Measurement and Calibration for Time-Domain Reflectometry

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ABSTRACT

Time-domain Reflectometry (TDR) measurements are difficult in accurately extracting the frequency information of device under test (DUT). A method has been proposed for the extraction of the frequency domain information of DUT using Gans and fast Fourier transform (FFT). In this dissertation, two calibration methods are developed for TDR that reduce the systematic errors . One port and two port TDR calibration techniques are SOL calibration and SOLT calibration, respectively. For evaluating the accuracy of time-to-frequency transform and calibration and compared to network analyzer (NA)

Keywords : Time-Domain Reflectometry ; Calibration

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REFERENCES

[1] W.L. Gans and N.S. Nahman,“ Continuous and Discrete Fourier Transform of Step-like Waveform ” IEEE Trans. Instrument measurement, vol. IM-31, NO.2, pp97-101,June 1982.

[2] Leonard A. Hayden and Vijai K. Tripathi,“ Calibration Methods for Time Domain Network Analysis ” IEEE Trans. on Microwave theory and Techniques, vol.41, NO.3,pp415-420,March 1993.

[3] Wansheng Su and Sedki M. Riad,“ Calibration of Time Domain Network Analyzers ” IEEE Trans. on Microwave theory and Techniques, vol.42, NO.2, pp157-161,April 1993.

[4] Tom Dhaene , Luc Martens and De Zutter,“ Calibration and Normalization of Time Domain Network Analyzer Measurements ” IEEE Trans. Microwave Theory and Techniques, vol.42, NO.4,pp580-589,April 1994.

[5] Jeffrey A. Jargon, Roger B. Marks and Doug K. Rytting,“ Robust SOLT and Alternative Calibrations for Four-Sampler Vector Network Analyzers ” IEEE Trans. on Microwave theory and Techniques, vol.47, NO.10,pp2008-2113, October 1999.

[6] Santa Rosa, CA ,“ Error Model for Systems Measurement ” Microwave Journal, pp63-66,May 1978.

[7] Woopoung Kim and Madhavan Swaminathan,“ Simulation of Lossy Package Transmission Lines Using Extracted Data From One-Port TDR Measurements and Nonphysical RLGC Models ” IEEE Trans. advanced packing vol.28,NO.4, pp736-744,Nov 2005 [8] Woopoung Kim,“ Development of Measurement-based Time-domain Models and its application to Wafer Level Packaging ” Georgia Institute of Technology June 2004 .

[9] W.C. Liu and W.R. Chen ,“ CPW-fed compact meandered patch antenna for dual- band operation ” Electronics Letters vol.40,NO.18,2nd September 2004.
[10] X. D. Huang and C. H. Cheng,“ A Novel Microstrip Dual-Mode Bandpass Filter With Harmonic Suppression ” IEEE Microwave and Wireless Component Letters, vol.16, NO.7, July 2006.
[11] S.J.Mason,“ Feedback Theory-some Properties of Signal Flow Graphs ” Proc.Ire, vol.41,pp1144-1156,1953.
[12] Stephen H. Hall, Garrett W. Hall and James A. Mccall,“ High-Speed Digital System Design ” pp276-302,2000.
[13] David M. Pozar ,“ Microwave Engineering ” third edition, pp189-192,2005.
[14] Tektronix ”CSA8200 Communications Signal Analyzer TDS8200 Digital Sampling Oscilloscope Quick Start User Manual ”.
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