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Subject: A coax question

Posted by [DanTheMan](#) on Sun, 14 Oct 2007 23:18:17 GMT

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I was wondering how a coaxial woofer behaves at high frequencies. Will it act as an extension of the horn flare of the tweeter? Or will the flare of the tweeter horn be narrow enough and the crossover frequency of the tweeter horn be high enough that the treble escapes almost unscathed? The speaker in question here would be the Hawthorne Audio Silver Iris. It is a 15" woofer with a 90 degree tweeter horn coaxially mounted with a crossover frequency of around 2000Hz. I don't know if this is enough info for anyone to answer the question or not, but I would really appreciate some insight. Thanks again, Dan

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Subject: Re: A coax question

Posted by [Wayne Parham](#) on Mon, 15 Oct 2007 13:14:34 GMT

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The tweeter will modify the radiation pattern, if large enough. There is a slight dip on axis in its shadow.

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Subject: Re: A coax question

Posted by [DanTheMan](#) on Mon, 15 Oct 2007 14:58:44 GMT

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Do you mean the woofer will modify the tweeter's pattern? That was kind of what I was asking. Or do you really mean that the tweeter will modify the woofer's response? I would think that the tweeter could only modify the woofer's response due to the porous dustcap/lack of compression behind the dustcap. I don't really know, but thanks for the reply Wayne! Hopefully I wasn't too confusing.

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Subject: Re: A coax question

Posted by [Wayne Parham](#) on Mon, 15 Oct 2007 19:28:19 GMT

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What I'm saying is that coaxial tweeters with horn flares that protrude out in front of a midwoofer will modify the dispersion of the midwoofer. The listener is in the shadow of the tweeter horn on-axis, so the midrange from the midwoofer is affected.

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Subject: Re: A coax question  
Posted by [DanTheMan](#) on Tue, 16 Oct 2007 07:27:37 GMT  
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Thanks Wayne, I gotcha there, and that's something I never thought about. It only protrudes a couple of mms. Will the woofer affect the tweeter response? ie. Will it act as a moving waveguide or distort the HF as it passes through the MR and bass? Thanks again! Dan

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Subject: Re: A coax question  
Posted by [Wayne Parham](#) on Tue, 16 Oct 2007 13:19:14 GMT  
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The woofer acts as a launch boundary, confining the radiation angle at low frequencies where the horn alone is too small to be effective controlling the pattern. This tends to smooth the response a little bit compared to freespace. The woofer is slightly cone shaped, so the radiation angle is smaller than halfspace but larger than quarter space.

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Subject: Re: A coax question  
Posted by [DanTheMan](#) on Tue, 16 Oct 2007 22:34:24 GMT  
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Ah yes! Thanks Wayne. Somehow it seems so obvious now. I was wanting to make it harder than that. I guess I always do when it's something I don't have a great grasp of in the first place. Thanks again! Dan

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