CFR 47 Part 2, 22, and 24 Test Report

Test Report Number: WR 833.001a

Terminal device: FCC ID: QMNRM-125 Model: 6165i Type: RM125 HW: 2001 SW: AZ100_05w21_12.nep (Detailed information is listed in section 4).

Originator:	Cindy Trinh
Function:	TCC - Dallas – EMC
Version/Status:	2.0 Approved
Location:	TCC Directories
Date:	21-Oct-05

Change History:

Version	*Date*	*Status*	*Handled By*	*Comments*
0.1	9-Sep-05	Draft	Cindy Trinh	
0.2	9-Sep-05	Proposal	Cindy Trinh	
0.3	9-Sep-05	Reviewed	Severson Mark	
1.0	9-Sep-05	Approved	Severson Mark	
2.0	21-Oct-05	Approved	Walton Nerina	Updated HW version and report template

Testing laboratory:

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

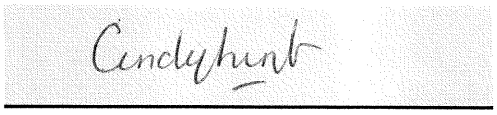
Tel. 972-894-5000

Client:

Nokia Inc.
San Diego
2278 Scripps Summit Dr.
CA 92131
USA
Tel. +1858 831 5000
Fax. +1 858 831 6500

Date and signatures: **October 21, 2005**

For the contents:



Cindy Trinh
Test Engineer

Severson Mark
Technical Review

TABLE OF CONTENTS

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 661.

1.2 List of General Information Required for Certification

This list is in accordance with FCC Rules and Regulations, CFR 47, Part 2, and to 22H, 24E, Confidentiality.

1.2.1 Sub-part 2.1033(c)(1)

Name and Address of Applicant:

Nokia Inc.
San Diego
12278 Scripps Summit Dr.
San Diego
CA 92131
USA
Tel. +1858 831 5000
Fax. +1 858 831 6500

Manufacturer:

Nokia Inc.
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1.2.2 Sub-part 2.1033(c)(2)

FCC ID: QMNRM-125

Model No: 6165i

1.2.3 Sub-part 2.1033(c)(3)

Instruction Manual(s): Refer to attached EXHIBITS

1.2.4 Sub-part 2.1033(c)(4)

Type of Emission: 40K0F8W / 40K0F1D / 1M25F9W

1.2.5 Sub-part 2.1033(c)(5)

Frequency Range, MHz: 824.04MHz – 848.97MHz

1851.25MHz – 1908.75MHz

1.2.6 Sub-part 2.1033(c)(6)

Power Rating, Watts: 0.428W AMPS

0.394W CDMA Cellular

0.287W CDMA PCS

☐ Switchable ☒ Variable ☐ N/A

FCC Grant Note: BC- The output power is continuously variable from the value listed in this entry to 5%-10% of the value listed.

1.2.7 Sub-part 2.1033(c)(7)

Maximum Power Rating, Watts: 0.428W

1.2.8 Sub-part 2.1033(c)(8)

Voltages & Currents in all elements in final R.F. Stage, including final transistor or solid-state device:
Collector Current, A = 0.116
Collector Voltage, Vdc = 3.7vdc
Supply Voltage, Vdc = 3.7vdc

1.2.9 Sub-part 2.1033(c)(9)

Tune-up Procedure: Refer to attached EXHIBITS

1.2.10 Sub-part 2.1033(c)(10)

Circuit Diagram/Circuit Description:
Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.
Refer to attached EXHIBITS

1.2.11 Sub-part 2.1033(c)(11)

Label Information: Refer to attached EXHIBITS

1.2.12 Sub-part 2.1033(c)(12)

Photographs: Refer to attached EXHIBITS

1.2.13 Sub-part 2.1033(c)(13)

Digital Modulation Description: N/A

1.2.14 Sub-part 2.1033(c)(14)

Test and Measurement Data: FOLLOWS

1.3 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, 2.1053, Part 22, and Part 24.

