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The ULTIMATE PREAMP
VTL's *Extraordinary* TL-7.5

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VTL TL-7.5 Reference
RECOMMENDED COMPONENTS 2003

Paul Bolin

VTL TL-7.5 Reference line preamplifier

ERIC SWANSON

What comes to mind when you think of VTL? If you're like most of us, enormously powerful tube power amplifiers are inseparable from the name. To contemplate VTL is to think of some of the finest-sounding, most potent amps ever built—from the late-1980s, 400Wpc Ichiban, the first massively powerful tube monoblock of the audiophile era, to the mighty Wotan and Siegfried amplifiers of today. All well and good, as far as it goes.

But VTL also has a long history of building fine, if somewhat underappreciated, line stages and preamplifiers, the excellent TL-5.5, reviewed for *Stereophile* by Chip Stern last November, being only the most recent example. For some reason, the light has never shone quite as brightly on VTL's front-end electronics, perhaps in part because it's been so long since the company attempted a headline-grabbing, all-out assault on the state of that art.

More than five years ago, Luke Manley, president of VTL, decided to rectify that situation, and began work on what was intended to be a world-beating line stage. The result of VTL's efforts, the TL-7.5, was introduced to the world at Home Entertainment 2002. One look at the TL-7.5 and there was no doubt that here was a line stage prepared to compete with, and quite possibly best, anything the competition had to offer. When Luke agreed to make a TL-7.5 available for review, I responded much as I would to learning that Lucy Liu was at my front door: immediately, and with no small enthusiasm.

Two chassis, no waiting

In early 1998, Luke Manley set his engineering team a formidable challenge: Develop a line stage that would not only outperform any existing preamplifier design, but would also have the test-bench measurements to back it up. The primary goals were to "deal with the sonic bottlenecks that occur in the multiple stages and functions of known preamplifier designs," and to completely isolate the circuitry from all external environmental influences, including AC condition, load, source components, noise, and physical vibrations. VTL wanted the TL-7.5 to be able to drive any length of cable, even a punishing 600 ohm load, and to provide the full gamut of switching and control facilities and an easy-to-use interface.

The VTL team took a unique approach to the TL-7.5's circuit topology. The gain is provided by two 12AX7 tubes run in a completely differential circuit with very small amounts of global feedback. Nothing too unusual about that, but the output buffer stage

uses high-voltage proprietary MOSFETs in a push-pull circuit. As the output stage is a buffer and provides no voltage amplification, the very low output impedance and high-current capabilities of the solid-state devices allow the preamp to drive virtually any type and length of cable with no sacrifice in performance. According to VTL's white paper, the output stage is capable of "maximum signal swing on both phases of the signal" so that, when the circuit clips at saturation, that clipping is perfectly symmetrical. The massive power supply and large coupling capacitors ensure that low output impedance is maintained at low frequencies; the preamp is thus "virtually unaffected by load impedance" and can swing 30V into 600 ohms before saturating.

The most obviously different feature about the TL-7.5 is its two-box package. As with the Mark Levinson No.32, the control chassis houses all the power supplies and microprocessors (and their noise), while the audio chassis contains only the amplification circuitry, relays, and switching facilities. Multiple, fully regulated power supplies are used for each stage of amplification, and extensive mains filtering is provided to block RF and other grunge that can sneak in to contaminate the signal path. The weight of the control box indicates that the power supply has plenty of muscle. Messages are relayed to the clean audio box via two 50-pin SCSI computer cables, one for each channel, but no digital signals are used to control the audio box — only a 5V DC signal travels between the boxes.

The control section contains but one knob, which can be switched to control volume level, input offset, and balance, simplifying the signal path and eliminating parts. Source selection and volume control are all controlled with specially selected low-signal, instrumentation-quality reed relays. The volume control offers 95 steps of 0.7dB each, and the signal passes through only one relay-selected series resistor at any setting. The dual-mono circuit boards are shock-mounted to isolate them from their environment.

Microprocessors also control a myriad of background functions, including turning the tubes on in stages and warming them up gradually (you can watch the 90-second warmup countdown on the front-panel display), applying the high plate voltage only after the filaments are properly warmed. VTL asserts that this will dramatically lengthen tube life, which they estimate at 4000–5000 hours.

