

EQUIPMENT REPORT

PSB Alpha B1 LOUDSPEAKER

John Atkinson



DESCRIPTION Two-way, magnetically shielded, stand-mounted, reflex-loaded loudspeaker. Drive-units: 0.75" (18mm) ferrofluid-cooled, aluminum-dome tweeter; 5.25" (135mm) metalized polypropylene-cone woofer. Crossover frequency: 3kHz (3rd-order Butterworth). Frequency response: 65Hz–21kHz, ±3dB. Impedance: 6 ohms nominal, 4 ohms minimum. Sensitivity: 89dB/2.83V/m (anechoic). Recommended amplification: 15–80W, 60W program.

DIMENSIONS 11.75" (299mm) H by 7" (178mm) W by 9.5" (241mm) D. Cabinet volume: 8 liters (0.29 cubic foot). Weight: 8.8 lbs (4kg) each.

FINISHES Black Ash, Maple, Sienna.

SERIAL NUMBERS OF UNITS

REVIEWED 04240-605083 & '4.

PRICE \$279/pair. Approximate number of dealers: 300.

MANUFACTURER PSB Speakers International, 633 Granite Court, Pickering, Ontario L1W 3K1, Canada. Tel: (905) 831-6555. Web: www.psb-speakers.com.

When audiophiles speak of the "Golden Age" of audio components, they almost always are talking about amplifiers and preamplifiers, not loudspeakers. While a very few speaker models have stood the test of time—among them the BBC LS3/5a, the two Quad electrostatics, some of the Magnepans, and the Klipschorn—almost no one would disagree that, taken en masse, the speakers of today outperform not just those of the 1960s and 1970s but even those of the 1980s and 1990s. The advent of low-cost, computerized test equipment, high-quality, inexpensive measuring microphones, and persuasive research into what measured parameters matter most to listeners who are listening for a neutral-sounding, uncolored loudspeaker, ¹ has led to an almost across-the-board improvement in speaker sound quality. ²

But perhaps even more significant, and aided by the trend toward the offshore manufacture of low-cost speakers, the level of excellence that used to be the preserve of high-priced designs is now available for very much less money than it

¹ For example, the seminal series of technical papers produced by Floyd Toole with Sean Olive when they were at the NRC in Ottawa, Canada, and continued by them after they joined Harman International's research staff in the late 1990s. Their publications are voluminous; for references, surf the index of papers and preprints at www.aes.org. See also Jim Austin's "As We See It" on p.3.

² I have to say "almost," as there are still a small number of speaker designers who appear to believe that a limited-production "high-end" speaker is not under the same obligation to either sound neutral or measure well as one aimed at the wider market.

used to be. \$1000 buys the impecunious audiophile a pair of speakers that in some areas are almost beyond reproach. The \$800/pair NHT Classic Three, which Bob Reina reviewed for Stereophile last November (pp.101–107, www.stereophile.com/standloudspeakers/1106nht), and the \$650/pair Epos M5, which he reviewed in April 2005 (pp.157–163, www.stereophile.com/standloudspeakers/405epos), as well as the diminutive \$600/pair Era Design 4, which I reviewed in January (pp.141–147, www.stereophile.com/

[standloudspeakers/107era](http://www.stereophile.com/standloudspeakers/107era)), set a standard for performance in the midrange and treble that you need to spend very much more to better.

But what do you lose if you spend less?

That question leads me to the subject of this review, the latest version of Canadian manufacturer PSB's best-selling Alpha speaker, the Alpha B1, which costs just \$279/pair.

Alpha-betical

The original Alpha was a rather tawdry-looking two-way mini that had

a 6.5" woofer with a plastic-doped paper cone and cost just \$200/pair. But in his July 1992 review (www.stereophile.com/standloudspeakers/792psb), Jack English concluded that it was "simply one of the best buys in audio, providing a musically satisfying sound...a sensational audio bargain." The Alpha went on to become one of the most popular audiophile speakers ever, with over 50,000 pairs sold by the end of the last century. PSB's Paul Barton revised the Alpha in 1998, replacing its 0.5" plastic-dome tweeter with a more refined unit, upgrading the cross-

MEASUREMENTS

All the measurements were performed with the speaker's grille in place. Despite its small size, the PSB Alpha B1 had an estimated voltage sensitivity of 87dB(B)/2.83V/m, which is right on the average of the speakers I have measured over the years. Though its impedance drops to a minimum value of 3.7 ohms at 235Hz (fig.1), the PSB will be relatively easy to drive overall, which is important given the inexpensive amplification with which it will be required to operate much of the time.

