Abstracts

Analysis and applications of a new CPW-slotline transition

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A novel broad-band coplanar waveguide (CPW) to slotline transition and several new CPW passive circuits based on this transition are proposed and analyzed in this paper. This transition utilizes CPW-slotline mode-conversion to convert CPW-mode field to slotline-mode field, and the transition bandwidth is broadened by the use of air-bridges. The transition consists of three parts, including a uniform CPW, phase shifter, and slotline. The phase shifter converts the CPW mode to slotline mode and the bandwidth of the transition is broadened due to the modes "bounce back-and-forth" in between the air-bridge and slotline. This new transition is used to realize three CPW passive circuits, including a CPW-fed Vivaldi antenna, CPW power divider, and side-coupled CPW-slotline coupler. The finite-difference time-domain method is employed to analyze those circuits, and good agreements are obtained with measured results.

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