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September 30, 2004

Creative Sound Solutions is pleased to announce their new 4.5" wide range loudspeaker, the WR125S. This shielded driver features a paper cone, rubber surround and attractive copper phase plug. It also uses the patent-pending XBL^{2}™ motor topology under license from Adire Audio, Lynnwood Washington.

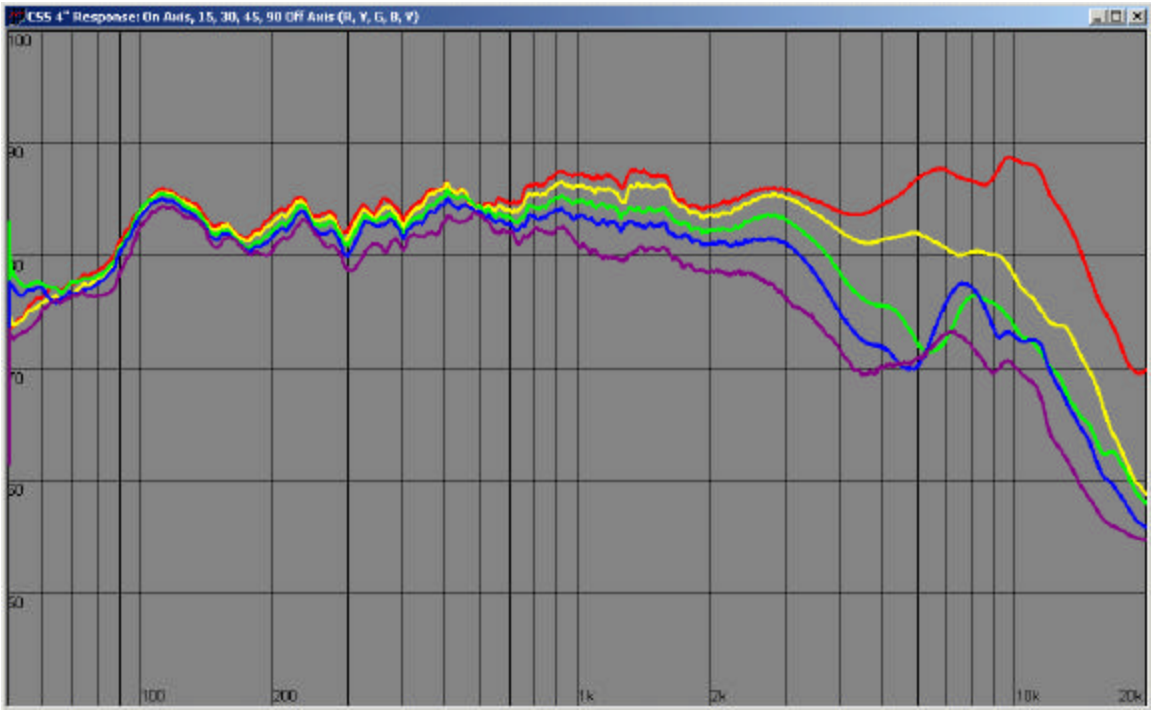
The flatter BL, lower distortion, light-weight moving mass and significant excursion provided by the XBL^{2}™ motor, permit this speaker to perform very cleanly with a wide frequency response as well as almost unbelievable bass output.

While some listeners will want to add a tweeter or super tweeter, for many the advantages of "crossoverless" wide range reproduction are worth the loss of upper half octave response and sparkle.

