Abstracts

A Quasi-Optical Mode Converter with a Bifocal Mirror

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This paper presents the design procedure of a quasi-optical mode converter to transform any kind of TE/sub mn/ mode into a Gaussian wave beam and experimental results obtained in the particular case of the TE/sub 64/ mode at 110 GHz. The quasi-optical system consists of a helical-cut launcher and a bifocal mirror, which is designed, using the techniques of geometric optics, to focus the radiation of the launcher into a Gaussian focal spot. Such a system was fabricated and tested for the transformation of the TE/sub 64/mode. The experimental results showed that about 80% of the power incident in the focal plane is focused into a small Gaussian-like spot of less than 20 mm diameter, while the 97% of the power is contained into the main TE/sub 64/ lobe.

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