



Part 24

TEST REPORT

Product Name	CDMA vehicle tracking device
Model Name	TALONCV002
FCC ID	2AAQ6TALONCV002
Client	MONTAGE SYSTEMS, INC.
Manufacturer	Asiatelco Technologies Co.
Date of issue	June 11, 2014

TA Technology (Shanghai) Co., Ltd.

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

Report No.: RXA1405-0121RF02R1

Page 2 of 38

GENERAL SUMMARY

Reference Standard(s)	FCC CFR47 Part 2 (2013) Frequency Allocations And Radio Treaty Matters; General Rules And Regulations FCC CFR47 Part 24E (2013) Personal Communications Services ANSI/TIA-603-C(2004) Land mobile FM or PM Communications Equipment Measurements and Performance Standards. KDB 971168 D01 Power Meas License Digital Systems v02r01 Measurement Guidance for Certification of Licensed Digital Transmitters
Conclusion	This fixed 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
Comment	The test result only responds to the measured sample.

Approved by Weizhong Yang
Weizhong Yang
Director

Revised by Lingling Kang
Lingling Kang
RF Manager

Performed by Yiqi Chen
Yiqi Chen
RF Engineer

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

Report No.: RXA1405-0121RF02R1

Page 3 of 38

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	6
2. Test Information	7
2.1. Summary of test results	7
2.2. RF Power Output	8
2.3. Effective Isotropic Radiated Power	10
2.4. Occupied Bandwidth	12
2.5. Band Edge Compliance	17
2.6. Peak-to-Average Power Ratio (PAPR)	21
2.7. Frequency Stability	26
2.8. Spurious Emissions at Antenna Terminals	28
2.8 Radiates Spurious Emission	32
3. Main Test Instruments	36
ANNEX A: EUT Appearance and Test Setup	37
A.1 EUT Appearance	37
A.2 Test Setup	38

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1405-0121RF02R1

Page 4 of 38

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. The sample under test was selected by the Client. This report only refers to the item that has undergone the test.

This report standalone does 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.: RXA1405-0121RF02R1

Page 5 of 38

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.
65 ENTERPRISE
Address: ALISO VIEJO
CA 92656
UNITED STATES

1.4. Manufacturer Information

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

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1405-0121RF02R1

Page 6 of 38

1.5. Information of EUT

General information

EUT IMEI:	A1000032307042		
Hardware Version:	P3		
Software Version:	MC891G_NC_1.0.4T		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Operating Mode(s):	CDMA PCS:(tested)		
Support mode:	1x RTT		
Test Modulation:	QPSK		
Maximum E.I.R.P.	24.64 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)	25-600-1175 (CDMA PCS) (tested)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	CDMA PCS	1851.25 ~ 1908.75	1931.25 ~ 1988.75

1.6. Test Date

The test is performed from May 27, 2014 to May 29, 2014.

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

Report No.: RXA1405-0121RF02R1

Page 7 of 38

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	24.232	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	24.238	PASS
5	Peak-to-Average Power Ratio	KDB 971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 24.235	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 24.238	PASS
8	Radiates Spurious Emission	2.1053 / 24.238	PASS

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1405-0121RF02R1

Page 8 of 38

2.2. RF Power Output

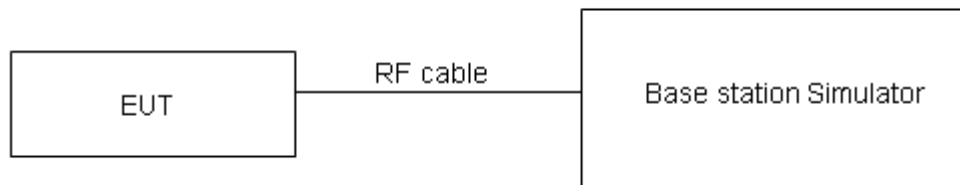
Ambient condition

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.

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.: RXA1405-0121RF02R1

Page 9 of 38

Test Results

CDMA PCS			Conducted Power(dBm)		
			Channel 25	Channel 600	Channel 1175
			1851.25 (MHz)	1880 (MHz)	1908.75 (MHz)
1x RTT	RC1	SO55(Loopback)	23.47	23.49	23.06
		SO2(Loopback)	23.51	23.52	23.08
	RC3	SO55(Loopback)	23.43	23.48	22.99
		SO2(Loopback)	23.44	23.45	23.02
		SO32(+FCH-SCH)	23.39	23.37	23.01
		SO32(+SCH)	23.31	23.24	22.98

Note:

- 1) The maximum RF Output Power numbers are marks in bold.
- 2) The following testing is set to RC1 SO2/ RC3 SO32 based on the maximum RF Output Power.

2.3. Effective Isotropic Radiated Power

Ambient condition

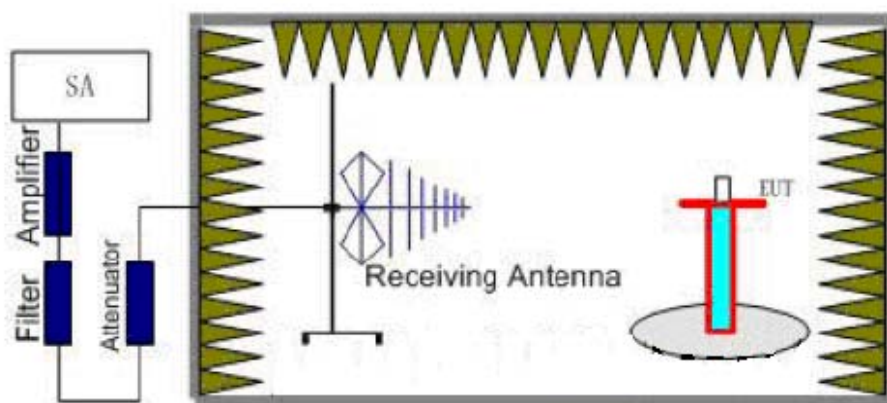
Temperature	Relative humidity
21°C ~25°C	40%~60%

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.: RXA1405-0121RF02R1

Page 11 of 38

Limits

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts EIRP. Peak power" and Rule Part 24.232(c) 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)	$\leq 2\text{ W}$ (33 dBm)
--------------	----------------------------

Measurement Uncertainty

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

Test Results: Pass

	Channel	Polarization	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	E.I.R.P. (dBm)
CDMA PCS	25	Vertical	-34.07	-53.71	0	1.92	21.56
	600	Vertical	-32.41	-53.91	0	1.94	23.44
	1175	Vertical	-34.59	-54.55	0	1.92	21.88
	25	Horizontal	-31.21	-53.19	0	1.92	23.90
	600	Horizontal	-30.72	-53.42	0	1.94	24.64
	1175	Horizontal	-32.07	-53.64	0	1.92	23.49

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

Report No.: RXA1405-0121RF02R1

Page 12 of 38

2.4. Occupied Bandwidth

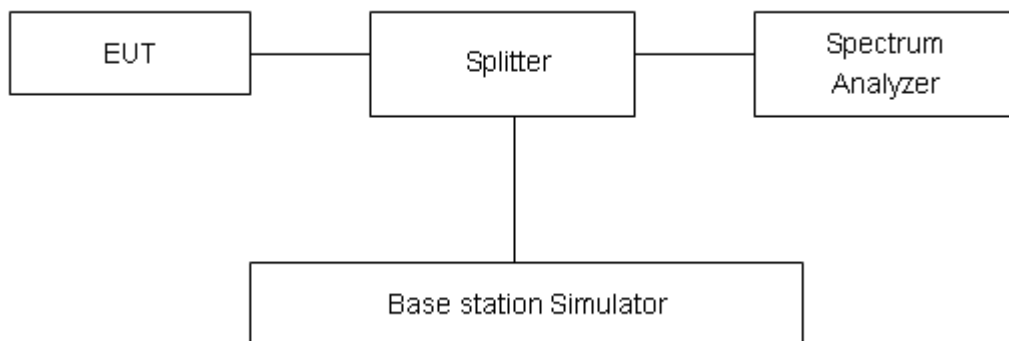
Ambient condition

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 30kHz, VBW is set to 300kHz for CDMA PCS. 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.

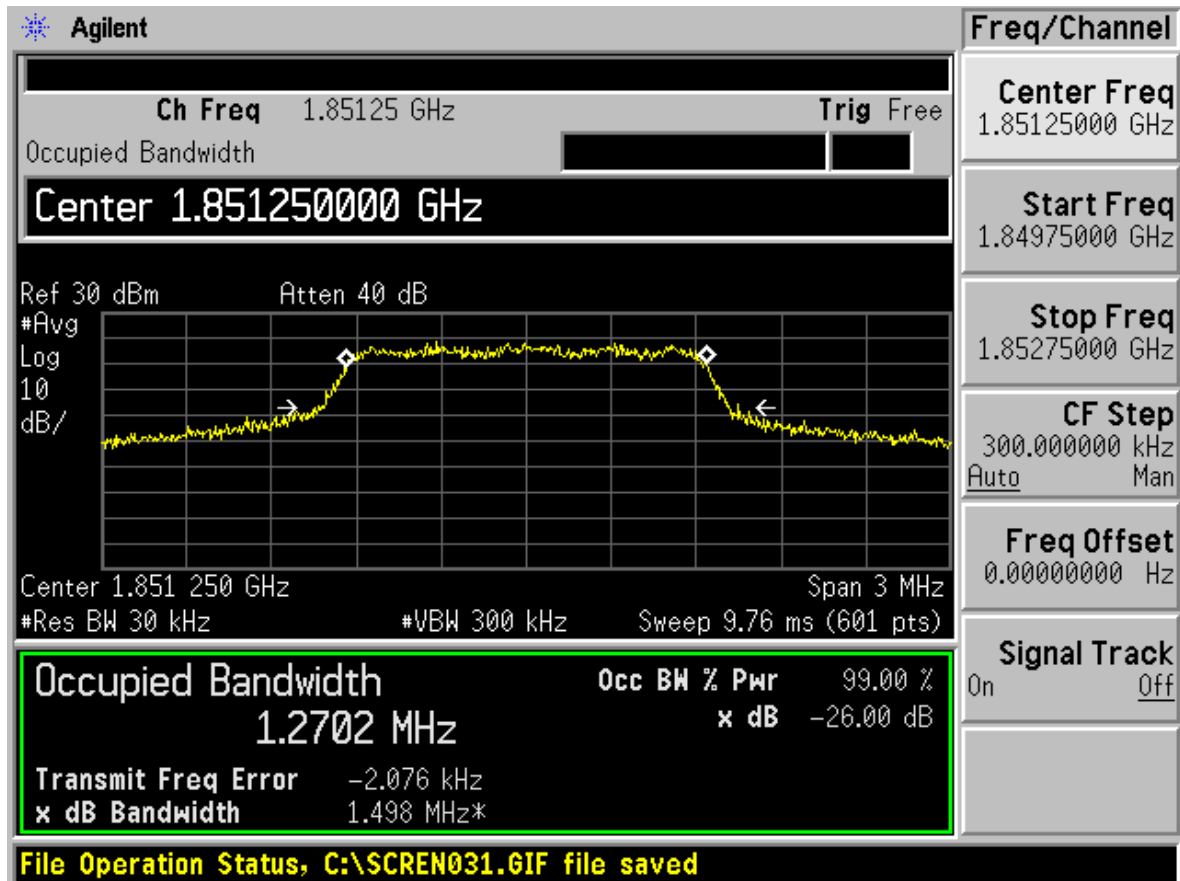
Test Report

Report No.: RXA1405-0121RF02R1

Page 13 of 38

Test Result

CDMA PCS	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
RC1 (SO2)	25	1851.25	1.2702	1.498
	600	1880.0	1.2787	1.534
	1175	1908.75	1.3101	1.918
RC3 (SO32)	25	1851.25	1.2637	1.441
	600	1880.0	1.2645	1.469
	1175	1908.75	1.2798	1.702