The software allows for an outstanding degree of flexibility and ease of use. Inputs can be set for single-ended or balanced operation (all inputs and outputs on the TL-7.5 are duplicated on excellent-quality RCA and XLR jacks), each source can be set for its own level of gain so that all will have the same loudness level, and any input can be assigned for unity gain and processor pass-through. Mute, fade, an absolute phase inversion switch, and tape-monitoring facilities are also provided, and everything you'll regularly use is accessible from the thorough but friendly remote.

Once programmed, the TL-7.5 remembers the configuration for each source until you choose to change it; the stored settings can be locked to prevent accidental resets. Should you want to use the VTL in a full-blown home entertainment system rather than a two-channel music setup, the TL-7.5 is ready to oblige. Programmable triggers can be used to turn on power amps remotely, and there's a rear-mounted infrared receiver for centralized control systems such as those from Crestron and AMX. The comprehensive owner's manual presents all of the options and features clearly; even an audio reviewer can quickly get the hang of the TL-7.5.

The TL-7.5 is no stripped-to-the-bone, built-for-speed racing machine. Its clean, handsome, functional styling, exhaustive complement of features, and exceptional flexibility make it the audio equivalent of an Aston Martin Vanquish — envelope-pushing performance there, but so are all of the thoughtful touches, useful convenience features, and luxurious feel that mark a dignified gentleman's express. Once the TL-7.5's capabilities are fully understood, it's no surprise to learn that it took more than four years to design and build. The buyer gets his money's worth.

Description: Tubed, two-chassis, remote-control line preamplifier with MOSFET output stage. Tube complement: two 12AX7. Inputs: 4 pairs balanced/XLR or RCA single-ended, 4 pairs single-ended/RCA. Outputs: 2 pairs balanced out, 2 pairs single-ended RCA out, 2 pairs single-ended RCA buffered Tape Out. Remote-control functions: Power, Source Select, Volume up/down, Mute, Fade, Balance, Phase Reverse. Voltage Gain: 20dB to RCA outputs, 26dB to XLR outputs. Output impedance: 25 ohms (150 ohms maximum at 10Hz). Input impedance: 50k ohms (20k ohms minimum). Frequency response: 1Hz–100kHz, +0/–1dB (20Hz–100kHz, +0/–1dB into 600 ohms with 900pF, 20' interconnect cable). Maximum output voltage: 31V, 10Hz–200kHz into 600 ohms at 1% THD. Channel separation: >100dB at 1kHz (>80dB at 20kHz). Power consumption: 150W.
Dimensions: Control chassis: 17.5 W by 4" H by 17.5 D. Audio chassis: 17.5 W by 6" H by 17.5 D. Shipping weight: 75 lbs.
Serial numbers of units reviewed: 02194976 (audio chassis) and 02194977 (control chassis), listening; 03235601 (audio chassis) and 03235602 (control chassis), measurements.
Approximate number of dealers: 42.
Manufacturer: VTL, 4774 Murrieta Street, Suite 10, Chino, CA 91710. Tel: (909) 627-5944. Fax: (909) 627-6988. Web: www.vtl.com.

The sound of one hand clapping

At first hearing, the TL-7.5 did not overwhelm me. Though it was clearly a superior product with impeccable sonic breeding, nothing leaped out at me. Its performance proved to be so balanced and free of weaknesses that no single quality stood out. The VTL required some get-acquainted time to appreciate how good it truly was. It neither accentuated nor glossed over *anything*.

String tones were extraordinary. The full-blooded, whipped-cream-lush sound of Debussy's *Clair de Lune* and Elgar's *Dream Children* (Raymond Agoult, London Proms; LP, RCA/Classic LSC-2326) came through with irreproachable clarity and ravishing transparency. The imploring, creamy tone of the solo violin in Massenet's "Meditation from *Thaïs*" was plush as goose down, but superbly defined and focused. The top octaves had a silkiness and openness that promptly became habit-forming.

The TL-7.5 was every bit as distinguished when handling the lighter textures of Ravel's "The Beauty and the Beast Converse," from the *Mother Goose Suite*, on the compilation *The French Touch* (Charles Munch, Boston Symphony; CD, RCA Living Stereo 68978-2). Electronics that can capture the full measures of overstuffed richness of the Elgar and Debussy recordings sometimes thicken and obscure the lacy textures that are the essence of the Ravel. Not the big VTL. Delicacy and power have seldom sat so comfortably and easily together as they did here.

