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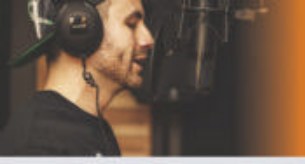

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EDITOR'S LEAD IN

Why Is Hi-Fi So Expensive?

High-end audio equipment is expensive. I know you don't need me to tell you that, but I will anyway. But why is it so expensive? Mostly it's because the people who design and build high-end components are not trying to build a product that sells at a price-point that their marketing research tells them is the 'sweet spot' for that particular category. They're instead trying to build something unique, a product they'd like to own themselves. Most importantly, they want to build a product they (and you) can be proud of.

I recently had a salutary lesson in component costs myself. After what was a freakish accident that involved a set of 'way too big speaker wires, cable elevators, a cam boot and a cup of tea, I found myself having to replace an internal fuse in a high-end, high-power stereo power amplifier. Disregarding the fact that I thought it a bit odd that an amplifier built in 2021 would be using fuses for protection in the first place (electronics repair technicians are fond of the oh-so-true aphorism that "a twenty-dollar transistor will always blow to protect a ten-cent fuse") I wasn't particularly fussed, because a standard 3AG fuse is not expensive (though not ten cents any more) so I stuck a ten-dollar note into my running shorts and jogged off to my local Jaycar branch, thinking I'd get some enforced exercise to atone for my sins.

As it happened, the amplifier manufacturer had specified that a very specific fuse must be used to replace the one I had blown, and when I priced this fuse at Jaycar I was rather shocked to discover that my single ten-dollar note was not going to cover it. Nope. That one single 15-amp fuse was going to cost me $17.95. I suppose you could argue that because the amplifier cost around twenty times more than a typical amplifier, a fuse for it should also cost around twenty times more than a typical fuse, but that would be a specious argument indeed. For me it meant a fuse-less jog home, followed by a return on my motorcycle with a credit card (I'd had enough exercise for one day!).

Frankly, I personally think that a one dollar fuse would have done the same job as the $17.95 one, but for some reason the designer had specified the most expensive option. It's pretty easy to rack up costs fast by using expensive components in your products. Let's say you're a loudspeaker manufacturer that needs a 1mH air-cored inductor for your crossover network. You can buy a very nice, high-quality, brand-name (Dayton Audio) inductor for $12.50. But hey, not many audiophiles have heard of Dayton Audio, and you'd rather use one they have heard of, so you instead specify a Solen 1mH air-cored inductor. Do this and you'll find you're now paying $45 for that same inductor, with the same construction and the same electrical value. And, if you're not exactly sure what an inductor is, it's just a coil of wire or foil — foil being tech-speak for flattened wire).

But what if you also need a couple of 3.3uF 600V capacitors for that crossover network? You could use an off-the-shelf one from Panasonic ($5.50) but that's not an 'audiophile' brand, so you instead specify one from Auricap. However, when you find that that Auricap will cost you $30, you think to yourself, why not pay a little more and step up to a really well-known brand (Mundorf), at $45? But if you really want to make sure that no-one will copy your crossover topology, why not specify an Audio Note Silver Foil 3.3uF 600V capacitor. Cost to you for a single capacitor? $4,276. And no, there are no misplaced commas in that price: that one single capacitor will set you back four thousand two hundred and seventy-six dollars. The kicker here is whether you really needed a capacitor with a 600-volt rating for your crossover.
If a 100-volt working voltage was all you needed, I could have picked up four of them for you while I was at Jaycar and still got change from my ten bucks. *greg.borrowman@futurenet.com*

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Future Publishing Australia
PO Box 1077 Mount Street,
North Sydney, NSW 2059
Tel: 02 9955 2677 **Fax:** 02 9955 2688
Email: aushifi@futurenet.com
Web: www.avhub.com.au

Subscription enquiries:
Please call CRM on (02) 8227 6486

Editorial
Editor: **Greg Borrowman**
greg.borrowman@futurenet.com
Art Director: **Kristian Hagen**
kristian.hagen@futurenet.com

Contributors
Jutta Grkinich, Stephen Dawson, Steve Holding, Jez Ford, Tom Waters, Peter Xeni, Paul Boon, Rod Easdown, Matt Doria, Bill Huff-Fanning, Brad Cunningham, Steven Rowland, Paul Boon, Angus Bradley, Kailu Chen, Peter Giles.

Photography
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Advertising
Advertising Director: **Jim Preece**
jim.preece@futurenet.com
Advertising Manager: **Lewis Preece**
lewis.preece@futurenet.com
Advertising Liaison: **Diane Preece**
diane.preece@futurenet.com

Management
Managing Director: **Neville Daniels**

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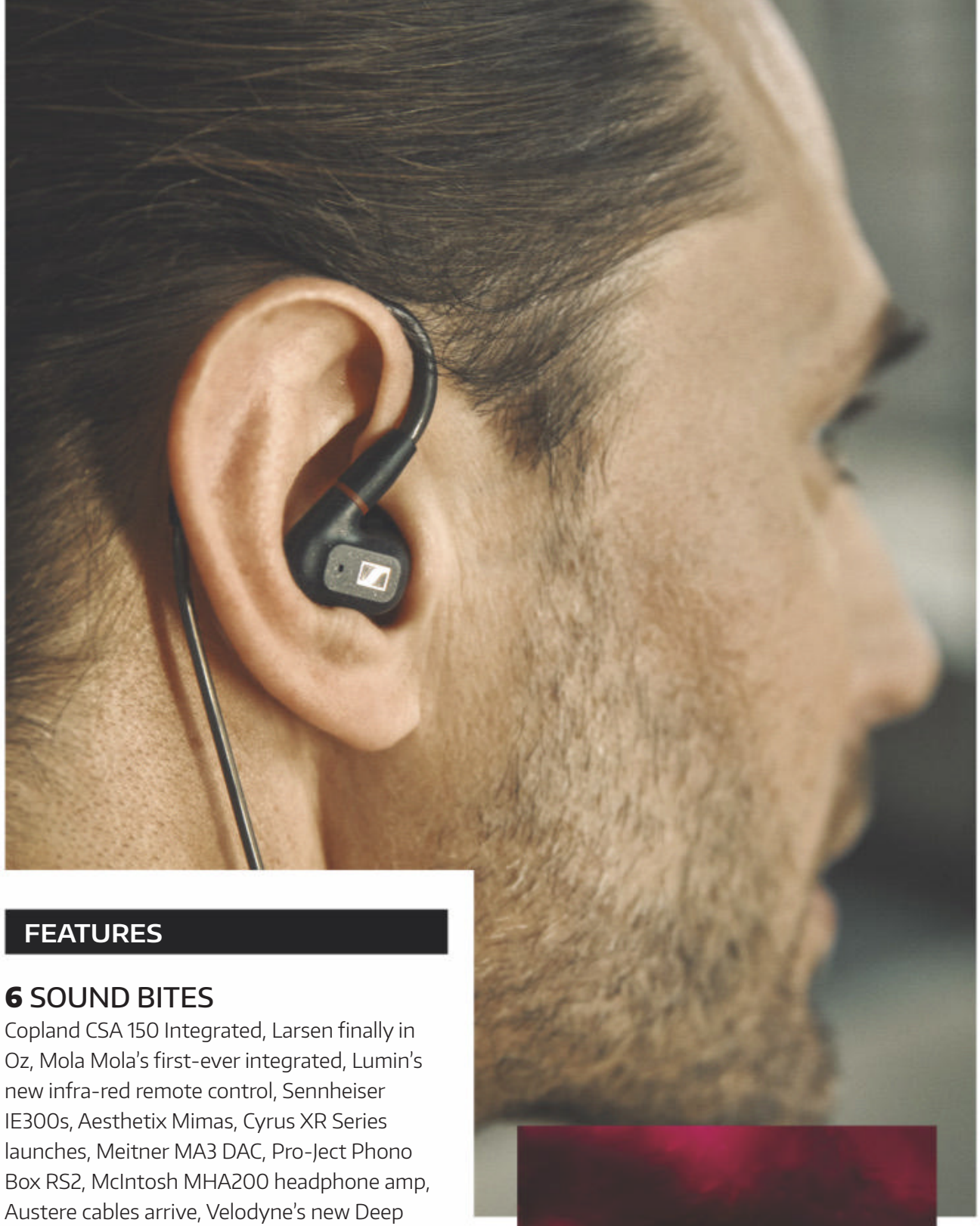
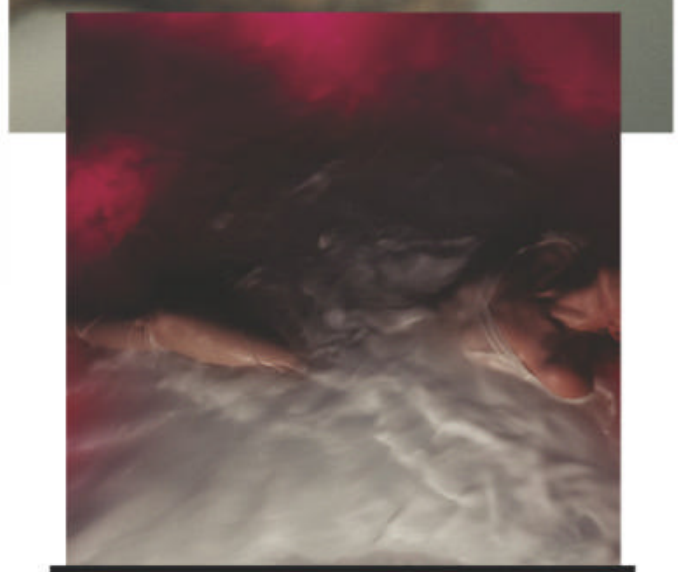
EQUIPMENT REVIEWS





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OUR FRONT COVER
We couldn't decide which of the components reviewed in this issue most deserved a front cover, so we put them all on it! Well, almost all...

COPLAND CSA 150

Famous Danish manufacturer Copland has released the top-of-the-range integrated amplifier in its latest CSA series. The new CSA 150 is a hybrid design using a double triode gain stage (6922) with MOS-FET buffering.

The solid-state bipolar output stage is rated with an output power of 150-watts per channel into 8Ω and 230-watts per channel into 4Ω. According to **Aleksandar Maksimovic** of Audio Magic, which distributes Copland in Australia the new amplifier will deliver higher power when reproducing music. "Under dynamic conditions the CSA 150's current feedback power plant will deliver several times its rated power, more than enough to drive almost any loudspeaker," he said.

The Copland CSA 150 has a built-in DAC that uses an ES9018 Reference 32-bit DAC to provide multiple S/PDIF inputs (one coaxial, two optical) plus a USB input and has both PCM and DSD capabilities. An optional aptX HD Bluetooth module can be fitted if a wireless capability is required.

For analogue use, the Copland CSA 150 has three unbalanced line inputs, two balanced line inputs and a phono input (MM). It also has a dedicated headphone output stage and balanced and unbalanced line-level outputs.

Copland rates the CSA 150 with a frequency response of 10Hz to 150kHz (–3dB) and a signal-to-noise ratio of 'better than' 90dB (IHF-A). Available now, the Copland CSA 150 sells for $8,400.

For more information, contact Audio Magic on (03) 9489 5122 or via its website at www.audiomagic.com.au

FIRST LARSEN IN AUSTRALIA

Larsen HiFi speakers are available for the first time in Australia from Melbourne-based distributor Nirvana Sound. Larsen is a Swedish manufacturer whose omni-directional (ortho-acoustic) loudspeaker designs can be traced back to the famous designs originally invented by Sonab of Sweden.

One of the first models to arrive is the flagship floor-standing Larsen 9, which is 300×930×378mm (WHD) and weighs 25.5kg. It has a rated sensitivity of 88dB-SPL and a rated nominal impedance of 4Ω. As is usual with an omni-directional design, the Larsen 9 has three 25mm soft-dome tweeters (all made by Scan-Speak) each one of which fires in a different direction. An angled 174mm Scan-Speak Illuminator driver sits high on the very 'Sonab-looking' cabinet to deliver mid and low frequencies while lower down in the cabinet, a 197mm Scan-Speak Illuminator driver in a bass reflex enclosure delivers the lowest frequencies down to a claimed 22Hz.

The crossover network is very complex not only because of the 2.5-way design (where the 197mm driver is low-passed at 300Hz, and the 174mm driver crossed to main tweeter at 2.5kHz) but also because the 'vertical' tweeters are high-pass-filtered at 5kHz. The crossover components include large, air-wound copper inductors and Jensen foil capacitors.

It should be no surprise that Larsen speakers look like Sonab speakers, because when **Stig Carlsson** (1925–97), who founded Sonab, left it and went on to found Carlsson, he did so in partnership with **John Larsen**. After Carlsson died in 1997 Larsen continued building Carlsson speakers until 2006 when he started up again in partnership with **Stefan Björklund** and designer **Anders Eriksson** (who tragically died in 2014 aged 34), this time using his own name to badge the speakers.

Larsen speakers are available in any colour, with the company's website showing models in unusual green and blue colours. "We can lacquer in many colours following the international colour standard called NCS (Natural Colour System)," says Larsen. "Ask your paint dealer or your painter to transform your colour sample to an NCS code and then ask your local dealer for more information." Available now, the Larsen 9 loudspeakers sell for $22,000 per pair (RRP).

For more information, contact Nirvana Sound on 1300 988 366 or visit www.nirvanasound.com

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FIRST MOLA MOLA KULA INTEGRATED

Mola Mola's first-ever integrated amplifier, Kula, can be optionally fitted with a phono stage whose equalisation settings you are able to adjust remotely, via an app. This, to our knowledge, is a world-first for any integrated amplifier or, indeed, any phono stage.

You can also option a DAC stage into the Mola-Mola Kula. It's the same one Mola Mola uses in its stand-alone Tambaqui DAC and has five digital inputs including Bluetooth. "The DAC uses a home-grown asynchronous upsampling algorithm whose input frequency measurement slows down rapidly until, after a few seconds of lock, the frequency ratio measurement is frozen," says **Warwick Freemantle**, of Sonic Purity, which distributes Mola Mola in Australia. "Frequency stability is then wholly determined by the internal clock, a laboratory grade 100MHz SC-cut oscillator. This is effectively an atomic clock." Because of this technology, Mola Mola claims jitter is less than 1 picosecond below 1kHz and less than 300 femtoseconds above it, with rejection of external jitter at better than 80dB.

Input gain of the phono stage is switchable in 5dB steps over a 40dB range, and the MC input is completely separate from the MM input, so you can use two cartridges without the need to swap out leads. Input resistance and capacitance are individually switchable and the available equalisation settings cover almost all cutting curves (RIAA, London, Decca etc). All settings are software controllable, either on the fly using a smart-phone and tablet via the Mola Mola Remote app or directly stored under the preset buttons.

The Kula's power output is rated as being 150-watts per channel into 8Ω and 300-watts per channel into 4Ω. The Class-D output stage has a rated impedance that varies between 2–7mΩ across the range 20Hz to 20kHz, ensuring more than adequate damping for any loudspeakers. The company claims that although the the Class-D amplifier is based on Hypex's nCore technology, that it's "exclusive to Mola Mola" and that it designed and builds the Kula's power supply in-house. Available now, the basic Kula sells for $15,900 (RRP). The Kula with phono stage option sells for $18,720 or, if you also add in the DAC, $27,950.

For more info, contact Sonic Purity on (04) 0950 4805 or www.sonicpurity.com.au

INDY ANC EARBUDS

Skullcandy has for the first time released a true wireless earbud with both Active Noise Cancelling and 'Tile' technologies, the Indy ANC. The sound of the Indy ANC earbuds can be customised using Skullcandy's free App which, according to **Jeff Hutchings**, of Skullcandy, "delivers a truly unique listening experience tailored to each user."

The Indy ANC earbuds are said to use a new design that gives an enhanced, more comfortable fit and there's also the ability to use each bud solo. Battery life is claimed to be 19 hours (with ANC on) and Skullcandy says they're sweat and water resistant (IPX4) and that the Bluetooth connection is 'Lag-Free'. "Supplied complete with a wireless charging/storage case, Indy ANC combines the best features of the previous Indy earbuds to create the pinnacle true wireless experience," said Hutchings.

Available now in grey or black, Skullcandy Indy ANC earbuds sell for $259.95 (RRP).

For more information call Skullcandy on (02) 6639 5555 or www.skullcandy.com.au

LUMIN RELEASES REMOTE!

Lumin has typically not supplied remote controls with its products, preferring that its customers use the Lumin app. However, after Lumin made Leedh Processing available for all its products, it says it received so many requests for a physical volume control from customers who were removing their preamplifier from their systems, yet still wanted to control volume remotely, that it's made one available for separate purchase.

Leedh Processing is an innovative new digital volume adjustment algorithm developed by French designer **Gilles Millot**, of Acoustical Beauty. Leedh Processing allows volume control in the digital domain, prior to conversion to analogue, without any of the drawbacks that plague other digital volume controls. Gilles says his Leedh Processing algorithm modifies the digital signal amplitude exactly, without any changes to its shape, and with absolutely no loss of information, plus it also uses whole number volume values to maintain audio information integrity during subsequent digital-to-analogue conversion.

"Lumin's new Infrared Control Package is completely compatible with all Lumin models, irrespective of whether the user elects to use Leedh Processing or not," said **Aleksandar Maksimovic** of Audio Magic, which distributes Lumin in Australia. "And as you'd expect from Lumin, its remote control — made in Austria — is of exceptional quality, and the buttons are beautifully tactile." The remote enables direct control over volume (up/down), mute, play, pause, track skip (next/previous), shuffle, repeat, and standby. It's also Roon compatible. It's made from piano black acrylic with a silver zinc bezel, and measures 230×33×10mm (LWD). The complete Lumin Infrared Control Package (remote control and infra-red receiver) sells for $440 (RRP).

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

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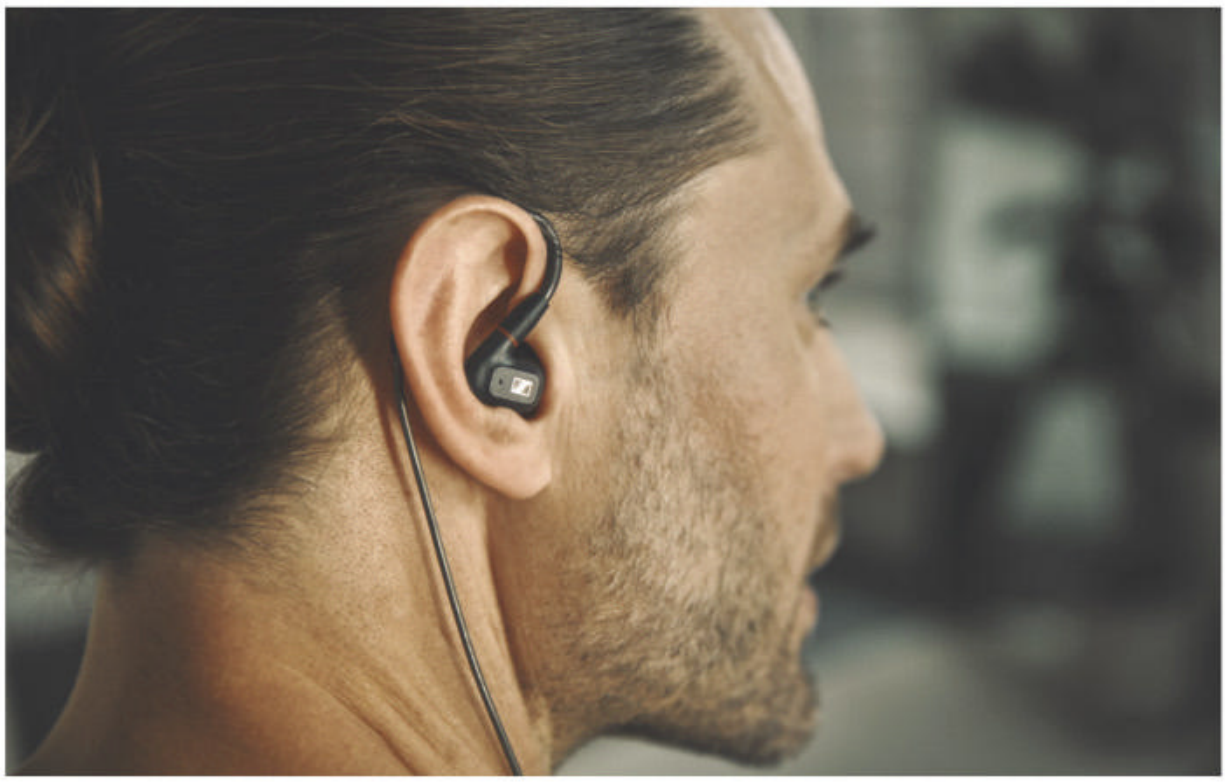
"High End Sound at an affordable price"

The KAYA 25 is a two-way speaker, with the alloy-coned C125D drive unit handling both bass and mid frequencies. Adopting a technology previously used only in our GIYA bass drivers, the driver is fitted with a radial rare-earth magnet, which ensures clean, transparent sound right to the top of its range. The laws of physics (which we're bound to obey) dictate that at the upper end of the frequency range, the sound becomes more focused and directional. To match this, the D26 tweeter is mounted in a shallow waveguide, ensuring that the sound field remains completely seamless. The effect is a compelling listening experience that holds your attention and draws you into the music: perfect for more concentrated listening, and enjoying music with nuance, depth and complexity.

SENNHEISER IE 300 IN-EARS



Sennheiser's new IE 300 in-ears feature an improved version of the headphone specialist's 7mm-diameter Extra Wide Band (XWB) transducer, which is manufactured at the company's headquarters in Germany. Frequency response has been extended to cover the range 6Hz–20kHz more linearly and the foil membrane has been re-engineered to reduce distortion to less than 0.08% at 1kHz at 94dBSPL. "All these refinements ensure superior sound quality, with a well-balanced sound signature and excellent sonic accuracy," said **Jermo Köhnke**, of Sennheiser. "These 'phones have been meticulously crafted to offer nuanced, natural sound on the go and their well-balanced sound signature and excellent sonic accuracy are complemented by a premium, professional audio-inspired design."

The Sennheiser IE 300's design promises exceptional durability and comfort, thanks to ergonomic features that include individually adjustable flexible ear hooks, and both silicone and memory foam ear-canal size adaptors in three sizes. "These features not only ensure a perfectly secure fit and superb wearing comfort for long listening sessions, but also the design itself offers optimum noise isolation, guaranteeing that audio enthusiasts can enjoy undisturbed listening even in busy environments or on the move," said Köhnke.

The unbalanced 'phone cable is reinforced with para-aramid and is attached to the 'phones via removable gold-plated Fidelity+ MMCX connectors. Balanced cables with 2.5mm or 4.4mm connectors are also available, as are replacement unbalanced cables. The Sennheiser IE-300 in-ears come with a storage/carry case and sell for $479.95 (RRP).

For more information, contact Sennheiser Australia on 1800 648 628 or at https://en-au.sennheiser.com/

AESTHETIX MIMAS

Designed by none other than Jim White (who worked with Mike Moffat at Theta) the new Aesthetix Mimas is an integrated hybrid amplifier whose preamp section uses one 6DJ8 (6922) valve per channel in a fully differential, balanced configuration and whose power output section is a fully discrete, fully differential, zero-feedback, DC coupled, balanced bridged output operating in Class-AB that's rated at 150-watts per channel into 8Ω. Top-quality components are used in the Mimas' construction, including Roederstein resistors from Germany and Reliable Capacitor capacitors from California. All valves are burned-in for over 100 hours before being tested and gain-matched prior to installation inside the amplifier.

On the power supply side, the Aesthetix Mimas has seven fully regulated power supplies with the main output rail being powered by a centre-tapped 750 VA transformer that feeds 176,800µF of capacitance for a total energy storage of more than 110 Joules. Input circuits are operated by a fully discrete regulated supply with over 4,400µF of supply capacitance. Vacuum tube heater supplies are fully d.c. regulated via a 900VA low-flux power transformer that's designed and manufactured by Aesthetix itself in its facility in Moorpark, California.

In keeping with the company's name, the appearance of the Mimas is sensational, thanks to an all-aluminium machined enclosure manufactured in Santa Barbara, California. Even the buttons on the amplifier are specially machined. A novel volume control interface is integrated with the front panel display

Multiple options are available to upgrade the basic Mimas design, including an MM/MC phono card (+$2,200), a USB DSD-capable DAC (+$2,200), a high-pass crossover (+$550), an upgraded remote control and an upgraded headphone amplifier (which replaces the IC-based standard circuit with fully discrete Class-AB circuitry.

"It took over four years to develop the Mimas," said **Anthony Camplone** of Nirvana Audio, which distributes Aesthetix in Australia. "The wait was worth it as the Mimas is now considered to be one of the most accomplished sounding integrated amplifiers in the world. One of the major reasons for its special sound is that Aesthetix uses the same volume control used in the award-winning Calypso. It consists of 88 1dB steps, utilising individually switched 1% metal-film resistors, with the result that a world of music enjoyment appears before you. The music flows through an expansive soundstage with freedom and agility. It has a very human element to the sound where things just sound real. It is intimate with an inner glow around the performance in one moment, expansive and wild in the next." The Aethetix Mimas is available now, with prices starting at $12,500 (RRP).

For more information, contact Nirvana Sound on 1300 988 366 or at www.nirvanasound.com

CYRUS XR SERIES

Famous British audio brand Cyrus has unveiled six new Cyrus XR Series components — two digital-friendly integrated amplifiers (i7-XR and i9-XR), a preamp (Pre-XR), a CD transport (Cdt-XR) a CD player (CDi-XR) and an external power supply (the PSU-XR). The range sits above Cyrus' critically-acclaimed Classic series.

"In developing this new XR series, Cyrus' engineers were given free rein to be able to select internal components to ensure unparalleled performance, without having to consider the cost," said **Paul Riachi**, of Indi Imports, which distributes Cyrus in Australia. "The result is that all these new components deliver phenomenal levels of performance, but the jewel in the new series is the PSU-XR, which takes outboard power supply design to a whole new level. It is a truly intelligent power supply whose on-board microprocessor communicates with the device it's powering so it can deliver the exact power required, through 256 digitally controlled voltage levels, with three different voltages able to be delivered simultaneously. Additionally, the new PSU-XR can deliver 60 per cent more power than the PSX-R2 while being 50 per cent more efficient."

The two new integrated amplifiers — the 52-watts-per-channel i7-XR ($4,499) and the 91-watts-per-channel i9-XR ($5,499) have user-selectable DAC filters, four analogue inputs (including a phono stage) and five digital inputs. The CDt-XR CD transport ($4,499) and CDi-XR CD player ($3,999), have new loading mechanisms, new custom-designed transformers, and second-generation QXR DACs specifically optimised for the most-often-used digital format (16-bit/44.1kHz). Although all models in the new XR Series have built-in power supplies, Cyrus says the performance of every one can be improved by using a PSU-XR. All models in the new Cyrus CR Series products are available now.

For more information, contact Indi Imports on (03) 9416 7037 or at its website at www.indimports.com.au

MEITNER MA3 DAC

Meitner Audio's new MA3 Integrated DAC is more than just a DAC — it's a sleek, single-box solution for managing all your digital sources. The first model in this Canadian company's next generation range, the MA3 combines the proven world-class sound techniques designer **Ed Meitner** developed for the acclaimed DA2 V2 and DV2 converters, with network audio streaming functions from the Meitner NS1 Streamer.

"EMM Labs and Meitner Audio have been at the forefront of digital source technology for decades and their flagship DACs are part of a handful that are considered to be the world's best," said **Anthony Camplone** of Nirvana Audio, which distributes Meitner Audio in Australia. "So imagine a company of this calibre making an all-in-one streaming/DAC/Volume control unit which delivers sound quality far beyond the plethora of mainstream digital devices available on the market today. The MA3 is quite simply the best value proposition on the planet. It's the perfect integrated digital hub for any high-end system, irrespective of budget."

The MA3 uses the Meitner MDAC2 fully-discrete single-bit, 16×DSD, D-to-A converters, coupled with the Meitner MDAT2 DSP

which performs real-time transient detection in addition to up-conversion of all incoming audio, so it supports all digital formats including DSD128/2×DSD, DXD and MQA. Meitner's 'VControl' maintains the input signal without re-quantization allowing for complete transparency at any volume setting with no loss of audio resolution.

The network streaming function allows you to connect to streaming services such as Tidal and Qobuz and supports music services such as Spotify and Deezer. Roon-ready and with Roon Endpoint functionality the MA3 also allows direct USB and NAS audio file playback along with UPnP/DLNA network support.

Available now, the Meitner Audio MA3 sells for $16,000 (RRP).

For more information, contact Nirvana Sound on 1300 988 366 or at www.nirvanasound.com

PRO-JECT PHONO BOX RS2

Austrian-based manufacturer Pro-Ject first made a name for itself in the phono stage arena with products such as the Pro-Ject Phono Box S2, which set a new performance standard for entry-level phono stages. The company now seems to have set its sights somewhat closer to the top-shelf with the introduction of the Pro-Ject Phono Box RS2 Phono Stage.

