

## Equipment Report

Chip Stern

# AH! Njoe Tjoeb 4000 CD player with 24-bit/192kHz TjoUpsampler

**A**udiophiles once took it as given that LPs sounded better than CDs—end of discussion. Things are no longer so cut-and-dried. In my seven years as a contributing editor to *Stereophile*, I've seen an enormous improvement in the quality of digital software and playback-delivery systems. The early-1980s recording and remastering anomalies that made listening to early digital recordings so fatiguing are largely things of the past, though advocates of massive compression, jacked-up gain, and compensatory EQ ("Sounds-better-on-cheap-radios," they dully chant) continue to sully the waters of natural resolution.

While the new digital formats of DVD-Audio and SACD offer audiophiles pricey glimpses of a nearly perfected sonic future, dedicated music-lovers and engineers have continued to tweak the venerable "Red Book"—standard CD playback systems—to the point where, nowadays, high-resolution, no-compromise sound is no longer the exclusive province of the well-heeled.

### What would you pay?

Consider the notion of an exceptionally musical, single-chassis CD player with a tubed output stage that evinces the kind of soundstaging depth, liquidity, timbral accuracy, high-frequency detail, and top-to-bottom smoothness for which, barely five years ago, consumers might have eagerly coughed up \$3000 and more. Add a specially tweaked AC cord



AH! Njoe Tjoeb 4000 CD player

and a set of special vibration-damping isolating footers. Finally, throw in the option of replacing the player's already high-quality op-amps and Philips Bitstream DAC with a special 24-bit/192kHz upsampling board. You can practically hear Bob Popeil cooing away suggestively on one of his late-night infomercials: "What would you expect to pay for this level of high-end resolution? Fifty thousand? A quarter of a million? Your firstborn child?"

Well, Rumpelstiltskin ain't *my* name, but would you believe me if I told you that all this is yours for a thousand bucks and change? A no-frills, basic version of the Dutch-made AH! Njoe Tjoeb 4000 CD player costs \$699. It's based on a player that Kevin Deal, of US importer Upscale Audio, tactfully calls an "OEM 4000"—it's a Marantz under the skin. This basically provides the case, front-panel display, drive

mechanism, DAC, headphone jack, and remote control. The mystery unit is then substantially tweaked. Deal says this process begins with the replacement of the transistorized muting circuit with a mechanical relay and the stock clock with a low-jitter unit called a Supercrystal. An AC Noise Killer, in a small black box mounted near the AC cord, purportedly contributes to a slightly quieter midband response.

The most sonically significant change to the stock player is a tube output board made in The Netherlands, where all these modifications are done. Power-supply stability is enhanced by use of a dedicated toroidal transformer just for the tube stage, in addition to the larger power-supply transformer that replaces the stock unit. The new board has high-quality tube sockets, a host of filter caps and regulator chips, premium parts by Wima and Vishay, a Philips TDA1546

**Description:** Remote-controlled CD player with tubed output stage, one pair of analog outputs, one headphone output, and one S/DIF digital output. Tube complement: two 6922s. Optional TjoUpsampler board adds 24-bit/192kHz-upsampling sigma-delta DAC. Maximum output level: switchable between 700mV, 1.25V, 2.5V, and 5V. Output impedance: <275 ohms. Power consumption: 20W maximum.

**Dimensions:** 17.2" (440mm) W by

3.4" (87mm) H by 10.9" (280mm) D. Weight: 11 lbs (5kg) net.

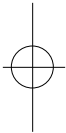
**Finish:** Black.

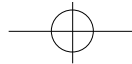
**Serial numbers of samples reviewed:** KT000015005190 (auditioning); KY000117034186 (measuring).

**Prices:** \$699. Options: AC Direkt power cord, \$79; Tjoeb Shoes isolation feet, \$69 set of four. SuperTjoeb package consisting of CD player and both options: \$847. TjoUpsampler 24-bit/192kHz upsampler: \$299. Approximate number of dealers:

factory-direct through Upscale Audio. Warranty: 1 year.

