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JASON VICTOR SERINUS

Moonriver 404 Reference

INTEGRATED AMPLIFIER

Joy. It's all about the joy.

Joy manifests during those moments when the critical mind suspends, the lens clears, and only union between you and your experience exists. When joy arises, time stands still, all sense of separation vanishes, and only wonder remains.

Many of us live for those moments. Moments of understanding that transcend verbiage and mental chatter and affirm what is real and eternal about the human condition.

Music offers the opportunity to live in joy for more than a fleeting second. The sense of oneness can last for an entire live performance or recording. Suddenly, all distance between you, the artist, and their creation vanishes. During those transcendent moments, the acoustics of the hall and the quality of the recording or sound system mean naught. All that matters is the oneness, the sense that what you are experiencing is true and eternal.

Everything felt so right that there was nothing to do but bliss out.

It is in oneness that many of us experience pure joy. I'll never forget the morning when my dear friend Béla, his late sister Emilye, and her husband Lou visited my house in Oakland. I cued up a CD of Renaud Capuçon performing Brahms's Violin Concerto (Erato 2653). I don't know what was happening with my system that morning. All I know is that the combination of Pass Labs XA200.5 monoblocks, dCS Puccini CD/SACD player and Scarlatti Clock, and Wilson Audio Sasha speakers had us in rapt attention for 40 minutes. We were unable to utter a word as we were enveloped by beauty. When the music ended, we all uttered a collective sigh, hugged each other, and floated out of the room.

After those transcendent experiences, the critical mind

SPECIFICATIONS

Description Integrated amplifier with class-AB output stage, optional D/A converter and phono stage. Analog inputs: 5 pair RCA (4 line, 1 tape). Optional phono stage on input 1: MM with 40dB gain or MM/MC with 60dB gain. Separate power supplies for analog and digital sections. Analog outputs: 3 pair RCA pre-out (2 variable line, 1 tape). Maximum output power: 50Wpc into 8 ohms (17dBW), 70Wpc into 4 ohms (15.4dBW). Maximum output voltage: 20V RMS, 10Hz–20kHz, 50V peak-to-peak. Frequency response: 10Hz–30kHz, +0/–1dB. THD+N: <0.05% typical, 20Hz–20kHz. Signal/noise: >93dB. Input impedance: 47k ohm. Power transformer: 250VA. Total capacitance: 105,000µF. Maximum power consumption: 220W. Idle power consumption: 22W. Accessories: Remote control.
Dimensions 16.9" (430mm) W × 5.3" (135mm) H × 15.35" (390mm) D. Weight: 26.45lb (13kg). Shipping weight: 33lb (16kg).
Finish Black.
Serial number of unit reviewed DK2010020153RE. Made in Sweden.
Price $4995. Warranty: 3 years. Approximate number of US dealers: 6.

Manufacturer
Moonriver Audio,
Poststugan 532, 21165,
Malmö, Sweden.
Tel: +46 (0)765905066.
Web: moonriveraudio.com.
North American distribution:
On a Higher Note,
P.O. Box 698,
San Juan Capistrano, CA 92693,
Tel: (949) 544-1990.
Web: onahighernote.com.

may reassert itself. With Capuçon, I observed that his priority was beauty of tone rather than emotional expression. But during those moments of pure joy, we who love Keith Jarrett or Glenn Gould forget about all their noises and grunts and eccentricities. Who cares that Toscanini is singing along with his artists? We're swept away by the emotions he draws from them. We forget that Diana Krall sometimes seems to mumble and gesture her way through a song, as though carefully parsing out her life force. (John Atkinson is going to want my head for that one.) Or that Janis Joplin is ripping her vocal cords apart as she sings out her pain. Or that Callas's voice is on the edge of falling apart, and Joan Sutherland is reserving clear enunciation for another lifetime. Instead, their artistic brilliance *and* their imperfections transport us to another plane.

Thoughts of such experiences lead me to the subject of this review: the Moonriver Audio Model 404 Reference ($4995) integrated amplifier. The Moonriver 404 is a relatively low-powered class-AB design rated at 50Wpc into 8 ohms and 70Wpc into 4 ohms. Designed and manufactured in Sweden, it's the least expensive and least powerful integrated amplifier I've ever had in my current system. The 404 integrated amp is a modular design that comes in two versions: a basic unit ($3495) and a Reference unit ($4995) containing upgraded parts, the latter of which is new. There are options for phono preamp ($450 for MM phono, $550 for MM/MC phono), and a USB DAC option originally based on an AKM chip.[1] Apart from the asynchronous USB DAC input and speaker outputs, all input and output jacks are single-ended.

Like Capuçon, Jarrett, Gould, Krall, Callas, and every other artist or component you can mention, the Moonriver 404 Reference integrated amplifier has its limitations. Yet Moonriver's chief engineer and founder, George Polychronidis, was so confident of its quality/price ratio that he encouraged me to compare its optional USB DAC to my

1 The recent fire at the AKM factory destroyed inventory and has impacted a number of companies, including Moonriver, that use their DACs in production.

MEASUREMENTS

When I received the sample of the Moonriver 404 Reference that Jason Victor Serinus had auditioned, serial number DK201002153RE, it rattled when I unpacked it. I removed the top cover and saw that the amplifier had incurred damage during its transcontinental journey. The heavy toroidal power transformer is mounted on one side of the large printed circuit board that occupies almost all the amplifier's internal space, with two aluminum straps connecting the board to the central internal heatsink to provide the necessary support. The box must have been dropped on its top during the journey, as the two aluminum straps had fractured, with one loose inside the chassis. When I connected the amplifier to my Audio Precision SYS2722 system (see the January 2008 "As We See It"[1]), the left channel was dead, though I was able to perform a complete set of tests on the right channel using the line-level inputs.

