Integrated vs pre/power amplification: Which is the best route for your system?

australian hi-fi

MINI MARVEL

Wattson Audio streamer is tiny in size, huge on performance

REVIEWED

CLEARLY SUPERIOR

Audio-Technica's see-through spinner is a triumph

REVIEWED

TOP LOADER

Lifting the lid on the Rotel Michi Q5 CD player

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SpectraFlora speakers make minimalism sound stunning

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Wattson Audio
SWITZERLAND

WATTSON AUDIO MADISON STREAMER & POWER AMPLIFIER

The Madison Streamer and Amplifier by Wattson Audio blend high-performance, precision engineering with elegant, compact design.

The Streamer features an upgradable DSP-driven DAC and digital volume control, delivering both technical accuracy and emotional musicality, and can connect directly to power amps or integrate with existing audio systems.

Meanwhile, the Madison Amplifier combines CH Precision's reference-grade performance with Wattson's refined aesthetics, offering dynamic, transparent sound with tonal purity and adaptable configurations—from stereo to bi-amp or mono. Together, they provide a versatile, high-fidelity audio experience that redefines expectations at an accessible price point.

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ACCLARA

ALCHEMA

AGADIA

Wattson Audio Madison Lounge Edition

Streamer/DAC

+
- Superb sound
- State-of-the-art performance
- Headphone output

−
- Lacks USB input
- Rings on control knob
- Unusual size and shape

RRP $8,200

The full model name of this product, the Wattson Audio Madison Lounge Edition Streamer DAC, is so long that you'll find it abbreviated not only in the references to it on the internet, but also on Wattson Audio's own website and in official Wattson Audio literature. It's so long that Wattson Audio couldn't even find a way to squeeze it onto the front panel! Instead, they've just settled for 'Madison Lounge Edition.'

It's not only because of the length of the model name that it couldn't be squeezed onto the front panel — it's also because the front panel itself is small. The Madison LE DAC (see, now even I'm abbreviating it!) is only 174mm wide, 185mm deep and 52mm high, so it's barely wider than the palms of your hands.

Although you may have noticed the similarity in shape between Wattson Audio's Madison LE DAC and its Madison Amplifier, the dimensions of the two products are completely different in all three dimensions: width, depth and height. It appears that if you want a matching Wattson Audio amplifier, you'll need to investigate the company's Power S amplifier, which is not only the same width, but will also provide the necessary DC voltage required to power the LE DAC, failing which you will instead need to use the LE DAC's own external 5VDC power supply that's made in Switzerland from lightweight alloy and measures 120mm deep, 75mm wide and 45mm high.

THE EQUIPMENT

The product name might be lengthy, but I guess it does very accurately describe what the device does, which is convert

Wattson Audio has fitted a number of useful connections to the Madison LE. We just wish there was a USB input too!

music delivered to it in a digital format into an analogue audio signal that can be passed on to be amplified to a loudspeaker system. However, because it has a standard 6.35mm stereo headphone jack on the front panel, you could always just plug in a pair of headphones and use these to listen to your music… so no need for any other components at all.

As for delivering the digital signal to the LE Streamer DAC, this can be done from your network, via a standard 100Mbit/s Ethernet jack on the rear panel, in which case the digital signal can be PCM up to 32-bit 384kHz or DSD up to 256× (11.2896MHz). If you choose to use the coaxial (via a gold-plated RCA socket) or optical (via a standard Toslink socket) digital inputs, you are restricted to inputting only PCM data, and only up to 24-bit 192kHz. That said, this is hardly a 'restriction' as I'd imagine the primary use for either of these inputs would be to connect the digital output from a CD player or CD transport, for which you need only a 16-bit/44.1kHz capability.

