MPE Calculations

The device is not a portable device (i.e. intended to be worn on the body or be hand-held), and is intended for use in mobile hosts. 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:

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

Wi-Fi Transceiver						
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	**49.0**	3.2	102.3	0.02 2% of limit	2.9
5725 to 5850 MHz	1.00	45.7[1]	5.0	**144.5**	0.03 3% of limit	7.9
5150 to 5250 MHz	1.00	44.7	3.6	102.3	0.02 2% of limit	2.9
5250 to 5350 MHz	1.00	45.7	3.7	107.2	0.02 2% of limit	2.9
5470 to 5725 MHz	1.00	44.7	4.8	134.9	0.03 3% of limit	3.3
[1]Output power rating is peak power for 802.11n40 mode. The highest average power measured across all modes in the 5725-5850MHz band was 16.6dBm (45.7mW). Output power is the power rating listed on the applications forms associated with this filing except as noted above.						

Bluetooth Transceiver						
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	**4.0**	3.2	**8.3**	0.002 0.2% of limit	0.8
Output power is the power rating listed on the applications forms associated with this filing.						

As shown in the calculations above, the power density 20cm from the device is below the maximum permitted level for uncontrolled exposure with either Bluetooth or Wi-Fi operational. When both devices are operational the worst case combination is only 3.2% of the limit at a distance of 20cm from the device (3% contribution from the Wi-Fi and 0.2% from the Bluetooth).

Note the maximum aggregate power (conducted) is 53mW and the maximum aggregate eirp is 152.8mW. This is calculated from the highest conducted output power from Bluetooth and WiFi devices and fomr the highest eirp from the two transceivers.