**Manufacturer:** Dé Hifiwinkel BV, Stratumsedijk 67h, 5611 NC Eindhoven, The Netherlands. Tel: (31) 40 211 33 88. Fax: (31) 40 211 77 34. Web: [www.hifi-planet.com](http://www.hifi-planet.com). US distributor: Upscale Audio, 2504 Spring Terrace, Upland, CA 91784. Tel: (909) 931-9686. Fax: (909) 985-6968. Web: [www.upscaleaudio.com](http://www.upscaleaudio.com).





DAC chip, and dual-mono Burr-Brown OPA604 op-amps for voltage gain.

"These are in sockets, and can be fine-tuned with plug-in Tjoeb Tjoens flavor packs," Deal explained. "For \$27/pair, the Analogue Devices AD825 offers a warmer sound, while at \$44 for the Burr-Brown OPA627 you get a more resolved sound with a little more pop. It's a cheap and easy way to give the player a nudge to fine-tune the tonal balance of the overall system."

However, if you opt to add the 24-bit/192kHz TjoUpsampler board for an additional \$299, it replaces the aforementioned DAC and op-amps, plugging into their vacated sockets. Anagram Technologies of Switzerland, who have designed and built components for such high-end mainstays as Nagra and Audio Aero, did the engineering for the TjoUpsampler. It uses an Analog Devices AD1895 chip—a second-generation 24-bit, asynchronous sample rate converter—for the upsampling and a

Wolfson Microelectronics WM8740 DAC chip, this a 24-bit, 192kHz-capable two-channel part.

Both of the Tjoeb 4000 samples I auditioned were gussied up with a set of Tjoeb Shoes (\$69) vibration-control devices, made by Suspension String Concepts of Germany; and the AC Direkt power cord (\$79), terminated with a high-quality Wattgate plug. This brings the suggested retail price to \$847. Upscale Audio offers other packages as well, including sets of NOS tubes.

### Setup

The maximum output voltage of the AH! Njoe Tjoeb 4000 is adjustable via an internal solder trace, offering purchasers the option of configuring the 4000 to 700mV, 1.25V, 2.5V, or 5V—a nice feature for system-tuning purposes, or for those folks who want to use the 4000 sans preamp, and/or with self-powered speakers (the remote features a 20-step volume control).

## AH! Njoe Tjoeb 4000

I've never much liked the sound I've gotten by driving a power amp with a digital source, so I used the 2.5V default output with my reference preamps. Then it was just a matter of installing the internal Marantz CD clamp and a pair of 6922 dual-triodes. The basic unit comes stock with Philips ECG tubes; after I'd tweaked my TjoUpsampler-equipped review sample with a pair of NOS Amperex PQ 7308 tubes and AH!'s tube damping rings, I was good to go.

I substituted the smoother, more frequency-extended update of the classic Synergistic Research Designers' Reference speaker cables for my reference Acoustic Zen Hologram II cables. The overall character of SR's new Solid State Reference X-Series Active speaker cables was very similar to that of the Acoustic Zens, though the SRs' high-resolution depiction of the soundstage was a touch more centered and less point-source. Other-

## Measurements

Despite being triple-boxed, the first sample of the AH! Njoe Tjoeb 4000 was a victim of shipping damage. It arrived at my place with only one channel working, and that for only a short while before the player expired. Upscale Audio's Kevin Deal sent me a replacement sample, which worked fine. It was identical with respect to the extras, other than not having the premium AC cable fitted.

As the 6922 tubes, upsampling board, and transport clamp all have to be installed before the player is fired up, this gave me the opportunity to look inside. Although the Njoe Tjoeb 4000 is based on an OEM player badged for Marantz, the tubed audio circuit and its associated board and power supply are all new, and the construction quality appears excellent. I was also impressed by the excellent instructions, complete with step-by-step photographs, that are supplied with the player and duplicated on the distributor's website. I wish more manufacturers were as helpful.

