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Subject: Re: 1-Pi/2-Pi

Posted by [Wayne Parham](#) on Fri, 08 Jan 2010 15:03:11 GMT

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RDLewis wrote on Thu, 07 January 2010 16:00: After you sent me the Plans for the above, I did some more searches for them on your site. To one answer you said that you used MJKing's worksheets to model the Towers. Now I have the original "free" version so I put the specs and dimensions and the results looked good. Out of interest I tried out the above using his "ML TQWT" and managed to come up with a very similar response (with different Port size). The box would be narrower and shorter, which would be more acceptable in my room. Modeling is all very well, but would it sound as good?? Though MJK does state that TL's, reflex, MLTQWT all use the same equations.

I don't build transmission lines, as I've always used Helmholtz resonance to tune the box instead of pipe modes. I designed the box with standard Helmholtz resonance formulas and then used Martin King's spreadsheets to verify that port and driver placement would prevent higher standing waves from generating peaks in response.

If you've studied what Martin King does, he essentially advocates using the primary pipe mode to tune the box but then suppresses all higher modes using port and driver placement. This is very similar to the approach I take, except the transmission line speaker uses the fundamental standing wave mode as the primary tuning mechanism, whereas my speakers use Helmholtz resonance. The results are the same, when properly done.

What can get a speaker builder in trouble, can happen either with either mechanism. If the speaker is designed right, I don't suppose which mechanism is chosen, both will probably give identical results. The main thing is to suppress those higher modes. If the box is large, and especially if it's a tower (long and thin), then it will have pipe modes, no matter what you do. Likewise, if it has a port, then it will have Helmholtz resonance.

It doesn't really matter if you call such a speaker a transmission line or bass reflex box - both standing waves and Helmholtz resonance are happening. What matters is that, in the end, the system provides the desired response. The primary resonance - whether it be the first pipe mode or Helmholtz resonance - must be tuned appropriate to give the intended transfer function on the low end, and the higher standing wave resonances must be suppressed either by placement or by damping, or both.

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