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Players

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Tonearms
Phono Cartridges
FM Tuners

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Powerline
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Think Pieces
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JBL Studio L880 loudspeaker

By Robert J. Reina • September, 2006

When I reviewed JBL's S38 loudspeaker for the June 2001 issue of *Stereophile* (Vol.24 No.6), I was impressed with the performance of this large, inexpensive (\$599/pair) bookshelf speaker. When I received a press announcement at the end of 2005 announcing JBL's new affordable speakers, the Studio L series, which incorporates innovations developed for JBL's recording-studio monitors, I began a discussion with JBL's public-relations firm. They promised many significant design innovations and sonic improvements over the S series.



The Studio L series includes three bookshelf models (two can be mounted on a wall), two floorstanding towers, two center-channel models, and a powered subwoofer. The line ranges in price from \$650 to \$1598/pair. When I asked for the Studio L model that JBL thought would provide the greatest bang for the buck, they chose the floorstanding Studio L880 (\$1400/pair), one notch below the top of the line.

Design

The Studio L880 is a four-way floorstanding array featuring a tweeter, midrange, and two woofers with a single front-loaded port, unusual in that it incorporates a supertweeter. This provides extended frequency response to 40kHz. Its ¾" driver element, which operates in conjunction with a specially designed horn with a 60° by 30° coverage pattern, uses a voice-coil mounted directly to a Mylar diaphragm. The 1" tweeter's dome is formed from a single rigid sheet of titanium with a highly flexible surround, and is housed in an Elliptical Oblate Spheroidal (EOS) waveguide designed to deliver the same response off axis as on. The EOS waveguide is made of aluminum to provide a more rigid surface for wave

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The woofer and midrange cones are made of PolyPlas, a proprietary JBL material made of polymer-coated cellulose fibers, and use voice-coils constructed of oversize Kapton formers for increased efficiency and power handling. The driver frames are cast from aluminum. The woofers employ JBL's proprietary Symmetrical Field Geometry (SFG) circuit, which lowers woofer distortion by maintaining a symmetrical magnetic field. The MDF cabinets are thicker and claimed to be less resonant than previous affordable JBL designs. The L880 is biwireable and magnetically shielded, and is available in black ash, cherry, or beech finishes.

The L880 can be fitted with sharp spikes or soft, nubby feet. Although the spikes are designed for carpets and the feet for wooden floors, I wanted to make sure this speaker was properly anchored, particularly as JBL claims for it bass response down into the bottom octave. So I fitted the L880s with the spikes and the spikes atop quarters, to protect my wooden floor (footnote 1).

I tried the L880s with their grilles on and off. Removing the grilles added a slightly unnatural high-frequency emphasis that detracted from the speaker's overall coherence; I left them on.

Listening

If a speaker has a great midrange, that's what grabs me on first listen, and that was the case with the JBL 880. Jamie Saft's blistering grand-piano pyrotechnics on his *Astaroth* (CD, Tzadik TZ 7348), which features arrangements for jazz trio of John Zorn's *Masada, Book Two*, sounded much as this trio did when I saw them in concert earlier this year. The L880 was able to reproduce Saft's lightning-fast transients—reminiscent of a Conlon Nancarrow piano roll, actually—as I'd heard them live, and the speaker's rich lower midrange was sufficiently revealing to tell me that he was playing a particularly good Steinway grand. The dynamic range was astounding for a \$1400/pair speaker: from *ppp* to *fff* on all well-recorded musical excerpts, the speaker sounded linear, organic, and without compression.

Charles Lloyd's tenor sax on his *Jumping the Creek* (CD, ECM 1911) was vibrant and burnished, with a pleasantly forward midrange presence. Geri Allen's piano on this disc was as natural as Saft's, but I felt I'd heard more detail from this recording through other speakers. My similar reaction to the vibes solo on the Jerome Harris Quintet's cover of Duke Ellington's "The Mooche," from *Editor's Choice* (CD, Stereophile STPH016-2), led me to believe that the L880 may not be the last word in inner midrange detail. Not that it detracted from the naturalness of the midrange—in fact, the *blat* and spittiness of the trombone solo on that track sounded as realistic as I've heard it on an affordable speaker. All vocal recordings shone through the JBL. My notes from a listening session with the a cappella "Our Prayer," from *Brian Wilson's SMILE* (CD, Nonesuch 79846-2), read: "silky, sumptuous, holographic splendor."

