



## CFR 47 Part 2, 22, and 24 Test Report

Test Report Number: WR-1151.101

**Terminal device:** FCC ID: QMNRM-155 Model: 2365i Type: RM-155 HW: 5001 SW: PR100b11.nep  
(Detailed information is listed in section 4).

Originator: Cindy Trinh  
Function: TCC - Dallas – EMC  
Version/Status: 2.0 Approved  
Location: TCC Directories  
Date: 11-Jan-07

### Change History:

| Version | Date      | Status   | Handled By        | Comments                          |
|---------|-----------|----------|-------------------|-----------------------------------|
| 0.1     | 9-Oct-06  | Draft    | Cindy Trinh       |                                   |
| 0.2     | 9-Oct-06  | Proposal | Cindy Trinh       |                                   |
| 0.3     | 9-Oct-06  | Reviewed | Hai To            |                                   |
| 1.0     | 9-Oct-06  | Approved | Hai To            |                                   |
| 2.0     | 11-Jan-07 | Approved | Andreas Gillmeier | Corrected HW ID from 6001 to 5001 |

**Testing laboratory:**

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**Date and signatures:**

11-Jan-07

For the contents:

A handwritten signature in black ink, appearing to read 'C. Trinh' or 'Cindy Trinh'. Below the signature, the text 'IN VIEW OF HAI TO' is handwritten in a cursive script.

Cindy Trinh  
Test Engineer

Hai To  
Technical Review



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DTX15927-EN-3.0

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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 4735.

### 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.

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

Sub-part 2.1033(c)(2)

FCC ID: QMNRM-155

Model No.: 2365i

Sub-part 2.1033(c)(3)

Instruction Manual(s): Refer to attached EXHIBITS

Sub-part 2.1033(c)(4)

Type of Emission: 1M25F9W, 1M00FXD, 1M00GXD

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Sub-part 2.1033(c)(5)

Frequency Range, MHz: 824.70-848.31 MHz

1851.25-1908.75 MHz

2402.00-2480.00 MHz

Sub-part 2.1033(c)(6)

Power Rating, Watts: 0.251 W CDMA Cellular

0.513 W 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.

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Sub-part 2.1033(c)(7)

Maximum Power Rating, Watts: 0.513 W

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 = 0.139  
Collector Voltage, Vdc = 3.7  
Supply Voltage, Vdc = 3.7

Sub-part 2.1033(c)(9)

Tune-up Procedure: Refer to attached EXHIBITS

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

Sub-part 2.1033(c)(11)

Label Information: Refer to attached EXHIBITS

Sub-part 2.1033(c)(12)

Photographs: Refer to attached EXHIBITS

Sub-part 2.1033(c)(13)

Digital Modulation Description: N/A

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), 2.1046, 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                 | Test Not Performed                      |
| Field Strength of Spurious Radiation | FCC Part 2.1053                | 7                 | 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    | 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-129              | 800 MHz Dual-Mode CDMA Cellular Telephones   |
| 7    | RSS-132              | 800 MHz Cellular Telephones Employing New Technologies   |
| 8    | RSS-133              | 2 GHz Personal Communications Services, Industry Canada  |
| 9    | RSS-212              | Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)  |
| 10   | 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.

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### 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.

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## 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 2.1053 | CDMA 800/1900     | 5-Oct-06        | Functional          | Phone   | FCC ID: QMNRM-155<br>Type: RM-155<br>HW: 5001<br>SW: PR100b11.nep<br>ESN: 02601183055 |
| N/A             | N/A               | N/A             | N/A                 | Battery | Type: BL-5B<br>Other: 3.7 Vdc   |
| N/A             | N/A               | N/A             | N/A                 | Headset | Type: HS-9  |
| N/A             | N/A               | N/A             | N/A                 | Charger | Type: AC-3U   |

### 4.2. Photograph of Tested Device(s):

Refer to attached EXHIBITS

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## 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 |
|-------------------|-------|--------------------------------|-----------------|---------------|----------------------|----------------------|
| 7                 | 04073 | EMI Receiver                   | Rhode & Schwarz | ESIB 26       | 03-Nov-06            | 12 months            |
| 7                 | 02625 | Base Station                   | Rhode & Schwarz | CMU-200       | 30-Nov-06            | 12 months            |
| 7                 | 02871 | Biconilog Antenna              | EMC Automation  | 3003C         | 08-Nov-06            | 12 months            |
| 7                 | 04076 | Horn Antenna                   | ETS             | 3117          | 18-Nov-06            | 12 months            |
| 7                 | 02836 | Turntable and Tower Controller | Sunol           | FM2022 & 2846 | N/A                  | N/A                  |

