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JOHN ATKINSON

Luxman M-10X

POWER AMPLIFIER

As I started to write this review, the news broke that Sound United, the owner of Boston Acoustics, Bowers & Wilkins, Classé, Definitive Technology, Denon, Marantz, and Polk, was going to be purchased by a corporation that makes medical instruments. Such consolidation is not new. China- and UK-based International Audio Group (IAG) was one of the first organizations to acquire iconic audio brands. IAG owns Audiolab, Castle, Quad, Leak, Mission, and Wharfedale. In 2009, they purchased Luxman.

My most recent listening session with a Luxman amplifier was at the end of 2010. I had been auditioning the Japanese company's 80th-anniversary B-1000F solid state monoblocks driving Vivid G1 Giya speakers in the late Wes Phillips's system. I drove the amplifiers to my place to be measured.[1] Listening to some of my hi-rez live piano recordings, I was blown away by the sheer force the massive monoblocks endowed the instrument's left-hand register with. The midrange and high frequencies sounded unforced and natural.

When Luxman America's PR rep suggested that I review Luxman's new flagship solid state stereo power amplifier, the M-10X, I initially declined because the only speakers I had to hand were KEF LS50 and GoldenEar BRX standmounts. While both of these have uncolored midrange and treble regions and offer superbly stable, accurate stereo imaging, neither delivers low frequencies extending much below 50Hz in my room. Luxman was not concerned about the lack of low bass, however, and I took on the review.[2]

1 Wes's review, the last he wrote for *Stereophile*, was published in the February 2011 issue. See stereophile.com/content/luxman-b-1000f-monoblock-power-amplifier.

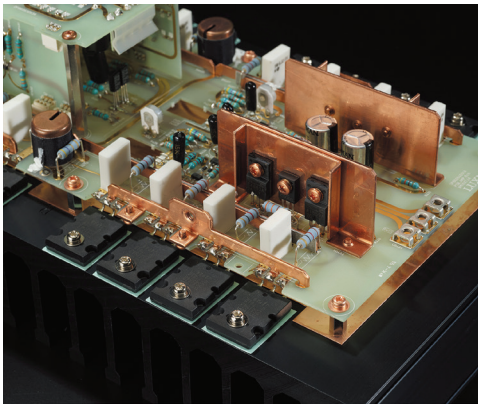
2 I did use Roon's DSP to apply a 3dB boost below 80Hz with both the GoldenEar and KEF speakers for this review. After I have submitted this review to Editor Jim Austin, I will be unpacking a pair of full-range floorstanding loudspeakers and using the M-10X to drive them. If I have more thoughts on the Luxman's low-frequency performance with these speakers, I will report them in a follow-up.

SPECIFICATIONS

Description Solid state, class-AB power amplifier (output stage biased into class-A operation up to 12W). Inputs: 1 pair single-ended (RCA), 1 pair balanced (XLR). Outputs: 2 pair binding posts. Power output: 150Wpc into 8 ohms (21.76dBW), 300W into 4 ohms (21.76dBW), 600W into 8 ohms (27.8dBW) as bridged monoblock (BTL). Instantaneous maximum output power: 1200W into 1 ohm (21.76dBW), 2400W into 2 ohms (21.76dBW), BTL. Frequency response: 20Hz–20kHz, +0/–0.1dB; 1Hz–130kHz, +0/–3dB. Voltage gain: 29dB. Input sensitivity (for 150W into 8 ohms): 1.24V. Input impedance: 51k ohms (unbalanced, "Line"), 28k ohms (balanced). Damping factor: 600 according to EIAJ Current Injection Method. THD: <0.003%, 1kHz at 150W into 8 ohms, <0.04%, 20Hz–20kHz. Signal/noise: 117dB, IHF A-weighted. Power consumption: 540W (max), 250W (no signal), 1W, standby.
Dimensions 17.3" (440mm) W × 8.8" (224mm) H × 19.1" (485mm) D. Weight: 106.5lb (48.4kg).
Finish Silver.
Serial number of unit reviewed M10800029 "Sample."
Price $19,995. Approximate number of dealers: 75. Warranty: three years parts and labor.

Manufacturer
Luxman Corporation, 1-3-1 Shin-yokohama, Kouhoku-ku, Yokohama-shi, Kanagawa 222-0033, Japan.
Tel: (81) (0)45-470-6980.
Web: luxman.co.jp.
US distributor:
Luxman America Inc.,
27 Kent St., Unit 122,
Ballston Spa, NY 12020.
Tel: (518) 261-6464.
Email: Sales01@luxmanamerica.com. Web: luxmanamerica.com.

