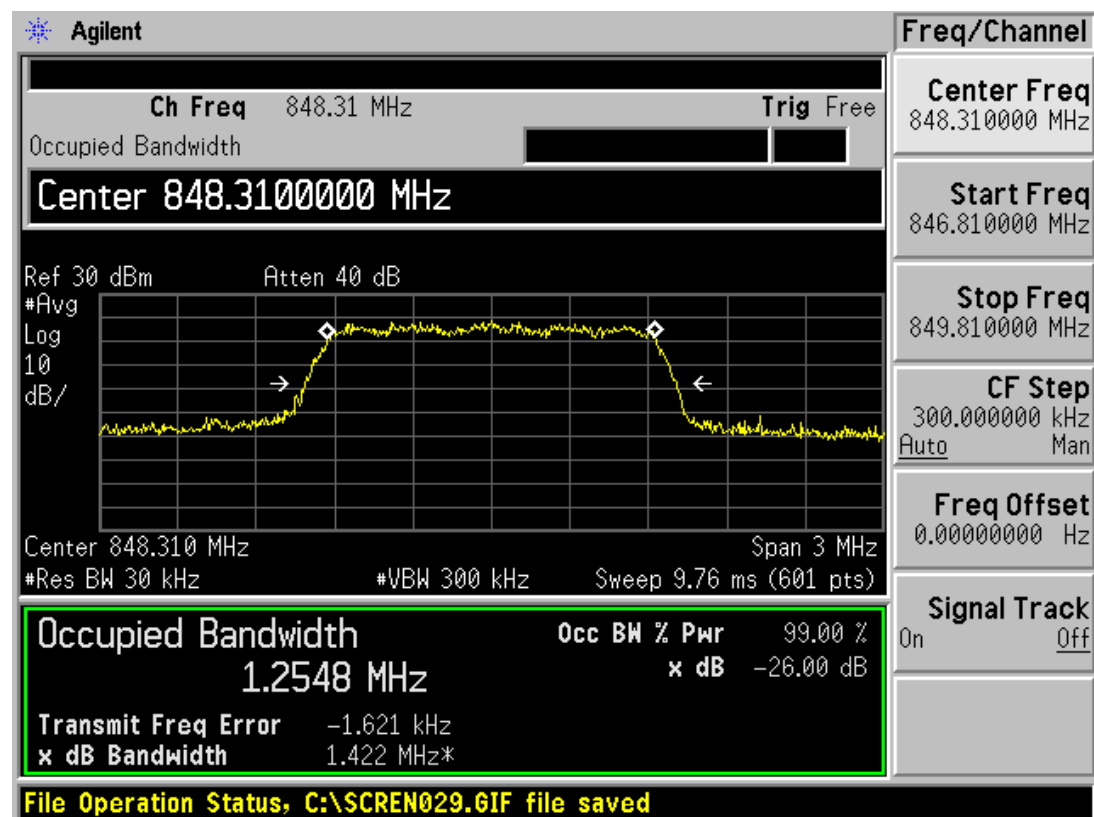
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1307-0096RF01R1

Page 16 of 40



CDMA Cellular RC3 (SO2) CH384 Occupied Bandwidth



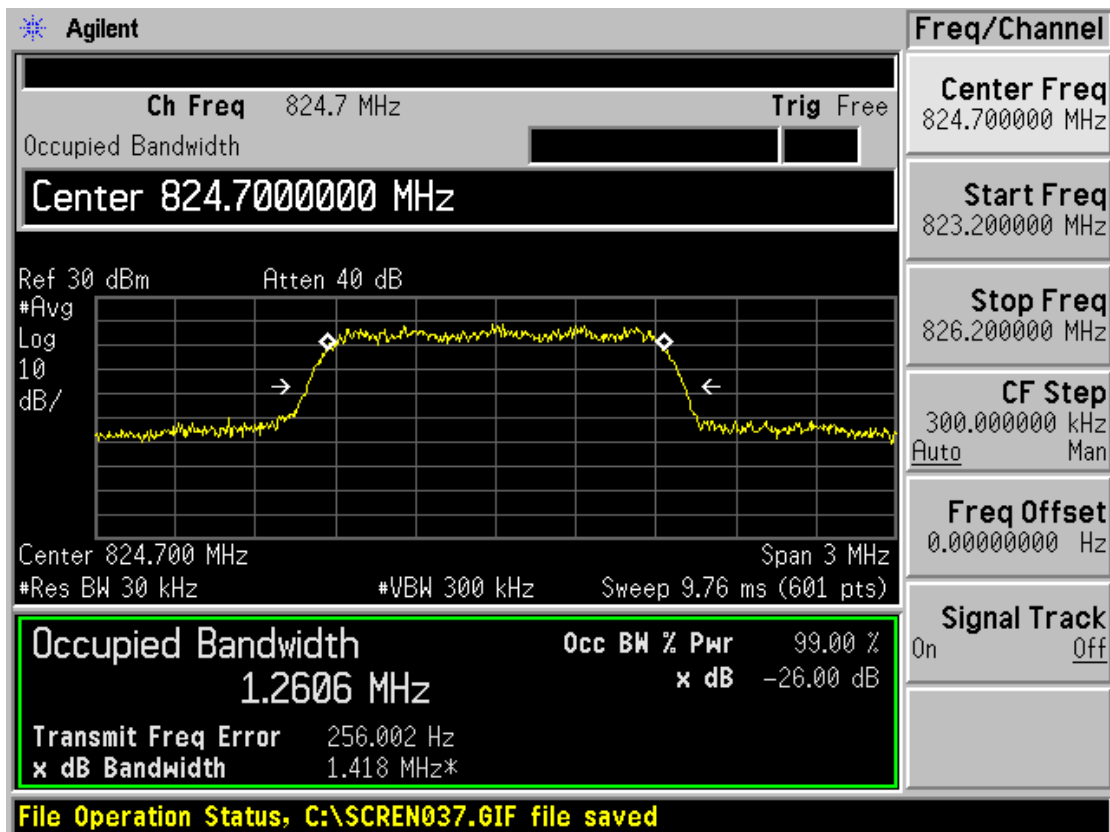
CDMA Cellular RC3 (SO2) CH777 Occupied Bandwidth

TA Technology (Shanghai) Co., Ltd.

