Abstracts

A new quasi-Yagi antenna for planar active antenna arrays

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In this paper, a novel broadband planar antenna based on the classic Yagi-Uda dipole antenna is presented, and its usefulness as an array antenna is explored. This "quasi-Yagi" antenna is realized on a high dielectric-constant substrate, and is completely compatible with microstrip circuitry and solid-state devices. This antenna achieves a measured 48% frequency bandwidth for voltage standing-wave ratio <2, better than a 12-dB front-to-back ratio, smaller than -15 dB cross polarization, and 3-5-dBi absolute gain. Mutual coupling of the antenna in an array environment is investigated. Finally, three simple arrays are presented, demonstrating the usefulness of the antenna as an array element. This novel antenna should find wide application in wireless communication systems, power combining, phased arrays, and active arrays, as well as millimeter-wave imaging arrays.

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