Abstracts

A Simple and Rigorous Analysis of the Transmission Properties of a Sector Horn Junction in a Rectangular Waveguide

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Rigorous representations of expansion with a modal function, reflection and transmission coefficients for the electromagnetic field at the junction between a sector horn and a rectangular waveguide are obtained. So far, this problem has been approximately treated by limiting the mode number of the electromagnetic field expansion or the flare angle of the horn. In this paper, the electromagnetic fields at the discontinuity are expanded by a modal function of integer order. As a result, rigorous solutions are simply obtained by the orthogonality of a trigonometric function without any qualification. By using the numerical results with strict accuracy calculated from these representations, the transmission properties at the junction between a sector horn and a rectangular waveguide are examined in detail.

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