The M-10X power amplifier



Priced at $19,995, the M-10X has a luxurious appearance and looks broadly similar to the Luxman L-509X integrated amplifier that Ken Micallef reviewed in May 2018.[3] However, at 106.5lb, it is almost twice as heavy. The beveled front panel features two large, illuminated analog power meters. These are offset to the right, so when the amplifier is used in bridged-mono mode, the active meter will be the one in the center. The Operation button (standby/power) is on the bottom left of the front panel, with a small button to its right selecting between Line (single-ended) and Balanced Line inputs. A second small button turns off the meters' illumination. Two rows of mesh-covered openings run from front to back at the sides of the polished aluminum chassis' top panel, acting as vents for the internal heatsinks.

The rear panel is dominated by two pairs of heavy-duty, five-way binding posts for the speaker outputs. Pairs of single-ended and balanced inputs, on RCA and XLR jacks, respectively, occupy the space in between. The 15A IEC AC power jack is below the inputs; the small pushbutton beside it serves as the main power switch. The AC jack doesn't have a ground connection, but there is a grounding post that can be used in case of hum—although even with no chassis ground, the amplifier was very quiet in my system. One slide switch selects stereo or bridged-mono operation; another allows the balanced input's polarity to be inverted. (I determined in my measurements that the balanced inputs inverted polarity with this switch set to Normal.)

Power inside

The M-10X is specified as delivering continuous power up to 150Wpc into 8 ohms and 300Wpc into 4 ohms (both equivalent to 21.76dBW), the first 12W in class-A. As a bridged monoblock, the Luxman will deliver 600W into 8 ohms (27.8dBW). The maximum instantaneous power is said to be 1.2kWpc into 1 ohm in stereo mode, 2.4kW into 2 ohms in bridged-mono mode.

Each channel's output stage uses eight complementary pairs of Darlington-connected transistors. The power supply features low-loss Kyocera Schottky rectifier diodes, a low-loss EI-type power transformer with flat copper windings, and 80,000µF of filter capacitance. Current is delivered to each channel's output transistors with a thick copper bus bar; another bus bar connects the devices' push-pull output to the speaker binding posts via a high-quality relay. This relay has four switch elements connected in parallel to reduce contact resistance. The power supply rails for the driver

3 See stereophile.com/content/luxman-l-509x-integrated-amplifier.

MEASUREMENTS

I tested the Luxman M-10X with my Audio Precision SYS2722 system.[1] I preconditioned the amplifier by following the CEA's recommendation of operating it at one-eighth the specified power into 8 ohms for 30 minutes. At the end of that time, the grilles over the internal heatsinks were hot, at 120.6°F (49.3°C), though the top panel was just warm at 90.9°F (32.8°C). Operating the amplifier for another 30 minutes at one-third the specified power, a level that results in the maximum heat dissipation in the output devices, increased the temperatures only slightly. The M-10X has sufficient heatsink capacity for its rated power.

The Luxman's voltage gain is specified as 29dB, presumably into 8 ohms, which was confirmed by my measurements. The amplifier preserved absolute polarity (ie, was noninverting) with the unbalanced input and the rear-panel Phase Inversion switch set to Normal. However, the M-10X inverted polarity with the balanced input with the Normal setting of the switch, which implies that the XLR jacks are wired with pin 3 positive rather than pin 2, the opposite of the AES convention. (As I wrote in the main text, the phase can be inverted with a back-panel switch.)

The balanced input impedance was usefully high, at 54k ohms at 20Hz and 1kHz, dropping to 26k ohms at 20kHz. The lower-frequency impedances are almost twice the specified 28k ohms, which suggests that the latter refers to the impedance of each signal phase. The unbalanced input impedance was 46k ohms at low and middle frequencies, rising to the specified 51k ohms at the top of the audioband.

1 See stereophile.com/asweseeit/108awsi/index.html.

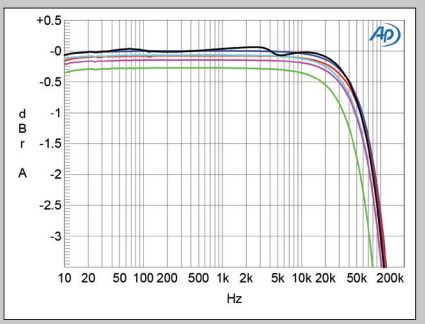


Fig.1 Luxman M-10X, frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), 2 ohms (green) (0.5dB/vertical div.).

