

CFR 47 Part 2, 24 Test Report

Test Report Number: WR1160.201

Terminal device:FCC ID: QMNRH-96, Model: 1315, HWID: 1500, SW: RH96R002
(Detailed information is listed in section 4).

Originator: Hai To
Function: TCC - Dallas – EMC
Version/Status: 1.0 Approved
Location: QATrax Directories
Date: 26-Jul-06

Change History:

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0.2	20-Jul-06	Proposal	Hai To	
0.3	26-Jul-06	Reviewed	Viet Do	
1.0	26-Jul-06	Approved	Viet Do	

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:

26-Jul-06

For the contents:

Hai To
Test Engineer

Viet Do
Technical Review

TABLE OF CONTENTS

1. GENERAL	4
1.1 QUALITY SYSTEM	4
1.2 OBJECTIVE	4
1.3 TEST SUMMARY	4
2. STANDARDS BASIS	5
3. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS	6
3.1 ABBREVIATIONS	6
3.2 ACRONYMS	6
3.3 TERMS	6
4. EQUIPMENT-UNDER-TEST (EUT)	7
4.1 DESCRIPTION OF TESTED DEVICE(S)	7
4.2 PHOTOGRAPH OF TESTED DEVICE(S)	7
5. TEST EQUIPMENT LIST	8
6. RF POWER OUTPUT (CONDUCTED)	9
6.1 SETUP	9
6.2 PASS/FAIL CRITERIA	9
6.3 DETAILED TEST RESULTS	9
7. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)	10
7.1 SETUP	10
7.2 PASS/FAIL CRITERIA	10
7.3 DETAILED TEST RESULTS	10
8. SPURIOUS EMISSIONS AT ANTENNA TERMINALS	13
8.1 SETUP	13
8.2 PASS/FAIL CRITERIA	13
8.3 DETAILED TEST RESULTS	13
9. EMISSIONS IN RECEIVER CRITICAL BAND	17
9.1 SETUP	17
9.2 PASS/FAIL CRITERIA	17
9.3 DETAILED TEST RESULTS	17
10. FREQUENCY STABILITY (TEMPERATURE VARIATION)	20
10.1 SETUP	20
10.2 PASS/FAIL CRITERIA	20
10.3 DETAILED TEST RESULTS	20
11. FREQUENCY STABILITY (VOLTAGE VARIATION)	21
11.1 SETUP	21
11.2 PASS/FAIL CRITERIA	21
11.3 DETAILED TEST RESULTS	21



Test & Certification Center (TCC) - Dallas

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FCC ID: QMNRH-96

Test Report #: WR1160.201

26-Jul-06



Accredited Laboratory
Certificate Number: 1819-01

3 (21)

Ver 1.0

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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 661N.

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
RF Power Output (Conducted)	FCC Part 2.1046	6	Complies
Occupied Bandwidth: Transmitter Conducted Measurements	FCC Part 2.1049	7	Complies
Spurious Emissions at Antenna Terminals	FCC Part 2.1051	8	Complies
Emission In Receiver Critical Band	FCC 22.917	9	Complies
Frequency Stability (Temperature Variation)	FCC Part 2.1055(a)	10	Complies
Frequency Stability (Voltage Variation)	FCC Part 2.1055(d)	11	Complies

2. 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	RSS-129	800 MHz Dual-Mode CDMA Cellular Telephones
5	RSS-132	800 MHz Cellular Telephones Employing New Technologies
6	RSS-133	2 GHz Personal Communications Services, Industry Canada
7	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
8	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.

3. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS

3.1 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

3.2 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

3.3 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.

4. EQUIPMENT-UNDER-TEST (EUT)

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

4.1 Description of Tested Device(s):

Test Performed	Mode of Operation	Date of Receipt	Condition of Sample	Item	Identifying Information
FCC Part 2.1046 FCC Part 2.1049 FCC Part 2.1051 FCC Part 22.917 FCC Part 2.1055	CDMA/800	20-Jul-06	Working	Phone	FCC ID: QMNRH-96 Model: 1315 HW: 1500 SW: RH96R002 ESN: 03705556081
FCC Part 2.1046 FCC Part 2.1049 FCC Part 2.1051 FCC Part 22.917 FCC Part 2.1055	CDMA/800	20-Jul-06	Working	Battery	Type: BL-5C

