# The Napoleons

Small Speakers that punch above their weight

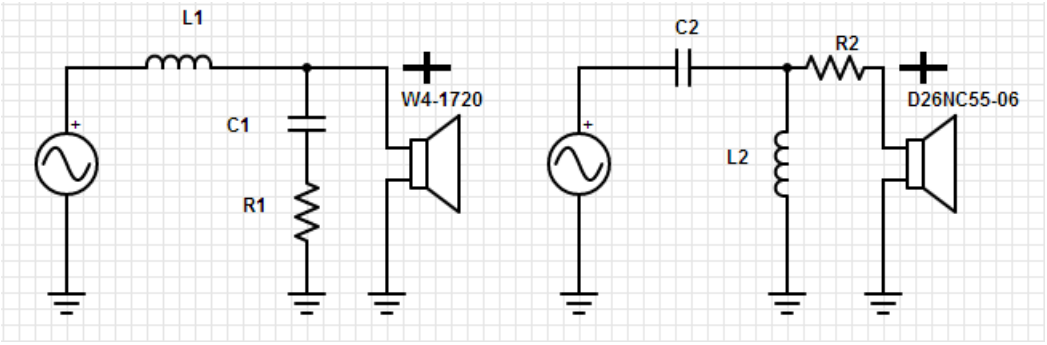
## Appendix I: First Published Crossover

This is the first iteration of the crossover, original published at diyAudio in 2013. This voicing may be preferred in large or well damped rooms. I found it had a bit too much mid-range on some material in my small room, as so could be a bit 'hard" on poorly recorded tracks.

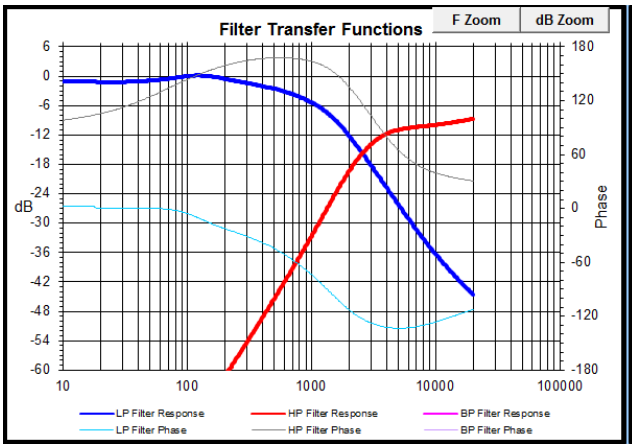
http://www.diyaudio.com/forums/multi-way/234674-napoleons-compact-2-way-punches-above-its-weight.html

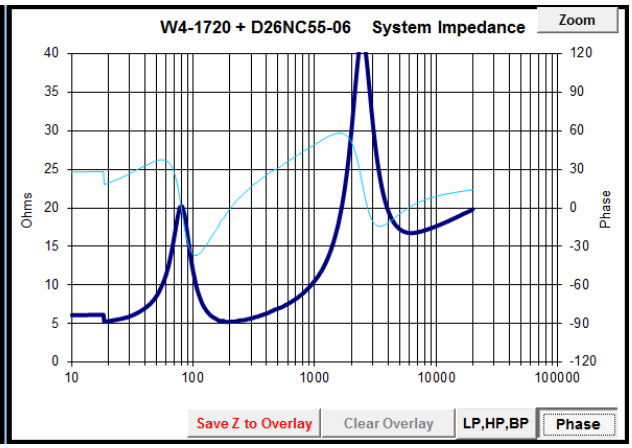
Low pass
L1: 1.5 mH inductor, 0.7 ohms dc resistance (18 gauge air core).
C1: 15 uF cap (not electrolytic)
R1: 1 ohm power resistor (10W or greater)

High Pass
C2: 2 uF cap (not electrolytic)
L2: 1.1 mH inductor, 0.5 ohms dc resistance (18 gauge air core)
R2: 15 ohm resistor, high power (25W or greater)

