

1.0 Maximum Permissible Exposure Evaluation (extracted from test report)

The results of power measurement and intended use/proximity are compared against the requirements for safety of RF exposure.

1.2 Criteria

Section Reference	Date
2.1091, FCC OET Bulletin 65, RSS-102	August 29, 2013

1.3 Procedure

Using measurement of peak power and intended application, determine the permissible exposure level or whether additional exposure tests (SAR) are indicated. Justify conclusion for selected exposure area and separation distance.

1.4 Results

Antenna for this device is a custom loop antenna soldered via the feed line to the circuit card assembly. The assembly receives power from a battery within the unit. During normal operation the device can operate for up to 10 years. It communicates wirelessly via network radio module(s) located on poles or structures above the traffic. Transmitting is infrequent.

The VDS-POD-S is buried beneath the asphalt getting traffic data via a magnetic field sensors distributed on the circuit board. RF emission is only from the loop antenna in the sensor. After initial setup and installation, direct user or general public contact with the unit is not possible without first physically removing the section of epoxy it is buried under. The user is only required to do this once every 10 years to change the battery.

A separation distance of 20 cm was selected. Power is determined from the measured field strength at 10 meters and antenna gain applied to determine EIRP. The EIRP is compared to the referenced table threshold value.

Measured Field Strength @ 10 m	At Distance	Calculated EIRP
96.4 dB μ V/m*	10 m	14.6 mW

*This is the peak measurement.

Limit of MPE for SAR Exclusion Threshold for 902 MHz, General Population/Uncontrolled:

$$f_{(\text{MHz})} / 1500 = 902 / 1500 = 0.6013 \text{ mW/cm}^2 \quad \text{Ref. FCC Bulletin OET-65 Table 1(B)}$$

Field density is determined at 20 cm as:

$$\begin{aligned} S &= \text{EIRP} / (4 \pi 20^2) & \text{Ref. FCC Bulletin OET-65 Equation (4)} \\ S &= 14.6 \text{ mW} / 5026.55 \text{ cm}^2 \\ S &= 0.0029 \text{ mW/cm}^2 \end{aligned}$$

The power is below the SAR Exclusion Threshold of 0.6013 mW/ cm², it therefore meets the criteria for exclusion from SAR testing.
