Abstracts

Some considerations for optimal efficiency and low noise in large power combiners

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This paper examines some relationships between important design parameters in large combiner systems and key performance objectives such as power, efficiency, noise, and graceful degradation. Results are derived for the combining efficiency of general combiner systems, and used to contrast spatial and corporate combiners and identify optimum combiner topology for a given device technology. The influence of array size on excess phase noise is quantified and shown to decrease with increase numbers of devices. Results are also presented for the degradation in combining efficiency due to statistical variations in amplifier characteristics, appropriate to large combiners, showing that phase errors are the dominant factor in power degradation.

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