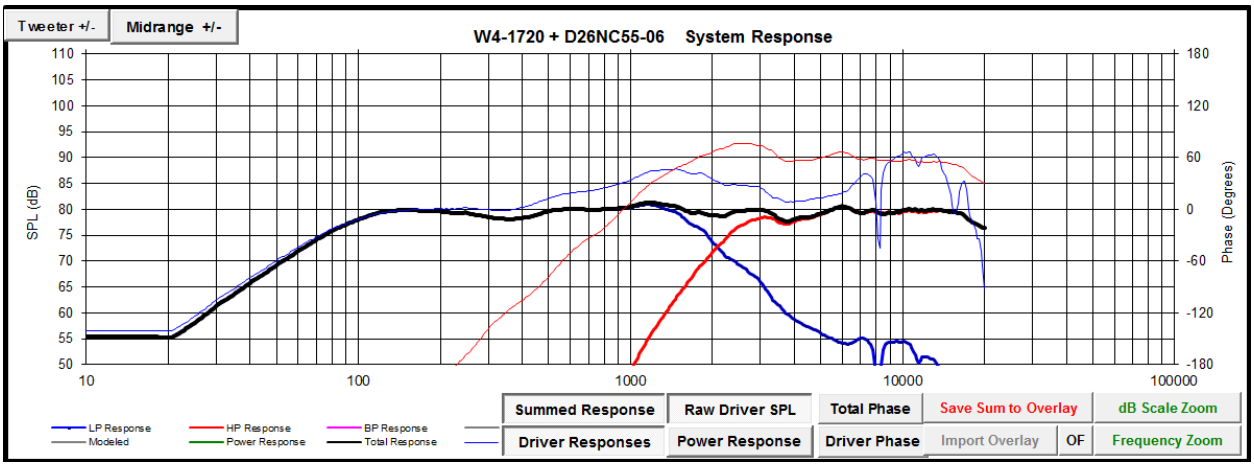



Filter Electrical Response loaded by the drivers and the System Impedance

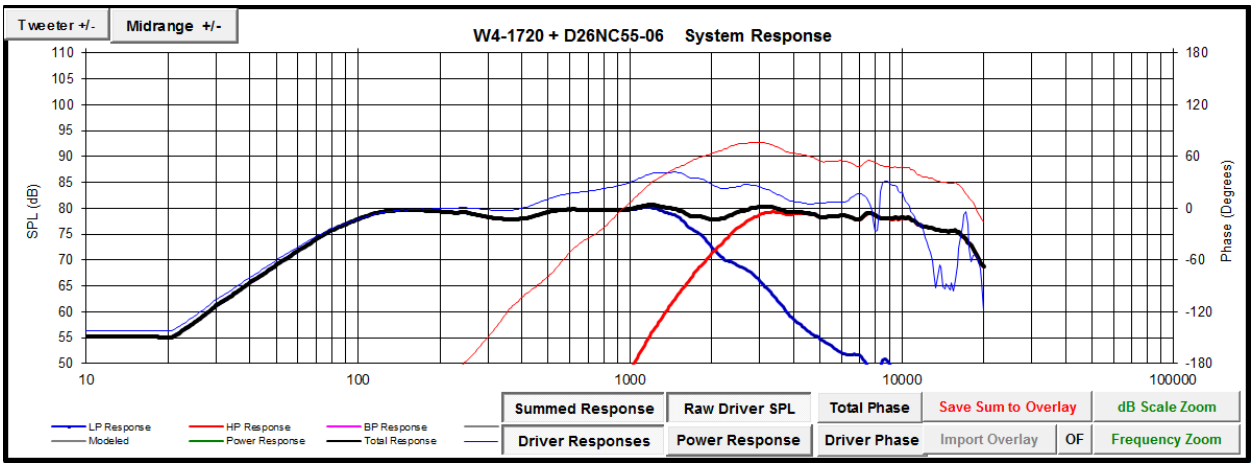


