Abstracts

A Class of Minimum-Phase Microwave Filters with Simultaneous Conditions on Amplitude and Delay

S.O. Scanlan and T.P. Pantzaris. "A Class of Minimum-Phase Microwave Filters with Simultaneous Conditions on Amplitude and Delay." 1971 Transactions on Microwave Theory and Techniques 19.9 (Sep. 1971 [T-MTT]): 749-759.

The class of filters considered here is such that with a prescribed numerator for the transducer power gain (a constant or (1- lambda²)/sup r/) the available degrees of freedom are divided to provide some zero derivatives of delay and some zero derivatives of the amplitude response at the origin. This enables one to progress in a smooth fashion from the maximally flat amplitude response to the maximally flat delay response. The results are derived by starting from the key case where the numbers of zero derivatives in amplitude and delay are equal. Results are presented for all-stub, cascaded transmission line, and interdigital realizations, and it is indicated how the technique may be applied for any prescribed even numerator in the transducer power gain. The results obtained indicate that this class of functions is particularly suitable for relatively wide passbands.

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