FCC RF Test Report

APPLICANT	:	Nokia (China) Investment Co., Ltd.
BRAND NAME	:	Nokia
MODEL NAME	:	RM-686
FCC ID	:	QTLRM-686
STANDARD	:	FCC 47 CFR Part 2, 22(H)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
Tx/Rx FREQUENCY RANGE	:	824.70 ~ 848.31 MHz / 869.70 ~ 893.31 MHz
MAX. ERP POWER	:	0.43 W
EMISSION DESIGNATOR	:	1M28F9W

The product was received on May 25, 2010 and completely tested on Jun. 17, 2010. We, SPORTON INTERNATIONAL 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 compliance with the applicable technical standards.

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

Reviewed by:

Roy Wu / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG052521B	Rev. 01	Initial issue of report	Jun. 18, 2010
FG052521B	Rev. 02	Added the note in section 3.4.5	Jul. 01, 2010
FG052521B	Rev. 03	Revise the notes for section 3.4.5	Jul. 07, 2010

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	-
3.3	§2.1049 §22.917(a)	Occupied Bandwidth	N/A	PASS	-
3.4	§2.1051 §22.917(a)	Band Edge Measurement	< $43+10\log_{10}$(P[Watts])	PASS	-
3.5	§2.1051 §22.917(a)	Conducted Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.6	§2.1053 §22.917(a)	Field Strength of Spurious Radiation	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 30.09 dB at 5015 MHz
3.7	§2.1055 §22.355	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Nokia (China) Investment Co., Ltd.
Beijing Economic and Technological Development Area, No. 5, Donghuan Zhonglu, Beijing, 100176 P.R.C. China

1.2 Manufacturer

Compal Communications (Nanjing) Co., Ltd.
Nanjing Jiangning Export Processing Zone (South Area) No.68-2 Suyuan Street

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Brand Name	Nokia
Model Name	RM-686
FCC ID	QTLRM-686
MEID	A0000001C904D2
Tx Frequency	824 MHz ~ 849 MHz
Rx Frequency	869 MHz ~ 894 MHz
Maximum Output Power to Antenna	24.75 dBm
Maximum ERP	0.43 W (26.34 dBm)
Antenna Type	Fixed Internal Antenna
HW Version	2200
SW Version	MD_2350B_TLC
Type of Modulation	QPSK
Type of Emission	1M28F9W

Remark:

1. For other wireless features of this EUT, the test report will be issued separately.
2. This test report recorded only product characteristics and test results of PCS Licensed Transmitter Held to Ear (PCE).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	TH02-HY	03CH07-HY	TW1022/4086B-1

1.5 Applied Standards

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

- Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- FCC 47 CFR Part 2, 22(H)
- ANSI / TIA / EIA-603-C-2004

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 (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Agilent	E5515C (8960)	N/A	N/A	Unshielded, 1.8 m

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.

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

Note:

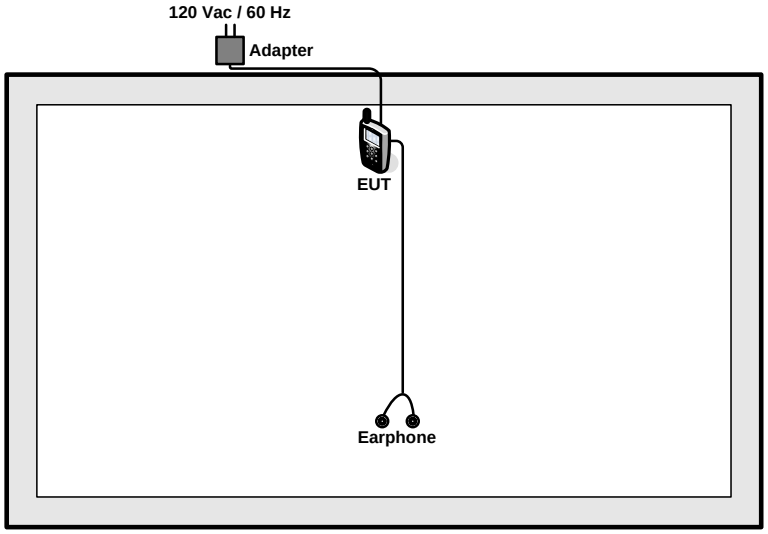
1. The maximum RF output power levels are 1xRTT RC1+SO2 mode for CDMA2000 BC0 on QPSK Link; only these modes were used for all tests.

2. Because there are individual antennas for each WWAN and Bluetooth, the co-location test modes are not required.

The conducted power table is as follows:

Radio Configurations	Service Options and Channel configurations	CH 1013 Pavg (dBm)	CH 384 Pavg (dBm)	CH 777 Pavg (dBm)
RC1	SO2	24.59	**24.75**	24.65
RC1	SO3	24.56	24.69	24.72
RC1	SO55	24.53	24.65	24.62
RC2	SO9	24.59	24.66	24.65
RC2	SO17	24.56	24.67	24.73
RC2	SO55	24.58	24.66	24.57
RC3	SO2	24.46	24.58	24.51
RC3	SO3	24.45	24.57	24.51
RC3	SO32 (no SCH1)	24.47	24.57	24.48
RC3	SO32 (SCH1 9.6 kpbs)	24.47	24.57	24.50
RC3	SO32 (SCH1 19.2 kpbs)	24.47	24.56	24.49
RC3	SO32 (SCH1 38.4 kpbs)	24.52	24.56	24.51
RC3	SO32 (SCH1 76.8 kpbs)	24.48	24.56	24.50
RC3	SO32 (SCH1 153.6 kpbs)	24.43	24.59	24.49
RC3	SO55	24.45	24.56	24.51
RC4	SO2	24.46	24.58	24.49
RC4	SO3	24.42	24.56	24.50
RC4	SO32 (no SCH1)	24.45	24.57	24.48
RC4	SO32 (SCH1 9.6 kpbs)	24.46	24.58	24.49
RC4	SO32 (SCH1 19.2 kpbs)	24.46	24.57	24.49
RC4	SO32 (SCH1 38.4 kpbs)	24.46	24.58	24.47
RC4	SO32 (SCH1 76.8 kpbs)	24.22	24.57	24.49
RC4	SO32 (SCH1 153.6 kpbs)	24.48	24.55	24.48
RC4	SO55	24.44	24.57	24.51
RC5	SO9	24.43	24.57	24.48
RC5	SO17	24.40	24.57	24.50
RC5	SO55	24.41	24.57	24.48
EVDO REV.0	**RTAP Rate**	**CH 1013**	**CH 384**	**CH 777**
	RTAP 9.6 kbps	24.48	24.71	24.48
	RTAP 19.2 kbps	24.54	24.72	24.66
	RTAP 38.4 kbps	24.47	24.67	24.61
	RTAP 76.8 kbps	24.57	24.72	24.64
	RTAP 153.6 kbps	24.58	24.74	24.65

2.2 Connection Diagram of Test System



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.

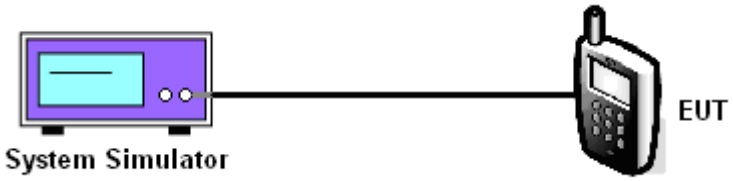
3.1.2 Measuring Instruments

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.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

CDMA2000 BC0					
Test Mode	**Test Status**	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Conducted Power (Watts)**
CDMA 2000 1xRTT	RC1+SO2	1013 (Low)	824.70	24.59	0.29
		384 (Mid)	836.52	24.75	0.30
		777 (High)	848.31	24.65	0.29

3.2 Effective Radiated Power Measurement

3.2.1 Description of the ERP Measurement

ERP/EIRP is measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The ERP of mobile transmitters must not exceed 7 Watts.