Controlling the Madison LE is accomplished via Wattson Audio's own Wattson Remote app for Android, or Wattson Music Controller for iOS. The Madison LE is Roon Ready, so you can optimise performance this way, otherwise there's integrated support for Qobuz, Tidal, HRA, et al, plus Wattson Audio promises "seamless compatibility" with Audirvāna, so you can play high-resolution music from your computer (Mac or Windows). And, of course, there's always UPnP should you prefer to roll this way (or in the event you're using a Linux platform). The Wattson Remote app is not loaded with features, which I liked because it means that it's very quick and easy to learn where everything is and to navigate effectively. For my everyday listening purposes, all I need to be able to do is find a track stored on my server and play it, so the app was all I needed. If you need more features, use UPnP with your preferred software.

IN USE

Setting up the LE Streamer is simplicity itself. Once you have connected whatever inputs you intend to use and then the external power supply, you just press and release the main control knob upon which all the LEDs on the front panel will flash three times. The LED over the active input will then remain on, as will one of the volume LEDs. (Note that when using the network input, the NET LED will blink until the LE has obtained an IP address.)

In the event that the default active input is not the one you wish to use, simply press the main control knob, which will instantly mute the output, then rotate the knob (in either direction) to select your desired input. Rotation is made very easy because of what I assumed were rubber rings around the knob (they could have been made of some other material) that provided a truly non-slip grip. I would actually have preferred to grasp solid metal, but maybe that's just me.

One input that is not available on the Madison LE is USB, and I have to admit that this would be kind of a deal breaker for me personally because I really like the ability to be able to plug a USB stick and/or external hard drive into a DAC to play my music. The reason is mostly that I am just old-fashioned and dislike having to be tied to a computer network. However, being old-fashioned, I was more than happy to mostly audition the performance of the Madison LE via the coaxial input, though of course in the interests of completeness and comprehensiveness I did also connect the Madison LE to my network, more about which later in this review.

So far as outputs are concerned, the Madison LE provides both unbalanced (via gold-plated RCA sockets) and balanced (via gold-plated XLR sockets) options. I used the balanced outputs and would suggest that you do the same. Obviously the control knob on the front panel allows you to adjust the volume (as well as input switching and standby power functions), but not so obvious is the means by which it controls volume, which is in the digital domain, via 'lossless' LEEDH processing.

LEEDH processing was developed (and patented) by French designer Gilles Millot of Acoustical Beauty. Unlike most digital volume controls, which can 'lose' essential information at the truncation stage, LEEDH processing is an algorithm that enables digital volume without any information loss. The technical description of what it actually does, how it works, and why it's superior to other methods is the subject of a white paper presented at the 2020 AES by Heeb Thierry and Leidi Tiziano of the University of Applied Sciences and Arts of Southern Switzerland, which can be found at **https://www.processing-leedh.com/copie-de-presentation**, but proof of its efficacy can be gauged by the companies that are using it, which include not only Wattson Audio, but also Lumin, Metronome, Vermeer Audio, 3D Lab, Soulution and others. LEEDH is an acronym for Laboratoire d'Études et de Dévelopements Holophoniques, which in English translates to Holophonic Laboratory of Research and Development.

LISTENING SESSIONS

Although I did most of my listening using the coaxial SPDIF input and standard 44.1kHz/16-bit data, I put in quite a few hours with higher-res sources and also using the Madison LE's other input options — and I have to say that I was totally impressed by the Madison LE's performance. In every respect, I simply could not fault it. It delivers truly state-of-the-art performance across the board.

Bass was crisp, tight and extended down beyond the lower limits of human hearing, so far lower than necessary for accurately replaying any type of music, irrespective of resolution. Sound quality across the

…I simply could not fault it. It delivers truly state-of-the-art performance across the board.

midrange was such that the tonal fidelity of all the instruments I heard in my sessions was exactly as I'd expect to hear them in real life. The same was true of human voice, whether I was listening to singing or to speech. Voice intelligibility was always at the very highest level, even against confused sonic backgrounds.

High-frequency sounds were delivered with amazing fidelity, no matter whether I was listening to high-pitched acoustic instruments or to synthesised high-frequency sounds. There was no sign of high-frequency harshness, blurring or ringing… just pure, clean treble.

