JASON VICTOR SERINUS

Aurender A10

CACHING NETWORK MUSIC PLAYER/SERVER

A huge fuss was made over Aurender's first music server, the S10, when it premiered in 2011 at the California Audio Show. While I didn't feel that the room acoustics and setup were good enough at CAS to permit an honest appraisal, the looks and features of the S10 (now discontinued) thrust Aurender into the spotlight. So when John Atkinson, who had very favorably reviewed Aurender's N10 server in April 2016,[1] asked if I would evaluate Aurender's new A10, the opportunity to serve so many audiophiles with a single review elicited from me an unequivocal "Yes!"

What have we here?

As part of a product line that includes multiple streamer/servers and a "lifestyle" DAC-integrated amp, the A10 is Aurender's first all-in-one model. Its single full-size case contains a network music player-server similar to the company's entry-level N100H caching music server, with the addition of what Aurender calls a "high-performance," MQA-certified DAC. The A10's all-in-one design and $5500 price should make it especially appealing to budget-conscious audiophiles. Those able to pay more will appreciate the superior power supplies, clocking systems, and noise isolation of Aurender's higher-end models, as well as their greater storage capacity, higher numbers of inputs, and other features.

Aurender is a South Korean company. John-Paul Lizars,

Its strong suits were bass, speed, and ability to play multiple formats.

the 21st century . . . that distills a complex process to the essence of simplicity." That's a claim worth examining.

The A10's DAC, designed by John Kim and Justin Jang, uses the Asahi Kasei Microdevices Corporation's AKM 4490 32-bit, 2-channel chip, employed in a fully discrete and balanced dual-mono configuration. (The DAC's linear power supplies are also configured as dual-mono.) The chip has five 32-bit digital filters, and accepts data up to 768kHz PCM and 11.2MHz DSD. Due to the A10's implementation of the DoP protocol, however, at present it can process only DSD64 and DSD128 (5.6448MHz). It also decodes MQA files.

Storage is limited to a 4TB hard disk drive (a 5TB Seagate drive option is in the testing phase), while cached playback is via a 120GB solid-state drive. This two-drive system—in which music stored on the HDD is cached for playback on the SSD—is claimed to completely eliminate electrical and acoustic noise produced by spinning disks, moving heads, and motors.

An HDD icon appears on the Aurender's large, adjustable display as a new track is being cached to SSD. During this

the California-based industry veteran who heads the sales and marketing division of Aurender America, calls the A10 "the CD player of

1 See www.stereophile.com/content/aurender-n10-music-server.

SPECIFICATIONS

Description Music server running Linux with integrated digital-to-analog converter. Formats supported: AAC, AIFF, ALAC, APE, DFF, DSF, FLAC, M4A, MQA, WAV. Internal storage: 2.5" 4TB hard-disk drive, 120GB solid-state cache drive. Conversion: PCM to 32-bit/384kHz, MQA, DSD64, DSD128. Dynamic range: 128dB. Resolutions supported via USB: PCM to 32/384, DSD64, DSD128 (DoP). Inputs: Ethernet, two USB Type A, one TosLink S/PDIF (supports up to 24/192 PCM). Outputs: USB Class 2.0 (Type A jack), balanced (XLR) and single-ended (RCA) left and right analog outputs. No other specifications listed.

Dimensions 16.93" (430mm) W by 2.2" (55mm) H by 13.9" (353mm) D. Weight: 22.5 lbs (10.2kg) net, 26.5 lbs (12kg) shipping.
Finishes Silver, Black.
Serial number of unit reviewed ASA4A0007 (auditioning), ASA4A0096 (measuring).
Price $5500. Approximate

number of dealers: 103. Warranty: two years parts & labor.
Manufacturer Aurender Inc., Dongan-gu, Anyang-si Beolmal-ro, 126 OBIZ Tower 12th (1211–1213), Gyunggi-Do 14057, South Korea. US: Aurender America Inc., 2312 NE 85th Street, Seattle, WA 98115. Web: www.aurender.com.

period, which doesn't last very long, ultimate sound quality is sacrificed. When the track has been transferred, the HD then goes to sleep to minimize wear, and the sound level returns to optimal.