The traces in the impedance graph are free from the small discontinuities that would indicate the presence of mechanical resonances of various kinds. Investigating the cabinet panels' vibrational behavior with an accelerometer did reveal a fairly strong mode present on all surfaces at 560Hz (fig.2), but this is too high in frequency to have much of an effect on sound quality. There is also some kind of resonant behavior apparent just below 200Hz, and I suspect it was this that led to the feeling of congestion at high levels.

The saddle centered on 57Hz in the impedance-magnitude plot (fig.1, solid trace) suggests that this is the tuning frequency of the rear-facing port. This was confirmed by the nearfield responses of the port (fig.3, red trace), which peaks between 40Hz and 80Hz, and of the woofer (fig.3, blue), which has the expected minimum-motion notch in

its output at 57Hz. The port's upper-frequency output is refreshingly free from any resonant peaks.

The sum of the woofer and port outputs (taking into account acoustic phase and the different distances from a nominal farfield microphone position) is shown as the black trace below 300Hz; even with the usual upper-bass boost from the nearfield measurement technique, the speaker's output is down 6dB at 60Hz. The Alpha is defi-

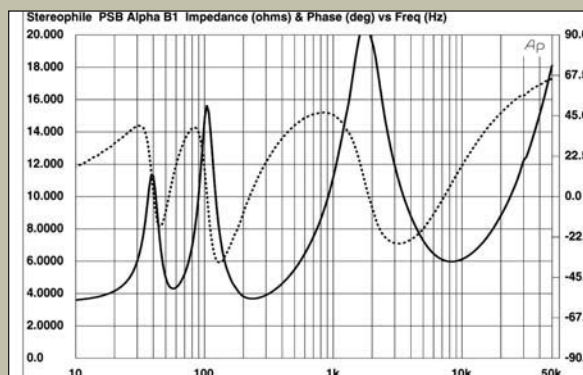


Fig.1 PSB Alpha B1, electrical impedance (solid) and phase (dashed). (2 ohms/vertical div.)

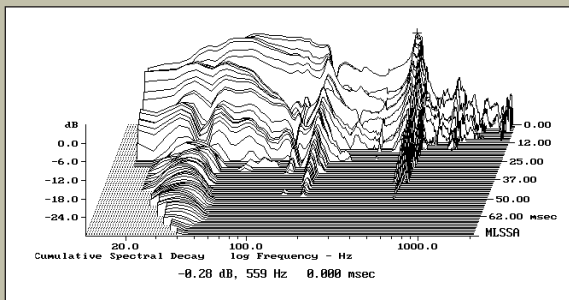


Fig.2 PSB Alpha B1, cumulative spectral-decay plot calculated from the output of an accelerometer fastened to the center of the cabinet's side panel (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

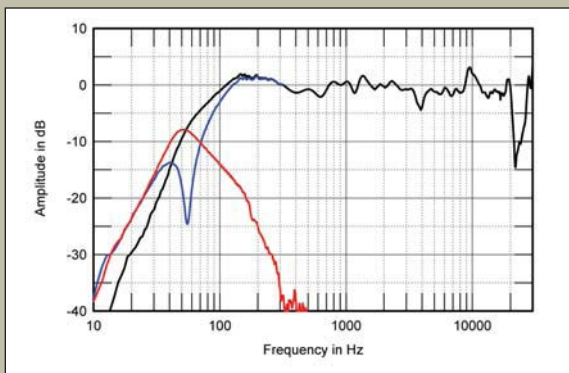


Fig.3 PSB Alpha B1, anechoic response with grille on tweeter axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with the nearfield responses of the port (red), woofer (blue), and their complex sum (black), plotted below 500Hz, 300Hz, and 300Hz, respectively.

over and terminals, magnetically shielding both drive-units for use in home-theater systems, and renaming it the Alpha A/V. The A/V cost \$249/pair, and I enthusiastically reviewed it in April 2000 (www.stereophile.com/standloudspeakers/241).

