

Extraction of Element Radiation Pattern of a Two-element Array in Near-Field Arrangement

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Near-field arrangement is a holographic approach to acquire the radiated near field of an AUT (antenna under test) using a planar-scanned receiving probe. In this paper, a near-field measurement technique is developed, in which the radiated near fields of the two AUTs in a two-element array are measured simultaneously. By changing the illumination conditions in amplitude or phase of one AUT, a set of equations of the radiation patterns can be acquired for the extraction of each AUT radiation pattern. Figure 1(a) is the measured near-field radiation pattern of a two-element rectangular horn antenna array. The extracted radiation patterns of each antenna are shown in Figs. 1(b) and (c) respectively. The formulas to extract the radiation pattern of each AUT from the received near-field pattern from simultaneously excited two AUTs will be reported in the presentation with measurement arrangement and results. This technique has the potential for the characterization of an antenna array.

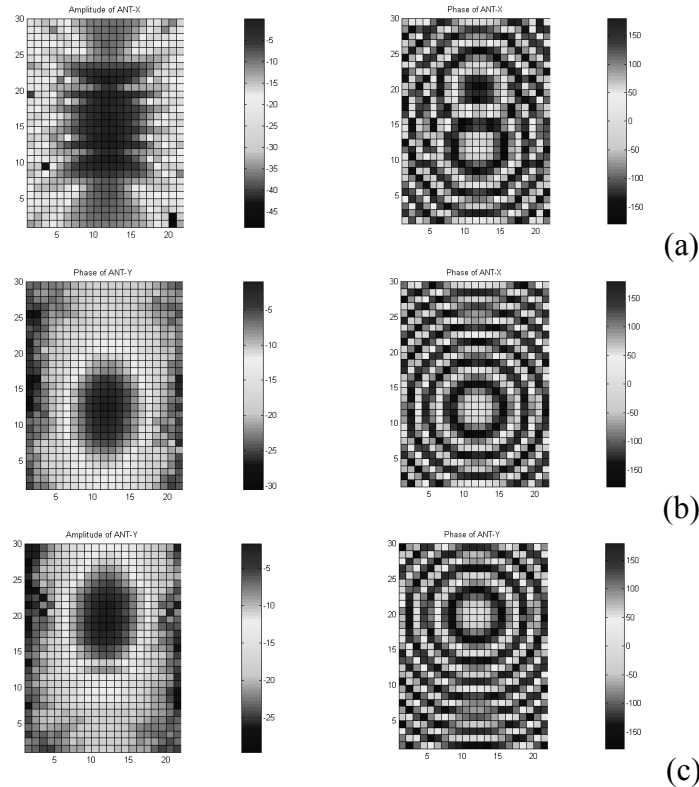


Fig.1 Measured near-field radiation patterns in amplitude and phase of (a) a two-element rectangular horn antenna array and (b) (c) extracted results of each antenna.