One of the A10's many features is its ability to use its S/PDIF (TosLink) input to interface with a CD or DVD player, as well as a TV or multi-zone system such as Sonos. In such situations, the A10's variable output enables it to function as a preamplifier in an all-digital system. In addition, the A10's USB 2.0 output lets you send signals to an outboard DAC. The A10 can also play music stored on NAS drives via its Aurender Media Manager (AMM) software and the all-important Aurender Conductor app.

Both an iPad and wireless router are essential to operate the A10. Even before the Aurender is plugged in, users are instructed to download Conductor from Apple's App Store. (The Aurender App for Android is based on the iPad app but apparently has limited functionality.) After the A10 is connected to the Internet via Ethernet and the correct information is entered in the settings, the app should communicate seamlessly with the A10.

While some of the A10's basic functions can be controlled via buttons on its front panel or with its supplied remote control, all settings, playback, and storage functions are managed using Conductor, including music from Tidal and Internet radio.[2]

If memory serves me, the handsome brown-and-yellow color scheme of the Conductor app has remained consistent since the days of the S10. When selections are played, album-cover art, the bit depth and sampling rate, and the file format (eg, FLAC or WAV) are displayed. In addition to Play, Pause, and Stop, you can Repeat a single track or an entire playlist. You can also play single tracks without automatically playing the tracks that follow. However, once you cue up a playlist, convincing the A10 to wait for your command to play music is a tricky business. Every time I chose my playlist or list of cached tracks, the first of those tracks, Yello's "Electrified II," would start booming away without my consent. Gah! This was not the shock my nervous system needed when I was all geared up psychically for hearing something very different.

Rather than tediously list everything the A10 and Conductor can do, I refer you to the A10's far too slim online manual[3] and New Features in Conductor App webpage.[4] While a huge amount of essential support information is available online, that section of Aurender's website was "under construction" during the review period, and what was available was outdated. Navigation was difficult, nomenclature inconsistent, and the product line included discontinued models.

So when problems or questions arise, Aurender's remark-

2 See http://support.aurender.com/internet-radio.html.

MEASUREMENTS

I measured the Aurender A10 with my Audio Precision SYS2722 system (see the January 2008 "As We See It," http://tinyurl.com/4ffpve4), using the Audio Precision's optical digital outputs, and data stored on the A10's internal hard disk and sourced from a NAS on my network. The serial number of the sample I'd been sent for measurement was ASA4A0096A10, its system software was v.5.10.16, and the Conductor app running on my iPad mini was v.2.8.6 (1730).

The optical inputs accepted data sampled up to 96kHz, the internal drive and the network connection files sampled at up to 384kHz. The A10's

maximum output level at 1kHz was 4.04V from the balanced output jacks, and 2.02V from the unbalanced jacks with the output level set to Fixed or with the volume control set to its maximum. Both sets of outputs preserved absolute polarity, and the output impedance was an extremely low 1 ohm or lower at all audio frequencies, regardless of the impedance setting in the Conductor app (the options are Max current, Less current, and Min current). Channel separation was superb, at >130dB between 40Hz and 5kHz, and still 120dB or better at the frequency extremes. The A10's noise floor with 24-bit data was also very low, with no power-supply–related spuriae visible. When I

increased the bit depth from 16 to 24, the drop in the Aurender's noise floor with a dithered 1kHz tone at –90dBFS was around 21dB (fig.1), implying that the A10 offers resolution of close to 20 bits, which is superb. Consequently, the Aurender's reproduction of an undithered tone at exactly –90.31dBFS (not shown) was close to perfect, with the three DC voltage levels described by the data clearly evident and the waveform superbly symmetrical.

Harmonic distortion with a 50Hz tone at full level was very low. Even into the punishing 600 ohm load impedance (fig.2), the highest-level harmonic, the third, lay at –106dB (0.0003%). However, with a full-scale 1kHz tone, I
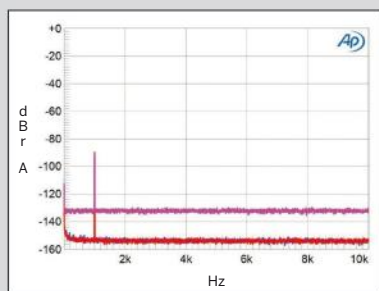

Fig.1 Aurender A10, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).
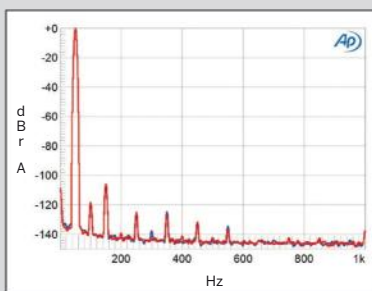

