Abstracts

Electromagnetic Transmission through a Filled Slit in a Conducting Plane of Finite Thickness, TE Case

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A solution is developed for computing the transmission characteristics of a slit in a conducting screen of finite thickness placed between two different media. The slit may be filled with lossy material while the two regions on either side of the screen are assumed lossless. A magnetic line source excitation is used (TE case) which is parallel to the axis of the slit. The equivalence principle is invoked to replace the two slit faces by equivalent magnetic current sheets on perfect electric conductors. Two coupled integral equations containing the magnetic currents as unknowns are then obtained and solved for by the method of moments. Pulses are used for the expansion and testing functions. Quantities computed are equivalent magnetic currents, the transmission coefficient, the gain pattern, and the normalized far field pattern.

❑ Return to main document.