Mobile Power Density Calculation
for
FCC ID: QTZ1200W
IC: 4518A-1200W

The Access Point (AP) is an IEE802.11 A / B /G radio. The access point operates on the 2.4 GHz and 5 GHz ISM bands.

Operating Environment:
The operating environment for the for the radio in all cases is a fixed, uncontrolled environment, however, the devices are classified as being "Mobile", Therefore the exposure at 20 cm is calculated.

Fixed, Uncontrolled Environment:
The FCC limit for the power density for uncontrolled exposure to RF devices operation at 2.4GHz and 5GHz at a distance of 20 cm is:

1 mW/cm^2

Power density is calculated from the following equation

$$\text{Exposure (mW/cm}^2) = \frac{\text{EIRP(mW) * Duty Cycle}}{4*PI*\text{ Radius}^2\text{(cm)}}$$

Where:
Radius = 20 cm
Duty Cycle = assumed to be 100% to yield a worst case result.
The maximum allowed external antenna gain on 2.4 GHz is 6.8dBi
The maximum allowed external antenna gain on 5 GHz is 7.4dBi

2.4GHz ISM Band MPE distance Calculation
Using the highest power measured on the 2.4 GHz ISM band.
    MAX Pout: 18.97dBm (78.89 mW)   MAX Ant Gain 7.8 dBi (6.02x)
    EIRP: 26.77 dBm (475.33 mW EIRP)

5GHz Band MPE distance Calculation
Using the highest power measured on the 5 GHz band.
    MAX Pout: 17.81 dBm (60.39 mW)   MAX Ant Gain 10.4 dBi (10.96x)
    EIRP: 28.3 dBm (662.21 mW EIRP)

Total EIRP (mw)
    475.33 + 662.21 = 1137.55

Calculating power density at a distance of 20 cm yields:

$$\text{Power Density} = \frac{1137.55 * 1}{4 * Pi * 20^2} \implies \frac{1137.55}{5026.54} \implies .2263 \text{ mw/cm}^2$$

$$\text{Delta} = \text{specification} - \text{result}$$
$$1 \text{ mW/cm}^2 - .2263 \text{ mw/cm}^2 = .7736 \text{ mw/cm}^2$$
$$= -6.453 \text{ dB below limit}$$