

The SUPERNAIT is Dead, Long Live SUPERNAIT 2

NAIM'S NEW SUPERNAIT 2 HAS FEWER FEATURES THAN ITS PREDECESSOR – WITH GOOD REASON, AS MARTIN COLLOMS DISCOVERS

Integrated amplifiers have been the mainstay of the amplifier market since the days when solid state took over from valves, but Naim Audio spent its first ten years specialising in separate pre-amp and power combinations, frequently available with pre-amp power supplies in additional outboard boxes. These kept the smallest signals well clear of the larger ones and also allowed upgrading through substitution of the pre-amp itself or of the power supplies (or both).

Naim also pioneered the ultra-simple approach to pre-amplification, notably by omitting tone control stages. Partly as a result, the option arose simply to fit an input selector switch and a 'passive' volume control to a well priced small power amplifier, jack up the input sensitivity a tad by reducing the feedback, and create a 'line input' integrated amplifier with short signal paths.

Back in 1983, a decade after the company was founded, Naim introduced its first integrated amplifier, a compact 15W/ch device called the *NAIT*. I had no contact with Naim at the time, but it was so inexpensive (I recall £170), that I bought one for review and liked it too. A number of *NAIT* variations have appeared since then, two of which *HIFICRITIC* has reviewed in recent years (the original *SUPERNAIT* five years ago and the more recent and less costly *NAIT5 XS*, see *Vol1 No4* and *Vol3 No4*). Both were also assessed with optional outboard pre-amp power supplies, reducing the influence of the internal power amplifier on the pre-amp stage, and consequently delivering worthwhile gains in sound quality.

In the *HIFICRITIC* review of the original *SUPERNAIT*, I gently queried the need to fit a medium grade DAC with S/PDIF input to it, as I believed that an analogue-only, purist version of this significantly powerful integrated amplifier could well turn out to be a grand proposition. This could now fairly be said to have occurred, in the form of this new *SUPERNAIT 2*.

However, this newcomer is no mere stripped-down upgrade of the original. It is fair to say that that it is actually a massive redesign, with all the

stops pulled out in order to maximise sound quality. A clear sense of belief may be seen in the way it has been designed and built, to make it into a 'flagship' integrated design. It keeps the faith with Naim's design principles for fine timing, upbeat tempos and crisp boom-free bass, while taking the opportunity to further extend the performance in respect of clarity, neutral timbre, improved focus and image depth, aspects of performance which are becoming increasingly prevalent in the Naim *oeuvre*, and which have greatly helped to enhance its international appeal. There is barely any change to the specifications; the real difference is how it sounds when playing music.

In outline this is a conservatively rated 80+80W/ch amplifier which nearly doubles its power capability into 4ohm loads, delivering firm drive into adverse loads. It has six analogue line level inputs and also particularly low power consumption, generally running almost cold to the touch. As before, the active pre-amplifier section may be powered by several choices of optional auxiliary outboard power supplies, but the consensus is that that the advantage gained by upgrading using an external power supply is somewhat debatable, as the internal pre-amp supply in this latest version has been considerably improved.

Reflecting the massive increase of interest in headphone listening, another feature is the inclusion of a dedicated headphone amplifier, employing single-ended Class A constant current technology which should provide good sound. A line output is available for subwoofer drive, and also a mini USB socket to allow easy updates for the control software. As before, a system remote link is included, but this is now built with optical isolation to remove possible ground noise coupling. All in all, this sounds rather like a brand new amplifier.

Technology

Compare the interiors of the previous and new models and the latter has been clearly and radically upgraded. Through a tidier main board design, and the deletion of the digital input section, space has



been found to enlarge the already oversized toroidal mains transformer, which should speed transient recovery, and improve the bass attack and timing.

The wiring loom is a critical factor, and here it has been analysed and reworked for lower noise and higher resolution. The power supplies for the preamplifier section have been upgraded from the traditional monolithic 'chip' regulators to the discrete ultra low noise DR technology, which has previously been restricted to the costly auxiliary external power supplies.

