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»The Big Block«:

Convergent Audio JL5

When in December 1947 the first bipolar transistor saw the light of the day in the Bell Laboratories, its spiritual fathers had probably no idea what development process they were thus instigating. The Americans Bardeen, Shockley and Brattain received the Nobel Prize in 1956 for their work; actually they might have anticipated that their invention would outstrip the electronic valve big-time in the years to come. However, op-amps in chip size were still a long way ahead, they followed no sooner than during the second half of the 1970s. But who would have thought that one day Apple's A8X processor, which is implemented into the iPad Air 2, would bundle up an incredible three billion transistors in a single component? The fact that in terms of audio this thing has mostly nothing else to do than stream MP3 files with a lousy data rate, is quite a different kettle of fish.

In the music world these technologies still exist until today, valve units are highly popular even in the digital era. Not only in the high-end sector, no, also and particularly in the recording studios of this earth. Maybe the paramount example for the coexistence of the best devices representing old-school to cutting-edge technology is the wonderful »British Grove Studio« which Mark Knopfler has built for himself in London. It's a temple of sound engineering, equipped with everything that is anything in the history of music production. For instance, from valve days Knopfler even owns two of the legendary Fairchild limiters (amongst collectors, each one costs about twice as much today as our review amp), precious large-diaphragm microphones from AKG and Neumann, Pultec equalizers and an original REDD mixing console which sound engineering icon Peter Burkowitz once had designed for the EMI. Let's not forget to mention some Neve microphone preamps from the discrete transistor era with top-notch transformers; at that time Neve was building entire mixing consoles

using class A electronics exclusively. The central switchpoint at British Grove Studio 1 is a huge analogue type 88R AMS/Neve mixing console (the same model is also installed on David Gilmour's »Astoria« house boat studio). The whole studio building is electromagnetically shielded by a cage of 3-mm steel plates, it also has an optimum acoustical insulation and was fitted with a filtered power supply for the analogue equipment alone (the 12-volt illumination in the complete house is totally separated from this) – an immense effort.

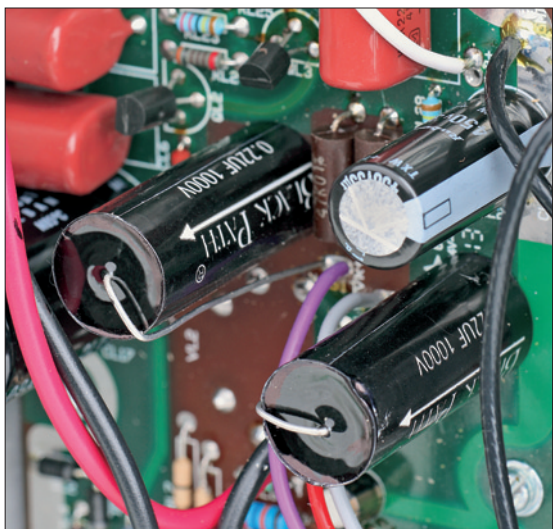
For his latest album »Tracker« Knopfler wanted to record everything, really everything on tape, says his long-term companion Guy Fletcher. For this purpose no less than six (!) Studer A800 multitrack recorders stand by at British Grove, the recordings of which are then fixed in the digital domain by Steinberg Nuendo at 96 kilohertz using Prism-Sound and Apogee converters. The final stereo mix-down is done digitally and also on three different tape recoders (1, 1/2 and 1/4") simultaneously. According to Fletcher it's usually one of those analogue versions that gains the victory, hence a lot of valves and magnetic tape have left their acoustic marks on »Tracker«.

What is the reason behind the timeless fascination of the valve? Well, as a voltage amplifier it's undisputed, this is where it shines. Alright, one may feel like discussing about the quality of the coupling caps in the signal path, which is an abiding theme among audiophiles, but up-to-date clean sounding preamps are doable, as Ken Stevens has shown with his CAT SL 1 Legend and Renaissance (see issues 2+4/2010). Yet when it comes to power, even the valve faction holds different philosophies. One can either do without it (triode) or try to screw it out using pentodes in a push-pull mode. Ken Stevens steers a middle course; on the one hand he's not satisfied with just a couple of watts, but then again he doesn't want to sacrifice sound quality on the altar of power. His formula: a push-pull operation with several, preferably strong power valves

Review: Tube power amplifier Convergent Audio JL 5

Convergent Audio Technology's new power amplifier JL 5 was given the byname »Baby CAT«. But behind its output transformers this is a sly old (amp) dog.

The Big Block



(6550 or KT 88 »Beam Power« tetrodes), but used in a triode wiring and with only a fraction of the maximum output power, according to the data sheet, which has a beneficial effect on their service life – 25 percent in the new JL5, for which Stevens uses the even more powerful Tung Sol KT120 power valve.

Equipped with two pairs of KT120s per channel, the power amp, which is probably called »Baby CAT« rather for fun, achieves the present performance data of its big sister JL 2 (which has twice as many power valves). Being a trained electronics engineer, Ken Stevens gives pleasantly serious manufacturer's information; with his 100 watts he's on the

safe side under all conditions, and the other specs also comply with our measurements (see Lab Report).