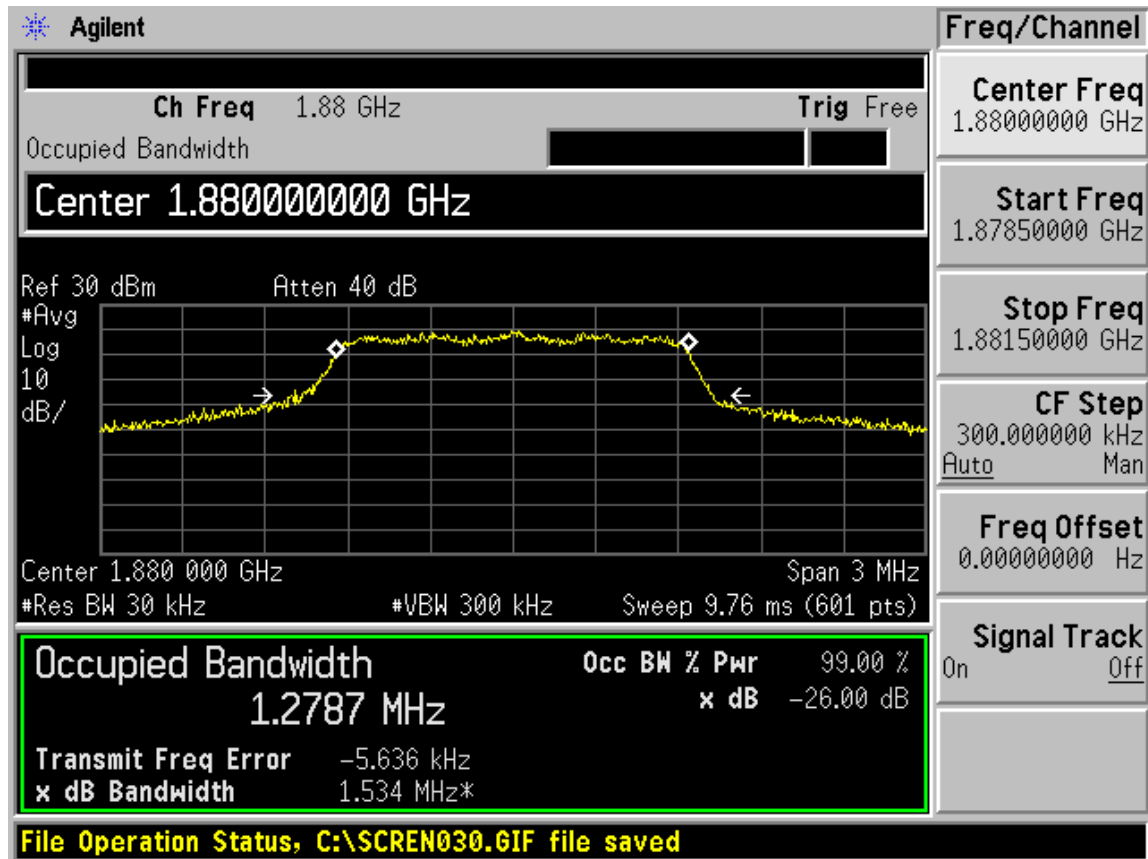


CDMA PCS RC1 (SO2) CH25 Occupied Bandwidth

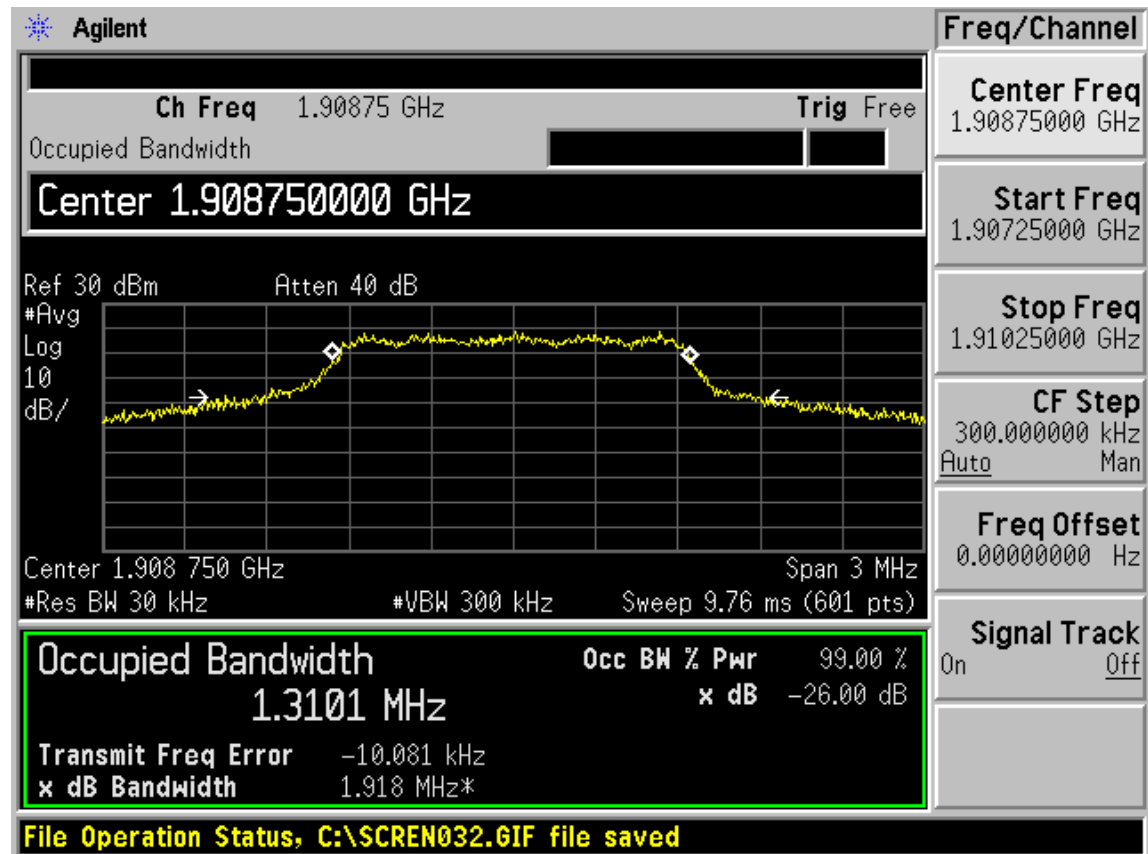
TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1405-0121RF02R1

Page 14 of 38



CDMA PCS RC1 (SO2) CH600 Occupied Bandwidth

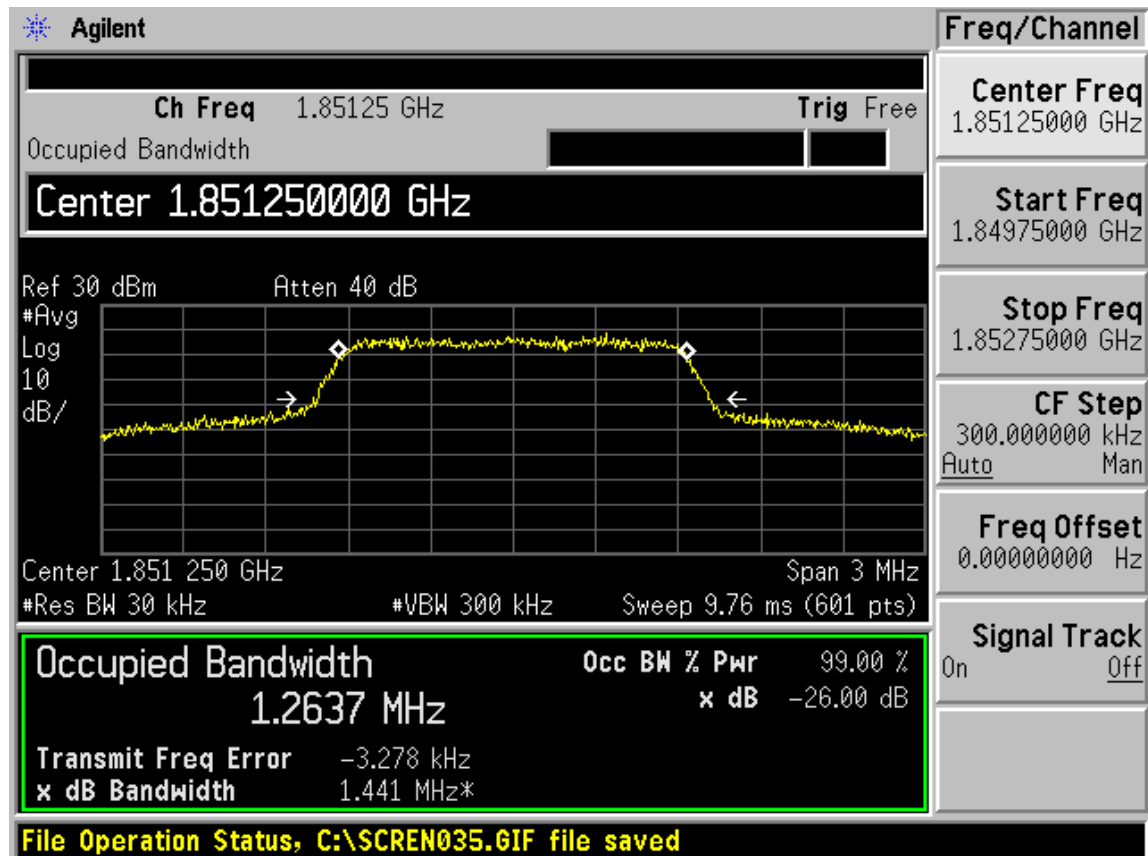


CDMA PCS RC1 (SO2) CH1175 Occupied Bandwidth

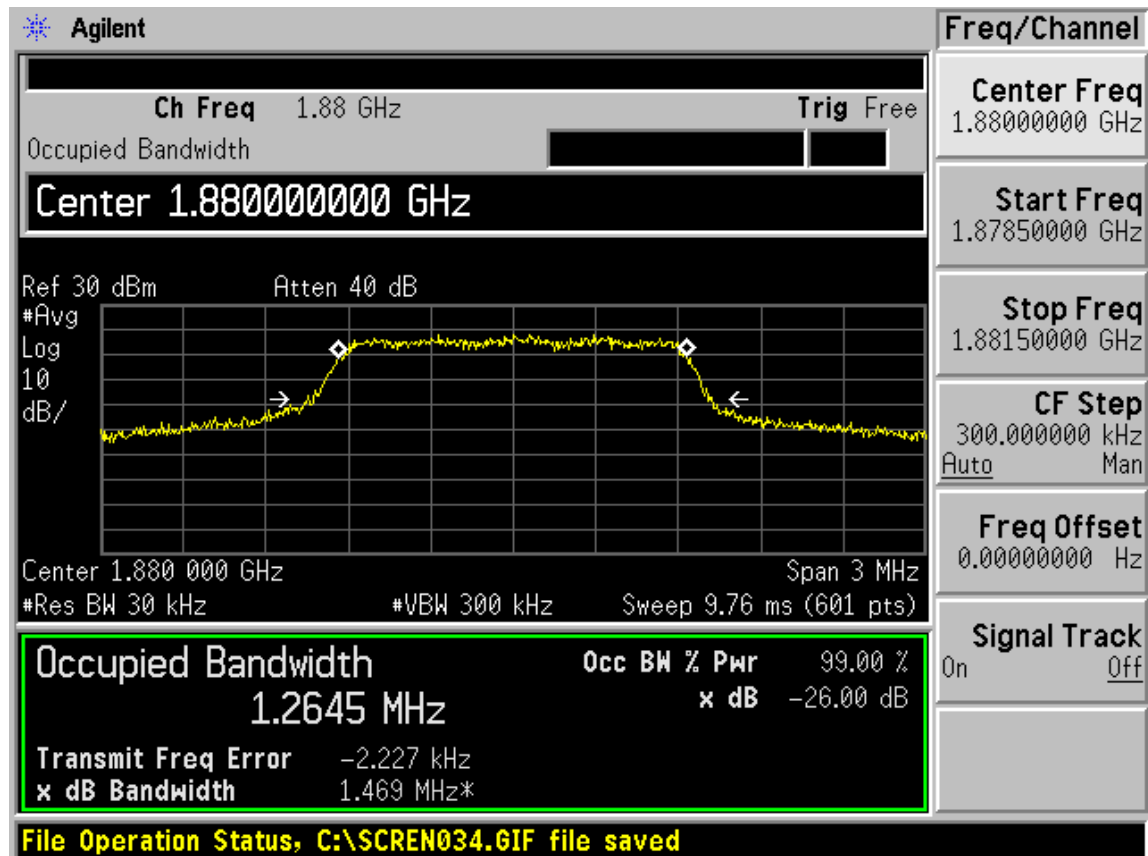
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1405-0121RF02R1

