

Safety Human Exposure

1.1 Radio Frequency Exposure Compliance

1.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test item : Wi-Fi Module
Identification / Type No. : WF-M63B-USD1
FCC ID : 2AOKI-WFM63BUSD1
Test standard : CFR47 FCC Part 2: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06

➤ Product Classification

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

Max 1.92 dBi for Bluetooth & Max 1.89 dBi for 2.4GHz Wi-Fi, Max 1.96 dBi for 5GHz Wi-Fi

➤ Radio Frequency Exposure Limit

For FCC:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)
300-1,500	--	--	f/1500
1,500-100,000	--	--	1.0

➤ Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

a) EUT RF Exposure Evaluation standalone operations

Mode	Maximum Conducted power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
Bluetooth	6.40	1.92	20	0.0014	1.0
2.4G Wi-Fi	19.08	1.89	20	0.0249	1.0
5G Wi-Fi	17.30	1.96	20	0.0168	1.0

Note:

1. *Bluetooth RF Output Power: Refer to CN222GQB 001
2. *2.4GHz Band Wi-Fi RF Output Power: Refer CN222GQB 002
3. *5GHz Bands Wi-Fi RF Output Power: Refer CN222GQB 003 Appendix B

b) Simultaneous transmission MPE:

Per KDB 447498 D01 v06, simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is ≤ 1.0 .

Simultaneous transmission Scenarios

Simultaneous transmission Scenarios	Sum for the MPE ratio	Limit	Verdict
Bluetooth + 2.4GHz Wi-Fi	$0.0014/1+0.0249/1=0.0263$	1.0	Compliance
Bluetooth + 5GHz Wi-Fi	$0.0014/1+0.0168/1=0.0182$	1.0	Compliance

➤ **Conclusion**

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.