Experimental Description

Under provisions of the Rail Safety Improvement Act of 2008, the US rail industry is subject to a federal mandate to implement Positive Train Control (PTC) technology by the end of 2015. The industry is in the midst of a comprehensive development effort to realize this technology.

A central component of PTC is wireless communications. The industry has identified 217-222 MHz as the band of operation for PTC, and some 220-222 spectrum licenses have already been acquired by an industry group.

A concerted effort is underway to develop a radio specifically for this application, and we expect to have an authorized radio in early to mid 2011. However, as part of our deployment planning, we need to characterize the performance and propagation of modulated 220 MHz signals by doing field tests this year.

We have a number of ways to implement a transmitter to test propagation and coverage: 1) we have access to a preliminary version of the PTC radio, and 2) we could use a signal generator coupled to an RF power amplifier to produce an appropriate signal. Neither of these transmitters would have a valid equipment authorization as required by the Commission.

This is the reason for this Experimental/STA request.

Under a grant for this Experimental/STA, we would deploy temporary transmitters at specific fixed site locations, and proceed to drive test the area with a compatible receiver to measure propagation, coverage, and also fading and bit error characteristics. We would do this for a number of base locations to get results from areas with varying terrain, vegetation, and climate characteristics.

Besides giving us field performance information for system design, results of these tests could influence the ongoing radio and protocol designs.