Page 15 of 38



CDMA PCS RC3 (SO32) CH25 Occupied Bandwidth

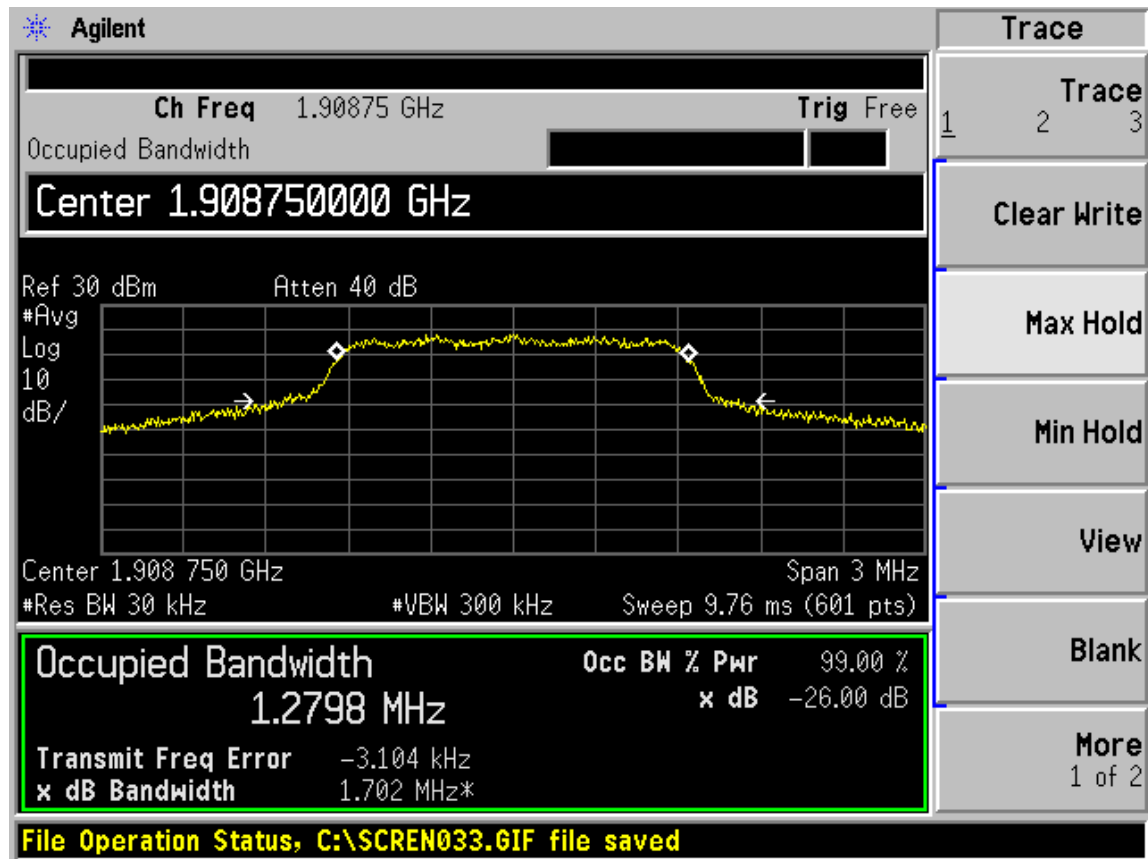


CDMA PCS RC3 (SO32) CH600 Occupied Bandwidth

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

Report No.: RXA1405-0121RF02R1

Page 16 of 38



CDMA PCS RC3 (SO32) CH1175 Occupied Bandwidth

TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1405-0121RF02R1

Page 17 of 38

2.5. Band Edge Compliance

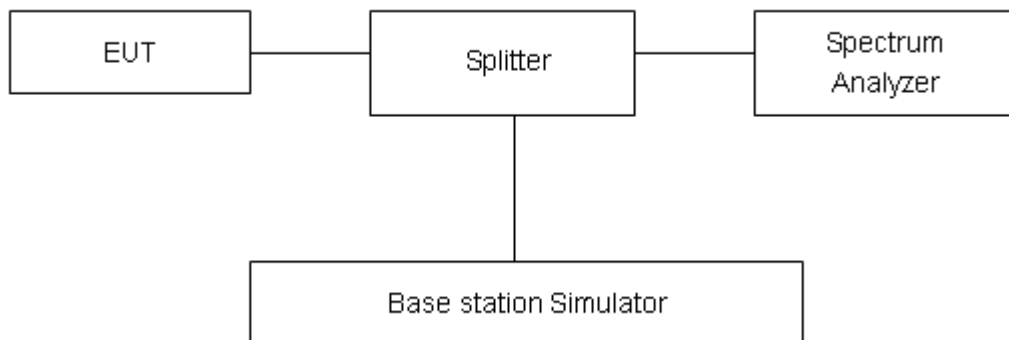
Ambient condition

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 15kHz, VBW is set to 30kHz for CDMA PCS. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee’s frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10} (P)$ 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.

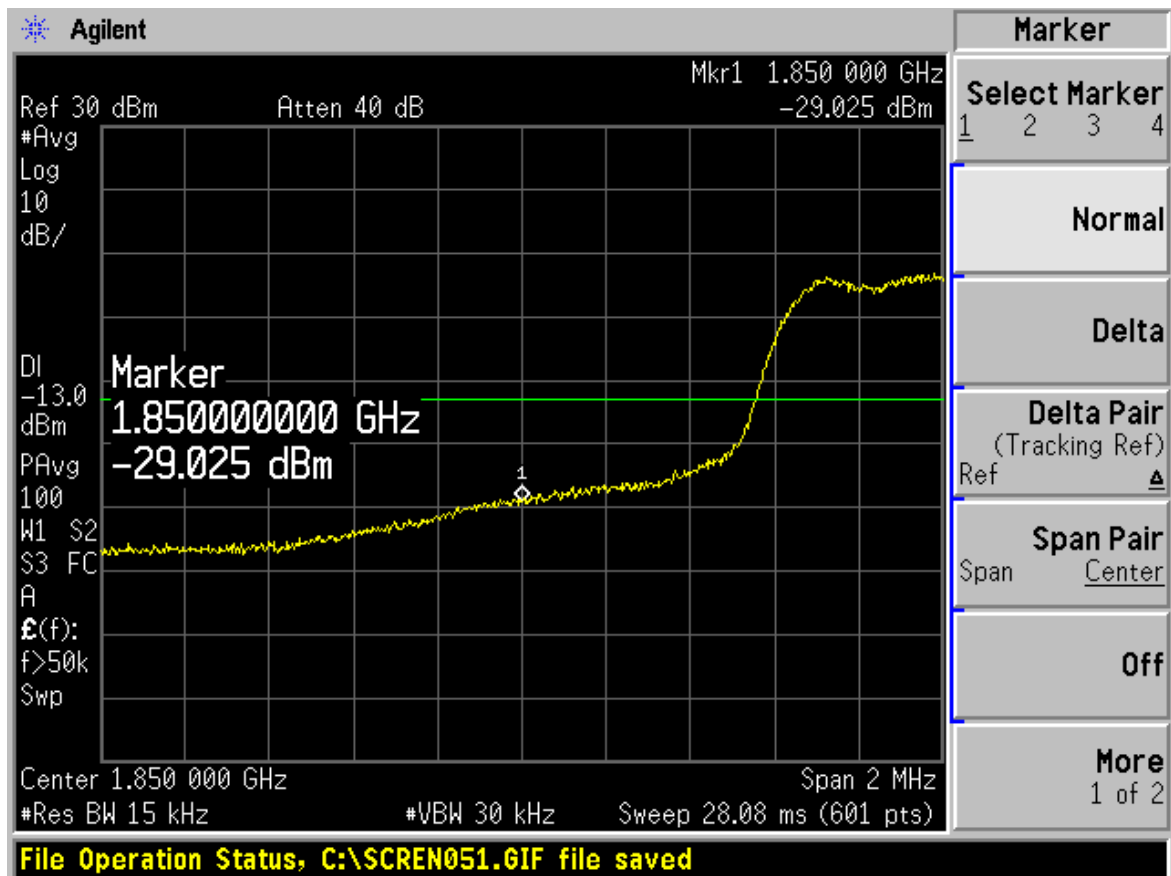
Test Report

Report No.: RXA1405-0121RF02R1

Page 18 of 38

Test Result:

CDMA PCS	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
RC1 (SO2)	1850.0	-29.025	-13	PASS
	1910.0	-25.737	-13	PASS
RC3 (SO32)	1850.0	-28.676	-13	PASS
	1910.0	-25.748	-13	PASS

