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PrimaLuna ProLogue One

Art Dudley

INTEGRATED AMPLIFIER

My first reaction to the PrimaLuna ProLogue One was based solely on looks: For \$1095, I might not have been disappointed had it sounded no better than a Bose Wave Radio. Its casework straddles the breach between vintage and modern in a way that little else does, at any price. The dark gray-blue finish, hand-rubbed to a tactile gloss, wouldn't look out of place on an Alfa GTV (the new one, which resembles a drop of oil). And for the first time in my experience, a high-end audio manufacturer has figured out a way to make a protective tube cage easy to remove and replace: with banana plugs and sockets. Why couldn't one of the high-price American brands have figured that out?

The theme continues inside, with point-to-point wiring that's carefully dressed and neatly soldered. All the hardware is bolted in place, not just stuck to the inside of the chassis with glue and hope, and well-finished metal shielding is installed wherever hum or RF interference might otherwise intrude. All the tube sockets are good ceramic ones, and the terminal strips are ceramic, too. Threaded parts are locked in place with a dab of red enamel. All the edges have been smoothed over. Inspectors' initials abound.

Here's where your music goes: Each channel's preamp tube is a 12AX7A dual triode, the two halves of which are tied together in parallel in the interest of current gain. From there it goes to the two halves of a 12AU7 driver, configured as a long-tailed pair. Then it's on to a push-pull pair of EL34s operating in "enhanced" class-A/B, with screen grids tied to the output transformer's primary so the tubes can deliver more power than if they were used in triode mode—yet also sound sweeter and exhibit a lower output impedance than if they were used in pure pentode mode. Tube-amp enthusiasts will recognize that as an Ultra-linear output circuit, which the great David Hafler first described more than half a century ago.

Sounds pretty simple, doesn't it? It is—for the most part. Then again, because the ProLogue One is aimed at the first-time owner of a tube amp, PrimaLuna wanted to ensure reliable performance in almost any setting, with no need for adjustments. So chief designer Marcel Croese devised a new way to bias the output tubes.

In a normal fixed-bias amplifier, the output tube's cathodes are referenced directly to ground, and an independent negative voltage is applied to the signal grid: It's that *bias* that the AC music signal modulates, continuously varying tube current as it travels from the cathode to the anode, and allowing the high-voltage output to mimic the low-voltage input. But because temperatures can vary inside a tube amp, and because tubes, like people, begin to deteriorate from the moment they enter the workforce, the bias will require periodic correction. The bias may also need to be altered in the face of unusually loud or bass-heavy signals, to prevent the higher voltage from functionally adding to the bias—and thus limiting tube current and compressing the output. Croese's solution, called Adaptive AutoBias, is a circuit that continuously adjusts the bias voltage in response to changing temperatures and input signals. (Neither the J-FET op-amp at the heart of Croese's circuit, nor its supporting parts, is in the signal path. Adaptive AutoBias, which is the only major

DESCRIPTION Single-box line-level tube preamplifier and push-pull tube power amplifier. Tube complement: two each 12AX7A, 12AU7, EL34. Inputs: 4 single-ended. Output power: 35Wpc into 8 ohms (15.4dBW). Voltage gain: 20dB. Output impedance: 4 or 8 ohms. Frequency response: 20Hz–30kHz, +0.5dB. Input impedance: 100k ohm. Input sensitivity: 300mV.

DIMENSIONS 11.5" W by 7.7" H by 15" D. Weight: 36 lbs.

SERIAL NUMBER OF UNIT

REVIEWED 04031452.

PRICE \$1095. Approximate number of dealers: 1 (sold direct).

DISTRIBUTOR Upscale Audio, 2504 Spring Terrace, Upland, CA 91784. Tel: (909) 931-9686.

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portion of the ProLogue One that's laid out on a printed-circuit board, uses a reference signal derived from the amplifier's input.)

