Abstracts

Generalized cross-coupled filters using evanescent mode coupling elements

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Generalized cross-coupled filters require implementation of both positive and negative cross coupled elements. A positive element frequently uses inductive coupling, while a negative coupling element uses capacitive coupling. While the required negative couplings are readily achieved in most cases using inductive irises, the synthesized values for capacitive coupling frequently require larger coupling values than can be achieved with a simple iris. Traditional methods for realizing capacitive couplings have included the use of capacitive probes, which are difficult to adjust in practice. Further, the negative couplings can be large enough to again cause problems with simple inductive irises. In this paper, we present the use of resonated evanescent mode sections to realize both positive and negative couplings by employing the phase shift and impedance characteristics of the bandpass element represented by a short resonated section of evanescent mode waveguide. The structure is quite practical and flexible in packaging. Examples include the use of up to four cross couplings, two negative and two positive.

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