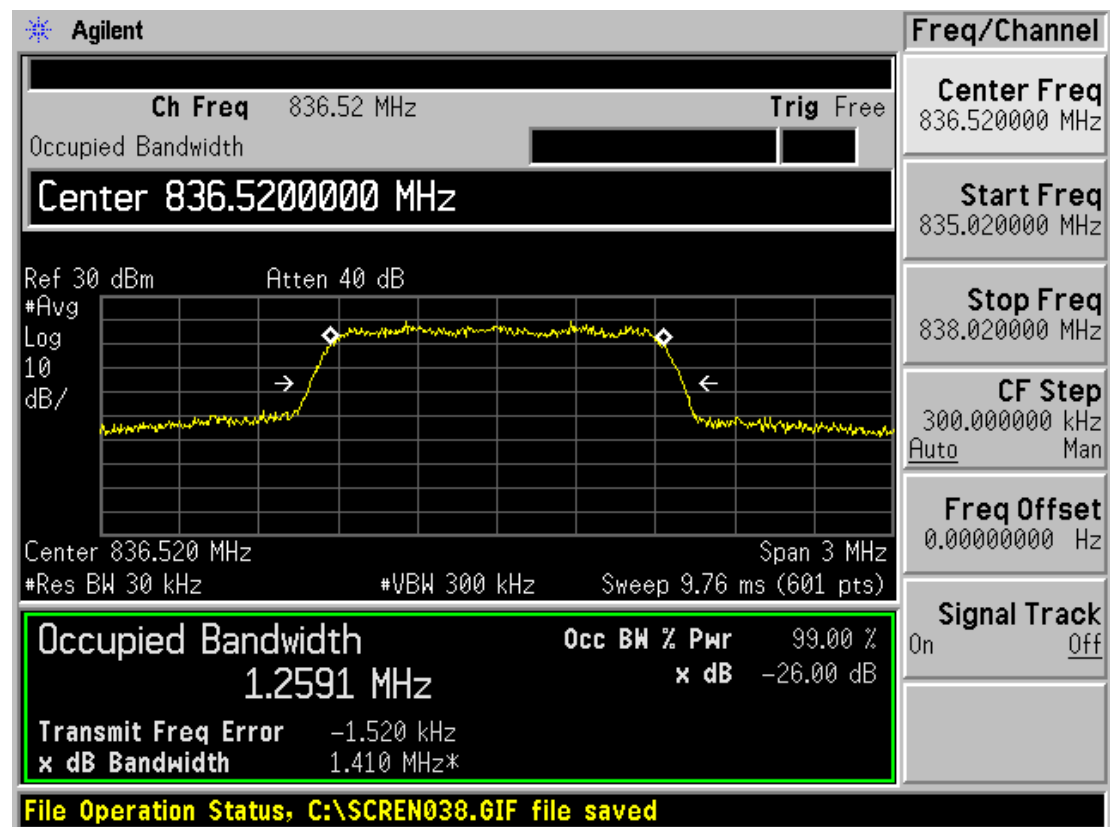
Test Report

Report No.: RXA1307-0096RF01R1

Page 17 of 40



CDMA Cellular RC3 (SO32) CH1013 Occupied Bandwidth

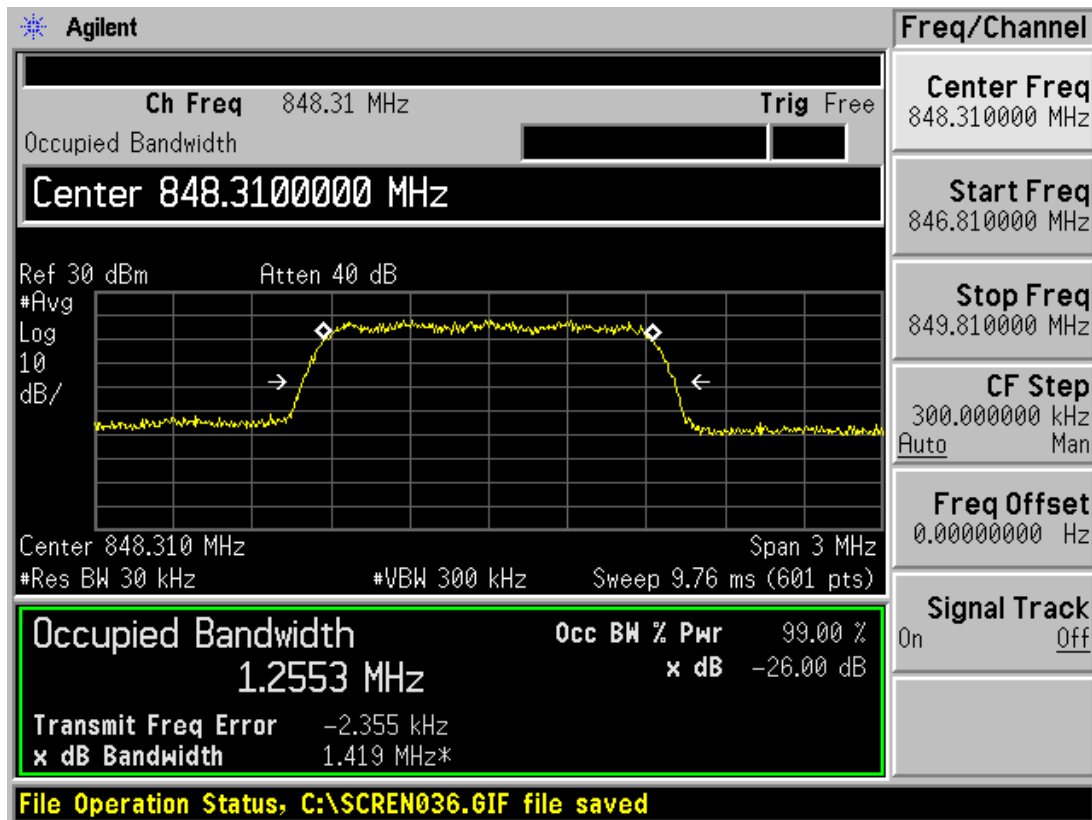


CDMA Cellular RC3 (SO32) CH384 Occupied Bandwidth

TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1307-0096RF01R1

Page 18 of 40



CDMA Cellular RC3 (SO32) CH777 Occupied Bandwidth

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 19 of 40

2.5. Band Edge Compliance

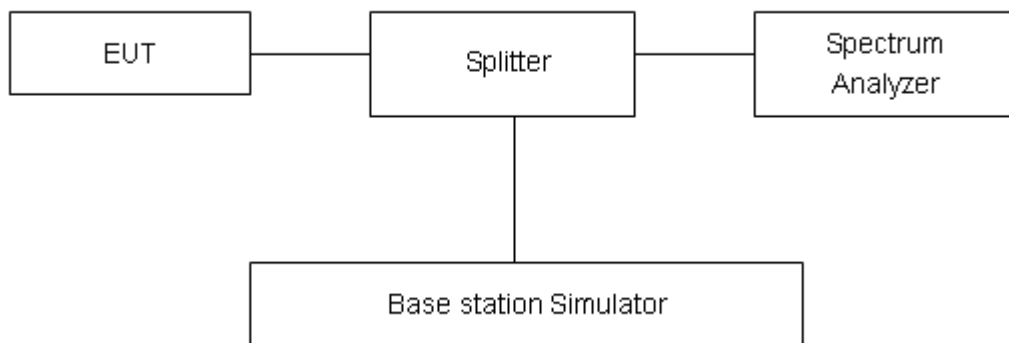
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

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 15kHz, VBW is set to 30kHz for CDMA Cellular. 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 $k = 1.96$, $U=0.684$ dB.

TA Technology (Shanghai) Co., Ltd.

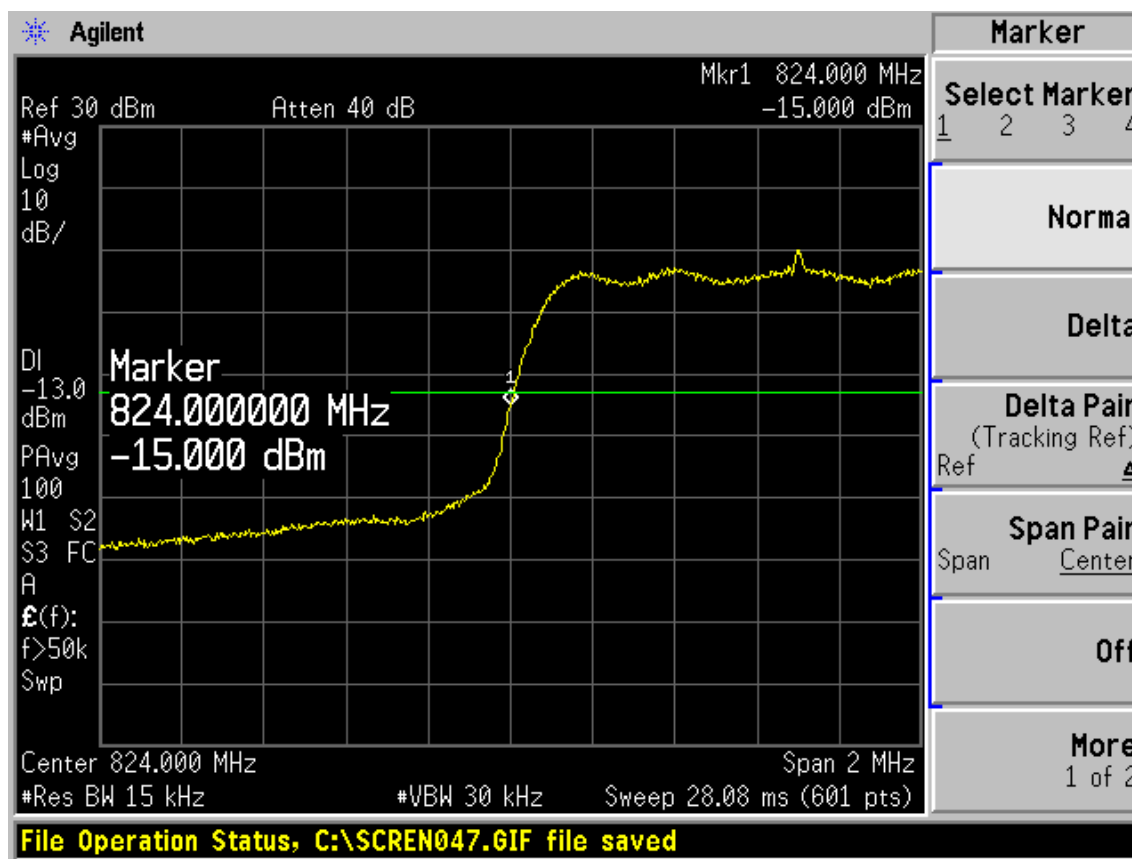
Test Report

Report No.: RXA1307-0096RF01R1

Page 20 of 40

Test Result:

