

W5 2143 Transmission Line simulation

This is a simulation of a design that I have not tried in real life. I have not tried to make the enclosure as small as possible, nor have I tried tapered line. The combination of tuning / volume / stuffing has a predicted good performance with a controlled displacement. The result is a relatively deep bass which I expect to be clean and tight – just the way we like it.

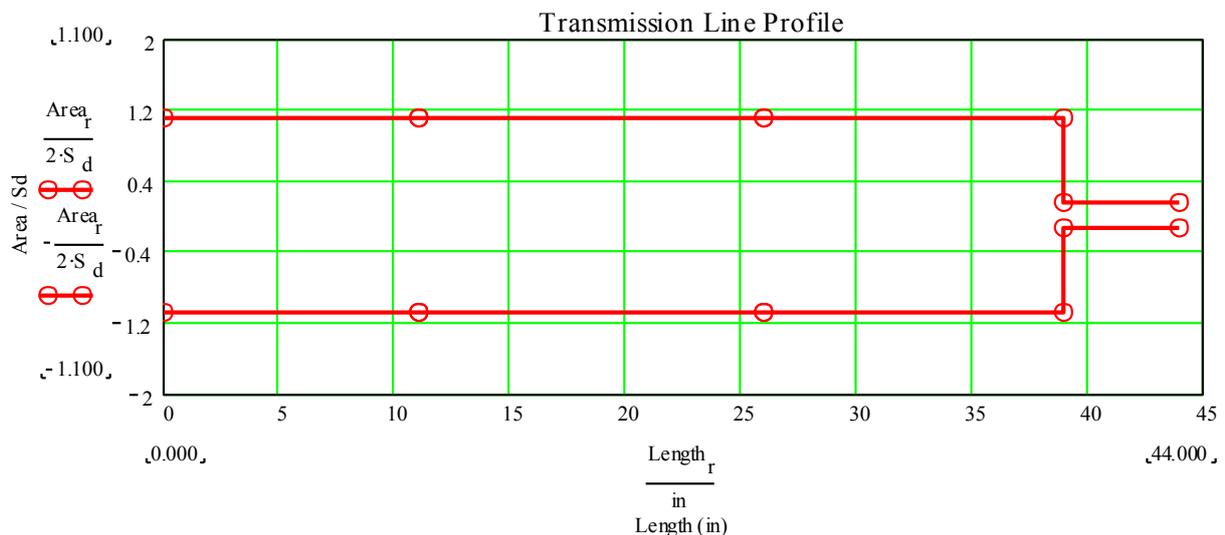
Simulation by Bjørn Johannesen, Copenhagen Denmark bjornarnejohannesen@gmail.com using models from Martin J. King <http://www.quarter-wave.com/>

Geometry

The shape is like TABAQ with these adjusted measures:

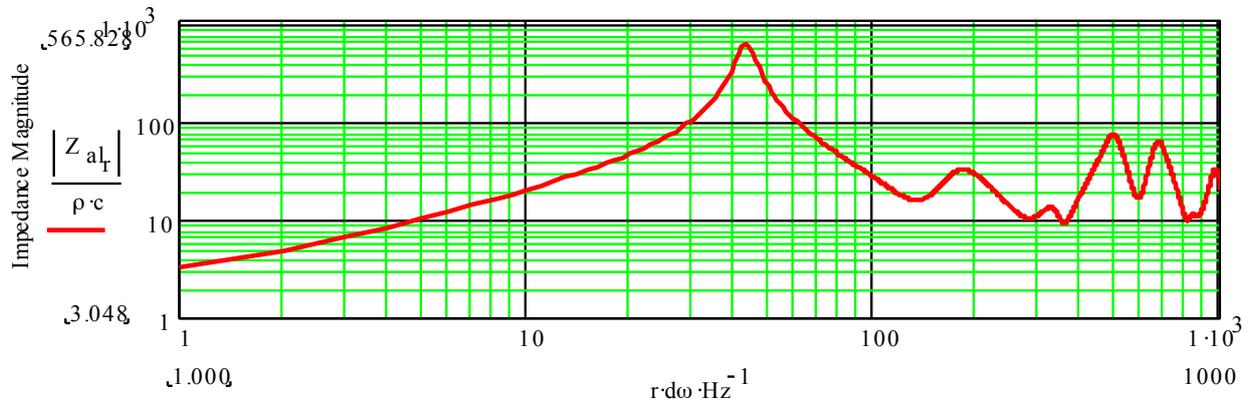
- Line 39 inch, 207 cm²
- The port is an extension to the line 5 inch, 28 cm²
- Driver 11 inch from the closed end
- Stuffing upper 2/3 110 gram

You can decide on how to make the enclosure as long as the internal measures are as described above.



Tuning

Tuning is about 43 Hz, driver Fs is 55Hz.

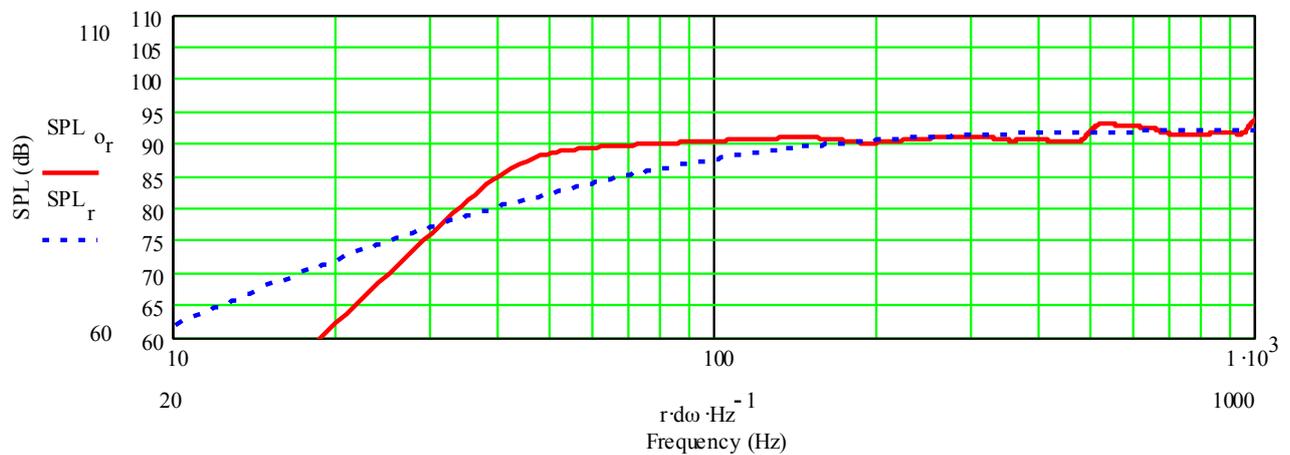


SPL

The driver is rather sensitive, 90 dB at 1 watt input.

The -10 dB point is at 35 Hz which will make this design suitable for most music types even without a sub.

The blue dotted line is the driver in an infinite baffle. The difference between the dotted blue line and the solid red one is the contribution from the TL design. The gentle roll off minimize the risk of a boomy bass caused by room gain.



Impedance

The driver is well damped, without losing too much output in the bass – thanks to the volume of the enclosure.

Note the lower peak, which is below the tuning frequency. This means that the driver is damped below the tuning frequency. This is one of the benefits of TL over BR. Feed a BR with a sinus tone below tuning frequency and you will see / hear what I mean.

