Abstracts

A SIMMWIC 76 GHz Front-End with High Polarization Purity

M. Singer, A. Stiller, K.M. Strohm, J.-F. Luy and E.M. Biebl. "A SIMMWIC 76 GHz Front-End with High Polarization Purity." 1996 MTT-S International Microwave Symposium Digest 96.2 (1996 Vol. II [MWSYM]): 1079-1082.

An integrated active antenna with a polarization purity better than 28 dB and a radiated power of 8 dBm at 75.7 GHz is presented. The linearly polarized radiator consists of a planar resonant antenna and a transit-time diode monolithically integrated on a silicon substrate. This active antenna finds various applications in low-cost multi-channel sensor systems, e.g. for object classification. Guidelines for the design are discussed. The characterization of the fabricated SIMMWIC devices includes measurements of output power, polarization purity, and far-field pattern. Moreover, the oscillation frequency of the devices has been successfully stabilized using subharmonic injection locking. The FM noise behavior of the locked oscillator has been characterized. The measured results are presented and compared to theoretical calculations.

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