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For years now, Anthony Gallo Acoustics has been known for affordable, whimsically styled satellite/subwoofer systems that sound better than they have any right to for the money (examples include Gallo's adorable, softball-shaped Micro and its bigger brother, the barbell-shaped Dué). But, about a year and a half ago, Gallo began showing prototypes of a different, more ambitious kind of speaker—one that has now arrived in the form of the futuristic-looking Nucleus Reference<sup>3</sup>. Judging by my listening experiences over the past several months, I can say the Reference<sup>3</sup> was not only worth the wait, but that it is a landmark product whose performance will blow minds throughout the high-end audio community, recalibrating upwards our notion of what a \$5900/pair of loudspeakers can be and do. This is a strong statement, I know, but the Reference<sup>3</sup> has the goods to back it up, offering a heady mixture of elegantly sculpted design, innovative technologies that really work, and—most importantly—best-in-class sound.

The Nucleus Reference<sup>3</sup> is a 35"-tall, three-way, four-driver, full-range

loudspeaker. The driver complement includes a side-firing, dual voice-coil 10" woofer, two 4" carbon-fiber midrange drivers, and a semi-cylindrical, wide-dispersion, Kynar piezoelectric tweeter. The midrange drivers and tweeter are time-and-phase-aligned, with a level-matching transformer balancing the tweeter's output with that of the midrange drivers. The speaker neither needs nor uses a traditional midrange-to-tweeter crossover. The Reference<sup>3</sup> provides a single pair of binding posts, labeled "Speaker In," plus a second set of posts, labeled "Sub In," through which users can connect an optional Gallo subwoofer amplifier that *co-drives* the woofer along with the main amplifier—pushing the Reference<sup>3</sup>'s low-frequency response flat to 22Hz.

Easily the two most striking qualities of the Reference<sup>3</sup> are its imaging and soundstaging—both of which are about as good as I've found at any price. As I listened to the Gallos, I always heard a wide, deep, stable, well-focused soundstage that showed me exactly where performers and instruments were located, and that painted a believable picture of the acoustics of the recording venue. The really neat part, though, was that the sonic images within the soundstage led lives of their own, deliciously detached from the physical presence of the speaker enclosures. To get an idea of how effectively the Reference<sup>3</sup> recreates the sound of real performers in acoustic spaces, listen to Christy Baron's *Take This Journey* [Chesky]. This recording features Baron plus a small jazz ensemble performing inside St. Peter's Church in Chelsea, New York, and as I listened the Gallos really did seem to transform my listening room into the reverberant interior of a church. As my wife said, "With these speakers, the music just *happens* within its own space; you can see the Gallos in front of you, but you don't even have the sense that they're *on*." Behold the power of world-class imaging and soundstaging.


But there is another, higher aspect of the Gallo's imaging/soundstaging capabilities, one that usually comes under the heading of "palpability"—a term that refers to a speaker's ability to present the sizes,

shapes, and bodies of instruments and vocalists in three dimensions, so that they seem almost real enough to touch. The Reference<sup>3</sup> has this special ability in spades as I discovered on the “Por Causa de Você” track from Rosa Passos and Ron Carter’s beautiful *Entre Amigos* [Chesky]. On that track, you hear only the intimate sound of Passos’ voice and Carter’s acoustic bass, with Passos positioned toward the front of the stage and to the right, and Carter farther back and to the left. As the track unfolds, the Gallos give you the uncanny sense that Passos and Carter are actually present in your room (or that you are present at their recording session), so that you hear Passos tilting her head slightly to emphasize phrases, or sense the large, wooden body of Carter’s bass singing sonorously as his hands work gracefully up and down the instrument’s fingerboard. This quantum leap up from “merely excellent” imaging/soundstaging to full-fledged three-dimensionality is one of the Nucleus Reference<sup>3</sup>’s greatest strengths.

As many audiophiles will attest, it can be tricky for any high-end speaker to combine full-range frequency response, neutral tonal balance, dynamic responsiveness, fine resolution of details, and overall smoothness in one package (many good speakers can give you two or three of these qualities, but not all of them at once). The Reference<sup>3</sup>, however, really does provide all these qualities, combining them in near perfectly balanced proportions. The Gallos offer what is essentially full-range frequency response, with highs extending smoothly into the ultrasonic range and bass extending solidly down to the upper-30Hz range (with, as I said, even deeper bass extension if you use Gallo’s optional subwoofer amplifier). Tonal balance is neutral and free of apparent colorations, although those who confuse small amounts of upper-midrange or treble forwardness with “definition” or “air” may initially think the Reference<sup>3</sup> sounds somewhat subdued (though I find them refreshingly natural-sounding). Recognizing that listening rooms and interpretations of high-frequency realism will vary, Gallo equips the Reference<sup>3</sup> with a three-position tweeter control whose “Flat” setting worked out best in my room. The speaker offers tons of textural definition and lively response to both large and small-scale dynamic swings, yet it delivers both with an overriding ease and smoothness (virtues that, as many of us have learned the hard way, do not often travel together). On certain sophisticated bluegrass/jazz fusion recordings (e.g., Jerry Douglas’ lovely *Lookout for Hope* [Sugar Hill] or Ti-Ti Chickapea’s earthy and exotic *Change of Worlds* [Orchard Beat]), for example, the Gallo’s definition-*sans*-edginess makes all the difference, fully revealing the rich voices of dobros, guitars, violins, etc., without overstating them or turning their sound into a jangled mess.

