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 OEM installation requires 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:

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

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	190.5 (Peak)	3.6	436.5	0.09	5.9
5745 to 5825 MHz	1.00	141.3 (Peak)	5.3	478.6	0.10	6.2
5180 to 5320 MHz	1.00	40.7 (Average)	5.6	147.9	0.03	3.4

Table 1 MPE Calculations - Atheros Module

As shown in the calculations above, the power density 20cm from the device is below the maximum permitted level for uncontrolled exposure.

The device may be collocated with a Bluetooth™ module (FCC ID: MCLJ07H081). The FCC application for this device states the maximum conducted output power to be 3.09mW and the maximum antenna gain to be 2.0 dBi. The calculation for the power density from this device is given below:

Frequency	MPE Limit (mW/cm2)	Output Power (mW)	Max. Antenna Gain (dBi)	EIRP (mW)	Pd at 20cm (mW/cm2)	Distance where Pd = limit (cm)
2402 to 2480 MHz	1.00	3.1	2.0	4.9	0.0010	0.6

Table 2 MPE Calculation - Bluetooth Module

As the power density at 20cm from the Bluetooth™ module is significantly below that from the Atheros module, the MPE calculations in table 1 are not affected and the rf exposure requirements are still met when the Atheros and Bluetooth modules are co-located