Abstracts

Operation of Tracking Circulators

J. Helszajn. "Operation of Tracking Circulators." 1981 Transactions on Microwave Theory and Techniques 29.7 (Jul. 1981 [T-MTT]): 700-707.

The classic two circulation conditions of a junction circulator obtained by setting the imaginary part of the complex gyrator impedance to zero and evaluating the real part does not ensure that the in-phase and counter-rotating eigennetworks are separately idealized. This paper indicates that the physical and magnetic variables of the tracking circulator described by Wu and Rosenbaum coincides with these special boundary conditions. Specifically, the gyrator resistance for this circulator may be calculated at the frequency for which the in-phase eigennetwork exhibits a short-circuit boundary condtion (using the n=0 and ±3 modes) and the counter-rotating eigennetwork modes exhibit complex conjugate immittances (using the n= -1, +2 and n = +1, -2 modes). The paper includes a new formulation for the Q-factor of this type of circulator which is used to calculate that of the tracking circulator.

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