One of the first albums I played was Jeff Buckley's *Grace*, which I hadn't played for a while, but was spurred to refresh my memory when I read that, thanks to TikTok, one of that album's tracks ('Lover, You Should Have Come Over') had finally charted (albeit at No. 97) some 29 years after his unfortunate death. I had completely forgotten the beautifully delicate intro to the album's opener, 'Mojo Pin' and was entranced by how well the Madison LE reproduced the 'twang' of the guitar, the sound of the drum kit and, of course, the sound of Buckley's gorgeous tenor voice which, for readers who might not have heard it, spanned four octaves, not including his exceptional falsetto.

> … that simply showcased the LE's total lack of circuit noise… this is certainly one super-quiet DAC.

The album's title track highlighted the Madison LE's ability to fuse multiple melodic lines while simultaneously keeping them separated, so the music is presented on a higher plane. I'm not sure of the reason behind this, but I imagine that it's because your brain is tracking in multiple directions, there's something fresh with each passing moment. As for the lovely 'Lilac Tree' track, well, that simply showcased the LE's total lack of circuit noise… this is certainly one

BEHIND WATTSON AUDIO

Despite being designed and engineered in Switzerland, Wattson Audio reportedly is named in honour of Scottish engineer James Watt, after whom the SI electrical unit the 'watt' was named, to indicate how much energy an electrical device consumes or produces. The company was created as the result of a series of rather fortuitous chain of events that began on April 14, 2005, when the Swiss company ABC PCB was established for the purpose of "developing and commercializing electronic equipment for the measurement instruments, audio and computer sectors". ABC PCB was established by equal partners Florian Cossy (who would go on to found CH Precision in 2015) and Michel Hertzschuch. Two years later, Hertzschuch sold his shares in ABC PCB to Cossy, then in 2009, Cossy sold shares in his now wholly-owned company to none other than Alexandre Lavanchy (who would later go on to cofound Wattson Audio). ABC PCB transitioned into a new company called Engineered SA in which corporate incarnation Herve Delatraz (of Dartzeel Audio) became a board member. Lavanchy then founded Wattson Audio in 2020 with cofounders Guy Cheval (Rhapsody Hi-Fi) and Philippe Day (who'd previously worked for both ABC PCB and Engineered SA). To complete the circle, Florian Cossy's company CH Precision acquired the Wattson Audio brand in April 2024. Commenting on the purchase, Cossy said, "By incorporating Wattson Audio's engineering team and products under the CH umbrella, we create an even greater concentration of audio design and engineering talent. It also opens a tremendous range of new market opportunities in which to apply our combined experience and technologies." For his part, Lavanchy said of the acquisition: "It's great to be working even more closely with Florian and his team once again. Modern products are incredibly hardware and software intensive: combining the resources of CH Precision and Wattson Audio gives both companies unparalleled access to design bandwidth and capability."

While they may share a similar design aesthetic, the Madison LE Streamer (top) is tiny in comparison to the also-small Wattson Audio Madison amplifier (bottom).

super-quiet DAC. You can also hear this on Buckley's cover of Leonard Cohen's 'Hallelujah', which is, IMO, the best version of this famous song. Interestingly, Buckley based his version on John Cale's cover rather than reinterpreting Cohen's original. Also interesting is that although Cale's version is the one used in the movie *Shrek*, the version on the movie's soundtrack album was sung by Rufus Wainwright. (And for completeness, k.d. lang delivers a superb version on her classic album *Hymns of the 49th Parallel*.)

When playing hi-res music, I played only tracks for which I had the provenance, so I knew for a fact that they were actually recorded using a high-resolution recorder, and not just up-sampled to a high-resolution format (which, unfortunately, is the case for many so-called 'high-res' albums, meaning that you're getting absolutely no more musical information for your money). Listening to 'Ballad for Chris Green', recorded live at 96kHz/24-bit, Cindy Boste's voice was a sonic mirror of what it sounds like in real life — and likewise the sound of her guitar — plus an absolutely silent background (if you don't count that I could hear the distant sound of birds chirping in the trees). The same was true of Micah Shelef's wonderful track 'Turn It Around': his voice was exactly as it is in real life, the electric guitar sound was true and the piano sound was everything it should have been.

