



YG Hailey 3 Loudspeaker

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Photos by Wrightsteel

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Accompany

Mission

early in the gestation of any new speaker, its designer must determine the product's mission. What is this speaker meant to accomplish? Who is it for? What will its listening environment be?

For the bulk of its 22-year existence, YG Acoustics speakers shared a mission instigated by its founder and chief designer, Yoav Geva. Regardless of a particular model's size or price point, Yoav uniformly aimed to create products that excelled in specific technical metrics. In particular, Geva was fanatical about reducing sonic impurities, as measured by conventional means.

Chief among the impurities he targeted was cabinet vibrations. This explains the trademark materials and shape of YG speakers. They are made of billet aluminum, complemented by extensive bracing and other techniques to increase stiffness and minimize ringing. To address diffraction, another impurity, the speakers are modular, with separate sections that are never much wider than the driver(s) housed within them. Further, all enclosures are sealed to preclude distortions that can arise from ported designs.

These techniques worked well. YG speakers have been widely esteemed for their low distortion, as well as tonal neutrality and superb imaging. On the other hand, YG was sometimes accused of building "analytical" products that failed to fully capture the music's emotional palette. The Carmel 2 I reviewed some years ago was a case in point. Though it was far more accessible than the original Carmel, the speaker lacked a certain warmth.

This fulcrum-teetering might have continued indefinitely except that in 2017, much to the surprise of many in the industry, the company ushered in a new set of audiophile-mind-

ed owners. In 2020 a forward-thinking designer named Matthew Webster was appointed CEO. At that point, although you'd never know it from the external appearance of the speakers, everything changed.

To be sure, Webster respected everything Geva had achieved. Yet he was determined to take the company in a new direction. Indeed, he had in mind a fundamentally different mission for YG speakers. Instead of being focused on delivering technical merits, he wanted them, in his own words, to "make magic." That is, in addition to their already-impressive technical virtues, YG speakers had to deliver goosebumps. The mission had swung from technical to emotional.

Of course, having a musically oriented goal is not uncommon for speaker manufacturers. The trick for Webster was to discover what design, manufacturing, and evaluation techniques would result in the magic he sought. For answers to these questions, Webster turned to what he knew best: computational modeling.

That might sound strange, turning to digital technology to explore the origins of emotionally impactful analog listening. But Webster is, at heart, a technical creature. After all, he holds a PhD in astrophysics from Cambridge University. (That's right, he's an actual rocket scientist.) Yet for him, technology and measurements are a means to an end—a *musical* end—rather than the end itself. As Webster points out, "there are many speakers that measure well by traditional metrics but that don't move the listener."

Through computational modeling (Webster wrote his doctoral dissertation on large-scale modeling of the universe), Webster felt he could determine which design techniques resulted in speakers that moved the emotional needle. Before tackling a revamp of the Reference Series 2 models, he decided

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to test this premise on a new line called Peaks. The Peaks models would come in at a lower price point than was possible given the materials and construction of the Reference line. And it would give Webster a platform on which to answer the question: “What can we achieve with computer modeling?”

One of the big advantages Webster saw in computer modeling was the ability to “build” a large number of virtual prototypes. For the Peaks series, he created 450 prototypes, a prospect that would be unthinkable in the physical domain. Of course, there were physical prototypes as well—about one for every 50 virtual prototypes. These were necessary because, for one thing, you can’t listen to a computer model. For another, it was imperative to measure the actual behavior of a prototype to ensure it matched the model’s predictions.

Along the way, Webster found that typical computer models were neither sufficiently accurate nor comprehensive enough to capture and explain a speaker’s behavior. The model grew more complex. For instance, it became multi-dimensional, incorporating not only physical properties but also electronic and magnetic ones. Soon, the model became so complex it couldn’t be built on or manipulated by computers available to mere mortals.

Fortunately, these days one need not purchase a supercomputer for jobs like this. Cloud computing has made the necessary power accessible on demand—and you only have to pay for what you use. Ultimately, YG ended up ganging together 2000 GPUs (Graphics Processing Units) from the cloud to run the model. The Peaks series consumed 4.5 million GPU-hours.

Webster also found traditional measurement techniques wanting. To get a better picture of a speaker’s actual performance, he invested some of the YG’s newfound capital in tools like multi-point laser vibrometry and high-speed photography capable of generating 200,000–500,000 time-sliced

images per second. The company always complemented these techniques with extensive listening. Otherwise, there was no way of knowing if the ultimate mission had been achieved.