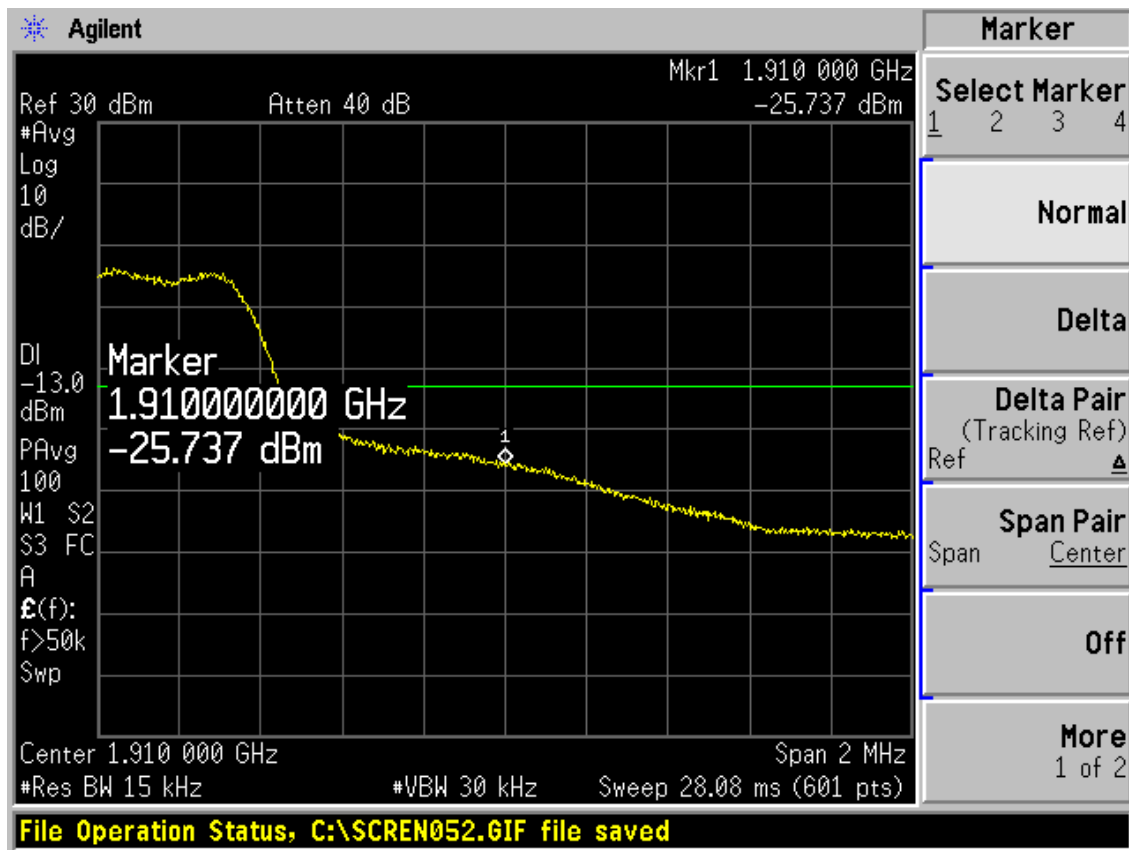


CDMA PCS RC1 (SO2) 25 Channel

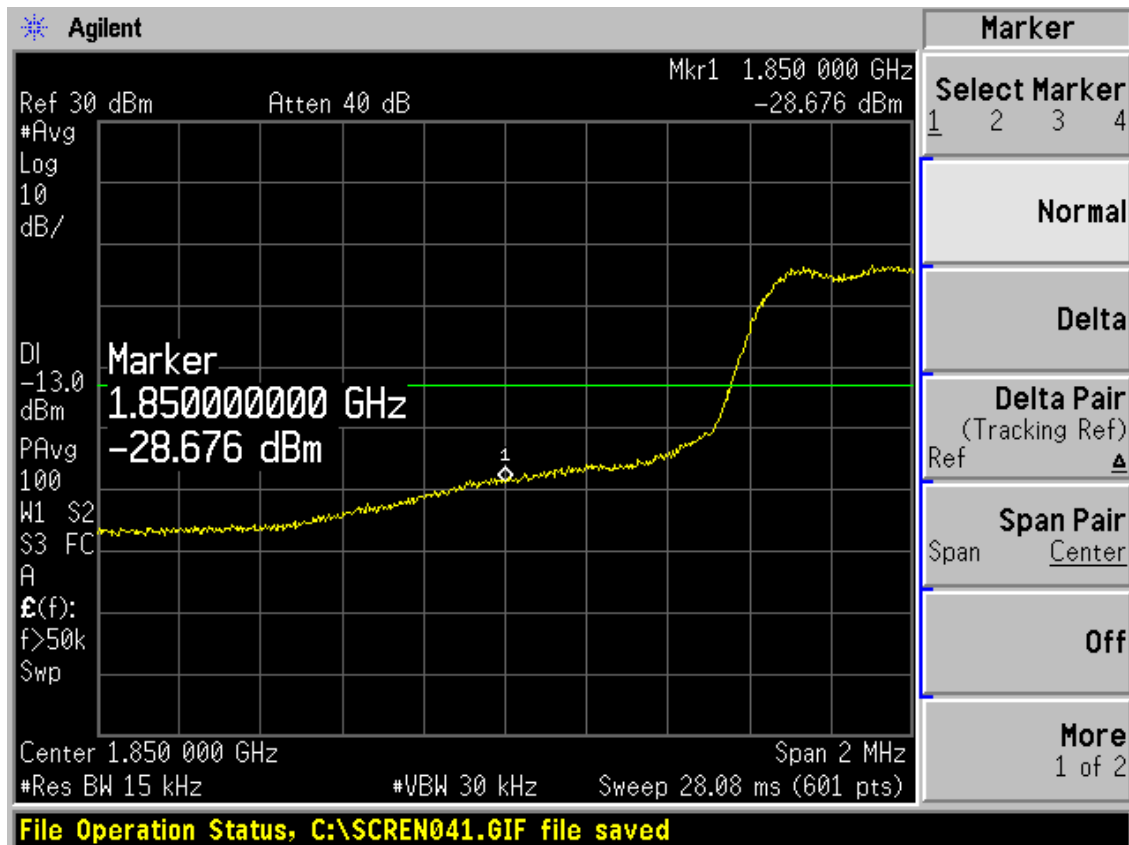
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1405-0121RF02R1

Page 19 of 38



CDMA PCS RC1 (SO2) 1175 Channel

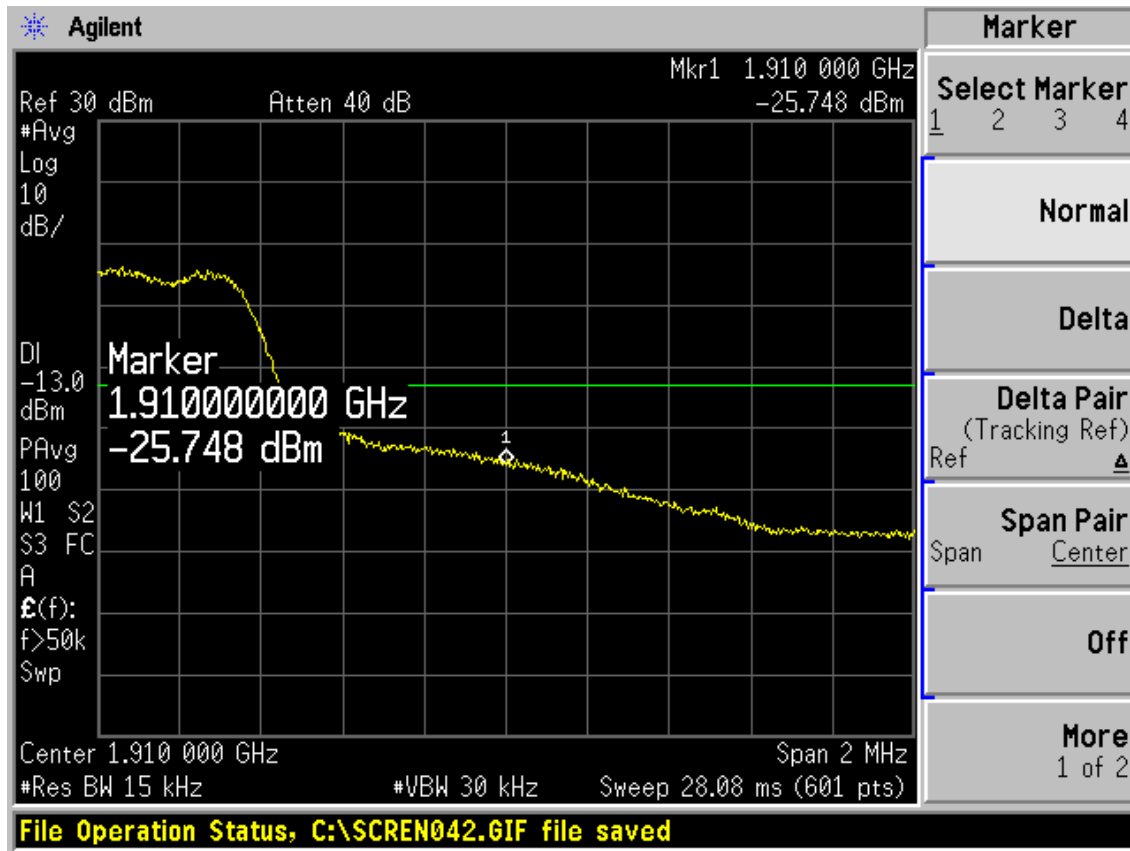


CDMA PCS RC3 (SO32) 25 Channel

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

Report No.: RXA1405-0121RF02R1

Page 20 of 38



CDMA PCS RC3 (SO32) 1175 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.

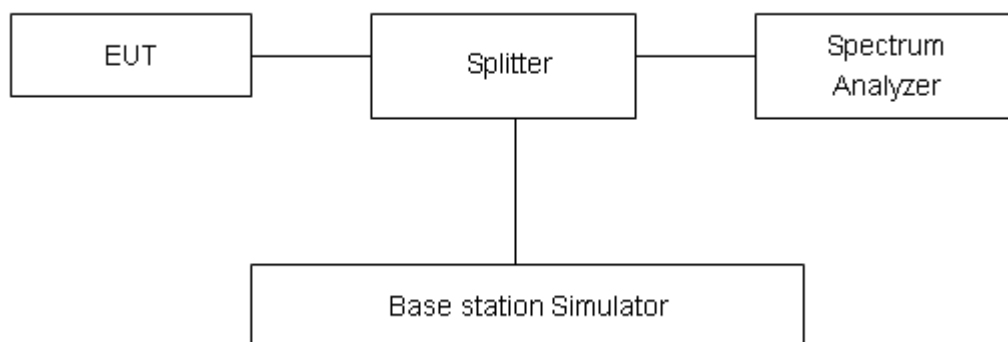
Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement 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

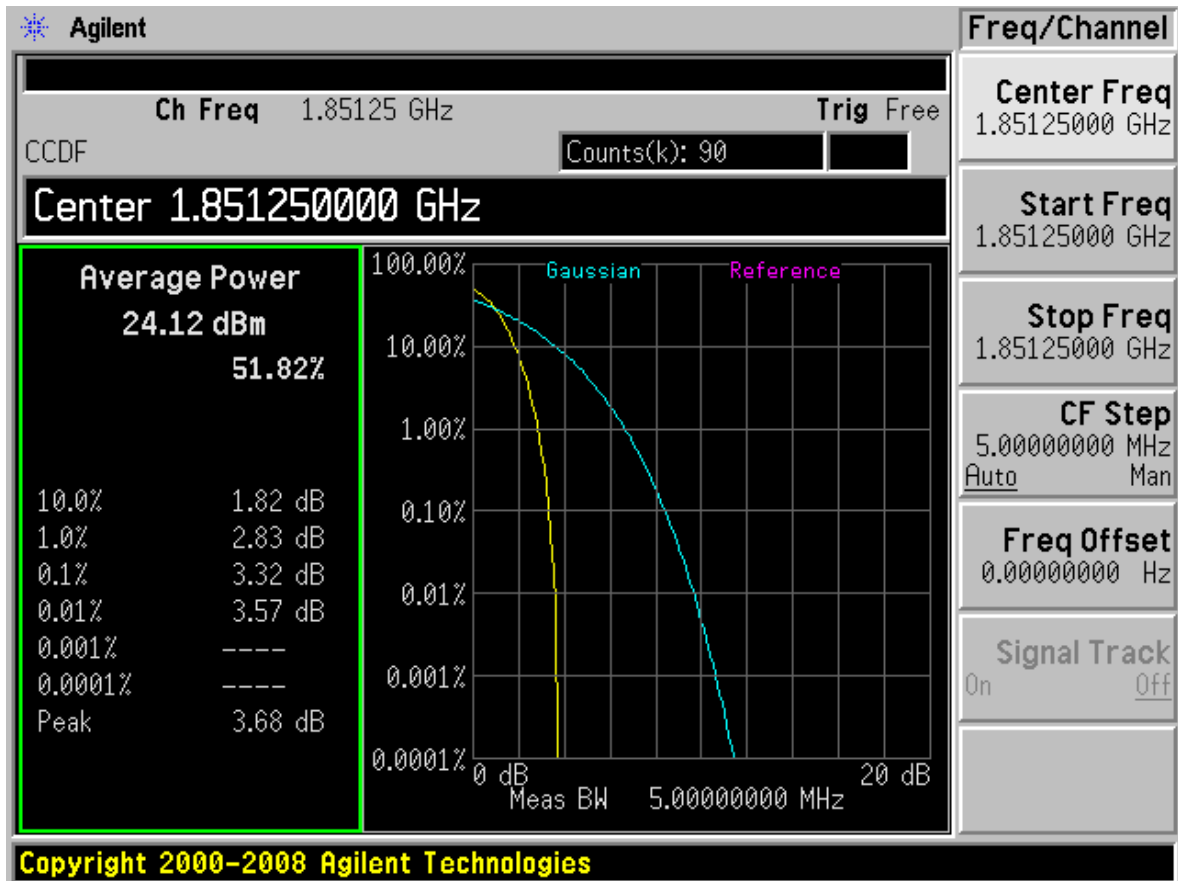
Report No.: RXA1405-0121RF02R1

Page 22 of 38

Test Result:

