

**47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091
Maximum Permissible Exposure Calculations**

For FCC ID: 2AB8I-RR4

EUT Device Category = General Population/Uncontrolled Exposure

EUT consists of two ISM band radio transmitting. One operating over a range of: **2402 MHz to 2480 MHz**, and one operating over a range of **910.2 MHz to 920 MHz**.

MPE Summary:

According subpart 1.1307 (b)(1) and 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure						
Frequency Range (MHz)	Electric Strength (V/m)	Field Magnetic Strength (A/m)	Field Power Density (mW/cm²)	Averaging Time (Minutes)		
0.3-1.34	614	1.63	*(100)	30		
1.34-30	824/f	2.19/f	*(180/f ²)	30		
30-300	27.5	0.073	0.2	30		
300-1500	/	/	f/1500	30		
1500-100,000	/	/	1.0	30		

f = frequency in MHz; * = Plane-wave equivalent power density

Calculated Formulary:

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm²)

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

PG = EIRP

MPE and Limit are calculated for this device as follows:

2.402 GHz to 2.48 GHz Frequency Band							
BLE Transceiver							
Freq	Output Power (dBm)	Max Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW)	Margin (mW)
2402	4.07	0.0	4.07	2.55	0.001	1.000	0.999
2440	4.69	0.0	4.69	2.95	0.001	1.000	0.999
2480	5.78	0.0	5.78	3.79	0.001	1.000	0.999

910.2 MHz to 920.0 MHz Frequency Band							
Freq	Output Power (dBm)	Max Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW)	Margin (mW)
910.2	24.67	0.0	24.67	293.0	0.058	0.607	0.549
915.0	24.16	0.0	24.16	260.6	0.052	0.610	0.558
920.0	23.73	0.0	23.73	236.0	0.047	0.613	0.566

Result: There are two transceivers in the device. They will never transmit at the same time as only one radio is configured for use in each installation. The device meets FCC MPE limit at 20 cm for General Population/Uncontrolled Exposure as specified in 47 CFR §1.1310 and §2.1091.