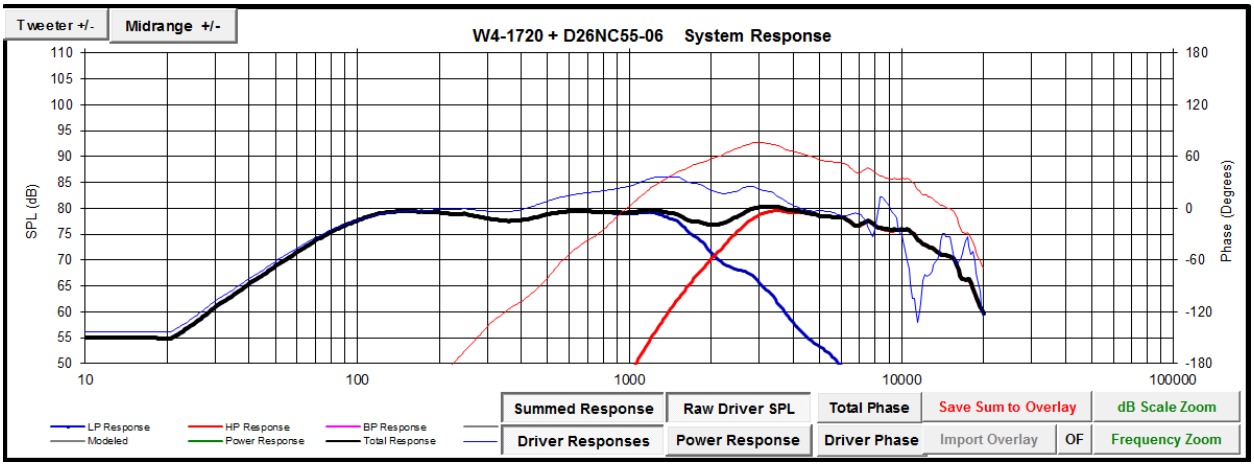
On Axis



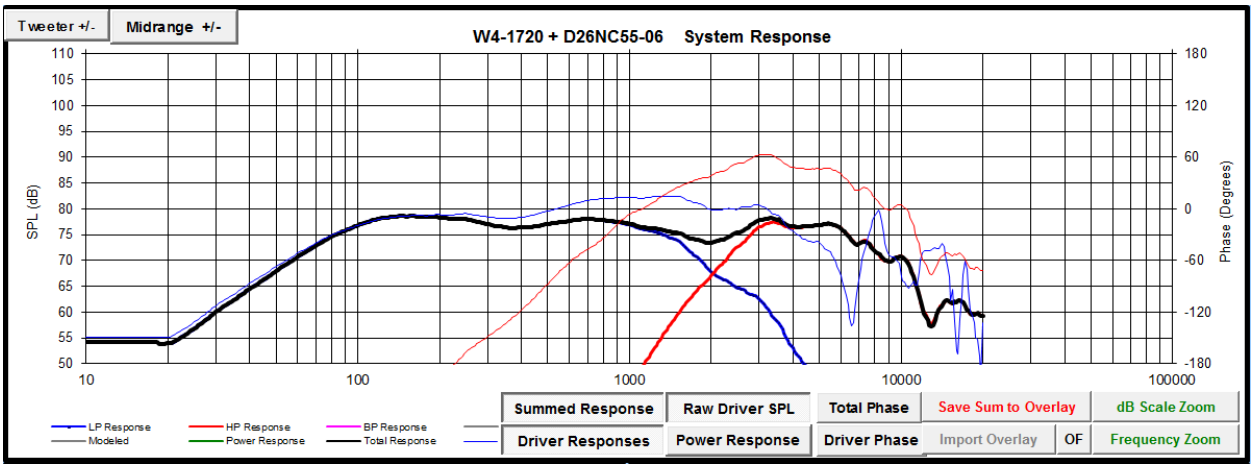

15 Degrees Horizontal



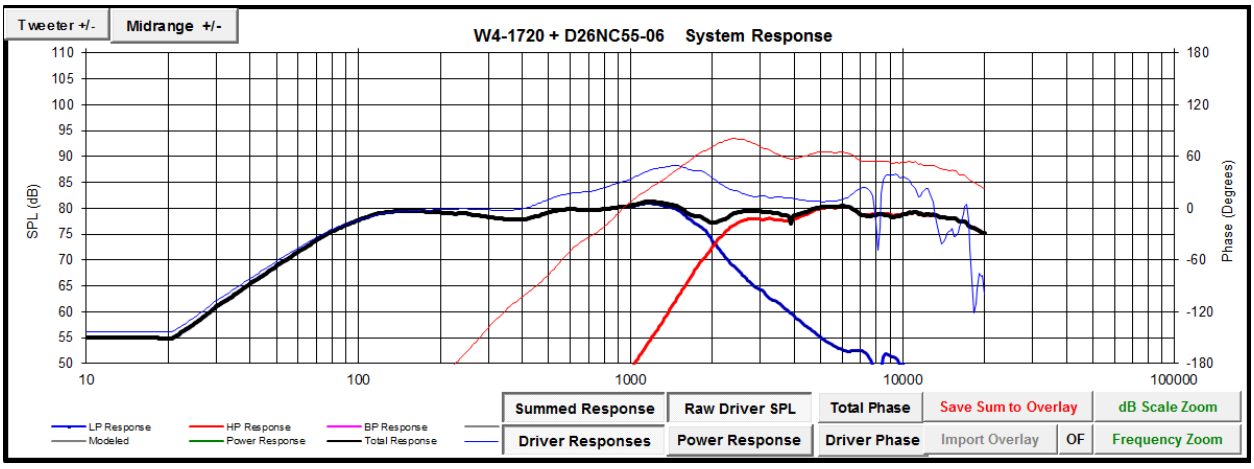

