



RF Exposure Evaluation Declaration

Report No.: S2023090421420104

Issue Date: 09-14-2024

Applicant: Shenzhen Mindray Bio-Medical Electronics Co., Ltd.

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PEOPLE'S REPUBLIC OF CHINA

FCC ID: ZLZ-WXT5CM2803

Product: WiFi module

Model No.: WXT5CM2803

Trade Mark: mindray

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

Item Receipt date: Sep 04, 2023

Test Date: Sep 11 ~ Nov 08, 2023

Compiled By

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(Stone Zhang)
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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.

The test report shall not be reproduced except in full without the written approval of Fangguang Inspection & Testing Co., Ltd. Wuxi Branch

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
S2023090421420104	Rev. 01	/	09-14-2024

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	WiFi module
Model Name:	WXT5CM2803
Trade Mark:	mindray
Input Voltage Range:	DC 3.3V

Note:

There are three types of antennas for the WiFi module. The antennas are RD542109NB87-1, RD542109NB87-2 and RD542109NB87-3.

1.2. Product Specification Subjective to this Report

Frequency Range:	802.11b/g/n20/ax20: 2412 ~ 2462MHz 802.11n40/ax40:2422 ~ 2452MHz For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz 5925~6425MHz, 6425~6525MHz, 6525~6875MHz, 6875~7125MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5670MHz, 5755~5795MHz 5925~6425MHz, 6425~6525MHz, 6525~6875MHz, 6875~7125MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz ,5775MHz 5925~6425MHz, 6425~6525MHz, 6525~6875MHz, 6875~7125MHz
Type of Modulation:	802.11b: DSSS 802.11g/n/ax: OFDM 802.11a/n/ac/ax:OFDM/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM/ 1024QAM
Antenna Type:	FPC dipole
Antenna Gain:	2.4G RD542109NB87-1 Antenna : Ant1 -0.68dBi, Ant2 -0.68dBi, 2.4G RD542109NB87-2 Antenna : Ant1 2.05dBi, Ant2 2.05dBi 2.4G RD542109NB87-3 Antenna : Ant1 2.45dBi ,Ant2 2.45dBi 5G RD542109NB87-1 Antenna : Ant1 3.29dBi, Ant2 3.29dBi 5G RD542109NB87-2 Antenna : Ant1 3.17dBi, Ant2 3.17dBi 5G RD542109NB87-3 Antenna : Ant1 2.77dBi, Ant2 2.77dBi 6G(5925-6425M) RD542109NB87-1 Antenna : Ant1 3.90dBi, Ant2 3.90dBi 6G(5925-6425M) RD542109NB87-2 Antenna : Ant1 3.36dBi, Ant2 3.36dBi 6G(5925-6425M) RD542109NB87-3 Antenna : Ant1 2.64dBi, Ant2 2.64dBi

	6G(6425-7125M) RD542109NB87-1 Antenna : Ant1 4.92dBi, Ant2 4.92dBi
	6G(6425-7125M) RD542109NB87-2 Antenna : Ant1 3.61dBi, Ant2 3.61dBi
	6G(6425-7125M) RD542109NB87-3 Antenna : Ant1 1.93dBi, Ant2 1.93dB

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	WiFi 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)		
WiFi	2412 - 2462	17.83	2.45	20.28	106.66	0.021	1.00
RLAN	5150 - 5250	18.60	3.29	21.89	154.53	0.031	1.00
	5250 - 5350						
	5470 - 5725						
	5725 - 5850						
RLAN	5925 - 6425	5.24	3.90	9.14	8.20	0.002	1.00
RLAN	6425 - 7125	5.74	4.92	10.66	11.64	0.002	1.00
WiFi	2412 - 2462	17.83	Directional Gain: 5.46	23.29	213.30	0.042	1.00
RLAN	5150 - 5250	18.60	Directional Gain: 6.30	24.90	309.03	0.062	1.00
	5250 - 5350						
	5470 - 5725						
	5725 - 5850						
RLAN	5925 - 6425	5.24	Directional Gain: 6.91	12.15	16.41	0.003	1.00
RLAN	6425 - 7125	5.74	Directional Gain: 7.94	13.68	23.33	0.005	1.00
Simultaneous Transmission	/	/	/	/	/	0.112	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 simultaneous transmission is WiFi and RLAN transmission.

CONCULISON:

The Max Power Density at R (20 cm) = $0.112\text{mW/cm}^2 < 1\text{mW/cm}^2$.

So the EUT complies with the requirement.

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