Abstracts

Surface Array Waveguide Mode Analyzer

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A new type mode analyzer based on an array of field probes at the surface of an overmoded circular waveguide is described. This type device is needed in high power microwave research where waveguide sizes typically permit dozens of modes to propagate. Initial experiments at 11 GHz using a 2 inch diameter waveguide with 16 propagating modes and 20 surface probes have demonstrated the feasibility of the technique which relies on singular value decomposition algorithms for modal analysis. To make calibration feasible, the field probes must respond only to the E-field or the H-field at the waveguide wall. Optimization of probe placement, and anticipated errors are analyzed.

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