

CFR 47 Part 2, 22,24 Test Report

Test Report Number: WR1180.201

Terminal device: FCC ID: QMNRM-125, Model: 6165i, HWID: 5001, SW: AZ100C0018.nep

Originator: Hai To
Function: TCC - Dallas – EMC
Version/Status: 1.0 Approved
Location: QATrax Directories
Date: 15-Sep-06

Change History:

Version	Date	Status	Handled By	Comments
0.1	15-Sep-06	Draft	Hai To	
0.2	15-Sep-06	Proposal	Hai To	
0.3	15-Sep-06	Reviewed	Cindy Trinh	
1.0	15-Sep-06	Approved	Cindy Trinh	

Testing laboratory:

Test & Certification Center (TCC) Dallas
Nokia Inc
6021 Connection Drive
Irving, Texas 75039
U.S.A.

Tel. 972-894-5000

Client:

Nokia Inc.
San Diego
12278 Script Summit Drive.
San Diego, Ca 92131
USA
Tel. +1858 831 5000
Fax. +1858 8316500

Date and signatures:**15-Sep-06**

For the contents:

Hai To
Test Operator

Cindy Trinh
Technical Review



TABLE OF CONTENTS

1. GENERAL	4
1.1 QUALITY SYSTEM	4
1.2 OBJECTIVE	4
1.3 TEST SUMMARY	4
STANDARDS BASIS	5
2. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS	6
2.1 ABBREVIATIONS	6
2.2 ACRONYMS	6
2.3 TERMS	6
3. EQUIPMENT-UNDER-TEST (EUT)	7
3.1 DESCRIPTION OF TESTED DEVICE(S):	7
3.2 PHOTOGRAPH OF TESTED DEVICE(S):	7
4. TEST EQUIPMENT LIST	8
5. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)	9
5.1 SETUP	9
5.2 PASS/FAIL CRITERIA	9
5.3 DETAILED TEST RESULTS	9
6. SPURIOUS EMISSIONS AT ANTENNA TERMINALS	13
6.1 SETUP	13
6.2 PASS/FAIL CRITERIA	13
6.3 DETAILED TEST RESULTS	13
7. FREQUENCY STABILITY (TEMPERATURE VARIATION)	20
7.1 SETUP	20
7.2 PASS/FAIL CRITERIA	20
7.3 DETAILED TEST RESULTS	20
8. FREQUENCY STABILITY (VOLTAGE VARIATION)	21
8.1 SETUP	21
8.2 PASS/FAIL CRITERIA	21
8.3 DETAILED TEST RESULTS	21

TCC

Company Confidential

FCC ID: QMNRM-125
Test Report #: WR1180.201
15-Sep-06



Accredited Laboratory
Certificate Number: 1819-01

3 (21)

Ver 1.0

© No part of this report shall be reproduced out of the context of the report without the written approval of Nokia Mobile Phones, Inc., Dallas Product Creation, TCC – Dallas.

1. GENERAL

1.1 Quality System

The quality system in place for TCC-Dallas conforms to ISO/IEC 17025 and has been audited to the standard by A2LA (American Association of Laboratory Accreditation). TCC - Dallas has also been audited using the ISO 9000 Quality System, as part of Nokia Mobile Phones, Inc., by ABS (American Bureau of Shipping) Quality Evaluations Inc.

TCC-Dallas is a recognized laboratory with the Federal Communications Commission in filing applications for Certification under Parts 15 and 18, Registration Number 100060, and Industry Canada, Registration Number IC 4735N.

1.2 Objective

All tests and measurement data shown was performed to determine whether the selected handset was in compliance as specified in FCC: CFR47 Parts 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, Part 22, and Part 24.

1.3 Test Summary

Test Results: *The test result relates only to those tested devices mentioned in Section 4 of this test report.*

Test Performed	Reference	Section of Report	Complies / Does not comply / Not Tested
Occupied Bandwidth: Transmitter Conducted Measurements	FCC Part 2.1049	6	Complies
Spurious Emissions at Antenna Terminals	FCC Part 2.1051	7	Complies
Frequency Stability (Temperature Variation)	FCC Part 2.1055(a)	8	Complies
Frequency Stability (Voltage Variation)	FCC Part 2.1055(d)	9	Complies

STANDARDS BASIS

Testing has been carried out in accordance with:

