ROBERT J. REINA

Nagra Jazz

LINE PREAMPLIFIER

Branding can be powerful—a well-developed brand connotes strong images in the consumer's mind. Apple means ergonomics, elegance, ego. Fremer means analog, exuberance, fastidiousness. Rolex means Swiss-made, precision, expensive. Nagra means Swiss-made, precision, expensive.

I've heard the occasional Nagra product at audio shows, but infrequently. When I have, I've been in awe of the gorgeous but understated quality of their handmade construction. And the rooms containing Nagra gear always produced superb sound.

My fondest memory of Nagra gear dates back almost a decade. I'd booked a gig for the John Atkinson Trio to perform jazz standards and originals at my local country club in New York City. Our usual drummer, Allen Perkins, of tonearm/turntable maker Immedia, was on the West Coast, so I had to find a drummer to replace him. I called on Mark Flynn, who's now the drummer of my jazz quartet Attention Screen, to sit in. Although Mark and I had long been friends, I'd never heard him play, and took the chance based on his reputation.

It was a warm day, so we set up under an awning next to the outdoor pool. JA asked if it was okay to record the gig; I said, "Sure, why not?" These were the days before the proliferation of Zoom portable digital recorders, and JA had shown up with his Nagra D open-reel deck and a pair of $2000 DPA microphones. The gig went well and the recording sounded great—but we'd set up midway between the pool and the bar's takeout window. As we played, we were besieged by tweens running from pool to window and back as they loaded up on liquid

SPECIFICATIONS

Description Tubed line preamplifier. Tube complement: two 12AX7, one 12AT7. Frequency response: 10Hz–50kHz, +0/–0.5dB. Input impedance: >75k ohms. Output impedance: 50 ohms. Signal/noise ratio (ref. 1V): 105dB (ASA-A weighting). Dynamic range: >112dB, gain at +12dB. Total harmonic distortion: <0.02% 1V RMS, gain at 0dB. Channel separation: >78dB. **Dimensions** 12" (310mm) W by 3" (75mm) H by 10" (255mm) D. Weight 7 lbs (3.2kg).

Serial number of unit reviewed 55025166156025. **Price** $12,250. Approximate number of dealers: 10. **Manufacturer** Audio Technology Switzerland SA, 30A, ch. de l'Orio, 1032 Romanel-sur-Lausanne, Switzerland. Tel: (41) 021-643-72-40. Fax: (41) 021-641-75-32. US distributor: Audio Technology Switzerland (USA) Inc., 450 W. Main Street, Suite B-4, Gallatin, TN 37066. Tel: (615) 451-4168. Fax: (615) 451-4175. www.nagraaudio.com.

One pair balanced and four pairs single-ended inputs; one pair balanced and two pairs single-ended outputs.

refreshment, their bodies splashing chlorinated water within inches of the Nagra. I was a nervous wreck for the entire gig.

So when the opportunity arose to hear in my reference system Nagra's Jazz tubed line stage ($12,250), I was, well, jazzed. I promised Nagra I'd keep their baby dry at all times.

Design

As soon as I opened the box, I knew I was in for an interesting experience. The packaging was immaculate, with inner and outer boxes separated by triangular Styrofoam supports. Inside the inner box were the preamp and its ACPS II outboard power supply, each in its own silky sack tied shut with a fabric sash. This packaging made Tiffany seem like Walmart. Although the Jazz and the ACPS II are unbelievably small (respectively, the size of a telephone answering machine and a laptop battery), the preamp's construction is rugged, with a faceplate machined from a solid billet of aluminum. The look, size, and shape are cosmetically identical to those of Nagra's CD players, which are all derived from the company's legendary IV-S portable open-reel deck. I was tempted to pop off the top to see what was inside, but refrained—I didn't want any of my tools to go near the Jazz's gorgeous case.

If I *had* wandered inside, I would have discovered a 12AX7 dual-triode tube, one per channel configured in differential topology, followed by a gain stage using a 12AT7 tube. The gain can be set to 0dB or 12dB. I tried both and heard no difference. I used the 0dB setting 80% of the time, the +12dB setting the remaining 20%. The Jazz has three groups of four-layered circuit boards of military-grade epoxy glass, gold-plated and festooned with polypropylene capacitors. There circuit boards also a have ground plane, intended to screen out disturbances and radiation, and to stop static loops that might give rise to hum. (Nagra claims an A-weighted signal/noise ratio, ref. 1V, of 105dB.) The ribbon cables linking the boards are as short as possible.