I let Editor Jim Austin and Moonriver's US distributor, Philip O'Hanlon of On a Higher Note, know about the situation. O'Hanlon told me that there would be a running change in production to provide more support for the transformer, and he arranged for Moonriver to ship a second sample to me directly from Sweden.

This sample, serial number DK201120164RE, arrived without shipping damage, and I resumed testing. Although the internal heatsink doesn't look substantial, it is connected to the bottom panel with thermally conductive grease so that the entire chassis can dissipate heat. I preconditioned the amplifier by following the IHF's recommendation of operating it at one-third the specified power into 8 ohms for an hour. At the end of that time, the temperature of the chassis was 100.1°F (37.8°C). The 404 Reference has sufficient heatsink capacity for its rated power.

I looked first at the new sample's behavior via its line inputs. The maximum gain at the loudspeaker outputs was 46dB, which is a little higher than usual for an integrated amplifier. At the preamplifier output, the maximum gain measured 16dB. The 404 Reference preserved absolute polarity (ie, was noninverting) at both its loudspeaker and preamplifier outputs.

The 404 Reference's line input impedance was an appropriately high 24k ohms at 20Hz and 1kHz, dropping to a sufficiently high 17.1k ohms at 20kHz. The manual says that the

1 See stereophile.com/content/measurements-maps-precision.

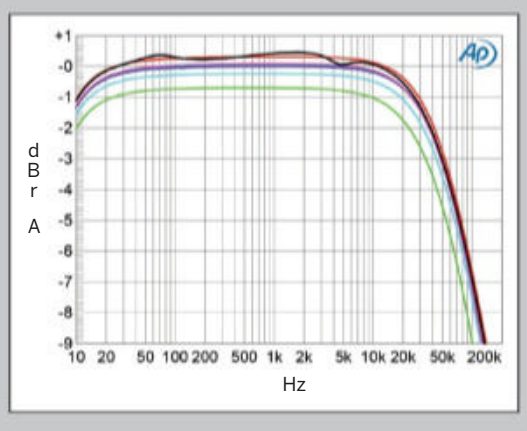

Fig.1 Moonriver 404 Reference, frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), 2 ohms (green) (1dB/vertical div.).

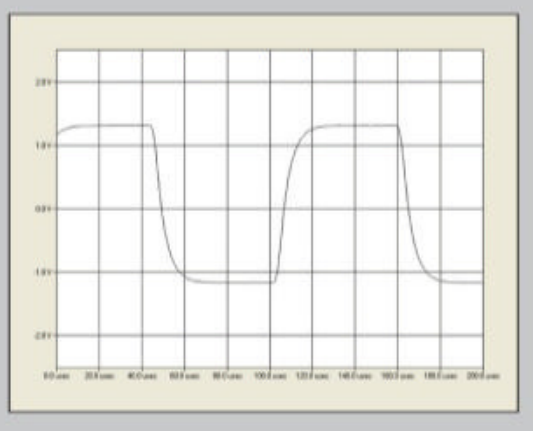

Fig.2 Moonriver 404 Reference, small-signal 10kHz squarewave into 8 ohms.

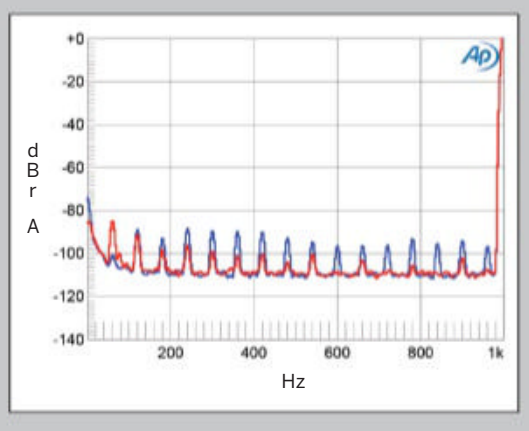

Fig.3 Moonriver 404 Reference, spectrum of 1kHz sinewave, DC–1kHz, at 1W into 8 ohms with volume control set to its maximum (left channel blue, right red, linear frequency scale).

reference D/A processors, the dCS Rossini/Clock combo ($31,500 plus lots of cables) and the HoloAudio May (Level 3) DAC ($4998). He also encouraged me to evaluate the quality of the 404 Reference's preamp stage by bypassing its amplifier section and connecting its preamp outs to my all-balanced D'Agostino Progression monoblocks ($38,000/pair). Through all these configurations, I kept returning to one basic fact: No matter what I played through the Moonriver 404 Reference, it sounded right and consistently brought me joy.

There's such a lot of world to see

You may not have heard of Moonriver Audio.[2] Polychronidis, 47, founded the company in 2015 and launched the 404

2 Yes, the company name was inspired by the Johnny Mercer/Henry Mancini song "Moon River."

measurements, continued

preamplifier output impedance is "a few ohms." I measured 96 ohms at high and middle frequencies and a higher 1426 ohms at the bottom of the audioband. However, I had problems measuring the behavior of the 404 Reference's preamplifier output due to the presence of high levels of ultrasonic noise.[2] I believe this noise, which had a center frequency around 1.7MHz, was confusing the input of the Audio Precision SYS2722. This noise was present with both samples of the amplifier, and could be the cause of a "buzz" Jason Serinus told me he experienced with the preamplifier output.

