

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 3.15Ω 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° off-axis curve and -6.5dB at 45° 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.

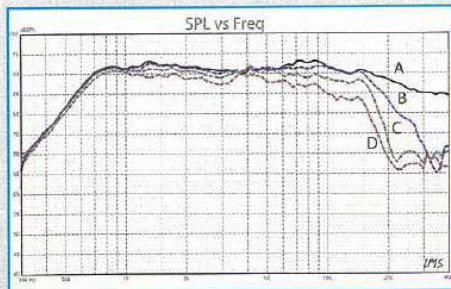


FIGURE 11: D3004/602000 horizontal on- and off-axis frequency response (A = 0° ; B = 15° ; C = 30° ; D = 45°).

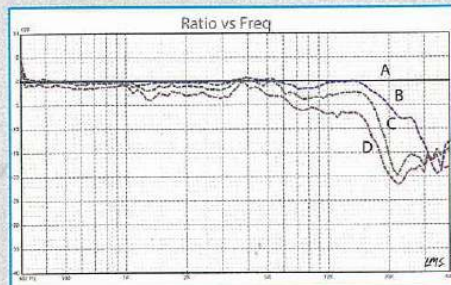


FIGURE 12: D3004/602000 normalized on- and off-axis frequency response (A = 0° ; B = 15° ; C = 30° ; D = 45°).

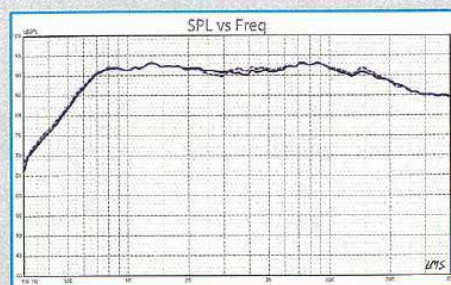


FIGURE 13: D3004/602000 two-sample SPL comparison.

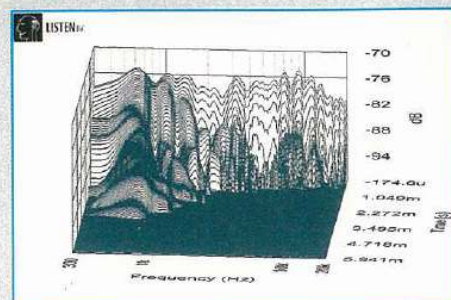


FIGURE 14: D3004/602000 SoundCheck CSD waterfall plot.

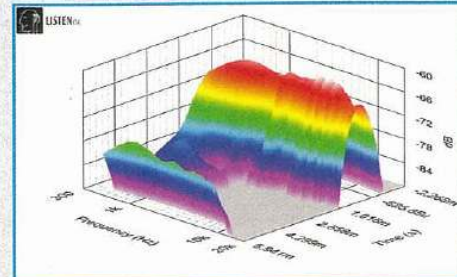


FIGURE 15: D3004/602000 SoundCheck STFT surface intensity plot.

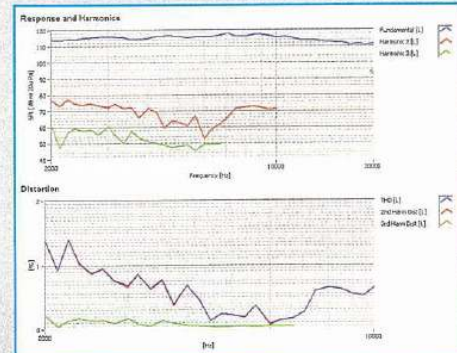


FIGURE 16: ScanSpeak D3004/602000 SoundCheck distortion plots.

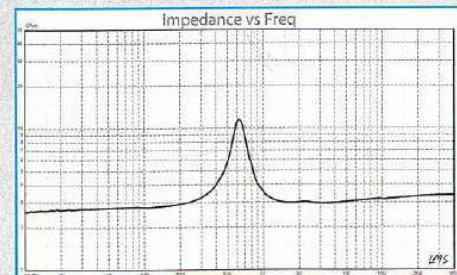


FIGURE 17: ScanSpeak D2004/602000 free-air impedance plot.

