Abstracts

Design of high directivity directional couplers in multilayer ceramic technologies

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Greater amalgamation of transceiver functionality is a way of addressing the commercial viability of forthcoming architectures. Multilayer Cofired Ceramics (e.g. LTCC/HTCC) is seen, as a potential integration platform offering size, cost and performance advantages. Monolithic integration of passive components, such as directional couplers, in Multilayer Integrated Circuit technologies is highly desirable. Microstrip broadside-coupled structures are well suited for tight coupling in a multilayer high integration environment. However, it is well known that such hybrids suffer from poor directivity due to the inhomogeneous nature of the substrate. Numerous compensation techniques have been proposed in the literature, which attempt to equalize the normal mode phase velocities. In this paper we address the equalization of couplers where the even mode phase velocity is greater than the odd mode, a case typically encountered in broadside-coupled microstrip structures. Simulation and measurement results of practical structures on LTCC technology show that the technique is well suited for multilayer design.

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