Fairport Convention's *XXXV* (UK CD, Woodworm WRC 2035) is yet another glory of the band's enormous

catalog, and it may be their best overall effort since the Sandy Denny era. A longtime fan, I was a bit nervous that the loss of guitarist supreme Martin Allcock and his replacement by singer-fiddler-mandolinist Chris Leslie would change the band's chemistry. I needn't have worried. Leslie is a wonderful songwriter and a soulful singer and player. Hearing his "My Love Is in America" through the TL-7.5 was to be on the receiving end of a musical TKO. This song, a beautiful and musically soaring story of loss, acceptance, and endurance, could wring tears from a stone; the TL-7.5's ability to evoke emotion as well as sound made it a magical experience. Ric Sanders' sweetly swinging violin on "Portmeirion" was a warm and gentle sea breeze, while the rocking "Madeleine" made me want to dance around the room with a pint of real ale in hand.[1]

The TL-7.5's sound was entirely grainless and as transparent as can be imagined. With Silly Wizard's rousing "Wha'll Be King But Cherlie" and the beautiful "Lover's Heart," from *A Glint of Silver* (LP, Green Linnet SIF 1070), Andy M. Stewart's warm, sonorous voice was, respectively, inspiring and gloriously touching. The sweetness of the guitars and the aching melancholy of the piano on the coda of Derek and the Dominos' immortal "Layla" (LP, Direct Disk Labs SD2-16629) were superb, Duane Allman's little orbits around the main theme like sprinklings of stardust.

Bass was true, deep, and tight. Those massive bass drums on "Journey to the Line," from *The Thin Red Line* soundtrack (CD, RCA 63382-2), and Copland's *Fanfare for the Common Man* (Eiji Oue with the Minnesota Orchestra; CD, Reference RR-93CD), had tremendous definition; I could hear the skins of the drums rippling as they returned to rest. Other Big Stupid Bass, from the likes of Kruder & Dorfmeister, Kraftwerk, and Virgil Fox's never-to-be-equaled performance of Bach's Passacaglia and Fugue in c (LP, Command CC11018 SD), was just as impressive.

The TL-7.5's treble was incredibly fast, smooth, and open, without any of the apparent (but not actual) speed that comes from goosing up the lower treble. Dynamics were a textbook exemplar of distinction from the top to the bottom of the audible spectrum, and the VTL's ability to resolve the precise differences in such things as a pianist's varying touch stands alone at the front of the field.

Big rock'n'roll was enrapturing through the TL-7.5. "Sultans of Swing," from Dire Straits' live album, *Alchemy* (LP, Warner Bros. 25085-1), slashed and swept across the room like a controlled tornado. Particularly wonderful were the ways the VTL handled Mark Knopfler's voice and his passionate raging against the dying of the light in the concluding guitar solo. Lightning was in the air.

As well as the power amplifiers listed in the Associated Equipment sidebar, I also spent an afternoon each with the TL-7.5 driving Atma-Sphere MA-2 triode monoblocks (250W, OTL) and a Tom Evans Audio Design Soul S30 stereo amp (30Wpc). Paired with the VTL, each of these sterling amplifiers gave a strikingly individualized sonic picture. Unsurprisingly, teaming VTL's own MB-450 Signature power amps with the TL-7.5 produced a synergy that was devastating in its ability to communicate both sound and meaning. Equally impressive if somewhat different results were achieved with the tubed and hybrid Lamm amplifiers. I've long thought that the ability of a component to maximize the differences between recordings and the sounds of other components swapped into a system is the single most reliable indicator of neutrality. There, the VTL pegged the meter.

The TL-7.5 resolved more subtle information from each recording and imposed less of itself on the music than I had previously heard from any piece of electronics.

The line stage that wasn't there

I haven't focused quite as much here on the catalog of sonic particulars that is the sum and substance of most reviews of audio gear. Components at the topmost levels of performance are now so good that, when evaluated against a checklist, the same commentary will apply to almost all of them, with only minor variations. Tonal neutrality, dynamic responsiveness, and spatial excellence are taken for granted at these levels. Traditional audio terminology was developed primarily to describe the absence of the flaws to which components have been subject. It is another thing entirely to try to describe the presence of positives; I can resort only to imperfect analogies.

When I was a law student, my legal philosophy professor assigned the class an article from the 1930s by an academic named Felix Cohen. Professor Cohen puckishly described lawyers' heaven (hold your snickering, please) as possessing a machine that could split a hair into 10,000 pieces, then parse each piece another 10,000 times.

