



Planar Ultrawideband Antenna Array for Short-Range Wireless Communications

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Abstract:

In this article, novel 2-element and 4-element planar ultra- ideband (UWB) antenna arrays with bidirectional radiation patterns based on identical UWB antenna elements for UWB communications applications have been proposed, simulated and experimentally investigated. Each array is constructed by means of feeding omni-directional printed UWB monopole antennas with a UWB power divider. The proposed 2-element antenna array yields an impedance bandwidth of 110% (3.1–10.6 GHz) covering the whole UWB frequency bandwidth while the impedance bandwidth is multi-band in case of the 4-element antenna array because of the increasing effect of mutual coupling among antenna elements. The calculated gain of the 2-element and 4-element array is quite stable with about 3 and 6 dB higher than that of the single element, respectively. Both measured and calculated E-plane radiation patterns of the array and the single element are almost the same while the H-plane radiation patterns of the array are distinctively bidirectional compared to the omni-directional pattern of the single element.

Keywords:

ultra-wideband (UWB); printed monopole antenna; UWB power divider; planar antenna arrays

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