

## GoldenEar Aon 2 Speaker System

**PRICE:** \$3,000 **AT A GLANCE:** Broad dispersion • Good power handling • Powerful subwoofer

# Speakers Without Boundaries

**A** review is more interesting when it tells a story. How should the story of the GoldenEar Aon 2 begin? There's the technology angle: The Aon 2 is among the few speakers on the market with an unusual pleated tweeter design that uses a squeezing motion (as opposed to a piston motion) to generate the changes in air pressure that we hear as sound waves. Because the benefits—wide horizontal dispersion and vivid imaging—are easy to describe, that would be a good way to begin. And then there's the human interest angle: GoldenEar is the third brand to be cofounded by Baltimore-based loudspeaker impresario Sandy Gross, whose genuine love for audio is balanced by his love for gourmet food, Expressionist canvases, and antique statuary. The only thing wrong with these angles is that reviewers hither and yon have used them so often in the past. That leaves the musical angle. Here I believe I have a variant that might qualify as an exclusive.

A new turntable purchase has fostered an obsession with filling gaps in my vinyl library. One of the first acquisitions to arrive in the mail was *Abbey Road*, the final album recorded by the Beatles. Heard through my reference system, the LP proved to be just what I'd prayed for. Despite some crackle, the music *communicated*, and smoothly enough to be played extra-loud. The vinyl met my standards for demo material and then some, so when the GoldenEars were set up just days later, I couldn't resist another listen. The result was an eye opener. Sweetheart, get me rewrite!

GoldenEar Aon 2 Speaker System  
**PERFORMANCE** ★★★★★  
**BUILD QUALITY** ★★★★★  
**VALUE** ★★★★★

### It's Not Just the Tweeter

The system under review mated five Aon 2 monitors with the new ForceField 5 subwoofer. The GoldenEar site recommends another configuration with a pair of either the Aon 2 or Aon 3 along with models from the Super-Cinema Series including the SuperSat3C center, SuperSat 3 surrounds, and ForceField 3 sub. The SuperSat 50C center also uses the same tweeter and is said to mate well with the Aons. Either of these might work better if the Aon 2's 12-inch height doesn't fit the center spot in your furniture or speaker setup. See our separate review of the SuperCinema models (*Home Theater*, November 2011 issue or at [HomeTheater.com](http://HomeTheater.com)).

Even at first glance, you can see the Aon 2 is different. Wrapped in fabric, it disdains the right angles that dominate speaker design, with its front face combining obtuse (greater than 90-degree) angles at top with acute (less than 90-degree) angles at bottom. Why does it take this truncated-pyramid form? Gross explains: "The pyramidal shape allows the area around the tweeter to be narrower (for better imaging) and also spreads out the diffraction effects of the cabinet over a broader range." (Control of diffraction emerged as a recurring theme.) Compared with a conventional parallel-walls enclosure, it also mitigates internal standing waves, which can muddy sound. The ForceField 5 subwoofer

adopts a similar shape for similar reasons.

GoldenEar refers to its tweeter as a High-Velocity Folded Ribbon tweeter; it measures a visible 1.5 by 1.75 inches, incorporates a diaphragm measuring 1.5 by 5.5 inches when unfolded, and is made for GoldenEar out of non-conductive pleated Kapton polyamide film with a bonded conductive trace to carry the audio signal. Technically speaking, a true ribbon transducer has a diaphragm that is itself conductive and carries the audio signal, while this tweeter would more accurately be described as a variation within the planar magnetic driver family. Either way, it's hard to argue with the



• The Aon 2 features stylish gloss black endcaps.