The TL-7.5 was the audio equivalent of Professor Cohen's marvelous machine. You name it — timbre, soundstage width, depth, height, the positions of each instrument and voice, the most infinitesimal difference between dynamic shadings — the TL-7.5 resolved more subtle information from each recording and imposed less of itself on the music than I had previously heard from any piece of electronics, save possibly the Halcro dm58 power amplifiers. Nothing on any recording escaped the VTL's grasp; whenever any-

Associated Equipment

Analog source: SOTA Cosmos Series III turntable, Graham 2.2 tonearm, Dynavector XV-1S cartridge.
Digital sources: Esoteric DV-50 universal player, Classé Omega SACD/CD player.
Preamplification: Manley Labs Steelhead, Aesthetix Io Signature, Rhea phono stages.
Power amplifiers: Lamm M2.1 & ML1.1, VTL MB-450 Signature, Classé CAM-350, Manley 250 Neo-Classic monoblocks; Plinius SA-102, Hovland Radia.
Loudspeakers: Calix Phoenix Grand Signature, Legacy Focus 20/20, Eggleston Works Andra II.
Cables: Phono: Hovland Music Groove 2. Interconnect: Acoustic Zen Silver Reference & Matrix Reference, Nordost Valhalla. Speaker: Nordost Valhalla & SPM, Acoustic Zen Satori Shotgun, Stereovox LSP-600, Cardas Golden Reference. AC: Shunyata Anaconda & Anaconda Vx, Acoustic Zen Gargantua & Gargantua II, Wireworld Silver Electra III+.
Accessories: Argent Room Lenses; Shunyata Hydra, Monster HT 7000 Signature power distribution & conditioning (front-end); Grand Prix Audio Monaco stands, Ultra Resolution Technologies Bedrock stand; Ganymede isolation footers; Caig Labs Pro Gold contact enhancer; Ayre/Cardas IBE system-enhancement CD, Cardas *Frequency Sweep/Burn-In LP*; Disc Doctor, LAST Labs record-care products.

—Paul Bolin

thing seemed inappropriately thrust into prominence, it was unmistakably a reflection of choices made by recording engineers. The VTL's package of image density, continuity, and completeness was a new kind of audio experience.

In the names of transparency and detail retrieval, many components have broken down music into its tiniest component parts with the fanatical precision of a 19th-century botanical taxonomist. Though all of that detail can be something of a wonder, it is not, by itself, enough to convincingly re-create the illusion of real music coming from an audio system.

A visual analogy: Listening to LPs and CDs through hyperdetailed components is much like standing too close to a brightly spotlit painting by Monet or Seurat. The *bits* are all there, but the *point* of the work being observed is obliterated. The totality of the work, its atmosphere and the intention of the artist (or musician), are overlooked in the name of accuracy to the details. The whole is the sum of the parts *in context*, not merely a list of those parts; absent context, the result is an unnaturally vivid differentiation of elements that must, ideally, all be working together in harmony to properly communicate the artistic experience. Rather miraculously, the VTL TL-7.5 combined a seemingly molecular level of resolution with an agile, flowing facility at presenting context, meaning, and emotion. While no component constitutes a Platonic ideal, the TL-7.5 is the closest thing I have experienced to one.

This is not to say that the big VTL was not vivid. It was, and remarkably so, but this was a different sort of vividness from what most electronics can manage. The TL-7.5 passed tons of information; its excellence in this regard might be singular. But how all of that information was so easily and totally integrated into a coherent, continuous, and seamless whole was what made the TL-7.5 something new under the sun. With any music recorded in a way that made musical sense, there was a sensation of total effortlessness and full-body immersion in the sounds that poured forth from the speakers, regardless of its scale or complexity.

Get in the Ring

It is no easy thing to attempt to describe the "sound" of a component that had less intrinsic sonic character than anything else I have ever reviewed. The TL-7.5 had such an infinitesimal sound of its own, and did everything so supremely well, that I found nothing to rationally criticize. Sonically, it simply did not exist in the signal chain. I've walked this road before, with the (sadly) discontinued Jeff Rowland Design Group Coherence II line stage, which I reviewed in 1999 for *The Absolute Sound*. Living with the Coherence for nearly three years imprinted its "sound" on me permanently. The VTL was even better at disappearing. It is, by no small margin, the finest line stage I have ever heard at length.