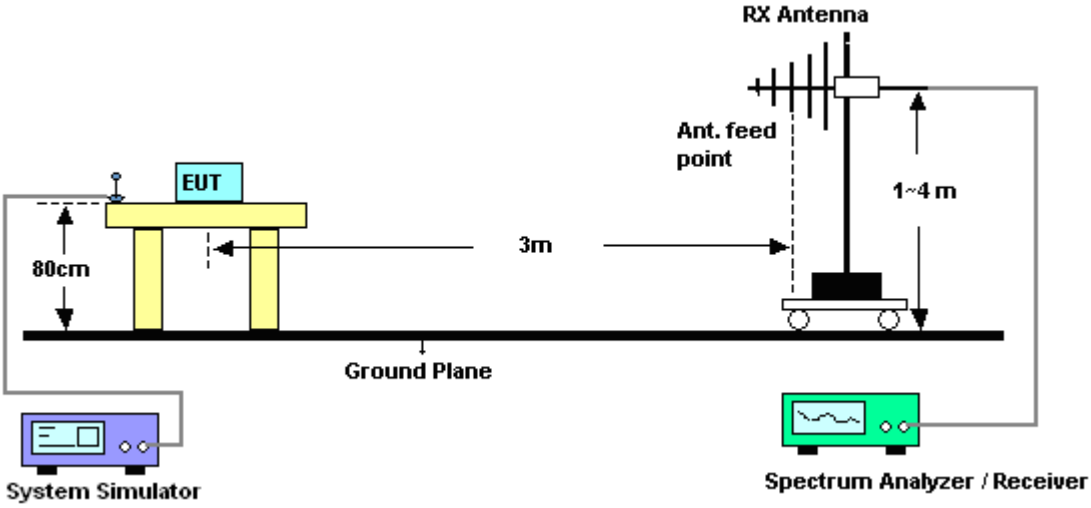
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 3MHz,VBW= 3MHz, and peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power(EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15 .

3.2.4 Test Setup



3.2.5 Test Result of ERP

CDMA2000 BC0 1xRTT_RC1+SO2 Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.70	-5.22	31.97	24.60	0.29
836.52	-3.95	32.44	26.34	0.43
848.31	-5.23	32.63	25.25	0.33
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.70	-14.60	35.39	18.64	0.07
836.52	-13.25	35.20	19.80	0.10
848.31	-14.11	35.69	19.43	0.09

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

3.3 Occupied Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth Measurement

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

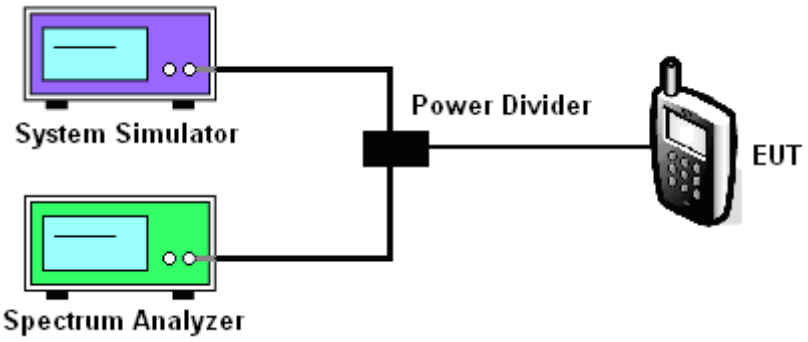
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

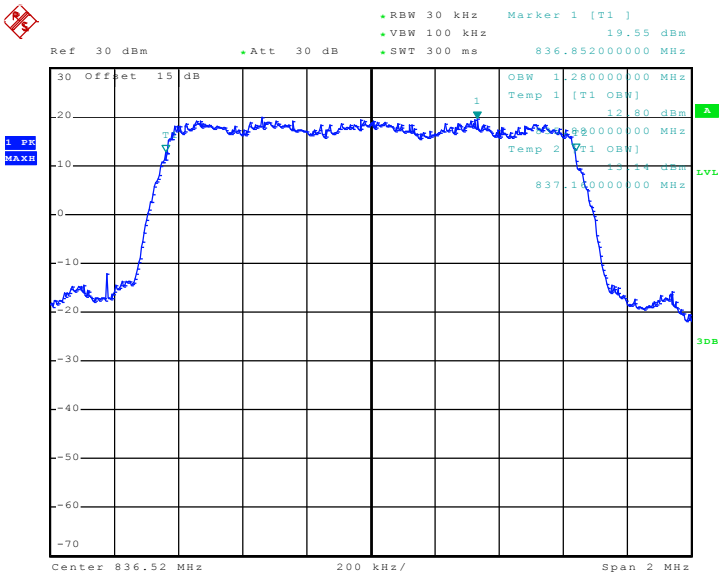
3.3.4 Test Setup



3.3.5 Test Result (Plots) of Occupied Bandwidth

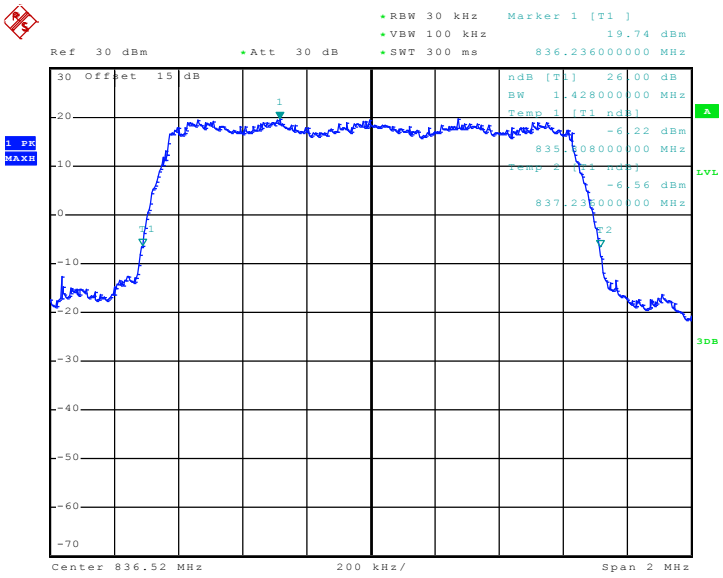
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC1+SO2		

99% Occupied Bandwidth Plot on Channel 384



Date: 10.JUN.2010 16:23:15

26dB Bandwidth Plot on Channel 384



Date: 10.JUN.2010 16:12:33

3.4 Band Edge Measurement

3.4.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

3.4.2 Measuring Instruments

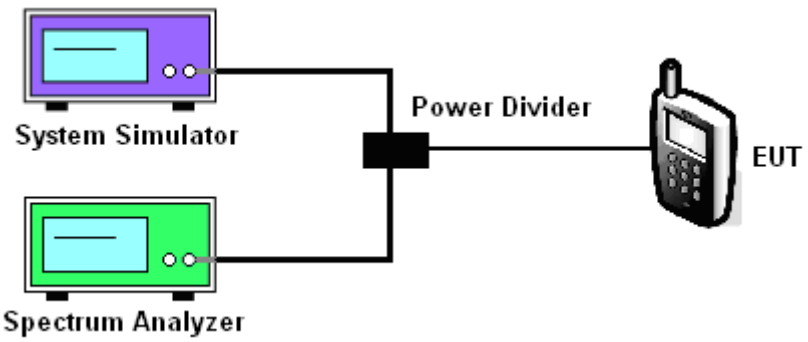
See list of measuring instruments of this test report.

3.4.3 Test Procedures

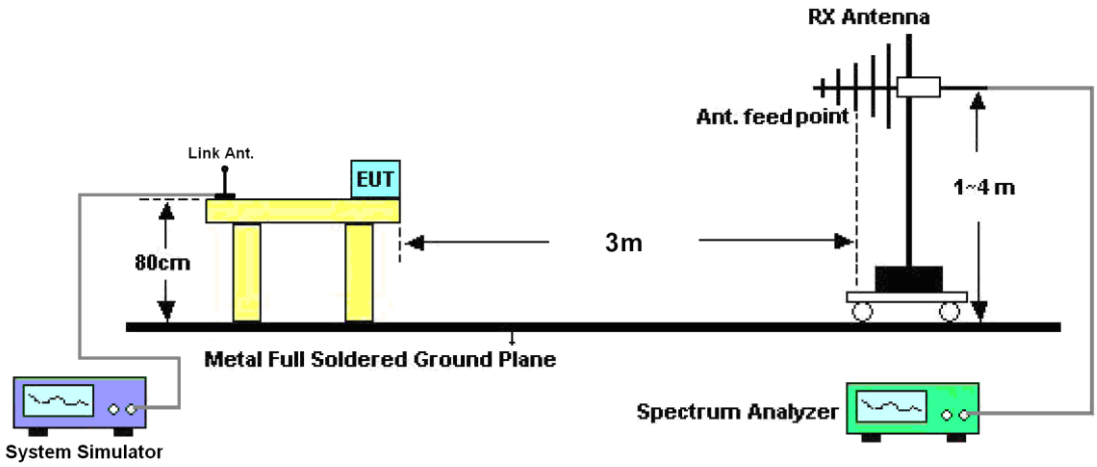
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
3. The RBW was replaced by 10 kHz, due to the spectrum analyzer IF-Filter including an excess of the limit. A worst case correction factor of 10 log (measurement RBW / 1% BW) was implemented.

