Abstracts

Computer-Aided Microwave Impedance Measurements (Aug. 1969 [T-MTT])

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The use of a general purpose digital computer to convert data obtained from a network analyzer system to parameters useful to the circuit or device engineer is discussed. Measurement errors resulting from system imperfections such as coupler directivity and reflections from small discontinuities are removed by matrix manipulation while the data are being processed. The computer program was written to allow any three known impedances to be used as references. The use of arbitrary reference impedances instead of ideal short circuits, ideal open circuits, or perfectly matched terminations allows greater flexibility and in most cases permits the system to be calibrated with only three measurements at each frequency. Quantitative results are presented which show the large reduction of the error vector obtained when measurements are corrected using the method described. The corrected results are compared with the manufacturer's calibration data for some loads. All measurements are compared with measurements made on a recently marketed automatic network analyzer system. The computer program was written to allow the use of a time-sharing remote-access computer for fast turn-around time for small amounts of data. A second program was written for use with batch-process computers when large amounts of data are needed.

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