1.4 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 (Radiated)	FCC Part 22.913(a) / 24.232(b)	6	Complies
Field Strength of Spurious Radiation	FCC Part 2.1053	7	Not Tested

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	FCC: CFR 47 Part 24	Code of Federal Regulations (CFR) Title 47, Part 24 – Personal Communications Services: Subpart E – Broadband PCS
5	RSS-128	800 MHz Dual-Mode TDMA 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.

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	AMPS CDMA 800 CDMA 1900	6-Sep-05	Functional	Phone	FCC ID: QMNRM-125 Type: RM-125 HW: 2001 SW: AZ100_05w21_12.nep ESN: 033/10858283
FCC Part 2.1046	AMPS CDMA 800 CDMA 1900	6-Sep-05	N/A	Battery	Type: BL-6C Other: 3.7Vdc
FCC Part 2.1046	AMPS CDMA 800 CDMA 1900	6-Sep-05	N/A	Headset	Type: HS-9
FCC Part 2.1046	AMPS CDMA 800 CDMA 1900	6-Sep-05	N/A	Charger	Type: AC-3U

4.2 Photograph of Tested Device(s):

See 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.

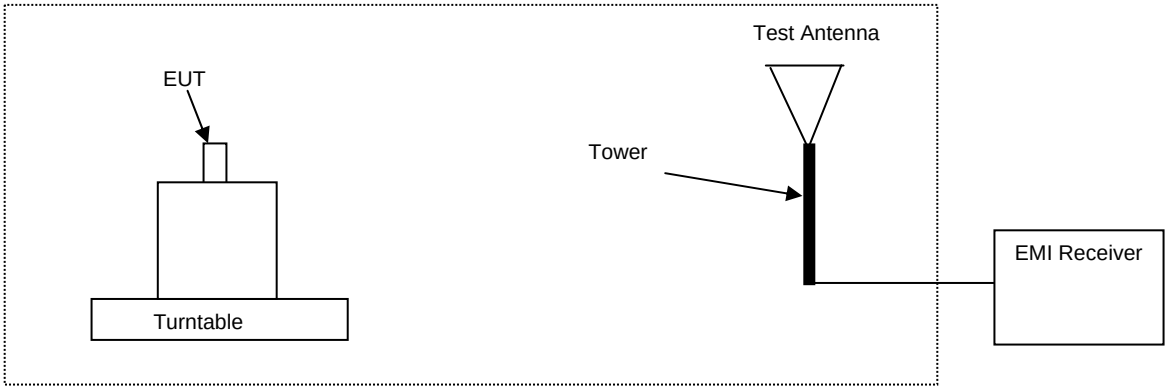
Section of Report	NMP#	Test Equipment	Mfr. #	Model #	Calibration Due Date	Calibration Interval
6	02661	EMI Receiver	Agilent	8546A / 85460A	03-Jun-06	12 months
6	04064	Base Station	R&S	CMU200	21-July-06	12 months
6	02679	Spectrum Analyzer	Agilent	E7405A	01-Jun-06	12 months
6	01472	Biconilog Antenna	ETS	3142B	16-May-06	12 months
6	00064	Horn Antenna	EMCO	3115	27-Apr-06	12 months
6	03960	Horn Antenna	EMCO	3116	06-May-06	12 months
6	02846	Turntable and Tower Controller	Sunol	FM2022 & 2846	NCR	N/A

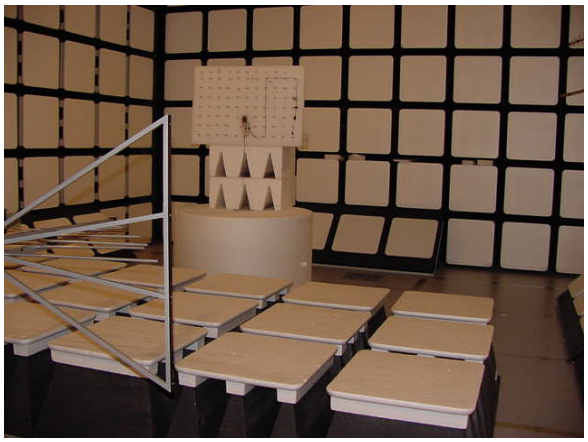
6. RF POWER OUTPUT (RADIATED)

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

6.1 Setup

ERP values are calculated using the substitution method in accordance with TIA 603. The phone is set to transmit maximum power and the maximum measured level is recorded. A signal generator iss then used to drive a substitute transmit antenna until the equivalent level is measured. The power into the transmit antenna is then measured.