3.4.4 Test Setup

<Conducted Band Edge >



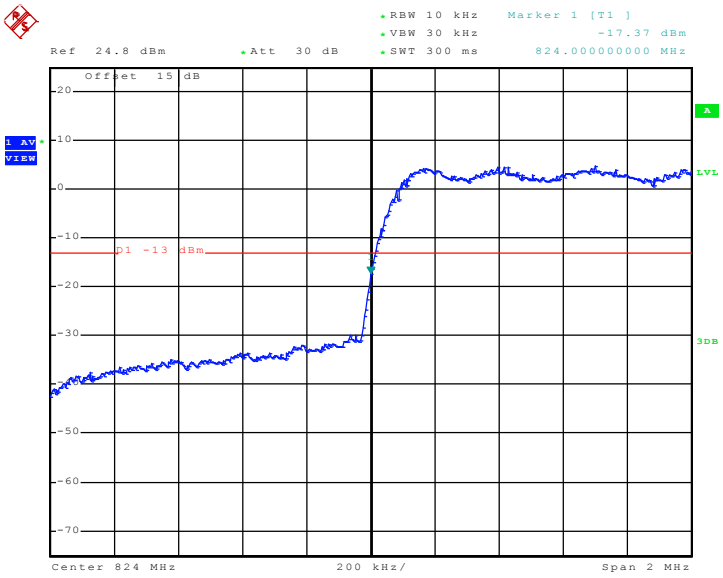
<Radiated Band Edge>



3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC1+SO2		

Lower Band Edge Plot on Channel 1013



Date: 10.JUN.2010 17:13:52

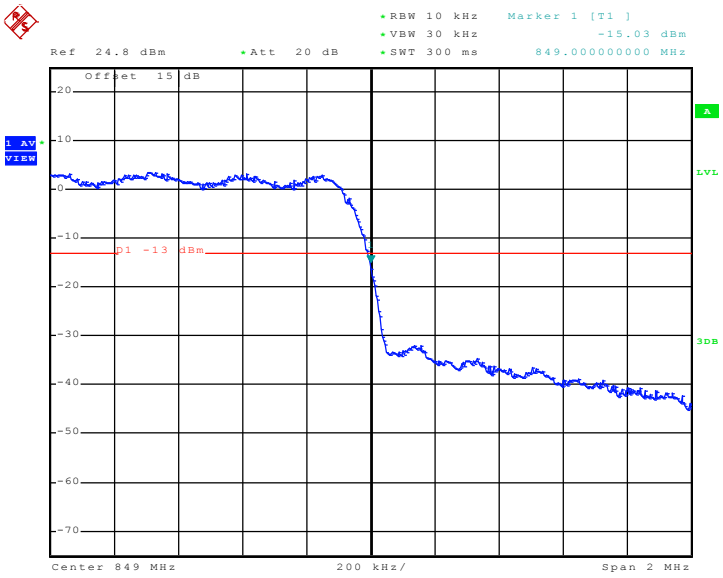
Note:

Correction Factor = 10 log (10 / 14.28) = -1.55

Band Edge = Measurement Value - Correction Factor

= -17.37 - (-1.55) = -15.82 (dBm)

Higher Band Edge Plot on Channel 777



Date: 10.JUN.2010 18:27:36

Note:

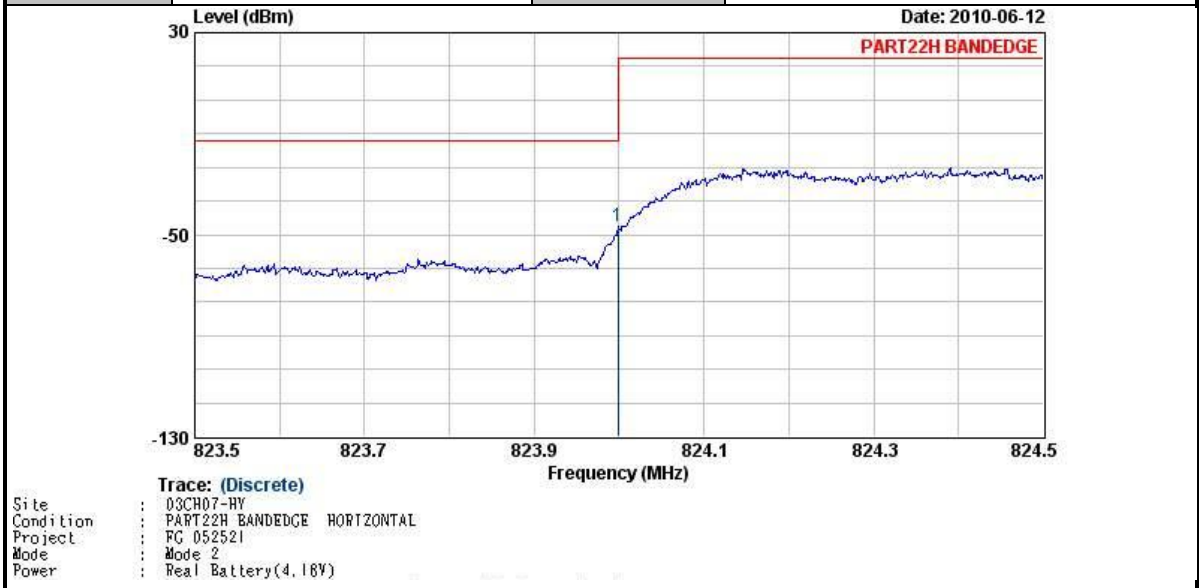
Correction Factor = 10 log (10 / 14.28) = -1.55

Band Edge = Measurement Value - Correction Factor

= -15.03 - (-1.55) = -13.48 (dBm)

3.4.6 Test Result of Radiated Band Edge

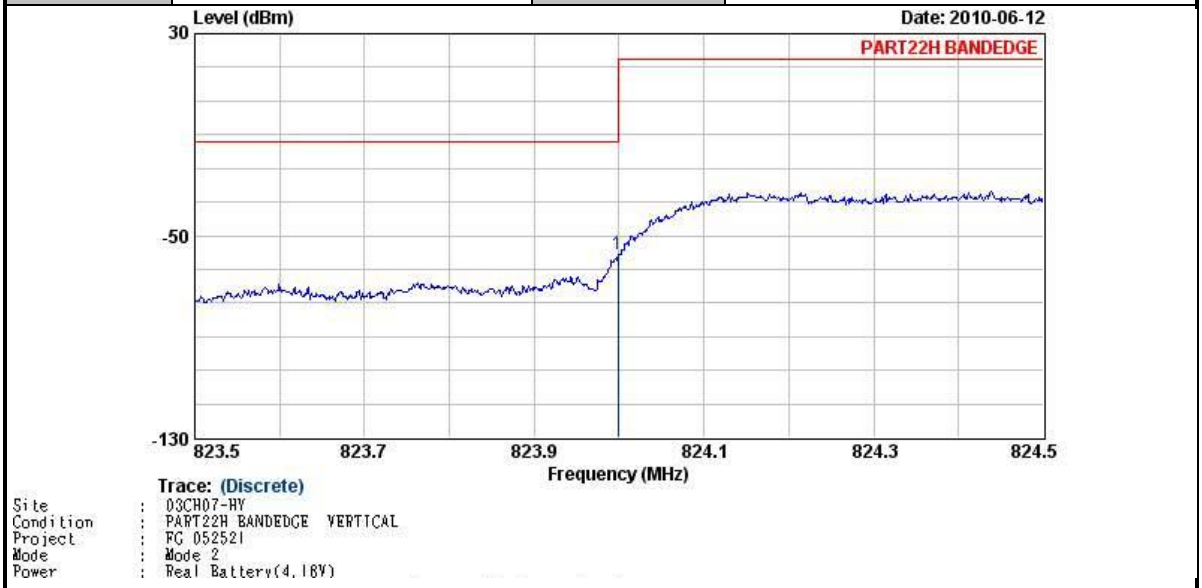
Band :	CDMA2000 BC0	Test Channel :	Lower Band Edge on Channel 1013
Test Mode :	1xRTT_RC1+SO2	Polarization :	Horizontal



Channel	Frequency	LVL	Correction Factor	ERP
	(MHz)	(dBm)	(dB)	(dBm)
1013	824.0	-46.83	31.97	-17.01

