

Integrated amplifier. Rated at 50W/8ohm  
 Made by: Moonriver Audio, Malmö, Sweden  
 Supplied by: Whole Note Distribution, Angus, Scotland  
 Telephone: 0203 9115 549  
 Web: www.moonriveraudio.com; www.wholenotedistribution.co.uk  
 Price: £4995

AUDIO  
FILE

INTEGRATED AMPLIFIER

# Moonriver Audio Model 404 Reference

This boutique brand from Sweden has quietly been making a name for itself with a classically-styled, modular integrated amp. We test the 'tickled up' Reference version  
 Review: **Andrew Everard** Lab: **Paul Miller**

Anyone who spends time idly clicking between websites will be familiar with the HTTP 404 error, which occurs when a browser can't find what it was looking for. Coincidentally, the Moonriver Model 404 Reference amplifier, which is priced from £4495, has a similar 'error': there may be a USB-B port on its rear panel, offering the prospect of connecting a computer to play music, but there's nothing behind it, due to circumstances beyond the control of the amp's Swedish manufacturer.

More on that in a moment, but what the Model 404 Reference does offer, aside from its somewhat retro looks, is a little flexibility beyond the basic specification of five line inputs, fixed and variable-level line outs, and single speaker terminals fed by a 50W/8ohm-rated amplifier. That £4495 gets you the basic specification, with a MM phono stage raising the price to £4870, and MM/MC to £4995. These options can be specified when ordering, or added later, as presumably will be the USB DAC.

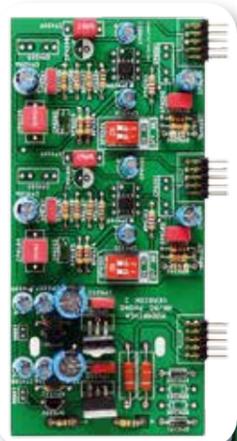
**PERILS OF PRODUCTION**  
 Like many companies, Moonriver fell victim to the devastating three-day fire that broke out in the Asahi Kasei Microsystems factory in Nobeoka City, Japan, halting production of AKM's chips. Add in a global surge in demand for microprocessors and Moonriver has found itself unable to offer the digital facilities it was planning. An alternative solution, based around the ubiquitous ESS Sabre DAC family, is still eagerly anticipated.

**RIGHT:** Transformer [right] is at the heart of the low-ESR PSU feeding the pairs of TI power amp modules [on heatsink, centre]. Optional MM/MC stage [inset picture] is fully screened [left]. Forthcoming DAC stage will locate bottom left

This illustrates both the benefits and drawbacks of artisan manufacturing, hand-building its products in Sweden – and yes, the name is inspired by the famous Henry Mancini song. On the plus side, it enables the company to make both the standard £3095 Model 404 amplifier (or £3470 with MM phono and £3620 for MM/MC) and the uprated Reference version we have here, whose major change is an enhanced power supply section. In place of the standard 404's 57,000µF of PSU 'storage', the 404 Reference has 107,000µF, with 21,000µF of that dedicated to the discrete preamp section. The Reference also boasts improved mechanical damping and isolation for the audio circuitry.

What's consistent between the two Model 404s is the concept of in-house design and build, and the sense that this is an amplifier built the 'traditional way', complete with facilities such as a tape monitor switch – useful for adding into an AV loop – balance control and even a mono/stereo selector.

**BACK TO BASICS**  
 Adding to that 'old-school' feeling is the use of discrete through-hole components rather than the more usual surface-mount types, with removable panels giving service access to the main board from above and below. The company was founded by George Polychronidis, whose background is in audio repair and servicing, and that shows in the production engineering here.



Under the bonnet are five separate power supplies fed by a hefty, if not extravagant toroidal transformer [see pic, p54], high-quality components (including a motorised ALPS Blue volume control), relay input switching, and a dual-mono power amp stage, even if the latter uses TI 'amp on a chip' modules rather than all-discrete stages. Why? Well, the designer believes that this integrated solution, properly implemented, offers more than sufficient headroom and dynamics – which is what the 404 Reference is designed to deliver via its WBT Nextgen speaker terminals.

Adding to the '60s/'70s aesthetic here is the general simplicity of operation, unless you have the phono stage fitted as you'll need to remove 13 screws to make any adjustments [see PM's boxout, below]. The four main controls – for input, tape monitor, balance and volume – are chunky and feel solid in operation, while there are just three switches, for power, mono/stereo and dimming or extinguishing the front panel illumination. Completing the front

panel is an 'output' lamp: this lights after the amplifier has carried out its soft-start sequence on power-up, which takes less than ten seconds, and turns red if the mute button on the remote is pressed.

**DREAM MAKER...**  
 As there are limited frills on offer, it's easy to get the 404 Reference up and running with a mere glance at the instruction manual. Nevertheless, the latter is still worth reading for its discussion on the merits of facilities such as the tape monitor, balance control and mono switch. As it says, "less" may well be "more", but "better" is to have a choice', an approach entirely consistent with the no-nonsense design philosophy here.