Fig.2 Aurender A10, spectrum of 50Hz sinewave, DC–1kHz, at 0dBFS into 600 ohms (left channel blue, right red; linear frequency scale).
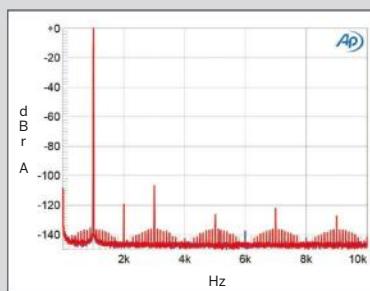

Fig.3 Aurender A10, spectrum of 1kHz sinewave, DC–10kHz, at 0dBFS into 100k ohms (left channel blue, right red; linear frequency scale).

ably responsive US technical-support person, the Seattle-based Jesse Locken, encourages users to contact him and Aurender's staff in Korea via the app's Help feature. Locken usually replied quickly with a link to the appropriate support pages, which otherwise are difficult to find. If something needs fixing, owners are asked to leave their units on so that someone in Korea can check them out remotely, via the Internet, and fix the problem.

The last page of Aurender's 15-page Quick Start Guide warns users to follow a two-step turn-off procedure before they disconnect from AC power, lest they unmount or corrupt the internal SSD drive, thus "crippling or rendering the unit inoperative." Try telling that to the reviewer who inadvertently pulled out the A10's power cord while performing multiple listening tests and cable swaps.

When I did that, my heart skipped more than one beat as the disconnected A10 powered down, went very, very quiet, and finally, after what seemed an eternity, announced that it was rebuilding its HDD. But it had completed only a small percentage of that rebuild when it seemed to freeze up again.

Oh, no, thought I. *Please may I not become the reviewer who broke the A10's back.* Thank goodness, after another be-still-my-beating-heart wait, the A10's display proclaimed that all was okay. HDD rebuilt. Eternal damnation averted.

Setup and Listening, Round One

Aurender's Jesse Locken doesn't live far away, and he dropped by to help me set up the A10. My four-shelf rack was already filled with multiple dCS components and power products—the only space for the A10 was atop the dCS Scarlatti clock. After connecting the router and Pass monoblocks to the A10, we powered up the latter and inserted, one by one, three USB 3.0 sticks filled with high-resolution tracks into the A10's USB port, and used the Conductor app to transfer their contents to the A10's HDD. Tracks whose sound I knew well we arranged in a playlist I named "JVS Test."

After letting the A10 warm up a bit—it was already broken in—Locken checked that everything was functioning as it should, and quickly noticed that the A10's HDD icon was not turning on during file transfer from HDD to SSD. Without it, we couldn't tell when the unit was delivering optimal sound. Before leaving, he promised to check with Aurender HQ in Korea and get back to me.

When I gave the A10 my first solo listen days later, after the cables had settled in, the A10 didn't sound very good. Speculating that its performance was compromised because

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3 See http://support.aurender.com/a10---manual---eng.html.

4 See http://support.aurender.com/a10---new-features---eng---updated.html.

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measurements, continued

was puzzled to see sidebands developing around the tone and its harmonics, even into the benign 100k ohm load (fig.3). These sidebands disappeared when I reduced the signal level by 3dB but not when I reduced the A10's output level by the same 3dB, so I wonder if they are due to mathematical limitations in the A10's digital signal processing rather than to power-supply limitations. Tested for intermodulation distortion with an equal mix of 19 and 20kHz tones, with the signal peaking at –3dBFS, the Aurender performed well, the difference product at 1kHz lying below –126dB and the higher-order products at –130dB (fig.4). However, even though this graph was taken

with the factory-default reconstruction filter, labeled Short Delay, Sharp Rolloff, the aliased images of the two high-level tones are suppressed by just 12dB or so, as I would expect from a slow-rolloff filter (see later).

Tested for its rejection of word-clock jitter using 16-bit J-Test data sourced via TosLink, the A10 reproduced the odd-order harmonics of the low-frequency, LSB-level squarewave at the correct levels, as shown by the sloping green line in fig.5. However, a pair of sidebands of unknown origin can be seen at ±3.2kHz. The higher-frequency sideband also has some frequency smearing evident.

