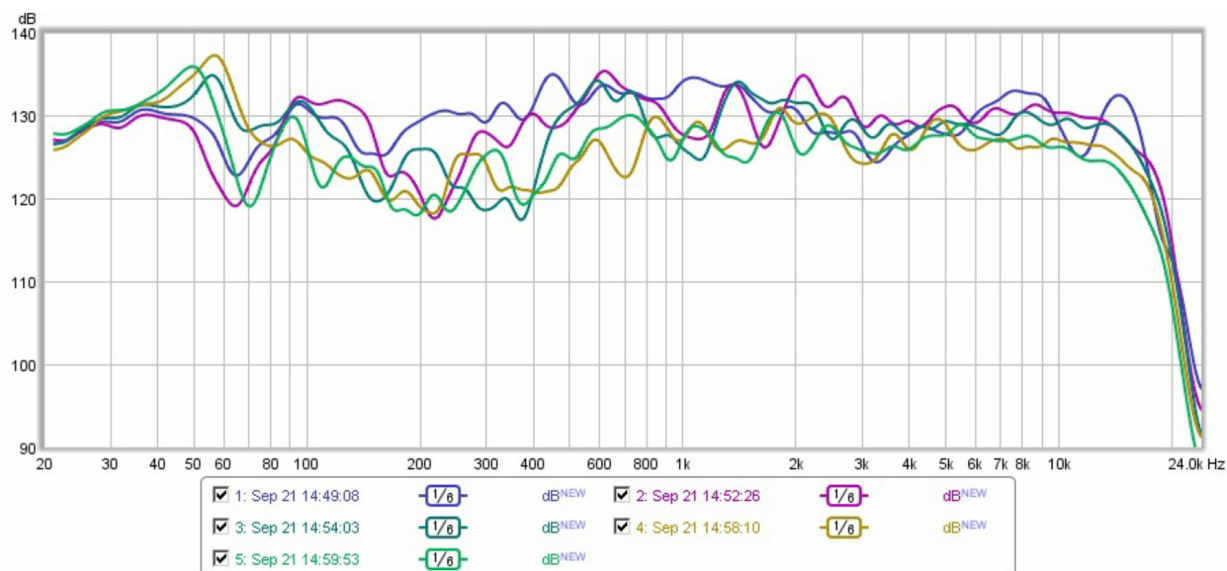
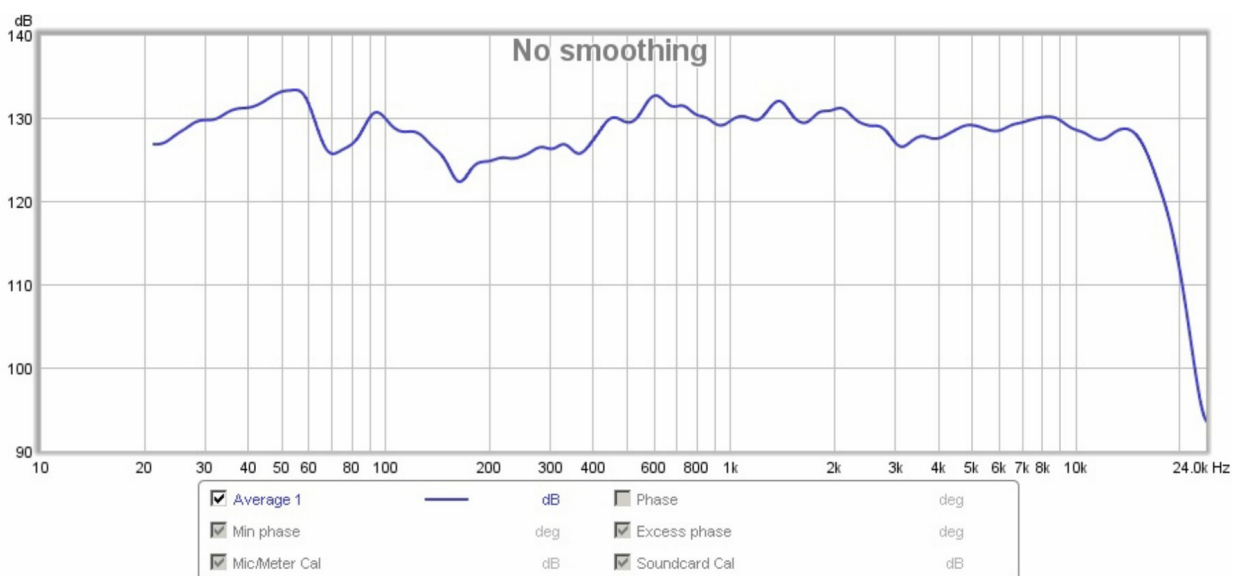


FULL-RANGE SPEAKER PAIR RESPONSE MEASUREMENT and CORRECTION USING ROOM EQ WIZARD

As I mentioned in this month's article on Automatic Room Correction, I used Room EQ Wizard (REW) to measure the frequency response of my stereo speakers. They are a 36" tall WMTMW design using pair of Dayton 8" Reference Shielded Woofers (RS225S-8), a pair of Dayton 2" Dome Midrange (RS52AN-8) and a single Dayton 3/4" Neodymium Dome Tweeter.

