Mark K's Speaker Pages

...when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of Science...Lord Kelvin

Zaph|Audio ZA14W08

John Krutke of the very well known Zaph Audio site has decided to develop his own driver. You can find the specs at the following link

http://www.zaphaudio.com/ZA14W08/

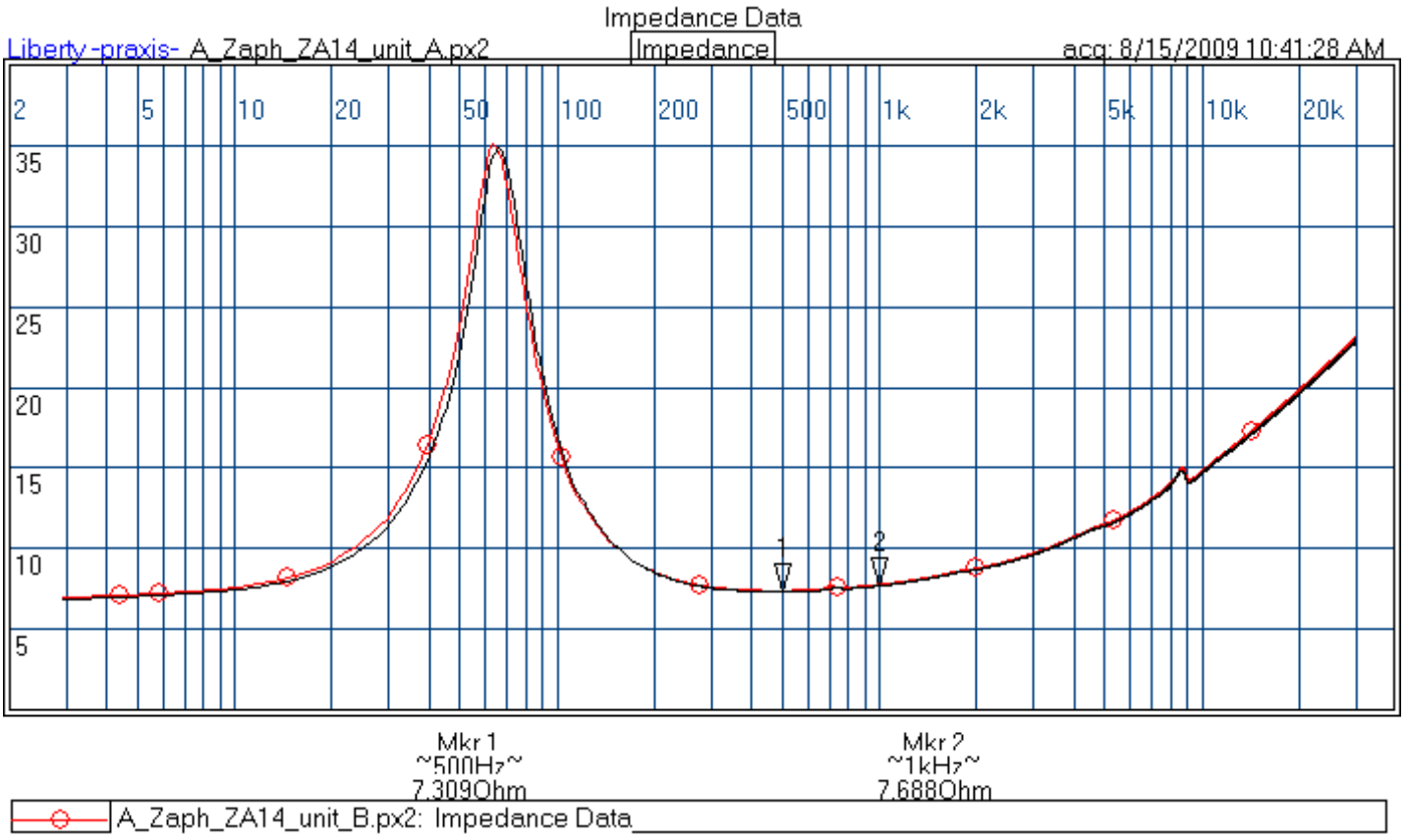
John was kind enough to send me a pair for evaluation. There are comparative measurements to the Dayton Audio RS150 and a Seas Excel W15cy-001.

Why not the RS125? Because I don't have one currently.

Also, in a number of graphs, I refer to the Seas as a "W14." Ignore this. Again, the actual Excel unit is an older version (still with the copper plate) W15cy001.

