

## MPE RF exposure calculations for TVG-850 EVDO with collocated antennas

The following RF exposure calculations have been made for the TVG-850 EVDO (FCC ID: JUP-TVG850EVDO) which incorporates the following devices and antennas:

- Sierra Wireless EVDO card, model: MC5728V FCC ID: N7N-MC5728
- Silex 802.11 b/g card, model: SX-10WAG FCC ID: N6C-SX-10WAG
- Mobile Mark antenna (cellular, GPS and 802.11) model number: SMW-UMB

This device will only be used with a separation of 20 cm or greater between the antennas and the user or nearby person. This device will be considered as a mobile transmitter per 47 CFR 2.1091(b) and therefore has to comply with Maximum Permissible Exposure (MPE) limits.

### Limits Applicable to the TVG-850 EVDO

For mobile radio equipment operating in the cellular phone band, the lowest power density limit is calculated using the lowest frequency as  $824 \text{ MHz} / 1500 = 0.55 \text{ mW/cm}^2$  and  $824 \text{ MHz} / 150 = 5.5 \text{ W/m}^2$

For operation in the PCS band and the 2.4 GHz band, from FCC 1.1310 Table 1 (B), the maximum values of  $S = 1.0 \text{ mW/cm}^2$  and from IC Safety Code, Section 2.2 Table 5 Column 4,  $S = 10 \text{ W/m}^2$ .

### Co-location results for Simultaneous Operation in the Cellular Band and 2.4 GHz band

Band	Mode	Separation Distance (m)	Output Power (dBm)	Antenna gain with cable loss (dBi)	Duty Cycle (%)	IC Power Density ( $\text{W/m}^2$ )
850 MHz	Cell		29.82	-0.25	100	
2.4 GHz	WLAN		16.45	1.7	100	
Combined		0.20				1.93

The co-located Power Density is less than  $5.5 \text{ W/m}^2$  which is the most stringent of the limits for each separate transmitter ( $5.5 \text{ W/m}^2$  and  $10 \text{ W/m}^2$  for the WAN and WLAN respectively).

### Co-located results for simultaneous operation in the PCS band and the 2.4 GHz band

Band	Mode	Separation Distance (m)	Output Power (dBm)	Antenna gain with cable loss (dBi)	Duty Cycle (%)	IC Power Density (W/m <sup>2</sup> )
1900 MHz	PCS		29.10	1.70	100	
2.4 GHz	WLAN		16.45	1.70	100	
Combined		0.20				2.52

The co-located Power Density is less than 10W/m<sup>2</sup> which is the limits for each separate transmitter.

## Conclusion

The TVG-850 EVDO is in compliance with FCC MPE limits for General Population / Uncontrolled Exposure as a mobile device with a distance of greater than 20 cm from the co-located antennas.