

HideAway Transmission Line Sub

By Bjørn Johannesen, Denmark with MathCad models, which property rights belongs to Martin J. King

This construction has some useful properties

- ☐ Opening is close to the driver, this has a good effect on the low end performance
- ☐ Driver and opening are at floor level
- ☐ Coupling chamber allows for the line to be hidden under the coach
- ☐ The line has 2 different cross sections areas, lowering the tuning frequency

The geometry allows for a reasonable size, yet a cabinet tuning in the low 20Hz to dampen cone movement. Furthermore, the geometry is levelling the output from the opening, and there are no unwanted peaks. The controlled roll off is helping to avoid boomy effects caused by resonances in the listening room.

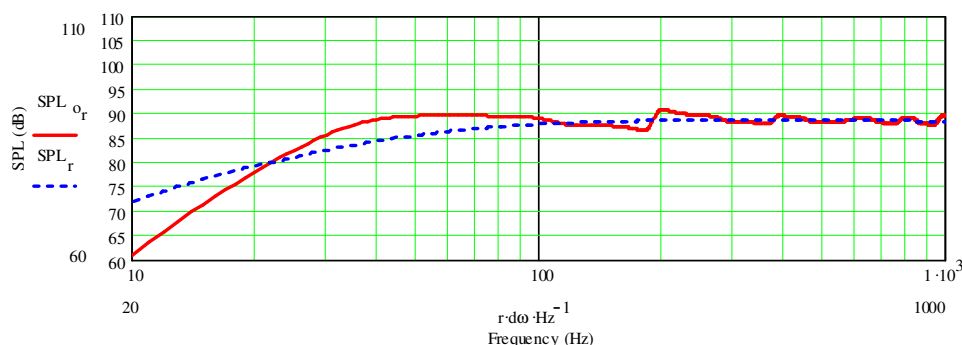


HideAway with SEAS W26FX001

This SEAS driver has a low F_s and a very nice Q_{ts} , not often seen with drivers with low F_s . However, the V_{as} is high.

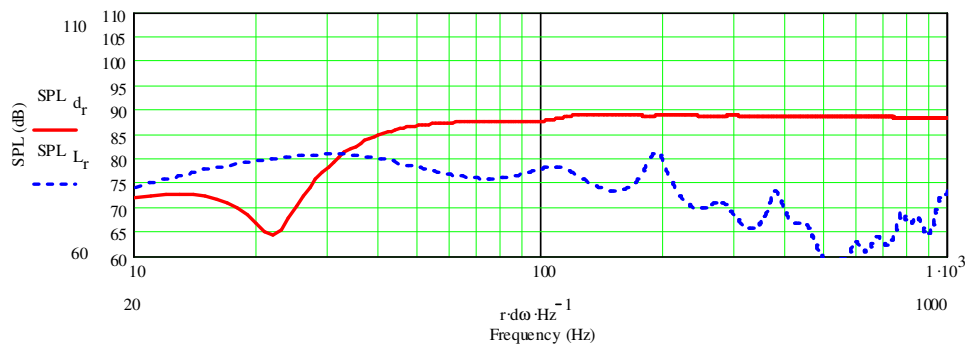
Nevertheless, I have simulated the driver in my HideAway, with no changes in the design or the stuffing.

Summed SPL. The blue dotted line is the driver in IB.

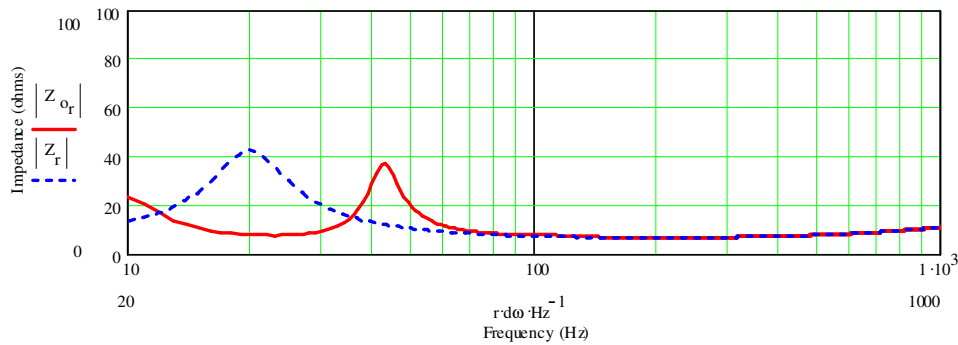


I like the gentle roll off, as this is preventing uneven response caused by room gain. The SEAS driver loves power, and in your listening room I would expect this sub to do really well. Of course the volume is too small, but on the other hand: You will get a clean, deep bass from an “invisible” speaker.

