Subject: Re: Both!
Posted by Bill Fitzmaurice on Fri, 17 Sep 2004 18:31:20 GMT
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True, but don't put too much emphasis on the directional aspect of horns as a gain source. The primary reason for the apparant gain of a horn with respect to the directional pattern has to do with the physical size of the horn mouth, and the fact that once it hits a wavelength across the radiating pattern shifts to hemispherical, rather than omni-dirctional, and that gets you 6dB of increased on-axis sensitivity. However, you can accomplish the same thing with a direct radiator if you simply make the baffle a wavelength across. The effect of the baffle step as a tool for gain is obvious with horns since they tend to have large mouths compared to the baffles of direct radiators operating in the same frequency range. If you make the respective radiating planes of a horn and a direct radiator the same size, eliminating the horn's advantage as far as the baffle step is concerned, the horn still can easily exhibit 10dB or more of gain over the direct radiator using the same driver.