Abstracts

Calibration of electric coaxial near-field probes and applications

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A new calibration technique for application to near-field probes has been developed. For this, a simple electric coaxial near-field probe for application in the 0.05-20-GHz band has been developed, theoretically analyzed, and calibrated using a known field. By using the finite-difference time-domain (FDTD) method, this field probe is theoretically analyzed to determine its most sensitive probe segment. Taking the amplitude of the normal electric field at this segment as a known field, the probe is calibrated by defining a performance factor (PF), which is the ratio of the known field amplitude to the probe signal amplitude. Comparing the calculated results with measured results, the agreement is good. Additionally, the measurements are experimentally characterized with respect to the influence of the distance between the probe and the device-under-test (DUT), the influence of the input signal on the probe, and the spatial resolution. Two measurement examples are demonstrated, which investigate the mode and field distribution within passive coplanar microwave components.

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