The amplifier's output impedance was moderately low, at 0.23 ohms at 20Hz and 1kHz, rising slightly to 0.33 ohms at 20kHz. The modulation of the amplifier's frequency response, due to the Ohm's law interaction between this source impedance and the impedance of our standard simulated loudspeaker,[3] was therefore small, at ±0.25dB (fig.1, gray trace). This graph was taken with the volume control set to its maximum, and the right channel output (red, magenta, and gray traces) was 0.25dB higher than the left (blue and cyan traces). The channel balance improved at lower settings of the volume control, in the range at which it will most often be used. The amplifier rolls off slightly at the top of the audioband, the response reaching –0.4dB at 20kHz and –3dB at 50kHz. This results in a slight lengthening of the waveform's leading edges with the Moonriver's reproduction of a 10kHz squarewave (fig.2). The waveform is free from overshoot and ringing, however.

Channel separation via the line inputs (not shown) was okay, at 72dB in both directions below 2kHz, decreasing to 48dB, L–R, and 56dB, R–L, at 20kHz. The level of the Moonriver's noise floor dropped at lower settings of the volume control, but even with the control at its maximum, which is the setting I use for noise-floor analysis, supply-related spuriae at 60Hz and its harmonics remained at or below –90dB ref. 1W into 8 ohms (fig.3). The higher-order supply harmonics were around 10dB lower in level in the right channel (red trace) than the left (blue). The

2 The level of this noise was not reduced when I floated the Audio Precision's signal generator ground nor when I connected the grounding terminal on the amplifier's rear panel to the analyzer ground.

3 See stereophile.com/content/real-life-measurements-page-2. .

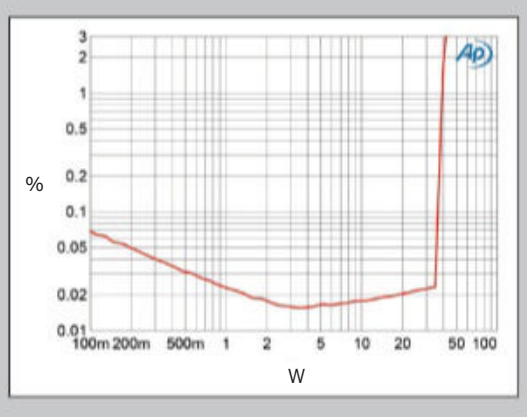

Fig.4 Moonriver 404 Reference, distortion (%) vs 1kHz continuous output power into 8 ohms.

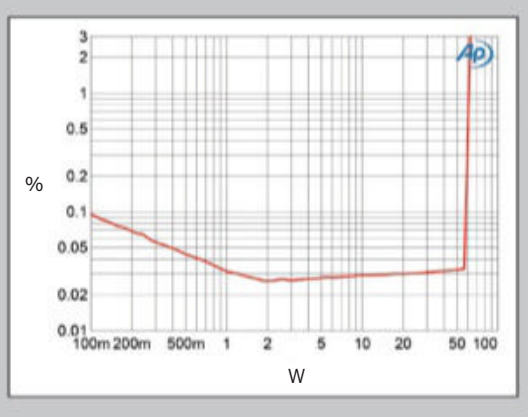

Fig.5 Moonriver 404 Reference, distortion (%) vs 1kHz continuous output power into 4 ohms.

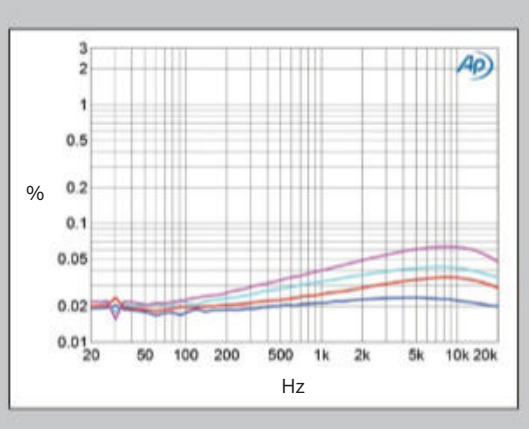

Fig.6 Moonriver 404 Reference, THD+N (%) vs frequency at 12.67V into: 8 ohms (left channel blue, right red) and 4 ohms (left cyan, right magenta).

integrated amplifier in May 2019 at the High End Munich show. In only 18 months, the company's distribution network expanded into 17 countries.

Like many high-end audio designers, Polychronidis began fiddling with electronics and designing circuits as a teenager. Nine years ago, after he had begun to develop what would become Moonriver, he relocated from his native Greece to Sweden and worked as a service technician in a hi-fi shop. The knowledge he acquired in the field, along with his background in design, photography, and user interface and industrial design, contributed to the Moonriver 404.

Polychronidis designed everything in the Moonriver 404 except for the core of its optional USB DAC, which was based on an AKM chip. I say "was" because after I had spent a long time evaluating the DAC and was prepared to sing its praises, the AKM factory in Japan went up in flames and, with it, this version of the Moonriver's DAC. (The remaining supply of DAC chips has been bought up already, and it could be a year or more before more chips are available.) As I write this, Polychronidis is contemplating designing a new DAC from scratch—possibly based on an ESS Sabre chip. If he does, the new DAC will handle PCM, DSD, and perhaps MQA.

Both Moonriver's basic and Reference 404 integrateds are hand-soldered and assembled in Sweden. They undergo a minimum of two days of factory burn-in to ensure reliability. Another 50 hours of consumer burn-in is recommended before they're at their best.