30 Degrees Horizontal



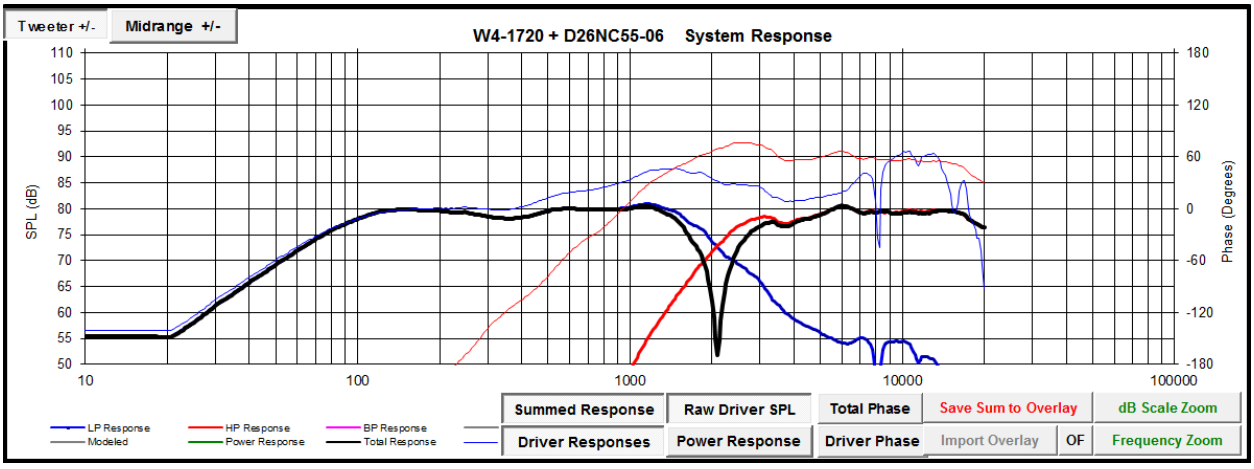
60 Degrees Horizontal




+15 Degrees Vertical (represents “listener standing”)