SPECS

SPEAKER:	AON 2
TYPE:	Monitor
TWEETER (SIZE IN INCHES, TYPE):	1.5 x 1.75, Kapton polyimide film, folded planar magnetic
WOOFER (SIZE IN INCHES, TYPE):	6, mineral-filled polypropylene
PASSIVE RADIATORS (SIZE IN INCHES, TYPE):	6.5, Medite, planar (2)
NOMINAL IMPEDANCE (OHMS):	8
RECOMMENDED AMP POWER (WATTS):	10-200
AVAILABLE FINISHES:	Black fabric with gloss end caps
DIMENSIONS (W X H X D, INCHES):	8 x 12 x 10
WEIGHT (POUNDS):	11
PRICE:	\$400/each

results. It has a unique faceplate forming an aperture that offers acoustic impedance matching

and control of directivity and diffraction. The tweeter is mounted 0.75 inches off center in the Aon 2, uniformly to the right (no mirror-imaged pairs). Gross says this is another means of reducing diffraction-related anomalies—“actually little ripples in the frequency response”—that are caused by the discontinuity of the baffle surface at the edges of the cabinet.

Lest you consider the Aon 2 a technological one-trick

pony, the tweeter is not its only noteworthy feature. In fact, it's the integration of the tweeter into other design features that enables this speaker to attain the balanced performance I witnessed in the ensuing demos. The Aon 2 also has a 6-inch mineral-filled polypropylene bass driver with a Multi-Vaned Phase Plug at the center of the cone. The plug's purpose is to control the riot of energy near the apex of the cone; its shape minimizes diffraction from the plug itself.

On each side is a 6.5-inch flat passive radiator, which GoldenEar correctly calls a Low Frequency Radiator. Made of

Medite—an especially dense wood and resin-based material similar to fiberboard—it gives the speaker an enviable degree of bass extension for its size with no messy port chuffing. It's remarkable to find this kind of design and construction in a speaker selling for just \$400/each. (In the larger Aon 3, \$500/each, the bass driver is 7 inches, and the Low Frequency Radiators are 8 inches.)

The ForceField 5 (\$1,000), with its 12-inch woofer, is the latest in a series that already includes the 10-inch ForceField 4 (\$700) and the 8-inch ForceField 3 (\$500). Much of this 46-pound brute's weight comes from its thick fiberboard enclosure: 1.5 inches at the front baffle, 1.25 inches at the rear baffle, and 0.75 inches at the sides. On the front is the active driver, its cone made of resin- and mineral-impregnated felted paper. On the bottom is a 13 x 14-inch Quadratic Planar Infrasonic Radiator (or rectangular flat passive radiator). In the sub, as in the speakers, it enhances bass extension while avoiding the unsubtle whistles and sputters of many ported sub designs. The internal amp, designed in house, is rated at 1,500 watts, actually splitting the difference between RMS (1,000) and peak (2,000) power claims.

Associated equipment included a Pioneer Elite VSX-53 A/V receiver, Oppo BDP-83SE universal disc player, Micro Seiki BL-51 turntable, Shure M97xE cartridge, and Onix OA 21s integrated amp serving as phono preamp.

**Grace and Power**

Few speakers in my experience have gotten through both movie and music demos with such unflinching grace and power as the Aon 2. It made available all the most desirable attributes of all the content I threw at it, missing nothing. While it was revealing enough to uncover flaws in content, it didn't emphasize them, and my comfort level remained high when movie soundtracks waxed bombastic. The



• Like the Aon 2, the ForceField 5's shape mitigates internal standing waves.

• The Aon 2's design results in wide horizontal dispersion and vivid imaging.

## HT Labs Measures

### GOLDENEAR AON 2 SPEAKER SYSTEM

Satellite Sensitivity:  
89 dB from 500 Hz to 2 kHz

This graph shows the quasi-anechoic (employing close-miking of all woofers) frequency response of the Aon 2 satellite (purple trace) and ForceField 5 subwoofer (blue trace). The passive loudspeaker was measured with grille at a distance of 1 meter with a 2.83-volt input.

The Aon 2's listening-window response (a five-point average of axial

and +/-15-degree horizontal and vertical responses) measures +2.00/-2.53 decibels from 200 hertz to 10 kilohertz. An average of axial and +/-15-degree horizontal responses measures +2.10/-2.43 decibels from 200 hertz to 10 kilohertz. The -3-dB point is at 57 Hz, and the -6-dB point is at 40 Hz. Impedance reaches a minimum of 4.21 ohms at 198 Hz and a phase angle of -55.94 degrees at 111 Hz.

