March 22, 2009

RF Exposure Calculations per FCC KDB 447498 v3r3

FCC ID: BRWDAMTX10
Granted Frequency Range: 2402-2478 MHz
Granted Power = 0.128 W = 21.1 dBm (average conducted power)
Duty Cycle = 36.9% (see Theory of Operation)
Source Based Power = **0.047W (16.8 dBm)**

Power and threshold calculations for hand-held / portable use:

The device exceeds the general SAR exclusion threshold of 60/f, therefore the determination for SAR testing is based on the following two thresholds:

- KDB 447498 section (4)(c)(iii)(1) requires Hand SAR for hand-held devices with the hand operating closer than 5 cm from the antenna during normal use if the power exceeds $1000 \cdot [f(\text{GHz})]^{-0.5}$ mW.
- KDB 447498 section (4)(c)(iii)(3) requires body SAR for hand-held devices that may be used closer than 5cm to the body if the power exceeds $300 \cdot [f(\text{GHz})]^{-0.5}$ mW.

Using the lower threshold of $300 \cdot [f(\text{GHz})]^{-0.5}$ mW:

SAR requirement threshold = 300 x $(2.478)^{-0.5}$ mW = 190.6 mW = 22.8 dBm

As the output power is below the of $300 \cdot [f(\text{GHz})]^{-0.5}$ mW threshold called out in KDB 447498, the product does not require Body- or Hand-SAR evaluation for handheld usage.

As requested by the FCC under KDB 555500, the user manual shall require an rf exposure warning requiring 5cm separation from the body. Photographs of air- and surface-controllers that will use this module have been files with this application to demonstrate this requirement is practical. Additionally the applicant is providing the verbiage to be used on the manuals for such controllers.

MPE calculation for Mobile Use:

Power density (S) = (Power x Gain)/(4*PI*d^2)

Using the source based power of 16.8 dBm (worst case duty cycle) and antenna gain of 2dBi…

S (mW/cm^2) at 20cm = 0.015 mW/cm^2
MPE limit = 1.0 mW/cm^2

The device complies with the RF exposure requirements for body exposure at a separation distance of 20cm.