CONCLUSION

To conclude, I can only rephrase what I've already written, and say that Wattson Audio's Madison Lounge Edition DAC/Streamer delivers truly state-of-the-art performance across the board.

Greg Borrowman

SPECS & CONTACT

Brand: Wattson Audio
Model: Madison LE Streamer
RRP: $8,200
Warranty: Five years
Network streaming resolution: PCM up to 32-bit 384kHz, DSD up to 256x (11.2896MHz) S/PDIF
Input resolution: PCM up to 24-bit 192kHz
Line Output Level (RCA unbalanced): 2.0V RMS
Line Output Level (XLR balanced): 4.0V RMS
S/N Ratio: >120dB A-weighted
THD+N: <0.001%
Network Input: 100Mbit/s
Ethernet Digital Inputs: 1x S/PDIF (RCA), 1xOptical (Toslink)
Headphone Output: 6.35mm phone
Dimensions (WDH): 174x185x52mm
Weight: 1.075kg
Power Supply: 5VDC (External)
Power Consumption: 3.5W Power Consumption (Standby): 50mW

Distributor: Absolute Hi End
Address: PO Box 370
Ormond, VIC 3204
T: 0488 777 999
E: info@absolutehiend.com
W: www.absolutehiend.com

Laboratory Test Report

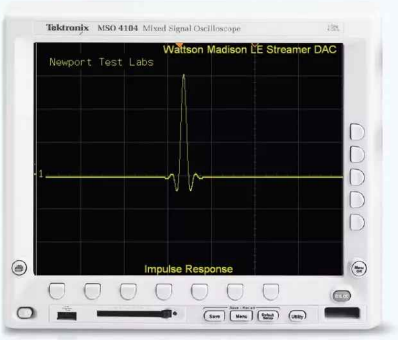
Readers interested in a full technical appraisal of the performance of the Wattson Audio Madison Lounge Edition Streamer DAC Amplifier should continue on and read the LABORATORY TEST REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

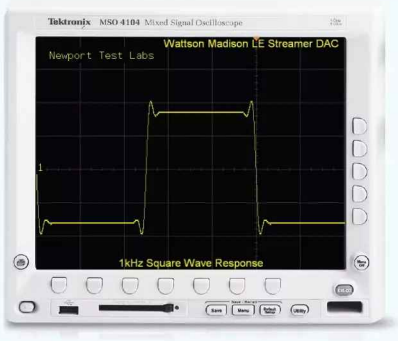
Newport Test Labs measured the performance of the Madison LE DAC using both Red Book (44.1kHz/16-bit) test signals and also with high-res (48kHz/96kHz/192kHz-24-bit) test signals. The results are shown both in the tables of results and in the graphs accompanying this report.

The output level from the balanced outputs with 0dBFS 1kHz test signals was measured as 4.4135 volts for the left channel and 4.4029 volts for the right channel, putting channel balance at 0.02dB, which is an excellent result. Output voltage from the unbalanced outputs was, of course, exactly half these voltages.

The frequency response using Red Book test signals is shown in Graph 9 and is as ruler flat as you'd expect, though there's a rolloff that puts the response 1dB down at 16kHz and 2.84dB down at 20kHz. With high resolution signals, the frequency response was 3dB down at 39kHz (96kHz) and using 196kHz data, 3dB down at 69kHz.

Channel separation using 44.1kHz/16-bit test signals was 136dB at all frequencies from 5Hz out to 1kHz, with separation rolling off very slightly to 115dB at 20kHz. Separation and crosstalk for 48kHz 24-bit digital data is shown in Graph 10 and you can see that it's around 135dB at low frequencies, diminishing to around 115dB at 1kHz, then again to around





107dB at 20kHz, but there were slight differences depending on whether the test was measuring from left channel to right channel or vice versa.