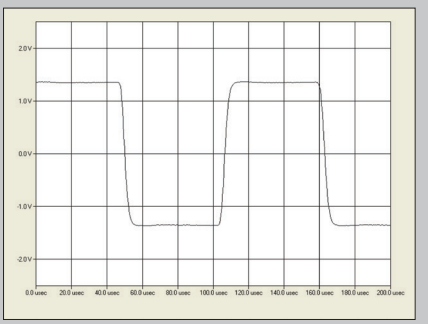


Fig.2 Luxman M-10X, small-signal 10kHz squarewave into 8 ohms.

stage use high-performance regulator chips and selected Zener diodes, the latter manufactured by Vishay in the United States. The 0.1mm-thick traces on the printed circuit boards are gold-plated.

The older L-509X's output stage featured a version of Luxman's Only Distortion Negative Feedback (ODNF) system. First utilized in 1999, ODNF is said to apply negative feedback only to the distortion products detected at the speaker outputs, thus minimizing the problematic aspects of negative feedback. (Used indiscriminately, negative feedback reduces the level of the subjectively innocuous second and third harmonics but increases the levels of the sonically harmful high-order harmonics.[4])

According to the new M-10X's design brief, the M-10X uses the Luxman Integrated Feedback Engine System (LIFES1.0) rather than ODNF. LIFES1.0 was developed using circuit simulation software to experiment with alternate layouts and individual circuit components before the design team committed to an actual hardware circuit. This was then optimized with extensive listening tests. It is implemented with a dual FET (field effect transistor) with an "unusually high transconductance" in the primary stage. This device is used to detect the distortion generated by the output stage. LIFES1.0 is claimed to provide the sound quality of a nonfeedback design.

4 See stereophile.com/content/future-without-feedback-letters and stereophile.com/news/10065/index.html.

measurements, continued

The Luxman's output impedance was a very low 0.06 ohm at 20Hz and 1kHz, increasing slightly to 0.09 ohm at 20kHz. (These impedances include the series impedance of 6' of spaced-pair loudspeaker cable.) The modulation of the amplifier's frequency response due to the Ohm's law interaction between this source impedance and the impedance of our standard simulated loudspeaker[2] was negligible, at ±0.1dB (fig.1, gray trace). The response into an 8 ohm resistive load (fig.1, blue and red traces) was down by 3dB just above 100kHz and flat to 20kHz, which correlates with the M-10X's superb reproduction of a 10kHz squarewave (fig.2). Commendably, there was no overshoot or ringing in the squarewave response.

Channel separation was close to 90dB in both directions below 2kHz, dropping insignificantly to 80dB at the top of the audioband. Measured with the unbalanced inputs shorted to ground, the amplifier's unweighted, wideband signal/noise ratio was an excellent 83dB ref. 1W into 8 ohms (average of both channels). This ratio improved to 93.8dB when the measurement was A-weighted and to 115.6dB when referenced to the amplifier's specified maximum power. This is very close to the specification of 117dB(A). Spuriae at the 60Hz power-supply frequency and its harmonics were present in the Luxman's noisefloor (fig.3) but were negligible at close to –100dB ref. 1W into 8 ohms.

In stereo mode—I didn't look at the amplifier's behavior in bridged-mono mode—the Luxman M-10X is specified as being able to deliver 150Wpc into 8 ohms and 300W into 4 ohms (both powers equivalent to 21.76dBW). With both channels driven and using our definition of clipping, which is when the output's

2 See stereophile.com/content/real-life-measurements-page-2.

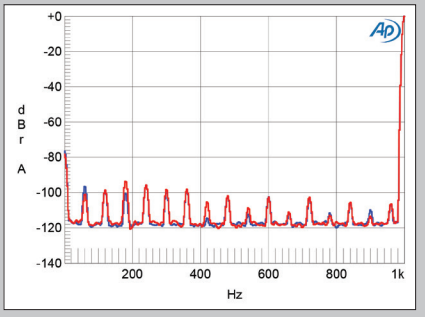


Fig.3 Luxman M-10X, spectrum of 1kHz sinewave, DC–1kHz, at 1Wpc into 8 ohms (left channel blue, right red, linear frequency scale).

