

# A Tale of Two NAITs

NAIM'S NEW NAIT5 XS INTEGRATED AMPLIFIER SITS HALFWAY BETWEEN THE 5i AND THE SUPERNAIT, AND MAY BE UPGRADED WITH A FLATCAP XS. MARTIN COLLOMS CHECKS OUT THE OPTIONS

MARTIN COLLOMS



Used to chunky, bulky amplifiers, often a struggle even to lift up, “What is this little runt?” was my first thought as I shook the *NAIT5 XS* free of its packing. “You can’t be serious..... a proper Naim amplifier?”

Rated at 60W per channel I could not imagine where the necessary power transformer in this low profile casework had been put. It reminded me of the first 40W/ch Cambridge *P40*, and the early 1970s which exploited the very first toroidal flat transformers for consumer hi-fi. Then I recalled my first encounter with a Naim integrated amplifier. I bought the original *NAIT* for review from Studio 99 in Swiss Cottage. The whole thing was built into a half width Naim pre-amp case, and measured less than 20W/ch, but I liked it so much I kept it for several years.

I have a split personality when it comes to Naim Audio products. No acolyte, I first see a Naim product as an independent entity, something which has to survive in the free world of audio regardless of its terrors and the frowned upon liberties taken with non-DIN-terminated cables and connections. Then, for those paid up members of the Naim fraternity, we must consider the dark side of Naim products: the mysterious hierarchy of the power supplies, and the unusual approach to upgrading its electronics by keeping them and spending more, sometimes much more, on external power supplies instead.

Consider the power of logical path system grounding. This begins with the signal source, where the audio signals must necessarily pass through the power supply chain, and in so doing require specially defined connector and cable practice. Fortunately those extra cables required for additional supplies are not expensive, and perform well despite the apparent lack of audiophile cable witch doctoring, thanks to the power of logical grounding I reckon. Logical grounding underpins Naim and its deserved reputation for rhythm and dynamics. Get this wrong, with good intentions but still in ignorance, and musical virtue may well be lost, and the whole design thesis begins to fall apart. For product evaluation it is necessary to keep all this in mind, making sure that you do not misuse the product, and that the best performance is obtained in both a non-Naim context and in one mindful of Naim practice.

Despite its moderate £1,350 price, the performance of the *NAIT XS* will not have been taken for granted in design. Its particular build and engineering content will have been voiced to achieved the optimum possible performance, so one must take care of main connections and mains quality, cable routing, sound-table support, and all this care taken for a properly run in and well warmed up example.

Claimed to idle on a very low 20W I found just 9W, 17VA, which is excellent, and the unit barely warms to the touch, remaining quite cool even when driven pretty hard. Upgradeable with *FlatCap*, *HiCap* or *SuperCap* power supplies, the latter two are generally considered inappropriate on cost/benefit grounds, so we chose to experiment with the *FlatCap* option for the second stage of this two product review.

This may well be a relatively inexpensive design, but it is well equipped. There are six line inputs: four phono/DIN, 1 x phono/3.5mm jack, and one more DIN input that also supplies power to an auxiliary Naim phono stage. The 3.5mm stereo jack socket located on the front panel has auto switching for *iPod*/MP3 player input. Like the *SUPERNAIT*, the DIN connections benefit from a degree of vibration decoupling, and should sound better than the phono alternatives (and they do when you can do the comparison with matched cable sets).

The handset design is logical enough in parts, but one objection is that it has some of the smallest legends on earth, requiring two magnifying glasses to read them. Otherwise this *RC5* code device does all that a complete system might require. The *XS* pre-amp design is similar to the *SUPERNAIT* and likewise the preamplifier or a power amplifier sections may be split. It has remote input switching, mute and volume, but no balance control.

