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**Focal
Kanta N°3**

French design flair
and stunning sound
in our full lab test
and review



GOLD NOTE DS-10

Glorious streaming from this Italian masterpiece!



50
YEARS  SINCE 1969

Pro-Ject X-1

Smaller yet
better than your
average turntable



A - G R A D E S O U N D

The A Series has been a huge success in bringing the magic of Magico to a wider audience. Now comes the largest and most advanced of Magico's A Series, the three-way, five-driver, floorstanding A5.

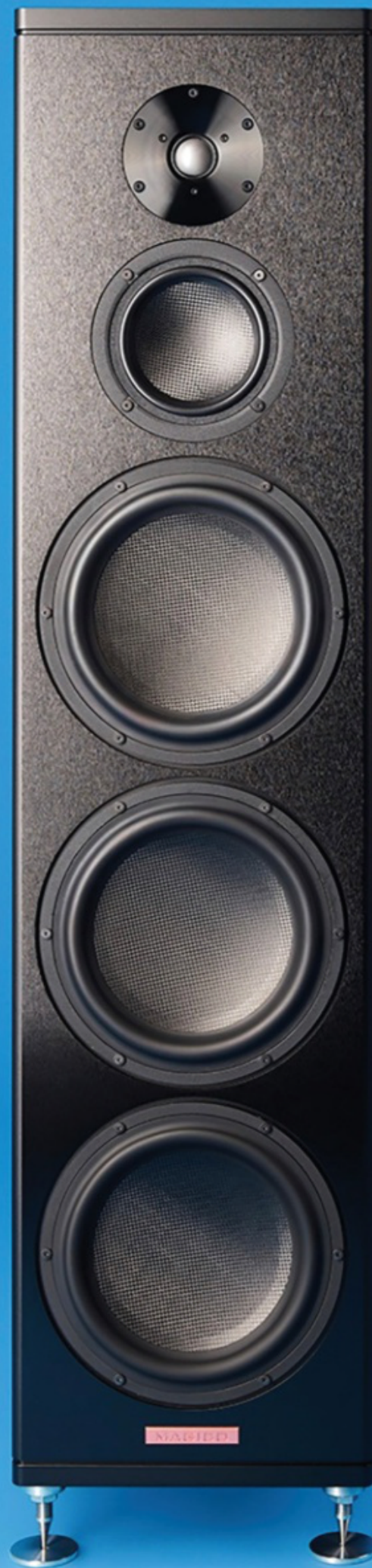
The A5 'plays larger', with powerfully extended dynamic range. The triple 9-inch bass drivers are backed by 5-inch pure titanium voice coils and huge copper caps with a full half-inch of linear excursion.

The A5 incorporates the company's first 5-inch pure midrange driver, an advanced Graphene carbon-fibre sandwich cone of extraordinary musicality.

And the A5 retains such Magico hallmarks as extensively cross-braced 6061 aircraft-grade aluminium and Elliptical Symmetry Crossover.

Experience the apex of the A Series.

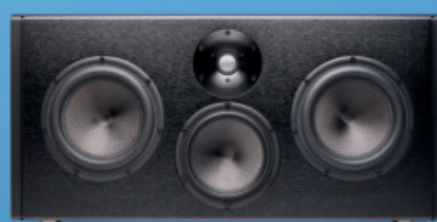
The Magico A5.



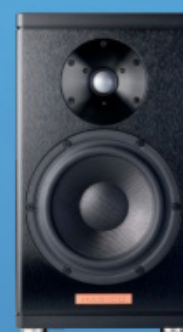
MAGICO A5



MAGICO A3



MAGICO ACC



MAGICO A1



MAGICO ASUB



EDITOR'S LEAD IN

THE FUTURE IS FUTURE...

Keen-eyed readers may have noticed something slightly different about our first issue for 2020. No, it's not that we've updated our '50 Year' Anniversary logo—though we're very proud of that as we know of only one other hi-fi magazine in the world that's been able to celebrate a 50th anniversary. No, what you should have noticed is that there's now a 'Future' logo above the barcode. Yes, Future Publishing Australia, the Australian division of the giant UK-based publisher Future plc, is the new owner of Australian Hi-Fi Magazine.

This is exciting news for everyone here at Australian Hi-Fi Magazine, because Future plc is an award-winning, global multi-platform media company that publishes more than 80 magazine titles across 56 countries, primarily in specialist consumer sectors such as music, photography, computers, computer software, television, gaming education and, of course hi-fi and audio, in which field Future is now well-established as the publisher of the world-famous UK magazine What Hi-Fi?.

Future also has one of the world's most popular technology websites, Techradar—along with numerous other technology websites, such as T-3.com—that together with its magazine titles, have won it more than 53 million social media fans and a total combined audience reach of more than 260 million people worldwide.

What all this means is that Australian Hi-Fi Magazine now has access to the full world-wide resources of Future plc, including hundreds of experienced technical journalists, so that in addition to continuing to bring you our world-class, cutting-edge reviews of the latest audio equipment available in Australia—reviews written by Australian reviewers, and complete with full laboratory tests revealing their true performance—as well as all the latest local Australian news stories, we will now also be able to bring you the latest news, reviews and stories from around the world—coverage of international audio shows, interviews with leading hi-fi designers, behind-the-scenes articles about hi-fi manufacturers plus, rather excitingly, even more reviews of the latest music releases, covering all genres of music, across multiple platforms, from streaming to hi-res. 

greg borrowman (greg.borrowman@futurenet.com)



Commanding PERFORMANCE NEW REFERENCE PREMIERE SPEAKERS



Hi-Fi News Editors Choice – Klipsch RP-600M

"One of the most characterful affordable speakers I've heard in a long time".



Stereophile Magazine Recommended Klipsch RP-600M

"In my world, this speaker is a uniquely important discovery. Super-highly recommended."



CNET 'Audiophile Speaker of the Year' Klipsch Reference Premiere RP-600M

"Full of surprises, at every turn it'll make you reconsider what a mid-size bookshelf speaker can do"



Home Cinema Choice Recommended Klipsch RP-500SA

"The sonic results are worth the extra outlay".



Home Cinema Choice 5-star review and Best Buy Klipsch RP-6000F 5.1 speaker system

"Those decades of experience have culminated in a line of speakers that's wonderfully effective."

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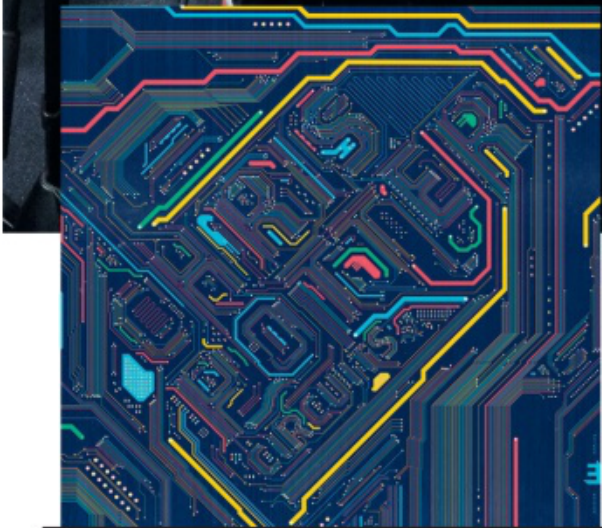
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OUR FRONT COVER

Features three of the top-drawer pieces of hi-fi equipment that have been reviewed and tested in this issue.

MCINTOSH C53 PREAMPLIFIER

The recently-released McIntosh C53 is the first product to feature McIntosh's new DA2 Digital Audio Module (DAM) which is upgradeable. The DA2 Digital Audio Module builds upon the DA1 already fitted to many McIntosh products because in addition to having all the same connections as the DA1 (2 coaxial, 2 optical, 1 USB and 1 proprietary MCT for use with McIntosh's MCT series of SACD/CD Transports), it also has an HDMI Audio Return Channel (ARC) input (audio only). This allows it to be connected to video components with HDMI (ARC) output to bring screen sound to a new level. The HDMI input converts multi-channel Dolby and DTS audio to stereo for proper playback through the C53.

The DA2's USB input can support native playback of up to DSD512, surpassing the DSD256 limit of the DA1. This increased DSD playback support is enabled due to McIntosh's use of a Quad Balanced, 8-channel, 32-bit DAC in the DA2. *'This audiophile-grade DAC is highlighted by both an improved dynamic range and reduced total harmonic distortion compared to the DA1,'* said **Philip Sawyer**, of Synergy Audio Visual, which distributes McIntosh in Australia. *'The USB input also supports DXD up to 384kHz and the coaxial and optical inputs can decode digital music up to 24-bit/192kHz for high resolution audio playback.'*

The new McIntosh C53 (\$14,995) has 16 inputs for connecting music sources, including three balanced and four unbalanced line-level analogue inputs and both moving-coil and moving magnet phono inputs. It also has multiple outputs, including three variable balanced and unbalanced connections

along with a fixed-level unbalanced connection. Tone controls include an 8-band analogue equaliser with each band adjustable by ± 12 dB. The headphone output has 'High Drive' circuitry that McIntosh says will power virtually any pair of headphones, and the circuit is fitted with a Headphone Crossfeed Director (HXD).

Although it's built into the McIntosh C35, the DA2 Digital Audio Module is also available as a separate component that can be used to upgrade to all products using the earlier DA1 module, which includes the MA9000, MA8900, MA7200 and MA5300 integrated amplifiers, the MAC7200 receiver, and the C49 preamplifier. Call Synergy AV for pricing on the DA1.

For more information, contact Synergy Audio Visual on (03) 9459 7474 or visit www.synergyaudio.com



TECHNICS GRAND CLASS SL-1200G

The Technics Grand Class SL-1200G turntable is finally available in Australia, four years after its launch. Launched globally in 2016, the SL-1200G combines a coreless direct-drive motor, precise motor control technology, a high-rigidity platter and a 230mm magnesium tonearm with a gimbal pivot. Technics' unique coreless motor eliminates the tiny variations in rotational speed, known as 'cogging', that affect most direct drive turntables. *'The SL-1200G provides the smoothest possible rotary control by the use of an encoder at the bottom of the motor which detects the precise rotating angle,'* said **Aaron Waters**, Product Marketing Manager (Audio and Video) at Panasonic Australia, which distributes Technics. *'Furthermore, a twin rotator construction reduces the bearing load while maintaining high torque and also limits minute vibration during rotation. This makes it possible to reproduce the warm sound and subtle nuances of musical expression engraved in analogue record grooves and craved by vinyl lovers.'*



The Technics SL-1200G has three speeds—33.33, 45, and 78 rpm—and you can adjust pitch by up to 16 per cent. Wow and flutter is rated at 0.025% (JIS C5521) and signal-to-noise as 78dB (IEC 98A weighted). Its brass and aluminium composite die-cast platter weighs 3.6kg. The tonearm employs a lightweight magnesium material which has been cold drawn to improve the characteristics of the material and increase the damping effect while tracing is enhanced through the use of a gimbal pivot with high-precision bearings which has the horizontal

rotation axis and the vertical rotation axis intersecting at a single central point. *'Technics' numerous listening trials have shown that magnesium is sonically superior compared to aluminium,'* said Waters. *'The passion and detail that goes into creating revered Technics products encompasses both superior technology and a timeless design, with precise construction and craftsmanship to*

create the centrepiece of any music lover's listening environment.'

Available now from selected audio specialist retailers around Australia, the Technics SL-1200G sells for \$6,999 (RRP).

For more information, contact Panasonic Australia on 13 26 00 or via www.panasonic.com.au

It's been a busy month at Len Wallis Audio. Firstly we were honoured to receive a 'Cinema Design Gold Award' from Sound+Image magazine for one of the dedicated Home Theatres we completed this year. This was a very special project. It is a 13.4.6 Atmos theatre featuring the highest number of Meridian Active speakers used in a domestic theatre anywhere in the world. This project also picked up a Silver award at the CE Pro awards earlier this year in the US.



STAX – the iconic manufacturer of superb headphones, has released two new headphone amplifiers. The SRM-700T and the SRM-700S are essentially the same product except one is solid state and the other is tube based. There are enthusiasts in both camps, and while Stax has always shown a preference for tube-based amplifiers at their higher level they recognise that consumer preference is torn between the two – so now you can own a Stax headphone amplifier irrespective of your preference.



Plus, we have just seen the return of a legend to Len Wallis Audio – we are stocking Technics turntables again, after a hiatus of a few decades. This has been a long time coming, but Technics were obviously content to take their time to get it right, and get it right they did. While we will not see their Reference Series here in the immediate future they have

released their \$6,999 Grand Class SL-1200G, plus the two lower models selling for \$2,749 (SL1200GR) and \$1,999 (SL1500). This is an important release: Technics was a highly regarded manufacturer of turntables in the past and is destined to continue in this vein.

We have been looking forward to this release for some time, having already seen releases at overseas shows.

At the same time Technics has

also released a high-quality Desk-Top system (the Ottawa SC-C70, pictured left) featuring CD,



DAB+ and FM radio, USB input, network connectivity (Spotify, Tidal, Internet Radio) and with AirPlay, Bluetooth and Wi-Fi. If you are looking for a compact, well-made, well-priced (\$1,649) system that does everything, including sound good – this could be the answer.

Finally, if there is a product of the moment it must be the Krell K-300i integrated amplifier. This has just picked up the Amplifier of the Year – under \$10,000 – award at the recent Sound+Image awards (for the non-digital version). It has also been the subject of an increasing number of rave reviews around the world, including one from Australia's *Best Buys Audio & AV* magazine. From the instant we turned this amplifier on we felt that it was something special – it's great to see that the world agrees.



MEZE AUDIO RAI SOLO

Romanian high-end audio company Meze Audio has released the Rai Solo in-ear monitor, a lower-priced version of the Meze Audio Rai Penta IEM. 'Meze Audio intends that its Rai Solo becomes the IEM of choice for entry-level audiophiles,' said **Christopher Strom**, General Manager of Radiance AudioVisual, which distributes Meze in Australia. 'The Rai Solo promises users an affordable way to immerse themselves into a pure listening experience while enjoying the ergonomic elegant design that is typical of Meze products.'

'The Rai Solo shares a lot of design philosophy DNA with our flagship, Rai Penta,' said **Antonio Meze**, founder and lead designer at Meze Audio. 'The two have a similar shape, with soft rounded edges that are designed to embrace the natural curves from one's ear so they fit perfectly.' The Rai Solo's stainless steel body contains a 9.2mm diameter dynamic driver with a UPM balanced piston membrane motion, encased in a durable and ergonomic sintered stainless steel shell. Unlike most dynamic drivers, the UPM driver's 9µm-thick silver-coated diaphragm is electrically conductive and therefore no wires are attached to it. 'The result is a symmetric piston motion through its entire movement, without disturbance from the unbalance created by wires,' Meze told Australian Hi-Fi Magazine. Meze Audio rates the impedance of the Rai Solo at 16Ω, and the frequency response as 18Hz–22kHz ±3dB.

Available now, the Meze Rai Solo comes with standard MMCX sockets and a detachable MMCX 1.3m silver-plated cable and sells for \$399 (RRP) with a two-year warranty.

For more information, contact Radiance AudioVisual on (02) 9659 1117 or visit the website at www.radianceav.com.au



ANTHEM MDX

Canadian amplifier manufacturer Anthem Electronics has released what it claims is the world's most advanced and versatile multi-zone distribution amplifier system, its Anthem MDX Series. MDX modules are rated at 60-watts into 8Ω per channel, with both 8-channel (i.e., four stereo amplifiers) and 16-channel (eight stereo amplifiers) modules available. Amplifier topology is Class-D. Each one has independent Anthem Room Correction (ARC), bass management, bass/treble adjustments, and level control settings, plus there's a 24-bit/192kHz digital-to-analogue converter (DAC).

'Anthem's digital/analogue matrix switching allows any analogue RCA, digital coaxial, or digital optical input to be assigned to any output—either pre-configured via the web interface or switched in real-time via IP/RS-232—using customized pre-set DSP settings if required,' said **Bruce Thierbach**, General Manager of Audio Active. 'Amplifier channels can be bridged for increased power and a digital switching output allows linking of digital inputs between multiple MDX modules, plus there are also analogue pass-through connections to allow daisy-chaining multiple MDX-8/16 units.' All MDX module features can be accessed via the web, which can also be used to customise zone configurations, from input assignments to zone names, adjust levels, run firmware updates and more. Available now from Australian distributor Audio Active, the Anthem MDX-16 retails for \$3,699 and the MDX-8 (pictured) for \$2,499.

For more information, contact Audio Active on (03) 9699 8900 or visit www.audioactive.com.au

LAYLA AION IEM

Jerry Harvey Audio (JH Audio) has released the third generation version of its Layla Aion in-ear monitors which, in a co-branding exercise, carry the logo of South Korean manufacturer Astell&Kern. Hand-crafted in Orlando, Florida, each Layla Aion in-ear contains four balanced armature drivers for bass, four balanced armature drivers for midrange and four balanced armature drivers for treble. The bass response is adjustable, with users being able to adjust bass level by up to ±13dB. The layered carbon fibre body incorporates three internal chambers, created from resin using 3D SLA printing technology. Wiring is via silver-plated Litz wire cable.

'The first Layla launched as a custom earphone in 2014 and instantly became known as the audiophile holy grail,' said **Jesse Ross** of Addicted To Audio, which distributes both Astell & Kern and JH Audio in Australia. 'This newest third generation model is the most exciting yet because it combines Jerry Harvey Audio's ever-evolving industry-leading manufacturing processes plus newest Patent Pending technologies and designs in such a way that they're best-sounding and most advanced earphones available to date.' The striking faceplate design of red and black pearloid with the Astell&Kern logo embedded makes the design unmistakable. Available now, the Layla Aion retails for \$5,499.

For more information, contact Addicted To Audio on 1 300 888 602 or (03) 9810 2900 or at www.addictedtoaudio.com.au





H590 Reference Integrated Amplifier

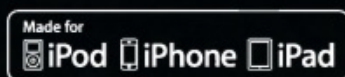
HEGEL
MUSIC SYSTEMS

Master & Commander



A **MASTER** at musicality. The **COMMANDER** of any set of loudspeakers. H590 is the name of Hegel's ultimate integrated amplifier. The H590 includes user friendly services such as Spotify Connect and Apple AirPlay®, while at the same time embracing ultra high

performance formats like MQA and DSD. With SoundEngine 2 technology and Hegel's finest amplifier implementation to date, the **H590** really personifies our strive to bring High End to the people.



MQA



SoundEngine2



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REDGUM

REDGUM RGAEL CABLE IMPROVED

Australian manufacturer Redgum's popular RGAEL 'Expressive Line' speaker cable is the only cable in Australia that uses top-quality Australian copper mined at the famed Olympic Dam mine and refined and drawn in Australia. Now it has been updated with a new look and improved specifications. *'Still holding true to its name and quality, it is a case of "more of the same" with a good dash of "and then some!"*', says Redgum's designer, **Ian Robinson**. The new RGAEL 'Expressive Line' twin-core cable offers incredibly low resistance but each core is now an even chunkier 16mm² / 5AWG cross-sectional area (up from 10mm²/7AWG). This has enabled Redgum to reduce resistance in the new cable by 50 per cent, down to 0.0012Ω/m, and capacitance down by 68 per cent, to just 26pF/m. The cable's current rating has been upped by a third, to 92 amps. As for the copper itself, Robinson told Australian Hi-Fi Magazine: *'The copper used in our RGAEL speaker leads is neither OFC nor OCC. It is just plain, top-quality made-in-Australia copper... and plenty of it! Why? Because the current flowing in speaker leads is 10,000,000 times higher than in inter-connects, and this renders the crystal boundaries irrelevant... as would be paying a higher price for an ineffective—and thus unnecessary—feature.'*

The new Redgum RGAEL cable is now finished with a dark wood-toned braided jacket, and to enable easy connection the lengths are offset and terminated by 24K gold-plated sawtooth right-angled banana plugs that not only minimise stresses on your amplifier's speaker terminals but also maximise conductivity and grip.

Redgum RGAEL 'Expressive Line Hi-Damping Factor' loudspeaker cables are available as standard-length pairs of either 2.5-metres or 3.0-metres but any other cable length is available, in either paired or uneven lengths and with or without mirror-imaged offsets at one or both ends. Standard-length pairs (including termination and connectors) sell for \$1,150 (2.5m) and \$1,150 (3.0m). Unequal cable lengths sell for \$150 per metre, plus \$200 per cable termination (inclusive of the cost of the banana plug).

For more information, call Redgum on (03) 9001 6788 or visit the website at www.redgumaudio.com



www.aushifi.com

SONOS PRIVATE VOICE ASSISTANT

Sonos has purchased the French-based company Snips. Snips specialises in on-device voice control. The purchase will enable Sonos to add a voice assistant to its products that will work without an internet connection, enabling added privacy.

Currently, voice assistants such as Alexa and Siri only work when the devices using them are connected to the internet, because speech recognition and speech generation are done 'in the cloud'. Snips' AI voice platform, on the other hand, claims to be a solution that uses proprietary technology to allow voice processing to take place on the device itself. *'This localised processing maximises accuracy, efficiency and privacy while minimising footprint and cloud dependency,'* said **Patrick Spence**, CEO of Sonos. *'Snips' voice assistants are custom-built for specific tasks and designed to run alongside other general-purpose voice assistants currently on the Sonos platform.'*

The acquisition comes at a time when many consumers are switching off their voice assistants or refusing to use products that embody voice recognition because of (well-documented) fears that private conversations could be overheard and recorded. 'Millions of people have come to enjoy the ease of controlling music with their voice', Spence told Australian Hi-Fi Magazine. 'Acquiring Snips' talented 50-strong engineering team and its proprietary technology gives us the ability to create an even more differentiated and immersive experience for customers, both inside and outside the home.'

Joseph Dureau, CTO of Snips, said, *'We are thrilled to join forces with Sonos, a company that shares our core values, to continue our work and take private-by-design voice experiences to a truly global audience. We see an exciting future together as we integrate our IP and platform with that of Sonos, knowing it shares our dedication to building great experiences for customers without asking them to sacrifice privacy.'*

For more information, contact Sonos Australia on (03) 9874 0800 or by visiting www.sonos.com.au



JBL PULSE 4

JBL has released its Pulse 4 portable waterproof powered loudspeaker, which has a high-brightness lightshow capability built in. The JBL's IPX7 waterproof-rated Pulse 4 claims a battery life of 12-hours, with a 3.5-hour recharge time for a full charge. Two smartphones or tablets can connect simultaneously, and high-brightness coloured LEDs can be switched to a single colour or set to provide a light-show accompaniment to whatever music is playing. *'With a simple click of a button through the JBL Connect App, you can switch between colours to suit your mood plus you can use your phone to scan and colour match any objects to take personalisation to a whole new level,'* said **Marcus Fry**, of Harman, which distributes JBL in Australia, *'so you can kick back to soothing pastels lighting while listening to some of your favourite chill-out tunes.'*

JBL rates the power of the internal amplifier at 20-watts. It drives a single 57mm wide-range driver for which JBL claims a frequency range of 70Hz to 20kHz. Multiple Pulse 4s can be interlinked, or the Pulse 4 can be wirelessly linked to any powered speaker with JBL's 'PartyBoost' circuit to increase volume level and coverage area. Up to 100 JBL PartyBoost-enabled speakers can be interlinked. *'A speaker to reflect your mood and environment, the new Pulse 4 lets you do you,'* said Fry. *'From the living room to a beach party, the portable speaker provides incredible sound, with visuals to match.'*

Available now, the JBL Pulse 4 measures 96x96x207mm (HWD) and sells for \$299.95 (RRP).

For more information, contact JBL Australia on (02) 9151 0376 or visit www.jbl.com.au

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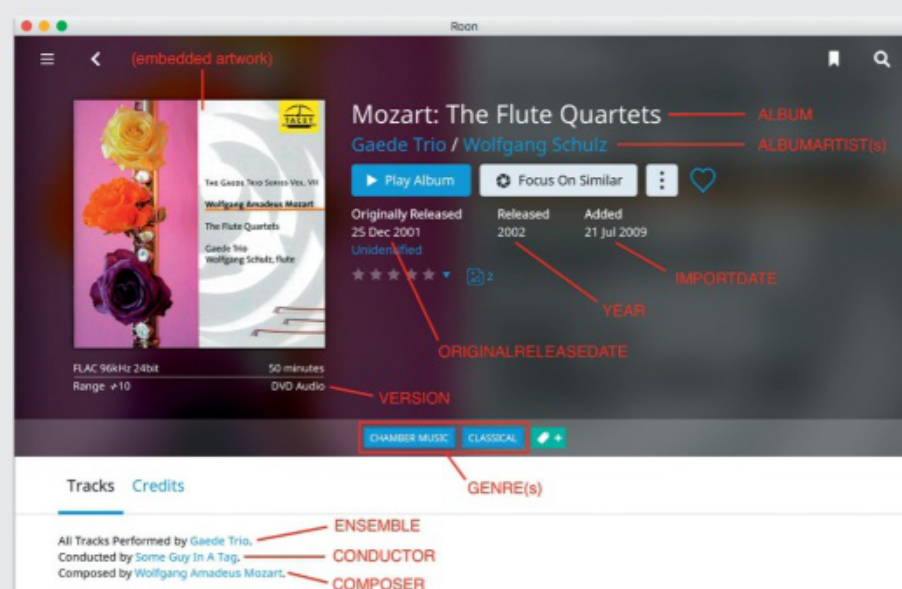
ROON RELEASES VALENCE

Roon Labs has unveiled an entirely new technology it calls Valence that predicts which new music releases you will like, plus adds additional functionality to Roon. It's contained in Roon 1.7. Valence is a system built on a cloud database that uses machine-learning algorithms in conjunction with its information about the musical tastes of the now-more than 100,000 Roon users to model the way different pieces of music are related—such as by shared musicians, shared producers, shared lyricists—to suggest music you might like that you've never previously heard. *'The result is the ultimate music expert, which presents the world of music through a lens personalised just for you,'* says Roon founder **Enno Vandermeer**. *'For example, in most streaming apps, 'New releases' are just a list of everything that's been released in the previous week. Valence lets Roon show you new releases you might care about, based on your library and listening history.'*

You can also use the new functionality to let Valence to pick a selection of an artist or composer's best music by determining their 'heyday' periods, finding their most popular albums (based on Roon users' listening history), plus you can even use it to find lesser-known gems. Roon says that Valence also improves several long-standing Roon features, enabling faster, more accurate searches, providing better context for classical compositions and vastly improved credits metadata. *'More than 44 million additional credits have been introduced to fill gaps that existed before, and the roles associated with those credits are more consistent and accurate,'* says Vandermeer.

Roon 1.7 also includes support for importing credits from file tags. Other features of the 1.7 release include optimised streaming for better performance with slow internet connections, a 30–40 per cent increase in library management speeds, and improved Android compatibility, so that it now acts more gracefully when the state of an Android device's audio output changes, such as when a phone call is received.

For more information, visit www.roonlabs.com



ROGERS LS 5/9 NOW AVAILABLE

Seen for the very first time last year at the Hi-Fi Show Live 2019 in the UK, Rogers' famous Rogers LS5/9 Classic speakers are now available in Australia. *'Although the BBC's engineers originally designed the Rogers LS5/9 Classic speakers for monitoring use in the studio, and they're still perfect for that application—they're equally perfect for enjoying accurate music reproduction in the home,'* said **Aleksandar Maksimovic**, of Audio Magic, which distributes Rogers speakers in Australia. *'The only thing you might need to do is adjust the level of the high frequencies, which on the LS 5/9 is done via precision resistors jump links handily located right on the front baffle.'*

The new Rogers LS5/9 pairs the latest version of Audax's HD34 soft dome tweeter with a critically flared polypropylene 210mm bass/midrange driver. Rogers modifies this tweeter by adding a dispersion loading protective plate. The 27 components used to build the 18dB/octave crossover network are hand-soldered using silver solder onto a single layer copper track fibreglass PCB. Rogers rates the frequency response of the new LS5/9 as 50Hz–26kHz (±3dB), its sensitivity at 89dB SPL (1-watt/1-metre) and its nominal impedance as 8Ω.



The 'new production' LS5/9 are manufactured in the UK from 9mm Russian Birch plywood that's finished with real wood veneer. Walnut, Rosewood and Olive finishes are available ex-stock, but an extremely wide range of special finishes are available for special order, plus the cabinets can be painted in any RAL colour.

'Rogers of England has been synonymous with quality audio equipment since it was first founded in 1947 by Jim Rogers,' said Maksimovic. *'Through creativity and innovative ideas, he produced a succession of consistently improved and refined systems. Now in its 71st year, Rogers are relaunching some familiar 'famous' products as well as some new ones, so once again, Rogers will set the standards for a new*

generation of music lovers.' The Rogers LS 5/9 bookshelf monitors are available now (in standard colours) for \$9,490 per pair (RRP).

