



CFR 47 Part 15 Test Report

Test Report Number: WR-1054.002

Terminal device: FCC ID: QMNRM-124 Model: 2855i Type: RM-124 HWID: 4000 SW: VR100_05w21_34.nep
(Detailed information is listed in section 4).

Originator: Cindy Trinh
Function: TCC - Dallas – EMC
Version/Status: 1.0 Approved
Location: TCC Directories
Date: February 22, 2006

Change History:

Version	Date	Status	Handled By	Comments
0.1	21-Feb-06	Draft	Cindy Trinh	
0.2	22-Feb-06	Proposal	Cindy Trinh	
0.3	22-Feb-06	Reviewed	Severson Mark	
1.0	22-Feb-06	Approved	Severson Mark	

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.
12278 Scripps Summit Dr.
San Diego, CA 92131
USA
Tel. +1 858 831 5000
Fax. +1 858 831 6500

Date and signatures:

February 22, 2006

For the contents:

Cindy Trinh
Test Engineer

Mark Severson
Technical Review



TABLE OF CONTENTS

1. GENERAL	3
1.1 QUALITY SYSTEM.....	3
1.2 OBJECTIVE	3
1.3 TEST SUMMARY.....	3
2. STANDARDS BASIS	4
3. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS	5
3.1 ABBREVIATIONS.....	5
3.2 ACRONYMS.....	5
3.3 TERMS	5
4. EQUIPMENT-UNDER-TEST (EUT)	6
4.1 DESCRIPTION OF TESTED DEVICE(S):.....	6
5. TEST EQUIPMENT LIST	7
6. IDLE MODE RADIATED EMISSIONS.....	8
6.1 SETUP.....	8
6.2 PASS/FAIL CRITERIA	8
6.3 DETAILED TEST RESULTS.....	8

© 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.

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

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 15.109.

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
Idle Mode Radiated Emissions	FCC Part 15.109	6	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 15	Code of Federal Regulations (CFR) Title 47, Part 15 – Radio Frequency Devices: Subpart B – Unintentional Radiators and Subpart C – Intentional Radiators
3	CISPR 22 / EN55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.
4	ICES-003	Digital Apparatus, Industry Canada
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
dBm - decibels per milliwatt (absolute measurement)
dB μ V - decibel per microvolt
dB μ V/m - decibel of microvolt per meter
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
EMC - Electromagnetic Compatibility
EMI - Electromagnetic Interference
EUT - Equipment under Test
GSM - Global System for Mobile communications
PCS - Personal Communications Services
RF - Radio Frequency

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, and CDMA.

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

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

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

6 (11)

Ver 1.0

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 15.109	AMPS, CDMA 800/1900, USB Data Transfer	16-Feb-06	Functional	Phone	FCC ID: QMNRM-124 Type: RM-124 HWID: 4000 SW: VR100_05w21_34.nep ESN: 02603567580
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	Battery	Type: BL-6C Other: 3.7vdc
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	Charger	Type: AC-3U
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	Headset	Type: HS-9
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	Laptop	Manufacturer: IBM Model: T40 Type: 2373 SN: 99ZVGF9
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	Data cable	Type: DKU-2 SN: JL44083821
FCC Part 15.109	AMPS, CDMA 800/1900, USB Data Transfer	N/A	N/A	AC Adapter	Manufacturer: IBM PN: 02K6543



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	04073	EMI Receiver	R&S	ESIB 26	03-Aug-06	12 months
6	02625	Base Station	R&S	CMU-200	30-Aug-06	12 months
6	02871	Biconilog Antenna	EMC Automation	3003C	08-July-06	12 months
6	04076	Horn Antenna	ETS	3117	18-Aug-06	12 months
6	02836	Turntable and Tower Controller	Sunol	FM2022 & 2846	N/A	N/A