Spectrum Setting : RBW = 30 kHz, VBW = 30 kHz, Sweep = 300 ms

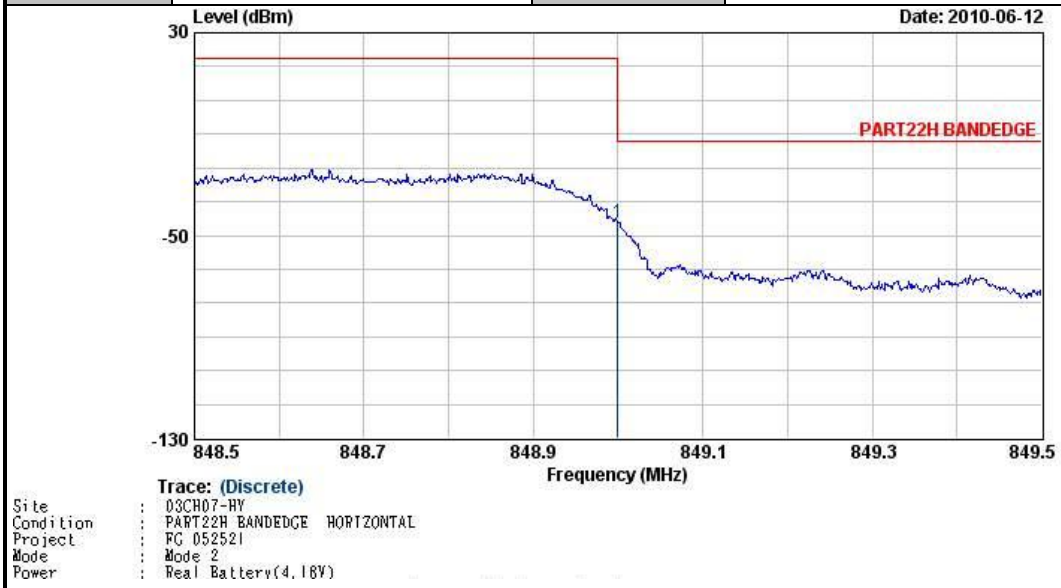
Band :	CDMA2000 BC0	Test Channel :	Lower Band Edge on Channel 1013
Test Mode :	1xRTT_RC1+SO2	Polarization :	Vertical



Channel	Frequency	LVL	Correction Factor	ERP
	(MHz)	(dBm)	(dB)	(dBm)
1013	824.0	-57.23	35.39	-23.99

Spectrum Setting : RBW = 30 kHz, VBW = 30 kHz, Sweep = 300 ms

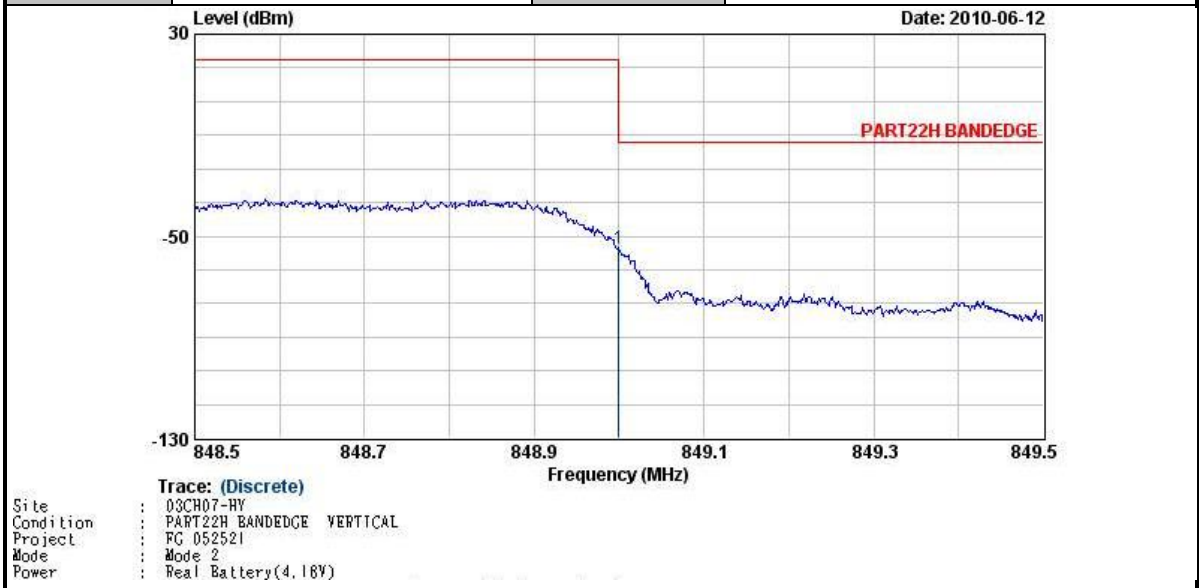
Band :	CDMA2000 BC0	Test Channel :	Higher Band Edge on Channel 777
Test Mode :	1xRTT_RC1+SO2	Polarization :	Horizontal



Channel	Frequency	LVL	Correction Factor	ERP
	(MHz)	(dBm)	(dB)	(dBm)
777	849.0	-44.89	32.63	-14.41

Spectrum Setting : RBW = 30 kHz, VBW = 30 kHz, Sweep = 300 ms

Band :	CDMA2000 BC0	Test Channel :	Higher Band Edge on Channel 777
Test Mode :	1xRTT_RC1+SO2	Polarization :	Vertical



Channel	Frequency	LVL	Correction Factor	ERP
	(MHz)	(dBm)	(dB)	(dBm)
777	849.0	-55.15	35.69	-21.61

Spectrum Setting : RBW = 30 kHz, VBW = 30 kHz, Sweep = 300 ms

3.5 Conducted Emission Measurement

3.5.1 Description of Conducted Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

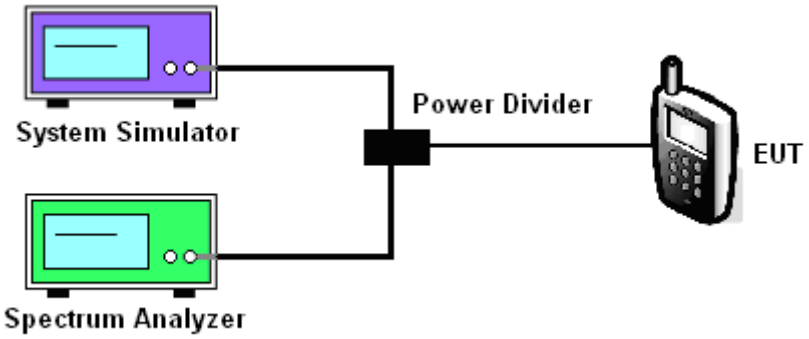
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

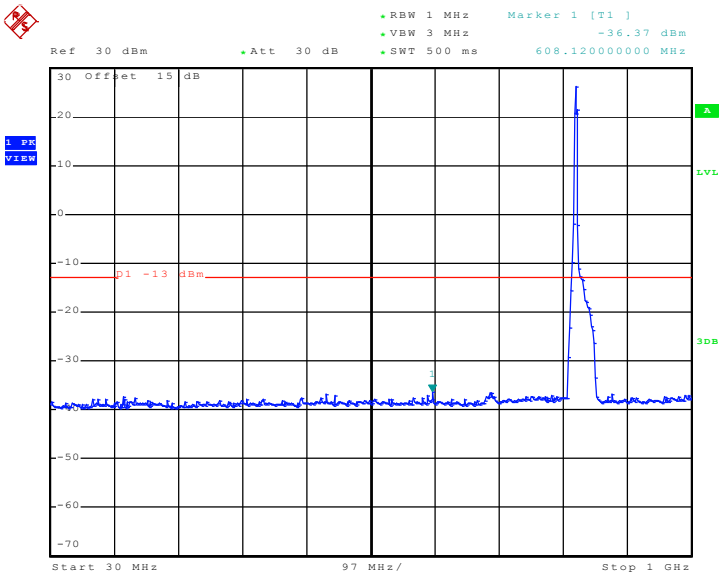
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Emission