The result, according to Croese, is an increase in both performance and reliability—two things that don't always track one another in the minds of hardcore tube enthusiasts. And by taking the enthusiast out of the adjustment loop, the Adaptive AutoBias circuit ensures something else: moderation. "The adjustments made are very slight," Croese says, "within narrow margins, so that the tubes always operate in the parts of their range that are lowest in distortion."

For its part, the ProLogue One's power supply is as traditional as they come: High-voltage AC from the

power transformer is straightened out by a smallish rectifier bridge, and the bumps and valleys are smoothed by a pi filter centered around a sturdy-

the trannies, and the feet hold the thing far enough off the shelf that the underside doesn't get too hot. It's also, coincidentally, one of the nicest-

MY ASTONISHMENT AT THE **LEVEL OF VALUE** THE PROLOGUE ONE OFFERS COULDN'T BE MORE GENUINE.

looking choke. Additional secondary taps lead to a separate filtering circuit for the tube heaters.

Again: All of this is contained in one of the nicest-looking enclosures I've seen in ages—one in which all the metal parts fit together, and the sheet metal doesn't flex under the weight of

smelling amplifiers I've had in a long time—like wood smoke, which I find pleasant. Let's see if John Atkinson notices that, too, when he performs his measurements. (Don't worry: There were no signs of burning trannies—or burning anything else—inside the ProLogue One.)

MEASUREMENTS

I ran the ProLogue One at one-third power into 8 ohms from the 8 ohm tap for 60 minutes—not so much to thermally stress it, as I do with solid-state designs, but to make sure it was up to its working temperature. (I didn't notice the pleasant smell, Art!) I performed a complete set of tests from both its 8 ohm and 4 ohm output transformer taps, but have described the results for both here only when relevant.

The input impedance was usefully high, at 95k ohms at 20Hz and 1kHz, this dropping inconsequentially to 76k ohms at 20kHz. The amplifier preserved absolute polarity—*ie*, was noninverting—from both sets of outputs. The voltage gain was a little hard to assess accurately, due to the presence of very-low-frequency noise, which caused the level reading to bounce a little. But it appeared that with the volume control set to its maximum, the gain from the 8 ohm tap into an 8 ohm load was 37.5dB; from the 4 ohm tap into 4 ohms, 36.3dB. Because the amplifier does not have preamp or tape outputs, I could not assess how much of this gain comes

from the preamp stage and how much from the power amplifier circuitry.

The output impedance was very high, at 5.8 ohms from the 8 ohm tap and 3.1 ohms from the 4 ohm tap. (These figures were measured at 1kHz; the source impedance was a little higher at 20Hz, a little lower at 20kHz, but inconsequentially so.) These high source impedances guarantee maximum power delivery into matched loads: approximately 6 ohms in the case of the "8 ohm" output, 3 ohms in the case of the "4 ohm" output. However, the downside is that there is a very audible modification of the amplifier's frequency response due to the manner in which the loudspeaker's impedance varies with frequency. This is shown graphically by the top traces in figs. 1 and 2, which were taken with the amplifier's 8 and 4 ohm taps, respectively, driving *Stereophile's* simulated loudspeaker load. The response modification is as high as ± 2.5 dB and ± 0.8 dB, and cannot be discounted when auditioning the amplifier.

These two graphs also show that the ProLogue One's response into resistive loads is commendably flat across

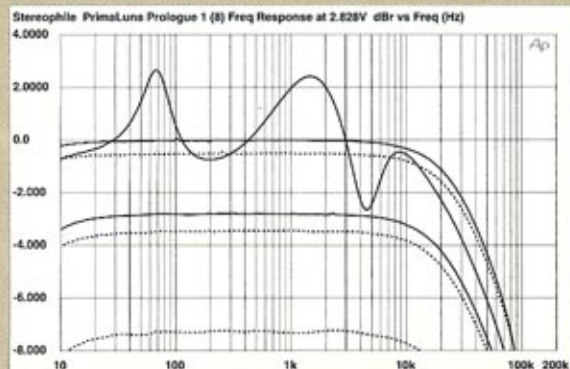


Fig.1 PrimaLuna ProLogue One, 8 ohm tap, frequency response at 2.83V into (from top to bottom at 2kHz): simulated loudspeaker load, 8 ohms, 4 ohms, 2 ohms (2dB/vertical div, right channel dashed).