For more information, contact Audio Magic on (03) 9489 5122 or visit www.audiomagic.com.au

SONNET DIGITAL AUDIO MORPHEUS DAC

Designer **Cees Ruijtenberg**, the founder of Metrum Acoustics, and **Lion Kwaaijtaal** have started a new company, Sonnet Digital Audio. Their first product, the Sonnet Morpheus DAC, is now available in Australia from Sonic Purity. *'This is a new and exciting period for us,'* said Ruijtenberg, *'one where we will be seeing just how far we can push the audio envelope. Not only will we focus on manufacturing complete matched sound systems but on a broader level, our knowledge, latest research and continuing developments will be used to create new components for domestic use and for the professional recording studio sector.'*

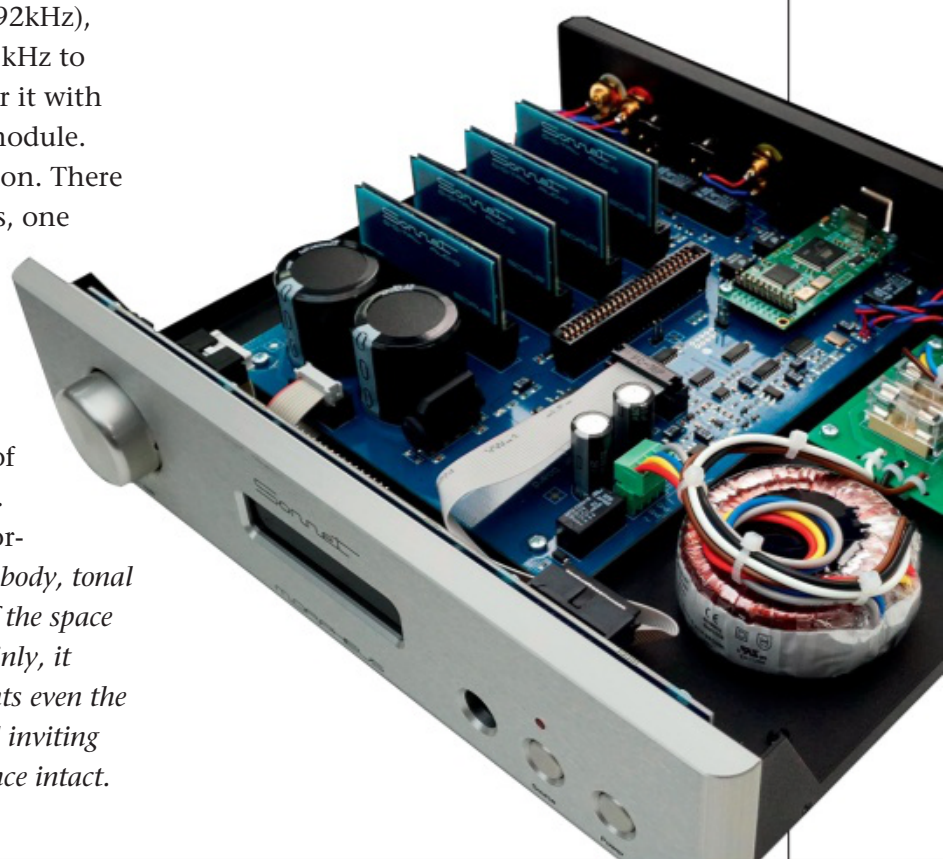
The concept for the new Sonnet Morpheus DAC was to integrate an effective loss-less volume control in order to eliminate the pre-amplifier from the chain of audio components. *'In the case of our R2R ladder DACs it is quite easy to change the output voltage of the DAC by changing its reference voltage,'* said Ruijtenberg. *'Our new generation SDA-2 DAC modules are fully balanced, and designed to get the best regulation possible, with the result being extremely high linearity, right down to -140dB, which means we have 24-bit dynamic range.'*

The new Morpheus DAC uses two balanced, non-oversampling SDA-2 R2R DAC modules per channel in differential mode. It has four inputs: optical (sampling rates from 44.1kHz to 96kHz), coaxial (sampling rates from 44.1kHz to 192kHz), AES/EBU (sampling rates from 44.1kHz to 192kHz), and USB (sampling rates from 44.1kHz to 384kHz), but users are able to order it with an I2S option instead of the USB module. MQA is also be available as an option. There are two line-level analogue outputs, one single-ended unbalanced (RCA) output and one fully balanced (XLR) output. Sonnet specifies the frequency response as 1Hz–65kHz (–3dB), with THD of less than 0.004%, channel separation of 120dB and a noise floor of –155dB.

Ruijtenberg says the Sonnet Morpheus DAC: *'gives you more weight, body, tonal richness, and a more natural sense of the space of the recording or, to put it more plainly, it fleshes out your music more! It presents even the most complex music in a natural and inviting manner with every last ounce of nuance intact.'*

It allows you to hear deep into the recording and the recording's quality. This is somewhat of a good news/bad news proposition in that you'll really hear what's there.' Available now, the Sonnet Morpheus DAC measures 290×250×60mm (HWD), weighs 3.2kg and sells for \$5,699 (RRP).

For more information, contact Pure Music Group on (04) 0950 4805 or visit www.puremusicgroup.com



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MIYAJIMA SABOTEN L PHONO CARTRIDGE

New moving-coil design from Japanese specialist cartridge designer **Noriyuki Miyajima** has a cantilever made from the spine of a cactus. The Miyajima Saboten L (the 'L' indicates that it has a nude line-contact diamond stylus) is a low-output moving-coil (MC) design where the line-contact diamond stylus is fixed to a short, tubular end-piece of aluminium, which is cemented to the end of the cactus spine in such a way that the stylus tip is very close to the central axis of the cantilever and coil assembly. In common with all of Miyajima's stereo cartridges, the Saboten L's generator system uses a patented 'cross-ring' geometry where the cantilever fulcrum and coils are positioned exactly in the centre of the magnetic field, which Miyajima says delivers *'a more faithful handing of dynamic contrasts.'* The body of the Miyajima Saboten L is made from Cameroonian Ebony.

Every cartridge bearing the Miyajima name is made by hand by either designer **Noriyuki Miyajima** himself or one of his small team of artisans. *'The Saboten L's skilfully balanced mix of natural ingredients serves up a life-like musicality that almost defies the fact that this is hi-fi,'* says **Boris Granovsky**, of Absolute Hi End, which distributes Miyajima phono cartridges in Australia. *'Musicians stand before you, not hovering in space but grounded, with a just-so sense of scale and pace. Neither forced nor softened, the music feels effortlessly natural, true and alive... almost as if there were no technology involved at all.'*

The Miyajima Saboten L is rated with a frequency range of 20Hz–32kHz, an output voltage of 0.23mV and an impedance of 16Ω (with a recommended load resistance of 100–250Ω).

Available now, it sells for \$7,490 (RRP).

For more information, contact Absolute Hi End on (04) 8877 7999 or at www.absolutehiend.com



CLEANER AUSSIE LPS

Australia's own Vinyl Record Cleaning Company (VRCC) has expanded its range of vinyl record cleaning solutions and services. VRC 'Easy Spread n' Peel' (ESP) vinyl record cleaning film is now available in three different concentrations. *'From older, long-stored collections through the regularly-played and well-maintained portfolio to the just-acquired, brand-new LP, there is now a matching ESP formulation,'* said **Stephen Price**, founder and owner of VRCC. *'In launching this unique differentiated product range, VRCC is responding to the demand for targeted record cleaning and fidelity restoration. Long-stored vinyl records typically demonstrate cleaning challenges, such as mould growth and tightly bound particulate contamination, whereas brand-new records generally require only a light clean to remove production residues.'*

For smaller and brand-new collections, where volume is not a consideration, the company has introduced the VRC Mini System. The VRCM is similarly available in each of the three ESP formulations.

The VRC System retails for \$189.95 and the VRC Mini System for \$110.95. Single ESP bottles are available as 210ml (\$44.95) and 500ml (\$99.95). VRC says that only 10ml is required per LP. If you'd rather not clean your own records, VRCC now offers Australian residents an 'outsourced' option, where the company will clean your records for you. *'VRCC now offers a courier-based cleaning service'* Price told Australian Hi-Fi Magazine.

'Your records receive a thorough restoration service by the VRC method, with minor repairs performed to covers as needed. Older records also receive a new antistatic sleeve.'

For more information, contact VRCS on (04) 0928 6150 or visit www.vinylrecordcleaningsystem.com



BOSE

BOSE PORTABLE HOME SPEAKER

Bose has released a battery-powered wireless loudspeaker it calls a 'Portable Home Speaker' that can be linked to Bose's other wireless models, the Home Speaker 300 and 500; and also to the Soundbar 500 and 700. The seamless, anodised aluminium cylindrical enclosure of the Bose PHS is 190mm tall and 101mm in diameter. Inside are a single high-excursion driver and three passive radiators. A deflector is employed to distribute the sound through 360 degrees. *'Unlike conventional speakers, there's no sweet-spot for placement or listening—it delivers the same, jaw-dropping experience wherever it is and wherever you are,'* said **Ben Burns**, of Bose. *'You'll hear clear, life-like sound, included size-defying bass.'*

The new Bose PHS is water-resistant with an IPX4 rating to survive spills, splashes, and rain, available in black or silver finishes, and is reportedly rugged enough to withstand drops, knocks, and hits. It comes with an integrated handle for convenience and can charge through standard USB-C, or a charging cradle (sold separately). Battery life is claimed to be 12 hours. Bose uses a proprietary system that works with Google Assistant and Amazon Alexa to access playlists, podcasts, news, weather, smart home devices and more, but there are buttons on top for basic functionality, including access to a 'microphone-off' feature which cuts power to the microphones to eliminate the chance you could be listened to or recorded. Using the Bose Music app adds additional functionality.

Available now, the Bose Portable Home Speaker sells for \$499.95.

For more information, contact Bose Australia on 1800 023 367 or (02) 8737 9999 or at www.bose.com.au



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MCINTOSH MC901 DUAL MONO AMPLIFIER

McIntosh has released its MC901 Dual Mono Amplifier which it describes as 'a one-of-a-kind, ultimate solution for bi-amping loudspeakers: a 300-watt vacuum tube amplifier and a 600-watt solid-state amplifier on one chassis.'

Although McIntosh describes the MC901 as a 'monobloc' it's not a true monobloc (which would be only a single amplifier) but two completely different amplifiers built on the one chassis. One amplifier is a single-channel valve amplifier rated at 300-watts; the other a solid-state amplifier rated at 600-watts.

The valve amplifier has eight KT88 output valves driven by four 12AT7s and two 12AX7As and uses the same patented Unity Coupled output transformer circuit McIntosh has been using since it was founded in 1949.

The solid-state amplifier uses transistors in combination with McIntosh's 'Autoformer' output stage. These circuits mean that the amplifiers will deliver their full rated output into any load from 2 to 8 ohms.

The valve amplifier also comes with a new technology for McIntosh which it calls a 'Power Guard Screen Grid Sensor' (SGS). 'This new screen grid sensor circuitry helps prevent premature vacuum tube failure by monitoring the screen grid current in the KT88 output valves,' says **Philip Sawyer**, of Synergy Audio Visual, which distributes McIntosh in Australia. 'If the current becomes too high, a circuit in the Power Guard SGS is activated which then dynamically attenuates the input signal in real time to keep the vacuum tubes operating at safe levels.'

McIntosh says that the primary application it envisages for the MC901 is to drive speakers that are able to be bi-amplified.



'Vacuum tubes do not perform at their best when they are amplifying lower frequencies that are not being used by the loudspeaker,' said **Mark Christensen** of McIntosh. 'With the MC901, the vacuum tube amp will not be burdened with low end reproduction as the solid-state section will drive these frequencies. The two amplifier sections of the MC901 are designed to work together in a synergistic relationship and are specifically engineered to assure that each section only amplifies its intended frequencies. Each amplifier section has its own discrete power supply so one neither siphons power or performance away from the other.'

All of this results in easy bi-amping, enabling unparalleled performance and sound reproduction from any speakers to which they're connected.'

The MC901 has adjustable crossover filters that allow users to optimise the performance of both amplifier sections to their listening preferences, plus the relative gain levels for each amplifier section

can be adjusted over a 9dB

range. Output power can be monitored

using what McIntosh calls a 'DualView' power output meter which shows the outputs of both amplifiers in a single meter window.

The McIntosh MC901 is already available for sale in the United State and is expected to be delivered to Australian hi-fi retailers later this month. It's scheduled to sell for \$34,995 (RRP).

For more information, contact Synergy Audio Visual on (03) 9459 7474 or visit www.synergyaudio.com

JELCO UPGRADES TONEARMS

When it comes to upgrades, Jelco doesn't do it by halves! To celebrate its 100th anniversary, this famous Japanese company is upgrading all its tonearms to MkII status with upgraded wiring and counterweights. The new Jelco MkII tonearms now incorporate newly-developed high-purity oxygen-free silver-coated-copper arm-tube wiring and a detachable headshell fitted with silk-weave OFC Litz interconnect. Jelco says the new arm-tube wiring, which it calls PCUHD (Pure Copper Ultra High Drawability) contains less than half the amount of oxygen contained in standard OFC 4N conductors, and is a world-first for the company. It then adds a coat of high-purity (5N) silver to the wire, which it says 'further adds to sound transparency and resolution.'

All Jelco MkII tonearms are also now equipped with a new counterweight that can accommodate a wider range of cartridges (with weights from



17 grams right up to 34 grams). All models still feature Jelco's famous one-point cross-suspension system and all can also be easily aligned in accordance with Baerwald geometry, as per the International Electrotechnical Commission's recommendation for tonearm/cartridge alignment. The new Jelco MkII line-up includes two entry-level 303mm (12-inch) arms, the TS-550L MkII (oil-damped) and TK-350L MkII (basic system) and two 232mm (9-inch) arms, the TK-550S (oil-damped) and TK-350S (basic system). 'Jelco's new PCUMD material eliminates inclusions and impurities through a combination of a casting process that does not use any refractory and a post-processing process that does not pass through any hot extrusion and rolling processes,' said **Brian Maddern**, of Decibel HiFi, which distributes Jelco tonearms, phono cartridge and accessories in Australia. Retail prices of these entry-level arms are: TS-550L MkII (\$1,320), TK-350L MkII (\$1,155), TK-550S (\$1,300) and TK-350S (\$990). All the new Jelco tonearms are available now. Contact Decibel for a full list of available models and features, together with pricing.

For more information, contact Decibel HiFi on (07) 3344 5756 or by visiting www.decibelhifi.com.au

CLEARAUDIO

CLEARAUDIO CONCEPT ACTIVE TURNTABLE

German manufacturer Clearaudio has released an 'active' version of its multi-award-winning Concept turntable.

The new Clearaudio Concept Active turntable has an integrated headphone amplifier, so that if you listen via headphones, you can just plug them directly into the turntable and start spinning your vinyl straight away. It also has an MM/MC phono stage and pre-amplifier built in, so you can connect it directly to a pair of active loudspeakers. And because it has its own volume control, you can also connect it directly to a power amplifier. Plus, of course, you could plug it into the line-level input of any integrated amplifier or AV receiver.

'The exceptionally affordable Clearaudio Concept turntable has been an undisputed success for the brand, winning an impressive seven What Hi-Fi? Awards, a Sound & Image Award and it was Sound & Vision's Product of the Year,' said Nigel Ng, of Advance Audio, which distributes Clearaudio in Australia. 'Clearaudio's concept with the new Concept Active was brilliantly simple: to deliver an elegantly-styled turntable package that sports a level of groundbreaking technology usually only found in much higher-end decks, combining plug-and-play simplicity with outstanding sound quality and affordability.'

The Concept Active turntable includes Clearaudio's innovative Concept tonearm, featuring magnetic bearings designed to eliminate bearing friction and bearing noise and optionally includes Clearaudio's Concept V2 MM or Concept MC cartridge... or you can fit any other compatible phono cartridge. If you choose to have a Clearaudio cartridge pre-installed, the turntable will be delivered with that cartridge factory-aligned and with the tonearm calibrated for everything from tracking force to anti-skating. You can adjust gain, add an infrasonic filter, fine-tune platter speed and select between two active output modes or a passive mode.

As with the original Concept turntable, the new Active version is belt-driven to its three available speeds (33⅓, 45 and 78rpm) via a flat belt linked to a decoupled and resonance-damped d.c. motor with a speed accuracy of better than 0.05%. The 30mm thick synthetic main platter sits atop an aluminium sub-platter whose polished and tempered stainless-steel spindle runs in a sintered bronze housing on Teflon bearings. The plinth is a three-layer 'sandwich' construction comprised of a black acrylic top plate and two layers of lacquer-finished MDF (unless you choose the 'Wood' version, which replaces the MDF layers with birch plywood). Available now, prices start at \$3,695 (RRP) depending on your choice of finish and cartridge.

For more information, contact Advance Audio Australia on (02) 9561 0799 or visit www.advanceaudio.com.au



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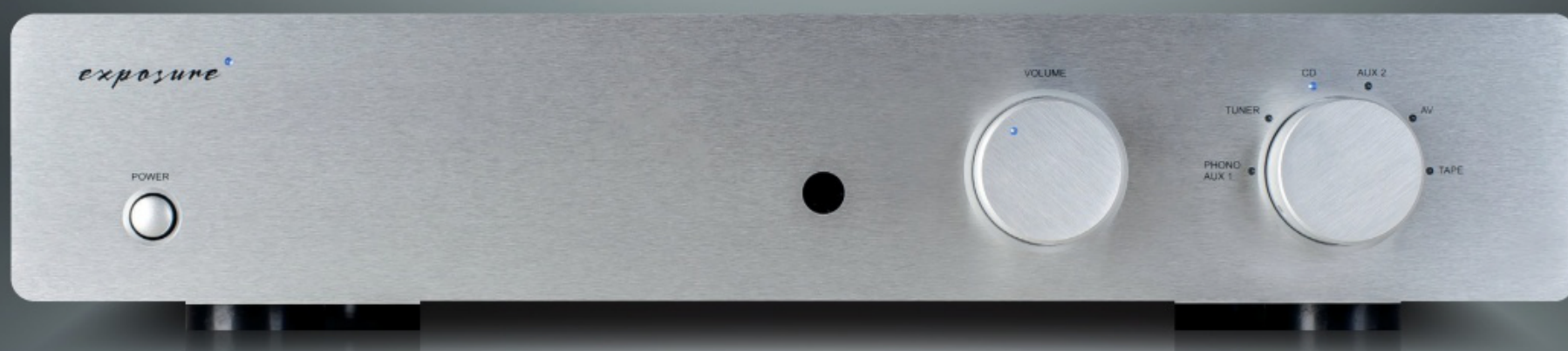


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EXPOSURE 2010S2 D

INTEGRATED AMPLIFIER

Exposure is a British brand that... err, has actually lacked exposure in Australia for many years. Hopefully, that will change now that Exposure has appointed a new Australian distributor (Audiofix).

THE EQUIPMENT

Change, however, is something that happens very slowly at Exposure, which delights as many audiophiles as it annoys. The Exposure 2010S2 D, for example, despite having seen many changes in internal circuitry, including many upgraded internal components, looks pretty much the same—externally, at least—as the original Exposure 2010 that I am fairly sure was released sometime last century. In other words, Exposure has been using basically the same chassis, metalwork and front panel for more than 20 years... a chassis that is, by the way, available in either black or silver.

Some audiophiles are, of course, delighted by this continuity, because it means their 'old' amplifier looks exactly the same as the newest version, with all the implications that has for re-sale and trade-in values. Others find it annoying because if you are buying second-hand, it makes it difficult to establish exactly how old a particular unit might be, and the older any amplifier is, the more likely it is to be in need of having its electrolytic capacitors replaced... at the very least.

So what are some of the changes that have taken place? The first of which I'm personally aware was when the original Exposure 2010 was upgraded to 'S' status. At the time, Exposure said the S stood for 'Super' (Power),

on the basis that, according to the company's brochure at the time: *'the new, improved 2010S integrated amplifier sees a whopping 50 per cent increase in power, from 50-watts to 75-watts per channel.'*

That so-called '50 per cent' increase is true according to the raw numbers, but it's a bit of a furphy, because amplifier power as perceived by the human ear doesn't quite work that way, because the numbers need to be viewed in a logarithmic sense rather than a linear one, so in fact this increase in power represents a barely audible 1.76dB.

Another change was that the value of the volume control potentiometer was changed from 50kΩ to 20kΩ, which apparently was to correct for some previous 'errors' in the amplifier's high-frequency response, but the change also made the choice of source components and cabling a little more important than previously, due to the lower impedance. This was because internally, the 2010S (and the '2' and the 'D' versions) does not have an 'active' preamplifier stage, like most integrated amplifiers. Instead, it has a passive preamplifier stage, which then drives the active power amplifier stage. It's because of this rather odd circuit implementation that the 2010S2 D does not have tone controls, a headphone output circuit or even a phono input. (Though it is possible to add a phono input if you need one, but if you do this, you 'lose' one of the line-level inputs (Aux 1).

Yet another change was that the 'S' version of the 2010 had pre-amplifier outputs, opening the way for bi-amping.

I understand that the output transistors have changed over the years too, with Ex-

posure variously using devices from Hitachi, Sanken and Toshiba. The power transformer has also been upgraded over the years, with current models sporting a 200VA toroid.

But what about that 'D'? What does that mean? Originally, when the editor said he was sending over a 2010S2 D for me to review, I imagined that Exposure must have added digital inputs for the first time. My unboxing proved me wrong... only analogue inputs were visible. It actually took me a while to discover that the 'D' is simply meant to indicate that this version of the amplifier has a 'Direct' line input (and, rather confusingly, it's labelled 'AV', rather than 'Direct') which bypasses the volume control to drive the power amplifier stage directly so that the 2010S D can be more easily integrated with a multi-channel audio system.

As you can see from the photograph, the 2010S2 D's chassis might date from before the turn of the century, but the 'look' harks right back to the early 70s, when modern-day audio was in its infancy. The only nods to modernity are the motorised volume control and the use of LEDs. Otherwise, what you see is what you get: a pushbutton power switch, a motorised volume control (with built-in LED) and a rotary input source selector. (If you're looking at the product pic accompanying this review, what looks to be a headphone socket on the front panel is actually just the infra-red receiver that picks up the signals from the supplied remote control.)

The input selector switch has positions for Phono/Aux 1, Tuner, CD, Aux 2, AV and Tape. As stated earlier, if you choose not to option in a phono stage at the time of

purchase, this means you have six line-level inputs. However, since the 'AV' input bypasses the volume control, I would not recommend using it for anything other than its designated purpose, which means effectively there are only five line level inputs. So if you do option in the phono stage, you're down to four line-level inputs, which still should be

Nothing gets in the way of the music at all. It's a delightfully lucid, natural-sounding amplifier

enough for most modern applications. (For younger readers who might be wondering what that input labelled 'Tape' might be used for, I suggest you ask your parents!)

The rear panel has the inputs and outputs you'd expect, but what was unexpected were the speaker output terminals. Rather than being the usual multi-way terminals, Exposure is using a terminal type that accepts only banana plugs. And although you can use standard banana plugs, I would recommend that you instead use what's called 'shrouded' banana plugs, as these will give a sturdier, more robust connection, not to say one that's electrically 'safer' than a conventional banana plug. Shrouded banana plugs are not readily available over-the-counter in Australia, so it would have been nice if Exposure had included a set with the amplifier, but they're easy enough to purchase on-line.

If you're looking at the photograph of the rear panel below and thinking to yourself that the 2010S2 D is offering 'A' and 'B' speaker pairs, you'll need to re-think that, because the sockets are simply paralleled, presumably to make bi-amping easier.

As for the internals of the 2010S2 D, well just as the amplifier's exterior is 'old-school', so too is the internal circuitry 'old-school',

with the very large single-sided PCB populated by very high-quality, but old-fashioned, full-sized through-hole resistors, capacitors and semiconductors. This means that when it does come time for capacitors to be replaced, it will be a simple and relatively inexpensive task. It also means that if a repair is ever required it, too, should be simple and relatively inexpensive.

The good news about this is that theoretically, you could keep a 2010S D in perfect operational order for ever, which is a breath of fresh air in today's wasteful 'throw away' society. This is also particularly important because unlike most

modern amplifiers, the 2010S D has no active output protection circuitry, meaning that if you do accidentally short its outputs (which the *Owner's Manual* specifically warns against doing), you could indeed be up for a repair.

IN USE AND LISTENING SESSIONS

Not having any shrouded banana plugs around, I simply wired up some speaker cables with standard plugs, making sure no bare wires were showing at all, to minimise the possibility of a short-circuit. Since I was using very heavy-duty cable, and the banana plugs I was using weren't exactly the tightest fit, any untoward movement of the cable could also move (and maybe potentially dislodge) the plug, so I'd recommend sticking with shrouded banana plugs, even if you have to wait for delivery.

I quickly discovered during the burn-in period that firstly, there is no stand-by circuitry. The remote control button 'appears' to offer a Stand-by function, but it doesn't work with the Exposure 2010S D. (The remote also has buttons for D1, D2, etc, and USB, but these don't do anything either). A button the remote control does have, and which does work, is 'Mute', which does the expected, and

mutes the amplifier's output. The operation of the mute circuit is such that you cannot turn up the volume of the 2010S2 D while the amplifier is muted. However, rather strangely, if you turn the volume down, the amplifier automatically unmutes as you do so. I would have preferred the mute to stay active during a 'turn-down' operation, but it's a moot point (sorry!).

Since the Exposure 2010S2 D has no stand-by mode, I would recommend you turn it off whenever you've finished listening to it for the day. If you do this, you'll find that whenever you switch it back on, the input source selector defaults to CD, so you may want to use this input for the source you use most often. Alternatively, because the Exposure 2010S2 D always defaults to whatever volume level you were last listening, you might want to connect your most-used source to one of the other inputs and not use the CD input at all, so that whenever you switch it on, the amplifier will be quiet. Your call, really.

When it comes to reporting about my experiences listening to the music played through the Exposure 2010S2 D (which is what you've all been waiting for... right?) I'm here to tell you that I now know why Exposure has been sticking to its basic recipe for the 2010 for so long. It's because it's a beautiful circuit. Keeping it simple obviously pays off big-time because the fewer components in the signal path, the fewer components there are to get in the way of the music. And when it comes to the Exposure 2010S2 D, nothing gets in the way of the music at all. It's a delightfully lucid, natural-sounding amplifier that just leaves it to the musicians to impart whatever nuances to the music they want: the 2010S2 D then adds nothing of its own, nor takes away any of the nuances they've added. Like Switzerland, it's neutral.

Initially I imagined the Exposure 2010S2 D's neutrality could be upset if it were partnered with loudspeakers for which it was not suited, but after listening sessions with nearly a dozen pairs of speakers ranging from small, inexpensive bookshelf models to large, costly floor-standers, which presented a



whole gamut of different impedances and efficiencies, I learned that the sonics remained impeccably neutral throughout. I did learn, however, that its ‘Super Power’ does not extend to driving very low-efficiency loudspeakers to overly loud levels. It’s obviously a powerful amplifier, but if you push it for too hard for too long with speakers rated at lower than 85dB SPL or so, the lightness of touch that’s in such abundance at lower listening volumes seems to be somewhat dispersed.

The neutrality of the Exposure 2010S2 D’s sound presents mostly as just transparency, so that stringed instruments sound, well, ‘stringy’ and human voices sound just as if the person singing is there with you in the room... there’s no ‘fullness’ or ‘thinness’... or anything really to the sound... you just hear an obviously talented singer with a wonderful voice just, well... *singing*.

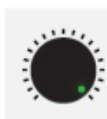
CONCLUSION

The neutrality of the Exposure 2010S2 D’s sound is a wonderful characteristic trait because it simplifies component choice in your system. Choosing to buy an Exposure 2010S2 D will mean that it will be your selection of signal source and speakers that determines the tonality of the sound you hear in your listening room. Having the burden of amplifier choice lifted from your shoulders in such a way just has to be a good feeling! ⚡ *Brad Cunningham*

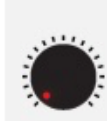
Readers interested in a full technical appraisal of the performance of the Exposure 2010S2 D should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

CONTACT DETAILS

Brand: Exposure
Model: 2010S2 D
RRP: \$1,999
Warranty: Two Years
Distributor: Audiofix Pty Ltd
Address: Cnr Production and Tandem Ave
Warana QLD 4575
TF: 1300 139 552
T2: (07) 5437 9790
W: www.audiofix.com.au



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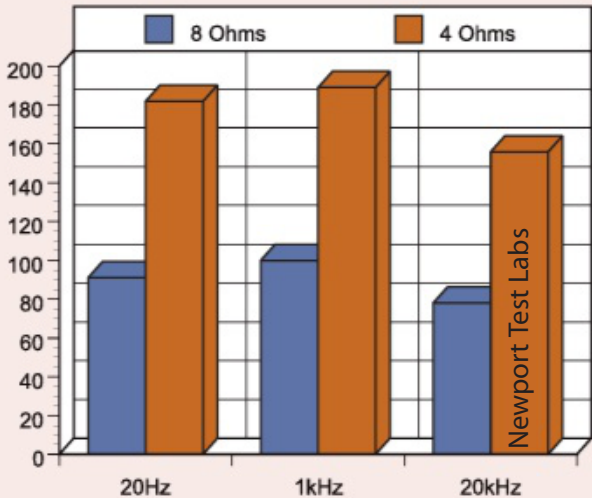


- Output protection
- Headphone output

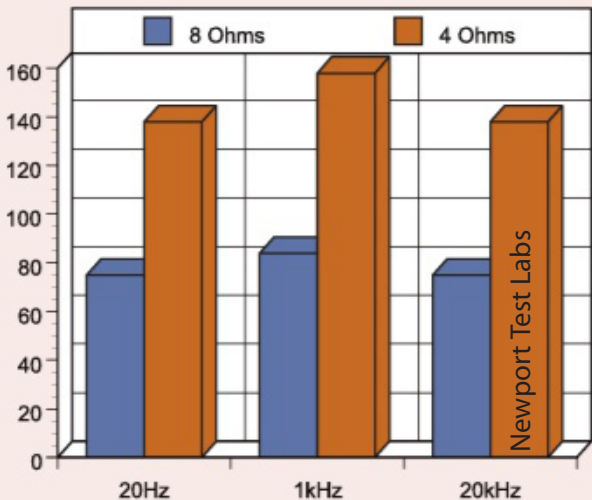
LABORATORY TEST REPORT

Newport Test Labs measured the single-channel-driven power output of the Exposure 2010S2 D at 100-watts per channel at 1kHz into an 8Ω load, with measured power output dropping to 91-watts with a 20Hz test frequency and to 78-watts with a 20kHz test frequency. These output figures nearly doubled when the amplifier was driving a 4Ω load, with the Exposure 2010S2 D delivering 182-watts at 20Hz, 189-watts at 1kHz and 156-watts at 20kHz. These single-channel test results are indicative of the amplifier’s peak power output.

Tested using the Australian standard for measuring amplifier power output (that is, both channels driven into 8Ω loads), the Exposure 2010S2 D returned 75-watts per channel at 20Hz, 84-watts per channel at 1kHz and 75-watts per channel at 20kHz, as tested by Newport Test Labs.



Power Output: Single channel driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz.



Power Output: Both channels driven into 8-ohm and 4-ohm non-inductive loads at 20Hz, 1kHz and 20kHz.