Phase accuracy between channels was excellent, as you can see from Graph 11, where you can see a slight upward trend in phase angle, but basically the error is negligible across the frequency band measured, with the greatest discrepancy at 20kHz being only 0.36 degrees. Absolute phase was correct (that is, the LE DAC is non-inverting).

Distortion varied depending on level and, of course the resolution of the test signal, but overall, the takeaway was that distortion was incredibly low. Looking at the worst-case scenario, 0dB using 16-bit/44kHz you can see from Graph 1 that although distortion components are visible in the output, they're all more than 100dB down and, if we ignore the third and fifth harmonic components, the others are around 120dB down or more, and 120dB is a distortion level of 0.0001%.

Looking at distortion at a recorded level of –20dB, which is typical of the level at which music signals are recorded (to allow headroom for peaks), there's only a single third harmonic visible (at –121dB) above the noise floor, and the noise floor itself is down at –140dB, which is a superb result.

Graph 4 shows an undithered 1kHz signal recorded at –60dB, which is a test that will inevitably reveal quantisation errors due to the lack of dithering, but all errors introduced are more than 120dB down, so the Madison LE performed brilliantly well on this test.

The difference between the way the Madison LE handles undithered and dithered test signals is revealed if you compare Graph 5 (undithered 1kHz signal at –100dBFS) with Graph 6 (dithered 1kHz test signal at –100dBFS). You can see quantisation errors again, this time between –110dB and –120dB, as well as some at –130dB (0.00003%) on Graph 5, with noise levels more than 140dB down. When the same signal is dithered, as in Graph 6, you can see all the quantisation errors have vanished, leaving only the 1kHz test signal visible on the graph at –100dB. The trade-off for using dither to remove the quantisation errors is an increase in the noise floor, but since the noise floor is sitting at a superbly low –138dB, it's hardly a trade-off at all, just a sensible outcome.

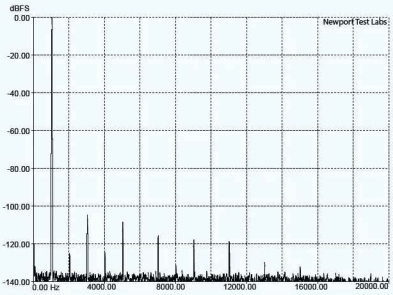
But of course a noise floor is not a signal-to-noise ratio, and Newport Test Labs measured the S/N ratio of the Madison LE at 116dB unweighted, and 123dB A-weighted with both 16-bit/44.1kHz signals and 24-bit/48kHz signals, though this latter measurement was made in the presence of a signal, which is not the case with the Red Book measurement. Again, these are superb results.

THD vs frequency measurements are shown in Graph 12, for both –1dBFS (red trace) and –20dB (black trace) levels, and you can see distortion hovering around the 0.001% for both levels for fundamental frequencies right out to 5.5kHz, after which distortion increases very slightly, but is still better than 0.005%.

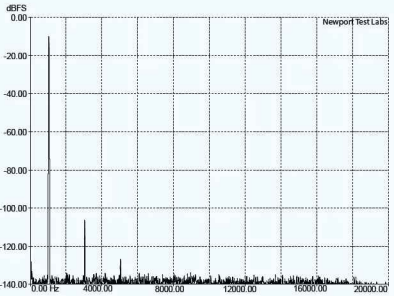
Newport Test Labs was not able to measure de-emphasis error simply because the Madison LE does not have de-emphasis circuitry, or if it's on board, it has not been enabled. Given that so few recordings are pre-emphasised, this