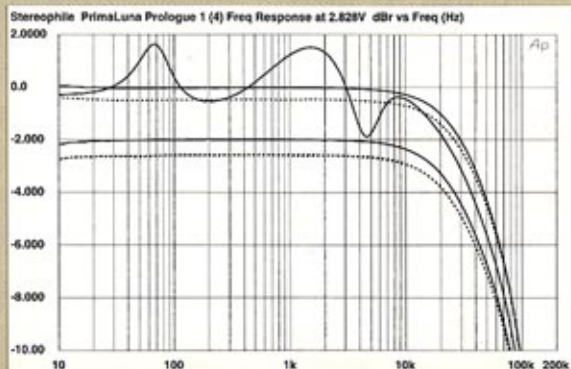


Fig.2 PrimaLuna ProLogue One, 4 ohm tap, frequency response at 2.83V into (from top to bottom at 2kHz): simulated loudspeaker load, 8 ohms, 4 ohms, 2 ohms (2dB/vertical div, right channel dashed).

Listening

Although I enjoyed every day I spent with the ProLogue One—my astonishment at the level of value it offers couldn't be more genuine—you may want to keep in mind that my reviewing environment is almost a worst-case scenario: Quad electrostatics on the one hand, high-sensitivity Lowther horns on the other. I heard just enough evidence of

uncontrolled bass with the former, and shoutiness from an overpowered whizzer with the latter, that I couldn't help imagining that most real-world installations, centered around a dynamic loudspeaker of medium to medium-high efficiency, would sound even better than my own.

All right—let's dispense with this product's most notable shortcoming: Driving the Quad ESL-989s, the Pro-

logue One had a very underdamped bottom two octaves. The bass drum in the *Prelude* of Ives' *Symphony 4*, performed by José Serebrier and the London Philharmonic (CD, BMG Classics 63316-2), was boomy, with an unrealistically long decay. Likewise the electric bass and the lowest-tuned floor tom on the Band's "Smoke Signal," from *Cahoots* (CD, Capitol 25391-2), which also sounded slow and rhythmically

measurements, continued

quite a wide bandwidth, particularly at low frequencies. At high frequencies, the rolloff didn't depend on the load to any great extent, which can be common in designs using an output transformer, but did depend on the setting of the volume control. It varied from -1dB at 30kHz at the extreme volume-control positions to -1dB at 20kHz in the unity-gain position (8:00). The PrimaLuna's reproduction of a 10kHz squarewave (fig.3) shows some slowing of the waveform edges, as well as a faint hint of ringing. But not apparent in the graph, which was taken with a digital oscilloscope,¹ is a very brief overshoot on each leading edge, which was visible with a 20MHz analog 'scope. It is possible, therefore, that the ProLogue One's circuitry is not unconditionally stable; but if so, the parasitic instability appears to be in the MHz region and is probably inconsequential.

The PrimaLuna's channel separation was moderate, at better than 60dB below 2kHz, decreasing above that frequency at the usual 6dB/octave rate due to capacitive coupling between the channels. The separation at 20kHz was 47dB, which is merely adequate. Of perhaps more practical concern was leakage between adjacent pairs of inputs. Because the amplifier does not have a Mute button, I was using the input selector to switch to an unused input between tests. When I did so, however, I noticed that the oscilloscope was still showing some high-frequency activity. Inserting a shorting plug into the unused input didn't make any difference; the leakage response in both the shorted and open-circuit conditions is shown in fig.4. If you're playing a CD with, say, a switched-on tuner plugged into the next pair of inputs, you'll hear a quiet treble ghost of the tuner signal in

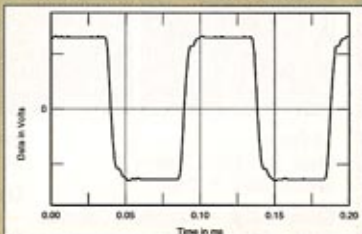


Fig.3 PrimaLuna ProLogue One, 8 ohm tap, small-signal 10kHz squarewave into 8 ohms.

