Abstracts

A Wide Stop Band UHF Coaxial Band-Pass Filter (Correspondence)

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A narrow-band coaxial filter is described which has a stop band fourteen times the fundamental frequency, and is relatively simple to design. Since the well-known multiresonator coaxial band-pass filter having quarter-wavelength resonators is probably the most commonly used coaxial filter for narrow-band frequency selection, the design to be described herein is most meaningful. Identical construction techniques used in the common quarter-wavelength filter can also be used for this design. Rather than employing the normal quarter-wavelength resonators, the filter being described here makes use of resonators which are approximately one-tenth of a wavelength long. The one-tenth wavelength coaxial sections are made to resonate by capacitively loading the open-circuit end of the cavities. The capacitors are formed by placing a disk on the end of the center conductor and inserting a low-loss dielectric between the disk and the end wall of the cavity. Fig. 1 shows a cutaway view of a four-stage filter using the above loading scheme. The dielectric section is bonded to the end of the cavity and the center conductor disk is completely captured by the dielectric in order to insure complete support of the center conductor under extreme vibration. It has been found that this type of capacitive loading does not appreciably reduce the unloaded cavity Q nor cause an increase in insertion loss of the filters.

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