But I offer a word of caution: A couple of super-heavyweight competitors are warming up in the bullpen as I write this. The VTL TL-7.5 has set a hellaciously high standard for line-stage performance. Is it unbeatable, at least to my ears and tastes? Will the challengers match or better the big VTL? Only time will tell, and there is never any single universal "best" in any component category. Stay tuned—this could get *really* interesting.

1 It's funny how these (mostly) graybeards can make music with more real life and passion than can most musicians half their ages. Fairport's music is made by men who have lived, loved, and learned; it remains a treasure, especially when heard through the TL-7.5.

PRODUCTS of the YEAR

BY JOHN ATKINSON & STEPHEN MEJIAS

AN EXCERPT FROM DECEMBER 2003

2003 JOINT AMPLIFICATION COMPONENTS

VTL TL-7.5 Reference preamplifier
(reviewed by Paul Bolin, Vol.26 No.10, October 2003 WWW)

Our final winner, the two-chassis VTL TL-7.5, combines tubes and FETs and was designed with the express purpose of being a world-beating line stage. Presumably, VTL succeeded. In this case, however, less proved to be more, as Paul Bolin was most impressed by the '7.5's lack of character: "The TL-7.5 had such an infinitesimal sound of its own, and did everything so supremely well, that I found nothing to rationally criticize.... It is, by no small margin, the finest line stage I have ever heard at length." Enough *Stereophile* scribes concurred to put the VTL up there on the podium.

The two-chassis TL-7.5 was a delight to test, both ergonomically and because it proved oblivious of every grounding scheme I tried between it and my test equipment. Someone has done their homework with respect to arranging the preamp circuit's grounding arrangement. Maximum voltage gain with balanced input to balanced output measured 25.25dB; unbalanced to unbalanced was 18.4dB, both figures slightly but inconsequentially lower than specified. Unity gain on the stepped volume control was "60" balanced, "69" unbalanced.

Unless the Phase button was pushed, the TL-7.5 preserved absolute polarity for both balanced and unbalanced signals. The balanced input impedance was 30k ohms across the audioband, the unbalanced figure 48k ohms — both are reasonably high. The balanced output impedance was 44 ohms over most of the audioband, this rising to 167 ohms at 20Hz. The corresponding unbalanced source impedances were 25 and 69 ohms, respectively. All these figures are low.

The TL-7.5's frequency response was dead flat in the audioband into high impedances (fig.1, top pair of traces), and was the same at all volume-control settings and for both balanced and unbalanced inputs and outputs. The ultrasonic rolloff was well above the audioband, at –0.5dB at 75kHz and –3dB at 150kHz. At the other end of the spectrum, the bass extended to below 10Hz into high impedances. The low frequencies rolled off earlier into a 600 ohm load (fig.1, lower traces), reaching 0.5dB down at 40Hz. But as 600 ohms is well below what the TL-7.5 would see in practice, this is academic.

The channel separation (not shown) was better than 110dB in the audioband, which is superb. The signal/noise ratio (ref. 2V balanced output) was good rather than great; the unweighted, wideband figure measured 79dB, this improving to 88dB when the measurement bandwidth was reduced to the audioband. A-weighting gave a further improvement of 3dB.

Fig.2 shows how the balanced output's percentage of distortion+noise changes with output voltage. The downward slope of the traces below 1.75V indicates that the measurement is dominated by noise in this region. The actual distortion harmonics rise above the noise floor only above 2V, which reveals a sensibly arranged gain architecture, 2V being about the maximum the TL-7.5 will be required to deliver into a real-world power amplifier. The lowest trace in this graph was taken with the preamp driving the high 100k ohm load. Note that the 1% clipping point is reached at an astonishing 69V! Even into the punishing 600 ohm load (top trace), no fewer than 24V are available at 1% THD. As expected, half this voltage was available from the single-ended jacks — still an order of magnitude higher than that required to drive any power amplifier into clipping.

I measured the way the distortion percentage changed with frequency at 2V output — the level, as noted above, where the harmonics begin to rise out of the noise (fig.3). Even so, the THD level was uniformly low and not significantly affected by the load. The spectrum of the distortion was predominantly the subjectively benign second harmonic, though at a low level (fig.4). The third harmonic rose into low impedances but still remained below the second (not shown). Intermodulation distortion was also very low in level (fig.5), and did not increase significantly into low impedances. For fun I drove the demanding mix of 19kHz and 20kHz tones at 10V balanced into 600 ohms. The 1kHz component rose, but only to a still low –73dB (0.02%). Extraordinary!