MEASUREMENTS

I measured the Nagra Jazz preamplifier with *Stereophile*'s loan sample of the top-of-the-line Audio Precision SYS2722 system (see www.ap.com and the January 2008 "As We See It," www.stereophile.com/asweseeit/108awsi/index.html). The review sample had only unbalanced inputs but was fitted with the optional balanced output transformers. I therefore performed a complete suite of measurements from both the unbalanced and balanced outputs, though in the following text I have concentrated on the balanced outputs, as that is how Bob Reina used the Jazz for his auditioning.

The voltage gain at 1kHz was 11.65dB from both sets of outputs with the front-panel switch set to +12dB, and –0.25dB with the switch set to 0dB. A reading of "0dB" on the Jazz's front-panel modulometer corresponded to 1V output into 100k ohms. Both outputs preserved absolute polarity (*ie*, were non-inverting), the XLR jacks being wired with pin 2 hot. The input impedance was lower than specified but was still usefully high at 51k ohms at low and middle frequencies, dropping slightly but inconsequentially to 39k ohms at 20kHz. The unbalanced output impedance was 116 ohms at 20 and 1kHz, rising slightly to 251 ohms at 20Hz. The balanced output impedance was 295 ohms at 20Hz, dropping to 158 ohms at 1kHz and rising again to 186 ohms at 20kHz. All of these impedances are usefully low in absolute terms, though are a little higher than specified.

Fig.1 shows the Jazz's frequency response at 1V with the volume control set to its maximum and the balance control centered, measured at the unbalanced output into 100k ohms (blue and red traces) and into 600 ohms (cyan, magenta). The bandwidth is very wide into both loads, with the output down by 3dB at 200kHz, and the channels are very closely matched.

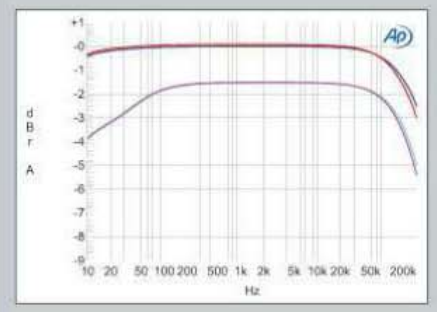

Fig.1 Nagra Jazz, 0dB gain, unbalanced frequency response with volume control at maximum at 1V into: 100k ohms (left channel blue, right red), 600 ohms (left cyan, right magenta) (1dB/vertical div.).

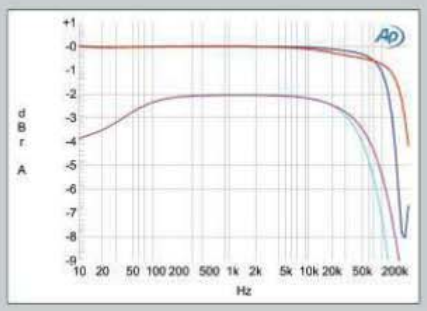

Fig.2 Nagra Jazz, 0dB gain, balanced frequency response with volume control at maximum at 1V into: 100k ohms (left channel blue, right red), 600 ohms (left cyan, right magenta) (1dB/vertical div.).

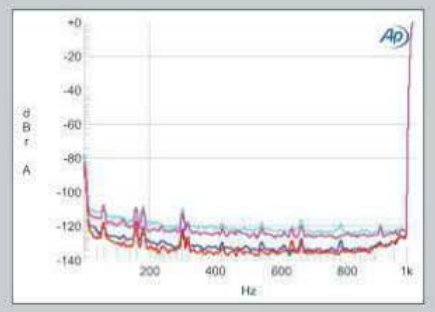

Fig.3 Nagra Jazz, balanced spectrum of 1kHz sinewave, DC–1kHz, at 1V into 100k ohms with: 0dB gain (left channel blue, right red), +12dB gain (left cyan, right magenta) (linear frequency scale).

The main board is mounted on elastomer blocks to filter out vibrations. The Jazz is also available with the optional VSP, a shock-absorbing double-plate isolation platform ($1950) made of solid aluminum with Alpha-gel feet.

