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Subject: Pattern control and mouth size

Posted by [Wayne Parham](#) on Thu, 08 Feb 2007 15:16:10 GMT

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Mouth size sets the lower limits of pattern control. At frequencies where the horn is large compared to wavelength, the horn walls act as boundaries and set the pattern. But when the wavelength is no longer small compared to mouth size, it begins to act as a diffraction slot. The wall angle is no longer important, instead, the wave launch is that of single slit diffraction. Assuming a constant flare angle, the frequency where pattern control is no longer set by wall angle is determined by mouth size. If the mouth is axisymmetric, then the frequency where this happens is the same in the vertical and horizontal plane. If, on the other hand, the horn is wider than tall, then the horn will act as a diffraction slot that widens the flare in the vertical plane before it begins to do this in the horizontal plane.

Pattern from single slit diffraction

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