REF.	Code of the standard	Name of the standard
1	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.
2	FCC: CFR 47 Part 2	Code of Federal Regulations (CFR) Title 47, Part 2 – Frequency Allocations and Radio Treaty Matters; General Rules and Regulations: Subpart J – Equipment Authorization Procedures
3	FCC: CFR 47 Part 22	Code of Federal Regulations (CFR) Title 47, Part 22 – Public Mobile Services: Subpart H – Cellular Radiotelephone Service
4	FCC: CFR 47 Part 24	Code of Federal Regulations (CFR) Title 47, Part 24 – Personal Communications Services: Subpart E – Broadband PCS
5	RSS-129	800 MHz Dual-Mode CDMA Cellular Telephones
6	RSS-132	800 MHz Cellular Telephones Employing New Technologies
7	RSS-133	2 GHz Personal Communications Services, Industry Canada
8	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
9	RSP-100	Radio Equipment Certification Procedure

Note: Unless otherwise stated, (by reference to a version number and a publication date), the latest version of the above documents applies.

Deviations:

Not Applicable.

2. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS

2.1 Abbreviations

- dB - decibel
- dBc - decibels from carrier
- dBm - decibels per milliwatt (absolute measurement)
- GHz - gigahertz or 1000000000 hertz
- kHz - kilohertz or 1000 hertz
- MHz - megahertz or 1000000 hertz

2.2 Acronyms

- AMPS - Advanced Mobile Phone System
- BSS - Base Station Simulator
- CDMA - Code Division Multiple Access
- EDRP - Effective Dipole Radiated Power
- EIRP - Effective Isotropic Radiated Power
- EMC - Electromagnetic Compatibility
- EMI - Electromagnetic Interference
- ERP - Effective Radiated Power
- EUT - Equipment under Test
- GSM - Global System for Mobile communications
- PCS - Personal Communications Services
- RF - Radio Frequency
- TDMA - Time Division Multiple Access

2.3 Terms

Base Station Simulator (BSS) - simulates all the necessary signals that a phone would experience while on a live network. There are many types of base station simulators catering for all current protocols, i.e., GSM, AMPS, TDMA, and CDMA.

Cellular - refers to a frequency in the 800MHz band.

PCS - refers to a frequency in the 1900MHz band.

3. EQUIPMENT-UNDER-TEST (EUT)

The results in this report relate only to the items listed below:

3.1 Description of Tested Device(s):

Test Performed	Mode of Operation	Date of Receipt	Condition of Sample	Item	Identifying Information
FCC Part 2.1049 FCC Part 2.1051 FCC Part 2.1055	CDMA 800/1900	12-Sep-06	Working	Phone	FCC ID: QMNRM-125 Model: 6165i HW: 5001 SW: AZ100C0018.nep ESN: 03306005738
FCC Part 2.1049 FCC Part 2.1051 FCC Part 2.1055	CDMA 800/1900	12-Sep-06	Working	Battery	Type: BL-6C

3.2 Photograph of Tested Device(s):

Refer to attached EXHIBITS

4. TEST EQUIPMENT LIST

The listing below indicates the test equipment utilized for the test (s). Calibration interval on all items listed can be obtained from the Engineering Services Group within NMP, Product Creation - Dallas. Where relevant, measuring equipment is subjected to in-service checks between testing. TCC - Dallas shall notify clients promptly, in writing, of identification of defective measuring equipment that casts doubt on the validity of results given in this report.

Section of Report	NMP#	Test Equipment	Mfr. #	Model #	Calibration Due Date	Calibration Interval
6,7,8,9	N/A	6dB Attenuator	Weinshcel	Model 2	Na	N/A
6,7,8,9	03461	Base Station	R&S	CMU200	31-Nov-06	12 months
6,7,8,9	02679	EMI Receiver	HP	E7405A	01-Nov-06	12 Months
8,9	00837	Temperature Chamber	Tenney Environmental	N/A	20-Oct-06	N/A

5. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

Specification: FCC Part 2.1049(c)(1), 24.238(a)(b)

5.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call.

5.2 Pass/Fail Criteria

Occupied Bandwidth, Out of Band

Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular 800, Low Channel	< 824	-13
Cellular 800, High Channel	> 849	-13
PCS 1900, Low Channel	< 1850	-13
PCS 1900, High Channel	> 1910	-13

Occupied Bandwidth, In Band

No pass/fail, these plots are used to determine the emission designators.

