Abstracts

High-performance transitions for overmoded operation of elliptical waveguides

U. Rosenberg and M. Schneider. "High-performance transitions for overmoded operation of elliptical waveguides." 2000 Transactions on Microwave Theory and Techniques 48.10 (Oct. 2000 [T-MTT]): 1749-1755.

Overmoded elliptical waveguide systems are shown to provide considerable lower insertion loss compared with standard types using the frequency band with exclusive TE/sub c11/ fundamental mode propagation. The considerations for the overmoded waveguide operation are outlined. A novel transition design based on transformer steps with curved cross sections and containing means for higher order mode control is established for interfacing the oversized elliptical cross section with the standard rectangular waveguide ports. The accurate determination of the transition structure maintaining high performance demands is obtained by a suitable computer-aided-design procedure. The overmoded waveguide approach, including the transition design, is proven by computed and experimental results for a millimeter-wave design.

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