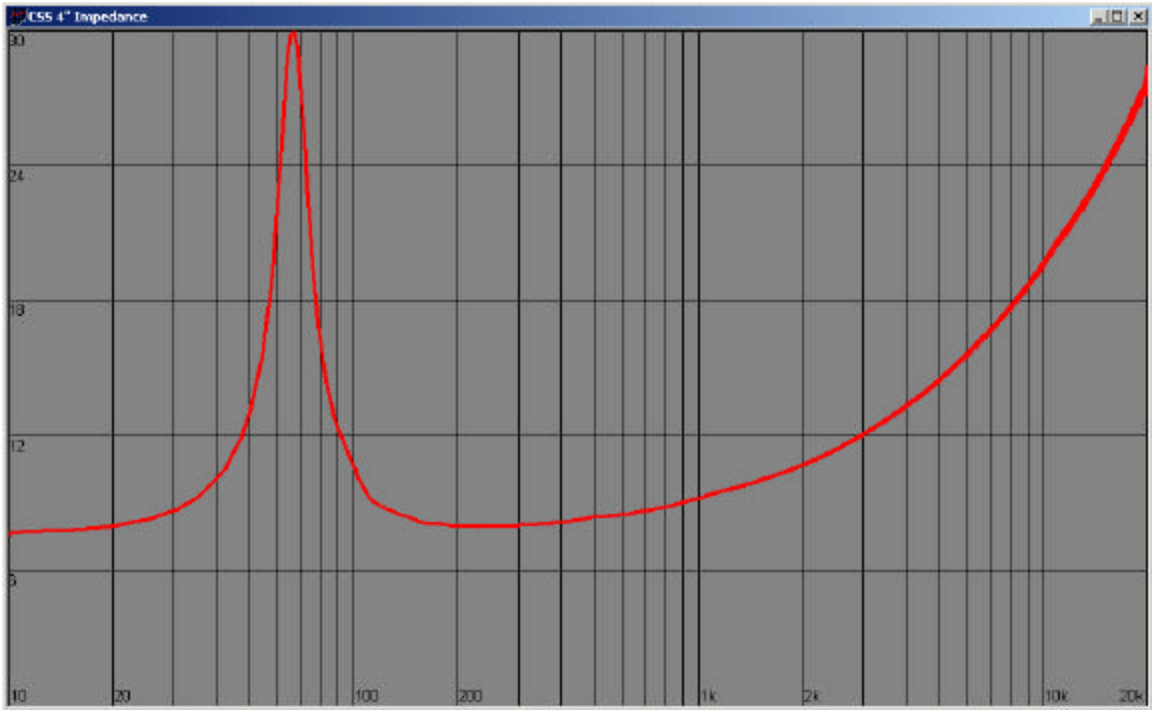
The T/S parameters averaged over 4 pre-production units are listed below. Measurements were taken with the drivers mounted in a 7 litre cabinet. If full production drivers are significantly different this document will be updated accordingly.

Fs: 68 Hz
Qes: 0.77
Qms: 3.85
Qts: 0.64
Vas: 5.8L
Sd: 57 cm^2
Xmax: 6mm one way
Re: 7 Ohms
Le: 0.32 mH
BL: 4.01 N/A
Mms: 4.3 grams
SPL: 85.6 dB @ 1W, 1m

The picture to the right shows the driver mounted in the cherry Parts Express .25 cubic foot cabinet. A 1.5" port 4" in length tunes the system to 50 Hz.



Frequency response shows on axis (red), 15 degrees off axis (yellow), 30 degrees off axis (green), 45 degrees off axis (blue), and 90 degrees off axis (violet).

