

# MPE Test Report

*of*

## WLAN 802.11g Mini-PCI Module

( tested with acer Notebook Computer ZI5)

*Model*

### RM8

**(Brand: Wistron NeWeb)**

*Applied by:*

Wistron NeWeb Corporation  
No. 10-1, Li-hsin Road I,  
Science-based Industrial Park Hsinchu 300,  
Taiwan, R. O. C.



*Test Performed by:*

### International Standards Laboratory

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**Report Number: 04LR012MPE**

**Test Date: 2004/02/22**

HC LAB:NVLAP:200234-0;VCCI: R-341,C-354;NEMKO:ELA 113a,113c;BSMI:SL2-IN-E-0037;SL2-R1-E-0037;CNLA:1178  
LT LAB:NVLAP:200234-0;VCCI: R-1435,C-1440;NEMKO:ELA 113b,113d;BSMI:SL2-IN-E-0013;CNLA:0997

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## 1. . General

### 1.1 Certification of Accuracy of Test Data

The test results contained in this report accurately represent the measurements of the Electrical Field characteristics and the energy generated by sample equipment under test at the time of the test.

**Equipment Tested**      WLAN 802.11g Mini-PCI Module  
Model: RM8  
Applied by Wistron NeWeb Corp.

**Sample received Date:** 2004/02/16

**Final test Date :**            2004/02/22

**Test Site:**                    Chamber 02, Conduction 02

**Test Engineer:**              Jerry Chiou

The results show that the sample equipment tested as described in this report is in compliance with the FCC Section 15.247(b)(5) & 1.1307(b)(1) MPE.

Approve & Signature

  
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Eddy Hsiung/Director

Test results given in this report apply only to the specific sample(s) tested under stated test conditions. This report shall not be reproduced other than in full without the explicit written consent of ISL. This report totally contains 8 pages, including 1 cover page , 1 contents page, and 6 pages for the test description. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

This test data shown below is traceable to NIST or national or international standard. International Standards Laboratory certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

## 2. Description of Equipment Under Test

### EUT

|                            |                                                                      |
|----------------------------|----------------------------------------------------------------------|
| Description:               | WLAN 802.11g Mini-PCI Module                                         |
| Model No.:                 | RM8                                                                  |
| FCC ID:                    | NKRRM8                                                               |
| Brand:                     | Wistron NeWeb                                                        |
| Frequency Range 802.11b/g: | 2400-2483.5 MHz                                                      |
| Support channel:           |                                                                      |
| 802.11b/g                  | 11 Channels                                                          |
| Modulation Skill:          |                                                                      |
| 802.11b                    | DBPSK(1Mbps), DQPSK(2Mbps),<br>CCK(5.5/11Mbps)                       |
| 802.11g                    | OFDM (6M - 54Mbps)                                                   |
| Antennas Type:             | PIFA Type in Meta<br>made by FOXCONN Corp.                           |
| Antenna Connected:         | Connected to RF connector on the PCB of the<br>802.11g WLAN Adapter. |
| Antenna peak Gain:         |                                                                      |
| Main antenna               | 4 dBi                                                                |
| Aux antenna                | 2.82 dBi                                                             |
| Power Type of LAN module:  | 3.3V DC from Notebook PC                                             |

The channel and the operation frequency of 802.11b and 802.11g is listed below:

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 01      | 2412           | 07      | 2442           |
| 02      | 2417           | 08      | 2447           |
| 03      | 2422           | 09      | 2452           |
| 04      | 2427           | 10      | 2457           |
| 05      | 2432           | 11      | 2462           |
| 06      | 2437           |         |                |

The EUT had been tested and granted, the IC ID is 4441A-RM8, please refer to ISL report 03LR026FC. For a class II change, the EUT is now using a new set of antennas, and tested with a new Notebook PC (brand: acer, model: ZI5).

During the test, the EUT was tested as a modular device of a notebook PC using a PCMCIA extender board to extend the EUT outside the notebook PC enclosure. The EUT was then connected to a set of antennas via its transmit and receive connectors.

## 2.1 General Test Conditions

1. During the test, the EUT was set in continuously transmitting mode with a duty cycle of 100%.
2. The channel 1, 7, 11 of 802.11b/g of EUT were all tested.

### 3. RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)]

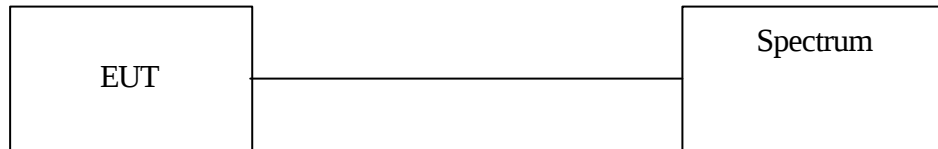
#### 3.1 Applied Standards

**FCC PART 1.1307, 1.1310, 2.1091, 2.1093 RF EXPOSURE**

#### 3.2 Test Procedure

The Transmitter output of EUT was connected to the peak power analyzer through an attenuator.

#### 3.3 Test Setup



#### 3.4 Calculation for Maximum Permissible Exposure (MPE)

From FCC 1.1310 Table 1B, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm<sup>2</sup>. The actual power density for the EUT with the antenna is calculated as shown below.

$$S = (P \times G) / (4 \times \pi \times d^2)$$

where:

S = power density

P = transmitter conducted power in (W)

G = antenna numeric gain

d = distance to radiation center (m)

|     | Antenna Manufacturer | Antenna Type | Gain (dBi) | Numeric Gain | Power (dBm) | Power (mW) | Separation Distance (cm) | Power Density (W/m <sup>2</sup> ) | Power Density (mW/cm <sup>2</sup> ) |
|-----|----------------------|--------------|------------|--------------|-------------|------------|--------------------------|-----------------------------------|-------------------------------------|
| 11b | FOXCONN NWInG        | PIFA         | 4          | 2.51         | 18          | 63.1       | 20                       | 0.315                             | 0.0315                              |
| 11g |                      |              |            |              | 18.406      | 69.27      | 20                       | 0.345                             | 0.0345                              |

**WARNING:**

It is the responsibility of the installer to ensure that the EUT is a notebook PC with a WLAN card and a specified antenna inside. Only the specified antenna listed above may be used. The use of any other antenna is expressly forbidden in accordance with FCC rules CFR 47 part 15.204.

**NOTICE:**

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits for an uncontrolled environment when installed as directed. This equipment should be installed and operated with FOXCONN NWInG PIFA antenna in a fixed-mount configuration, installed with a maximum of 18.406dBm of radiated output power during normal operation

## 4. Appendix : Test Equipment

### 4.1 Test Equipment List

**Equipment Name:** Spectrum Analyzer 08  
**Brand:** Advantest  
**Model:** R3132  
**S/N:** 111000867  
**Last Cal. Date:** 11/21/2003  
**Next Cal. Date:** 11/21/2004

Note: Calibration traceable to NIST or national or international standards.