



## Test bench for the study of the noise of HEMTs at temperatures down to 300mK

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High electron mobility transistors (HEMTs) have already demonstrated their feasibility as first-stage amplification components to be mounted near cryogenic detectors down to temperatures of 1.5 K, reducing the noise picked up by long cables before amplification. With the objective of reducing even more the distance between the cryogenic detector and the first amplification electronic stage, we have developed at the Astrophysics Service of CEA, a cryogenic installation to study the behavior of HEMTs down to 300mK. This temperature is attained by a bi-stage 4He/3He refrigerator. In this work we describe the test bench focusing on its electronic performance. We also detail the electronic model used to take into account the parasitic elements from the internal connection cables. Finally, we present the results in terms of input noise, gain and dissipation power of the first tests performed on HEMTs developed by LPN (CNRS).