Abstracts

Introduction - Microwave Filters: A Maturing Art

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Since the publication in September 1965 of the first special issue on microwave filters, significant theoretical and technological developments have occurred in this field. Because the major stimulus has been the ever-increasing demand to conserve bandwidth in the congested microwave frequency spectrum, a premium is placed on optimum filter transfer functions that achieve sharp frequency selectivity and flat group delay. In particular, the continued development and expansion of satellite communications systems was the primary driving force behind the development of the dual-mode waveguide bandpass filters. These filters combine both optimum transfer functions with minimum mass and volume, allowing the achievement of significant efficiencies in satellite transponder design. These requirements have also provided an important stimulus for developing new technologies to improve filter construction and manufacturing. In addition, newly developed ceramic materials that combine excellent temperature stability with low dielectric tangents (losses) and high dielectric constants are becoming readily available, thereby further reducing mass, volume, and production cost while maintaining the high-quality performance characteristics of metal cavity filters.

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