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Subject: Re: OS waveguides

Posted by [Earl Geddes](#) on Tue, 07 Jun 2005 13:04:30 GMT

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WayneYes, you are correct. I have done a lot of work in this area. Each desired polar response dictates a mouth wavefront shape. This seems obvious, right. The OS waveguide will only ever yield an axi-symmetric wavefront and hence axi-symmetric polar pattern. To me this is nearly ideal since that is the pattern that all piston drivers have (except some obscure ones - ovals, square). So matching waveguide directivity to a piston dictates an OS waveguide. But with multiple piston drivers at low frequencies a non-axisymmetric pattern could be achieved which would require a different waveguide. There are two possibilities here; prolate spheroidal; and Ellipsoidal. The first is rectangular and the other is elliptical in cross section. In fact the OS waveguide is a special case of the Ellipsoidal. These three waveguides all require different shapes at the throat - rectangular, elliptical and circular. It is possible to design an adapter, but this is less than ideal. Ideally the phase plug should create the proper shape at the compression drivers exit aperture. Hence a specific phase plug for a specific application. I applied for a patent on interchangeable phase plugs several years ago. After much discussion with the USPTO, it looks like it will be issued within the next year.

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