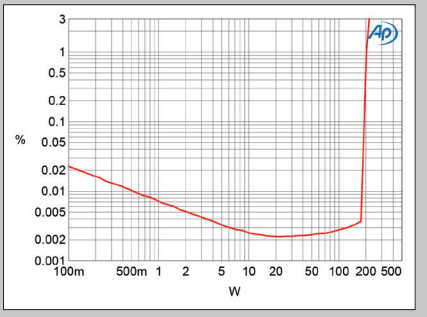


Fig.4 Luxman M-10X, distortion (%) vs 1kHz continuous output power into 8 ohms.

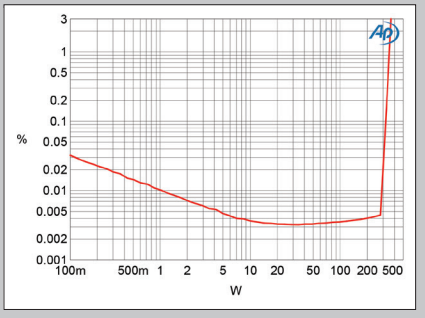


Fig.5 Luxman M-10X, distortion (%) vs 1kHz continuous output power into 4 ohms.

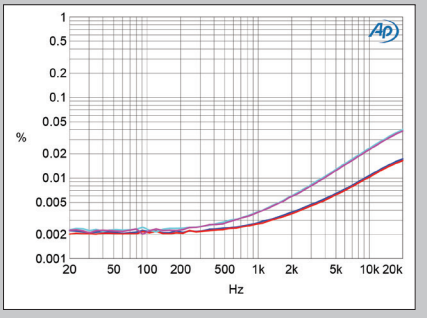
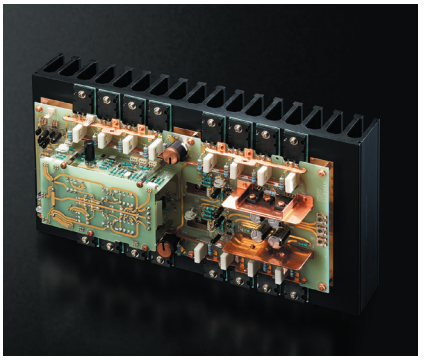


Fig.6 Luxman M-10X, THD+N (%) vs frequency at 20V into: 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta).

To deal with signal-related temperature fluctuations, the M-10X employs what Luxman calls "a new configuration of high-precision fixed resistance components in the current mirror constant current circuit."



Power in listening

To make it easier to swap in and out of my system, I placed the M-10X and the Parasound monoblocks with which I was going to compare it on wheeled dollies. As usual when I review an amplifier or digital product, I didn't do any critical listening for a couple of weeks after installing the M-10X in my system, just using it for my daily dose of music. This process ensures that the product is fully broken in and allows me to acclimatize to its presentation.

The source was my Roon Nucleus+ server sending data over my network to the MBL N31 D/A processor, which was connected to the Luxman with AudioQuest Wild Blue balanced interconnects. I controlled volume with the Roon app.

As I used the M-10X during those first two weeks, I found it difficult to discern an identifiable character that the amplifier was imposing on the music. With all types of music, the midrange was clean, uncolored, and detailed. The highs were also clean, with no emphasis or sibilance on the sound of cymbals. Low frequencies were articulate, and—I have to return to this word—clean. With the small speakers I was using, I wasn't particularly aware that I was missing much of the low bass.

With the M-10X providing power, my attention kept being attracted to the music.

Brian Bromberg's double bass on "The Saga of Harrison Crabfeathers," from *Wood* (16/44.1 FLAC, Tidal/A440 Music Group), for example, sounded both articulate and muscular with the Luxman, as did Christian McBride's lighter-toned instrument on his

measurements, continued

percentage of THD+noise reaches 1%, the Luxman exceeded its specified powers, clipping with a 1kHz signal at 202W into 8 ohms (23.05dBW, fig.4) and at 350W into 4 ohms (22.43dBW, fig.5). At 1W into 8 ohms, the front-panel meters indicated "–25dB" ref. 0dB, and at 50W into 8 ohms they indicated "–9dB."

The shape of the traces in figs.4 and 5 suggests that the measured THD+N percentage below 20W is dominated by noise. I therefore examined how the percentage of THD+noise changed with frequency at 20V, which is equivalent to 50W into 8 ohms and 100W into 4 ohms. The THD+N was very low in the bass and midrange into 8 and 4 ohms (fig.6) then rising at higher frequencies, more so into 4 ohms (cyan and magenta traces) than into 8 ohms (blue and red traces). Nevertheless, the THD+N only reached the specified 0.04% with 20kHz at 100W into 4 ohms.

