Abstracts

CAD and optimization of compact ortho-mode transducers (Dec. 1999 [T-MTT])

M. Ludovico, B. Piovano, G. Bertin, G. Zarba, L. Accatino and M. Mongiardo. "CAD and optimization of compact ortho-mode transducers (Dec. 1999 [T-MTT])." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2479-2486.

We describe a hybrid computer-aided-design technique, which employs the standard generalized scattering matrix description and a new method, based on the three-dimensional generalized admittance matrix representation, for the efficient and reliable analysis of compact ortho-mode transducers (OMT). A rigorous investigation of the numerical convergence properties of the electromagnetic simulators is carried out by using as a benchmark the measurements of a specifically built structure. The electromagnetic simulators are used for the efficient computer-aided optimization of the OMT and a procedure for the dynamical optimization of such components is introduced and tested by designing several OMT's operating at L, S, and Ku frequency bands. The component design, entirely carried out at computer level, has demonstrated significant advantages in terms of development times and no need of post-manufacturing adjustments. The very satisfactory agreement between experimental and theoretical results further confirms the validity of the proposed technique.

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