The A10 offers five different

reconstruction filters, as well as the MQA filter. I examined their behavior using S/PDIF data. Fig.6 shows the impulse response with data sampled at 44.1kHz for the Sharp Rolloff filter. It is a conventional finite impulse-response (FIR) type, with symmetrical ringing evident around the single sample at 44.1kHz. This filter's ultrasonic rolloff with 44.1kHz-sampled white-noise data is shown in fig.7 (red and magenta traces); the rolloff is very steep, and there is almost total suppression of the aliased tone at 25kHz associated with a full-scale tone at 19.1kHz (blue, cyan).[1] Fig.8 shows the responses of this filter with data sampled at 44.1, 96, 192, and 384kHz. The ultrasonic rolloff
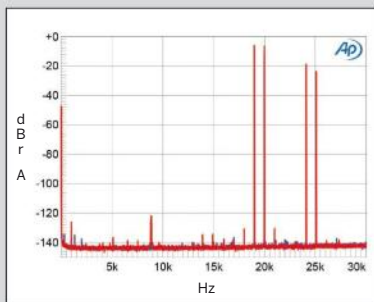
Fig.4 Aurender A10, Short Delay, Sharp Rolloff filter, HF intermodulation spectrum, DC–30kHz, 19+20kHz at –3dBFS into 100k ohms, 44.1kHz internal data (left channel blue, right red; linear frequency scale).
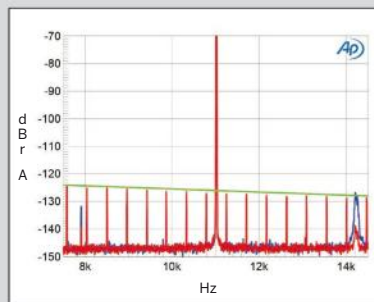
Fig.5 Aurender A10, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit TosLink data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.
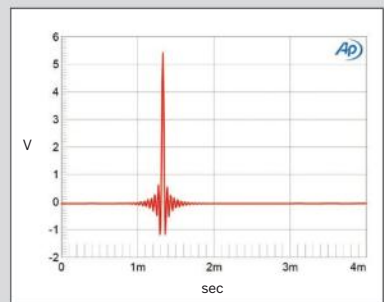
Fig.6 Aurender A10, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).

I'd placed it atop the dCS Scarlatti, I turned the Scarlatti off. That made a major difference.

It also made me realize that an honest assessment of the A10 required removing multiple shelves of dCS gear. Once the A10 had a shelf of its own, I further isolated it from noise by placing it on a Grand Prix carbon-fiber Formula platform. These relatively lightweight platforms contribute greatly to the "black"-background transparency of my reference system. On the empty shelf below the Aurender went a Mytek HiFi Brooklyn DAC ($1995), set atop a second Formula platform.

My plan was to first listen to the A10 by itself for an extended period of time. Once I was clear on how it sounded as an all-in-one unit, I would compare its DAC section's sound to the Brooklyn's. Both can play PCM up to 24/384, DSD64 and 128 (the Mytek goes higher), and MQA. Connecting the units was Nordost's excellent, ultra-transparent Valhalla II USB cable, which in my experience transfers data with virtually no loss of sound quality. When the Brooklyn wasn't in use, I left it in standby mode so that it would be performance-ready. Given that the Brooklyn had a shelf of its own, away from both the A10 and the silent dCS Vivaldi that sat on the top shelf of my rack, I had no concerns about unwanted interactions.

There may be trouble ahead
But while there's music and moonlight and love and romance
Let's face the music and dance

Before tackling these setup issues, I'd opened Advanced Settings on the Conductor app and tried to compare the sound of the A10's various digital and analog filters. (There's a separate, nonadjustable filter for MQA.) However, I could hear absolutely no differences among them. Meanwhile, across the country, in Brooklyn, John Atkinson was trying to complete measurements on a different sample of the A10 before renovation of his listening room and test lab began. This was a highly unusual situation: JA usually measures products only after a reviewer has finished his listening and sent the sample to him.

When John, too, could find no differences among the filters, he wrote to ask if I was having the same experience. Given that I'd already spent days assembling four pages of listening notes, I did the ostrich dance. When I could stall no longer, I faced the music and confirmed that switching filters made no audible difference.