Test Results

Mode	Channel	Frequency (MHz)	Test Result(dB)
RC1 (SO2)	25	1851.25	3.32
	600	1880.0	3.46
	1175	1908.75	2.75
RC3 (SO32)	25	1851.25	3.40
	600	1880.0	3.48
	1175	1908.75	2.86

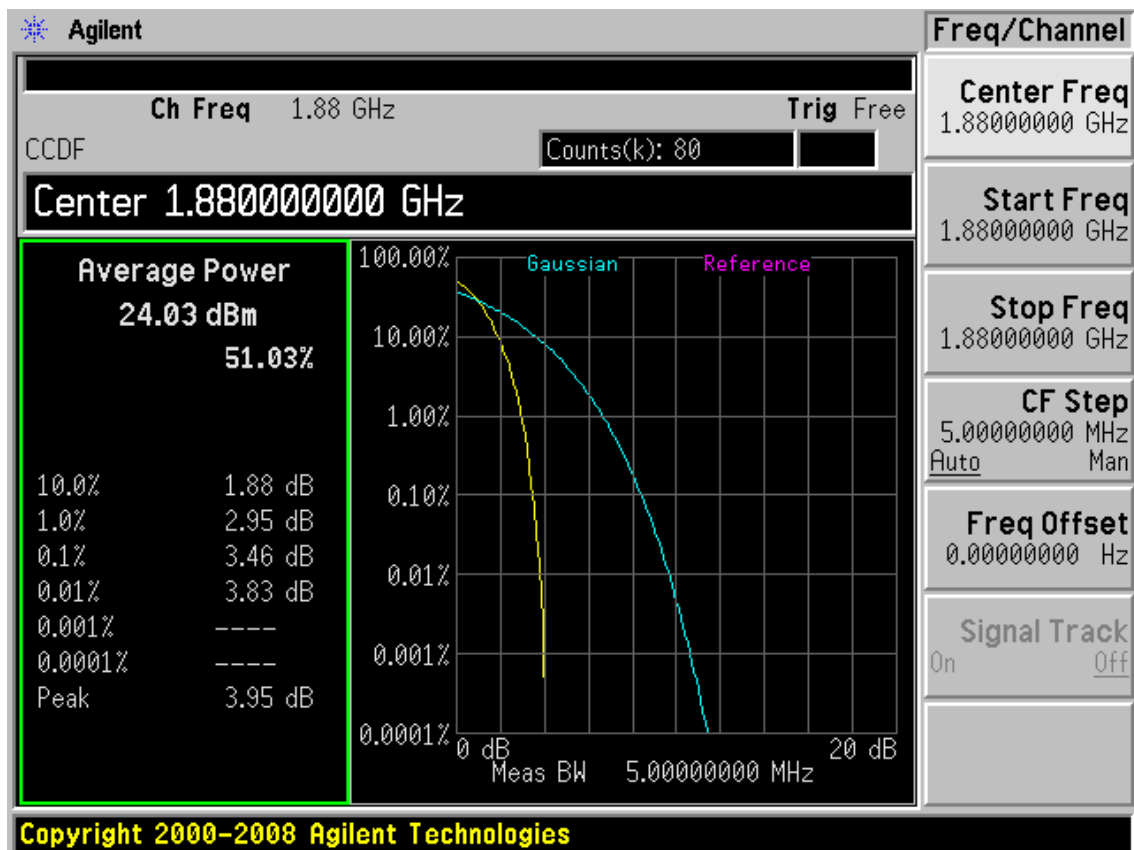


CDMA PCS RC1 (SO2) CH25 Channel

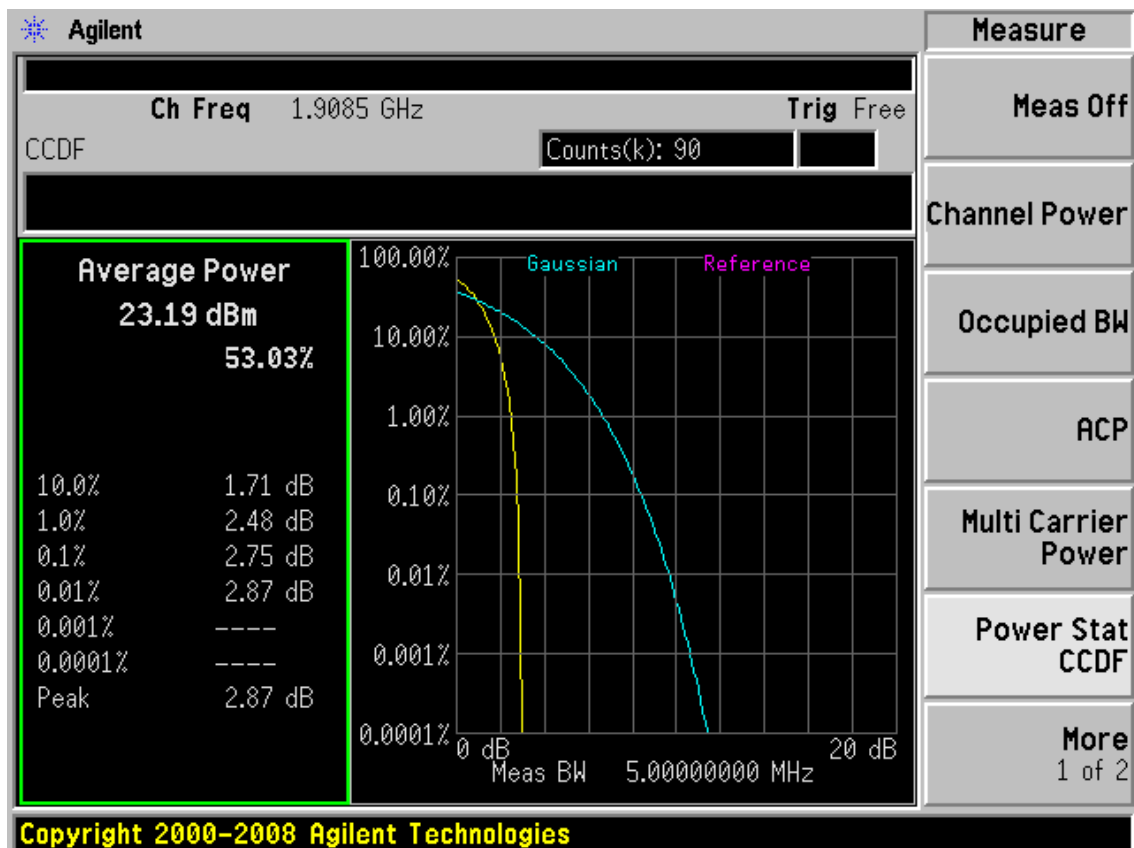
TA Technology (Shanghai) Co., Ltd. Test Report

