Abstract:
Near-field antenna measurements are a common technique to characterize the radiation behavior of antennas. Due to the measurement in the radiating near field, a postprocessing near-field far-field transformation is required to finally compute the radiation pattern. For the near-field transformation a low numerical complexity as well as full probe correction capabilities are highly desirable. In this paper a hybrid near-field far-field transformation algorithm is presented which combines a Fast Fourier Transform preprocessing with the plane wave based fully probe corrected near-field transformation of low numerical complexity being suitable for “body of revolution” antenna measurement grids. The Fast Fourier Transform splits the probe signals into azimuthal Fourier modes which are processed individually by the plane wave based transformation algorithm. In this way the computation time can be reduced while the numerical complexity is unchanged. In this paper the hybrid technique is applied to cylindrical near-field measurements which are superior for the measurement of fan beam antennas.

Stichworte:
antenna measurement grids, Antenna measurements, antenna radiation behavior, antenna radiation patterns, azimuthal Fourier modes, Complexity theory, cylindrical near-field measurements, fan beam antennas, fast Fourier transform preprocessing, fast Fourier transforms, hybrid fast
Fourier transform, near-field antenna measurements, numerical complexity, plane wave, postprocessing near-field far-field transformation, probe correction, probes, Wavelength measurement

Kongress- / Buchtitel:
IEEE International Symposium on Antennas and Propagation (APSURSI)

Verlag / Institution:
IEEE

Verlagsort:
Spokane, USA

Jahr:
2011

Monat:
Jul

Volltext / DOI:
http://doi.org/10.1109/APS.2011.5996614

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Elektrotechnik und Informationstechnik > Lehrstühle und Professuren > Hochfrequenztechnik (Prof. Eibert) > 2011

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