4.2 Photograph of Tested Device(s):

Refer to attached EXHIBITS

5. 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
6,7,8,9,10,11	N/A	6dB Attenuator	Weinshchel	Model 2	Na	12 months
6,7,8,9,10,11	02666	Base Station	R&S	CM200	6-Sept-06	12 months
6,7,8,9,10,11	02680	EMI Receiver	HP	E7405A	6-Jan-07	12 Months
6,7,8,9,10,11	00087	Synthesized Fun/Sweep Generator	HP	3324A	31-Oct- 06	12Months
9,10	00837	Temperature Chamber	Tenney Environmental	N/A	20-Oct-06	12 months

6. RF POWER OUTPUT (CONDUCTED)

Specification: FCC Part 2.1046(a), 22.913(a), 24.232(b)(c)

6.1 Setup

Testing was performed with the EUT connected to a 6dB splitter and then to the RF Power Meter to measure the conducted RF power output. The base station simulator was connected to the other port of the splitter to establish a call.

6.2 Pass/Fail Criteria

Not Applicable

6.3 Detailed Test Results

Test Technician / Engineer	Julian Kim
Date of Measurement	11-July-06
Temperature	24°C
Humidity	27 %RH
Test Result	Was operated at max power and tested in accordance with FCC Part 2.1046(a), 22.913(a), 24.232(b)(c).

Note: RF Conducted measurements were performed with, Average Power reading.

CDMA 800

Channel	Freq Max (MHz)	Max (mW)	Max (dBm)
1013	824.70 MHz	257.0	24.1
384	836.52 MHz	239.9	23.8
777	848.31 MHz	239.9	23.8

7. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

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

7.1 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.

7.2 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

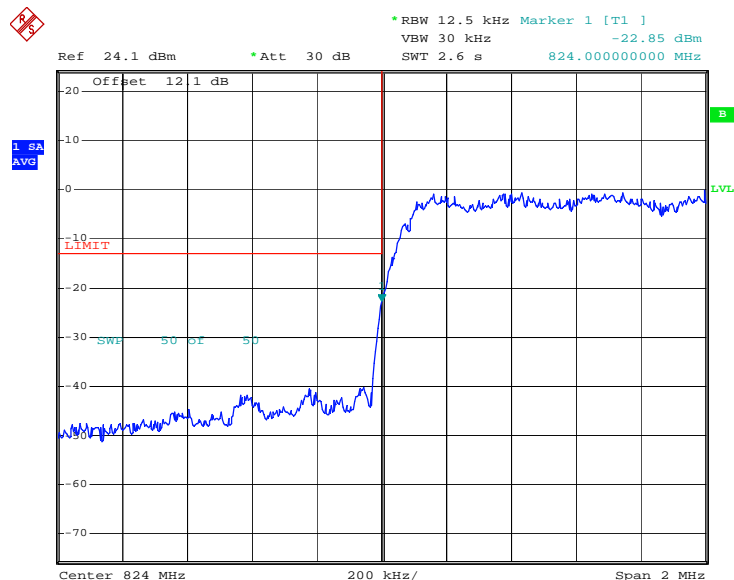
No pass/fail, these plots are used to determine the emission designators.

7.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	20-Jul-06
Temperature	23 °C
Humidity	46 %RH
Test Result	Complies with FCC Part 2.1049(c)(1), 24.238(a)(b)

