

# RF Exposure Evaluation Report

**APPLICANT** : Shanghai MXCHIP Information  
Technology Co., Ltd.

**EQUIPMENT** : Embedded WiFi module

**BRAND NAME** : MXCHIP

**MODEL NAME** : EMW3091

**FCC ID** : P53-EMW3091

**STANDARD** : 47 CFR Part 2.1091  
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager



**Sporton International (Kunshan) Inc.**  
**No. 1098, Pengxi North Road, Kunshan Economic Development Zone,**  
**Jiangsu Province 215335, China**



## Table of Contents

<b>1. ADMINISTRATION DATA.....</b>	<b>4</b>
1.1. Testing Laboratory .....	4
<b>2. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....</b>	<b>5</b>
<b>3. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS .....</b>	<b>6</b>
<b>4. RF EXPOSURE LIMIT INTRODUCTION.....</b>	<b>7</b>
<b>5. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION .....</b>	<b>8</b>
5.1. Standalone Power Density Calculation .....	8



### History of this test report

Report No.	Version	Description	Issued Date
FA930801	Rev. 01	Initial issue of report	Apr. 10, 2019



**1. Administration Data**

**1.1. Testing Laboratory**

<b>Testing Laboratory</b>	
<b>Test Site</b>	Sporton International (Kunshan) Inc.
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958

<b>Applicant</b>	
<b>Company Name</b>	Shanghai MXCHIP Information Technology Co., Ltd.
<b>Address</b>	9thFloor, No.5 Lane2145JinshaJiangRoad, Putuo District, ShangHai (200333)

<b>Manufacturer</b>	
<b>Company Name</b>	Shanghai MXCHIP Information Technology Co., Ltd.
<b>Address</b>	9thFloor, No.5 Lane2145JinshaJiangRoad, Putuo District, ShangHai (200333)



## 2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Embedded WiFi module
Brand Name	MXCHIP
Model Name	EMW3091
FCC ID	P53-EMW3091
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz
Mode	WLAN 2.4GHz 802.11b/g/n HT20
Antenna Type / Gain	Copper tube antenna with gain 2.0 dBi
HW Version	V1.0
SW Version	MX1290V2_0000.0000.A212
EUT Stage	Production Unit
<b>Remark:</b> The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	



**3. Maximum RF average output power among production units**

**<WLAN 2.4GHz>**

Mode		Channel	Maximum Average Power (dBm)
2.4GHz	802.11b	1	15.50
		6	15.50
		11	15.50
	802.11g	1	15.50
		6	15.50
		11	16.00
	802.11n-HT20	1	14.50
		6	15.00
		11	15.00



### 4. 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



## 5. Radio Frequency Radiation Exposure Evaluation

### 5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN2.4GHz 802.11b	2412	2.0	15.50	17.50	0.056	56.23	0.011	1.00
WLAN2.4GHz 802.11g	2412	2.0	16.00	18.00	0.063	63.10	0.013	1.00
WLAN2.4GHz 802.11n-HT20	2412	2.0	15.00	17.00	0.050	50.12	0.010	1.00

**Note:** For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

### Conclusion:

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