Polychronidis shared more about the 404's build-out. "The output stage of the amplifier is not discrete and is not formed by two bipolar transistors," Polychronidis said toward the start of an internet-based chat. "It's actually an integrated circuit based on an LM3886 chip that was originally designed by National Semiconductors and is currently produced by Texas Instruments. It has also been used by Simaudio Moon and Jeff Rowland and is limited to an output of approximately 50Wpc into 8 ohms and 70Wpc into 4 ohms. Actually, it is even less than 50W without measurable distortion. What's important, however, is not the amount of watts but how it sounds, how it performs, and how it drives

measurements, continued

wideband, unweighted S/N ratio, taken with the input shorted to ground and the volume control set to its maximum, was 54.7dB, left, and 49.9dB, right, ref. 2.83V output into 8 ohms. Restricting the measurement bandwidth to the audible range improved the ratios to 75.3dB and 74.8dB, respectively, while switching an A-weighting filter into circuit improved the ratio in both channels to 77.8dB.

Fig.4 plots the percentage of THD+noise in the 404 Reference's speaker output vs power into 8 ohms. Though the 404 Reference's maximum power is specified as 50W into 8 ohms (17dBW), using our definition of clipping, which is when the output's percentage of THD+noise reaches 1%, fig.4 indicates that the amplifier clipped at 39.5Wpc into 8 ohms (14dBW). The Moonriver clipped at 60W into 4 ohms (14.8dBW, fig.5). (Both graphs were taken with both channels driven. The first sample's right channel behaved identically.)

I measured how the 404 Reference's distortion changed with frequency at 12.67V output, which is equivalent to 20W into 8 ohms and 40W into 4 ohms. The THD+N percentage was low in the midrange and bass into both loads (fig.6) but rose in the top audio octaves, more in the right channel (red, magenta traces) than the left (blue, cyan). The distortion is predominantly the subjectively innocuous second harmonic (fig.7) with the third and higher harmonics lower in level, even into 4 ohms (fig.8). Even with the rise in distortion at the top of the audioband, intermodulation distortion was low (fig.9), the difference product at 1kHz resulting from equal-level tones at 19kHz and 20kHz at high power into 4 ohms lying just below –80dB (0.01%).

The first sample included the optional USB digital module. I didn't test this, however, as it uses an AKM DAC chip that is no longer available due to a disastrous fire at the Japanese factory in late October 2020. (Moonriver is redesigning this module to use a chip from another manufacturer.) The digital module wasn't installed in the second sample of the amplifier. The 404 Reference's phono input offers moving magnet and moving coil modes, these selectable with internal DIP switches; however, the second sample of the 404 Reference had not been fitted with the phono module: This input behaved identically to the line inputs.

The Moonriver 404 Reference's measured performance had some good points: the low level of power-supply spuriae and the distortion signature, which is primarily the subjectively benign second harmonic without this being accompanied by excessive levels of intermodulation distortion. However, the amplifier does not meet its specified powers. I was also bothered by the high level of ultrasonic noise from the preamplifier outputs. **—John Atkinson**

Fig.7 Moonriver 404 Reference, 1kHz waveform at 20W into 8 ohms, 0.02% THD+N (top); distortion and noise waveform with fundamental notched out (bottom, not to scale).

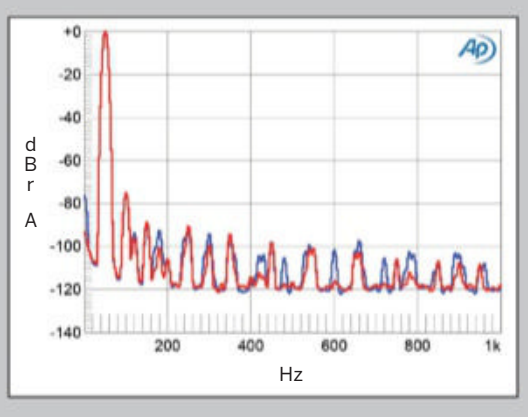

Fig.8 Moonriver 404 Reference, spectrum of 50Hz sinewave, DC–1kHz, at 40W into 4 ohms (left channel blue, right red, linear frequency scale).

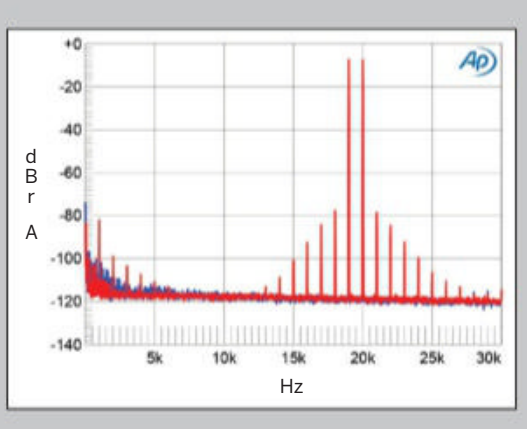

Fig.9 Moonriver 404 Reference, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 40W peak into 4 ohms (linear frequency scale).

the speaker."

Polychronidis's statement challenges the common assertion that the power rating is a critical factor in defining an amp's ability to drive a speaker. So, this raised more questions. Top of my mind was the recently reviewed Yamaha A-S3200 integrated amplifier ($7499.95),[3] which is specified to output 100Wpc into 8 ohms and 150Wpc into 4 ohms. Were the Yamaha's limitations in reproducing and controlling bass adequately in my reference Wilson Audio Alexia 2 loudspeakers due to its power rating, or were other factors at play?