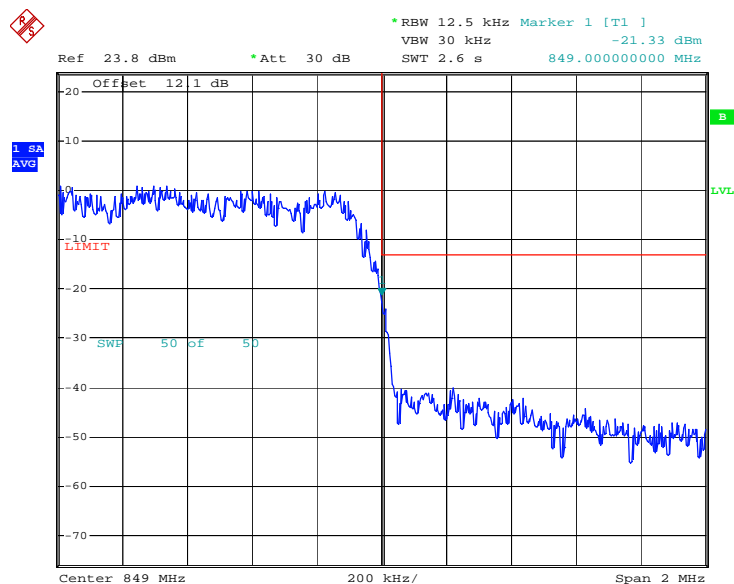
Occupied Bandwidth, Out of Band

CDMA 800 - Channel 1013 (824.70 MHz)



Date: 20.JUL.2006 17:38:00

CDMA 800 – Channel 777 (848.31 MHz)

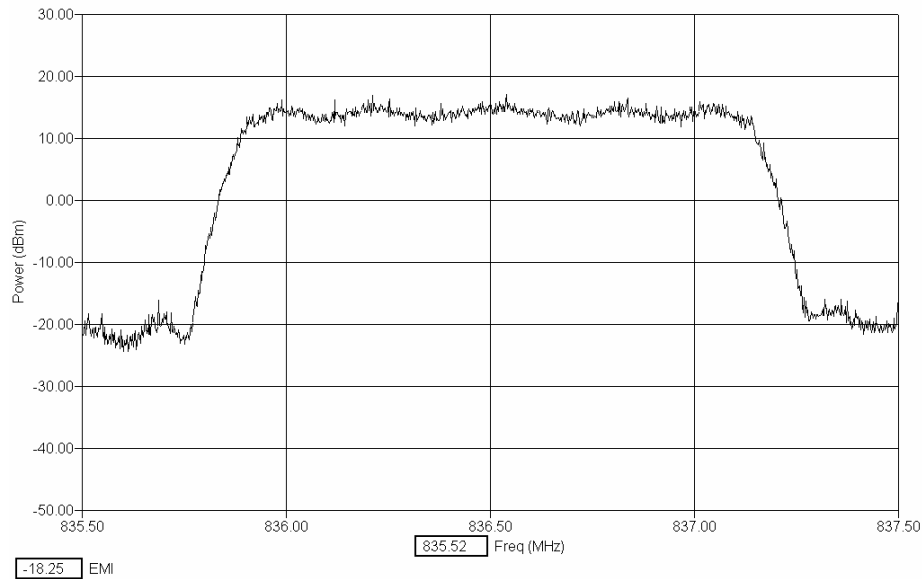


Date: 20.JUL.2006 17:40:50

Occupied Bandwidth, In Band

CDMA 800 - Channel 384

30KHz RBW/VBW



8. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Specification: FCC Part 2.1051

8.1 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.

8.2 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.

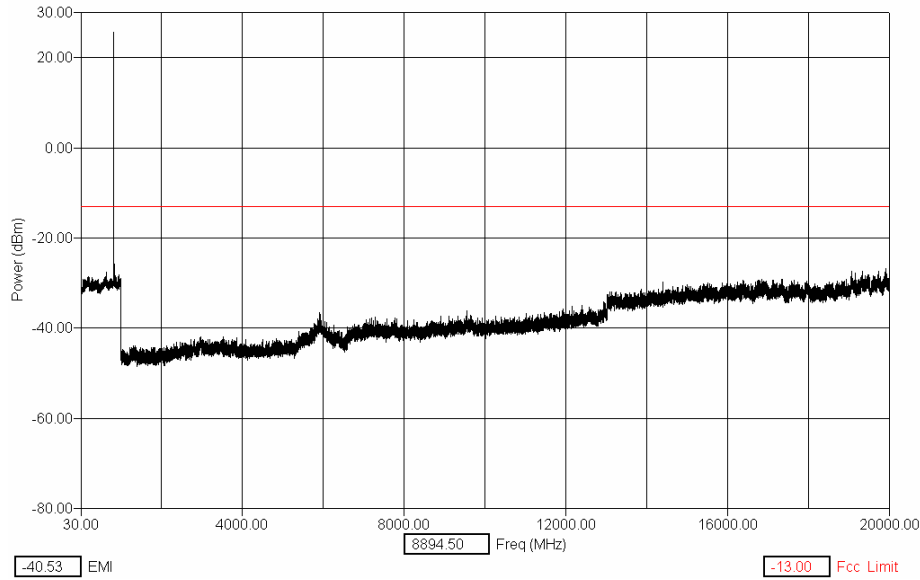
8.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	20-Jul-06
Temperature	22 °C
Humidity	44 %RH
Test Result	Complies with FCC Part 2.1051