Exposure 2010S2 D Int. Amp. Test Results - Power Output

Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω	91	19.6	100	20.0	78	18.9
2	8 Ω	75	18.7	84	19.2	75	18.7
1	4 Ω	182	22.6	189	22.7	156	21.9
2	4 Ω	138	21.4	158	21.9	138	21.4

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

Exposure 2010S2 D Integrated Amplifier - Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	9Hz – 23kHz	–1dB
Frequency Response @ 1 watt o/p	4.5Hz – 45kHz	–3dB
Channel Separation (dB)	87dB / 79dB / 54dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.13	dB @ 1kHz
Interchannel Phase	0.14 / 0.01 / 2.35	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.017% / 0.026%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wgghted)	80dB / 86dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wgghted)	92dB / 97dB	dB referred to rated output
Input Sensitivity (CD Input)	23mV / 193mV	(1-watt / rated output)
Output Impedance	0.1Ω	OC = V
Damping Factor	80	@1kHz
Power Consumption	N/A / 12.66	watts (Standby / On)
Power Consumption	40.6 / 289	watts at 1-watt / at rated output
Mains Voltage Variation during Test	238 – 251	Minimum – Maximum


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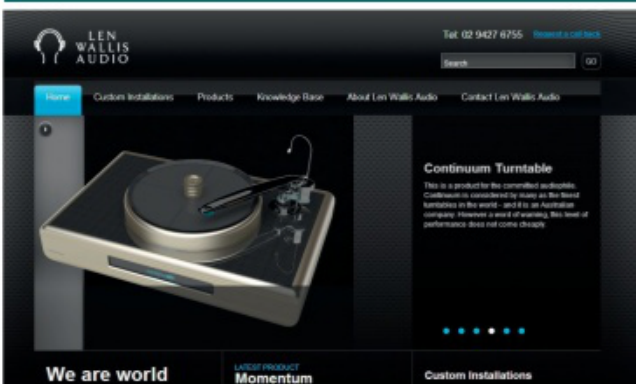
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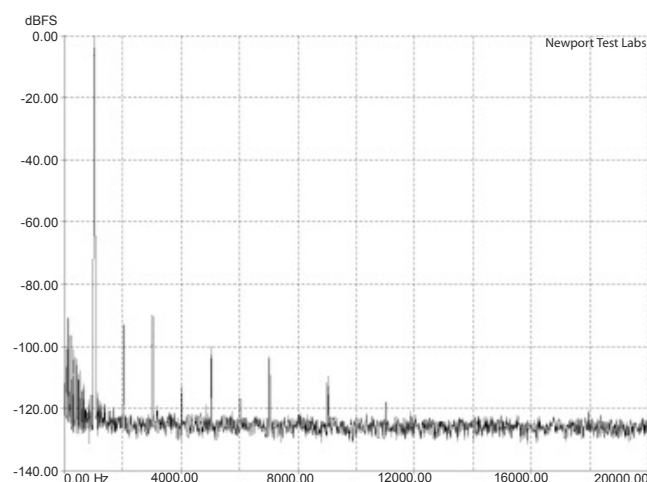
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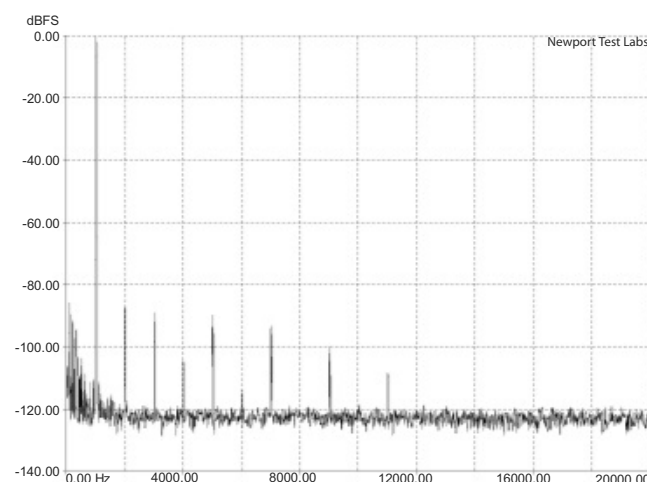
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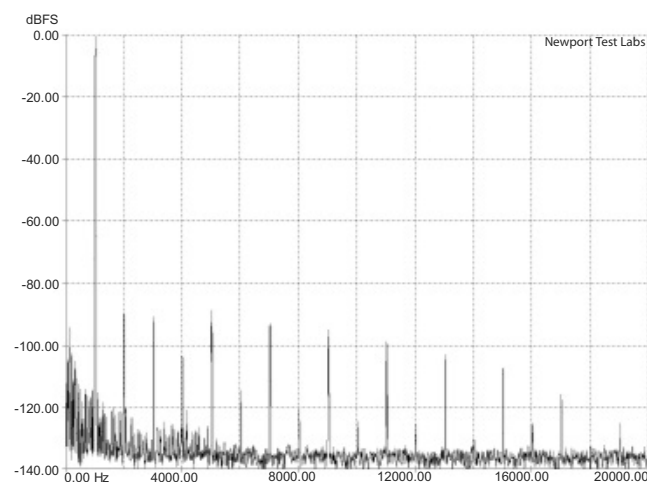
Graph 1. Total harmonic distortion (THD) at 1kHz at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB.



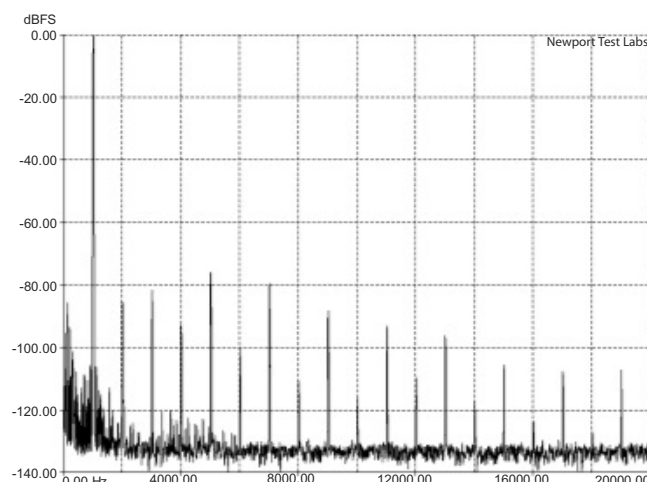
Graph 2. Total harmonic distortion (THD) at 1kHz at an output of 1-watt into a 4-ohm non-inductive load, referenced to 0dB.



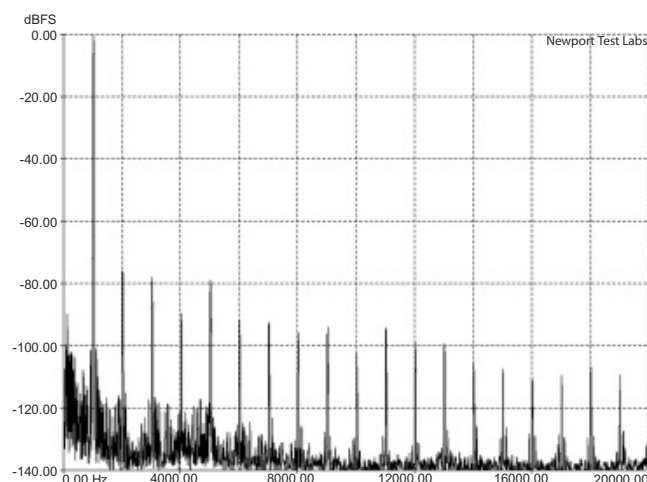
Graph 3. Total harmonic distortion (THD) at 1kHz at an output of 20-watts into an 8-ohm non-inductive load, referenced to 0dB.



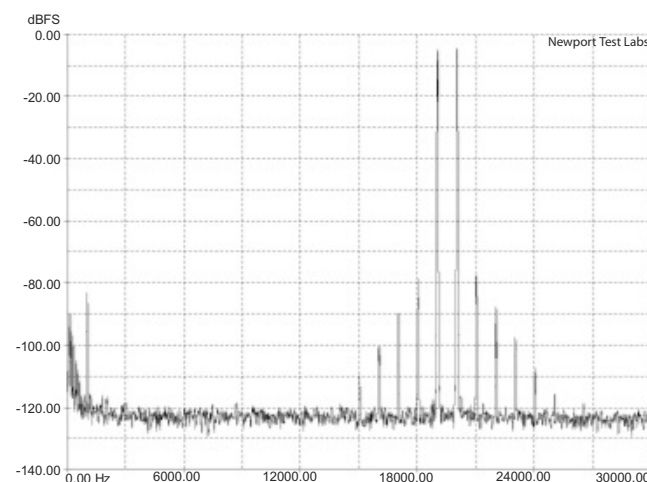
Graph 4. Total harmonic distortion (THD) at 1kHz at an output of 20-watts into a 4-ohm non-inductive load, referenced to 0dB.



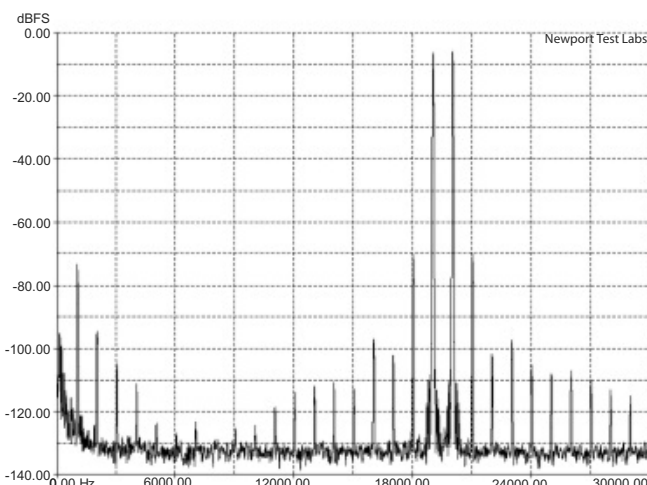
Graph 5. Total harmonic distortion (THD) at 1kHz at an output of 100-watts into an 8-ohm non-inductive load, referenced to 0dB.



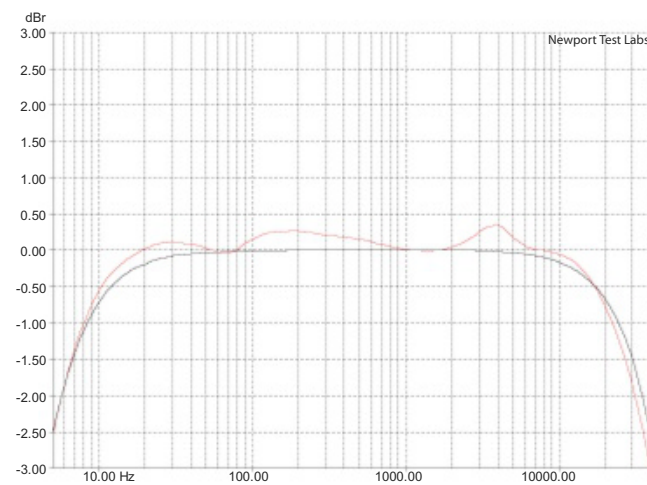
Graph 6. Intermodulation distortion (CCIF-IMD) using test signals at 19kHz and 20kHz, at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB.



Graph 7. Intermodulation distortion (CCIF-IMD) using test signals at 19kHz and 20kHz, at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB.



Graph 8. Frequency response of line input at an output of 1-watt into an 8-ohm non-inductive load (black trace) and into a combination resistive/inductive/capacitive



So, since the 2010S D's maximum long-term continuous power output into 8Ω is 75-watts, that is the output power that should be advertised as the rated (specified) figure here in Australia. The frequency response of the Exposure 2010S2 D, as measured by *Newport Test Labs*, was not overly wide, with 1dB downpoints measured at 9Hz and 23kHz, and the 3dB downpoints measured at 4.5Hz and 45kHz. The frequency response across

the audio band is shown in Graph 8. The black trace on this graph shows the Exposure 2010S2 D's frequency response into a standard laboratory test load (8Ω resistive) while the red trace shows its response into a test load that simulates the impedance of two-way bass reflex bookshelf loudspeaker. You can see that the response into the resistive load is very linear, but at low frequencies it starts rolling off at 60Hz to be

around 0.2dB down at 20Hz while at high frequencies it starts rolling off at 4kHz to be 0.6dB down at 20kHz. This is actually an excellent result, putting the Exposure 2010S2 D's 20Hz to 20kHz frequency response result at just ±0.03dB. The frequency response into the simulated loudspeaker load shows far more variation than the response into the resistive load, but the variations also mean that it gains some low-frequency extension.



Into this load, the overall frequency response measured by *Newport Test Labs* was 20Hz to 20kHz $\pm 0.5\text{dB}$, which is also an excellent result. Channel separation was measured by the lab as being 87dB at 20Hz, reducing a little to 79dB at 1kHz, and quite a bit further to 54dB at 20kHz. Maybe Exposure could work a little on improving channel separation at 20kHz, but they might not, since 54dB at 20kHz is still more than sufficient to ensure audibly perfect channel separation and also audibly perfect stereo imaging. Channel balance was 0.13dB at 1kHz.

Distortion at an output of 1-watt into 8 Ω is shown in Graph 1. You can see that there's really nothing above the ninth harmonic, and that the noise floor is more than 120dB down except at low frequencies, where power supply noise intrudes. The second and third harmonic distortion components are the most prominent, but at levels of -93dB (0.0022%) and -91dB (0.0028%) respectively, they're hardly dominant. The fifth and seventh harmonic distortion components are at -100dB (0.001%) and -103dB (0.0007%) respectively, whilst all other distortion components are more than 110dB (0.0003%) down.

Increasing the power output to 20-watts into the same load saw distortion increase in both level and order (Graph 3) but all components out to the 11th are more than 90dB (0.003%) down, and the higher-order ones more than 100dB (0.001%) down. Noise across most of the audio band drops even further, close to 120dB down, leaving power supply noise (at the extreme left of the graph) to be the major contributor to the wideband noise measurements shown in the tabulated test results: 90dB referred to 1-watt and 92dB referred to rated output.

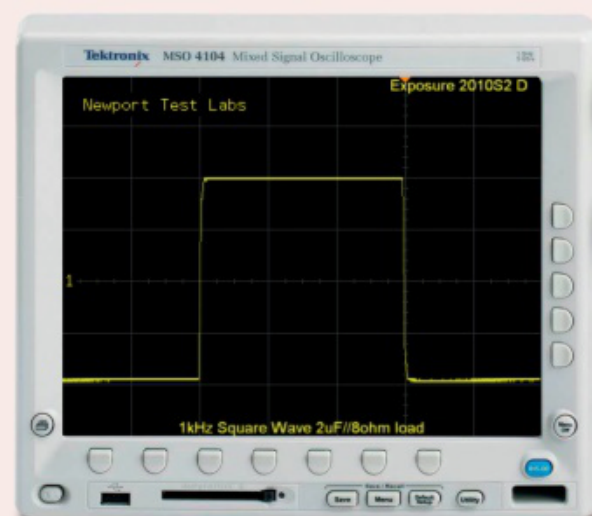
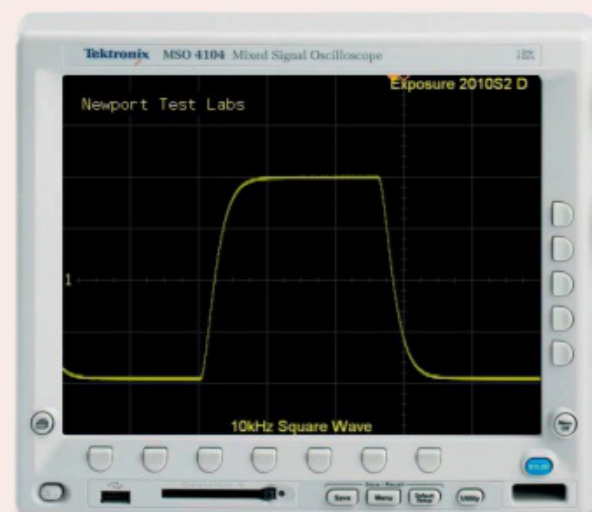
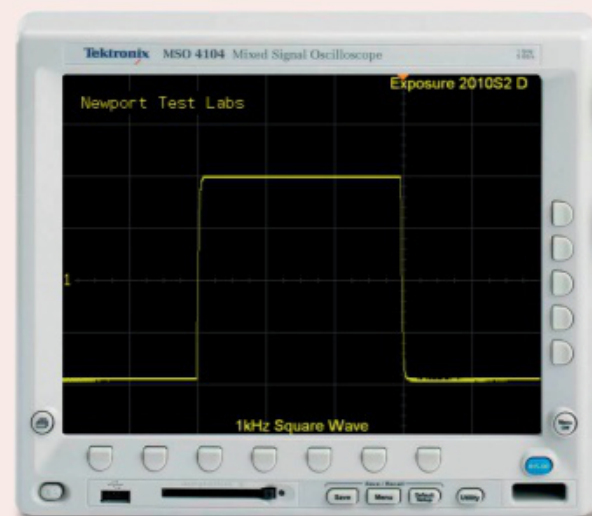
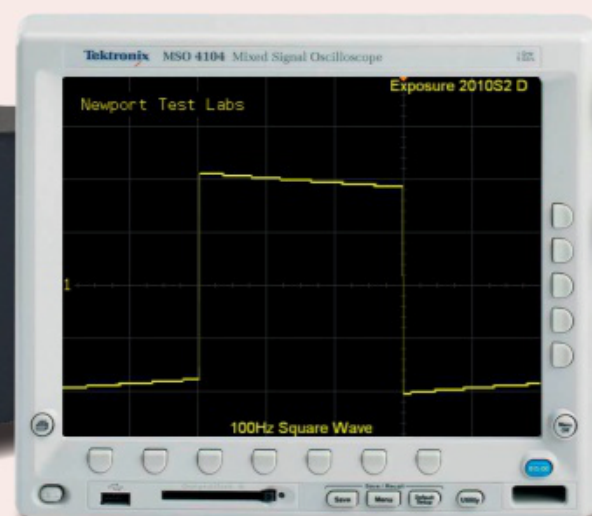
The Exposure 2010S2 D integrated amplifier delivered solid, workman-like test results

The A-weighted noise figures (which represent, in figures, the amount of noise the human ear would perceive as noise) are excellent, at 92dB A-weighted and 97dB A-weighted.

As you'd expect, distortion increases again at rated output (Graph 5) but almost all of the harmonics are around or more than 80dB down (0.010%), hence the overall THD+N figure measured by *Newport Test Labs* of 0.026% that's recorded in the tabulated Test Result figures. Distortion into 4 Ω loads was slightly higher than it was into 8 Ω loads, but roughly similar in level and harmonic distribution, so the Exposure 2010S2 D can be used confidently with lower-impedance speakers... though the measured damping factor of 80 at 1kHz would seem to suggest that a 4 Ω nominal impedance would be the lowest you'd really want to connect to its output terminals.

The Exposure 2010S2 D's square wave performance was reflective of its measured bandwidth, as you'd expect, with the 100Hz square wave showing the expected tilt that accompanies non-d.c. frequency extension, but none of the bending that would otherwise indicate phase errors. The 1kHz square wave is not perfectly formed, but there's very little rounding and the shape is otherwise good. Likewise, at 10kHz, there's considerable rounding on the leading edge but otherwise no waveform aberrations. What's particularly exciting is the amplifier's performance when driving a highly capacitive load, where you can see that it's pretty much a duplicate of the amplifier's performance at this frequency when driving a conventional non-reactive load. Amplifiers that are immune to aberrations in this test are usually identified by listening panels as having 'better sound'... irrespective of the type of loudspeakers that are used. This test result also shows you can safely connect electrostatic loudspeakers if you wish.

The Exposure 2010S2 D's line level inputs are sufficiently sensitive that you won't need to worry about being overly-careful with your selection of source components, because just 23mV at the input will produce 1-watt and the output and only 193mV is required at the input for the amplifier to produce its rated



output, putting overall gain at 43dB.

Overall, the Exposure 2010S2 D integrated amplifier delivered what I'd regard as solid, workman-like results during its time on *Newport Test Labs'* bench, with the stand-out result being its performance into highly capacitive loads, which was truly excellent. ⚡ Steve Holding



PRO-JECT X-1

TURNTABLE

When the compact disc was introduced in the early 80s, nearly everyone in the world said it was the end of the vinyl era. The CD was smaller, played for longer, was more robust and, according to co-inventors Philips and Sony, would deliver *'perfect sound forever.'* Turntables disappeared from hi-fi stores and started appearing at garage sales throughout the suburbs. Australian record companies shut down their local LP pressing plants. By the end of the 80s, more than 400 million CDs were being manufactured every year.

Meanwhile, in faraway Austria, Heinz Lichtenegger was designing his first turntable, and in 1991 established a company to build it—Pro-Ject. Seemingly against all the odds, Lichtenegger's Pro-Ject P1 turntable went on to become a success story for the fledgling company. Skip forward nearly 30 years and Pro-Ject, whose turntables are now built in the Czech Republic and Slovakia, has released the Pro-Ject X1, which it says is a direct descendant of the original P1. *'We have taken our beloved original Pro-Ject 1 design and improved it in every aspect,'* says Lichtenegger.

'The X1 is based on the same concept as the P1, but improved in every aspect thanks to modern materials and new production methods.'

THE EQUIPMENT

One key to the success of the Pro-Ject P1 was its simplicity, and another its price. Turntables had become hugely complex devices, many requiring the attention of factory-trained technicians not only to repair and maintain, but even to simply install. A few turntables even required partial disassembly simply in order to change platter speed from 33½ to 45rpm. The arrival of the P1 changed all that.

Pro-Ject has certainly maintained the element of simplicity in the new X-1. Changing platter speed from 33½ to 45 rpm is just a matter of pushing a button. It's true that it's not quite so simple to access the third speed (78rpm) available on the X-1, as this requires you to remove the platter and transfer the rubber drive belt from one pulley diameter to another, then re-position the platter, but how many 78 rpm records do you own?

As indicated by the previous paragraph, the Pro-Ject X-1 is a belt drive design, with electronic speed change on one pulley diameter, and belt-swapping required to access

78rpm. The drive pulley is directly attached to the drive motor shaft, with the motor itself being located below the platter, in a recess carved into the otherwise solid multi-layer MDF plinth. The motor is attached to the plinth via two 'engine-mount' style vibration absorbers, while a rubber belt fixed at four places on the motor prevents axial movement. The belt drives a ribbed PFT sub-platter that rotates on a stainless-steel/brass bearing atop which sits, in turn, the main platter, which is a single-piece slab of precision-machined white acrylic that tips the scales at 1.5kg that Pro-Ject claims is 'resonance-free'. Atop this sits a very high-quality felted slip-mat...a nicety I was very pleased to see, given the usual standard of slip-mats supplied by some other manufacturers.

Power for the drive motor comes from an external 15Vd.c., 0.8A plug-pack style adaptor, but this does not power the motor directly. Instead, inside the X-1 is a d.c./a.c. generator board which delivers clean, stable voltage to the drive motor. Pro-Ject says it adopted this design approach because although it costs more it: *'performs many times better than a simple, direct-powered a.c. motor.'*

As with most Pro-Ject turntables, the tonearm comes pre-installed. The arm has a

carbon-fibre/aluminium 'sandwich' arm-tube with a fixed cartridge mount and a Kardan-style four-pin bearing.

The counterweight is said to be a newly-designed 'anti-resonant' type with a built-in TPE (thermo plastic elastomer) damper to reduce the unavoidable primary cartridge/ tonearm resonance. The anti-skate device is decidedly 'low-tech' being a 'string-and-

Pro-Ject's X-1 is certainly a pretty-looking turntable, and it's also easy to use, but a turntable has to be much more

weight' device. Well, Pro-Ject did say it was trying to keep things simple! The effective length of the arm is rather shorter than I am used to seeing, at '8.6-inches' (218.44mm) rather than the usual 9-inches (228.6mm), presumably in order to reduce the size of the plinth. All other things being equal, a shorter arm will have greater tracing error than a longer one.

I do need to point out that despite the length, the X-1's arm incorporates adjustments for both vertical tracking angle (VTA) and azimuth—adjustments not often sighted at this price point. The arm's effective mass of 10-grams means it will work very well with all medium-compliance cartridges, either moving-magnet or moving-coil.

Lastly, three height-adjustable alloy/TPE sandwich construction feet allow not only a modicum of isolation from structure-borne vibration, but also allow you to level the platter, even if the surface on which the turntable is sitting is not level. Such levelling is crucial in reducing levels of wow and flutter, bearing rumble and bearing wear. Because of this, I find it surprising that so few manufacturers include adjustable feet... indeed very few even include a dustcover with their 'tables these days, but Pro-Ject is one of the exceptions, because it bundles a very nice one with the X-1. Pro-Ject also includes a set of phono cables: another essential that lots of other manufacturers expect you to shell out extra for.

Whatever painted finish you choose (and you can choose between high-gloss black or high-gloss white) the beautiful sheen you see is the result of the application of eight layers of paint coupled with extensive hand-polishing. Very nice. You can also opt for a walnut veneer. Also nice.

IN USE AND LISTENING SESSIONS

In most jurisdictions, the Pro-Ject X-1 comes with a Pro-Ject 'Pick-it S2' moving-magnet cartridge pre-installed—a cartridge that is specially made for Pro-Ject by Danish cartridge specialist manufacturer Ortofon. Here in Australia, we get to choose our own cartridge, after which we can install it

ourselves (for which I would recommend you use a Pro-Ject 'Align-It' protractor). Alternatively you can have your dealer install it for you. My suggestion would be Ortofon's 2M Red. No, it's not an expensive cartridge, and might seem a little underpowered for the

X-1, but it tracks extremely well, delivers excellent low-frequency performance, has outstanding presentation of the midrange along with very smooth and extended delivery of high-frequencies, plus it has outstanding stereo imaging. I thought it an excellent match, so that's what I installed for this review.

Note, however, that if you are going to avail yourself of the Pro-Ject X-1's 78 rpm speed, you will have to buy a second cartridge—and I'd recommend either an Ortofon 2M 78 or 2M Mono—because the 2M Red is not suitable for playing 78s.

Pro-Ject's X-1 is certainly a pretty-looking

turntable, and it's also easy to use, but a turntable has to be much more than that. There's speed accuracy, for starters. According to my strobe card, the Pro-Ject X-1 was running at exactly 33⅓ at that speed, but almost imperceptibly fast at 45 rpm which means that while a 45 rpm LP might finish fractionally earlier than it should, you won't be able to detect any change in the musical pitch... and that's even if you have perfect pitch.

As for wow and flutter, slow piano music is the best for establishing the audibility of this, and I used both Michael Nyman's 'Decay Music' and Eric Satie's 'Gymnopédies' (the version by Anne Queffélec on Virgin Classics 522 0502 is the best one to use here, I think, not only because she plays so, sooo slowly, but also because she manages to make the music sound more 'other-worldly' than, say, Pascal Rogé, whose wonderful reading is probably more true to the score—and technically perfect—but not nearly so ethereal.)

Although the Pro-Ject X-1 undoubtedly has some inherent speed variations (the specifications put these at 0.15% at 33⅓ rpm) these are not audibly detectable as either wow or flutter, so the Pro-Ject PSU, motor and drive train are obviously doing a great job... and if you can't hear wow and flutter with slow piano music, it won't be audible with any other type of music either.

As for that other *bête noire* of turntables—rumble—and I am intrigued that Pro-Ject does not include a rumble specification for any of its turntables), again, it's a certainty that it *does* have some rumble, but if there was






any, then I for one could certainly could not hear it... and neither could anyone else in my family. The X-1 does seem to allow external environmental noise in via its feet (which I discovered only after my next-door neighbour started removing his concrete driveway with a jack-hammer one morning), so if you live in a place that has lots of external vibration and you find it affects you, you'd need to invest in an isolation platform. Pro-Ject's new tonearm certainly allowed me to extract the best sound from my work-horse Ortofon 2M Red... indeed I thought it sounded as good as I've ever heard it sound, and it's been in a good many turntables that cost 'way more than what is being asked for the Pro-Ject X1. No matter what mode of music I span, it was more than up to the task of delivering totally musically satisfying performances on all counts.

On a simply practical level, I was more than happy with the quick start-up time, which brought the platter up to speed in under four seconds, and with the cueing lever which is easy to use and will also accurately drop the

stylus directly down onto the LP at whatever spot you've chosen (and do so repeatedly, if necessary). The solid plinth also means you can also easily cue by hand if you'd prefer (harder to do with a sprung plinth).

CONCLUSION

The Pro-Ject X-1 has lots of stiff competition in this price bracket including from other models in Pro-Ject's own range (most obviously the physically larger, longer-armed and slightly better-specified X-2), but if you're after a high-performance turntable with a small footprint, the Pro-Ject X-1 should see off all contenders.  *Steven Roland*

CONTACT DETAILS

Brand: Pro-Ject

Model: X-1

RRP: \$1,190 (without cartridge)

Warranty: Two Years

Distributor: Interdyn Pty Ltd

Address: Level 1, 116 Cremorne Street
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Readers interested in a full technical appraisal of the performance of the Project X-1 Turntable should continue on and read the LABORATORY 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.


LABORATORY TEST REPORT

Newport Test Labs first checked for platter speed and found that at 33 $\frac{1}{3}$ rpm a 3,150Hz test tone played back at 3,150Hz, indicating that the platter speed was exactly 33 $\frac{1}{3}$ rpm. At 45rpm, a 3000Hz test tone played back at 3007Hz, indicating that the platter was around 0.28% fast. The lab doesn't have a 78 rpm test record, so speed accuracy at 78rpm could not be checked. (This speed increase at 45rpm, by the way, would amount to a difference in pitch of around one sixteenth of a semitone, so it would be completely inaudible.)

Newport Test Labs then measured wow and flutter. The Pro-Ject X-1 returned a combined wow and flutter result of 0.06% DIN-weighted at 33 $\frac{1}{3}$ rpm and 0.05% DIN-weighted at 45 rpm. These are very good figures.

Low-frequency mechanical noise (a.k.a. 'rumble') was measured using a German-built device known as a 'rumpel-messkoppler', which attaches directly to the platter spindle and allows the measurement of noise created by the turntable's motor and bearings without interference from the inherent surface noise on a test disc. The result *Newport Test Labs* measured for the Pro-Ject X-1 was an excellent 68dB (below the reference of 3.54cm/second velocity, which is standard 0dB for an LP). This is a very good result.

Power consumption was measured by *Newport Test Labs* as 2.84-watts during normal play (33 $\frac{1}{3}$ rpm) and 9.95-watts at 45 rpm (78 rpm not measured) with a power factor of +0.43, while standby power consumption was just 0.1-watts, which is well under the Australian government's legislated maximum of 0.5-watts.

Overall, the Pro-Ject X-1 exhibited excellent measured performance. 

Steve Holding

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GOLD NOTE DS-10

DAC/NETWORK PLAYER/HEADPHONE AMPLIFIER

Gold Note is an Italian brand with a portfolio of firmly stereo high-end products. Those products cover vinyl, CD and streaming digital sources, through to amplifiers to loudspeakers. Here we're starting at the start of the audio chain with the Gold Note DS-10, a combined network streamer, DAC and headphone amplifier.