The Luxman's distortion was predominantly the subjectively innocuous second harmonic (fig.7), with the third harmonic a little lower in level (fig.8). This spectrum was taken with the amplifier driving 50Wpc into 8 ohms; the second harmonic in the left channel lay at a low –103dB (0.0007%). With a 1kHz signal at 100Wpc into 4 ohms, it rose to a still very low –90dB (0.003%, fig.9). When the amplifier drove an equal mix of 19 and 20kHz tones at 100W into 8 ohms (fig.10), the second-order difference product at 1kHz lay at a very low –100dB (0.001%), with higher-order intermodulation products close to the same level. At the same voltage into 4 ohms, these distortion products only rose slightly in level.

The Luxman M-10X offers superb measured performance.—**John Atkinson**

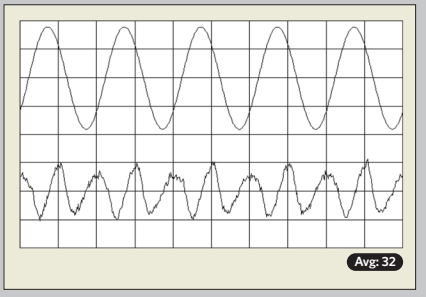


Fig.7 Luxman M-10X, 1kHz waveform at 50W into 8 ohms, 0.002% THD+N (top); distortion and noise waveform with fundamental notched out (bottom, not to scale).

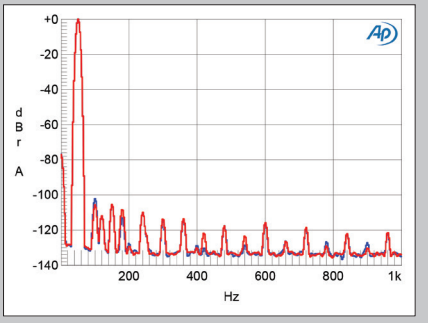


Fig.8 Luxman M-10X, spectrum of 50Hz sinewave, DC–1kHz, at 50Wpc into 8 ohms (linear frequency scale).

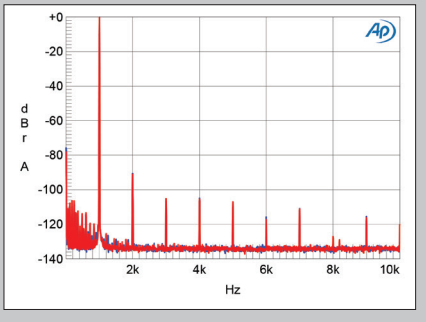


Fig.9 Luxman M-10X, spectrum of 1kHz sinewave, DC–10kHz, at 100Wpc into 4 ohms (linear frequency scale).

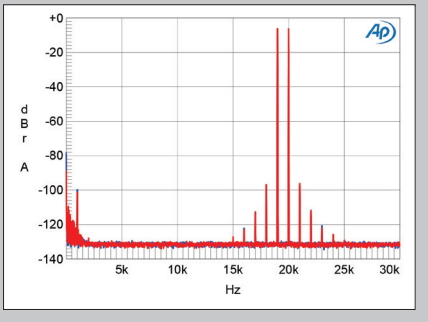


Fig.10 Luxman M-10X, HF intermodulation spectrum, DC–24kHz, 19+20kHz at 50Wpc peak into 8 ohms (linear frequency scale).

duet with Sting on "Consider Me Gone," from *Conversations with Christian* (24/96 FLAC, Qobuz/Mack Avenue). Sting's vocal sounded particularly palpable.

When I am not listening critically, when I am writing or catching up on my reading, I let Roon's Radio function be my DJ, and in the early evening I stream *Night Tracks* on the BBC's Radio 3 internet station. With the M-10X providing power, my attention kept being attracted to the music.

While listening to the latter one evening, with the Luxman driving the GoldenEar speakers, I had to get up from in front of my desk, where I had been answering emails, to sit in the listening chair. The recording being played was an extraordinary piece constructed entirely from overdubbed voices. The BBC Radio 3 website told me it was "Balloon Tree" from Ben See's album *blink blink* (BandCamp), and even with Radio 3's 128kbps stream, the Luxman's presentation was compelling. I immediately searched for a higher-resolution version and found it in 16/44.1 FLAC on Tidal. The overlaid intakes of breath at the start of the song sounded palpable, and the layered descant lines were presented way behind the close-miked lead voices.