Aficionados of low bass will no doubt want to know if Gallo’s A\$1900, 240Wpc subwoofer amplifier works as advertised to extend the Reference<sup>3</sup>’s response down to the low 20Hz range. I’m pleased to report that it does. At first, Gallo’s strategy of using two amplifiers (one full-range, the other subwoofer-only), to co-drive one woofer via dual voice-coils seems peculiar—peculiar, that is, until you realize that: a) the very long-throw woofer was designed from the outset with this application in mind, and b) Gallo’s goal was to enhance (and precisely fine-tune) the Reference<sup>3</sup>’s bass response below 40Hz *without* inserting any sort of EQ box in the main signal path. With the subwoofer amp in play, the Reference<sup>3</sup> becomes a true full-range speaker with “take-no-prisoners”-grade low bass (you are now cleared to play the Saint-Saëns *Organ* Symphony or the Mahler *Symphony of a Thousand* whenever the urge arises). The subwoofer amp also makes it easy to beef up the Reference<sup>3</sup>’s bass output to handle blockbuster low-frequency effects in home-theater applications.

What of caveats or compatibility issues? I can think of only a few minor ones. First, plan on using your Gallos with amplifiers that offer a fair amount of power—I suggest 50Wpc at a minimum, and preferably more than that. Second, note that while the Reference<sup>3</sup> can be driven well by affordable electronics, top-shelf amplification may be needed to draw out the speaker’s almost magical three-dimensionality. Third, be aware that the 35"-tall Gallos produce images whose height is lower and overall scale is smaller (and thus may seem somewhat less realistic) than that of images produced by large dipole speakers (e.g., Magnepans). Finally, note that with Gallo’s subwoofer amplifier in play, you *may* in some instances hear slight shifts in timbre from the mid-40Hz region on downward. These shifts could be due to the large woofer excursions incurred with use of the sub amp, or they could be the result of voicing differences between the sub and main amps, but in any event they are subtle, sounding like a barely perceptible thickening of the sound in the bottom octave and a half.

Gallo’s A\$5900/pair Reference<sup>3</sup>’s are rewriting the book on value in high-end loudspeakers, making accessible a level of performance that might previously have been far beyond reach for most of us. For an additional A\$1900, Gallo’s subwoofer amplifier takes this speaker to the next level, showing us how satisfying it is to have bass response that extends about as low as our hearing can go. Performance this good has never been so affordable, which is why one audio industry veteran who heard the speakers in my home commented (Mr. Gallo, would you kindly plug your ears for a few moments?) that the Reference<sup>3</sup> was significantly *underpriced* for the level of excellence it offered. I couldn’t agree more, which is why I believe the Nucleus Reference<sup>3</sup> is a speaker many readers need to hear, and soon. 

## Design Innovations

**Rigid, low-diffraction metal enclosures:** The Reference<sup>3</sup> enclosure is based on a hollow, die-cast metal pylon into which are set a cylindrical woofer enclosure, two spherical midrange driver enclosures, and a piezo tweeter (mounted between the midrange drivers). Tooling for the enclosure cost Gallo a fortune, but the result is a rigid, acoustically inert enclosure that adds virtually no panel resonance. The spherical midrange enclosures, a design element pioneered in earlier Gallo models, have absolutely no sharp edges or protruding mounting hardware to cause diffraction (tension rods concealed inside the spheres hold the drivers in place).

**Patented damping materials:** In 1998, Gallo quietly patented a unique, shredded polyethylene film damping material called "S2," which effectively changes the volumetric efficiency of the air sealed inside Gallo's speaker enclosures. Layman's translation: S2 helps small enclosures behave as if they contained larger volumes of air than they actually do (which is how Gallo gets great bass response from such small enclosures). The general damping properties of S2 are said to be excellent.

**Kynar piezoelectric tweeter:** The Reference<sup>3</sup> tweeter is made of thin sheets of a piezoelectric material called Kynar; as current flows back and forth through the material, it expands and contracts. Gallo forms small rectangular Kynar sheets into a semi-cylindrically-shaped tweeter whose performance approximates that of a pulsating cylinder. The tweeter offers fast transient response, 300 degrees of horizontal dispersion, and output extending far into the ultrasonic range. Because the Kynar sheets are also capacitors (i.e., acting as roughly 6dB/octave high-pass filters), the tweeter serves as its own crossover, rolling itself in at around 3kHz (the same frequency at which the midrange drivers roll off). With no crossover to muddy the sound, the midrange-to-tweeter transition sounds virtually seamless.

**Dual voice-coil woofer:** By design, the Reference<sup>3</sup> dual-voice-coil woofer can be driven through one voice coil (powered by a full-range amp) or through both voice coils in unison (where the master amp powers one coil, while the supplemental subwoofer amp—working in phase with the master amp—powers the other). With both amplifiers and voice coils in play, the result is a woofer that transforms itself into its own "powered subwoofer." **CM**

#### **Specifications**

*Nucleus Reference<sup>3</sup>*

**Driver complement:** 10" woofer, two 4" carbon-fiber midrange drivers, Kynar piezoelectric tweeter

**Frequency response:** 34Hz–50kHz, ±3dB

**Sensitivity:** 88dB/2.83V/1M

**Impedance:** 8 ohms nominal

**Recommended amplifier power:** Up to 350 watts, continuous

**Dimensions:** 8" x 35" x 15"

**Weight:** 47 lbs. each

*Reference<sup>3</sup> Stereo Subwoofer Amplifier*

**Power:** 240 Watts per channel @ 4 ohms

**Controls:** Stereo/mono switch, power-up-mode switch, crossover frequency control, L/R phase control (0-180 degrees), L/R level controls, low bass EQ control (-3-to-+6dB)

**Dimensions:** 19" x 4.25" x 16"

**Weight:** 36 lbs.

#### **Distributor Information**

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**Price:** A\$5900/pair, Nucleus Reference<sup>3</sup>