

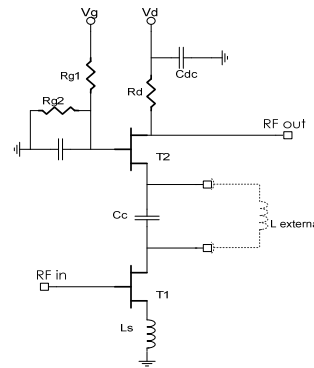
# Sub 10K LNA at room temperature

## LNA design:

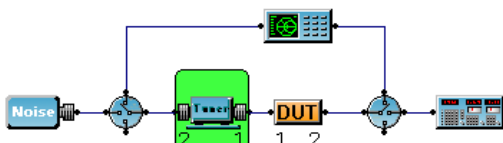
GaAs 70nm OMMIC D007IH  
 NT below 10K for 1.1-2 GHz  
 $S_{11} < -10\text{dB}$  for 0.8 - 1.5 GHz  
 $S_{21} > 18\text{dB}$  for 0.5 - 1.5GHz  
 $P_{dc} = 175\text{mW}$

## Why use cooled receivers?

Roel Witvers  
 Bert Woestenburg  
 Jan Geralt bij de Vaate



Schematic of LNA

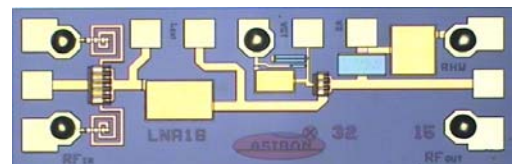


Measurement setup

## How it was measured

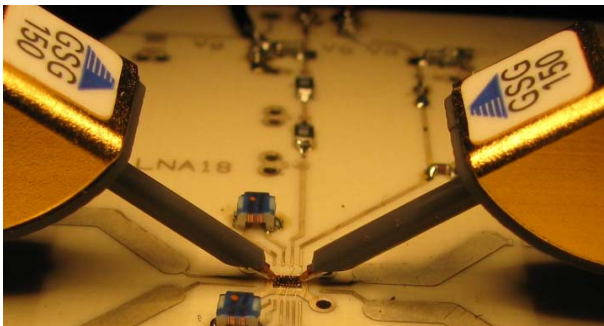
The measurement has been done using an Agilent PNA-X, a network analyzer with noise measurement option, in combination with a Maury tuner.

To measure the device we used a Cascade probe-station. This setup enabled us to measure the s-parameters and the noise parameters of the device. We then used this data to calculate the NT using an 150Ω source impedance and a 20nH series inductor at the input.

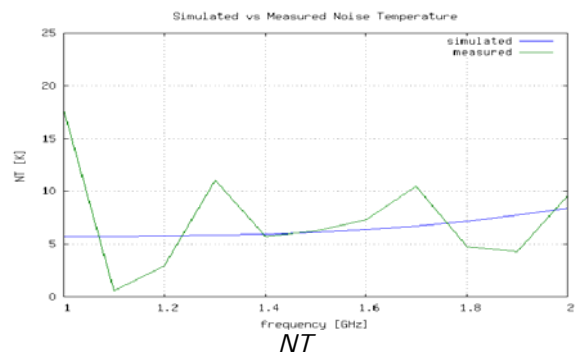


Layout

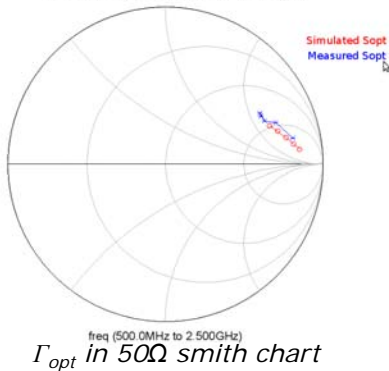
## Measured Results



LNA on the prober



Simulated versus Measured Gamma\_opt



$\Gamma_{opt}$  in 50Ω smith chart

