Abstracts

A 3M-Device Cavity-Type Power Combiner

M. Madihian and S. Mizushina. "A 3M-Device Cavity-Type Power Combiner." 1983 Transactions on Microwave Theory and Techniques 31.9 (Sep. 1983, Part I [T-MTT]): 731-736.

This paper describes a new class of combiners which com-bine the powers from 3M (M = 1,2, · · ·) active devices by coupling them to both magnetic and electric fields inside a rectangular wavegnide cavity. The structure employs coaxial lines and probes for magnetic and electric coupling, respectively. Up to 18 Gunn diodes have been combined with combining efficiencies higher than 96 percent at X-band. The operation of all combiners was stable and neither spurious oscillations nor jump phenomena were observed. An eigenfunction approach is used to analyze the operating principles of the combiner network systematically. A description is given to operate the circuit under optimum conditions.

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