4 FCC §15.407(f) & §2.1091 - RF Exposure

4.1 Applicable Standard

According to FCC §15.407(f) and §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) | |
|---|-------------------------------------|-------------------------------------|--|-----------------------------|--|
| Limits for General Population/Uncontrolled Exposure | | | | | |
| 0.3-1.34 | 614 | 1.63 | * (100) | 30 | |
| 1.34-30 | 824/f | 2.19/f | * (180/f ²) | 30 | |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 | |
| 300-1500 | / | / | f/1500 | 30 | |
| 1500-100,000 | / | / | 1.0 | 30 | |

f = frequency in MHz

* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^{2}$$

Where: S = power density

- P = power input to antenna
- G = power gain of the antenna in the direction of interest relative to an isotropic radiator

 \mathbf{R} = distance to the center of radiation of the antenna

4.3 MPE Results

5.2 GHz:

| Maximum peak output power at antenna input ter | minal (dBm): | 15.48 |
|---|-------------------------------|-----------------|
| Maximum peak output power at antenna input te | <u>rminal (mW):</u> | <u>35.32</u> |
| Prediction of | distance (cm): | <u>30</u> |
| Prediction frequ | uency (MHz): | <u>5200</u> |
| Maximum Antenna Gain, | typical (dBi): | <u>25</u> |
| Maximum Antenna Ga | ain (numeric): | 316.227 |
| Power density of prediction frequency at 30.0 c | <u>m (mW/cm²):</u> | <u>0.987524</u> |
| MPE limit for uncontrolled exposure at prediction frequence | $cy (mW/cm^2)$: | <u>1.0</u> |

5.8 GHz:

| Maximum peak output power at antenna input terminal (dBm): | | |
|--|----------------|--|
| Maximum peak output power at antenna input terminal (mW): | | |
| Prediction distance (cm): | <u>68</u> | |
| Prediction frequency (MHz): | <u>5785</u> | |
| Maximum Antenna Gain, typical (dBi): | <u>25</u> | |
| Maximum Antenna Gain (numeric): | <u>316.227</u> | |
| Power density of prediction frequency at 68.0 cm (mW/cm ²): | <u>0.977</u> | |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²): | <u>1.0</u> | |

The device meets FCC MPE requirement for uncontrolled exposure environment at 68 cm distance.