distortion curve shown in **Figure 12**.

I then used SoundCheck to get a 2.83 V/1 m impulse response for each driver and imported the data into Listen's SoundMap Time/Frequency software. The resulting cumulative spectral decay (CSD) waterfall plots for the LS-10 and LS-12 are shown in **Figure 13** and **Figure 14**, respectively., **Figure 15** and **Figure 16** show the Wigner-Ville (for its better low-frequency performance) plots for the LS-10 and the LS-12.

It's obvious from these graphs that the LS-10 and the LS-12 are best suited for subwoofer applications crossed over at 100 Hz or lower, which is exactly the application for which they are intended. For more information on Dayton Audio's shallow-mount subwoofers, visit www.daytonaudio.com.

Tang Band's T1-1942SB

Since *Voice Coil*'s Test Bench is about transducer analysis, I normally don't accept turnkey systems or complete multi-way speakers. However, I have previously featured two of Tang Band's passive radiator (PR) modules, the T1-1942S (March 2013) and the T1-1931S (May 2013). This month's offering from Tang Band, the T1-1942SB, is pretty much the same type of PR module, but with the addition of its own Bluetooth amplifier (see **Photo 3**).

As you can expect, the T1-1942SB is similar to the T1-1942S previously featured. The primary difference

Photo 3: Bluetooth amplifier for the Tang Band T1-1942SB

Photo 4: Tang Band T1-1942SB passive radiator modules

Photo 5: Complete powered system for the Tang Band T1-1942SB

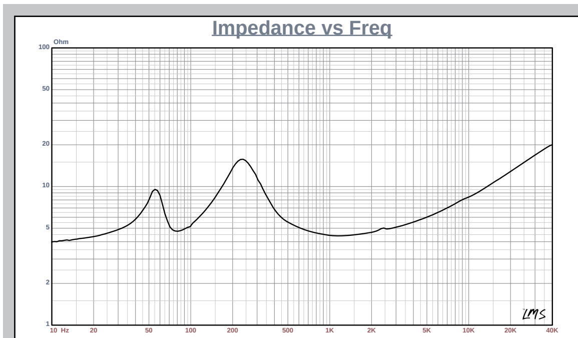

Figure 17: Tang Band T1-1942SB 1-V free-air impedance plot

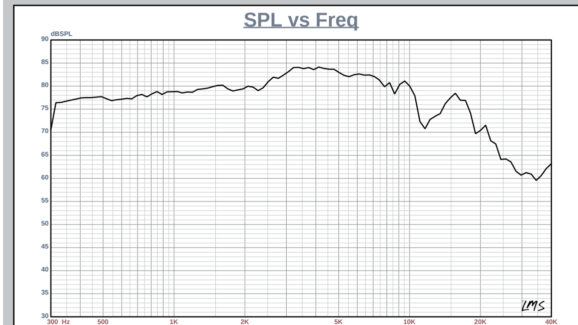

Figure 18: Tang Band T1-1942SB on-axis response

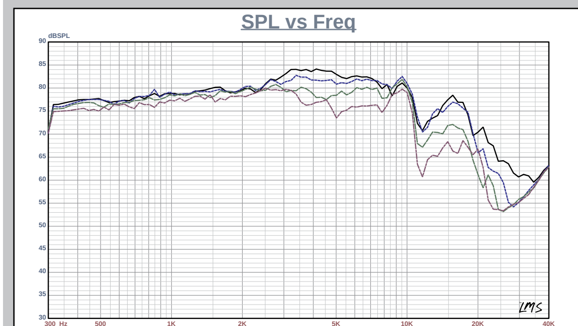

Figure 19: Tang Band T1-1942SB on- and off-axis frequency response (0° = solid; 15° = dot; 30° = dash; 45° = dash/dot)