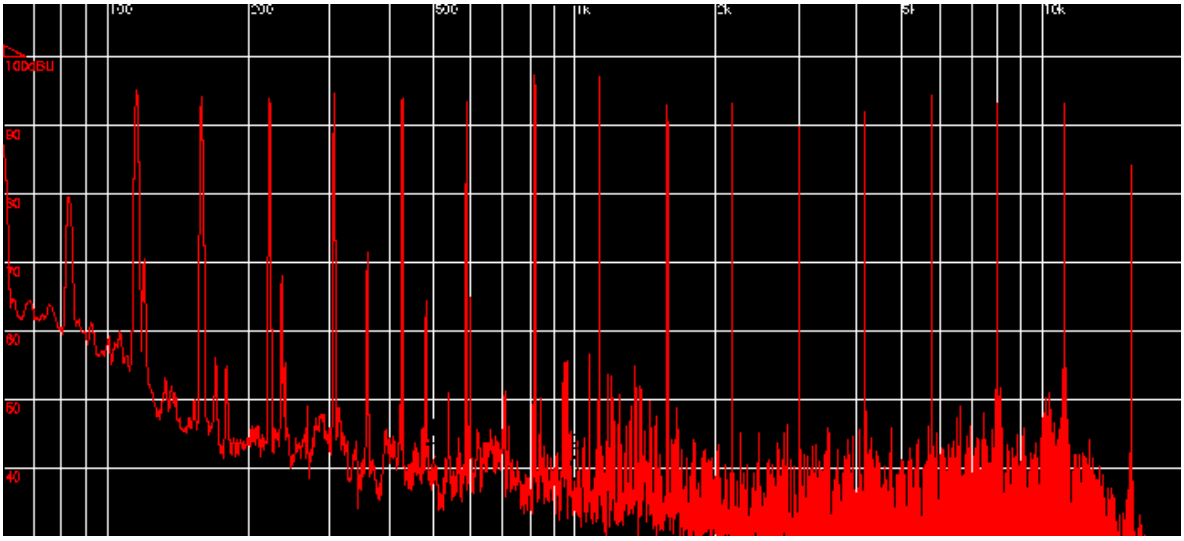


Impedance curve

Additional Measurements with Notes from the Designer, Dan Wiggins

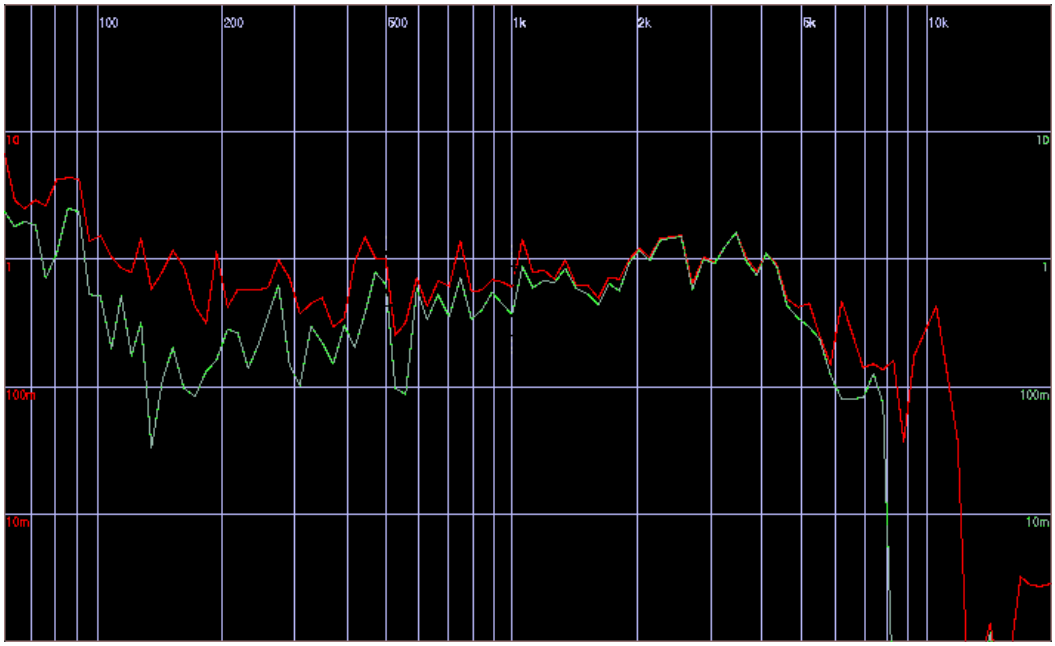
General notes on all measurements:

- Measured in a 7 liter ported box tuned to 65 Hz.
- Sweeps run from 60 Hz to 20 kHz (true full range of the driver)
- Measured at a nominal 94 dB SPL @ 1W, 1m (except for power stepping)



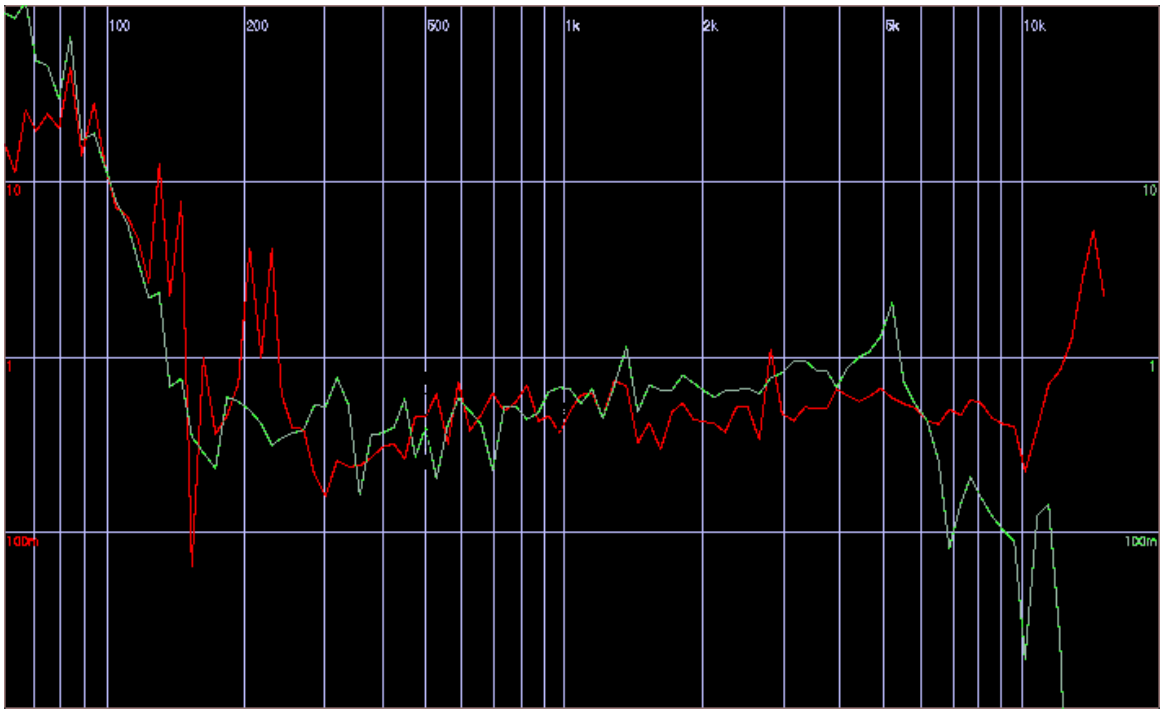
WR125S SC @ 94 dB SPL.