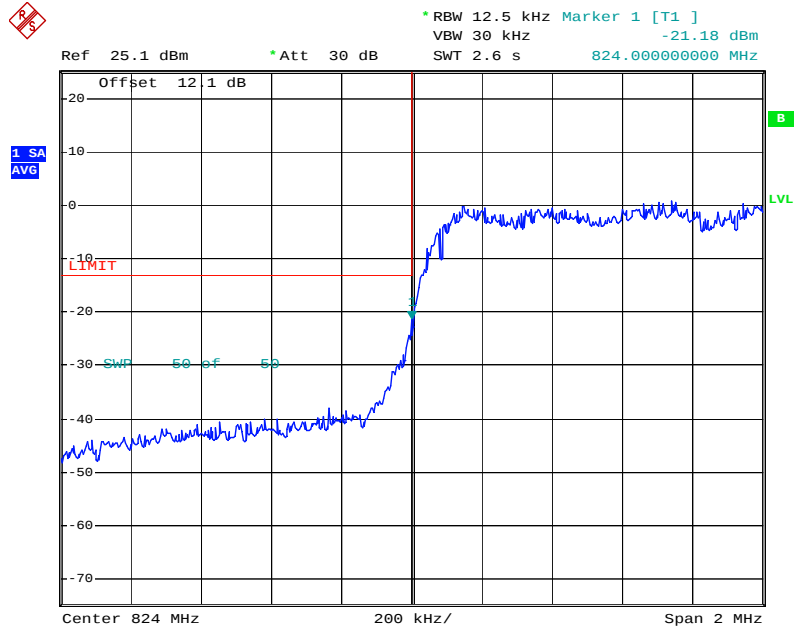
5.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	13-Sep-06
Temperature	23 °C
Humidity	46 %RH
Test Result	Complies with FCC Part 2.1049(c)(1), 24.238(a)(b)

Note1: AMPS measurements were performed with 300Hz RBW/VBW.

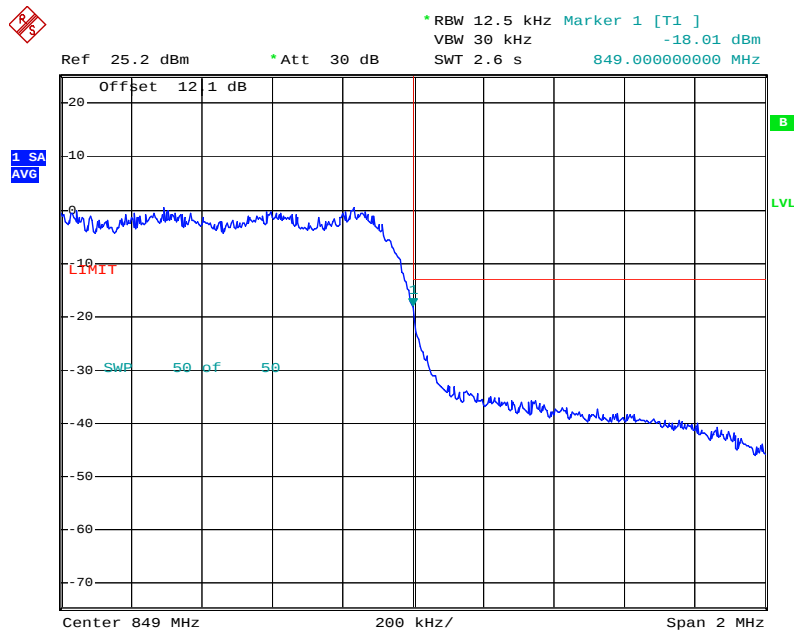
Occupied Bandwidth, Out of Band

CDMA 800 - Channel 1013 (824.70 MHz)



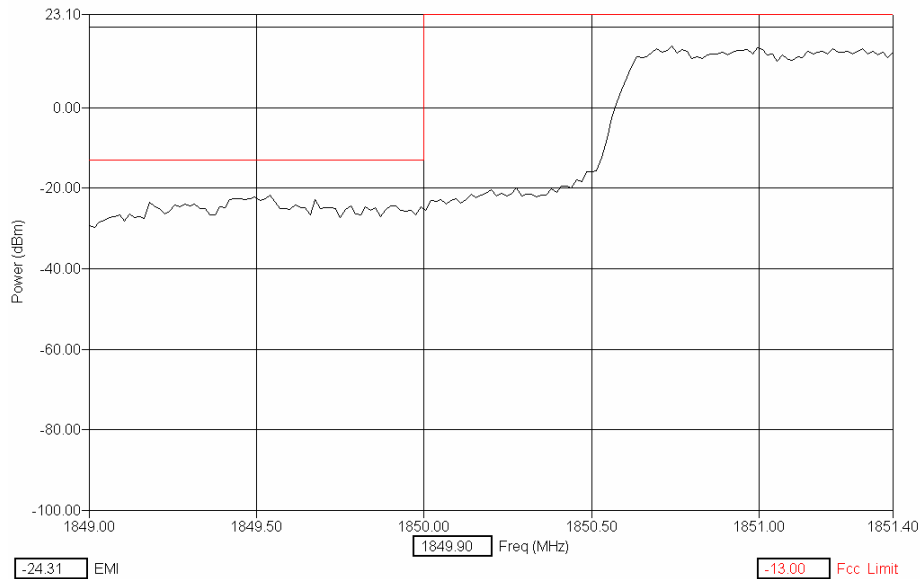
Date: 12.SEP.2006 12:21:01

CDMA 800 - Channel 777 (848.31 MHz)