Don't be confused by the similarity in the model names. The Phono Box S2 (which is still available) retails for $249 most places, while the new Phono Box RS2 sells for $2,499.

The new Phono Box RS2 is undoubtedly the finest phono stage Pro-Ject has ever built. Not only is the circuitry fully balanced and fully dual-mono from input to output, but there's also not a single operational amplifier used: the circuitry is completely discrete even down to the RIAA equalisation, which is a split passive topology in order to enable better impedance matching and lower deviation from the ideal RIAA curve. But in addition to the standard RIAA curve, the RS2 also offers the Decca curve, again with split passive circuitry.

Unusually, but totally appropriately, the RS2 has a balance control to allow you to compensate for the fact that all (and we mean all) phono cartridges output different voltages on each channel, due to inherent design and manufacturing limitations. The Phono Box RS2 has a balance control that allows you to compensate for channel imbalance, so you can centre the sound stage exactly where it should be. The 4dB range is more than sufficient to compensate for any phono cartridge.

Also unusually, the Pro-Ject RS2 has continuously variable input impedance for its moving coil input, so you can vary it between from 10Ω and 1000Ω. Moving magnet impedance is fixed at 47kΩ. Load capacitance is also variable, but only fixed values are available: 50, 100, 150, 200, 250, 300, 350, and 400pF. Gain is also variable for both MM (40–50dB) and MC (60–70dB) inputs.

"No other phono preamplifier in the world has the gain range offered by the Pro-Ject RS2," said **Sam Encel**, of Interdyn, which distributes Pro-Ject in Australia, "nor does any other offer the unique continuously variable impedance control, which was developed by Pro-Ject's engineers. This is a true reference-class phono preamplifier in every sense of that expression." Available now, the Pro-Ject Phono Box RS2 sells for $2,499.

For more information, contact Interdyn on (03) 9426 3600 or at www.interdyn.com.au

'PHONES FOR BENTLEY OWNERS

As the name suggests, the "Focal for Bentley" Radiance headphones combine Focal technologies with design elements that are also used in motor vehicles bearing the Bentley badge. "Engineered, developed and made in France, these headphones combine design, refinement and cutting-edge audio technologies, embodying the excellence and unique expertise of these two luxury brands" says **George Poutakidis**, of Addicted To Audio, which distributes Focal in Australia. "Radiance brings together high-end Focal technology and distinctive Bentley design elements including the striking copper accents, diamond pattern and full-grain leather."

Focal, Naim, and Bentley Motors' history of collaboration dates back to 2008, when Naim and Bentley began working together on in-car audio systems. Then, later in 2011 after Naim merged with Focal, the Naim Mu-So for Bentley Wireless Loudspeaker and the Focal Radiance headphone were developed.

The full-range speaker driver in each closed ear-cup of the Radiance has a 40mm diameter aluminium/magnesium 'M'-shaped dome. Focal rates each driver with a frequency response of 5Hz to 23kHz and a sensitivity of 101dB SPL/mW. Nominal impedance is 35Ω. The ear-cups are finished in Pittard's leather, which is also used on the headband.

A bespoke woven copper and black carry case (measuring 250×240×120mm HWD) is supplied with each pair of Focal For Bentley headphones, along with a mini-jack cable and a 6.35mm jack adaptor. Available now, the Focal for Bentley" Radiance headphones sell for $1,999.

For more information, contact Addicted To Audio on 1300 888 602 or visit www.addictedtoaudio.com.au

MCINTOSH MHA200 VALVE HEADPHONE AMP

McIntosh has released a compact valve headphone amplifier, the MHA200, which has both balanced and single-ended inputs and outputs and the ability to switch its output transformer taps to best-suit the impedance of the headphones being used.

The MHA200 uses 12AT7 valves to amplify the incoming audio signal and 12BH7As to provide the power to drive the output to the headphones via a pair of McIntosh's 'Unity Coupled Circuit' output transformers. These transformers have four settings: 32–100Ω, 100–250Ω, 250–600Ω, and 600–1,000Ω so you can select the one that best-matches the impedance of the headphones you're using. Headphones can be connected via 3-pin balanced XLR connectors for dedicated left/right balanced output; a 4-pin balanced XLR connector for balanced stereo output; and a 6.35mm unbalanced stereo headphone jack.

"The McIntosh MHA200 is designed for discerning headphone enthusiasts who demand the most from their headphones," said **Philip Sawyer**, of Synergy AV, which distributes McIntosh in Australia. "The switchable output transformer windings ensure the full power of the MHA200 is available irrespective of the impedance of the headphones, while its versatile connectivity options allow for nearly all headphone types to be connected to enjoy an extraordinary personal listening experience."

Available now, the McIntosh MHA200 valve headphone amplifier sells for $4,995 (RRP).

For more information, contact Synergy AV on (03) 9459 7474 or at www.synergyaudio.com

AUSTERE IN OZ

Austere's range of audio and video cables, interconnects and cleaners is now being distributed in Australia for the first time by Melbourne-based distributor Audio Active. Austere is as famous for its lifetime warranty as it is for its products. "There is a massive gap in the technology accessories category, where the choice is either ubiquitous products that easily break and under-perform or overly extravagant, antiquated accessories," said **Deena Ghazarian**, Austere's CEO. "At Austere, we're equally passionate about performance and style and believe there's a tremendous need in the market for accessible products where these ideologies intersect."

The range of audio cables made by Austere include the V Series Optical ($99) the V Series Interconnect ($149) and the V Series Subwoofer Cable ($149). The company also makes V Series Speaker Cable and Banana Adapters. For video, Austere makes III Series 4K ADR HDMI cables, which come in 1.5m, 2.5m and 5m lengths and have WovenArmour cable and pure gold contacts. There's also a V Series of 4K HDMI cables that adds pure silver-plated conductors and 'LinkFit' locking connectors.

"All Austere products are supplied with reusable packaging and have a sleek, minimalistic style which will seamlessly combine with Australian users' home audio and video systems," said **Bruce Thierbach**, of Audio Active. "One of Austere's founding brand pillars is its aDesign philosophy, which begins with a passion to create products with purpose and style. Every element of its design and material is handpicked for the consumer experience. But they also deliver spectacular performance."

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

WORLD'S LOUDEST PORTABLE?

Soundboks, a Danish company that started out by crowdfunding, says that it has built the world's loudest portable wireless loudspeaker, which it claims can deliver 126dBSPL (though because the company doesn't state the distance from the loudspeaker at which this sound pressure level was measured, nor the frequency at which it was measured, nor a bandwidth over which it might be delivered, the figure has no meaning).

According to Forbes magazine, Hjalte Emilio Wieth, Jesper Theil Thomsen, Christoffer Nyvold and five of their friends built battery-powered speakers in a garage to satisfy orders ahead of the Northern Europe's biggest music festival (Roskilde) in 2015. After the festival they then raised $US870,000 on Kickstarter and $US2.5 million from investors including Matthew Bellamy (Muse) and Tue Mantoni (a former CEO of Bang & Olufsen).

The latest '3' version of the Soundboks uses three Class-D amplifiers, each rated at 72-watts continuous per channel, to drive two 254mm bass/midrange drivers and a 25mm compression tweeter via a 2.5-way crossover. The amplifiers (built by Merus Audio) are powered by a single 12.8V, 7.8Ah Lithium Iron Phosphate (LiFePO4) battery that Soundboks claims will enable 40 hours of playback at mid-volume or five hours at full volume. The company says the battery can be fully recharged in 3.5 hours. Extra plug-in battery packs are available so you don't have to waste time recharging. Bluetooth is V5.0 with Soundboks claiming "lower latency stereo performance" through the use of SKAA Audio's Pro SKAA circuitry.

"We have finally created the speaker we always wanted," says Thomsen. "Over the past four years we've been integrating community feedback with the vision of the speaker we have always wanted to build; the result is the new Soundboks. We were very focused on creating an unmatched sound experience, wireless connectivity and battery life were critical for that."

Up to five individual Soundbox 3s can be interlinked, so there's a free app that allows you to specify whether a specific unit will handle the left or the right channel, or operate in mono. The app also allows you to equalise the sound to your own preference, or use one of Soundboks' own sound modes: Bass+, Power, or Indoor. In addition to Bluetooth, there are two mic/line inputs (XLR and 6.35mm phone) and a 3.5mm stereo input. There is also a 3.5mm stereo output jack for physical linking.

Available now, the Soundboks 3 (which is also known as 'The New Soundboks") sells for $1,599.

For more information, contact distributor Seabreeze Supply on (02) 6639 5555 or at www.soundboks.com.au

VELODYNE DEEP BLUE SUBWOOFERS

Velodyne has released four totally new subwoofers which it's curated in a series called "Deep Blue", or "dB" for short. Each subwoofer in the dB Series has a differently-sized high-excursion bass driver, but all are new drivers for Velodyne and all feature four-layer, vented voice-coils in differing diameters. The smallest DB8 ($1,199) has a 203mm bass driver with a four-layer, 52mm voice-coil driven by a 300-watt amplifier. The DB10 ($1,499) has a 254mm bass driver with a four-layer 52mm voice-coil driven by a 350-watt amplifier. The DB12 ($1,749) has a 305mm bass driver with a four-layer 65mm voice-coil driven by a 350-watt amplifier. The top-of-the-lineVelodyne DB15 ($2,099) has a 381mm bass driver with a four-layer 75mm voice-coil driven by a 450-watt amplifier. Rather unusually these days, all amplifiers are classic linear Class-AB designs, not Class-D (switching) types. And, of course, all the cabinets are totally sealed, as per Velodyne's long-time philosophy of completely eliminating the possibility of port noise in its subwoofers.

"The new Deep Blue subwoofer series was developed by an international team from the USA and Germany," said **James Hicks**, of Oceanic Distribution, which distributes Velodyne in Australia. "To achieve their enormously deep yet powerful and undistorted bass reproduction the enclosure walls are up to 25mm thick, the baffles are 50mm thick and the new extremely powerful PP high-excursion drivers have massive dual ferrite magnet motors as well as vented four-layer voice-coils."

All models in the Deep Blue range have both line- and speaker-level inputs, plus all have an LFE pass-through to make it easy to add a second subwoofer if required. All the crossover networks have infinitely variable level and phase controls.

For more information, contact Oceanic Distribution on 1300 556 303 or visit www.oceanicdistribution.com

A-GRADE SOUND

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.

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COPLAND CTA408

INTEGRATED TUBE AMPLIFIER

Copland really needs to have a quiet word with Danish customs authorities. My review sample, which was air-freighted to me almost direct from Denmark, had been opened and resealed by them before being loaded onto the plane. "Based on X-ray control our security personnel (…) had to open the consignment and make a manual control" said the printed note that had been left inside the carton.

I suspect the manual inspection might have been required because unlike many manufacturers of valve amplifiers, which ship their amplifiers with the valves already installed, Copland ships the four KT150 power valves in a separate box inside the main carton. I guess that all those wires and metal supports inside the valves must look extremely suspicious on an X-ray.

EQUIPMENT

The Copland CTA408's front panel looks so plain that you could almost be forgiven for thinking it was a power amplifier, especially if it's in its standby mode, in which mode the centrally located front panel display is just a solid black circle save for a single bright blue LED.

Press the small black round-topped push-button to the right of the display, however, and (assuming you've connected the power and correctly set the 240V mains rocker switch on the rear panel) the display will light up to show that you have a choice of four line inputs (identified only by the numerals 1 to 4) and a phono input (identified by a capital P). There are two extra symbols in the display, circles with dots in their centre, which appear to have no purpose at all, and which are unexplained by the sparse (eight page) Copland 'User Guide'. Copland seems to be using a new display on the CTA408, because whereas the older display had the letters 'SB' alongside the blue standby LED, and 'ON' alongside the red 'On' LED, the display on my review sample of the CTA408 had no lettering alongside these LEDs at all.

The small black round-topped push-button to the left of the display is a 'Tape Monitor' button, which is a description that's sure to mystify anyone born in the last twenty years or so. And although it might seem that tape machines are making a bit of a comeback, given the number of audiophile sites selling pre-recorded open reel tapes, only two companies in the world currently manufacture open-reel recorders – STM (formerly Mechlabor) and Metaxas & Sins, so 'comeback' is hardly an accurate description.

Copland's volume control is a little intimidating, because it's calibrated from 0 to infinity in dB, though it's difficult to decipher this because the 'dB' is actually upside down at the two extremities of the control. Even more confusingly, the numerals on the dial are not prefaced by the minus symbol that's essential in order that the 0 and the infinity make sense. But, just so we're clear, infinity is minimum volume and 0dB is maximum volume. As for the numerals themselves that are on the dial, they go up in twos from 0 to 10 (2, 4, 6, 8, 10) then in fours from 10 to 22 (14, 18, 22) then in sixes from 22 to 46 (22, 28, 34, 40, 46), then in eights from 46 to 70 (46, 54, 62, 70) after which there's a bit of a leap to infinity. I've never, ever, seen this numbering system before and cannot imagine any earthly reason for it.

Input selection is done via the rotary control at the left of the front panel, and it's an encoder, rather than a switch, so it merely instructs relays inside the CTA408 to make the desired input selection. This circuit implementation means there's a loud click whenever you switch inputs.

The Copland CTA408 can handle both moving-magnet (MM) and moving-coil (MC) cartridges, but as you've probably already guessed from my description of the front panel display, there is only one phono input. You have to select whether you want it to be MC or MM via a slider switch on the rear panel. If you choose the MC input you have a choice of three input impedances: 50Ω, 100Ω or 470Ω. For a moving-magnet cartridge the impedance is set at the industry-standard of 47kΩ.

The Copland's headphone output circuitry is over-engineered, with an output impedance of just 9Ω and a frequency response far exceeding that of the main amplifier, from under 10Hz to more than 200kHz. It's all delivered from a standard 6.35mm (quarter inch) phone socket on the right-hand side of the amplifier. This is a very inconvenient location, but I guess it's more accessible than if it were on the rear panel, which, if you're not going to put it on the front panel, would be the only other place you could put it.

My suggestion would be to buy an extension lead with a standard 6.35mm socket at one end and a right-angled 6.35mm plug at the other, to make for a 'neater' look, but be warned that whenever the plug is inserted the main speaker output will be muted, so you're still going to require easy access to the plug. It did occur to me that this might be Copland's way of ensuring you leave sufficient space for ventilation!

Copland's CTA408 is a very photogenic amplifier. Which is to say that it looks much more elegant and streamlined in photographs than it does when it's in your equipment rack. It's a big, boxy amplifier. If it were not for the need to ensure the valves are adequately ventilated, I'd suggest putting it on one of the lower shelves of your equipment rack, so you can only see the front panel, which is actually pretty good-looking, especially as you can see the glowing valves through those six horizontal slots machined into it, that for all the world reminded me of a mantle-shelf radio my grandfather used to own. The bars of alloy separating the slots are, incidentally, quite musical… or at least four of them are. If you pluck the topmost one with your fingernail, it will play a fairly pure 'B' on the tempered musical scale, pluck the next and you'll hear 'C', while the next will sound 'D' and the next 'E'. The bottom-most bar will sound 'F', but it's not as 'pure' a sound as the others.

However, regarding the need to ensure ventilation for the valves, the chassis is so capacious, and there's so much ventilation

The bars of alloy separating the slots are, incidentally, quite musical… or at least four of them are

supplied (there are also slots on both sides of the chassis, as well as the bottom and top of the chassis… indeed the only panel that doesn't have any ventilation is the rear panel) that I am certain there will likely be adequate ventilation so long as you leave a two or three centimetre gap on both sides of the chassis and above it.

The rear panel of the CTA408 is a bit unusual because rather than fix all the RCA terminals to the rear panel in the usual manner, Copland has fixed them directly to a printed circuit board located inside the chassis, so each one is accessed via a small circular hole drilled in the rear panel. This technique greatly reduces the amount of wiring inside the amplifier — and improves performance and reliability — but does mean that if you have a favourite RCA connector whose body is larger than the diameter of the hole (16mm) you won't be able to use it. The speaker terminals are standard multi-way gold-plated types.

REMOTE

The infra-red remote Copland supplies (RC-102A) is interesting because it has more buttons on it that don't work than it does buttons that do. The five buttons that work are for on/standby, volume up, volume down, and input source selection up, and input source selection down. The six buttons that don't work don't do so because they're intended to operate a CD player. (Stop, Play, Pause, Track Skip, etc). This would not be unusual if Copland actually manufactured a CD player, because many manufacturers 're-use' remotes across several different models because it's more cost-effective for them (they can buy the remotes in greater quantities). But Copland doesn't have a CD player in its line-up.

I can only assume the company has found a supply of inexpensive remotes and is 'badging' them. Given the number of spare buttons on the RC-102A, it would have been nice if Copland had made one of them a 'Mute' button, or re-purposed several of them as direct access source buttons. At least all the buttons that control the CTA408 are at the 'top' of the remote plate, so they fall easily under the thumb.

> The combination of those KT150s and Copland's custom-wound transformers is an aural delight

INTERNALS

Inside the CTA408 you'll find the layout and design of the entire amplifier, including the PCB components, is a true delight, and apparently all the work of Copland's own Olé Møller, who founded the company after working for many years at Ortofon. Although Møller was involved in the design of Ortofon cartridges, his principal duties with the company were involved in the design and manufacture of the cutter heads and amplifiers used in Ortofon's cutting lathes, used to make the masters used to press LPs.

The very large toroidal power transformer is made for Copland by Noratel, which came as a surprise to me, because I would have thought that being a Dane manufacturing in Denmark, Møller would have specified a transformer from a Danish manufacturer, rather than one made in Norway. I then realised he didn't have much option, because in recent years Noratel purchased all three of Denmark's transformer manufacturers, Lübcke, Garre Transformere and Ulveco!

Møller does, however, use Danish-made output transformers. In fact, they're not just made in Denmark, they're made in Copland's own factory in København. This is very important because output transformers are arguably the most important components in a valve amplifier… even more so than the output valves themselves.

The phono input circuitry is all housed out of sight and away from electromagnetic interference in a shielded case, right where the signal enters the amplifier, which is excellent design. I am led to understand that it uses active RIAA equalisation that uses entirely discrete components including high-spec JFETs.

The four KT150 valves are provided separately. Mine were made by Tung-Sol. Because they're matched at Copland's factory and the bias set for each one in its appointed position, the exterior of each valve box has a sticker (V104, V204, V103, V203) indicating in which valve socket it should be inserted. Being a mistrusting type of person, I would have preferred Copland to mark the valves themselves, because they cannot guarantee that anyone removing the valves from the cartons will then place them back in the same cartons. I mention this also because Danish customs had not only opened the carton containing the amplifier, but had also opened the valve cartons as well. I can only hope they put them back in the correct cartons! As for Tung-Sol, although the name sounds Chinese, it is a US company that took its name by tacking the first syllable from the word Tungsten (which is the metal from which the valve heaters are made) and tacking on the Latin word for the Sun (Sol), this last in reference to the colour the valves glow once they've heated up.

The company has changed hands a number of times since it was first established in Newark, New Jersey, back in 1907. It is now owned by the New Sensor Corporation, founded by Mike Matthews, which also owns the brands Sovtek and Electro-Harmonix. Although the company is still headquartered in New Jersey, all its valves are now manufactured in Russia under the watchful eye of Matthews' partner, Irusha Bitukova. (Trivia factoid: Bitukova's father was the co-inventor of the hydrogen bomb in Russia.) Irusha is also a videographer. She shot a great video that shows how valves are made that you can watch here: *https://tinyurl.com/ehx-valve-manu*

OPERATIONAL

Although Copland ships the CTA408 without the valves installed, as noted in the previous section of this review, I would imagine that if you purchase it from a retailer the valves would be pre-installed for you and the amplifier hand-delivered to your home, so it'll really be a plug n'play exercise. But in the event you do have to install the valves yourself, it's still really a plug n' play exercise because all you need is an Allen key (not supplied), to remove the 16 screws that fix the CTA408's cover to the chassis. (This may sound excessive, but the chassis is so large that it needs this number of fixings to ensure structural rigidity.)

Once the cover is removed, it's simply a matter of plugging the four KT150 valves into their sockets. I would suggest using cotton gloves (not supplied) when handling the valves, but it's not strictly necessary. The manual says the valves "have been carefully matched at the factory and the tube bias has been set accordingly." Which for me raised the question of how the bias is reset when you replace the valves. The answer is that it's reset using potentiometers on the PCB, a process that will require the attention of an accredited service centre.

As for the bias used, there are two methods commonly used on valve amplifiers: Fixed Bias and Cathode Bias. In a Fixed Bias type (such as the Copland CTA408) once the bias is initially adjusted to suit the electrical characteristics of the valve, it then stays the same until it's adjusted again, such as when valves are replaced. In a Cathode Bias design the negative grid bias is accomplished by lifting the potential of the cathode using a resistor in series with the cathode so the grid bias varies according to the size of the resistor and the current through the tube. Because of this action, Cathode Bias valve amplifiers are often called 'Auto-Bias' designs.

Why does Copland use Fixed Bias in the CTA408? According to designer Olé Møller: "In cathode-biased output stages, the cathode resistors usually have an electrolytic capacitor in parallel, in order to prevent local a.c. feedback at this point in the amplifier. These cathode bias amplifiers, along with some more modern variants using IC servos, can have a sonic tendency towards compression and muddy bass, like other types of d.c.-servos. The Fixed Bias type amplifier is usually more power-efficient, with less compression and deeper, tighter, and freer-flowing bass reproduction."

Copland says that because its circuit has been specifically designed so that it does not stress the valves, you can expect long valve replacement intervals. Says Copland's Operating Manual: "The tubes are operated around 50% of their full nominal power, which considerably increases their life expectancy. The lifetime of the tubes should be at least 4,000 hours, assuming that the amplifier is switched on and off a couple of times per day."

You do have to be firm but not overly-pushy to correctly seat the valves in their valve sockets, but it's easy enough. I do have to note, merely because of its incongruity, that while on one hand Copland ships its valves separately so they have to be installed, and tells you how to open the case and install the valves, it seems to see no irony in the fact that it also prints a warning on the rear panel that says: "*Caution! Risk of Electronic Shock. Do Not Open.*" And, just in case you didn't quite get the gist, it prints yet another warning that says "*Attention! Risque de shock electronique ne pas ouvrir.*"

As is usual with glass audio (I absolutely love this descriptor for valve-based hi-fi components) there's a 'soft-start' circuit in the CTA408, though for this amp, I think I'd call it a slowwwww start because after you press the stand-by button, the 'blue' standby light extinguishes and a red light starts flashing… and flashing… and flashing, during which the Copland is doing a self-check routine. This self-check takes around half-a minute (which seems like forever) after which the light stops flashing, but the amplifier still isn't ready to go. You need to wait around another half-a-minute before you're rewarded with sound. (You can attempt to listen prior to this, but it won't be pretty, I warn you!)

On switch-on after the power is switched off at the rear panel the Copland always defaults to Input 1, so it would make sense to connect your most-used source to this input, but if you leave the amplifier in its Standby mode (in which it will consume less than one-watt of your mains power and none of the valves are powered-up, so it won't eat into their service life), the CTA408 defaults to the last-used input. The one exception is if you were using the 'Tape' input. This input selection is always cancelled whenever you switch to Standby.

Some people reading this review might not understand the potential usefulness of the tape input, not least because I have yet to mention that there's also a tape output, and the two comprise what was commonly known as a 'tape loop'.

What happens is that whatever music is selected with the source selector (say A1) not only appears at the speaker outputs, but also at the tape outputs. The signal at the tape output is unaffected by the position of the volume control, so it simply 'tracks' volume changes of the music. This means that you can connect a recorder to the Tape Output and connect, say, an analogue-to-digital converter and, if you played back LPs via the CTA408's phono input, you could convert your LPs to digital at the same time you were listening to them.

However, you could also send the phono signal out from the Tape Output to, say, a DEQX HDP-Express II room corrector and then take the output from the DEQX and connect that to the Tape Input. This would mean that every time you pressed the Tape button on the front panel, you'd hear your music corrected by the HDP-Express II to compensate for any deficiencies in your loudspeakers' performance as well as for your room's acoustics.

A tape loop also makes it very easy to conduct 'A–B' comparisons. For example you could easily check the 'audibility' of a particular brand of interconnect by simply using it to directly link the tape output terminals to the tape input terminals. With the 'Tape' button switched off, you'd hear the direct sound, and with the Tape button switched on, you'd hear the same sound, but through the length of interconnect. This would make it simple to choose the interconnect that — in your system, at least – has the least affect on the sound.

AUDITIONS

I was so excited by the performance of the Copland CTA408's phono stage that I am going to lead my listening sessions with what I heard when spinning black vinyl.

First up was an old favourite (in both senses of that word) in the form of Frank Sinatra's famous album 'In The Wee Small Hours'. It's been supposed that this particular album may have been the world's first 'concept' album, being produced on the back of a failed suicide attempt, a divorce and the messy end of his most significant extra-marital affair, but I think Antonio Vivaldi would have a better claim with his album 'The Four Seasons.'

Sinatra's concept album is a magnificently unhappy album about loneliness, failure, isolation and depression that has such stand-out tracks as *Mood Indigo, I Get Along Without You Very Well, What Is This Thing Called Love, Last Night When We Were Young* and, of course the title track. Interestingly, the album was first released on two 10-inch discs (which I don't have) and then on a conventional 12-inch LP, one of the first such 'pop' 12-inchers ever released.

Sinatra's vocal construct on this album was a complete turn-around for him (Nelson Riddle famously said that Sinatra's new-found ability to sing more emotionally was a direct result of his marital and other trials and tribulations.) You'll hear all of this emotion listening to the Copland CTA408 better than you've ever heard it before. Along the way take the time to admire Sinatra's phrasing and his ability to sustain almost any note, anywhere in a phrase or even within a word. It's uncanny. The Copland also has the balance between Sinatra's voice and his orchestra perfect.

But if you really want to hear fantastic sonics as well as fantastic music you could do no better than to audition GoGo Penguin's 'A Humdrum Star' from just a few years ago. This was the band's second album for Blue Note (hence the fabulous sonics!) but also the band's furthest excursion from the fairly straight-ahead jazz with which they first made their name. 'Humdrum Star' is a fantastical meld of jazz, classical and electronica that's so detailed you can barely believe it's just drums, keyboards and bass. The musicianship from all three players is mind-blowingly good. If you need to test the attack and decay, dynamism, texture and tonality of a component, this should be your go-to album, and the Copland CTA408 passed all these tests with colours flying.

Time then, for some Steely Dan, so I span up 'Aja', partly because it's a great album (probably their best) but also because I wouldn't like to admit that mostly when I want to listen to Steely Dan I play my 'Greatest Hits' double-album from 1978 because it has pretty much all my favourite Dan tracks on them. But although it doesn't have all my favourite tracks 'Aja' probably has the finest musicianship (literally dozens of the finest session musos in the US at the time played on it) of any of their albums and certainly the most going on sonically. The complex and sumptuous sound of this album was delivered to perfection by the Copland CTA408.

The fantastic sonics I heard could have been because of the synergies between vinyl and valves, the two technologies just seem to deliver better sound quality when paired. Then again it could also be due to designer Olé Møller's passion for vinyl, and his long history at Ortofon. He has obviously put his heart and soul into the design of the CTA408's phono stage. Just as equally, it could be due to the contributions from all three: valves, vinyl and Møller.

Being a valve amplifier, and not a particularly high-powered one at that, you will need to carefully consider the speakers you'll use with it, not least because of the inevitable interaction between the amplifier's output impedance and the loudspeakers' own impedance. As a general guide I'd suggest that speakers connected to the 8Ω tap should have an impedance that dips no lower than 2Ω and it would be nice if the impedance also stayed under 20Ω for the most part. For speakers with impedances that drop below 4Ω, you'd need to use the 4Ω tap.

In my own sessions, during which I used speakers that fell into both categories, I preferred the performance of the Copland when using the 8Ω tap. I also preferred the performance when using loudspeakers with higher, rather than lower, efficiency ratings. My recommendation for this spec would be no lower than 87dBSPL and preferably higher. JBL's fabulous L100 Classics worked brilliantly with the CTA408, for example, not only sonically but visually. (If you'd prefer a more modern-looking pair of JBLs, the Copland also worked really well with the JBL Synthesis HDI-3600s.) The Copland CTA408 also worked really well with Richter's Wizards and Focal's Kanta No3s.

Staying a little left-field for a moment longer, I also need to complement Møller on the headphone amplifier he's designed for, and fitted to, the CTA408 because it, too, is a stand-out performer, delivering sound quality far in excess of what I usually hear from the headphone outputs on integrated amplifiers. I heard very fine sounds indeed from both Focal's Stellias and Grado's RS1s.