The Jazz's suite of inputs consists of one pair balanced (if the optional input transformers are fitted, otherwise this input is single-ended), four pairs single-ended, and a bypass that routes the inputs directly to the output; the outputs comprise two pairs single-ended and one pair balanced if the optimal output transformers are fitted. On the front panel is an incredibly sexy-looking Modulometer—basically, an output-level meter derived from Nagra's original 1952 tape recorder, the Nagra II, with a red needle for the right channel and a green needle for the left. The modulometer has six levels of illumination (it can also be turned off); I heard no sonic differences among the various levels. The motorized volume, balance, mute, and input selector controls are also accessible via the compact, minimalist, and ergonomically robust remote control. The only incongruity among the otherwise sexy and Swiss-precise front-panel controls is the recessed volume knob, which resembles the heater control on the dashboard of a 1985 Honda Accord.

Listening

As much of my listening for this review occurred during December, I spun some of my favorite Christmas CDs. *A Jolly Christmas* from Frank Sinatra (CD, Capitol CDP 7 48329 2) is from Sinatra's best period, in my view: the albums he recorded in the 1950s for Capitol. The Nagra's ability to develop an organic and voluptuous uncolored midrange made it a natural match for well-recorded voices. Sinatra's voice in "The First Noel" was warm, open, rich, and vibrant. Although I thought his voice sounded quite natural, the Nagra demonstrated its ability to clearly delineate differences between recordings when I moved to *The Doris Day Christmas Album* (CD, Columbia 513539 2), a sonic masterpiece. Day's voice in "Silver Bells" was larger than life and startlingly realistic—much more so than Sinatra's. The entire recording was enveloped in an airy, silky sheen of ambience. It was, however, easy to tell that the reverb had been poured on a bit excessively for the Day recording.

The Nagra's ability to develop an organic and voluptuous uncolored midrange made it a natural match for well-recorded voices.

Not so with Karin Winther conducting the Taby Church Chamber Choir on *Hush! The Angels Are Singing* (CD, First Impressions Music CD 001). The choir had a seductively angelic quality, and it was easy to delineate the individual layers of voices within the ensemble. The integration of the choir with the room acoustic was also extremely natural. But my single favorite vocal recording is of men's choir Cantus's performance of Eric Whitacre's *Lux Aurumque*, from *While You Are Alive* (CD, Cantus CTS-1208). The Jazz captured the

measurements, continued

The low frequencies start to roll off a little into 600 ohms, but so extreme a load is unlikely to be encountered in practical use. Fig.2 shows the response under than same conditions measured from the balanced outputs. It's still flat in the audioband, but rolls off earlier into the low impedance, reaching –3dB at 60kHz (left channel, cyan trace) and 85kHz (right channel, magenta trace). The high-frequency rolloff is also different between channels into the high impedance, with a major difference visible above 100kHz, though of course this will have no audible consequences. Commendably, the close matching between the channels was maintained at lower settings of the volume control, a tribute to the quality of the ALPS potentiometer used. The audioband frequency response was identical for the 0dB and +12dB gain settings.

Channel separation was good rather than great, at >80dB in both directions below 1kHz but about 50dB at the top of the audioband (not shown). I measure signal/noise ratios (SNRs) with the input shorted but with the volume control set to its maximum, which is very much the worst-case situation. The wideband, unweighted SNR, ref. 1V output, depended on the gain setting. With the gain set to 0dB, the ratio was 70.2dB (average of two channels), while switching the gain to +12dB decreased the SNR by the same 12dB. Restricting the measurement bandwidth to the audioband increased the ratios to 103 and 90dB, respectively, which is excellent, while switching into circuit an A-weighting filter increased the measured ratios by 3dB. This is a very quiet preamp with power-supply spuriae all at or below –110dB, even at the +12dB gain setting (fig.3).

Figs. 4 and 5 show how the THD+noise percentage in the Nagra's output changes with output voltage from, respectively, the unbalanced and balanced outputs. The THD+N reading was dominated by noise below 500–600mV and remains very low at all levels the Jazz

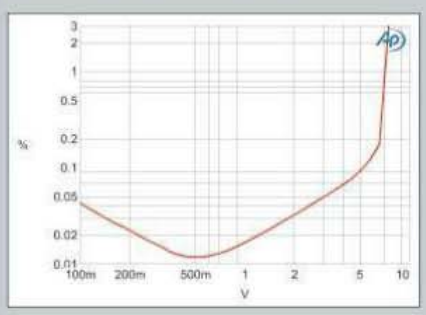

Fig.4 Nagra Jazz, 0dB gain, unbalanced distortion (%) *vs* 1kHz output voltage into 100k ohms.