On Axis Reverse Null

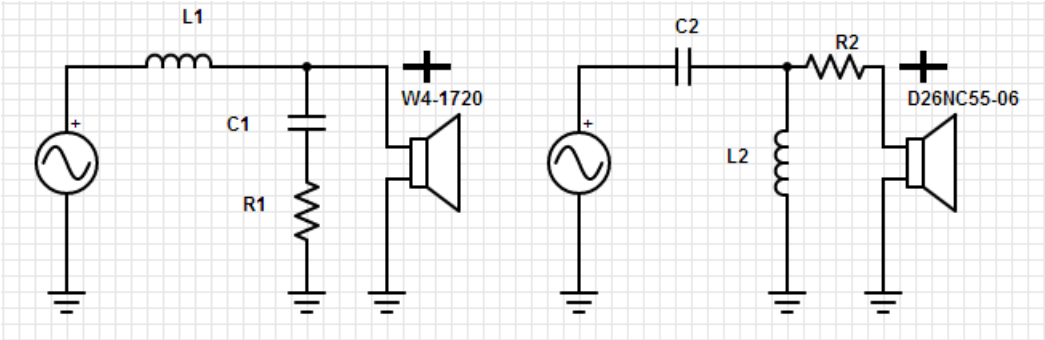


## Appendix II: Second Published Crossover

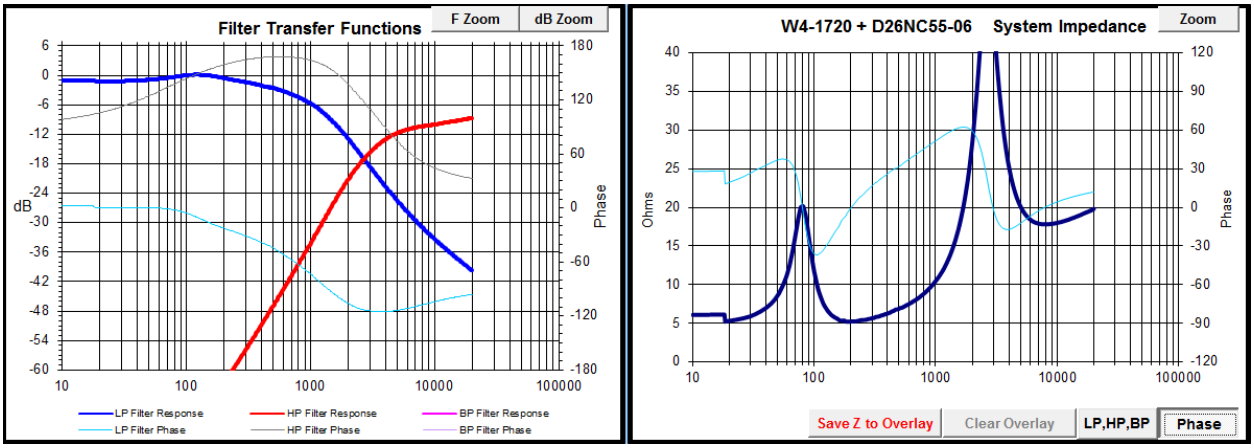
This is the second iteration of the crossover. Voicing over a year in a small 10'x12' lively room led to adding a small depression from 3 kHz to 5 kHz, while trying to minimize component changes from the crossover in Appendix I. This eradicated a small amount of perceived sizzle. The initial publication of this design (Appendix I) had R1 as 1 ohm, and C2 as 2 uF for a flatter response, which may be preferred in a large or well damped room.

Low pass
L1: 1.5 mH inductor, 0.7 ohms dc resistance (18 gauge air core).
C1: 15 uF cap (not electrolytic)
R1: 2 ohm power resistor (10W or greater)

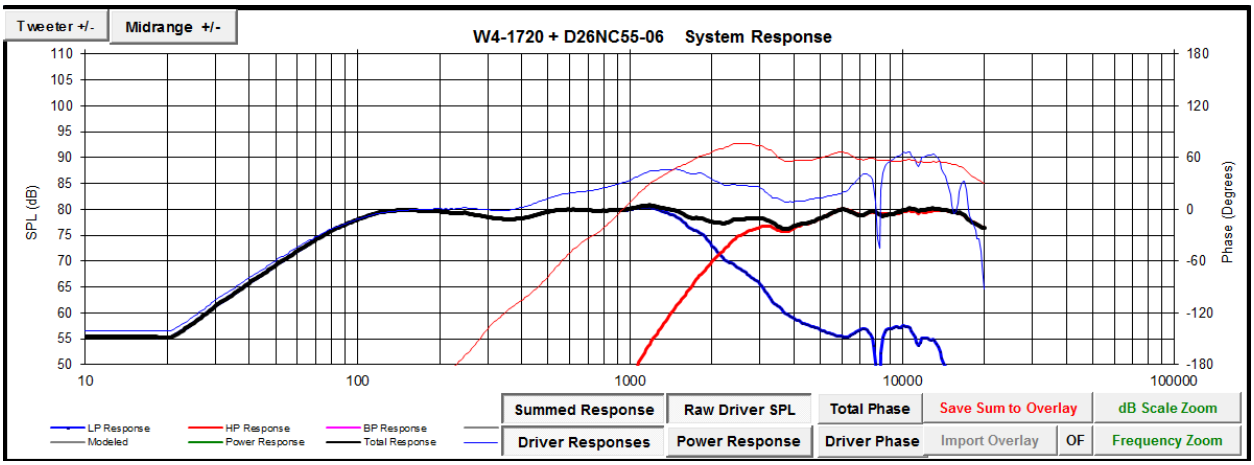
High Pass
C2: 1.68 uF cap (not electrolytic)
L2: 1.1 mH inductor, 0.5 ohms dc resistance (18 gauge air core)
R2: 15 ohm resistor, high power (25W or greater)



