Abstracts

Millimeter-wave Ka-band H-plane diplexers and multiplexers

Yu Rong, Hui-Wen Yao, K.A. Zaki and T.G. Dolan. "Millimeter-wave Ka-band H-plane diplexers and multiplexers." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2325-2330.

Millimeter-wave H-plane diplexers/multiplexers are designed using modified H-plane waveguide T-junctions and modified inductive window bandpass filters. Modeling of the diplexers/multiplexers are performed using the full-wave mode-matching method to obtain the generalized scattering matrices of the building blocks and by the cascading procedure to provide the overall frequency response. A complete systematic optimization procedure leads to the desired diplexer/multiplexer design. The validity of employing the modified H-plane T-junctions in the diplexer/multiplexer configurations are demonstrated by the design examples. A millimeter-wave Ka upper band diplexer based on the simulated results was built and tested. Without any tuning, excellent experimental results are obtained, which verified the full-wave mode-matching-based precise design.

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