Variant FCC RF Test Report

APPLICANT	**:**	**Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd**
EQUIPMENT	**:**	**mobile phone**
BRAND NAME	**:**	**Coolpad**
MODEL NAME	**:**	**Coolpad 801EM**
FCC ID	**:**	**R38YL801EM**
STANDARD	**:**	**FCC 47 CFR Part 2, 22(H), 24(E)**
CLASSIFICATION	**:**	**PCS Licensed Transmitter Held to Ear (PCE)**

This is a variant report which is only valid together with the original test report. The product was received on Aug. 09, 2013 and testing was completed on Sep. 10, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown to be compliant with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG311602-01A	Rev. 01	EUT is variant version of Coolpad 801E (FCC ID: R38YL801E), and now the variant sample is with FCC ID: R38YL801EM, please refer the product equality declaration exhibit submitted. Due to the similarity, the parent sample RF performance is representative and part of test data (Sporton Report Number FG311602A for FCC ID: R38YL801E) is referenced; only the conducted power,ERP/EIRP and worst case of Spurious Emission was verified for the differences for the variant sample.	Sep. 18, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	N/A	PASS	-
3.2	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
3.2	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.3	§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 34.98 dB at 2510.000 MHz

1 General Description

1.1 Applicant

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.2 Manufacturer

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	mobile phone
Brand Name	Coolpad
Model Name	Coolpad 801EM
FCC ID	R38YL801EM
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth v3.0 + EDR Bluetooth v4.0 + LE
HW Version	P0
SW Version	4.1.003.P0.130809.801EM
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz
Rx Frequency	CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz
Maximum Output Power to Antenna	CDMA2000 BC0 : 23.50 dBm CDMA2000 BC1 : 23.54 dBm
Antenna Type	PIFA Antenna
Type of Modulation	CDMA2000 : QPSK CDMA2000 1xEV-DO : QPSK/8PSK

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum ERP/EIRP Power

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)
Part 22	CDMA2000 BC0 1xRTT	QPSK	0.0577
Part 24	CDMA2000 BC11xRTT	QPSK	0.2939

1.7 Testing Site

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398		
Test Site No.	**Sporton Site No.**		**FCC Registration No.**
	TH01-SZ	03CH01-SZ	831040

1.8 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- FCC KDB 412172 D01 Determining ERP and ERIP v01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for CDMA2000 BC0.
2. 30 MHz to 19000 MHz for CDMA2000 BC1.

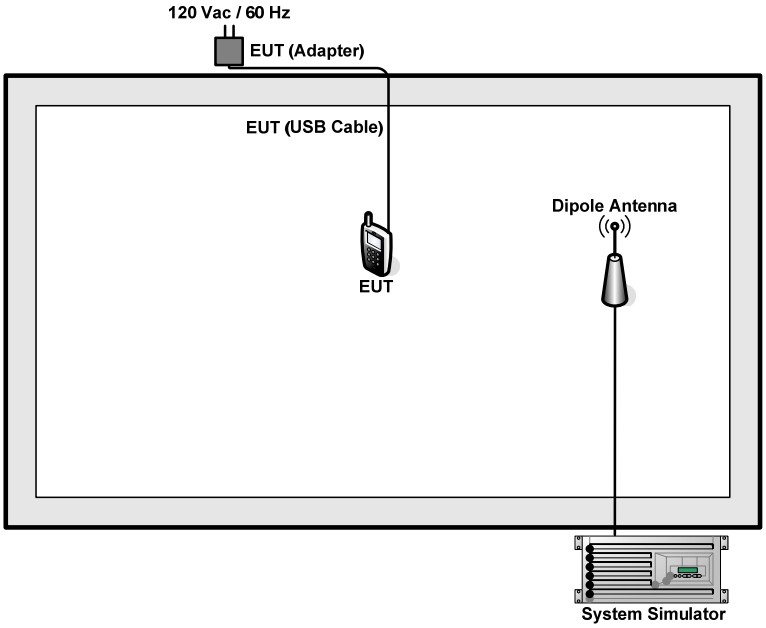
Test Modes	
Band	**Radiated TCs**
CDMA2000 BC0	■ 1xRTT Link Mode
CDMA2000 BC1	■ 1xRTT Link Mode

Note: The maximum RF output power levels are 1xRTT RC3+SO55 mode for CDMA2000 BC0 on QPSK Link and 1xRTT RC3+SO55 mode for CDMA2000 BC1 on QPSK Link; only these modes were used for all tests.

