

MPE Calculations

The device is not a portable device (i.e. intended to be worn on the body or be hand-held), so it is classified as being either a mobile device or a fixed mounted device. The user's manual specifies a minimum separation distance of at least 20cm, consistent with this classification.

FCC part 1.1310, Table 1 limits the power density for uncontrolled exposure. The power density, P_d (mW/cm^2) calculated from the maximum EIRP, P_t (mW) and the distance, d (m), between the transmitting antenna and the closest person, can be calculated using:

$$P_d = P_t / (4 \pi d^2)$$

Bluetooth						
Output power of 5.5mW is taken from the test report and is the highest power for basic and Enhanced data rate modes. Antenna gain is the taken form the antenna specification sheets.						
Frequency	MPE Limit (mW/cm^2)	Output Power (mW)	Max. Antenna Gain (dBi)	EIRP (mW)	Pd at 20cm (mW/cm^2)	Distance where Pd = limit (cm)
2402 to 2480 MHz	1.00	5.5	3.2	11.5	0.002 <i>0.2% of limit</i>	1.0

Wi-Fi						
Output power of 63.1mW is taken from the test report and is the highest average power for all modes. Note that the Form 731\REL power rating for 802.11g and n20 modes show 20.7mW and 20.9mW respectively, but these are peak powers. The average powers are detailed in the test report as 16.7dBm. This rf exposure evaluation uses average power. Antenna gain is the taken form the antenna specification sheets						
Frequency	MPE Limit (mW/cm^2)	Output Power (mW)	Max. Antenna Gain (dBi)	EIRP (mW)	Pd at 20cm (mW/cm^2)	Distance where Pd = limit (cm)
2412 to 2462 MHz	1.00	63.1	3.2	131.8	0.03 <i>3% of limit</i>	3.2

As shown in the calculations above, the power density 20cm from the device is below the maximum permitted level for uncontrolled exposure when either Bluetooth or Wi-Fi devices are operational.

If both Bluetooth and Wi-Fi are operational simultaneously then the total power density 20cm from the device is 3.2% of the limit (3% for the WiFi and 0.2% for the Bluetooth) and complies with the rf exposure requirements. The total eirp with both devices transmitting is 68.6mW.