Abstracts

A Positive Resistance Up-Converter for Ultra-Low-Noise Amplification

E. Sard, B. Peyton and S. Okwit. "A Positive Resistance Up-Converter for Ultra-Low-Noise Amplification." 1966 Transactions on Microwave Theory and Techniques 14.12 (Dec. 1966 [T-MTT]): 608-618.

An ultra-low-noise two-channel tunable amplifier system, operating in the 1.5 to 2.5 GHz frequency range, consisting of a cooled positive resistance parametric up-converter followed by a traveling-wave maser (TWM) and down-converter, has been developed. A theoretical analysis of the important operating and design parameters of the up-converter is presented and experimentally verified. Experimental data is given on the operation of the up-converter with the input and output ports reversed (down-converter), and is shown to correlate with the theoretical model. A brief discussion is presented on the TWM, and the spurious signal considerations which govern the choice of maser center frequency (up-converter output frequency). Finally, some preliminary system data is given showing the low noise performance of the overall cascaded amplifier integrated with a 4.2°K closed-cycle refrigerator.

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