Abstracts

Ultra-broad-band doubly balanced star mixers using planar Mouw's hybrid junction

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The planar Mouw's hybrid junction is realized by coplanar waveguide (CPW) to coplanar strip (CPS) or CPW to CPW T-junctions. A new explanation of Mouw's theory based on coupled transmission lines and including the transmission line losses is presented, The modified theory is more suitable for ultra-broad-band mixer design. Some prototype mixers with CPW to CPS or CPW to CPW T-junctions are fabricated with Al/sub 2/O/sub 3/ substrate, The prototype mixers show a bandwidth of greater than 20:1 if the even-mode resonance has been damped out. A method for damping out the even-mode resonance is also presented. All of the prototype circuits show much broader bandwidth than that of conventional star mixer.

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