THE EQUIPMENT

The Gold Note DS-10 is a handsome piece of equipment, its case machined from quite thick aluminium sheets, the angled cooling vents adding a particular style to the unit. On the front is a 57×45mm colour display panel, an infra-red receiver, a power LED, a headphone socket and a single knob which

Gold Note refers to as an 'SKC' (Single Knob Control). Indeed, it is the only physical control on the unit, but as the IR receiver suggests, it can be controlled at a distance using the included remote control... but, as we will discover later, you'll probably be using an app much of the time to control it.

Apart from that 6.5mm headphone output, all the connections are at the back. These comprise a pair of RCA sockets for line-level output and a pair of balanced XLR outputs for higher-end equipment. The rest of the connections are digital inputs. There are no analogue inputs that would otherwise have allowed you to use the headphone amplifier function with analogue source devices. Those inputs (with the maximum rated format support) are:

- USB Type B for using the unit as a USB Audio Class 2 DAC (32-bit, 384kHz PCM and DSD512, i.e. 4 × DSD)

- USB Type A for plugging in USB storage carrying music (24-bit, 192kHz PCM and standard DSD64)
- Coaxial digital audio (24-bit, 192kHz PCM)
- 2 × optical digital audio (24-bit, 192kHz PCM)
- AES/EBU digital audio (24-bit, 192kHz PCM)
- Ethernet (24-bit, 192kHz PCM and standard DSD64)
- 802.11b/g Wi-Fi (24-bit, 192kHz PCM and standard DSD64)
- Bluetooth

There's a three pin 240-volt power socket on the back, but there's also a proprietary multi-pin socket to which can be connected an optional outboard power supply unit that Gold Note says will improve the DS-10's performance.

This PSU will not be available until later this year. Inside the DS-10, digital-to-analogue conversion duties are performed by an AKM AK4493 DAC chip. This supports PCM up to 32-bits/768kHz along with DSD512 natively.

CONTROL AND INFORMATION

The display gives a full accounting of what's happening with the system. At top left is file format and sampling frequency. Below that is what looked to be Line-out/Phones selection, with a switch for on or mute next to that.

The 'Mconnect Control' app, on the other hand, worked exceptionally well throughout

You can have both outputs going, neither going or one or the other... or you can accept the default, which means that inserting a headphone plug will mute the line outputs. There's also a high/low gain setting for the headphones, although it sounded to my ears as though there was only 3dB difference between the two levels. The main part of the screen shows the output level in large figures if you're using headphones, or the letters 'DAC' if you're not.

At the bottom of the display is the input selection and a new addition (with Firmware V1.30): tweaks for high-frequency de-emphasis, a PCM EQ curve and something to do with the 'internal power of the DAC'. Gold Note calls these 'chameleon' functions. I left all these switched off throughout my subjective and objective evaluations.

You control the unit mostly with that single SKC knob. The remote (mostly) replicates the same control actions. I found the SKC a little unwieldy. To change input, you press the knob (which puts a white square around the big number in the middle of the display) then turn it one click to the left, which moves the square to the input name. You press the SKC again to switch the box red, then you turn the SKC until the input you want is shown, after which you press the SKC again. Phew!

SET-UP

I had quite a few problems setting up the Gold Note DS-10. The first was downloading the network audio control app. And the reason for this was simple: an inadequate instruction manual.

The manual said 'Scan the QR Code to download the iOS or Android DS-10 Remote Control App or search "Mconnect control" in the relevant app store.' There were two QR codes, one for each store. I scanned the Android QR code and was taken instantly to the Play Store page for the Gold Note DS-1000 Remote app. That seemed about right. I installed that and started it. It spun a search wheel for a few seconds and came up empty. I had already plugged the DS-10 into Ethernet and switched it on. There were no controls in this app other than a button to scan again. It continued not to find anything.

Well, if that didn't work, what was that about 'Mconnect Control'? I searched the Play Store for that, rapidly found it, and installed it. This was some kind of player. It seems that

a number of different network devices use the protocols controlled by this app. I tapped on the settings cogwheel, then Device Setup, and it instantly found the DS-10. I used the 'Browse' function in the app to select my music server and set some music playing. It came out of my phone, but there was a 'Play to' button as well, so I tapped that, chose the DS-10 and immediately the mellifluous tones of Alice Cooper started coming out of the system into which I had plugged the DS-10.

As for the Gold Note app—you know, the one that the QR code in the manual took me to—it still couldn't find the DS-10. In fact, I never found a use for that app. It just didn't do anything. The 'Mconnect Control' app, on the other hand, worked exceptionally

well throughout, but in its extensive settings section it reported that the firmware for the Gold Note DS-10 was up to date. Except that it wasn't. I stumbled across an update on the Gold Note website from V1.20 to V1.30.

The update process didn't seem particularly onerous, though it was rather old-fashioned. I had to dig deeply into my cables cupboard to find a Mini-B USB cable. I haven't used one of those for years. It involved downloading the update files, switching off the DS-10 and plugging it into my computer. In that mode it appeared to my computer as a flash drive. You then copy the files from a particular folder (wrongly named in the PDF instructions, but it's still fairly obvious) to that 'flash drive', overwriting the ones there. When you turn it back on, you're supposed to get an update warning for a few seconds, and then it will switch off, job done.

Except that when I switched it back on, it hung. I repeated the process again and again it hung. In the end, I pulled the power cord—always an iffy thing to do during a firmware update—and plugged it back in again. And then the warning briefly flashed. That completed the upgrade.

The instructions for this kind of thing ought to be clear and accurate. I am experienced and the stakes are low for me. But for someone who may never have had to do this kind of thing before, and who has thousands of dollars' worth of investment on the line, this would not be a pleasant process.

USB DAC

So now I had the Gold Note DS-10 up-to-date in the firmware department, and I had control and the ability to send network music to it. Time to get that other important function going: it working as a USB DAC.



I downloaded the drivers and installed them to my Microsoft Surface Pro 2017, which I always use for this purpose. Two sets of drivers were installed. There was the Gold Note USB-DAC Driver 1.0.57 and the Akamai ASIO driver. Generally the former supports the Direct Sound audio systems of Windows, plus the WASAPI interface which allows some software to directly feed sound to external hardware. The Akamai ASIO driver does not support Direct Sound, but it writes directly as well to the hardware. It's generally via ASIO that one feeds DSD.

They didn't work. It seems there was some problem with the digital signature, so Windows wouldn't run the drivers. Gold Note provided me with an updated driver—V1.0.62—and this one worked, but was a bit flaky. Basically, it worked perfectly with PCM at 44.1kHz, 48kHz, 88.2kHz and 96kHz and with standard DSD64. But there were weird noises going on with PCM at 176.4kHz, 192kHz, 352.8kHz and 384kHz, and with DSD128 and DSD256, with that last barely getting through at all.

I expect that the Windows drivers will be improved to fix this issue. I am confident of that because all of those signal standards—other than DSD256—worked perfectly when I used a Mac. I am also confident they will be improved because I admire the responsiveness of Gold Note's support team. As I smacked into technical obstacles—such as the Windows drivers not working and the firmware update failing—I emailed support at the Gold Note head office and within hours each time received a substantive email response. That is what I like to see.

No drivers are required for Macs, and the Gold Note DS-10 was immediately detected by my Mac Mini. It reported support for 32-bit PCM at up to 384,000 Hertz. And, unusually, down to 32,000 Hertz.



My player software doesn't support DSD256 fed directly to a DAC, so I couldn't test that with the Mac.

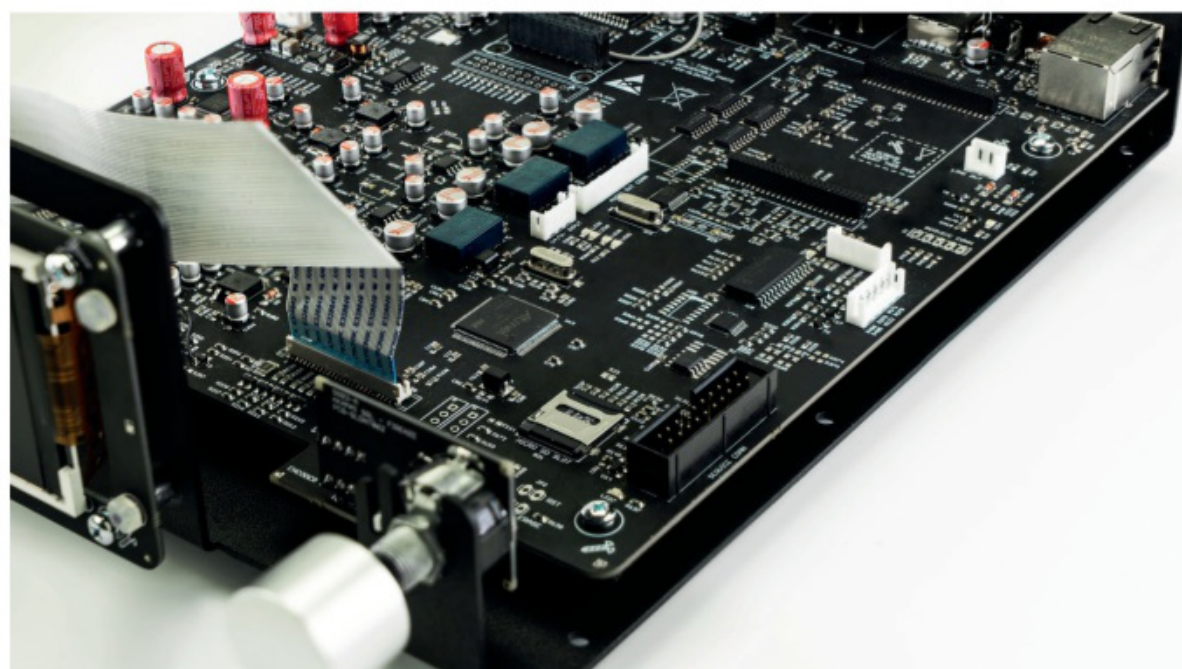
LISTENING

I used four different sets of headphones for most of my listening with the Gold Note DS-10: Focal Elear over-ear dynamic open-backed models, Beyerdynamic Amiron Home

dynamic open-backed models, Oppo PM-3 planar magnetic closed-backed models, and Audiofly AF180 Mk 2 in-ear monitors. Those last are possibly the most complex, employing four balanced armature drivers per side with a three-way crossover.

In all cases, the Gold Note DS-10 DAC delivered a magisterial performance. It was on top of everything.

A Don Burrows Quintet live recording from 1983 was glorious. Almost certainly analogue recording equipment was used, but it was at the peak of development before the takeover by digital. With the Audiofly IEMs, there was an extraordinary transparency to the sound. It was as though a direct wire connected my humble Canberra home with the Hamer Hall in Melbourne across 800 kilometres of distance and 36 years of time. The clarity of intonation of Burrows' clarinet and guest James Morrison's trombone (yes!) on *Tin Roof* was kind of thrilling. As Morrison pulls back a little from the microphone during his crescendos, the slight increase in reverberation was revelatory. The authority of the Beyerdynamic headphones—these are 250Ω models—pushed by the DS-10 was flawless with some Telarc-recorded Bach.





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You're unlikely to find any headphones on the market that the Gold Note DS-10 can't drive cleanly to any volume level

That's Bach on a pipe organ with a 16Hz C-Pedal. Enormously recorded and enormously delivered by the Gold Note DS-10.

'Yes' from the early 1970s, Kanye West from the mid-2000s, plus a huge amount of material in between were delivered as well as they could be.

The unit supports MQA, although it surprisingly does not give an obvious visual indication of this on its front panel. And, as always with MQA, it's a bit hard working out exactly what's going on. For example, playing the 'M' (Master) version of Smashing Pumpkins' *Mellon Collie and the Infinite Sadness* on Tidal, the app clearly indicated MQA and said that the stream was 24-bits and 96kHz (and that the bitrate was 1694kbps, for what that's worth) but the DS-10's front panel reported the audio as 'PCM 192kHz'. Was the app doubling things?

But when I played some test MQA music I'd downloaded, the app reported MQA, 24-bits and 352.8kHz sampling, but the front panel showed 176.4kHz. So perhaps the app was reporting the coded music but was not performing the last unfold.

Another test track that the app reported to be 44.1kHz was also shown as 176.4kHz on the front panel, while a further 44.1kHz one was shown as playing back at 44.1kHz by both the app and on the DS-10's front panel. Clearly the unit is doing something with MQA, and they all sounded fine.

Finally, I should mention that when I connected my phone to the Gold Note DS-10's Bluetooth facility it established an aptX HD connection, so it's using one of the highest quality codecs around.

MEASUREMENTS

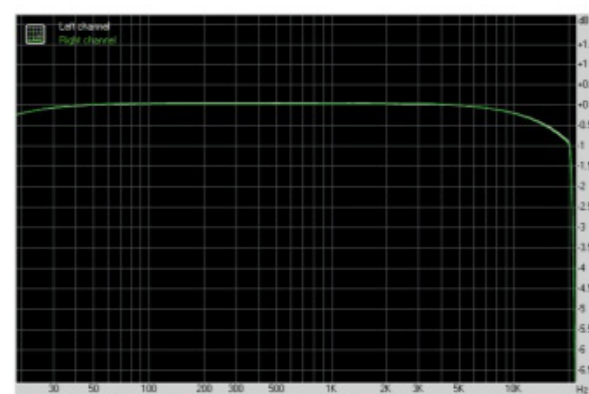
For objective measurements, I first looked at the headphone output levels. If you never exceed an indicated volume level of 83 on the scale—it goes to 100—then you simply won't run into any problems with headphone loads of 16Ω and up. The output won't clip at that volume setting, and will provide you with enormous quantities of power. Into a 15.9Ω test load at that same volume setting, the Gold Note DS-10 delivered a little more than 3-volts RMS, or 590mW, or 27.7dB more than the sensitivity rating of your headphones.

(Fun fact: that suggests that the Audiofly IEMs, with their 16Ω nominal impedance, ought to be able to deliver 131dB SPL with the Gold Note DS-10.)

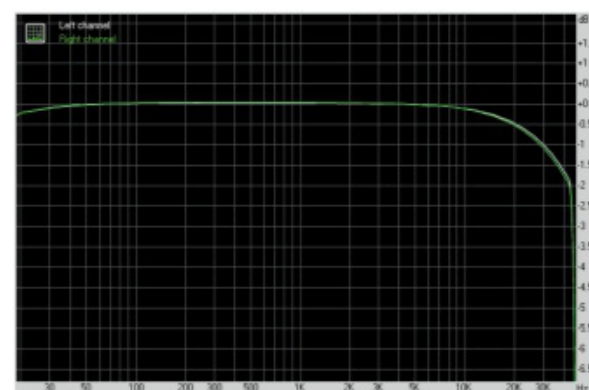
With high-impedance headphones, the Gold Note DS-10 produced even more: around 4.9-volts RMS for 80mW and 19dB more than the sensitivity rating of your headphones. If you turn the level control to more than an indicated 88, then even into an open circuit the output starts to clip (with a signal that uses the full digital scale). I like that. Sure, silly people can overdo things more readily. But it means that you'll always have plenty of gain on tap, even for the lowest-modulated material.

Basically, what it all means is that you're unlikely to find any headphones on the market that the Gold Note DS-10 can't drive cleanly to whatever volume level your heart desires.

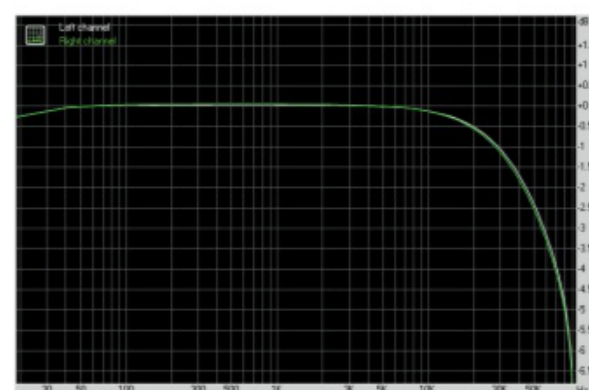
I calculated the DS-10's headphone output impedance at 10Ω. That's a little higher than I'd like, but it's low enough that the influence on most headphone's frequency balance should be minimal... apart, perhaps, from those 'phones which have a nominal impedance that's lower than 16Ω.



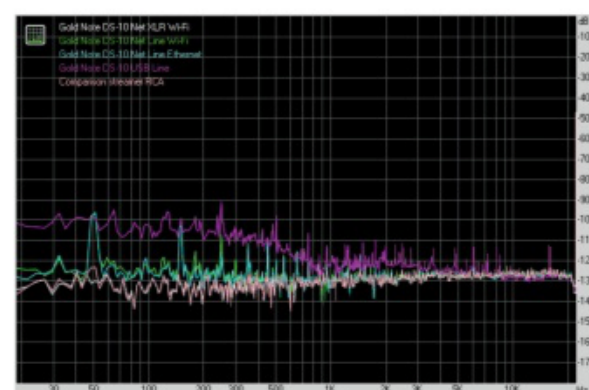
Graph 1. Frequency response using 16-bit/44.1kHz test signal. Left channel (white trace) vs. right channel (green trace).



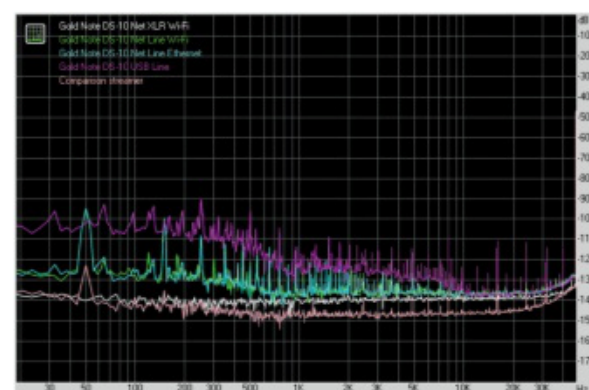
Graph 2. Frequency response using 24-bit/96kHz test signal. Left channel (white trace) vs. right channel (green trace).



Graph 3. Frequency response using 24-bit/192kHz test signal. Left channel (white trace) vs. right channel (green trace).



Graph 4. Noise floor vs. frequency at 16-bit/44.1kHz. Wi-Fi/XLR (white trace), Wi-Fi/Line (green trace), Ethernet/Line (blue trace), USB/Line (purple trace), set-up cross-check (pink trace).



Graph 5. Noise floor vs. frequency at 24-bit/96kHz. Wi-Fi/XLR (white trace), Wi-Fi/Line (green trace), Ethernet/Line (blue trace), USB/Line (purple trace), set-up cross-check (pink trace).

Pioneer

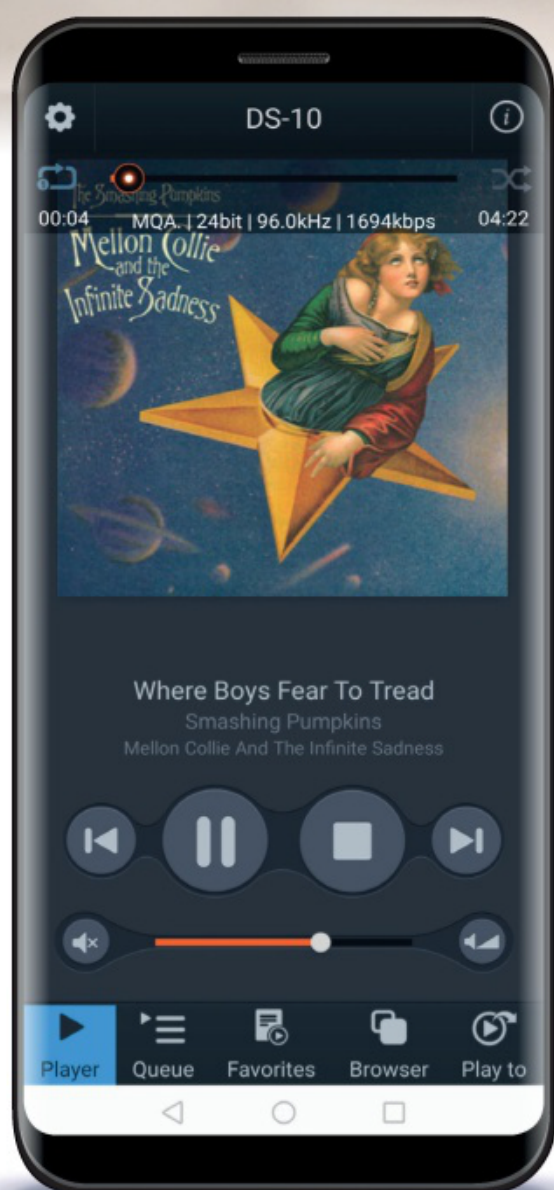
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I then measured noise and the frequency response from the line and XLR outputs. With 24-bit audio, the noise levels varied according to output connection and the audio source. The best performance was with audio fed via the Wi-Fi network and output via balanced XLR: it came in at -107.2dB A-weighted. With the RCA outputs it fell to -102.3dB A. Isolation from noise on the Ethernet cable was good, with virtually no difference between whether the input was coming via Ethernet or Wi-Fi. Noise performance dropped markedly when I used the unit as a USB DAC, with a


Mac Mini running proceedings, coming in at -90.5dB A, or somewhat poorer than I'd normally expect for 16-bit audio. Even with 16-bit audio, the outputs and inputs made quite the difference. The best combination was again XLR output/network input, with a signal-to-noise figure that's about as good as it gets: -97.5dB A. Same input but with RCA output, that noise level increased by a seemingly modest amount to -96.6dB A. Again, there was no significant difference between Wi-Fi or Ethernet. And for USB? A mediocre -89.1dB A, with 20dB more noise over much of the bass.

When we look at the graph, we see that the RCA outputs featured plenty of 50Hz (mains frequency) break-through—along with its harmonics—whereas the XLR output showed none. But, then, a comparison streamer's RCA outputs I measured to cross-check my test rig didn't show any either. So, somehow, the RCA outputs of the Gold Note DS-10 are internally picking up something from the mains. But—and I must stress this—bumps on a graph don't necessarily mean that anything is audible. I couldn't hear anything, and I knew exactly what I was listening for. So although the measured noise levels may not be up there with the best in terms of the numbers, I think we've long since gone beyond the human ability to hear such low noise levels as these. So their impact on musical performance? Zero!

Gold Note has gone for one of the slow roll-off filters in the AK4493 (there are several it could have selected between... or offered optionally). With 44.1kHz sampling, the one chosen by Gold Note basically starts to roll off around 6kHz and is down to almost -1dB at 20kHz, falling away sharply thereafter. Oddly, there's also some bass droop, although it's only 1dB down at 9Hz. With 96kHz sampling,

the frequency response theme was similar: a slow roll-off to be down by 1dB at 30kHz and by nearly 2dB at 43kHz, then the brick wall. Take that line and continue the trend with 192kHz sampling: -3dB at 58kHz after which it wasn't until 86.5kHz that -6dB was reached.

CONCLUSION

I found the musical performance of the Gold Note DS-10 to be absolutely delightful. 

Stephen Dawson



CONTACT DETAILS

Gold Note DS-10 DAC

Brand: Gold Note

Model: DS-10

RRP: \$4,995

Warranty: Two Years

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MAKING MUSIC IN DENMARK

BY **ROD EASDOWN**

When Rod Easdown toured Dynaudio's new factory in Denmark, during a visit sponsored by Dynaudio's Australian distributor, BusiSoft AV, he took time out to tour Denmark's most famous music venue and was amazed by everything he saw, and heard...

The organ in the Aarhus Musikhuset, the Aarhus Music House, has 3,200 pipes. If you're into organs this is an impressive number. Only a fraction of them are on display, and when it was being installed the folk doing it told everyone here that an instrument is not an instrument unless you can walk around in it. This organ can go down to 16 Hertz, a bass note that is so low in pitch that you feel it rather than hear it. It thoroughly earns the adjective that is thrust on so many lesser organs; this is indeed a mighty organ.

I listened as Mussorgsky's *Pictures at an Exhibition* was played on it, a very loose transcription to be sure but really interesting, and the 16 Hertz depth was plumbed three times. And each time all the hairs on my neck and arms stood rigidly to attention. This was truly exciting music and the most interesting thing about it was that I wasn't in the concert hall at the time, I was downstairs in the recording control centre of the House listening to the rehearsal through a chain of microphones, analogue to digital converters, optical fibre cables, mixing equipment, digital to analogue converters, amplifiers and finally, two monitor speakers built to specification by the

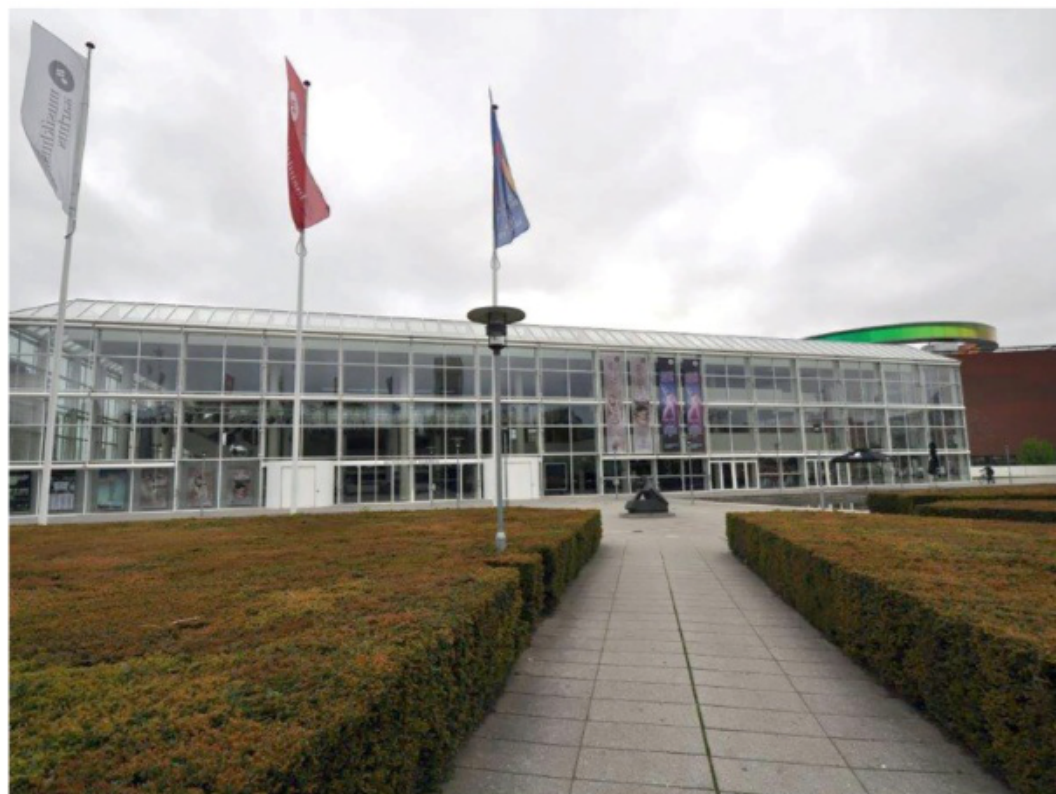
speaker manufacturer just down the road, a place called Dynaudio. There may be many a slip twixt cup and lip but none of them were in evidence in this chain of equipment, a fact that truly came home a few minutes later when I went into the concert hall and listened to the rest of the rehearsal with the organ right there in front of me. The sound was identical.

The Aarhus Music House is an amazing place not least because it's in Aarhus, a city of just 300,000 in central Denmark. Its restaurant serves the best smorrebrod, Denmark's traditional open sandwiches, I've ever had, and I've had lots of smorrebrod. Inside the Aarhus Music House there are 500 rooms, four concert halls, a music school, a recording studio... I even spotted a ping-pong table. The recording facilities are enough to drive your average muso into fits of the greenest envy. Because the concert halls are all wired you can place the various components of a recording in the acoustic that best suits them. Choirs can go to the one with the airiest acoustic, woodwinds to another, strings to the third and percussion by itself in the fourth. It's all controlled in a single control room that's packed solid with monitor speakers, panels, amplifiers and computers throwing to a couple of huge screens. The guys in here talk about microphones like most guys talk about women. The control room is down amongst a cluster of soundproof rehearsal rooms, the little red lights outside each door telling you that work is going on in there and no disturbance is to be tolerated. The number of red lights illuminated on the Tuesday afternoon I was there was sufficient to tell me that Aarhus is a town that takes its music seriously.

So seriously that it controls the temperature and humidity of the main concert hall, taking 3,000 people, close enough to suggest that it never changes at all, even when 3,000 large, soft bodies shuffle in and settle into the acoustically neutral seating. It does this by having a vent under every seat and a massive air expulsion system above.

It thoroughly earns the adjective that is thrust on so many lesser organs; this is indeed a mighty organ.

AARHUS MUSIC HOUSE



At full stretch this system can completely change the air inside the hall every ten minutes, and even when it's operating flat out it remains entirely silent. Well, silent in the concert hall anyway.

The sharp-eyed among you may have noticed in the picture that the walls are both grey and red. The wall panels are interchangeable and each colour has a different rate of sound absorption and reflection. In some concerts the reds out-number the greys, when I was there the grey was dominant. Or it can be all red or all grey. It varies depends on the music being played.

The performer's dressing rooms have received special attention, the idea being that if performers enjoy their experience in Aarhus they'll tell other performers who will then want to perform here, bringing their fans and their kronor. So the rooms are large and well-

equipped with couches, easy chairs, make-up mirrors and, interestingly, a Marshall amplifier and speaker built into the wall. Ask why these are here and you discover the great secret of the Aarhus dressing rooms—the Marshall equipment is nothing but a disguise worn by the fridge door.

There's a can-do attitude in this place that is inspiring. A visiting Chinese theatre requested that, if possible, a traditional Chinese ornamental lake be part of the set, expecting the usual offering of chipboard and silver paper, but in here they converted the orchestra pit into an actual lake, importing 40,000 litres of water, a couple of dozen carp and even a few live ducks that were free to fly around as they desired (six tuxedos required dry cleaning). When another performer requested a couple of camels on stage they were duly rented from a local theme park,

trucked in and led down the narrow staff hallway to the stage entrance, redesigning the light fittings along their way. The Bolshoi has performed here and brought its own tried and true solution for a stage surface its dancers regarded as too slippery. They went to the 7-Eleven and bought litres and litres of cola soft drink, then mopped the stage with it and left it to dry. Nice and sticky.

