

A new miniaturized wideband microstrip Balun design

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ABSTRACT

This thesis proposes a new miniaturized wideband coupled-line microstrip balun and its design procedure based on an original finding. This finding suggests that the coupled-line microstrip balun can be realized by employing a much smaller high-pass ground defect instead of a bandstop ground defect. The newly proposed balun is derived initially from a coupled-line microstrip balun with a typical dumbbell-shaped defected ground. Following the proposed three-step design procedure, the size of the final balun is only about 8.3% of the size of the initial one. In addition, the final balun possesses immunity against the influence of the supporting material. Balun prototypes were created and investigated. Both the simulated and measured results demonstrate the compactness and wideband performance. Finally, the new balun is merged with unbalance-fed antennas into balance-fed ones.

Keywords : Wideband balun、 coupled-line balun、 defected ground structure

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