Report No.: RXA1405-0121RF02R1

Page 23 of 38



CDMA PCS RC1 (SO2) CH600 Channel

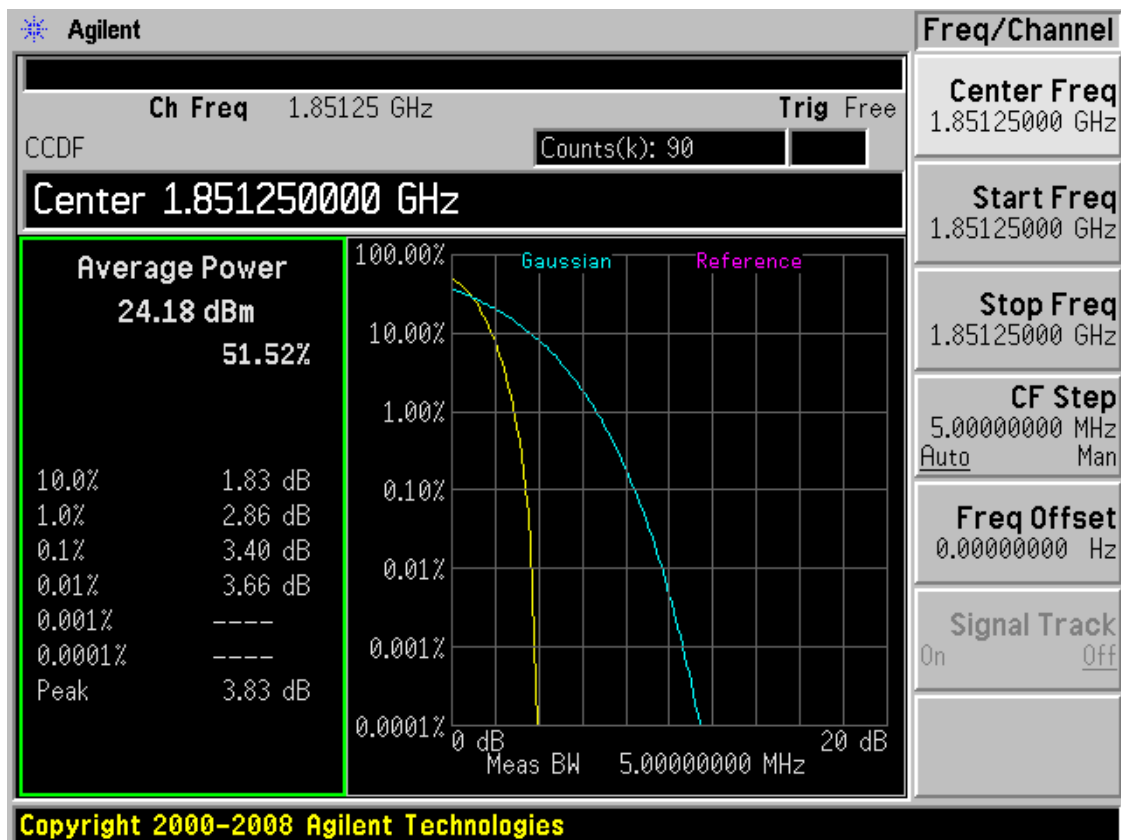


CDMA PCS RC1 (SO2) CH1175 Channel

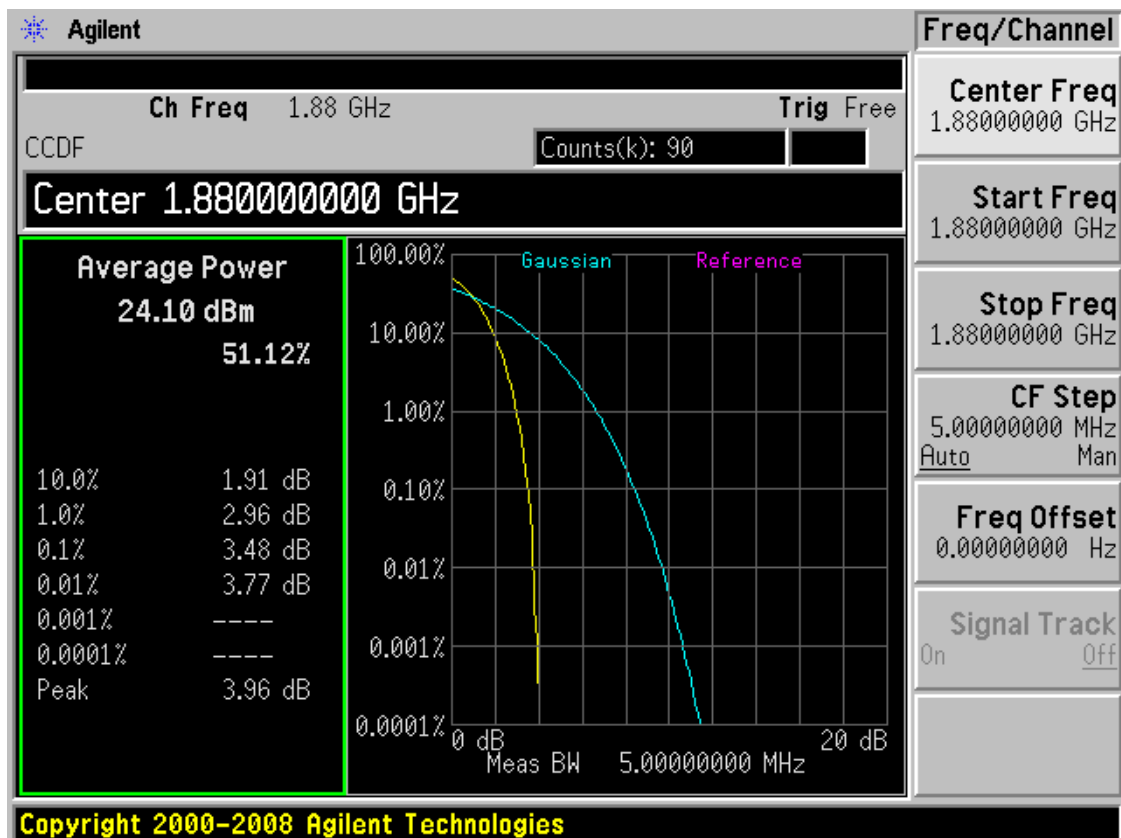
TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1405-0121RF02R1

Page 24 of 38



CDMA PCS RC3 (SO32) CH25 Channel

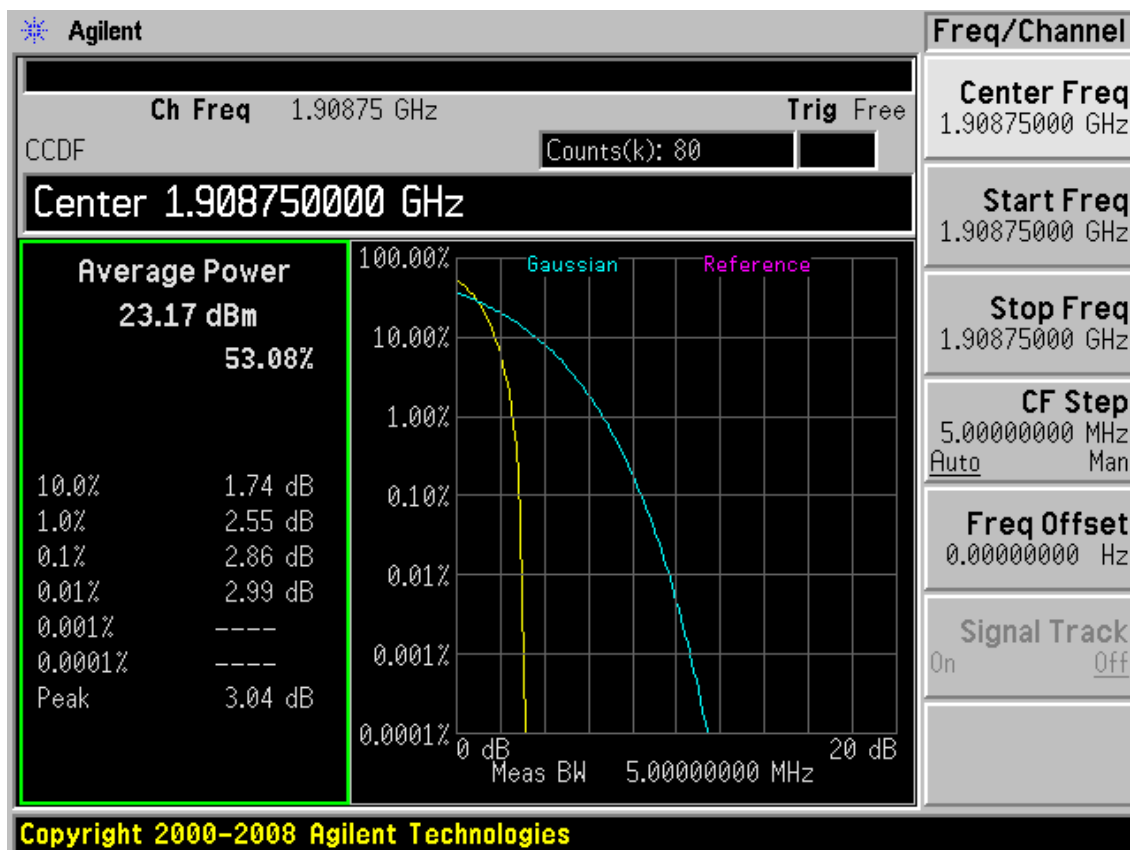


CDMA PCS RC3 (SO32) CH600 Channel

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

Report No.: RXA1405-0121RF02R1

Page 25 of 38



CDMA PCS RC3 (SO32) CH1175 Channel

2.7. 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 -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)

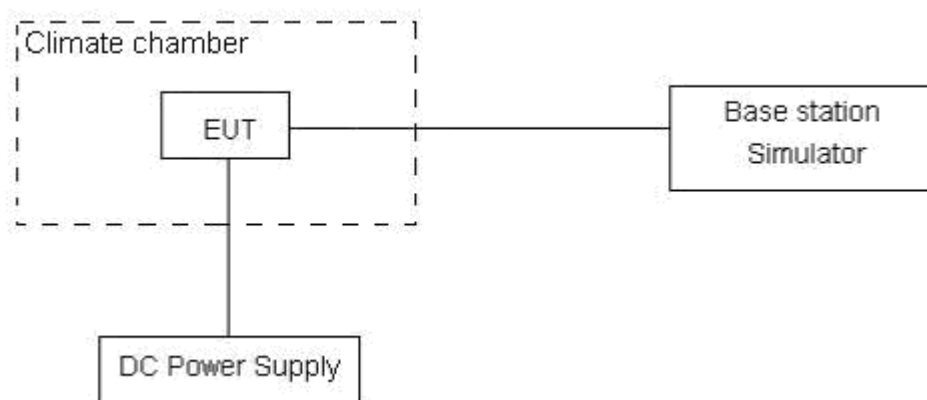
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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.: RXA1405-0121RF02R1

Page 27 of 38

Limits

No specific frequency stability requirements in part 24.235

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 600	
	RC1 (SO2)	RC3 (SO32)
-40	-0.00215	-0.00051
-30	0.002186	0.000569
-20	0.002043	-0.00209
-10	0.0000904	-0.00138
0	0.002138	0.002388
10	-0.00215	-0.00051
20	-0.00092	0.000872
30	-0.00128	-0.00169
40	-0.00126	0.00233
50	0.001585	0.002324
60	0.002174	0.000555
70	0.002012	-0.00207
80	0.000077	-0.00137
90	0.002136	0.002387

Voltage (V)	Test Results(ppm) / 20°C	
	Channel 600	
	RC1 (SO2)	RC3 (SO32)
10	0.002271	-0.00156
12	-0.00092	0.000872
14	-0.00201	0.002394

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

Report No.: RXA1405-0121RF02R1

Page 28 of 38

2.8. Spurious Emissions at Antenna Terminals

Ambient condition

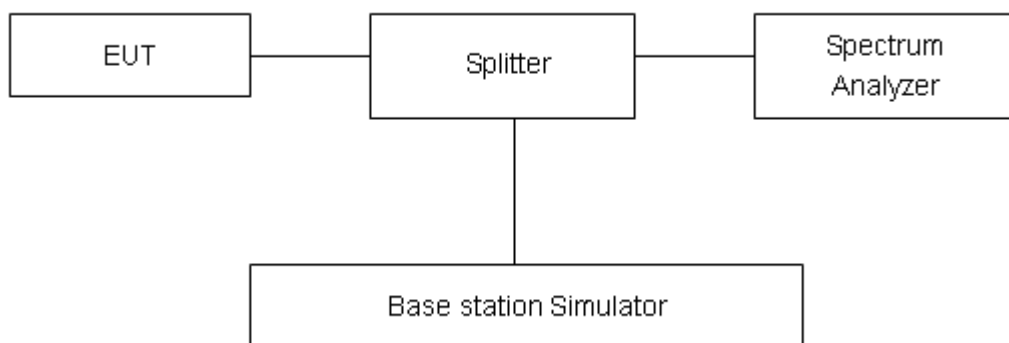
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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. For CDMA PCS, 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 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ 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

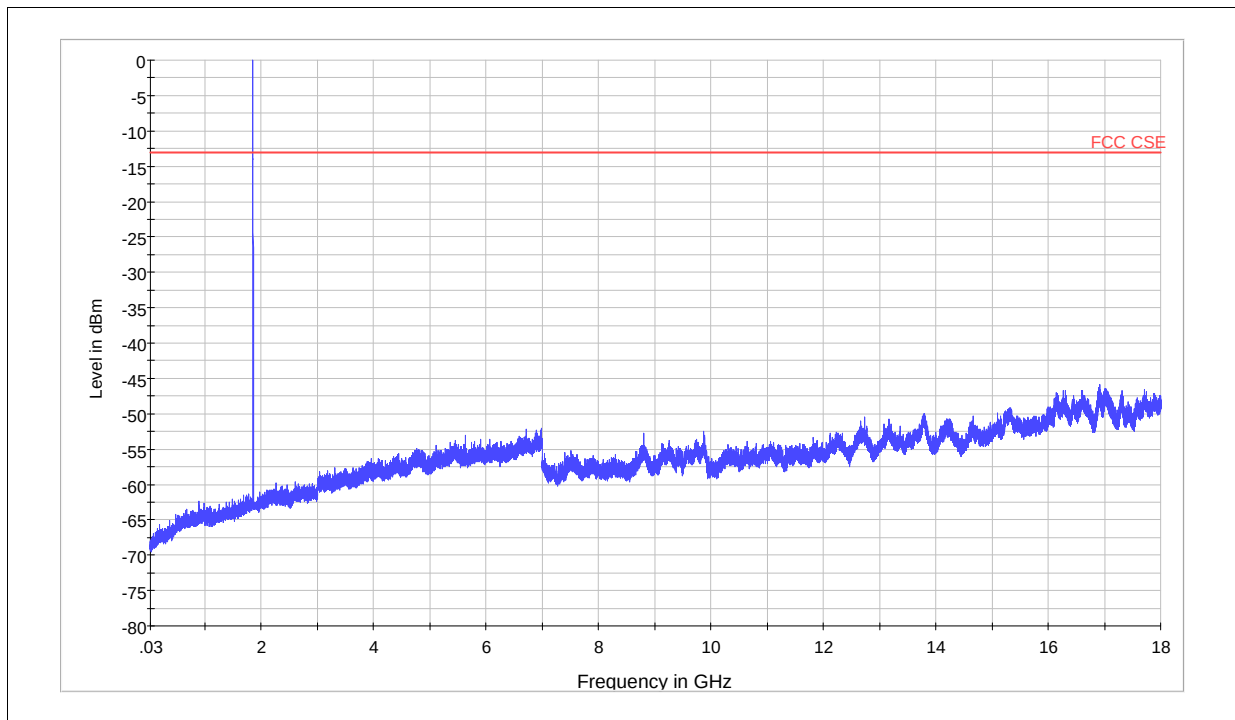
TA Technology (Shanghai) Co., Ltd.
Test Report

