Abstracts

General Synthesis of Optimum Multi-Element Coupied-Transmission-Line Directional Couplers

R. Levy. "General Synthesis of Optimum Multi-Element Coupied-Transmission-Line Directional Couplers." 1963 PTGMTT National Symposium Program and Digest 63.1 (1963 [MWSYM]): 51-56.

Coupled-transmission-line directional couplers of the simple quarter-wavelength type have theoretically perfect isolation and input match. The coupling varies sinusoidally with frequency, giving a useful bandwidth of approximately 2:1, but much greater bandwidths may be obtained by cascading sections. Thus for example a coupling of 3 db ± 0.4 db over a 5:1 band may be obtained using a symmetrical three-quarter wavelength coupler. However this is not optimum in the sense of having maximum bandwidth for a given coupling tolerance, owing to the restriction placed on the coupling function by making the two outer elements equal. When the three elements are allowed to be all unequal, then it is possible to obtain an optimum Tchebycheff coupling characteristic with two ripples.

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