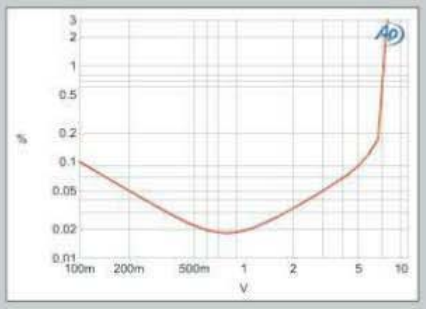

Fig.5 Nagra Jazz, 0dB gain, balanced distortion (%) *vs* 1kHz output voltage into 100k ohms.

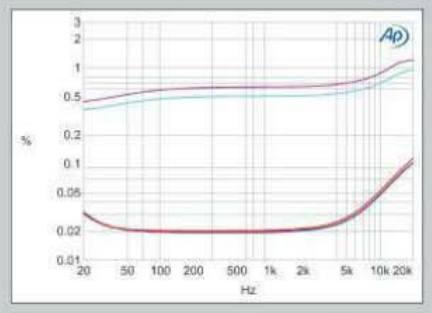

Fig.6 Nagra Jazz, 0dB gain, balanced THD+N (%) *vs* frequency at 1V into: 100k ohms (left channel blue, right red), 600 ohms (left cyan, right magenta).

perfect integration of the voices with an extraordinarily linear depiction of the subtlest microdynamics from *pppp* to *p*. Nagra makes a big deal of promoting the Jazz's low noise floor, and this recording showed it off quite elegantly. The preamp also showcased Cantus's uncanny precision of pitch in this piece.

Keeping within the Christmas spirit, I spun my favorite Christmas recording, Solid Brass's *Christmas with Solid Brass* (CD, Dorian DOR-90114). This recording has the most natural reproduction of French horn and trombone timbres that I've ever heard, and the Nagra's ruthless revelation of layers of uncolored detail in the lower midrange let me easily fool myself that horns had invaded my living room. The brasses were holographically placed across the soundstage, each instrument bathed in ambience. The Nagra also revealed a smooth transition from the nearfield envelope of the decays of the individual instruments' sounds to a clear delineation of the recording venue's acoustic.

The Jazz demonstrated an extraordinary ability to unravel the delicate nuances of individual instruments no matter how dense the orchestration.

In fact, the Jazz demonstrated an extraordinary ability to unravel the delicate nuances of individual instruments no matter how dense the orchestration. In an early recording by pianist Marilyn Crispell, "Rituel," from her *Circles* (CD, Victo 199), her quintet bursts with busily cacophonous energy, but I was still able to follow every one of the pianist's licks. Similarly, in the first movement of David Chesky's Violin Concerto, with soloist Tom Chiu and Anthony Aibel conducting Area 31, it was easy for me to follow each subtle woodwind line, even during fortissimo orchestral tuttis that include dramatic, crushing, and startlingly realistic-sounding timpani.

The Nagra also resolved transients with lightning-fast precision, but with no trace of hardness, blurring, or overhang. As I analyzed all the complex and difficult lines for mallet percussion in "Naval Aviation in Art?," from Frank Zappa's *Läther* (CD, Ryko 10574/76), I wondered which percussionist was playing: Ruth Underwood or Arthur Dyre Tripp? Underwood, I decided. (As this music was recorded during Zappa's confrontational period with manager Herb Cohen, there are no liner notes, at least in my copy.[1]) On a more conventional recording of mallet percussion, and getting back into the Christmas spirit with John Zorn's most accessible recording, *A Dreamers Christmas* (CD, Tzadik 7393), percussionist Kenny Wollensen dishes out some pretty tasty vibes solos. Through the Jazz they sounded clean and shimmering, with a sense of body and natural decay.

Recordings that combine percussion with subtle low-level dynamics shone through the Nagra. In "Partial Truths/Four Impersonations," from his *This Is Not a Clarinet* (CD, Cantaloupe CA21001), clarinetist Evan Ziporyn uses his instrument's keys

1 My copy of *Läther* includes a 32-page booklet with liner notes and complete personnel credits: for this track, it's "FZ, guitar; Dave Parlato, bass; Terry Bozzio, drums; Emil Richards, percussion; Orchestra conducted by Michael Zearott."—**Copy Editor**

measurements, continued

will be asked to deliver in normal use. The gain was set to 0dB for these measurements; switching to +12dB preserved the shape of the curves but increased the THD+N percentage below clipping (not shown). At 1V into 100k ohms from the balanced outputs, the Jazz offered very low distortion (fig.6, blue and red traces), though with a rise in the top two octaves. The preamplifier was clearly unhappy into 600 ohms (cyan and magenta traces); loads this low are to be avoided.