Report No.: RXA1405-0121RF02R1

Page 29 of 38

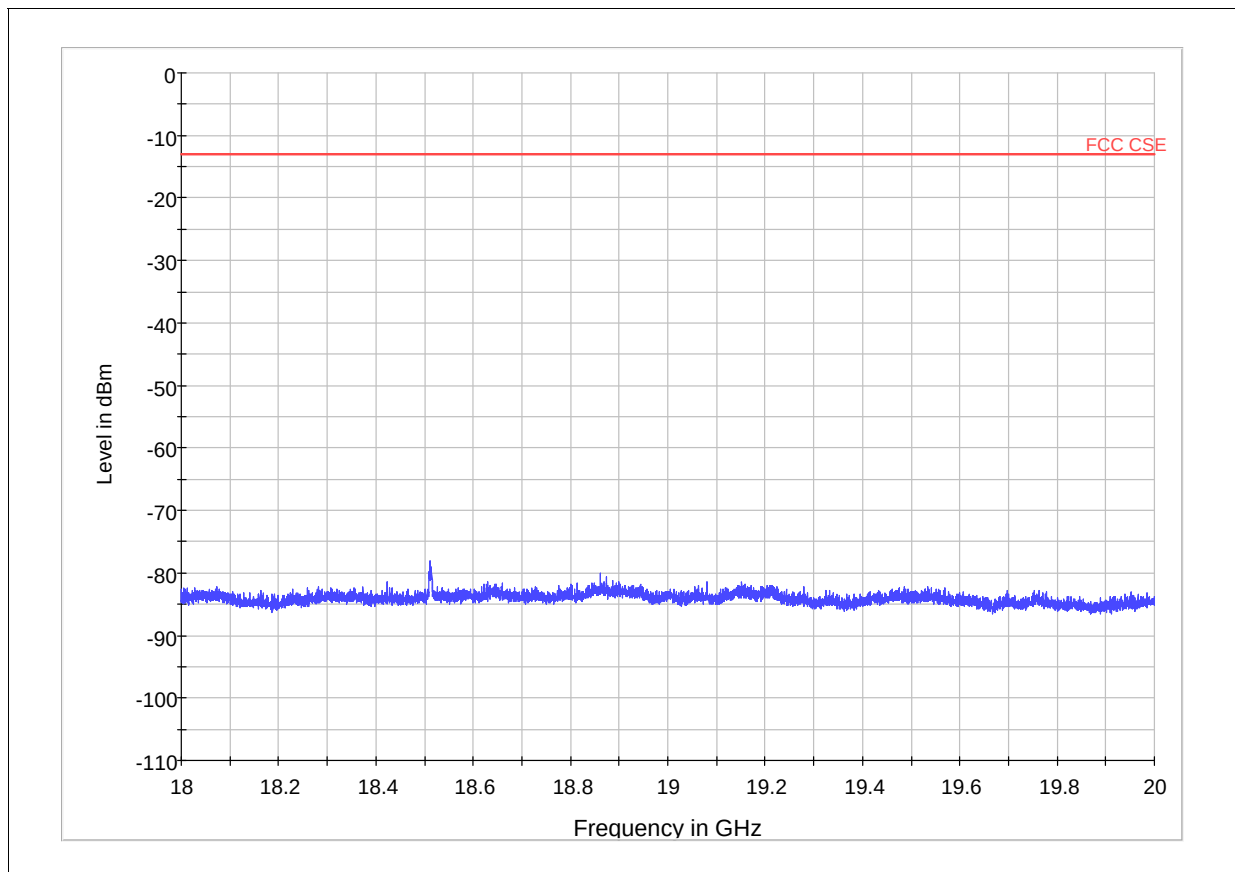
Test Result

CDMA PCS CH25



Note: The signal beyond the limit is carrier.

CDMA PCS CH25 30MHz~18GHz



CDMA PCS CH25 18GHz ~20GHz

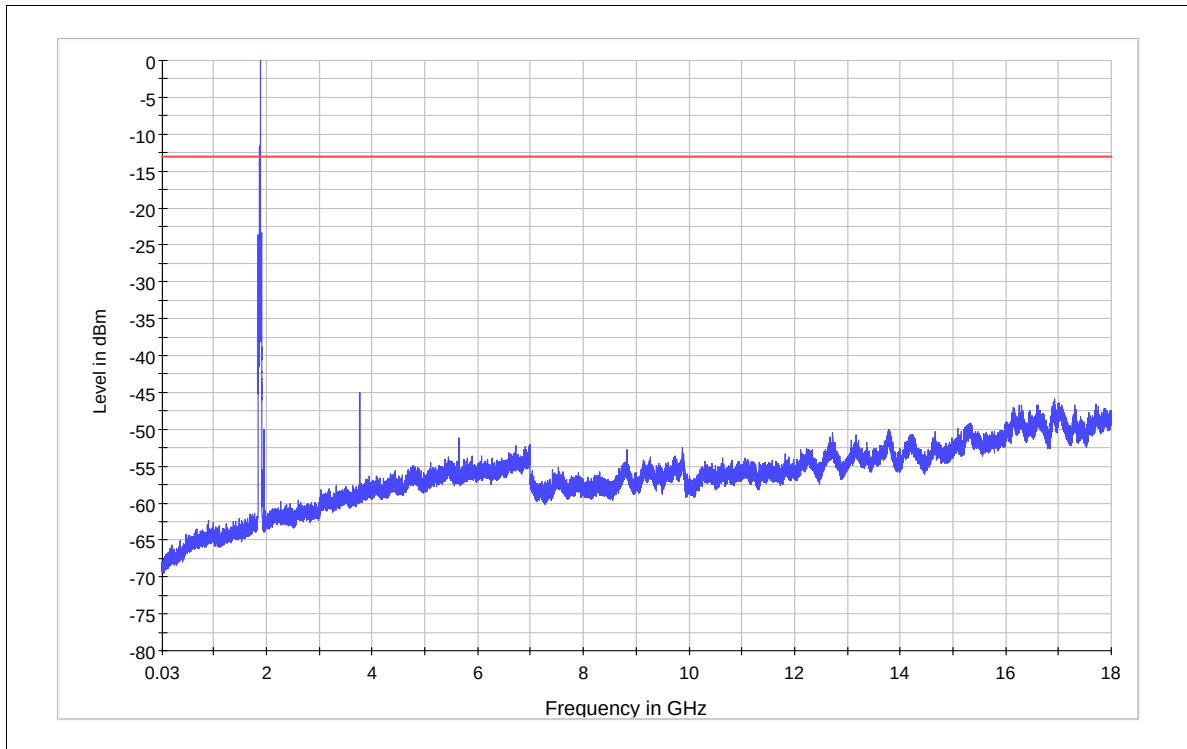
TA Technology (Shanghai) Co., Ltd.

Test Report

Report No.: RXA1405-0121RF02R1

Page 30 of 38

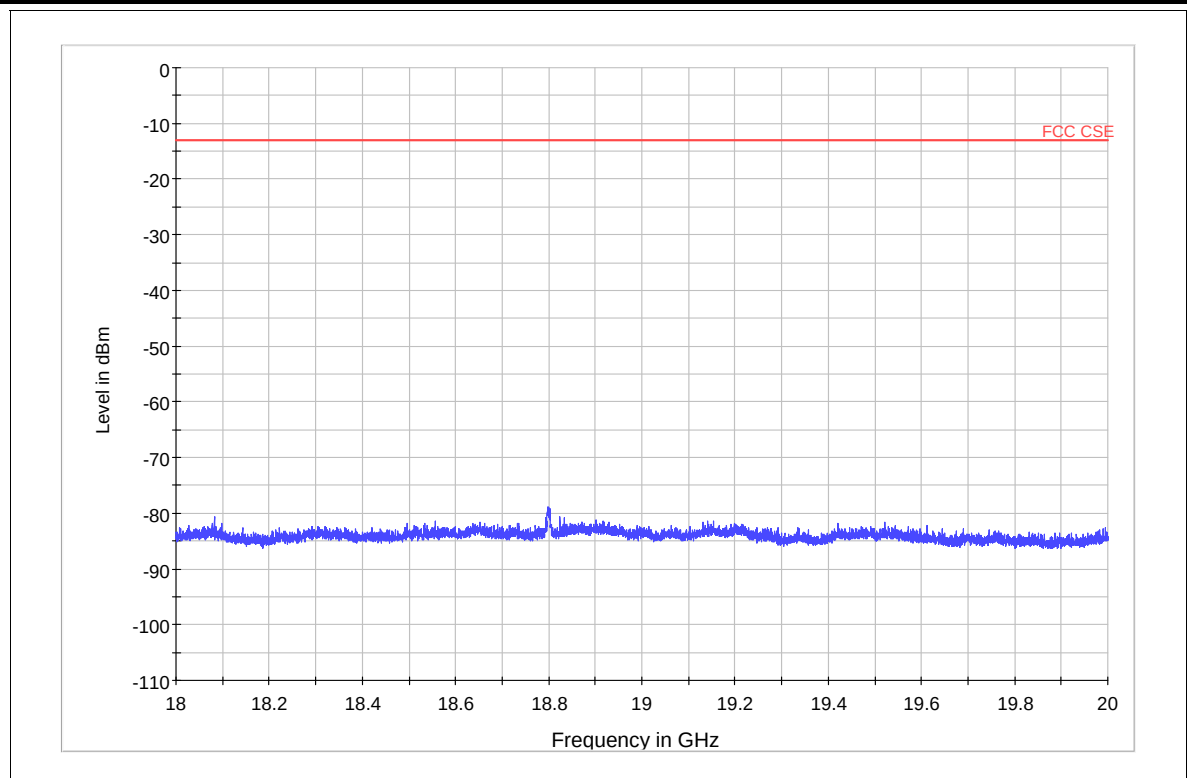
CDMA PCS CH600



Note: The signal beyond the limit is carrier.

