

Abstracts

Design of General Manifold Multiplexers

J.D. Rhodes and R. Levy. "Design of General Manifold Multiplexers." 1979 Transactions on Microwave Theory and Techniques 27.2 (Feb. 1979 [T-MTT]): 111-123.

The direct analytical design process for arbitrary multiplexers given in a previous paper is extended to the case of bandpass channel filters connected to a uniform-impedance manifold (e.g., a length of waveguide or transmission line). The previous approximations are greatly improved by adding immittance compensation in a way which not only preserves the canonic form of the network but also assists in the physical construction by spacing the filters along a manifold. The phase shifters between channels are themselves sufficient to compensate the filter interactions to such an extent that contiguous channeling cases are designable. The results are presented mainly in closed form requiring minimal computer optimization. Analysis of multiplexers with frequency-dependent manifolds indicate that there are restrictions on the total bandwidth, but a ten-channel multiplexer is probably feasible, suitable for input and output multiplexers required in typical communications systems. Practical results on a simple manifold triplexer are presented.

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