

# RF Exposure Evaluation declaration

Product Name : MiiNePort W1 series Embedded Serial Device Server

Model No. : MiiNePort W1

FCC ID : SLE-W1

Applicant : Moxa Inc.

Address : Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City,  
Taipei, Taiwan, R.O.C.

Date of Receipt : Jan. 09, 2012

Date of Declaration : Feb. 06, 2012

Report No. : 121211R-RFUSP42V01

The declaration results relate only to the samples calculated.

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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:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in  $\text{mW/cm}^2$

$P_{out}$  = 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,  $1 \text{ mW/cm}^2$ . 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:  $18^\circ\text{C}$  and 78% RH.

### 1.3. Test Result of RF Exposure Evaluation

Product : MiiNePort W1 series Embedded Serial Device Server  
Test Item : RF Exposure Evaluation  
Test Site : No.3 OATS

#### (802.11b) Output Power Into Antenna & RF Exposure Evaluation Distance (2dBi):

| Channel | Frequency (MHz) | Output Power to Antenna (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) |
|---------|-----------------|------------------------------|--|
| 01      | 2412.00         | 46.5586                      | 0.014680   |
| 06      | 2437.00         | 34.5144                      | 0.010883   |
| 11      | 2462.00         | 36.1410                      | 0.011395   |

Power density in column 4 is much lower than the limit (1 mW/mc<sup>2</sup>).

#### (802.11g) Output Power Into Antenna & RF Exposure Evaluation Distance (2dBi):

| Channel | Frequency (MHz) | Output Power to Antenna (mW) | Power Density at R = 20 cm (mW/cm <sup>2</sup> ) |
|---------|-----------------|------------------------------|--|
| 01      | 2412.00         | 177.4189                     | 0.055941   |
| 06      | 2437.00         | 163.3052                     | 0.051491   |
| 11      | 2462.00         | 167.8804                     | 0.052933   |

Power density in column 4 is much lower than the limit (1 mW/mc<sup>2</sup>).