This is the spectral contamination plot at a nominal 94 dB SPL volume setting. There are 20 discrete frequencies fed to the driver - those are the red spikes in the plot. The stuff down below the spikes is all the spectral contamination results. THD, IMD, buzzes, rubs, etc. 10 dB/division. It's EXTREMELY clean - there's a good 40+ dB between the stimuli and the contamination at all frequencies above 150 Hz.



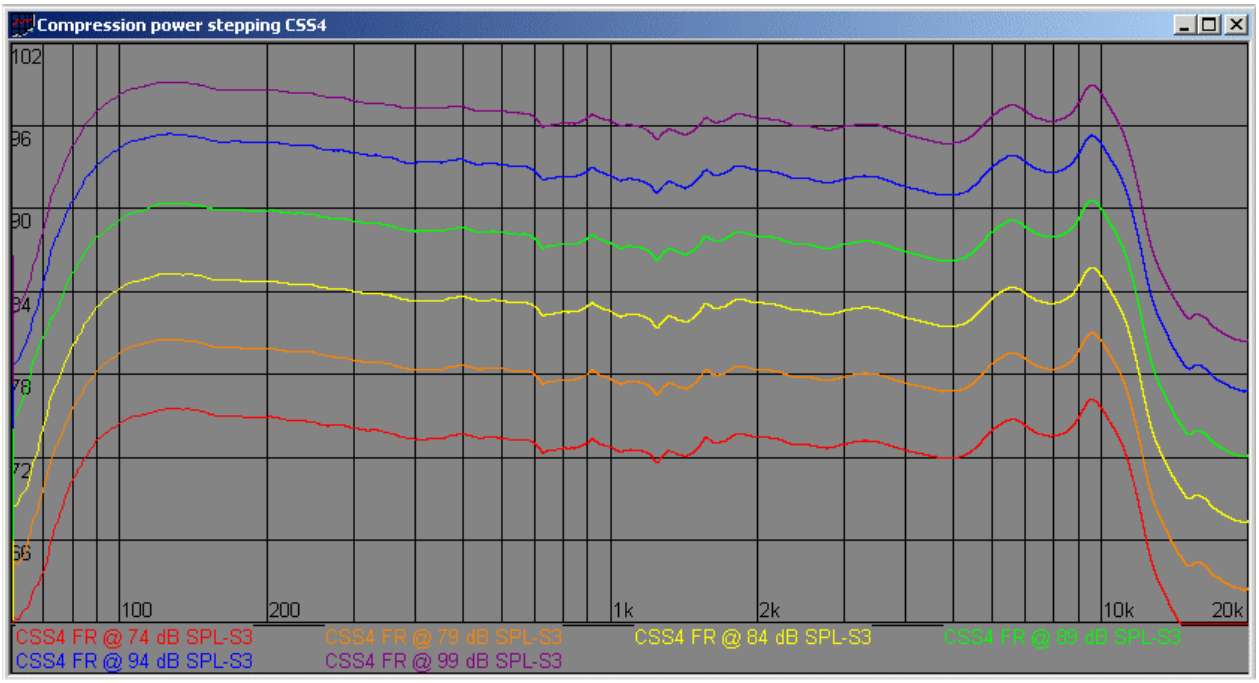
WR125S HD @ 94 dB SPL

This is the Harmonic distortion (in red) and 3rd harmonic (green) for the driver. Scales are on the vertical sides - 100% is the upper boarder of the image, then 10%, 1%, 0.1%, 0.01%, and 0.001% is the very bottom of the image. As you can see, less than 1% THD from ~100 Hz and up at 94 dB SPL. Quite clean for that volume level!



WR125S IMD @ 94 dB SPL

This was generated with a base frequency and 1.5X that frequency played simultaneously. Red trace is IMD of (base + freq), green trace is IMD of (base - freq). Again, quite clean, and pretty much always below 1% above 250 Hz.



WR125S PowerStepping.

This is the frequency response of the speaker as power was stepped in 5 dB increments. The speaker was fed power to generate 74 dB SPL, and the frequency response was measured. Power was increased 5 dB, remeasured, etc. Start to see 3 dB of compression once we're at 99 dB SPL. So that's really pretty high! Power delivered when 3 dB of compression was reached was around 25W, so I'd rate the driver at 25-30W.