

On the matching characteristics of a rectangular slot located near the edge of a finite-size ground plane

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ABSTRACT

We study the matching characteristics of a rectangular slot located in the farthest upper part of a ground plane. First, we investigate the effect of geometrical parameters including the length and width of the slot, the ground plane height, and feed point position on the input impedance. In turn, we consider the matching between the slot and a 50Ω feed and examine impedance-matched frequencies and bandwidths. An approximate closed-form expression for the impedance-matched wavelength of the slot in terms of its length, width, and feed-point position is given. The results can aid in the design of application-specific slot antennas for handheld devices.

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Slot antennas; rectangular slot; center-fed slot; offset-fed slot; antenna bandwidth; antenna input impedance