¹ Some readers have asked why the usual Gibbs' Phenomenon "ringing" from the 'scope's digital antialiasing filter is not evident on my squarewave graphs. There is no "ringing" because the 'scope, a 1987-vintage 8-bit Heathkit, has no low-pass filtering on its input. I make sure that the picture is not obscured by aliasing by using a very high sampling frequency. —JA

the background. The solution is to turn unselected sources down (not off), but it's rare to see this behavior these days.

With the input shorted and the volume control set to its maximum, the ProLogue One's unweighted signal/noise ratio (ref. 1W into 8 ohms) was moderate, at 64.9dB. This increased to 75.9dB when A-weighted.

As expected from a design using a pair of EL34 output tubes for each channel, the ProLogue One's maximum power is relatively modest. Fig.5 shows the percentage of THD+noise present in the amplifier's output while its 8 ohm output transformer tap drives increasing power

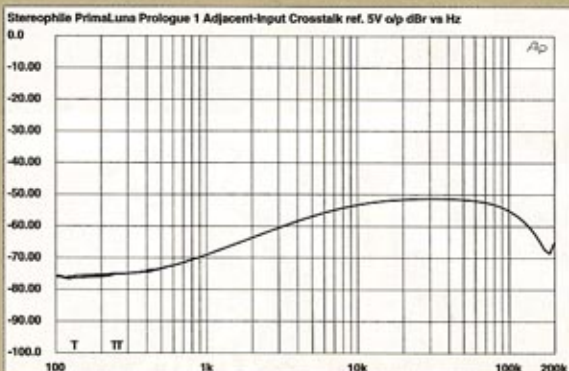


Fig.4 PrimaLuna ProLogue One, adjacent-input crosstalk (10dB/vertical div.).

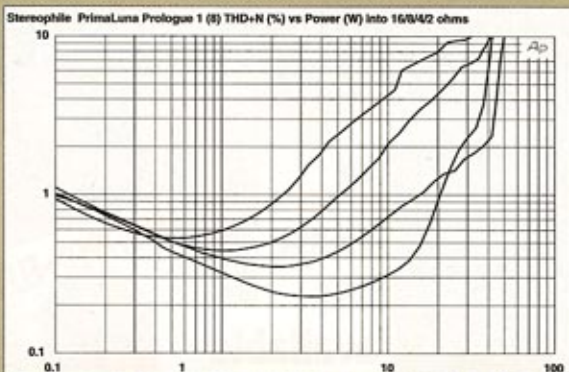


Fig.5 PrimaLuna ProLogue One, 8 ohm tap, distortion (%) vs 1kHz continuous output power into (from bottom to top at 1W): 16 ohms, 8 ohms, 4 ohms, 2 ohms.

unstirring as a result. Roxy Music's "More Than This," from *Avalon* (CD, Virgin 5 83871 2), never really took off.

