

Maximum Permissible Exposure

FCC ID: BEJWN8122E1

IC:2703H-WN8122E1

Product Name: Wi-Fi module

Model No: WN8122E1

We, hereby clarify that BEJWN8122E1 is applied for single modular approval, and this model might be embedded with Bluetooth device. Thus, this MPE takes collocation into consideration as the worst case for demonstrating is compliance with requirement.

1. According to FCC CFR 47 §1.1310, the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

Table 1 Limits for Maximum Permissible Exposure

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 (f = frequency)				
30-300	61.4	0.163	1.0	6
300-1500	...	...	f/300	6
1500-100,000	...	...	5.0	6
(B) Limits For General Population / Uncontrolled Exposure (f = frequency)				
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

2. MPE Calculation

For WLAN(2.4GHz):

Based on safety distance 20cm, the antenna gain is -0.86dBi, and the power output is 86.696mW, the power density is 0.0147mW/cm².

RF Exposure Calculations:

$$S = (P * G) / (4 * \pi * r^2) \text{ or } r = \sqrt{(P * G) / (4 * \pi * S)}$$

Where S = Power Density in mW/cm²

$$P = 19.38\text{dBm} = 86.696\text{mW}$$

$$G = -0.68\text{dBi} = 0.855 \text{ Numerical}$$

$$r = 20\text{cm}$$

$$S = 86.696 * 0.855 / (4 * \pi * 20^2) = 0.0147\text{mW/cm}^2$$

For WLAN(5.2GHz):

Based on safety distance 20cm, the antenna gain is 0.62dBi, and the power output is 38.994mW, the power density is 0.0089mW/cm².

RF Exposure Calculations:

$$S = (P * G) / (4 * \pi * r^2) \text{ or } r = \sqrt{(P * G) / (4 * \pi * S)}$$

Where S = Power Density in mW/cm²

$$P = 15.91\text{dBm} = 38.994\text{mW}$$

$$G = 0.62\text{dBi} = 1.153 \text{ Numerical}$$

$$r = 20\text{cm}$$

$$S = 38.994 * 1.153 / (4 * \pi * 20^2) = 0.0089\text{mW/cm}^2$$

For WLAN(5.8GHz):

Based on safety distance 20cm, the antenna gain is 0.52dBi, and the power output is 89.949mW, the power density is 0.0201mW/cm².

RF Exposure Calculations:

$$S = (P * G) / (4 * \pi * r^2) \text{ or } r = \sqrt{(P * G) / (4 * \pi * S)}$$

Where S = Power Density in mW/cm²

P = 19.54dBm = 89.949mW

G = 0.52dBi = 1.127 Numerical

r = 20cm

$$S = 89.949 * 1.127 / (4 * \pi * 20^2) = 0.0201 \text{ mW/cm}^2$$

For Bluetooth:

Based on safety distance 20cm, the allowed maximum antenna gain is 6dBi, and the power output of class 1 BT device is 100 mW, the power density is 0.079mW/cm².

RF Exposure Calculations:

$$S = (P * G) / (4 * \pi * r^2) \text{ or } r = \sqrt{(P * G) / (4 * \pi * S)}$$

Where S = Power Density in mW/cm²

P = 20dBm = 100 mW

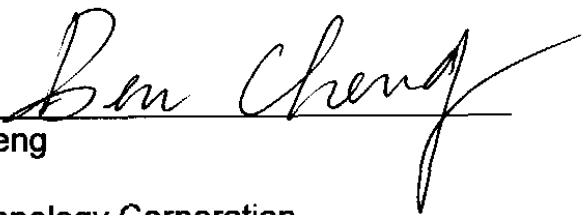
G = 6 dBi = 3.98 Numerical

r = 20cm

$$S = 100 * 3.98 / (4 * \pi * 20^2) = 0.079 \text{ mW/cm}^2$$

Bluetooth MPE (mW/cm ²)	WLAN MPE (mW/cm ²)	Total MPE (mW/cm ²)	Limit (mW/cm ²)	Compliance or not
0.079	0.0201	0.0991	1	YES

Sincerely Yours,



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