The conducted power table is as follows:

Conducted Power (*Unit: dBm)						
Band	**CDMA2000 BC0**			**CDMA2000 BC1**		
Channel	**1013**	**384**	**777**	**25**	**600**	**1175**
Frequency	**824.7**	**836.52**	**848.31**	**1851.25**	**1880**	**1908.75**
1xRTT RC1 SO55	23.42	23.43	23.49	23.47	23.39	23.51
1xRTT RC3 SO55	23.48	**23.50**	23.46	23.41	23.31	**23.54**
1xRTT RC3 SO32(+ F-SCH)	23.46	23.39	23.45	23.39	23.28	23.51
1xRTT RC3 SO32(+SCH)	23.42	23.39	23.46	23.37	23.28	23.47
1xEV-DO RTAP 153.6Kbps	23.37	23.33	23.36	23.38	23.25	23.49
1xEV-DO RETAP 4096Bits	23.38	23.31	23.40	23.37	23.25	23.48

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	Unshielded, 1.8 m

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

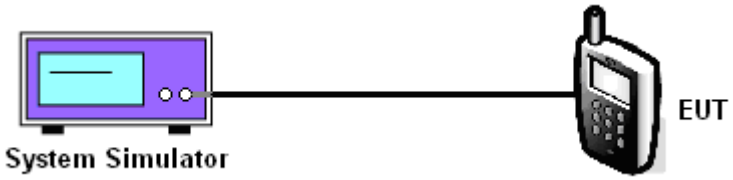
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

CDMA2000 BC0			
Test Mode	**CDMA 2000 1xRTT**		
Test Status	**RC3+SO55**		
Channel	**1013 (Low)**	**384 (Mid)**	**777 (High)**
Frequency (MHz)	**824.7**	**836.52**	**848.31**
Conducted Power (dBm)	23.48	23.50	23.46
Conducted Power (Watts)	0.22	0.22	0.22

CDMA2000 BC1			
Test Mode	**CDMA 2000 1xRTT**		
Test Status	**RC3+SO55**		
Channel	**25 (Low)**	**600 (Mid)**	**1175 (High)**
Frequency (MHz)	**1851.25**	**1880**	**1908.75**
Conducted Power (dBm)	23.41	23.31	23.54
Conducted Power (Watts)	0.22	0.21	0.23

Note: maximum average power for CDMA2000.

3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.2.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r01. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

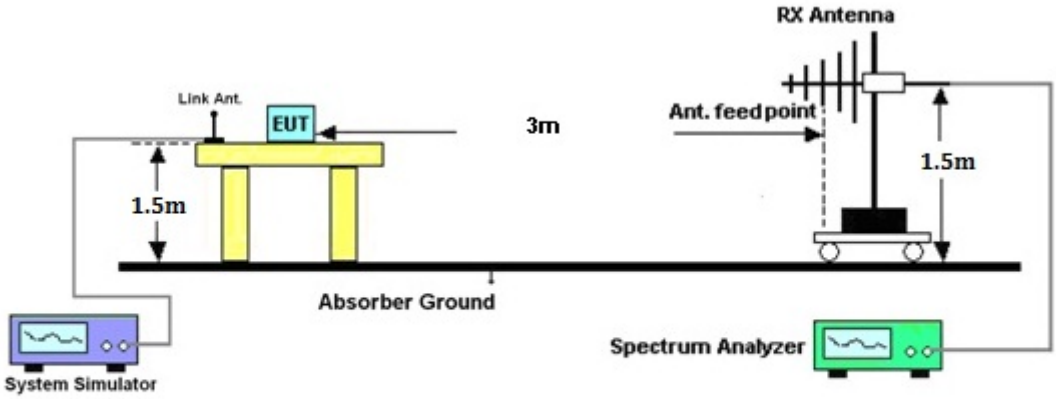
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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 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 = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs
    Ps (dBm)：Input power to substitution antenna.
    Gs (dBi or dBd)：Substitution antenna Gain.
    Et = Rt + AF
    Es = Rs + AF
    AF (dB/m)：Receive antenna factor
    Rt：The highest received signal in spectrum analyzer for EUT.
    Rs：The highest received signal in spectrum analyzer for substitution antenna.