But with the same speakers, the ProLogue One sounded consistently fine with smaller-scale music, and with music that didn't require so much in the way of quick, taut bass reproduction. The amp was engaging on good solo-piano recordings, such as the XRC D reissue of Thelonious Monk's *Thelonious Himself* (CD, Riverside/JVC VICJ-60170). The ProLogue One didn't smooth over the deliberateness of Monk's style, but neither did it sound unduly mechanical—a common enough failing, in my experience, with other pentode amps. It tracked the album's continuously shifting moods, from the playful to the serious and everything in

between: The music got bigger when it had to, without strain, and Monk's touch was never lost in the process. And while other amps may do certain things better—the purr and sheer scale of the low B-flat in the bluesy "Func-

tion," for example—I've never heard another comparatively inexpensive amplifier get the humanness of Monk's piano sound *this* right. When I took my attention away from

I'VE NEVER HEARD ANOTHER **COMPARATIVELY INEXPENSIVE AMPLIFIER** GET THE HUMANNESS OF MONK'S PIANO SOUND *THIS* RIGHT.

and thickness, especially throughout the midrange: It was, without question, a sweet-sounding amp, but not one I considered unpleasantly colored.

The ProLogue One's tonal balance

When I took my attention away from

measurements, continued

levels into loads ranging from 2 to 16 ohms; fig.6 shows similar curves for the 4 ohm output tap. With the load

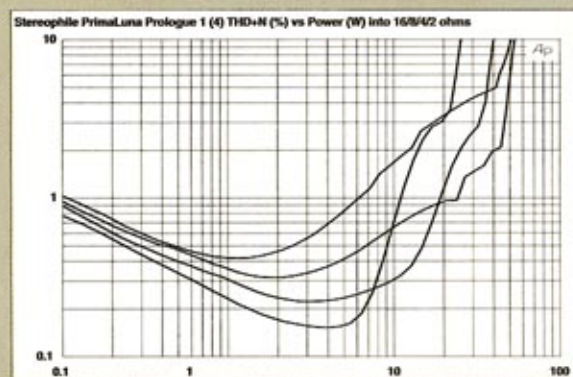


Fig.6 PrimaLuna ProLogue One, 4 ohm tap, distortion (%) vs 1kHz continuous output power into (from bottom to top at 1W): 16 ohms, 8 ohms, 4 ohms, 2 ohms.

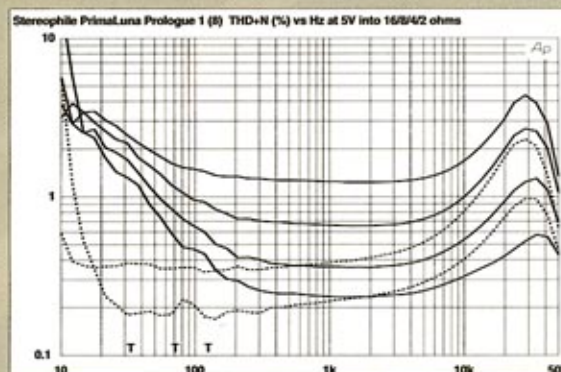


Fig.7 PrimaLuna ProLogue One, 8 ohm tap, THD+N (%) vs frequency at 5V into (from bottom to top): 16 ohms, 8 ohms, 4 ohms, 2 ohms.

matched to the nominal output tap, the 1% points are 21W from the 8 ohm tap (13.2dBW), and 24W from the 4 ohm tap (10.8dBW). It could be argued that using our usual definition of "clipping" as being 1% THD would be misleading, as the amplifier is not actually in hard clip at that point, but is really suffering from waveform triangulation and compression of the peaks. So, relaxing the definition to 3% THD, where actual clipping is visible on the oscilloscope screen, the 8 ohm tap gives out 42W into 8 ohms (16.2dBW) and 14W into 4 ohms (8.45dBW). The 4 ohm tap delivers 25W into 8 ohms (14dBW), 47W into 4 ohms (13.7dBW), and 17W into 2 ohms (6.3dBW).