Wattson Audio Madison Lounge Edition Streamer DAC — Lab Test Results

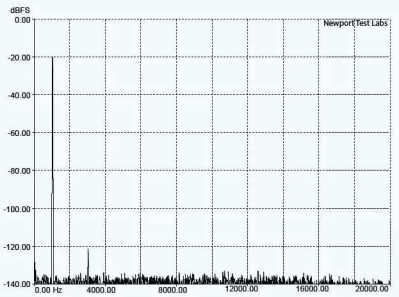
Analogue Section	Result	Units/Comment
Output Voltage (Balanced Outputs)	4.4135./ 4.4029	volts (Left Ch/ Right Ch)
Frequency Response	See Graph	
Channel Separation	136 / 136 / 115	dB at 16Hz / 1kHz / 20kHz
THD+N	0.0014	@ 1kHz @ 0dBFS
Channel Balance	0.021	@ 1kHz @ 0dBFS
Channel Phase	0.05 / 0.02 / 0.36	degrees at 16Hz / 1kHz / 20kHz
Group Delay	8.57 / 9.18	degrees (1–20kHz / 20–1kHz)
Signal-to-Noise Ratio (No Pre-emph)	116dB / 125dB	dB (unweighted/weighted)
De-Emphasis Error	N/A	at 1kHz / 4kHz / 16kHz
Linearity Error @ –60.00dB / –70.00dB	0.00 / 0.06	dB (Test Signal Not Dithered)
Linearity Error @ –80.59dB / –85.24dB	0.02 / 0.02	dB (Test Signal Not Dithered)
Linearity Error @ –89.46dB / –91.24dB	0.06 / 0.03	dB (Test Signal Not Dithered)
Linearity Error @ –80.70dB / –90.31dB	0.09 / 0.06	dB (Test Signal Dithered)
Power Consumption	5.41	watts
Power Factor	+3.389	



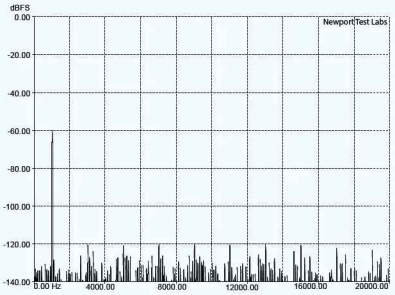
Graph 1. THD with a 1kHz 0dBFS test signal (16-bit/44.1kHz)



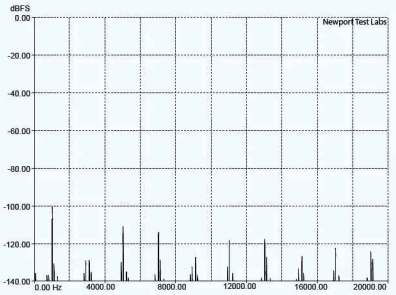
Graph 2. THD with 1kHz -10dBFS test signal (16-bit/44.1kHz)



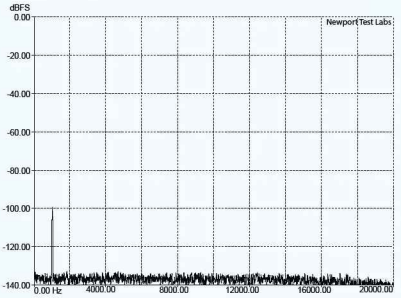
Graph 3. THD with 1kHz -20dBFS test signal (16-bit/44.1kHz)



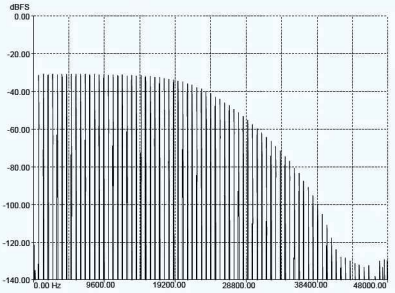
Graph 4. THD with 1kHz -60dBFS test signal (16-bit/44.1kHz) (Not Dithered)



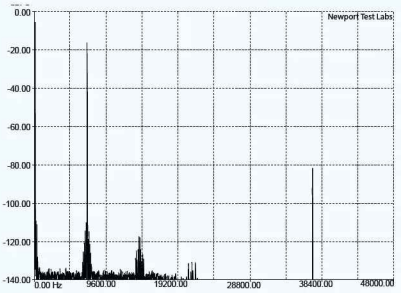
Graph 5. THD with 1kHz -100dBFS test signal (16-bit/44.1kHz) (Not Dithered)



