

Bent Coplanar Waveguide Feeds for Balanced Planar Antennas and Arrays

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Abstract

Planar antenna arrays of a balanced structure are of great importance in many applications due to their features including low-profile, wideband and high polarisation purity. However, feeding such antennas adds great complexity in terms of manufacturing and reduces the performance due to production of common mode propagation. A method for feeding such antennas using coplanar waveguide on a thin substrate is proposed. Not only does it terminate the antenna of a balanced structure with a single-ended feed but it also enables impedance transformation. The design was an attempt towards a completely printed front-end that incorporates the antenna elements and their feeding circuits on bendable substrates. The electromagnetic performance has been validated with a dual polarized prototype and its prospect for ultrawideband arrays e.g., 5G sub-6 GHz or square kilometre array, was explored.

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