Once I started listening via the line-level inputs, I quickly found Neneh Cherry's 'Broken Politics' had the Copland responding with a wonderfully light touch, so that her vocals came through with passion and nuance, and the kind of natural dynamic fluidity that only really good valve designs seem to manage. There was a lovely sense of space around each instrumental strand and a total lack of unwanted hardness to the sound.

Going in rather heavier with The War On Drugs' Grammy award-winning (Best Rock Album) 'A Deeper Understanding' proved the Copland is able to deliver the deepest bass, the highest treble and tiniest sonic details perfectly, and all at the same time if needs be. The CTA408 revealed the signature sound of Adam Granduciel's guitar-playing beautifully and the complexity of his melodies and arrangements. (He might, however, have spent a bit more time on his lyrics for the songs on this album. Maybe he consulted on the lyrics with Kate Bush, from whom he borrowed the album's title.)

CONCLUSION

If you spin a lot of vinyl, you owe it to yourself to check out Copland's CTA408 because the performance using the phono input is absolutely outstanding — you're going to love it! Vinyl and valves are a match made in heaven. But even if you don't spin a lot of vinyl, it's worth checking out the Copland CTA408's sound via its line inputs and your favourite line source because the combination of those KT150s and Copland's custom-wound output transformers is an aural delight. Plus you can take added delight in the sound of the headphone output driving your favourite cans.

Yes, you do need to take some care with loudspeaker selection, but if you follow the guidelines I mentioned earlier in this review, you will have an enormous range of models from which to choose and trust me that if you do take the time to choose wisely, your efforts will be rewarded, because the Copland CTA408 will make certain they are. *Scott Nyland*

CONTACT DETAILS

Brand: Copland
Model: CTA408
RRP: $9,900
Warranty: Two Years
Distributor: Audio Magic Pty Ltd
Address: 482 High Street
Northcote, VIC. 3070
T2: (03) 9489 5122
E: info@audiomagic.com.au
W: www. audiomagic.com.au

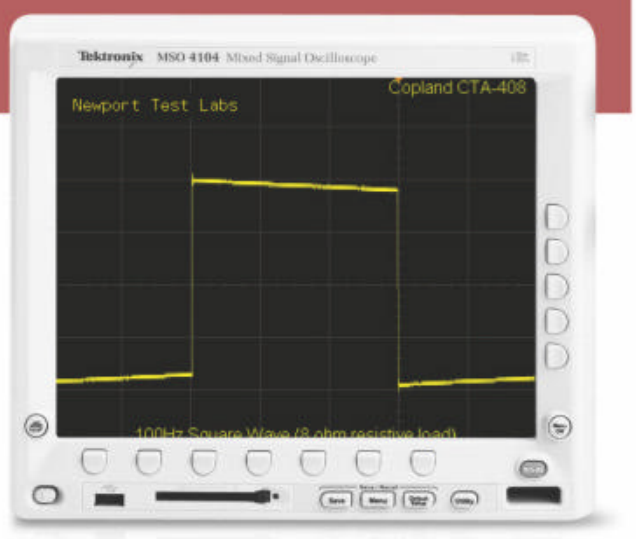
+

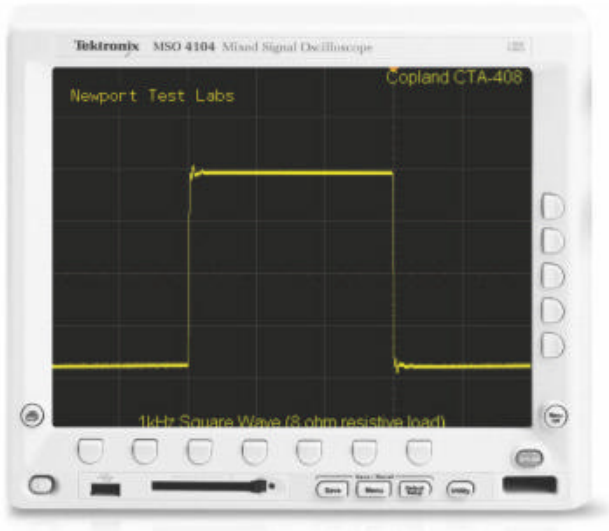
- Fantastic phono stage
- Authentic valve sound
- Detailed midrange
- Excellent dynamics

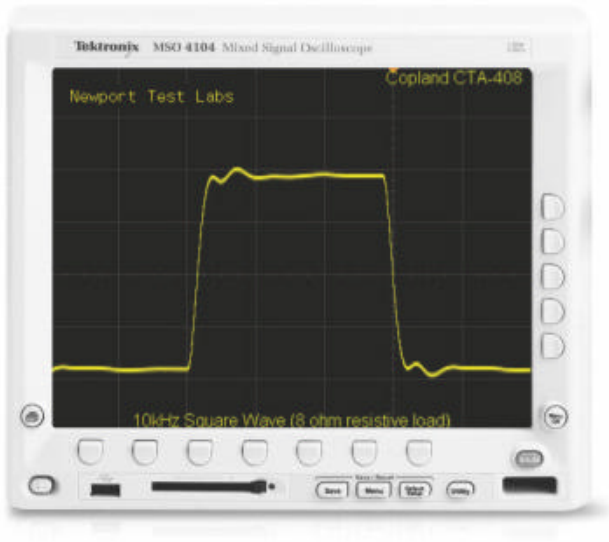
—

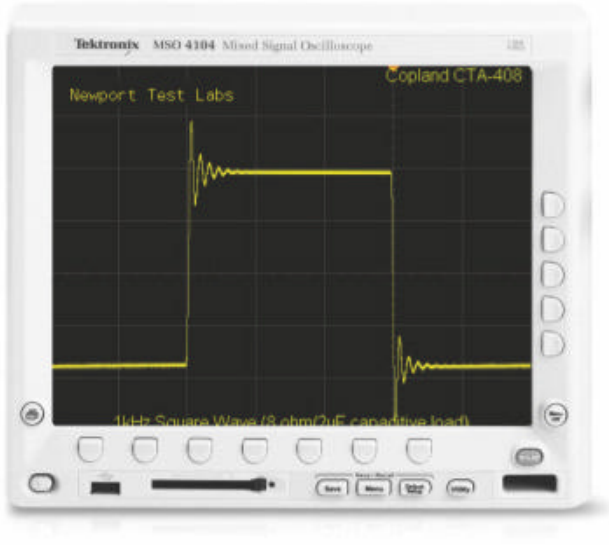
- Headphone socket location
- Valves not directly marked
- Physically large

LABORATORY TEST REPORT









The Copland CTA408 has two taps on each of its output transformers, one 8Ω and the other 4Ω, yet Copland specifies the power output of the CTA408 into 8Ω and 3Ω loads. Irrespective of the tap you use, output power is rated at 75-watts per channel.

Newport Test Labs first measured output power using the 8Ω taps and 8Ω test loads. At 1kHz, the CTA408 exceeded its manufacturer's specification by 23-watts when both channels were driven and by 28-watts when only a single channel was driven, returning power output results of 98-watts per channel and 103-watts per channel.

When the same tap was used to drive 4Ω loads at the same frequency the Copland CTA408 delivered 135-watts when only a single channel was driven and 110-watts per channel when both channels were driven.

Power output dropped off at the frequency extremes, as you can see from the tabulated figures. At 20kHz the Copland CTA408 delivered 50-watts per channel both channels driven into 8Ω, and 42-watts per channel when the 8Ω tap was used to drive 4Ω loads.

At 20Hz the Copland CTA408 delivered 66-watts per channel both channels driven into 8Ω, and 95-watts per channel when the 8Ω tap was used to drive 4Ω loads.

When the Copland CTA408's 4Ω tap was used to drive a 4Ω load, and a 1kHz test frequency used, the amplifier delivered 98-watts when only a single channel was driven, and 87-watts per channel both channels driven. Again, the same power was not available at the frequency extremes, with Newport Test Labs measuring the both-channels driven power output at 20Hz as 66-watts per channel, and at 20kHz as 64-watts per channel.

On test, the Copland CTA408 exceeded its manufacturer's claim for frequency response extension at both ends of the audio spectrum, with Newport Test Labs measured amplifier's 3dB downpoints at 3Hz and 121kHz. This means that normalised, the Copland CTA408's frequency response was measured as 3Hz to 121kHz ±1.5dB.

The frequency response across the audio band is shown in Graph 7 for both when the Copland CTA408 is driving a standard non-inductive 8Ω laboratory test load (black trace) and also when driving a complex load that simulates a typical two-way stand-mount loudspeaker (red trace). You can see that, when driving the 8Ω load, the frequency response is just 0.6dB down at 5Hz and 0.2dB down at 50kHz. Newport Test Labs measured the 20Hz to 20kHz response as ±0.05dB.

Driving the simulated loudspeaker test load, the Copland's frequency response varied considerably, as would that of any valve amplifier, but Newport Test Labs's graph still shows that response as extending from 5Hz to 50kHz ±0.06dB, which is an excellent result and would be perceived as 'audibly flat.'

Channel separation was more than will be required for good stereo separation and imaging, but quite low at 66dB for frequencies below 1kHz and only 44dB up at 20kHz. Phase accuracy was also good at midrange and low frequencies, but there was a high 7.9° error at 20kHz.

Channel balance (at 1kHz) was better than 1dB (0.79dB) which is an order of magnitude less than I'd expect of a solid-state amplifier.

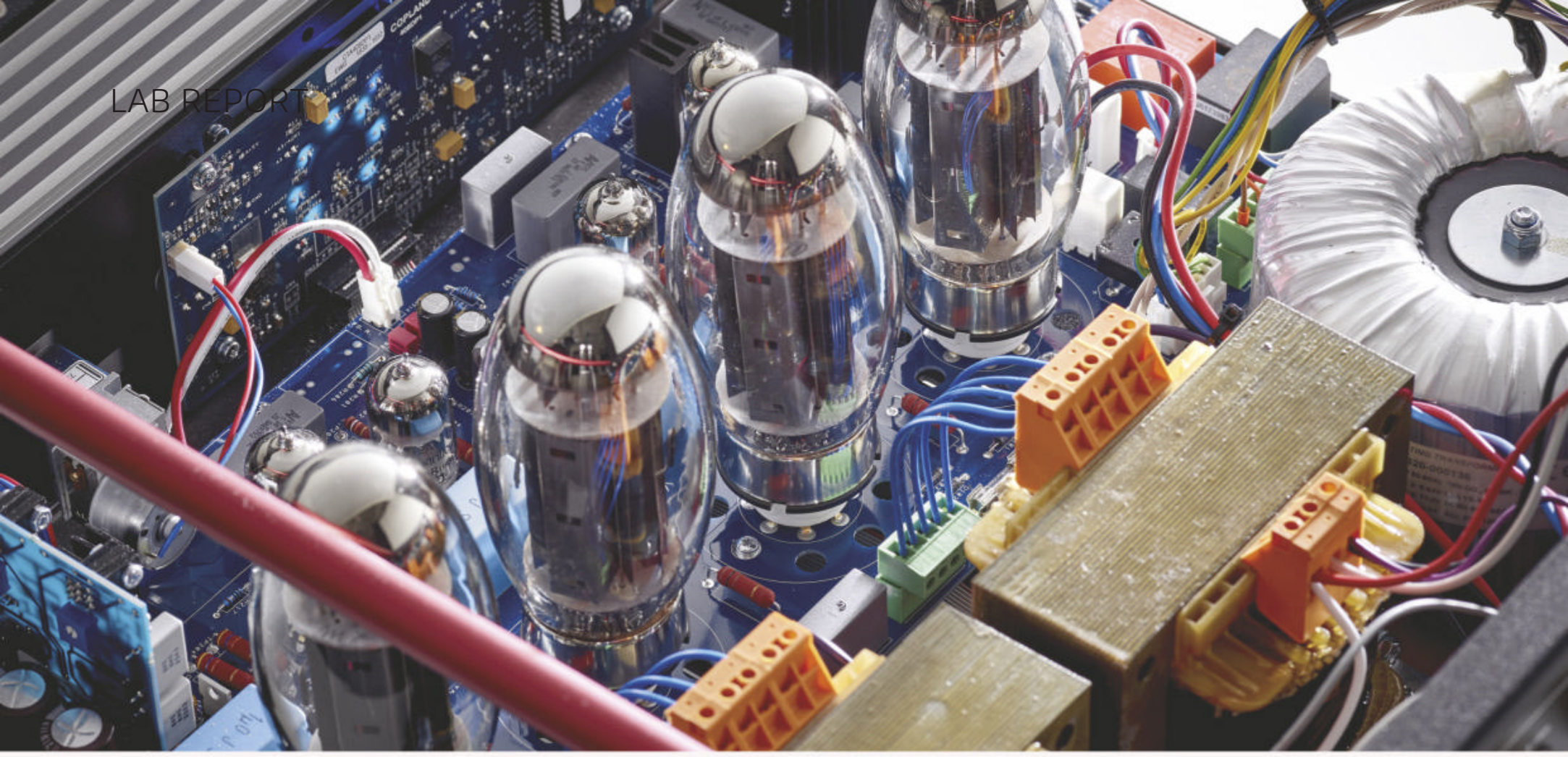
Harmonic distortion at an output of 1-watt into 8Ω (Graph 1) was, as I'd expect of a valve amplifier, dominated by a second harmonic at the relatively high level of –65dB (0.0562% THD). This was followed by a third at –82dB (0.0079% THD), a fourth at –86dB (0.0050% THD), and a fifth at –100dB (0.001% THD). As you can see, higher order harmonics (6th, 7th, 9th, 10th and 12th) are visible on the graph, but they're all more than 100dB down.

When driven into a 4Ω load at the same output level, but still using the Copland's 8Ω transformer tap, the level of almost all harmonic distortion components increased, with Newport Test Labs measuring the second at –57dB (0.1412% THD). This was followed by a third at –75dB (0.0177% THD), a fourth at –78dB (0.0125% THD), a fifth at –93dB (0.0022% THD) and a sixth at –98dB (0.0012% THD).

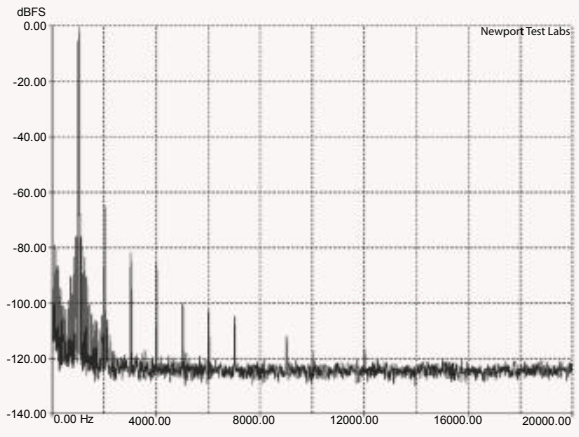
Distortion again increased significantly when output power was increased to 20-watts per channel. At this level, into an 8Ω test load, Graph 3 shows that the second harmonic at –46dB (0.5011% THD). The third, fourth, fifth and sixth harmonic distortion components are clustered either side of –70dB (0.0316% THD) graphing line. The next four components are mostly lower than –80dB (0.01% THD) and although harmonics are visible out to 20kHz, all are more than 100dB down.

At the same power level and frequency into a 4Ω load, distortion levels increased further, as you can see on Graph 4. The second, third and fourth harmonic are all above –60dB (0.1% THD), while the fifth through 10th harmonics are all above –70dB (0.0316% THD).

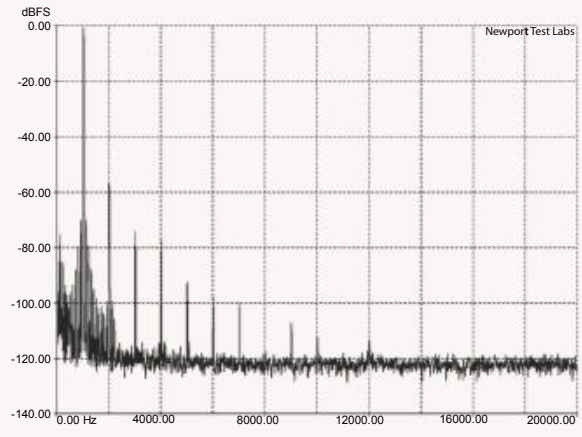
Intermodulation distortion at an output of 1-watt into an 8Ω load (8Ω tap) is shown in Graph 5.



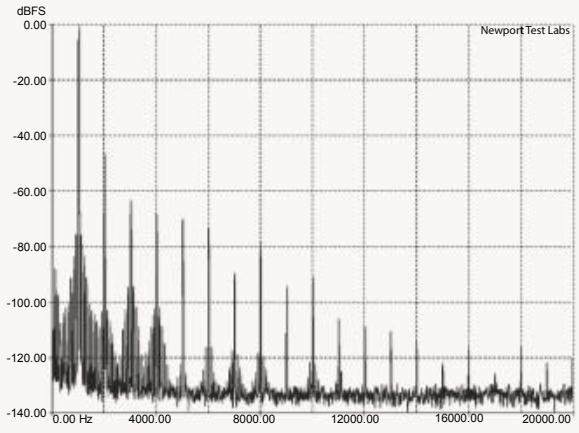
Graph 1: Total harmonic distortion (THD) at 1kHz at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



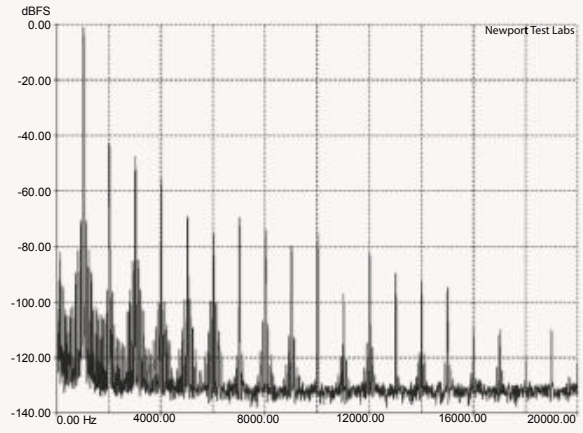
Graph 2: Total harmonic distortion (THD) at 1kHz at an output of 1-watt into a 4-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



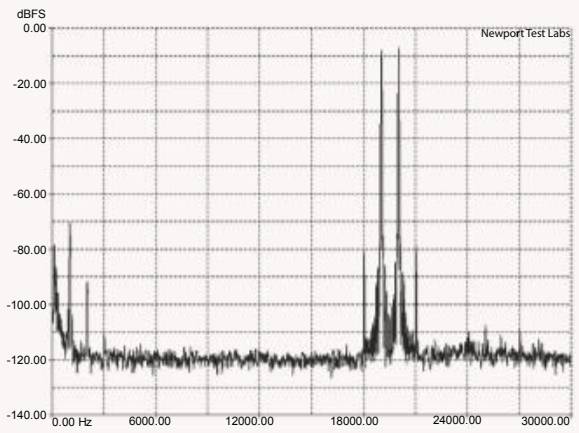
Graph 3: Total harmonic distortion (THD) at 1kHz at 20-watts into an 8-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



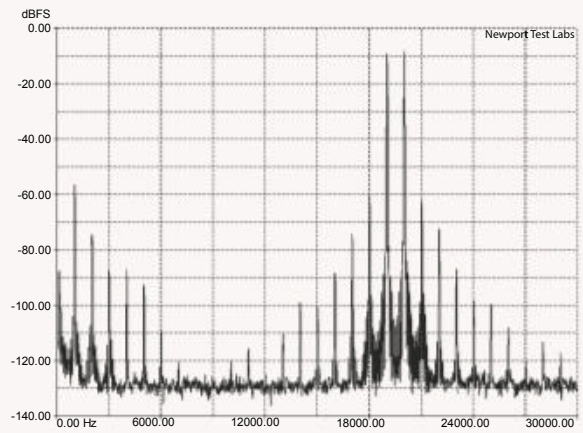
Graph 4: Total harmonic distortion (THD) at 1kHz at 20-watts into a 4-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



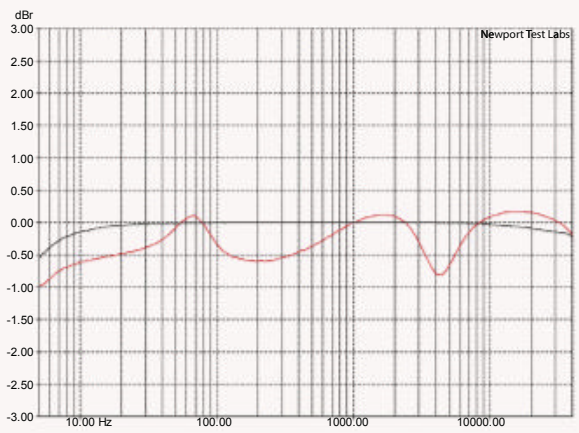
Graph 5: Intermodulation distortion (CCIF-IMD) using test signals at 19kHz and 20kHz, at an output of 1-watt into an 8-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



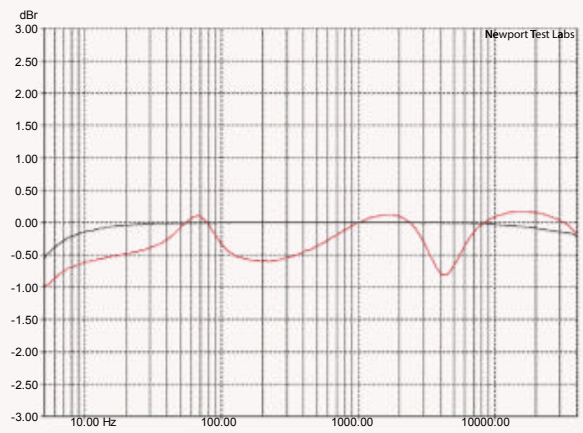
Graph 6: Intermodulation distortion (CCIF-IMD) using test signals at 19kHz and 20kHz, at an output of 20-watts into an 8-ohm non-inductive load, referenced to 0dB. (8-ohm tap).



Graph 7: 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 load representative of a typical two-way loudspeaker system (red trace) when using the 8-ohm transformer tap.



Graph 7: Frequency response of line input at an output of 1-watt into an 8-ohm non-inductive load (black trace) and into a load representative of a typical two-way loudspeaker system (red trace).



The unwanted regenerated signal at 1kHz is at the fairly high level of –71dB (0.0316%), but there's also a signal at 2kHz at –93dB (0.0022%) and at 3kHz at –112dB (0.0002%). The sideband signals at 18kHz and 20kHz are both around 80dB down (0.01%).

When output was increased to 20-watts (Graph 6) the level of the regenerated 1kHz signal increased to –56dB (0.1584%). The 18kHz and 20kHz sideband levels increased to around –60dB (0.3162%). As you can see, high-frequency sideband signals were added, along with additional regenerated signals.

Newport Test Labs measured the signal-to-noise ratio of the Copland CTA408 at 81dB (IHF-A) referred to one watt and 95dBdB (IHF-A) referred to rated output, the latter figure exceeding Copland's specification by a very healthy 5dB.

The 100Hz square wave has a slight tilt that indicates the non-d.c. frequency response of the Copland CTA408, but there's no bending, so phase shift is low, supporting the tabulated figure of 0.5°. The slight overshoot present is more obvious on the 1kHz square wave.

The 1kHz square wave is not 'text-book' with a slight overshoot, albeit quickly corrected, that would seem to be partially due to a rise in the response at ultrasonic frequencies but there could be some other mechanism responsible.

The same overshoot is visible on the 10kHz square wave, seemingly 'stretched out' due to the different time-base on the oscilloscope. The rise-time is very fast, confirming the Copland CTA408's extended high-frequency response. Driven into a highly-demanding capacitative load (8Ω in parallel with a 2µF capacitor) the Copland CTA408 proved itself to be completely stable, with a quarter-height overshoot completely corrected within five cycles. While the ringing is small and quickly damped, it's a little more than I might have expected on a valve amplifier and more like the ringing I'd expect to see from a solid-state amplifier tested in a like manner.

> A very well-designed valve amplifier that returned an excellent set of results on the test bench

The line inputs of the Copland CTA408 were very sensitive, requiring an input of just 25mV to deliver one-watt at output, and just 212mV to deliver rated output. This puts overall gain at a shade more than 41dB.

The output impedance of the Copland CTA408 is, of course, much higher than for a solid-state amplifier, with Newport Test Labs measuring 1Ω at 1kHz. Importantly, despite being high, the impedance was remarkably consistent over the audio band, varying only between 0.9Ω and 1.1Ω. This means a single-figure damping factor (of exactly 8) rather than a more desirable two-figure DF (and preferably one higher than 20). Because of these impedance characteristics the CTA408's frequency response will vary with swings in loudspeaker load impedance, so it will 'sound' different with different loudspeakers, depending on their design. For a well-designed loudspeaker however, the differences should not be audible, as demonstrated in the red trace of Graph 7.

Newport Test Labs confirmed that the Copland CTA408 meets the Australian standard for stand-by power consumption, drawing just 0.39-watts in this mode. However, as you'd expect of a valve amplifier, it will draw 222-watts once it's switched on, even if you're not actually playing music through it, and a bit more once you start listening to music. Use it at full power and it will pull around 500-watts from your 240V a.c. mains. So whenever you are not actually using it, it would be wise to switch it to its Standby mode.

Overall, the Copland CTA408 is a very well-designed valve amplifier that returned an excellent set of results on Newport Test Labs's test bench. *Steve Holding*

Copland CTA 408 Integrated Amplifier
POWER OUTPUT TEST RESULTS

Channel	Load (Ω)	20Hz (watts)	20Hz (dBW)	1kHz (watts)	1kHz (dBW)	20kHz (watts)	20kHz (dBW)
1	8 Ω/8 Ω tap	75	18.7	103	20.1	50	16.9
2	8 Ω/8 Ω tap	64	18.0	84	19.2	50	16.9
1	4 Ω/8 Ω tap	95	19.8	135	21.3	42	16.2
2	4 Ω/8 Ω tap	95	19.8	110	20.4	42	16.2
1	4 Ω/4 Ω tap	75	18.7	98	19.9	64	18.1
2	4 Ω/4 Ω tap	66	18.1	87	19.4	64	18.1

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

Copland CTA 408 Integrated Amplifier
LABORATORY TEST RESULTS

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	4Hz – 51kHz	–1dB
Frequency Response @ 1 watt o/p	3Hz – 121kHz	–3dB
Channel Separation (dB)	66dB / 66dB / 44dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.79	dB @ 1kHz
Interchannel Phase	0.5 / 0.37 / 7.9	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.05% / 0.51%	@ 1-watt / @ rated output
Signal-to-Noise (unwghted/wghted)	70dB / 81dB	dB referred to 1-watt output
Signal-to-Noise (unwghted/wghted)	86dB / 95dB	dB referred to rated output
Input Sensitivity (CD Input)	25mV / 212mV	(1-watt / rated output)
Output Impedance	1Ω	@ 1kHz
Damping Factor	8	@ 1kHz
Power Consumption	0.39 / 222	watts (Standby / On)
Power Consumption	230 / 575	watts at 1-watt / at rated output
Mains Voltage Variation during Test	234 – 253	Minimum – Maximum

PARADIGM PREMIER 800F

LOUDSPEAKERS

Famous Canadian loudspeaker manufacturer has developed some extraordinary technologies over the years, and its Paradigm Premier 800F is a perfect example. The company has really thrown all its recent technological break-throughs into this four-driver, three-way floor-standing design.

EQUIPMENT

The most obvious of those technologies sits in front of the Premier 800F's 165mm-diameter midrange driver, which has a carbon-infused polypropylene cone with a Thiele/Small diameter of 130mm. In front of it is what Paradigm calls a patented 'Perforated Phase-Aligning' (PPA) lens, which it says "increases and smooths its output without colouring the sound".

The idea of putting a dispersion/phase-alignment device in front of a driver is not a new idea — loudspeaker manufacturers have been putting them in front of tweeters for more than half-a-century, and indeed Paradigm has fitted one to the tweeter on the Premier 800F. But putting one in front of a midrange driver is, while not without precedent, relatively rare.

How might such a 'lens' "increase and smooth" the output of a midrange driver? One reason is fairly obvious. In any 'cone' loudspeaker, the cone moves inwards and outwards in pistonic fashion to produce sound. So if the centre of the cone moves forwards and backwards one millimetre, the outside edge of the cone, where it joins with the roll surround, will also move forwards and backwards by one millimetre. But because sound waves are quite short (a 4kHz sound wave is 11cm long) this means that the sound wave created at the centre of the cone will be slightly out of phase with the same sound wave that's being created at the cone edge, and when the waves combine further in front of the driver there will be interference that will cause frequency response variations — increases when the sound waves are in-phase and decreases when they're out-of-phase.

Essentially what Paradigm is doing with its PPA lens is trying to minimise the deleterious sound-wave interactions while at the same time maximising the useful interactions. I say 'trying to minimise' because to do this perfectly, you'd need a slightly different PPA for every frequency the driver is capable of reproducing.