Nigel Kennedy has played here. He booked the orchestra for two days of rehearsals and didn't turn up for either of them, arriving at the House only minutes prior to the first performance, during which he turned his back to the audience for the entire concert because he likes looking at his 'band' while he plays. When you're as good as he is you can do this kind of stuff and still get a standing ovation. Best not to try it until you're as good as he is. ⚡ Rod Easdown



BLUE SATELLITE

ACTIVE NOISE CANCELLING HEADPHONES

Blue Designs is a Californian company manufacturing in China, though last year it became part of Logitech, which is Swiss... and just to confuse things even more, BLUE is actually an acronym for Baltic Latvian Universal Electronics. Australian pricing seems, well, variable. Harvey Norman online sells at \$697 (not available in-store); Kogan has the black ones at \$599 and I've seen Dick Smith advertise the white/brown version at \$419! Their quality is self-evident; I love the golden-age-of-radio logos which are LED indicators, each surrounded by three control buttons, and the aviator-style ear-pods—it's classic and modern at the same time. They feel rock-solid with their solid yet pivoting yokes, which make for safe and solid storage even without the high-quality solid bag provided, which has the sole disadvantage of size, being far larger than the cases for key rivals such as the Bose QC35 or Sony WH-1000XM3. Yet I shifted them around case-less for a full month, cables attached, without them suffering so much as a scratch, and they're nicely compact carried like that..

NEW ANC TECH

For noise-cancelling Blue claims an 'all-new patent-pending ANC technology'—I was expecting a burst of marketing speak, so was impressed to discover a genuinely new idea. The Satellites have an extra pair of 30mm drivers dedicated solely to the noise-cancelling, while the main 44mm drivers just play the music. Other noise-cancellers overlay the cancellation

on the music signal; Blue's solution is NC on the side, instead of mashed in with the main meal. It's easy to see how theoretically that removes a layer of additive processing, not only maintaining the purity of the signal, but potentially speeding up the cancellation process, which would make it more effective at every frequency and also able to operate to a higher frequency. Conversely the use of smaller drivers might limit NC operation at lower frequencies. But the point is that you get pure music, acoustically mixed with separate noise-cancelling.

One bonus from this system is that unlike almost every other NC headphone on the market, there is no significant change in sonic signature in playback between NC-on and NC-off (just an audible pop as you turn it off). Nor does invoking the active amplification much affect the sound; this uses what Blue describes as an 'audiophile' amplifier, and unusually it is analogue, quoted with a miniscule THD+N for the amplifier of 0.0055% (at 1kHz), while the overall headphone design scores a reasonable THD of <0.5%. Turning on the amplifier adds about 4dB of level, but the sound quality doesn't radically change.

And that's a good thing, as the Satellites sound tight and impeccably balanced in every mode. They're not bass monsters; they don't over-emphasise the low-end, rather there's a realistic and solid low-end to support an engaging midrange with no gaps, and no bloom in the lower mids. While the smallish closed earpods preclude the most shimmering highs obtainable from open or electrostatic or planar designs, the Blue Satellites deliver natural and musical sound.

There's plenty of level, too, with the amplification circuit providing a boost that allows even quieter tracks to be enjoyed over the NC-muted noise of the daily commute. For the final steps of volume you need to use the on-ear controls; there's more there even after your mobile's volume controls top out.

The Satellites charge via microUSB in around three hours, and Blue quotes 24 hours use with just Bluetooth, or eight with Bluetooth, the amp and the NC. They'll work passively for ever with the cable, of course, though you can also invoke NC and amplification through the cable and, as is invariably the case, this delivered their best sound, with extra dynamism and an unveiling of, say, Lou Reed's vocal on *Walk on the Wild Side*, which via Bluetooth is slightly duller, less edgy in its cut-through. Cabled use similarly opens up detail on Leonard Cohen's difficult vocal on the O2 live version of *Tower Of Love*. There's simply more information available via the cable, and you can hear it. But this isn't a model where the difference is black and white; I was happy living wirelessly.

The NC also works well; it's less full-on than the market leaders from Sony and Bose but it's also minimal in its 'suck-out' effect. Equally importantly you can turn it off—noise-cancelling is great for noisy places, of course, but in quiet places you should turn it off so you get a less compromised sound. (Some designs don't let you turn NC off, which is bonkers.) You can also use them for making phone calls, using the play/pause button to accept or reject calls.

CONCLUSION

All in all, then, an unimpeachable clean sheet for these wireless noise-cancellers. Blue's Satellites are not for bass-heads or head-bangers, nor are they inexpensive, but for those who love well-presented wireless music they present a finely poised musical combination of sound and silence. ✈ Jez Ford

CONTACT DETAILS

Brand: BLUE

Model: Satellite

RRP: \$699.95

Warranty: One Year

Distributor: Pacificomm Australia Ltd

Address: 1/39 Laser Drive, Rowville, VIC 3178

T: 1300 856 823

W: www.pacifcomm.com.au



- Unique noise cancelling
- Natural, musical



- Large storage case



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MERIDIAN – THE FUTURE OF SOUND, TODAY

For more than 40 years, Meridian has pushed boundaries, disrupted norms and delivered products that have shaped the industry and redefined how people experience sound.

In 1983, Meridian Audio was the first British company to manufacture a CD player, and in 1990, the first to introduce for the domestic market active loudspeakers with power amplifiers inside the cabinet. Meridian created the first digital surround-sound processor, and the first loudspeaker using Digital Signal Processing. All of these have been acclaimed for their performance, winning awards around the world. The technology Meridian has developed is now being used by other companies globally, defining how we experience home entertainment today.

The number of unique technologies developed over the course of the company's history is impressive in itself. That these technologies have set standards for the rest of the industry goes even further to prove a reputation for innovation and the pursuit of

perfection. One particularly notable example is the Meridian Lossless Packing standard used in DVD-Audio as well as the sound on High-Definition formats including Blu-ray.

Through constant development, evolution and refinement, Meridian has worked to create compact hardware and speakers while simultaneously advancing the capabilities of its processing technology to increase the quality of audio output. Now well beyond its 40th year, Meridian remains at the forefront of innovation — and shows no signs of slowing down.

HOW IT BEGAN

Meridian was founded in July 1977 by J. Robert Stuart, known to his friends as Bob, and Allen Boothroyd. Allen and Bob had worked together as consultants since the early 1970s; their early projects

included the famous Lecson Audio product line (pictured right), which remains on permanent display in the New York Museum of Modern Art and for which they won their first British Design Council Award in 1974.




Then as Meridian, the company product line grew steadily into a complete 100 Series, for which the company received a second British Design Council Award in 1982.

Bob Stuart was involved in the very early stages of the development of Compact Disc through his connections with Philips in Holland, so that in 1983, Meridian launched the first CD player to be made in Britain.

In 1986, the first products of a new 200 Series were launched — “the intelligent high fidelity system”, as Meridian called it, and it grew to include a whole range of domestic hi-fi plus digital-to-analogue converters and a range of multi-room components. The 208 CD player introduced Meridian's newly developed proprietary coherent-differential Bitstream Conversion, and a pioneering series of active loudspeakers was developed and brought to market, followed in 1989 by the world's first digitally-driven loudspeaker — the D600. The D600 up-ended conventional notions of what constituted a hi-fi system, just as today Meridian's latest 210 Streamer (see reviews overleaf) can partner with any of Meridian's

WE WILL CONTINUE TO CHALLENGE CONVENTION TO ENRICH PEOPLE'S LIVES

Much has changed since Meridian first opened its doors in 1977. Our core philosophy hasn't. This remains as strong as ever and will continue to fuel our efforts to truly revolutionise how we experience sound.

1977  ★ Meridian M1 Loudspeaker	1983  ★ Meridian MCD / Meridian MCD Pro	1986  ★ Meridian 200 Series	1989  ★ Meridian D600	1993  ★ Meridian 500 Series	1997  ★ Meridian 800 Series	2003 ★ Meridian 420	
1978  Meridian 100 Series	1985  ★ Meridian D10	1988 ★ Meridian 200 Series Multiroom	1990  ★ Meridian 600 Series	1991  ★ Meridian D6000	1997  Meridian Lossless Packing (MLP)	2000  Meridian DSP8000	2004 ★ Meridian G Series

The unique Lecson products produced by Boothroyd and Stuart prior to founding Meridian.



active speakers to make a complete system, nothing else required. “All communication and control is by handset from the listening position,” said Meridian back in 1989. The company had invented the future of audio.

DIGITAL INNOVATION

In 1994 the company entered the emerging home theatre market with another first, the Meridian Digital Theatre concept, its success including the winning of more than 10 awards in their first 12 months of production.

The custom installation market was further served the following decade by a new line of 300 Series in/on-wall loudspeakers and C Series components, paving the way for Meridian’s Architectural series today (see reviews).

The company’s 800 Reference Series was introduced in 1997, another new and forward-looking concept for hi-fi, being designed as “a card-based Audiophile Digital Computer”.

The development of software control took a leap in 2008, following a short period of collaborative development, when Meridian successfully acquired Sooloos LLC, a manufacturer of server-based home entertainment systems widely acknowledged as the most innovative and sophisticated available, and a forerunner of today’s Roon.

A 17-inch touch screen controller, the Control 10, was the first of a growing range of products to integrate the powerful features of the Meridian Digital Media System with Meridian’s class-leading audio systems.

The future is bright for Meridian Audio as it enters its 43rd year, with the ongoing development of its compact 200 Series, a new line in unrivalled Architectural in-wall and in-ceiling active speakers, and a continued dedication to delivering superb hi-fi and multichannel components and digital active loudspeakers that offer a different, single-based approach to delivering the highest levels of entertainment in the home.

THE MERIDIAN LOUNGE

The ‘Meridian Lounge’ concept brings together Meridian dealers in Australia who have the highest knowledge of Meridian’s unique solutions — established experts in crafting and delivering innovative, elegant, high performance audio-video solutions. They will listen to your needs, and explain how Meridian’s unique approach can address them.

Meridian has always challenged convention. For more than 40 years, Meridian has pushed boundaries, disrupted norms and delivered products that have shaped the industry and redefined how people experience sound.

At your nearest Meridian Lounge, you can experience that difference, and discover how your life and home could be enhanced by these unique yet simple technologies, creating moments that bring people together and forge shared connections.

✦ World’s firsts Meridian has always challenged convention. For more than forty years, we have pushed boundaries, disrupted norms and delivered products that have shaped our industry and redefined how people experience sound.

2007 Meridian F80	2009 Meridian Sooloos	2011 Land Rover	2012 ✦ D Surround Sound System	2013 Meridian Prime Headphone Amplifier and Meridian Explorer	2014 Master Quality Authenticated	2016 ✦ Meridian 808V41 CD Player	
2008 Meridian 810 Reference Video System	2010 McLaren Automotive	2012 Meridian M6	2012 Jaguar	2013 ✦ Meridian Special Edition loudspeaker range	2014 Meridian Explorer ² ✦	2016 Meridian 200 Series	2017 Meridian Ultra DAC

MERIDIAN SPECIAL EDITION DSP5200 LOUDSPEAKERS

It needs a shift in thinking to consider Meridian's digital active speaker solutions. But it's precisely those differences that make them so attractive.

Many companies have come to accept that — especially in today's largely digital world — it makes sense to keep audio signals digital for as much of the system chain as possible. Volume adjustment, tone and even complex EQ can be calculated in the digital domain without the distortions introduced by analogue components.

What's remarkable about Meridian in this regard is that it started doing this not a few years ago like everyone else, but nearly three decades ago. Its first 'digitally-driven' D600 loudspeaker appeared in 1989, the DSP6000 in 1991. So while most companies are still learning the art of digital-domain processing and fine-tuning the results, Meridian has already had 30 years to evolve the techniques embodied in its

UPGRADE TO 'SE'

An upgrade path is available for owners of previous Meridian DSP loudspeakers.

The DSP5200, DSP7200 and DSP8000 models — including the Anniversary Edition — can be upgraded with the new Beryllium-domed tweeter and a complete new electronics and DSP package. This upgrade option also includes a full new warranty for the entire loudspeaker system. Contact your Meridian Lounge dealer for full details.

21st-century range of what it refers to as its 'DSP loudspeakers'.

The top of those DSP loudspeakers is the Special Edition DSP8000, standing 135cm tall, with each cabinet weighing 105kg. But here we have the perhaps more easily accommodated Special Edition DSP5200, less than a metre tall, and a distinctly more manageable 35kg each. Meridian makes the point that it's with such smaller speakers that the DSP can really come into its own, by enabling the delivery of great things from the smaller cabinet size.

The pair we reviewed were in an entrancing piano gloss white, which oozed quality while neatly disappearing into today's modern décors with a minimum of impact. Black is the other standard colour available. But any of the Special Edition range can be ordered in the purchaser's choice from 270 'Meridian Select' colours.

A reminder here that the amplifiers are part of the speakers, and are driver-specific in that they form a completely matched audio system. Also inside the 'speakers' are DSP crossovers, again optimised precisely to the known driver characteristics, but also adaptable to the owner's requirements to allow room optimisation, even to tweak according to the material being played. The digital-to-analogue converters, too, are inside the

DSP5200SE cabinets. So the inputs to the Special Edition DSP5200 speakers are not analogue speaker terminals, but digital RJ45 type sockets for SpeakerLink, Meridian's digital connection system.

Compared with the side-firing drivers used higher up the range, the driver layout of the DSP5200 is relatively conventional. The front baffle hosts twin 160mm polypropylene long-throw bass drivers, and above those a 25mm beryllium-dome tweeter within a short horn. The beryllium tweeter, used here with dual voice-coils of silver, is just one part of Meridian's 'Special Edition' status (see panel).

We reckon it would indeed be interesting to sit someone blindfold in front of the DSP5200SE and have them guess what size of speaker was playing. Because from the first track there was such a presence, a scale to the sound from these metre-high speakers, slam and kick too, that it speaks to Meridian's boast of being kings of timing. The result feels entirely intimate, with the sense of genuine reality that comes only from the best of systems, in the tightness of the bass in particular, while the imaging and soundstage were equally thrilling.

REVIEW reprinted from
Audio Esoterica magazine.



M E R I D I A N M 6 L O U D S P E A K E R S

A visually stunning loudspeaker delivering a level of performance that is unsurpassed by traditional speaker design.

The first thing that strikes you when you see the Meridian M6 active speakers is their shape — they look not-unlike small felt-clad missiles. When you hear them, however, their performance clearly makes them weapons of mass audio! How can a speaker of this size and shape sound so good?

Well, while avoiding the technobabble to focus on the heart of the matter — audio, or rather, music performance — Meridian has been manufacturing fully active systems since the 1970s and their expertise is clearly on show here. Combining specific materials, clever design, coupled with proprietary digital signal processing, makes for a speaker system that excels at convincing you

that you have bigger, more expensive speakers in your room.

So, what's an active speaker system? There are numerous explanations and some of the wording can be misused, but we will stick with Meridian's naming of their product. A system of this type typically refers to the speaker drivers, electronics and amplification all being built into the housing, eliminating the need for a stack of separate components. The crossover, typically found on the back of passive loudspeakers behind the speaker cable terminals, is eliminated in favour of a digital crossover. This design allows the DSP to work more effectively and eliminate things like comb filtering, time delay issues etc, resulting in a more coherent sound with less smearing between frequencies. What we are presented with in the M6 speakers is an incredibly wide soundstage that can be enjoyed in both the sweet spot or off-axis.

One of the key features of Meridian speakers is the minimalist approach to cabling. The speakers themselves just require power, with both speakers connected with inexpensive CAT5/6/7 cabling. To get your sources of audio

playing through the M6 speakers, there are a few extremely compact solutions available, such as the Meridian 218. This tiny box allows connectivity from sources such as turntable, CD/DVD, TV, PC etc. This box can be hidden from view, all controlled with a smartphone/tablet app. To connect the 218 to the speakers, simply connect it in-line between the two speakers with the aforementioned Ethernet-style cabling.

The Meridian M6 is by no means the last word in audiophilia from the brand — their flagship model sells for \$110,000 and we expect some concessions at this price point, but there's no denying how clean, detailed, engaging and just darn fun the M6 speakers are to listen to. You would be hard pressed to get a similarly-priced solution that offers the same level of performance in a discrete package, even with in-expensive cabling. And this system is room agnostic — it cares 'less' about the room's acoustics compared with conventional systems.

REVIEW from
Meridian M6 member



MERIDIAN 210 STREAMER

The 210 streamer is the latest in Meridian's compact 200 Series, delivering a superbly curated digital output to feed whatever equipment you choose to put downline from it — and that might be a very simple system indeed.

Meridian's 200 Series is something different in the world of wireless multiroom audio. Many companies have had a go at the market defined first by Sonos, delivering their own ecosystems of wireless speakers, soundbars and streaming electronics, and most follow a similar formula. Meridian, a company which operates at the highest levels of hi-fi, has done things rather differently. For starters it has gone small. While high-end Meridian components

regularly tip the scales over 20kg, the 210 Streamer reviewed here weighs just 660 grams, a 'half-width' component only 4.2cm high. It joins the rest of Meridian's 200 Series, a set of compact yet capable multiroom-equipped units that can deliver a whole house of audio, and are designed to do so while being hidden away, controlled via an app on your smart device. You don't need your hi-fi electronics out on show.

So while an initial comparison with Sonos helps explain what the 200 Series is aiming to achieve, that comparison only goes so far. Meridian has been a pioneer in high-resolution audio. Just because it has gone small with the 200 Series, it hasn't left the emphasis on quality behind. This is real hi-fi, made smart, and made small. The Meridian 200 Series has shrunk your hi-fi.

Meridian describes the 210 Streamer as "a high-performance networked audio source providing a full set of network and connectivity protocols to interoperate with smartphones, tablets, computers, and networked servers". It connects to your network via dual-band Wi-Fi or 10/100 Ethernet and thereby supports internet streaming services such as Spotify Connect, controlled from your smart device but streaming over the internet directly to the 210. It can stream files across your home network from a

computer share or a NAS drive (a third-party DLNA/UPnP app is required for this), and it has a USB slot into which you can directly plug a USB stick or drive to play music, in which mode the 210 Streamer also becomes a Digital Media Server (DMS), making the contents of the USB available to other networked devices.

And there's direct streaming via Bluetooth, supporting AAC, aptX and the aptX HD codec, this last capable of up to 24-bit/48kHz delivered with mildly lossy compression. The 210 Streamer is also a Roon device, so that if you have a paid Roon software subscription and have a Roon core set up on your system, you can enjoy using this excellent software music interface to play both your own music collection and, with an additional subscription, music from the Tidal internet music service. Pay double for the Tidal HiFi subscription and you can make use of the 210's ability to play MQA files, which Tidal calls 'Masters'. The 210 includes MQA core technology which unfolds an MQA file once, up to 24-bit/96kHz high resolution.

There's no analogue output, so you can link it digitally to an amplifier, or via Meridian's simple SpeakerLink cabling digitally direct to a pair of active speakers, of which, of course, Meridian has quite the selection. This configuration potentially delivers a delightfully simple yet high-quality system solution.

As for sound quality, we were astonished by how good the likes of Spotify could sound when treated to Meridian's digital signal expertise. So good did all manner of material sound that we tried A-Bing the Spotify performance against tracks we own as CD-quality files (or higher), and there was bewilderingly little to choose between them. So the highlights here are music quality, especially from sometimes lesser-regarded sources Spotify and Bluetooth, coupled with the compact form factor and ability to hide the 210 Streamer and other 200 series components away out of sight. So impressed were we, indeed, that the 210 Streamer received our award for Network Music Player of the Year under \$5000.

THE SIMPLEST SYSTEM



With the 210 Streamer as your source, you could simply connect it via SpeakerLink to any of Meridian's digital active loudspeakers to complete what must qualify as one of the world's simplest but highest-quality audio systems, delivering stunning music under the control of Meridian's app (or Roon) from the smart device of your choice.



ARCHITECTURAL SOUND

Meridian in-wall and in-ceiling installation speakers

“High resolution audio perfect for the most demanding architectural installations and dedicated home theatres” — that’s the promise of Meridian Audio’s DSP750 in-wall digital active loudspeakers.

The DSP750 is the newly-launched flagship of Meridian Audio’s Architectural range of loudspeakers — in-wall and

in-ceiling models that combine reliability and versatility with the same market-leading digital and driver technologies that go into Meridian’s highly-regarded in-room speakers.

Powered by Meridian’s exclusive ‘CLASS-M’ DSP engine and integrated with ‘DYNAMIC’ Hi-Res amplifiers, this product range is perfect for delivering Meridian’s renowned audio quality discreetly within any media room or home cinema.

The DSP750 takes its place as Meridian’s highest performer among its architectural loudspeaker range, which also includes the DSP520.2 and DSP640.2 in-wall loudspeakers, and the DSP320.2 in-

ceiling/in-wall model. What makes these loudspeakers unique is their ability to operate in two-channel, multichannel or single-speaker systems, while consistently performing at a level of quality that far exceeds that usually associated with architectural speakers.

The DSP750, for example, delivers a maximum output of 120dB at 1 metre, with bass extension to 30Hz and high frequency extension to 40kHz from five drive units of three new high-performance designs — two 160mm long-throw high-output woofers with titanium voice coils, two 100mm

polypropylene midrange drivers, and a custom high-performance beryllium tweeter with diffraction expansion technology which promises to turn the listening room into “one large sweet-spot” thanks to controlled directivity, wide dispersion and consistent off-axis response.

Shallow sealed aluminium cabinets keep the sound where it should be, while the paintable perforated front steel grille is held in place by powerful rubber-coated magnets, making the speakers ‘disappear’ into your décor.

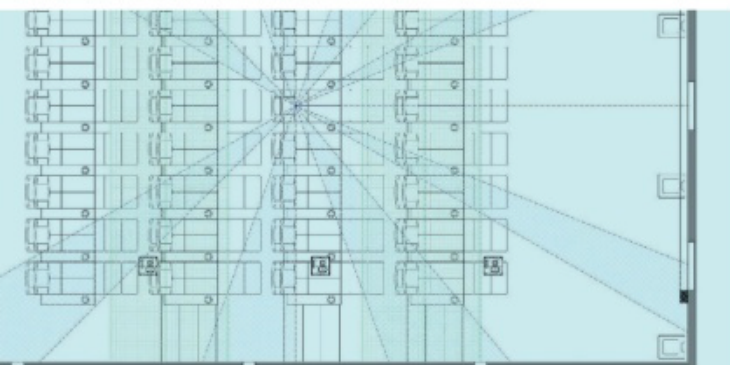
As an active loudspeaker, each of the five drive-units is powered by a bridged pair of high-res power amplifiers, each pair capable of delivering over 100W into eight ohms. A DSP engine provides

thermal and dynamic bass protection while retaining very accurate transients, ensuring that when the loudspeaker is played at high levels – even over prolonged periods of time – it can always deliver a clean, detailed and accurate sound.

All Meridian’s Architectural range are as easy to connect as any of its conventional speakers, receiving digital signals via Meridian’s SpeakerLink connections

using simple Cat-5/6/7/ cable. And whether integrated as a surround sound system or implemented to boost the quality and clarity of specific zones, as far as architectural loudspeakers go, the sound here is simply astonishing.

MERIDIAN DESIGN SERVICE



Meridian’s bespoke Design Service provides you with the reassurance of a perfectly-designed room that will deliver the highest possible levels of entertainment. These can include multiple options, with ‘Standard’, ‘Performance’ and ‘Reference’ solutions, enabling you to enjoy tailored levels of Hi-Res performance created by Meridian using exclusive designer software created in partnership with CEDIA.

Ask your Meridian Lounge dealer how this unique design service could transform your home and your enjoyment of music and movies.



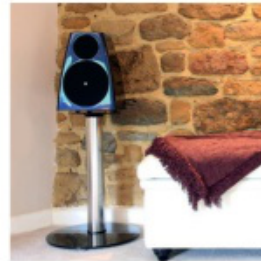


THE MERIDIAN LOUNGE

PROMOTIONS

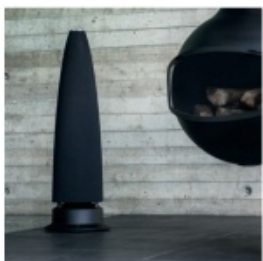
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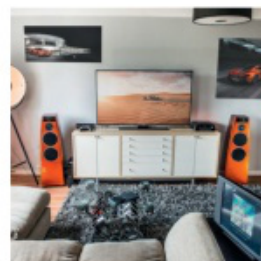
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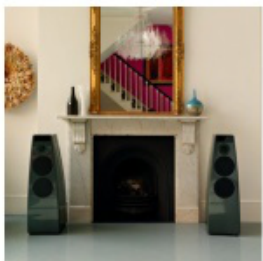
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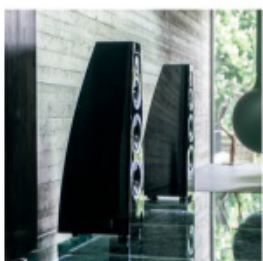
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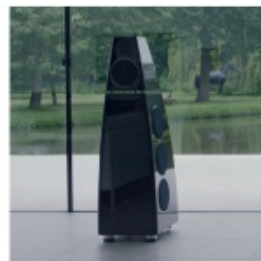
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Receive an invitation* to a hosted tour of the Meridian Factory in Huntingdon, England.



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Receive a 20% discount on the new Meridian 210 Streamer and Zone 2 Meridian 251 Amplifier using SpeakerLink.

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PURCHASE AN 818v3 REFERENCE AUDIO CORE / 857 POWER AMP COMBINATION...

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FOCAL KANTA N° 3

We hear this famous
French manufacturer's
Neutral Inductance Circuit
in action!



SOUND TRAVELS

A journey from home theatre to
hi-fi and then back again



THE STORY OF A WELL-TRAVELLED AUDIOPHILE...

We all take a unique journey to find what ultimately makes us happy. Limiting that thought to merely audio now... CL took that journey from hi-fi to home theatre and then back again.

INTERVIEW BY **TOM WATERS** OF THE **SYDNEY AUDIO CLUB**

Tom Waters: *Do you have a first memory, a first unforgettable musical experience that left an impression?*

CL: My first impression was when my oldest brother bought a system comprised of Altec Lansing speakers (I can't remember which model) and separate Sony components, which he'd set up in the family

lounge room. He played lots of the music I like, which was 70's type music. I was gobsmacked at the difference between his system and my parent's old system. The second instance was when I was at university. I visited my flatmate's parent's home somewhere down in Ulladulla. I wasn't into HiFi then (more the music back then).

His dad had a separate music room, and I was gobsmacked (again!) with what I heard. I knew it must have been expensive because his dad seemed a bit nervous that we were in 'his' room. And he locked the door afterwards!

TW: *And did that start you on the hi-fi journey or did something else start you on the audio equipment quest?*

CL: I bought my first system when I was 21. I'd asked my parents for money for my 21st birthday. I had only a little bit of money to spend, so I had to spend wisely. I went around to a lot of shops and eventually bought a pair of Heco Interior Plus 505 floorstanders. They aren't well known here, it's a German brand.

I also bought a 40 watt Onkyo receiver and an Onkyo CD player. Back then Onkyo was less expensive than today because its reputation wasn't as established. Then again, it isn't expensive today either compared to some gear out there! That was my first proper system which I kept for many years. I got side-tracked with work and other stuff, so the system didn't evolve too much.



It's easy to hear something different and confuse it for something better. I'm getting much better at differentiating now!

TW: *What would be your second most favourite piece of equipment..?*

CL: Definitely the Hulgich Ella speakers, I love the speakers. They allow that perfect balance that I've been looking for.

TW: *What do you see as your next hi-fi purchase or upgrade?*

CL: Likely cables, or maybe a DAC. I've spent a fair bit of money lately on the Antipodes so I'm trying to resist spending more for a while. I've spent a bit on power cables lately—only \$600 for Shunyata NR cords. [CL then laughs saying \$600 is virtually nothing in the HiFi world!] I'm waiting for them, they are on order. I recently replaced the basic ethernet cable that came with the Antipodes components with an AudioQuest Vodka ethernet cable and that made a noticeable improvement. Some people try to deny these things make a difference—they only have to try them with unbiased ears to be convinced!

After about 15 years I got into home theatre, so I ditched my Onkyo CD player and bought this multi-channel Marantz player, which was a backwards step (for stereo) but I didn't really realize it at the time. I had Paradigm Studio 60 front speakers then because one of my old Heco speakers stopped working. I also had Paradigm Studio 20s for rears and a Paradigm centre speaker. I played music through the system too, which wasn't really very good because it was geared more for home theatre. I knew there was something wrong with the sound, but I didn't fuss about it too much.

Then in 2012 I noticed this ad for a HiFi show in Sydney. I went there and was totally blown away at how much better these systems sounded than mine! It was a bit overwhelming actually, to tell you the truth. I was surprised by the quality of sound, the many different brands... and the prices! As a result, I bought a new three-channel valve integrated amp by Consonance. That alone made such a difference in my system that I bought a new pair of floorstanding speakers by Osborn and a Consonance integrated valve amp, primarily for music, not home theatre. The three-channel amp was then relegated to home theatre channels. Although the sound was great, the bass was a bit soft and the valves made my room too hot in the summer. So I bought a separate Modwright amp which I ran in summer and the Consonance in winter! The Modwright amp exposed me to better bass, which I certainly liked. Along the way I also bought a First Watt J2 which got me intrigued in Pass Labs and Nelson Pass designs. I read reviews on his amps and people said they had a bit of a

valve sound, so I upgraded to the Pass Labs separates I have today.

I then heard the Hulgich Ella speakers at a Sydney Audio Club meeting I loved them and bought a pair. Still happy!

TW: *Where do you think your system is going, or has it arrived?*

CL: At the moment I'm very happy. The last upgrade was the Antipodes music server gear—that lifted my system hugely yet again. The effect of a good digital front-end is quite amazing. I find that I tend to now play complete albums rather than flick from track to track. I think it's because I don't experience so much brightness with the Antipodes, so I'm encouraged to keep listening to the album. It's more analogue sounding; it leans a bit to the warm side which I much prefer. But unfortunately, my system will likely never 'arrive'! In this hobby it's easy to hear something different and confuse it for something better. I'm getting much better at differentiating now!

TW: *What's your favourite piece of equipment at the moment, something that you wouldn't sell?*

CL: I wouldn't sell my Pass Labs XA30.8 amplifier and XP20 preamp. Going from the valve gear to the Pass Labs gear was a revelation in terms of background silence! Every little bit matters, reducing noise incrementally makes a huge difference.



TW: *What's the most memorable pair of speakers (or system as a whole) you've ever heard?*

CL: I heard these omnidirectional speakers at a recent show in Melbourne; I think they were the German Physiks Borderland MkIV speakers. They were in a small room and I thought ... these can't sound good. The source was an original tape of an early Miles Davis album. And the sound was phenomenal. Another memorable instance was at the Lifestyle Store in Sydney—they were powering the new PMC fenestria speakers with McIntosh gear.

