Abstracts

Machined Waveguide Twist (Short Papers)

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In the fabrication of microwave and millimeter-wave circuits in waveguide, the designer often requires a 90° change of the E plane. This presents no problem if the circuit is assembled from discrete waveguide components, since 90° twists are commercially available. However, if the circuit is machined from aluminum blocks, a 90° twist is difficult to realize. This note presents a simple solution to that problem. At the waveguide input, half the waveguide wide dimension is machined into one aluminum block the mirror image being machined into a second block. The technique involves gradually reducing the width of the "input" waveguide (machined as described above) in one block and simultaneously increasing the depth of the waveguide in the opposite block until the "output" waveguide depth is equal to the "input" waveguide width. Care must be taken to maintain a constant waveguide cutoff frequency through the length of the twisted section so that a good match is obtained. Two twists made by this technique in WR-22 waveguide performed satisfactorily.

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