Abstracts

A Compact, High Power Notch Filter with Adjustable F/sub 0/ and Bandwidth (Short Papers)

R.V. Snyder. "A Compact, High Power Notch Filter with Adjustable F/sub 0/ and Bandwidth (Short Papers)." 1994 Transactions on Microwave Theory and Techniques 42.7 (Jul. 1994, Part II [T-MTT] (Special Issue on Filters and Multiplexers)): 1397-1403.

The network to be described is a notch filter, synthesized as a capacitively-coupled short circuited shunt stub design. A well-known equivalence between open circuited, quarter wavelength high-impedance stubs, and capacitively coupled short-circuited stubs of lower impedance, is used iteratively to achieve a design with some innovative features: The shunt stubs are all the same impedance; typically, 50 Omega. The series 90 degree coupling lines are also the same impedance (again typically 50 Omega. Dimensions and components may thus be easily selected for high-power and low-loss operation. The coupling capacitors (which are in series with the stubs) are adjustable without compromising Q. Re-entrant stubs are used which allow a mixed lumped-distributed stub response and easy adjustment of stub lengths. Rugged coaxial construction with nothing cantilevered or unsupported. These features result in a design which is quite compact, tunable over a wide range of center frequencies, allows for adjustable bandwidth and thus selectivity, while intrinsically exhibiting high-power capability, low passband loss, and suitability for operation in demanding environments.

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