Measured Performance of an Electrically Thin Broadband Antenna

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This presentation describes measurements taken to quantify the performance of an electrically thin antenna (i.e., less than 1/40 of a wavelength at the lowest frequency of operation.) The measured performance compares and contrasts this electrically thin antenna to higher profile commercial off the shelf antennas in terms of gain, efficiency, and bandwidth. The measured data is compared to simulations.

One operational scenario for such an antenna would be for satellite communications in the VHF/UHF band where the wavelength is on the order of a meter. Accordingly, additional measurements such as a bit error rate test to gauge the throughput of the device are of additional interest. Again, this measurement is compared to the performance of a commercial antenna.

The enabling technology for these low-profile broadband antennas uses Magnetodielectric materials. In addition to the discussion of measured data, the presentation will discuss the theoretical reasoning that enables the antennas to maintain a wideband impedance match over an octave or more.

In addition to the measured data taken in anechoic chambers, data taken in field test in realistic environments will be presented. The presentation will conclude with comments about future low-profile antenna development as well as the realization of such antennas embedded on a curved surface such the wing of an aerial platform.