At that point, JA felt it best to abort the review until the folks at Aurender HQ could fix what seemed to be a firmware problem. Out went the A10 and Brooklyn, and

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conforms to the same basic shape up to 20kHz, with then a sharp rolloff evident at the lowest rate just below the Nyquist frequency (half the sample rate), but a more gentle rolloff at the three higher rates.

The Slow Rolloff filter has a very short impulse response (fig.9), with a high-frequency rolloff that starts around 12kHz, and very little suppression of the 25kHz aliased tone (fig.10). The Short Delay, SuperSlow Rolloff filter has an even shorter impulse response (not shown). The spectrum with white noise has nulls at 44.1kHz and 88.2kHz and the output at 100kHz is down by just 30dB (not shown). The Short Delay, Slow Rolloff filter

is a minimum-phase type similar to Ayre Acoustics' Listen filter, with its ultrasonic rolloff similar to that shown in fig.10. The Short Delay, Sharp Rolloff filter has a conventional minimum-phase impulse response with 44.1kHz data (fig.11) with, as expected, a sharp ultrasonic rolloff (fig.12, red and magenta traces).

I then reexamined the behavior of the filters using the same test files stored on the A10's internal drive, and immediately ran into problems. The Short Delay, Sharp Rolloff filter still had a minimum-phase impulse response (fig.13), but it was much shorter than it had been with S/PDIF data. Its ultrasonic rolloff with 44.1kHz-sampled

white noise (fig.14, red and magenta traces) was very different, and actually resembles the behavior of the MQA filters that I have measured in other processors.[2] (This was why the A10's HF intermodulation result in fig.4, which I'd measured using internal data, was anomalous.) Fig.15 compares the wideband spectra of the A10's output when it decodes 44.1kHz-sampled white noise with S/PDIF data (green and gray traces) and internally stored data (blue, red). It looks as if the MQA

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[1] My thanks to MBL's Jürgen Reis for suggesting this test to me.

[2] See, for example, fig.9 at www.stereophile.com/content/mytek-hifi-manhattan-ii-da-preamplifier-headphone-amplifier-measurements.
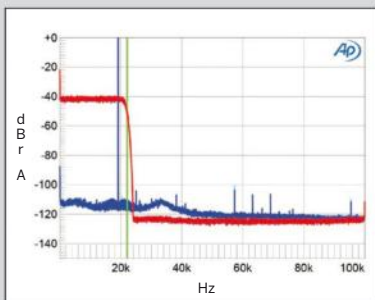
Fig.7 Aurender A10, Sharp Rolloff filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).
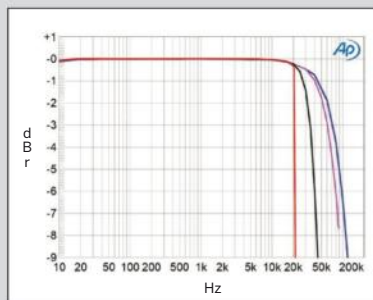
Fig.8 Aurender A10, Sharp Rolloff filter, frequency response at –12dBFS into 100k ohms with S/PDIF data sampled at: 44.1kHz (left channel blue, right red), 96kHz (left gray, right green), 192kHz (left cyan, right magenta), 384kHz (left green, right gray) (1dB/vertical div.).
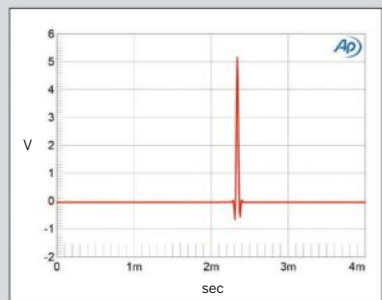
Fig.9 Aurender A10, Slow Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).

back in went the dCS components and enough cables to suspend the Brooklyn Bridge. Easier said than done. Only when I'd finished reviewing the dCS Network Bridge[5] did I once again switch all those boxes and cables and reinstall the Aurender A10 and Brooklyn. For the first time in my life, I fantasized about the joys of Assisted Living.

Eventually, Locken e-mailed to tell me that, due to how the A10 processes MQA, filter choices were no longer an appropriate option for this product. Therefore Aurender had "removed the option to select the optional digital and analog filters from the Aurender Conductor app." He also assured me that, under cover of darkness, Eric in Korea had remotely entered my unit, removed all filter options, and fixed the HDD icon.