TW: *Is there any component you've owned and sold that you now regret selling?*

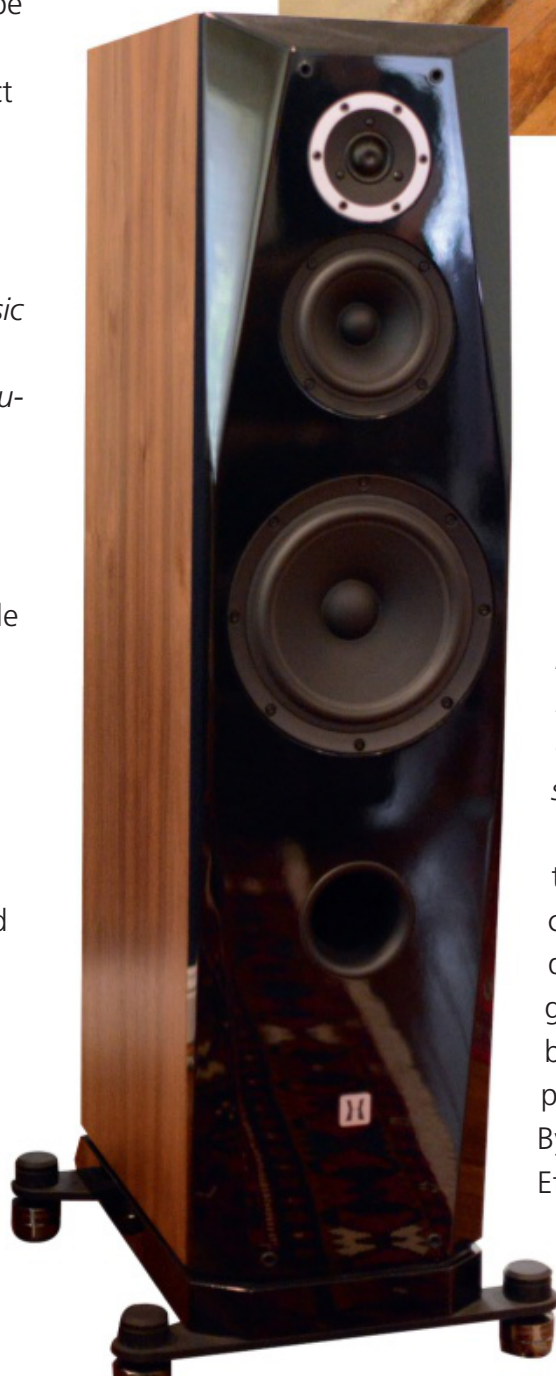
CL: I only regret selling the First Watt J2. I had an emotional attachment to it because of the way it sounded. I kept it for a while but I never used it, so I thought it should go. I think if you're not using something, it's best to just sell it. It just depreciates more the longer it sits around.

TW: *Do you use the same music for comparing components as you do for listening pleasure?*

CL: Yes, except for maybe the heavy metal. Metal is great for hearing the impact and power a component is capable of producing, but I don't listen to it much for pleasure.

TW: *What genre of music do you listen to mostly and who are some of your favourite artists?*

CL: I think my favourite genre is still rock music—I like artists like R.E.M. and Pearl Jam, I even have a little Metallica but I don't listen to it much. I still listen to a lot of 70's music. Lately I've listening to more folk music, artists like Angus and Julia Stone. And more jazz, artists like Donald Byrd from back in the 50s and 60s. I've always listened to a bit of blues but lately I've been appreciating John Lee Hooker—there's something about his voice and rhythmic pounding repetition. I think as your system gets better



you're then open to more varied types of music—it allows you to hear into the music better. You get a better appreciation of the music, and you can more easily hear the recording quality.

TW: *What would be your 'desert island' music albums if you could only choose, say, three works?*

CL: It'd be hard to pick three specific albums. I would definitely pick three genres. One would be rock. For jazz, I'd probably pick a Donald Byrd album, maybe Ethiopian Nights, and for folk I'd probably pick an Angus and Julia Stone album.

TW: *How would you describe the sound you're getting from your current system?*

CL: Well balanced, slightly on the warm side, enjoyable, non-fatiguing. But still there is a good level of detail, without being 'crisp' or hard sounding (that can irritate me a bit). I find my system to be relaxing. I'm really happy with my system at the moment. With all the money I've spent, I'd certainly want to be happy with it!

TW: *In what way does music affect your life, your emotions and the way you feel?*

CL: I find music is quite relaxing. After a stressful day at work, I'll often play music. Often jazz or folk... something softer than rock so I can relax. Sometimes I'll take a break from music for a couple of weeks, like when I travel. I have portable music then, but it's not good fidelity music. I find I really miss that. I then look forward to getting home. And as I get older, I find I'm more interested in the background stories of the music and the musicians. I think that's why I like John Lee Hooker—his music is often like a story.



TW: *Where do you see the high-end audio industry going in the future?*

CL: It's not disappearing, it's still here. I think it'll survive—there will likely be more rationalizing of brands. People who can afford the expensive audio equipment will still buy the high-end equipment, they might not necessarily be interested in the sound quality—some buy it because they believe it's good. The older generations like us were exposed to our parent's system at home—back then today's portable



Back then today's portable technology didn't exist, so many of us were exposed to hi-fi by default. That isn't so today.

technology didn't exist, so many of us were exposed to hi-fi by default. That isn't so prevalent today. But hopefully, the younger generations that are into ear buds and headphones (and headphones across all price ranges are a huge market right now) will eventually buy real hi-fi gear like better speakers and amps. Then again, some will probably just buy better headphones..!

Vinyl appears to be re-invigorating the younger people, even though the manufacturing quality of much of it is poor. But turntables lead to larger less portable gear which in turn may lead to phono stages, power amplification, etc.

TW: *Where would you like the audio industry to go or to evolve to?*

CL: I think the trickle-down from the uber expensive gear to the more affordable gear is already largely happening. Development costs of new components can be huge, so I can't fault the designers and manufacturers with their trickle-down efforts—I think they're doing a great job there. I think that digital has advanced to such a degree now, and so quickly, that

many people are in denial that it is so good. Many people still hold-out that vinyl reigns supreme and is untouchable. I don't think that is true at all—sure it's different but it isn't better. There needs to be recognition of that.

Lastly, I still like owning things so I wouldn't want to see everything go towards streaming from services such as Tidal or Qobuz. I want to be able to continue to buy my music; even if that means buying a download rather than something physical like a CD. At least I know I have it on my own server. Furthermore, the artist really suffers with streaming from a service—they get paid such a small pittance that they can't make a living on that alone. To survive they are forced to sell physical media and merchandise and, of course, tour. 🎵

EQUIPMENT LIST

- **Pass Labs** XA30.8 amplifier
- **Pass Labs** XP20 preamp
- **Antipodes** CX & EX music server and renderer
- **Antipodes** P1 ripper
- **Oppo** BDP-105D, JLT1 modified (Level 4.2 + ACB signature)
- **Inakustik** Reference LS-1603 speaker cable
- **Aurealis** XLR interconnects
- **Wireworld** Silver Platinum Starlight USB cable
- **AudioQuest** Vodka Ethernet cable
- **IsoAcoustic** Gaia feet (under speakers)
- **IsoAcoustic** Orea isolation products (under electronic components)



FOCAL KANTA N°3 LOUDSPEAKERS

The Focal Kanta N°3 is the top-of-the line model in this French manufacturer's range of home loudspeakers. The next step up would be to the Sopra Series, and from there it's quite a leap to the premiere Utopia Series, whose flagship model, the Grande Utopia EM EVO, will set you back a cool \$335,000. Which makes the Kanta N°3 look like something of a bargain, really...

THE EQUIPMENT

Focal's Kanta N°3s are large loudspeakers, standing 1.28-metres tall on their unique integral Zamac base. But they're so drop-dead gorgeous that you'll wish they were even larger, so you could gape at even more gorgeousness. The Italians might be known for their style, but the French are renowned for their *chic*... there's even a French word for it... and these Kanta N°3s are very definitely *chic*... *très chic*, in fact.

If you're looking at the photo accompanying this review and wondering what all the fuss is about, I can assure you that it doesn't do them justice. These are speakers you really have to see in the flesh... *in flagrante delicto*... to appreciate how good they look. There's the curve of the front baffle, which is available in patriotic Gaulouis Blue, Carrara White, Black Lacquer or Solar Yellow, all of which contrast beautifully against the main cabinet finish of high-gloss black. Or, if you'd prefer a wood veneer cabinet, you then get to choose between front baffle finishes of Warm Taupe, Dark Grey, Ivory and patriotic Gaulouis Blue. (I'm saying 'patriotic' because in France, the smoking of Gaulouises—the national cigarette—was for many years considered patriotic, particularly following WW1, a conflict during which almost all the *poilu*—French infantryman—smoked the original, filterless version.)

In addition to the rather sexy curve of the cabinet, there's a slight tilt that

pushes everything just slightly off the vertical, visually softening the lines. But perhaps one of the most attractive elements is the baffle itself, which moulded in one piece from a High Density Polymer (HDP) material that is 70 per cent denser than MDF, 15 per cent stiffer than MDF and provides 25 per cent more damping than MDF. Although my review sample was finished in 'Black Lacquer' it seemed to have a tiny metal-flake 'fleck' that gave it a wonderful visual depth, superior to plain black lacquer.

Then there's the unusual colour of the two bass drivers and the midrange driver, which comes about because rather than using metal or plastic to form the cones, Focal has used a natural plant material... flax (*linum usitatissimum*). Flax is a beautiful-looking blue-flowered plant whose stalk is most often cultivated to make linen, as used in high-quality bed sheets. It's a very useful plant, because while its stalk is used to make textiles, its seeds can be eaten or turned into (linseed) oil. It's hardly surprising that Focal should use flax, because French flax is considered the best in the world, particularly those varieties cultivated in Picardy, Normandy and the Pas-de-Calais region, where they have hectares of it growing.

Of course you can't just use flax on its own for a cone material—it's too soft. So Focal has trickled down the 'W' and 'K2' 'sandwich' techniques it uses to build the drivers used in its top-line models down to the Kanta N°3, so that its flax core has a fibreglass layer on either side, forming what Focal calls an 'F' driver. Focal says the nature of the 'F' driver's construction, along with the materials used, results in a cone that exhibits high internal damping, high velocity of sound and high rigidity... exactly what every loudspeaker designer demands in a cone. The construction of the cone varies with application. The bass drivers mostly have a 250g/m² flax core and 100g/m² glass layers, while the midrange drivers have 150g/m² flax core and 50g/m² glass layers.

However, no matter how stiff a cone is, it has to be allowed to move freely, and this is where Focal has developed a unique surround for its 165mm midrange driver, one that it has patented. If you look at the rubber at the circumference of the midrange cone (and it's a rubber, not a foam, so it won't deteriorate in Australia's harsh UV-rich environment) you'll see there are curious 'bumps' moulded into it. These 'bumps' form what's called a 'Tuned Mass Damper' (TMD) that Focal says prevents resonances from adversely affecting the pistonic behaviour of the cone. Focal says it's the same engineering solution that's used to build earthquake-resistant skyscrapers.

The magnets used to drive the 'F' cones with their TMD suspensions are also unusual, in that they use Focal's 'NIC' technology. For details on this technology, please see the panel accompanying this review titled 'Neutral Inductance Circuit.'

The Focal Kanta N°3 is a three-way speaker, which is my preferred design, because it means that the bass driver—or *drivers* (plural) in this case, because the Focal Kanta N°3 has two of them sharing the bass duties—delivers only bass frequencies, and the midrange driver delivers only the midrange frequencies. This means that the bass notes can't 'muddy' notes in the midrange, either through compression effects or—more significantly—via the phenomenon of Doppler distortion.

Loudspeaker manufacturers prefer to keep very quiet about Doppler distortion because they all sell two-way loudspeakers, and all two-way speakers suffer from it. You're likely already familiar with the principle of Doppler distortion. If you're standing beside a railroad and a train goes past you with its whistle blowing, you will hear the pitch of whistle as being a higher frequency when the train is approaching than you do when it's at its 'proper' (lower) frequency when the train is alongside, and finally as a lower frequency when it's moving away. This is because the train whistle's sound waves are 'compressed'

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The Italians might be known for their style, but the French are renowned for their chic...



WHAT IS A NEUTRAL INDUCTANCE CIRCUIT?

The magnets in the three cone drivers in the Focal Kanta N°3 all feature Focal's Neutral Inductance Circuit (NIC). This is not an electrical circuit but a magnetic one... or rather a small part of a larger magnetic circuit. One major problem with all moving-coil drivers (also known as dynamic drivers) is that their operation is dependent on the interaction between two magnetic fields, the one surrounding the driver magnet and the other surrounding the voice coil. Without an audio signal going through the voice coil, the coil doesn't have a magnetic field and the magnetic field of the driver magnet is therefore stable.

The problem that arises is that when you pass an electrical current (i.e. an audio signal) through the voice coil, it creates a magnetic field around the coil that then interacts with the magnetic field around the magnet and causes the voice coil to move one way or the other, but as the voice coil moves through the magnetic field it distorts it, which then means that the movement of the coil will depend on where the coil is located in relation to that field

as well as the voltage through the coil. Since the movement of the voice coil is what moves the speaker cone that creates the sound waves, the fact that everything is constantly changing makes it difficult to build a driver that has both a flat frequency response and low distortion.

Driver manufacturers use different methods in order to ameliorate this problem (often using several different methods at once) and one common method is to add a Faraday ring (sometimes called a flux modulation ring, or 'shorting ring') to the magnetic circuit, either at the top or bottom of the pole piece. This reduces and linearises the voice coil's inductance, resulting in reduced distortion and a more predictable frequency response.

Faraday rings aren't new—driver manufacturers have been using them for more than half a century, but Focal has used its very expensive Klippel analyser to optimise the dimensions of the Faraday rings it uses—and their positions in the magnetic field—to produce superior results over the usual 'off-the-shelf' Faraday rings. As well as benefitting speaker performance, a speaker whose inductance is stable presents an easier load for the driving amplifier, so you get better performance from your amplifier, as well. #

when the train is approaching the listening position and 'stretched out' when it's departing that position.

Now think about a loudspeaker driver that has to produce both bass *and* midrange sounds because the particular cabinet in which it's fitted does not have a midrange driver. And let's imagine that that driver is producing a deep bass note at 20 cycles per second (i.e., 20Hz), so it's moving back and forth 20 times per second. At the same time, it's also producing a midrange note at 1,000Hz, which means it's also moving back and forth one thousand times per second at the same time that it's moving back and forth 20 times per second. This means that instead of hearing a 1,000Hz tone, we will actually hear 1,020Hz as the cone moves towards us and 1,980Hz when it's moving away. It's only when the cone is midway through producing the 20Hz signal that we will hear the correct frequency of exactly 1,000Hz. That's how Doppler distortion affects loudspeakers, and it is present in all two-way loudspeakers.

In a three-way design, such as this Focal Kanta N°3, in the previous scenario the two bass drivers will be producing the 20Hz tone, moving back and forth freely without having to deliver the 1,000Hz tone, and the midrange driver will be reproducing the 1,000Hz tone at exactly 1,000Hz, with no frequency variations at all. The advantage of a three-way loudspeaker design with its separate midrange driver is obvious!

In the case of the Kanta N°3, the bass drivers are each rated at 210mm in diameter, but the total moving diameter (cone plus roll surround) is 180mm and the Thiele/Small diameter is 168mm. This puts the cone area (Sd) at 222cm². This means that if Focal had used a single driver to deliver the bass, rather than two, that driver would have had to have had an overall diameter of around 290mm in order to move the same amount of air as the two bass drivers it has used. The energy from the rear of these drivers is harnessed by an unusual dual bass reflex port arrangement, whereby one port (190mm long and 60mm in diameter) exits through the front baffle while the other (90mm long and 65mm deep) exits from the rear panel. Both ports are radiused at both entrance and exit. According to Nicolas Debard, of Focal: *'the benefit of having two ports mainly consists in an easier positioning in the room to make the speakers less sensitive to a positioning near a front wall.'* Beryllium has been Focal's preferred dome material of choice for a good many years now, as has its use of an 'inverted' dome geometry for its tweeters, whereby rather than bulging outwards, as with most dome tweeters, Focal's tweeter domes are 'concave'.

FOCAL KANTA N°3 LOUDSPEAKERS

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Not an amorphous wall of sound, it's a tangible, textured apparition, with perceptible depth, height and width

The 27mm beryllium inverted dome IAL3 tweeter in the Focal Kanta N°3 further benefits from being fitted with Focal's patented 'IHL' (Infinite Horn Loading) technology whereby the rear of the dome is loaded via a small cavity which is connected to the exterior of the enclosure by a horn whose volume is filled with damping material, so all the energy from the rear of the dome is absorbed, rather than being reflected. The approach is not dissimilar to the system developed by Laurence Dickie when he was designing speakers for B&W, but is obviously different enough for Focal to have gained a patent for it. As for the IAL (Infinite Acoustic Loading) that's referenced in the model name of the IAL3 tweeter (the '3' stands for third generation by the way), those letters refer to the way by which pressures from the sides of the dome are re-directed.

IN USE & LISTENING SESSIONS

You're going to appreciate Focal's 'Zamac' base, because it makes speaker positioning and alignment (and re-positioning, if you have to) dead easy. Unlike most other speaker designs, where you have to reach in underneath a cabinet with one or more spanners in order to adjust the spikes fitted to the base, the Zamac base fitted to the Focal Kanta N°3 allows you to just reach down and make adjustments quickly, easily, and without any tools. The base also increases the cabinet's stability, which is important, because it's large and heavy. The base takes its name from the materials used to make it: Zinc, Aluminium, Magnesium and Copper. Focal also uses Zamac to construct the diecast baskets used for its bass and midrange drivers.

Whether or not you use the speaker grilles (which attach magnetically, by the way) is up to you, really, because I found that the speakers sound the same with or without them. One thing to consider, however, is that the midrange driver does not have a protective dustcap at its centre like the two bass drivers: it has what driver designers call an 'exposed'

voice coil, which means that if your room is very dirty, dust particles may become lodged in the gap between the voice coil and the magnet... though this will not necessarily affect performance. However, because of this design, I'd suggest that even if you decide not to fit the grille that covers the two bass drivers, you should always fit the midrange grille.

Experienced hi-fi reviewers know when they're listening to something really special when they find they're listening to the music, rather than to the component they're supposed to be evaluating, and that's exactly what happened with my review of the Focal Kanta N°3s. After having positioned the speakers in a spot that works well in my room, I settled back in the prime listening position with a coffee and an A4 paper pad, expecting to have not only fine-tuned the positioning of the speakers by the end of the listening session but to also have a few pages of listening notes scrawled out. News Flash: That is not what happened!

By the end of the first listening session not only had I not moved the speakers, but I also had not really written anything substantive

about the speakers at all. I'd instead spent the entire time listening, rather slack-jawed—and with what I presumed would be an expression of disbelief set off by a very big smile—to a wide selection of music that ran the gamut from country to classical. Yep, I hadn't been listening to the speakers at all... I'd been listening to the music, held totally in the thrall of the performances... which actually tells you everything you need to know about the sound quality of the Focal Kanta N°3s.

When you listen to the Focal Kanta N°3s for yourself, I expect that initially, you'll do the same thing as me... you'll be held in the thrall of the music. However, I'd suggest that if you can step back from this, what you will immediately notice is that you're hearing—and appreciating—the entire sound field as a sonic force. The sound is simply that: sound. You're not hearing 'bass' and 'midrange' and 'treble', you're hearing all three, perfectly melded, totally cohesive and seemingly indivisible.

Yet it's not an amorphous wall of sound, it's a tangible, textured apparition, with perceptible depth, height and width.



If you want to hear some really deep bass from the Kanta N°3s—as well as some ordinary low-frequency bass, but very cleanly recorded—you could do what I did and listen to what many claim is Linda Ronstadt's finest album, 'Winter Light', which has on it her cover of Anna McGarrigle's *Hearts Awakening*, which has bass down to 11Hz. As you're listening, bear in mind that this album was a failure for Ronstadt, despite the lush Enya-like sound, and that she sings perfectly songs that were penned by the likes of Brian Wilson, Carole King, Jimmy Webb, Emmylou Harris, Burt Bacharach... well, you get the idea. And to celebrate the anniversary of the moon landing as well as plumb the depths of the Kanta No3's bass capabilities, I also used them to play back the soundtrack of the NASA doco 'The Dream Is Alive' which includes the thunder of the Discovery shuttle launch. Awesome! (But rather poignant viewed now, since it contains footage of Francis Scobee and Judith Resnik, who were to die in the Challenger disaster two years later.)

Listening to Jim Keltner's drumming on Sheffield Lab's 'Drum & Track' album I heard a perfectly-tuned bass drum with incredible dynamics, as well as superb rim shots and great brushwork. Listening to Kanine's *What I Said*, I revelled in the way the Kanta N°3s were able to reveal the pitch of any low-frequency sound immediately... which is a stunning achievement considering the frequencies involved. The 'space-y' sound of this track further revealed the incredible dynamics of which the Kanta N°3 speakers are capable, as well as the ability of the tweeter to handle complex synthesised high frequencies without any distortion whatsoever.

Switching to music that made things rather easier for the tweeter simply proved that Focal's new IAL3 beryllium tweeter will deliver any sound within its pass band with aplomb. Violin sound is sweet and pure, with no harshness at all. Triangles tinkle effortlessly, the echoes simply hanging in the air.

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Violin sound is sweet and pure, with no harshness at all. Triangles tinkle effortlessly.



These sounds are perhaps best-heard on-axis, but the off-axis sound is equally satisfying, if somewhat lower in level at the extreme highs. Just listen to the warmth of Hilary Hahn's instrument as she plays Beethoven's *Violin Concerto in D Major, Op. 61* with David Zinman and the Baltimore Symphony Orchestra (Sony SK60584). Her ability to generate this level of warmth from her violin sets her apart as a genius, rather than a virtuoso. By way of comparison, listen to Leila Josefowicz's tone on John Adams's *Violin Concerto* with Robertson and the St Louis Symphony (Nonesuch). And as for the sound of the Baltimore's string section when playing the Beethoven, just listen to the short, clean strokes in the opening *tutti*.

But the star of the show is indubitably the Kanta No3's midrange, of which reviewer and *Stereophile* magazine founder J. Gordon Holt once rightly (and famously) said: 'If the mid-range isn't right, nothing else matters.' The Kanta N°3s get the midrange oh so right. Just listen to them reproducing what is likely currently the most beautiful voice in the world, that of Anna Netrebko. Listening to her singing Elettra's aria from *Idomeneo* (The Mozart Album, DG 00289 477 6297) through the Kanta N°3s, the despair—and the anger—in her voice is palpable and the Focals clearly reveal the intensity she brings to her delivery as well as highlight the ways she finds to colour and inflect her lines.

Although everything Netrebko sings is glorious, her very best performance (IMHO) is the one she gave with Plácido Domingo and Rolando Villazón at an open-air concert in Berlin in 2006, available on DVD (The Berlin Concert: Live from the Waldbühne.) The relaxed nature of this commemorative event (all three clutch glasses of champagne!) seemed to allow her to relax totally, and her voice on this DVD is so exceptionally beautiful it brought tears to my eyes, as it will to yours... and will even if you're not a fan of opera. Listen to the perfection of her vocal tone and delivery on *Meine Lippen sie küssen so heiss*, as just one example.

One advantage of this concert being on DVD is that as well as hearing how relaxed and comfortable she is, you can also see how relaxed she is, such as when she almost dances during Franz Lehar's *Giuditta* whilst singing 'my mother was a dancer.' But the *tour-de-force* during this concert—the absolute party-stopper—is when she sings her encore as Musetta (in *Quando m'en vo'soletta*, from *La Bohème*). It's a moment in time you'll never forget, and nor will those who were present... just check the reaction from Armiliato!

The stereo imaging and soundstaging presented by the Focal Kanta N°3s is worthy of special mention, as it's so focused you can even hear the subtle... minuscule... changes in tone as singers move their microphones

FOCAL KANTA N°3 LOUDSPEAKERS

whilst singing (or move from side to side while singing into fixed microphones). It must be said that this significant attribute is one that's made possible by mass production. Carefully produced mass-produced products are identical... something that can't be said of 'hand-made' products, most particularly when different people are building the same thing. Indeed the individuality made possible by hand-building may be prized when you're making something like glassware, but when you're building speakers, it's an anathema: you want every single driver to be indistinguishable from any other.

CONCLUSION

The science of loudspeaker design is like any science: it obeys the law of diminishing returns. For anyone buying loudspeakers, this means that the more you pay, the better the sound will be, but there will eventually come a point at which the increased costs are not matched by similarly satisfying increases in sound quality. The ideal is to find a speaker at the 'sweet spot' where the balance is just right for both your ears and your own budget. For me, the Focal Kanta N°3s represent that 'sweet spot'. For you? You'll obviously have to make that judgement for yourself... but I do sincerely recommend that you at least listen to a pair of Kanta N°3s... no matter what price you might originally have had in mind. 🎧 *greg borrowman*

Focal Kanta N°3

Brand: Focal
Model: Kanta N°3
RRP: \$18,000 per pair
Warranty: Five Years
Distributor: BusiSoft AV Pty Ltd
Address: 158 Christmas Street
Fairfield, VIC 3078
T: 1300 888 602
T: (03) 9810 2900
E: sales@busisoft.com.au
W: www.busisoft.com.au



- Très, très chic
- Glorious midrange
- Extended bass



- No bi-wiring
- Mid grille can be fiddly to fit

Readers interested in a full technical appraisal of the performance of the Focal Kanta N°3 should continue on and read the LABORATORY 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.

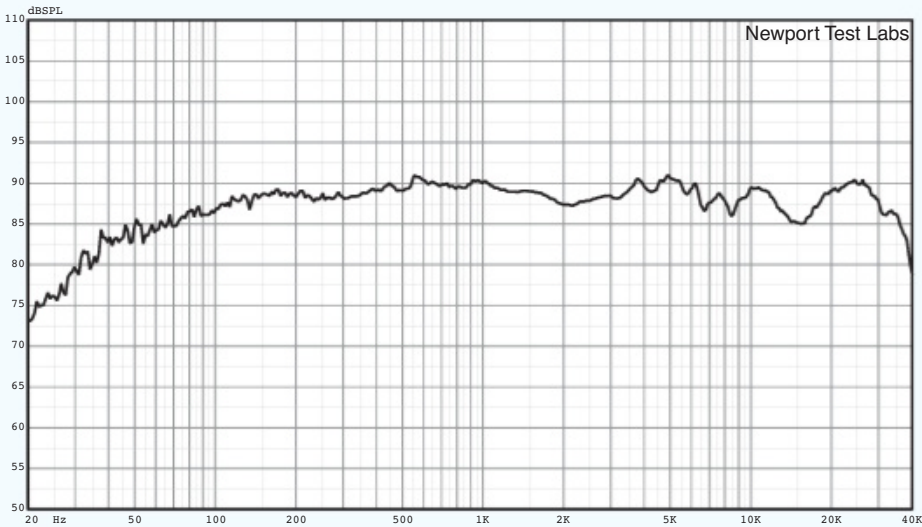
LABORATORY TEST REPORT

Newport Test Labs measured the frequency response of the Focal Kanta N°3 as 37Hz to 40kHz ± 4 dB, which is an outstanding result that shows both the bass and treble extension of which this speaker is capable. This is the response that's shown in Graph 1. This trace is a post-processed, so that below 500Hz the

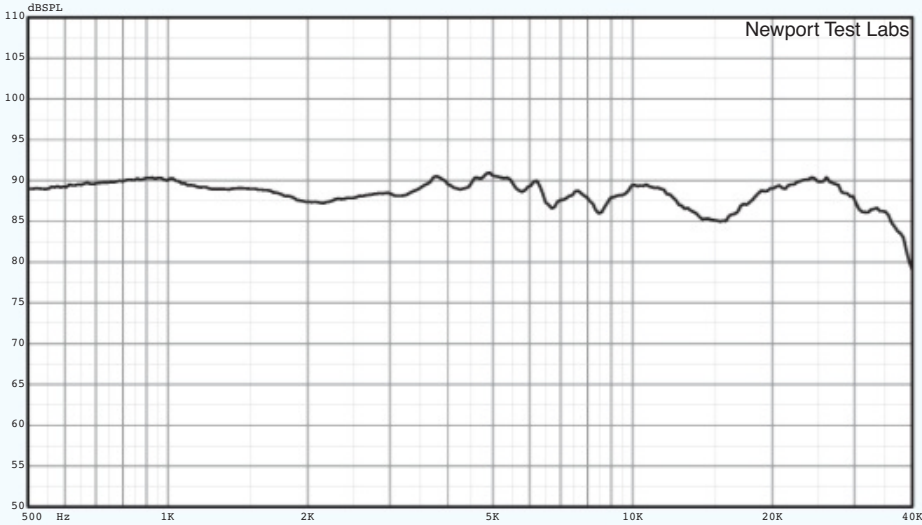
trace is the averaged result of multiple sweeps using a pink noise stimulus. The section of the trace between 500Hz and 900Hz is a nearfield response of the midrange driver acquired using a swept sine wave, while the section of the trace above 900Hz was measured using a gated spot sine test signal, which simulates the result that would be obtained if the speaker were measured in an anechoic chamber.

You can see from Graph 1 that even if we tighten the dB reporting window, the response is still very linear and extended: 50Hz to 36kHz ± 2.5 dB, while across the all-im-

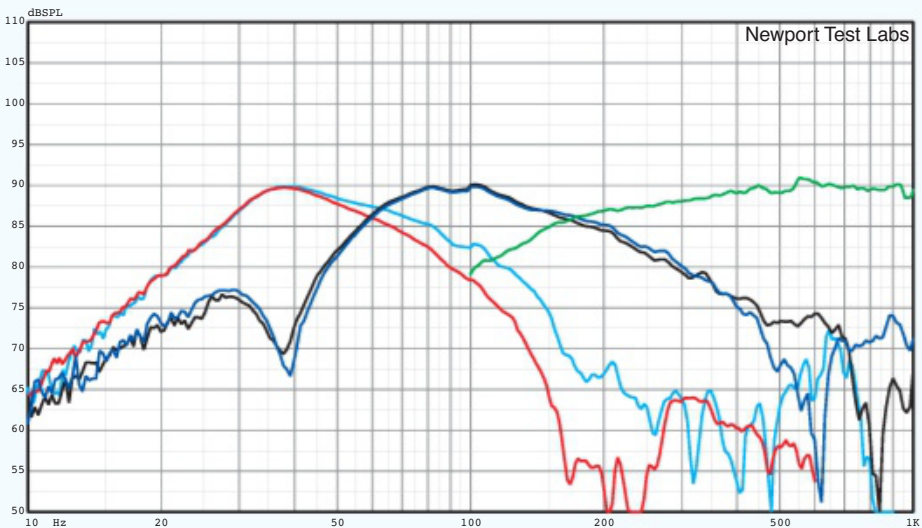
Graph 1. Frequency response. Trace below 500Hz is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise test stimulus with capture unsmoothed. This has been manually spliced to the midrange response (at 500Hz) which in turn has been spliced to the gated high-frequency response at 900Hz, an expanded view of which is shown in Graph 2.



