



RF Exposure Evaluation Declaration

Report No.: S20240511014701E03

Issue Date: 06-17-2024

Applicant: Shanghai MXCHIP Information Technology Co., Ltd

Address: Floor 9, Building B, Lane 2145, JinshaJiang Road, Putuo District, Shanghai

FCC ID: P53-EMC5020

Application Type: Certification

Product: 2.4GHz Wi-Fi/BLE Module

Model No.: EMC5020-P

Trade Mark: 

FCC Rule Part(s): CFR 47, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices.

Item Receipt date: May 11, 2024

Test Date: May 13 ~ Jun 04, 2024

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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


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1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	2.4GHz Wi-Fi/BLE Module
Model Name:	EMC5020-P
Trade Mark:	
Input Voltage Range:	DC5.0V 300mA

1.2. Product Specification Subjective to this Report

Frequency Range:	BLE:2402~2480MHz 802.11b/g/n20/ax20: 2412 ~ 2462MHz
Data Rate:	BLE:1Mbps 802.11b: DSSS 802.11g/n: OFDM
Antenna Type:	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 ²)	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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

r = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1mW/cm². 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. Calculation Method

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

Mode	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Antenna Gain (dBi)	PG		MPE (mW/cm ²)	MPE Limits (mW/cm ²)
				(dBm)	(mW)		
WLAN	2412 - 2462	15.38	2	17.38	54.70	0.11	1.00
BLE	2402 - 2480	7.55	2	9.55	9.02	0.02	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

CONCLUSION:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

————— The End —————