Abstracts

Development of a "laminated waveguide"

H. Uchimura, T. Takenoshita and M. Fujii. "Development of a "laminated waveguide"." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2438-2443.

A waveguide of new structure has been developed for millimeter-wave applications. The dielectric waveguide is constructed with sidewalls consisting of lined via-holes and edges of metallized planes. This structure can be manufactured by lamination techniques, so we refer to the waveguide as a "laminated waveguide". The laminated waveguide can be embedded in a substrate and is able to be wired in three dimensions. The transmission characteristics are evaluated using a glass-ceramic substrate of dielectric constant, /spl epsiv//sub r/=5, and loss, tan /spl delta/=0.0008. Insertion loss per unit length of the guide is estimated to be less than 0.5 dB/cm at 83 GHz. Furthermore, it was confirmed that the laminated waveguide is suitable to feeding lines for a small sized plane array antenna. By electromagnetic simulation, it has been confirmed that fundamental structures, such as bends, branches, power dividers, and interconnections between upper and lower layers can be realized with sufficient performances.

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