Abstracts

Elliptical cavity resonators for dual-mode narrowband filters

L. Accatino, G. Bertin and M. Mongiardo. "Elliptical cavity resonators for dual-mode narrowband filters." 1997 MTT-S International Microwave Symposium Digest 2. (1997 Vol. II [MWSYM]): 1083-1086.

A novel cavity resonator with elliptical cross-section is proposed in order to realize dual-mode narrowband filters without tuning and coupling elements. No discontinuities are required inside the cavities hence significantly enhancing the unloaded Q, the ability to operate with higher power levels, and the ease of manufacturing. Dual-mode coupling is generated by the step discontinuity between the input rectangular waveguide and an inclined elliptical waveguide; a rigorous full-wave electromagnetic model for this discontinuity has been developed. Proper choice of the ellipticity and of the inclination angle allows us to obtain the desired coupling and tuning actions. Representative prototypes of elliptical cavities exhibiting various degrees of coupling have been carefully measured; the favorable comparison between experimental and theoretical results proves the accuracy of the model and its applicability for narrowband X/Ku band filters.

❑ Return to main document.