

Test & Certification Center (TCC) - Dallas  
DTX-1276-EN-1.0

Test Report #: WR-1045.002  
February 27, 2006

Accredited Laboratory  
Certificate Number: 1819-01

Ver 2.0

## Bluetooth Test Report

Test Report Number: WR-1045.002

**Terminal device:**

FCC ID: QMNRM-66 Model: 6265 Type: RM-66 HWID: 6000 SW: HL100V0400.nep  
(Detailed information is listed in section 4).

Originator: Cindy Trinh  
Function: TCC - Dallas – EMC  
Version/Status: Approved  
Location: TCC Directories  
Date: February 27, 2006

**Change History:**

| <b>Version</b> | <b>Date</b> | <b>Status</b> | <b>Handled By</b> | <b>Comments</b>        |
|----------------|-------------|---------------|-------------------|------------------------|
| 0.1            | 16-Feb-06   | Draft         | Cindy Trinh       |                        |
| 0.2            | 16-Feb-06   | Proposal      | Cindy Trinh       |                        |
| 0.3            | 16-Feb-06   | Review        | Mark Severson     |                        |
| 1.0            | 16-Feb-06   | Approved      | Mark Severson     |                        |
| 2.0            | 27-Feb-06   | Approved      | Mark Severson     | Corrected Model Number |

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**Date and signatures:**

February 27, 2006

For the contents:

Cindy Trinh  
Test Engineer

Mark Severson  
Technical Review

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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 15.207 and 15.247.

### 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     | CFR 47     | RSS-210       | Section of Report | Complies / Does not comply / Not Tested |
|--------------------|------------|---------------|-------------------|---|
| Radiated Emissions | 15.247 (c) | 6.2.2 (o), e1 | 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 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-210              | Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)  |
| 6    | RSS-212              | Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)  |
| 7    | 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 $\mu$ V - decibel per microvolt

dB $\mu$ V/m - decibel of microvolt per meter

GHz - gigahertz or 1000000000 hertz

kHz - kilohertz or 1000 hertz

MHz - megahertz or 1000000 hertz

ms - millisecond or 0.001 second

$\mu$ s - microsecond or 0.000001 second

#### 3.2 Acronyms

BT - Bluetooth

EMC - Electromagnetic Compatibility

EMI - Electromagnetic Interference

EUT - Equipment under Test

PRBS - Pseudo Random Bit Sequence

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, TDMA, and CDMA.

## 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 15.247(c) | BT                | 15-Feb-06       | Functional          | Phone   | ESN: 02601681657<br>FCC ID: QMNRM-66<br>Type: RM-66<br>HWID: 6000<br>SW: HL100V0400.nep |
| FCC Part 15.247(c) | BT                | 15-Feb-06       | N/A                 | Battery | Type: BL-6C<br>Other: 3.7 Vdc   |
| FCC Part 15.247(c) | BT                | 15-Feb-06       | N/A                 | Charger | Type: AC-3U   |
| FCC Part 15.247(c) | BT                | 15-Feb-06       | N/A                 | Headset | Type: HS-3  |
| FCC Part 15.247(c) | BT                | 15-Feb-06       | N/A                 | MiniSD  | Type: SD-S128T  |

## 5. TEST EQUIPMENT LIST

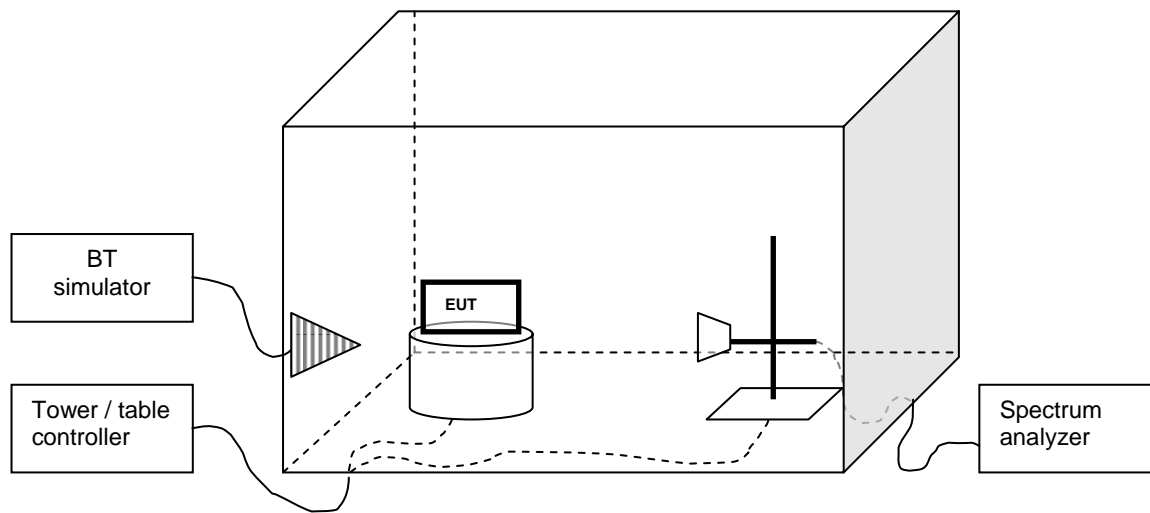
The listing below indicates the test equipment utilized for the test (s). Calibration interval on all items listed can be obtained from the Engineering Services Group within NMP, Product Creation - Dallas. Where relevant, measuring equipment is subjected to in-service checks between testing. TCC - Dallas 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                   | R&S            | ESIB 26       | 03-Aug-06            | 12 months            |
| 7                 | 02625 | Base Station                   | R&S            | CMU-200       | 30-Aug-06            | 12 months            |
| 7                 | 02871 | Biconilog Antenna              | EMC Automation | 3003C         | 08-July-06           | 12 months            |
| 7                 | 04076 | Horn Antenna                   | ETS            | 3117          | 18-Aug-06            | 12 months            |
| 7                 | 02836 | Turntable and Tower Controller | Sunol          | FM2022 & 2846 | N/A                  | N/A                  |