The one coloration I noticed, on every recording I played through the L880s, was a slight lower midrange emphasis, though this seemed evenly distributed over a broad frequency band and never sounded hooty, resonant, or uneven. It was very easy to follow the pitches in the rapid double-bass passages of David Chesky's Violin Concerto, from *Area 31* (CD layer, Chesky SACD282).

Further down in frequency, however, was where the L880 really strutted its stuff. This is the first affordable speaker I've auditioned that, subjectively at least, did not sacrifice definition or neutrality in reproducing convincing bottom-octave bass. All of the organ-pedal notes in John Rutter's *Requiem* (CD, Reference RR57-CD) were exactly equal in volume. More often than not when listening to this recording, I hear a slight fade as the organist approaches the bottom of the instrument's range—not this time. In fact, the JBL L880 reproduced the 32Hz C in John Atkinson's *chromatic-scale test* on *Editor's Choice* with no reduction in emphasis—a first in my experience of reviewing affordable speakers.

As expected, the combination of the L880's bass definition, dynamics, and transient capabilities turned Kraftwerk's "The Man Machine," from *Minimum/Maximum* (CD, EMI ASW 60611), into a sonic blockbuster. All synthesizers and electronic percussion were reproduced with lightning-fast transients without edge, and dramatically plunging bass.

Footnote 1: A speaker designer showed me this trick several years ago. When I replaced with quarters some fancy, expensive audiophile "coasters" designed to embrace spikes on wooden floors, I experienced tighter dynamics and less colored bass. The only problem is, my aggressive cleaning lady tends to move the speakers off the quarters, which she then places on my equipment stand. I end up with holes in my floor anyway.

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Subwoofers

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Integrated
Amps/Receivers
Phono Preamps

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Players/Transports
Hi-Res Disc
Players/Transports
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Computer Audio
Media Servers/MP3
Players

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Tonearms
Phono Cartridges
FM Tuners

Accessories

Cables
Phono Accessories
Powerline
Accessories
Room Acoustics
Treatments
Stands/Racks
Headphones &
Accessories
Miscellaneous

Columns

As We See It
Listening / Art
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The Fifth Element /
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Features

Special Features
Reference
Interviews
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Music/Recordings

Blogs

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Latest News

Audio News
Past eNewsletters

Budget Components

JBL Studio L880 loudspeaker:

Page 2

The L880 was a great rock speaker, and not just because it could blast and slam with great abandon—which it could—but also because its reproductions of the timbres of electric and electronic instruments were as convincing as I've heard from an affordable speaker. On Mighty Sam McClain's *Give It Up to Love* (CD, JVC JVCXR 0012-2), I was fixating on Bruce Katz's stunning Hammond B-3 tonewheel sound, following each growly dynamic nuance executed by his hands, feet, and by manipulation of the drawbars.

If you want to crank this baby, it will party. I make it a point never to listen to Courtney Love at less than 100dB, and on Hole's *Celebrity Skin* (CD, Geffen DGCD-25631), the coherent rhythms had me twitching across the room. On this track, the L880s' slightly warm midbass gave the tune a greater sense of drive.

The L880's highs were natural and extended, but not as resolving or as delicate as those of other speakers I've heard. I'm not saying there was a coloration or a harshness—all high frequencies were quite natural—but that other speakers seem to reveal more information in this area. Nevertheless, Don Fiorino's SG Standard guitar on the Tertiary Trio's *Title Goes Here* (CD, Rent Control RCRCD009) had a sparkly presence, particularly in the upper register, but never sounded too etched or muddy. The solo-violin passages in Chesky's *Violin Concerto* were extended and delicate if not completely refined.

On balance, I think I enjoyed the JBL L880 even more as a classical-music speaker. It was capable of throwing a wide, deep soundstage with well-recorded works and, although I felt the speaker didn't resolve a tremendous amount of inner detail in the midrange and low frequencies, it was able to retrieve an uncanny amount of ambience and hall sound from classical recordings. This may seem a bit of a paradox, but I enjoyed it anyway. Antal Dorati and the London Symphony's recording of Stravinsky's *The Firebird* (CD, Mercury Living Presence/Classic SR 90226), George Crumb's *Quest* (CD, Bridge 9069), and the Chesky concerto brought me a sense of involvement with the music that was more than I normally expect from a speaker at this price.

