Advances Towards an ALMA Band-1 Receiver

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***Abstract*—Despite its low frequency range, band 1 of ALMA (30−45 GHz) presents several challenges for its realization. In particular, the required noise temperature of the system (17 K at 80% of the band) combined with the design of the antenna imposes stringent requirements on low noise amplifiers and focusing optics. A preliminary analysis of the optics sets the specifications of the amplifiers on a maximum noise temperature of 10 K (five times the quantum limit) and a minimum gain of 20 dB. Here we present our recent efforts towards achieving these requirements. Furthermore, we will present the results of construction and characterization of several parts necessary for the future implementation of the receiver.**