SECTION 8

RF EXPOSURE INFORMATION

8.1 RF Safety Requirements to 2.1091 for Mobile Transmitters

Part 95 transmitters are considered categorically excluded from routine environmental evaluation as given in 47 CFR 2.1091. However, the following information is presented to prove compliance with the limits.

Power Output

The EUT's maximum expected output power as shown in section 2.6 is

Frequency of Fundamental (MHz)	Measurement (Watt)*	Antenna Gain (dBi)	P_{ERP} (Watt)	FCC Limit (Watt)
218.974202	1.10	-2.0	0.694	20.0

Source Based Time Averaging

Additionally, source based time averaging may be applied as the worse case duty cycle is given as follows:

Worse Case Duty Cycle:
There is a 'supervisory delay' between the end of one message burst and the beginning of the next message burst. The shortest supervisory delay possible is 4 seconds. The maximum number of redundant messages in a burst is 255 although it is expected to only be 10 or 15). Each message is 38 ms long, with a 50 ms gap between messages (this 50 ms is randomly dithered, but 50 ms is the average time length).

On time = 255 * 38 ms = 9.69 s
Off time = (254 * 50 ms) + 4 s = 16.7 s

Duty cycle = (on time)/(total time) = 9.69/(9.69+16.7) = 36.7 %

The information regarding duty cycle has been provided for informative purposes only. The MPE calculations specified on the following page do not take into consideration any duty cycle correction.

MPE Calculations

The limits for this unit (uncontrolled exposure) are 0.2 mW/cm^2. Taking the RF Denisty Field Equation:

$S = (EIRP \text{ in } mW)/(4\pi R^2)$ and solving for Distance R

$R = SQRT (EIRP \text{ in } mW)/(S4\pi)$

Solving the above equation yields

$R (cm) = SQRT (694(mw))/(0.2(mW/cm^2)*4*\pi) = 16.6$ cm

Since the EUT is designed only for mobile applications (where the expected separation distance between antenna and humans is greater than 20 cm), all manual instructions have specified 20 cm as the minimum exposure distance.