Now take a close look at the roll surrounds of the two bass drivers. Instead of being a smoothly curved piece of material (manufacturers use various materials, including rubber, cloth, foam, thermoplastic, etc), the roll surround of the 800F's bass driver is both ridged *and* curved, in a process Paradigm calls 'Active Ridge Technology, or 'ART'.

Paradigm says these corrugations enable much greater driver excursion than a standard profile surround and they also enable a driver to deliver higher sound pressure levels for the same input voltage, and with less distortion. Indeed Paradigm says the differences can be quantified as "*an astounding, measurable 3dBSPL gain in output and a 50 per cent reduction in distortion*". Also, rather than gluing this surround to the cone, Paradigm 'overmoulds' the surround onto the cone, which provides a much stronger bond.

Paradigm has been granted two US patents for its Active Ridge Technology, which was invented by Paradigm researchers Oleg Bogdanov and Kevin Stitt. One of these patents covers the ornamental design of the surround, while the other describes the function of the profile (in part) as "*having a cross-sectional profile that varies continuously between each peak and adjacent trough so as to substantially eliminate unwanted stress-induced deformation during displacement of the diaphragm suspension when in use*".

As for the cones themselves, they're formed from carbon-infused polypropylene, have dish-shaped dust caps and a Thiele/Small diameter of 130mm for an effective cone area (Sd) of 133cm², so the total for both drivers would be roughly equivalent to that of a single driver with an overall diameter of 203mm.

The tweeter in the Premier 800F has a 25mm pure-aluminium dome which also benefits from being fronted by a PPA lens. It has a neodymium magnet fitted with external heat-sinking and the voice-coil gap is filled with ferro-fluid for improved efficiency, damping and cooling. Rather unusually, the tweeter is fitted not to the cabinet but to the ABS facade that not only covers the entire front baffle but is also used to form the PPA lens in front of the midrange driver.

Paradigm has positioned the fairly large (77mm diameter) bass-reflex port that augments the bass output of the Premier 800F on the rear of the speaker, so pushing the cabinet up against a rear wall would not be advisable. Unusually, but rather sensibly, the inner end of the port has an acoustically transparent cloth stretched across it that lets sound through, but keeps small beasties out. (Speaker cabinets are quite warm inside, because of the heat created by the drivers and the internal baffling material, which is a bit like a doona.) The rear panel is also home to the four speaker terminals, which allow bi-wiring or bi-amping. The terminals and the buss-bars that link them are high-quality multi-way gold-plated types, though the clear plastic knobs on the posts are not of the same quality.

As you can probably tell from the photographs here, the Premier 800F is a tall speaker, measuring 1053 × 230 × 350mm (HWD). Paradigm has used 'outrigger' feet to increase the size of the cabinet's footprint, but even with these fitted I found that it was still fairly easy to tip over a cabinet.

You could improve stability by using the supplied screw threads on the feet to attach a wider outrigger base, rather than screwing in the supplied spikes or rubber feet.

The company uses angular side panels on the cabinet to get the visual and acoustic advantages of curved cabinets without actually physically curving them. The pair of loudspeakers I was loaned for review speakers were finished with Paradigm's new 'Espresso Grain' finish. You would be best advised to judge this finish in the flesh for yourself. Although it's a nice enough finish I wasn't a huge fan of it, so I'd personally opt for one of the other two finishes that are available: gloss white and gloss black.

As for where the 800F speakers are manufactured, you will be pleased to hear that in a world where even the highest-end loudspeakers are now being manufactured in China, all Paradigm's Premier Series speakers are designed, engineered, and manufactured in Canada.

PERFORMANCE

I have to say it. The first thing that leaps out at you when listening to Paradigm's Premier 800Fs is that nothing leaps out at you. Yes, the bass is great — taut, controlled and depthy, whether you're listening to a jazz trio, a rock band or an orchestra. Yes, the midrange is beautifully natural, whether it's reproducing vocalists or instruments. And yes, the high frequencies are gloriously extended to beyond the upper limits of human hearing and, on that journey, the clarity of the sound and the silky-smoothness are outstanding.

But you don't really hear any of this,

> All Paradigm's Premier Series speakers are designed, engineered, and manufactured in Canada

because the overall frequency balance is so perfect that all this great sound at the different frequencies is just… well, great sound right across the board. More importantly, it's a perfectly natural sound.

The authenticity of the 800F's bass response was perfectly demonstrated to me as I listened to the wonderfully-named 'Flight of the Cosmic Hippo' album by Béla Fleck and the Flecktones. On the title track, listen to Victor Wooten absolutely paste his bass lines into the song's structure. Listen to the entire album and you'll hear how effortlessly the Paradigms reveal which of his 4-string, 5-string and 6-string basses he's playing. As for their version of *Michelle* (Lennon/McCartney), it's simply sublime.

There's also plenty of low bass to admire on Crooked Still's 'Shaken By a Low Sound', but I listened to it to enjoy the beautifully recorded sound of all the instruments on the album as well as the achingly delicate voice of Aoife O'Donovan. This album will demonstrate to you the unerring accuracy of the Premier 800F's midrange reproduction. Just listen to Greg Liszt's banjo, Rushad Eggleston's cello and Casey Driessen's five-string violin. But the star of the sonic show is undoubtedly O'Donovan's pipes.

One of my go-to albums for testing treble is Steely Dan's 'Can't Buy a Thrill', from 1972. On *Do It Again* the different sounds and textures of the congas, cymbals, finger-cymbals, electric piano and guiro make for a true tweeter-tester, and the Paradigm 800F's tweeters were more than up for it. And if you think the Paradigms are making the guitar solo sound weird, they're not: You're listening to an electric sitar, played by Denny Dias.

You will need to angle these speakers in a little, so they're aimed either directly at the listening position, or so that the acoustic

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paths cross just in front of it, and you don't want to be sitting too close to them. But apart from this, they're remarkably forgiving of where you put them in your room, so long as you leave at least 20–30cm of space at the back for those rear-firing ports to do their stuff.

CONCLUSION

The Paradigm Premier 800F is one of those rare loudspeaker designs that delivers monitor-like sonic accuracy. If you've become accustomed to hearing over-egged bass, or speakers that deliver a peaky, forward midrange to impress inexperienced listeners, or treble that's either rolled off to imitate smoothness, or artificially elevated to give it a bit of a tizz, you may well be a little underwhelmed when you first listen to a pair. But once you've spent a little quality listening time with them, preferably with your favourite albums (rather than those in the dealer's demo collection), you will soon appreciate that the Paradigm Premier 800Fs are doing exactly what a good pair of speakers should do — which is to tell it like it is. Highly recommended! *David Gillespie*

CONTACT DETAILS

Brand: Paradigm
Model: Premier 800F
Price: $3,499 (RRP) per pair
Warranty: Five Years
Distributor: Audio Active Australia
Address: 63 Fennell Street,
Port Melbourne, VIC. 3207
T: (03) 9699 8900
E: info@audioactive.com.au
W: www.audioactive.com.au

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Readers interested in a full technical appraisal of the performance of the Paradigm Premier 800F Loudspeakers 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

Graph 1 shows the in-room frequency response of the Paradigm Premier 800F, measured by *Newport Test Labs* using pink noise as the test stimulus. The response is very, very flat. If you look at the 90dBSPL graphing line together with the 87.5dBSPL line just below it, you can see that the 800F's response is essentially contained in the space between these two lines from around 140Hz all the way up to 40kHz. That's 140Hz to 40kHz ±1.25dB! So from the upper bass, right across the midrange and up to inaudibility the 800F is within ±1.25dB.

In Graph 2, Newport Test Labs has measured the high-frequency response of the Paradigm Premier 800F using a gating technique that allows 1Hz resolution, and this time running the same test with the speaker grille fitted (red trace) and without it (black trace). The increased resolution of this graph shows peaks and dips that are 'ironed out' by the pink noise test used for Graph 1. Although Graph 2 shows the actual high-frequency response, these peaks and dips would not be perceived by the human ear, which would 'hear' the response shown in Graph 1. Some of the peaks and dips are also artefacts caused by the use of a single microphone, whereas when listening, signals arrive at two different points.

The grille is essentially acoustically transparent below 5kHz, but above this, the overall level is around 2dB lower than if the grille is not used, at least out to around 14kHz after which the two traces basically re-align themselves. This means that the grille essentially removes the slightly shelved 'lift' in the response between 6kHz and 13kHz when the grille isn't fitted. The result of this is that I suspect most listeners will prefer the sound balance of the 800F when the grille is fitted. If you prefer a slightly 'brighter' high-frequency sound, you could listen with the grilles removed. However, your hearing would need to be very acute to perceive a 2dB difference in this high-frequency region.

Graph 3 shows the nearfield response of both of the Paradigm 800F's bass drivers (the black and green traces) and that of the bass reflex port (red trace). You can see that the cabinet is tuned for a very low 35Hz, so you could expect some serious bass extension from this design.

The output of the port is controlled, but you can see some general 'leakage' of higher frequencies from 100Hz right out to around 900Hz.

Paradigm doesn't actually state the impedance of the 800F design, simply claiming that it is 'compatible with 8Ω' presumably to obscure the fact that its impedance is only 8Ω or higher for a very brief frequency span between 1.6kHz and 5.5kHz and is less than 6Ω between 75Hz and 1.3kHz and also between 7kHz and 30kHz. It drops down to around 3.2Ω at 130Hz. According to the International Electrotechnical Committee (IEC) guidelines, the Premier 800F would attract a 'nominal' impedance rating of 4Ω. This impedance is shown in Graph 4 as the red trace. Phase angle (blue trace) is benign such that at its most difficult (–45°) point, impedance is a healthy 7Ω. I think you will get best performance from the 800Fs if you use an amplifier that will happily drive very low impedances, preferably down to 2Ω.

In Graph 5, Newport Test Labs has spliced the three-metre in-room frequency response to the gated one-metre on-axis response at 700Hz to arrive at a composite response. As the IEC allows us to disregard high-Q discontinuities, you can see that the overall measured response is 45Hz to 23kHz ±3dB, which is so close to Paradigm's own specification of 43Hz–25kHz ±3dB that we're in the realm of measurement error.

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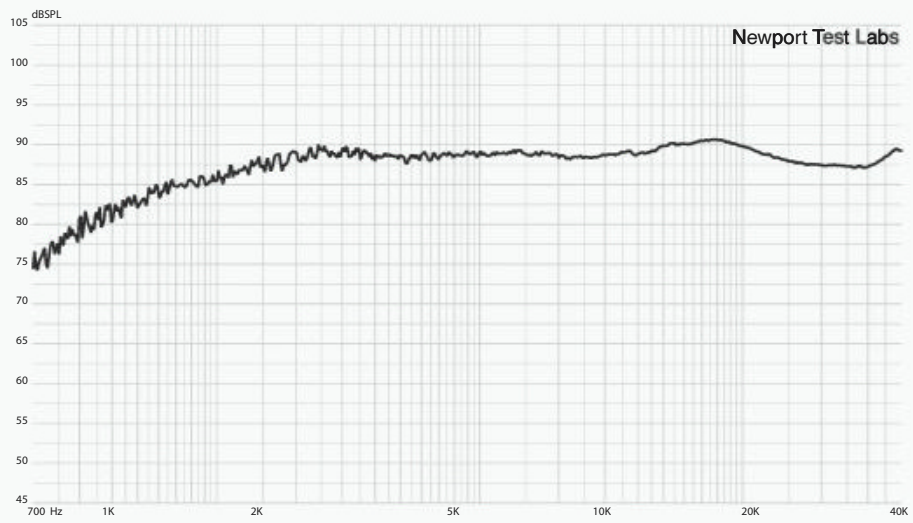
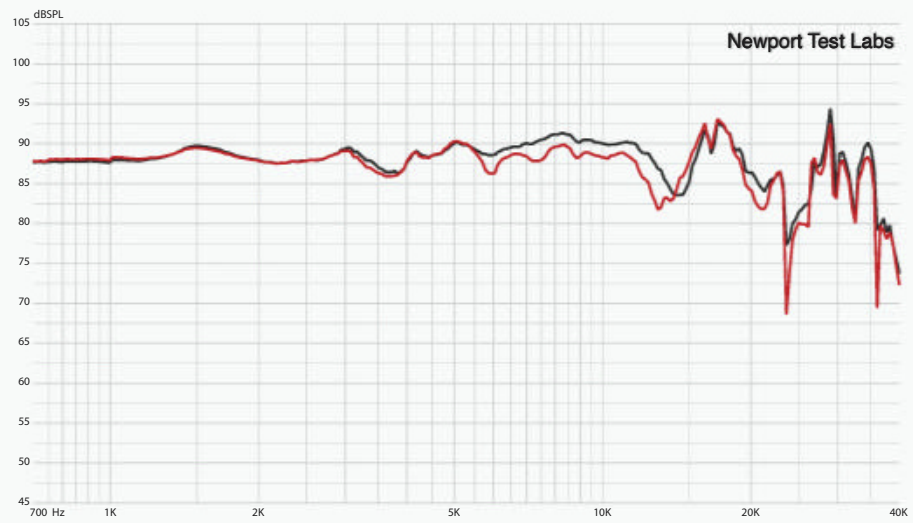
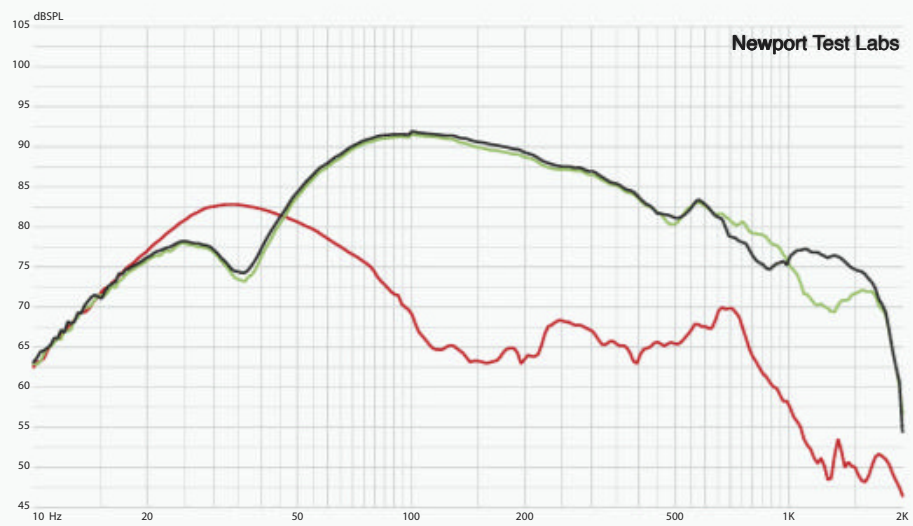


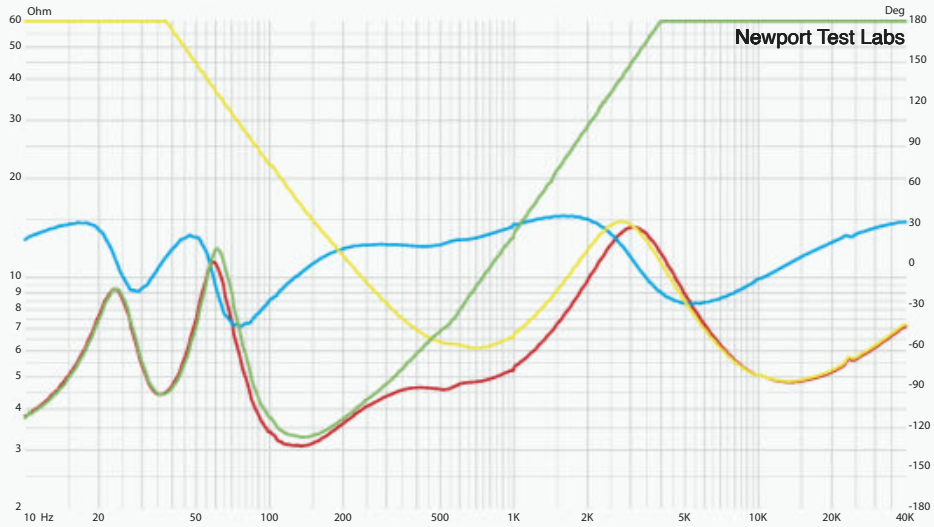
Graph 1: Frequency response using pink noise test stimulus with capture unsmoothed. Trace is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter.



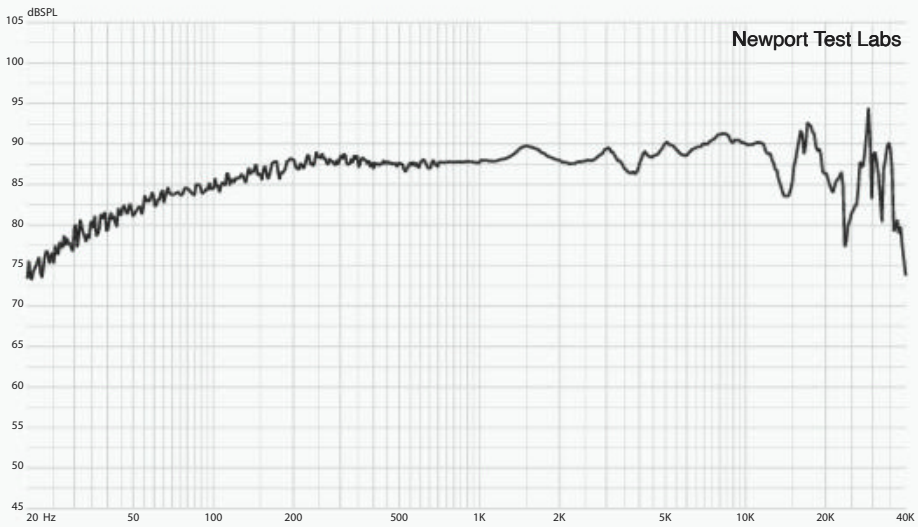
Graph 2: High-frequency response, expanded view, using gated sine test stimulus, with grille (red trace) and without (black trace). Microphone placed at one metre on-axis with tweeter. Lower measurement limit 700Hz.



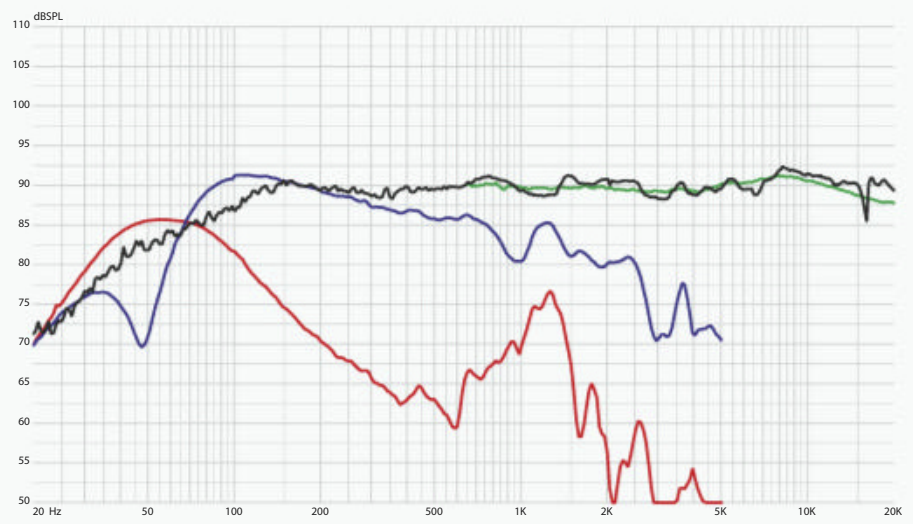
Graph 3: Low frequency response of front-firing bass reflex port (red trace) and bass drivers. Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas.



Graph 4: System impedance modulus (red trace) with low-pass crossover section (green trace) high-pass crossover section (yellow trace) speakers plus phase (blue trace).



Graph 5: Frequency response. Trace below 700Hz is the averaged result of nine individual frequency sweeps measured at three metres using pink noise test stimulus with capture unsmoothed. This has been manually spliced (at 700Hz) to the gated high-frequency response, the expanded view of which is shown in Graph 2.



Graph 6: Composite response. Red trace is output of bass reflex port. Dark blue trace is anechoic response of bass driver. Black trace (see Graph 5). Green trace (see Graph 1.)

And if you stretch the dB envelope out by just two decibels, the 800F measures 35Hz to 35kHz ±4dB.

Newport Test Labs has created another composite graph (Graph 6) via post-processing to show the 'fit' for the various different measurement techniques used by the lab. You can see how the high-frequency in-room pink noise trace (black) is a smoother version of the one obtained using the high-resolution gated technique (pink trace), the black trace being the response that would be perceived by the human ear.

The pink trace shown is the one without the grille: attaching the grille would reduce the level slightly between 6kHz and 14kHz (approx). The light blue and dark blue traces are the response of the two bass drivers and the red trace the output of the bass reflex port. You can see the reason for the 800F's excellent low-frequency performance.

The efficiency of the Paradigm 800F was measured using Newport Test Labs' usual rather stringent test methodology, under which it obtained a test result of 88.5dBSPL at one metre for a 2.83Veq input.

This matches very well with one of Paradigm's claimed two specifications for this parameter — 89dBSPL (anechoic). It means the Paradigm 800F is more efficient than most floor-standing designs, so will make the most of whatever amplifier power you have available.

Paradigm's Canadian engineers have excelled themselves with their Premier 800F. The frequency response is incredibly flat and extended at both ends of the audio spectrum, there is no spectral skew and it's also very efficient loudspeaker. It's an outstandingly good design. *Steve Holding*

18+

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APOLLO HI-FI

Apollo Hi-Fi has served audio/visual products and advice to the Sydney area (and beyond) for many decades. In the words of John Chillari (right), who is the store's owner and its general manager, "We must be doing something right!" John and his staff know their customers' needs, and have become adept at knowing what to stock, when, and at what levels. Their attitude and adaptability have earned them their place as a top Australian home entertainment dealer when many are simply striving to survive in a competitive market. We talk with John and staff…

I believe the history of Apollo Hi-Fi goes back many decades. Have you been the owner since inception, and is it the oldest established hi-fi store in Sydney?

Apollo Hi-Fi was first established in 1969 by Mel and Vicki Chillari—that's my brother and sister-in-law. They started off in this same building, selling black and white TVs and cheaper audio equipment. The front of the store was originally the local "Free Weekly" newspaper office.

Mel and Vicki bought the premises and had the Apollo business at the front and lived in the back. As the business grew, they kept moving back more and more to make space for more demo rooms, more hi-fi gear. Eventually, there was no more living space, and they moved house elsewhere.

We chose the name Apollo to commemorate the Apollo lunar missions—a giant leap for mankind, you could say. Apollo is also the Greek God of music, which seems fitting since Marrickville has a large Greek community! We're Italian, though. We have so many Greek customers coming in, they start explaining what they're looking for in Greek, and without trying to be rude I let them finish and I have to tell them "I'm sorry, I'm not Greek, I'm Italian", and the response is always, "but this is Marrickville!"

We're a family business—I started to work in the shop in the early 80s, doing some of Mel's ordering work, and over time inherited the managing director position. Eventually, Mel got more involved with his side business—yacht charters on the Sydney Harbour with his big boats! He retired soon afterwards, but he's definitely still got his "finger on the pulse" here at the shop—he likes to know what's happening!

Relative to the established date of hi-fi stores across Australia, where does Apollo Hi-Fi fit?

I am not sure if it is the oldest Hi-Fi shop in Sydney, but it's certainly in the running! Quality Hi-Fi goes back a long way too, but Apollo is definitely the longest established hi-fi shop in the same location in Sydney. We may well be the oldest hi-fi shop in Australia… I don't know. Many of the shops in Melbourne are fairly new, so… maybe we are! We're a pretty small team, open seven days. There's four permanent staff and two casuals, and we're pretty competent when it comes to installation, troubleshooting and giving advice!

What got you interested in hi-fi? What gear did you have in your first personal system?

My first Hi-Fi system was basically a toy—

it was an old Pioneer Prelude 500 system; an amplifier, turntable and two speakers. Before I started working here, I worked at David Jones as a salesman in the audio department. Mel knew one of the buyers there, so whenever they took a trade-in (certainly not something they do any more!) for an old black and white TV, he'd then purchase, refurbish and sell it in the store here. It was Mel who suggested I work there—I'd just left school then; it was my first job. After a while, Mel bought into Park Street Hi-Fi and I worked there, and then started working here when he eventually sold off his share of Park Street to Peter Peters. Back in those days, Barry Lord, our brother-in-law, was working here for a while too. We opened another store in Summer Hill, but we eventually closed that to concentrate on our business here in Marrickville—it must have been ten years ago now since we closed the doors there.

You seem busy but you seem to really be enjoying it, and you get to work with people all day...

I do enjoy it. It can be exciting. I do at times unfortunately feel very rushed, and can rub my customers the wrong way sometimes—for that, I really do apologise. [Laughter in the background as a sales lady at the counter throws a jibe at John…] "What are you laughing at?", John says playfully. "It's only when I'm stressed—trying to do too many things at the same time!" [*Obviously, the fun and camaraderie are great in this shop! Tom Waters*]

What is the key to being a successful dealer? Do you have loyal customers dating back to the early days of Apollo Hi-Fi?

The key is being able to gauge the market, by knowing what type of items to purchase and in what quantities. Usually, we get it right: seldom do we get it wrong. But there are times when you think something is going to sell well, but unfortunately it doesn't. Obviously, connecting with customers is hugely important too—being able to provide top-quality advice to match the calibre of our product. We now have second- and third-generation customers. Mel sold to the first generation, then their kids would buy, then their kids! We have people all the time who come in who bought their first system from us in the 80s and are now looking to upgrade! It's unusual to get such loyalty today in business, but we do earn it. We don't sell something for the sake of selling it. We have some great representatives from our brands that are always looking out for us, which means better deals for our customers! There's real passion behind the brands we support, and we want the items we sell to suit our customer's needs—the last thing we want is for them to come back and complain.

We're always willing to go the extra mile – there's something about in-person service that just can't be beaten, you know?

Positive feedback is so valuable to us, it helps our business survive in today's market with the likes of Amazon. We're always willing to go the extra mile—there's something about in-person service that just can't be beaten, you know?

Has the Covid-19 pandemic been a challenge for you? Have you had to make changes in your store's operation in order to cope?

For the first few months it was a challenge. We didn't know what was going on. There was talk of total shutdown, from day to day it was supposedly going to happen, but it never did. The uncertainty slowed us down, made us feel unsettled. But with JobKeeper, customers still have an income. They're trying to enjoy themselves while they're staying at home, and improving their home audio systems.

So, for us, we've been lucky enough to be successful in spite of the pandemic, but I am sorry to say many other businesses haven't been so lucky. We had to add the sign-in register and, of course, the hand sanitiser. It's the new normal I guess, and people are generally very understanding of the changes. The biggest problem we've had is being able to get enough stock from our suppliers to fill our orders, and we're really grateful to everyone for being so patient while we plan our next step forward.

I noticed you're selling products from the newly-resurrected Leak brand. Are people attracted to the retro look?

Definitely, but at the moment it's a little bit slow to take off. A lot of the younger people don't know the brand, and the older people who do know it don't think it's the same! It's now owned by IAG—a company that now owns the brands Audiolab, Mission, Quad, and Wharfedale. It's likely made in the same factories as those brands. A lot of the technology in those other brands has likely filtered down into the Leak brand as well. Oh, speaking of retro, we have recently taken on the resurged Technics 1200 turntable range, which has been massively popular. It's great to see people getting excited about it!

What are your best-selling brands? Do you have new brands or models coming in the future that excite you?

Our best-selling electronics brands are definitely Marantz, Denon, Rotel and Cambridge Audio, and in speakers it's definitely KEF, Bowers & Wilkins, Wharfedale and Elac. The new long-awaited KEF LS50 Meta sound great and I think will be a good seller for us, if the popularity of its predecessor, the LS50, is anything to go by.

They have some great reviews! Our best-selling bookshelf speakers are the Elac Debut B5.2 and B6.2 — they just fly off the shelves, we can never get in enough stock. They aren't dear and they offer great sound for the money. They really speak for themselves (pun intended!). People buy them without even listening! Later this year, we have the Diamond 12 series from Wharfedale to look forward to, plus the introduction of 8K AV receivers from Denon and Marantz.

And how do you handle the servicing of the products you sell?

All our brands are backed by real Australian warranties, with 3-year extended warranties on Denon and Marantz and up to 5 years on most of our speakers. So, for warranties, we work with our suppliers directly, and for all other services and repairs our service centre is literally two doors up the street. Pablo, from MP Electronics, is a bit of a wizard—if he can't fix it, likely no one can! He fixes everything from old electronic hi-fi gear to newer amplifiers and speakers, and he's pretty handy with spare parts and special modifications too.

With the swing back to vinyl and the switch to more streaming, how has the store adapted?

