Abstracts

L-band transmitter using Kahn EER technique

F.H. Raab, B.E. Sigmon, R.G. Myers and R.M. Jackson. "L-band transmitter using Kahn EER technique." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2220-2225.

This paper describes a 20-W peak-envelope power linear L-band transmitter based upon the Kahn envelope-elimination-and-restoration technique. A double envelope-feedback loop assures high linearity. The radio-frequency (RF) power amplifier employs a two-stage monolithic-microwave integrated-circuit driver amplifier and a 20-W power amplifier biased for class-AB operation. The class-S modulator includes a high-speed comparator and 1/2-/spl mu/m heterojunction field-effect transistors 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 (41 dBm), and 35% at 18 dB into back-off. The third-order intermodulation distortions for a two-tone signal vary from -30 to -40 dBc over a 20-dB range of back-off. For quaternary phase-shift keying, the first and second adjacent-channel powers are -48 and -57 dBc.

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