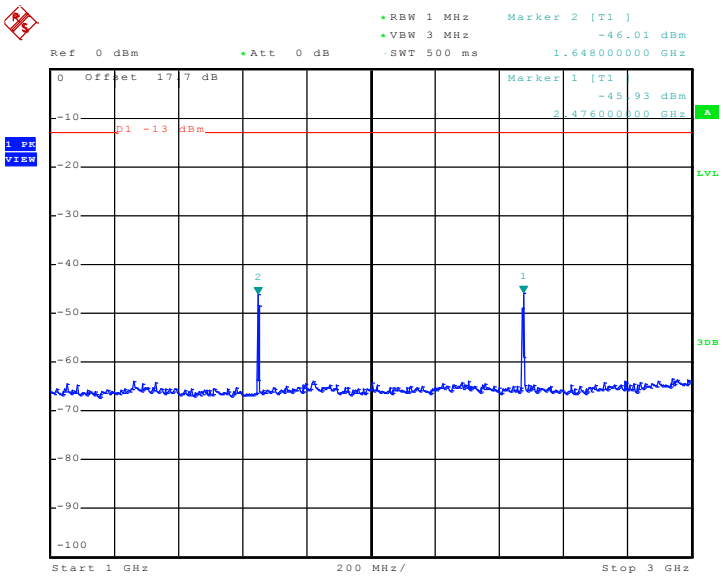
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC1+SO2	Channel :	1013

Conducted Emission Plot between 30MHz ~ 1GHz



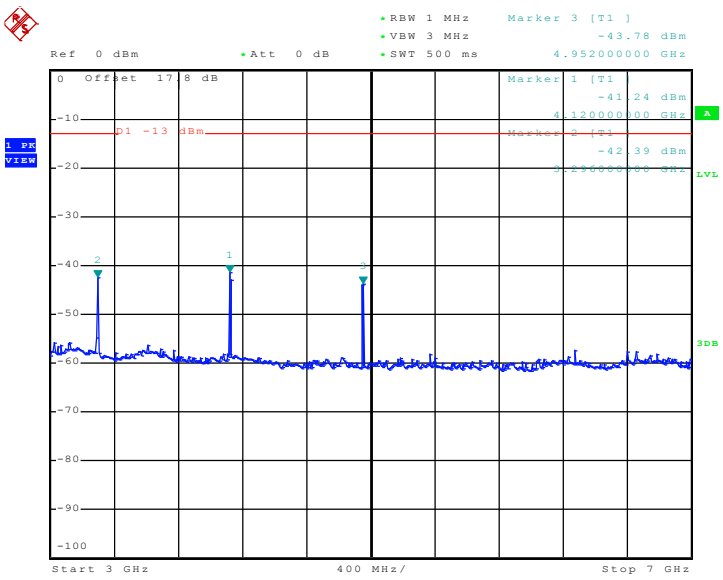
Date: 10.JUN.2010 15:05:23

Conducted Emission Plot between 1GHz ~ 3GHz



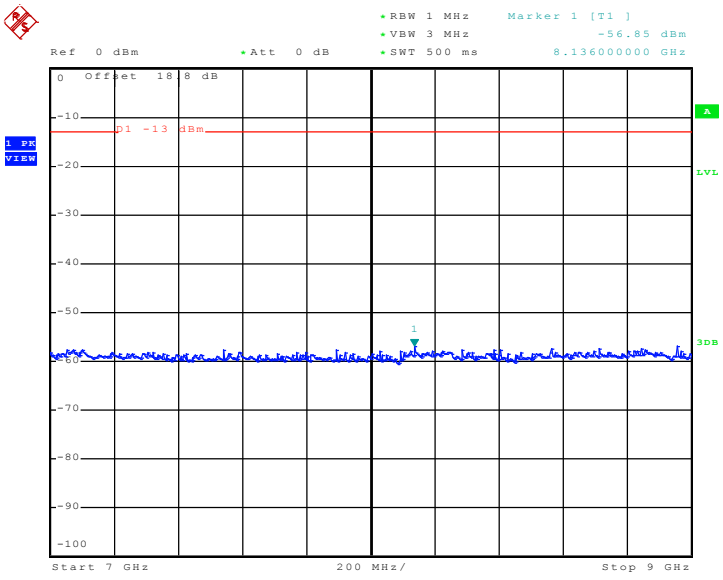
Date: 10.JUN.2010 15:32:26

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.JUN.2010 15:36:36

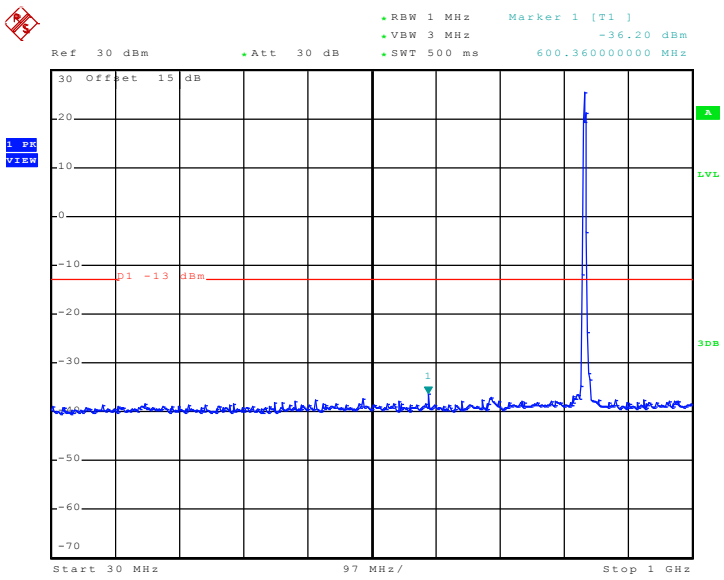
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 10.JUN.2010 15:45:22

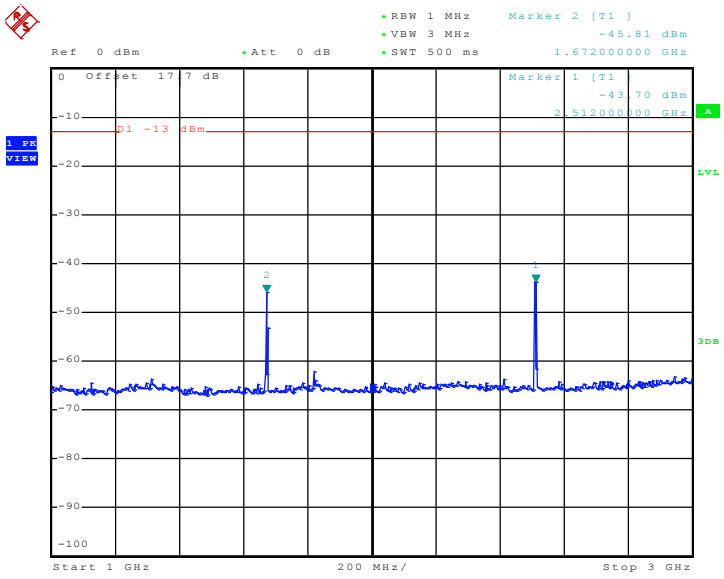
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC1+SO2	Channel :	384