Not quite. While the HDD icon finally did begin flashing on and off when tracks were being cached in the SSD, the filter choices remained. Doubly assured that changing filters was no longer possible, and that the option would disappear
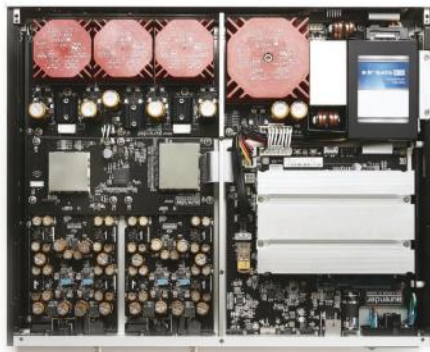
with the A10's next official firmware upgrade, I recommenced listening from scratch.

Listening, Round Two

Once I'd acclimated to the sound of the A10, the excellent depth and bass impact of the remarkably spacious, driving "Electrified II," from Yello's *Toy* (24/48 WAV, Polydor 4782160/HDtracks), as well as the strength of its upper midrange, helped compensate for muted colors and a bit of grayness. For contrast, I cued up the capacious voice of operatic great Jamie Barton singing Sibelius's "Var det en dröm?" to Brian Zeger's liquid pianism (24/96 WAV, Delos 3494/HDtracks). I wanted to sink deeply into Barton's glorious mezzo-soprano, but I kept having to turn up the volume when she sang softer (not that a woman with such a huge instrument can truly sing softly), then turn it down when she opened up fully. Under the sound of her voice,

5 See my review in the December 2017 *Stereophile*.

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measurements, continued

filter is being applied to conventionally encoded PCM files when they are stored internally, but not when the A10 is decoding the same data via its S/PDIF input. Something was very wrong.

I repeated all of this testing using data sourced from the NAS drive on my network. Again, regardless of which filter was being selected with the Conductor app, the MQA filter was being incorrectly applied to non-MQA data. I halted the testing and contacted Aurender's US representative, to let them know that there seemed to be something wrong with not only my sample of the A10 but also with Jason's.

The e-mail exchange that followed was frustrating. Aurender's engineers in Korea didn't appear either to be able

to repeat the problem or to comprehend the issue I was raising. I had no option but to postpone the review from the December 2017 issue to this one. Then, in mid-September, I received an e-mail from the US rep explaining that:

We discovered that prior to applying the MQA firmware update earlier this year, MQA had recommended that we adopt using MQA upsampling for all content in order to eliminate possible issues with click or pop noises when switching between non-MQA and MQA content. After some discussion with Alan at MQA about this, he had the following comment: "The MQA decoder provides an optional up-sampler for

PCM to simplify implementation and to enable a smooth, clean, click-free user experience. The reason this is offered is that the implementer may not know if the incoming stream is MQA and so the decoder is used to detect MQA and to provide a seamless switch to the usually higher output rate. By using Upsample Always, the user-experience is guaranteed to be accurate from the first sample of an MQA song and also to be free of clicks and pops if the user skips within a song or if there are crossfades between songs."

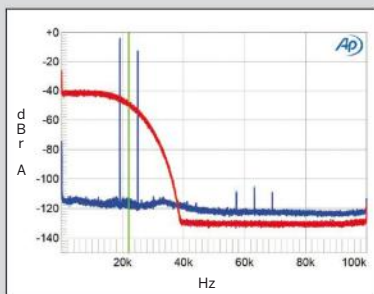As of our firmware update earlier this year, using the Upsample Always option in the MQA decoder

Fig.10 Aurender A10, Slow Rolloff filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).
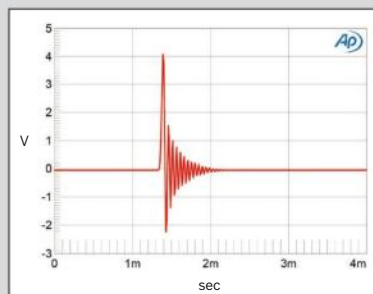

Fig.11 Aurender A10, Short Delay, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled S/PDIF data, 4ms time window).
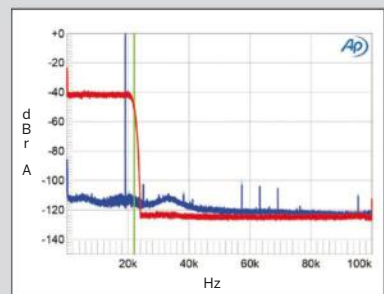

Fig.12 Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled S/PDIF data (20dB/vertical div.).

