Abstracts

The Use of Exponential Transmission Lines in Microwave Components

C.P. Womack. "The Use of Exponential Transmission Lines in Microwave Components." 1962 Transactions on Microwave Theory and Techniques 10.2 (Mar. 1962 [T-MTT]): 124-132.

This paper describes some techniques for utilizing exponential transmission lines in microwave components in order to reduce element lengths, and hence size and weight, and to significantly increase the operating frequency range. Formulas are developed which relate line length to the frequency and rate of taper for transmission line resonators, and a nomogram is included for easy determination of spurious frequencies. Additional formulas are given for the distributed representation of lumped elements using exponential sections of both coaxial and strip transmission line, and their use described in application to microwave filters and related components. In addition, the paper describes how unusually large rejection bandwidths can easily be obtained by proper selection of the individual element lengths and rates of taper.

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