Abstracts

Modes of Propagation in a Coaxial Waveguide with Lossless Reactive Guiding Surfaces (Comments and Author's Reply)

R.A. Waldron and R.K. Arora. "Modes of Propagation in a Coaxial Waveguide with Lossless Reactive Guiding Surfaces (Comments and Author's Reply)." 1973 Transactions on Microwave Theory and Techniques 21.1 (Jan. 1973 [T-MTT]): 61-62.

Many authors have attempted to simplify the study of the mode spectrum of a waveguide with a complicated wall structure by the use of a surface-impedance boundary condition, and the above paper is a classic example of the exercise. The method depends on two assumptions-that it is proper to express a ratio between the tangential E and H fields as a boundary condition, and that such a ratio can be expressed unambiguously in terms of the form of the waveguide wall. That these assumptions are valid is always taken for granted by users of the method, including the present authors, but I have never seen a proof of their validity. Unless such a proof can be given, the results of calculations by the surface-impedance method cannot be trusted.

❑ Return to main document.