Abstracts

High-efficiency L-band Kahn-technique transmitter

F.H. Raab, B.E. Sigmon, R.G. Myers and R.M. Jackson. "High-efficiency L-band Kahn-technique transmitter." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 585-588.

This paper describes a 20 W PEP linear L-band transmitter based upon the Kahn envelope-elimination-and-restoration technique. A double envelope-feedback loop assures high linearity. The RF power amplifier employs a two stage MMIC driver amplifier and a 20 W PA biased for class-AB operation. The class-S modulator includes a high speed comparator and 0.5 /spl mu/m HFETs in its output stage. A double envelope-feedback loop assures both high linearity and time-delay equalization for RF bandwidths to 150 kHz. With a two-tone signal the transmitter achieves an efficiency of 56% at full power (40 dBm under QPSK modulation), and 35% at 18 dB in back-off. The third-order IMDs for a two-tone signal vary from -30 dBc to -40 dBc over a 20 dB back-off range.

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