Absolute polarity was correct, and as set for the review, the 4000's maximum output level at 1kHz was almost 3dB higher than the CD standard, at 2.75V into a high 100k ohm load. The player couldn't drive a signal at 0dBFS

into impedances lower than 2k ohms without the top half of the waveform squaring off, so even though the Njoe Tjoeb's output impedance was a low 170 ohms across most of the band, a preamplifier with an input impedance higher than 10k ohms is advised. Error correction was excellent, the player coping with gaps in the data spiral of up to 1.25mm in length without audible glitches.

The AH! player's frequency response was, surprisingly, less than flat (fig.1, top pair of traces), with the midbass-to-midrange region shelved up compared with the mid-treble. The boost is just over half a dB, but as it covers five octaves, it will be very audible. "I wouldn't characterize the 4000's sound as bright," wrote Chip Stern; from its measured response, neither would I. The tonal balance was even more skewed to the mid-range and bass with a pre-emphasized signal (fig.1, lower traces), but such discs are relatively rare. Channel separation (not shown) was good, at better than 90dB in both directions at 1kHz, but less good at low and high frequencies, due to capacitive coupling in the latter case, and perhaps to increasing power-supply impedance in the former.

However, the 4000's noise floor also slopes up at low frequencies, which can be seen in fig.2, a 1/3-octave spectral analysis of the Njoe Tjoeb's

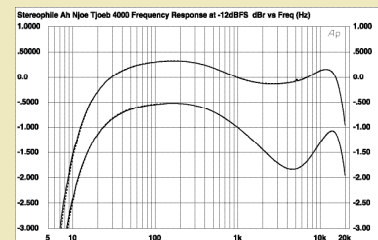


Fig.1 AH! Njoe Tjoeb 4000, frequency response at -12dBFS into 100k ohms without (top) and with de-emphasis (right channel dashed, 0.5dB/vertical div.).

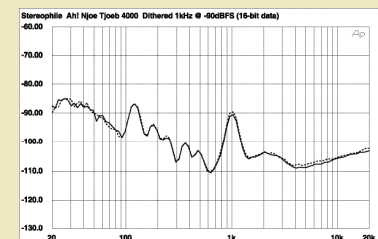
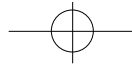


Fig.2 AH! Njoe Tjoeb 4000, 1/3-octave spectrum of dithered 1kHz tone at -90dBFS, with noise and spurs, 16-bit CD data (right channel dashed).



## AH! Njoe Tjoeb 4000

wise, everything in my system was much the same as it has been for the past year or so—save for a constant shuffling of digital front-ends.

So that I'd have a more convenient basis for comparison, I had Upscale Audio send me a Njoe Tjoeb 4000 with the basic trimmings, as well as the totally tweaked model with 24/192 Tjo-Upsampler already installed. The latter was the unit I ended up spending the most time with.

### Bang for the buck

Right out of the box, the basic \$849 AH! Njoe Tjoeb 4000 sounded every bit as warmly detailed and resolved as my trusty old sidekick, the California Audio Labs combo of Delta CD transport and Alpha 24-bit/96kHz tubed DAC. The CAL remains a very musical, alluring performer, but the Njoe Tjoeb more than held its musical own against the CAL, which dates back to the mid-to-late '90s, when it retailed for \$2400. This sort of took me by surprise, but hey, time marches on. Digital design has come a long way since then.

There isn't room here to delineate the technical nature of upsampling or how Njoe Tjoeb mates it to a tubed output stage, but based on my experience of

these units, and of conjugal visits with the pricey, pace-setting, supremely musical dCS Elgar, I was reminded anew of how, when all else is in doubt, the culprit is invariably noise. Proponents of upsampling assume that, as you remove noise by reducing jitter errors and kicking high-frequency artifacts upstairs into ever less audible realms, ambient backgrounds get blacker and deeper.

