

# VOICE & COIL

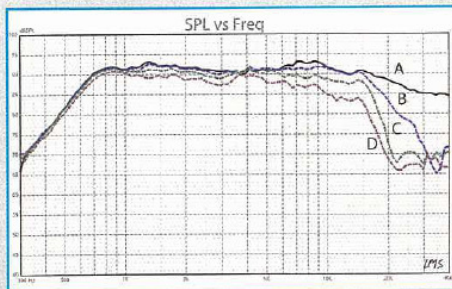
THE PERIODICAL FOR THE LOUDSPEAKER INDUSTRY

## D2004/602000

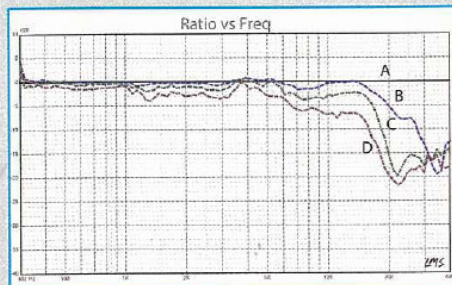
The last Tymphany ScanSpeak tweeter to be analyzed this month was the D2004/602000. Again, following the same measurement protocol, the first measurement was to produce an impedance plot using a LMS 300-point impedance sine wave sweep as given in **Fig. 17**. The tweeter resonance with this smaller cavity was 619Hz, with a measured  $R_e = 2.82$ . The Tymphany quoted T/S parameters of  $Q_{ms} = 4.42$ ,  $Q_{es} = 1.42$ , and  $Q_{es} = 1.07$ . The minimum impedance for the 602000 was  $3.15\Omega$  at 2.9kHz.

Next I recess-mounted the 602000 in a small enclosure that had a baffle area of about  $9" \times 4"$  and measured the on- and off-axis frequency response at

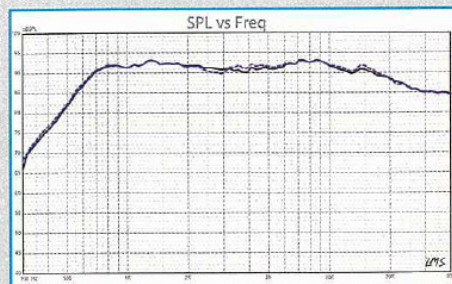
2.83V/1m with a 100-point gated sine wave sweep from 300Hz to 40kHz. **Figure 18** shows the on-axis response. The frequency response is a very flat and smooth  $\pm 1.68\text{dB}$  from 990Hz-13.5kHz and  $\pm 2\text{dB}$  from 695Hz to 21.5kHz. **Figure 19** illustrates the on- and off-axis response. Off-axis the device is -3.5dB down at 10kHz from the on-axis response with respect to the  $30^\circ$  off-axis curve and -6.5dB at  $45^\circ$  off-axis, again with respect to the on-axis response. **Figure 20** illustrates the normalized version of **Fig. 19**. In terms of production consistency, the two-sample SPL comparison is depicted in **Fig. 21**, indicating the two samples were well matched with only minor midband variations.



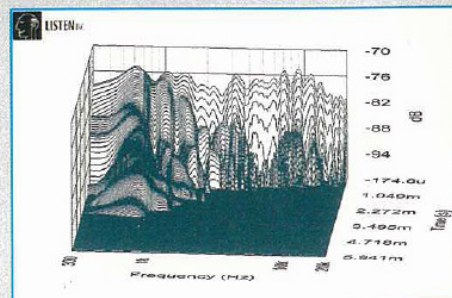
**FIGURE 11:** D3004/602000 horizontal on- and off-axis frequency response (A =  $0^\circ$ ; B =  $15^\circ$ ; C =  $30^\circ$ ; D =  $45^\circ$ ).



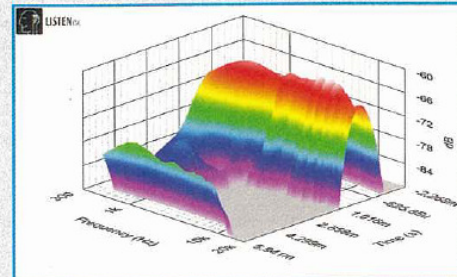
**FIGURE 12:** D3004/602000 normalized on- and off-axis frequency response (A =  $0^\circ$ ; B =  $15^\circ$ ; C =  $30^\circ$ ; D =  $45^\circ$ ).



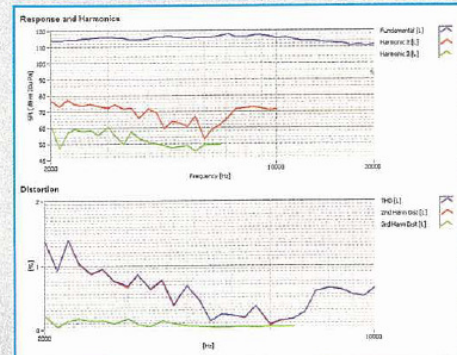
**FIGURE 13:** D3004/602000 two-sample SPL comparison.