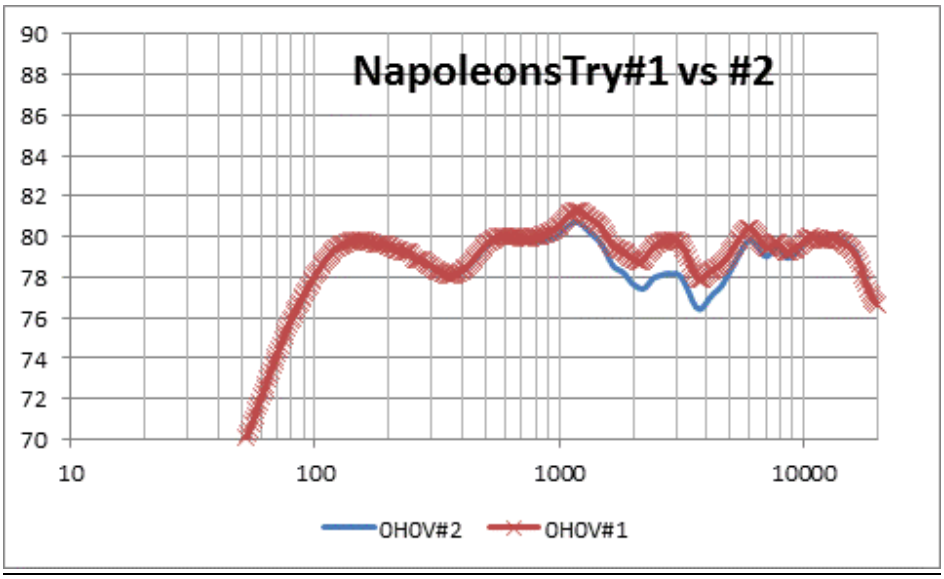

Filter Electrical Response loaded by the drivers and the System Impedance



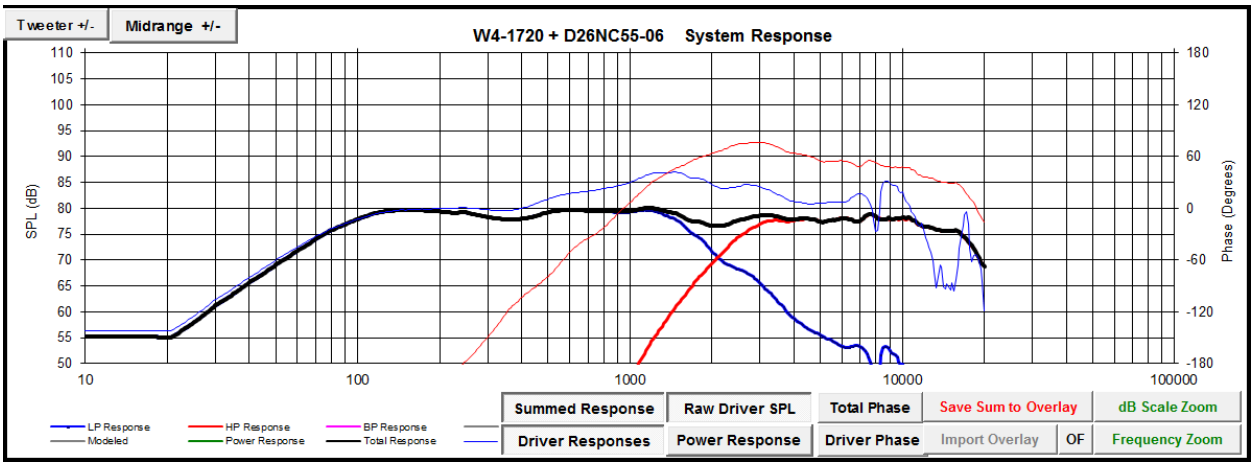
On-Axis



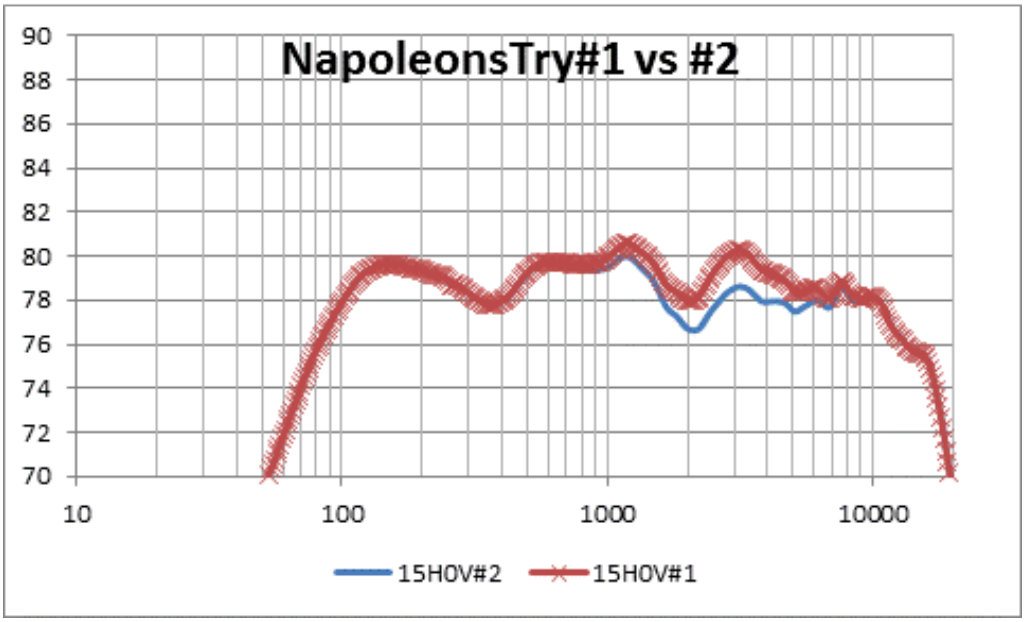

The effect of the change from the first version of the crossover, on axis:



