

# RF Exposure Evaluation Declaration

Product Name : Wireless-AG 23dBm Network Mini PCI Adapter  
Model No. : IWAVEPORT WLM54AGP23  
FCC ID : TK4-07-WLM54AGP23

Applicant : Compex Systems Pte Ltd.

Address : 135 Joo Seng Road, #08-01 PM Industrial Building  
Singapore 368363

Date of Receipt : 2007/06/15

Issued Date : 2007/10/26

Report No. : 076S046-RF-US

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNLA, NVLAP, NIST or any agency of the Government.

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# Test Report Certification

Issued Date : 2007/10/26  
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Applicant : Compex Systems Pte Ltd.  
Address : 135 Joo Seng Road, #08-01 PM Industrial Building  
Singapore 368363  
Manufacturer : Compex Systems Pte Ltd.  
Model No. : IWAVEPORT WLM54AGP23  
FCC ID : TK4-07-WLM54AGP23  
Rated Voltage : AC 120V/60Hz  
EUT Voltage : DC 3.3V  
Trade Name : Compex  
Applicable Standard : FCC OET 65  
Test Result : Complied  
Performed Location : SuZhou EMC laboratory  
No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
Hi-Tech Development Zone., SuZhou, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392

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## Laboratory Information

We , **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

|               |                   |
|---------------|-------------------|
| Taiwan R.O.C. | : BSMI, DGT, CNLA |
| Germany       | : TUV Rheinland   |
| Norway        | : Nemko, DNV      |
| USA           | : FCC, NVLAP      |
| Japan         | : VCCI            |

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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## 1. RF Exposure Evaluation

### 1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz)                                     | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Average Time (Minutes) |
|-----------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| (A) Limits for Occupational/ Control Exposures            |                               |                               |                                     |                        |
| 300-1500                                                  | --                            | --                            | F/300                               | 6                      |
| 1500-100,000                                              | --                            | --                            | 5                                   | 6                      |
| (B) Limits for General Population/ Uncontrolled Exposures |                               |                               |                                     |                        |
| 300-1500                                                  | --                            | --                            | F/1500                              | 6                      |
| 1500-100,000                                              | --                            | --                            | 1                                   | 30                     |

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

|           |   |                                            |
|-----------|---|--------------------------------------------|
| Product   | : | Wireless-AG 23dBm Network Mini PCI Adapter |
| Test Item | : | Peak Power Output                          |
| Test Site | : | AC-3                                       |
| Test Mode | : | Mode 1: Transmit by 802.11b                |

### Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 dBi or 1.58 in linear scale.

### Output Power Into Antenna & RF Exposure Evaluation Distance:

| Channel | Channel Frequency (MHz) | Output Power to Antenna (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) |
|---------|-------------------------|------------------------------|--------------------------------------------------|
| 01      | 2412.00                 | 201.3724                     | 0.063494                                         |
| 06      | 2437.00                 | 192.7525                     | 0.060776                                         |
| 11      | 2462.00                 | 177.8279                     | 0.056070                                         |

Note:

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

|           |   |                                            |
|-----------|---|--------------------------------------------|
| Product   | : | Wireless-AG 23dBm Network Mini PCI Adapter |
| Test Item | : | Peak Power Output                          |
| Test Site | : | AC-3                                       |
| Test Mode | : | Mode 2: Transmit by 802.11g                |

## Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 dBi or 1.58 in linear scale.

## Output Power Into Antenna & RF Exposure Evaluation Distance:

| Channel | Channel Frequency (MHz) | Output Power to Antenna (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) |
|---------|-------------------------|------------------------------|--------------------------------------------------|
| 01      | 2412.00                 | 350.7519                     | 0.110594                                         |
| 06      | 2437.00                 | 349.9452                     | 0.110339                                         |
| 11      | 2462.00                 | 345.1437                     | 0.108825                                         |

Note:

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.