The next revision was the Alpha B, which kept the \$249/pair price but upgraded the woofer to a 5 1/4" polypropylene-cone unit very similar to that used in PSB's more expensive Image line. The tweeter was also upgraded, to an aluminum-dome unit recessed within a short flare and protected by a plastic "phase plate." In his May 2002 review (www.stereophile.com/standloudspeakers/580), Bob Reina wrote that the PSB Alpha B was a classic example of the benefits of technology trickled down from a serious high-end speaker design. "Considering again the quality of construction and sound of these remarkable little

boxes and checking the price yet again," he wrote, "I'm still shaking my head [at the fact that] this speaker doesn't cost \$250 apiece but \$250 per pair."

The Alpha B1

The latest version of the Alpha, the B1, has suffered a price rise, to \$279/pair, but this is actually lower in real terms than the original Alpha's \$200/pair price in 1992 dollars. Like the B, the B1 has molded plastic front and rear baffles, each with internal ribs to add rigidity, connected by an MDF "sleeve." It combines a 5 1/4", injection-molded, polypropylene-cone woofer with a ferrofluid-cooled, aluminum-dome tweeter. The latter is now a 3/4" unit rather than a 1", for better top-octave dispersion, and the woofer cone has an attractive metalized finish. Both units are bolted to the baffle with wood screws and rabbeted into the front baffle. This, of course, is easy to arrange when the baffle is mold-

ed plastic rather than the necessary recesses having to be routed into a wooden baffle. The cabinet volume has been increased by, I believe, 10% compared with the Alpha B, and there is now a faint front-to-back convex "bow" to the top and bottom panels. (Small stick-on pads add stability when the speaker is placed on a stand.) The rear-facing port at the top of the rear panel has a gently radiused exit at both ends, to reduce turbulence and wind noise.

The crossover is specified as lying at 3kHz, with third-order slopes. The six-element crossover—two air-cored inductors, one ferrite-cored inductor, one resistor, and two electrolytic capacitors—is mounted on a small board attached to the inside of the rear panel just above the inset five-way binding posts. The cabinet—it must be a vinyl finish at this price, but it sure looks like veneer—is not internally braced, but there is a filling of acrylic fiber. In a

measurements, continued

nately a small speaker; however, the clean, well-damped nature of its bass alignment will allow it to be used relatively close to room boundaries, to get some low-frequency reinforcement.

Higher in frequency in fig.3, the Alpha B1's response on its tweeter axis in the midrange and treble is superbly flat and even. Yes, there are very slight peaks between 1 and 2kHz and at 10kHz—the latter probably due to the effect of the grille—and there is a narrow suckout at the crossover frequency, but overall, this kind of performance would be commendable in an expensive speaker, let alone one that costs just \$279/pair.

I did find the PSB's presentation to be occasionally a touch bright, and this is not explained by the trace in fig.3. However, the speaker's horizontal radiation pattern (fig.4) does show a slight off-axis flare at the base of the tweeter's passband that might well have contributed to my feeling. The speaker's 3/4" tweeter maintains its top-octave out-

put to the sides to a greater degree than would a 1" unit.

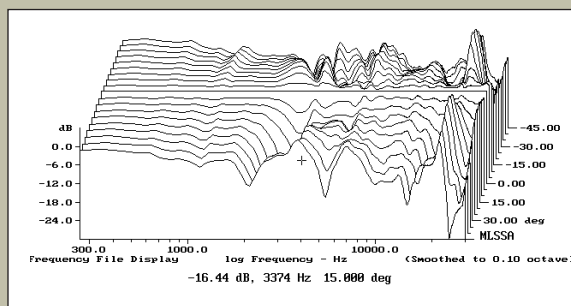


Fig.5 PSB Alpha B1, vertical response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 45–5° above axis, reference response, differences in response 5–45° below axis.

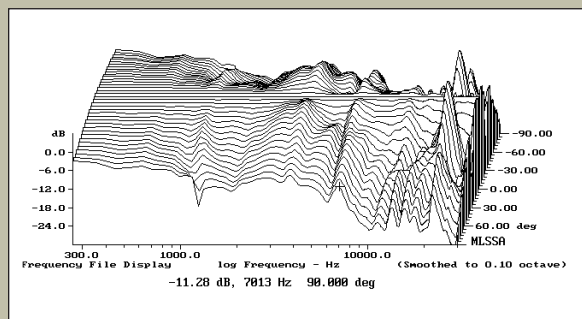


Fig.4 PSB Alpha B1, lateral response family at 50°, normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