CDMA Cellular	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
RC3 (SO2)	824.0	-15.000	-13	PASS
	849.0	-14.012	-13	PASS
RC3 (SO32)	824.0	-14.775	-13	PASS
	849.0	-14.105	-13	PASS

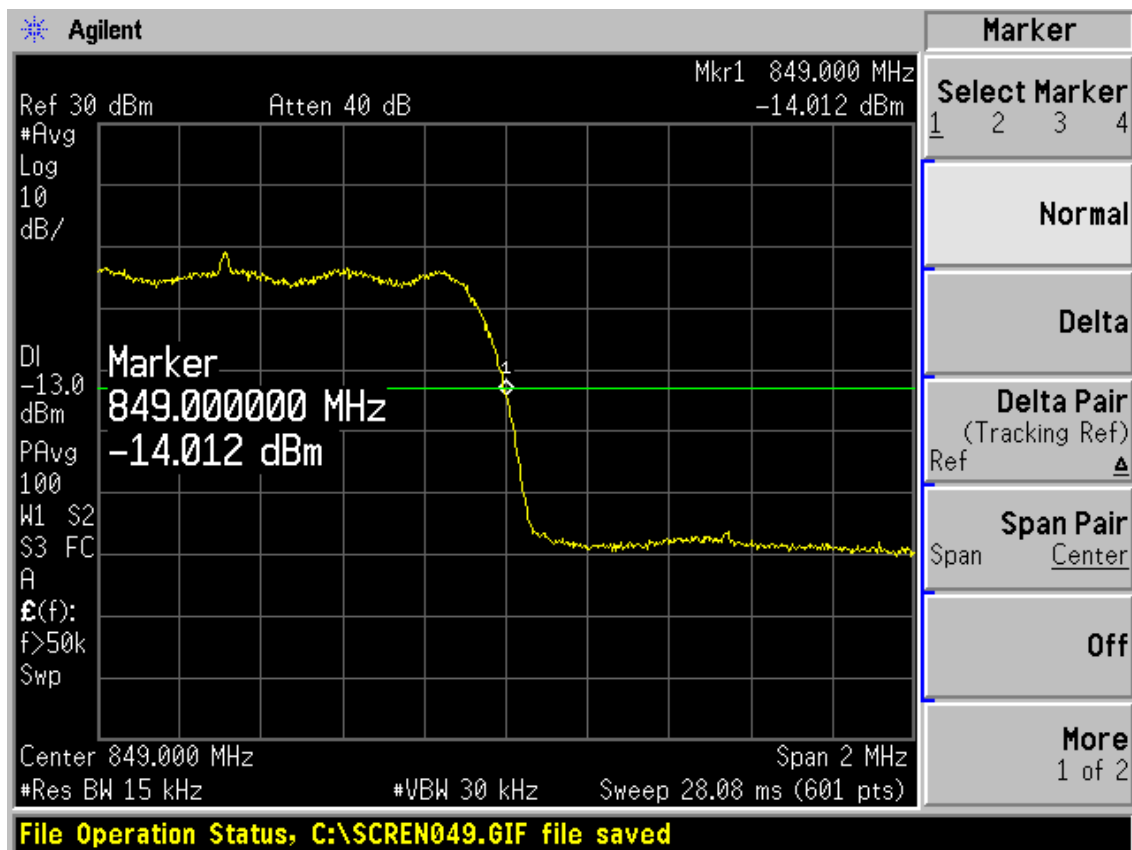


CDMA Cellular RC3 (SO2) 1013 Channel

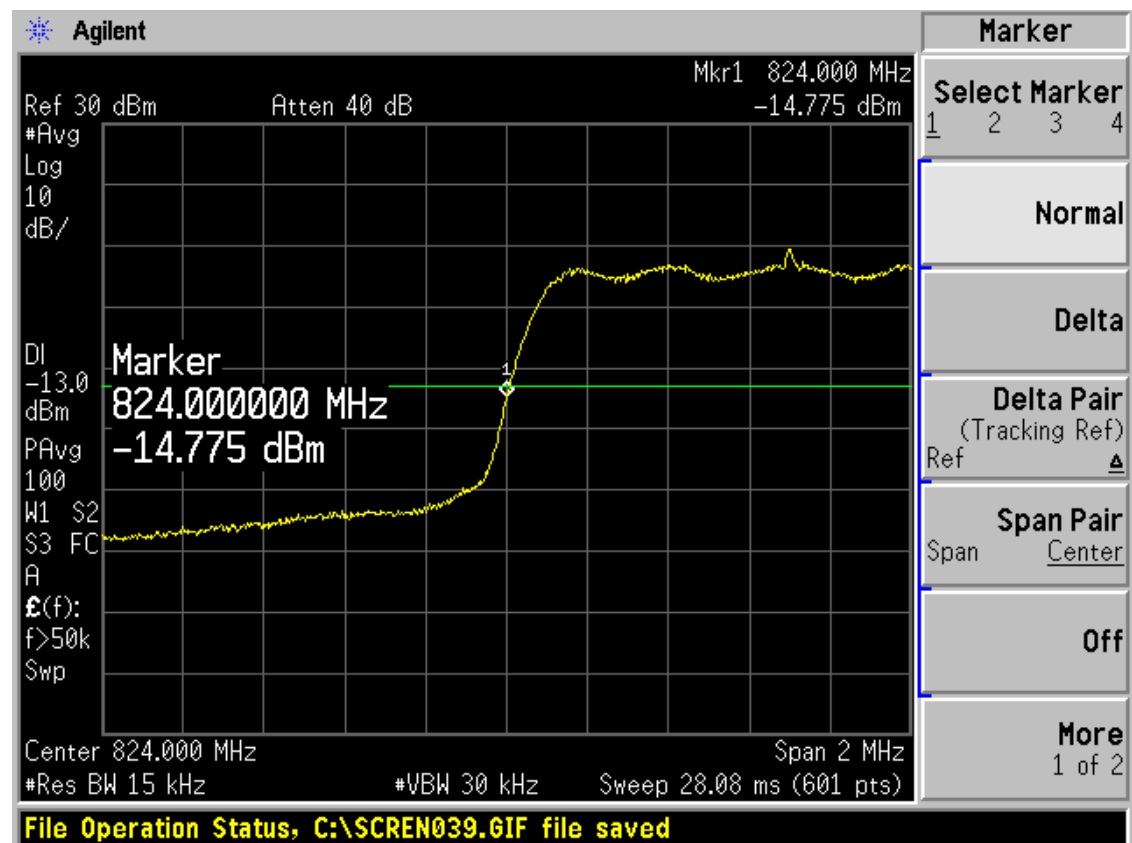
TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 21 of 40



