

## A Compact Monolithic Microwave Demodulator-Modulator for 64-QAM Digital Radio Links

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*I. Telliez, A.-M. Couturier, C. Rumelhard, C. Versnaeyen, P. Champion and D. Fayol. "A Compact Monolithic Microwave Demodulator-Modulator for 64-QAM Digital Radio Links." 1991 Transactions on Microwave Theory and Techniques 39.12 (Dec. 1991 [T-MTT] (1991 Symposium Issue)): 1947-1954.*

The design, fabrication and performances of a monolithic microwave direct modulation modulator-demodulator are presented. The subsystem is designed to work in a 64-QAM digital radio link. At this level of modulation, it is necessary to have some possibilities of phase and amplitude trimming by external voltages to achieve sufficient accuracy. The circuit includes elementary functions such as quadrature and in-phase splitters, two balanced mixers, a quadrature phase comparator, and circuits giving the possibility to adjust phases and amplitudes for 64 QAM and higher level modulation. The design is such that the same chip can be used either as a direct demodulator or as a modulator. This complex circuit of small dimensions (2.7 mm X 3.65 mm) exhibits good demodulation and modulation performances. These overall performances of this monolithic circuit are achieved without degrading the dc yield.

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