Conducted Emission Plot between 30MHz ~ 1GHz



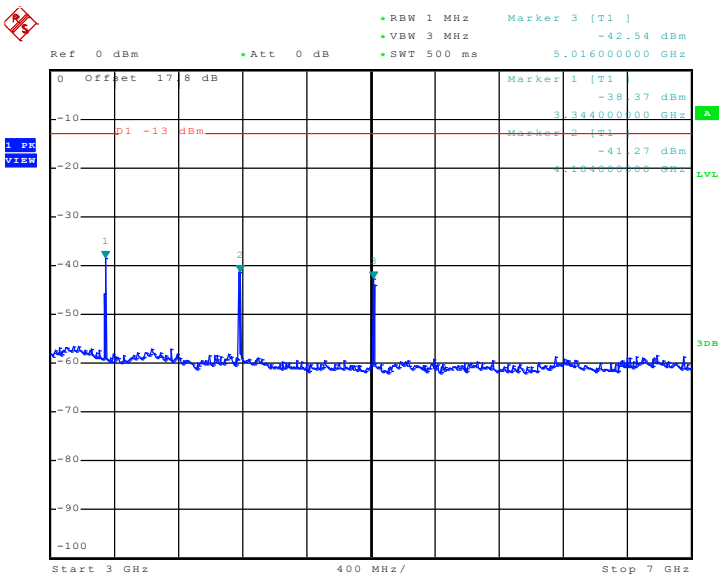
Date: 10.JUN.2010 15:06:35

Conducted Emission Plot between 1GHz ~ 3GHz



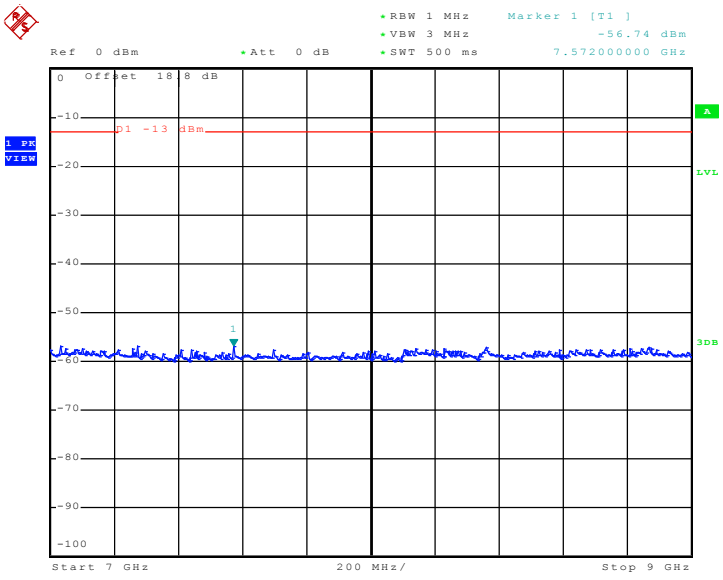
Date: 10.JUN.2010 15:32:56

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.JUN.2010 15:35:36

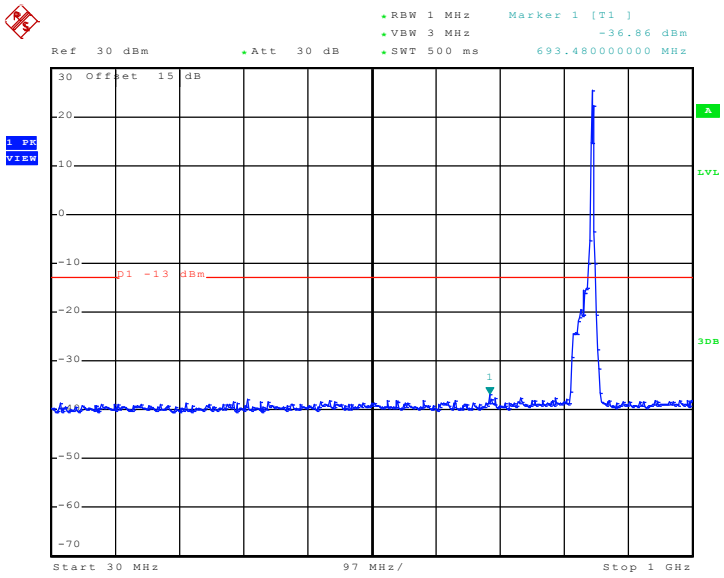
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 10.JUN.2010 15:45:59

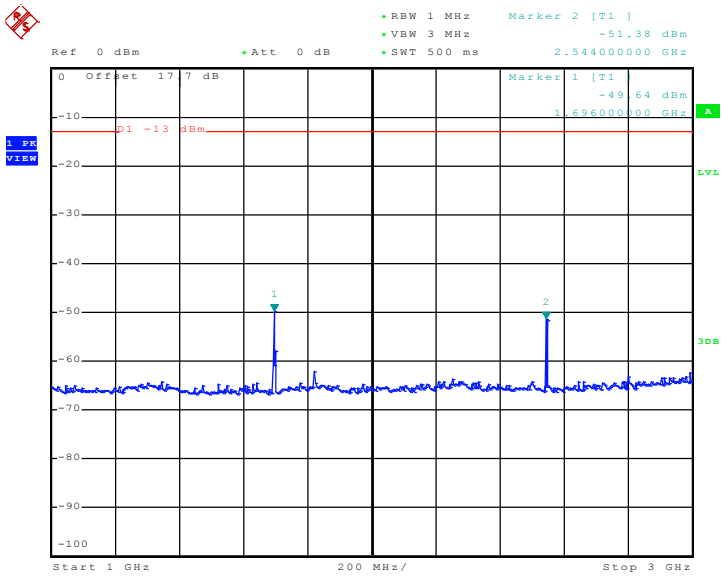
Band :	CDMA2000 BC0	Power Stage :	High
Test Mode :	1xRTT_RC1+SO2	Channel :	777

Conducted Emission Plot between 30MHz ~ 1GHz



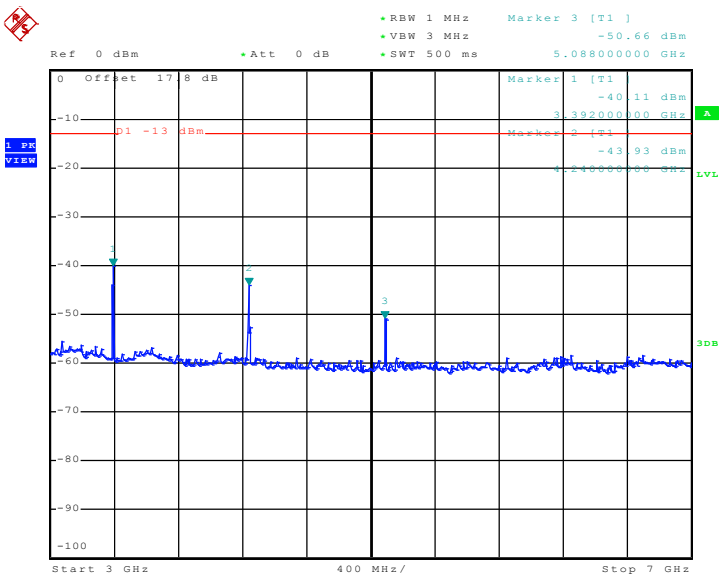
Date: 10.JUN.2010 15:07:35

Conducted Emission Plot between 1GHz ~ 3GHz



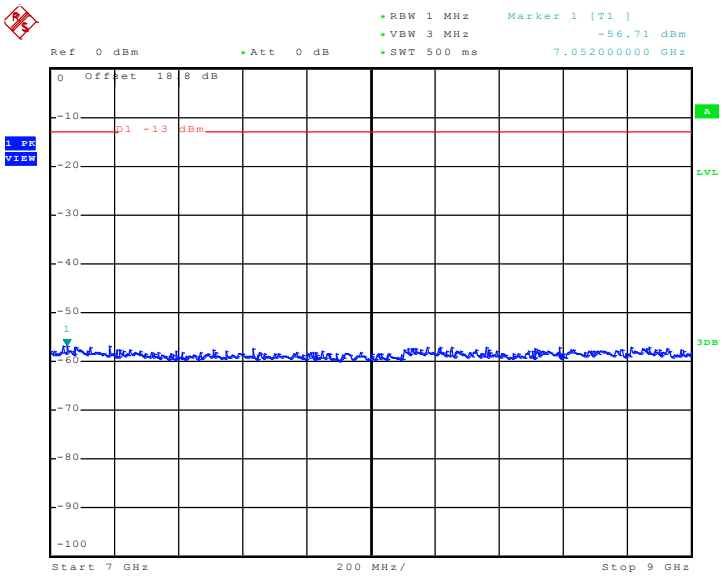
Date: 10.JUN.2010 15:33:28

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 10.JUN.2010 15:34:41

Conducted Emission Plot between 7GHz ~ 9GHz



Date: 10.JUN.2010 15:40:36

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. 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.

