Abstracts

Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators

J. Helszajn and F.C. Tan. "Design Data for Radial-Waveguide Circulators Using Partial-Height Ferrite Resonators." 1975 Transactions on Microwave Theory and Techniques 23.3 (Mar. 1975 [T-MTT]): 288-298.

This paper derives the eigennetworks of radial-waveguide circulators using partial-height ferrite resonators with n=2 Chebyshev characteristics. To obtain a Chebyshev response with such junctions it is necessary to establish the proper phase angles and admittance levels of the three eigennetworks of the device. This paper derives the phase angles for the eigennetworks but relies on experiments to establish the admittance levels. The configurations dealt with include the standard circulators using either half-wave-long ferrite resonators open circuited (OC) at both ends or coupled quarter-wave-long ferrite resonators OC at one end and short circuited (SQ) at the other. It also includes the design of a new single quarter-wave-long version, which is likely to replace the two more conventional arrangements in common usage. It is observed that the eigennetworks of any one of the geometries is sufficient to characterize the other two.

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