Naim Audio Uniti Atom Headphone Edition

The evergreen Uniti Atom all-in-one platform, complete with custom streaming solution, is adapted to service the needs of the most demanding headphone users.

Review: Andrew Everard Lab: Paul Miller

Never let it be said the product name isn't long enough – in the 12 years since Naim launched its network audio all-in-one, to which the buyer need only add speakers, it’s grown from the simple Naim Uniti of the initial model, all the way to this, the £2399 Naim Audio Uniti Atom Headphone Edition. And yet here, less is more.

This new arrival, despite being the same price as the existing Atom, which continues in the range, has shed the power amplification of what is the company’s most compact streaming system, slotting in below the full-width Nova and Star models. Here the unit is repurposed as a dedicated device for followers of the ‘head-fi’ trend, complete with a choice of conventional and balanced headphone outputs. Well, that’s almost the whole story...

STREAM CITY

This is the latest evolution of Naim’s in-house streaming platform first unveiled with the arrival of the current Uniti models [HFN Nov ’17], and which has gone on to underpin not only the Uniti range, but also the Mu-so and Mu-so Qb. Similarly, much play was made of the quality of the bridge between PCs and ‘phones. Similarly, the DAC-V1 was designed in part as a solution, is adapted to service the needs of the most demanding headphone users.

PREAMP TOO

All these services are best accessed via the Naim app, although the unit also comes with an 8F remote handset [see p35]. In addition there are both optical and coaxial digital inputs as well as a single set of analogue ins, the latter digitised at 48kHz [see PM's Lab Report, p53]. It should be noted that one of the gains made in the development of the current Atom platform was greatly improved Wi-Fi capability. Despite the absence of any external antennae for this or any other wireless modes, the Atom HE is fully capable of handling Hi-Res PCM or even DSD given a reasonable home network signal strength, although many will want the reassurance of the wired Ethernet connection located on the rear of the unit.

So regardless of input, all signals pass through Naim’s long-refined SHARC-based digital signal processing, and the company’s favoured TI PCM1791 DAC, and thence to the output stage – which is something Technical Director Steve Sells and his team have reportedly spent much time fettling.

Yes, this is a headphone amplifier, with both 6.3mm unbalanced and 4.4mm balanced Pentaconn balanced sockets on the front panel, plus a four-pin XLR balanced headphone output to the rear, it can also be used as a preamp, thanks to both RCA and XLRs round the back.

IN THE BALANCE

Now this is rather interesting, as there’s no sign of Naim’s usual DIN connectivity here, although the company is at pains to emphasise that the current Uniti models have never offered such provision. However, balanced XLR preouts – and matching power amp inputs – are only currently found on the company’s flagship Statement pre/power [HFN Jun ’15], alongside the familiar DINs used for unbalanced working. So it will be interesting to see whether Naim launches more mainstream power amps (and indeed preamps) equipped with balanced XLRs.

“B&W’s P9 phones were made to work for their living”

Not only can it stream music from the user’s own collection, be it located on network storage or USB devices, it can also deliver online services including Spotify Connect, Qobuz and Tidal, not to mention the verbose 320kbps AAC BBC radio streams. There’s also accommodated here, along with a high-res PCM/DSD output – are all three headphone outputs capable of handling hi-res PCM or even DSD, but its response here does not exceed 30kHz with either 96kHz or 192kHz media. Instead, Naim’s digital filter cuts in earlier, delivering a ~60th-order roll-off at ~3dB/21Hzs [see Lab Report, p53].

DIGITAL DOMAIN

The response and time domain behaviour of the Uniti Atom’s digital heart is entirely determined by Naim’s custom 16x upsampling digital filter. This brickwall IIR filter is executed on a SHARC DSP and is combined with two series-connected 3rd-order analogue filters (6th-order roll-off) at the output. In common with the proprietary WTA filter used in Chord Electronics’ DACs, Naim’s bespoke filter cannot be adapted to accommodate MQA, should either company have been inclined to offer this facility in the first place. Specifically, Naim’s digital filter avoids acoustical pre-ripping, but does exhibit extended post-ripping [see inset Graph]. The partnering Burr-Brown PCM1791, a legacy ‘Advanced Segment’ DAC, operates up to 192kHz/24-bit and DSD256, but its response here does not exceed 30kHz with either 96kHz or 192kHz media. Instead, Naim’s digital filter cuts in earlier, delivering a ~60th-order roll-off at ~3dB/21Hzs [see Lab Report, p53].

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LAB REPORT

NAIM UNITI ATOM HEADPHONE EDITION

All inputs are eventually routed via Naim’s choice of PCM1791 DAC, including the analogue RCAs which run through a PCM1803A ADC at 48kHz/24-bit. This limits the frequency response to ~3dB(22kHz while all other 88.2kHz+ digital inputs are limited to ~3dB(22kHz courtesy of Naim’s custom IR digital filter solution [see boxout, p51]. The DAC/preamp path offers a modest 104dB A-wtd S/N ratio but excellent ±0.1dB linearity over a 100dB dynamic range, low distortion that falls to 0.0002-0.001% over the top 30dB of its range [20Hz-20kHz, Graph 2] and exceptionally low <15spec jitter with all input sample rates.