For the sake of full disclosure, I consider John a friend and may be somewhat biased. In my mind I just resolved that, if the driver tested poorly, I was just not going to post anything and keep my thoughts and test results private. Fortunately for John, the driver appears to be excellent.

Impedance data



You can see the curves agree very well. The published TS seem to agree reasonably with the partial TS values I extracted from the above curves.

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        =praxis=     Thiele/Small Parameters
_____________________________________________
DEMO MODE:      ZA14W08 unit A

  _____________________________________________

  Qts =  0.469    Total Q
  Qes =  0.593    Electrical Q
  Qms =  2.258    Mechanical Q
  Fs =   65.945   Hertz, Free Air Resonance
  Re =   7.245    Ohms, DC resistance
  Ls =   177.7u   H, series inductance
  Lp =   151.0u   H, lossy series inductance
  Rp =   2.713    Ohms, loss across Lp
  Dia =  95m      meters, effective


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_____________________________________________
DEMO MODE:      ZA15 unit B

  _____________________________________________

  Qts =  0.466    Total Q
  Qes =  0.591    Electrical Q
  Qms =  2.200    Mechanical Q
  Fs =   63.953   Hertz, Free Air Resonance
  Re =   7.373    Ohms, DC resistance
  Ls =   178.8u   H, series inductance
  Lp =   145.5u   H, lossy series inductance
  Rp =   2.723    Ohms, loss across Lp
  Dia =  95m      meters, effective
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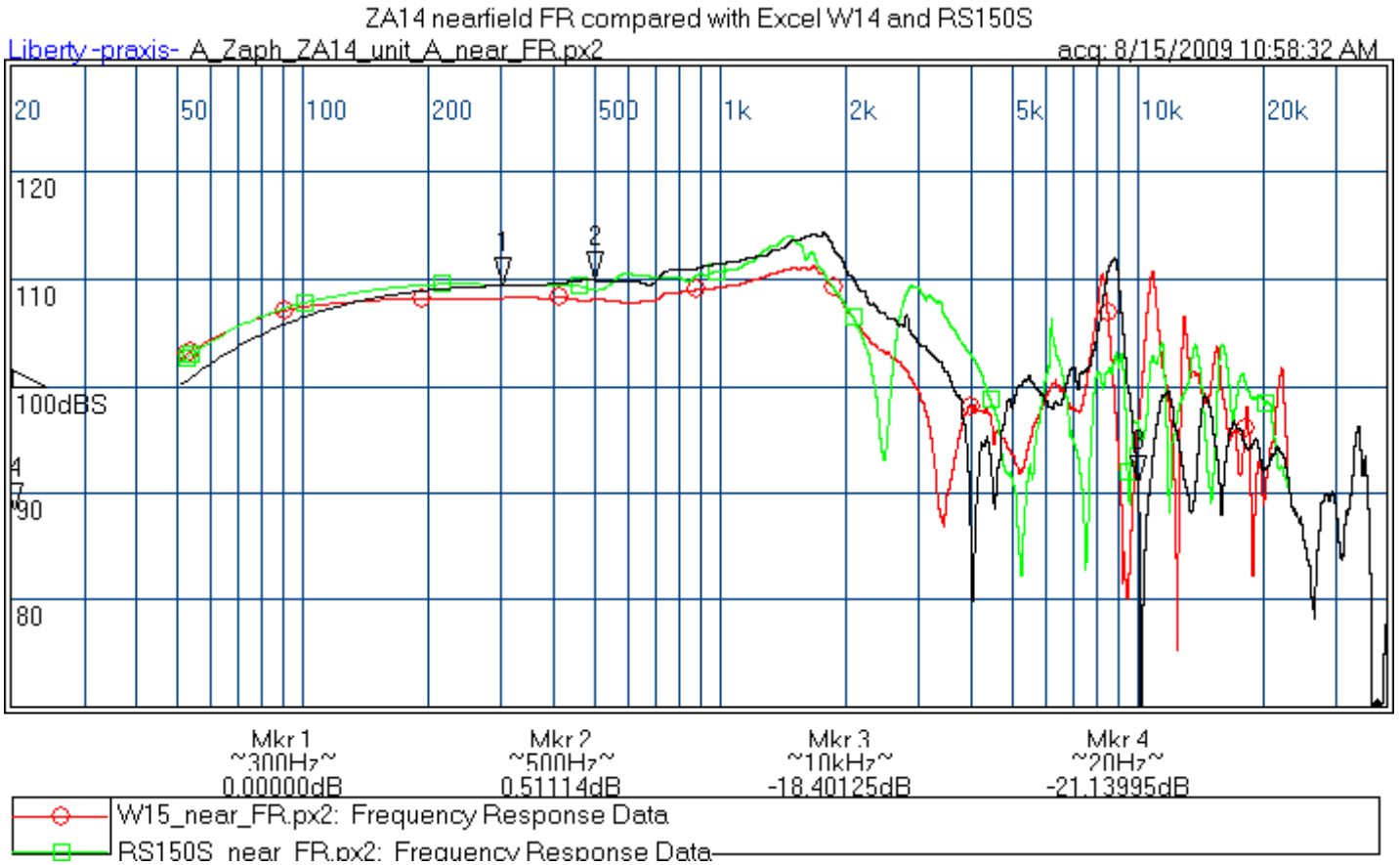
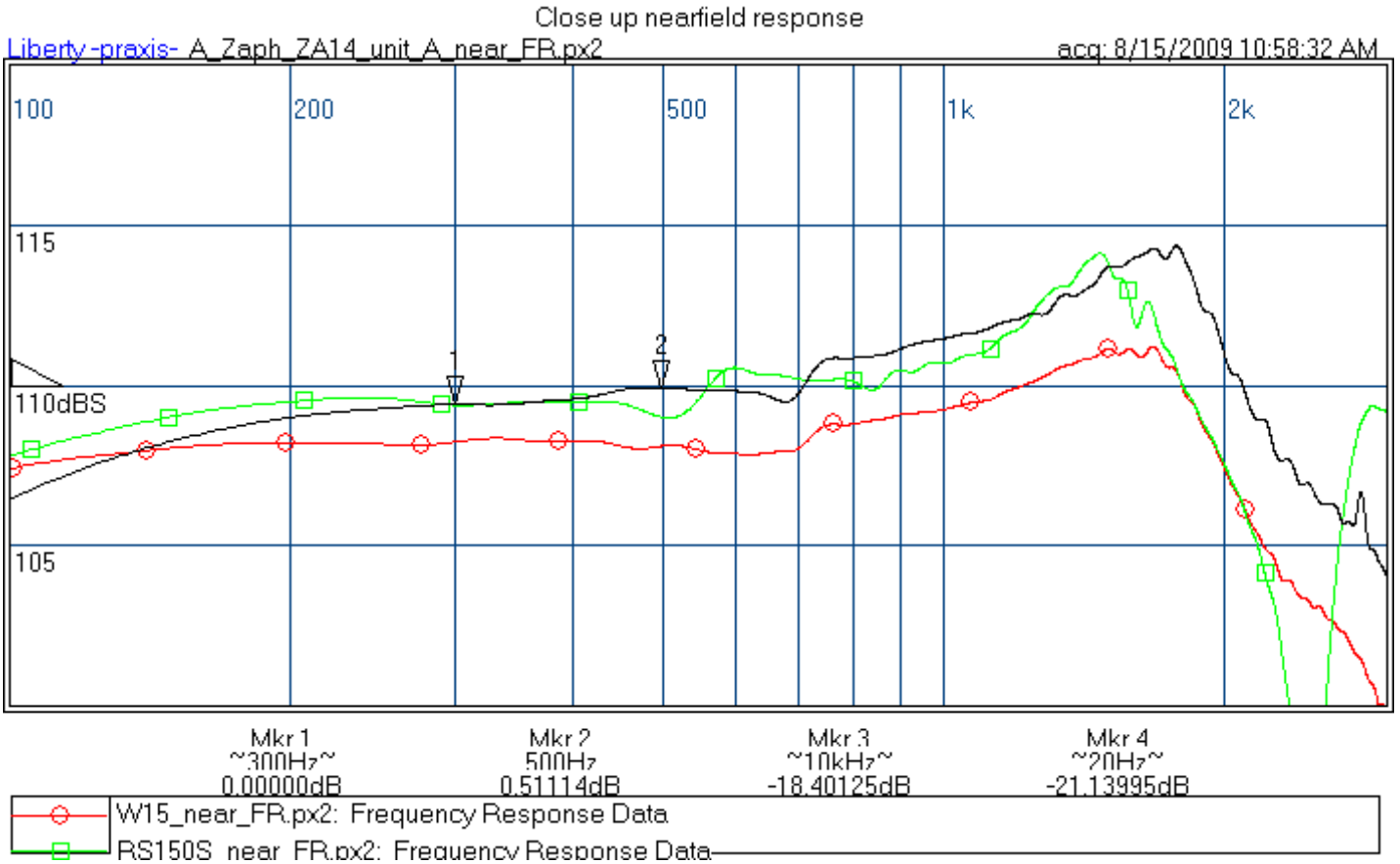
Frequency response

Below the ZA14 nearfield FR is shown in black. An RS150 and Seas W15cy--001 are shown for comparison.

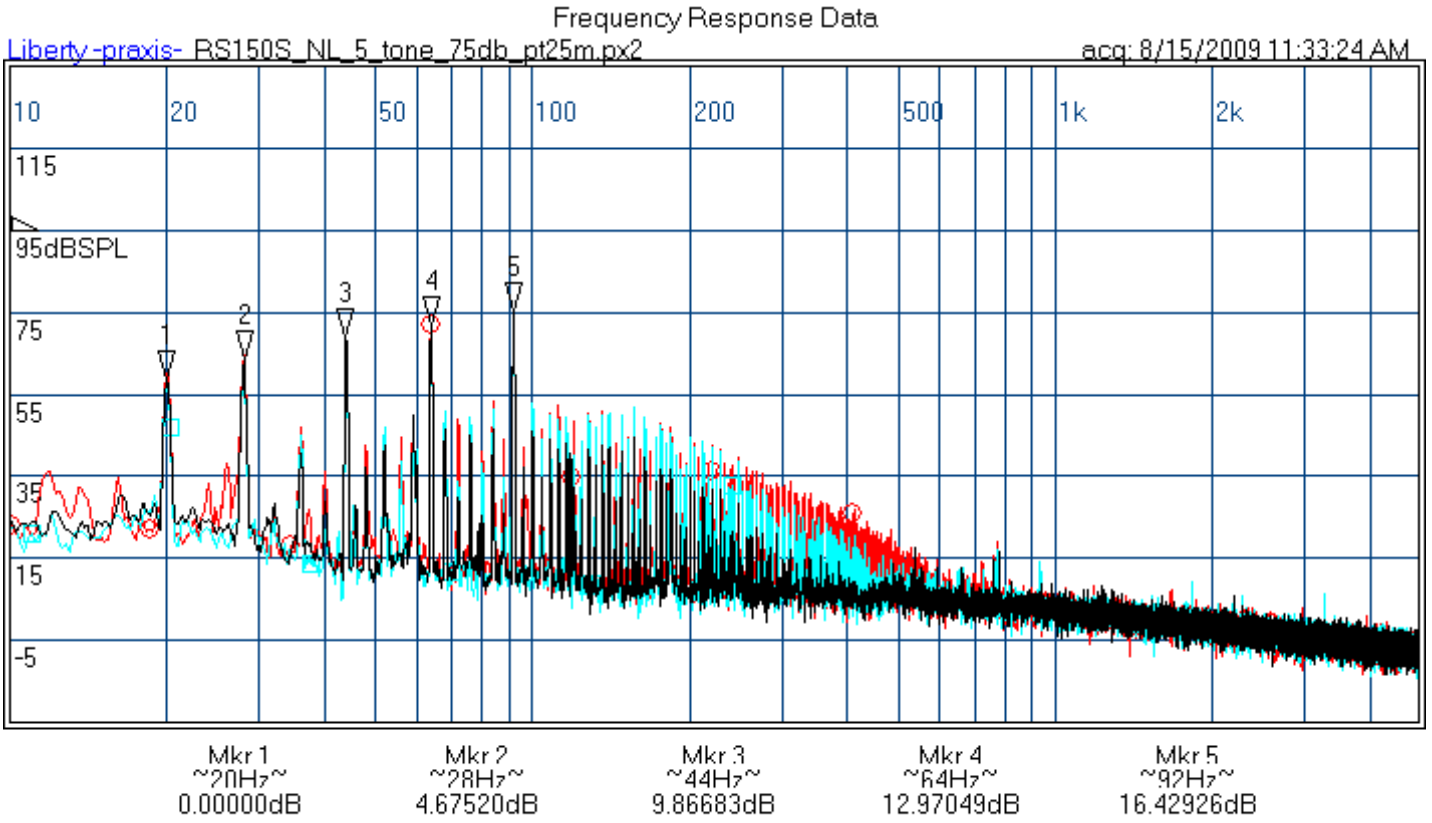


O Close up of the 100-2k region. The Seas has the least linear distortion, followed by the ZA14, and then the RS150.



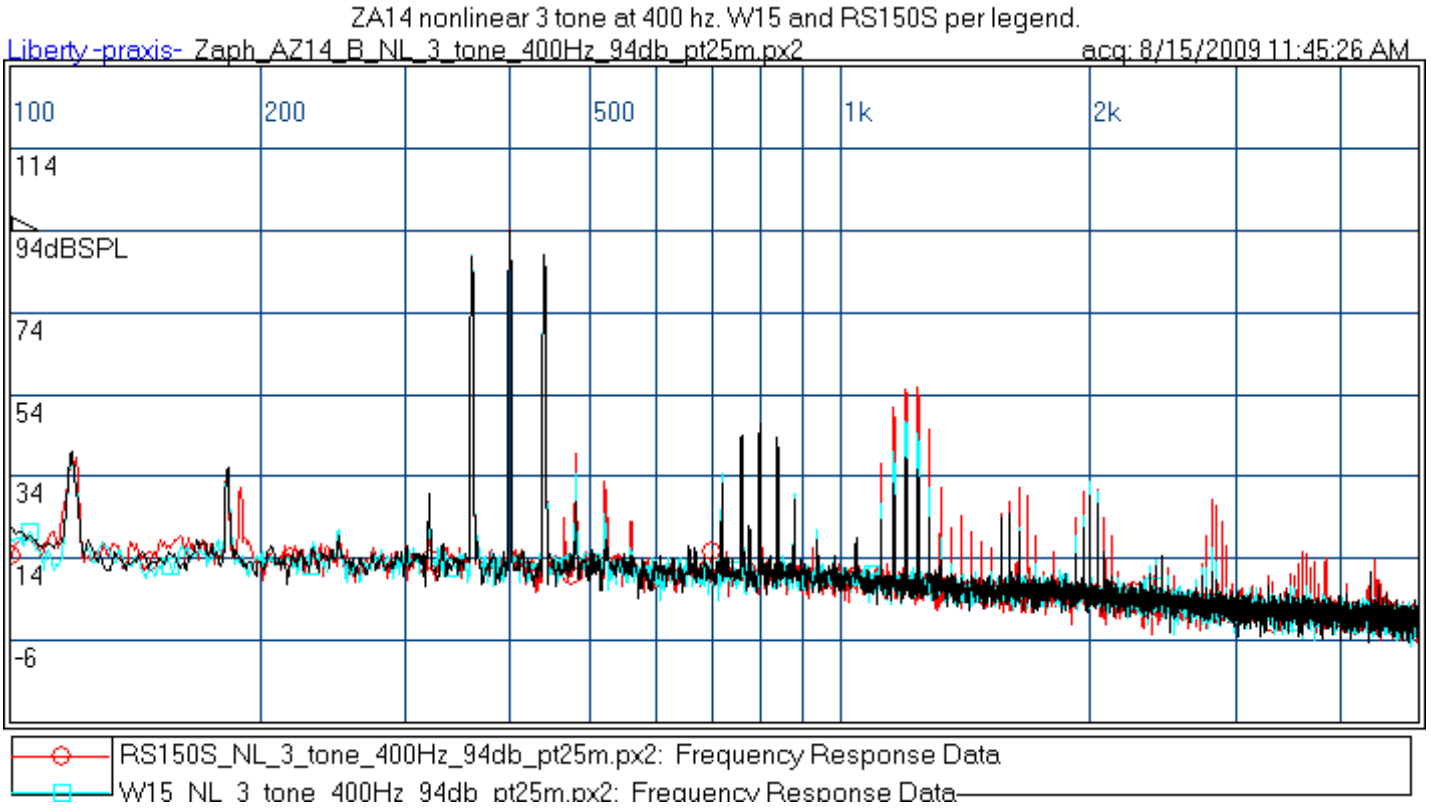
Nonlinear distortion data

Five tone nonlinear distortion.



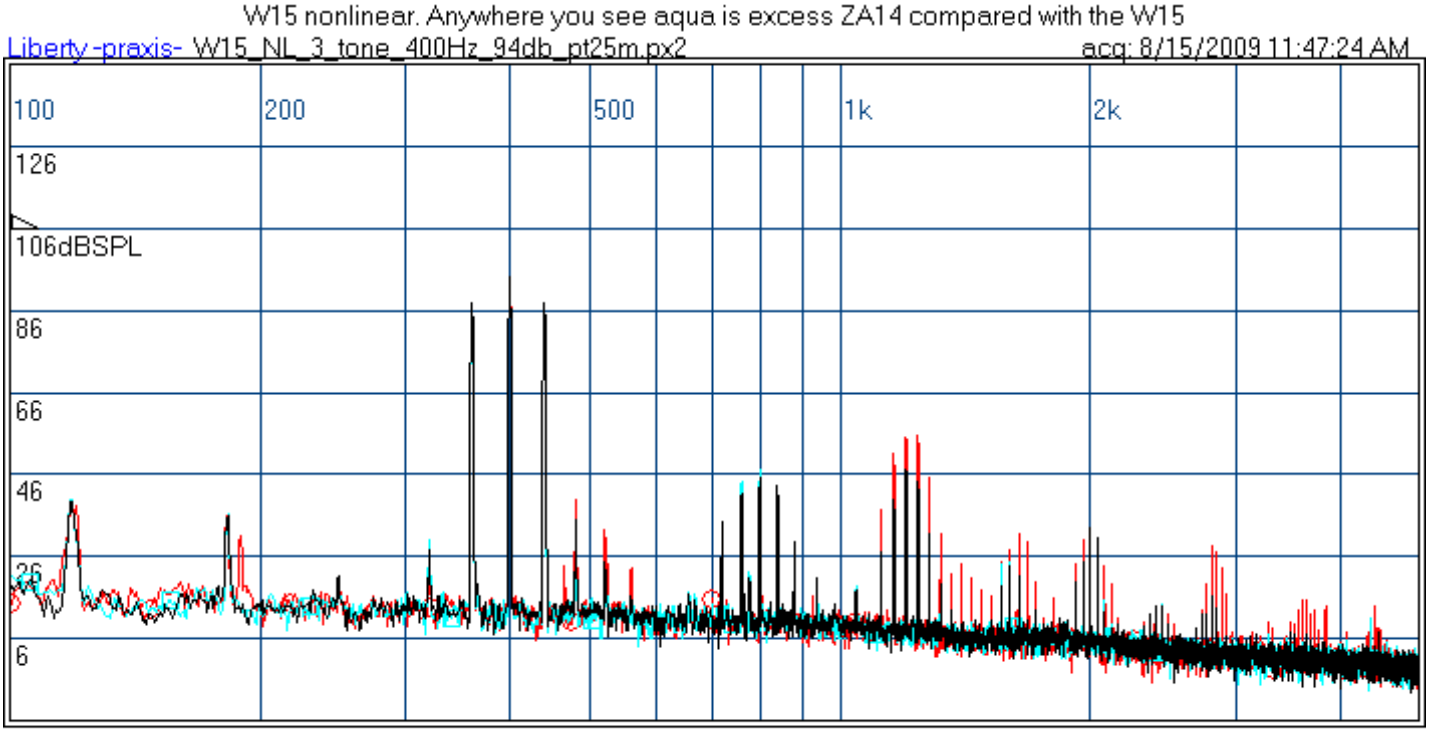
The RS150 has the best nonlinear distortion in black, followed by the ZA14 in aqua. The Excel W15 is last, in red. When you consider a more fair comparison would be the RS125 with a smaller Sd, and the Excel Sd is a little larger than the diminutive ZA14, the low end distortion is very respectable. I would be curious to see how Zaph's driver compared against the RS125 and may pick one up just to update the comparison.

At 400 Hz.



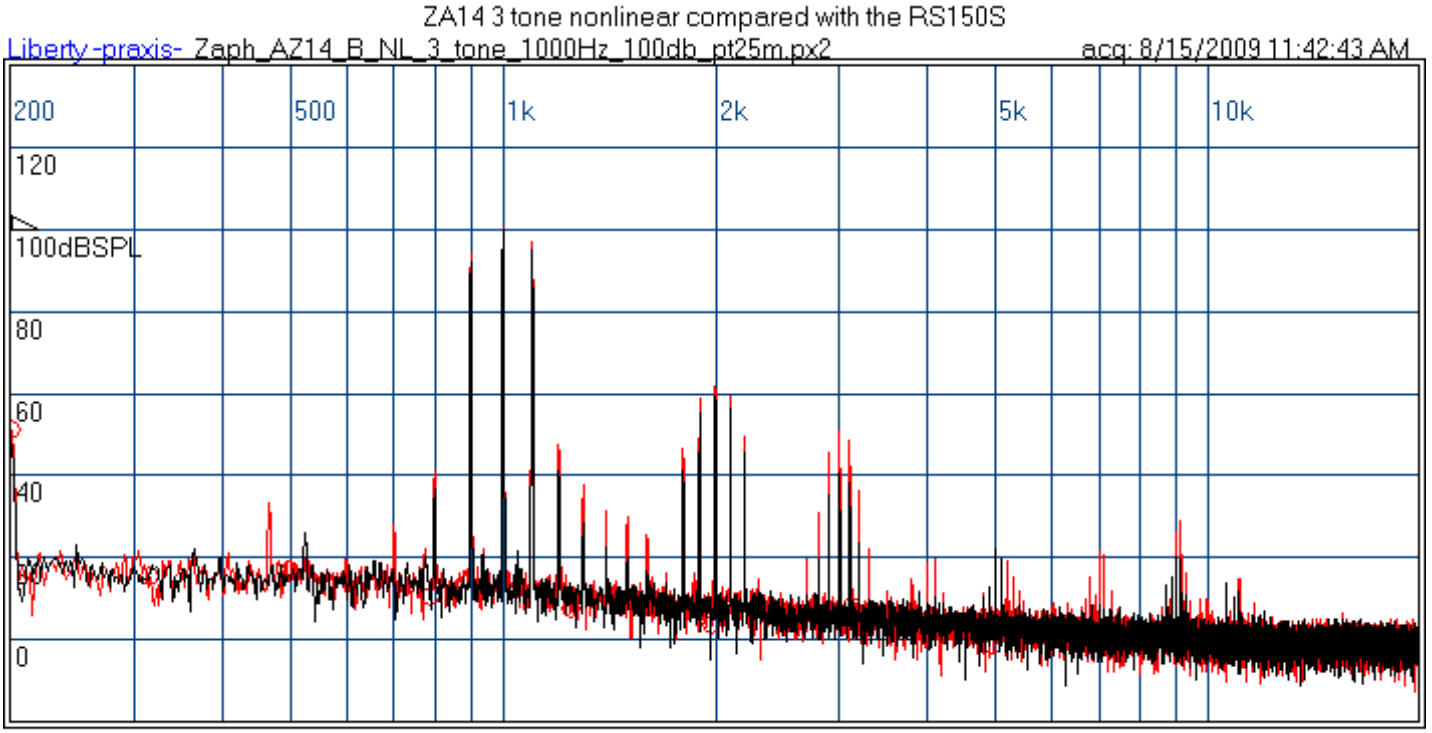
Well, that is interesting. The ZA14 is in black, and the RS and Excel in red and aqua, respectively. Zaph's driver is clearly better than the excel everywhere but the second order product family. From the above curve, you can't quite see what's going on at 800 Hz, although clearly the ZA14 is better everywhere else.

So, what I can do is flip the overlay of the curves-this way, you can see how much excess second order products are present in the ZA14 compared with the Excel. What you should note below is that there is only a couple of dB difference around 800 Hz. Difficult to know if this is even statistically significant. Focus on the slight excess of aqua at 800 Hz (the ZA14) compared with the excel in black. So, essentially they have a very similar second order distortion profile here, and the ZA14 is better with respect to 3rd order, and it's close everywhere else.