6.2 Pass/Fail Criteria

Band	FCC Limit (dBm)
Cellular	38.5 (EDRP)
PCS	33.0 (EIRP)

6.3 Detailed Test Results

Test Technician / Engineer	Cindy Trinh
Date of Measurement	9-Sep-05
Temperature	23 to 24 °C
Humidity	41 to 46 %RH
Test Result	Complies with FCC Part 22.913(a) and FCC Part 24.232(b)

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

AMPS, RM-125, Headset HS-9, charger AC-3, BL-6C battery

Freq (MHz)	EDRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
824.04	26.22	131.00	150.00	V
836.52	26.31	125.00	149.00	V
848.97	26.30	126.00	150.00	V

Freq (MHz)	EDRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
824.04	22.83	220.00	150.00	H
836.52	23.53	220.00	149.00	H
848.97	23.22	214.00	150.00	H

CDMA 800, RM-125, Headset HS-9, charger AC-3, BL-6C battery

Freq (MHz)	EDRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
824.70	25.63	138.00	150.00	V
836.52	25.95	127.00	150.00	V
848.31	25.33	125.00	150.00	V

Freq (MHz)	EDRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
824.70	20.90	331.00	150.00	H
836.52	21.83	207.00	150.00	H
848.31	22.26	191.00	149.00	H

CDMA 1900, RM-125, Headset HS-9, charger AC-3, BL-6C battery

Freq (MHz)	EIRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
1851.25	24.48	120.00	149.00	V
1880.00	24.46	131.00	150.00	V
1908.75	23.63	143.00	150.00	V

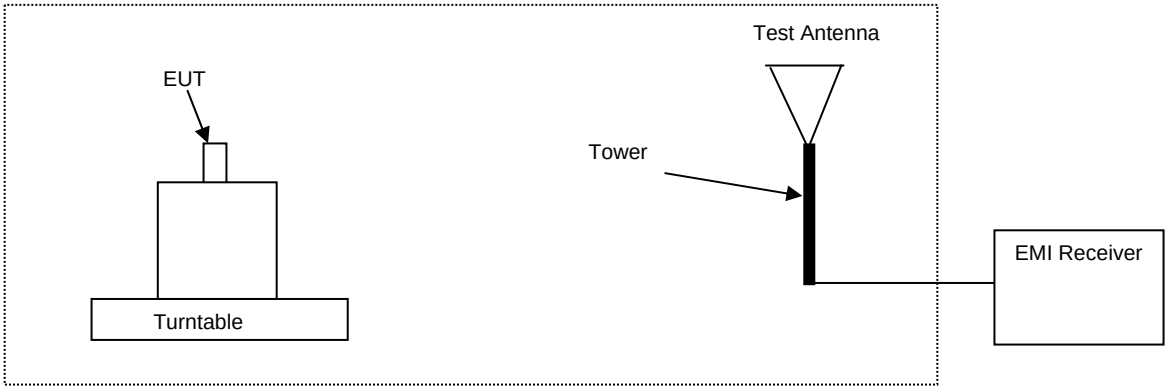
Freq (MHz)	EIRP (dBm)	Ttbl Agl (deg)	Twr Ht (cm)	Pol
1851.25	24.58	38.00	150.00	H
1880.00	24.41	38.00	150.00	H
1908.75	24.04	38.00	150.00	H

7. FIELD STRENGTH OF SPURIOUS RADIATION

Specification: FCC Part 2.1053

7.1 Setup

Test equipment set-up.



7.2 Pass/Fail Criteria

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

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

Substitution method according to ANSI/TIA/EIA 603-1 was used for final measurements.

7.3 Detailed Test Results

Not Tested.