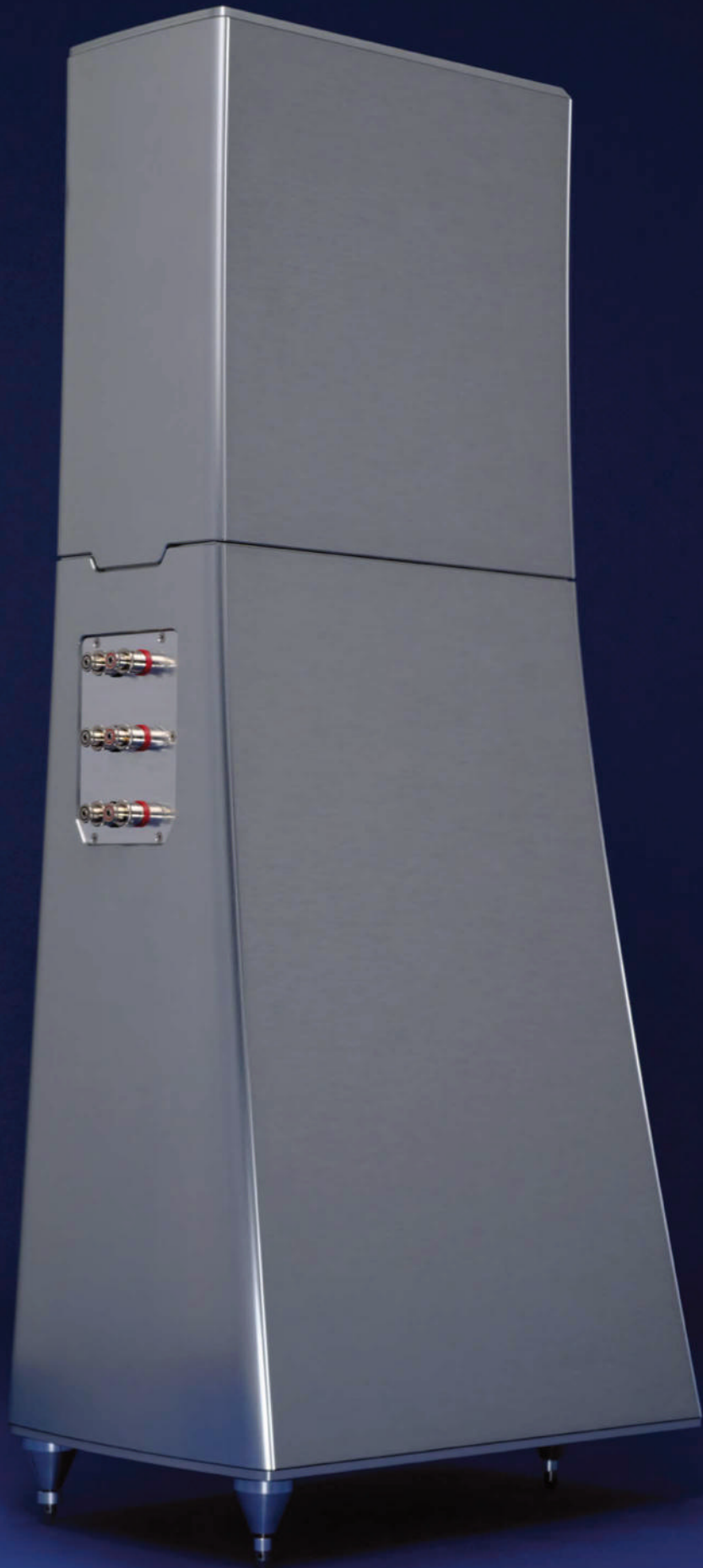
As the Peaks designs were being finalized, Webster simultaneously put more capital to work on a revamped and expanded factory. He built a state-of-the-art production facility to match YG’s now state-of-the-art R&D process. For instance, the initial cuts of the aluminum cabinet pieces are done with a waterjet, which is faster, more economical, and more environmentally friendly. The resulting cutouts are then fashioned with the most advanced 4- and 5-axis lathes and tooling available; they deliver accuracy to an astonishing 0.004 millimeters.

As it turned out, the Peaks series proved to be a resounding sonic and marketing success. Webster, now confident of his R&D, evaluation and production processes, was emboldened to turn to the Reference series. Ambitiously, the company decided to upgrade the entire Series 2 to Series 3 status all at once. Among those new models was the mid-level Hailey 3 under review here. The speaker sells for \$68,000 per pair.

Like all Series 3 models, the Hailey 3 cabinet is built out of solid aluminum. However, there are in essence two aluminum cabinets with a gap between them. To deter ringing, the aluminum sheets that comprise the cabinets are pressed together with constrained-layer damping material in between. This accounts for the Hailey 3’s rare cabinet, which is stiff without sounding dead.

Drivers begin with the silk-dome tweeter, whose dome is set onto a delicate aluminum lattice frame. New for the Series 3 is a redesign of the bracing machined into the back side of the cone, which increases rigidity and decreases the cone’s mass. There is also a new, more intricate waveguide that was only made possible by the refined production techniques described above. The new waveguide results in less

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high-order distortion, which in turn yields smoother highs. The tweeter spans frequencies from 1.75kHz all the way up to 40kHz. This extended range ensures that the driver isn't breaking up or experiencing phase shift in the audible band.

The aluminum-coned 7.25" midrange and 11" woofer are both carried over from the Hailey 2. The 90Hz crossover point between them means that the midrange is doing a lot of the work normally reserved for a woofer. However, the modeling, listening, and measurements showed that the design improves coherence and phase regularity in a critical portion of the audible band.