CDMA Cellular RC3 (SO2) 777 Channel

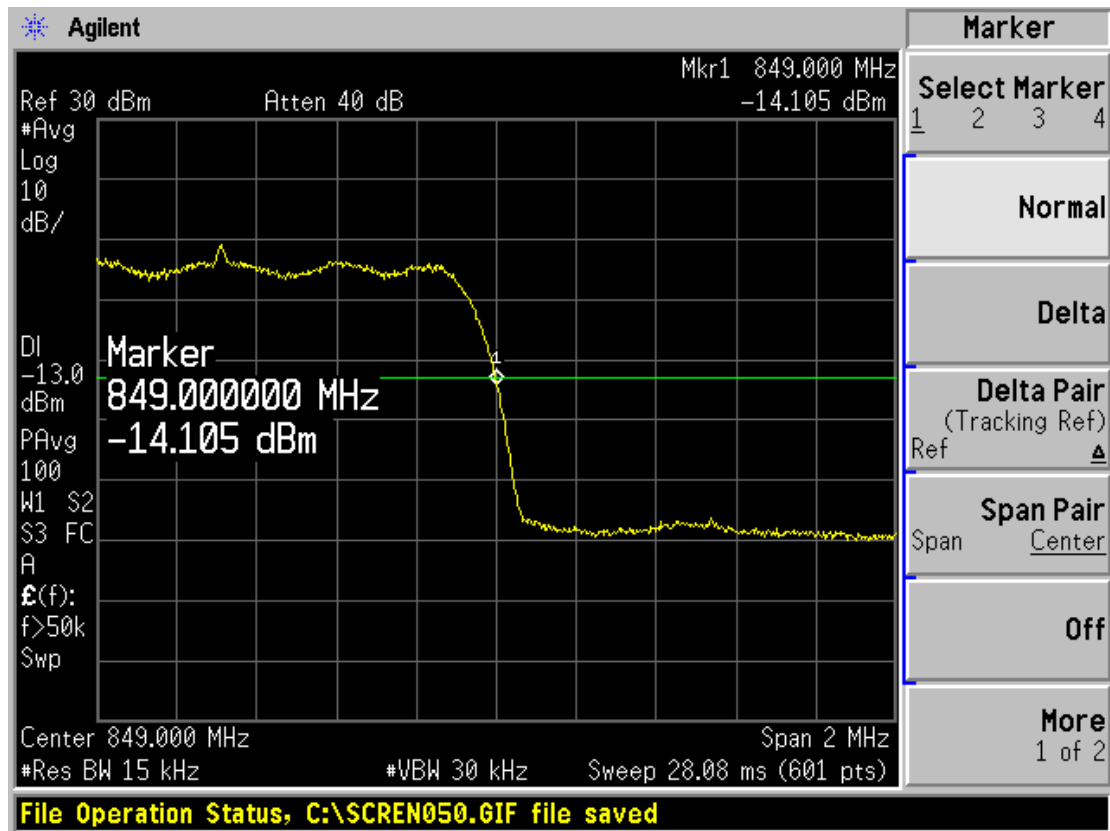


CDMA Cellular RC3 (SO32) 1013 Channel

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 22 of 40



CDMA Cellular RC3 (SO32) 777 Channel

2.6. Peak-to-Average Power Ratio (PAPR)

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

The measurement procedures in KDB971168 are used.

The inherent randomness of the power peaks in a noise-like signal makes it difficult to quantify the peak power using traditional measurement techniques for determining the peak power of an analog signal. The peak power of a digitally-modulated signal is predictable only on a statistical basis. Thus, for these types of signals, a statistical measurement of the peak power is necessary.

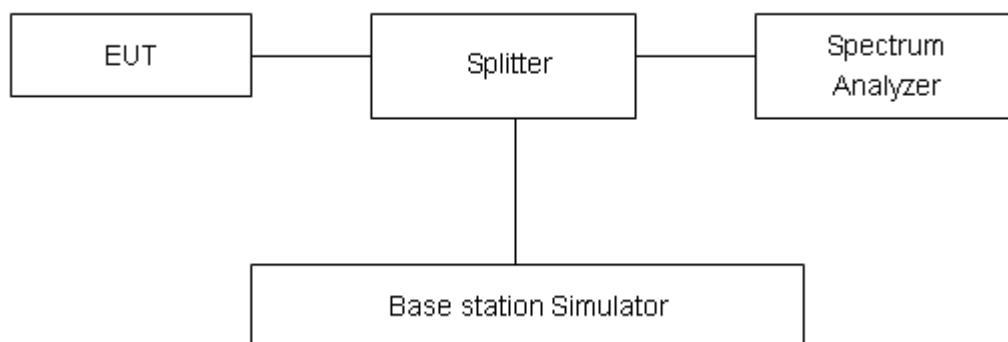
Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.

Step 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

Step 2. Set the CCDF option in Spectrum analyzer.

Step 3. Record the maximum PAPR level associated with a probability of 0.1%.

Test Setup



Limits

No specific Peak-to-Average Ratio requirements in KDB 971168.

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.

TA Technology (Shanghai) Co., Ltd.

Test Report

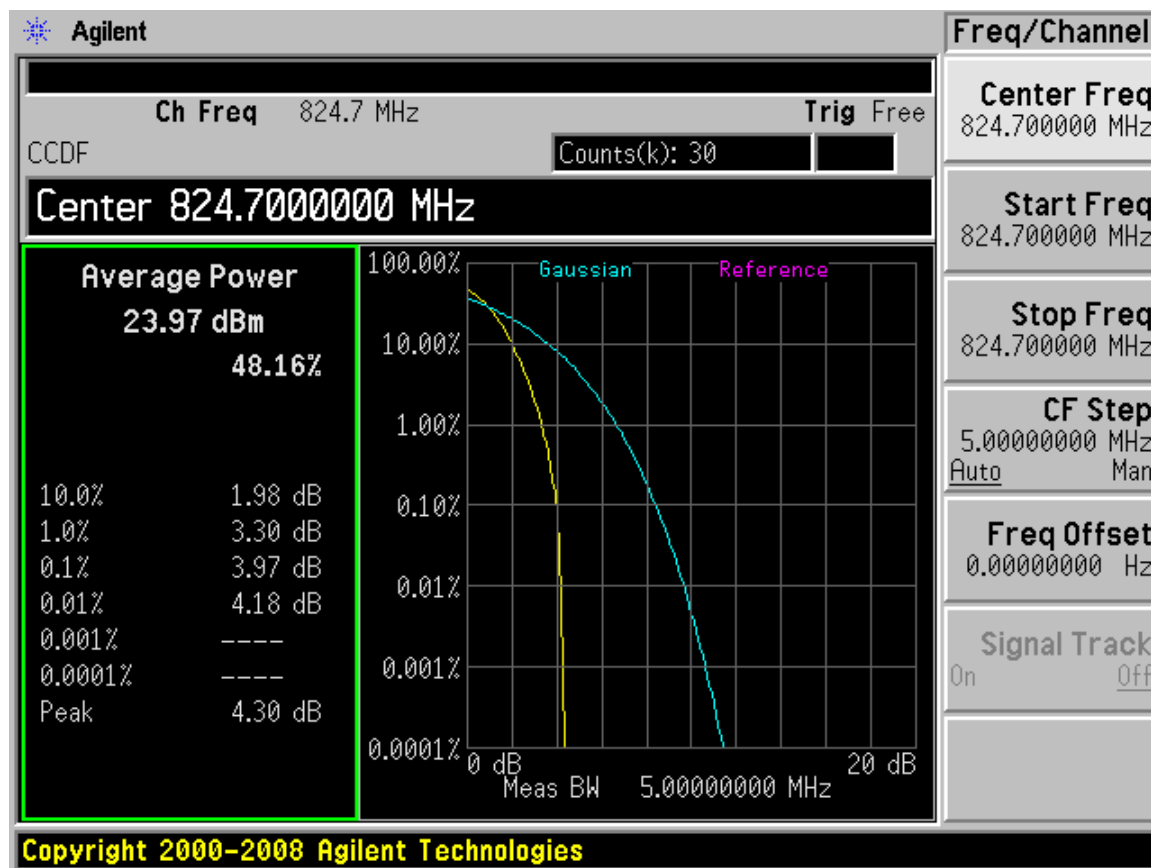
Report No.: RXA1307-0096RF01R1

Page 24 of 40

Test Result:

Test Results

Mode	Channel	Frequency (MHz)	Test Result(dB)
RC3 (SO2)	1013	824.7	3.97
	384	836.52	3.63
	777	848.31	3.91
RC3 (SO32)	1013	824.7	3.92
	384	836.52	3.76
	777	848.31	3.89

