Abstracts

A Cryogenic 43-GHz-Band Low-Noise Amplifier for Radio Astronomy

T. Saito, Y. Oohashi, H. Kurihara, Y. Hirachi, T. Kasuga and K. Miyazawa. "A Cryogenic 43-GHz-Band Low-Noise Amplifier for Radio Astronomy." 1989 MTT-S International Microwave Symposium Digest 89.3 (1989 Vol. III [MWSYM]): 853-856.

This paper describes the first development of a cryogenic millimeter-wave-band HEMT low-noise amplifier for radio astronomy application. To ensure stable operation, the amplifier was designed using S-parameters measured at a cryogenic temperature of 30 K. Very low noise temperature is obtained over wide frequency range from 41.3 to 44.5 GHz by adopting a balanced amplifier configuration with a waveguide-type 3 dB hybrid. Minimum and maximum noise temperatures within the frequency range are 65 and 95 K, at an ambient temperature of 30 K and amplifier gain of 11.5 dB.

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