The crossover itself is entirely new. Custom inductor and capacitor designs are used throughout the circuit with attention to microphonics. For example, many of the inductors are potted and clamped to the circuit board. Also, caps were chosen after listening to wares from over 20 suppliers and the circuit includes custom foil capacitors made exactly to YG's design. Even

the circuit board traces were thickened.

But perhaps most significantly, computational modeling made it possible for YG to design a crossover with virtually perfect phase-matching between drivers. In the frequencies where two drivers overlap, they exhibit perfect pistonic synchronicity. YG identified this as an area that, if not just right, adversely impacts musical engagement.

So how does this re-fashioned Hailey sound? Pure, yes. But with newfound passion. On the first front, I felt like I was listening to a speaker that not only banishes impurities, but that shows off its quietude by getting out of the way of the music. Through the Hailey 3, I heard individual lines more clearly

than I ever have in my system. These YGs deliver not just detail, but *layered* detail.

As an example, consider Peter Gabriel's "Playing for Time." When the orchestra comes in, it does so not as a single monolith but as a combination of interwoven instrumental lines. Through the YG's, I heard elements of this musical lattice that I'd never heard before, even on other superb speakers.

After purity, the next thing I heard was refinement. Sound from the Hailey 3s is never unduly sharp, and this isn't because anything is being softened. There are plenty of transients, and they hit with appropriate might. But there's no artificial edginess whatsoever. One contributor is the newly configured tweeter, which is extremely well behaved. There's no breakup in the audible range, no matter how hard this driver is pushed.

My ultimate test in this regard is the "stabbed" high piano notes on Michael Wolff's "The Conversation." For correct reproduction, they need to have real speed, definition, and forti-

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tude. Yet most of the (few) speakers that can do that also exhibit breakup around those notes. Not the Hailey 3. The notes come across forcefully but cleanly—a rare feat. You may think your speakers excel in this area, but until you've heard something like the Hailey 3s, where the tweeter goes up to 40kHz and is therefore coasting in the audible band, you may never have heard true high-frequency refinement.

Meanwhile, the new waveguide does a splendid job of dispersing those upper frequencies. One benefit, in addition to exemplary imaging, is that the Hailey 3 has a comfortably wide sweet spot. No head-in-a-vise syndrome here!

Regarding bass, the YG excelled in all the areas you'd expect (and demand) from a speaker of this price. There's timbral density, transient definition, power, and reach. The Hailey 3 is most definitely a full-range speaker. Further, low-end definition is such that I heard more timbral information from string basses than I'm used to hearing from just about any other speaker.

But the Hailey 3 has another bass quality that goes back to the virtue of refinement: The bass is sonorous. This is best appreciated in the context of a comparison. The excellent Wilson Sasha V also possesses the aforementioned bass qualities; but its character is entirely different. Instead of being so-



Specs & Pricing

Type: 3-way sealed floorstander

Drivers: 11" woofer, 7.25" midrange, 1" tweeter

Impedance: 4 ohms nominal

Power requirement: 25W min

Sensitivity: 87dB/1W/1m

Frequency response: 20Hz–40kHz

Weight: 200 lbs. each

Dimensions: 13" x 48" x 21"

Price: \$68,000

yg-acoustics.com

Associated Equipment

Analog source: Lyra Etna cartridge, Goldmund Studietto turntable, Graham 2.2 tonearm

Digital source: Bryston BCD-3 CD player

Electronics: CH Precision I1 universal amplifier (phonostage, DAC, streamer, linestage, power amplifier)

Speaker: Wilson Sasha V

Cables and cords: Empirical Design

Footers: Goldmund Cones

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norous, the Wilson is what I'd call gutsy. Which you prefer is a matter of personal preference. The larger point is that the YG's bass is perfectly in keeping with the refined nature of the rest of the speaker.

As for the midrange, I wish every speaker was as neutral and revealing in this frequency range as the Hailey 3. What this speaker gives you is unforced

transparency. The kind of transparency, as I mentioned earlier, that gives every musical line and instrument, no matter how buried in the mix, a chance to shine. On multiple occasions I found myself

being carried away by these now-evident musical elements. Which was, after all, the whole point of the Series 3.

To better illustrate the engagement of which these speakers are capable, allow me to share a short anecdote. I have a listening group in my neighborhood that gathers from time to time to audition equipment that's here for review. A rather large crowd turned out to hear the Hailey 3s, and everyone brought a musical sample of their choosing. Together, we listened to this familiar material. On multiple occasions, the group was so taken by the music that they erupted in spontaneous applause at the end of the piece. That's a first here. The speakers do indeed "make magic."

In appearance, the Hailey 3 doesn't give the slightest hint at the behind-the-scenes transformation that created it. The speaker looks well-nigh identical to its predecessor. But don't be fooled. From a philosophical, technological, and sonic perspective, the new speaker is a clear break from the past. With the Series 3, YG has made engagement and musicality its top priorities, enlisting science to achieve those goals without relinquishing what made YGs of the past special. Judging by the Hailey 3 performance, there is no doubt the new mission has been accomplished brilliantly. **tas**

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