

August 22, 2006

RE: XM Satellite Radio, Inc

FCC ID: RS2R101B

Please see comments and attachments below regarding the above referenced Application.

- 2 Q: The block diagram appears to show 2 different forms of FM couplers (one labeled coupler, one labeled direct). Test photographs suggest an arial antenna coupler and XM coupler. Please explain the differences between these various modes/configurations as necessary (i.e. are they leaky coax, what type of coupling is utilized, is the signal attenuated, length of cable etc.) For instance, it appears that the FM Direct may replace the FM antenna and therefore be considered a digital device configuration and not actually a wireless configuration. Please comment as necessary and also explain if all variations have been tested. Please ensure this includes a description of operation/function of each.
- A: There are two modes of getting the FM signal to the user's FM radio. The first is through the FM direct adaptor box which hard-wires the FM modulator signal to the FM radio's FM input, through a switch. The second is by using the FM coupler mechanism, which couples the FM signal directly to the vehicle's FM antenna. In the case of an arial antenna, the FM coupler clip is attached directly to the arial antenna. In the case of an embedded window antenna, the FM coupler clip is attached to a window bracket, which adheres to the window containing the FM antenna.
- As for testing, we will submit additional data using the FM direct adaptor to verify that it meets the unintentional limits. The FM emissions testing in the case of a window antenna is currently being discussed with the FCC.
- 3 Q: Given the loosely coupled mechanism used in certain configurations and the wide variety of antenna types and placements in a vehicle (window, panel, roof), how was testing performed in effort to obtain worse case data? Have various antenna configurations been investigated? Please detail.
- A: We performed the arial antenna emissions testing using an aftermarket arial antenna mounted on a large ground plane (3ft x 4ft). The ground plane was attached to the negative terminal of the car battery being used. In each case, all coaxial cables were placed randomly on the table next to the ground plane. For each test frequency, the coaxial cables were randomly moved a minimum of 3 times and the test table rotated to find the maximum emissions. We have tested with other models of arial antennas and found variations to be minimal. Window mount antennas are being discussed with the FCC.
- 4 Q: Regarding the FM coupler, please explain what happens if the XM antenna is directly connected to the docking port and therefore bypasses the coupling module. Would this yield a leaky coax connection? Is it possible to bypass the coupling module this way?
- A: Part of the submission data was this scenario. The XM antenna was connected directly to the car dock without an FM coupler attached. As the data shows, we meet the unintentional emissions limit with about 15 dB of margin.
- 5 Q: Can better photographs regarding the various devices (i.e. FM coupler/direct, etc.) be provided for clarity purposes?
- A: Please refer to the following files named Coupler Photos\_5.pdf and Direct FM Photos\_5.pdf.