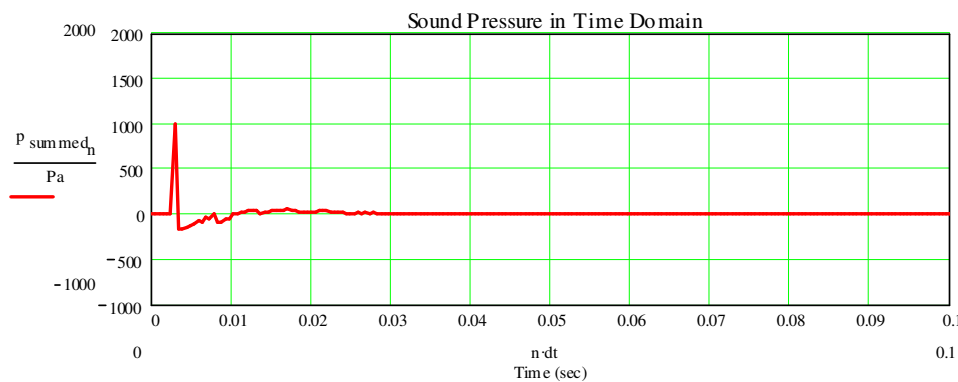
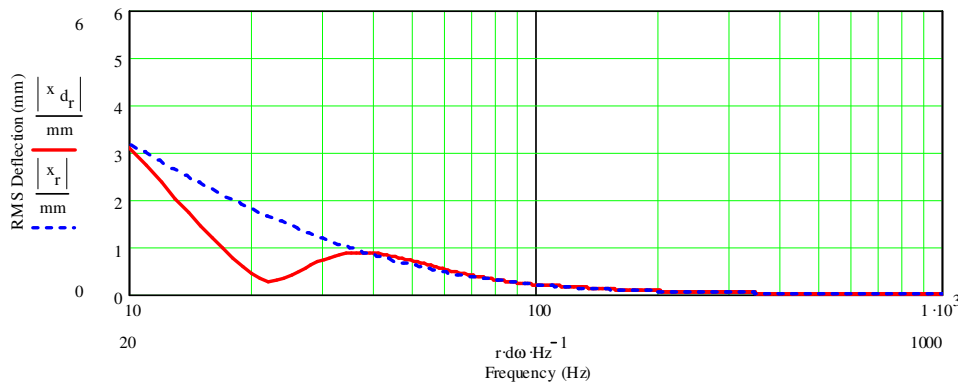
The blue dotted line is the output from the opening, and the red solid line is the driver:



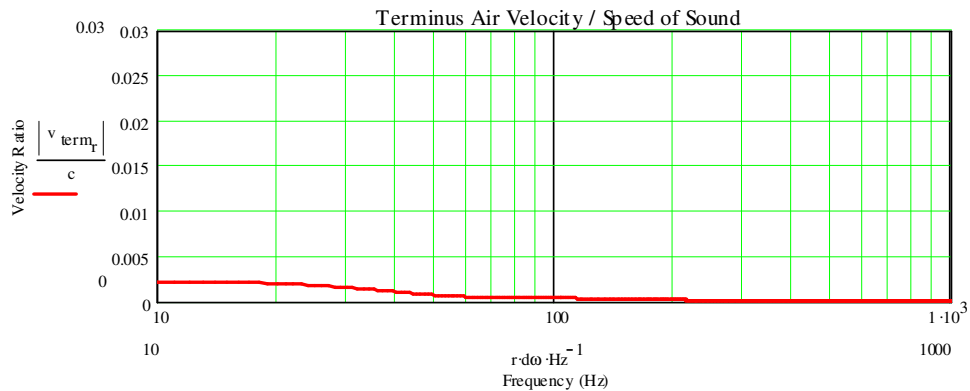
The impedance plot shows the difference between a TL (quarter wave) and a vented box. Blue dotted line is the driver in IB:



Woofer displacement is very well controlled. The blue dotted line is the driver in IB:

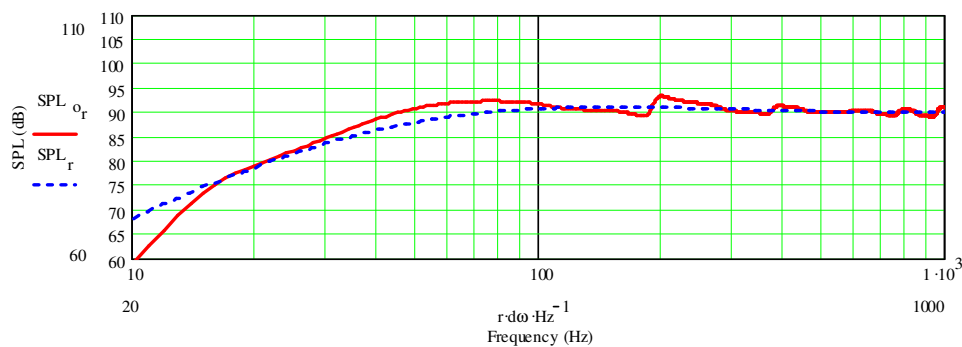


There is no risk for noise caused by air turbulence (chuffing) in the opening:



HideAway with Peerless

The same cabinet with Peerless 830843, which I am using in my living room:



Conclusion:

My HideAway might be worth upgrading with the SEAS driver. As the power handling is high, and the driver is well damped, you should definitely expect a very satisfying result.

Hawing said this; I am very pleased with the Peerless. This driver has a very nice price tag and is really a bargain.

HideAway

More info on HideAway can be found in AudioXpress October 2007, AudioXpress July 2006 and on Internet:

<http://www.audioxpress.com/magsdirx/ax/addenda/media/johannesen2835.pdf>

All I know about quarter wave design is thanks to Martin J. King:

<http://www.quarter-wave.com/>

Rob Brines articles are a must as well:

<http://geocities.com/rbrines1/Articles.html>

Please also take a look at my own introduction to Martin's work on this useful site:

<http://www.t-linespeakers.org/>

Build it!
Have fun!

Bjørn Johannesen
Wonderful Copenhagen

