Abstracts

Analysis and Calibration of a Reflection Coefficient Bridge for Use with Any Waveguide Mode (Correspondence)

K.S. Champlin, J.D. Holm and D.B. Armstrong. "Analysis and Calibration of a Reflection Coefficient Bridge for Use with Any Waveguide Mode (Correspondence)." 1967 Transactions on Microwave Theory and Techniques 15.8 (Aug. 1967 [T-MTT]): 477-478.

Single-frequency measurements of both absolute phase and absolute magnitude of a complex reflection coefficient are required in determining complex permittivity by the Roberts-von Hippel method. The slotted line, although traditionally the basic tool for these measurements, suffers from several disadvantages. Among them are errors caused the perturbing influence of the probe and slot and decreased precision at short (millimeter) wavelengths and low VSWR’s. Reflectometers the Engen and Beatty type and "return-loss test sets" such as used by Pomeroy yield high precision at low VSWR's but measure only magnitude and are therefore unacceptable. Some microwave bridges measure complex reflection coefficient, however, thus offering an effective alternative to the slotted line.

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