Radiation From An Open Ended Eccentric Annular Waveguide

Ragheb, H.A.;Dept. of Electr. Eng., King Fahd Univ. of Pet.Miner., Dhahran;
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King Fahd University of Petroleum & Minerals

Summary

The radiation from an open ended eccentric annular waveguide is examined here. The region between the two circular conductors is assumed to have either symmetrical or anti-symmetrical TE field distribution. The cut-off wavenumber is first calculated and the unknown coefficients in the field are then obtained. It is found that for anti-symmetric field distribution the radiation pattern in the H-plane has a null which can be widely scanned by displacing the conducting core from the central axis. For the symmetrical field distribution a pair of symmetrical nulls in the E-plane are slightly scanned with the displacement of the conducting core. This type of waveguide antenna is useful for applications in phased and adaptive arrays which require null scanning