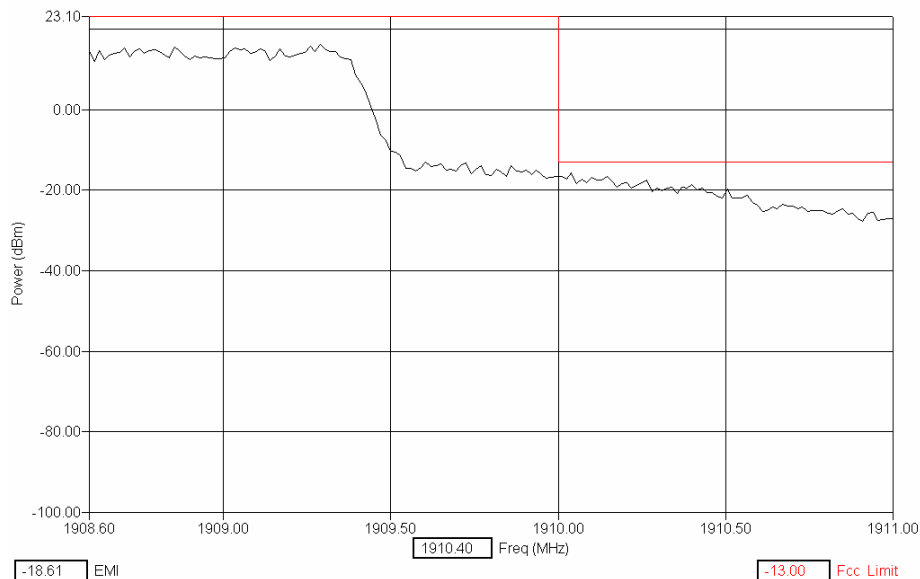


Date: 12.SEP.2006 12:17:55

CDMA 1900 – Channel 25 (1851.25 MHz)



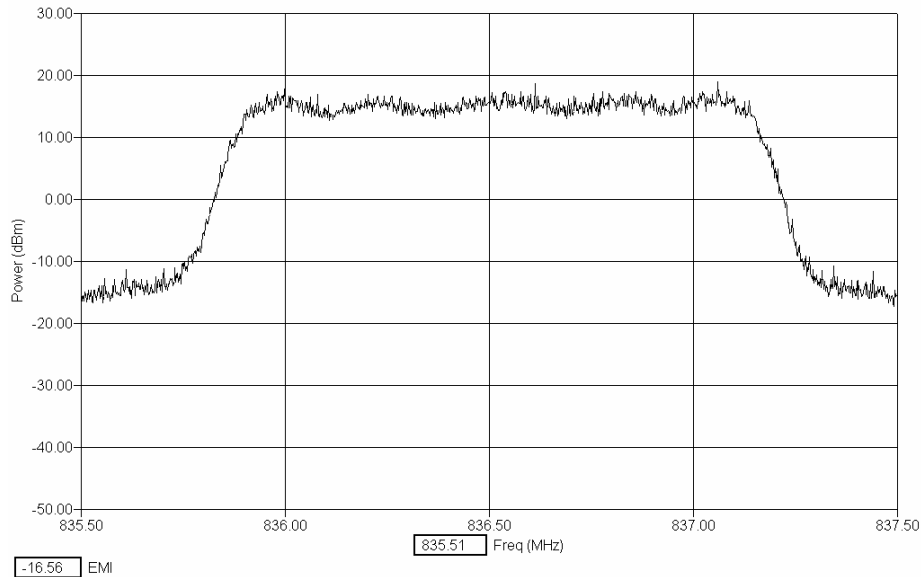
CDMA 1900 – Channel 1175 (1908.75 MHz)