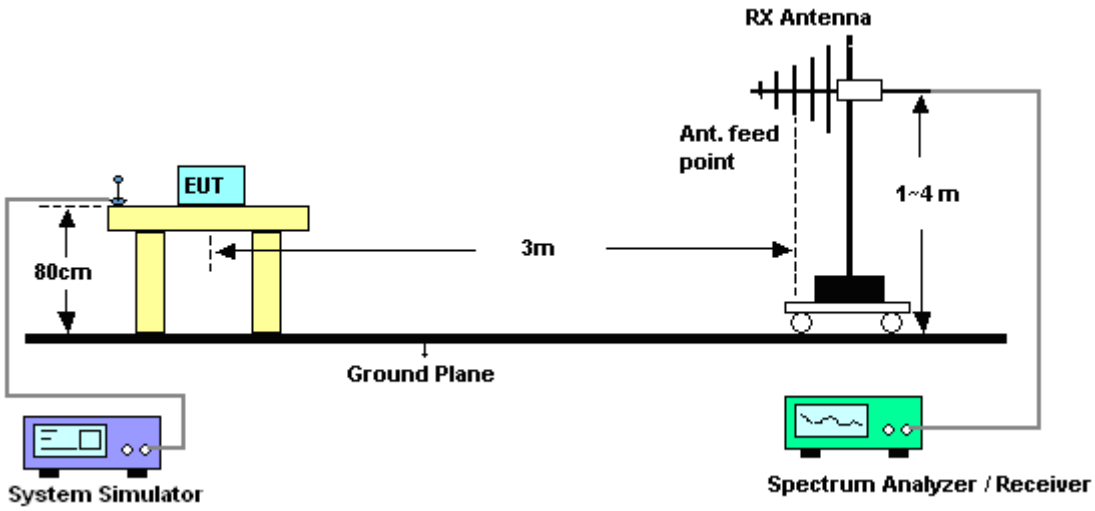
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

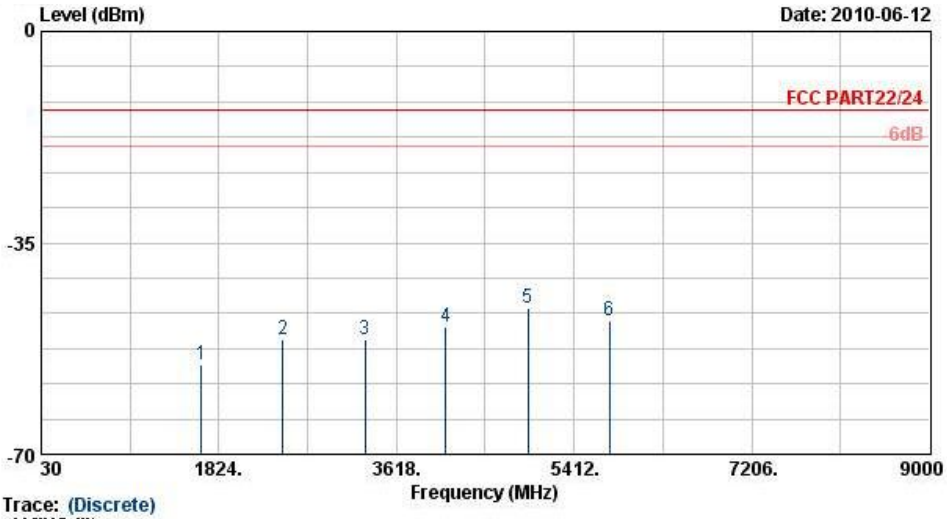
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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, Sweep = 500ms, 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

3.6.4 Test Setup



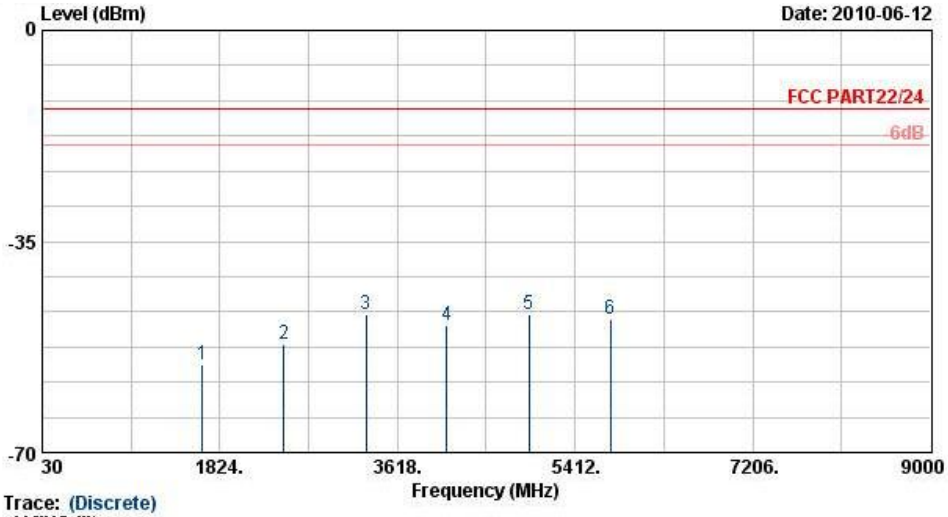
3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	CDMA2000 BC0 Channel 1013	**Temperature :**	22~24°C
Test Mode :	1xRTT_RC1+SO2	**Relative Humidity :**	48~50%
Test Engineer :	Ivan Jiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



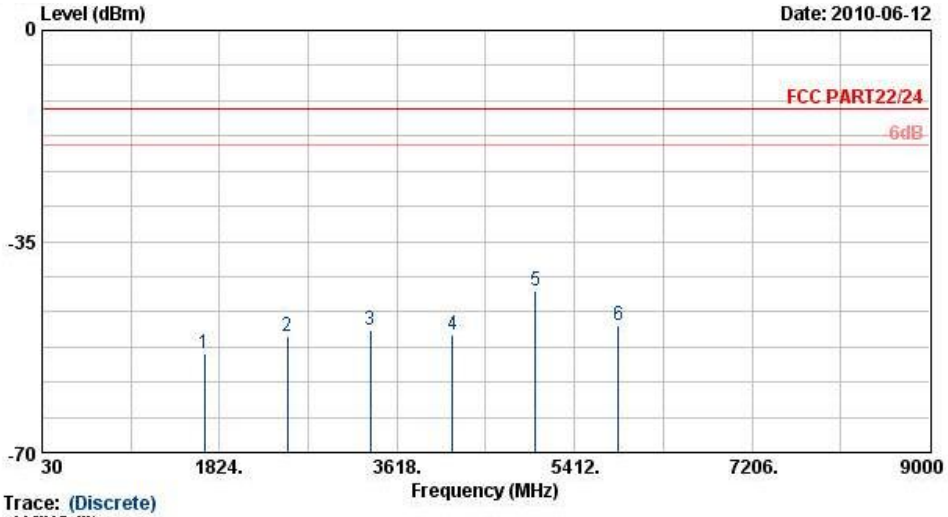
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1645	-55.22	-13	-42.22	-62.97	-55.40	3.1	5.43	H	Pass
2473	-50.88	-13	-37.88	-63.06	-50.87	3.89	6.03	H	Pass
3298	-51.07	-13	-38.07	-64.07	-52.63	4.16	7.87	H	Pass
4115	-48.89	-13	-35.89	-64.15	-50.86	4.88	9.00	H	Pass
4950	-45.76	-13	-32.76	-62.42	-48.15	5.09	9.63	H	Pass
5772	-47.83	-13	-34.83	-68.12	-50.54	5.54	10.40	H	Pass

Band :	CDMA2000 BC0 Channel 1013	Temperature :	22~24°C
Test Mode :	1xRTT_RC1+SO2	Relative Humidity :	48~50%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



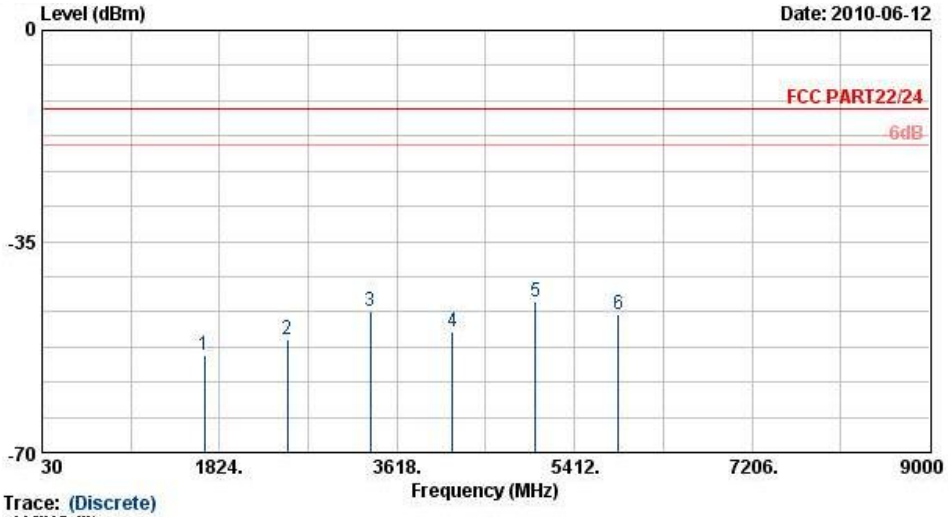
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1649	-55.53	-13	-42.53	-65.51	-55.71	3.1	5.43	V	Pass
2474	-52.06	-13	-39.06	-64.7	-52.05	3.89	6.03	V	Pass
3298	-47.13	-13	-34.13	-61.74	-48.69	4.16	7.87	V	Pass
4115	-49.04	-13	-36.04	-65.1	-51.01	4.88	9.00	V	Pass
4950	-47.02	-13	-34.02	-63.93	-49.41	5.09	9.63	V	Pass
5772	-48.01	-13	-35.01	-68.04	-50.72	5.54	10.40	V	Pass

