Abstracts

The design of microstrip six-pole quasi-elliptic filter with linear phase response using extracted-pole technique

The development of microstrip filters has been in great demand due to the rapid growth of wireless communication systems in this decade. Quasi-elliptic response filters are very popular in communication systems because of their high selectivity, which is introduced by a pair of transmission zeros. A number of ways of implementing the quasi-elliptic response filter on microstrip have been studied over the last two decades, i.e., the cascaded quadruplet filter, canonical filter, and extracted-pole filter. However, there is very little information in the literature giving the design details for microstrip extracted-pole filters. In this paper, design equations of the extracted-pole filter for microstrip are reviewed. A new class of microstrip filter is also presented here. This class of filter will have a quasi-elliptic function response and at the same time linear phase in the passband. The linear phase of the filter is introduced by an in-phase cross coupling, while the transmission zero is realized using an extracted-pole technique. Experimental results, together with a theoretical comparison between the group delay of this design, and the conventional quasi-elliptic six-pole filter are also presented.

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