I had listened to many of the recordings mentioned when I reviewed the JBL S38 back in 2001, and my recollections of how they sounded through that speaker lead me to conclude that the L880 is, overall, a more neutral and delicate reproducer of music.

Comparisons

I compared the JBL L880 (\$1400/pair) to the [Nola Mini](#) (\$650/pair), the [Amphion Helium²](#) (\$1000/pair), and the [Monitor Silver RS6](#) (\$1000/pair).

The Nola Mini had a similarly gorgeous and silky midrange, with more inner detail, and highs that were more delicate and extended. The Mini's low-level dynamic resolution was superior to the JBL's, but the JBL's high-level dynamics and bass extension were better.

The Amphion Helium² had even more midrange detail and low-level dynamic resolution, as well as more delicate highs, but its bass extension



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was significantly inferior to the JBL's.

The Monitor Silver RS6 had more natural midbass than the JBL, and its deep bass was excellent, if not quite as extended as the JBL's. The Silver RS6's highs were more sophisticated and extended than the L880's, with superior detail, and its high-level dynamics were on a par with the JBL's.

The Goodbye

The end of my time with the L880 was difficult. Although I've reviewed many affordable speakers I've fallen in love with, I was very reluctant to send the L880s back to JBL. I'd fallen in love with the L880 as a home-theater speaker.

With every film or TV show I heard through the JBLs, I achieved levels of enjoyment and involvement I'd never before felt with an affordable speaker. First, the L880's midrange made dialog and soundtracks quite captivating. Its bass extension and dynamic capabilities added a sense of drama that was intoxicating and, at times, shocking. Several times I tried to nap on the couch while my kids watched *The Chronicles of Narnia: The Lion, the Witch, and the Wardrobe*, but was awakened by blasts from the soundtrack. And, let's face it, do you *really* want the most revealing high-frequency speaker in a home-theater setup? Just listen to a few of those Pokémon DVDs (note to the childless: mediocre music with exaggerated highs poorly recorded) and you'll appreciate the benefits of a speaker such as the JBL L880 for home theater.

I am a devotee of two-channel home-theater sound. First, I believe that if you have a speaker with good horizontal dispersion (such as the L880), you don't need a center channel. Second, if you have a speaker capable of realistic bottom-octave bass reproduction (such as the L880), who needs a subwoofer? Finally, if you watch as many independent films as my wife and I do, you may find you don't need the rear channel, as many such films contain little or no information in those channels. (It's likely that some of the smaller models in JBL's Studio L series may be good choices for rear-channel duties in a system based on the L880s.)

Conclusions

JBL's Studio L880 is a superb performer with many strengths and few limitations. In the areas of low-bass extension and high-level dynamic realism, it may set new benchmarks for its price. (To achieve this level of realism, of course, it's essential that the associated equipment be capable of the same level of dynamic swing and low-bass definition.) In any event, the JBL L880 is an extraordinary value as a reproducer of a broad range of music big and small, and an absolutely dynamite home-theater speaker. Congratulations to the JBL design team for having brought a speaker of this quality to the masses.

Article Continues: [Specifications](#) »

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Page 1

▶ Page 2

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 - Computer Audio
 - Media Servers/MP3
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 - Turntables
 - Tonearms
 - Phono Cartridges
 - FM Tuners

- Accessories
 - Cables
 - Phono Accessories
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 - Treatments
 - Stands/Racks
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JBL Studio L880 loudspeaker:
Specifications

Sidebar 1: Specifications

Description: Four-way, five-driver, reflex-loaded, floorstanding loudspeaker. Drive-units: ¾" (19mm) Mylar supertweeter in Bi-Radial horn; 1" (25mm) pure-titanium dome in EOS waveguide; 4" (100mm) PolyPlas-cone midrange unit with rubber surround, HeatScape motor structure; two 6" (150mm) PolyPlas-cone woofers with rubber surrounds, HeatScape motor structures. Crossover frequencies: 700Hz, 5kHz, 20kHz. Frequency response: 30Hz–40kHz, ±3dB. Sensitivity: 91dB (2.83V/m). Nominal impedance: 8 ohms. Maximum recommended amplification: 200W. Power handling: 100W continuous, 400W peak.

Dimensions: 39" (991mm) H by 8¾" (222mm) W by 14¾" (370mm) D, including feet. Weight: 54 lbs (24.5kg).

