Abstracts

A Rectangular-Waveguide Filter Using Trapped-Mode Resonators

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A two-resonator, narrow-band waveguide filter with a very wide stop band is described. Each resonator cavity has one side wall which is entirely open except for a bifurcating E-plane septum. Energy in most modes tends to radiate freely out of the open end of each resonator to absorbing material; however, energy in the fundamental TE/sub 101/-mode is trapped in the resonator structures to give high-Q resonances such as are typical of conventional solid-wall resonators. Thus, a primary pass band is obtained similar to that of filters using conventional cavity resonators, but the many higher-order pass bands usually found in cavity-resonator filters are largely eliminated because the higher-order-mode cavity resonances are damped out. This type of filter attenuates unwanted signals mainly by reflection. For applications where a low-input VSWR is desired in the pass band, a bifurcated section of guide backed by absorbing material is also used in the input waveguide so as to tend to absorb the input energy at frequencies above that of the pass band.

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