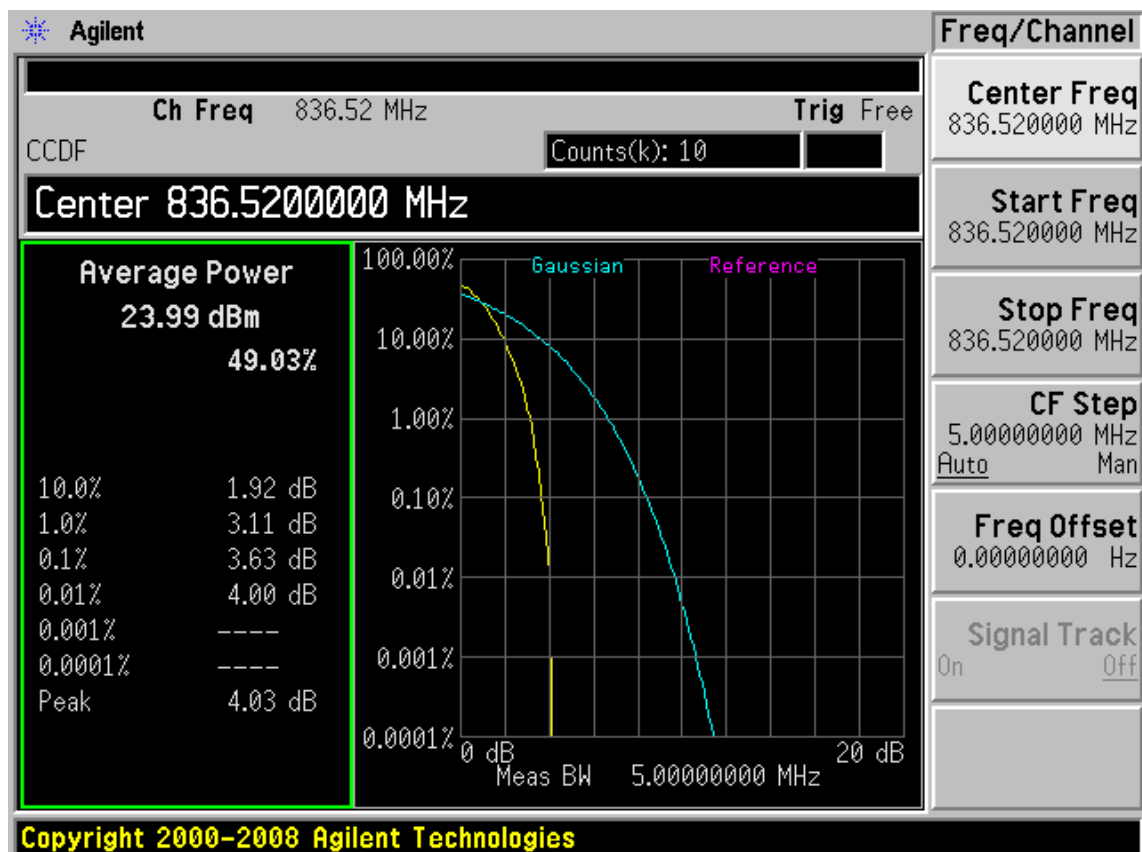


CDMA Cellular RC3 (SO2) CH1013

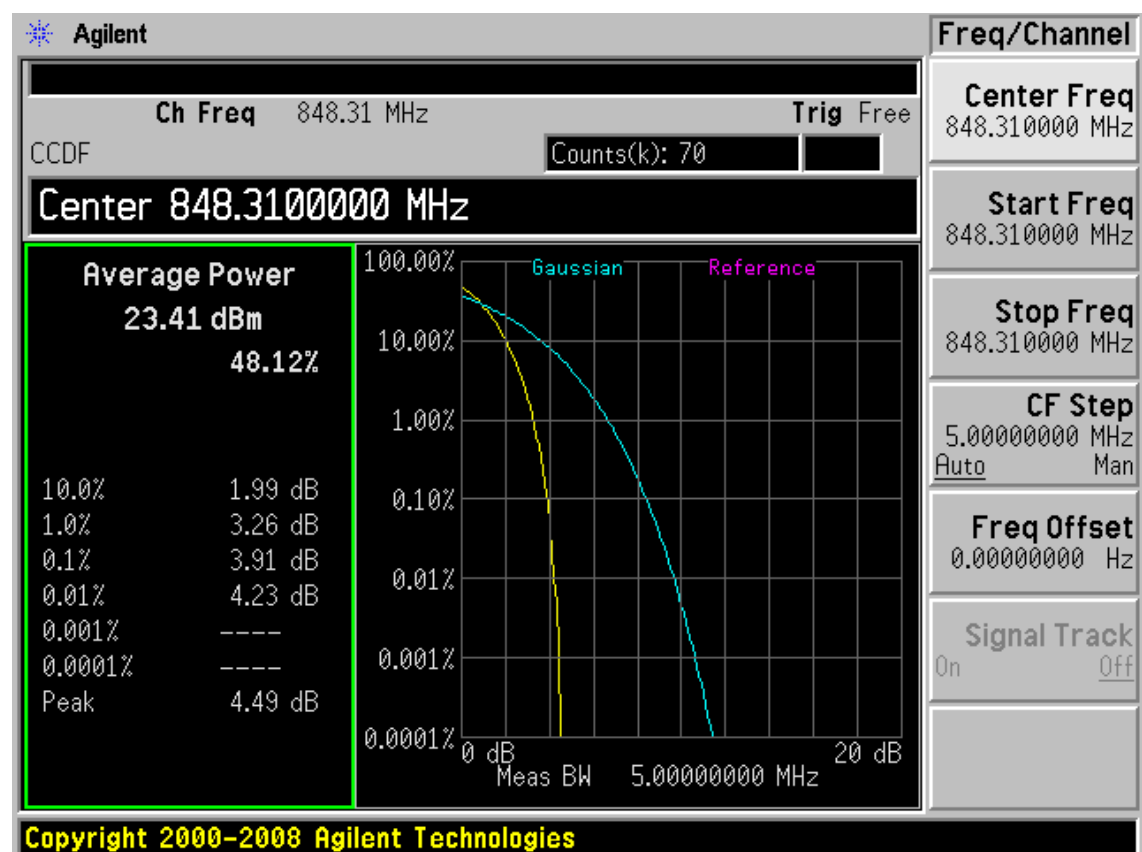
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1307-0096RF01R1

