Abstracts

The Design and Measurement of Two Broad-Band Coaxial Phase Shifters

C.F. Augustine and J. Cheal. "The Design and Measurement of Two Broad-Band Coaxial Phase Shifters." 1960 Transactions on Microwave Theory and Techniques 8.4 (Jul. 1960 [T-MTT]): 398-402.

Two mechanical (servo-driven) phase shifters were developed in response to systems requirements of low torque, compactness, octave bandwidth, and linear relation between mechanical motion and phase shift. One phase shifter relies upon the axial motion of a dielectric slug through a helix wound from modified miniature rigid coaxial cable. The second design consists of a 3-db coupler with ganged movable shorts on two ports. The helix design displayed phase shift of 720 degrees at 3 kmc and linearity to within ± 3 degrees. The coupler design is capable of achieving 720 degrees phase shift at 3 kmc and linearity within ±2 degrees. A precision measuring facility (phase bridge) was developed for the purpose of determining the electrical performance of the phase shifters. A brief analysis is included to illustrate the prediction of maximum possible errors in the phase bridge and the phase shifters, in terms of transmission line parameters.

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