

Efficient Side-band Ratio Measurement of a Submm Wave Mixer Using a Fourier Transform Spectrometer.

A. Baryshev¹, R. Hesper¹, G. Gerlofsma¹, M. Kroug², W. Wild³

¹ NOVA/SRON/RuG

² DIMES/TuD

³ SRON / RuG

Abstract

The sideband ratio is an important parameter for the sensitivity calibration of a DSB heterodyne receiver at a telescope. A number of techniques can be used for measuring this parameter. We present sideband ratio measurements of a submm receiver in the 600-720 GHz band. A Michelson Fourier transform spectrometer with long path length difference is used. A frequency resolution of up to 0.75 GHz is achieved. The sideband ratio is measured at many points across the receiver band making use of an electronically tuneable LO and automatic receiver tuning procedures. The direct response of the same mixer is measured using the same interferometer. We will compare the side-band ratio obtained in the heterodyne mode with an estimate that can be obtained from a direct detection mode, and evaluate if the direct detection curve can be a good indication of the receiver quality. Comparison with estimates for the side-band ratio applying the full Tucker theory will be made.

Preference: poster

Corresponding author A. Baryshev -- andrey@sron.rug.nl