Page 25 of 40



CDMA Cellular RC3 (SO2) CH384

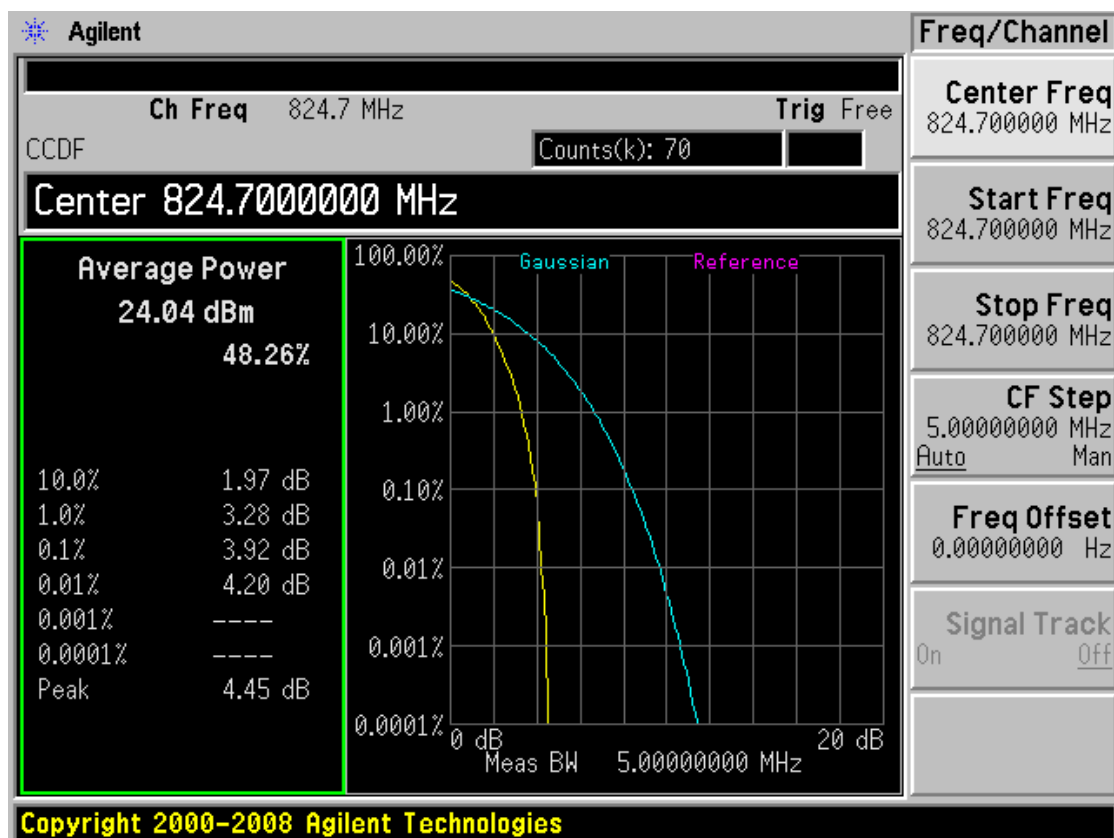


CDMA Cellular RC3 (SO2) CH777

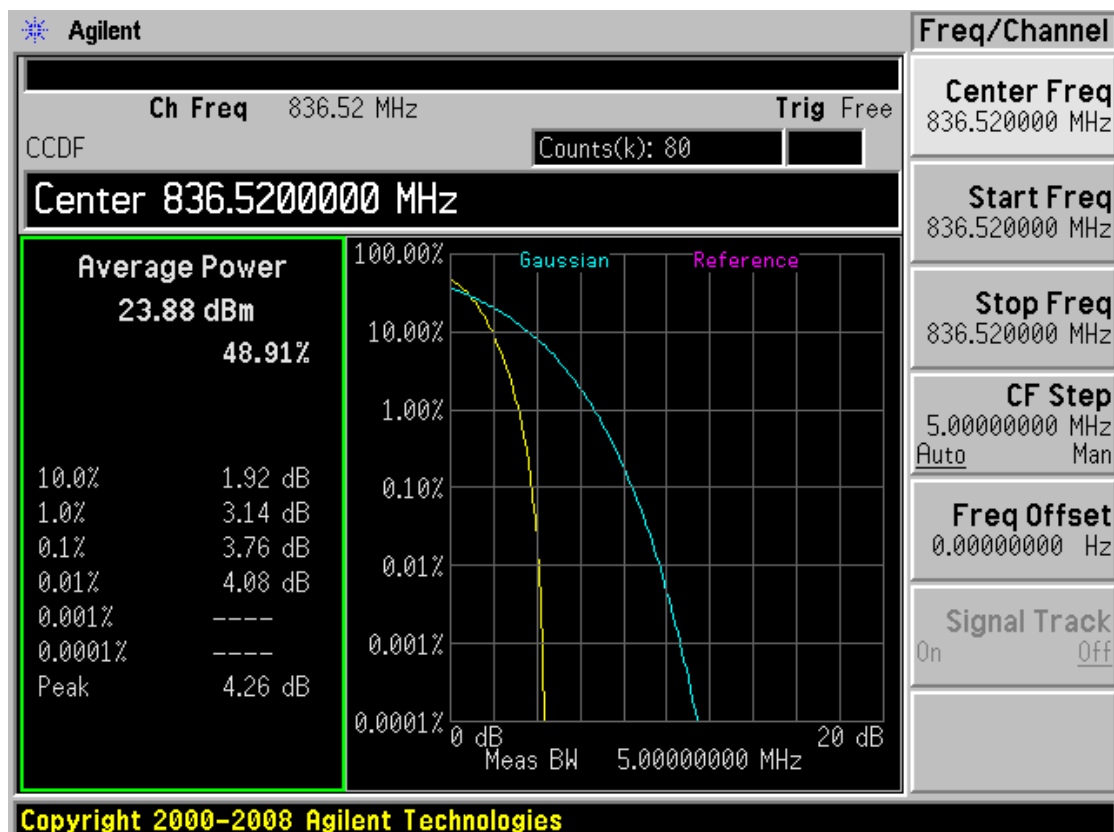
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1307-0096RF01R1

Page 26 of 40



CDMA Cellular RC3 (SO32) CH1013

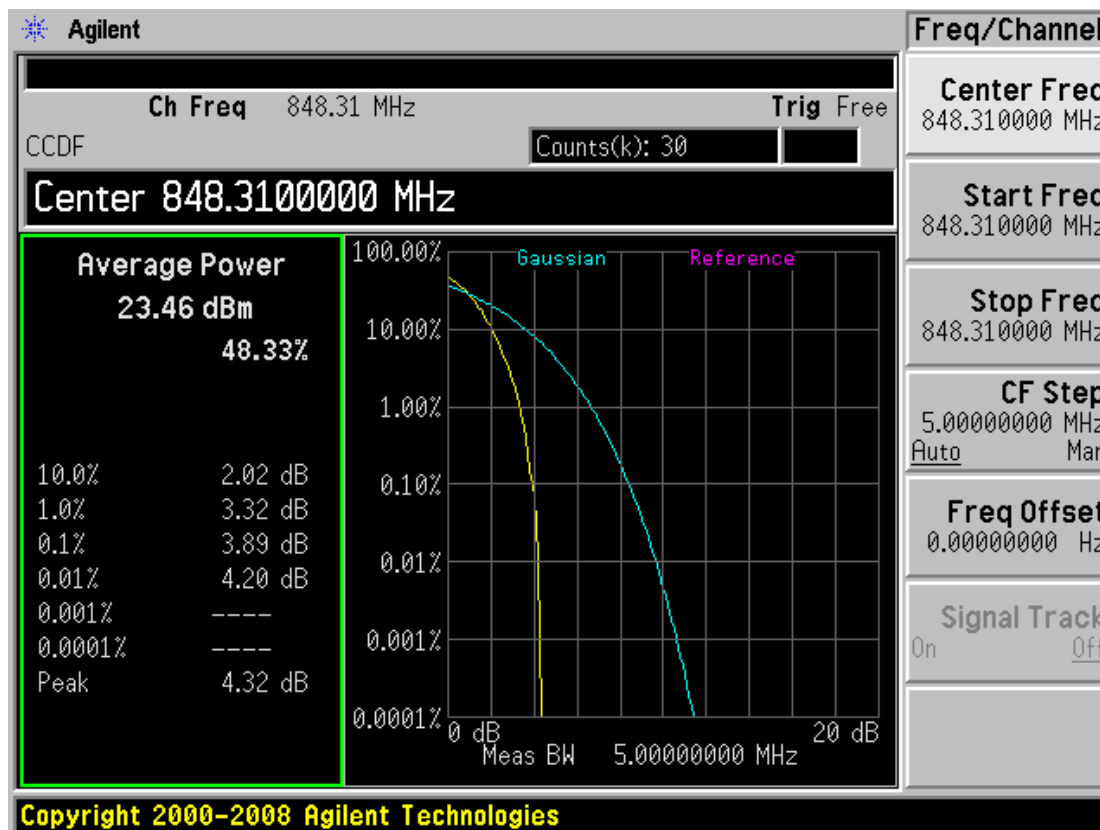


CDMA Cellular RC3 (SO32) CH384

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 27 of 40



CDMA Cellular RC3 (SO32) CH777

2.7. Frequency Stability

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -40°C to +85°C in 10°C step size,

(1) With all power removed, the temperature was decreased to -40°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 -40°C to +85°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

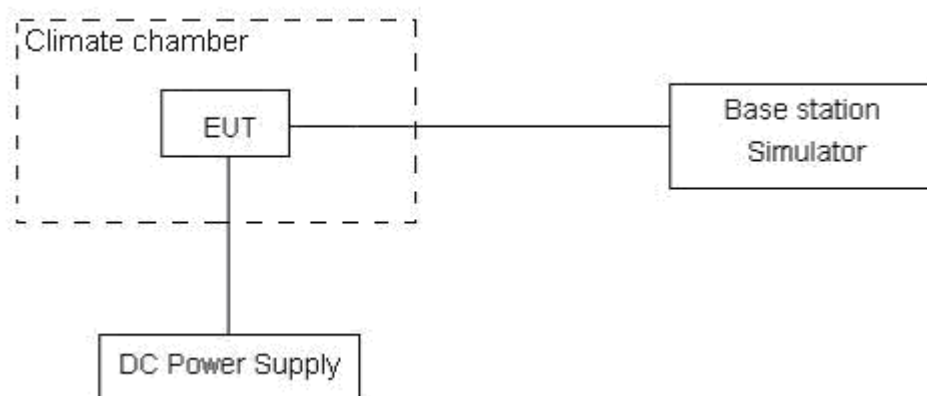
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 10 V and 14 V, with a nominal voltage of 12V.

Test setup



TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 29 of 40

Limits

According to the Sec. 22.355, the frequency stability of the carrier shall be accurate to within 2.5 ppm of the received frequency for mobile stations.

Limits	$\leq 2.5 \text{ ppm}$
--------	------------------------

Measurement Uncertainty

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

Test Result

Temperature (°C)	Test Results (ppm) / 12 V Power supply	
	Channel 384	
	RC3 (SO2)	RC3 (SO32)
-40	-0.00251	-0.00461
-30	-0.00153	-0.00562
-20	-0.00525	-0.00449
-10	-0.00207	-0.0051
0	0.00361	-0.00495
10	-0.00516	-0.00531
20	-0.00328	-0.00487
30	0.001984	-0.00472
40	-0.00136	0.005511
50	-0.00512	0.004232
60	0.00188	-0.00464
70	-0.00135	0.002517
80	-0.00424	0.002252
90	-0.00551	0.005231

Voltage (V)	Test Results(ppm) / 20°C	
	Channel 384	
	RC3 (SO2)	RC3 (SO32)
10	0.001638	-0.00506
12	-0.00328	-0.00487
14	0.004578	0.005451

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 30 of 40

2.8. Spurious Emissions at Antenna Terminals

Ambient condition

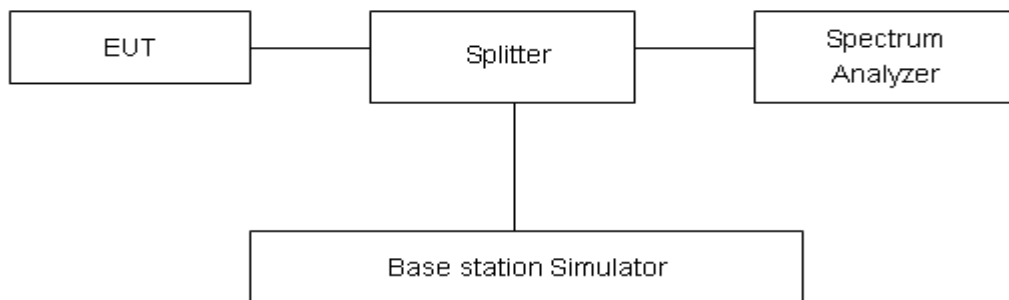
Temperature	Relative humidity
21°C ~25°C	40%~60%

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. For CDMA Cellular, RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT

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 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

TA Technology (Shanghai) Co., Ltd.

