

**“Left-handed multilayer super compact coupled-line directional coupler”**, pp.60-65

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**Abstract** – A super compact backward-wave directional coupler, composed of two multilayer left-handed transmission lines, is presented. Compared to existing left-handed directional couplers, the proposed has much smaller size and broader bandwidth due to its much size-reduced multilayer unit cells. A quasi 0-dB backward-wave directional coupler with more than 63% fractional bandwidth at centre frequency of 8.72 GHz, good phase directivity and better than 20 dB directivity, is demonstrated by means of full wave electromagnetic simulation and equivalent circuit analysis.