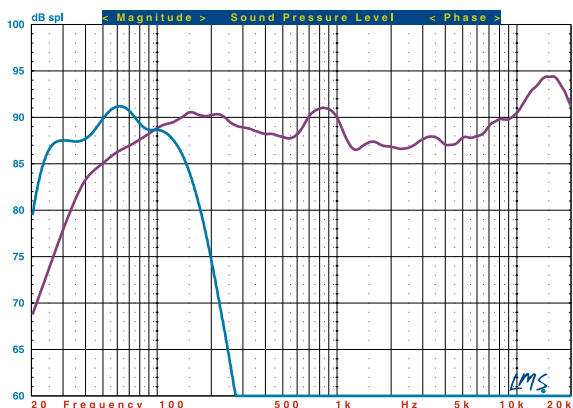
The ForceField 5's close-miked response, normalized to the level at 80 Hz, indicates that the lower -3-dB point is at 24 Hz and the -6-dB point is at 21 Hz. The upper -3-dB point is at 138 Hz with the Lowpass Crossover control set to maximum.

—MJP

Visit our Website for a detailed explanation of our testing regimen, plus a list of our reference gear.



### GOLDENEAR AON 2 SPEAKER SYSTEM



soundfield was large and—as one would expect with five matched speakers—continuous. Objects within it were clearly delineated but not excessively outlined or etched. Highs were extended and airy, midrange full of variety and detail, and—most surprising in a foot-tall speaker—bass was punchy. Overall, the speaker offered a degree of transparency that was highly unusual at this price point.

The ForceField 5's input gain was generous almost to a fault: I had to reduce the subwoofer level in my AVR's sound processor from the usual -4 decibels to -12 dB, the minimum allowed, and resorted to the sub's dial for further reductions. The 80-hertz crossover I use by default with monitor-class speakers was

probably higher than necessary for this combination of speaker and sub—if I were living with them, I'd probably use 60 Hz. This sub will likely serve a large room with headroom to spare. My only quibble is that listeners with less-than-cavernous rooms are going to want more adjustability at the lower end of the volume range.

*Seeking Justice* (Blu-ray Disc, Dolby TrueHD soundtrack) is a slightly above-average Nicolas Cage vehicle with our hero sucked into a vigilante murder conspiracy. Effects came fast and thick. Those above the sub crossover were detailed yet palatable: These speakers are dynamic performers. Bass effects below the sub crossover needed adjustment as described earlier—I



• The ForceField 5 has a 12-inch woofer.

GoldenEar ForceField 5 Subwoofer

**PERFORMANCE** ★★★★★  
**FEATURES** ★★★★★  
**BUILD QUALITY** ★★★★★  
**VALUE** ★★★★★

### SPECS GOLDENEAR

#### FORCEFIELD 5 SUBWOOFER

**ENCLOSURE TYPE:** Passive radiator  
**WOOFER (SIZE IN INCHES, TYPE):** 12, treated paper **PASSIVE RADIATOR (SIZE IN INCHES, TYPE):** 13 x 14, Medite, rectangular planar  
**RATED POWER (WATTS):** 1,000 RMS, 2,000 peak  
**CONNECTIONS:** Line-level LFE in, RCA; speaker-level in/out  
**CROSSOVER BYPASS:** LFE AVAILABLE  
**FINISHES:** Black matte vinyl  
**DIMENSIONS (W X H X D, INCHES):** 15 x 14.63 x 18  
**WEIGHT (POUNDS):** 46  
**PRICE:** \$1,000



intelligible, clothed in appropriate ambience, and without obvious coloration.

I didn't intend to use the first season of *Star Trek: The Next Generation* as demo material, but I had so much fun with it that I couldn't ignore it. The Aons bowed reverently before Patrick Stewart's Shakespearean enunciation and almost musical timbre even as they mocked the slightly canned quality of the

was dumbfounded by how much bass output the sub could muster. Vocals were commendably



• The Aon 2 uses an unusual pleated tweeter.