Many of the new Marantz and Denon home theatre and Hi-Fi products have streaming on board and support wireless multi-room systems via the HEOS platform, which has been really well-received thus far. We saw a massive revival of turntable sales about two years ago, starting just around Christmas time, and it's been steady ever since then. We probably have between 20 to 30 different current models on display. We sell mostly Pro-Ject and Rega—they're our two biggest selling turntable brands, and we also carry a comprehensive range of LP accessories including cartridges, styli, record cleaning machines, brushes, record mats, cleaning fluid… the list goes on and on!

Turntable sales were good leading up to Christmas, home theatre, too. People often want to upgrade their technology at this time of year; like streaming, 4K, 8K, etc… They choose Christmas time to do it. It was hectic around here then, all hands on deck! I'm not complaining though!

What are the greatest challenges for your hi-fi market?

We're moving into this digital age and hi-fi is becoming a bit of a niche nowadays. There's a huge online consumer market now, so we send orders all around the country. We're having to compete with the likes of Amazon and online stores that just don't give you the sales support that brick-and-mortar stores provide.

With new models being released all the time, you have to decide if the new product offers something better, and is something that is going to appeal and sell well to our clientele. We don't want boxes that sit on the shelves and look pretty, but do nothing! We can gauge our success by how long we've been here. We must be doing something right! Some shops stock what they want to stock and don't listen to their customer's needs—they're the businesses that don't survive.

Outside of your business, what do you do for fun?

I drive a car that's always in the workshop getting fixed! No, just joking. I love my Audi — I've had many. I love modifying them to get some serious horsepower out of them. I currently drive an RS6 with a V10. It's a Lamborghini V10! Even stock-standard, they're very fast, but with a few modifications you can make them very, very fast. The mods make it unique — I like uniqueness. I am always on Facebook chatting with people about how it'll go on the track!

At home, I'm always cooking pasta and pizza—hand-made macaroni is my speciality. We're Italians, that's what we do! I listen to a bit of music at home, but usually I hear so much of it at work that I just want something different at home. I'll sit down and watch TV or a movie, because I can relax and I don't have to talk. I talk all day at work!

Interview by Tom Waters.
Photos by Tom Waters and Keith Morris.

SPENDOR

Almost 50 years on, the influence of the iconic Spendor loudspeaker can be seen and heard in the range of distinctive, innovative loudspeakers. Spendor remains the reference standard for both discerning audiophiles and professional sound engineers, delivering a transparent, natural and musical sound that truly captivates you.

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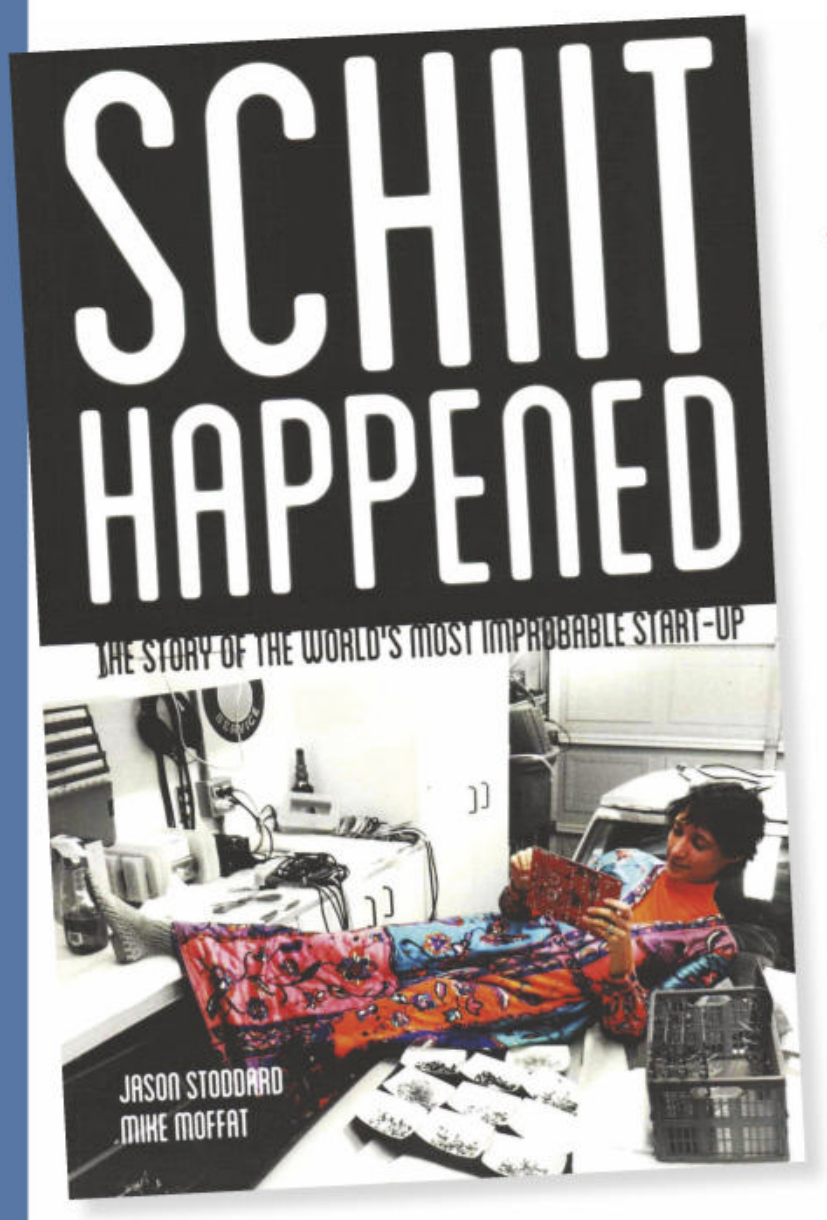


SCHIIT HAPPENED

The Story of the World's Most Improbable Start-Up

By Jason Stoddard, Mike Moffat (with)

Schiit Audio is now famous.... or should that be infamous... most likely because of the company's scatological name. So why the subtitle? Why might the founding of this company have been so improbable?

According to its co-founder, Jason Stoddard, also the lead author of this book, there were several reasons it was improbable. He lists them as:

- No outside funds, no venture capital, no crowd-funding.
- Founders had been out of the audio business for 15+ years.
- Direct sales
- Started with no staff, from Stoddard's own garage.
- Products built in the USA.
- First products were inexpensive.

Improbability is not a fixed value, as readers of Douglas Adams' fabulous book *Hitchhiker's Guide to the Galaxy* will be well aware.

There are many values of improbability. One of these (point two on Stoddard's list) should have pricked your ears straight away, because it points to the fact that both founders had previously been in the audio business, so they weren't newbies. As it happens, they'd both been very seriously in the audio business. So when I tell you that Stoddard's partner in Schiit was actually none other than the very famous audio amplifier designer Mike Moffat, you might already be dividing whatever previous improbability number you'd decided on by a factor of, oh, say about 10 million.

Back in the 70s, Moffat was partly responsible for the resurgence in popularity of valve technologies, whilst in the 80s he became one of the founders of Theta Digital. He also built the world's first stand-alone DAC, which used his own conversion algorithms coded into a Magnavox DSP. Moffat also founded Angstrom, which was initially famous for building the world's first upgradeable surround processor.

As for Stoddard, after leaving university with a Bachelor of Science Degree (*summa cum laude*, no less!) during which time he also established his own loudspeaker company (Odeon), he worked first at Magnavox before being appointed Vice President of Engineering at Sumo, an amplifier manufacturing company founded by the late James Bongiorno, which built one the most famous power amplifiers in the USA back in the 70 and 80s.

Stoddard spent five years at Sumo before leaving it to found and run Centric, which described itself as a 'new media agency working on leading-edge interactive marketing in social media, virtual worlds, and other emerging opportunities.' Centrics' clients included Imation, Threshold, Infinity, Pioneer, LA Gear, Canon, Hewlett-Packard, VeriSign, Nestle and Acura and had offices in Los Angeles, New York, and Second Life (this last being a 'virtual world').

I have to say that Schiit Happened is a page-turner from its very beginning. This surprised me, because most books about the audio industry are not.

I suspected Stoddard had hired a very good ghost-writer until I discovered that he's also a published author, with two well-regarded science fiction novels available. (And if you're a sci-fi fan, those novels are as entertaining as Schiit Happened.)

We discover that Schiit Happened will be a 'tell-all' book right from the start, when Stoddard tells us that "Sumo was, by and large, the company that taught me what not to do." One of these lessons was not to ship products you know are faulty and so will inevitably be returned, which Sumo did against Stoddard's advice, which, as he put it, "contributed to an extreme service load that never went away in my five-year tenure." We also learn that Sumo was not only doing its schematics by had, but laying out its printed circuit board designs by hand as well. Stoddard also learned a lot at Sumo, and not only about PCB layouts! He says it was at Sumo that he turned from a 'hardcore objectivist to a subjective-objectivist.' This epiphany came about when he took a Sumo Andromeda II home to actually listen to one on his home system. Not only did Sumo's amp sound louder than his more powerful Carver amps, they also sounded better. "Way better," he says. "Everyone noticed it, audiophiles and non-audiophiles alike."

Sumo was also where Stoddard met Mike Moffat, because Theta was located in the same industrial park. He not only met Moffat, he started working for him... though it might more precisely be called 'moon-lighting' for him since Stoddard also continued to work for Sumo. Stoddard designed quite a few circuits for Theta, including the discrete, current-feedback output stage of the Theta DS Pro Gen V digital processor. He did that one to win a bet, which was that he could do it without using any op-amps at all, and that it would not only sound better than the existing op-amped version, but measure better as well. Stoddard won his bet, and Moffat was impressed enough to incorporate it in the design, despite it requiring 260 parts on a 100×150mm Teflon PCB.

As you would imagine of a man who created a very successful media agency, Stoddard is an outstanding marketer and gives excellent advice about it throughout this book, starting right at Chapter 2 where he says it's important to get the marketing basics correct, which are your website and e-commerce systems, making sure they work on mobile devices, and getting mentions in the press: "by which we mean mentions and articles both online and off, in an out of the niche press." He also points out Schiit's rationale for selling direct to customers, which is that "48–65 per cent of the cost of a product can be in its distribution. So the manufacturer, that is the company that engineers, designs, certifies, tests, packages, ships, markets, supports, warrants and repairs the product gets one-third to half of the retail cost."

In almost the same breath he admits that customers do lose out when manufacturers sell direct. "Dealers provide a service to customers by letting them compare a whole lot of different products. That is definitely worth something. And we are losing that as they go away."

For me the book really took off at Chapter 4, where Stoddard explains all the steps that went into starting Schiit from scratch. Don't get me wrong: It was a page turner from the outset, as I've already told you, but after Chapter 4 I found that I was reading faster, and turning pages faster, and using my highlighter even more often. I also discovered that making a chassis was even more difficult than I thought it already was. So when Stoddard describes how he was feeling when he pushed the button to order $800 worth of screws, I felt his pain. What I still don't quite understand is how he managed to talk his partner, Rina, into hand-soldering printed circuit boards for him, despite her having her own full-time job, or the fact that he'd let her hand-solder around 1,000 PCBs before he tasked the process to an independent assembly house (Jaxx Manufacturing). My wife would have filed for divorce after the first ten PCBs.

I was also amazed to learn that Jason, Rina and Mike really did do everything from scratch, and by themselves… and not just building the equipment, but also building the Schiit website, that website's e-commerce system, along with designing and assembling the packaging (plus doing the actual packaging), the shipping... the lot. And in this book he tells you exactly how they did it, what they used to do it and how to do it better if you're thinking about doing it yourself. He even tells you how to get free press coverage for your products (as in not paying for a public relations company, not buying advertisements, and not paying for clicks). If you're in the business of selling stuff, this chapter alone (6) is worth multiple times the book's cover price... even if you're buying the paperback, rather than on Kindle.

If you are planning on growing a company, you really need employees. Or at least one of them. And this is what Chapter 10 is all about. How to go about finding and hiring employees. It's very US-centric employment contract-wise, but the information about the actual hiring process is good for anywhere in the world. Better than good, in fact: perfect. Chapter 14, where we learn about the 'Popping Lyrs' is one of my favourites, not least because it is a perfect example of an elusive fault that is able to be solved without actually ever learning what the fault was in the first place.

Stoddard accurately refers to it as "the most irritating failure mode in the world". Service technicians around the world will be nodding their heads in sympathy.

Chapter 17 (Resurrecting the Circlotron) is really all about Stoddard designing the Schiit Mjolnir headphone amplifier, which uses a very old, very elegant design topology originally developed for valves, but whilst explaining why he used it, Stoddard also gives very useful descriptions of the various different types of amplifier classes (Class-A, Class-D, Class-H etc), of balanced and unbalanced amplifier operation, and of the different types of devices used in amplifiers (Triodes, Pentodes, BJTs, MOSFETs, JFETs, SITs) and more. Yes, you can find all this information in several different electronics textbooks, as well as a few hi-fi buying guides, not to mention on-line, but it won't be as interestingly and entertainingly explained as it is here. In Chapter 18, Stoddard pulls off exactly the same trick, but this time he does so whilst addressing the various digital circuits in common use today.

Believe it or not, 18 chapters in we learn that Schiit's sales figures are now in seven-figures yet Stoddard and Moffat are still running it from Mike and Lina's garage, albeit with a few more employees and a lot more of the assembly being done by outside subcontractors.

Significantly, it's a garage that is located in a suburb that is not actually zoned for a commercial operation. So it's here we get to discover how Stoddard goes about finding commercial premises. Once more, he gives a great deal of good advice, interspersed with amusing back stories, which includes that when Schiit finally gets its own commercial accommodation, it's promptly named the "Schiithole". You should also be getting the idea that this is not a small book.

Worst. Customer. Ever. That's actually a chapter heading. With the full stops. And if you thought it might be a bad idea to pay out on your own customers in a book, you're in good company, because Stoddard agrees with you. But since owning and running a successful company will mean interacting with your customers, you're going to have to learn to take the good with the bad, and how to ensure you have satisfied customers. Once again Stoddard lays out exactly how any responsible business should approach customer service issues, whether it's advice, complaints, faults, refunds or simply answering the phone and emails. Those last two are interesting, because Schiit actually recommends you don't ring the company at all. Its website says: "Email us, we're really fast. Call us, and we may get to it eventually." As for Schiit's worst customer ever, it's a real pity Stoddard doesn't actually mention his name, because you could add him to your own 'black list' of people to never deal with again. Stoddard keeps just such a list and says 'Butthead' (not his real name) is on it. As he says: "Starting a business? Working with customers? Repeat after me: not every customer is worth having."

At the moment, and maybe it's just due to Covid-19, but then again maybe not, a great many audio manufacturers are releasing 'MkII', 'Signature', 'Anniversary' and 'same model in a new colour' versions of existing products, which makes Stoddard's chapter titled 'Death of a Product' very relevant, because in it he discusses product life-cycles and how and when (and why) manufacturers make changes to their products (and what to do when it goes wrong!).

There is more in this book: much, much more, including appraisals of DSD, USB and Bluetooth, where Stoddard explains in detail the ins and outs, and the ups and downs of all the various formats and interfaces. There's more on product development, more on how to put someone else in charge of your own company, how to negotiate with real estate agents and property owners, and not least how to develop 'Blue Sky' ideas into successful products. In short, there's 'way too much to tell you everything I'd like to say about this book in this review.

Stoddard says (on the rear dust-sleeve, which features Schiit's very first employee) that Schiit Happened was written: "*For everyone who didn't win the venture capital lottery, for everyone who wasn't born with a trust fund, for everyone who doesn't have rich relatives… this is how to turn a dream into a multi-million dollar business—without selling out, without spending a mint on marketing and without losing your sense of humour.*"

I would agree wholeheartedly with that shameless blurb, but even if you have not the slightest intention of starting up an audio business, but you do have an interest in audio equipment—which, if you're reading this, you must have—you are simply going to love reading Schiit Happened. I've read it three times already and I'm going back for more! *greg borrowman*

Schiit Happened

Jason Stoddard/Mike Moffat

Pages: 383pp
Published: 2015
ISBN: 1514355027
Paperback: $32.98
Kindle: $6.54

Tim de Paravicini
1945–2020

Tim de Paravicini, co-founder (with his wife, Oliva) of EAR Yoshino, a polymath who built and designed every component in the audio chain, from cutting lathes to studio recorders through to loudspeakers, has died, aged 75, of liver cancer. At one stage in the 90s, Paravicini's EAR 859 valve amplifier, a true Class-A design delivering 13-watts per channel, was Japan's best-selling valve amplifier—more of them were sold in that country than all other valve amplifiers together.

Many in the audio business called Paravicini "the world's best valve circuit designer." He was also something of a curmudgeon, so an almost equal number, whilst admitting his multiple and extraordinary talents, described him as being contrary and rather difficult to get on with. What many imagined was his nickname ('the Baron') as a result of his demeanour was not a nickname at all, but a genuine title. He was, in point of fact, a real Baron. The title had been in his family for many generations and now passes to his son, Nevin, the current CEO of EAR.

Born in Nigeria to English parents in 1945, Paravicini and his family returned to England in 1952 so he could be schooled there. At his school in Stevenage, one of his classmates was Ken Hensley of Uriah Heep. It was while he was in England that Paravicini not only fell in love with rock'n'roll but also learned to play the drums, much to the consternation of his mother, an amateur pianist who played exclusively classical compositions. Paravicini remembers being impressed by Hensley's work ethic, which he said was his guiding light throughout his career. "I was able to see that this guy had the push, the determination, that he wasn't going to rest. You've got to have that spark or fire by the time you're 15 or 16, some sort of drive to keep you going."

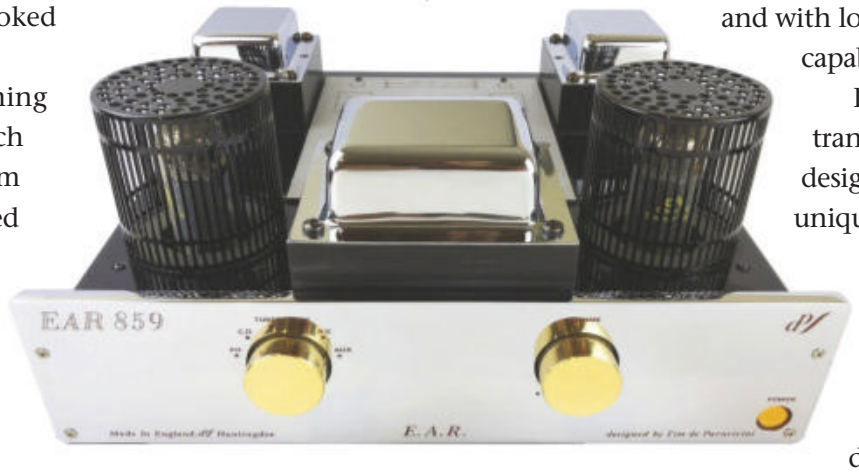
Paravicini became interested in electronics while he was in primary school, during which time he built a number of AM radios and also modified his parents' audio system. As a teenager, he started building amplifiers based on circuits published in hobbyist magazines, using parts he scrounged from old radios and televisions that had been scrapped, because he couldn't afford to buy the components he needed. He says that it was his frustration with the performance of these projects that forced him to evaluate their designs then to try new design approaches to achieve better performance. It was because of this that he elected to go to technical college, rather than university, where he studied Electrical Engineering.

After graduating, Paravicini worked in England in the computer industry for a short time before, aged 21, he decided to return to South Africa to escape the both the political climate in the UK and the actual climate, as well as the promise of a higher wage. In Johannesburg he continued working in the computer industry but at the same time also started working for a few hi-fi stores and a couple of recording studios as well as setting up his own company to build transformers.

One of the stores he worked for was also the South African importer for McIntosh and Luxman, and his work there gained him an invitation from Luxman in 1972 to go to Japan, where he not only designed the Lux MB3045, MQ3600, M4000 and M6000 amplifiers, as well as the C-1000 preamp, but also met the woman who would later become his wife, Oliva.

The two went to England where Paravicini briefly designed loudspeakers and amplifiers for Tangent, before consulting for Michaelson & Austin, where he designed the TVA-10 and M-200. His view of the company's first amplifier, the TVA-1, was that it was "really hopeless, both sonically and technically. I felt that they [Antony Michaelson and Kevin Austin] had gone down the usual blind alley because they had just lifted their circuitry from early 1950s textbooks." (This criticism didn't stop Michaelson from later asking Paravacini to design the A1 integrated amplifier for Musical Fidelity.) Paravicini also consulted for Quad, gaining a design commission that resulted in the Quad II Series amplifier, which updated founder Peter Walker's original circuits. The company's website said at the time: "The Quad II Series circuit design is the work of Tim de Paravicini, a man widely acknowledged to be the UK's foremost valve amp designer."

But Paravicini didn't only design loudspeakers and amplifiers. He also built custom-made analog tape decks for Lenny Kravitz, Bob Ludwig, Paul Stubblebine, and James Guthrie, one of which was used to remaster Pink Floyd's catalogue. He also rebuilt Paul McCartney's deck, as well as worked on decks owned by Ringo Starr and George Harrison. On the recording side of things, he helped out Stereophile's editor, John Atkinson, by mastering 'Poem', the first LP on the Stereophile label. Atkinson recalls: "Laura and I drove to his and Oliva's home near Cambridge, England, to pick up the lacquers. We entered their living room and Tim beckoned us to sit down. Laura and I looked at each other, silently mouthing 'where?' to each other; the room was jam-packed full of things reflecting Tim's eclectic passions."



Tim and Oliva founded EAR Yoshino (the EAR stands for 'Esoteric Audio Research' and Yoshino is an ancient Japanese word meaning 'lucky'), primarily to promote one of Paravicini's favourite designs, which he'd started working on when he was at Michaelson & Austin and been tweaking ever since: the EAR 509, a valve amplifier rated at 100-watts per channel that used PL509s—a valve type he'd championed for many years. Paravacini once told Stereophile's Dick Olsher: "I felt that I had an amplifier which met practically all my criteria. I'm not saying it's the ultimate amplifier, but I admit that it is very good. I felt I had something that was good, compact, and efficient. I had a design that had all the qualities of a solid-state amplifier, the ideal bass, clean lower and midrange, very tight, and with lots of current capability."

Paravinci's transformer designs were also unique, particularly as used in his EAR MC4 phono stage. He would never discuss how he wound his coils because he said it was only his unique method of doing this that gave his transformers their unique characteristics — "I use copper, like everyone else, but that's where the similarities end," he said. He was, however, willing to talk about his transformers'hysteresis properties.

"Hysteresis is a function of how much magnetisable material there is in the core, so the larger you make that, the less significant hysteresis will be. And the lower the frequency, the more significant hysteresis becomes. In other words, the heavier the output transformer, the better it is likely to be. Just as there is no substitute for [cubic inches] in a car, there is no substitute for iron in an audio transformer. But the expense goes up very markedly, so there is a practical limit."

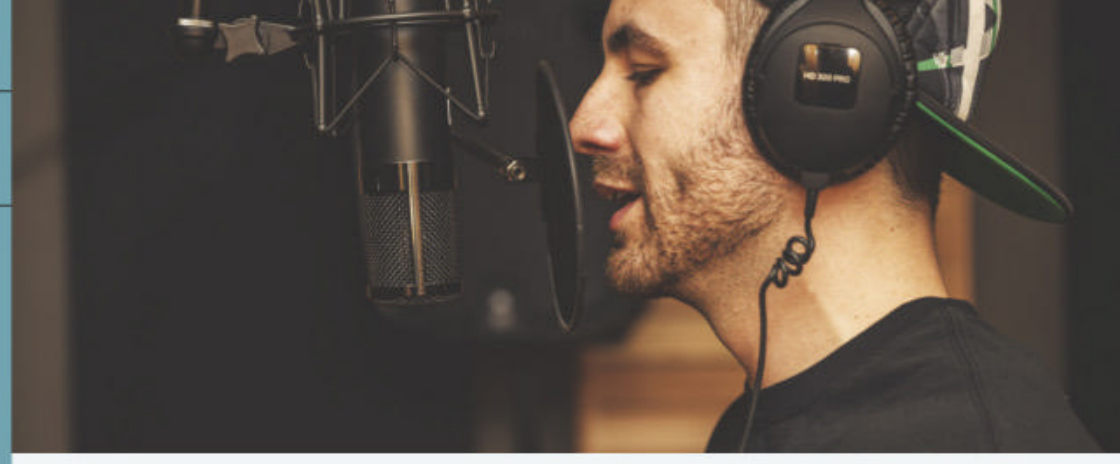
Paravicini's quote about cubic inches was a bit of a tell that he was also a complete petrol-head and had raced rally cars, as well as Formula 3. Indeed he could spout chapter and verse on vehicle design, telling you what sort of suspension setup was used on some obscure 1960s car and why the engine in a particular vehicle was prone to oil leaks. UK reviewer Richard Black recalls: "A ride in his car was always something to remember. The first time he gave me a lift he approached a roundabout at a speed that suggested he was intending to go over the top of it rather than around it. But he did go around, on a wet and slightly muddy surface, with not more than one wheel ever in solid contact with the road, following a perfect line all the time."

Paravicini is survived by his wife Oliva, his son Nevin, and his daughter, Avalon.

FEATURE

PODCASTING FOR FUN AND FOR PROFIT

Part 1 of this article detailed the equipment you'll need to record a podcast. If you missed it, send an email to aushifi@futurenet.com with the word "podcast" in the subject line and we'll send you a free pdf of that article. In Part II we explain how to take your ideas out of your head and turn them into cold, hard audio files you can share with the world, whether it's for fun, or for profit, or for both.



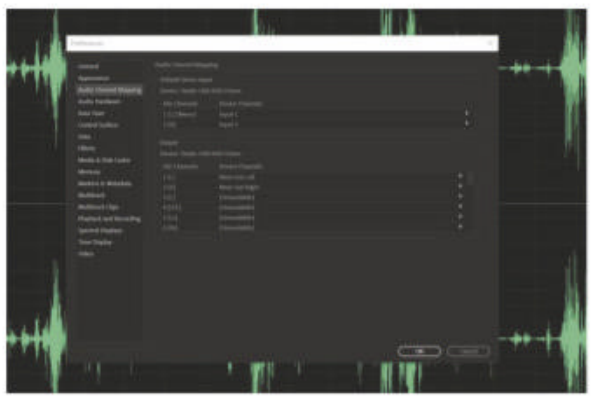
1. SETTING THE SCENE

The first task is to arrange the area that will act as your studio so you have everything you need within arm's reach. That means setting up your laptop or recording device within eyeline, and then arranging your microphones so they are in front of anyone who will be talking. Hook your mics up to your mixer, and fire up the software you'll be using to capture the audio.

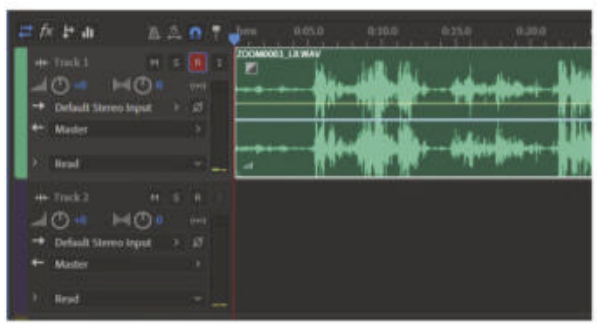
Now, it's a case of fine-tuning. Have anybody who will be talking speak in their normal voice; a good trick here is to ease them in by starting a completely unrelated conversation, and covertly using their responses to tweak levels. Some people naturally talk louder than others, so be sure to balance out levels and be mindful of clipping, where the sound is louder than the microphone can handle, as this will result in recordings which are nigh-on unusable.

2. SETTING THE SOFTWARE

With your hardware all set up, you'll need to carry out the same housekeeping within your software. Using Adobe Audition as the example, make sure you have your audio routing set the way your mixer, USB microphones or audio interface require.



In the example above, I have set Audition to use my Presonus Studio audio interface, and have inputs one and two receiving signals from two microphones connected to the interface. For monitoring — listening back to our recordings — I have the two outputs set to send the audio to my studio monitors, and my headphones for live monitoring when recording.



Now the audio routing is set up, it's time to 'arm' the individual tracks to record. Recording in most audio software applications is a two-step process; you tell the software which tracks are receiving the audio by arming them. Look for the little 'R' button to choose which tracks you want to record, then hit the master record button to start the process. Congratulations! You are now recording.

3. EDITING YOUR PODCAST

With your audio hopefully now residing nicely within the software arrangement window, you can start the process of editing. Editing is the process of cleaning, or enhancing, audio using the tools available within the software. If your recording features multiple voices, it's good practice to either lower the volume — or remove completely — parts where a specific person isn't talking as this removes any background noise and allows the listener to focus entirely on the subject.

Look for peaks in the wave file too; in the example above the audio clips slightly in the part I have highlighted.

In Audition, you can lower the volume of parts like this quickly and easily using the Clip Gain function, making it ideal for doctoring 'plosives or sibilances. But be careful of using this too liberally though; the human voice is a dynamic thing and is naturally quieter or louder depending on the context.

Attacking your audio file with too broad a brush can make for a harrowing listening experience afterwards.