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

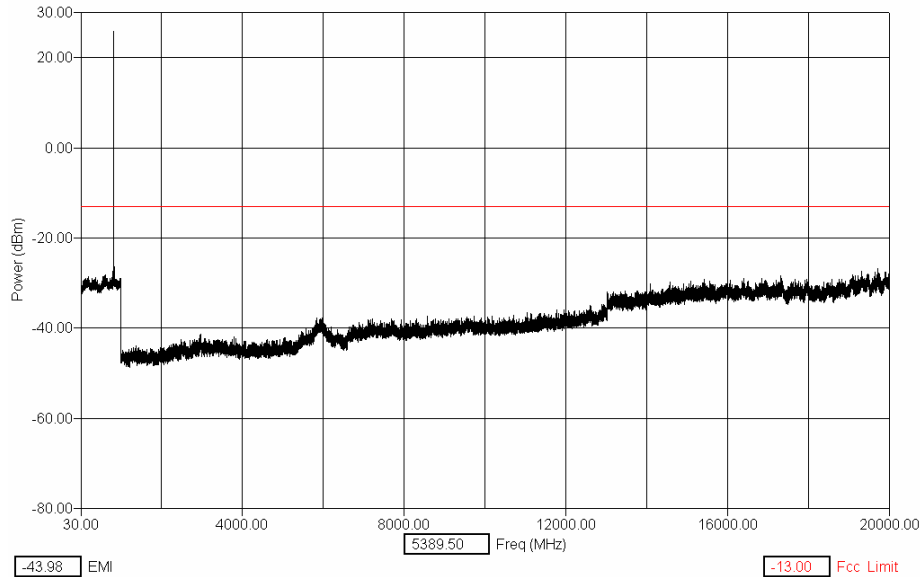
Note 2: measurements were performed with 3MHz RBW/VBW.

CDMA 800 - Channel 1013, 824.70 MHz



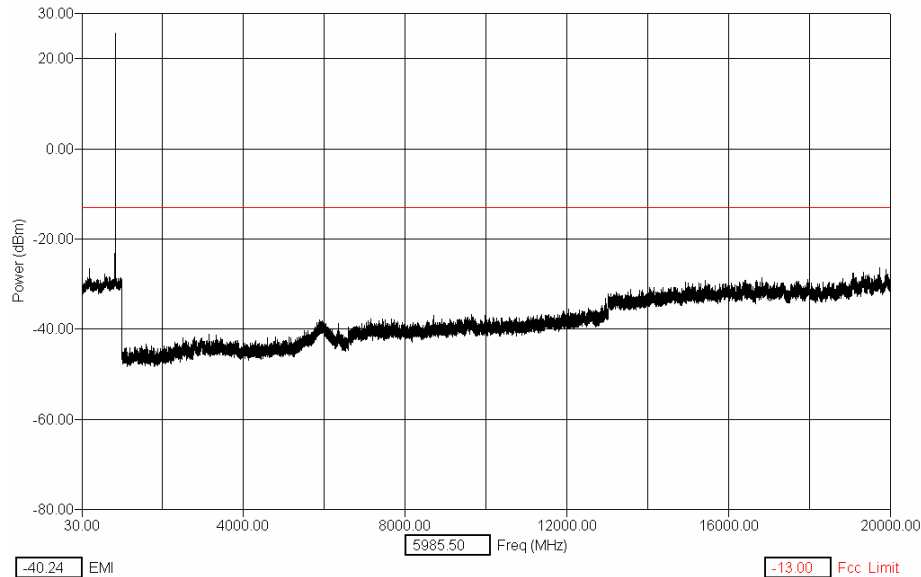
Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
1649.7	-64.7	0.4	14.67	-49.6	-13.0
2475.5	-63.4	0.6	15.46	-47.4	-13.0
3298.5	-62.8	0.8	15.98	-46.0	-13.0
4122.9	-65.7	0.9	16.09	-48.7	-13.0
4948.5	-63.9	1.1	17.03	-45.8	-13.0
5773.3	-63.8	1.2	19.98	-42.7	-13.0
6598.1	-66.2	1.2	18.06	-46.9	-13.0
7421.5	-62.6	1.3	17.98	-43.3	-13.0
8246.7	-62.8	1.4	18.97	-42.4	-13.0