The distortion from the balanced output at 0dB gain was predominantly second harmonic (fig.7), though the third and fifth harmonics can respectively be seen at -90dB (0.003%) and -110dB (0.0003%). With the unbalanced output (not shown), the second harmonic remained at -76dB (0.015%), but the third harmonic dropped to -114dB (0.0002%), and all higher-order harmonics disappeared. Switching to +12dB gain increased the levels of all harmonics by the same 12dB (not shown).

The unbalanced output offered a very low level of intermodulation distortion, with the difference product resulting from an equal mix of 19 and 20kHz tones lying at -80dB (0.01%), and the higher-order products all much lower in level (fig.8). The balanced outputs (fig.9) clearly showed that the output transformer's reduced linearity was beginning to affect the measured result, but not to the extent that there would be any subjective consequences.

The Jazz's excellent measured performance revealed it to be as well engineered as I have come to expect from Nagra. And as a fan of the Swiss company's earlier PL-L preamplifier, which I reviewed in June 2008, I'm happy to see the input and output jacks moved from the side panels to the rear!—**John Atkinson**

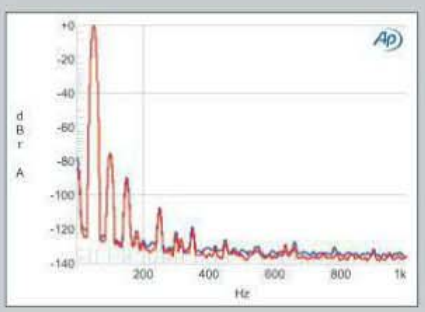

Fig.7 Nagra Jazz, 0dB gain, balanced spectrum of 50Hz sinewave, DC–1kHz, at 1V into 100k ohms (left channel blue, right red; linear frequency scale).

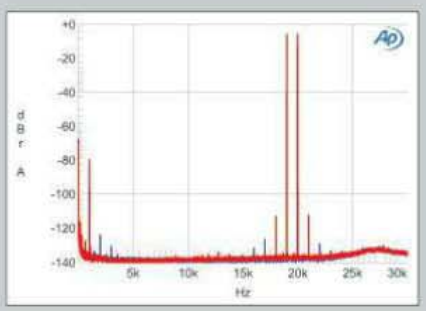

Fig.8 Nagra Jazz, 0dB gain, unbalanced HF intermodulation spectrum, DC–30kHz, 19+20kHz at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

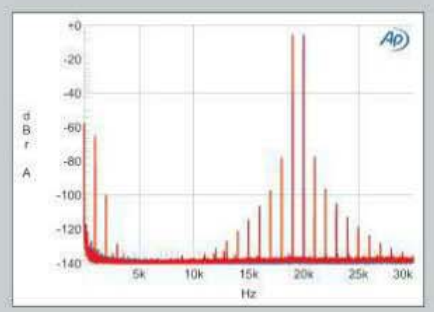

Fig.9 Nagra Jazz, 0dB gain, balanced HF intermodulation spectrum, DC–30kHz, 19+20kHz at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

Clean, purposeful Swiss design.

for percussion effects coupled with short bursts of breath. The precise dynamic envelope of this technique was captured by the Jazz exactly as I've heard Ziporyn perform it in concert.

The acid test for percussive realism is Charles Wuorinen conducting the New Jersey Percussion Ensemble in his own *Ringing Changes* (LP, Nonesuch H 71263). The Nagra resolved excellent detail with natural transients, while the recording venue was rendered with a great sense of air and space.

Realistic transient articulation goes hand in hand with high-frequency definition, extension, and delicacy, all of which the Nagra rendered in spades. With all recordings I played I heard a sparkling sense of clarity, cleanness, and delicacy throughout the Jazz's extended high-frequency range. Each note on electric guitarist Derek Bailey's *Improvisation* (CD, Ampersand 2) was reproduced with its own unique dynamic envelope; it was easy to unravel the high-frequency harmonic spectrum of each plucked string. And higher-volume electric guitar work, such as Mark Ribot's melodies in "Mow Mow," from *The Dreamers*, by John Zorn's Electric Masada band (CD, Tzadik TZ 11712), had the requisite searing bite and scream.