I plotted the manner in which the THD+noise percentage changes with frequency at 5V output, a level at which the distortion products emerge from the noise floor. Figs.7 and 8 show the behavior from the 8 and 4 ohm taps, respectively. Though it increases to moderately high levels at high and low frequencies—reflecting the relatively modestly sized output transformers—and into

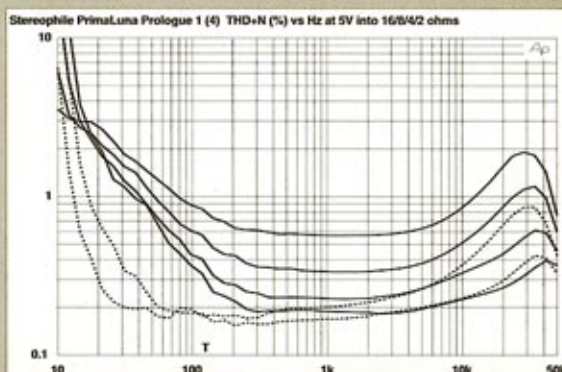


Fig.8 PrimaLuna ProLogue One, 4 ohm tap, THD+N (%) vs frequency at 5V into (from bottom to top): 16 ohms, 8 ohms, 4 ohms, 2 ohms.

the music and focused on the sound, I heard that Norman Blake's voice was slightly chestier than usual on "Grey-coat Soldiers," from *Fields of November* (LP, Flying Fish 70004), and his vintage Martin D-18 was one color swatch darker. But the amp made up for it with a nearly SET-like presence and spatial believability on voice and guitar alike, and an equally believable sense of the space between them.

Conductors all focus on different things in the same music, and so, I think, do fine audio components. The ProLogue One was acceptably good at conveying the scale and drama of orchestral music, and while it didn't pull subtle details from the mix as explicitly as I would have liked—as in the aforementioned Ives recording, which needs all the openness and clarity it can get—it was good enough that I

could listen for hours at a stretch without frustration or boredom setting in. But this amp's strongest suit with good

THE PROLOGUE ONE WAS ACCEPTABLY GOOD AT CONVEYING THE SCALE AND DRAMA OF ORCHESTRAL MUSIC.

orchestral recordings was its tendency to find the color, substance, and textures of the instrumental sounds. Even on discs not known for their warmth, such as the 1962 Starker-Dorati recording of Dvorák's Cello Concerto

(CD, Mercury 432 001-2), the ProLogue One brought out the best in massed strings, preserving well their rich texture and timbral complexity. Simply put, *this amp let that record sound beautiful.*

The ProLogue One brought those same strengths to well-recorded folk and pop music, too. It did a fine job with Tony Rice's guitar solo on the great Lester Flatt song "Why Don't You Tell Me So," from *Cold on the Shoulder* (CD, Rounder CD 0183), sounding especially twangy and *right* when Tony ventured down to the lower strings. And Ronnie McCoury and David Grisman's mandolins sounded real—and appropriately distinct from one another—on their fairly recent recording of Bill Monroe's "Roanoke," on *Bluegrass Mandolin Extravaganza* (CD, Acoustic Disc

measurements, continued

loads that are much lower than the nominal value of the transformer tap, the midband THD is quite respectable. In fact, when you take into account the fact that the main distortion component is the subjectively benign

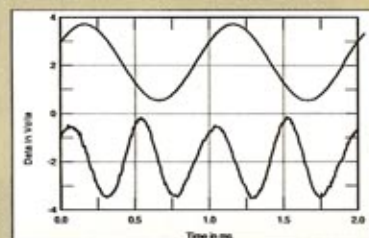


Fig.9 PrimaLuna ProLogue One, 8 ohm tap, 1kHz waveform at 1W into 8 ohms (top), 0.3% THD+N; distortion and noise waveform with fundamental notched out (bottom, not to scale).

second harmonic (fig.9), it is not surprising that the PrimaLuna sounds more powerful than its measurements suggest.

At low frequencies, the onset of saturation of the output transformer core adds odd-order har-

monics to the amplifier's sonic signature (fig.10), but note that the 120Hz power-supply component is still 90dB down in this graph. Only when I measured the ProLogue One's high-frequency intermodulation at a power just below visible waveform clipping on the oscilloscope screen did the amplifier begin to run out of steam, with power-supply components joining the intermodulation spurs (fig.11). Even so, the level of intermodulation is not catastrophically bad, as it can be with some single-ended designs.

