Abstracts

A Broad Band Time Domain Technique for the Measurement of the Frequency Dependent Complex Permittivity in Lossy Transmission Line Systems

K.M. Lape and T. Rahal-Arabi. "A Broad Band Time Domain Technique for the Measurement of the Frequency Dependent Complex Permittivity in Lossy Transmission Line Systems." 1993 MTT-S International Microwave Symposium Digest 93.3 (1993 Vol. III [MWSYM]): 1235-1238.

The objective of this paper is to present a new numerical hybrid time/frequency domain technique for accurate broad band characterization of the complex dielectric constant of transmission line systems using the TDR. The properties of linear systems have been exploited to avoid the FFT truncation and aliasing errors introduced by processing data from measurement systems. The measurement accuracy has been significantly enhanced by extracting the ac variations of the dielectric constant instead of extracting the dielectric constant itself. Finally, in order to demonstrate the usefulness of the approach, a simple cable was characterized using this technique.

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