Abstracts

A Dual-Mode Latching, Reciprocal Ferrite Phase Shifter (1970 [MWSYM])

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An attractive method for producing reciprocal phase shift is to use a pair of identical nonreciprocal phase shifters with circulators at input and output, as shown in Figure 1. In this scheme, signals passing from left to right are sent through the lower phase shifter, while signals passing from right to left are sent through the upper phase shifter. By switching the phase shifters in a complementary manner, equal variable insertion phases can be provided for either direction of propagation. This approach to achieving reciprocal phase shift yields the desirable bandwidth, figure of merit, and temperature stability advantages of nonreciprocal phase shifters, except that it is more complicated and has the additional losses of the input and output circulators. However, the added complexity can be significantly reduced by employing a dual-mode transmission line in which the two nonreciprocal phase shifters occupy the same physical space. It is the purpose of this paper to describe the principle of operation, physical realization, and performance parameters for a reciprocal phase shifter of this latter type.

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