

Abstracts

Analysis and Synthesis of Broad-Band Symmetric Power Dividing Trees

G.L. Nystrom. "Analysis and Synthesis of Broad-Band Symmetric Power Dividing Trees." 1980 *Transactions on Microwave Theory and Techniques* 28.11 (Nov. 1980, Part I [T-MTT]): 1182-1187.

A planar power divider with $2^{\text{sup}} m$ output ports consists of 2-way equal-power dividing sections coupled after each other to form a tree-like structure. This paper deals with the synthesis of such symmetric structures, thus forming a network that divides the incoming power into equal parts over a broad band. The analysis is done by the even and odd modes. An optimization program has been written which can optimize the total bandwidth with nearly equal-ripple response. Tables are given for synthesized power dividers with 4, 8, and 16 output ports and with a VSWR equal to 1.05, 1.1, and 1.2. The bandwidth, $f_{\text{max}}/f_{\text{min}}$ of the power dividers in the tables is between 1.7 and 7. A 4-way divider with 7 transformers in the even mode and 3 isolating resistors in each odd mode has been built with the center frequency 5 GHz. The total bandwidth of the whole divider, which is theoretically 4.5, was measured to be 4.1.

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