Roon Radio followed "Balloon Tree" with "Murmuration" from Max Richter's *Voices (Pt.1 & 2)* (24/48 MQA, Tidal/Decca Classics), performed by chamber choir Tenebrae. A woman intones a list of the rights to be expected by all people, her voice underpinned and surrounded by a slow-moving chord sequence that mixes string instruments and synthesizer. The Luxman's presentation was so compelling and so richly detailed that I sat and listened to the entire 103-minute album.

Compared with the Parasound Halo JC 1+

In his review, Wes Phillips compared the B-1000Fs with the original version of Parasound's Halo JC 1 monoblocks. It is perhaps not coincidental that until the arrival of the Luxman M-10X, I had been using the current version, the Halo JC 1+, which I reviewed in May 2020,[5] and which costs $16,990/pair.

For the first comparison, I cued up the 24/192 needle drop of Joe Walsh's "Rocky Mountain Way" I had made from a 12" 45rpm single (ABC ABE 12002). Even with the KEF standmounts, replacing the Luxman with the Parasounds endowed the lows with extra weight while equaling the Japanese amplifier's clean midrange and highs. Considering that I was comparing this stereo amplifier with a pair of much more powerful monoblocks, that is perhaps to be expected (though I did note that the M-10X's 80,000µF of supply capacitance is almost twice the Halos' combined 44,800µF.)

My final comparison was with the GoldenEar speakers, using the chamber orchestra version of Copland's *Appalachian Spring*, which I had recorded live at the 1995 Santa Fe Chamber Music Festival. This was the first recording I made with the microphone array that was to become my go-to for live recording projects: a central ORTF pair of cardioids flanked by two omnidirectionals, with the outputs of the two pairs time-aligned in the mix.[6] The cardioids give a stable, accurate stereo image with the omnis adding low-frequency bloom. From the hushed opening through to the joyful "Simple Gifts" melody, the Luxman and Parasounds both produced the clear, stable image of the orchestra in Santa Fe's St. Francis Auditorium that I had worked to create. Both amplifiers correctly placed the woodwinds and piano behind the strings, and the occasional cough from the audience was placed well back in the soundstage with both the Luxman and Parasounds. The presentation of the cellos and basses was similarly articulate. I was hard put to choose one model of amplifier over the other.

Summing up

Perhaps it is fitting that Luxman is now owned by IAG, which also owns Quad. It was Quad's founder, the late Peter Walker, who defined the role of a perfect power amplifier as being "a straight wire with gain," neither subtracting from the signal it was amplifying nor adding to it. I have yet to encounter an amplifier that meets that ideal in every way, but from the month it spent in my system, I believe that Luxman's M-10X gets very close. Highly recommended. ■

5 See stereophile.com/content/parasound-halo-jc-1-monoblock-power-amplifier-0.

6 See stereophile.com/content/ifestivali-best-1995-santa-fe-chamber-music-festival-microphones-techniques.

ASSOCIATED EQUIPMENT

Analog source Linn Sondek LP12 turntable with Lingo power supply, Linn Ekos tonearm, Linn Arkiv B cartridge, Channel D Seta L phono preamplifier. **Digital source** Roon Nucleus+ server; Ayre Acoustics C-5xe^{MP} universal player; MBL Noble Line N31 CD player/DAC, Ayre Acoustics QA-9 A/D converter. **Power amplifiers** Parasound Halo JC 1+ monoblocks. **Loudspeakers** Golden Ear BRX, KEF LS50. **Cables** Digital: AudioQuest Vodka (Ethernet), AudioQuest Coffee (USB), DH Labs (1m, AES/EBU). Interconnect: AudioQuest Wild Blue (balanced). Speaker: AudioQuest Robin Hood. AC: AudioQuest Dragon Source & High Current, manufacturers' own. **Accessories** Sanus 29" loudspeaker stands; Target TT-5 equipment racks; Ayre Acoustics Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; AudioQuest Niagara 5000 Low-Z Power/Noise-Dissipation System (amplifiers) and AudioQuest Niagara 1000 Low-Z Power/Noise-Dissipation System (source components). AudioQuest Fog Lifter cable supports. AC power comes from two dedicated 20A circuits, each just 6' from the breaker box.—**John Atkinson**