Evaluation of RF Exposure for AirCard 555 Wireless Modem as a Mobile Device

In this application we seek modular approval to the AirCard 555 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 555 modem is a dual band device, the analysis will be done in both bands.

Operation in cellular band (824 – 849 MHz)

The peak conducted output power of AirCard 555 in cellular band is 27.7 dBm. Take the worst case as an example, in which an antenna with 6 dBi gain is used. The resulted ERP can be expressed as follows:

ERP = 27.7 + 6 – 2.15 = 31.55 dBm (1.43 W) < 1.5 W

As we can see this resulted ERP is below 1.5 W, therefore routine environmental evaluation for RF exposure prior to equipment authorization or use for AirCard 555 in cellular band is categorically excluded.

Operation in PCS band (1850 – 1910 MHz)

The peak conducted output power of AirCard 555 in PCS band is 26.8 dBm. Take the worst case as an example, in which an antenna with 6 dBi gain is used. The resulted ERP can be expressed as follows:

ERP = 26.8 + 6 –2.15 = 30.65 dBm (1.16 W) < 3 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 555 in PCS band is also 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 555 wireless modem is categorically excluded if the peak gain of the antenna does not exceed 6 dBi in cellular band and PCS band.