Abstracts

Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide

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Small spherical objects have been found useful as impedance matching elements in rectangular waveguides. In this paper, we develop a formula for the reflection coefficient produced by a conducting spherical ball in contact with the broad wall of a rectangular waveguide. The solution involves replacement of the obstacle by equivalent electric and magnetic dipoles but employs no ad hoc assumptions to determine the dipole moments and to this extent is exact. The theory is found to yield good results for all balls likely to be practical as impedance matching elements.

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