The resulting sound, as I apprehended it with the Njoe Tjoeb 4000 with 24/192 upsampler, was indeed more musically involving: quieter and more resolved, with a stunning increase in resolution and small details. There was simply more *there* there. Straightaway, the 4000's superb rhythm and pacing made my experience of small-combo jazz far more enjoyable. The 4000 didn't display the transient snap and steely, vise-like grip on low frequencies that I enjoyed with my longtime reference, the now-departed Sony SCD-777ES SACD/CD player. But in some ways its portrayal of bass information was juicier and more detailed, while its depiction of acoustic space rivaled, and in many ways exceeded, that of the tubed CAL Delta/Alpha and the solid-state CAL CL-20 CD/DVD player. For instance, on clarinetist Bill Smith's *Folk Jazz* (Contemporary

OJCCD-1956-2), a wonderful 1959 recording engineered by Roy DuNann, there was significantly more harmonic information present in the leading edge of bassist Monty Budwig's acoustic bass than through the Sony: the sound of each individual string, the touch of the hand, the air around each note, the way those notes blossomed and decayed.

Just as the Delta/Alpha portrayed Budwig's bass with ingratiating warmth and roundness, the Njoe Tjoeb 4000 fleshed out the midrange to reveal another layer of texture and detail, which manifested itself in the shimmy of Shelly Manne's brushes. And while the CL-20 has long impressed me with its depth of resolution and portrayal of acoustic space, there was altogether more depth with the Njoe Tjoeb 4000, not to mention more *presence*, which I heard as greater image-to-image distinction—a more palpable sense of the physical placement of instruments within the soundstage. I heard this to particular effect with Jim Hall's muted electric-guitar comp—the 4000 brought Hall's sound forward without unduly tipping the balance of the mix. Bill Smith's clarinet was woody, buoyant, and warmly balanced from the upper bass through the lower treble, the horn

## Measurements

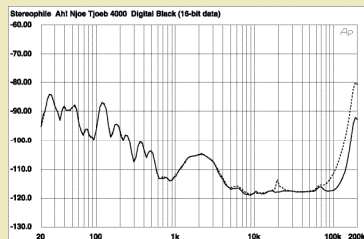


Fig.3 AH! Njoe Tjoeb 4000,  $\frac{1}{3}$ -octave spectrum of digital black, with noise and spurs, 16-bit CD data (right channel dashed).

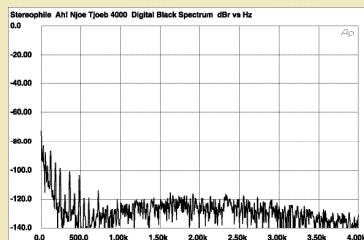


Fig.4 AH! Njoe Tjoeb 4000, FFT-derived spectrum of digital black, DC–4kHz, with noise and spurs, 16-bit CD data (linear frequency scale).

output while it played a dithered 1kHz tone at  $-90$ dBFS. Perhaps more significant, a number of peaks can be seen at power-supply-related frequencies, both at 60Hz and at its odd-numbered harmonics (which are probably generated by magnetic coupling from the AC transformers), and at 120Hz and its harmonics (which are due to electrical coupling from the full-wave-rectified supply). Even the highest in level, at 120Hz, only just pokes its head above the  $-90$ dB level,

so they shouldn't be audible in typical systems. Still, I'd rather they weren't there at all.

There is a hump around 2kHz in the noise floor visible in fig.2, which can be seen more clearly in a spectral analysis of the player's output while it decoded "digital black" (fig.3). The power-supply components can also be seen in this graph, as can a small peak just below 200kHz. It isn't possible with a  $\frac{1}{3}$ -octave spectrum to distinguish between pure tones and true noise, so I repeated the analysis using an FFT technique (fig.4). This graph shows the phenomenon consists of a hump in the noise rather than idle tones, meaning that it is probably benign. However, I haven't seen something like this before.

