Abstracts

Multioctave spatial power combining in oversized coaxial waveguide

Pengcheng Jia, Lee-Yin Chen, A. Alexanian and R.A. York. "Multioctave spatial power combining in oversized coaxial waveguide." 2002 Transactions on Microwave Theory and Techniques 50.5 (May 2002 [T-MTT]): 1355-1360.

We describe a multioctave power-combiner structure using finline arrays in an oversized coaxial waveguide. The spectral-domain method (SDM) is used to compute the propagation constant in this structure, and is verified with HFSS simulations. The SDM method is then employed to synthesize broad-band tapered impedance transformers in finline for coupling energy to and from a set of monolithic microwave integrated circuit (MMIC) amplifiers. A modular assembly is described using a sectoral tray architecture. The concept is demonstrated for a 32-MMIC system using low-power traveling-wave amplifier MMICs, providing a 3-dB bandwidth of 13 GHz (3-16 GHz). An output combining loss of 1 dB is estimated from the small-signal measurements, suggestion a combining efficiency of /spl sim/75% for 32 MMICs.

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