CDMA PCS CH600 30MHz~18GHz

Harmonic	TX Ch.600 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3759.8	-45.03	-13	32.03



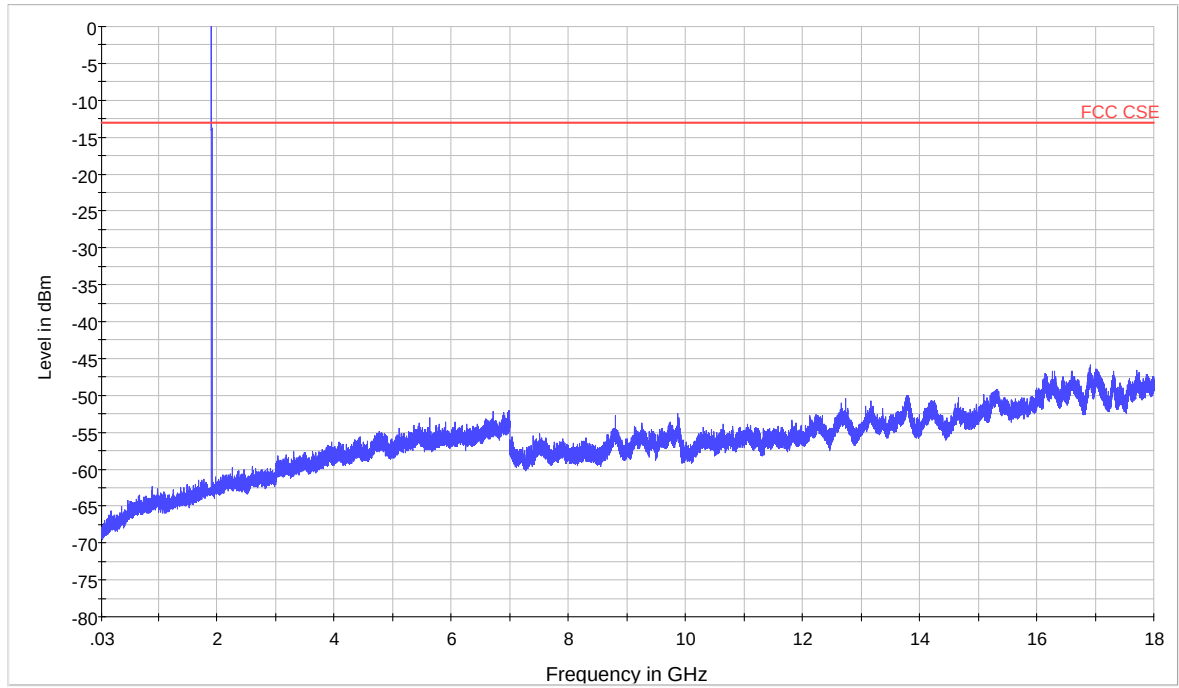
CDMA PCS CH600 18GHz ~20GHz

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

Report No.: RXA1405-0121RF02R1

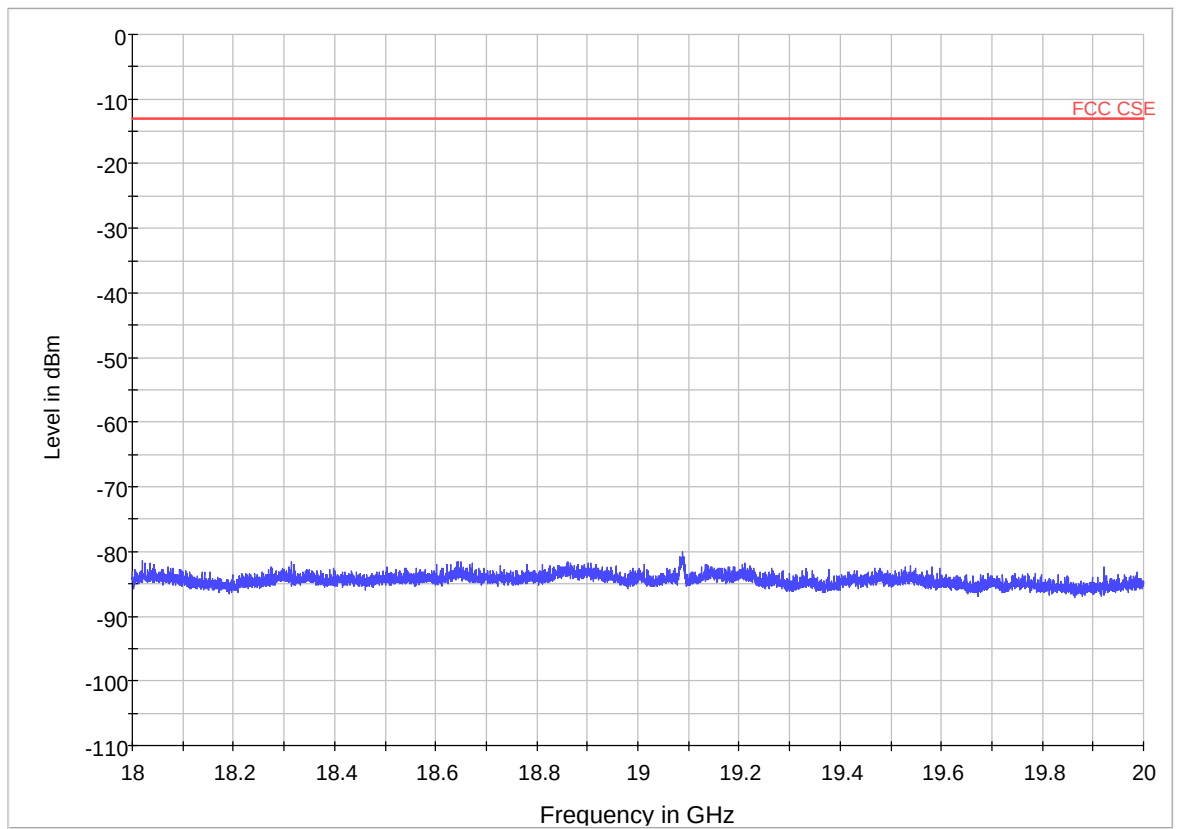
Page 31 of 38

CDMA PCS CH1175



Note: The signal beyond the limit is carrier.

CDMA PCS CH1175 30MHz~18GHz



CDMA PCS CH1175 18GHz ~20GHz

2.8 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

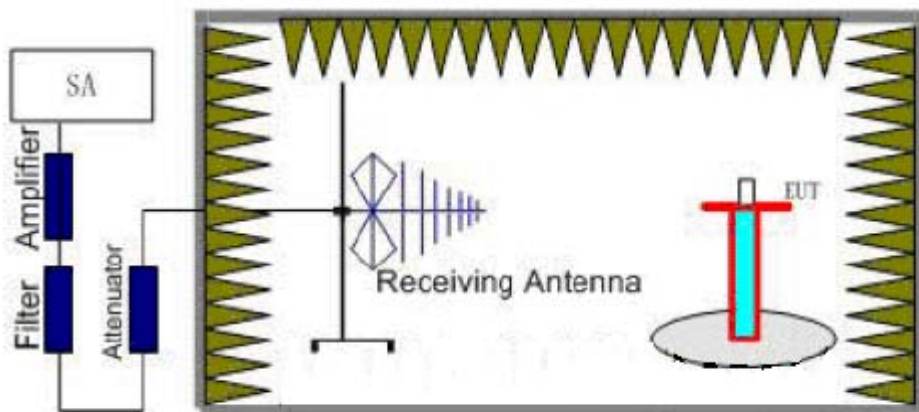
The measurements procedures in TIA -603C are used.

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

The 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.



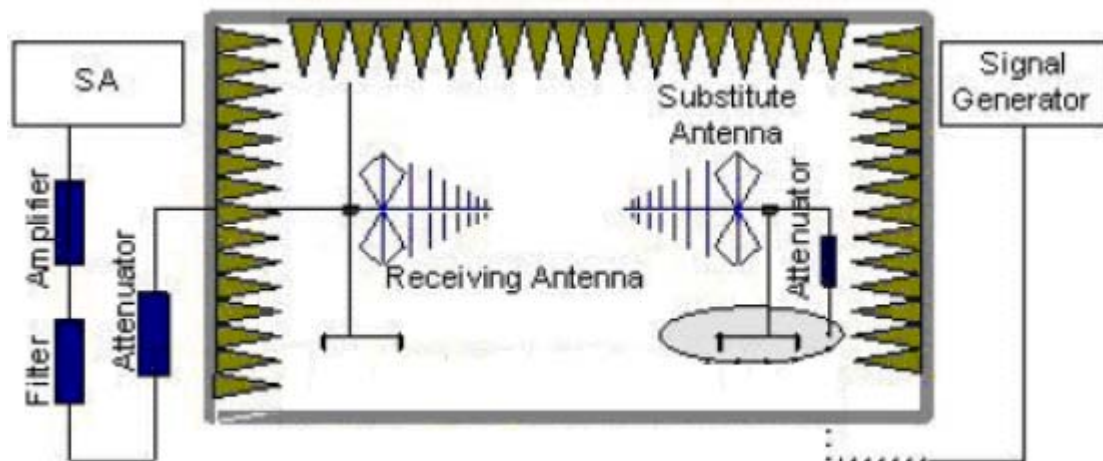
Step 2:

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.: RXA1405-0121RF02R1

Page 33 of 38



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

$EIRP = E.R.P + 2.15$

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 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10} (P)$ 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.: RXA1405-0121RF02R1

Page 34 of 38

Test Result

CDMA PCS CH25

Harmonic	TX Ch.25 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3701.6	-36.96	2	10.15	Vertical	-30.96	-13	17.96	45
3	5553.4	-46.95	2.51	11.35	Vertical	-40.26	-13	27.26	315
4	7405.5	-48.9	4.2	10.85	Vertical	-44.40	-13	31.40	0
5	9257.3	-41.55	5.2	11.35	Vertical	-37.55	-13	24.55	0
6	11106.4	-34.57	5.5	11.95	Vertical	-30.27	-13	17.27	0
7	12959.6	-45.88	5.7	13.55	Vertical	-40.18	-13	27.18	45
8	14812.1	-34.99	6.3	13.75	Vertical	-29.69	-13	16.69	0
9	16663.1	-41.49	6.8	13.85	Vertical	-36.59	-13	23.59	0
10	18512.5	-43.34	6.9	14.25	Vertical	-38.14	-13	25.14	0

CDMA PCS CH600

Harmonic	TX Ch.600 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3759.8	-41.23	2	10.75	Vertical	-34.63	-13	21.63	315
3	5641.1	-48.11	2.51	11.05	Vertical	-41.72	-13	28.72	0
4	7521.4	-49.25	4.2	11.15	Vertical	-44.45	-13	31.45	90
5	9401.3	-44.45	5.2	11.15	Vertical	-40.65	-13	27.65	0
6	11281.9	-38.14	5.5	11.95	Vertical	-33.84	-13	20.84	0
7	13158.4	-41.57	5.7	13.55	Vertical	-35.87	-13	22.87	315
8	15041.6	-34.95	6.3	13.75	Vertical	-29.65	-13	16.65	315
9	16920	-44.48	6.8	13.85	Vertical	-39.58	-13	26.58	0
10	18800	-42.30	6.9	14.25	Vertical	-37.10	-13	24.10	270

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

Report No.: RXA1405-0121RF02R1

Page 35 of 38

CDMA PCS CH1175

Harmonic	TX Ch.1175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3816.8	-33.34	2	10.15	Vertical	-27.34	-13	14.34	315
3	5726.3	-48.37	2.51	11.05	Vertical	-41.98	-13	28.98	0
4	7634.6	-50.37	4.2	11.15	Vertical	-45.57	-13	32.57	225
5	9542.6	-44.12	5.2	11.15	Vertical	-40.32	-13	27.32	45
6	11452.9	-28.04	5.5	11.95	Vertical	-23.74	-13	10.74	0
7	13361.6	-42.26	5.7	13.55	Vertical	-36.56	-13	23.56	0
8	15268.1	-34.48	6.3	13.75	Vertical	-29.18	-13	16.18	0
9	17178.8	-39.6	6.8	13.85	Vertical	-34.70	-13	21.70	0
10	19087.5	-43.22	6.9	14.25	Vertical	-38.02	-13	25.02	0

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

Report No.: RXA1405-0121RF02R1

Page 36 of 38

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	Horn Antenna	3160-09	ETS-Lindgren	00102643	2012-05-17	Three years
11	Climatic Chamber	PT-30B	Re Ce	20101891	2013-09-09	Three years

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

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