The relatively high level of analog noise in the AH! Njoe Tjoeb 4000's output means that its linearity plot (fig.5) is marred by what appears to be an increasing amount of positive error below  $-100$ dBFS. But above

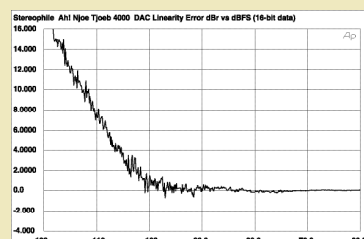
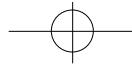


Fig.5 AH! Njoe Tjoeb 4000, left-channel departure from linearity, 16-bit CD data (2dB/vertical div.).



floating out front with a relaxed vocal presence, no register hotter or stronger than any other.

This last point was driven home when I contrasted the performance of the Njoe Tjoeb 4000 with another reliable old friend whose musical deportment has never failed to draw me deeper into the emotional subtexts of a performance: the Musical Fidelity A3 CD player, which was, dollar for dollar, one of the best values ever in high-end audio. Renée Fleming's stunning performance of "Ave Maria" (*The Schubert Album*, London 455 294-2) showcased the A3's captivating depiction of space and dimensionality; its

exceptionally smooth frequency response and natural portrayal of vocals were altogether pleasing, yet there was a little something extra to the Njoe Tjoeb 4000's presentation. Call it the deeply layered midrange character of tubes or the extra detail attributable to the TjoUpsampler—there was not only greater depth of field and a more fulsome sense of resolution, but the depiction of space itself—the silences between the notes—was more compelling. Not only was there more detail to Fleming's individual notes—such as how she concludes the arc of one long phrase by snapping it off with a click of her tongue on the top of her palate—

but it sounded as though the images of Fleming's voice and that of her pianist, Christoph Eschenbach, were individually backlit.

Yet while I could discern greater distinction between the two images, and a wealth of additional detail, there nevertheless remained an organic bond between voice and instrument that defined the emotional connection of soprano, piano, and room acoustic. I'm talking macrodynamics and microdynamics here—not in the cold, analytical manner of a telescope or microscope, but in the best senses of those terms: as a more realistic sense of liveness and sonic illumination.

### Measurements

that level the actual amplitude error is very low, suggesting good DAC linearity. However, the low-frequency noise obscures the waveform of an undithered 1kHz tone at  $-90.31\text{dBFS}$  (fig.6).

The Njoe Tjoeb player's distortion signature comprised low-order harmonics at moderately low levels (fig.7), the third harmonic rising above the second as the load impedance drops. The subjectively benign second harmonic was the highest in level, at around  $-66\text{dB}$  (0.05%) with the player driving the 100k ohm lab load, which again suggests that the Njoe Tjoeb will be happiest driving preamps of high input impedance. Intermodulation distortion was moderately low in level (fig.8), and not particularly affected by the load impedance (at least while it remained above 10k ohms). But there is a reasonably strong component at 24.1kHz in this graph, which suggests that the player's reconstruction filter has been optimized for time-domain perfor-

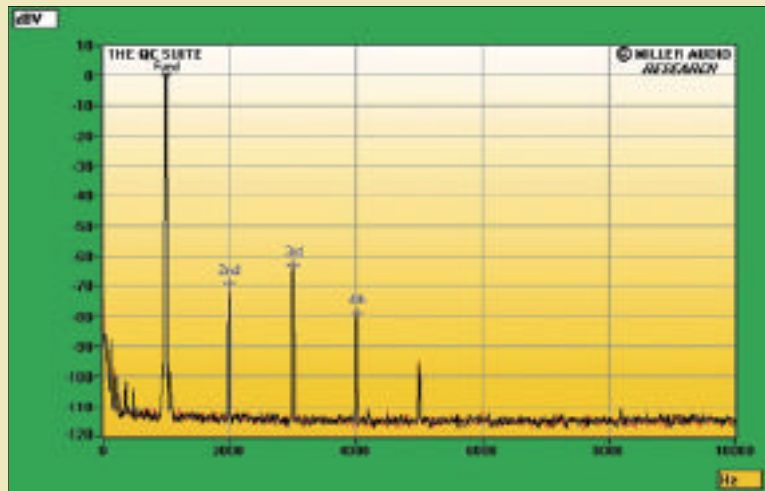


Fig.7 AH! Njoe Tjoeb 4000, spectrum of 1kHz sinewave, DC–10kHz, at 0dBFS into 8k ohms (linear frequency scale).

