Abstracts

Optical Test Set for Microwave Fiber-Optic Network Analysis

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An optical test set is presented which can be used with any vector network analyzer for measuring microwave transmission and reflection scattering parameters of fiber-optic components. Measurement configurations and operating characteristics are discussed. Calibration of the network analyzer, which is performed using fiber-optic offset shorts, matched load, and thru calibration standards, is discussed, reflection error terms are computed, and de-embedding relations are given for transmission and reflection measurements. A frequency response normalization is also presented as an alternative means of de-embedding reflection magnitude and phase. Accuracy limitations are addressed in terms of connector repeatability, calibration repeatability, accuracy of the calibration standards, test set dynamic range, and resolution. S matrices measured at 2.0 GHz are also presented to illustrate the utility of characterizing fiber-optic components in terms of microwave performance when designing a microwave fiber-optic network.

❑ Return to main document.