Abstracts

Analysis and Synthesis of Waveguide Multi-Aperture Directional Couplers (1968 [MWSYM])

R. Levy. "Analysis and Synthesis of Waveguide Multi-Aperture Directional Couplers (1968 [MWSYM])." 1968 G-MTT International Microwave Symposium Digest and Technical Program 68.1 (1968 [MWSYM]): 32-38.

The conventional treatment of directional couplers formed by two parallel waveguides coupled by a number of equally spaced discrete apertures is based on a loose coupling theory which, for co-directional couplers, assumes that the individual coupled voltages of the apertures add in the forward direction and tend to cancel in the backward direction. Assuming no multiple coupling or interaction effects, a first order expression for the isolation as a function of frequency and of the voltage amplitude couplings of the individual apertures is readily derived. These amplitudes may be tapered to give either Butterworth or Chebyshev performance and simple formulae for the amplitudes derived. In the case of fairly tightly coupled waveguides, e. g. 3 dB, it is preferable to use a set of superimposed arrays, which result in a shorter coupler since the majority of the holes in this design method are of equal diameter.

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