"There is a big misunderstanding about power," Polychronidis continued. "Power is always measured by a constant, stable frequency in the lab—a single continuous sinewave without alterations of the level in time—when the major question is how much power an amplifier can deliver *instantly*, not constantly. Measuring with a stable frequency doesn't tell you much about how an amplifier will handle musical dynamics, *follow precisely* music's chaotic and complex transients, and drive the speaker. It's a number that doesn't apply in real life. Because it is common for an amplifier of hundreds of watts to be incapable of driving a difficult speaker load, you have to listen to see if it will drive the speaker."

Polychronidis acknowledged that because many speakers are low in sensitivity or present challenging loads, most people are insecure about investing in an amplifier that outputs less than 100Wpc into 8 ohms. "Some amplifiers don't drive well because of their preamp design, power supply design, and power supply placement," he continued. "The power supply should be as close to the output stage as possible in order to deliver instant power to the speaker. As a service technician, I've worked on hundreds of amplifiers with dozens of speakers. I have a sense of what can and can't drive well—let me remind you of the legendary NAD 3020[4] that changed the perception about hi-fi forever when it came out in 1978—and I have some particular tests I conduct to be sure."

According to Polychronidis, the power supplies for both the amp and preamp sections are at the heart of the unit. Although the basic 404 and the 404 Reference have the same power output rating, the 404 Reference's power supplies have double the capacitance of the basic unit. This improvement, he claims, enables the Reference to better handle incoming signals and deliver more detail, low-level information, instrumental texture, and dynamics. The Reference model, he asserts, also produces a deeper and more articulate soundstage and better controlled, more authoritative bass. It has WBT nextgen™ speaker terminals, and the chassis includes additional vibration-absorbing materials and is said to provide better support.

It sounds tonally spot on, well balanced, clear, and musical.

Polychronidis believes that the most significant factors in amplifier design are voicing and timing, not the price of its components or the complexity of its design. "When you design something that's affordable, you have to choose between better performance/sound or better specs. It's one or the other, except when you design cost-no-object; in that case, you don't have to choose. The Moonriver Reference 404 may not be the quietest-measuring amplifier on the market, but it performs better than those with superior specs because it was designed for optimal performance/sound rather than specs.

"The secret to this integrated amplifier lies in its preamp," Polychronidis said. "Everything is about *timing* in music reproduction, and the preamp is the conductor that gives the amplifier the timing and tempo. The preamp decides when the note starts, how it will get louder, and how it will fade out. It kicks the power amp and produces big dynamics as well as microdynamics. A good preamp can elevate an amplifier's driving capability to the maximum level. In my opinion, it is the most important part of any system after the speakers.

"Class-A amplifiers can reveal even small microdynamic detail that a normal class-AB amplifier can't, but so can a good preamplifier. Our preamp is a discrete design with bipolar transistors; it is not based on an integrated circuit because, in a preamp, ICs lack transparency and drive. ICs don't negatively affect transparency in a power amplifier. If you could achieve the same transparency and drive in a preamp with an integrated circuit, I would use it."

Polychronidis's background as a technician informed his design choices. The 404's front panel has a single on/off power button that activates a soft-start circuit. He decided to eliminate the rear-panel power switch and standby function from the 404. "With standby, you have an active circuit inside the amp that runs power 24/7 and will break at some point," he said. "A simple power switch with soft-start

3 See stereophile.com/content/yamaha-s3200-integrated-amplifier.

4 The diminutive NAD 3020 integrated amplifier output 20Wpc into 8 ohms, 38Wpc into 4 ohms, and 72Wpc into 2 ohms.

increases reliability. I know this isn't very good for some people, but I want to build something that will last for many decades or even a lifetime."

For more longevity, he made the 404 Reference easily serviceable: It has a removable bottom that gives access to both sides. "When you have through-hole components rather than surface-mount components, and you have access to both sides of the PCB [printed circuit board], you can service the amplifier very easily," he said. "The chip I use has a very short signal path and doesn't have crosstalk or interference between the discrete transistors that are usually used in a power amplifier. It also includes essential protection circuits that guard against damage from overheating, short circuits, and voltage spikes. This creates the kind of transparency that only single-ended amplifiers have.

"Everyone has their own preferences and own tastes," Polychronidis said at the end of our chat. "If someone says their amplifier is the best, it makes me laugh. I like the multicolored diversity of our market, which has products for every taste and every wallet. Some people prefer 8W single-ended amps with 300B tubes, and others buy 1000W [solid-state] amplifiers to do exactly the same thing. We should keep it like this."

We're after the same rainbow's end

Instead of huckleberries, four rotating knobs dominate the Moonriver 404 Reference's front panel: a source selector for four inputs (two can be converted for the optional MM/MC phono stage and the forthcoming asynchronous USB DAC); a tape monitor selector; a balance control; and a volume control that's coupled to a motorized Blue ALPS potentiometer. Interspersed are a three-position panel-lights switch (normal/dimmed/off), a power on/off button, an output LED that turns off when the "mute" button on the remote control is activated, a stereo/mono switch, and a remote-control sensor. On the rear panel there's an asynchronous USB input, a phono ground for turntables, four sets of RCA inputs, tape in (play) and out (record) jacks, preamplifier outputs said to have a very low output impedance that are intended to drive additional power amplifiers or subwoofers, two pairs of speaker outputs, an IEC connector, and a serial number.

