

Online Loudspeaker Enclosure Calculation

On this page you are able to calculate a speaker enclosure with Thiele/Small parameter. The colors of the curves in the diagrams for frequency response, step response, group delay and voice-coil impedance have the following meaning:

- **Black:** Vented-Box with Thiele/Small-Parameter (Bullock alignment).
- **Blue:** Closed-Box (without filling material) aligned with Thiele/Small-parameter and a desired Qtc.
- **Red:** any construction of your enclosure using the same Thiele/Small-parameter. You are also able to calculate a Closed-Box if you make the value of the vent diameter very small (i.e 0.01).

Thiele Small Parameter

Attention: You can put in your own Thiele/Small-parameter only if the speaker-select "parameterinput" is selected. To display diagrams you must fill in all appropriate fields (zeros disables the curves).

Speaker:

parameterinput

Resonance frequency f_S (Hz):

72.57

V_{AS} (litres):

1.39

Q_{TS} :

0.35

Q_{MS} :

5.38

=> $Q_{ES}=0.37$

DC voice-coil resistance R_E (Ohm):

3.18

voice-coil inductance L_E (mH):

0.16

R_g (Ohm):

=> $Q_E=0.37$ => $Q_T=0.35$

Enclosure

Vented-Box

Q_L :

7 enclosure 35-70 litres

Vent diameter r_d (cm):

2.1

Closed-Box

Desired Q_{TC} :

0.707

($R_g=0$)

Your own Box

Impedance Phase

☒

Phase of Sound Pressure Frequency Response

☒

Enclosure volume V_B (litres):

1.9

Vent diameter (cm):

2.262

=> (4.02 cm²)

Vent length (cm):

11.3

Q_L :

10

Air temperature (°C):

