Abstracts

Wideband low-phase-noise high-power W-band signal sources

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This paper describes the development of electronically-tunable wideband low-phase-noise millimeter-wave signal sources. These sources are designed to drive cooled Schottky multipliers to supply the LO for the ALMA telescope array. Each phase-locked driver consists of a YTO, active multiplier chain (AMC), and a power amplifier. Measurements of a prototype driver electronically tunable from 72-85 GHz with greater than 50 mW output power are presented. Additive phase noise of individual amplifiers and multipliers is described. Long-term phase drift measurements are reported. Preliminary W-band amplitude noise measurements using a SIS mixer with a YTO-based driver chain and Gunn oscillator LO are also presented. All measurements indicate that the stringent ALMA LO specifications can be met with this architecture.

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