3.2.4 Test Setup



3.2.5 Test Result of ERP

CDMA2000 BC0 1xRTT_RC3+SO55 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-30.47	-48.12	0.00	-1.08	16.57	0.0454
836.52	-29.74	-48.28	0.00	-0.93	17.61	0.0577
848.31	-30.79	-48.35	0.00	-0.76	16.80	0.0478
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.70	-43.88	-47.97	0.00	-1.08	3.01	0.0020
836.52	-42.15	-48.01	0.00	-0.93	4.93	0.0031
848.31	-41.92	-48.05	0.00	-0.76	5.37	0.0034

3.2.6 Test Result of EIRP

CDMA2000 BC1 1xRTT_RC3+SO55 Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-30.21	-51.88	0.00	1.96	23.63	0.2306
1880.00	-30.34	-52.99	0.00	2.00	24.65	0.2915
1908.75	-32.00	-54.28	0.00	1.98	24.26	0.2666
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1851.25	-30.53	-52.13	0.00	1.96	23.56	0.2270
1880.00	-30.49	-53.17	0.00	2.00	24.68	0.2939
1908.75	-31.81	-54.13	0.00	1.98	24.30	0.2689

3.3 Field Strength of Spurious Radiation Measurement

3.3.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43+10\log_{10}(P[Watts])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.3.2 Measuring Instruments

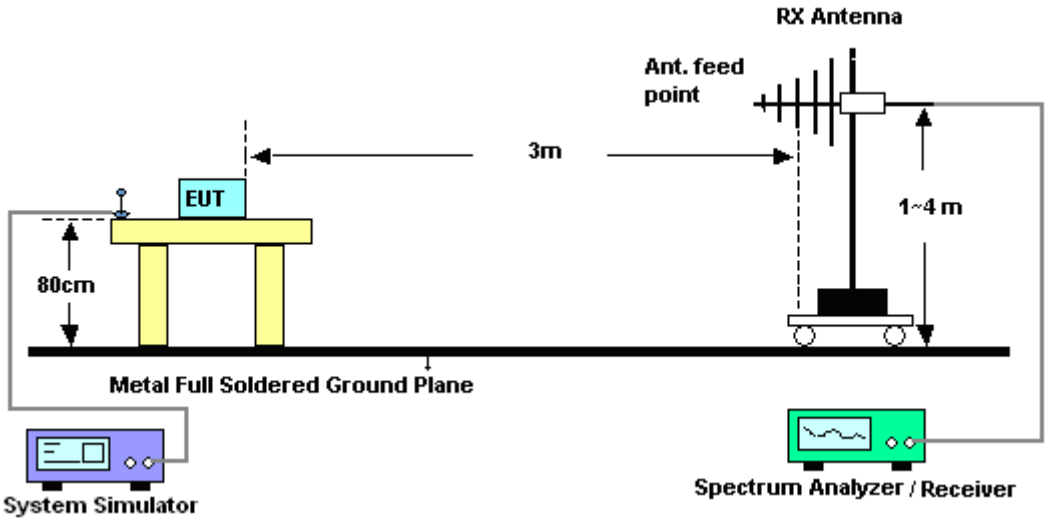
See list of measuring instruments of this test report.

3.3.3 Test Procedures

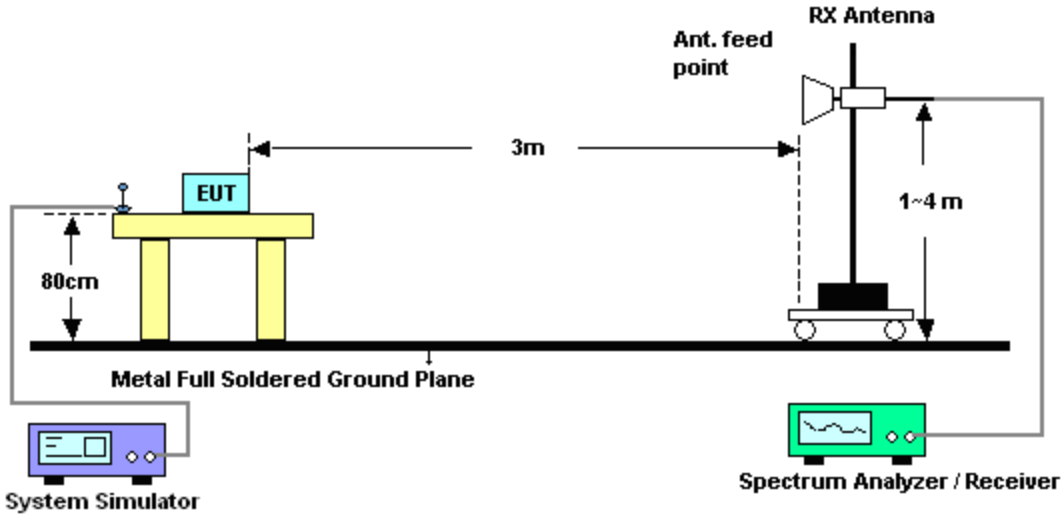
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
    = P(W) - [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.3.4 Test Setup