Improvements in vibration control and suppression include full decoupling of all audio inputs separating the incoming mechanical cable connections from the input circuit board. Improved circuit analysis software has allowed more subtle thermal and dynamic behaviours to be investigated, providing scope for further optimisation of well known topologies, and several audio-critical electronic components have also been upgraded. More subtle factors analysed during the development phase included dielectric absorption, temperature coefficients, microphony, susceptibility to electric and magnetic fields, magnetostriction, and stray capacitive coupling, for example to the chassis, and also to the output transistors and the integral low resonance alloy heat sink.

Vibration countermeasures are also found in the decoupled Alps *Blue Velvet* balance and volume controls, the hand-wired inputs (first seen in the *SuperLine*), and input switching *via* low noise reed relays fed silent, constant current control signals. As with the earlier designs, high quality passive components are used in critical locations, including polystyrene capacitors and those costly, better sounding ceramic heat pads for the power transistors.

Sound Quality

We were frankly bowled over by the fresh crisp sound of this new design. First impressions were of a bold, lively presentation, imbued with ample detail and with an expressive, upbeat and open character. Although it sounds thoroughly modern, traditional Naim virtues of lively dynamics are also evident,

married to a distinct 'direct coupled' quality – a sense of short signal path clarity and immediacy which quickly engages the listener.

Straight out of the box it sounded rather bright, even a little chromium-plated – detailed but somehow out of balance, lacking grace and coherence. During the running in period (and that initial stage takes some weeks), it acquires extra poise and a more natural tonal balance, with increased grace and transparency. The classic Naim virtue of a clean, crisp and tuneful bass line was well in place by now, but this amplifier also had a markedly low coloration sound that was truthful to sources, combined with convincing dynamics.

Frankly it sounded rather more powerful and of higher quality than many substantially more expensive amplifiers, and happily drove my Wilson *Sophia 3s* as if made for the job. This combination also revealed much about the high end virtues of my test programme – image depth, focus and overall quality. Where integrated amplifiers have generally scored an average of 25 marks with exceptional designs such as the Krell *300i* and the original *SUPERNAIT* up in the thirties (the latter reached 49 when it was augmented by adding an original *HiCap* power supply to feed its pre-amp section). However, the run in *SUPERNAIT 2* slammed in at 77, which in my view is genuine audiophile territory, while the headphone amplifier was very good too, and may therefore be regarded as a valuable bonus.

Lab Report

The previous model measured very well so I looked for possible differences that would correlate with the improved sound while compiling the lab results. Flat out power is increased from 87W to 97W (both channels driven into 8ohms). At 4ohm loading, power is increased from 144W to 156W for 1% clipping. The high frequency power is also improved, to 95W for 8ohms and 148W for 4ohms. A maximum of 240W may be drawn for short term music related peaks into 2ohms, and the peak current limit has increased a little to a fine 16.5A.

Midband distortion at moderate power is



Review System

D'Agostino *Momentum Stereo*, Naim *NAP300* power amps; Audio Research *REF5 SE*, Townshend *Allegri* control units; Naim *UnitiServe* network server and *S/PDIF* source; Naim *NDS/555 PS* streamer-DAC, Wilson Audio *Sophia 3*, Quad *ESL63*, *BBC LS3/5a* speakers; Finite Elemente *Pagode Reference* racks; Cardas *Golden Reference*, Transparent *XLmm2 VdH TFU* and NAC *A5* cables.

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similar at -72dB – better than 0.025% including noise – but it is much improved at high frequencies, up from -58dB to -70dB. Distortion was similarly improved at rated power, up from -71dB to -78 dB. A similar trend was also seen in the high frequency intermodulation results, which improved 10dB from -70 dB to -80dB at rated power. Channel separation was similar at low and mid frequencies but had improved from 32dB to 45dB at 20kHz (noting that some of this crosstalk is actually a design feature to mask residual cross channel distortion).

As before the frequency response is intentionally slightly limited (see graph), to -0.8dB by 20kHz here which I do not regard as audible, and is well filtered thereafter. Even without the benefit of filtering, the accompanying noise and distortion trace is stable at better than -66dB (0.05%), right up to 20kHz. See also the 1kHz 1W distortion trace, which shows that the significant harmonics are only third and fifth, at -84dB and -92dB: negligible. Very little hum and also no high frequency interference is seen here, so in all this is an excellent result.

