

From: Carol Martin

To: Jose Trevino

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Subject: FCC file number 0257-EX-PL-2010

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Message:

Applicant: Telcordia Technologies, Inc.  
File Number: 0257-EX-PL-2010  
Confirmation Number: EL961802  
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Response to request in correspondence provide the description of the operation to be conducted and its purpose in more details.

The proposed experiments support Telcordia deliverables under a Department of Defense research program, Contract Number H98230-09-C-0280, for the Laboratory for Telecommunications Sciences. The project includes experiments to better understand vulnerabilities of critical infrastructure to natural and manmade phenomena.

In particular we propose to conduct experiments on the impact of radio frequency interference (RFI) into advanced communications services such as broadband access. We propose to do this by running short term transmission experiments at a number of locations using conventional AM transmissions, but just below the commercial AM band to avoid interference with commercial broadcasts.

A typical field test would be conducted as follows. First, a test broadband access system is identified. A volunteer will willingly and knowingly allow tests to be conducted on his or her broadband line. Initial testing will be done on DSL systems. The phone line at the connection to the DSL modem in the home will be temporarily removed, and reinserted into test equipment.

Second, an experimental AM transmitter will be activated. Using a Sangean ATS 909 longwave radio receiver, the transmission frequency will be checked for other users. If the band is clear, an AM signal will be transmitted for several minutes, during which time measurements are made at the phone line termination. The transmission will consist of a pre-recorded message running in a continuous loop; we propose identifying the station by call sign, indicating that a test is in progress, and that this is a non-distress situation.

Multiple tests will be run at various locations in the vicinity of the volunteer's home, and at differing power levels. The purpose is to determine interference coupling mechanisms and sensitivities.

Because the interference is narrowband, other broadband lines in the immediate vicinity will not be seriously impacted. DSL systems transmit using 256 separate tones, spaced 4 kHz apart. A strong local AM transmitter will impact one or two tones. But the DSL system will immediately adapt to redistribute bits (using a technique called bit swapping). DSL systems adapt continuously, and overall service is not affected during this process.

The results of these narrowband experiments will be extrapolated to model vulnerability to potential wideband hostile disturbances. This latter work will be done via computer simulation, and will not involve field tests or emissions.

At the conclusion of the tests, the volunteer's original broadband access will be restored by reinserting the phone line, rebooting the modem, and verifying connectivity.