Note that the ADC clips with analogue inputs above 2.9V and that the maximum balanced line output is 4.75V via analogue or full-scale digital inputs. Gain is a higher +12.5dB via the headphone output and so its maximum output is 7.1V with a 0dBfs digital input (clipping at volume ‘92’) or 7.8V via the analogue input. The maximum single-ended power outputs [see Graph 1] are 89mW/600ohm (voltage limit), 1190mW/32ohm and 2225mW/8ohm (current limit), all perfectly in line with Naim’s rated 1500mW/16ohm. The output impedance is not vanishingly low at 5.2ohm, representing a signal loss of some 1.2dB/32ohm, but this and any possible response variations, will be minimal into higher, 600ohm headphone loads. Moreover, the ~93dB (22µV) undr residual noise suggests the Uniti Atom will serve high sensitivity ‘phones with usefully quiet backgrounds. Finally, headphone distortion actually reduces under load here from 0.006% at 0dBV/unloaded to 0.0053/30mW/32ohm through the midrange, albeit with a slight increase from 0.0075% to 0.11%, respectively, at 20kHz.

ABOVE: Alongside wireless [inside] and wired Ethernet ports are USB-A, coax, two Toslink optical and one pair of analogue inputs (RCAs). Preamp outs are offered on RCAs and balanced via 3-pin XLRs, with a balanced headphone output on a 4-pin XLR.

about the most important sonic trait – the direct communication of music. And that means just about every style of music you choose to throw at this streaming headphone amp, including really raw recordings like Motörhead’s No Sleep Til Hammersmith [Bronze BMGRM023LP] sounds suitably driving and thrilling, for all its abrasive edge. Similarly, a characterful vocal such as Sonja Kristina’s cover of ELP’s ‘Still… You Know’ [Bronze BMGRM023LP] sounds magnificent and has superb character. By the way, should you ever want to hear the original ‘god of hellfire’, Arthur Brown, tackling the first part of ‘Karn Evil No. 9’ in his 70s, or Keith Emerson’s son and grandson attempting ‘Fanfare For The Common Man’, this curiosity is the one for you.

MAJOR SCALE

The sound here is never less than entirely focused on the performance, as is clear with American Quilt [675 Records 538668572], the dropping Kristina’s cover of ELP’s ‘Still… You Know’ [Bronze BMGRM023LP] sounds magnificent and has superb character. By the way, should you ever want to hear the original ‘god of hellfire’, Arthur Brown, tackling the first part of ‘Karn Evil No. 9’ in his 70s, or Keith Emerson’s son and grandson attempting ‘Fanfare For The Common Man’, this curiosity is the one for you.

HELIF NEWS VERDICT

Although it’s had headphone amps in its lineup before, Naim is something of a latecomer to the whole streaming head-fi arena. However, the arrival of this unit, delayed by you-know-what, was well worth waiting for. The Atom HE sounds magnificent across a range of musical styles and partnering headphones, combining fine detail, power and control. It’s even a respectable streaming preamp, too.

Without recourse to any obvious signal-manipulation, the Naim Atom HE seems to do a fine job of dispelling that ‘shut in’ effect sometimes afflicting headphone listening, even when powering closed-back designs such as the Focal Stellias [HFN May ’19]. And the Uniti Atom HE puts in a good showing with the scale and drama of classical music, too, whether it’s the gentle, small-scale scoring of the Brazilian Landscapes album of recorder, percussion and guitar [OUR Recordings 6220618; DSD 128, see p94], which is treated to a lucid, beautifully-measured view of the instruments, or the weight and power of the Budapest Festival Orchestra/Iván Fischer recording of Brahms’ Third Symphony [Channel Classics CCS SA 43821; DXD]. From the opening chords of the Brahms, the Atom HE, driving the Oppo PM-1 headphones in this case, delivers a sound of real drama and impact, but packed with detail and with a delicious sense of the orchestra ranged before the listener. The wide-ranging ability of this compact but substantial streaming headphone amp is never in doubt.

HIFI NEWS SPECIFICATIONS

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<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Maximum output (THD into 47kHz)</td>
<td>7.8V [Balanced XLR preamp]</td>
</tr>
<tr>
<td>Maximum power (THD to 1kHz)</td>
<td>2225mW [1kHz]/1190mW [8kHz]</td>
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<tr>
<td>Output impedance (20Hz-20kHz)</td>
<td>5.2±0.5% (32Ω), 1500mW [16Ω]</td>
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<tr>
<td>A-wrd S/N ratio (1kHz/0dBV)</td>
<td>103.7dB [1% THD]</td>
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<tr>
<td>Distortion (20Hz-20kHz)</td>
<td>0.001% [0.003%]</td>
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<tr>
<td>Frequency resp. (20Hz-20kHz)</td>
<td>6±1dB to –6±1dB</td>
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<tr>
<td>Digital jitter (48kHz)</td>
<td>30±10µV</td>
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<tr>
<td>Power consumption of headphone</td>
<td>12W</td>
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<tr>
<td>Dimensions (WxHxD)</td>
<td>245x165x65mm</td>
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