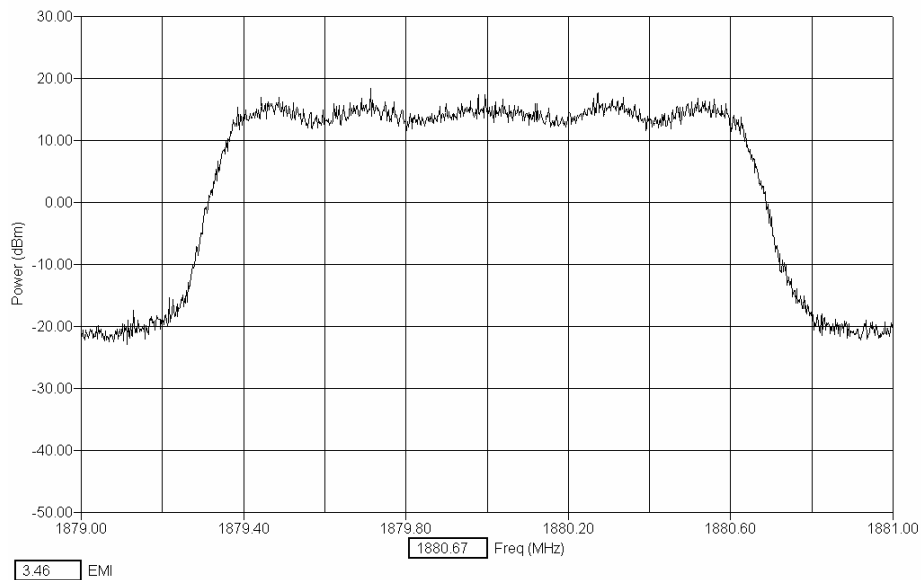
Occupied Bandwidth, In Band

CDMA 800 - Channel 384

30KHz RBW/VBW



CDMA 1900 - Channel 600



6. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Specification: FCC Part 2.1051

6.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call. Filters were introduced to reduce or eliminate spurious emission, which could be generated internally in the EMI receiver.

6.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular / PCS	30 – 20000 *	-13

* Frequency to be investigated up to the 10th harmonic of the highest clock or frequency used.

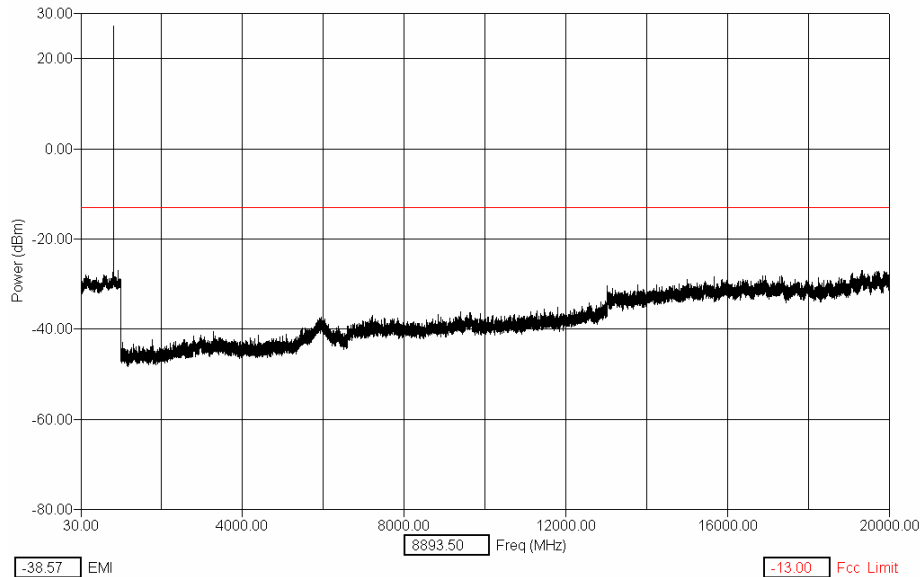
6.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	13-Sept-06
Temperature	21 °C
Humidity	45 %RH
Test Result	Complies with FCC Part 2.1051

Note 1: EMI (dBm) = trace (dBuV) + cable loss (dB) + filter loss (dB).

