



RF Exposure Evaluation Declaration


Report No.: S20241028562503

Issue Date: 12-13-2024

Applicant: Shanghai MXCHIP Information Technology Co., Ltd
Address: 9th Floor, No.5, Lane2145 JinshaJiang Road, Putuo District, Shang Hai, China (200333)
FCC ID: P53-EMC3183
Product: 2.4GHz Wi-Fi/BLE Module
Model No.: EMC3183-E
Trade Mark: MXCHIP
FCC Rule Part(s): CFR 47, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices.
Item Receipt date: Oct. 31, 2024
Test Date: Nov. 10, 2024

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Senior Test Engineer

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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

Report No.	Version	Description	Issue Date
S20241028562503	Rev. 01	/	12-13-2024

Note:
The module adds a PCB antenna (SUN-wifi stick V1.0, 2400 ~ 2500MHz, Max Gain: 2dBi) this time. After evaluation, only radiation items need to be retested. The test results of other conducted items please refer to the FCC test report (Report NO. S20240620077202E03) which was issued by Fangguang Inspection & Testing Co., Ltd. on 2024.08.23.

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	2.4GHz Wi-Fi/BLE Module
Model Name:	EMC3183-E
Trade Mark:	MXCHIP
Input Voltage Range:	DC: 3.3V
Wi-Fi Specification:	802.11b/g/n20
Bluetooth Version:	5.3
Software Version:	A258
Hardware Version:	1.0
Note:	This information is provided by the Customer and its authenticity is the responsibility of the Customer.

1.2. Product Specification Subjective to this Report

Frequency Range:	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:	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. Test Result of RF Exposure Evaluation

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

Mode	Frequency (MHz)	Maximum Conducted OutputPower (dBm)	Antenna Gain (dBi)	PG		MPE (mW/cm ²)	MPE Limits (mW/cm ²)
				(dBm)	(mW)		
WIFI	2412~2462	13.84	2	15.84	24.21	0.010	1.00
BLE	2402~2480	7.44	2	9.44	8.79	0.003	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. The test results of Maximum Conducted OutputPowe please refer to the CE test report (Report NO. S20240620077202E03) which was issued by Fangguang Inspection & Testing Co., Ltd. on 2024.08.23.

CONCULISON:

The Max Power Density at R (20 cm) = 0.010mW/cm² < 1mW/cm².

So the EUT complies with the requirement.

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