Airgo BBGW True MIMO Access Point
FCC ID: SA3-AGN0901AP0100

MPE Calculations

The EUT has two radio boards , one operating at 2.4 GHz, the other operating at 5 GHz. Each radio uses 3 antennas in MIMO (multiple in, multiple out) configuration. Two of the antennas are transmit/receive, the third antenna is receive only. The receive only antenna is the center antenna of each triplet.

Each transmit antenna is fed half the total radio output power at that frequency.

The maximum RF exposure will be when both transmitter cards are transmitting data at their highest power settings.

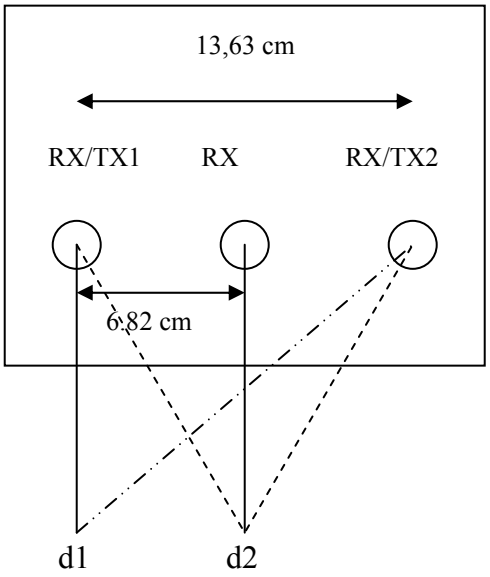
Maximum Power output: 24.25 dBm (2412 MHz in 802.11b mode)
Antenna gain, 3 dBi

One-half power (power in each TX chain): 21.25 dBm

Maximum EIRP from each 2.4 GHz transmit antenna is 21.25 + 3 = 24.25 dBm EIRP

To determine the overall exposure at 20 cm from the EUT, the contribution from each antenna will be added and then compared to the limit of 1 mW/cm^2

TOP VIEW EUT



A point 20 cm from the center of the EUT is intuitively the point at which both antennas are at their minimum separation distance, meaning the greatest field strength contribution will be located here. This is the result of a number of iterations of the calculation spread sheet, choosing different locations along the length of the EUT for exposure points. Power density decreases as the square of the separation distance, so that even if the 20 cm point is directly in front of one of the antennas, the contributions from the other antenna is less.

Antenna 1 distance to d1: 20 cm
Antenna 2 distance to d1: $(13.63^2 + 20^2)^{0.5}$ = 24.2 cm = 0.242m
Antenna 1 distance to d2: $(6.82^2 + 20^2)^{0.5}$ = 21.13 cm = 0.213m
Antenna 2 distance to d2: $(6.82^2 + 20^2)^{0.5}$ = 21.13cm = 0.213m

The field strength contribution from each antenna is calculated using the equation

E, V/m = $(30*\text{EIRP,watts})^{0.5}$/separation distance

Maximum EIRP from each 2.4 GHz transmit antenna is 24.25 dBm EIRP = 0.266 watt EIRP

S, mW/cm2 = $E^2/3770$, E in V/m

20 cm exposure distances were calculated for points d1 and d2

Worst case data was at d2.

Total exposure at d2**:** **0.09482 mW/cm^2**
Limit: 1.00000 mW/cm^2