

# **BROADBAND FTS MEASUREMENTS OF PLANAR ANTENNAS AT TERAHERTZ FREQUENCIES.**

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The direct response of NbN phonon-cooled hot electron bolometer (HEB) mixers integrated with both spiral (with different scaling factors) and twin slot (designed for 0.6 THz, 1.6THz and 2.5 THz center frequencies) antennas is measured in the frequency range from 0.5 THz to 3 THz. The results of these measurements are compared with heterodyne measurements of the mixers. The RF bandwidth of the broadband spiral antennas is found to be dependent on the radiation polarization. However, the accuracy of the measurements is affected by the water absorption between the cryostat and the FTS output window.

Fourier transform spectrometer (FTS) optimization is discussed in terms of the beam splitter and the FTS-to-HEB coupling. As a result, FTS bandwidth was extended up to 7 THz.