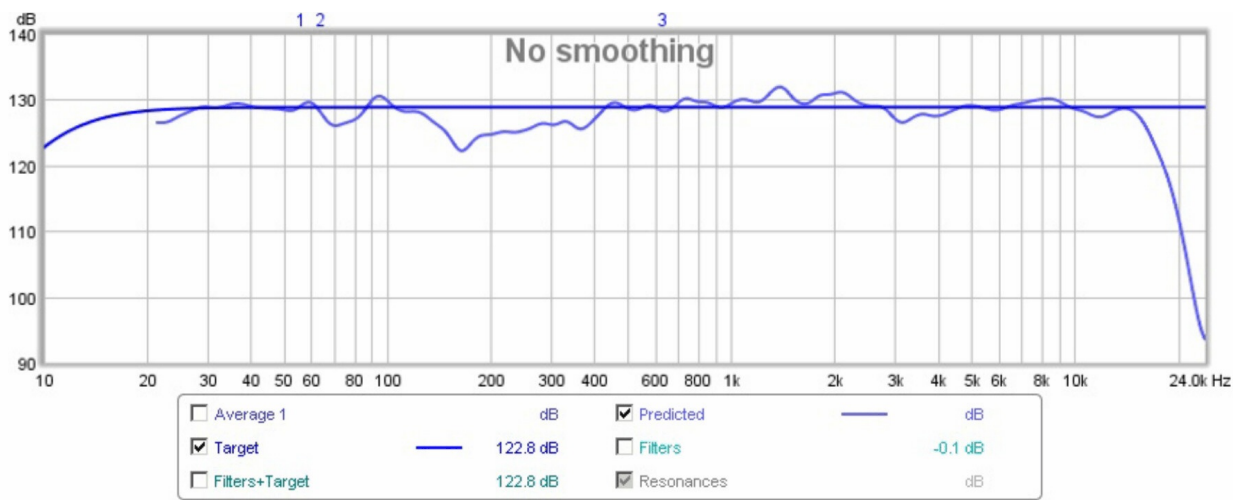


The five measurements are shown in this graph with the line numbers corresponding to the numbered locations in Figure 1 of the aX article. This file is for both speakers tested at the same time. A more general approach would test them one-at-a-time to generate both a left and right correction file.



This is a graph of the average of the above five measurements. The “No smoothing” label is not correct because the five measurements had 1/6-octave smoothing applied as shown by the “1/6” in the legend..

I used the REW EQ feature to use the average response to calculate the digital filter coefficients for programming the miniDSP hardware to apply the smoothing correction. The following graph shows the target correction (nearly straight line) and the predicted frequency response correction.



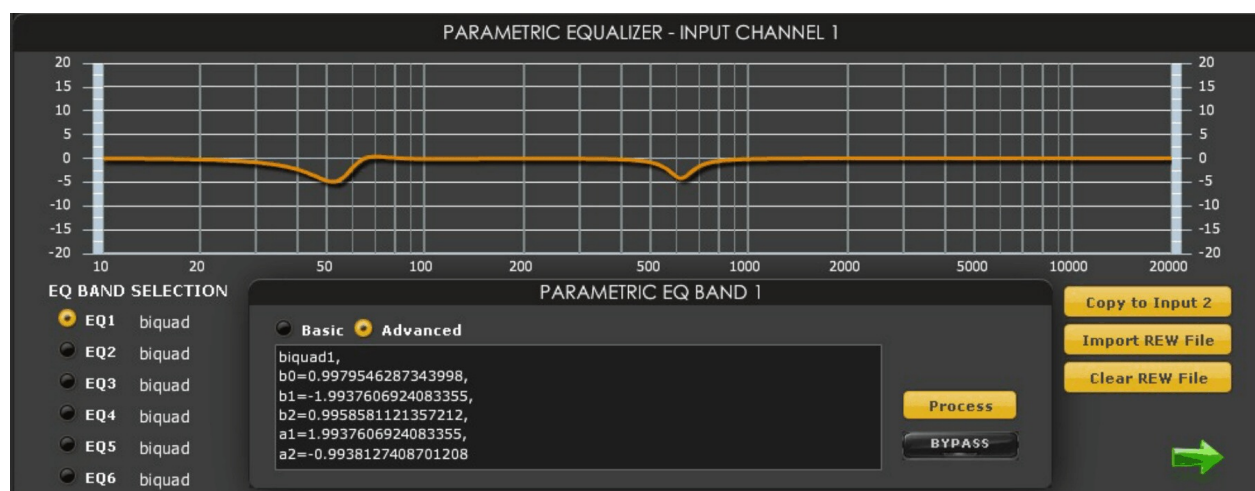
The predicted curve is much flatter than the uncorrected average shown above. (Again, the “No smoothing” label is not correct.)

I did not implement this correction because I used my miniDSP unit to correct the subwoofer instead. However, I may purchase another miniDSP and add correction at a later date as it certainly appears to offer a listening improvement.

The three filter sections have very reasonable parameters:

Section 1:	Freq = 55.20 Hz	-9.4 dB	Q = 2.00
2:	62.80	+6.4	2.11
3:	623.0	-4.2	4.65

I imported the filter coefficient file into the 2x4 Advanced plug-in to see what the filter response looks like.



As I mentioned earlier, it would be better to generate a correction file for each speaker, but this Note describes the process. The 2x4 Advanced plug-in would work fine. Just set the mixer matrix to IN 1 to OUT 1 and IN 2 to OUT 3. Then program the Input 1 PEQ with the left correction file and Input 2 PEQ with the right-side file. I expect both filters would be very similar to the single filter shown above.