For radiated emissions from 30MHz to 1GHz

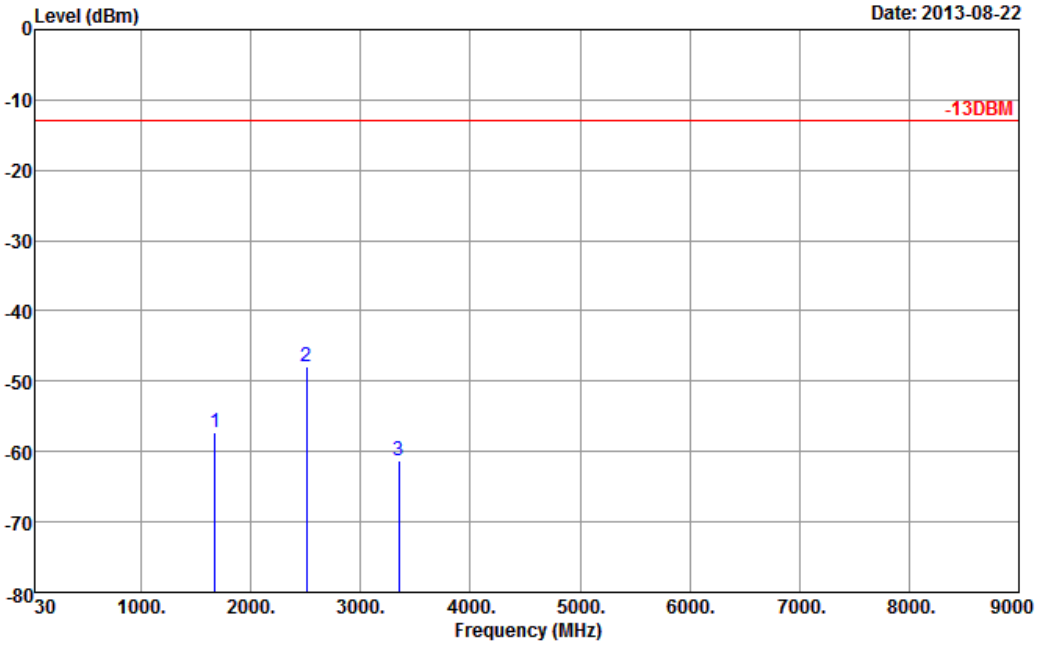


For radiated emissions above 1GHz



3.3.5 Test Result of Field Strength of Spurious Radiated

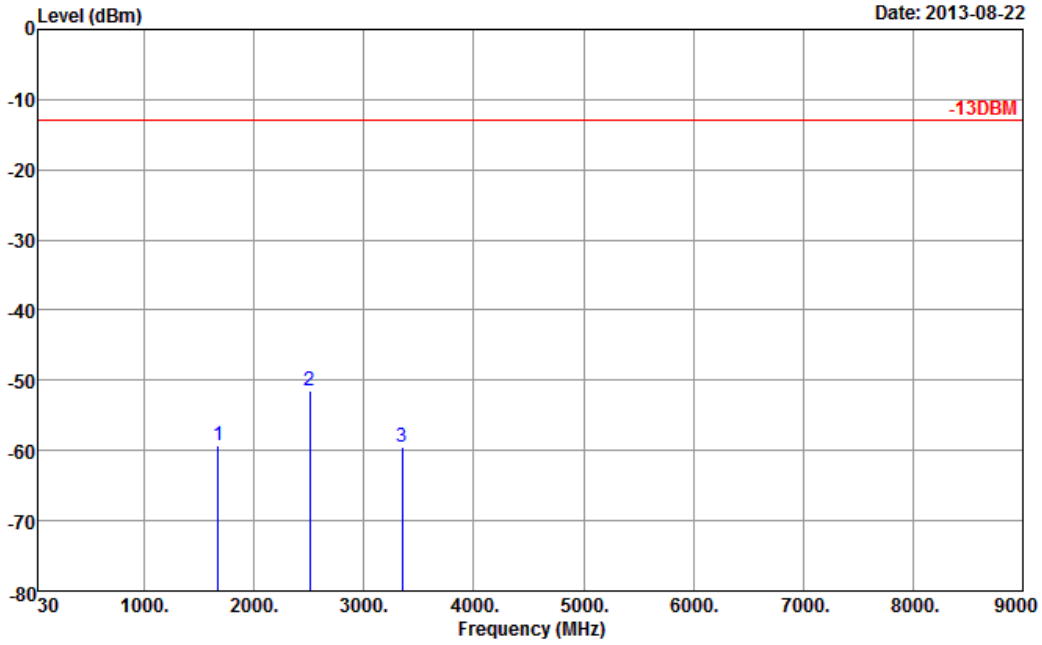
Band :	CDMA2000 BC0	**Temperature :**	25~26°C
Test Mode :	1xRTT_RC3+SO55 Link	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-SZ
Condition : -13DBM HF_EIRP_H_130101 HORIZONTAL

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-57.24	-13	-44.24	-70.16	-60.21	0.88	6.00	H	Pass
