RF Exposure Compliance Requirements
HiPR-900

FCC Rule: 1.1307, 1.1310, 2.1091(b)(d), 2.1093
IC Rule: RSS-210 (14), Exemption Clause RSS-102(4.3)

Description of Compliance: The HiPR-900 is intended to be used in the SCADA (Supervisory Control And Data Acquisition) market and will be mounted with a fixed RTU (Remote Terminal Unit). The HiPR-900 will be professionally installed in such a way that a minimum separation distance of more than 20 cm will be maintained between the radiating structure and any person so it is classified as a mobile. A typical installation would be with the antenna mounted on a tower, in rare instances a ½ wave whip antenna would be used. In either installation the antenna would be mounted greater than the minimum distance calculated below.

The calculation for the more stringent specification, a General Population/Uncontrolled Mobile device according to section 2.1091(b) and section 1.1310 Note 2 is shown below:

Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density mW/cm^2	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	---	---	f/1500	30
1500-100,000	---	---	1.0	30

Environmental Specification: f (MHz) / 1500 mW/cm^2
f (902 MHz) / 1500 mW/cm^2 = **.6 mW/cm^2** (worse case)

$S = (PG) / (4\pi R^2)$ (OET Bulletin 65)

where: S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

Distance Calculation:

Maximum Antenna Gain: 8.5 dBi Yagi $10^{(8.5dBi / 10)}$ = 7.08
Power input to antenna: 27.5dBm = $10^{(27.5dBm / 10)}$ =562 mW
.6 mW/cm^2 = (562mW * 7.08) / ($4\pi R^2$) ➔ **Minimum Distance = 22.97 cm**