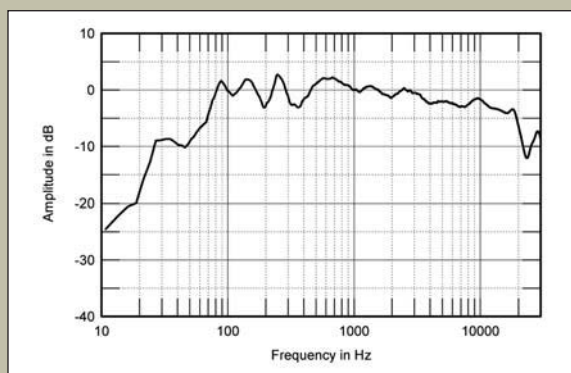


Fig.6 PSB Alpha B1, spatially averaged, 1/6-octave response in JA's listening room.

departure from earlier Alphas, the B1's grille, a fine metal-mesh type with a thin layer of gauze on its inner surface, is removable, revealing some attractive-looking dimpling of the front baffle around the tweeter. Once it is removed, however, the grille is tricky to wrestle back into place.

Sound quality

I did all my auditioning with the Alpha B1's grilles in place, the sound getting a little too bright otherwise. The speakers sat on 24" Celestion SL stands, the central pillars of which were filled with dry sand and lead shot. In addition to the synthetic rubber pads front and back, I further damped the interface between the cabinet's base and the stand's top panel with thin strips of Blu-Tack. The stands put my ears level with the tweeters, and pink noise sounded smooth on that axis. When I stood up, however, the speaker's bal-

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ance sounded a bit hollow. The B1s ended up in positions that had worked for the Harbeth and Stirling minimonitors that I wrote about last month, but tucked somewhat closer to the side-walls to get a little more boundary reinforcement at low frequencies.

Nevertheless, the Alpha is still a small speaker with a small woofer, and you can't expect thunderous bass from it. But it gave a usefully high output down to the 63Hz $\frac{1}{3}$ -octave band on my Editor's Choice CD (Stereophile STPH016-2), and there was still some audible output, aided by a room mode, in the 32Hz band. The organ pedals in the finale of Elgar's Enigma Variations, with George Hurst conducting the Bournemouth Symphony Orchestra (Naxos 8.553564), were still faintly audible, and the speakers made a brave attempt at reproducing the rolled bass drum at the very end of the work. Similarly, the combination of bass-trombone pedal

In the vertical plane (fig.5), a deep suckout centered on 3.4kHz develops more than 5° above or 10° below the tweeter axis, suggesting that sufficiently high stands be used to place the Alpha B1's tweeters level with the listener's ears.

Fig.6 shows the Alpha B1's in-room response, plotted with $\frac{1}{6}$ -octave resolution and averaged across a rectangular grid centered on the position of my ears. The small peaks and dips in the lower midrange are room effects that have not been completely eliminated by the spatial averaging. But other than that, the Alpha B1's in-room response smoothly and gently slopes down from the middle of the midrange to the top of the audioband in an almost perfect depiction of how a speaker needs to behave. *Almost*, because there is slight hint of there being too much energy in the presence region, which would give the speaker a slightly bright presentation, though this

would also bring a benefit: recorded detail would be accentuated. The low frequencies extend in-room to the 80Hz band at almost full level, but roll off below that region. My room, unfortunately, does not give small speakers much in the way of boundary reinforcement.

In the time domain, the Alpha's step response (fig.7) indicates that both of the speaker's drive-units are connected in positive acoustic polarity, with the short, sharp step of the tweeter smoothly handing over to that of the woofer. The PSB's cumulative spectral-decay plot (fig.8) is perhaps the only graph that indicates any compromises due to the speaker's low price, in that the decay of the impulse is marred by some low-level resonant modes throughout the treble.

Overall, however, this is superb measured performance for such an affordable speaker, and demonstrates that some excellent engineering has gone into its design.