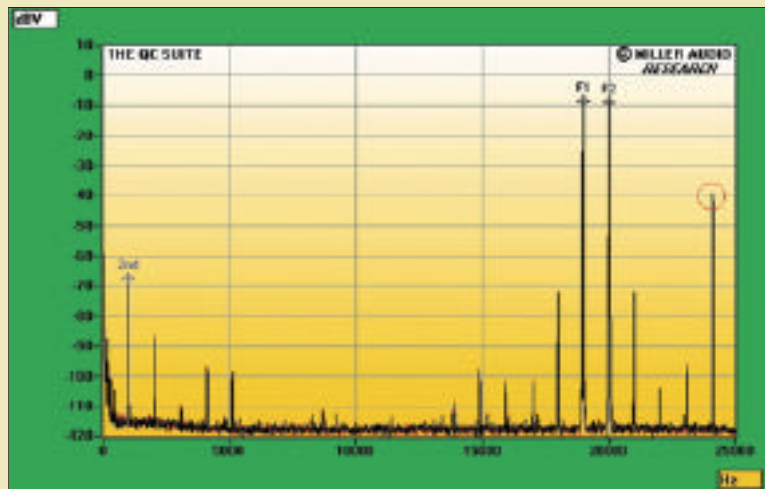


Fig.8 AH! Njoe Tjoeb 4000, HF intermodulation spectrum, DC–25kHz, 19+20kHz at 0dBFS into 8k ohms (linear frequency scale).

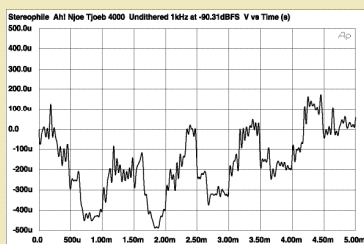
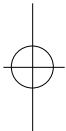
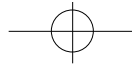


Fig.6 AH! Njoe Tjoeb 4000, waveform of undithered 1kHz sinewave at  $-90.31\text{dBFS}$ , 16-bit CD data.






## Conclusions

For several months in my reference system, the AH! Njoe Tjoeb 4000 CD player with 24-bit/192kHz TjoUpsampler acquitted itself like a champ. However, listeners with exceptionally reflective rooms and/or etched, analytical systems should be prepared for a fairly extended break-in period, during which the 4000 might sound irritatingly bright. My upsampler-equipped unit took a few hundred hours to break in; thereafter, as it continued to settle in, the brassiness that had characterized its out-of-box sound gradually diminished. (Despite all the extra resolution, some listeners may

very well prefer the warmth of the basic unit, sans TjoUpsampler.)

While I've heard CD players with smoother, more relaxed top ends, I wouldn't characterize the 4000's sound as bright, but...brilliant. Likewise, I've heard digital playback systems with punchier low ends. But the glory of the AH! Njoe Tjoeb 4000 is its detailed and richly layered midrange. Visitors to my den of iniquity were invariably surprised when I pointed out that a \$1000 CD player was functioning as the digital epicenter of a no-compromise sound system. I've heard CD players that had better rhythm and pacing, more midrange liquidity and trans-

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parency, greater depth of field, and finer resolution. But I can't recall hearing a more musically involving, full-somely detailed, three-dimensional presentation from any other CD player at such a modest price as the AH! Njoe Tjoeb 4000. 

### Associated Equipment

**Analog source:** Rega Planar 25 turntable, Rega RB600 tonearm, Grado Statement Master cartridge; Marantz PMD430 portable cassette recorder.