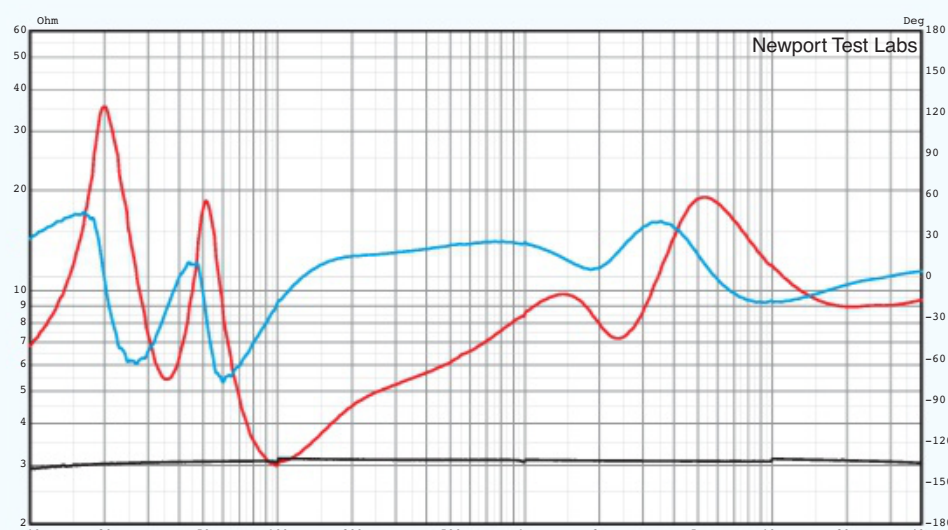
Graph 2. High-frequency response, expanded view. Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. Lower measurement limit 500Hz.



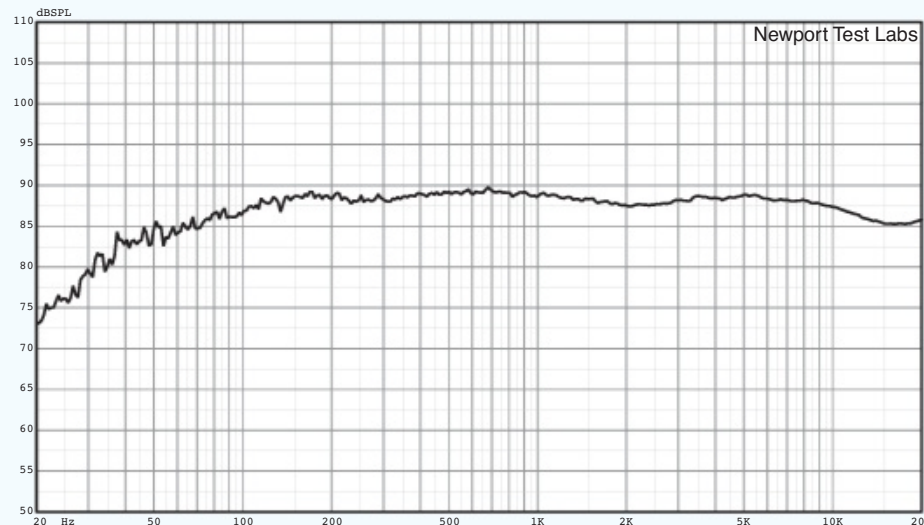
Graph 3. Low frequency response of front-firing bass reflex port (blue); rear-firing bass reflex port (red), lower bass driver (black), upper bass driver (dark blue) and midrange driver (green). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas.



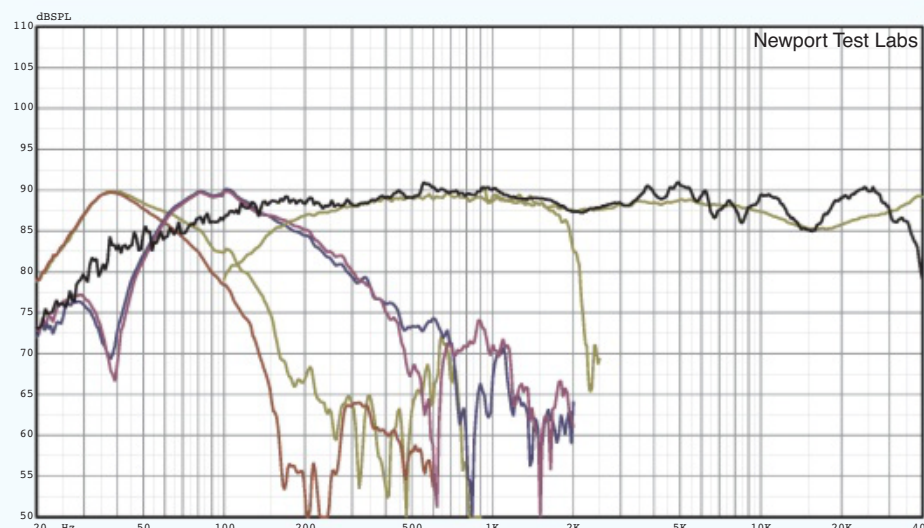
Graph 4. Impedance modulus (red trace) plus phase (blue trace). Black trace under is reference 3 ohm precision calibration resistor.



Graph 5. In-room response using pink noise test stimulus with capture unsmoothed. Trace is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter.



Graph 6. Composite frequency response plot (see copy).



portant midrange, the measured frequency response is essentially within $\pm 1.5\text{dB}$! These are truly outstanding results.

It's also important to note that the response is not spectrally skewed to favour any one frequency band over another—we basically see an extraordinarily flat midrange with a slow smooth roll-off in the bass and a slow smooth roll-off at high frequencies.

Graph 2 shows the high-frequency performance of the Focal Kanta N°3 in extreme detail from 500Hz (this low frequency limited by the graph) up to 40kHz (this upper limit dictated by the limit of calibration for the measurement microphone), yet you can still see the incredible smoothness of the Kanta N°3's response. There are very minor variations in level, but nothing untoward, and there are absolutely no resonances.

The low-frequency performance of the Focal Kanta N°3 measured by *Newport Test Labs* is shown in Graph 3. This graph shows the output of the front-firing bass reflex port (blue trace); the rear-firing port (red trace), the response of the lower of the two bass drivers (black trace) and of the higher one (dark blue trace) as well as the response of the midrange driver (green trace). You can see that although the maximum output for both ports is at around 37Hz, there's more output from the front-firing port at higher frequencies than there is from the rear-firing port. This is a very nice design touch that will allow speakers to be positioned closer to the rear wall than might otherwise be usual. It's interesting that the lower bass driver's output is higher than that of the identical driver above it between 450Hz and 700Hz, but I suspect this is just due to some cancellation.


You can see that although Focal puts the electrical crossover point between the bass drivers and the midrange at 250Hz, the acoustic crossover is at around 175Hz.


Graph 4, which shows the impedance modulus of the Focal Kanta N°3, shows that Focal is being a little ingenuous with its 8Ω nominal specification for this parameter, because if this were my design, I would have rated it as a 4Ω design, based on the fact that its impedance remains at or lower than 5Ω from 70Hz to 250Hz, with a minimum of just 3Ω at 100Hz. However, because Focal actually states a minimum impedance (of 3Ω) in its specification, it is allowed (under the International Electrotechnical Commission rules that govern what can be legally claimed) to claim an 8Ω nominal spec. And, as you can see, the majority of the impedance trace does lie at or higher than 8Ω, so there's a lot of technical justification for Focal's stance. However the take-away from this impedance modulus is that you'll get best performance if you use an amplifier that's happy driving 2Ω loads.

The in-room response of the Focal Kanta N°3 is shown in Graph 5, and if we allow for the inevitable vagaries of pink noise measurements made at extremely low frequencies, you can see that it returned a result of 37Hz to 20kHz $\pm 3\text{dB}$.

Graph 6 is a composite that puts all the response measurements from the previous graphs onto just the one, so you can see the 'fit' between them all. It also shows that with careful room placement, it would be possible to extract considerably more low-frequency output from the Focal Kanta N°3 than was measured by *Newport Test Labs* (which essentially measures low frequencies in open space, so there's no boundary reinforcement.)

Newport Test Labs measured the Focal Kanta N°3 as delivering 90dB SPL at one metre for a 2.83Veq input, which is just 1dB shy of Focal's specification of 91dB SPL and so easily within the bounds of measurement error. It's a very good—and very high!—figure which means that from a practical viewpoint, you'll be able to get the most from your amplifier, as well as generate extremely high sound pressure levels without distortion. From a theoretical point of view, it demonstrates the superiority of the drivers Focal is using, such that its design engineers are able to extract such a flat and extended frequency response without compromising on efficiency.

Overall, the laboratory tests performed by *Newport Test Labs* reveal that the performance of the Focal Kanta N°3 is absolutely outstanding across all measured parameters.  S.H.



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AYRE ACOUSTICS EX-8

INTEGRATED HUB

I know. I too wondered what an 'integrated hub' might be, having never previously heard of such a component. I guess that the problem is that now that there are so many different ways to store and deliver music hi-fi manufacturers are not only having to make sure the components they sell can accommodate all those different ways, but also have to come up with simple ways of telling customers that their products are equipped to handle all these different ways... as well as give them an idea of what type of amplification might also be built in.

Obviously, Ayre Acoustics' attempt to do this integrates the words 'Integrated' and 'Hub.' Presumably, we're supposed infer that it's not only an integrated amplifier, but also a 'hub' for all your sources. This isn't a bad stab at a description, but whether it will fly with the hi-fi industry as a whole has yet to be seen.

THE EQUIPMENT

The degree to which the Ayre EX-8 can fulfil its advertised role as a 'hub' depends to a large extent on the buyer, since three different versions of it are available. The 'base' version, which retails for \$11,500, gives you only three analogue inputs: two unbalanced (via RCA) and one balanced (via XLR). I suspect that most audiophiles would find that too few inputs to be truly useful. A couple more inputs would have made for a more practical proposition.

The next step up is to option in digital inputs, which Ayre rather confusingly calls a 'Digital Base' option, which brings the retail price up to \$12,650. But for this, you get only a coaxial digital input, an optical digital input and an AES/EBU input. In order make the EX-8 a real 'hub' you have to go the whole hog and go for the 'Full' option, which adds Ethernet and USB and which brings the retail price up to \$13,000. I would have paid even more for a 'Wireless' module that added Wi-Fi, Airplay and Bluetooth, but Ayre doesn't offer one (at least it didn't at the time of writing). What it *does* offer is a USB/Wi-Fi adaptor that plugs into one of the two USB sockets on the rear and enables you to connect to your home network wirelessly, rather than via Ethernet. This USB/Wi-Fi 'dongle' is usually included, but for some reason it wasn't with mine... perhaps it's in a previous reviewer's pocket, so I had to stick with wired Ethernet.

One advantage of this 'option' approach is that according to Ayre, all the options are on separate modules—in fact it claims that everything in the EX-8 is modular, including the headphone amplifier, the output amplifier and even the volume control circuitry. This means that, according to Ryan Berry, President of Ayre, almost everything is upgradeable. *'This way we make it easy for our customers to keep up with formats or add new technologies we discover with a simple board swap,'* he says.

As you can see, the Ayre EX-8 is rather spartan, with only a smallish display, a largish volume knob, two normal-sized

push-buttons and a pair of headphone sockets occupying the space. (When I say 'a pair' you might be wondering why there are three sockets. Two are balanced 3.5mm outputs, the other is a standard 6.35mm unbalanced output.) The EX-8 is also a fairly small component, measuring 440×330×100mm (WDH) and fairly light (11kg), even when optioned-up to the gills. But I think Ayre's design approach looks very elegant, something you could proudly have out on top of a credenza or such-like for all visitors to admire.

The rear panel has all the inputs and outputs required, but there are two notable omissions. Firstly, Ayre does not identify which speaker terminal is the right channel or which is the left, leaving you to work this out yourself. Secondly, it labels its speaker terminals with big, black (+) and (–) markings but does not include any warning that

Interconnectedness, easy operability, excellent sound quality and attractive exterior make the Ayre EX-8 worthy of your consideration

these outputs are in fact balanced, so the (–) terminals are not at ground potential, which means if you connect either to ground (possibly via a powered subwoofer), you might damage the amplifier. This lack of a warning is a serious oversight. (This last, about the (–) terminal is mentioned in the *Owner's Manual*, but who reads them?)

I was not surprised to find in the *Owner's Manual* (yes, I did read it, my previous comment was a joke) the advice that 'Due to the manufacturing processes used for the wires, capacitors and circuit-board materials a break-in period is required for the amplifier to reach its full sonic potential,' because most manufacturers include similar statements. I was equally not surprised to find that Ayre recommends that the break-in period should be 'around 100 to 500 hours for the amplifier to reach its full sonic potential' because many other manufacturers also recommend similar break-in timeframes. But what really, really surprised me was Ayre's next statement, that 'each input uses a different physical path on the input circuit board, therefore a separate break-in period is required for each input.' Really? So putting that into context, a fully-optioned Ayre EX-8 has ten inputs, so if I proceeded on the basis of caution and allocated the maximum break-in time for each input, I'd have to use the Ayre EX-8 for 5,000 hours before it was performing as its manufacturer intended in order that I could review it properly. That's a bit over six months of continuous operation! So, since I wasn't able to have the Ayre EX-8 loaner unit for nearly that long, you'll appreciate that I was not able to 'break-in' all the inputs I used.

Ayre also includes a set of wooden (Myrtle) blocks that it recommends you place underneath the EX-8 to improve its sound quality. While they may very well do that, I suspect an ulterior motive, which is to make

sure there's plenty of airflow underneath the amplifier, because without it the amplifier will get very hot indeed—my infra-red thermometer measured it at more than 50°C, and that was in an air-conditioned listening room following a not-overly-loud reviewing session. (I was, however, running the EX-8 24/7 in order to try to rack up the required break-in hours.)

IN USE AND LISTENING SESSIONS

After I worked out which speaker terminals were left and which were right (I had initially guessed wrong, so I had to re-wire) it was all plain sailing. Ayre's menu system is so intuitive that you probably won't need to use the *Owner's Manual*, unless it's to set up the wi-fi (pages 29 to 33) or work out how to make inputs 'invisible', or adjust display time-out times or install firmware updates via USB, or arrange pass-through options, or enable video sync. This applies to controlling the EX-8 via the front panel, using the supplied infra-red remote control or via the M-Connect app, though you will have to switch between them for some operations.

Sound quality was clean and dynamic, and there was more than enough punch to the sound even with fairly inefficient speakers, so I can't see you needing any more power than the Ayre EX-8 can deliver if you have an otherwise well-curated system. Listening to the classic opener *Doctor My Eyes*, from Jackson Browne's self-titled debut album, the Ayre delivered the full complexity of the contrasting bass lines from bass guitar and piano plus the fabulous percussion (full kit n' congas) with unerring precision, keeping the low frequency sounds completely separate. You can also hear the finger strikes on the congas very clearly, and even on the fastest of the bass

guitar riffs you can clearly hear the attack and the decay... and there's no bleeding of one note into another.


Midrange was also superb. Listening to Browne's *Tender is the Night* (I don't know if he borrowed the title from F. Scott Fitzgerald's novel of the same name, or from its original source, the John Keats poem *Ode to a Nightingale*) not only was Browne's voice rendered accurately, but also the sound of the lead guitar and organ. You can hear the 'studio' sound of the day, but it's very natural, with mostly only a little echo added... an effect which is also made clearly audible by the clarity of the Ayre EX-8's sonic delivery.

I stayed with the same artist to test out the Ayre EX-8's high-frequency performance, using Browne's track *Lawyers in Love* (again from his album of the same name). This has some insane super high-frequency action (is it a synth pretending to be a theremin?) along with great cymbal sound and the Ayre again delivered it all beautifully. And, of course, the superb bass and drum sound Browne's engineers manage to deliver on all his early albums is also clearly in evidence. (But do take the time to listen carefully to the lyric of this track... it's a doozy, and particularly relevant in these Trumpian times.)

CONCLUSION

The fact that the Ayre EX-8 does not have Bluetooth and Airplay should not really worry you, but if it does, there are easy ways to enable this (ask your hi-fi dealer), so I don't really lament their lack. Likewise with MQA, even though Ayre could easily add this at any time (in fact, probably a good idea to check if it has been added by the time you're reading this review). But I do recommend you listen to the Ayre EX-8, because although its price puts it on a shelf where it has lots of serious



and well-credentialed competitors, its interconnectedness, easy operability, excellent sound quality and attractive exterior make it worthy of your consideration. 

Steven Roland

Readers interested in a full technical appraisal of the performance of the Ayre Acoustics EX-8 Integrated Hub should continue on and read the LABORATORY 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

CONTACT DETAILS

Brand: Ayre Acoustics

Model: Integrated Hub

RRP: \$11,500 (Base price, see copy)

Warranty: Five Years

Distributor: Audio Magic Pty Ltd

Address: 482 High Street
Northcote VIC 3070

T: (03) 9489 5122

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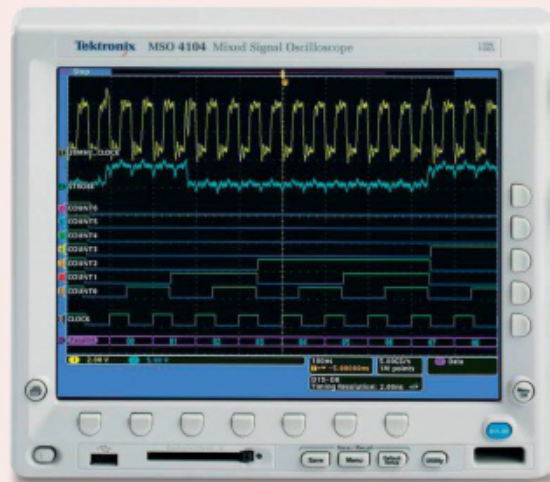
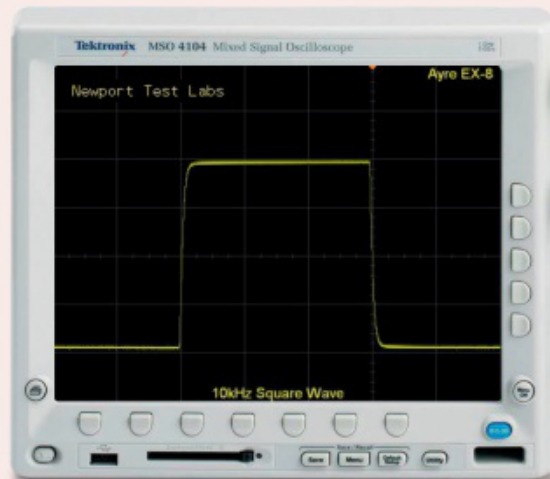
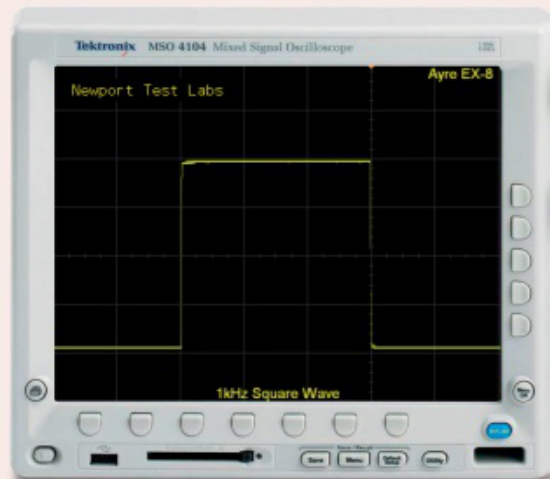
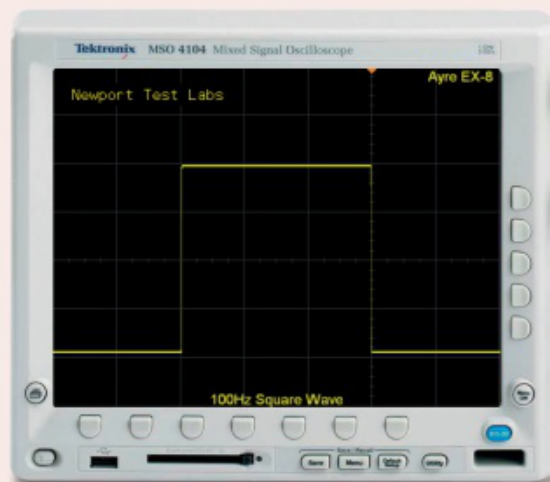


- Balanced speaker output
- MQA
- Airplay, Bluetooth

LABORATORY TEST REPORT

Newport Test Labs measured the power output of the Ayre EX-8 at 1kHz, both channels driven into 8Ω, as being 100-watts continuous per channel, exactly on specification.

Power at the frequency extremes dropped a little below this, by 0.5dB to 93-watts at 20Hz and at 20kHz. The single-channel output results were slightly higher, and more uniform, suggesting the slightly lower power figures at the frequency extremes are due to the Ayre EX-8's power supply. This would seem to be borne out by the test results into the lower, 4Ω impedance, where the Ayre returned a test result of 125-watts per channel, both channels driven... not quite the increase in power I'd usually expect into the lower impedance load.



Frequency response, as measured by Newport Test Labs, was very linear as well as extremely extended, with the lab measuring <1Hz to 101kHz -1dB and <1Hz to 224kHz -3dB, so the normalised response was <1Hz to 224kHz ±1.5dB. The Ayre EX-8's frequency response across the audio band is shown in Graph 6. The black trace shows the frequency response into a non-inductive 8Ω precision high-power resistor and you can see that between 20Hz and 20kHz, it basically tracks the graph line, so is superbly flat.

Below 20Hz there's a slight roll-off to be 0.05dB down at 5Hz and 40kHz (the graphing limits for this particular test). This puts the normalised audio-band frequency response at 5Hz to 40kHz ±0.025dB. The red trace shows the Ayre EX-8's frequency response when it's driving a load that's representative of a typical two-way loud-speaker system. (Essentially this circuit is one originally developed by Ken Kantor and modified by John Atkinson, the schematic for which can be found here: www.tinyurl.com/sim-ls-load) Although it's not nearly so flat, you need to consider the vertical scale of the graph, which is just a quarter of a dB per division, so even into this load, the Ayre EX-8's frequency response is still a truly excellent 5Hz to 40kHz ±0.12dB.

Channel separation was outstanding at low frequencies (109dB), good at mid-frequencies (78dB) and more than required at high frequencies (53dB), though I'd like to see better results at these high frequencies, even though they would not be audible. Channel balance was 0.14dB, which is good, particularly considering the balanced nature of the circuitry. Inter-channel phase accuracy was also good, as you can see from the tabulated figures.

Distortion was low enough that it will be inaudible but a little higher than usual due to the use of a balanced output stage. (Essentially, the balanced output stage means that the audio signal is passing through two identical amplifiers so distortion must inevitably be twice as high as if it were passing through only one of them.) It's also lower into 8Ω loads than into 4Ω loads which, again, is exactly as theory would predict. Looking at Graph 1 (1-watt output into 8Ω) you can see a second harmonic at -80dB (0.01%), a third at -63dB (0.0707%), a fourth at -100dB (0.001%), and a fifth at -92dB (0.0025%). The four higher-order harmonics visible further to the right are all more than 110dB down (0.0003%). Into a 4Ω load at the same 1-watt output, the levels of the first five harmonic components are almost identical to those produced when the amplifier is driving 8Ω, but the levels of the higher-order harmonics are higher and additional harmonics are also added. Increasing the power output to 20-watts per channels sees the distortion levels increase further—as would be expected—and additional higher-order harmonics added. However even at these levels distortion is still too low to be audible as distortion. Looking at Graph 3 we can see a second harmonic at -72dB (0.0251%), then a third at -77dB (0.0141%), a fourth at -96dB (0.0015%), and a fifth at -88dB (0.0039%).

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Above this, apart from 7th and 9th components both down at around –81dB (0.0089%), all other distortion components are more than 90dB down (0.003%) and most more than 100dB down (0.001%).

Across all graphs you can see that the noise floor of the Ayre EX-8 is ‘way low, down more than 120dB relative to 1-watt and nearly 140dB relative to 20-watts. This performance is reflected by the overall wideband signal-to-noise ratios measured by *Newport Test Labs* of 82dB unweighted relative to 1-watt (improving to 88dB with IHF-A-weighting) and 102dB unweighted relative to rated output, improving to 109dB A-weighted.

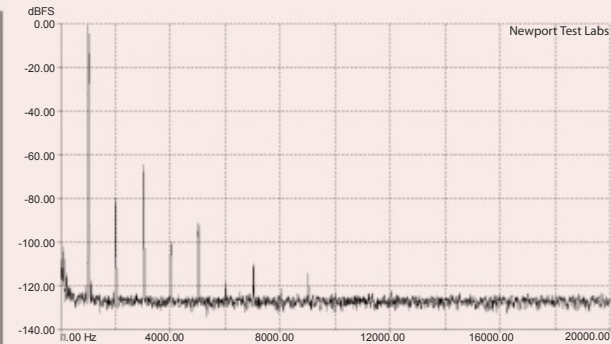
Output impedance was high (again partly due to the balanced output configuration), at a measured 0.48Ω at 1kHz. This is the reason for the response variations in the red trace of Graph 6, but also means a relatively low damping factor of 16, which would be more typical of a valve amplifier than a solid-state amplifier. Input sensitivity was 146mV for 1-watt out (balanced or unbalanced inputs) and 1.46V for rated output, which puts overall voltage gain at 25.7dB which is on the low side for an integrated amplifier and also suggests that the balanced input might not be differential.

The Ayre EX-8’s performance when reproducing square waves was outstandingly good. The 100Hz square wave is excellent, with no tilt at all and none of the bending that, if present, would have indicated phase shift. The 1kHz square wave is almost a replica of the test signal. The 10kHz square wave was far ‘squarer’ than I usually see from amplifiers at this frequency, with only a very slight rounding on the leading edge. Performance into a capacitive load was equally exemplary, with the waveform showing a very slight 25 per cent overshoot that is completely damped within two cycles. This shows that the amplifier is unconditionally stable and also able to drive complex reactive loads including electrostatic speakers.

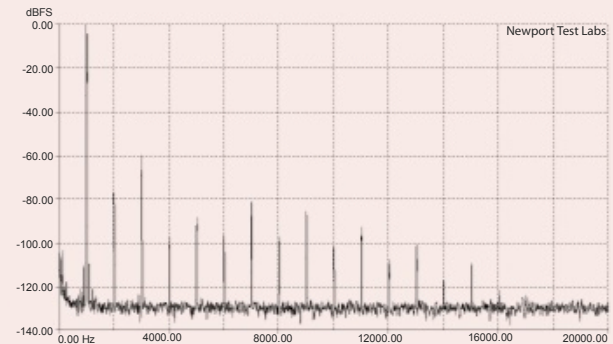
Standby power consumption was inexplicably high, at 42-watts, so I’d suggest actually turning the amplifier off whenever you’re not using it. The fact that the EX-8 runs so hot (>50°C) means that it will come up to operating temperature very fast, so you’ll get maximal performance soon enough.

Overall the Ayre EX-8 Integrated Hub performed very well on *Newport Test Labs*’ test bench, though the results do indicate that you will get best performance from it if you to use loudspeakers with a nominal impedance of at least 8Ω and connect them using short lengths of low-resistance cable. ⚡

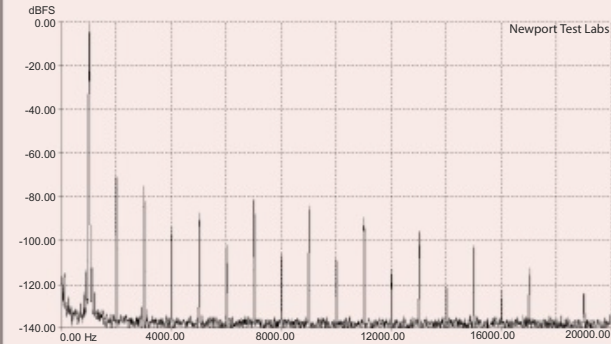
Steve Holding



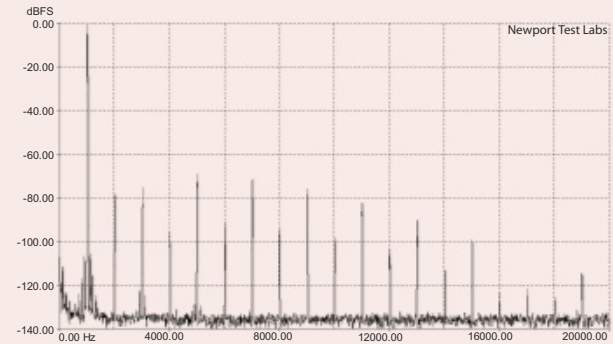
Graph 1. Total harmonic distortion (THD) at 1kHz at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB.



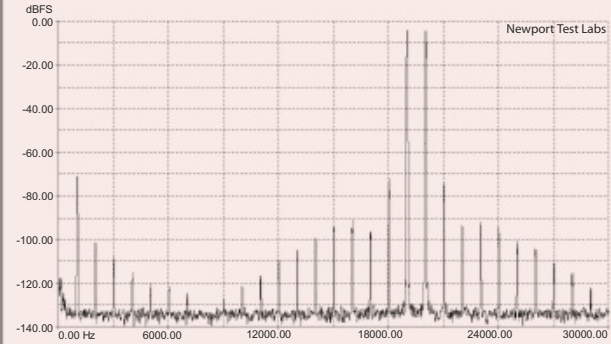
Graph 2. Total harmonic distortion (THD) at 1kHz at an output of 1-watt into a 4-ohm non-inductive load, referenced to 0dB.