Finishes: black ash, cherry, beech.

Serial Numbers Of Units Reviewed: HAO245-01771/4.

Price: \$1400/pair. Approximate number of dealers: 200.

Manufacturer: JBL Consumer Products, 250 Crossways Park Drive, Woodbury, NY 11797. Tel: (516) 255-4525. Fax (516) 682-3523. Web: www.jbl.com.

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- Page 1
- Page 2
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Treatments
Stands/Racks
Headphones &
Accessories
Miscellaneous

Columns

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Records 2 Die 4
Music/Recordings

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JBL Studio L880 loudspeaker:
Associated Equipment

Sidebar 2: Associated Equipment

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Digital Sources: Lector CDP-7T, California Audio Labs Icon Mk.II Power Boss, Creek CD53 Mk.II CD players; Pioneer DV-333 DVD player.

Preamplification: Vendetta Research SCP-2D phono stage, Audio Valve Ekliptis line stage.

Power Amplifier: Audio Research VT100 Mk.II.

Integrated Amplifier: Creek 5350SE.

Loudspeakers: Amphion Helium², Monitor Silver RS6, Nola Mini.

Cables: Interconnect: MIT MI-350 CVTwin Terminator, MIT MI-330SG, MIT Terminator. Speaker: Acarian Systems Black Orpheus.

Accessories: Various by ASC, Bright Star, Celestion, Echo Busters, Salamander Designs, Simply Physics, Sound Anchor, VPI.—**Robert J. Reina**

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Page 1

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 - Tonearms
 - Phono Cartridges
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 - Cables
 - Phono Accessories
 - Powerline
 - Room Acoustics
 - Treatments
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 - Reference
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- Music
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 - Stephen Mejias
 - Robert Baird
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- Latest News
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 - Past eNewsletters

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JBL Studio L880 loudspeaker:
Measurements

Sidebar 3: Measurements

My estimate of the JBL Studio L880's voltage sensitivity was 90.5dB (B)/2.83V/m, which is within experimental error of the specified 91dB. This places it in the small group of speakers with sensitivities significantly greater than the average. Its impedance, however, drops to 3.82 ohms at 170Hz (fig.1), which, in combination with a moderately high electrical phase angle of -51° at 84Hz, where the magnitude is a still-quite-low 5.1 ohms, means that an amplifier or receiver rated at 4 ohms will work best with this speaker.

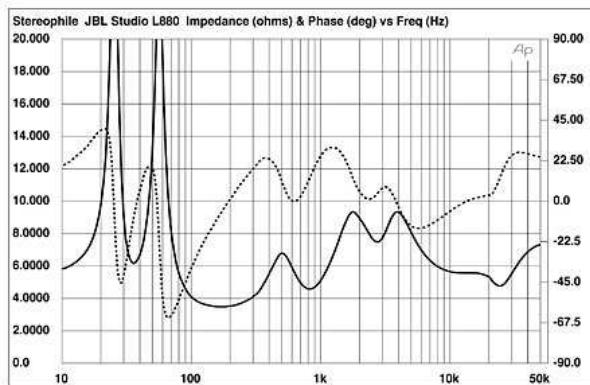


Fig.1 JBL Studio L880, electrical impedance (solid) and phase (dashed). (2 ohms/vertical div.)

The traces in the impedance graph are free from the small discontinuities that would indicate the presence of cabinet vibrational resonances. When I was moving the speaker around, however, I couldn't help noticing that the large, unbraced cabinet was very lively, and an accelerometer fastened to the various cabinet surfaces revealed some major high-Q resonances. Fig.2, for example, a waterfall plot calculated from the accelerator's output when fastened to the center of the sidewall 12" from the top, reveals a very-high-level mode at 285Hz, and two others almost as strong, at 320Hz and 350Hz. I could hear these modes adding a hollow coloration on pink noise; I must assume they contributed to Bob Reina's criticisms of the speaker's emphasis in the lower midrange.

