Abstracts

An improved sliding-load calibration procedure using a semiparametric circle-fitting procedure

G. Vandersteen, Y. Rolain, J. Schoukens and A. Verschueren. "An improved sliding-load calibration procedure using a semiparametric circle-fitting procedure." 1997 Transactions on Microwave Theory and Techniques 45.7 (Jul. 1997 [T-MTT]): 1027-1033.

Circle-fitting problems often occur in microwave engineering when dealing with variable delays, e.g., during calibration using a sliding load. This paper proposes an efficient semiparametric circle-fitting procedure, which takes into account the phase relationships over the frequencies. It produces more accurate results than the standard sliding-load calibration, requires only three positions on the sliding load for the whole frequency band, and is more robust to the settings of the positions of the sliding load. The proposed method also has the ability to detect whether or not the sliding load is defective or out of its specifications. This can be done by using only three positions on the sliding load. Optimal-position settings are then proposed. The performance of the proposed method is illustrated on sliding-load measurements up to 50 GHz, demonstrating the ability of detecting modeling errors and showing that the accuracy of the proposed method using three positions is comparable to the standard method with six positions.

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