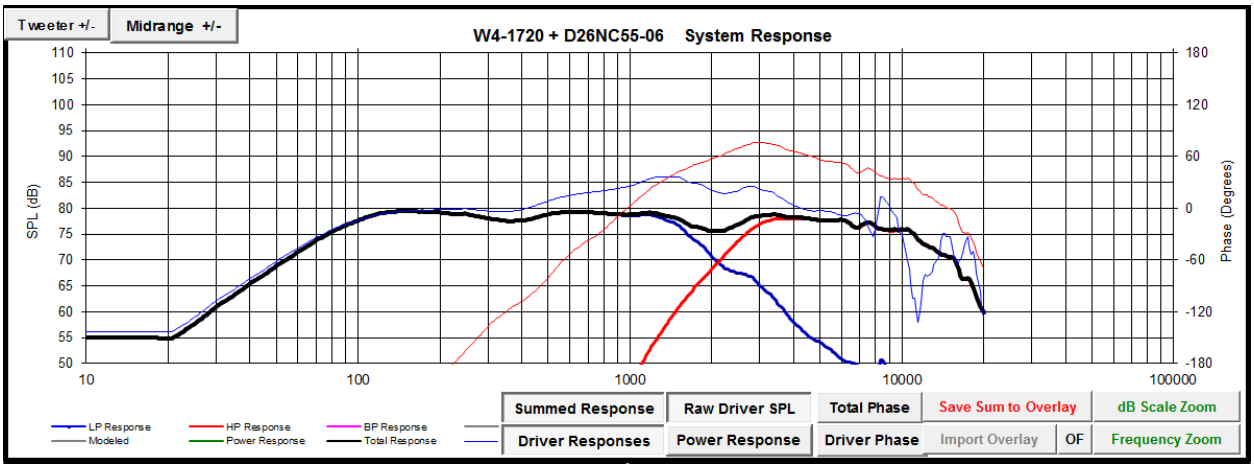
15 Degrees Horizontal



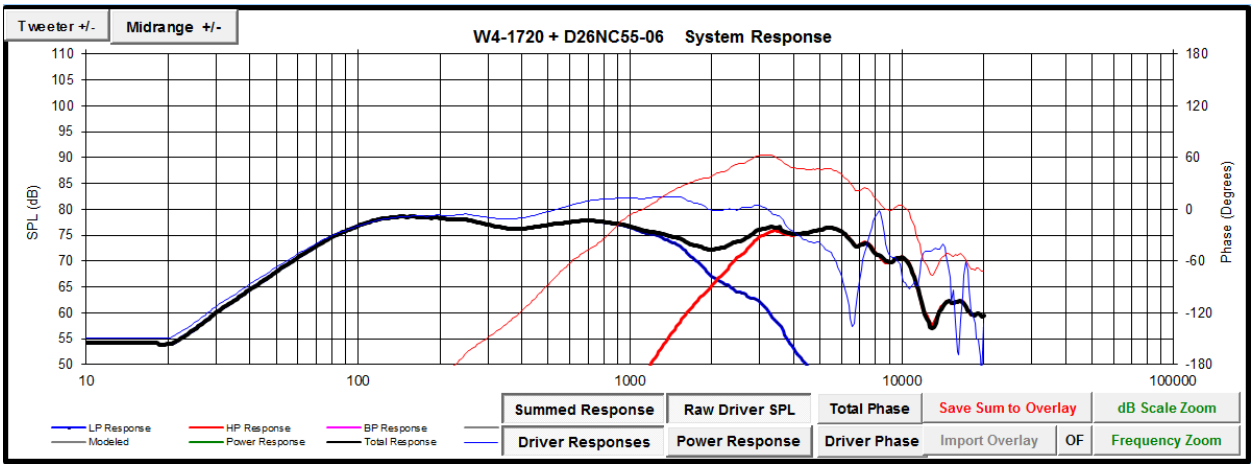

The effect of the change from the first version of the crossover at 15 degrees off axis shows a welcome