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

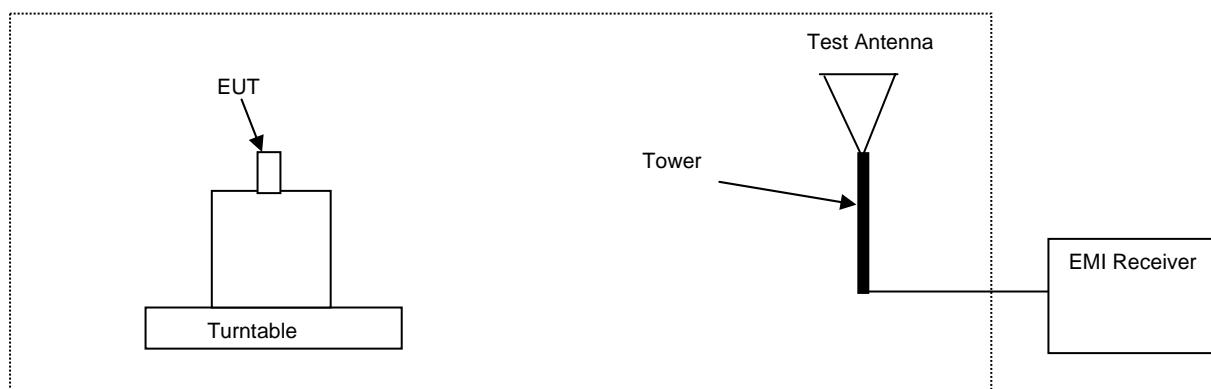
Ver 1.0

6. IDLE MODE RADIATED EMISSIONS

Specification: FCC Part 15.109

6.1 Setup

Testing was performed in accordance with 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.



6.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Class B Limit (dB μ V/m at 3m)
Cellular	30 – 88	40
Cellular	88 – 216	43.5
Cellular	216 – 960	46
Cellular	> 960 *	54

* Frequency to be investigated up to the 5th harmonic of the highest clock or frequency used

6.3 Detailed Test Results

Test Technician / Engineer	Cindy Trinh
Date of Measurement	21-Feb-06
Temperature	23 °C
Humidity	28 to 32 %RH
Test Result	Complies with FCC Part 15.109

The measurement results are obtained as described below:

$$E [\mu\text{V}/\text{m}] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

CDMA 800

USB Data Transfer

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
398.295591	37.20	72.44	42.30	-5.10	VERTICAL	PASSED
664.128657	36.60	67.61	37.10	-0.50	VERTICAL	PASSED
895.291583	33.10	45.19	28.60	4.50	VERTICAL	PASSED
931.261723	36.00	63.10	31.80	4.20	VERTICAL	PASSED
959.117836	31.30	36.73	26.50	4.80	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
1001.500000	47.60	239.88	42.90	4.70	VERTICAL	PASSED
1201.402806	42.00	125.89	35.30	6.70	VERTICAL	PASSED
1601.702405	45.40	186.21	35.60	9.80	HORIZONTAL	PASSED
2002.504008	48.30	260.02	36.40	11.90	VERTICAL	PASSED

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

AMPS

USB Data Transfer

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
399.898798	34.80	54.95	39.80	-5.00	VERTICAL	PASSED
443.788577	25.10	17.99	29.20	-4.10	VERTICAL	PASSED
828.355311	27.00	22.39	23.40	3.60	HORIZONTAL	PASSED
907.115631	30.80	34.67	26.40	4.40	VERTICAL	PASSED
933.067735	38.20	81.28	34.00	4.20	VERTICAL	PASSED

Test & Certification Center (TCC) - Dallas
DTXC 1280-EN-1.0

FCC ID: QMNRM-124
Test Report #: WR-1054.002
February 22, 2006



Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

CDMA 1900

USB Data Transfer

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
266.132064	31.00	35.48	40.40	-9.40	VERTICAL	PASSED
919.339679	32.70	43.15	28.60	4.10	VERTICAL	PASSED
932.065731	39.80	97.72	35.60	4.20	VERTICAL	PASSED
943.385772	34.10	50.70	29.90	4.20	VERTICAL	PASSED
946.591784	33.00	44.67	28.70	4.30	VERTICAL	PASSED
952.303808	32.30	41.21	27.80	4.50	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
1001.000000	47.00	223.87	42.30	4.70	VERTICAL	PASSED
1201.402806	42.40	131.83	35.70	6.70	VERTICAL	PASSED
1602.202405	46.30	206.54	36.50	9.80	HORIZONTAL	PASSED
2002.004008	44.80	173.78	32.90	11.90	VERTICAL	PASSED
8352.205411	42.10	127.35	25.60	16.50	VERTICAL	PASSED
9733.462926	39.90	98.86	21.60	18.30	HORIZONTAL	PASSED