And that thinking pays off in an amplifier with a refreshingly direct sound, shorn of almost any artifice and with solid communication of the music it plays. Connected between my Naim ND555 network player [HFN Apr '19] and driving a pair of big

*'It delivers music with convincing substance'*

**ABOVE:** Four stylish rotaries and two toggles cater for the full suite of volume, balance, input selection, tape monitor and mono/stereo facilities. The yellow LEDs may be dimmed

PMC floorstanders, a task to which it rapidly showed itself to be well-suited, the Model 404 Reference immediately grabbed my attention with the no-nonsense Texas boogie of *Hardware*, the recent album by ZZ Top guitarist/lead vocalist Billy F Gibbons [Concord Records, 96kHz/24-bit download].

The fuzzy guitars, relentless drive and growled vocals sounded magnificent here, and you could almost sense the spontaneity of the trio involved in making so big a sound in their California desert studio. It's a thick, heavy and rather fabulous album, and from the straight-rockers to the more menacing – the simmering 'Spanish Fly' and the dark closer, 'Desert High' – the Model 404 Reference creates compelling sonic pictures, full of ambience and hot, dusty atmosphere.

**NEW YEAR'S CELEBRATION**  
 So far, then, not much of the *Fågelsång* (birdsong) the Moonriver amplifier

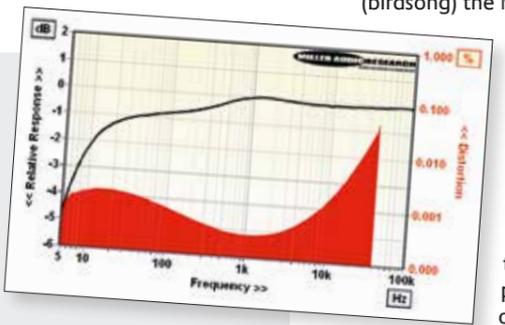
proclaims on its fascia! However, with more intricate recordings, such as the live Vienna Philharmonic/Barenboim 2022 *New Year's Concert* [Sony Classical 19439962512], that rich yet open presentation, albeit one with a slightly soft top-end that removes brittleness rather than robbing ambience, conveys not only the space of the concert hall but also the internal details of the scoring and playing.

Meanwhile its generally big-boned, fast sound does a fine job with the dynamics of the music, whether with the great sweep of the 'Blue Danube' waltz or the speed and drive of the faster polkas. I've written

**UNDER THE CAN**

If you're an enthusiast with more than one pick-up, and irritated by fiddly DIP switches on the rear of an amp to set MM/MC gain/loading, then you might feel the 404 Reference is less friendly still. To make any changes here you need to unscrew the lid and then also unscrew a metal screening can that hides the optional phono card [see inset picture, p54].

But it's worth the trouble... with MM selected, full gain through the preamp is +58.5dB including +17.3dB for the line stage. In practice, the tape loop provides a better indication of the true MM and MC gain at +41.2dB and +59.2dB, respectively. This translates into MM/MC sensitivities of 8.71mV and 1.1mV, supported by very generous input overload margins of 84mV and 10.5mV (or +24.5dB and +26.4dB headroom re. 5mV and 500µV, respectively). The A-wtd S/N is very wide (noise is low) via MM at 91.1dB (re. 5mV in) and slightly less so at 72.2dB via MC (re. 500µV in) while distortion is vanishingly low at ~0.0002% midband to 0.005%/20kHz [red infill, inset Graph]. The response [black trace] is flat to ±0.1dB from 1kHz-100kHz but bass rolls away from -0.75dB/100Hz to -1.3dB/20Hz. PM



## MOONRIVER AUDIO 404 REF



**ABOVE:** The 404 integrated offers four line inputs on RCA, one being occupied by MM/MC phono if fitted. The USB input is still forthcoming but there are two preamp outputs and, in the Reference, single sets of WBT 'nextgen' speaker cable terminals

before about the best amplification being able to get out of the way of the music, and that's what the 404 Reference does – and across a wide range of musical styles, despite offering less than 50W/8ohm per channel – as PM's lab report [adjacent] reveals.

### BETWEEN THE LINES

In practice, there are plenty of ways of getting higher output, and a lot more in the way of facilities, for a much smaller outlay, but the 404 Reference still offers a compelling speaker-driving ability, also revealed in PM's low impedance measurements. So, while it may not have the world's most sonorous or stentorian bass, it's by no means light in the low frequencies, and delivers music with convincing scale and substance, while its speed and dynamics are beyond reproach.

For example, with The Weeknd's superb new set, *Dawn FM* [XO/Republic Records download], combining fine performances and immaculate production, this Moonriver amp is as at home with the sometimes-introspective lyrics as it is with the exuberant beats and obvious hit single material. It's a totally entertaining experience,

but then that's just what this amplifier delivers, in a manner that's sure to win it friends and admirers in equal numbers.

That said, there's still a sense that this design is as much about those retro looks than some of the internals,

**LEFT:** Moonriver's neat little remote offers control over volume, mute, input selection and the tape monitor facility



as evidenced by that off-the shelf output section, which seems somewhat at odds with the rest of the amp's intentions. There's also the slightly 'work in progress' feel of the absent digital section, but the 404 Reference belies any of these doubts with a sound that's never less than entirely entertaining, even when you push the levels up a bit in response to its well-balanced, informative presentation.

