Compliance with 47 CFR 15.247(b)(5)

"Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter."

The EUT will only be used with a separation distance of 20 centimeters or greater between the antenna and the body of the user or nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091 (b). The EUT has two antenna ports. One antenna port is for both transmit and receive, the other antenna port is unused. The EUT will only be used in the applicant's pico Base Station, Model RFU. The pico Base Station can accommodate up to seven radios. The pico Base Station can be configured for a maximum of three 802.11(b) radios (FCC ID: PURDH2) and four iDEN radios (FCC ID: PURRFU7). Alternately, the pico Base Station can be configured with a maximum of seven iDEN radios.

The maximum peak power was measured to be 113.49 mW (ERP) for FCC ID: PURDH2 and 8.41 mW (ERP) for FCC ID: PURRFU7. The EUT's transmit frequency is greater than 1.5 GHz, therefore the EUT is categorically excluded from routine environmental evaluation per 47 CFR 2.1091(c).

The MPE estimates are as follows:

Table 1 in 47 CFR 1.1310 defines the EUT's maximum permissible exposure (MPE) for the general population as 1mW/cm^2 . The iDEN radio's MPE for the general population is 0.567mW/cm^2 . The exposure level at a 20 cm distance from the EUT's transmitting antenna is calculated using the general equation:

 $S = (PG)/4\pi R^2$ Where: S = power density (mW/cm²) P = power input to the antenna (mW) G = numeric power gain relative to an isotropic radiator R = distance to the center of the radiation of the antenna (20 cm = limit for MPE estimates) PG = EIRP

Solving for S, the maximum power densities 20 cm from the transmitting antennas are summarized in the tables on the following page.

Excerpts from TCB Training, April 3, 2002, "Mobile Transmitters", Slide 6:

"Devices operating in multiple frequency bands

- □ When RF exposure evaluation is required for TCB approval
 - <u>Separate antennas</u> estimated minimum separation distances may be considered for the frequency bands that do not require evaluation or TCB approval, however, the estimated distance should take into account the effect of co-located transmitters. (Note 24)

<u>Note 24</u> According to multiple frequency exposure criteria, the ratio of field strength or power density to the applicable exposure limit at the exposure location should be determined for each transmitter and the sum of these ratios must not exceed 1.0 for the location to be compliant."

MPE Estimates for Self Co-located Device

FCC ID: PURDH2

802.11 (b) Radio

Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit
Omni	ANT-2.4-RCT	2400	76.7	3.85	0	0.0370	1	0.0370

FCC ID: PURRFU7

iDEN Radio

Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm ²)	General Population Exposure Limit from 1.1310 (mW/cm ²)	Ratio of Power Density to the Exposure Limit
Omni	AXQ8SM-32S	851	13.8	0	0	0.0027	0.567	0.0048

Exposure Scenarios for Access Point

Per Note 24 shown above, the Sum of Ratios cannot exceed 1.0

Scenario #1 (Three 802.11(b) radios and four iDEN radios co-located in one pico Base Station)

Slot 1 802.11(b) Ratio of Power Density to the Exposure Limit	Slot 2 802.11(b) Ratio of Power Density to the Exposure Limit	Slot 3 802.11(b) Ratio of Power Density to the Exposure Limit	Slot 4 iDEN Ratio of Power Density to the Exposure Limit	Slot 5 iDEN Ratio of Power Density to the Exposure Limit	Slot 6 iDEN Ratio of Power Density to the Exposure Limit	Slot 7 iDEN Ratio of Power Density to the Exposure Limit	Sum of Ratios (Power Density to the Exposure Limit)	FCC Limit for Sum of Ratios
0.03703	0.03703	0.03703	0.00484	0.00484	0.00484	0.00484	0.13045	1.0

Scenario #2 (Seven iDEN radios co-located in one pico Base Station)

iD D Ex	Slot 1 EN Rat of Power ensity to th posure Lin	io iDEI o e Der nit Expo	Slot 2 N Ratio f Power sity to the osure Limit	Sic iDEN of Po Density Exposu	ot 3 Ratio ower y to the ire Limit	SI iDEN of F Densit Exposi	ot 4 Ratio Power ty to the ure Limit	Slo iDEN of Po Density Exposur	t 5 Ratio ower to the re Limit	Slot 6 iDEN Ratio of Power Density to the Exposure Limit	Slot iDEN of Pov Density Exposure	7 Ratio wer to the e Limit	Sum of Ratios (Power Density to the Exposure Limit)	FCC Limit for Sum of Ratios
	0.00484	C	.00484	0.00)484	0.0	0484	0.00	484	0.00484	0.004	84	0.03389	1.0

PASS

PASS

The results shown in the above tables are equivalent to the Sum of the EIRP of the Two Co-located Transmitters (EIRP TX1 + EIRP TX2) compared to the exposure limit. The benefit of this method, is that accounts for transmitters operating at different freq

Please note that EIRP = ERP x 1.64, so EIRP is worst case.

In accordance with the FCC's multiple frequency exposure criteria, the sum of the ratios (power density to the exposure limit) does not exceed 1.0; therefore, the exposure condition is compliant with FCC rules.