The light plastic remote is uncomplicated: two up/down pairs to switch inputs and increase/decrease volume, and mute and tape monitor on/off buttons. You cannot turn the power on or off via the remote control.

Four thimble-like rubber feet protrude from the 404's underside. They looked rather basic, so I asked Polychronidis if he ever used aftermarket support feet to provide additional isolation from vibration. He told me he uses aftermarket footers only under his own turntable, but he gave me the go-ahead to try some.

I placed the 404 integrated on one of the top shelves of my Grand Prix Audio Monza rack and listened with a variety of footers and with none at all. Of all the footers I tried, the Wilson Pedestals provided the cleanest, fullest, most rounded images. I preferred the sound with footers, but the Moonriver sounded very good without them.

The first sounds brought a smile to my face.

When I asked about power conditioners, Polychronidis said that their effectiveness varies. Rather than use one during the design process, he voiced the 404 after midnight, when power was cleanest. Since my marriage precludes late night/early morning listening, he suggested I test to see which sounded better with his creation, wall power from my dedicated line or conditioned power. I was so happy with what I heard with the 404 Reference plugged into one of the AudioQuest Niagara 5000 power conditioner's high-current outlets that I saw no need to investigate further.

After I connected the 404 Reference and the Wilson Alexia 2's, I used the Roon Nucleus+ to serve up files sourced from my Synology NAS to either the dCS Rossini DAC/Clock combo, the Holo Audio May (Level 3) DAC, or the Moonriver 404's optional USB DAC[5] (which, again, is unavailable as of the time of this writing). The 404 is not Roon Ready, but this presented no obstacle to using it with Roon.

Some readers have questioned the appropriateness of evaluating a $4995 integrated amplifier in a system with components and cabling that cost far more. A few factors must be considered. Assuming that those higher-cost reference components have been chosen and matched carefully, that synchronicity between those components exists, the higher-priced spread should deliver additional resolution, transparency, detail, color, soundstaging information, and so on. Listening is key here, since such synergy cannot be taken for granted or determined by measurements alone. It should follow, in theory at least, that those very resolving reference components might more fully reveal the strengths and limitations of lower-priced equipment under review. If a *Stereophile* Class B component performs wonderfully in a Class A system, you have reasonable assurance of its potential to offer sonic satisfaction in a more modest system.

Wherever you're goin', I'm goin' your way

I connected the dCS Rossini DAC/Clock to the Moonriver 404 Reference and allowed time for cables and equipment to settle in. The first sounds brought a smile to my face. Playing the Doug Tourtelot–engineered hi-rez files of Ēriks Ešenvalds's angelic "O salutaris hostia" from the Portland State Chamber Choir's exceptionally spacious all-Ešenvalds recording, *Translations* (Naxos 8.574124, 24/96 WAV)—a recording that includes tracks engineered by John Atkinson—I was touched by the solo soprano's warm and beautiful voice

5 Even though the sound of the Moonriver USB DAC compared favorably to and perhaps surpassed that of the Krell K-300i integrated amplifier's optional DAC ($1000—see my review in the December 2019 issue), there's no point discussing the sound of a DAC that is currently being redesigned from scratch.

that opens the piece.

The sense of air wasn't as breathtaking as through my reference, but the music sounded airier and more colorful and seemed to emerge from a quieter background than what I'd heard through the two more expensive integrateds that I recently reviewed. The singing was so lovely that I didn't give a damn about keeping a critical scorecard. All that mattered was the gentle ecstasy that Ethan Sperry's superbly tuned ensemble conveyed. I enjoyed how the Rossini/404 Reference gave the lower men's voices the firm foundation necessary to support the women's vocal flights. By the time I was halfway through the next track, "The Heavens' Flock," I had no desire to continue taking notes. Soaring blissfully was enough.

After settling back down to earth, I cued up the Rondo Finale of Mahler's Symphony No.7 from Iván Fischer and the Budapest Festival Orchestra (Channel Classics CCSA 38019, Qobuz 24/192 FLAC). Pace, timing, bass, color, weight, and emotional impact delivered a convincing representation of Mahler at his most splendid. On the title track of *John Tavener: No Longer Mourn for Me* from Steven Isserlis and the Philharmonia Orchestra, conducted by Omer Meir Wellber (Hyperíon CDA68246, 24/96 WAV), the eight cellos' seductive warmth and fullness was palpable.

It was time to play other genres. "I Contain Multitudes" from Bob Dylan's *Rough & Rowdy Ways* (Qobuz 24/96 FLAC) showed midrange beauty. I was equally impressed by the Moonriver's ability to reproduce the complex tonalities that the Rossini fleshed out in Dylan's aging voice.

I'm not sure how I discovered the slightly crazed relentlessness of Berg & Zanon featuring Trio Mandili's "Dugly Dagly" from *Blue Tunes Mega Pack* (Tidal 16/44.1 FLAC); I think Herb Reichert suggested them. You might call it Balkan nasality meets electronic dub fusion. Plenty of bass showed that the low-powered Moonriver 404 Reference has what it takes to drive the challenging Wilson Alexia 2's. After shifting into the overdrive momentum of Son of Dave's take on Lead Belly's "Black Betty" (Qobuz 24/88.2 FLAC) from *Explosive Hits*, it was time to party.

