



# RF Exposure Evaluation Declaration

Report No.: S20230814721206

Issue Date: 09-13-2023

**Applicant:** Shanghai MXCHIP Information Technology Co., Ltd  
**Address:** 9th Floor, Building B, Lane 2145, JinshaJiang Road,  
Putuo District, Shanghai  
**FCC ID:** P53-EMC3090  
**Product:** 2.4GHz Wi-Fi/BLEModule  
**Model No.:** EMC3090-P  
**Trade Mark:** MXCHIP  
**FCC Rule Part(s):** CFR 47, FCC Part 2.1091 Radio frequency radiation  
exposure evaluation: mobile devices.  
**Item Receipt date:** Aug. 24, 2023  
**Test Date:** Sep. 02~ Sep. 06, 2023

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Engineer Manager

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 558074 D01. Test results reported herein relate only to the item(s) tested.

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The test report must not be used by the client to claim product certifications, approval, or endorsement by NVLAP, NIST or any agency of U.S. Government.

## Revision History

Report No.	Version	Description	Issue Date
S20230814721206	Rev. 01	/	09-13-2023

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name:	2.4GHz Wi-Fi /BLEModule
Model Name:	EMC3090-P
Trade Mark:	MXCHIP
Input Voltage Range:	DC 3.3V
Wi-Fi Specification:	802.11b/g/n20
Bluetooth Version:	4.2

### 1.2. Product Specification Subjective to this Report

Frequency Range:	WIFI:802.11b/g/n20: 2412 ~ 2462MHz BLE:2402~2480MHz
Channel Number:	802.11b/g/n20: 11 BLE:40
Type of Modulation:	802.11b: DSSS 802.11g/n: OFDM BLE:GFSK
Data Rate:	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n/: MCS0~MCS7 BLE:1Mbps
Antenna Type:	Single PCB Antenna
Antenna Gain:	2dBi

## 2. RF Exposure Evaluation

### 2.1. 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

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

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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, 1mW/cm<sup>2</sup>. 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.

## 2.2. Test Result of RF Exposure Evaluation

Product	2.4GHz Wi-Fi/BLEModule
Test Item	RF Exposure Evaluation

Mode	Frequency (MHz)	Maximum Conducted OutputPower (dBm)	Antenna Gain (dBi)	PG		MPE (mW/cm <sup>2</sup> )	MPE Limits (mW/cm <sup>2</sup> )
				(dBm)	(mW)		
WIFI	2412~2462	15.33	2	17.33	54.1	0.02	1.00
BLE	2402~2480	5.26	2	7.26	5.3	0.002	1.00

Remark: 1. MPE use distance is 20cm from manufacturer declaration of user manual.

Remark: 2. Use the maximum gain of all bands when evaluating

Remark: 3. BT and 5G wifi can't transmit simultaneously.

### CONCLUSION:

The Max Power Density at R (20 cm) = 0.02mW/cm<sup>2</sup> < 1mW/cm<sup>2</sup>.

So the EUT complies with the requirement.

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