Now you can start to import the other elements. In the last example, you'll see I have a short jingle on the second row, and then a music bed on the third row. The music bed has had its levels reduced so it doesn't compete with the main speech track. Think of this part as musical building blocks; you simply drag the audio files into the arrangement window, and move them where you need them. You can also chop, slice and rearrange here if you want.

To add a final coat of polish to the sound, use compression and normalisation. In Audition, this is called Dynamics Processing, and the 'Classic Soft Knee' preset does this job perfectly. Be careful though; overusing compression will make voices sound like they're coming from a goldfish bowl. The final step is normalisation, which attempts to level the sound across the whole track. Again, this can prove quite drastic so always check your entire mix once you've completed normalisation.

4. EXPORTING YOUR PODCAST

So the audio is recorded, arranged and polished, and you're ready to export. This part is simple; first tell the software to create a mixdown of your multitrack session — as seen above — which 'bounces' all the individual files into one master file. Then hit 'Export' in the File menu and you're good to go: you now have your very own podcast and are ready to take the world by storm! Good luck!

For a free pdf copy of Part 1 of this article, send an email to aushifi@futurenet.com with the word "Podcast" in the subject line.

HEADLINES

The Newsletter of Len Wallis Audio

Autumn 2021

PERFORMANCE, RELIABILITY & TRADITION:

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Inside...

FROM THE DESK OF LEN WALLIS

It has been a very constructive few months for Len Wallis Audio. Amid all the recent disruption we have taken the opportunity to have a look at our offerings, and in some areas, found we came up short. This has prompted us to add several new products to our range, in some cases additional models from our tried and respected existing brands — and in some cases new brands entirely.

One positive impact the pandemic has had on our industry is that people are taking the opportunity to spend more time with their music. This is not only evident in the ever-increasing number of people investing in vinyl (particularly among the younger generations), but with a very marked return to two-channel systems. Our industry has been dominated by Audio Visual (Home Theatre) offerings for many years — but as we move towards the easy option of sound bars it has become increasingly obvious that musical reproduction has been compromised. The return to two-channel is not only by our traditional buyers, but a whole new market has opened, many of them buying systems for the first time. There is a vast percentage of the population who have grown up with an almost unlimited source of music — mostly consisting of compressed music through a pair of earbuds. While this system of delivery leaves a lot to be desired it has served to expose this market to an endless catalogue of music. All that was needed was for this market to experience this music the way the artist intended, and this is now taking place.

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McIntosh

The decision to add a new range of electronics to the Len Wallis Audio stable is never taken lightly; the last time this happened was many years ago when we took on the Naim range — which proved to be a very wise decision. After months of consideration and auditioning we have decided to do it again — and are proud to announce that we are the latest Australian dealer to be appointed as a McIntosh outlet.

McIntosh needs no introduction to anyone with a fleeting interest in our industry. Founded in 1949 McIntosh has come to represent to the audio ▸

2-channel hybrid valve/ solid-state integrated amplifier rated at 100 watts/channel. $7,495


McIntosh
MA252 INTEGRATED AMPLIFIER
INPUT
HEADPHONES
PUSH - TRIM
STANDBY
VOLUME
PUSH - POWER
for the love of mus
tory of High-End Aud

MCINTOSH

Solid state mono power amplifier rated at 1,200 watts – it sounds amazing. $27,995 each

We were skeptical, McIntosh is famous for amplifiers, not turntables, but this is an excellent sounding turntable — easily justifying its price of $8,995

- industry what Harley-Davidson represents to the motorcycle world: Performance, reliability and tradition. (In 2002 McIntosh built an audio system for Harley-Davidson).

The breadth of the McIntosh offering is vast, far too extensive for any one outlet to carry. We have carefully picked what we consider to be the eyes of the range — which includes a combination of solid-state and valve models. We have everything from integrated amplifiers through to the mammoth 1,200 watt MC1.25kW monobloc power amplifiers, CD transports and even a turntable.

We have now loaded all these products onto our website, and if there is something that catches your eye that we have not ranged on the floor — please let us know; we have access to the entire range.

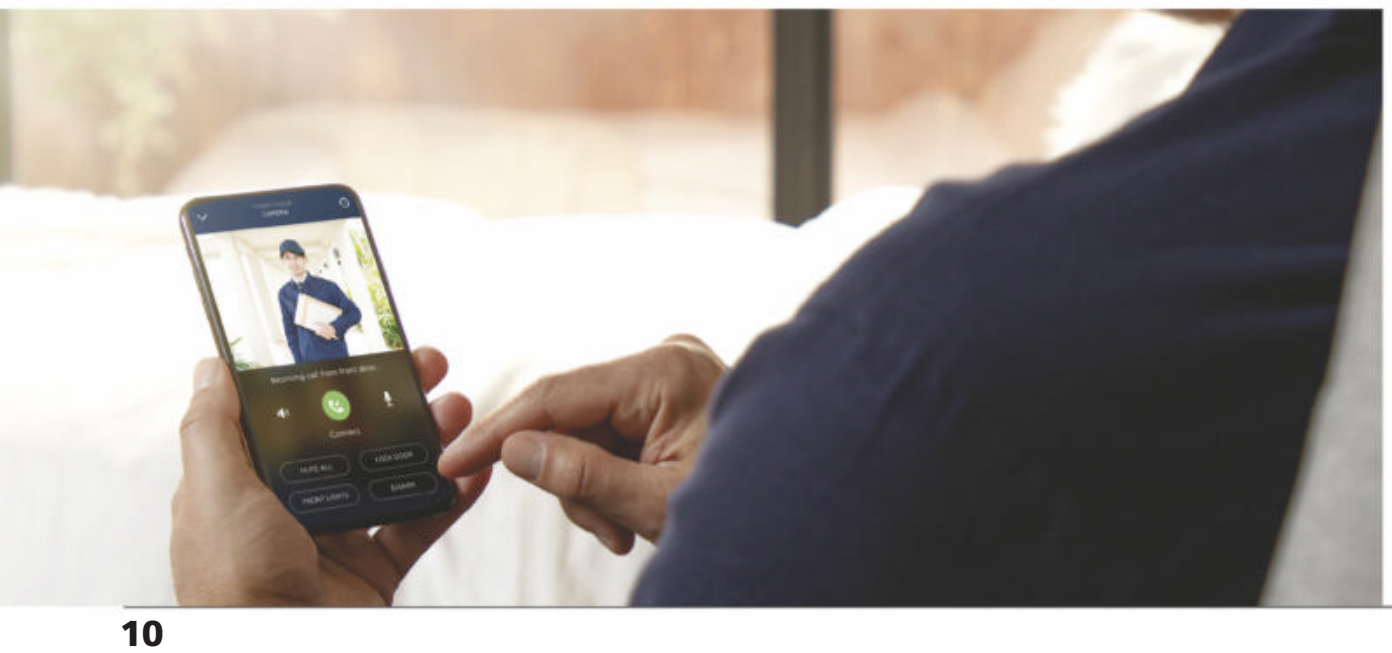
The difference between a smart home and home integration

By Len Wallis Audio Custom Sales Consultant Christian Lambros.

In 2009, Apple coined the phrase "there's an app for that!" This was two years after the invention of the iPhone. Twelve years on it turns out they were right, and the modern-day smart phone is now a part of our everyday life. We are now in an era where we can control our homes through proprietary apps controlling individual "smart things" throughout. You can purchase off-the-shelf lighting and power systems at your local hardware store.

Many other companies have launched apps for their products, including fireplaces, security systems, access control, sprinklers, pool motors, blinds, motorized doors, the list goes on. All these devices are controlled by a variety of wireless technologies.

This is where the confusion and frustration begin for the end-user, and where we can start to understand the difference between a smart home vs. an integrated home.



As mentioned, it is very easy to fall into the confusion of purchasing multiple app-based products to control everything in your home. Once you have connected all of this tech you are ready to go, swapping from app to app to turn on your fireplace, dim the lights, change the song, adjust the temperature, oh wait, the lights are not right, you will have to go back into the lighting app to adjust them.

What may happen once all of your wireless devices are set just the way you want is that your ISP modem will reach its wireless capacity and lock up, then nothing will work until you power cycle the modem. Does this sound familiar?

That is the off-the-shelf smart home technology solution that many home-owners are deploying in their home, and while this may work for many and the costs are relatively low, **it is not an integrated home.**

A professional systems integrator will create a design that will combine all of

these services into one piece of software, allowing the home-owner to control their entire home in a very simple and natural way.

Some things to consider when building a new integrated home:

A Robust Home Network

The question I get asked often during an initial discovery meeting is, "isn't everything wireless these days?" While this is sometimes true and it seems that every piece of electronics is wi-fi connected, a structured home will have as many hardwired connections as possible, this is to minimise wi-fi congestion and to ensure a solid, fast internet connection. We also hardwire robust wi-fi access points to ensure that when a wireless device speaks to it, the information gets transferred as quickly as possible back to the network.

Services

A modern home includes many connected services these days. This may include multi-room audio/video, a complex lighting system, blind control, security, access control, irrigation, pool control, solar energy management, vehicle charging, and a multi-zone air-conditioner.

These systems need to be reviewed at the beginning of the project to ensure the initial design and cabling are correct. Some products work well with each other while others do not.

Design and Project Management

A good initial design will pave the way to seamless integration. A well-designed system includes a lot of cables, and understanding what cables to use is important. Do we use CAT6, CAT6a or fibre? Where do we run these cables? It is worth noting that this area of construction is fairly cutting-edge, and not available on all builds, hence, your builder may ask for assistance, and a good project manager will help guide the builder through the complete installation process.

Central Control

The key piece to an integrated home is the control software, and there are many out there, all built to achieve a certain level of control. While I typically use a program called Savant, other integrators may prefer to use a different brand that they are trained to use and understand well.

The controller will bring in all of the previously-mentioned variables into one unified control system, tie them together as one package and then output it to a variety of mediums such as your smart phone, a universal remote, or a touchscreen wall controller. The initial design will denote where these may need to go. For example, a TV will need a handheld remote and the kitchen or bedroom may have on-wall touchscreens for quick access to many services.

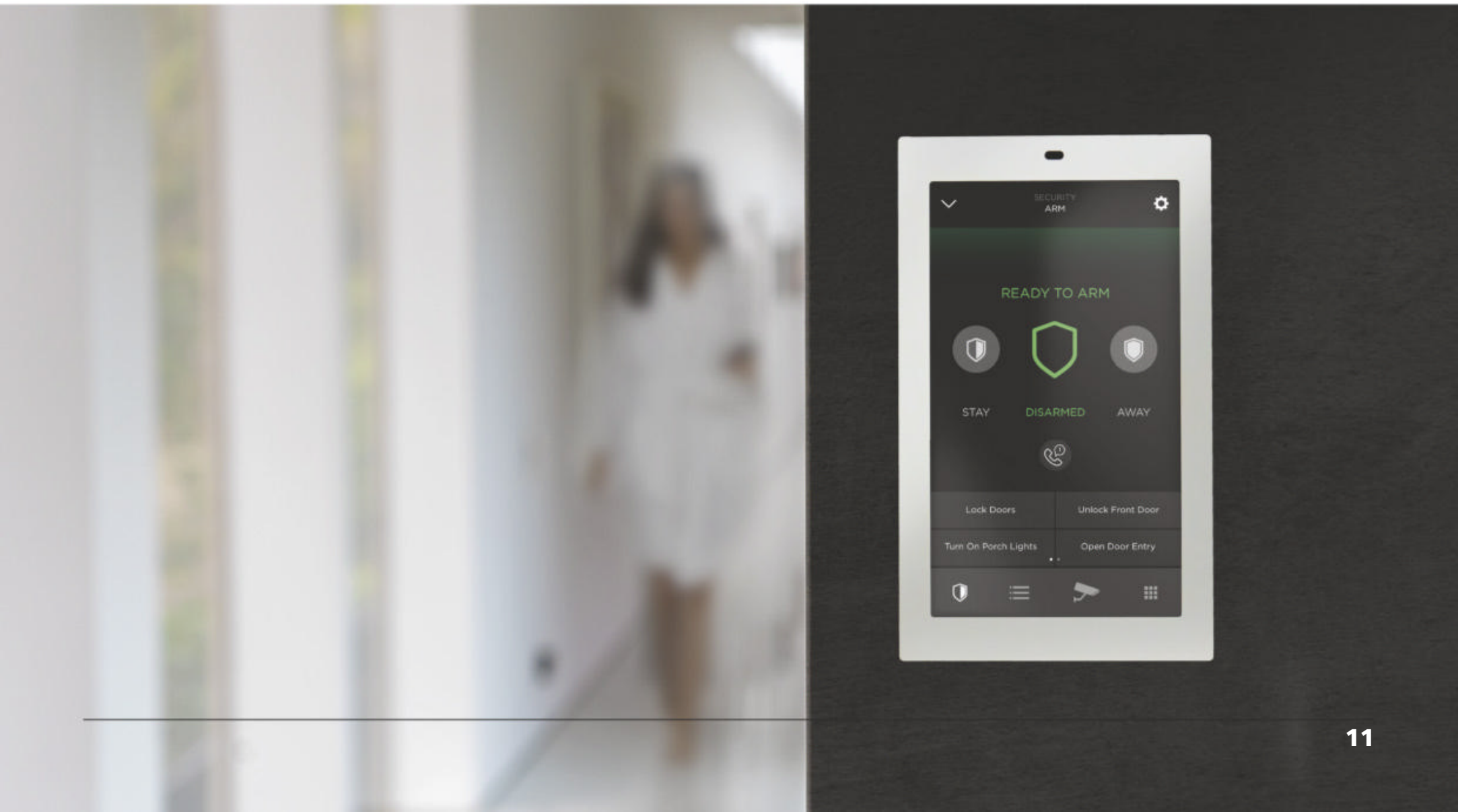
An experienced designer will allow for some customised scenes that will control a variety of items at the touch of one button.

For example, when you press the home button, your garage will open, lights leading into your key rooms (kitchen, lounge, bedroom) will turn on, your favorite playlist will come on, and the temperature will be set to 23 degrees.

There are a variety of scenes that can be set up in this way, and Savant enables the home owner to be the programmer and create and adjust their own scenes without integrator support.

If you are interested in building a new home and would like to incorporate any of these technologies, I would encourage you to speak to an integrator first.

After all, just as you would not ask your plumber to do your landscaping, you should not ask your electrician to design your next integrated home.



Marantz MODEL 30

The Marantz MODEL 30 Integrated Amplifier and SACD 30n Network Audio Streamer and SACD Player have been in the works for the last three years and they are now at Len Wallis Audio. The new products from Marantz embrace elements of classic Marantz design and combine a fresh modern approach to design aesthetics to create a crisp new form factor for these components.

To create MODEL 30, Marantz blended contemporary technical innovation with Marantz Hi-Fi traditions to pay homage to the brand's roots while offering the best possible sound. The all-analog design features a fully discrete two-stage build, with independent power supplies for the pre-amplifier and power amplifier. The power supply circuit, designed exclusively for the preamplifier, enables a stable power supply that Marantz says will be "unaffected by fluctuations from power demanded by the power amplifier stage."

An oversized toroidal transformer is dedicated exclusively for the preamp while a double-shielded steel case is mounted around the transformer to suppress the leakage flux that could generate noise in peripheral circuits.

Leveraging the HEOS built-in platform, the SACD 30n combines a premium CD/SACD player with a modern digital source's hub, a USB-DAC, and a built-in preamplifier. With HEOS built-in, the SACD 30n can stream FLAC files from 44.1kHz to 192kHz at up to 24-bit resolution, DSD2.8MHz, and DSD 5.6MHz. It can play ALAC (Apple Lossless), AIFF, and MP3 files from major streaming providers, including Amazon Music HD, Tidal and others. HEOS Built-in also allows for greater listening flexibility and access, including a variety of voice-enabled technologies, including Amazon Alexa, Google Assistant, Apple Siri, and Josh.ai to easily play music, skip tracks, and more.

The headphone amplifier used in the SACD 30n features a dedicated amplifier module using exclusive Marantz HDAM-SA2 circuitry with an exceptional signal-to-noise ratio. To work with a wider variety of headphones, the gain factor can be adjusted to three established presets—low, mid, and high—making it possible to drive high-impedance headphones.

The Model 30 and the SACD 30n are both priced at $5990 respectfully. We highly recommend you audition these components together in one of our sound lounges.

New Naim Audio amplification

We have been promoting Naim for many years now, but have never had the depth of product on display that we now have. We have recently added the following products to our existing range:

- NAC552 Pre-amp with NAPS552 Power Supply - **$43,000**
- NAP500 Power-amp with NAPS500PS Power Supply - **$46,600**
- NAC282 Pre-amp including NAPSC2 - **$10,550**
- NAP300 Power-amp with NAPS300PS Power Supply - **$18,300**
- NAP 250DR Power-amplifier - **$8,700**
- NAIT XS3 Integrated amplifier - **$5,250**

Most of these products have graced our floor previously at one stage or the other, but this is the first time that we have been able to showcase such a comprehensive selection at the same time.

B&W TRADE-UP!

It's back – B&W have relaunched their very successful Trade-Up campaign for 2021.

Your existing speakers, irrespective of brand or condition, are worth a minimum of 10% of the value of the B&W speakers that you are purchasing.

This equates to more than $4,000 if you are trading up to a pair of their top-of-the-line B&W 800D3s.

Plus everyone who participates in the promotion will go into the draw to win a pair of B&W PX-7 Carbon Edition headphones — and there are five pairs to be won, with a new draw on a two-weekly basis.

For more information, or to see what your trade-in is worth, go to our website **— https://lenwallisaudio.com/bowers-wilkins-upgrade-your-sound/**

New Sony Projectors

VPLVW590ES

The Sony VPL-VW590ES is Sony's top lamp-based, native 4K projector. There are more premium models in the family, but they feature laser light sources instead. This more traditional approach keeps the VW590ES relatively affordable, as native 4K projectors go, while still offering plenty of contrast and, according to Sony, stunning detail and rich, faithful colour.

The body is 50cm wide and weighs some 14kg making it suitable for either ceiling- or rack-mounting. There are two HDMI 2.0 ports and a single USB 2.0 port for your source material. The internet connectivity is for firmware and service only.

Picture throw of 1.5-metres to 7.6-metres is possible, with a 2.5-metre image possible at distances between 3.1-metres and 6.4-metres. It also allows the movement of the projected image up to 85 percent in each direction vertically and 31 percent horizontally. There is full motorization with shift, zoom and focus functions all managed from the easy-to-use remote control.

The big news is the inclusion of the 'X1 for Projector' chip. It's the same picture processor used in Sony's Bravia TVs, but optimised for projectors. This means it gets Sony's 'high-precision frame analysis' for features such as Dynamic HDR Enhancer, Super Resolution and, of course, Sony's excellent 4K Motionflow motion processing.

The VPLVW590ES is priced at $11,999

VPLVW790ES

The 790 is a premium 4k projector model that is laser-powered at heart. The 790 has all the classic features of the 590 such as X1 technology, a Dynamic HDR enhancer and an SXRD panel.

That's where the similarities end as the 790 has a massive light and colours output of 200lm thanks to its laser diode. It has adjustability of both iris control and laser independently and dynamically, to optimise light output for dark and high-contrast scenes. The end result is deeper blacks and almost infinite dynamic contrast, making every scene spring to life with detail and realism.

It also analyses every pixel of every image and then employs pattern-matching algorithms developed over years of movie production to enhance crispness without increasing digital image noise.

The VPLVW590ES is priced at $22,999

Triangle Borea Range Expands

It has been a long time since we have seen a range of budget loudspeakers create the level of interest that Triangle have with their Borea series. Well made, great performers and, most importantly, extremely keenly-priced.
We have just received two new models:

Borea BR07 Floor-standing Speakers: This is a two-and-a-half way speaker utilizing a 25mm silk dome tweeter with a 160mm cellulose paper mid-bass driver supplemented with a 160mm fibreglass bass driver. Simple design done right. **$1,700/pair**.

Borea BRA1 Speakers: There is no doubt that Atmos style overhead speakers make a marked difference to the immersive experience of a home theatre system — but it is not always possible to add speakers in the ceiling. As a result, the majority of multi-channel receivers purchased today are still used in a more traditional 5.1-channel mode, with the additional channels going to waste.

The **Borea BRA1 speakers** can be placed on top of the existing front and/or rear speakers directing the overhead channels towards the ceiling, giving the impression of overhead speakers. While not 100% as effective as correctly placed overhead speakers, this is still a considerable improvement on not utilizing those channels at all. **$900/pair.**

Yamaha

One of the challenges currently facing our industry is the inability to access stock. Factory shut-downs, closures and shipping issues have made some products very scarce. One of the worst affected is Yamaha — particularly their AV receivers. At the time the pandemic struck last year Yamaha was in the process of transitioning to a new range of receivers. With the exception of one model — the RX-A2A — we are still waiting!

However, it is not all bad news. In our last newsletter we announced the arrival of Yamaha's GT-5000 turntable. At $12,995 it is an exceptional turntable but is outside the budget of most people. Since then, we have received what we believe to be one of the best value turntables on the market — the TT-N303. At $649 this unit is well-built, sounds great, and has an in-built phono stage (which can be by-passed). This one of the best turntables on the market at its price point.

Yamaha have also released a Wi-Fi version of this table. It is based on the TT-N303 but has their streaming solution MusicCast on board. If you have an existing Yamaha MusicCast this unit will connect to it wirelessly. If not, you can wire the unit to your existing system, and then also use it as a streaming device. So you can not only play vinyl, but access Internet radio, streaming services such as Spotify, or music stored on devices on your home network.

The TT-N505 sells for $999, but the best news is that we have a limited number of this model in white which we are offering for $679.

Several years ago Yamaha re-entered the audiophile market with their range of A-S series of high-end amplifiers and CD players. These are priced up against the industry heavy-hitters and led to the inevitable debate over whether Yamaha could compete in this market.

(This highlights what I consider to be one of the problems facing this industry — opinions based on hearsay and speculation rather than actually listening to the product. I have spoken to many people who are adamant that Yamaha could never compete with the likes of Krell, Audio Research etc., yet when questioned the majority admit that they had not actually listened the product. Alongside Yamaha we carry Krell, McIntosh, Prima Luna, Naim and others — and we can attest to the fact that Yamaha is up there with the best of them — and is better-made than most. Len)

We have now received the new series of this range — please feel free to drop in and have a listen.

- A-S1200 integrated amp: **$3,499**
- A-S2200 integrated amp: **$4,999**
- A-S3200 integrated amp: **$9,999**
- CD-S2100 CD/SACD player: **$2,999**
- CD-S3000 CD/SACD player: **$7,499**

Yamaha Elite Evening

The GT5000 turntable, A-S3200 amplifier and CD-S3000 CD/SACD player mentioned above form part of Yamaha's Elite series, together with the CS5000/ MS5000 pre-power amplifier combination and their fabulous NS5000 speakers.

On Thursday, April 15th, 2021, at 6.00 p.m. sharp, Len Wallis Audio and Yamaha Australia will be holding a presentation evening for the range in our store. Numbers will be limited, so if you would like to come along to listen to this excellent range — and meet some of the Yamaha representatives — please give us a call on (02) 9427 6755 or email sales@lenwallisaudioaudio.com.au to reserve a place.

Ruark R1 Mk4 makeover

Ruark Audio has given its ever-popular R1 DAB+ radio a stylish makeover. This new model improves upon its third-generation predecessor with a Danish-inspired wooden grille and, more importantly, a USB-C port that can both play from and charge compatible devices. Hooray!

Fans of the previous generation may notice that the R1 now comes with new finishes in ‘cream’ or ‘espresso’ and the cabinet has once again been acoustically treated to reduce vibrations — a key reason why these little radios offer such accomplished sound despite the compact 175 × 130 × 135mm footprint.

Behind the hand-crafted wooden grille sits the linear Class-AB amplifier and Ruark’s NaturalSound+ driver. You also get DAB/DAB+ and FM radio, adjustable EQ settings, a 3.5mm headphone output, a switchable aux input and Ruark›s familiar RotoDial top-panel control. The Mk4›s improved OLED screen displays the time, alarm settings and radio station information. **Priced at $475**

Terra Tr60 MTM outdoor speakers

"So tough they come with a lifetime warranty"

There are times when you need a pair of good outdoor speakers — and we mean really good. Speakers that not only sound excellent, but which will stand up to the most extreme climatic conditions. The Terra Tr60-MTM is such a speaker. Featuring two 6.5-inch cast-frame mid-bass drivers and a 1.1-inch inverted titanium fluid-cooled dome tweeter, these speakers will handle a massive 225-watts of undistorted power. Plus they are efficient (91dBSPL) meaning you do not need a big amplifier to drive them to high volume levels.

The UniCavity polyethylene enclosure is created in one piece via a unique rotational moulding process. Even the screw posts that hold the brackets are part of the mould. The speaker connections are via a one-metre pigtail cable.

There is nowhere that water can enter, and there are no exposed components that are susceptible to corrosion or rust. They will handle temperature extremes of –31°C to 80°C and they come with a lifetime warranty.

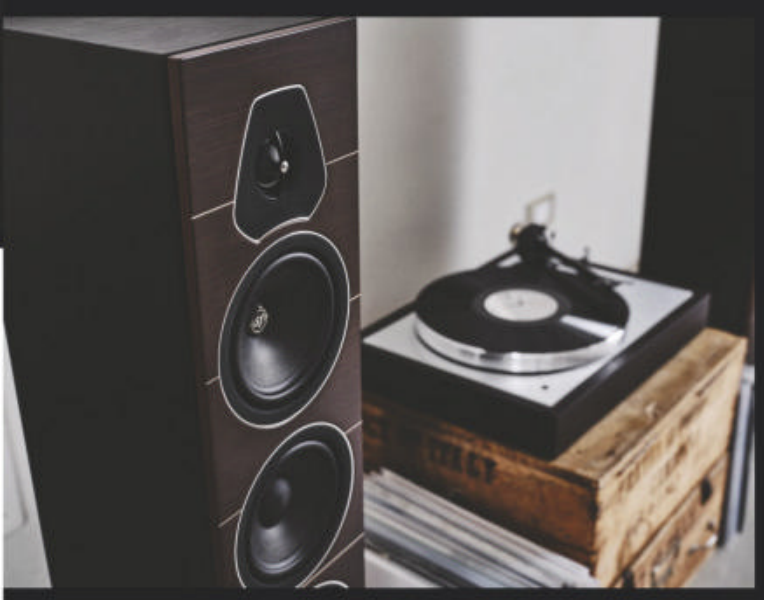
As if all this was not impressive enough, we are offering these speakers (which are available in black or white) for only $2,195 a pair — a saving of 50% on their RRP of $4,418.

PRIMA LUNA

Prima Luna range expands

To round out our now-extensive selection of high-quality electronics we have also added the top-of-the-range EVO 400 series of amplifiers from Dutch specialist Prima Luna. We have been a stockist of Prima Luna for many years but have not ranged the 400 pre, power and integrated amplifiers until now. Prima Luna is universally regarded as one of the industry's bargains and listening to this series reveals why — great performance and realistic pricing. For example, their EVO 400 integrated amplifier sells for $7,295 — this is an impressive amplifier for that money.

The Prima Luna Evo 400 pre-amplifier and its matching power amplifier sell for $6,995 each.



Sonus faber Lumina range

Sonus faber have just released a new range of 'budget' speakers, bringing their Italian artistry and performance to a wider audience. This is a very limited range, consisting of one floor-standing, one bookshelf and one centre-channel speaker. The prices are $3,995/pair, $1,595/pair and $1,295 respectively, and they come in three choices of finish: Black, Wenge and Walnut.

Anthem

Yet another new brand for Len Wallis Audio. We were not looking for a new product to join our stable of Home Theatre brands, but every so often a product comes along that simply cannot be ignored, and that was the case with Anthem.

This 20-year-old Canadian-based company has been making a name for itself as a premium manufacturer of electronics, mostly AV receivers. They are in the process of releasing a new range, and even before they reach the market it is obvious that this will be an exceptional series.

The first things you will notice with this product is the build quality. Their power ratings are also realistic (or, should we say, honest), and the best news is that they remain competitively priced.

You will also notice that the processing stage of each model features more channels than the power amplifiers. Anthem has been smart enough to realise that the majority of Atmos-based receivers are in fact used in 5.1-channel or 7.1-channel situations.

Their receivers have the processing necessary to accommodate the channels required for fully immersive installations, so if you wish to add additional speakers all that is required is additional external amplifiers — which they also manufacture.

There will be three AV receivers in the range:

- **MRX-540:** A 7.1 processor with a 100-watt per channel 5-channel power amp. $2,999
- **MRX-740:** Featuring an 11.2 processor and 7 x 140-watt amplification. $4,499
- **MRX-1140:** A 15.2-channel processor and 11 channels of power amplification (5 x 140-watts/channel and 6 x 80-watts/channel). $5,999.

We should have the MRX-540 in stock by the time you read this; the other models are due in May.