Considering its \$1k price, the nicely made PrimaLuna ProLogue One offers relatively respectable measured performance. No, it will not rival a competent solid-state design on the test bench, but neither does it do anything to be ashamed of.

—John Atkinson

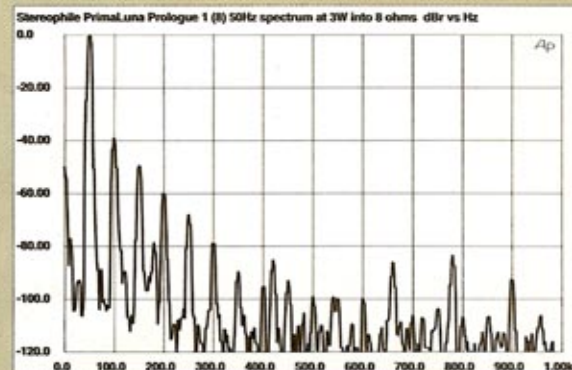


Fig.10 PrimaLuna ProLogue One, 8 ohm tap, spectrum of 50Hz sine wave, DC-1kHz, at 3W into 8 ohms (linear frequency scale).

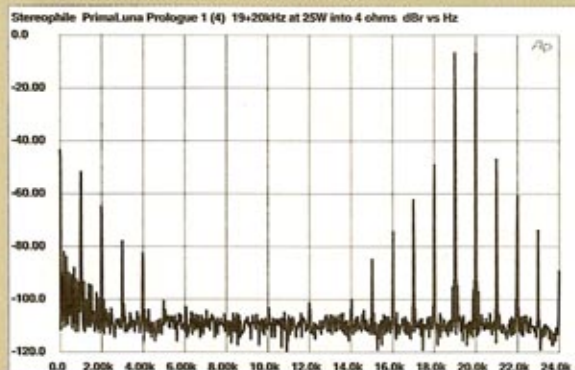


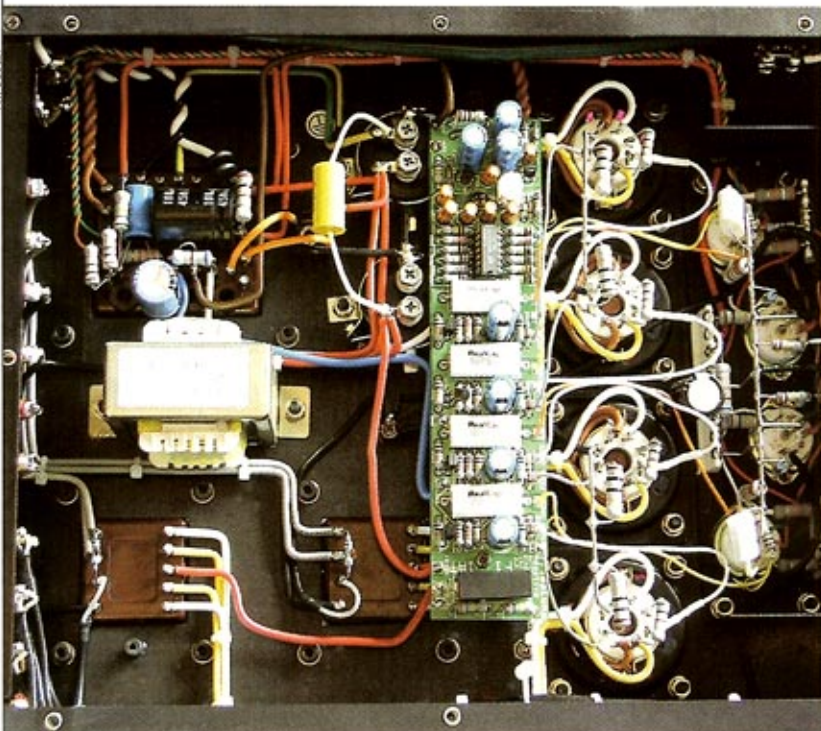
Fig.11 PrimaLuna ProLogue One, 4 ohm tap, HF intermodulation spectrum, DC-24kHz, 19+20kHz at 25W peak into 4 ohms (linear frequency scale).