CDMA 800 - Channel 384, 836.52 MHz



Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
1672.8	-65.2	0.4	14.60	-50.3	-13.0
2510.2	-64.6	0.6	15.65	-48.4	-13.0
3345.8	-62.4	0.8	16.10	-45.5	-13.0
4183.7	-65.3	0.9	16.12	-48.3	-13.0
5020.5	-65.5	1.1	17.16	-47.3	-13.0
5856.2	-64.7	1.2	21.33	-42.3	-13.0
6691.7	-66.7	1.3	17.75	-47.7	-13.0
7528.8	-62.5	1.3	18.06	-43.1	-13.0
8365.4	-64.6	1.4	19.00	-44.2	-13.0

CDMA 800 - Channel 777, 848.31 MHz



Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
1696.2	-64.3	0.4	14.59	-49.3	-13.0
2543.8	-64.2	0.6	15.53	-48.1	-13.0
3392.9	-62.9	0.8	16.05	-46.1	-13.0
4242.4	-65.7	0.9	16.35	-48.4	-13.0
5089.5	-64.2	1.1	17.26	-45.8	-13.0
5938.4	-64.8	1.2	22.09	-41.5	-13.0
6786.5	-63.6	1.3	17.96	-44.3	-13.0
7633.1	-61.5	1.3	17.98	-42.2	-13.0
8483.4	-63.8	1.4	18.53	-43.8	-13.0

9. EMISSIONS IN RECEIVER CRITICAL BAND

Specification: FCC Part 22.917(f)

9.1 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.

9.2 Pass/Fail Criteria

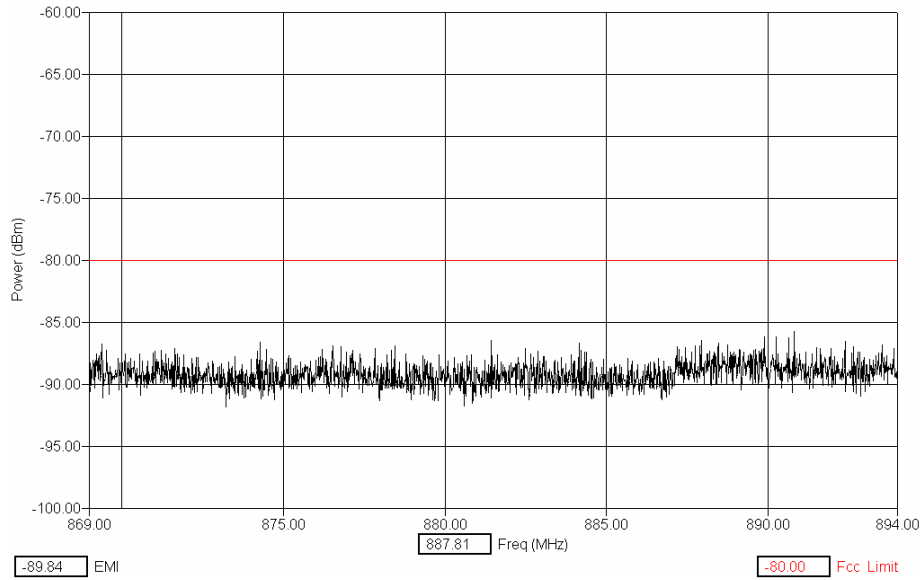
Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular	869 - 894	-80