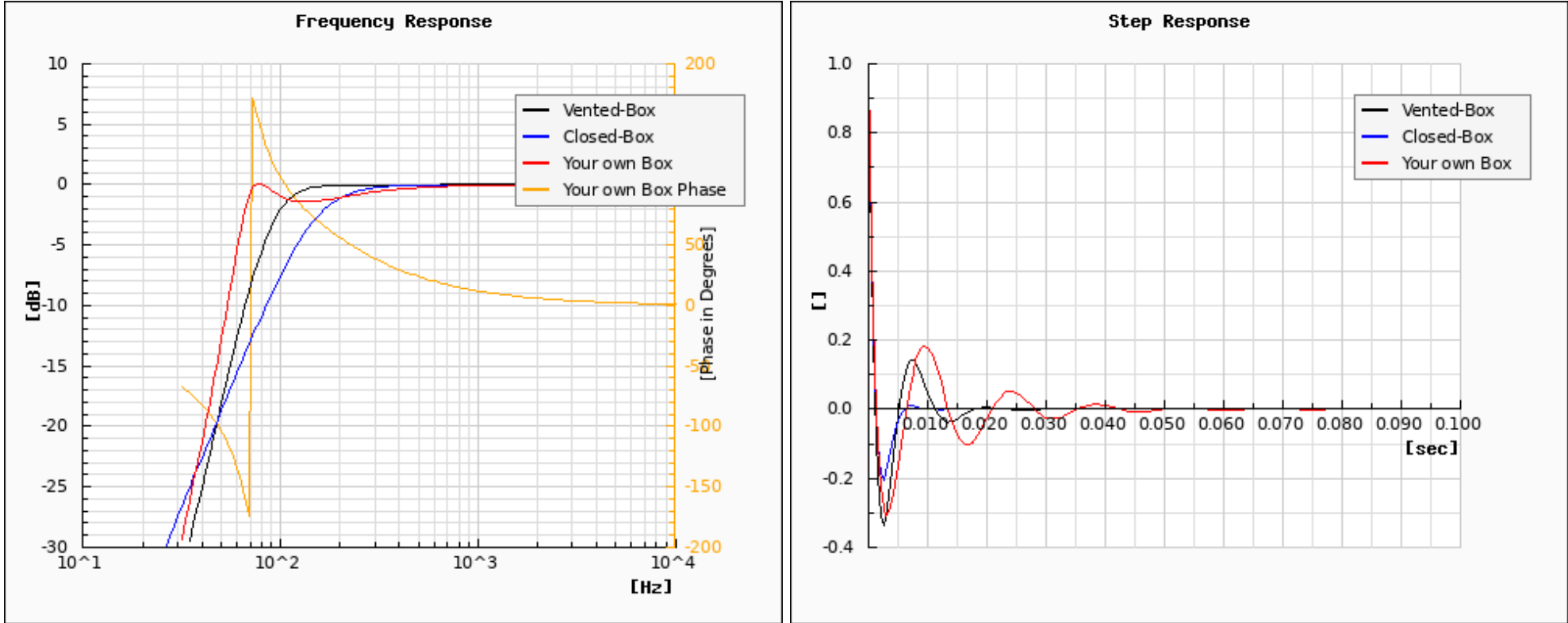
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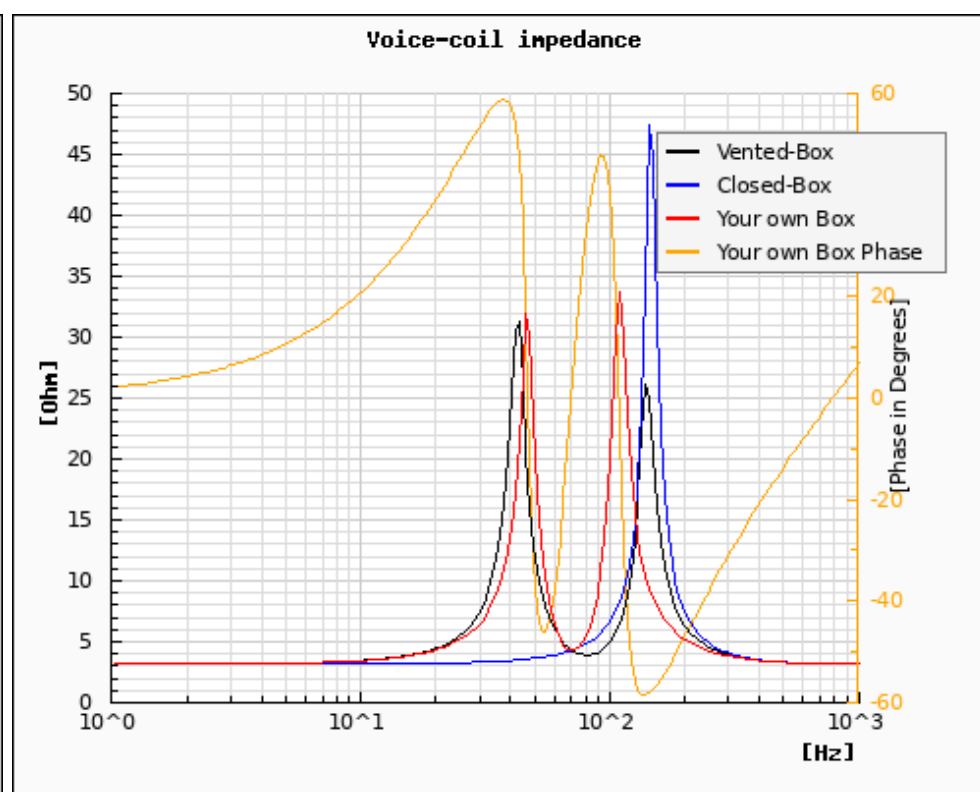
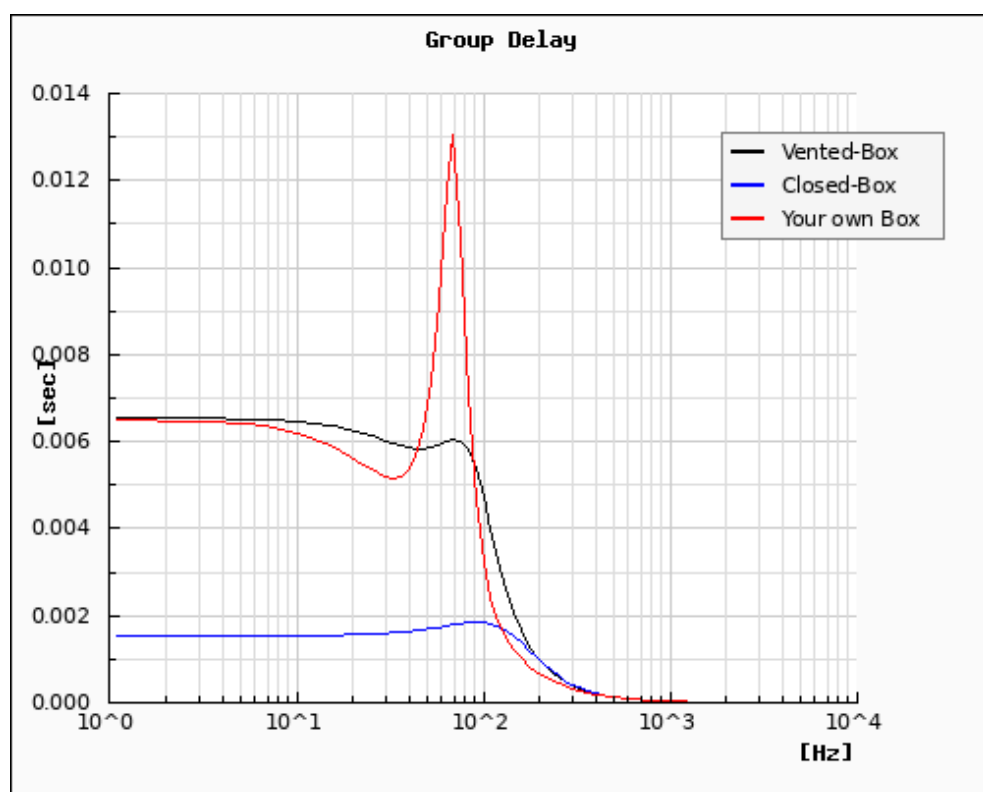
=> C_{air} : (346.5 m/s)

Calculate

Besucherzähler

Result:	Vented-Box	Closed-Box without filling	Your own Box	Your own Box parameter for Spice Simulation	parameterinput
Volume of enclosure	0.77 litres	0.45 litres	1.90 litres	$f_S=72.57$ Hz $V_B=1.90$ litres	$S_d=0.00$ cm ²
Resonance frequency	82.69 Hz	146.49 Hz	70.47 Hz	$V_{AS}=1.39$ litres $Q_L=10.00$	$X_{max}=0.00$ mm
Half power frequency	92.18 Hz	146.61 Hz	64.29 Hz	$Q_{TS}=0.35$ $h=0.97$	$P_{nom}=0.00$ W
Vent diameter	2.1 cm (3.46 cm ²)	---	2.262 cm (4.02 cm ²)	$Q_{MS}=5.38$	$SPL_{max}=INF$ dB
Vent length	17.99 cm	---	11.30 cm	$R_E=3.18$ Ohm	
Reference efficiency	0.14 %	0.14 %	0.14 %	$L_E=0.16$ mH	
Sound pressure level (SPL)	83.36 dB/W/m	83.36 dB/W/m	83.34 dB/W/m	$R_g=0.00$ Ohm	





last change: 11.june 2014

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