Abstracts

Microwave diversity imaging using six-port reflectometer

Hsin-Chia Lu and Tah-Hsiung Chu. "Microwave diversity imaging using six-port reflectometer." 1999 Transactions on Microwave Theory and Techniques 47.1 (Jan. 1999 [T-MTT]): 84-87.

A microwave diversity imaging system conventionally uses a vector network analyzer (VNA) to directly measure the object scattered field (amplitude and phase) over a selected frequency range and viewing angles, then reconstructs the scattering object characteristic function through two dimensional Fourier inversion. In this paper, we present a cost-effective microwave diversity imaging system using a six-port reflectometer, which measures four amplitude (or power) values to acquire the object scattered field indirectly. One can then eliminate the coherent detectors in a VNA. The calibration procedure for this microwave diversity imaging measurement is also described. Experimental results of three types of scattering objects, a metallic cylinder, four distributed line scatterers, and a 72:1 scaled B-52 aircraft model, are presented using the described six-port microwave imaging system.

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