Anthem also manufacture a range of AV processors, stereo pre-amplifiers, power amplifiers and integrated amplifiers — all of which will gradually make their way to our shelves.

INCREDIBLY LOADED. STILL UNBELIEVABLY PRICED.

Nu-Vista 800 $19,000

M6si $5,000

M5si $3,500

M2si $2,000

Effortless Amplification

Musical Fidelity's range of amplifiers consisting of 12 models start from just $2,000 making them more affordable than ever. By combining 30+ years of audio expertise and the latest technical innovations, Musical Fidelity has created a family of powerful hi-fi separates offering exceptional performance.

So whether you're taking your first steps towards better performance or striding into the world of high-end products, Musical Fidelity will take you there for a lot less than you might expect.

MUSICAL FIDELITY

LG's 48"OLED TV

This is one of the only OLED TVs under 55" that is available on the market. In the past we have had many situations where clients requested the best TV screen available, but in a more compact size — it has been necessary to settle for an LCD screen, or one of the LCD variants.

Nothing has been taken away in terms of performance and connectivity compared to LG's larger offerings, and one of the surprises has been the sound. The performance of the inbuilt speakers, whilst still not perfect, is surprisingly good. Yes — you may get by without needing to add that soundbar.

Solidsteel speaker stands

One of the most underrated categories in our industry is speaker stands. We have previously gone out on a limb and stated that we believe a good pair of speaker stands (along with proper placement) has a greater positive impact on your system than a good pair of speaker cables. It is very important that the speakers are held rock-solid, and that there is no transfer of energy from the speaker to the stand or vice-versa.

For years our speaker stands of choice have been from Sound Organisation in the UK. We no longer have access to this range, so we have needed to go out and find a suitable alternative — and that alternative is Solidsteel. We did not have to search far. Brad Serhan of Serhan & Swift — the designer of the exceptional Mu2 bookshelf speaker (pictured above on Solidsteel stands), insists that of all the stands available, Solidsteel stands are the ones that bring the best out in his designs.

We are inclined to agree.

Solidsteel stands are manufactured in Italy by the brothers Gaetano and Manfredi Conti, the two sons of Moreno Conti, the man who founded the company in the early 90s. Moreno originally worked in his family's metal fabrication company, one of whose contracts was to build stainless steel exhaust systems for Ducati motorcycles in Bologna. He had multiple passions in his brief life, including a passion for music, a passion for motorcycles and a passion for creating beautiful hand-crafted metal parts, particularly those that involved the now-rare skill of open-flame welded stainless steel.

Moreno together with his wife Dora, combined their talents to start a company that specialised in building custom speaker stands and audio-video furniture, the first such company in Italy.

BERKELEY ALPHA REF3 DAC

Every so often something very special comes along — and right now that something is the Berkeley Alpha DAC Reference Series 3 digital-to-analogue converter. Admittedly at $35,000 this extraordinary piece of technology is not going to be on everyone's shopping list, but it is regarded by many as the finest DAC in the world — and there are several $100k+ DACs vying for that crown.

Every piece of your audio chain has an impact on the eventual performance of your system, and this includes the DAC. We have the Berkeley on audition in our hi-end room — and the impact it has on any system we assemble in that room is undeniable.

We are far from being the only ones who are impressed with this unit:

"The Series 3 extends the Alpha DAC Reference status as the ne plus ultra in digital decoding, and will remain at the front end of my reference system… The Series 3's deeper bass, wider dynamic expression, superior bottom-end articulation and textural resolution, and enhanced top-end openness are clearly major advances…With less accomplished DACs, it sounds as if a whole layer of very low-level information has gone missing".
Robert Harley, The Absolute Sound.

"The Berkeley Audio Design Alpha DAC Reference Series 3 takes the flag for the best DAC I've had the pleasure of reviewing… To the truest encapsulation of the word 'Reference', when it comes to the Alpha DAC Reference Series 3, I can but add one succinct word to celebrate its purest meaning: Triumph."
Edgar Kramer, Editor-in-Chief, Soundstage! Australia, December 2020

(SoundStage! Australia subsequently awarded the Alpha DAC Series 3 the 2020 SoundStage! Australia Outstanding Performance Award).

ACCESSORIES

Spin-Clean Record Washer Mk2

Clean LPs sound better, last longer and reduce wear and tear on your stylus, and this low-priced, easy-to-use machine is hailed by experts as one of the easiest, most effective—and most affordable—solutions for cleaning records.

So go on… get the grunge out of your grooves for only $149!

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CLEARAUDIO

Clearaudio

The fascination with vinyl continues, for obvious reasons. We have recently added another turntable to our extensive stable — this time from Clearaudio, a company that co-incidentally started in 1978, the same year as Len Wallis Audio. Initially they were a cartridge manufacturer, and remain so today, but in more recent times they have built an enviable reputation for manufacturing some of the finest turntables in the world.

The Clearaudio Concept is without doubt one of the best sub-$3,000 turntables on the market. Construction is first-class, doing justice to its German heritage, and it comes fitted with a Clearaudio moving-magnet cartridge (a moving-coil model is available as an upgrade). There is also a tonearm upgrade available, plus a version of the turntable that has a phono stage built in.

ACCESSORIES

Len Wallis Audio is proud to begin offering Audiophile quality recordings from UK specialist 'Chasing the Dragon', a leading producer of audiophile recordings.

The UK label is owned by producer/recording engineer Mike Valentine, and offers Direct Cut LPs, Audiophile LPs, CDs, and Master Tapes which will demonstrate the potential of your Hi-Fi system. Chasing The Dragon's releases are so detailed that if you take the time to familiarise yourself with the subtleties of these reference-level recordings, the next time you make any changes, big or small, to your Hi-Fi system, the differences will be remarkable. Their LPs range in price from $95 to $140 and are must for music lovers. We have many Chasing the Dragon titles available on vinyl LP and if we don't have the one you want, we can order it in for you.

Linn's new arm

Linn have released a new tonearm for the Majik LP12 turntable. The Linn Krane is a high-quality tonearm which, combined with Linn's new Karousel bearing, significantly elevates the performance of the Majik LP12 turntable and provides even greater value.

The new high-performance tonearm features a static-balanced design and is hand-assembled using high-quality aluminium and stainless-steel components. It includes a polished Tungsten and Sapphire vertical bearing with dual ceramic horizontal bearing assembly, both of which are long-lasting and provide very low friction/rotational mass.

Krane has a range of adjustments making it easy to set up, including a laser-etched scale for accurate and repeatable VTA adjustment, and azimuth adjustment combined with a fixed offset angle to ensure perfect alignment of the cartridge and stylus. An adjustable head-shell design ensures effective length is absolutely precise for proper cartridge alignment and performance.

The best news is that the Linn Majik LP12, with the new arm and Karousel bearing still sells for $6,495.

ACCESSORIES

IsoAcoustics GAIA Speaker Isolators

Totally transform the sound of your loudspeakers, making them sound better than you ever thought possible by adding a set of GAIAs to remove lateral movement and oscillations and isolate them from structure-borne vibration. You will be amazed how the sound 'opens up' after you've installed a set. **There are three sizes, depending on speaker weight: $349.50 (up to 32kg), $499.50 (up to 54kg), and $1,099.50 (up to 100kg).**

PRO-JECT DEBUT CARBON EVO

Few people familiar with our industry will need any introduction to Pro-Ject turntables — Pro-Ject have been the world's largest manufacturer of turntables for some time now. Their strength lies in the mid-market, and the new Debut Carbon Evo is a perfect example. The Pro-Ject Debut Carbon Evo sells for $879, and it has a lot going for it:

- Speed control as standard. No need to lift the platter and move the belt when changing from 33⅓ to 45rpm — simply flick a switch.
- Damped and adjustable feet.
- Carbon-fibre tonearm.
- Damped metal platter.
- Pre-fitted with an Ortofon 2M Red moving-magnet cartridge.
- Available in a number of modern colour finishes.

ACCESSORIES

DragonFly Cobalt DAC

AudioQuest's best-selling portable Dragonfly Cobalt Headphone Amplifier/DAC was the proud winner of an EISA Award for 2020–21. It boasts a more advanced DAC chip than any other in the Dragonfly range, an improved processor and improved power supply filtering to reduce Wi-Fi, Bluetooth and cellular noise, so you hear perfect sound no matter whether you're using it with a phone, a laptop or even in a full-sized hi-fi system. **And it's just $630!**

Technics Ottava Mk2 adds Chromecast and AirPlay

Desktop audio systems continue to improve in performance and functionality every year, and one of the very best units now available on the market is the Technics Ottava SC-70 Mk2.

Although visually similar to the Mk1 version Technics have made a number of improvements to its performance and added additional features. It now has Chromecast and AirPlay, plus it can also be used in a wireless multi-room environment utilizing their SC-C30 or SC-C50 wireless speakers. Its performance can now be optimized to the acoustic space it is placed in, and it has a new Control Ap.

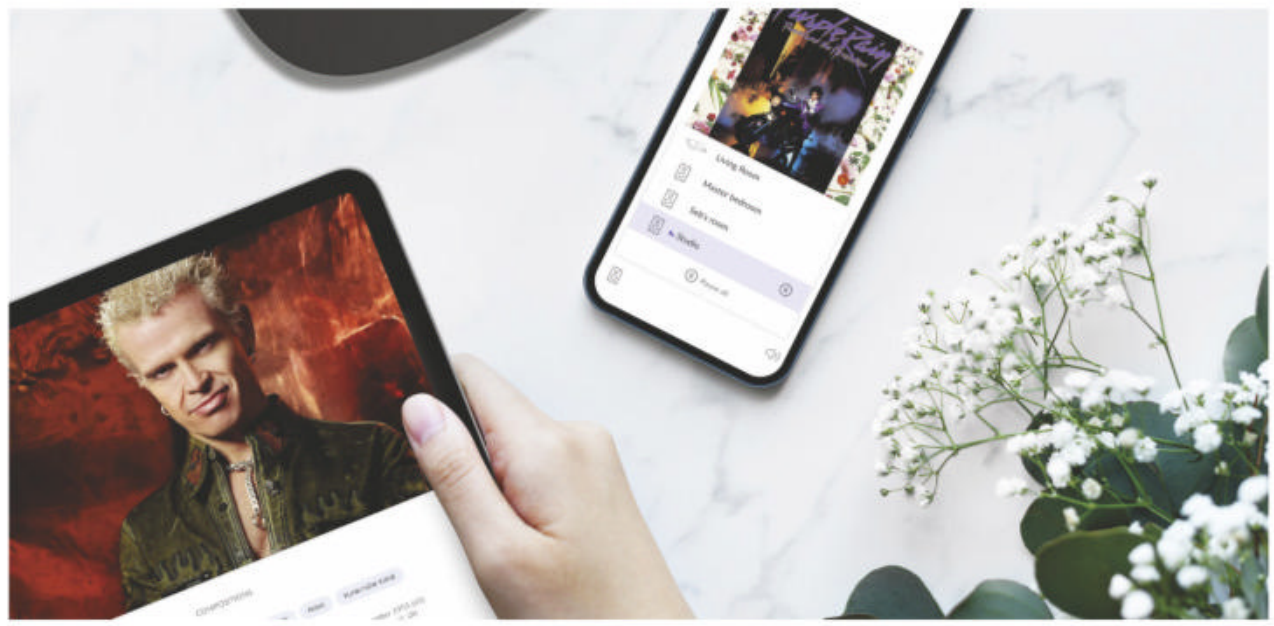
All the earlier features remain, including Internet Radio, Spotify, Tidal, Wi-Fi, Bluetooth, DAB+, and USB playback, amongst others.

Most importantly, the price also remains the same— $1,649.

Great value!

Roon Upgraded

Most people in the both the hi-fi and the music industries believe that Roon is the best music management system around. The company have recently updated their software to Version 1.8, and it has been a major revamp. If you are an existing Roon user we are sure you have updated by now. However, if you are not a Roon user we would suggest that you investigate this software, it is a fabulous way of accessing, investigating and playing your music.



Particular attention has been paid to the classical repertoire — something that has been lacking (or poorly done) by most music-management systems — including Roon — in the past.

If you would like any assistance with Roon please contact us by phone or through sales@lenwallisaudio.com.au

ACCESSORIES

IsoTek Cables

IsoTek manufactures a very large range of power cables specifically designed to improve the sound of your system. Prices vary depending on the range (there are five in all) and the required length, but they start out at just $129 for the 1.5-metre EV03 Initium cable through to $12,000+ for the 5-metre EV03 Ascension.

YAMAHA
Make Waves

5000 SERIES
妥協なき音楽性

AUTHENTIC, PURE HI-FI UNITES YOU AND THE ARTIST. THE ROOM AND EQUIPMENT DISAPPEAR, AND YOU ARE TRANSPORTED DIRECTLY TO THE CONCERT OR LIVE PERFORMANCE - BRINGING YOU CLOSER TO THE ARTIST. AN EXPRESSIVELY EMOTIONAL MUSICAL EXPERIENCE ONLY YAMAHA CAN ACHIEVE.

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Turntable of the Year
Over $5000

No 81. March/April 2021

esoterica

THE MAGIC OF EQUALISATION

Gold Note's PH-1000 has it all, and more!

GOLD NOTE PH-1000

PHONO STAGE

If you use a high-quality phono cartridge, a high-quality external phono stage is essential if you're to extract the best performance from it. The phono stages built into even the best high-end pre-amplifiers and integrated amplifiers simply won't do it justice, most particularly if you're using a moving-coil cartridge.

Although there are many high-quality phono stages available, most of them are difficult and inconvenient to use, and don't offer the wide range of load, gain and filter options I'd expect to find in 2021. You kind of have to choose one that best-matches the cartridge you're using, so if you subsequently change to a different cartridge, your phono stage might not provide the correct load or gain for it, which would mean buying a whole new phono stage or sticking with a phono cartridge you've decided is not the best for you.

Which makes Gold Note's latest and greatest phono stage, the PH-1000, an absolute breath of fresh air. It has every phono load and gain adjustment you will ever need in order to correctly match any cartridge ever developed — or will be developed in the future— plus it has selectable — and adjustable! — LP equalisation curves, so you can correctly play back any LP ever pressed. It has loads of other features as well, almost too many to detail in this review, in fact!

Finally, unlike most phono stages, the PH-1000 looks beautiful, particularly when it's powered-up so you can see its fabulously informative bright TFT multi-coloured control panel.

EQUIPMENT

Perhaps it is not so surprising that the Gold Note is beautiful, because it is designed and built in Italy, a country whose citizens have a track record of making beautiful objects, from the Mona Lisa to the Ferrari 488 Pista.

Italy also has a track record for functionality, and the Gold Note PH-1000 is certainly that, because despite its flexibility and the number of options available, absolutely everything is controlled with just that single solitary rotary control you can see to the right of the TFT display. Gold Note calls it an 'SKC', which is short for Single Knob Control. It not only turns, but can be pushed inwards, which is the secret to its ability to multi-task. SKC might not be the most elegant of acronyms, but it describes the control perfectly.

It is essential to set the gain of any phono stage correctly in order to get the ideal signal-to-noise ratio from moving-coil and moving-magnet cartridges while at the same time not driving the phono stage into overload, and for this purpose you can adjust the otherwise fixed gain of the PH-1000 (which is 65dB on the moving-coil setting and 40dB on the moving-magnet setting) through six different gain levels: –9dB, –6dB –3dB, +3dB, +6dB, +9dB.

High-output cartridges would likely perform best at the –3dB setting, while low-output cartridges would most likely perform best at the +6dB setting, but it's nice to have that 3dB of extra gain available as an option in the form of the +9dB position. And of course there's also the 0dB setting, should the default gains of 40dB and 65dB be 'just right' for your particular set-up.

After properly matching the gain of a phono stage to best-suit your cartridge,

the next most-important task of any phono stage is to ensure that it offers the correct impedance loading for the cartridge. At least it is for moving-coil cartridges — moving-magnet cartridges require exactly 47kΩ.

The Gold Note PH-1000 offers twelve load impedances: 10Ω, 22Ω, 47Ω, 100Ω, 220Ω, 470Ω, 1kΩ, 22kΩ, 33kΩ, 47kΩ and 100kΩ. This list is notable for offering two low impedances that aren't usually available (10Ω and 22Ω) and also for offering three more than were available on the Gold Note PH-10 (which, at a mere $2,690, now becomes Gold Note's entry-level phono stage).

However, this isn't the end of the Gold Note's cartridge loading possibilities because you can use two of the PH-1000's line inputs to fit loading plugs, rather than use them as line inputs. This means that you can provide the exact loading for any phono cartridge ever developed.

When you are using a moving-magnet cartridge, it's more important to match capacitance, and the PH-1000 offers you the choice of six pre-set capacitance values — 100pF, 150pF, 220pF, 330pF, 470pF, and 1000pF but, as noted in the previous paragraph, you can extend this by using your own load plug.

But although correct electrical matching is essential, the actual purpose of any phono stage — its *raison d'etre*, if you like — is to 'correct' the frequency response of the signal your phono cartridge's stylus is extracting from the LP's groove. This comes about because in order to 'store' music on an LP the cutting engineer has to pre-attenuate the levels of the low frequencies, and pre-boost the level of the high frequencies. At the midway point (1kHz) there is no boost or cut. This is the 0dB point. As the music being recorded on the LP gets progressively lower in frequency, its level is progressively reduced until at 20Hz it is 19.3dB lower than the 0dB reference at 1kHz.

The opposite happens with frequencies above 1kHz. The higher the frequency of the music being recorded, the more the audio signal is boosted until, at 20kHz, it's boosted to +19.6dB. Because the levels of boost and cut applied are different for every different frequency, the overall effect is described as an 'equalisation curve' and the most common of these is the RIAA phono equalisation curve, so-called because it was developed by the Record Industry Association of America.

So in order to ensure the correct response is sent to your main amplifier and then to your speakers, a phono stage must provide an 'inverse' curve to restore all the frequencies to their correct levels, for example boosting the bass at 20Hz by 19.3dB and cutting the treble at 20kHz by 19.6dB.

> This stunningly-good phono stage sounds wonderful and has every feature and facility you're ever going to need

Before the RIAA introduced its equalisation curve, there were dozens of different curves in common use; indeed almost every different record label had its own unique curve. This meant consumers had to have a stash of compensatory 'curve plugs' and plug in the one specific to the LP they were playing, which meant lots of plug-changing. It was to stop all this confusion that the RIAA introduced its own equalisation standard in 1954, and required all industry members to use it. (The RIAA changed its own curve in the '70s to an 'enhanced' version, so there are actually two different versions of it, eRIAA and RIAA.)

If you buy a PH-1000 you'll be able to correctly play back every LP in existence, because in addition to providing both the RIAA equalisation curves, it offers more than forty-four other equalisation options, including Capitol, Columbia/CBS, Deutche Grammophon, Decca London, Epic, Mercury, RCA/Victor, Philips, Elektra, Parlophone, and L'Oliseau-Lyre plus the ability to custom-tune any or all of them and/or create your own. I can't think of any other phono stage in the world that offers so many equalisation curves, and I can't think of a single one that offers owners the ability to 'tweak' the curve. This truly makes the Gold Note PH-1000 unique.

Rumble (unwanted low-frequency noise) used to be a huge problem when playing LPs, because of the poor tolerances of old platter bearings (and noisy drive motors) but modern turntables suffer much less from either issue. That said, unwanted low-frequency sounds are often found on LPs themselves. Decca's London studio was so close to an underground train line that many of its recordings contain railway noise.

Gold Note provides a solution to this problem in the form of a Rumble/Subsonic filter. (Infrasonic would be a more correct description than Subsonic!) This filter has a 3dB down-point at 10Hz, with a 36dB/octave slope. Unlike the Rumble filter on the PH-10, the one on the PH-1000 is switchable, as it should be. So, if neither your turntable nor LP have any low frequency noises you'd like to remove, you should leave the filter in the 'Off' position.

If you have a noisy LP you should also be able to reduce noise level by taking advantage of the Gold Note PH-1000's ability to be switched for mono operation, which will often reduce not only surface noise, but also the volume of any 'ticks' and 'pops' on it.

In fact, not only can you switch the PH-1000 to mono, you can also invert channel phase (mono or stereo) or even swap left and right channels around. I am not entirely certain why you would want to do this last, but if you want to do it for reasons of your own, you can!

If you have more than one turntable, or your turntable has two or more tonearms, you're going to love Gold Note's PH-1000, because it has three phono inputs (two via RCA connectors, and one via an XLR connector) and two line-level inputs (one via RCA, the other via XLR). If you don't use one or both of these line-level inputs for additional cartridge loading, it means that you could plug in one or two line-level sources, which would enable the PH-1000 to be a pre-amplifier and/or headphone amplifier as well as a phono stage thanks to it having both a volume control and a headphone output. (And if you'd prefer to control volume somewhere else in your system, the PH-1000's volume control can be bypassed.)

> If you want to extract the ultimate performance from all your albums, the Gold Note is perfect

In many cultures, there's a belief that nothing made by humans should be perfect (because only God is perfect), for which reason tiny yet deliberate imperfections can be found in cathedrals around the world, across all religions. This could be the reason the PH-1000 does not have a high-cut filter. Or not. But it's easily fixed by a firmware upgrade. I'd also question the provision of an old-fashioned Mini-B connector for uploading firmware upgrades. I personally would have preferred a Type-C connector, but this is no biggie.

LISTENING

I have to admit to being quite excited by the Gold Note PH-1000 before I even played my first LP, because it's the very first time I have been able to provide absolutely exact load and gain settings for both my moving-magnet and moving-coil cartridges, and one of the very few times I have been able to have both cartridges connected simultaneously, to allow me to perform A–B comparisons on different versions of the same album and/or compare one phono cartridge to another. And, thanks to the PH-1000's headphone output, I could also listen to LPs via the shortest path possible, for maximum sound quality.

During the set-up process and whilst familiarising myself with the myriad options provided, I rather gained the opinion that although the SKC is good, it's actually faster to use the remote control than the SKC itself in many situations.

This being the case, it would have been a good idea if the remote had rated a mention in the Owners' Manual, because operation via the remote is not covered at all. Also, because Gold Note uses exactly the same remote for other of its products, many of the buttons do nothing when it comes to controlling the PH-1000.

One thing it did take me a long time to get used to is that the SKC seems to move more or less randomly from one function to another. If there is some logical order to the switching sequence, I certainly couldn't fathom what it was. There's a similar lack of order when it comes to switching between the various equalisation curves. I would have expected them to be arranged in alphabetical order but they're not.

Because of the number of adjustments you can make with the PH-1000, it would also have been nice to have had a 'Factory Reset' button or function. There may well be one, but I couldn't find it. The Owners' Manual could also be improved. The one I was supplied was rather amateurish, and although it was 24 pages long, only 15 of them contained any relevant information.

When I finally did get around to playing my first LP, I became even more excited, because the sound quality was everything I could have hoped for, and more. If you want to extract the ultimate performance from all the albums in your collection, be they 45s, LPs, 78s — stereo or mono — the Gold Note PH-1000 is the perfect tool for the job. It's exactly what you need.

Bass is incredibly depthy and solid. My standard go-to album for evaluating this has for many years been, and no doubt will continue to be into the future, Telarc's version of Tchaikovsky's 1812 Overture with Erich Kunzel and the Cincinnati Symphony Orchestra. The sound of cannon-fire on this recording is — if replayed properly — absolutely amazing. It's no wonder that Telarc includes warnings that playing it too loudly could cause component damage. Just in case you didn't know, the cannons were recorded separately and mixed in at the appropriate spots, as were the bells, which is one of the reasons for the insanely good sound and for the perfect balance against the orchestra. Played back via the PH-1000, the sound was so realistically reproduced in my listening room that I involuntarily flinched when the first cannon fired even though I was expecting it.

To test the deepest bass out on something more musical than cannon-fire I switched to another favourite 'warhorse' in the shape of Don Dorsey's 'Bachbusters' on which he uses a wide array of synthesizers to play some of J.S. Bach's most popular works, all of which have deep bass. Again, the PH-1000 responded perfectly, allowing me to hear the various tonal qualities of the different synthesizers and settings he uses. For real authenticity, (as in a real pipe organ) I took advantage of the PH-1000's mono setting to play one of my favourite recordings — Clarence Watters playing three of Cesar Franck's *Chorales* on the organ of Trinity College, which was recorded and pressed in mono. It's a beautiful-sounding instrument and the beauty of its sound was realised perfectly by the Gold Note PH-1000, most so in its mono setting.

I am a huge Brian Eno fan, so the appearance of a Miles Showell 45-rpm half-speed mastered version of 'Music For Films' was a must-buy event and it has been entrancing me for some time, so when I listened using the PH-1000, and found the subtleties of the improvements to the dynamics and the detailing were more clearly revealed than I'd ever heard before, so it was money well spent. Buy this album and it will be money well spent for you, too.

For evaluating voice I could not do better than play my Rhino version of Joni Mitchell's 'Blue'. I also have this in formats other than LP (lucky, because otherwise the vinyl would be worn paper-thin!) but I think it always sounds more authentic on vinyl than it does in any other format, and when I heard it via the PH-1000 the reproduction was so masterfully authentic that I took the opportunity to re-record a FLAC capture of it to replace my existing capture. And not just 'Blue'. During my review process I did new rips of every single one of the LPs I played, and I hope to get through even more before Absolute Hi End requests that the Gold Note be returned. The sound it delivers is just that gorgeous.

The high frequencies I tested with a wide range of recordings, but I kept coming back to Lubomyr Melnyk's 'Fallen Trees' with its hypnotic piano lines, its ethereal voices and its harmonic echoes. Curiously, my favourite track (*Barcarole*) is one of the only two tracks that don't have the word 'Tree' in their title. I also kept coming back to the 2LP 'Joni 75' album that captures the 75th birthday tribute concert to Joni Mitchell by Diana Krall, Glen Hansard, Norah Jones, Rufus Wainwright, James Taylor and others. (If you buy this album, I'd recommend skipping past Kris Kristofferson's cover of *A Case of You* and also playing Krall's cover of *Amelia* over and over.)

CONCLUSION

If you have been holding off on buying a phono stage to see if something incredible comes onto the market, you've hit the jackpot, because Gold Note's new PH-1000 is everything you've been waiting for and more. It is a truly incredible phono stage. I can still barely believe such an achievement was possible.

This stunningly-good phono stage sounds wonderful and has every feature and facility you're ever going to need, plus it's also an extraordinary pre-amplifier and an extraordinary headphone amplifier into the bargain. And if all this weren't enough, it is also completely upgradeable in terms of firmware and also hardware (two additional power supplies and two additional output stages are already available for it), plus I hear there are several firmware upgrades in the wings.

So what else can I say but 'simply superb'. I'm giving it a ten out of ten. *Ray Ward*

Full Laboratory Test Report Overleaf ▶

CONTACT DETAILS

Brand: Gold Note
Model: PH-1000
RRP: $16,000
Warranty: Five Years
Distributor: Absolute Hi End
Address: PO Box 370 Ormond VIC 3204
T: (04) 8877 7999
E: info@absolutehiend.com
W: www.absolutehiend.com

+
- Totally unique phono stage!
- Extraordinary flexibility
- Amazing sound

—
- High-cut filter
- Mini-B USB connector
- Owners' Manual

esoterica

LABORATORY TEST REPORT

In Graph 1 *Newport Test* Labs has measured the frequency response of the Gold Note PH-1000's line input. You can see that it's very flat, being just 0.1dB down at 20Hz and 0.25dB down at 20kHz, giving a normalised response of 20Hz to 20kHz ±0.125dB. At the low end, the response rolls off to be 0.5dB down at 9Hz then 1dB down at 6Hz and 3dB down at 3Hz.

At the upper end of the audio spectrum, the response continues to roll off from being 0.25dB down at 20kHz to be 1dB down at 41kHz and 3dB down at 75kHz.

Channel separation was excellent, with Newport Test Labs measuring it as being 95dB at both 20Hz and 20kHz and 113dB at 1kHz.

Graph 2 shows the total harmonic distortion measured by Newport Test Labs with a 1kHz test signal and a 2V output. You can see that noise is exceptionally low across the audio band, virtually hugging the –120dB graphing line and that there's just a single harmonic distortion component at 3kHz, which is around 108dB down, or around 0.0003% THD. The laboratory's wideband measurement of distortion was 0.006%, as per the figure tabulated in the test results.

Graph 3 shows CCIF-IMD for a two-volt output. You can see the test signals (at 19kHz and 20kHz) are flanked by IMD products at 18kHz and 21kHz that are 90dB down (0.0031%) and a further two outside them with the 17kHz signal being 117dB down (0.00014%) and the 22kHz signal 103dB down (0.0007%).

Surprisingly, down at 1kHz, where I would normally have expected to see at least a small difference signal, there's absolutely nothing visible above the noise floor. This is an excellent result for the Gold Note.

Graph 4 shows the unequalised phono responses for the RIAA filter (black trace), the DGGTeldec filter (blue trace), the London LP filter (green trace) and the Philips filter (red trace).

