

On the Narrow-Band Microwave Filter Design Using a Dielectric Rod

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A method is presented to design bandpass or bandstop filters in the microwave region. The procedure is based on the analysis of the discontinuity problem of a circular cylindrical dielectric rod centered in a rectangular waveguide. For some special relations between the frequency, the dielectric constant, and the radius of the rod, the reflection or the transmission coefficient becomes equal to zero. This relation gives the narrow-band filter. Experimental results for filter design with the help of plastic and porcelain rods are given.

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