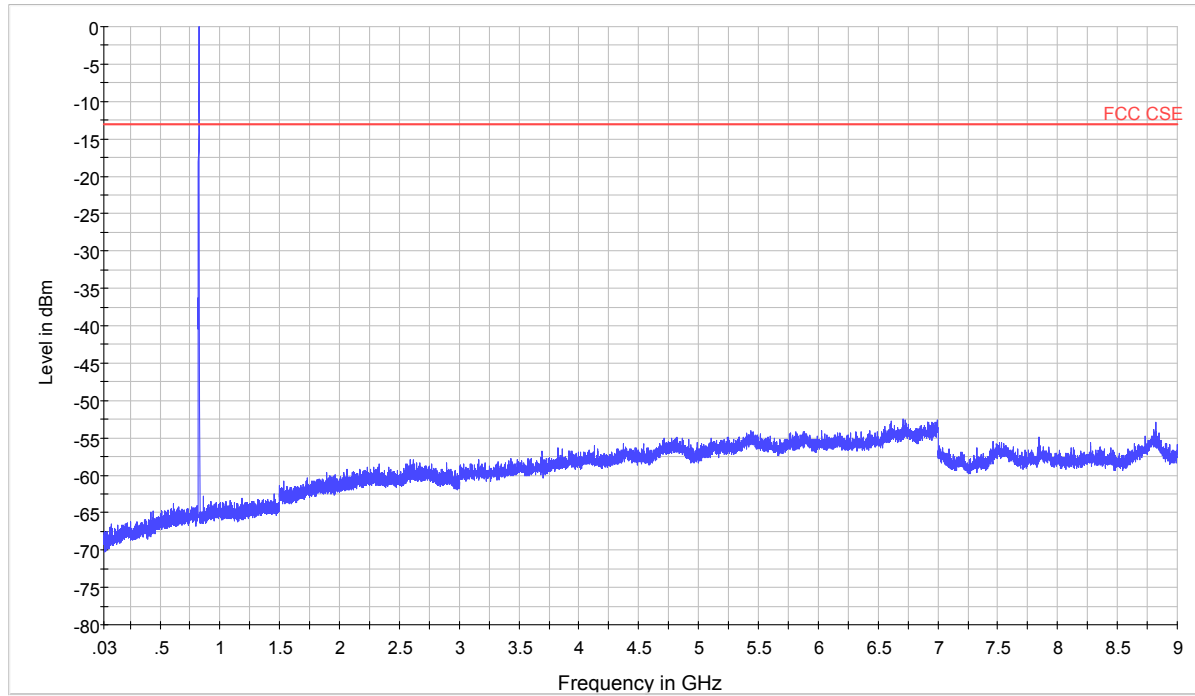
Test Report

Report No.: RXA1307-0096RF01R1

Page 31 of 40

Test Result

CDMA Cellular CH1013



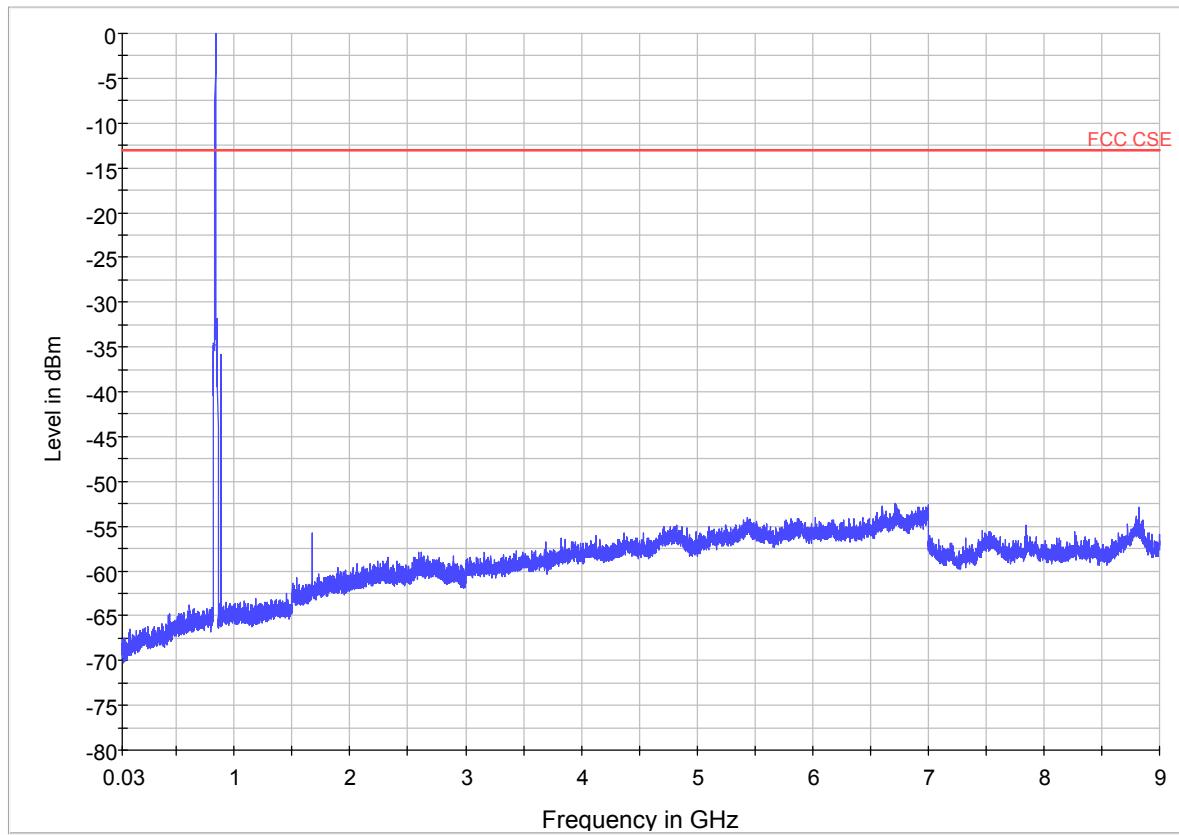
Note: The signal beyond the limit is carrier
CDMA Cellular CH1013 30MHz~9GHz

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 32 of 40

CDMA Cellular CH384



Note: The signal beyond the limit is carrier
CDMA Cellular CH384 30MHz~9GHz

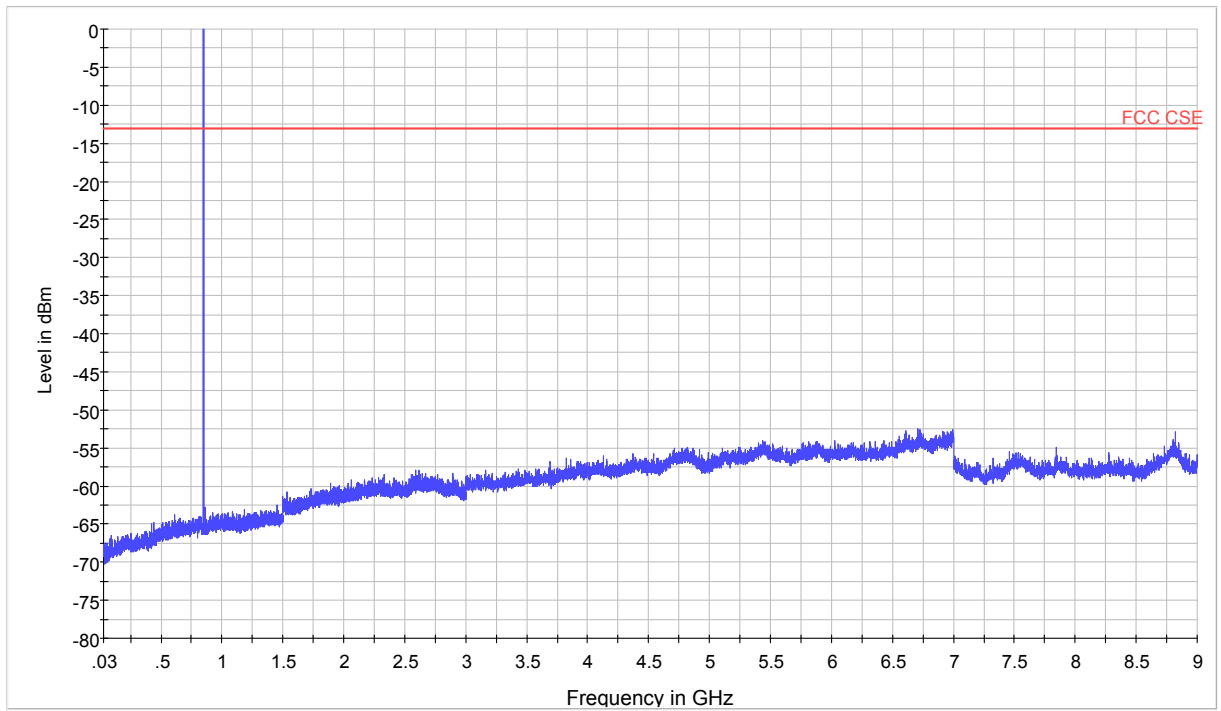
Harmonic	TX ch.384 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	1672.5	-55.78	-13	42.78

