

Evaluation of RF Exposure for AirCard 750 Wireless Modem in Mobile Configuration

In this application we seek modular approval to the AirCard 750 wireless modem for use in mobile configuration. The FCC OET Bulletin 65 Supplement C states that mobile devices identified in 47 CFR §2.1091 that operate at 1.5 GHz or below with an effective radiated power (ERP) of 1.5 watts or more, or those that operate at frequencies above 1.5 GHz with an ERP of 3.0 watts or more are required to perform routine environmental evaluation for RF exposure prior to equipment authorization or use; otherwise, they are categorically excluded. The following analysis will demonstrate compliance with the FCC rules on RF exposure. Since the AirCard 750 modem is only operational in PCS band in the US, the analysis will be done in PCS band only.

Operation in PCS band (1850 – 1910 MHz)

The maximum conducted output power of AirCard 750 is 28.4 dBm. In order to satisfy the EIRP limit under Part 24, the antenna peak gain can not exceed 4.6 dBi. Take the worst case as an example, in which an antenna with 4.6 dBi gain is used. The resulted ERP can be expressed as follows:

$$\text{ERP} = 28.4 + 4.6 - 2.15 = 30.85 \text{ dBm (1.22 W)} < 3 \text{ W}$$

As we can see this resulted ERP is below 3 W, therefore routine environmental evaluation for RF exposure prior to equipment authorization or use for AirCard 750 in PCS band is categorically excluded.

In summary, the analysis shown above has clearly demonstrated that routine environmental evaluation for RF exposure prior to equipment authorization or use for the AirCard 750 wireless modem is categorically excluded if the maximum antenna gain does not exceed 4.6 dBi in PCS band.