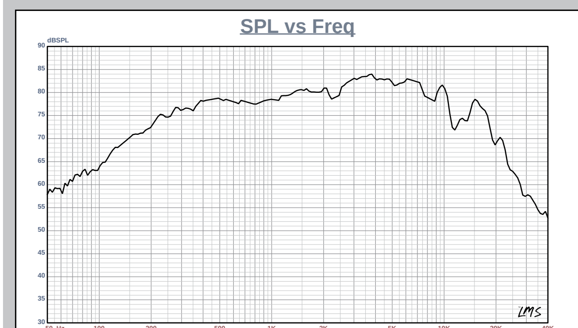

Figure 20: Tang Band T1-1942SB full-range on-axis frequency response

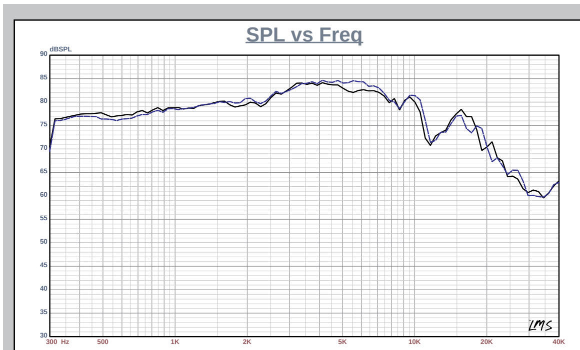

Figure 21: Tang Band T1-1942SB two-sample SPL comparison

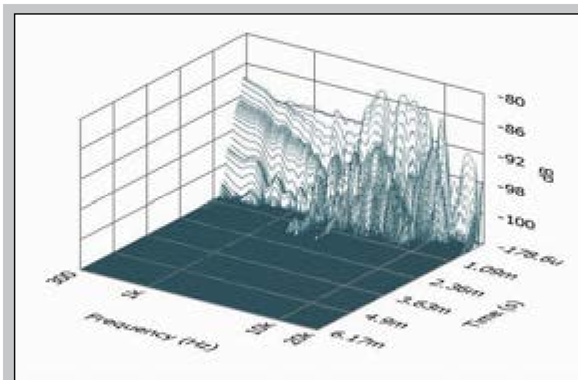

Figure 23: Tang Band T1-1942SB SoundCheck CSD waterfall plot

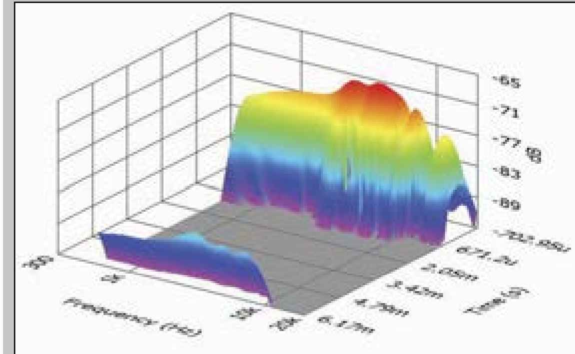

Figure 24: Tang Band T1-1942SB SoundCheck Wigner-Ville plot

is that the T1-1942S used a forward-firing rack track-shaped passive radiator in a rectangular enclosure, while the T1-1942SB uses a rear-firing round PR in a cylindrical enclosure (see **Photo 4**).

Features for the T1-1942SB include a 38-mm diameter dome and surround, a 28-mm voice coil diameter, a polypropylene composite dome with an articulated elastomer covering, a composite polypropylene enclosure, and a 38-mm diameter passive radiator and surround with a 28-mm flat cone. A complete stereo system, which can be configured in various enclosure shapes, is shown in **Photo 5** using an Apple iPhone as a source.

I began analysis of the T1-1942SB by measuring the system impedance with the LinearX LMS analyzer using a 200-point sine wave sweep from 10 Hz to 40 kHz. The results are shown in **Figure 17**. Since this is a system response, the data can't be used for parameters, but the PR tuning frequency occurs at 80.4 Hz.

Next, I mounted the T1-1942SB in free air without an additional baffle and measured the on- and off-axis SPL from 300 Hz to 40 kHz with a 100-point gated sine wave sweep. **Figure 18** gives the T1-1942SB's on-axis frequency response. **Figure 19** depicts both the on- and the off-axis response. Since we are experiencing rather nice weather in the Pacific Northwest where my office is located, and because the T1-1942SB is a self-contained system, I did a full-range outdoor measurement (see **Figure 20**). F3 for the system is about 200 Hz. For the last SPL measurement, I compared the frequency response of both samples, which indicates a reasonably close match (see **Figure 21**).

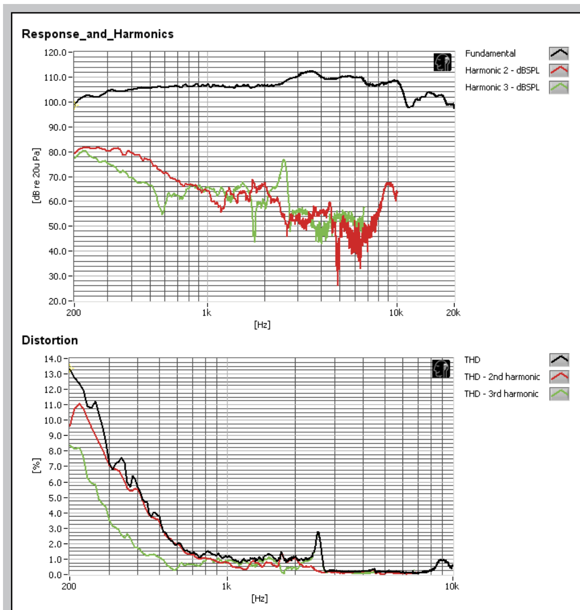

Figure 22: Tang Band T1-1942SB SoundCheck distortion plot

I used the Listen SoundCheck analyzer for the final group of measurements. For the distortion measurement, I rigidly mounted the T1-1942SB driver in free air and set the SPL to 89 dB (7.5 V) at 1 m using a noise stimulus. Then, I measured the distortion with the Listen microphone placed 10 cm from the dust cap. This produced the distortion curves shown in **Figure 22**.

Next, I used SoundCheck to get a 2.83 V/1 m impulse response for the T1-1942SB driver and imported the data into Listen's SoundMap Time/Frequency software. The resulting CSD waterfall plot for the full-range device is shown in **Figure 23**. the Wigner-Ville (for its better low-frequency performance) plot is displayed in **Figure 24**.

If you were to repackage the T1-1942SB into some lifestyle cosmetic statement and put a rechargeable battery on the amplifier, this has the potential for a nice Bluetooth mini-system. For more information, visit www.tb-speaker.com. *VC*