

## Environmental Assessment

Applicant's Name (company): FLIR Radars Inc.

### Expected Use of Equipment

The Experimentation proposed is to demonstrate the R6SS radar capabilities in various areas in the USA. Demonstrations will typically be conducted for 1 to 3 hours at a time. Frequency of the demonstrations is expected to be in the order of 1 or 2 demonstrations per month.

### Equipment Setup

To conduct demonstrations, the R6SS radar will be installed on a tripod with a height from 2 to 6 meters above ground or of an existing building structure. No structure(s) will be built for the purpose of conducting demonstrations under the license being applied for.

### Safety Hazard

The R6SS emission characteristics are as follows:

| Parameter             | Value                                                                                                             | Comment                                                                                                                                                                                                                |
|-----------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tx Center frequency   | 9315 to 9685 MHz<br>selectable in 10 MHz steps                                                                    | The radar can be configured to operate in any of 38 channels. Operation is on one channel at any time. A channel is selectable provided that the bandwidth does not extend beyond the 9300 – 9700 MHz operating range. |
| Bandwidth             | 90 MHz (3.6 km mode)<br>60 MHz (5.6 km mode)<br>35 MHz (10 km mode)<br>24 MHz (15 km mode)<br>12 MHz (26 km mode) |                                                                                                                                                                                                                        |
| RF Output Power       | 8 W peak<br>6 W average                                                                                           |                                                                                                                                                                                                                        |
| Modulation            | Linear FMCW                                                                                                       |                                                                                                                                                                                                                        |
| Tx Antenna Gain       | 17 dBi                                                                                                            |                                                                                                                                                                                                                        |
| Tx Antenna Beamwidths | 90 deg azimuth<br>5.5 deg elevation                                                                               | Half power                                                                                                                                                                                                             |
| Polarization          | Linear Horizontal                                                                                                 |                                                                                                                                                                                                                        |

Using the limits for Maximum Permissible Exposure for Occupational/Controlled exposure of  $5 \text{ mW/cm}^2$ , the safe distance is calculated as follows:

$$R_s = \sqrt{\frac{P G}{4\pi S}} = 80 \text{ cm}$$

where

S = Power Density ( 5 mW/cm<sup>2</sup> )

P = Power Input to Antenna ( 8000 mW )

G = Power Gain of Antenna ( 50.1 or 17 dB )

R<sub>s</sub> = Safe distance to center of Antenna

### Conclusion

Given that the antenna will be mounted on a tripod 3 to 6 meters above ground or structure, it can be concluded that the RF emissions will not cause safety hazard for personnel in terms of radiation exposure, the safe distance being calculated at 80 cm.

Since the radar is a mobile equipment, no structure or tower will be built and there shall be no environmental impact due to construction.

With the safe distance being 0.80 meter and the expected usage being 2 to 8 hours per month, no significant environmental impact on wildlife is expected from the use of the R6SS radar as a mobile demonstration asset.