2510	-47.98	-13	-34.98	-70.09	-50.59	1.08	5.84	H	Pass
3346	-61.21	-13	-48.21	-71.81	-65.58	1.14	7.66	H	Pass

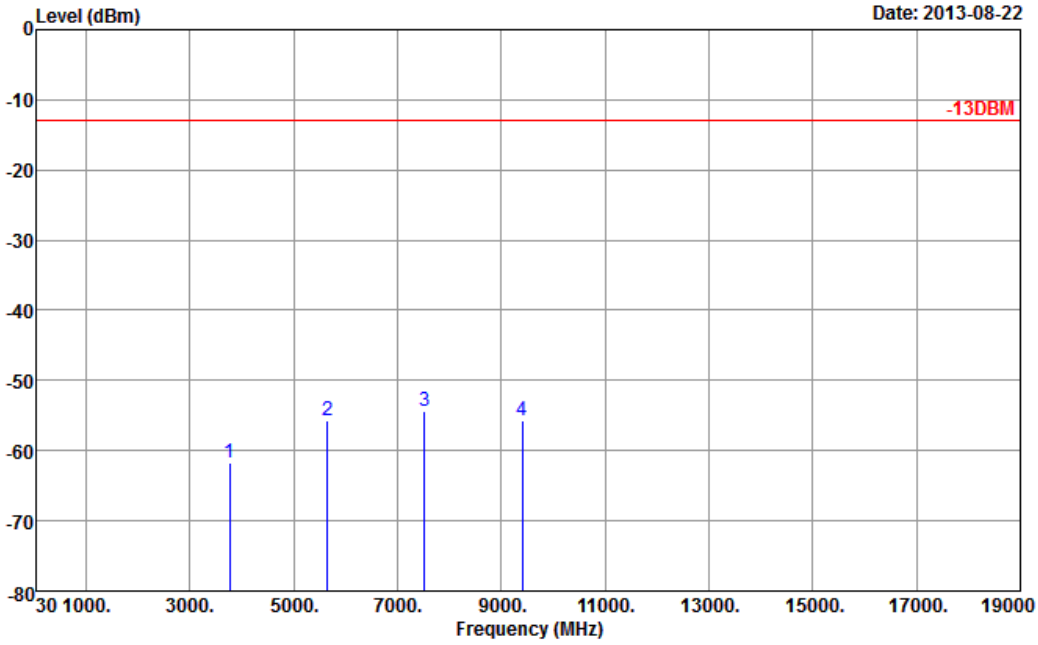
Band :	CDMA2000 BC0	**Temperature :**	25~26°C
Test Mode :	1xRTT_RC3+SO55 Link	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-SZ
Condition : -13DBM HF_EIRP_V_130101 VERTICAL

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-59.27	-13	-46.27	-69.90	-62.24	0.88	6.00	V	Pass
2510	-51.50	-13	-38.50	-70.63	-54.11	1.08	5.84	V	Pass
3346	-59.58	-13	-46.58	-71.41	-63.95	1.14	7.66	V	Pass