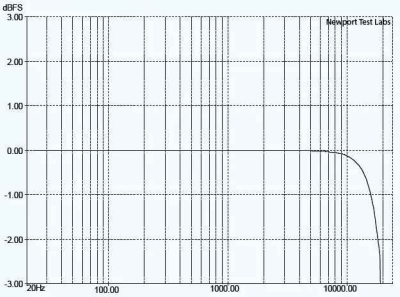
Graph 6. THD with 1kHz -100dBFS test signal (16-bit/44.1kHz) (Dithered)



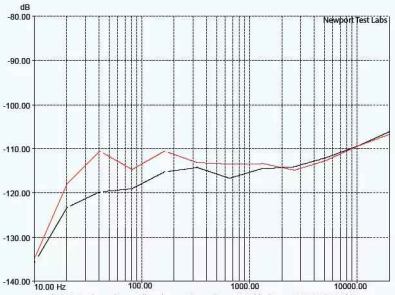
Graph 7. Impulse train at 0dBFS 630 samples per second (16-bit/44.1kHz)



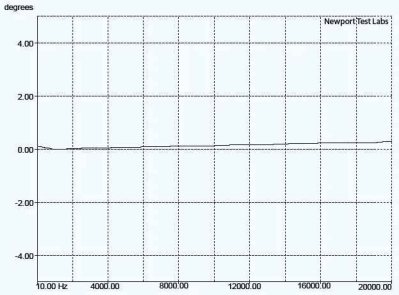
Graph 8. SMPTE-IMD 60Hz/7kHz 4:1 ratio 0dBFS (16-bit/44.1kHz)



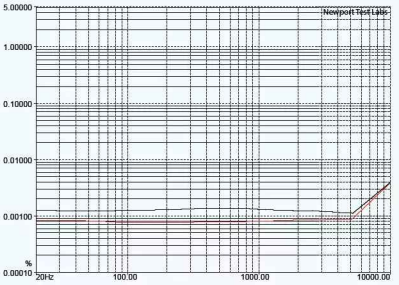
Graph 9. Frequency response at 0dBFS (16-bit/44.1kHz)



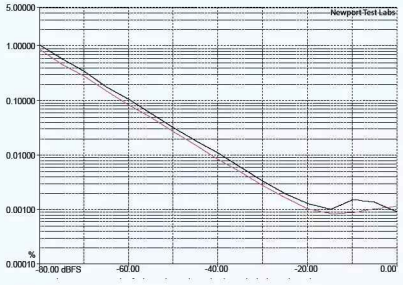
Graph 10. Interchannel crosstalk and separation red trace (L-R) black trace (R-L) (24-bit/48kHz)



Graph 11. Interchannel phase response (24-bit/48kHz)



Graph 12. THD vs Frequency at -1dBFS (red trace) and -20dB (black trace). (24-bit/48kHz)



Graph 13. THD Vs Level Left channel (purple) Right channel (Black) (24-bit/48kHz)

seems to be a sensible engineering (and marketing!) decision.

The impulse response measured by Newport Test Labs, and shown on the oscillogram accompanying this report, shows just one pre-echo and one post-echo which suggests a very short linear-phase reconstruction filter obviously chosen by Wattson Audio to ensure constant group delay across all frequencies and perfect time coherence without phase distortion. These have latency compared to a brick wall filters, and a slower rolloff (evidenced by the pulse train result shown in Graph 7). The approach also results in a very clean square wave reproduction, as you can see in the oscillogram showing a 1kHz square wave response.

Overall, all the tests conducted on the Wattson Audio Madison Lounge Edition Streamer/DAC by Newport Test Labs returned state-of-the-art results. This is digital-to-analogue conversion at its very best! **Steve Holding**