Zeger's piano lacked color.

One of the most revealing of the many recordings I listened to was the second movement of Lou Harrison's remarkable Concerto for Violin with Percussion Orchestra, with soloist Tim Fain, and Angel Gil-Ordóñez conducting the Post-Classical Ensemble (24/48 WAV, Naxos 8559825/HDtracks). The impressive impact of Harrison's wild collection of percussion instruments helped compensate for, again, a lack of color. Fain's violin sounded fine at full volume, but a bit hoarse and overly resinous when played softly.

I then chose an MQA file that Bob Stuart had provided of a recording John Atkinson had made, Eric Whitacre's *Lux Aurumque*. (The original resolution and sample rate was 24 bits and 88.2kHz.) While the male voices of Cantus certainly sounded more real and present than I recalled hearing from my copy of the group's *While You Are Alive* (CD, Cantus CTS-1208), on which this recording originally appeared, vocal colors were, once more, muted. More engaging were the presence and speed of a stream of the ever-engaging "Babylon Sisters," from Steely Dan's *Gaucho* (MQA, MCA/Tidal).

Connecting Mytek's Brooklyn DAC and using its digital volume control, I experienced more color and transparency than from the A10's built-in DAC. Revisiting "Electrified II," "Babylon Sisters," and Barton's Sibelius, I found myself more involved with the music. The essential mystery of Harrison's concerto came through loud and clear, and the Mytek did a better job of handling Tim Fain's soft playing without over-emphasizing the rasp of bow and resin on strings.

But after a while I began to feel that the Brooklyn's sonic palette was a mite too warm. Rather than knocking me out with the 12-tone take on the devastation of WWI and the dissolution of Old World order, Michael Tilson Thomas and the San Francisco Symphony's download-only release of Berg's Three Pieces for Orchestra (24/192 WAV, SFS Media/HDtracks) sounded seductively smooth, midrange-rich, and remarkably beautiful. But since the Brooklyn's source was the A10's server section, its sonic signature was difficult to ascertain without trying alternative sources.

Thus, I tried two non-Aurender source components to play files through the Brooklyn: my MacBook Pro, using the Amarra Luxe music-playback app to feed files via

> **It's fair to say that Aurender has become the most ubiquitous brand of music server in North America.**

is the current implementation in the A10. Alan's other comment was that when MQA upsampling is enabled you can still change the over sampling filter in the DAC during PCM playback, but as the DAC is being supplied 8x, the difference made by the different DAC filters will be harder to measure unless you can make a very fast digital capture.

Our overall thinking is that for all intents and purposes, the filter selections are no longer valid, so we have removed the option to select the optional digital and analog filters from the Aurender Conductor App. We will be releasing a public update to the App to remove the filters on the Advanced tab so that the review can commence as planned.

Travel plans and other commitments meant that I couldn't get my sample of the A10 back on the test bench until the beginning of October. When I did, and connected it to my network, the first thing the A10 did was to update its system software to the latest version, v.5.10.34. I resumed the testing and found that, despite what I had been told, the Filter options were still there in the Conductor app, which had also been updated to the latest version. The next thing I found was that that while the five different filters were still available for S/PDIF data, and measured identically to what I had found in my earlier testing, once again the MQA filter was incorrectly applied to non-MQA data when it was sourced from the A10's internal storage.

Its measured performance suggests that the A10's analog output stage is of high quality, and my experience with Aurender's N10 server[3] makes me a fan of how the company's Conductor app organizes the user's music library. However, the A10's misapplication of the MQA reconstruction filter to non-MQA files stored on its internal drive means we must withhold a full recommendation for the A10 until this problem has been corrected.

—John Atkinson

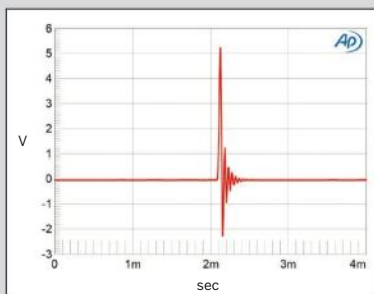3 See www.stereophile.com/content/aurender-n10-music-server.