The Jazz's bass reproduction also impressed me, especially its rendition of double bass in jazz recordings. The midbass had a slightly rounded quality through the Nagra, but this wasn't a coloration; rather, it was a natural dynamic texture that enveloped each note of the instrument, and integrated perfectly with the sounds of higher-pitched instruments. Michael Elizado's bass in the Alex Cline Ensemble's *Sparks Fly Upward* (CD, Cryptogramophone CG102) was woody, uncolored, and dramatic; and Dave Holland's instrument in his *Prime Directive* (CD, ECM 1698) sounded clean and naturally warm.

The Nagra's ability to render linear and natural dynamic contrasts from *ppp* to *fff* was best exemplified by its reproduction of piano recordings. In "Isn't It Romantic," from the Bill Evans Trio's *At Shelley's Manne-Hole, Hollywood, California* (CD, JVC JVCXR-0036-2), the microdynamic phrasing of Evans's unique style was reproduced in all of its subtlety. At the higher end of the dynamic range, Paul Bley's fortissimo attacks in some of the more dramatic passages of his *Close* (CD, ESP ESPDISK 1021) had a sharpness and sense of drama that were quite realistic. There was also a sense of dynamic drama during the fortissimo passages of cellist János Starker's recording of Locatelli's Sonata in D Major, with pianist György Sebök (CD, Mercury Living Presence 434 344-2).

But don't think the Jazz wasn't a great rock preamp—it perfectly integrated the richly holographic voice of Dana Fuchs with Jon Diamond's burning electric guitar riffs in the Dana Fuchs Band's latest, *Love to Beg* (CD, Ruf RUF 1167): coherent, together, and tight.

Comparisons

I compared the Nagra with my reference line stage, the Audio Valve Eklipse ($5699), as well as with Audio Research's Reference 5 SE ($12,995), which I reviewed in the February 2013 issue. The Audio Valve was as liquid and natural throughout its range as the Nagra, though I felt the Eklipse's midrange sounded slightly more forward. The Jazz also resolved a bit more inner detail and retrieved a tad more ambience. The Audio Valve's low-level dynamics equaled the Nagra's and its midbass was just as clean, though I felt the Eklipse's lower bass was more forceful. Through the Nagra, however, transients were more delicate, and there was a greater sense of purity and clarity in the highs.

ARC's Ref 5 SE created an even greater sense of space than did the Nagra, with even better resolution of detail and sharper, more articulate transients. There was also a greater sense of stage width and depth with the ARC, and its highs seemed even more extended than the excellent Nagra's, with even more articulate sibilants. The 5 SE also had a greater sense of decay, with more subtle gradations of dynamic inflections from *pppp* to *p*. However, the Nagra had more high-level dynamic slam in the midbass.

Summing up

The Nagra Jazz is a stunning, handmade jewel of a tubed line-stage preamplifier. Its build quality is indeed reminiscent of a fine Swiss watch, and its ergonomics and flexibility made it a joy to use. Most important, I enjoyed every piece of music I listened to through the Jazz, even when it ruthlessly revealed differences in recording quality. If you're considering buying a tubed preamp anywhere near the Jazz's price, put it on your short list. ■

ASSOCIATED EQUIPMENT

Analog Sources VPI TNT IV, Rega Planar 3 turntables; Immedia, Syrinx PU-3 tonearms; Koetsu Urushi, Clearaudio Virtuoso Wood cartridges.
Digital Sources Lector CDP-7T, Creek Destiny CD players.
Preamplification Audio Valve Eclipse, Audio Research Reference 5SE line stages; Vendetta Research SCP-2D phono stage.
Power Amplifiers Audio Research Reference 110 & Reference 75.
Loudspeakers Epos M16i, Monitor Audio Silver RS6, Nola Viper Reference III.
Cables Interconnect (all MIT): Magnum M3, MI-350 CVTwin Terminator, MI-330SG Terminator. Speaker: Accent Speaker Technology Blue Thunder. AC: manufacturers' own.
Accessories Various by ASC, Bright Star, Celestion, Echo Busters, Salamander Designs, Simply Physics, Sound Anchor, VPI.—**Robert J. Reina**