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 33 of 40

CDMA Cellular CH777



Note: The signal beyond the limit is carrier
CDMA Cellular CH777 30MHz~9GHz

2.9. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

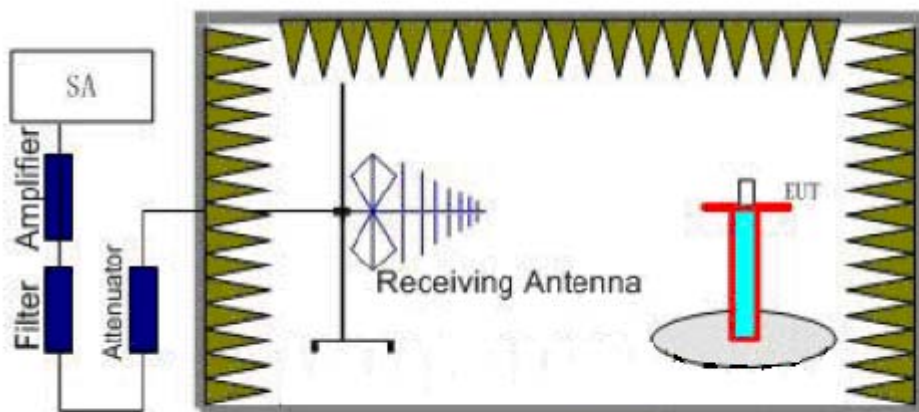
The measurements procedures in TIA -603C are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The procedure of Radiates Spurious Emission is as follows:

Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 1.5 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. The test setup refers to figure below.



Step 2:

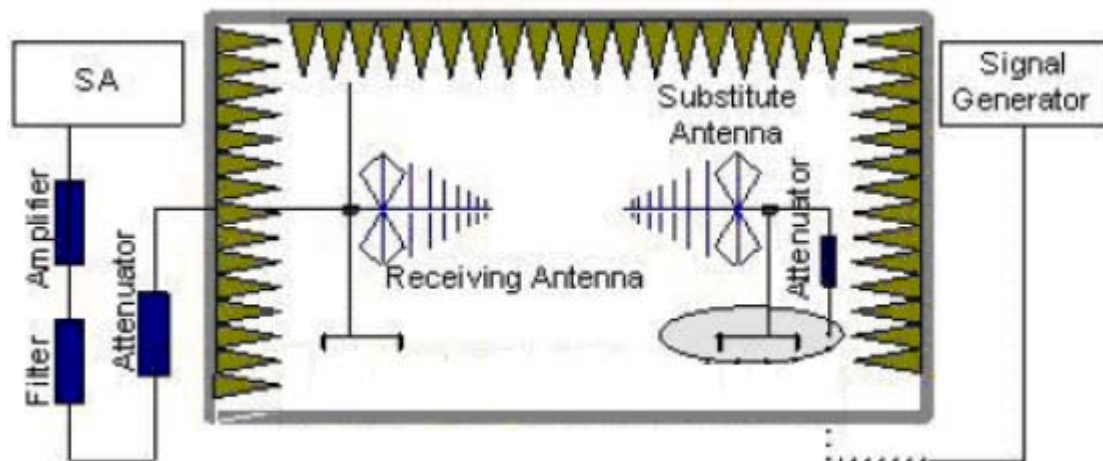
A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a adjustable S.G. applied through a Tx cable. Adjust the level of the signal generator output until the value of the receiver reach the previously recorded analyzer power level (LVL). Then The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 35 of 40



$E.R.P \text{ (peak power)} = S.G. - Tx \text{ Cable loss} + \text{Substitution antenna gain} - 2.15.$

$EIRP = E.R.P + 2.15$

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

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT

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 $k = 1.96$, $U = 3.55$ dB.

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1307-0096RF01R1

Page 36 of 40

Test Result

CDMA Cellular CH1013

Harmonic	TX ch.1013 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1649.6	-45.21	2	10.15	Vertical	-39.21	-13	26.21	45
3	2474.1	-66.74	2.51	11.35	Vertical	-60.05	-13	47.05	0
4	3298.8	-64.45	4.2	10.85	Vertical	-59.95	-13	46.95	180
5	4123.5	-62.89	5.2	11.35	Vertical	-58.89	-13	45.89	90
6	4948.2	-63.43	5.5	11.95	Vertical	-59.13	-13	46.13	0
7	5772.9	-61.76	5.7	13.55	Vertical	-56.06	-13	43.06	270
8	6597.6	-61.10	6.3	13.75	Vertical	-55.80	-13	42.80	180
9	7422.3	-61.08	6.8	13.85	Vertical	-56.18	-13	43.18	0
10	8247	-61.86	6.9	14.25	Vertical	-56.66	-13	43.66	180

CDMA Cellular CH384

Harmonic	TX ch.384 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1672.5	-50.43	2	10.75	Vertical	-43.83	-13	30.83	225
3	2509.56	-62.78	2.51	11.05	Vertical	-56.39	-13	43.39	0
4	3346.08	-64.61	4.2	11.15	Vertical	-59.81	-13	46.81	180
5	4182.6	-62.67	5.2	11.15	Vertical	-58.87	-13	45.87	90
6	5019.12	-61.23	5.5	11.95	Vertical	-56.93	-13	43.93	0
7	5855.64	-62.70	5.7	13.55	Vertical	-57.00	-13	44.00	270
8	6692.16	-61.77	6.3	13.75	Vertical	-56.47	-13	43.47	180
9	7528.68	-60.26	6.8	13.85	Vertical	-55.36	-13	42.36	0
10	8365.2	-61.88	6.9	14.25	Vertical	-56.68	-13	43.68	90

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 37 of 40

CDMA Cellular CH777

Harmonic	TX ch.777 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1695.9	-55.04	2	10.15	Vertical	-49.04	-13	36.04	0
3	2544.93	-56.6	2.51	11.05	Vertical	-50.21	-13	37.21	0
4	3393.24	-64.16	4.2	11.15	Vertical	-59.36	-13	46.36	0
5	4241.55	-61.50	5.2	11.15	Vertical	-57.70	-13	44.70	180
6	5089.86	-62.89	5.5	11.95	Vertical	-58.59	-13	45.59	90
7	5938.17	-63.04	5.7	13.55	Vertical	-57.34	-13	44.34	0
8	6786.48	-60.84	6.3	13.75	Vertical	-55.54	-13	42.54	270
9	7634.79	-60.52	6.8	13.85	Vertical	-55.62	-13	42.62	180
10	8483.1	-62.22	6.9	14.25	Vertical	-57.02	-13	44.02	0

TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1307-0096RF01R1

Page 38 of 40

3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Base Station Simulator	CMU200	R&S	118133	2013-06-29	One year
02	Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
03	Spectrum Analyzer	E4445A	Agilent	MY46181146	2013-06-29	One year
04	Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2013-06-29	One year
05	Signal Analyzer	FSV30	R&S	100815	2013-06-29	One year
06	Signal generator	SMB 100A	R&S	102594	2013-06-29	One year
07	EMI Test Receiver	ESCI	R&S	100948	2013-06-29	One year
08	Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-201	2012-06-19	Three years
09	Horn Antenna	HF907	R&S	100126	2012-07-01	Three years
10	Climatic Chamber	PT-30B	Re Ce	20101891	2010-09-10	Three years

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

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance



Picture 1 EUT and Auxiliary

A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup