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

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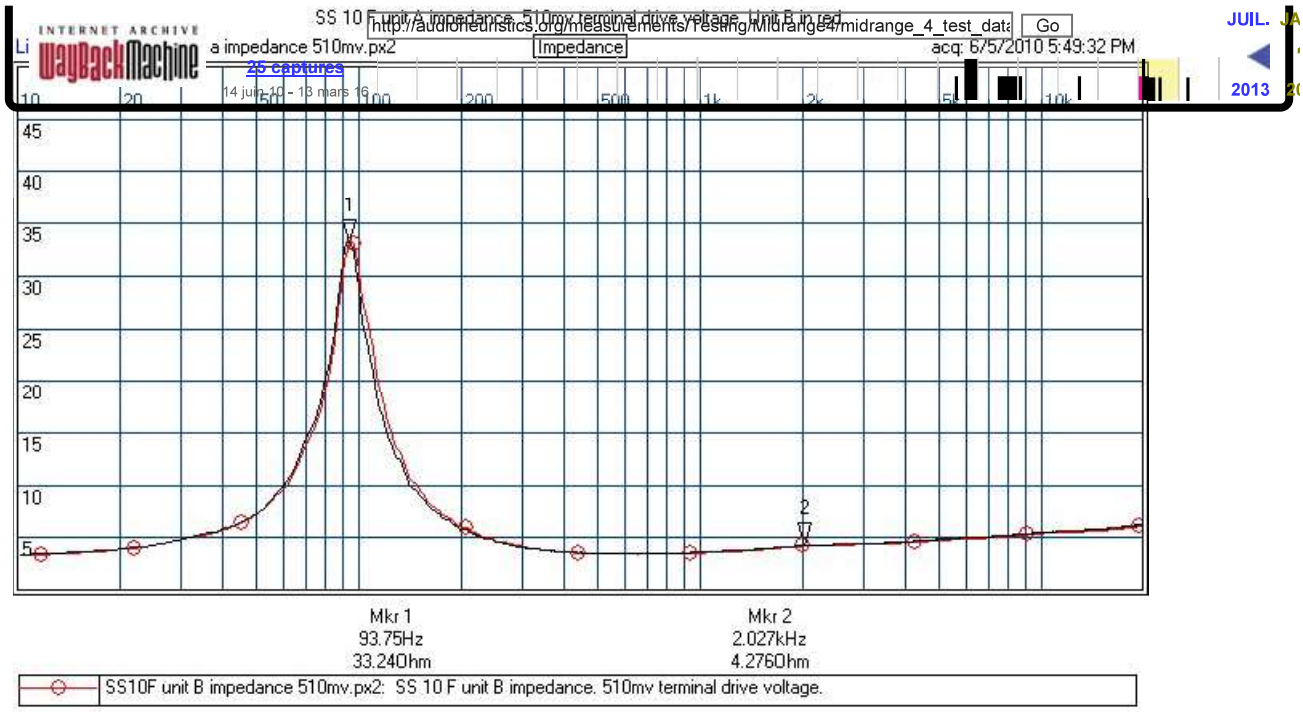
Midrange Group 4 test data- Scan Speak 10F 4424G

Midrange test data

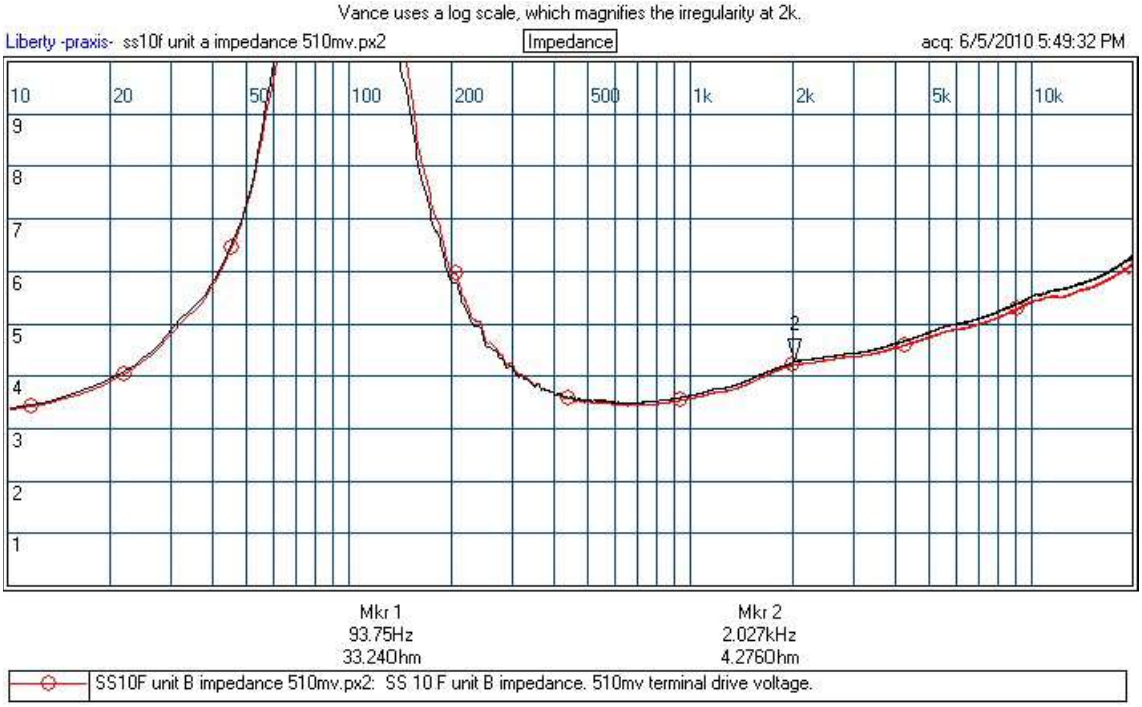
I was fortunate enough to have a pair of Scan Speak 10F midrange drivers sent to me to evaluate. Comparisons to the Scan Speak Revelator 12m and the Zaph Audio ZA14 were made.

Above, from left to right, the SS10F, the SS12m and the ZA14. Will the real 4" driver please step forward?

Impedance



Magnified impedance curve.



TS parameters

Thiele/Small Parameters

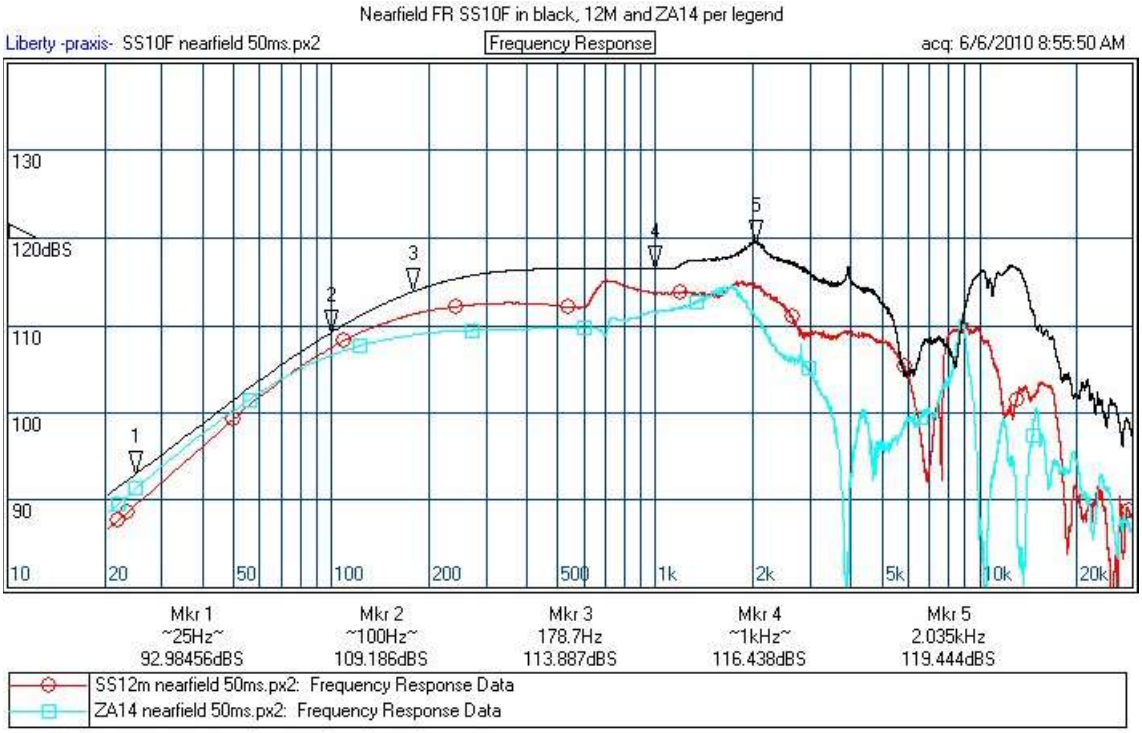
Qts =	0.402	Total Q
Qes =	0.449	Electrical Q
Qms =	3.802	Mechanical Q
Fs =	93.889	Hertz, Free Air Resonance
Re =	3.425	Ohms, DC resistance
Ls =	47.81u	H, series inductance
Lp =	103.3u	H, lossy series inductance
Rp =	1.200	Ohms, loss across Lp
Dia =	68m	meters, effective

SS 10F unit B

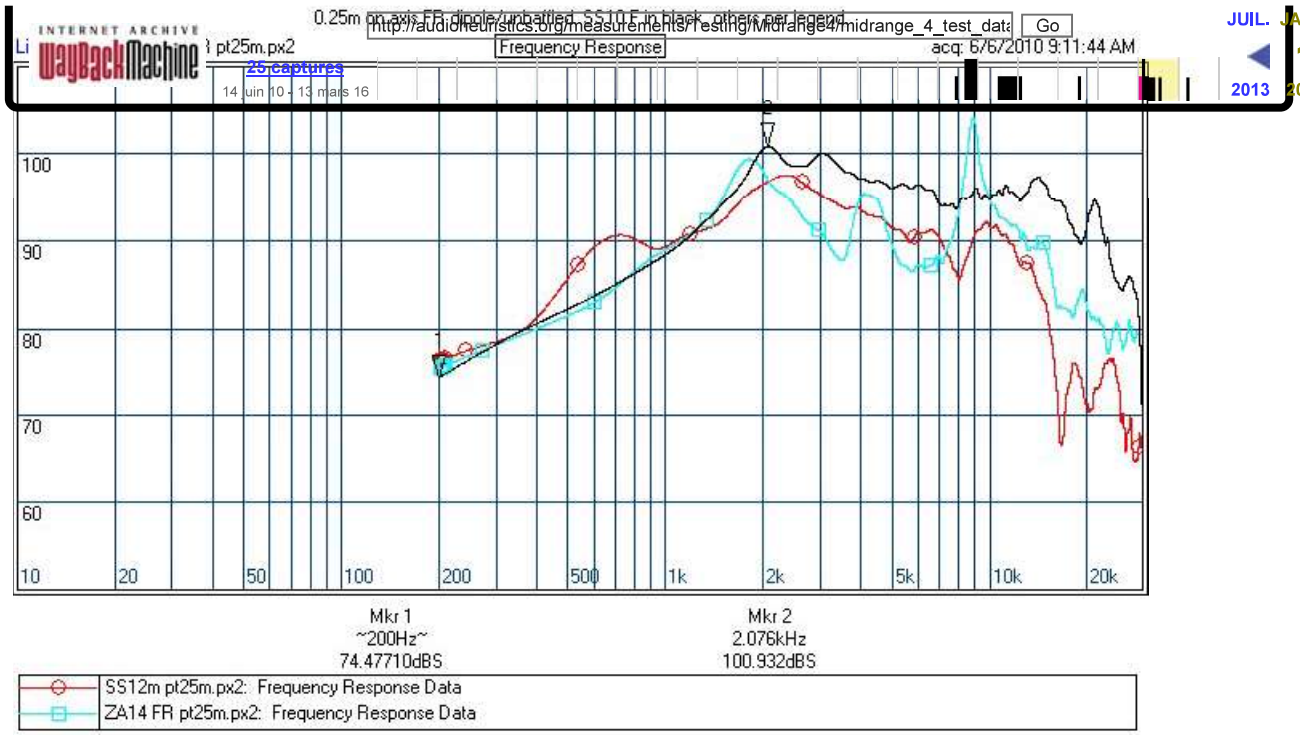
Qts =	0.378	Total Q
Qes =	0.421	Electrical Q
Qms =	3.692	Mechanical Q
Fs =	95.585	Hertz, Free Air Resonance
Re =	3.338	Ohms, DC resistance
Ls =	46.56u	H, series inductance
Lp =	109.5u	H, lossy series inductance
Rp =	1.202	Ohms, loss across Lp
Dia =	68m	meters, effective

Nearfield frequency response

Note the 12m in red and the ZA14 in aqua.

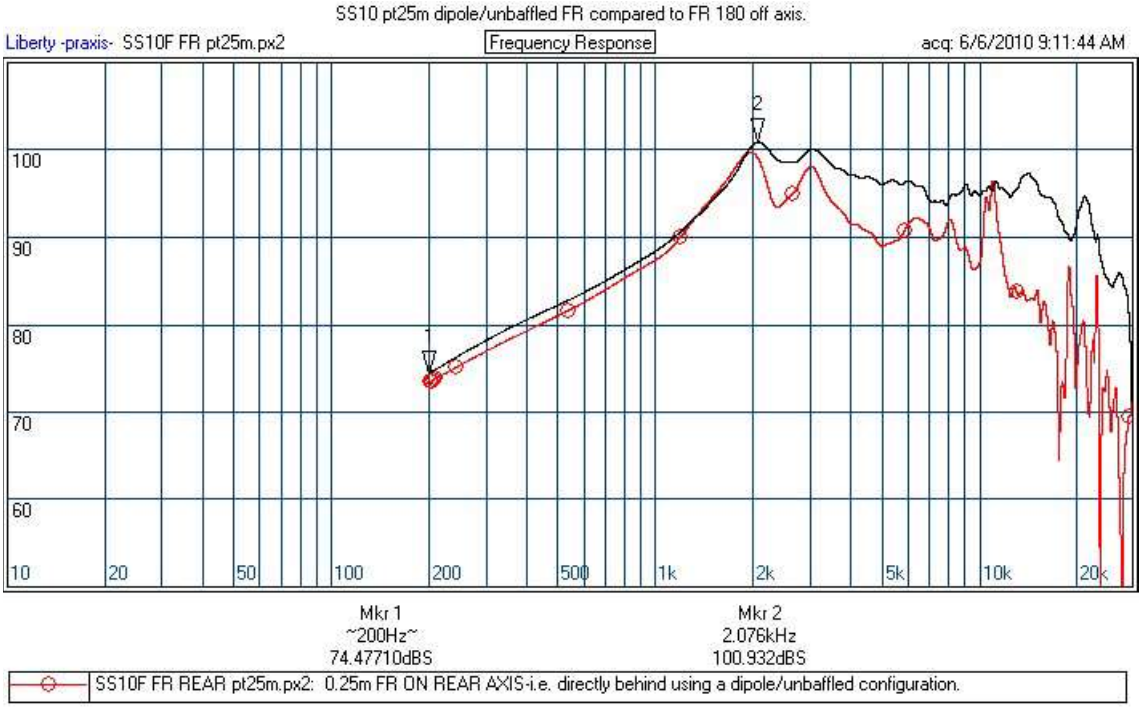


FR open frame(dipole) at 0.25m.

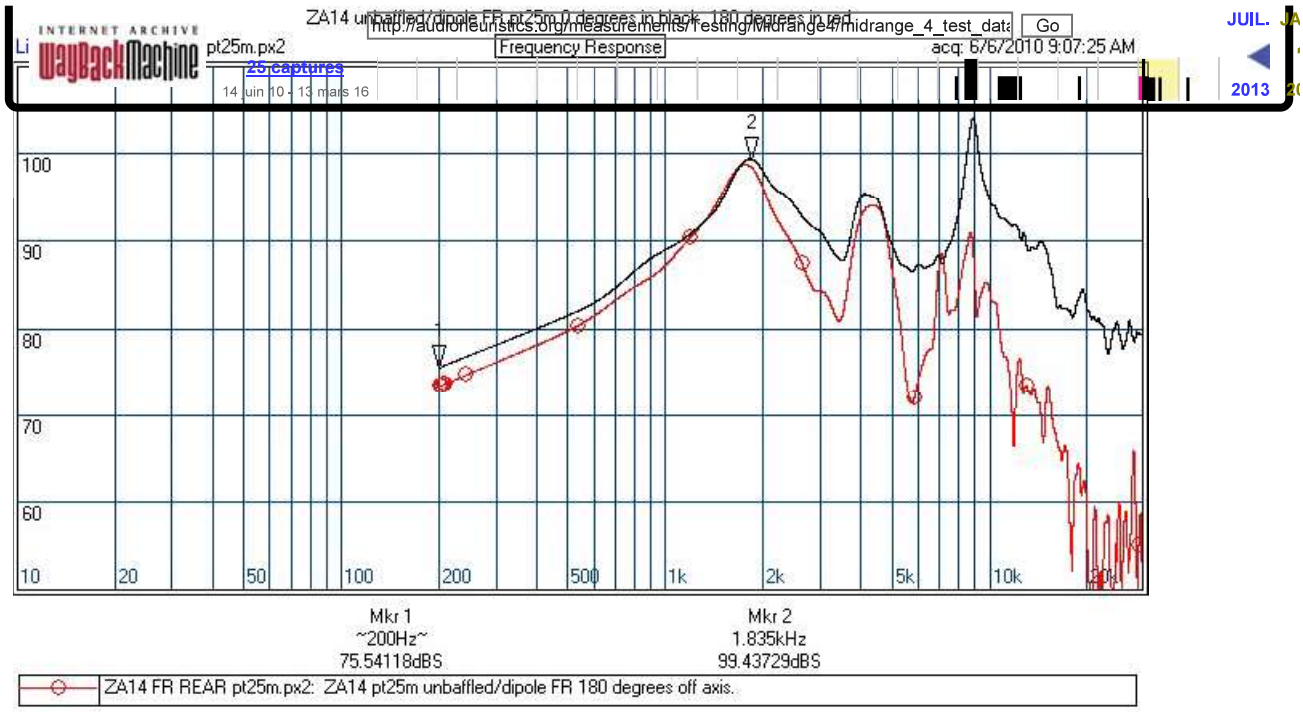


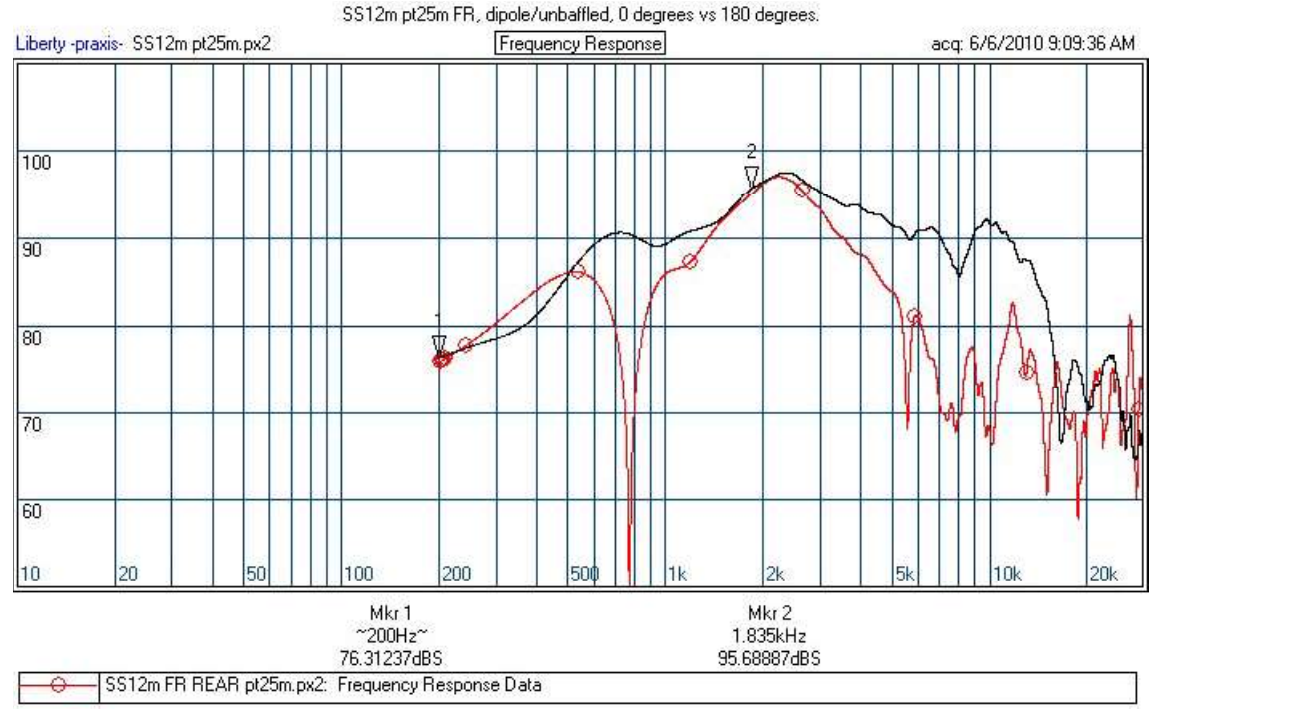
FR unbaffled, dipole 180 degrees off axis (i.e. BEHIND the driver).

On axis, 0 degree curve in black and 180 degree curve in red, directly behind the unbaffled driver.



How about the FR front and rear for the ZA14 and 12m for comparison?



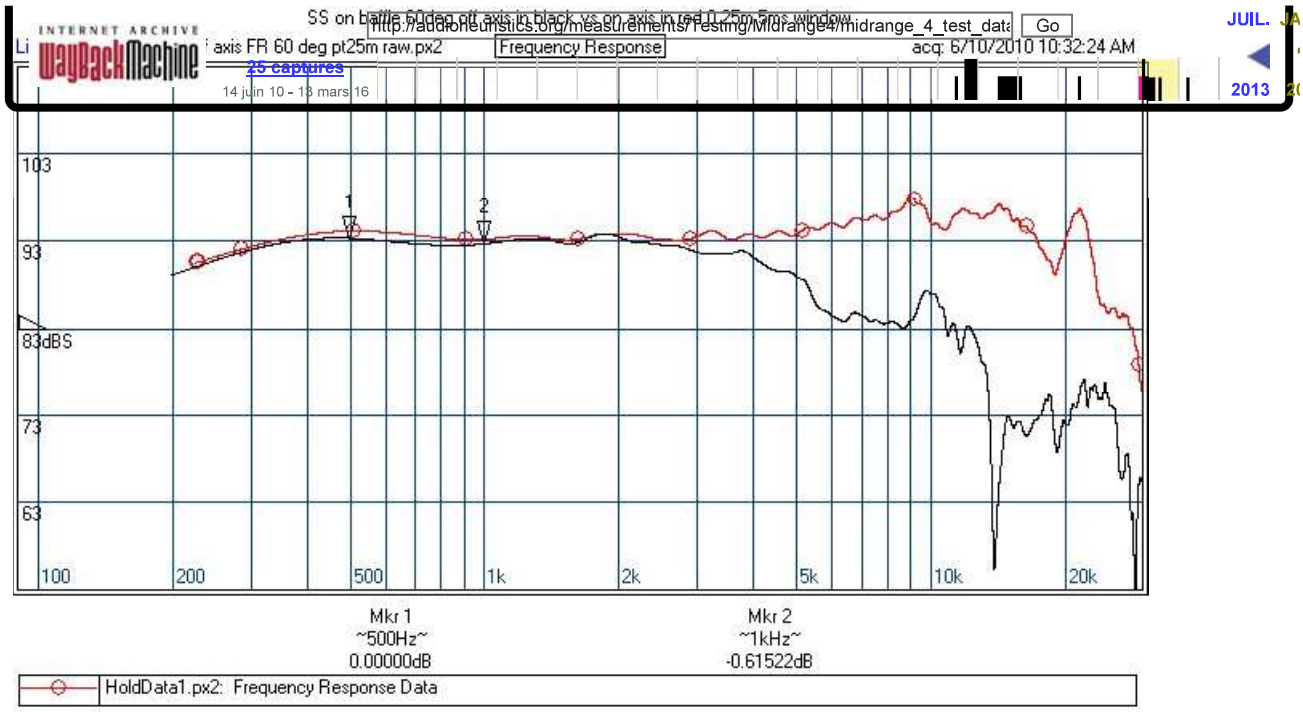


The ZA14 might be usable dipole. The 12m has some more prominent FR irregularities...

FR on wide baffle, enclosed.

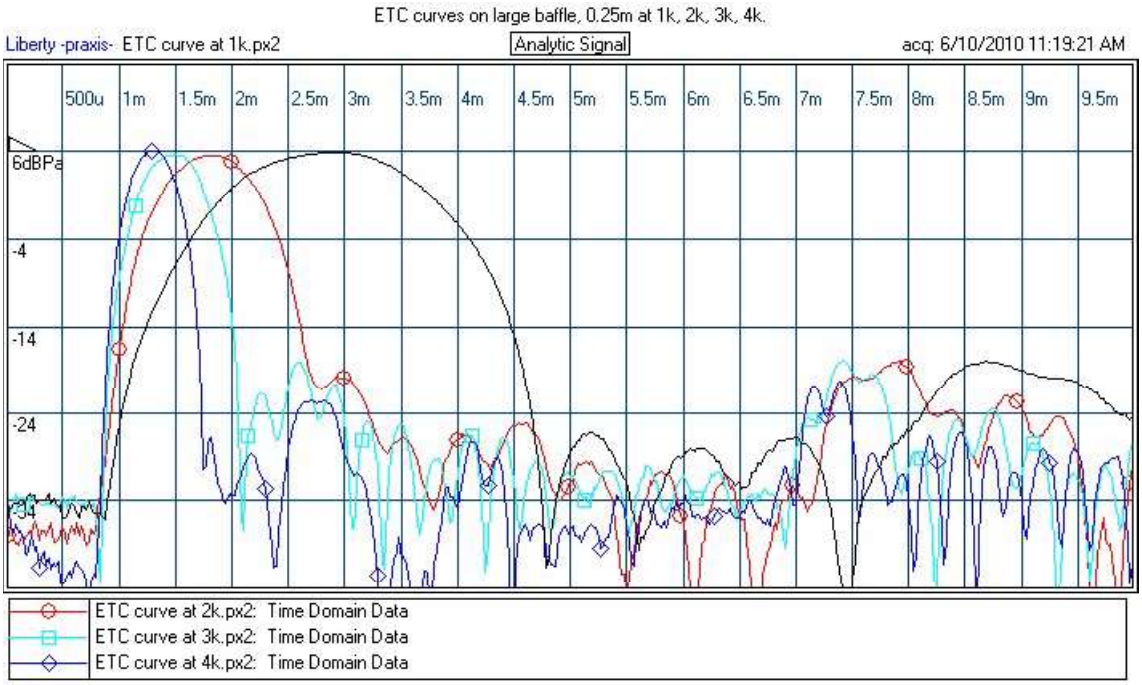
I tossed the driver on my standard baffle and enclosed the back. The black curve is the FR 60 degree off axis. The hole for the baffle was not a great fit, so there is some ripple from the mounting. I thought about smoothing it but I let it go. It's very smooth, and probably smoother if you take better care with the baffle cutout.

Of note, the driver is very sensitive to the enclosure volume, backwave reflection and chamfering of the cutout. Care should be taken in mounting and choosing an enclosure.



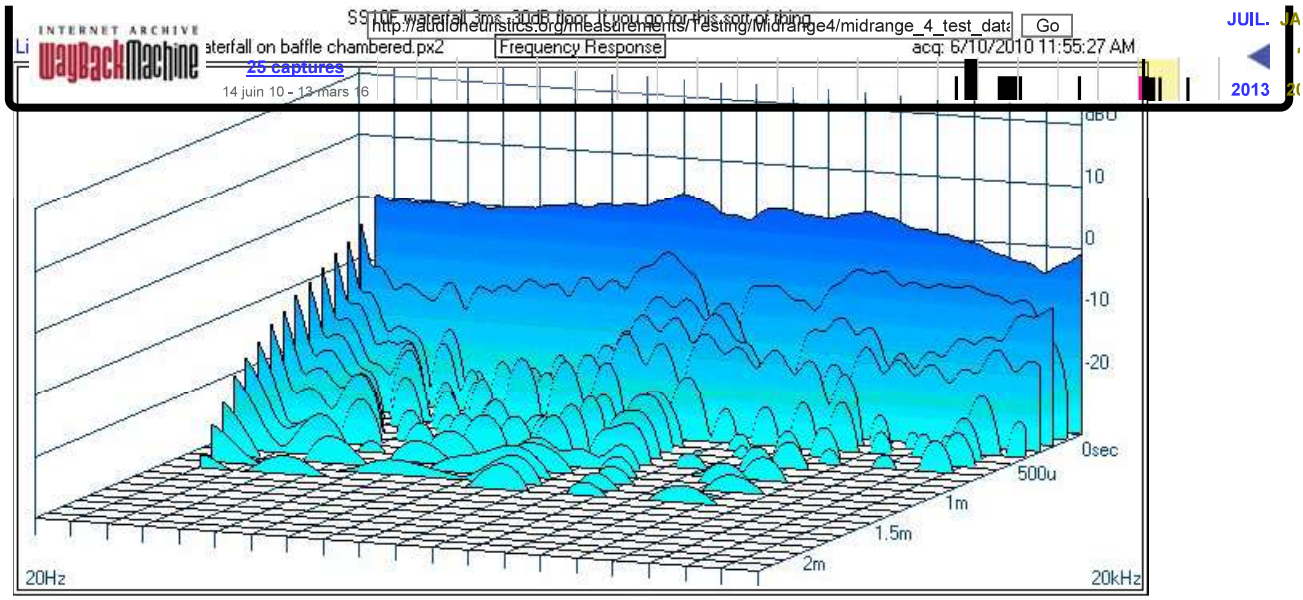
ETC curves at 1k, 2k, 3k, 4k.

If you go for this sort of thing, the first 30 dB drops are quite excellent at all levels.



Waterfall 3ms, -30dB, 20-20k. Standard plot.

Again, if you're into this sort of thing.



Nonlinear distortion at 0.25m.

A couple different sets of curves were done.

Initially, I did 3 tone distortion bursts unbaffled and in a dipole configuration. This is good for a comparison to other drivers, but it is difficult to interpret the absolute meaningfulness of the distortion.

What do I mean? Well look for a minute at the curve below. You see a standard 3 tone stimulus at 350 Hz, measured at 92dB SPL at 0.25m.

I've overlaid in red the dipole FR. Given the falloff below 2k, the driver has to be driven much harder at 350 hz to get to the same spl level as a monopole. (See the same curve with a monopole wide baffle box way below.) So the level has to be interpreted with caution. Since you would not use it in a dipole configuration to 350 hz, it's only relevant when compared to a different driver under the same conditions, with roughly the same frame diameter and FR response.