ACD-35). Another plus was the timbral and spatial realism of Del McCoury's backing guitar. On the minus side, the ProLogue One made that recording and others like it a bit draggy, rhythmically: It missed a lot of the bounce and momentum that other amps seem able to find.

Conclusions

In fewer words: This chunky little tube amp sounded like a chunky little tube amp, for better and for worse. That it's so easy to buy and to use may steer you further from *worse* and closer to *better*.

Apart from its clever bias circuit, there's nothing new inside the ProLogue One's handsome chassis, technologically speaking. Economically, however—or geopolitically, or however else you want to look at it—there's a much bigger story: An amp this good can't be made to sell for this little in America, Europe, Japan, or even Mexico. So the PrimaLuna ProLogue One, while designed in the Netherlands, is manufactured in the People's Republic of China. Its



Inside the ProLogue One.

ASSOCIATED EQUIPMENT

ANALOG SOURCES Linn LP12 turntable with Naim Armageddon power supply, Naim Aro tonearm; Rega Planar 9 turntable; Supex 900 Super, Linn Akiva, Lyra Helikon Mono cartridges; Audio Note AN-S2 step-up transformer.

DIGITAL SOURCE Sony SCD-777ES and dCS La Scala-Delius SACD/CD players.

PREAMPLIFIERS Fi, DNM 3C Primus.

POWER AMPLIFIERS EAR 890, Lamm ML2.1s, First Watt F1.

LOUDSPEAKERS Quad ESL-989, Lowther PM2A in modified Medalion horns.

CABLES Digital: various dCS. Interconnect: Audio Note AN-Vx, Nordost Valhalla, homemades. Speaker: Audio Note AN-SPx, Nordost Valhalla, homemades.

ACCESSORIES Mana stands under turntables, digital components; Base base under EAR, First Watt amplifiers; Wally tools for phono setup.

—Art Dudley

casework is fabricated and finished in China. Its components are wired together in China. And its original, Dutch-designed output trannies are wound in China—apparently quite well. (The ProLogue One may not be at the very cutting edge of tube design, but it wouldn't sound this good if its output trannies were crap.)

1970s, when sequestering oneself with a record player was a way of turning one's back on all other media, most notably television—I can't help but feel that affordable or relatively affordable products are good for everyone: for dealers, for magazines, and even for people who make and sell music in the first place. Of course,

BOY OH BOY, CAN I EVER RECOMMEND THIS AMP!

Let's face it: China, when she's not busy buying up US currency, is busy making things, and making them well. And just like the clothes on your back and the flag in your yard, China makes them for a lot less than we apparently can. You are free to make of that what you wish.

I know how I feel about it. Because my first full-time job paid \$96 a week after taxes, and my first integrated amplifier, a Sansui AU101, cost about \$150, I've never shaken the notion that one's first very good amp should cost between one and two weeks' pay. And while I recognize that most things have changed since then—hi-fi doesn't mean the same thing to young people today that it did in the

I may whistle another tune if our economy tanks and I can't even afford the Christmas-tree ornaments at Walmart on December 26.

But for now, boy oh boy, can I ever recommend this amp! It's not the liveliest-sounding thing, and if that's more important to you than such things as texture and color, you'll be better off considering something else. But if you're new to the world of tubes and you want to see what it's all about—and you're on a limited budget, and rolling your own is out of the question—then it's hard to see how you can go wrong with the PrimaLuna ProLogue One. Lustily, heartily, and enthusiastically (if conditionally) recommended. ■