## 6. EUT TEST SETUPS

For each test the EUT was exercised to find out the worst case of operation modes and device configuration.

### 6.1 EUT test set-up (radiated measurement)



## 7. RADIATED EMISSIONS

**Specification: FCC Part 15.247(c)(1); RSS-210 6.2.2(o), e1**

### 7.1 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.

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210 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 antenna polarizations.

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

The measurement results are obtained as described below:

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

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



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## 7.2 Test Results

|                            |              |
|----------------------------|--------------|
| <b>Test Operator</b>       | Cindy Trinh  |
| <b>Date of Measurement</b> | 16-Feb-06    |
| <b>Temperature</b>         | 23 to 24 °C  |
| <b>Humidity</b>            | 24 to 28 %RH |
| <b>Test Result</b>         | Complies     |

## 7.3 EUT operation mode

|                           |  |
|---------------------------|--|
| <b>EUT operation mode</b> | Connected, DH5, Static PRBS                |
| <b>EUT channel</b>        | 0 (2402 MHz), 40 (2442 MHz), 78 (2480 MHz) |
| <b>EUT TX power level</b> | Nominal                                    |

## 7.4 Pass/Fail Criteria

| Band | Frequency Range (MHz) | FCC Class B Limit (dBµV/m at 3m) | Detector |
|------|-----------------------|----------------------------------|----------|
| BT   | 30 – 88               | 40                               | QP       |
| BT   | 88 – 216              | 43.5                             | QP       |
| BT   | 216 – 960             | 46                               | QP       |
| BT   | 960 – 1000            | 54                               | QP       |
| BT   | > 1000                | 74.0/ 54.0                       | PK/ AV   |

## 7.5 Results

### Average (RBW: 1 MHz) Channel 0

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4804.000000     | 39.20      | 91.20    | 28.40                  | 10.80                 | VERTICAL     | PASSED |
| 7206.000000     | 39.80      | 97.72    | 24.70                  | 15.10                 | VERTICAL     | PASSED |

### Average (RBW: 1 MHz) Channel 40

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 2335.871743     | 37.80      | 77.62    | 25.00                  | 12.80                 | VERTICAL     | PASSED |
| 2830.209419     | 40.80      | 109.65   | 24.90                  | 15.90                 | HORIZONTAL   | PASSED |
| 4884.267535     | 38.50      | 84.14    | 27.60                  | 10.90                 | VERTICAL     | PASSED |
| 7222.950902     | 38.10      | 80.35    | 22.80                  | 15.30                 | VERTICAL     | PASSED |
| 11625.256513    | 42.90      | 139.64   | 20.70                  | 22.20                 | HORIZONTAL   | PASSED |
| 13322.145291    | 42.30      | 130.32   | 17.20                  | 25.10                 | VERTICAL     | PASSED |
| 15377.763527    | 44.00      | 158.49   | 18.20                  | 25.80                 | HORIZONTAL   | PASSED |
| 15725.954910    | 45.30      | 184.08   | 18.90                  | 26.40                 | VERTICAL     | PASSED |
| 16021.050100    | 44.80      | 173.78   | 18.00                  | 26.80                 | HORIZONTAL   | PASSED |
| 17956.911824    | 47.30      | 231.74   | 16.70                  | 30.60                 | HORIZONTAL   | PASSED |

### Average (RBW: 1 MHz) Channel 78

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4960.000000     | 39.20      | 91.20    | 28.10                  | 11.10                 | VERTICAL     | PASSED |
| 7440.000000     | 38.70      | 86.10    | 23.20                  | 15.50                 | VERTICAL     | PASSED |