It is rated at 60W/ch into 8Ω or 90W/ch into 4Ω loads and is powered from a generous 380VA toroidal transformer equipped with four high current 10,000uF reservoir capacitors, two per channel. Employing five separate secondary windings this resource is divided into left and right ‘mono’ power, the preamplifier, the display, and then the relay switching. It also offers AV unity gain option (AV bypass switchable) together with a full bandwidth stereo subwoofer output. The high current output transistors are very securely clamped to the massive aluminium block heat sink which greatly reduces

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## XS COMBINATIONS

The £1,350 NAIT5 XS is just one component in a series of cosmetically matching mid-price XS-series products that represent a step up from the 5i-series in performance and price. Includes a CD5 XS CD player (£1,750), a NAT05 XS FM tuner (£995), a NAC152 XS preamplifier (£895, but an external power source), a NAP155 XS power amplifier (£1,025), and also a FlatCap XS power supply (£675). The latter has two separate dual rail 24V supplies from a very generous 215VA toroidal transformer, and can power two separate XS products, or both outputs can be used to extract optimum performance from a NAC152XS pre-amp.

An XS-series separates equivalent to this integrated NAIT5 XS could comprise a NAC152 XS preamplifier powered by and partnering a NAP155 XS power amplifier (£1925). Adding a FlatCap XS (taking the total price to £2,600) should give a sound quality superior but of similar character to the £2,050 NAIT5 XS/FlatCap XS combo described here. It's easy to see why the inexpensive integrated NAIT5 XS has considerable mileage.

short term temperature variations, in theory improving low frequency dynamics and focus. Speaker output is via paired 4mm sockets only, and is primarily intended for use with Naim's two-pin plugs. The detachable IEC mains cable is adjacent to the rear panel power switch.

## Sound Quality

### NAIT5 XS

I tried this amp on delivery. Although it had been used elsewhere, it had been disconnected for about a week. I ran it a day or so, did some listening, and thought it very good overall, hoping I'd got a reasonable measure of its performance. I then used it for two weeks and it progressively improved to a new plateau. While it would have deserved recommended from the off, the subsequent improvement moved it into a higher class.

Initially it sounded a bit too dimensional, cool in timbre, with slight treble grain, a touch of looseness in the lower bass, and some midrange forwardness. That said, it actually scored about 31, which is very good for the price, due to the good clarity, dynamics and rhythm. By week two (and with a magazine left on the top cover, as it runs very cool) it had reached an impressive 35 marks.

While the bass was not as tight or deep as the *SUPERNAIT* (48 marks) or the Krell *S300i*, it still drove a good beat, and while textures were not so clearly revealed, it was faster, smoother, with deeper soundstages, better focus, cleaner treble and a more upbeat character than anything else I have experienced in this price sector. It was in the performance bracket of some of the best amplifiers at twice the price, with the proviso that its limit of 60W or so meant it would simply run out of peak headroom if volume was applied with too much enthusiasm.

### NAIT5 XS+FlatCap XS

In reviews elsewhere I've seen reports that adding the *FlatCap XS* gave some but only a limited improvement. Maybe they simply stacked it on top? I gave it a shelf below the *NAIT5 XS*, properly routed all leads, and sat back to listen.

The result was instant musical pleasure. While I really admired the standalone *NAIT5 XS*, finding

its limitations minor, forgivable and relatively unimportant, this two-box variation kicked in with something special in its degree of intimacy. Its resolution, of image depth and focus, of bass detail and definition, and its upbeat 'get up and go' was way beyond its class. And it carried on getting better as it continued running in over another week.

It simply sounded delightful: honest to the music, direct, uncomplicated, and just got on with the job to a point where you simply forgot it was in the chain. Within its power envelope, this is a genuine 'high end' sound. No *NAIT5 XS* owner would argue with a 30% jump in sound quality to 45 points, and now knocking at the door of its big *SUPERNAIT* brother. (The *SUPERNAIT* still has better bass, sounds smoother and tighter though not more transparent, has 50% more power, and includes a more than competent DAC. Furthermore, adding a *Hi-Cap* supply to power the *SUPERNAIT*'s pre-amp section boosted its score to a whopping 64 marks!)