reduction in energy from 2 to 6 kHz:



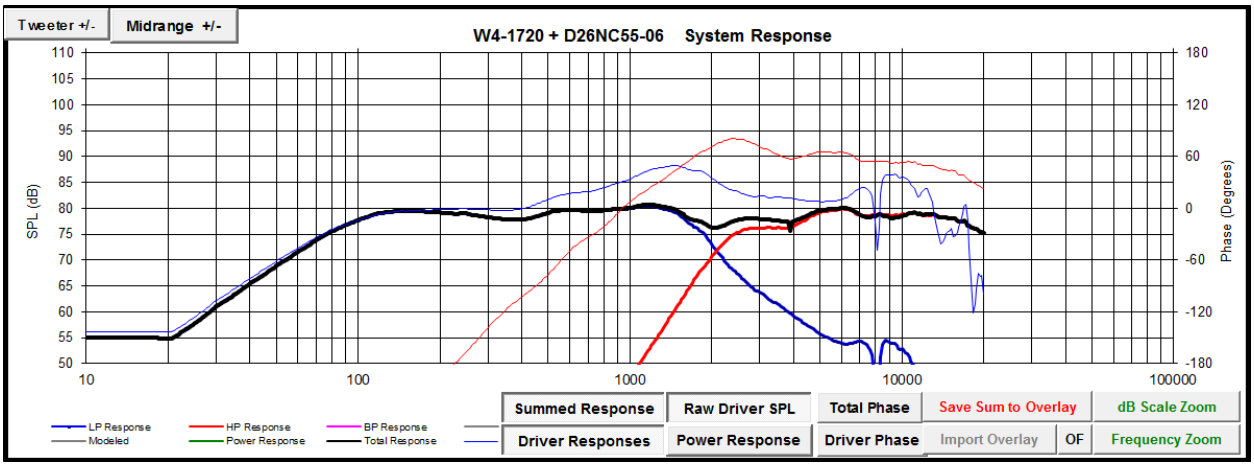
30 degrees Horizontal




60 Degrees Horizontal




+15 Degrees Vertical (represents “listener standing”)



On Axis Reverse Null