9.3 Detailed Test Results

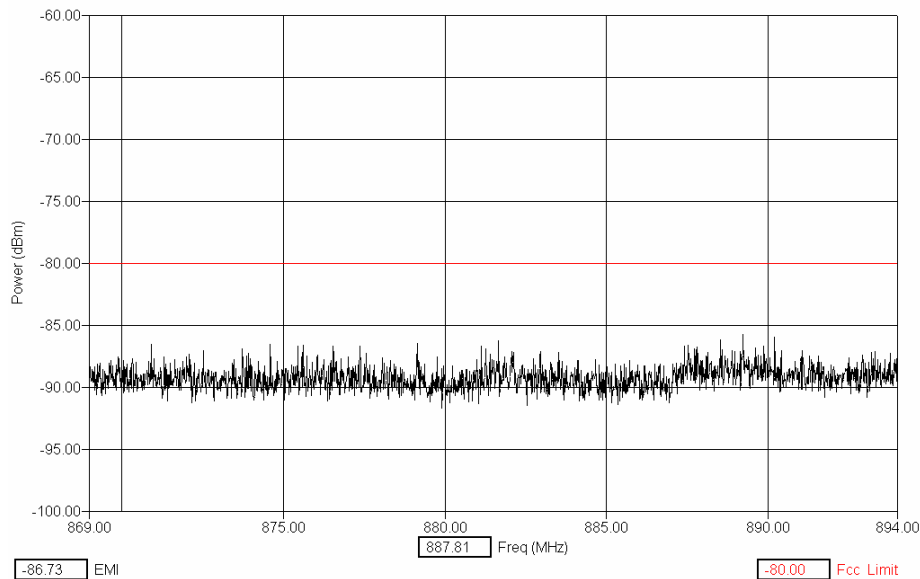
Test Technician / Engineer	Hai To
Date of Measurement	20-Jul-06
Temperature	22 °C
Humidity	44 %RH
Test Result	Complies with FCC Part 22.917(f)

Note1: Measurements were performed with 30 kHz RBW/VBW, 100ms Sweep Time.

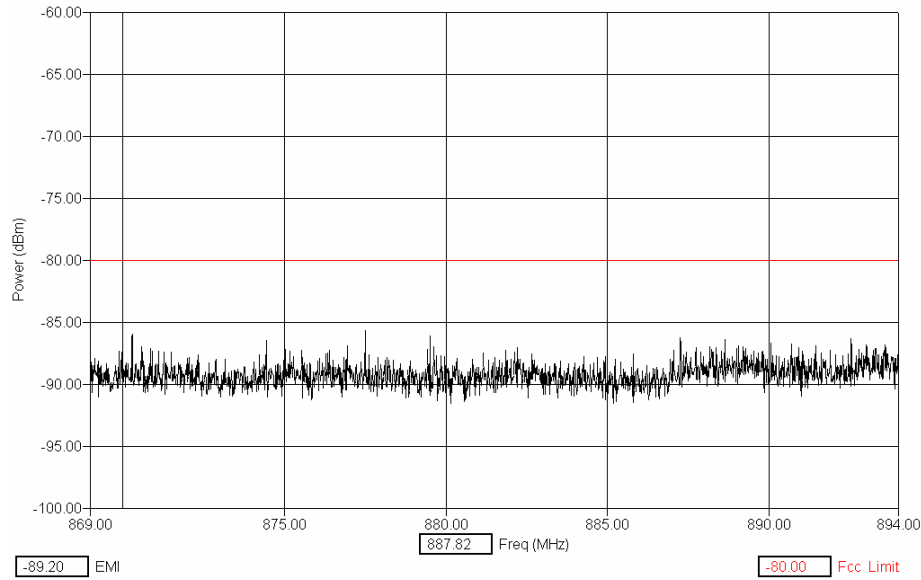
CDMA 800, Channel 1013



CDMA 800, Channel 384



CDMA 800, Channel 777



10. FREQUENCY STABILITY (TEMPERATURE VARIATION)

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

10.1 Setup

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

10.2 Pass/Fail Criteria

Not Applicable

10.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	21-24-Jul-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
	Change (Hz)
-30	38
-20	45
-10	53
0	39
10	53
20	58
30	64
40	64
50	60

11. FREQUENCY STABILITY (VOLTAGE VARIATION)

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

11.1 Setup

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

11.2 Pass/Fail Criteria

Not Applicable

11.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	20-Jul-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

% of STV	Voltage	Change (Hz)
85	3.2	41
100 (Nominal)	3.7	38
115	4.2	37