

Subject: Response to ATCB questions for Grant Application FCC ID: RS2R101B dated August 23, 2006.

2) Please provide a technical description of operation/function of the FM coupler.

XM Answer: The FM coupler is designed to deliver the FM modulated signal from the XM Radio receiver to the vehicle FM radio by capacitive coupling the FM signal directly to the vehicle FM antenna. The FM modulated signal is output from the XM Radio receiver on the center conductor of the RF SMB connector which also carries the S-Band XM radio signals received from the XM antenna. The coupler system contains a short section of RF coax which is connected to the XM receiver SMB connector at one end and to a diplexor box at the other end. The diplexor box interfaces also include a SMB connector for connecting the XM antenna and a longer section of coax which is terminated with a spring clip for attachment to the vehicle FM antenna. A discrete filter circuit in the diplexor box provides a low loss path for the S-Band XM radio signals to travel from the XM antenna to the XM receiver while attenuating the XM signals to the long section of coax to the FM antenna. Similarly, the diplexor box provides a low loss path for the FM signals from the XM receiver to travel to the FM antenna along the long section of coax while attenuating the FM signal to the XM antenna. The spring clip at the end of the long section of coax is connected directly to the coaxial center conductor which contains the FM signal. When the spring clip is either clipped onto an aerial antenna or clipped onto the window antenna attachment, the FM energy is transferred to the FM radio through the capacitive coupling at the antenna. In order to reduce the FM signal radiating from the shield of the long coaxial section, two small ferrites are molded onto the coax approximately up to 1 foot from the spring clip.