Abstracts

High Power 14 GHz SSPA for SATCOM Applications

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This paper describes the development of a 14.0GHz, 30W FET combiner/amplifier intended as a replacement for 50W TWTAs used in SATCOM uplink transmitter applications. The output stage of the amplifier consists of four 8W power FETs that are combined using a three dimensional combining circuit known as the spatial field power combiner. The entire amplifier is a self-contained unit with its own heat sink, high velocity blower and a regulator/sequencing circuitry for FET biasing. The amplifier results presented here show a P/sub sat/=30Wmin, P/sub 1dB/=25W, AM/PM conversion= 2°/dB max, Noise Figure=4dB, and a typical two tone IM/sub 3/=-25dBc with single carrier backed off 6dB from saturation. The high power handling capacity of the output combiner will enable development of 60 and 100W KU band SSPAs in the near future.

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