

# **A BROADBAND TERAHERTZ HETERODYNE RECEIVER WITH AN NbN HEB MIXER.**

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A 1.4-1.7 THz heterodyne receiver is being developed for the Herschel Space Telescope. The receiver is based on a quasioptical NbN hot-electron bolometric (HEB) mixer integrated with a twin-slot antenna. An intermediate frequency band is 4-8 GHz. In the report we present results of a noise temperature and a conversion gain measurements in the mentioned IF band. We analyze an impact of the IF chain on the receiver noise temperature due to an added noise and a mixer-to-amplifier mismatch loss. The receiver is tested with two 4-8 GHz low noise amplifiers with noise temperatures of 4.5 K (Yebes) and 2 K (CTH) with and without an isolator. A directional coupler is implemented between the HEB mixer and the amplifier in order to perform microwave reflection measurements from the mixer, which is biased to different bias points, in a wide intermediate frequency band.

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