Abstracts

Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design

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The properties of the mismatched symmetrical five-port circuit are discussed, i.e., the equations for the maximum and minimum couplings of a mismatched symmetrical five-port circuit are derived by appropriate approximations. The approximate equations for the maximum and minimum phase differences due to mismatches of a symmetrical five-port circuit are also derived. Furthermore, a broad-band design theory of a symmetrical five-port circuit with microstrip line is propsed by applying a matching technique which adds a generalized compensating network and matching sections to the fundamental symmetrical five-port circuit. Thus, the bandwidth of the proposed broad-band symmetrical five-port circuit extends to about an octave. The experimental verification has been achieved, and, hence, the validity of the design method is confirmed.

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