

RF EXPOSURE INFORMATION



RADIO FREQUENCY EXPOSURE (HAZARD) INFORMATION

Testing was performed in accordance with the requirements of FCC Part 15.247(b)(5)

Spread spectrum transmitters operating in the 2400 - 2483.5 MHz band are required to be operated in a manner that ensures that the public is not exposed to RF energy levels in accordance with CFR 47, Section 1.1307(b)(1).

In accordance with this section and also section 2.1091 this device has been defined as a portable device.

In accordance with Section 1.1310, the Maximum Permissible Exposure (MPE) limit for the General Population/Uncontrolled Exposure of 1.0 has been applied, i.e $1\text{mW}/\text{cm}^2$.

Friis transmission formula: $P_d = (P \cdot G) / (4 \cdot \pi \cdot r^2)$

where: P_d = power density (mW/cm^2)

P = power input to the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of the antenna (cm)

The result was extracted from Part 1, section 3.0 of EMC Technologies Report No: M040603_Cert_Ocampa3_Atheros_2.4_BT (WLAN Module):

Maximum peak output power = $21.75\text{dBm} = 150\text{mW}$

Antenna (Monopole Ceramic Chip) gain (typical) = $0.69\text{ dBi} = 1.17$ numeric

Prediction distance = 3.88 cm

Prediction frequency = 2437 MHz

MPE limit for uncontrolled exposure at prediction frequency = $1\text{ mW}/\text{cm}^2$

Therefore, the power density at prediction frequency (P_d) = $0.9271\text{ mW}/\text{cm}^2$

The result was extracted from section 3.0 of EMC Technologies Report No: M040603_Cert_Ocampa3_BT_Atheros (Bluetooth):

Maximum peak output power = $10.75\text{dBm} = 12.0\text{mW}$

Antenna (Monopole Ceramic Chip) gain (typical) = $0.12\text{ dBi} = 1.03$ numeric

Prediction distance = 3.88 cm

Prediction frequency = 2441 MHz

MPE limit for uncontrolled exposure at prediction frequency = $1\text{ mW}/\text{cm}^2$

Therefore, the power density at prediction frequency (P_d) = $0.0646\text{mW}/\text{cm}^2$

The total power density (TPd) for WLAN and Bluetooth transmitters continuously operated:

$\text{TPd} = 0.9271\text{ (WLAN)} + 0.0646\text{ (Bluetooth)} = 0.992\text{mW}/\text{cm}^2$

Calculations show that this portable device with described antenna must have a minimum of 3.88 cm clearance between the user and the device.

SAR testing was performed in accordance with OET Bulletin 65 and reported under EMC Technologies M040630_Ocampa3_Atheros_SAR_2.4. The highest SAR value was 0.606 mW/g which complies with the FCC human exposure requirements of 47 CFR 2.1093 (d).

Refer to EMC Technologies' report - M040630_Ocampa3_Atheros_SAR_2.4 for details of SAR compliance.

Results: Complies