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POWER COMBINERS WITH GUNN DIODE OSCILLATORS

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ABSTRACT

Combiners were developed using two Gunn diodes in dielectric waveguide (image line) oscillator circuits. The optimum configuration consisted of each Gunn diode being imbedded in a separate rectangular dielectric cavity as a primary source of oscillation. The frequency of operation was near 10 GHz. The dielectric resonators were then radiatively coupled to a common dielectric resonator from which the combined power could be obtained. It was found that the combined power was much greater than the sum of the power obtainable from separate isolated oscillators. The proposed combiner appears attractive from the point of view of simplicity of construction and low cost and should be applicable to the millimeter-wave region, where the difficulties of precision machined metal walled cavities are very great.