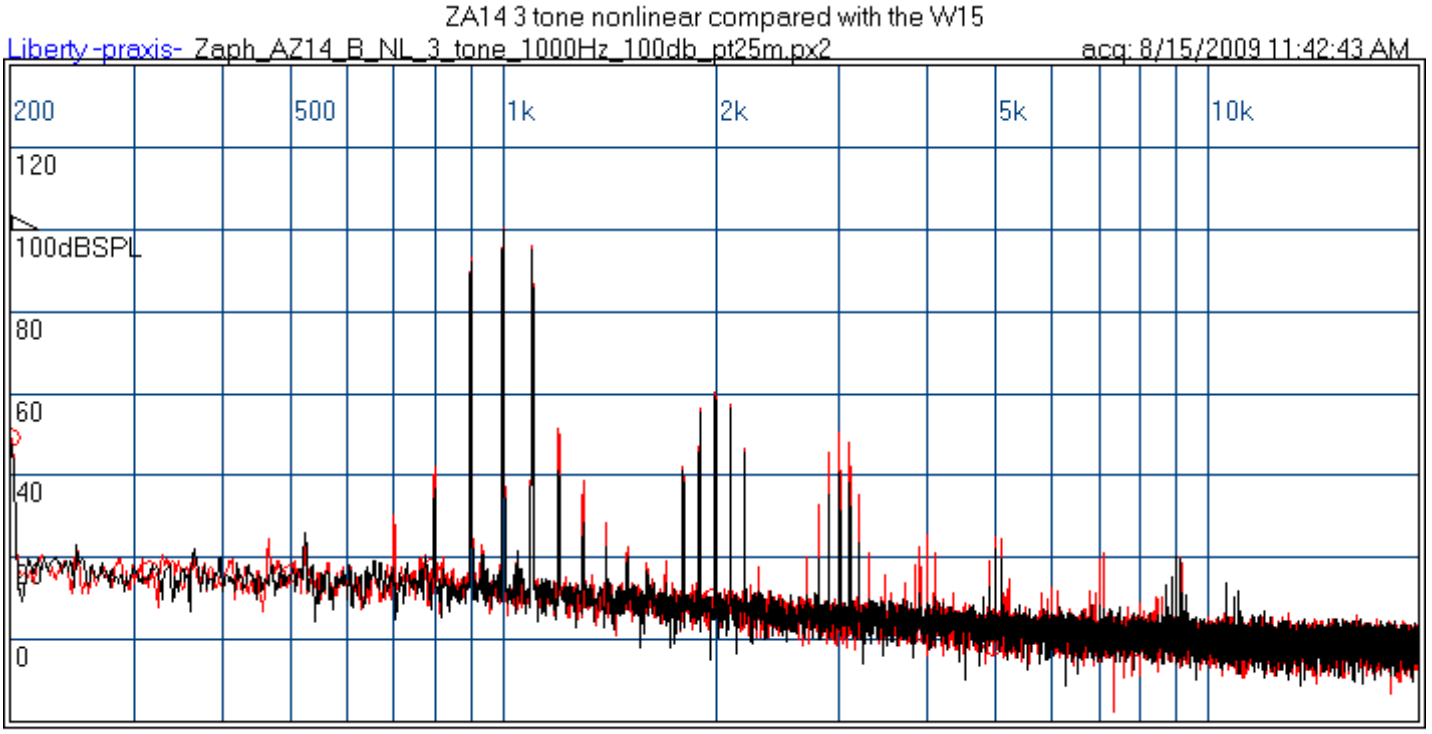


At 1000 Hz.

The ZA14 is cleaner than the RS150 when compared with the RS150.



How about the comparison with the Seas excel W15cy001? See below. The ZA14 beats the Seas excel W15 as well!



Comments

An impressive performance indeed. The ZA14 is better at 400 and 1000 hz than the venerable Excel W15, which has some of the best midrange distortion numbers around. The driver also does better on the low end 5 tone distortion than the excel, but not quite as good as the RS150. As previously noted, this might not be a fair comparison as the correct comparison is really to the RS125, which does not do as well as the RS150 on the 5 tone test owing to it's smaller Sd. But the nonlinear performance over the W15 is even more impressive when you consider the Sd of the ZA14 is less than the W15!

The linear distortion of the W15 is better than the RS150 in the critical midrange area, although the ZA14 is better than the RS150 here. I also suspect, from looking at all the measurements (more than what is shown here) that the ZA14 holds it's linearity a little bit higher up than the RS150 or W15. I would feel comfortable taking this to ~2.5k or so, depending on the actual application and result.

Physically, it's a well built, good looking driver, quite diminutive. Either for a micro speaker/satellite, mtm/mmtmm, or as a midrange. The QC appears solid from the TS and visible exam.

At the current price, this driver appears to be a bargain and offers outstanding price/performance as it test performance puts it in the same league as the W15, with somewhat better overall in nonlinear performance, and slightly worse linear distortion performance.

PS- as an aside, more on my initial comments about possibly keeping test results private. The answer is yes, I have tested drivers and not posted results. My rational is that, occasionally I'm sent drivers for an honest evaluation. If they are loans from a manufacturer/distributor and the goal is to see how well/how to improve a driver, I do not want to discourage folks from sending me drivers. Now, if I pay full price, then I will generally post the result, good or bad.