

## **Effects of Noise on VHF Satellite Communications**

Abstract:

This presentation provides an overview of man-made radio noise that affects VHF space-to-earth satellite links. The noise statistics presented include recent measurements made by the Institute for Telecommunication Sciences as part of a link analysis for the broadcast of digital satellite weather images at 137 MHz. The motivation for the measurements was that published man-made noise statistics are probably outdated because they are based on measurements made more than two decades ago. Since that time, technological advances have changed man-made noise emissions. For example, automotive emissions have been reduced, while emissions from other sources such as unregulated electronic devices (e.g., computers, switching devices) and other electrical equipment such as electric motors have probably increased substantially. The measured data show that there have been significant changes in the character of man-made radio noise in the VHF band that can significantly affect space-to-earth satellite links. The conclusion being that new noise models and noise environment characterizations are required to adequately predict performance of VHF satellite links.