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## 6. RF POWER OUTPUT (RADIATED)

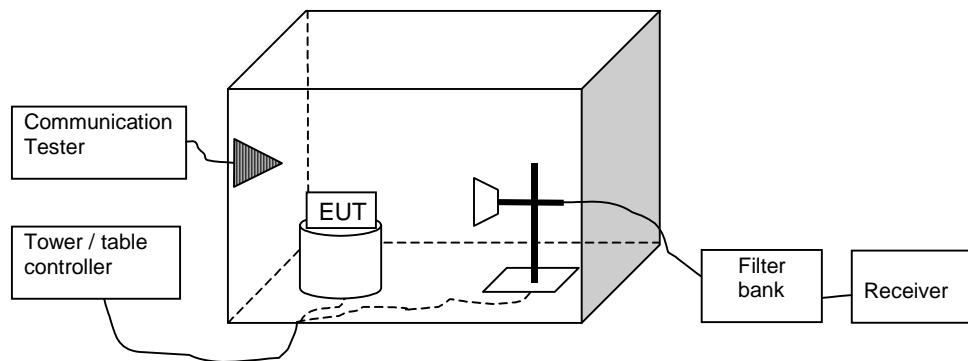
*Specification: FCC Part 22.913(a), 24.232(b)(c)*

**Test Not Performed**

## 7. FIELD STRENGTH OF SPURIOUS RADIATION

*Specification: FCC Part 2.1053*

### 7.1. Setup



### 7.2. Test method and limit

The measurement is made according to TIA-603-B-2002 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive polarizations.

The emissions less than 20 dB below the permissible value are reported.

The substitution method is used. Substitution values at each frequencies are measured beforehand and saved to the test software.

The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$$

Where  $A_{SUBST}$  is the final substitution correction including receive antenna gain.  $P_{SUBST\_TX}$  is signal generator level,  $P_{SUBST\_RX}$  is receiver level,  $L_{SUBST\_CABLES}$  is cable losses including both TX and RX cables and  $G_{SUBST\_TX\_ANT}$  is substitution antenna gain.

The measurement results are obtained as described below:

$$P [dBm] = P_{MEAS} + A_{TOT}$$

Where  $P_{MEAS}$  is receiver reading in dBm and  $A_{TOT}$  is total correction factor including cable loss, preamplifier gain and substitution correction ( $A_{TOT} = L_{CABLES} - G_{PREAMP} + A_{SUBST}$ ).

### 7.3. Pass/Fail Criteria

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

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

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

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## 7.4. Detailed Test Results

|                                   |                               |
|-----------------------------------|-------------------------------|
| <b>Test Technician / Engineer</b> | Cindy Trinh                   |
| <b>Date of Measurement</b>        | 5-Oct-06                      |
| <b>Temperature</b>                | 23 to 24 °C                   |
| <b>Humidity</b>                   | 45 to 56 %RH                  |
| <b>Test Result</b>                | Complies with FCC Part 2.1053 |

Note: 30MHz to 18GHz were performed with 1MHz RBW/VBW.

### CDMA 800, Channel 384

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|--------|
| 1672.44         | -46.40  | 0.02291      | -65.20                  | 18.80                 | VERTICAL     | Passed |
| 1680.96         | -50.50  | 0.00891      | -68.10                  | 17.60                 | HORIZONTAL   | Passed |
| 2510.32         | -33.40  | 0.45709      | -52.10                  | 18.70                 | VERTICAL     | Passed |
| 3345.19         | -39.80  | 0.10471      | -55.00                  | 15.20                 | HORIZONTAL   | Passed |

### CDMA 1900, Channel 600

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|--------|
| 3759.02         | -32.50  | 0.56234      | -50.80                  | 18.30                 | VERTICAL     | Passed |
| 5639.28         | -29.30  | 1.17490      | -50.00                  | 20.70                 | HORIZONTAL   | Passed |
| 5649.31         | -50.30  | 0.00933      | -71.20                  | 20.90                 | VERTICAL     | Passed |
| 7519.54         | -44.90  | 0.03236      | -68.40                  | 23.50                 | VERTICAL     | Passed |