Subject: Uniform DI verses Collapsing DI
Posted by Wayne Parham on Sun, 27 Mar 2005 21:34:02 GMT
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I would suggest that you compare a system with uniform or matched directionality to another with axisymmetric horns having collapsing DI. More specifically, you would be comparing a loudspeaker system that uses tractrix round horns with another that uses 90x40 horns. That involves using matched mids and bass systems and, in the case of the uniform DI speaker, you'll also want a crossover that minimizes comb filtering between adjacent subsystems. In my opinion, the type of system you are making determines the horn you should use.It's not just a matter of comparing one particular horn with another, that's kind of like comparing a car's tires without discussing suspension. Unless they are of the same general type, a comparison isn't really appropriate. Some things can be quantified but overall performance cannot. Some tires are more suited for one kind of vehicle or another, like tall, bouncy slicks for a drag car or short, rigid tires for a road race. Both are designed to maximize traction, but one is optimized for straight-line launch and the other for lateral hold. Either way, the tuner has to optimize properly or the car isn't setup right. Put a drag slick on an indy car and you can out-corner it in a mini-cooper. Put a Formula I tire on a top fueler and you'll melt it to the rim without even leaving the lights.So the long story short is that I don't think it is going to really work comparing an individual round horn to a 90x40. The system optimizations are different. One is optimized when power response is uniform, the other when on-axis response is uniform. A nice experiment might be to compare a loudspeaker system with all round horns to another with all 90x40 radial horns. If you like the tractrix curve, you could use round tractrix horns for one system and for the other, use radial horns having a tractrix expansion in the vertical plane and uniform 90° in the horizontal plane. But whatever the flare profile, I suggest the 90x40 horn be used in a system that has a DI matched midwoofer or a cornerhorn that uses all 90° flares. I'd use the round horn in a system that has all axisymmetric horns. Then you can compare systems, because I think that makes a lot more sense.