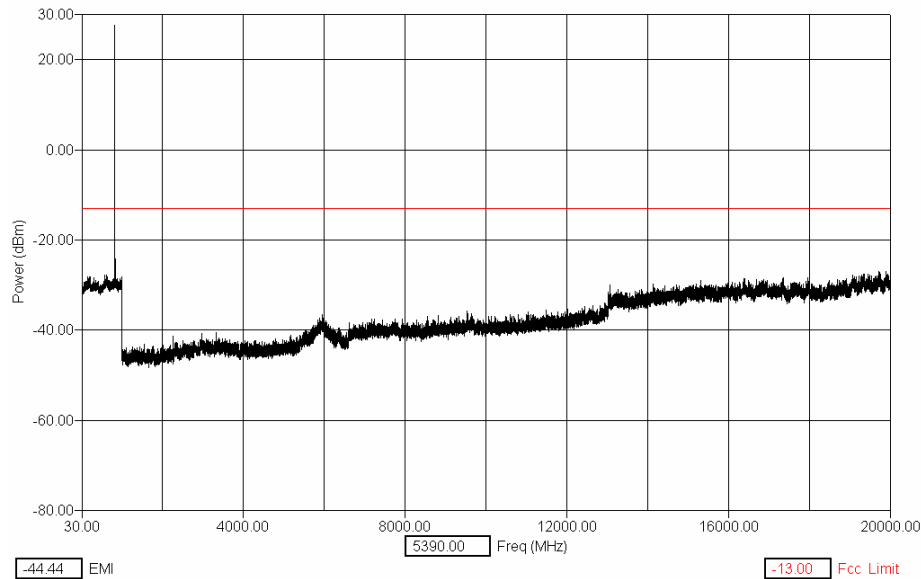
Note 2: measurements were performed with 1MHz RBW/VBW.

CDMA 800 - Channel 1013, 824.70 MHz



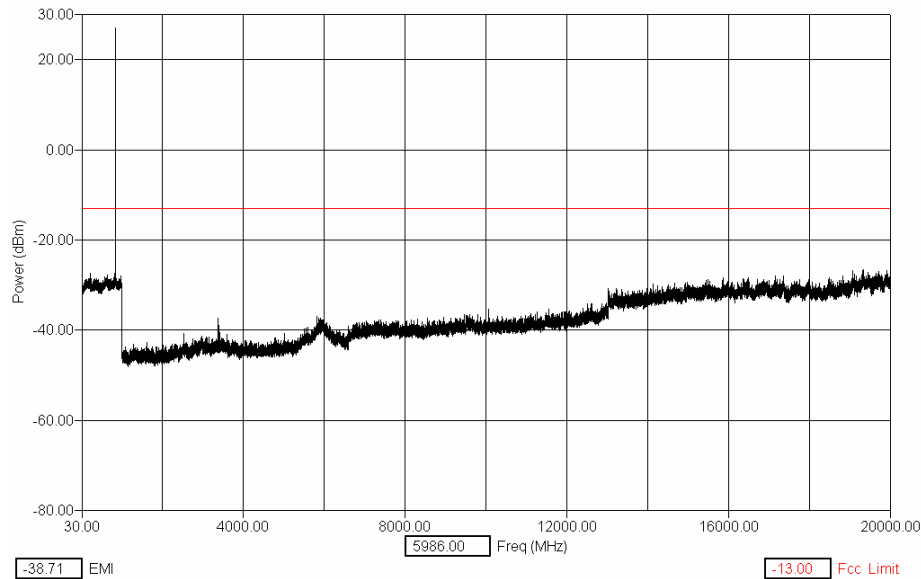
Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
1649.6	-65.8	0.4	14.67	-50.7	-13.0
2473.5	-64.1	0.6	15.46	-48.1	-13.0
3298.1	-60.2	0.8	15.98	-43.5	-13.0
4123.9	-65.8	0.9	16.09	-48.8	-13.0
4947.6	-65.8	1.1	17.03	-47.7	-13.0
5771.0	-65.7	1.2	19.98	-44.5	-13.0
6595.6	-66.0	1.2	18.06	-46.7	-13.0
7421.8	-61.0	1.3	17.98	-41.7	-13.0
8247.5	-62.7	1.4	18.97	-42.3	-13.0