—John Atkinson

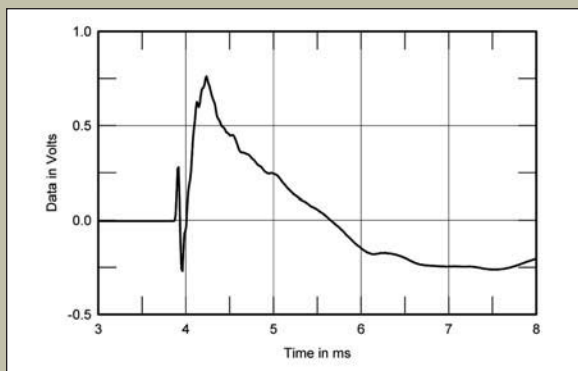


Fig.7 PSB Alpha B1, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

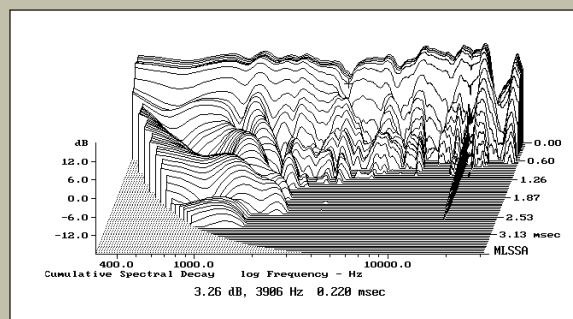


Fig.8 PSB Alpha B1, cumulative spectral-decay plot at 50" (0.15ms risetime).

tones and bass-drum punctuations in Elgar's In the South overture on the same CD was reproduced with bravado, as long as I kept a wary eye on the Ayre K-5xe preamp's volume control.

Perhaps more important, while I had thought that the low frequencies of earlier Alphas were a bit lacking when it came to clearly defined leading edges, even when hung on the end of the mighty Mark Levinson No.33H monoblocks, the B1's bass was very clean and clear, other than at very high volumes.

I recorded Attention Screen, Bob Reina's jazz fusion group, live at Manhattan's Merkin Hall in February, and used the Alpha B1s as monitors while I prepared rough mixes of the eight improvisations for the musicians to listen to. I had used an AKG D112 mike for Mark Flynn's kick drum, which tends to accentuate the boom of the drum's sound when placed close to the front skin. Even so, with the 24-bit, 88.2kHz-sampled files played back from DVD over the PSBs, the kick drum sounded well defined while the speaker's lack of low-bass extension didn't detract from the body of the tone, which is rich in upper-bass content. Similarly, the sound of Chris Jones' fretless Fender Jazz bass guitar, which I had recorded direct as well as with a distant pair of mikes, had a satisfying combination of "pat" and "purr."

There was a degree of blur, a lack of clarity, at the lower boundary of the midrange, revealed by listening to the half-step-spaced tonebursts on Editor's Choice (track 19). In general, these bursts "spoke" very cleanly—with some aberrant speakers, you hear a descending series of "wolf tones" overlaying the ascending tonebursts—but there was some cabinet liveliness apparent between 130Hz and 200Hz, as well as at an octave above middle C.

At the other end of the spectrum, even though there appeared to be plenty of high-frequency energy, such instruments as triangle and cymbals having the appropriate degree of sparkle, the Alpha's top end sounded slightly softened overall compared, for example, with the Stirling LS3/5a V2. As a result, the top end of such chromium-plated recordings as the JVC XRCD²⁴ reissue of Britten's The Young Person's Guide to the Orchestra, with the composer conducting the English Chamber Orchestra in 1963 in London's Kingsway Hall (JVC 93692 0226-2), actually sounded sweet. This was not unpleasant, but neither was it strictly

accurate. Paradoxically, however, there was also a slight emphasis of recorded sibilance and an occasional touch of

energy in the top two octaves, but more a feeling that a faint veil was obscuring musical detail.

WHEN HUNG ON THE END OF THE MIGHTY MARK LEVINSON NO.33H MONOBLOCKS, THE B1'S BASS WAS VERY CLEAN AND CLEAR, OTHER THAN AT VERY HIGH VOLUMES.

brightness evident in the mid-treble.

Perhaps the only clue to the engineering compromises mandated by the Alpha B1's very affordable price—other than limited loudness capability and low-frequency extension and power handling, of course—was the rather veiled quality of its high frequencies. This wasn't due to a lack of

The midrange was where the Alpha B1 excelled. The tone colors of all the individual instruments on the Britten recording were reproduced accurately, and naturally recorded piano—for example, Robert Silverman performing Beethoven's Diabelli Variations (CD, Stereophile STPH017-2)—sounded very natural, other than for a reduction in the scale of the instrument, of course.

