ALCATEL

Alcatel Internetworking, Inc.
26801 West Agoura Road
Calabasas, CA 91301 USA

Mobile Power Density Calculation
for
FCC ID: RUT1200ABG

The Alcatel 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

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

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: 20.4 dBm (109.65 mW)   MAX Ant Gain 6.8 dBi (4.78x)
      EIRP: 27.2 dBm (524.80 mW EIRP)

5GHz Band MPE distance Calculation
Using the highest power measured on the 5 GHz band.
      MAX Pout: 17.9 dBm (61.65 mW)   MAX Ant Gain 10.4 dBi (10.96x)
      EIRP: 28.3 dBm (676.08 mW EIRP)

Calculating power density at a distance of 20 cm yields:

Power = Density $\dfrac{1200.88 * 1}{4 * Pi * 20^2}$ ⟹ $\dfrac{1200.88}{5026.54}$ ⟹ .2389 mw/cm^2

Delta =   specification - result
       1 mW/cm^2 - .2389 mw/cm^2 = .7610 mw/cm^2
                               = -6.217 dB below limit