Abstracts

Modeling of a Monolithic Slot Ring Quasi-Optical Mixer

S.K. Masarweh, T.N. Sherer, K.S. Yngvesson, R.L. Gingras, C. Drubin, A.G. Cardiasmenos and J. Wolverton. "Modeling of a Monolithic Slot Ring Quasi-Optical Mixer." 1994 Transactions on Microwave Theory and Techniques 42.9 (Sep. 1994, Part I [T-MTT]): 1602-1609.

This paper describes the design and modeling of a quasi-optical monolithic mixer system. An integrated slot-ring element with two Schottky-Barrier diodes acts simultaneously as an antenna, and as a mixer. A nonlinear analysis has been performed of the mixer function. The slot-ring element receives RF and LO power through a hyper-hemispherical lens. This lens is also analyzed and radiation patterns are calculated, which are in good agreement with measurements. The results in this paper indicate that quasi-optical monolithic monopulse systems in the millimeter wave range, based on four slot-ring elements and a hyper-hemispherical lens, should have excellent performance.

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