And singers sounded simply superb. A recent recommendation from Musical Fidelity's Antony Michaelson was Gundula Janowitz singing Richard Strauss's Four Last Songs with the Berlin Philharmonic under Karajan (CD, Deutsche Grammophon 447 422-2). Some think that Elisabeth Schwarzkopf, with the RSO-Berlin under George Szell (CD, EMI CDC 7 47276 2), is unbeatable in this work, but through the PSBs, Janowitz's smaller but silkier tones floated free of the dark-toned, gloriously rich orchestral accompaniment—again provided I didn't play the music too loud, when the presentation rapidly became congested in the lower mids. The 1965 EMI sound, however, is considerably more spacious, with a wider, deeper soundstage than DG's engineers managed almost a decade later, something that, again, the PSBs laid bare. And why couldn't the DG team have resisted the temptation to make the solo violin in the third song as big as the voice?

The stereo imaging produced by the Alpha B1s was stable, with reasonably good soundstage depth. But lateral precision was not in the same class as the Harbeths' or Stirlings', individual images being broader. And on the Gundula Janowitz CD, her voice was presented above the plane of the speakers, generally a sign that some upper-midrange response anomaly is being misinterpreted by the ear/brain as height information.

I think the thing that most surprised

ASSOCIATED EQUIPMENT

DIGITAL SOURCES Classé cdp-202 DVD/CD player, Ayre C-5xe universal player; Mark Levinson No.30.6, Benchmark DAC 1 D/A processors; Slim Devices Squeezebox WiFi music player with Apple Mac mini running OSX for media storage.

PREAMPLIFIERS Mark Levinson No.326S, Audio Research Reference 3, Ayre K-5xe.

POWER AMPLIFIERS Mark Levinson No.33H monoblocks, Halcro dm38.

LOUDSPEAKERS Stirling LS3/5a V2, Harbeth HL-P3ES-2, Rogers LS3/5a.

CABLES Digital: Kimber Illuminations Orchid AES/EBU, AudioQuest OptiLink-5 S/PDIF. Interconnect (balanced): AudioQuest Cheetah, Madrigal CZ Gel-1, Ayre Signature Series, Crystalconnect. Speaker: AudioQuest Kilimanjaro. AC: PS Audio Lab, Shunyata Research Anaconda Helix Alpha, manufacturers' own.

ACCESSORIES Target TT-5 equipment racks; Ayre Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; PS Audio Power Plant 300 at 90Hz (disc players only), Audio Power Industries 116 Mk.II & PE-1, APC S-15 AC line conditioners (not power amps). AC power comes from two dedicated 20A circuits, each just 6' from the breaker box, a Mark Levinson No.33H plugged into each.

—John Atkinson

me about the Alpha B1 is how much orchestral music I ended up playing while the speakers were in my system. I have long been a believer in the idea that the loudspeaker you choose dictates what music you listen to. Whether consciously or subconsciously, you choose recordings that benefit from a speaker's strengths and don't shine too much of a light on its shortcomings. As I write these words, I am working my way through Kurt Sanderling's 1972 traversal of the four Brahms symphonies with the Dresden Staatskapelle (CD, BMG Classics 69220-2), which has been a favorite of mine since I bought it on LP in the late 1970s, again on the recommendation of Antony Michaelson. Via the unassuming Alphas, all of Brahms' characteristic touches were readily apparent: the "big" tunes, such as in the Beethovenian fourth movement of Symphony 1 and the first movement of Symphony 2; the hushed mystery of the slow movements; the sweet mix of pathos and Viennese sugar of the scherzos in Symphonies 1-3; the bombastic scherzo of Symphony 4; the declarative opening of Symphony 3. It's as if Richard Wagner had never been born!

But if you are a classical-music lover with a small room and an equally small budget, a pair of PSB's Alpha B1s is just what you need.

Summing up

It might seem craziness to use a \$279/pair of speakers in a system costing more than 200 times as much. In my defense, I flick through my well-thumbed copy of J. Gordon Holt's Really Reliable Rules for Rookie Reviewers to p.634, where it states: "The reviewer shall not change more than one variable at a time in his system." By using the Alpha B1s in a context where everything else was intimately familiar, I would be able to unambiguously describe what I heard the speakers doing. But more significant, the little PSB didn't disgrace itself in such exalted company, doing (within its dynamic limits) much of what I need from a speaker at any price.

I very much enjoyed my time with this unassuming but attractive-looking little speaker. Considering its price, the PSB Alpha B1 is quite extraordinary in its way. Even if not in the market for a cheap mini, audiophiles should buy them for their Bose-owning friends and family, to give those unfortunates more than a taste of what a true high-end loudspeaker is capable of. ■