**Digital sources:** California Audio Labs Delta CD transport, Alpha 24-bit/96kHz tube DAC, CL-20 DVD-V/CD player; Musical Fidelity A3 CD player.

**Preamplification:** Musical Fidelity Nu-Vista, VTL 5.5, Rogue Audio Magnum Ninety-Nine preamplifiers; Rogue Audio Stealth phono preamplifier; Manley Labs Massive Passive equalizer.

**Power amplifiers:** Musical Fidelity Nu-Vista 300, Mesa Baron, Rogue Audio Magnum M-120.

**Integrated amplifiers:** Linn Klassik, Simaudio i-5, Mesa Tigris, Musical Fidelity A3.2.

**Loudspeakers:** Joseph Audio RM25si Mk.II Signature & RM7si Mk.II Signature, Martens Audio Monk.

**Cables:** Interconnect: Acoustic Zen Silver Reference II (balanced, single-ended, coaxial). Speaker: Synergistic Research Solid State Reference X-Series Active, Acoustic Zen Hologram II, JPS Labs Superconductor 2. AC: JPS Labs Aluminata, Kaptovator, Kaptovator Power AC Outlet Centers, Digital AC; Synergistic Research Designers' Reference<sup>2</sup> Master Couplers with Active Shielding; Acoustic Zen Gargantua II.

**Accessories:** Equi-Tech 2Q & Q650 balanced AC power systems, Monster Cable AVS 2000 Automatic Voltage Stabilizer, Mondial Magic Splitter; Poly-Crystal equipment racks & amp stand, Ringmat 330 & Signal Guard II Isolation Stand (turntable); Shakti Stones, PolyCrystal cones; Argent Room Lens, Echo Busters Bass Busters, Absorptive & Diffusive Panels.   
—Chip Stern

mance rather than for maximum stop-band rejection.

The Njoe Tjoeb 4000 did very well on my usual jitter-rejection test, producing just 180 picoseconds of wordclock-related spurious (fig.9). Most of these were data-related (red numeric markers), though some low-frequency sideband pairs could be seen (purple markers). Note the very low noise floor in this graph, which covers the 77–14.7kHz range. The noise introduced by the player's use of tubes appears to be almost all low-frequency in nature.

The AH! Njoe Tjoeb 4000's measured performance is generally good,

with some areas of excellence. Only its unflat response and the presence of supply-related spurious caused my eyebrows to rise.   
—John Atkinson

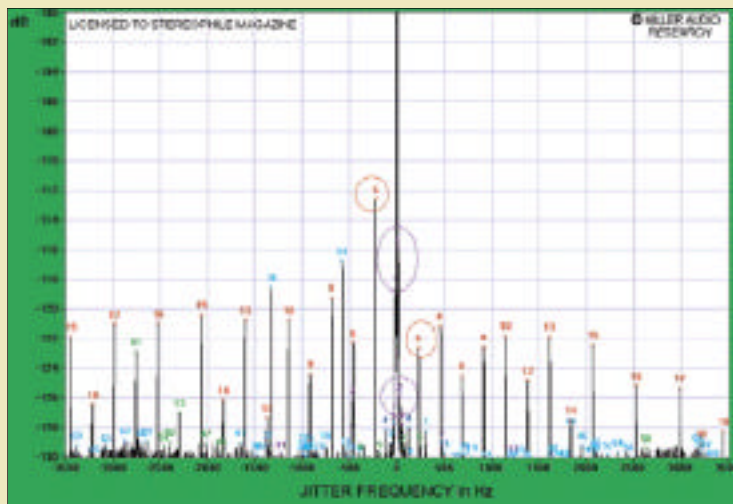


Fig.9 AH! Njoe Tjoeb 4000, high-resolution jitter spectrum of analog output signal (11.025kHz at -6dBFS sampled at 44.1kHz with LSB toggled at 229Hz). Center frequency of trace, 11.025kHz; frequency range,  $\pm 3.5$ kHz.