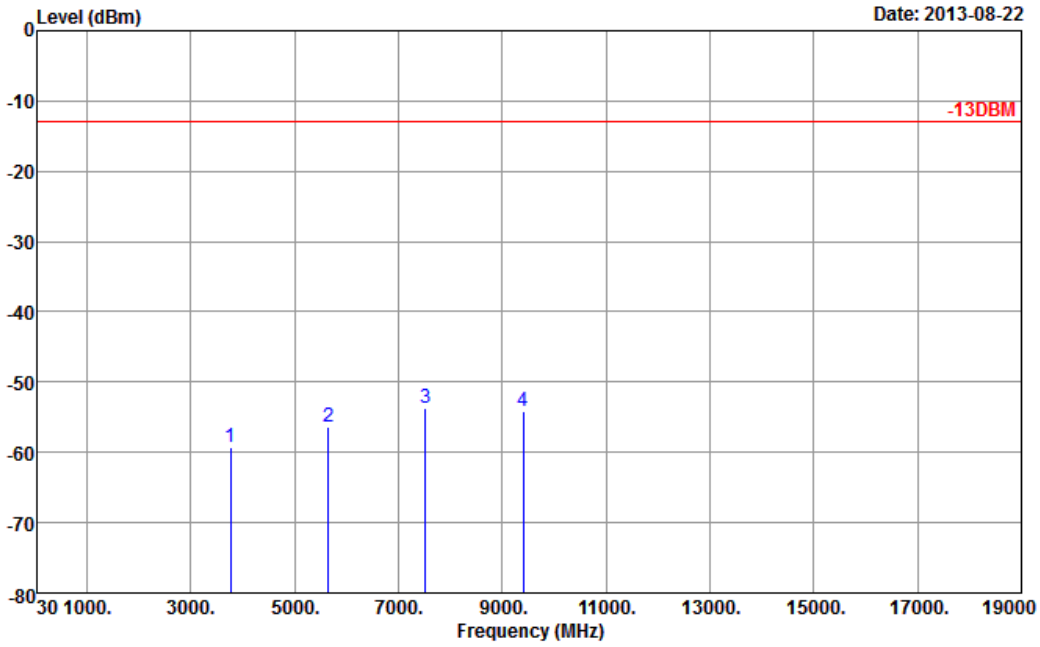
Band :	CDMA2000 BC1	**Temperature :**	25~26°C
Test Mode :	1xRTT_RC3+SO55 Link	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-SZ
Condition : -13DBM HF_EIRP_H_130101 HORIZONTAL

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-61.80	-13	-48.80	-73.95	-68.54	1.28	8.02	H	Pass
5640	-55.67	-13	-42.67	-73.66	-64.09	1.58	10.00	H	Pass
7520	-54.28	-13	-41.28	-76.22	-64.60	1.78	12.10	H	Pass
9400	-55.61	-13	-42.61	-77.73	-66.39	2.22	13.00	H	Pass

Band :	CDMA2000 BC1	**Temperature :**	25~26°C
Test Mode :	1xRTT_RC3+SO55 Link	**Relative Humidity :**	48~49%
Test Engineer :	Leo Liao	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-SZ
Condition : -13DBM HF_EIRP_V_130101 VERTICAL

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-59.29	-13	-46.29	-74.32	-66.03	1.28	8.02	V	Pass
5640	-56.43	-13	-43.43	-73.51	-64.85	1.58	10	V	Pass
7520	-53.69	-13	-40.69	-75.94	-64.01	1.78	12.1	V	Pass
9400	-54.13	-13	-41.13	-77.75	-64.91	2.22	13	V	Pass

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Sep. 10, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	Sep. 10, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	Sep. 10, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	N/A	Mar. 28, 2013	Sep. 10, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Aug. 22, 2013	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Aug. 22, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Aug. 22, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz-3000MHz GAIN 30db	Mar. 28, 2013	Aug. 22, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Aug. 22, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Aug. 22, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronice	EM 1000	N/A	0 ~ 360 degree	N/A	Aug. 22, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM Electronice	EM 1000	N/A	1 m - 4 m	N/A	Aug. 22, 2013	N/A	Radiation (03CH01-SZ)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95%(U = 2Uc(y))	**4.72**