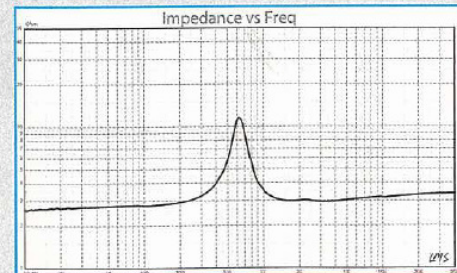
**FIGURE 14:** D3004/602000 SoundCheck CSD waterfall plot.



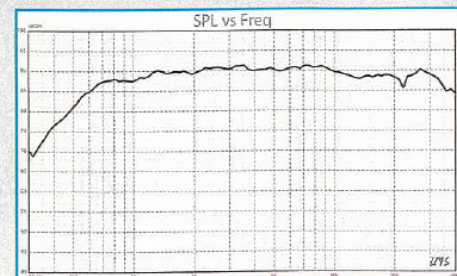
**FIGURE 15:** D3004/602000 SoundCheck STFT surface intensity plot.



**FIGURE 16:** ScanSpeak D3004/602000 SoundCheck distortion plots.



**FIGURE 17:** ScanSpeak D2004/602000 free-air impedance plot.



**FIGURE 18:** D2004/602000 on-axis response.



# VOICE COIL

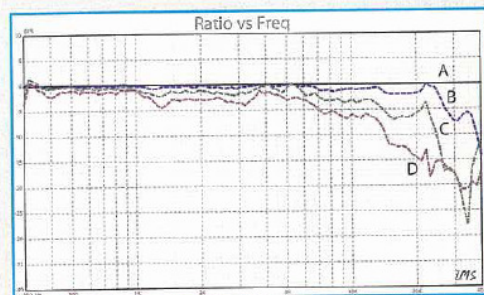
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After I finished the LMS set of measurements, I then once more set up the SoundCheck analyzer and measured the impulse response with the tweeter recess-mounted on a large 4' x 2' baffle. Importing this data in the SoundMap software yielded the cumulative spectral decay plot (waterfall) shown in **Fig. 22. Figure 23**

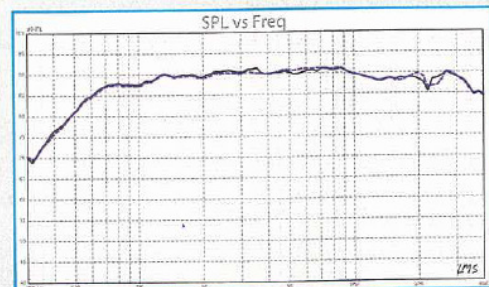
gives the STFT displayed as a multi-color surface plot. Last, I set the 1m SPL to 94dB (7.4V) and the analyzer range to 2kHz-20kHz and measured the 2<sup>nd</sup> and 3<sup>rd</sup> harmonic distortion at 10cm (**Fig. 24**). For more information on these new Illuminator tweeters and the rest of the Illuminator line, visit [www.tymphany.com](http://www.tymphany.com). **VC**



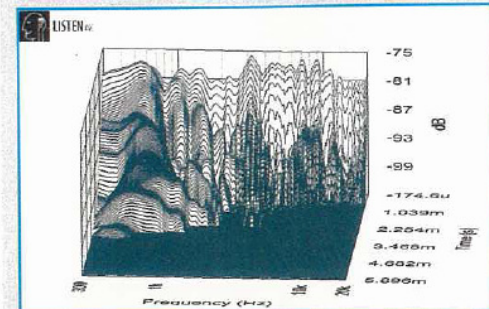
**FIGURE 19:** D2004/602000 horizontal on- and off-axis frequency response (A = 0°; B = 15°; C = 30°; D = 45°).



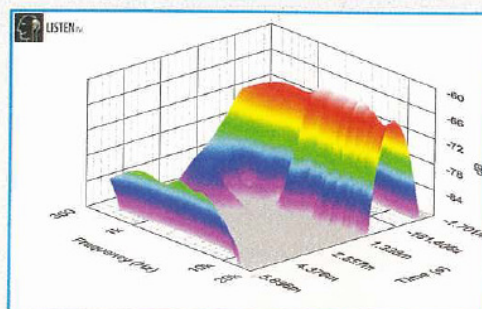
**FIGURE 20:** D2004/602000 normalized on- and off-axis frequency response (A = 0°; B = 15°; C = 30°; D = 45°).



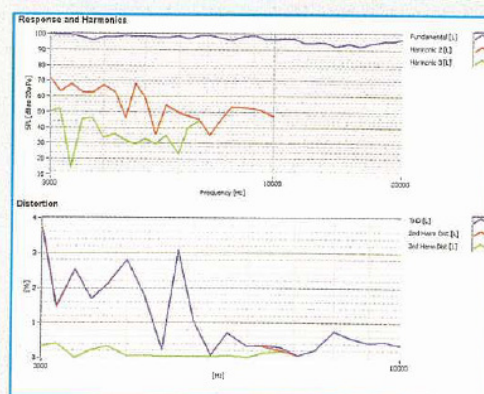
**FIGURE 21:** D2004/602000 two-sample SPL comparison.



**FIGURE 22:** D2004/602000 SoundCheck CSD waterfall plot.



**FIGURE 23:** D2004/602000 SoundCheck STFT surface intensity plot.



**FIGURE 24:** ScanSpeak D2004/602000 SoundCheck distortion plots.