CDMA 800 - Channel 384, 836.52 MHz



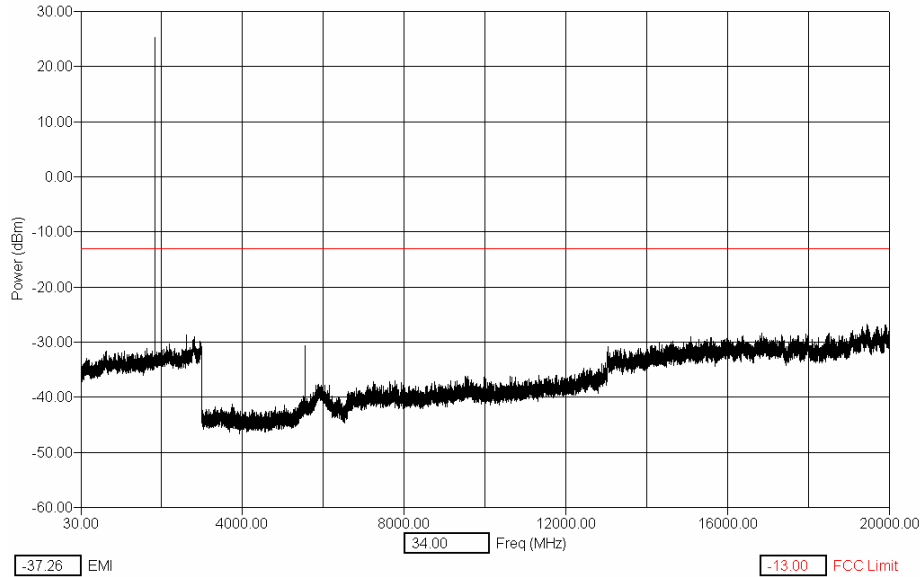
Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
1674.2	-65.5	0.4	14.60	-50.6	-13.0
2510.1	-62.6	0.6	15.65	-46.4	-13.0
3345.2	-60.4	0.8	16.10	-43.5	-13.0
4182.0	-63.9	0.9	16.12	-46.9	-13.0
5018.1	-64.4	1.1	17.16	-46.1	-13.0
5855.9	-64.0	1.2	21.33	-41.5	-13.0
6692.3	-66.2	1.3	17.75	-47.2	-13.0
7527.8	-62.3	1.3	18.06	-42.9	-13.0
8364.2	-63.6	1.4	19.00	-43.1	-13.0

CDMA 800 - Channel 777, 848.31 MHz



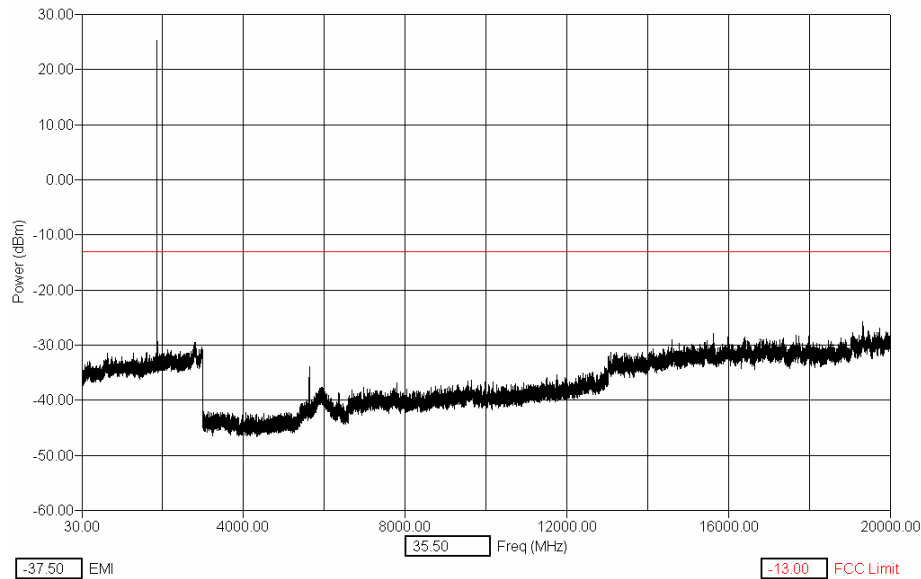
Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
1697.2	-64.2	0.4	14.59	-49.2	-13.0
2544.3	-61.3	0.6	15.53	-45.2	-13.0
3392.3	-64.0	0.8	16.05	-47.2	-13.0
4241.4	-66.2	0.9	16.35	-48.9	-13.0
5090.8	-64.8	1.1	17.26	-46.5	-13.0
5938.4	-66.4	1.2	22.09	-43.1	-13.0
6787.6	-63.7	1.3	17.96	-44.5	-13.0
7634.2	-62.8	1.3	17.98	-43.5	-13.0
8483.3	-63.1	1.4	18.53	-43.2	-13.0

