Abstracts

Removal of cable and connector dispersion in time-domain waveform measurements on 40 Gb integrated circuits

J. Scott, B. Behnia, M.V. Bossche, A. Cognata, J. Verspecht, F. Verbeyst, M. Thorn and D.R. Scherrer. "Removal of cable and connector dispersion in time-domain waveform measurements on 40 Gb integrated circuits." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 1669-1672 vol.3.

A new instrument for time-domain characterization of circuits is illustrated. We measure output waveshape and rise time of two high-speed digital circuits on wafer, using a 50 GHz prototype of the new instrument. It uses vector error-correction to de-embed the component under test like a network analyzer but reads out in the time-domain after the fashion of an equivalent-time oscilloscope. With the calibration plane of the instrument set at the tips of the wafer probes, errors arising from dispersion in the connection hardware are removed. A further benefit of this instrument is that random jitter is removed without the convolution penalty usually incurred by averaging, so that anomalies such as pattern dependent jitter are exposed. The system risetime is 7 ps, compared to a system risetime of 12-13 ps for a conventional equivalent-time oscilloscope of the same bandwidth in the presence of wafer probes, bias networks, and cables.

❑ Return to main document.