VTL's TL-7.5 demonstrates virtually bombproof measured performance, with no clue — other than its sound quality — that it is a tubed preamplifier. With its enormous dynamic-range potential, in real-life systems this preamp will be idling almost all the time. I look forward to auditioning it in my own system. –

John Atkinson

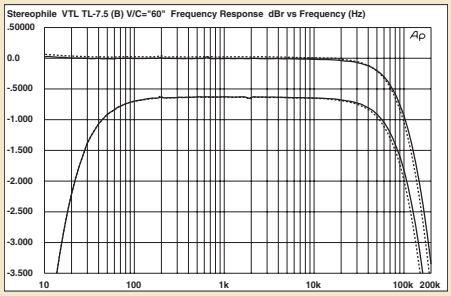

Fig.1 VTL TL-7.5, balanced, frequency response at 1V into 100k ohms (top) and 600 ohms (bottom), both with volume control at unity gain (0.5dB/vertical div., right channel dashed).

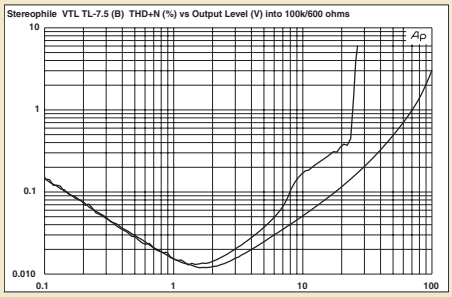

Fig.2 VTL TL-7.5, balanced, distortion (%) *vs* output voltage at 1kHz into (from bottom to top): 100k, 600 ohms.

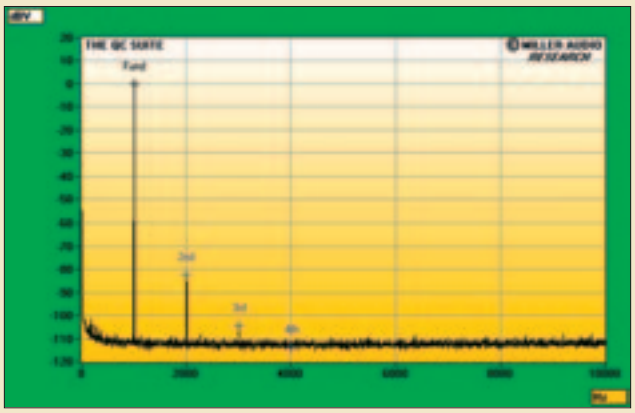

Fig.4 VTL TL-7.5, unbalanced, spectrum of 1kHz sinewave, DC–10kHz, at 1V into 8k ohms (linear frequency scale).

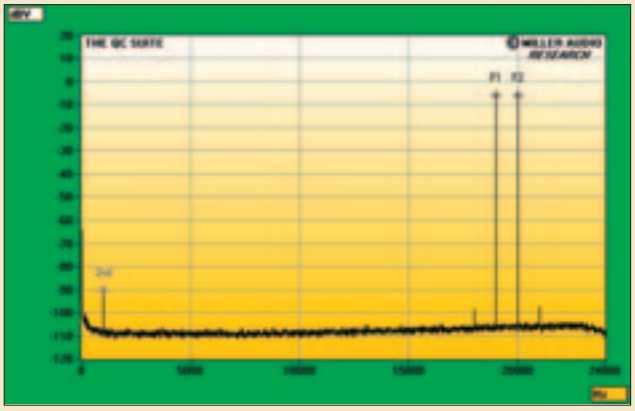

Fig.5 VTL TL-7.5, unbalanced, HF intermodulation spectrum, DC–24kHz, 19+20kHz at 1V into 8k ohms (linear frequency scale).

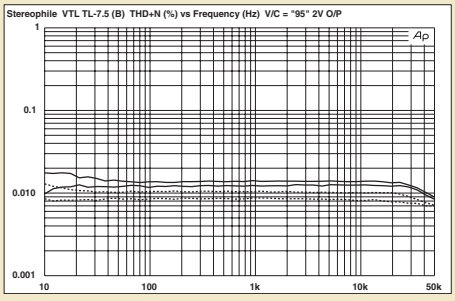

Fig.3 VTL TL-7.5, balanced, THD+N (%) *vs* frequency at 2V into 100k ohms (bottom) and 600 ohms (top). (Right channel dashed.)