Very early in the review process, Larry Deniston of the San Francisco Audiophile Society visited my Port Townsend home. We began with a familiar push-the-accelerator-to-the-floor track: Yello's "Electrified II" from *Toy* (24/48 FLAC). The recording is full of sizzling highs, knockout bass, and a vast soundstage. I won't pretend that the 404 Reference's bass shook the walls, or that it equaled the low end from the more expensive and powerful Musical Fidelity M8xi ($6490) and Krell K-300i ($7000) integrateds. But the Moonriver 404 Reference's bass *surpassed* that from the gorgeous-sounding class-A Gryphon Essence mono amplifiers ($46,000/pair). The 404's low end was firm, tuneful, and in proportion with the octaves above it.

Deniston requested a familiar song by an unfamiliar artist: Abel Meeropol's "Strange Fruit" sung by Dominique Fils-Aimé on her album *Nameless* (Qobuz 24/48 FLAC). "I can't say I've heard anything as good at this price," he said, speaking of the Moonriver amplifier. Next, we played the same track through my reference amplification. More depth, drive, and color. There was more separation between soloist and backup singers. And yet, when restored to the system, the Moonriver sounded just great: Its fine midrange, quiet backgrounds, and overall clarity stood out—on the fast snap of hand claps, for instance.

After Larry cued up Patricia Barber's ultracool, disarmingly sparse recording of the Gershwins' "Summertime,"

ASSOCIATED EQUIPMENT

Digital sources dCS Rossini SACD/CD transport, Rossini DAC, and Rossini Clock; Synology 5-bay NAS 1019+; Roon Nucleus+ music server with HDPlex 200 linear power supply; Uptone Audio etherRegen, Small Green Computer Sonore opticalModule, TP-Link gigabit Ethernet media converters plus multimode duplex fiber optic cable (2), Linksys routers (2); Small Green Computer linear power supply and Small Green Computer/HDPlex four-component 200W linear power supply (3); external hard drives, SSD USB sticks, iPad Pro.
Preamplifier Dan D'Agostino Momentum HD.
Power amplifiers Dan D'Agostino Progression monoblocks.
Loudspeakers Wilson Audio Specialties Alexia 2.
Cables Digital: Nordost Odin 1 and Odin 2 and Valhalla 2 (USB), Wireworld Platinum Starlight Cat8 (Ethernet). Interconnect: Nordost Odin 2. Speaker: Nordost Odin 2. AC: Nordost Odin 2 and Valhalla, AudioQuest Dragon HC, Kimber Palladian.
Accessories Grand Prix Monza 8-shelf double rack and amp stands, 1.5" Formula platform, Apex footers; Nordost QB8, QX4 (2), QK1, and QV2 AC power accessories, QKore 1, 3, and 6 with QKore Wires, Titanium and Bronze Sort Kones, Sort Lifts; AudioQuest Niagara 5000 power conditioner and NRG Edison outlets and JitterBugs; Tweek Geek Dark Matter Stealth power conditioner with High Fidelity and Furutech options; GreenWave AC filter; Ansuz Darkz T2^S resonance support feet; Wilson Audio Pedestals; IsoAcoustics Orea footers, Vibex PDR footers; Stillpoints Aperture panels; Resolution Acoustics room treatment; Stein Music Blue Suns/Diamonds, Quantum Organizer; Bybee Room Neutralizers; Absolare Stabilians; Symposium Ultra Platform; Marigo Aida CD mat.
Room 20'L × 16'W × 9'H.
—Jason Victor Serinus

from her early album *A Distortion of Love* (Qobuz 24/192 FLAC), I played three versions of that Gershwin standard all sung by soprano Leontyne Price. All three are faithful to the score, but the best-recorded of the lot features Skitch Henderson conducting the RCA Victor Orchestra on *The Essential Leontyne Price* (Qobuz 16/44.1 FLAC). Listening to the shimmering beauty of Price's unique voice reminded me why, at one of her recitals, we devotees had screamed ourselves hoarse until she returned to the stage for one more encore.

My Moonriver hour of supreme revelation was still to come, thanks to a neighbor's recommendation of jazz pianist Marilyn Crispell. A Roon search led me to *Trio Tapestry* (Qobuz 24/96 FLAC), which is led by saxophonist Joe Lovano with Crispell and percussionist Carmen Castaldi (Qobuz 24/96 FLAC). I couldn't believe how realistic Castaldi's gongs sounded on "One Time In." On "Seeds of Change," sonics and musicianship were mesmerizing. The varied heights of instruments in the deep and spacious soundstage were enthralling. Everything felt so right that there was nothing to do but bliss out. I cued up "Mystic," the album's longest track, climbed aboard the Moonriver's magic carpet, turned out the lights, and soared away.

On another occasion, I used the Moonriver 404 Reference to take a first listen to the much-praised HoloAudio May (Level 3) DAC ($4998). Altering my flight path in the direction of Kubrick's *2001: A Space Odyssey*, I entered the galaxy of pounding percussion and blasting brass that opens Richard Strauss's *Also Sprach Zarathustra*, as performed by the Seattle Symphony under Thomas Dausgaard (24/96 WAV). The May/Moonriver's ability to reproduce the opening deep pedal organ notes and convey the depth and width of the Benaroya Hall stage was impressive. The far more expensive Rossini DAC/Clock with the Moonriver 404 depicted an even greater sense of air at stage rear and delivered smoother and weightier bass and treble.

Moonriver and thee

I wrote at the beginning of this review that the Moonriver 404 Reference is the least expensive integrated amplifier I've had in my system; that makes it difficult for me to proclaim the Moonriver 404 Reference integrated amplifier a new benchmark for sonic excellence in an integrated costing $5000 or less. But I'm tempted to anyway, because it does justice to complex and demanding recordings and it sounds tonally spot on, well balanced, clear, and musical.

