** MPE Calculations **

The peak radiated output power (EIRP) is calculated as follows:

EIRP = P + G	Where,
EIRP = -13.25 dBm + 3.89 dBi	P = Power input to the antenna (mW)
EIRP = -9.36 dBm	G = Power gain of the antenna (dBi)

Power density at the specific separation:

$S = PG/(4R^2\pi)$	Where,
	S = Maximum power density (mW/cm^2)
$S = (-13.25*2.45) / (4 * 0.14^2 * \pi)$	P = Power input to the antenna (mW)
	G = Numeric power gain of the antenna
$S = 0.037$ mW/cm^2	R = Distance to the center of the radiation of the antenna
	(0.5cm = limit for MPE)

The Maximum permissible exposure (MPE) for the general population is 1 mW/cm^2 .

The power density at 0.5cm does not exceed the 1 mW/cm^2 limit.

Therefore, the exposure condition is compliant with FCC rules.

Estimated safe separation:

$R = \sqrt{(PG / 4\pi)}$	Where,
	P = Power input to the antenna (mW)
$R = \sqrt{(-13.25 * 2.45 / 4\pi)}$	G = Numeric power gain of the antenna
	R = Distance to the center of the radiation of the antenna
$R = 0.10$ Cm	(0.5cm = limit for MPE)

The numeric gain(G) of the antenna with a gain specified in dB is determined by:

$G = Log^{-1}$ (dB antenna gain / 10)

G = Log-1 (3.89 / 10)

G = 2.45

- Min. transmitting frequency = 494.0 MHz

- Min. test separation distance = 5 mm

- Max. Power with tune-up tolerance = 0 dBm = 1 mW

(Measured power -13 dBm $\pm$ 0.5dB)

Step 1)

SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance $\leq$ 50 mm = **Used**

[(max.power of channel, including tune-up torelance, mW)/(min. test separation distance, mm)] * [$\sqrt{f(GHz)}$]

= [0.05 / 5] * [$\sqrt{0.494}$] = 0.007 $\leq$ 3, for 1g SAR

Thus, SAR for this device is not required.

Step 2)

SAR Test exclusion thresholds for 100MHz to 1500MHz at test separation distance > 50 mm = **N/A**

[Threshold at 50mm in step 1) + (test separation distance - 50 mm) * ($\sqrt{f(MHz)}$/150] mW

Step 3)

SAR Test exclusion thresholds for 1500MHz to 6GHz at test separation distance > 50 mm = **N/A**

[Threshold at 50mm in step 1) + (test separation distance - 50 mm) * 10] mW