Abstracts

Computer-Aided Microwave Impedance Measurements (1969 [MWSYM])

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The development of better microwave components has made it possible to design more sophisticated systems in the last decade. Great strides have also been made in creating new and better microwave semiconductor devices. In order to adequately characterize these new components and systems, accurate impedance measurements are required at many frequencies. Several manufacturers have recently introduced network analyzers which are capable of providing magnitude and phase information which can be read directly from panel meters. External connectors are provided for analog-to-digital conversion of the data. While these network analyzers are convenient to use, their accuracy is often not as high as desired due to impairment by system imperfections such as coupler directivity and reflections from small discontinuities. This paper discusses the use of a general purpose digital computer to remove the system errors from microwave impedance measurements while the measured data are being converted to a variety of forms useful for circuit design or device evaluation. Error reduction is accomplished by using the known values and the measured values of three reference impedances to form a matrix. The corrected impedance can then be found from the measured impedance by the use of matrix algebra.

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