

# RF EXPOSURE EVALUATION REPORT

FCC ID : COF-WMCW51MS  
Equipment : 802.11a/b/g/n/ac/ax 1x1 + BT 5.3 Combo Module  
Brand Name : USI  
Model Name : WM-CW-51MS  
Applicant : Universal Global Scientific Industrial Co., Ltd.  
No. 141, Lane 351, Sec. 1, Taiping Road, Tsao-tuen,  
Nantou County 542007, Taiwan  
Manufacturer : Universal Global Scientific Industrial Co., Ltd.  
No. 141, Lane 351, Sec. 1, Taiping Road, Tsao-tuen,  
Nantou County 542007, Taiwan  
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3786) and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



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## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FA591512   | Rev. 01 | Initial issue of report | Dec. 30, 2025 |
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**1. Description of Equipment Under Test (EUT)**

| Product Feature & Specification         |                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Type                                | 802.11a/b/g/n/ac/ax 1x1 + BT 5.3 Combo Module                                                                                                                                                                                                                                                                                                              |
| Brand Name                              | USI                                                                                                                                                                                                                                                                                                                                                        |
| Model Name                              | WM-CW-51MS                                                                                                                                                                                                                                                                                                                                                 |
| FCC ID                                  | COF-WMCW51MS                                                                                                                                                                                                                                                                                                                                               |
| Wireless Technology and Frequency Range | WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz<br>WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz<br>WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz<br>WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz<br>WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz<br>WLAN 6GHz Band: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz |
| Mode                                    | WLAN: 802.11a/b/g/n/ac/ax/be<br>HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160<br>Bluetooth BR/EDR/LE                                                                                                                                                                                                                    |
| HW Version                              | V20                                                                                                                                                                                                                                                                                                                                                        |
| SW Version                              | cyfmac-v5.15.58-20240514                                                                                                                                                                                                                                                                                                                                   |
| EUT Stage                               | Identical Prototype                                                                                                                                                                                                                                                                                                                                        |

**Reviewed by: Jason Wang****Report Producer: Carlie Tsai****2. Maximum RF average output power among production units**

| Mode      |             | Maximum Average power(dBm) |
|-----------|-------------|----------------------------|
| WLAN      | 2.4GHz      | 19.63                      |
|           | 5.2GHz      | 18.48                      |
|           | 5.3GHz      | 18.71                      |
|           | 5.5GHz      | 18.78                      |
|           | 5.8GHz      | 18.86                      |
|           | 6GHz-UNII 5 | 6.76                       |
|           | 6GHz-UNII 6 | 6.52                       |
|           | 6GHz-UNII 7 | 6.97                       |
|           | 6GHz-UNII 8 | 7.28                       |
| Bluetooth |             | 10.71                      |

### 3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1500                                                       |                               |                               | f/300                               | 6                        |
| 1500-100,000                                                   |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30-300                                                         | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500                                                       |                               |                               | f/1500                              | 30                       |
| 1500-100,000                                                   |                               |                               | 1.0                                 | 30                       |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



## 4. Radio Frequency Radiation Exposure Evaluation

### 4.1. Standalone Power Density Calculation

| Band                 | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Maximum PG (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Power Density / Limit |
|----------------------|--------------------|---------------------|--------------------|------------------|-----------------|---------------------------------------------|-----------------------------|-----------------------|
| WLAN2.4GHz Band      | 2.96               | 19.63               | 22.6               | 0.18             | 181.55          | 0.036                                       | 1.000                       | 0.036                 |
| WLAN5.2GHz Band      | 3.99               | 18.48               | 22.5               | 0.18             | 176.60          | 0.035                                       | 1.000                       | 0.035                 |
| WLAN5.3GHz Band      | 3.99               | 18.71               | 22.7               | 0.19             | 186.21          | 0.037                                       | 1.000                       | 0.037                 |
| WLAN5.5GHz Band      | 4.74               | 18.78               | 23.5               | 0.22             | 224.91          | 0.045                                       | 1.000                       | 0.045                 |
| WLAN5.8GHz Band      | 4.81               | 18.86               | 23.7               | 0.23             | 232.81          | 0.046                                       | 1.000                       | 0.046                 |
| WLAN6GHz-UNII 5 Band | 4.85               | 6.76                | 11.6               | 0.01             | 14.49           | 0.003                                       | 1.000                       | 0.003                 |
| WLAN6GHz-UNII 6 Band | 4.89               | 6.52                | 11.4               | 0.01             | 13.84           | 0.003                                       | 1.000                       | 0.003                 |
| WLAN6GHz-UNII 7 Band | 4.89               | 6.97                | 11.9               | 0.02             | 15.35           | 0.003                                       | 1.000                       | 0.003                 |
| WLAN6GHz-UNII 8 Band | 3.89               | 7.28                | 11.2               | 0.01             | 13.09           | 0.003                                       | 1.000                       | 0.003                 |
| Bluetooth            | 2.96               | 10.71               | 13.7               | 0.02             | 23.28           | 0.005                                       | 1.000                       | 0.005                 |

### 4.2. Collocated Power Density Calculation

| WLAN 2.4GHz Power Density / Limit | Bluetooth Power Density / Limit | $\Sigma$ (Power Density / Limit) of WLAN 2.4GHz + Bluetooth |
|-----------------------------------|---------------------------------|-------------------------------------------------------------|
| 0.036                             | 0.005                           | 0.041                                                       |

| WLAN 5GHz Power Density / Limit | Bluetooth Power Density / Limit | $\Sigma$ (Power Density / Limit) of WLAN 5GHz + Bluetooth |
|---------------------------------|---------------------------------|-----------------------------------------------------------|
| 0.046                           | 0.005                           | 0.051                                                     |

| WLAN 6GHz Power Density / Limit | Bluetooth Power Density / Limit | $\Sigma$ (Power Density / Limit) of WLAN 6GHz + Bluetooth |
|---------------------------------|---------------------------------|-----------------------------------------------------------|
| 0.003                           | 0.005                           | 0.008                                                     |

**Note:**

- $\Sigma$  (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)], for WLAN + Bluetooth.
- Considering the transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of all collocated transmitters is compliant.

## Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.