For some of you, the Moonriver 404 integrated may be the longed-for component, just waitin' round the bend, that transports you to audio nirvana. With dutiful attention to setup and component matching, the Moonriver Model 404 integrated amplifier can deliver Class A sound at a Class B price, and joyful listening. ■

MANUFACTURERS' COMMENTS

THIS ISSUE: Representatives from DS Audio, Phasemation, Audio Research, Clarus Audio, Moonriver Audio, Zesto Audio, Benchmark Media Systems, and Volumio respond to our reviews of their products.

DS Audio DS-E1

Musical Surroundings commends Michael Fremer for revisiting DS Audio optical phono cartridges and sharing his very positive experiences. We applaud his open-minded approach to new analog playback technologies. If you are in the market for a new $1200 phono cartridge and a similarly priced, perfectly matched phono stage, audition the DS-E1 set. The speed and resolution defies what we think is possible of a cartridge with an aluminum cantilever/elliptical stylus and this price range.

Michael's comparison to another cartridge using the same LPs "produced a sonic picture that was surprisingly similar in key ways." It matched a $7500 front end including the DS-E1 with its companion phono stage ($2750) against 6 figures' worth of turntable/tonearm/phono stage and a $7000 MC cartridge.

Fremer's description of the E1 actually applies to *all* DS optical cartridges and equalizers: "The optical cartridge is so *fast* and remarkably transparent. Because it doesn't rely upon a magnet-based generator system, there's no back-EMF hysteresis to slow things down." The E1 possesses "astonishing transparency, image solidity, and three-dimensionality, … superior speed, freedom from mechanical artifacts, full frequency response, and top-to-bottom timbral believability."

In addition, they have 1/5th the moving mass of a MC former/coil assembly, require less than 20dB gain, and replace the complex RIAA equalization network with a simpler filter and purist circuitry. Oh yeah, they are pure analog and have a needle. In the case of the E1, it is elliptical; other DS models sport Micro Ridge and Shibata tips.

Aki-san of DS Audio writes, "Thank you very much! It has been over 50 years since the first optical cartridge was introduced by Toshiba. Optical cartridges are *free from magnets* and use *purist electronics*, bringing us overwhelming advantages in vinyl record playback. It was DS Audio's optical technology developed in the last 7 years which made it possible."

Garth Leerer, President
Musical Surroundings

Phasemation PP-2000

Phasemation (Japan) and I would like to extend our gratitude for the time and effort you dedicated to reviewing our top-of-the-line cartridge, the PP-2000. For many years, Phasemation has continually produced and offered products that are designed and built with pride and attention to detail. Great care is taken when selecting the core materials, manufacturing, and even the presentation of the finished product. Although Phasemation is only now starting to become more recognized, I have been using these special cartridges for many, many years at shows and in my own system. Now, hopefully, some of the *Stereophile* readership can get a chance to experience what Phasemation has to offer!

Angela Lisi
American Sound of Canada

Audio Research Reference Phono 3SE

Thank you, Michael, for spending time with the Reference Phono 3SE. I, too, wish you were able to directly compare your original Ref PH3 with the new 3SE because, side-by-side, the improvements are immediate and quite startling. What you heard was a long time in the making, beginning over three years ago in the development of our new generation of Reference amplifiers, the 160M and 160S, and carrying over to our SE preamp family.

There are intrinsic similarities between the models, but important changes. "I concluded that the upgrade, like the original Ref3, 'gets the instrumental harmonic structure exactly right.' But now the top end is even more open and especially transparent." What you perceived as slight colorations in the original 3 have, as you noted, been eliminated. In wondering "whether the sonic improvements I heard comport with what Audio Research thinks it has achieved with the upgrade," our answer is unequivocally "Yes."

We are honored to be compared to notable products that cost about three times as much as the SE. We'll keep the difference and invest in some more vinyl. We all got into this for the music, which we need more than ever these days.

Dave Gordon, Managing Director
Audio Research

Clarus Audio CPB-2 Duet Power Block

Thank you to Michael Fremer for including an audition of the Clarus Duet in his February 2021 Analog Corner column. While a power conditioner may not necessarily fit within the context of the column, we're happy that Mr. Fremer thought the product was interesting enough to have it included.

We designed the Clarus Duet to filter and protect remote-powered subwoofers and monoblocks, where they would normally be powered into a wall, not as a main power-conditioning unit. While the comparison to a product 10× the cost is flattering, we have other products in our lineup, like the Concerto, that are more suitable for that task.

We are extremely happy that Mr. Fremer found the Duet to be well-made and technically sound, and that it does not limit dynamics. We're positive that *Stereophile* readers will have the same findings should they have an opportunity audition it.

Joe Perfito, President
Gordon J. Gow Technologies

Moonriver 404 Reference

I can't begin to describe my gratitude to the *Stereophile* team for their thoroughness and utmost professionalism in conducting the first-ever review of the new Moonriver 404 Reference. I am of the belief that we can deliver incredible performance and help listeners make the emotional connection with music at any price range. The 404 original model did that in smaller systems, but it immediately showed me the need for a model that can handle more. It gave me great joy to see that I have achieved that with at least one listener, Jason, in his listening sessions. Engineering is the art of balancing, and in balancing budget and specs, we create the personality of our products. I look forward to having Moonriver Audio bring music bliss to listeners worldwide, one music lover at a time.

Once more, I would like to thank you all in *Stereophile*, especially Jason, John, and you, for this superb review.

George Polychronidis, Chief Engineer
Moonriver Audio