The fact that the JL 5 still weighs in at a hefty 32 kilograms (70.6 lbs) is partly due to the mains transformer, which sits shielded under its private steel cup, and, of course, to the two output transformers. In valve amps these are extremely important sound-

responsible for the transformation of voltage into current. Together with the mentioned coupling capacitors, they mark the critical points in the valve-equipped signal path – and in the JL 5 Ken Stevens has come up with something special for both of them.

Typical losses in capacitors are due to dielectric memory effects that blur transients and fine details. This is why low-loss materials such as teflon are preferably used for this purpose. Stevens now had a custom »Black Path« cap wound

(see image on the left), which owing to an innovative foil is said to sound even more transparent. Likewise the »Amorphous Core« output transformer jumps on the bandwagon. Already OTL pioneer Julius Futterman had realised that iron in a transformer core was to be blamed for inevitable distortions (therefore he kept on demanding »keep the iron out«). An amorphous core material can considerably reduce those hysteresis effects, »to less than one twelfth«, as Ken Stevens points out – this should also prove advantageous for a clean reproduction.

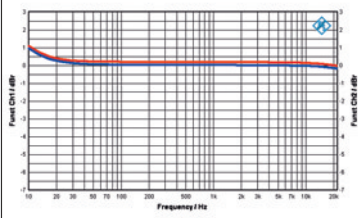
By the way, the JL 5 is a carefree amplifier, there is no need to set or readjust the quiescent current. A little »Tube Life Indicator« LED even signals when it's time for a valve change: as long as it lights green, everything's okay. An unusual feature are the lateral input and output sockets, but this is just a »CAT-typical« earmark.

When Bernd Bold dropped off the test amp, he was raving about the JL 5: »It's got sweeter mids than the old JL 2.« Okay, ready for the acid test and back to Mark Knopfler's »Tracker« album.

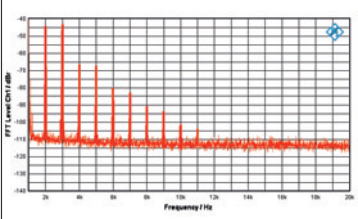


Lab Report

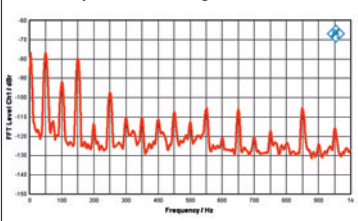
Frequency response: Convergent Audio JL 5



Distortion spectrum: Convergent Audio JL 5



Noise spectrum: Convergent Audio JL 5



Convergent Audio JL 5

Nominal output power 8Ω (1% THD)	116 W
Nominal output power 4Ω (1% THD)	114 W
Gain factor	15-fold / 23.6 dB
Distortions (THD+N, 10W/4Ω)	0.138 %
IM distortions (SMPTE, 5W/4Ω)	0.57 %
IM distortions (CCIF, 5W/4Ω)	0.18 %
Unweighted noise voltage	-89.8 dB
Weighted noise voltage (A-weighted)	-104.5 dB
Channel deviation	0.18 dB
Upper limit frequency (-3dB/10W)	72 kHz
Sensitivity (for full drive 4Ω)	1.42 V
Input impedance	153 kΩ
Idle power consumption	ca. 360 W

Even with an amorphous core material in the output transformer, the harmonic behaviour of a valve amp still remains its acoustical fingerprint. In the JL 5 the harmonics show a clean, pairwise drop-off, Ken Stevens relies on only a little feedback (7 dB). The S/N ratios are excellent, and this not just according to valve standards. The question for power is really no issue in the JL 5, it offers an average output of 115 »true« valve watts. ■



Among the bonus tracks of the deluxe edition is a gem called »Heart Of Oak«, a plain song featuring the master solo, just vocals and guitar – an amp cannot score with bass and power here. With the new CAT driving the YG Hailey 1.2 this sounds so authentic and three-dimensional, so full of atmosphere, that it makes your hair stand on end. The JL 5 is indeed at home in the midrange, it offers the charme of valves plus it sounds full-bodied, affectionate and at the same time clean as well. Hence it's obvious that it makes a terrific team when matched with the Magico V2 or a Dynaudio Special 25.

Following the best of CAT tradition, the JL 5 is also able to convince in the bass, delivering »control and punch«. Not as mercilessly as a solid-state amp,

The drive stage of the CAT JL 5 is equipped with two Electro Harmonix 6922 dual triodes.

of course, that's impossible, yet with timbre and flair. A large orchestra? No problem, if the speaker can handle it. Against the CAT low-power valve amps seem like narrow-chested young lads who happen to overstretch themselves with a heavy load and cave in. On the other hand, you're welcome to connect even a pretty demanding speaker to the JL 5 for a change.

However, to me an even stronger appeal springs from the palpable imaging, the intense blaze of colour and easy-going nature of the CAT. Maybe the valves do play some part here? Yes, of course, and even masterfully.

Convergent Audio JL 5

WxHxD	31,5 x 23,5 x 51 cm
Warranty*	5 years
Distribution	Convergent Audio Technology 85 High Tech Drive RUSH, NY 14543, USA
Phone	(+1) 585 359 2700

* Tubes 6 months

Result

Its overall qualities make the CAT JL 5 without any doubt the best valve power amp I've ever heard. It merges power with charme, sounds relaxed and yet souverign, and it brings a fascinating valve plasticity into play. If you feel that solid-state amps sound too sober, the CAT JL 5 is the valve of choice, even in the age of multi-billion transistor chips.

Wilfried Kress ■