### SUBTLETY WINS OUT

Play Carmen Gomes, Inc.'s latest album, *Ray!* [Sound Liaison SL1052A; DXD], and the sheer intimacy of Gomes's voice, accompanied by no more than guitar, bass and drums – or indeed just bass on 'The Sun Is Gonna Shine Again' – makes for a compelling listen, the amp working with source and speakers to give a real 'artists in the room' effect.

There's no overt 'hi-finess' here, but instead an honest, rich and enveloping sound from boogie to sweeping orchestra to sultry jazz. While some will wish for more power, a headphone socket, or even a functioning USB input, the 404 Reference still offers a refreshing alternative to amplifiers with more obvious physical size and swagger. ☺

### HI-FI NEWS VERDICT

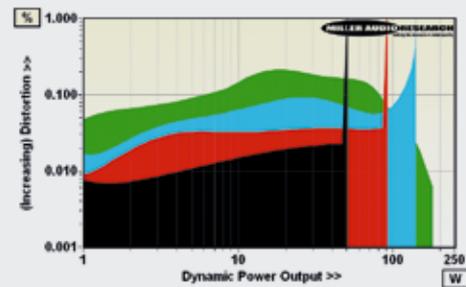
What it lacks in stump-pulling power, the 404 Reference makes up for in solidity of build, simplicity of operation and easygoing music-making. You might wonder whether a more hairshirt design could offer a more direct sound, especially if you don't need the basic facilities, but it's hard to argue with the way it serves up a wide range of material, or the ease with which its presentation can be enjoyed.

Sound Quality: 82%

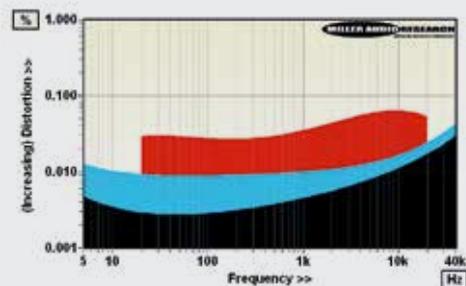


There is seemingly a lot of amplifier under the Model 404 Reference's bonnet, including a substantial power supply and very impressive (optional) MM/MC phono card [see boxout, p55]. However, rather than use discrete output transistors, Moonriver has opted for a pair of TI's Overture-series 11-pin power amp modules [see inside pic, p54]. The LM3886 was introduced some 23 years ago and is rated at 38W/8ohm, or 50W/8ohm with ±35V PSU rails. This is the specification adopted by Moonriver for this 'Reference' version of the Model 404 integrated amplifier although, on test, the output is closer to 2x46W/8ohm and 2x72W/4ohm (re. 1kHz at <1% THD) with a little extra headroom to accommodate 51W, 92W, 146W and 178W into 8, 4, 2 and 1ohm loads under dynamic conditions [see Graph 1, below].

Moonriver has modified its expectations for the amplifier's S/N, as its flyer claims '95dB (line)' while the website says '85dB (line)'. In practice the A-wtd figure is closer to 81dB (re. line in/0dBW out) while the overall gain is a very high +46.1dB. As this requires just 95mV from your (2V) digital player to reach full output, it's arguable that the 'Blue' ALPS volume control is not being optimally employed here. Distortion increases gently with output level from 0.003-0.014%/1W to 0.009-0.024%/10W and 0.03-0.06%/30W [all 20Hz-20kHz, see Graph 2], broadly in line with the 0.03% specification of TI's amp-on-a-chip. The ~0.14ohm output impedance is defined by Moonriver's choice of external components and while not *low* it is usefully constant from 20Hz-100kHz. The response is less 'flat' however, showing a gentle treble roll-off with a -0.8dB drop at 20kHz and an arguably (again) sensible -7.7dB at 100kHz. PM



**ABOVE:** Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 13.3A



**ABOVE:** Distortion vs. frequency at 1W/8ohm (black, 5Hz-40kHz), 10W (blue) and 30W (red, 20Hz-20kHz)

### HI-FI NEWS SPECIFICATIONS

Continuous power (<1% THD, 8/4ohm)	46W / 72W
Dynamic power (<1% THD, 8/4/2/1ohm)	51W / 92W / 146W / 178W
Output imp. (20Hz-20kHz/100kHz)	0.124-0.15ohm / 0.14ohm
Freq. resp. (20Hz-20kHz/100kHz)	-0.0dB to -0.8dB / -7.7dB
Input sensitivity (for 0dBW/46W)	14mV / 95mV
A-wtd S/N ratio (re. 0dBW/46W)	80.7dB / 97.2dB
Distortion (20Hz-20kHz, 1W/10W)	0.0029-0.017%/0.009-0.024%
Power consumption (idle/rated o/p)	14W / 150W (1W standby)
Dimensions (WHD) / Weight	430x135x390mm / 13kg