• The Aon 2 has a height of 12 inches.

mixed-for-TV string section. Remastered for Blu-ray in DTS-HD Master Audio, these 1987–88 TV episodes had more sonic good moments than bad. The Aons gave an honest account of their intermittent strengths and modest weaknesses but never allowed them to be less than entertaining.

With *Hobbits* hitting the big screen, the ultimate movie demo had to be *Lord of the Rings: The Fellowship of the Ring* (DVD, DTS). *Wow*, I thought, *where did this unaccustomed edginess come from?* My bad: I started playing the movie in Dolby Digital, and the Aons didn't hesitate to note the distinction. Switched to DTS, the soundtrack resumed its familiar splendor, and the Aons gave a definitive account of the voices, music, and effects. The movie, one of the few contemporary whiz-bang films I can watch endlessly, never sounded better. The ForceField 5 sub handled low-frequency barrages with floor-shaking confidence, though I continued to knock down the sub level.

**Music for 21st Century Listeners**

I've spent years searching for a definitive version of Steve Reich's

*Music for 18 Musicians*, an essential masterpiece of 20th century music. The original vinyl sounds superb, but flipping sides breaks the work's continuous one-hour spell. The SACD/CD release by the Grand Valley State University Music Ensemble (of Michigan) equals the LP's resolution and performance and needs no flipping. What the Aons made immediately apparent was the lengthened decay of the tuned percussion instruments (xylophone, vibraphone, marimba, and piano, most of them in multiples). This altered the rhythmic flow and tonal balance in ways that were subtle and pleasing, offering new insight into the work without disrupting its essential character. The SACD has the added attraction of a 5.1-channel mix, though it's used too conservatively, for ambience only, versus a full wraparound that would tease apart the strands of the music. Still, what the pleated tweeter and woofer/

radiator combo did for this harmonically and rhythmically complex fabric was rewarding.

Donald Fagen's *Sunken Condos*, a mere CD, gave the speakers and (by now fine-tuned) sub a chance to groove. With bass and drums, this system sounded way bigger than its physical size. Fagen's suave horn charts were a continual treat, and the speakers burnished them without concealing the production's airlessness.

And then there was *Abbey Road*. Compared with my reference speakers, the Paradigm Reference Studio 20 v.4, the GoldenEar Aon 2 lacked nothing in timbral reliability, imaging, or dynamics and had a distinct edge in dispersion. Bass response was so solid that I often ran a pair of Aon 2s without the sub. When I added the sub, Ringo's pounding on "Come Together" and tasteful drum solo on side two became even meatier, but not over-the-top boomy, disproportionate, or unsubtle. Each beat was a series of integrated events with a beginning (attack), middle (dominant bass pitch), and end (damping). The system could stand up to high-level blasting, never losing touch with the warmth, smoothness, and texture that made me seek out the British vinyl in the first place.

Subsequent off-hours vinyl meandering had the Aons navigating some Haydn string quartets as performed in gorgeous 1950s mono by the Vienna Konzerthaus Quartet. It struck me that these speakers were as

adept at low-level resolution in chamber music as they were with high-decibel rock 'n' roll. They were boundary-busters: sensible trade-offs, no excuses. They could literally play anything I threw at them.

Because of its converging narratives—the pedigree of its founders, the distinctive blend of its technologies, and the performance of the product—the GoldenEar Technology story is catnip for a writer, a fun subject to write about. But the almost Apple-like reality distortion field surrounding the brand also makes it a sticky wicket for the conscientious critic acting as a surrogate for the reader, which is the essence of my job. The Aon 2 and ForceField 5 were fun for me to write about; would they be equally fun for you to live with? I am confident that most listeners in the market for a fairly compact speaker and powerful sub will love them, and they might even turn heads among listeners who want a bigger speaker and bigger sub. Whatever you play, just play it loud, and you'll see what I mean. ☞

\* Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (quietriverpress.com).

**GoldenEar Technology**  
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• GoldenEar's woofer features a Multi-Vaned Phase Plug (MVPP).