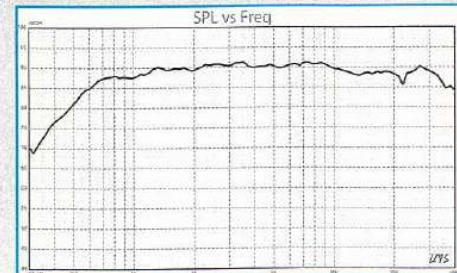


FIGURE 18: D2004/602000 on-axis response.

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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 2nd and 3rd 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. **VC**

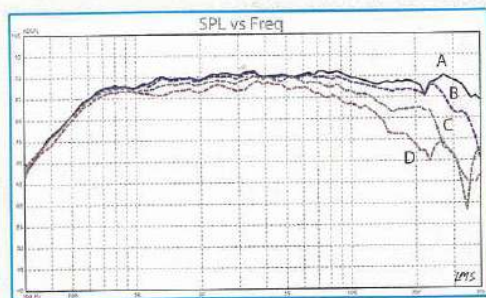


FIGURE 19: D2004/602000 horizontal on- and off-axis frequency response (A = 0°; B = 15°; C = 30°; D = 45°).

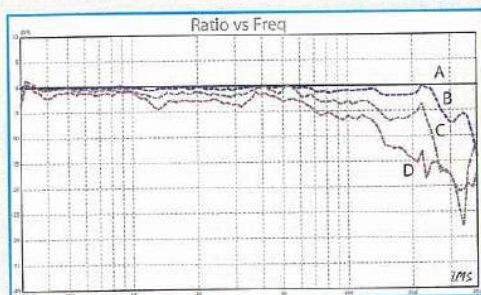


FIGURE 20: D2004/602000 normalized on- and off-axis frequency response (A = 0°; B = 15°; C = 30°; D = 45°).

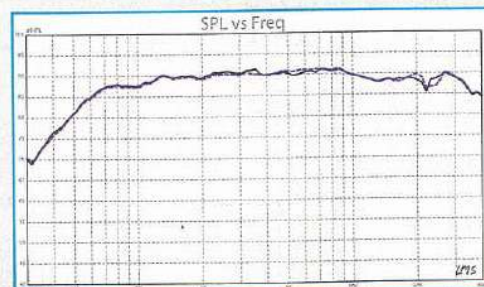


FIGURE 21: D2004/602000 two-sample SPL comparison.

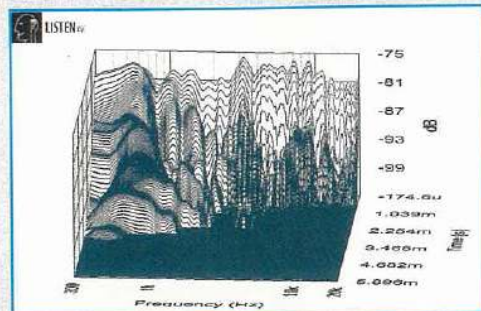


FIGURE 22: D2004/602000 SoundCheck CSD waterfall plot.

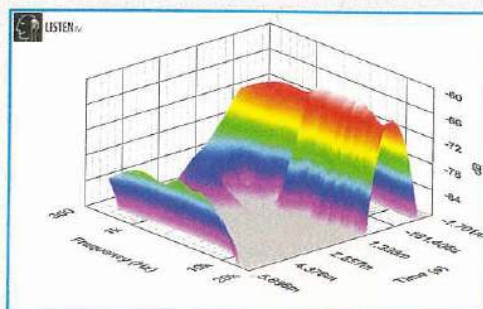


FIGURE 23: D2004/602000 SoundCheck STFT surface intensity plot.

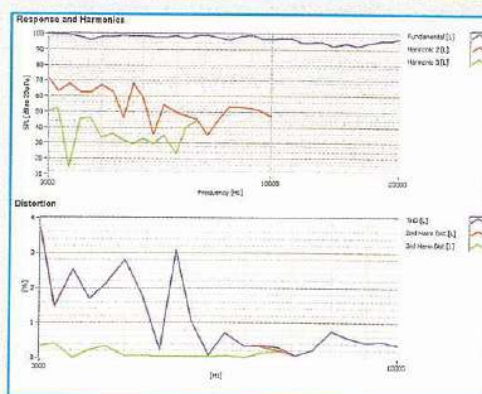


FIGURE 24: ScanSpeak D2004/602000 SoundCheck distortion plots.