Signal-to-noise ratios have also been improved by typically 6dB, and now measure around 76dB for 1W under all instrument weighting regime – these

are fine results. Channel balance tracking was very good before, but is now quite excellent, only 0.06dB out at a low volume level of -60dB, and typically 0.03dB. Input sensitivity was rather high for the mk1 and has sensibly now been reduced to 140mV for full power. There is also an improvement in DC offset at the output, from a 5.5mV average to 1mV.

It might be convenient to ascribe the improvement in sound quality to the better lab figures, but it is more likely that it is the other way round, and that the development work carried out to achieve better sound quality also improved the lab results!

Conclusions

The improvement in sound quality is not trivial. The comprehensive rebuild and re-engineering has delivered a low coloration, short path sound which is contagiously involving, immediate, detailed and highly musical. The *SUPERNAIT 2* is best in class for bass tune playing and timing, but has also audiophile clarity, focus and depth to boot. This fresh sounding, well priced and beautifully engineered integrated amplifier is a no brainer for a Best Buy and actually knocks on the door of our Audio Excellence category.

INTEGRATED AMPLIFIER TEST RESULTS (original SUPERNAIT values in brackets)

Make Naim Date 20/11/2013

| | | | |
|--------------------------------------------------------------------|---------------------------------|-----------------------|---------------------------|
| Model SUPERNAIT 2 | Ser. No. 0352021 | | |
| POWER OUTPUT | 20Hz | 1kHz | 20kHz |
| Continuous 8 ohm 2 channel | 92 (84) W | 97 (87) W | 95 (75 ⁽¹⁾) W |
| Continuous 4 ohm 1 channel | 140 (130) W | 156 (144) W | 148 (115) W |
| Pulsed 2 ohm 1 channel | 240 (227) W | | |
| Output impedance (ohms) | 0.12 ohms | 0.12 ohms | 0.13 ohms |
| Peak Current | 16.5(15) A | | |
| Distortion, THD inc. noise (1W) | -72 (-70) dB | -72 (-71) dB | -70 (-58) dB |
| Distortion, THD inc. noise (rated power) | -80 (-78) dB | -78 (-71) dB | -68 (-61) dB |
| Channel separation | 61 (60) dB | 60(58) dB | 45 (32) dB |
| Intermodulation Distortion 19.5kHz/20.5kHz 1:1 rated power, 8 ohms | -80 (-70 ⁽³⁾) dB | | |
| Intermodulation Distortion 19.5kHz/20.5kHz 1:1 1W, 8 ohms | -87 (-86) dB | | |
| Signal to noise ratio (ref. 1W output) | CCIR Weighted | Unweighted | A-weighted |
| IHF. 0.5V | Aux | 75 (-64) dB | 76 (-70) dB |
| | Disc mm | - dB | - dB |
| | Disc mc | - dB | - dB |
| Channel Balance over volume range | R ch is reference at 0db | | |
| | at -20db 0 ⁽⁴⁾ dB | | |
| | at -40dB 0.03 (0.3) dB | | |
| | at -60dB 0.03 (0.38) dB | | |
| | at -60dB 0.06 (0.38) dB | | |
| Notes: | | | |
| Mains voltage measured at 246V | (1) and (2) protection operates | (3) at just belowclip | (4) balance control set |
| Absolute Phase | correct | | |
| Input Data | Socket | Sensitivity | Loading |
| Aux input balanced | - | -mV | -ohms - nF |
| Aux input single ended (full power) | | | |
| Phono or DIN | 140mV(85) mV | 47k ohms | 140 pF |
| Disc mm | Phono or DIN | - mV | - ohms |
| Disc mc | Phono | - uV | ohms |
| DC offset L, R | 2.1 (5.1) mV | 0.5 (6.2) mV | |
| Size W, H, D | mm; weight | 434 | 87 350 kg |
| Price | £ 2,825 | | |

Naim Supernait 2 1W 8ohm distortion spectrum



Naim Supernait 2 Frequency Response 10W 8ohm distortion (green)

