

## 4 FCC §2.1091– RF Exposure

### 4.1 Applicable Standard

According to FCC §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.

#### Limits for General Population/Uncontrolled Exposure

| Frequency Range (MHz)                               | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | 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 <sup>2</sup> )             | 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

R = distance to the center of radiation of the antenna

### 4.3 MPE Results

RSU:

Maximum peak output power at antenna input terminal (dBm): 19.62

Maximum peak output power at antenna input terminal (mW): 91.62

Prediction distance (cm): 20

Prediction frequency (MHz): 5860

Maximum Antenna Gain, typical (dBi): 6

Maximum Antenna Gain (numeric): 3.98

Power density of prediction frequency at 20 cm (mW/cm<sup>2</sup>): 0.073

MPE limit for uncontrolled exposure at prediction frequency (mW/cm<sup>2</sup>): 1

The device compliances with FCC MPE limit at 20 cm distance.

OBU:

|                                                                                         |              |
|-----------------------------------------------------------------------------------------|--------------|
| <u>Maximum peak output power at antenna input terminal (dBm):</u>                       | <u>19.63</u> |
| <u>Maximum peak output power at antenna input terminal (mW):</u>                        | <u>91.83</u> |
| <u>Prediction distance (cm):</u>                                                        | <u>20</u>    |
| <u>Prediction frequency (MHz):</u>                                                      | <u>5860</u>  |
| <u>Maximum Antenna Gain, typical (dBi):</u>                                             | <u>3</u>     |
| <u>Maximum Antenna Gain (numeric):</u>                                                  | <u>1.99</u>  |
| <u>Power density of prediction frequency at 20 cm (mW/cm<sup>2</sup>):</u>              | <u>0.036</u> |
| <u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm<sup>2</sup>):</u> | <u>1</u>     |

The device compliances with FCC MPE limit at 20 cm distance.