

Efficiency Improvement of REV-Method for Calibration of Phased Array Antennas

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Abstract : The paper describes the principle of operation, simulation and physical validation of method for simultaneous acquisition of gain and phase states of multiple antenna elements and the corresponding feed lines across a Phased Array Antenna (PAA). The derived values for gain and phase are used for PAA-calibration. The method utilizes the Rotating-Element Electric- Field Vector (REV) principle currently used for gain and phase state estimation of single antenna element across an active antenna aperture. A significant reduction of procedure execution time is achieved with simultaneous setting of different phase delays to multiple phase shifters, followed by a single power measurement. The initial gain and phase states are calculated using spectral and correlation analysis of the measured power series.

Keywords : antenna, antenna arrays, calibration, phase measurement, power measurement

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