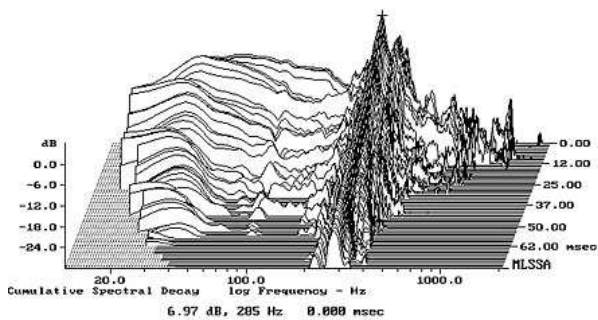


Fig.2 JBL Studio L880, cumulative spectral-decay plot calculated from the output of an accelerometer fastened to the cabinet's side panel level with

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the midrange unit (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

Turning to the L880's acoustic performance, fig.3 is a composite showing the farfield responses of the tweeter-midrange and woofer sections, taken without the grille, spliced to the nearfield response of the midrange unit, of the port, and the sum of the nearfield woofer outputs. The impedance graph indicated that the big, front-panel-mounted port is tuned to a low 35Hz, with a broad peak between 25Hz and 50Hz in fig.3 defining its output. The port response is also commendably free from high-frequency spurious. The minimum-motion point of the summed woofer outputs in this graph lies at 35Hz, the port tuning frequency, but the individual outputs of the woofers (not shown) lie slightly to the sides of this frequency. The woofers cross over to the midrange unit just above 500Hz, with symmetrical, ultimately fourth-order rolloff slopes. Though one treble peak can be seen in the woofers' output, this is a long way down in level.

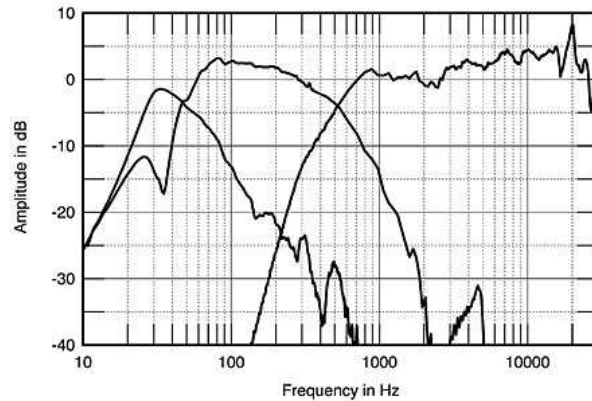


Fig.3 JBL Studio L880, acoustic crossover on supertweeter axis at 50", corrected for microphone response, with the nearfield responses of the port, woofers, and midrange unit plotted below 700Hz, 350Hz, and 500Hz, respectively.

The midrange unit's response is flat in its passband, but the output of the two tweeters looks shelved-up by a couple of dB in fig.3, which was taken on the supertweeter axis. This can also be seen in fig.4, which shows the L880's farfield response averaged across a 30° horizontal window on the supertweeter axis, spliced at 300Hz to the complex sum of the nearfield responses. The response, however, is flat through the midrange and treble, and the apparent rise in the mid- and upper bass is actually due to the nearfield measurement technique. In actuality, the JBL L880 is maximally flat down to 40Hz or so, with then the expected 24dB/octave rolloff below the port tuning frequency—a textbook reflex alignment. In-room, the usual low-frequency room gain will give a response that is flat down to 32Hz or so, as Bob found in his auditioning.

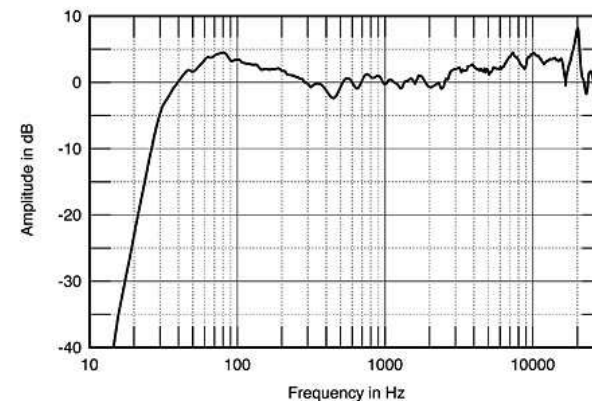


Fig.4 JBL Studio L880, anechoic response on supertweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the complex sum of the nearfield responses plotted below 300Hz.

The L880's treble will never be heard as reticent, but Bob Reina was not bothered by an excess of top-octave information. The reason, I believe, is that the JBL's lateral dispersion is quite narrow in this region (fig.5), which will work in-room against the on-axis excess. Below 7kHz, the speaker's horizontal radiation pattern can be seen to be wide and even. In the vertical plane (fig.6), the L880 maintains the evenness of its output for 10° above and below the 37.5"-high supertweeter axis. Only when the listener's ears are well below that axis does a suckout begin to

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develop in the crossover region between the midrange unit and tweeter.