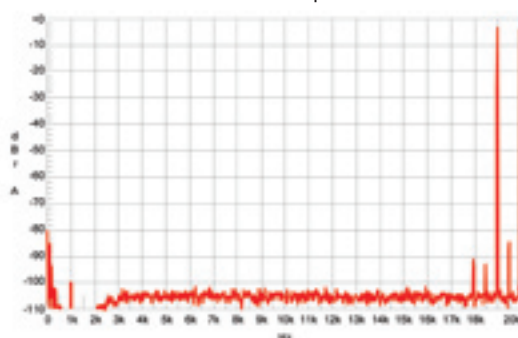
## Lab Results

The well sorted *NAIT5 XS* provided 2x 67W output for 8ohm loads and about 71W peak program. Into 4ohms it provided 110W/ch, while music pulsed drive reaching 172W into 2ohms, alongside a peak current of 13A. It will clearly cope with modern loudspeakers and rates as load tolerant. Output DC offset was low: 20/14.5mV for L/R respectively. Output impedance was also low, constant with frequency and close on 0.23ohm, so speaker impedances that vary with frequency will not be significantly affected.

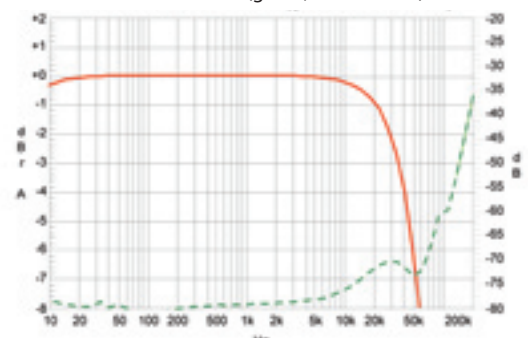
Input impedance is a kind 43kohm/145pF, and will sustain 6.5V before overload, a better than 20dB IHF margin. At full volume it needed just 125mV to get full power, so there's more than enough gain. Channel separation ranged from 100dB at low frequencies to 80dB midband and 63 dB by 20kHz, all very satisfactory. Channel balance was very good both with level and frequency, and was maintained at better than 0.3dB right down to a -60dB volume setting.

Distortion was negligible (see graph for 10W 20Hz-200kHz and matching frequency response). The spectrogram (fig 2 for 10W 1kHz) shows low noise and hum and nicely low levels of odd order harmonics. Distortion at 20kHz was around -68dB, midband about -80 dB, and it did not vary much with load impedance.

Naim Nait XS 1W CCIF distortion spectrum 8ohm load



Naim Nait XS frequency response 10W 8ohm and distortion (green, dashed RHS)



The harmonics remained quite low order, with an almost monotonic progression from the second harmonic upwards, a favourable result. CCIF intermodulation performed well, recording an excellent -94dB product at 10W 8ohms, and even measuring a low -86dB for the 1kHz difference product at full power. Graph 3 shows the state of the art 1W result at -100dB, or just 0.001%.

Signal-to-noise ratios were fine for rated output: 93dB unweighted, 97dBA weighted, 86dB CCIR 1kHz, and there were essentially no hum products in the residuals, a great result. Frequency response was -0.3db at 10Hz, flat 20Hz-10kHz, and with a mild 1dB roll off by 20kHz. The response is tailored to -6dB by 50kHz, which is quite sensible in view of all the EMC muck generally flying around.

I connected the *FlatCap XS* and laboured hard to measure a difference: indeed a taxing 80W/4ohm THD measurement gave identical results with and without the extra supply. Crosstalk distortion measurement under power actually gave a slightly poorer result for noise floor with the extra isolated supply, though there was an improvement of about 6dB in 150Hz harmonic breakthrough.

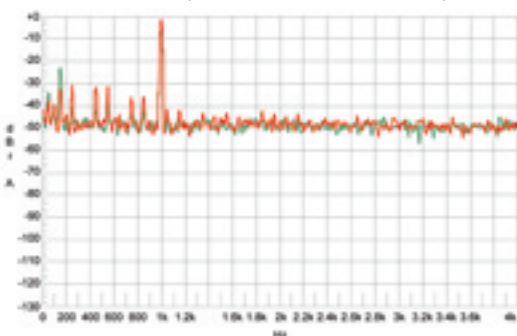
**Conclusions**

While we now have a pretty good idea how the consonant *XS*-series separates amplification will likely sound, we have two conclusions for what I regard as two distinctly identifiable integrated amplifiers.