Band :	CDMA2000 BC0 Channel 384	Temperature :	22~24°C
Test Mode :	1xRTT_RC1+SO2	Relative Humidity :	48~50%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



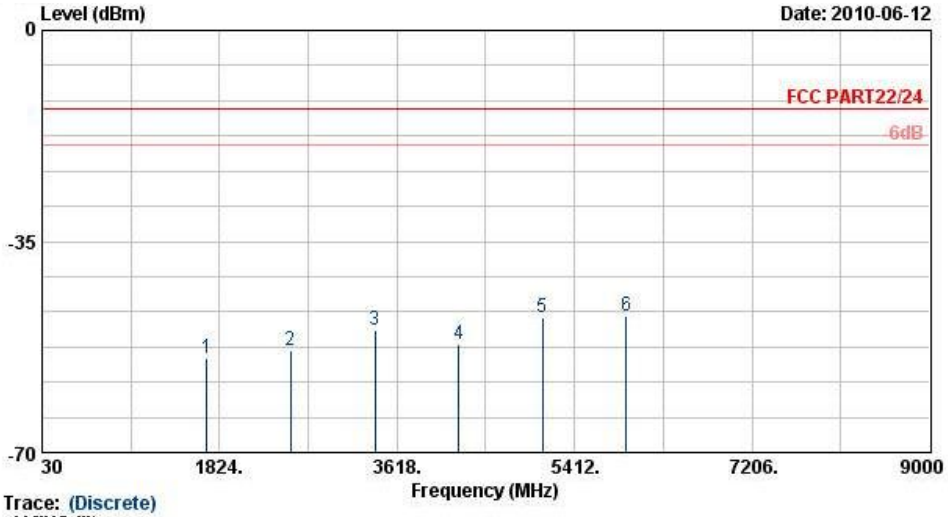
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-53.58	-13	-40.58	-61.42	-53.43	3.39	5.39	H	Pass
2509	-50.62	-13	-37.62	-62.91	-50.88	3.71	6.12	H	Pass
3346	-49.74	-13	-36.74	-62.84	-52.46	3.13	8.00	H	Pass
4175	-50.36	-13	-37.36	-65.61	-54.20	3.01	9.00	H	Pass
5015	-43.09	-13	-30.09	-60	-48.06	2.61	9.73	H	Pass
5854	-48.90	-13	-35.90	-69.52	-52.77	4.38	10.40	H	Pass

Band :	CDMA2000 BC0 Channel 384	Temperature :	22~24°C
Test Mode :	1xRTT_RC1+SO2	Relative Humidity :	48~50%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



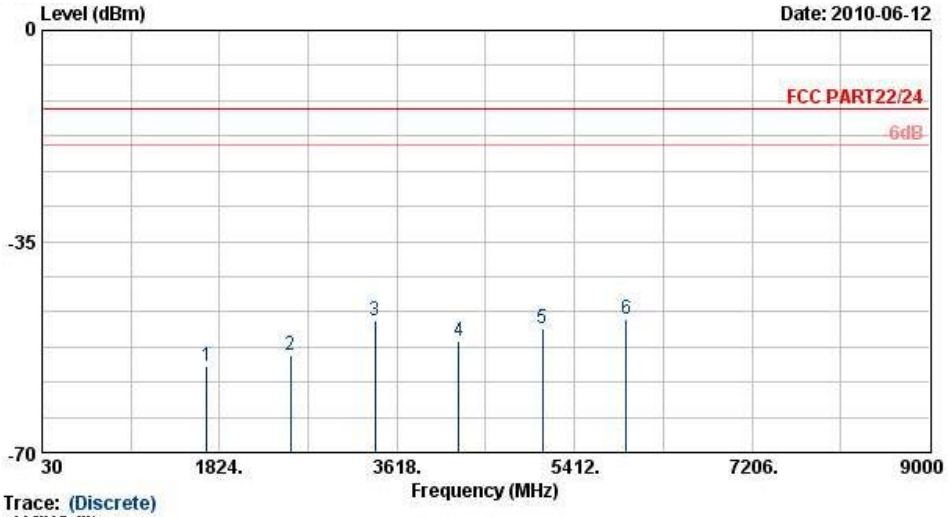
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-53.97	-13	-40.97	-64.04	-53.82	3.39	5.39	V	Pass
2506	-51.21	-13	-38.21	-63.95	-51.47	3.71	6.12	V	Pass
3349	-46.59	-13	-33.59	-61.18	-49.31	3.13	8.00	V	Pass
4175	-49.90	-13	-36.90	-65.99	-53.74	3.01	9.00	V	Pass
5015	-45.11	-13	-32.11	-62.17	-50.08	2.61	9.73	V	Pass
5854	-47.04	-13	-34.04	-67.36	-50.91	4.38	10.40	V	Pass

Band :	CDMA2000 BC0 Channel 777	Temperature :	22~24°C
Test Mode :	1xRTT_RC1+SO2	Relative Humidity :	48~50%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1693	-54.51	-13	-41.51	-62.52	-54.69	3.02	5.35	H	Pass
2545	-53.06	-13	-40.06	-40.06	-53.37	3.73	6.19	H	Pass
3394	-49.59	-13	-36.59	-36.59	-51.58	3.98	8.12	H	Pass
4241	-52.03	-13	-39.03	-67.27	-54.04	4.84	9.00	H	Pass
5090	-47.53	-13	-34.53	-64.84	-49.84	5.36	9.82	H	Pass
5938	-47.32	-13	-34.32	-68.2	-49.74	5.83	10.40	H	Pass

Band :	CDMA2000 BC0 Channel 777	Temperature :	22~24°C
Test Mode :	1xRTT_RC1+SO2	Relative Humidity :	48~50%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1696	-55.70	-13	-42.70	-65.96	-55.88	3.02	5.35	V	Pass
2544	-53.88	-13	-40.88	-66.76	-54.19	3.73	6.19	V	Pass
3394	-48.10	-13	-35.10	-62.67	-50.09	3.98	8.12	V	Pass
4241	-51.40	-13	-38.40	-67.51	-53.41	4.84	9.00	V	Pass
5090	-49.33	-13	-36.33	-66.74	-51.64	5.36	9.82	V	Pass
5938	-47.95	-13	-34.95	-68.51	-50.37	5.83	10.40	V	Pass

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

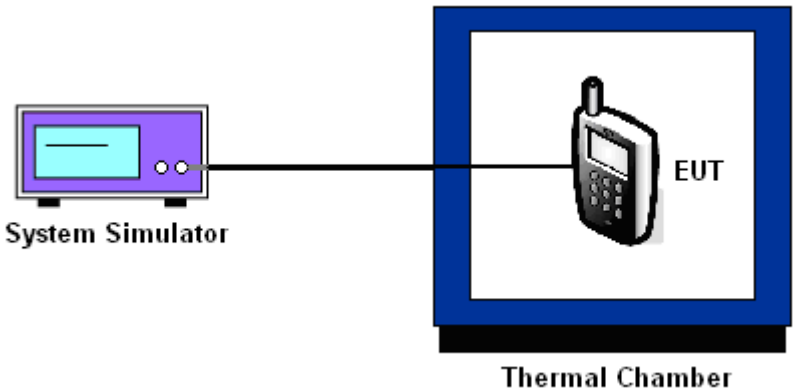
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT can not be turned on at -30°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.7.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.7.5 Test Setup



3.7.6 Test Result of Temperature Variation

Band :	CDMA2000 BC0	Channel :	384
Test Mode :	1xRTT_RC1+SO2	Limit (ppm) :	2.5

Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-5	-0.01	PASS
-20	-4	0.00	
-10	5	0.01	
0	-7	-0.01	
10	-6	-0.01	
20	3	0.00	
30	-6	-0.01	
40	-4	0.00	
50	4	0.00	

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
CDMA2000 BC0 CH384	1xRTT RC1+SO2	3.8	-4	0.00	2.5	PASS
		BEP	-4	0.00		
		4.2	3	0.00		

Note :

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.4 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	Agilent	E5515C (8960)	GB46311322	N/A	Feb. 16, 2009	Feb. 15, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Thermal Chamber	TEN BILLION	TTH-D35P	TBN-930701	N/A	Jul. 29, 2009	Jul. 28, 2010	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	-

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				