

An Experimental Study of 28 GHz Analog Beamforming with a Uniform Linear Array

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(Pt9)Abstract— This paper reports an over-the-air measurement of a uniform linear antenna array for the radio frequency of 28 GHz and discusses the achieved accuracy of beamforming. Two conventional phased array calibration methods, i.e., rotating element electric field vector method and multi-element phase-toggle method, are performed and compared to confirm calibration validity. Both methods realize fine beam steering accuracy of the root mean squared error in the steering angle to be 0.23° around the boresight direction. In addition, we confirmed the robustness of the calibration values against frequencies within 200 MHz wide around 28 GHz.

Keyword—5G NR, OTA measurement, analog beamforming, uniform linear array, calibration



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