Abstracts

Applications of Directional Filters for Multiplexing Systems

F.S. Coale. "Applications of Directional Filters for Multiplexing Systems." 1958 Transactions on Microwave Theory and Techniques 6.4 (Oct. 1958 [T-MTT]): 450-453.

The design of microwave multiplexing systems for frequency channelization of a broad-band microwave spectrum is complicated by problems such as off-resonance mismatch and mutual interaction between adjacent filters. By employing directional filters as basic building blocks, it is possible to construct multiplexing filters with a perfect input match since the input VSWR of a directional filter is theoretically unity both at resonance and off-resonance. Less insertion loss of a manifold may be obtained by the use of directional filters than with conventional band-pass filters. Curves giving the predicted response of a manifold containing n elements are presented for single-tuned and double-tuned directional filters. An asymmetrical response shape is obtained which has a midband insertion loss related to the separation of adjacent channels. An experimental model consisting of a five-channel multiplexer has been constructed utilizing double-tuned-circular-waveguide directional filters.

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