



# RF Exposure Evaluation Report

**Equipment** : 802.11ac 2x2 MIMO PCI Express Mini Card  
**Brand Name** : LITE-ON  
**Model No.** : WM862FEMD  
**FCC ID** : PPQ-WM862FEMD  
**Standard** : 47 CFR Part 2.1091  
**Applicant** : LITE-ON Technology Corp.  
Bldg. C, 90, Chien 1 Rd., Chung-Ho, New Taipei City,  
23585 Taiwan  
**Manufacturer** : Lite-On Network Communication (Dongguan)  
Limited  
30#Keji Rd., Yin Hu Industrial Area, Qingxi  
Town, DongGuan City, Guangdong, China

The product sample received on May 22, 2017 and completely tested on Jun. 16, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091 and pass the limit.

Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

  
Cliff Chang  
SPORTON INTERNATIONAL INC.





## **TABLE OF CONTENTS**

|          |                                             |          |
|----------|---------------------------------------------|----------|
| <b>1</b> | <b>GENERAL DESCRIPTION .....</b>            | <b>4</b> |
| 1.1      | EUT General Information .....               | 4        |
| 1.2      | Testing Location .....                      | 4        |
| <b>2</b> | <b>MAXIMUM PERMISSIBLE EXPOSURE .....</b>   | <b>5</b> |
| 2.1      | Limit of Maximum Permissible Exposure ..... | 5        |
| 2.2      | MPE Calculation Method .....                | 5        |
| 2.3      | Calculated Result and Limit.....            | 6        |

### **PHOTOGRAPHS OF EUT V01**



SPORTON INTERNATIONAL INC.  
TEL : 886-3-327-3456  
FAX : 886-3-327-0973  
FCC ID: PPQ-WM862FEMD

# 1 General Description

## 1.1 EUT General Information

| RF General Information |                                                  |                                                  |                                                                                                                                      |
|------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Evaluation Mode        | Frequency Range (MHz)                            | Operating Frequency (MHz)                        | Modulation Type                                                                                                                      |
| 2.4GHz WLAN            | 2400-2483.5                                      | 2412-2462                                        | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) |
| 5GHz WLAN              | 5150-5250<br>5250-5350<br>5470-5725<br>5725-5850 | 5180-5240<br>5260-5320<br>5500-5720<br>5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)                                      |

Note1:The EUT is a limited module which only limited to the host (Brand Name: LITE-ON, MOJO / Model No.: WP8333V1, C-110 / FCC ID: PPQ-WP8333V1).

Note2:The EUT was installed to the host (Brand Name: LITE-ON / Model No.: WP8333V1 / FCC ID: PPQ-WP8333V1) to perform all the tests.

## 1.2 Testing Location

| Testing Location                    |        |                                                                                                                               |
|-------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL : 886-3-327-3456 FAX : 886-3-327-0973   |
| <input checked="" type="checkbox"/> | JHUBEI | ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.<br>TEL : 886-3-656-9065 FAX : 886-3-656-9085 |

## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                   | 6                                                                |
| 3.0-30                | 1842 / f                          | 4.89 / f                          | (900 / f)*                               | 6                                                                |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | 6                                                                |
| 300-1500              |                                   |                                   | F/300                                    | 6                                                                |
| 1500-100,000          |                                   |                                   | 5                                        | 6                                                                |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                   | 30                                                               |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f)*                                 | 30                                                               |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | 30                                                               |
| 300-1500              |                                   |                                   | F/1500                                   | 30                                                               |
| 1500-100,000          |                                   |                                   | 1.0                                      | 30                                                               |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Method

The MPE was calculated at 28 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



## 2.3 Calculated Result and Limit

**Exposure Environment: General Population / Uncontrolled Exposure**

Simultaneous Transmission Analysis Mode: 2.4G + 5G

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) | Ratio<br>(S/Limit) |
|----------|-------------|----------------|---------------|-------------|------------------|----------------------------|----------------------------------|--------------------|
| 5.3G;D1D | 5.4         | 22.87          | 28.27         | 0.67143     | 28               | 0.06818                    | 1                                | 0.06818            |
| 2.4G;G1D | 6.5         | 24.89          | 31.39         | 1.37721     | 28               | 0.13986                    | 1                                | 0.13986            |
|          |             |                |               |             |                  |                            | Sum Ratio                        | 0.20804            |
|          |             |                |               |             |                  |                            | Ratio Limit                      | 1                  |