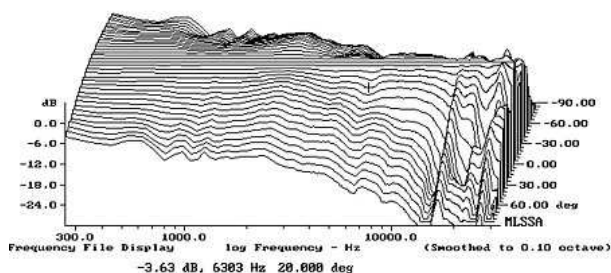


Fig.5 JBL Studio L880, lateral response family at 50", normalized to response on supertweeter axis, from back to front: differences in response 90-5° off axis, reference response, differences in response 5-90° off axis.

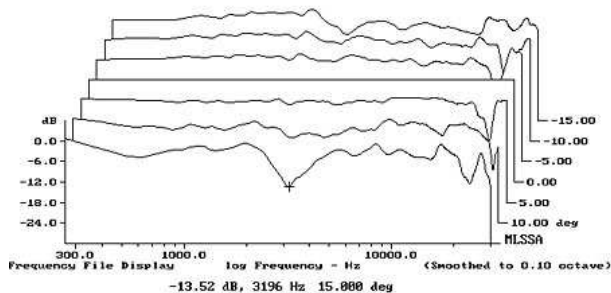


Fig.6 JBL Studio L880, vertical response family at 50", normalized to response on supertweeter axis, from back to front: differences in response 15-5° above axis, reference response, differences in response 5-15° below axis.

In the time domain, the JBL's step response (fig.7) is complex. However, inspection of the individual drive-unit steps (not shown) indicates that all five units are connected with positive acoustic polarity and that, the supertweeter aside, the output of each smoothly integrates in time with that of the next lower in frequency, correlating with the excellent frequency-domain integration noted in fig.4. The supertweeter's horn loading means that it is set back slightly, delaying its output. I suspect that its step response is the small peak rising above the midrange unit's step just past the 4ms mark in this graph. Finally, the L880's cumulative spectral-decay plot (fig.8) is superbly clean throughout the upper midrange and treble.

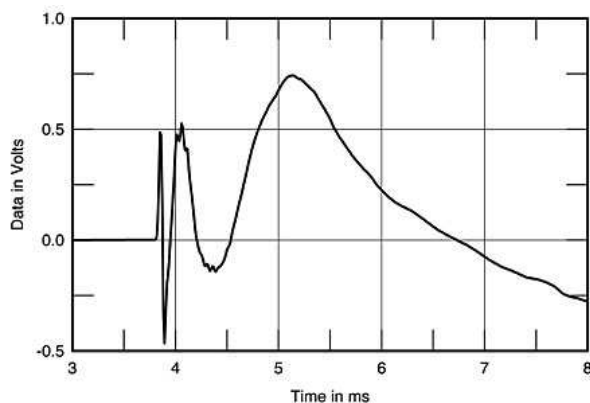


Fig.7 JBL Studio L880, step response on supertweeter axis at 50" (5ms time window, 30kHz bandwidth).

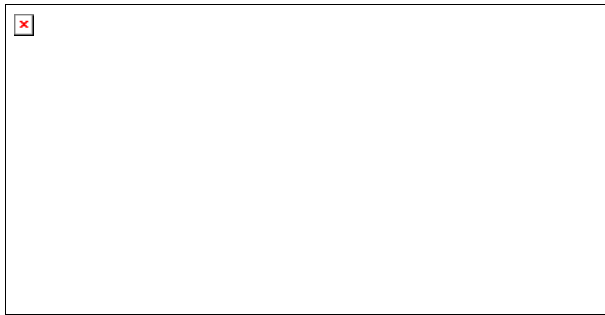


Fig.8 JBL Studio L880, cumulative spectral-decay plot at 50" (0.15ms risetime).

Like the similarly priced Revel F12, which Kal Rubinson [reviewed in July](#), JBL's Studio L880 is evidence of some sophisticated loudspeaker engineering being performed at Harman International, the parent company of both brands, as well as Infinity.—**John Atkinson**

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- Page 2
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