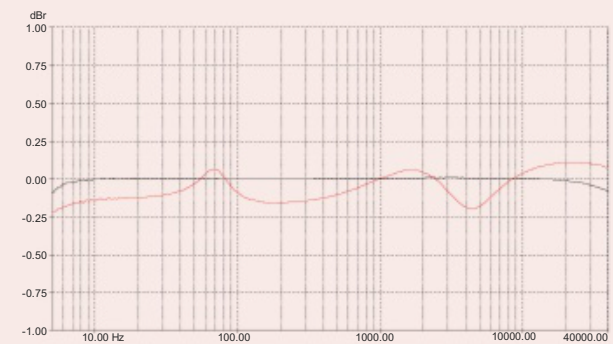
Graph 3. Total harmonic distortion (THD) at 1kHz at 20-watts into an 8-ohm non-inductive load, referenced to 0dB.



Graph 4. Total harmonic distortion (THD) at 1kHz at 20-watts into a 4-ohm non-inductive load, referenced to 0dB.



Graph 5. Intermodulation distortion (CCIF-IMD) using test signals at 19kHz and 20kHz, at an output of 20-watts into an 8-ohm non-inductive load.



Graph 6. Frequency response into a resistive/inductive/capacitive load representative of a two-way speaker (red trace) and into an 8-ohm non-inductive load.

Ayre Acoustics EX-8 Integrated Hub – Test Results – Power Output

Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω	105	20.2	105	20.2	105	20.2
2	8 Ω	93	19.6	100	20.0	93	19.6
1	4 Ω	121	20.8	132	21.2	118	20.7
2	4 Ω	115	20.6	125	20.9	114	20.5

Note: Figures in the dBW column represent output level in decibels referred to one watt output.

Ayre Acoustics EX-8 Integrated Hub – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	<1.0Hz – 101kHz	–1dB
Frequency Response @ 1 watt o/p	<1.0Hz – 224kHz	–3dB
Channel Separation (dB)	109dB / 78dB / 53dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.14	dB @ 1kHz
Interchannel Phase	0.01 / 0.01 / 0.13	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.009% / 0.128%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wghted)	82dB / 88dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wghted)	102dB / 107dB	dB referred to rated output
Input Sensitivity (Balanced Input)	146mV / 1.46V	(1-watt / rated output)
Output Impedance	0.48Ω	at 1kHz
Damping Factor	16	@1kHz
Power Consumption	42 / 76	watts (Standby / On)
Power Consumption	93 / 402	watts at 1-watt / at rated output
Mains Voltage Variation during Test	236 – 246	Minimum – Maximum
Power Factor	+693	

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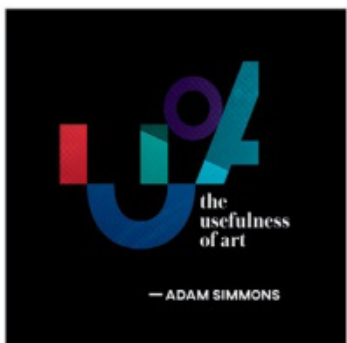
AX-5 Twenty

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The Usefulness of Art (Fat Rain FAT021)

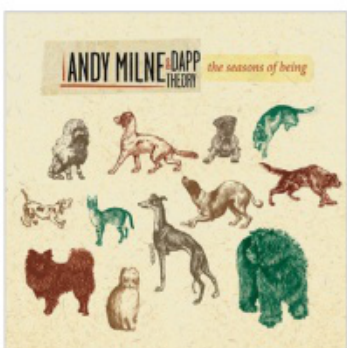


The breadth of the music matches the scale of the ambition. These five albums dig deep into the *oeuvre* of brilliant Melbourne composer/multi-instrumentalist Adam Simmons, beginning with Concerto for Piano and Toy Band, a dense, giddy conversation between pianist Michael Kieran Harvey and the eight-piece Adam Simmons Creative Music Ensemble (CME).

The titular suite, which, alongside its intense beauty of melody and improvisation, carries dialogues between startling fluctuations of sheer mass, from the leader's spectral bass clarinet to avalanches of 15-piece ensemble sound. *Travelling Tales* places Simmons' assorted reeds against a heady, edgy composition for 20-piece string orchestra. *The Calling*, by contrast, uses a 14-piece CME containing six drummers and percussionists. The usefulness of art? A Rodin quote.

ANDY MILNE & DAPP THEORY

The Seasons of Being (Sunnyside SSC1482)

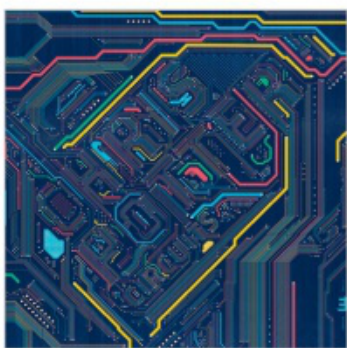


Ah, the old chestnut of music and healing. Pianist/composer Andy Milne's music has spectacular breadth and genuinely uplifting power. His core sextet is joined by six guests: featured soloists on pieces specifically crafted with them in mind. The results are so engrossing as to shift moods and molecules. They might not cure measles, but will certainly knock over a case of the blues. If you're

grumpy when you start listening, you will come out the other end with a smile, and probably with your hair standing on end. I just love Milne's sense of colour combinations, such as Aaron Kruziki's bass clarinet with Christopher Hoffman's cello and his own piano in a passage of reflective chamber music. At the other end of the spectrum come blazing solos from guitarist Ben Monder and trumpeter Ralph Alessi, or rapping from John Moon, skimming across choppy waves created by bassist Christopher Tordini and drummer Kenny Grohowski.

CHRIS POTTER

Circuits (Edition/Planet EDN1123)

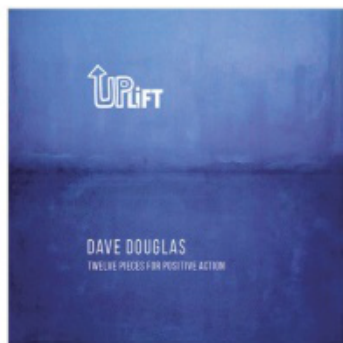


Chris Potter's most profound work occurred in his decade with the late Paul Motian—but that's like saying a fine actor's greatest role was as Hamlet. *Circuits* is a whole new theatre of sound for the saxophonist. Recorded with sparkling presence, it has Potter returning to more groove-based material, amid bold textures, compositional complexities and wide-

open improvising. The textural boldness includes Potter sometimes multi-tracking his array of reeds, and keyboards player James Francies supplying anything from electronic hazes to lyrical piano or synth bass—electric bassist Linley Marthe only appearing on four of nine pieces. Key to the music's success is drummer Eric Harland, who blends precision, dialogue, groove and drama into a startling series of underpinnings and foreground jolts.

DAVE DOUGLAS

Uplift (Greenleaf GRE-CD-1068)



Trumpeter Dave Douglas's Greenleaf label is a tap for pouring out exceptional records. This one was preceded by four double-albums of his quintet in incendiary form at the Jazz Standard. The Uplift project could hardly be more different, the music intended as an impetus to political action in a time when he sees democracy as under threat. Douglas

assembled five players he saw as sharing his concerns: Joe Lovano (reeds), Mary Halvorson and Julian Lage (guitars), Bill Laswell (bass) and Ian Chang (drums). While Lovano has been a long-term sparring partner and slightly earthier foil to Douglas's quicksilver musical mind, a particular fascination comes from the two guitarists' interaction against the juddering, delightfully unconventional rhythm section of Laswell and Chang.

JEFF BALLARD

Fairgrounds (Edition/Planet EDN1121)

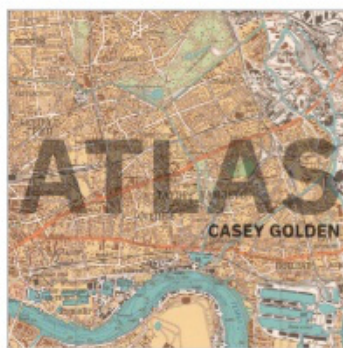


This live album proves that much that is new can still be brewed by mixing jazz, funk and electronics. Ballard, who has drummed with Ray Charles, Chick Corea, Brad Mehldau and Pat Metheny, leads an unusual quintet, with two keyboards, (Kevin Hays and Pete Rende), electronics (Reid Anderson) and guitar (Lionel Loueke).

The compositions, from within the band (which is sometimes augmented by Mark Turner or Chris Cheek on tenor), are mostly sketches that are coloured in by the improvising. And what colours! Loueke is such a supple, slinky guitarist, his playing writhing through the sometimes dense, sometimes transparent strata of keyboard and electronic sounds. While they all play freely with dazzling invention, the interest steps up a level when a groove emerges. Ballard's drumming can be thrillingly audacious, whether working against synth bass or just the super-groovy guitar of Loueke.

CASEY GOLDEN

Atlas (caseygoldenmusic.bandcamp.com)



Pianist/composer Casey Golden likes to disguise cleverness or surprise with veneers of logic or just plain beauty. It never strikes you as being experimental one moment and lyrical the next, but rather the same river with changing banks. He is joined by guitarist Alex Munk, bassist Henrik Jensen and drummer Will Glaser, who help smooth any choppiness out of changes in

the music's surface. As *Singularity* evolves, for instance, they shape-shift between roles, much as might have been conceived by a fine orchestrator—and Golden is that as well as being an idiosyncratic composer and imaginative improviser. *Singularity* uses recurrent echoes of its own motifs in ways that are both disquieting and beguiling, and meanwhile a groove ever so slowly solidifies out of a more abstract version of itself. 🎧 John Shand

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COURTNEY BARNETT

MTV Unplugged (Milk!/Remote Control)



Though her studio output is damn near impeccable, Courtney Barnett is a concert crusher at heart. Her shows are characteristically monstrous, manic and magnetic. Her MTV Unplugged session could not be more diametric. The CB3 are in tow, of course, albeit stripped to their basics while Barnett herself wields a bright, resonant acoustic and sings drier and more pastoral than

we're used to. In an eight-track set, three covers seems exorbitant, yet when she and Paul Kelly hit the chorus of a gloomy *Charcoal Lane* (Archie Roach)—or when the final refrain of *So Long, Marianne* rolls around and you're forced to wonder if Leonard Cohen foresaw such beauty when he wrote it—the argument falls flat. Dismally short but delightfully sweet, MTV is an essential listen; not just for her own fans but also for fans of any sirenic, emotionally rousing music. *Matt Doria*

BEACH SLANG

The Deadbeat Bang of Heartbreak City (Dew Process)



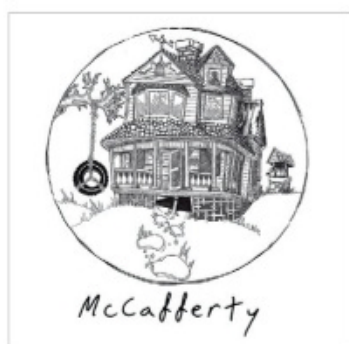
If Jimmy Eat World came down with a throat infection, doused their gear in whiskey and set fire to it, you'd have a wonderfully gnarly explosion of grit, wit, and tunes custom-built for a rollicking good time—not unlike this fierce new offering from Philly punks Beach Slang.

The guitars croon relentlessly, and the vocals are bright and committed

to creating a certain kind of atmosphere: one that will instil in you an urge to nod your head, shuffle your feet and raise your hands high. Of course, if you want to maintain something resembling composure when expressing your love for this album, you might prefer to stroke your proverbial beard and say, 'Mm, yes, quite good!' *Anna Rose*

MCCAFFERTY

The House with No Doorbell (Independent)



Wearing weathered hearts on tattered sleeves, LP3 sees McCafferty strike a stunning balance between the raw, visceral emotional fervour that defined their early days and the ear-crushing brand of fiery, fist-in-the-air energy that made last year's 'Yarn' such a head-turner. Gracefully weaving around his homey, yet palpably strained vocals, Nick Hartkopt's

fretwork is astounding—he pulls every punch he knows across the LP's tight 30 minutes, showcasing everything from squeaky clean acoustic prings to punchy, overdriven Telecaster chaos. The album came together unusually fast, but you'd never know; the songs are sharp, witty and colossally catchy, and the production is next-level good. However tumultuous McCafferty's trajectory has been, Doorbell shines as a definitive high point. *Matt Doria*

ALGIERS

There Is No Year (Matador/Remote Control)



It wasn't intentional, but four bars into *There Is No Year* and the feet started tapping away. So consumed will you be by the rich and impassioned performances that you will instantly find yourself giving into the penetrating rhythm and blues, exalting urban grooves and sensational soul at play. It's the bright piano mirroring the flurry

of guitars in the title track, and the sharp attack of rhythms in *Unoccupied*—there's a lot that begs for your attention, but Algiers have mastered a certain knack so you don't miss anything; they revel in stripped bare, cleanly cut and neatly produced components that don't overwhelm one another. Rather, they quite politely offer each element a turn in the spotlight so that you can really immerse yourself into the essence of each member's contributions. *Anna Rose*

LANDE HEKT

Gigantic Disappointment (Independent)



Typically loud and livid as the fierce front-woman in Muncie Girls, on her debut solo effort Lande Hekt dabbles in sensitivity and restraint.

The production is looser and more low-key than we're used to with her full-band material, which allows her dry, crumbly fretwork and distinct British drawl to shine brighter and punch harder than ever before.

Though maintaining the blunt confidence and boldness that Hekt has made a name for herself for, the EP shows a lighter side of the singer-songwriter; the lyrics are doughier and more personal, and the guitar sings sweetly under them. Disregard the title: this seven-track scorcher is all poised to please. *Sarah Comey*

PINEGROVE

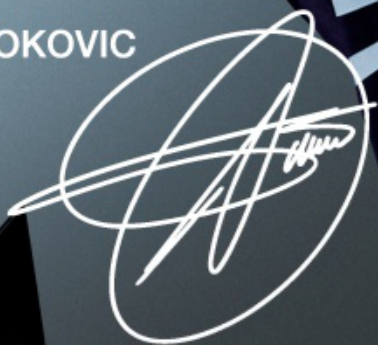
Marigold (Rough Trade/Remote Control)



With denser interplay between its six abettors, tighter playing and a boost in production values, Pinegrove have finally cracked the code to perfecting the warbly emo-country ebullience that only they do so well. Guitars whistle with a sticky-sweet twang, Evan Hall's striking and sentimental poetry twisting elegantly around the band's

labyrinthine compositions. Whereas previous records felt more like home projects hatched for friends to toy with their influences, *Marigold* is defiant in its moxie: every steely pluck reverberates with the strength of country legends, every hook sharp and every chorus riveting. It's a slow-burner of an LP, and one that certainly deserves savouring in a dedicated play-through—on vinyl too, if you can manage it. ⚡ *Avery Jacobs*

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ELVIN JONES

Midnight Walk (Speakers Corner Records)

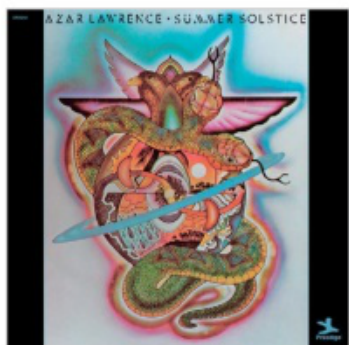


This album features an all-star ensemble (Thad Jones/trumpet; Hank Mobley/tenor; Dollar Brand/piano; Donald Moore/double bass; Steve James/electric piano and George Abend/percussion). Side One opens with a stirring title cut. The track kicks off with a group vamp, then Brother Thad takes the first solo. His crystalline, no-vibrato trumpet sparkles with blues intonation. Mobley

adds some muscle on tenor before handing off to Brand. Side Two is notable for a pair of Thad Jones compositions. On *Cross Purpose* a bop swing framework unleashes the initial trumpet solo. Jones embraces a piercing elegance in an extended run. Mobley follows suit as the piano, bass and drum encompass old school jazz manipulation. Speakers Corner has done a stellar job in remastering to 180-gram vinyl. The mix is crisp and balanced. Thad Jones' trumpet and Hank Mobley's tenor sax are vibrant and the stereo separation is flawless. *Robbie Gerson*

AZAR LAWRENCE

Summer Solstice (Prestige CR00262)

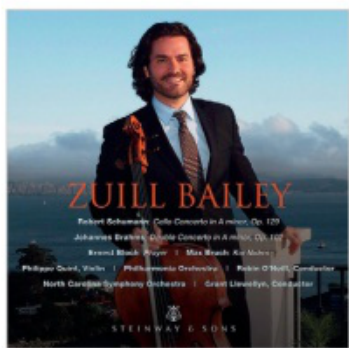


The decade of the 1970s was a fertile period for exploration of the genre of spiritual jazz. Saxophonist Azar Lawrence's contribution, *Summer Solstice*, has just been re-released on 180 gram audiophile vinyl, with all analogue remastering from the original tapes. Azar was strongly influenced by Coltrane and took his place in the quartet led by McCoy Tyner after John's

passing. Here, Azar concentrates on Brazilian jazz. In addition to an ace rhythm section of pianist Albert Dailey, bassist Ron Carter, and drummer Billy Hart, Lawrence brings in trombonist, Raul de Souza, whose big meaty sound fits right in with Azar's soaring soprano and tenor saxes. Lawrence partially dedicates the album to The Aquarian Spiritual Centre, as well as offering this hopeful refrain: 'May peace, joy, and beauty on the wings of faith and hope fly into your hearts, and heal and lift your souls towards the spiritual sun. And may celestial music help restore the plan on earth.' *Jeff Krow*

ZUILL BAILEY

Schumann, Brahms, Bloch (Steinway & Sons 30132)



As a great fan of Schumann, it pains me to confess that the Cello Concerto is not a favourite but this altogether handsome and successful reading is distinguished by the rarely played last-movement cadenza by Gregor Piatigorsky, which gives added breadth and gravity to the finale. The performance of Brahms' Double Concerto is especially big-hearted, with

some very tender voicing of the equally tender slow movement (one of Brahms's most beautiful), as well as both fiery and flavourful playing in the outer movements. The two make-weights on this recording are welcome, especially the Bruch, which is one of his most gorgeous creations. Sadly, the recording is variable, but it's the performances that count here, and I can recommend them, and the generous program, as a fine way to hear these cello classics. *Lee Passarella*

DONOVAN

Wear Your Love Like Heaven (Speakers Corner)



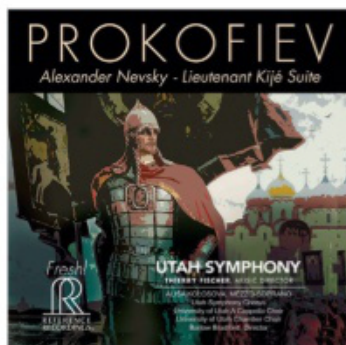
Scottish singer/songwriter Donovan Leitch was often called Britain's answer to Bob Dylan. Recorded in 1967, *Wear Your Hair Like Heaven* has ten songs that clock in at a succinct 22:40. The title track is the epitome of the quirky tempo and lyrical contexts of Donovan. In an unusual ode to love, the singer utilises an assortment of colours to express a spiritual resonance. Organ

shading, vibraphone and jazzy phrasing complement the idiosyncratic vocals. *Mad John's Escape* certainly feels like a Dylan song. The universality of *Oh Gosh* is framed by a funky bass line and jazz flute as Donovan imbues spiritual awakening to everyday life. Donovan's musical vision was emblematic of his era and Speakers Corner's remastering of it is flawless. The overall mix is balanced and the pressing of superior quality. The infrared cover photo is compelling and nostalgic. Oh, and listen for Jack Bruce on electric bass! *Robbie Gerson*

PROKOFIEV

Alexander Nevsky/Lieutenant Kijé

(Reference Recordings FR-735)

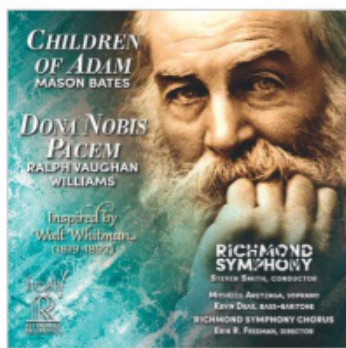


I will wager that even those familiar with these Prokofiev works do not know about their celluloid beginnings. *Lieutenant Kijé* was the first film he worked on, at a time when the medium was very new and unproven. Prokofiev's music captures the mania of the movie (which satirises the pedantic absurdities

of the rule of Emperor Paul I) in an exemplary fashion, yet when we listen today we enjoy the composer-fashioned suite rarely thinking about the satire that inspired it. The *Alexander Nevsky* film is brilliant and artsy, the score redolent in the Russian romanticism of the time. Yet, as with *Lieutenant Kijé*, the composer realised that there would be limited life for his work unless he tore the music from the film, and hence the now-prevalent cantata. The Utah forces are superb in every way, though I will probably hang on to my Ormandy for the *Kijé*, and to my Reiner for the *Nevsky*. *Steven Ritter*

MASON BATES

Children of Adam (Reference Recordings FR-732)



This was the first time I had heard Mason Bates' music. There is always excitement at such a prospect, as it goes to the future of the classical idiom and gauges the taste of contemporary audiences. The program is dedicated to the poetry of Walt Whitman, evidently as beloved to Bates with his *Children of Adam* as it was to Ralph Vaughan Williams and his *Dona Nobis Pacem*.

The two view the same poet in very different lights. Bates shows a fine grasp of the orchestral idiom, and even more importantly, the choral, with a highly individual sound that seamlessly transfers from text to text. The Williams is even better. The piece (for large orchestra, chorus, and two soloists) made for a magnificent compilation that served as the prototype for similar 'pastiche' textual works for years to come including, one might hazard, the Bates on this disc. 🎧 *Steven Ritter*

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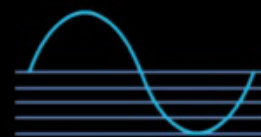
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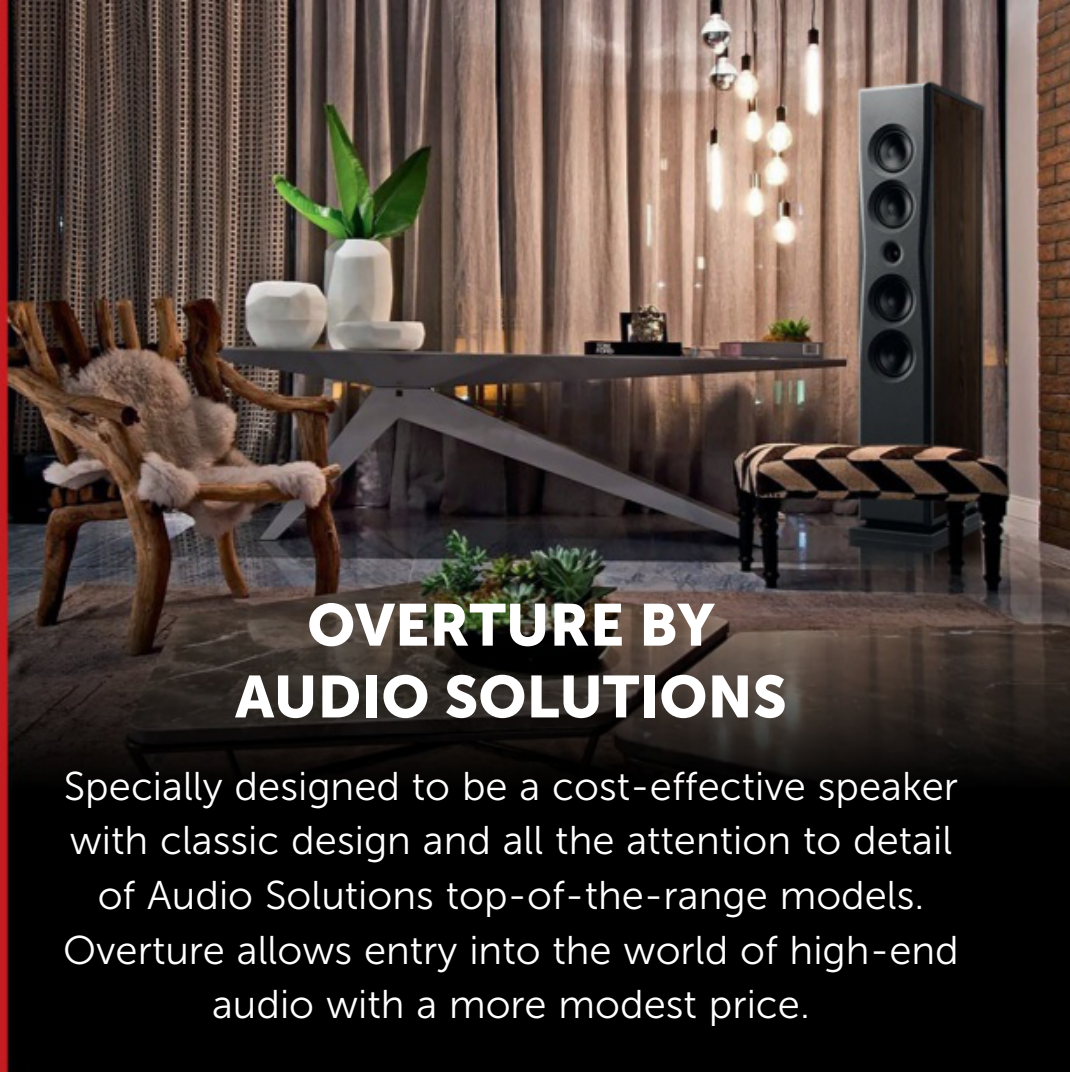
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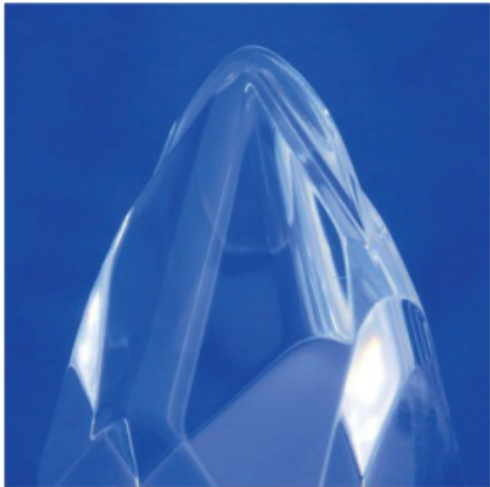
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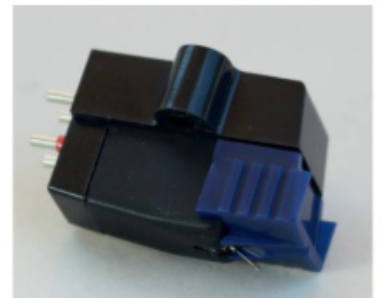
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DAMAGED HEARING

Hugh Grant, an English movie actor who makes his living by playing the role of Hugh Grant, thinks movie theatres are turning the volume up too loud.

Grant's view made it to the media after he'd seen *The Joker* and said the volume had made it 'unendurable.' 'Am I old or is the cinema MUCH TOO LOUD?' the 59-year-old tweeted.

His view generated a flurry of responses. The British cinema chain operating the theatre he named promised an immediate check of sound levels to ensure they complied with health and safety standards. Less famous twitterers flocked to agree with him, some saying volume levels had been creeping up for years. At Dolby they suggested a sound pressure level of 85 decibels was appropriate for three hours of listening, the British Tinnitus Association thought 80dB SPL would be better. That's a little less than the volume generated by a sweetly played cello. Or a dial tone. Hugh would remember dial tones.

Phil Clapp, chief executive of the Cinema Association, the trade body that represents most British cinema operators, said average sound levels of 85dB SPL, coupled with limits on the maximum permitted sound levels, 'are well below those likely to pose any health risk to customers.' Finally there was a movie producer who compared cinemas that play movies too loud to restaurants that use too much salt.

I like salt. And I like loud. And when I go to the cinema I expect the sound to be accurate.

For example, I expect terrorist bombs to explode at something louder than 85dB SPL. After all, when was the last time a terrorist bomb, made to kill countless hapless civilians, was carefully engineered to explode at a volume that would not damage people's hearing? When did Elton John or Queen last play an open-air concert at 85dB SPL? Are we expected to believe that the thoroughly worked seven-litre V8 of Ken Miles' Ford GT40 sitting on 7000 revs per minute down the Mulsanne Straight makes no more noise than Grandma Duck's Prius?

Part of the reason I go to a cinema is that it's one of the very few places where I get to hear genuinely loud, amplified sound without distortion. I hear delicious lows way down there around 20 Hertz, as clean as a whistle and that's because they're being reproduced by drivers that are built specifically for the job. I hear gunshots that crack sharply without decay, and ricochets that sound like ricochets, zinging and piercing and rippingly defined. And when something explodes I know it has exploded.

Sound like this, the bass starting somewhere south of 20 Hertz yet still beautifully defined even at a volume of 11, lows that roll seamlessly into mids, and highs that are coming from every direction including above, is simply not achievable in the vast bulk of home cinemas. That's because achieving such quality is not cheap. So it's something that good cinemas can deliver over and above anything the great bulk of people can get at home, ergo it's something cinemas will do to get people off their couches, and it will leave them with their spines chilled and their blood curdled. It was in the 1960s, after stereo had caught on, that movie makers and cinemas started realising that good sound enhanced the whole experience.

And further, that louder always sounds better until distortion arcs up. It started with the Cinerama epic *How the West was Won* and never looked back.

Maybe the most interesting usage of sound in cinemas happened with *Earthquake* in 1974. The sound system was called Sensurround and assisted a movie that cost \$7 million to take in \$80 million.

Sensurround was invented by Universal and a driving force behind it was Cerwin Vega, a company then and now specialising in subwoofers. Sensurround consisted of monster Cerwin Vega subs installed strategically around participating cinemas and, on cue from the movie, generating sub-bass so low it physically shook the building as well as the folk in the seats. And it sure worked. Well enough, in fact, to win an Oscar for technical achievement. There's a much-repeated story about a test run of Sensurround at the cinema complex on the Universal lot in Hollywood. When the subs kicked in there were big smiles from the executives in there, but the folk in the adjacent cinema evacuated the building because they thought a real earthquake was happening.

Paul Graham, who for years was the driving force behind Alpine car audio in Australia, started out installing Cerwin Vega's massive 45-cm subs in the Sydney cinemas setting up for the movie. He once told me the downside of Sensurround was that cinema owners hated it; it kept cracking their walls. Some cinemas installed netting below their plaster ceilings fearing they'd fracture.

Maybe that's why only three more movies were made with Sensurround. Then we got Dolby Stereo (*Star Wars*. Yes!), Dolby Surround, THX, DTS, Atmos, and now... Hugh Grant. I'd like to reason with him.

I'll take a bull horn. **⚡ Rod Easdown**



Photo Credit: Kurt Kulac

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