Fig.13 Aurender A10, Short Delay, Sharp Rolloff filter, impulse response (one sample at 0dBFS, 44.1kHz-sampled internal data, 4ms time window).
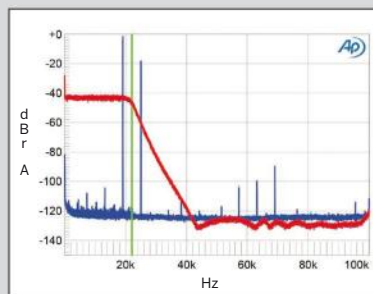

Fig.14 Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with 44.1kHz-sampled internal data (20dB/vertical div.).
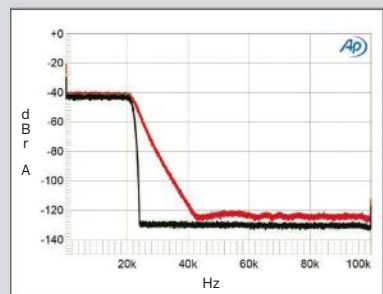

Fig.15 Aurender A10, Short Delay, Sharp Rolloff filter, wideband spectrum of white noise at –4dBFS with internal data (left channel red, right magenta) and S/PDIF data (left green, right gray), with data sampled at 44.1kHz (20dB/vertical div.).

USB; and the dCS Network Bridge ($4250), using dCS software to feed those files via AES/EBU. The computer source sounded way inferior, lacking the vividness, color, and "blacker" backgrounds transmitted by the A10's server section. The Network Bridge, on the other hand, delivered more midrange and detail than the A10, and sounded more neutral, truthful, and realistic. However, not only was the Network Bridge unable to handle MQA (at the time of the review), it also required extra cables that raised the cost of the Bridge plus Brooklyn far above that of the single-box Aurender A10.

Before wrapping up, I double-checked my observations with a second back-and-forth between the A10 solo and the A10 into the Brooklyn. Playing the final section of Stravinsky's *The Rite of Spring*, with Ludovic Morlot conducting the Seattle Symphony (24/96 WAV, Seattle Symphony Media 1005/HDtracks), again confirmed that while the A10's color saturation and transparency were just okay, its strong suits were bass, speed, ease of operation, convenience, and ability to play multiple formats.

Conclusions

If the Aurender A10 is not the CD player of the 21st century, it's certainly a viable 21st-century successor to that less-than-perfect source. That the A10 provides a single front-end solution for playing digital music in far more formats, sourced from far more platforms, than the designers of the CD ever envisioned makes it a most tempting proposition for those with limited space and budgets, or who consider a pile of boxes and cables the work of the devil. Whether or not the A10 will end up on your shelf will depend, in large part, on your sonic priorities. Those who tend to listen to music while multitasking, or who don't spend hours on end sitting undisturbed in the sweet spot, need not hesitate. ∎

ASSOCIATED EQUIPMENT

Digital Sources dCS Paganini SACD/CD transport & Rossini DAC & Scarlatti clock & Vivaldi DAC & Network Bridge; Mytek HiFi Brooklyn DAC; Oppo Digital UDP-205 universal BD player; Intel NUC7i7BNH with 8GB RAM, 128GB SSD, running Roon; Apple MacBook Pro computer with Intel i7, SSD, 8GB RAM; iPad Pro, external hard drives, USB sticks.
Power Amplifiers Pass Laboratories XA200.8 monoblocks.
Loudspeakers Wilson Audio Specialties Alexia.
Cables Digital: AudioQuest Diamond (FireWire, Ethernet), Nordost Odin 1 & Odin 2 & Valhalla 2 (USB), Wireworld Platinum Starlight Cat8 (Ethernet). Interconnect, Speaker, AC: Nordost Odin 2.
Accessories Grand Prix Monaco rack & amp stands & 1.5"-thick Formula platform; Nordost QB8, QK1, QV2, QX4 AC power accessories; AudioQuest NRG Edison outlets; Stein Music Signature Harmonizers, Blue Suns/Diamonds, Speaker Matches, Super Naturals, crystal Quantum Organizer; Synergistic Research Tranquility Base UEFs & Transporter & PowerCell; Bybee Room Neutralizers; Absolare Stabilians; Resolution Acoustics room treatment; Stillpoints Aperture panels.
Listening Room 20' L by 16' W by 9' H.—Jason Victor Serinus