The standalone £1350 *NAIT5 XS* puts on a very fine show, delivering an excellent sound quality for its price and reaching well beyond its price class. It's lively, upbeat, informative, detailed, quite clear, substantially accurate, and entertaining. It's unfair to single out the softened lower bass and slight two dimensionality because the competition is rather poorer in so many ways. The technical performance and build quality is beyond reproach and it is kind to sources and speakers. This is genuine high fidelity at a very competitive price and may be highly recommended.

Add that c£700 *FlatCap XS* pre-amp supply, checking what standard Naim cables are supplied or needed, and one might at first wonder at the 50% extra cost. Wonder, however, ceases when you get to hear it. *FlatCap XS* delivers a cracking upgrade to the *NAIT5*

Naim Nait XS 50W 1kHz crosstalk pectrum at about -110dB, 8 ohm load; add Flatpack for red trace. (Case non proven)



*XS*, and on grounds of sound quality alone effectively results in yet another amplifier model. Judging this at £2,000, it kicks in with a transparent high quality stereo image with depth and focus in spades, has quick and well defined bass, superior dynamics and a fine, upbeat and involving sound, with rhythmic capabilities streets ahead of the common herd. The technical performance specification remains unchanged. The sound quality here is now really chasing the *SUPERNAIT*'s tail.

For sheer sound quality this supercharged *NAIT5 XS/FlatCap XS* is another clean winner and is highly recommended.

**INTEGRATED AMPLIFIER TEST RESULTS**

Make Naim	Date 20/10/09		
Model NAIT5 XS	Ser. No. 268884		
POWER OUTPUT	20Hz	1kHz	20kHz
Continuous 8 ohm 2 channel	84 W	67 W	75 <sup>(1)</sup> W
Continuous 4 ohm 1 channel	130 W	110 W	115 <sup>(2)</sup> W
Pulsed 2 ohm 1 channel		172	W
Output impedance (ohms)	0.22 ohms	0.22 ohms	0.24 ohms
Peak Current	13 A		
Distortion, THD inc. noise (1W)	-70 dB	-80 dB	-63 dB
Distortion, THD inc. noise (rated power)	>-75 dB	-75 dB	-68 dB
Channel separation	100 dB	80 dB	63 dB
Intermodulation Distortion 19.5kHz/20.5kHz 1:1 rated power, 8 ohms	-86 dB		
Intermodulation Distortion 19.5kHz/20.5kHz 1:1 1W, 8 ohms	-100 dB		
Signal to noise ratio (ref. 60W output)	CCIR Weighted	Unweighted	A-weighted
IHF. Aux	86 dB	93 dB	97 dB
Disc mm	- dB	- dB	- dB
Disc mc	- dB	- dB	- dB
Channel Balance over volume range			
R ch is reference	at 0dB	0 dB	
at -20dB		0.25 dB	
at -40dB		0.32 dB	
at -60dB		0.30 dB	
Frequency Response: +0, -0.3dB 10 Hz to 10kHz, - 1dB at 20kHz, -6dB by 50kHz			
Absolute Phase	correct		
Input Data	Socket	Sensitivity	Loading
Aux input balanced	- mV	- ohms	- nF
Aux input single ended (full power)			
Phono or DIN	125 mV	43k ohms	145 pF
Disc mm Phono or DIN	- mV	- ohms	nF
Disc mc Phono		- uV ohms	nF
DC offset Left	20 mV	Right 14.5 mV	
Width	Height	Depth	
Size (w x h x d)	432 mm	70 mm	301 mm
Price	£1,350 (FlatCap XS £675)		
Contact	Tel: 01722 426600 www.naim-audio.com		

Naim Nait XS 10W 1kHz distortion spectrum 8ohm load, low distortion. (Some balance of odd and even products)

