

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.

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Approved by: Cona Huang / Deputy Manager



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History of this test report

Report No.	Version	Description	Issued Date
FA591512-01	Rev. 01	Initial issue of report	Jun. 03, 2026

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 WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 6GHz Band: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax/be HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160 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

Original Antenna					Second Antenn				
Frequency Band		130mm cable			Frequency Band		90mm cable		
WLAN		2025/8/22			WLAN		2026/3/18		
	MHz	Efficiency (%)	3D Gain (dB)	Peak Gain(dBi)		MHz	Efficiency (%)	3D Gain (dB)	Peak Gain(dBi)
2.4G Band	2400	62.7	-2.0	2.81	2.4G Band	2400	53.2	-2.7	2.08
	2412	64.3	-1.9	2.96		2412	59.7	-2.2	2.47
	2442	62.7	-2.0	2.76		2442	58.9	-2.3	2.55
	2450	62.5	-2.0	2.69		2450	62.7	-2.0	2.96
	2484	66.8	-1.8	2.79		2484	54.6	-2.6	2.75
	2500	60.3	-2.2	2.42		2500	50.2	-3.0	2.39
5G Band	5150	70.5	-1.5	3.73	5G Band	5150	52.4	-2.8	3.19
	5250	73.8	-1.3	3.99		5250	62.1	-2.1	3.72
	5350	74.6	-1.3	3.80		5350	61.0	-2.2	3.49
	5470	78.7	-1.0	3.81		5470	51.1	-2.9	3.03
	5600	76.4	-1.2	4.27		5600	50.1	-3.0	2.88
	5725	71.3	-1.5	4.74		5725	49.7	-3.0	3.49
	5785	68.4	-1.7	4.78		5785	51.6	-2.9	4.06
	5800	66.8	-1.8	4.79		5800	52.5	-2.8	4.21
6G/ 7G Band	5850	65.0	-1.9	4.81	6G/ 7G Band	5850	57.4	-2.4	4.04
	5925	66.7	-1.8	4.82		5925	54.1	-2.7	4.12
	6000	64.6	-1.9	4.35		6000	55.3	-2.6	4.08
	6125	68.4	-1.7	4.74		6125	53.2	-2.7	3.70
	6225	70.0	-1.6	4.64		6225	56.4	-2.5	3.44
	6325	70.5	-1.5	4.75		6325	56.0	-2.5	3.31
	6425	69.7	-1.6	4.85		6425	52.6	-2.8	4.36
	6525	69.7	-1.6	4.89		6525	54.2	-2.7	4.48
	6625	67.9	-1.7	4.81		6625	50.4	-3.0	4.21
	6725	63.5	-2.0	4.60		6725	52.1	-2.8	3.97
	6875	62.1	-2.1	3.68		6875	51.4	-2.9	3.98
	6925	67.8	-1.7	3.89		6925	56.1	-2.5	4.74
	7000	72.8	-1.4	3.64		7000	50.8	-2.9	4.74
	7125	68.5	-1.6	3.15		7125	47.3	-3.3	3.40

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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	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				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	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 ²)	Limit (mW/cm ²)	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	4.74	7.28	12.0	0.02	15.92	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	Σ (Power Density / Limit) of WLAN 2.4GHz + Bluetooth
0.036	0.005	0.041

WLAN 5GHz Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WLAN 5GHz + Bluetooth
0.046	0.005	0.051

WLAN 6GHz Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WLAN 6GHz + Bluetooth
0.003	0.005	0.008

Note:

- Σ (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.