CDMA 1900 - Channel 25, 1851.25 MHz



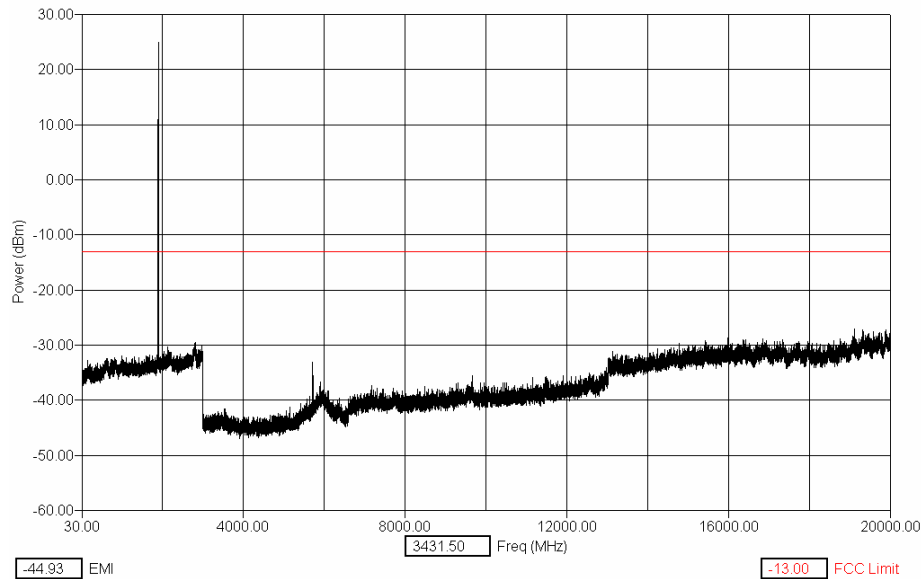
Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
3701.5	-65.1	0.85	16.2	-48.0	-13.0
5553.4	-52.9	1.13	18.4	-33.3	-13.0
7403.7	-62.5	1.32	18.4	-42.8	-13.0
9256.3	-63.2	1.48	19.5	-42.1	-13.0
11106.4	-63.1	1.60	20.2	-41.3	-13.0
12958.0	-63.0	1.71	22.6	-38.7	-13.0
14809.2	-60.3	1.80	22.8	-35.7	-13.0
16662.7	-60.1	1.88	23.8	-34.5	-13.0
18510.5	-60.5	1.95	24.9	-33.7	-13.0

CDMA 1900 - Channel 600, 1880.00 MHz



Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
3760.4	-65.4	0.86	16.8	-47.8	-13.0
5640.4	-57.2	1.14	18.5	-37.5	-13.0
7519.9	-63.3	1.34	18.1	-43.9	-13.0
9399.8	-63.6	1.49	18.9	-43.1	-13.0
11279.0	-64.1	1.61	20.2	-42.3	-13.0
13158.9	-63.2	1.72	21.8	-39.7	-13.0
15041.2	-59.3	1.81	23.7	-33.8	-13.0
16918.1	-59.8	1.89	25.0	-32.9	-13.0
18800.9	-60.7	1.96	25.1	-33.7	-13.0

CDMA 1900 - Channel 1175, 1908.75 MHz



Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
3818.4	-65.4	0.87	16.7	-47.8	-13.0
5725.4	-56.0	1.15	19.4	-35.5	-13.0
7635.2	-61.6	1.35	18.0	-42.3	-13.0
9544.4	-63.8	1.50	20.3	-42.0	-13.0
11453.0	-63.3	1.62	20.5	-41.1	-13.0
13361.1	-57.8	1.73	22.0	-34.1	-13.0
15270.9	-60.3	1.82	23.3	-35.2	-13.0
17180.1	-59.0	1.90	24.3	-32.9	-13.0
19088.5	-60.4	1.97	26.3	-32.2	-13.0

7. FREQUENCY STABILITY (TEMPERATURE VARIATION)

Specification: FCC Part 2.1055(a)(1)(b), 24.235

7.1 Setup

The EUT was connected to the base station simulator to measure the RF power output.

7.2 Pass/Fail Criteria

Not Applicable

7.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	13-Sep-06
Temperature	23°C
Humidity	50 %RH
Test Result	Tested in accordance with 2.1055(a)(1)(b), 24.235 at maximum power setting.

Temp. (°C)	CDMA 800, Channel 384	CDMA 1900, Channel 600
	Change (Hz)	Change (Hz)
-30	12	29
-20	14	26
-10	13	28
0	11	29
10	10	27
20	15	28
30	13	26
40	14	28
50	13	30

8. FREQUENCY STABILITY (VOLTAGE VARIATION)

Specification: FCC Part 2.1055(d)(1)(2), 24.235

8.1 Setup

The EUT was connected to the base station simulator to measure the RF power output.

8.2 Pass/Fail Criteria

Not Applicable

8.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	14-Sep-06
Temperature	24 °C
Humidity	50 %RH
Test Result	Tested in accordance with 2.1055(d)(1)(2), 24.235 at maximum power setting.

CDMA 800, Call Mode, Channel 384

% of STV	Voltage	Change (Hz)
85	3.2	17
100 (Nominal)	3.7	17
115	4.2	20

CDMA 1900, Call Mode, Channel 600

% of STV	Voltage	Change (Hz)
85	3.2	16
100 (Nominal)	3.7	18
115	4.2	17