Although these are measurements, representations of these curves are shown on the PH-1000's front panel display. The displayed curves are remarkably accurate, though of course the PH-1000's display is too coarse to be able to show them exactly.

You can see that below 1kHz, the RIAA and DGGTeldec filters are almost identical, whereas above 1kHz the RIAA filter rolls off a little more steeply, and it is the DGGTeldec and London LP filter slopes that are almost identical.

Graph 5 shows that the Columbia LP (red trace) and NAB (green trace) curves are almost identical above 200Hz, but diverge significantly below 1kHz so that there's almost a 5dB difference at 20Hz. Once again, an RIAA curve (black trace) has been included for comparison purposes.

Graph 6 shows the differences between the RIAA and RIAA Enhanced equalisation curves and also the effect of the rumble (high-pass) filter (red trace). The rumble filter is spectacularly effective at its job, such that it's 65dB down at 5Hz yet has no effect at all at 40Hz and attenuates the response at 20Hz by only a few dB.

You should note that the rumble filter operates only on the phono stage, it has no effect at all on the line inputs.

Newport Test Labs measured the overall wideband signal-to-noise ratio of the Gold Note PH-1000 Phono Stage at 90dB unweighted, a figure that improved to 95dB with IHF-A weighting. This is an outstanding result for a phono stage.

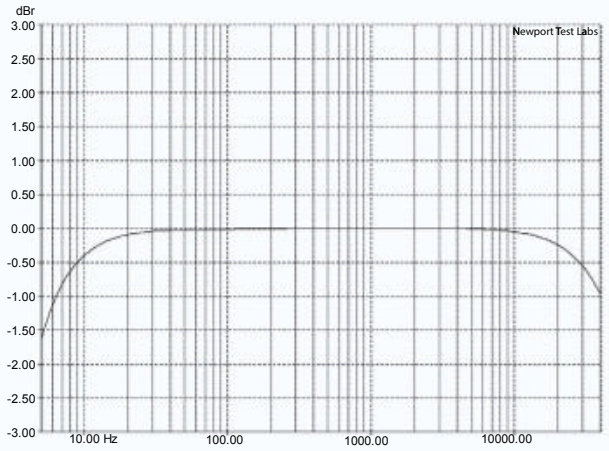
Gold Note's PH-1000 drew 2.61-watts in its 'stand-by' mode which isn't a lot and means you could leave it in this mode, but I'd prefer to see a result of 0.5-watts or less for this test. As you can see from the tabulated results, it draws less than 19-watts when operational.

Overall, the Gold Note PH-1000 returned exceptionally good performance for all tested parameters. *Steve Holding*

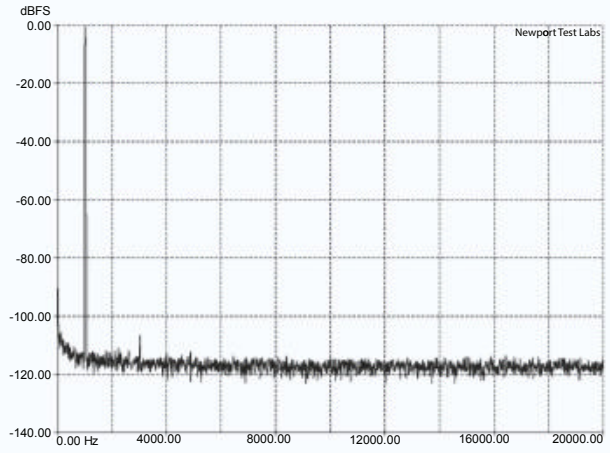
Gold Note PH-1000 Phono Stage
LABORATORY TEST RESULTS

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	6Hz – 41kHz	–1dB
Frequency Response @ 1 watt o/p	3Hz –75kHz	–3dB
Channel Separation (dB)	95dB / 113dB / 95dB	(20Hz / 1kHz / 20kHz)
Channel Balance	0.006	dB @ 1kHz
Interchannel Phase	0.46 / 0.02/ 0.67	degrees (20Hz / 1kHz / 20kHz)
THD+N	0.005%	@ 1-volt out
Signal-to-Noise (unwghted/wghted)	90dB / 95dB	dB ref 1-volt output (500mV in)
Maximum Ouput	25V rms	at 1kHz
Gain	42.4dB	@1kHz
Power Consumption	2.61 / 18.98	watts (Standby / On)
Mains Voltage Variation during test	242 – 248	watts at 1-watt / at rated output
Power Factor	+0.565	

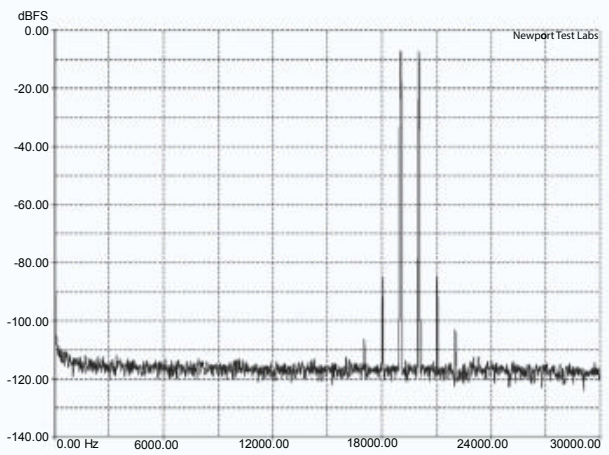
Graph 1: Frequency response, line input.



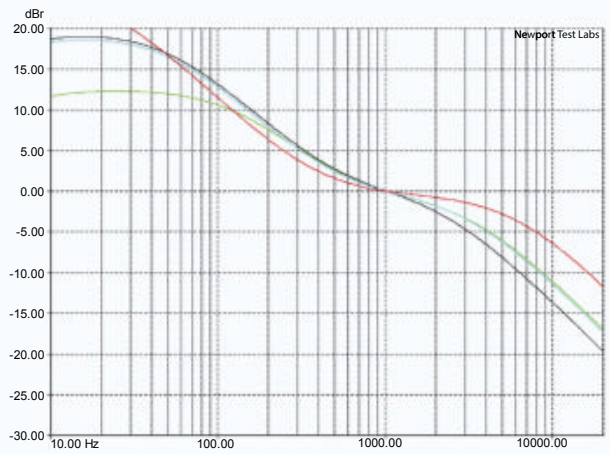
Graph 2: THD at 1kHz, 2-volts out, line input.



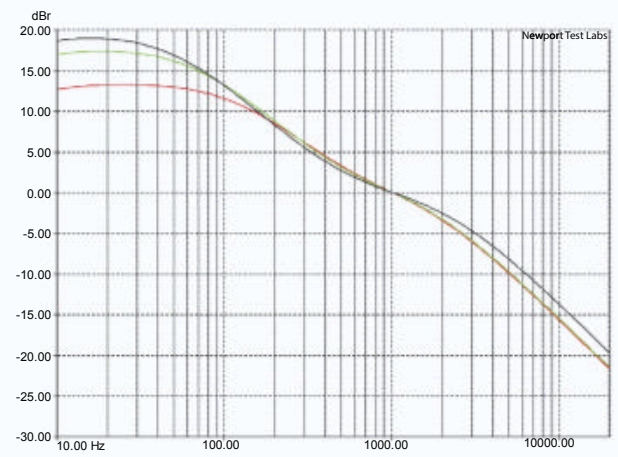
Graph 3: Graph 3. CCIF-IMD (19kHz, 20kHz, 1:1), 2-volts out, line input.



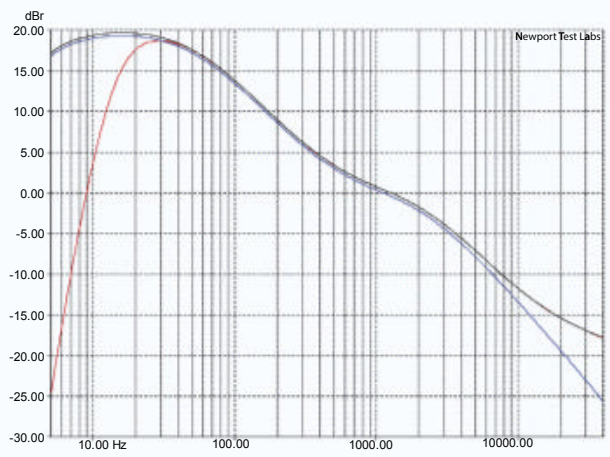
Graph 4: Phono EQ responses. RIAA (black); DGGTeldec (blue); London LP (green); Philips (red).



Graph 5: Phono EQ responses. RIAA (black); NAB (green); Columbia LP (red).



Graph 6: Phono EQ responses. RIAA Enhanced Off (blue) vs On (black); plus Rumble Filter (red).



KLIPSCH SPL-150

SUBWOOFER

I have become so accustomed to receiving shoe-box sized subwoofers for review (they being the flavour of the month, what with all the apartment buildings going up in Sydney) that when Klipsch's SPL-150 arrived on my door-step, I had one of those Crocodile Dundee moments, you know, that one where he mocks a New York mugger: "You call that a knife? This is a knife!"

I had exactly the same feeling once I'd unpacked it and discovered that gigantic copper-coloured bass driver. In a world where most subwoofers sport much smaller 254mm diameter bass drivers, or 305mm drivers, Klipsch has fitted a massive 381mm diameter bass driver to its SPL-150. That makes a difference to the amount of air the SPL-150 can move. A big difference.

THE EQUIPMENT

Since I have already told you that the SPL-150 is big, I won't tantalise you any further by withholding its actual size until later in this review, as I usually do.

It measures 546×495×566mm (HWD), so if you can imagine a cube that's half a metre in every direction, you'd be just about spot-on size-wise. Despite this size, the SPL-150 weighs only a little more than 34 kilos, so Klipsch is obviously keeping the weight down by using just a single-walled MDF cabinet. It's also keeping costs down by using a standard black vinyl finish.

As for that copper-coloured cone I mentioned, Klipsch says it's a "long-throw copper spun cerametallic" cone but the cone is not made from copper. "Cerametallic" is a trademark rather than a description of the material, so we asked Klipsch what it was made of. "The cone is made by first forming the cone shape in aluminium, after which a unique patented process is then used to 'grow' a skin of alumina on each side of the aluminium core," is what we were told. Our source went on to say: "The resulting laminate is less dense and less brittle than traditional ceramics, yet at the same time is significantly stiffer than both metallic and non-metallic cones… plus it has the practical advantage that its properties are not affected by humidity or moisture."

Given that the scientific definition of a ceramic is that it be 'non-metallic' it would seem to me that the SPL-150's cone would be more accurately described as being made of anodised aluminium.

Klipsch's representative went on to tell us that "an important technical advantage of the cerametallic cone over a standard metal cone is that while metal cone drivers are superior to paper, polypropylene and paper cones across their operating band because they operate as perfect pistons across that band, they have deleterious resonances at higher frequencies. Coating a metal cone with the ceramic material almost doubles the speed of sound through the cone, which in turn moves these resonances much higher in frequency, where they can be effectively 'removed' by the crossover network." Such a description would also apply to the properties of an anodised aluminium cone, but of course in a subwoofer the cone does not deliver higher frequencies, so this particular advantage doesn't apply.

Whatever the technicalities (and the practical and technical advantages) of the process used to make the Klipsch SPL-150's cone, and irrespective of what it's actually made of, the process certainly results in a beautiful-looking cone with attractive coppery sheen. Overall the driver is 381mm in diameter (15 inches in old currency), but the diameter of the cone is of course necessarily smaller, at 310mm.

However the important Thiele/Small diameter which gives the effective cone area (the area available to push air) is 345mm, which gives a cone area (Sd) of 934cm². This is not a number to be sniffed at, because even small differences in cone diameter make an enormous difference to cone area. By way of example, a typical 254mm bass driver has a cone area of only 346cm², so you'd need to use three 254mm bass drivers to get the same cone area as a single 381mm diameter bass driver. Or, to put it another way, a single 381mm bass driver will move the same amount of air as three 254mm bass drivers (and more air than two 305mm diameter bass drivers).

The grille that can be used to cover this driver if you want (but why would you want to?) is acoustically transparent and also visually transparent as well, so you can always see the small green LED glowing underneath it whenever the subwoofer is on. The grille does not cover the bass reflex slot at the bottom of the subwoofer, which I thought a bit odd. Maybe the appearance of the subwoofer when you're using the grille might have been better if it had, but then again, maybe not. It's a tough call. I have to say that I think that Klipsch rather over-eggs the design of this port. The description on its website says: "Klipsch SPL subwoofers leverage proprietary internal-flare geometry that minimises port noise for clean undistorted low frequencies."

The Class-D amplifier inside the SPL-150 is rated with a continuous power output of 400-watts

From what I could see, the port on the SPL-150 is a industry-standard slotted bass reflex design with a rectangular internal cross-section that has been bevelled at its exit. As for the cross-section of that internal rectangular section, it's 25mm high and 440mm wide. Klipsch is using a Class-D amplifier inside the SPL-150, which it rates with a continuous power output of 400-watts. Input to this amplifier is via two line-level RCA inputs, one of which doubles as an LFE input.

Signal phase can only be set for normal (0 degrees) or inverted (180 degrees) via a two-position switch. High-pass frequency is continuously variable, using a rotary switch that can be adjusted from 40Hz to 120Hz, with the most clockwise position of the control being labelled 'LFE' — a setting that presumably by-passes the crossover network entirely. The volume control (marked 'Gain') is also rotary and has only two calibrations: Min and Max. All these calibrations are identified by grey lettering, which is extremely difficult to read against the black alloy of the amplifier plate.

Below the two RCA inputs is a multi-terminal female connector labelled 'WA Port'. I have to confess that I had absolutely no idea what this might be for and the manual was no help at all because not only does it not have an illustration of the SPL-150's terminal plate, it doesn't actually even mention the SPL-150 at all, making reference only to the two smaller subwoofers in Klipsch's range.

(Editor's Note: As of 00/02/21, the downloadable manual for the SPL-150 [SPL-Subwoofers-Manual-v01.pdf] still did not mention the SPL-150).

It wasn't until I looked at Klipsch's website that I discovered that the connection is a 'Wireless Access Port' to which you can connect an optional Bluetooth module that allows you to send LFE signals wirelessly from your system to the SPL-150. This being the case, it seems a bit disingenuous of Klipsch to state on its website "Both the RCA and wireless inputs can be utilised, giving you the ability to use a single subwoofer with multiple system in the same room. For example, you can use the wireless input for your home theatre set up and the RCA input for your two-channel system, without needing to switch inputs when changing between systems."

Yes, you could do this, and it's certainly a very useful benefit, but only if you also purchase the optional WA-2 Wireless Subwoofer Kit.

Klipsch has been an American company since its beginning in 1946, when it was founded by Paul Wilbur Klipsch, but in 2005 it purchased Danish brand Jamo, and the following year Canadian manufacturer Audio Products International (whose brands included Mirage, Energy and Athena). Then in 2011, Klipsch was itself purchased by Audiovox Corporation (a company wholly owned by Voxx International). Although Klipsch speakers are designed and engineered in Indianapolis, and certain of its models are made in the USA, notably the Heritage models, most are now manufactured in China.

LISTENING SESSIONS

If you have experienced the bass from small subwoofers with equally small drivers, you'll heave a sigh of relief when you hear the bass issuing from the Klipsch SPL-150. Whereas the bass from small subwoofers sounds forced, the bass from the SPL-150 is absolutely effortless. There's a smoothness and grace to the bass delivery that makes it the aural equivalent of slipping on a comfy pair of slippers.

More importantly, smaller subwoofers just do not deliver the depthy bass that you'll hear when you audition the Klipsch SPL-150. The low-frequency response of smaller subwoofers, most especially those with smaller drivers — even if they have several of them — inevitably starts rolling off below 30Hz or so. The Klipsch just keeps powering down to at least 15Hz according to my listening sessions. That means you'll get an octave more extension from the SPL-150, which is significant.

Sure, there's not a lot of music down below 30Hz, due to the simple fact that very, very few instruments can play this low. For example, the lowest note that can be played on a four-string double bass is E1, which is around 41Hz. The lowest note that can be played on a five-string bass, is either C1 (≈33Hz), or sometimes B0 (≈31Hz), depending on how it's tuned.

Of course there are some stringed instruments that play lower, one famous example being the octobass, whose lowest playable note is A1 (≈27.5Hz). However, there are very few of these in existence, due to their size (3.6 metres high), their cost (don't ask!) and the fact that they are very, very difficult to play, because you can't reach the fingerboard and play the strings simultaneously — there's instead two sets of levers operated by the octobassist's hands and feet that push the strings down to create notes. You can see (and hear!) one in action here: www.tinyurl.com/AHFoctobass

As for more conventional instruments, the lowest note that can be played on a standard 88-key piano is A1 (27.5Hz), though some grand pianos, such as the Beleura, made here in Tasmania by Australian piano manufacturer Stuart & Sons. It was the world's first nine octave piano — a 3.0 metre 108-key piano whose lowest note is C0 (16.35Hz) and whose highest is B8 (7.9kHz). Its range is almost two octaves more than a standard 88-key piano.

But even though there are few fundamental musical notes down low, there are resonances and there are acoustics, so when music is recorded live, the 'sound' of the venue in which the music was recorded is largely determined by the presence of low frequencies. When a system is capable of low-frequency reproduction, you actually 'hear' the venue itself, as well as the music, and the less the low-frequency extension, the less you hear the venue (though you'd still be able to hear the music).

I started with the Klipsch SPL-150s underpinning the bass of a pair of large floor-standers, with the crossover control wound back to the minimum 40Hz and the increase in extension was immediately noticeable, despite the floor-standers already having excellent bass extension of their own. The Klipsch SPL-150 not only added depth and solidity to the upper bass, it boosted the low bass that was being rolled off by the floor-standers, and added sub-bass that they weren't reproducing at all. The overall effect was revelatory.

Listening to Jean Guillou play Bach's famous Toccata & Fugue in D minor (Dorian DOR90134) it was one of the very few times I've truly heard a recording of the St Eustache Organ in Paris sound like it did when I was in Paris actually listening to it.

> I could literally feel the air in the room being pressurised by the depth charge explosions

It may be an over-played work, but at least you can usually be guaranteed to hear performances of it when you're on holiday in Europe. Not that I'll be doing that in the near future, thanks to Covid.

It wasn't just the thunder of the organ pipes either, nor the way the SPL-150 reached down into the bass, it was that I could hear the acoustic of the church, the reverberation as notes that had been sent to the far corners of the nave bounced off and returned to increase the complexity of the nearer sound-field. It was also the 'fullness' of the sound of the larger, longer pipes. I heard a richness and depth to the sound that I just don't hear with small subwoofers.

Paired with smaller pair of two-way stand-mount loudspeakers, with the cross-over set at 120Hz, the deepest bass from the SPL-150 was still totally satisfying, but I thought the upper bass from the Klipsch didn't have quite the sonic agility of the bass from the stand-mounts, with the result that it wasn't quite a perfect match, so I switched these out for another pair of stand-mounts with larger bass drivers, wound the crossover back a little and tried again. This time, I was more than happy with the overall sound, which became seamless. I guess that if you have a really small pair of two-ways, you'd probably be happier with Klipsch's smaller SPL-120 or SPL-100 models, with their smaller and more agile (but still large!) bass drivers — at least you will if you mainly use your system for listening to music.

On the other hand, if you mainly use your system for watching movies, either with three front channels, or with a complete 5.1-channel (or more) system, your choice of subwoofers will not be quite so clear-cut, because the Klipsch SPL-150 does such a fantastic job reproducing low-frequency sound effects that I really didn't notice any kinks higher up.

Watching the depth charge attack scene in the movie U-571 (whose cast includes not only Matthew McConaughey, Bill Paxton and Harvey Keitel but also Jon Bon Jovi!), it's not just the depth of the low frequencies the SPL-150 delivered, but also the unbelievably high forces in the listening room it was able to generate. I could literally feel the air in the room being pressurised by the depth charge explosions.

CONCLUSION

I just had to laugh at Klipsch's promotional tag line for the SPL-150. It says "Large and in charge, the SPL-150 fills even the largest spaces with explosive, deep bass. We've been pissing off your neighbours since 1946 — why stop now?"

I laughed because yep, if you want to annoy your neighbours, deep bass is a great way to do it, particularly at any time after midnight, and you'll not be experiencing any shortage of deep bass when it comes to the SPL-150. In fact I can just hear the engineers at Klipsch muttering to themselves while they designed the SPL-150: "You call that a subwoofer? This is a subwoofer!" *Doug Mason*

CONTACT DETAILS

Brand: Klipsch
Model: SPL-150
RRP: $1,999
Warranty: Two Years
Distributor: Premium Audio Company
W: www.klipsch.com.au

+
- Effortlessly deep bass
- High SPLs
- Low distortion

—
- Very large
- Best in large rooms
- Vinyl finish

Readers interested in a full technical appraisal of the performance of the Klipsch SPL-150 Subwoofer 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

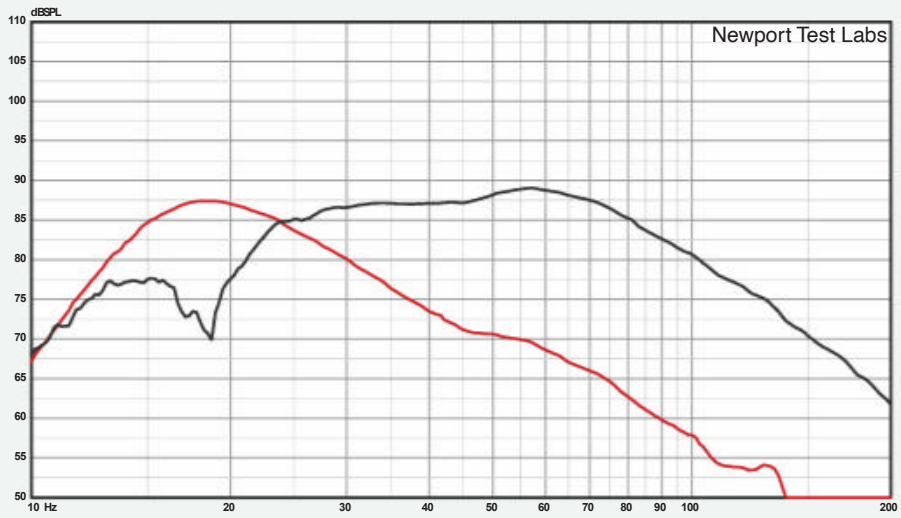
Newport Test Labs first measured the frequency response of the Klipsch SPL-150 using a near-field technique that removes room-related effects, effectively obtaining the same response that would be measured in an anechoic chamber. This technique requires that the output of the bass driver be measured separately from that of the bass-reflex port, which is the reason for the two traces shown on Graph 1.

The black trace on Graph 1 shows the frequency response of the SPL-150's bass driver when the crossover control is set to approximately 'half past 10', which the lab reported was the setting that gave the 'flat-test' response when conducting this test. You can see that the response is within ±3dB from around 23Hz up to 90Hz, which is an excellent result.

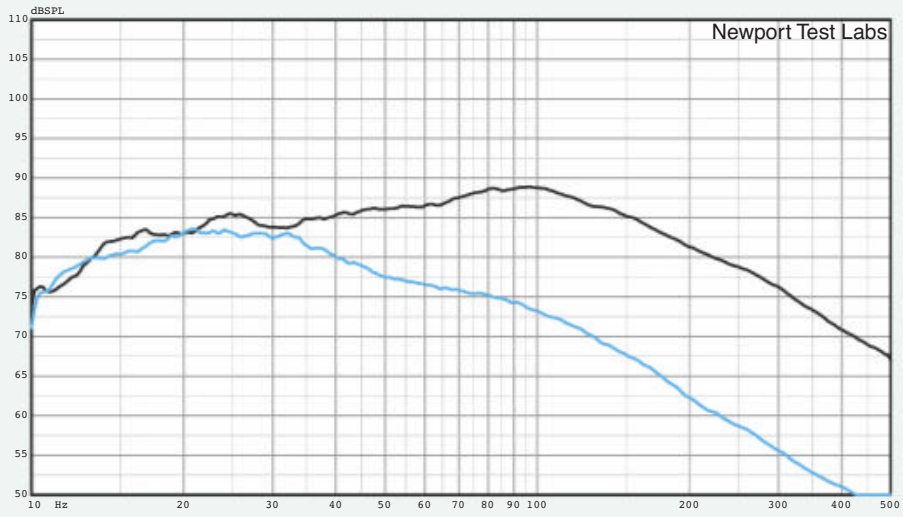
The red trace shows the output of the front-firing bass reflex port and you can see that it peaks at around 18–19Hz and rolls off very smoothly either side, so that its output could be characterised as 14–28Hz ±3dB.

Klipsch's engineers have done a very good job on this, because you can see that the output of the bass reflex port starts rolling off above 20Hz and the output of the bass driver starts rolling off below 30Hz, with the two traces crossing approximately midway. This means that the outputs of the two would sum complementarily across this bandwidth such that the overall combined response would be approximately 14Hz to 90Hz ±3dB. (I note that Klipsch claims 18Hz to 125Hz, but since it doesn't mention the dB level variation across this range, I can't speculate on any differences between Newport Test Labs' measured results and Klipsch's specifications).

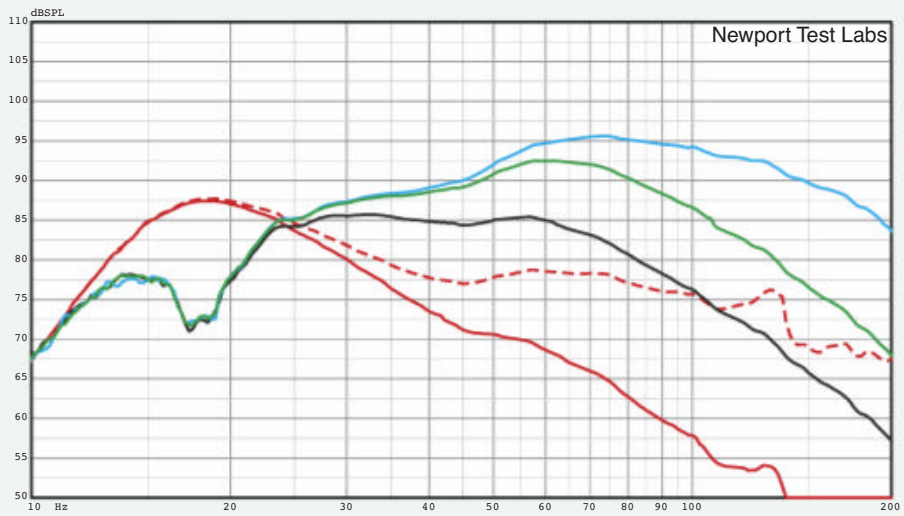
Graph 2 shows the room response of the Klipsch SPL-150, measured at a distance of three metres using pink noise. This time, the black trace shows the frequency response of the SPL-150 when the crossover is set to maximum and the blue trace shows the response when it's set to its minimum. You can see that set to minimum, the response extends from around 13Hz to 50Hz ±3dB. The maximum setting shows a frequency response of 16Hz to 180Hz±3dB, but at the expense of a bit of a peak in the response centred at around 90–100Hz. Backing off on the crossover a bit would flatten this response out, but would also truncate the extension somewhat, so it would be closer to Klipsch's specification, leading me to guess that the company is probably stating a room response with a ±3dB window for its published spec.



Graph 1: Nearfield response of bass driver with low-pass control set for optimal flatness (black trace) and of bass reflex output for same setting (red trace).



Graph 2: Room response with low-pass filter set to maximum (black trace) and minimum (blue trace),



Graph 3: Nearfield frequency response set. Bass reflex port with lpf set to max (dashed red trace) and minimum (solid red trace). Bass driver max (blue trace), min (black trace) and with lpf set to 12 o'clock (green trace).

Graph 3 shows the set of near-field responses for the Klipsch SPL-150 that Newport Test Labs measured for various settings of the crossover control. You can see that the port's output is very well-behaved at both minimum (solid red trace) and maximum (dashed red trace) of the crossover, though as you'd expect, there's more high-frequency leakage from the port at the maximum setting.

The black trace on Graph 3 shows the frequency response of the driver when the crossover is set to 40Hz (minimum); the blue trace shows the response when the crossover is set to LFE, and the green trace shows the response when the crossover is set to the '12 o'clock' position. These traces suggest to me that maybe Klipsch should have labelled the minimum setting on its crossover control as being 60Hz.

Newport Test Labs was not able to test the maximum sound pressure levels of which the SPL-150 might be capable (Klipsch claims a 122dBSPL) but it did confirm that this subwoofer is capable of delivering levels in excess of 110dBSPL at 40Hz without audible distortion, which will be far more than is required for any domestic application.

Overall, Newport Test Labs' measurements of the Klipsch SPL-150 show that it's capable of delivering seriously deep bass at seriously high sound pressure levels. *Steve Holding*

TRIANGLE BOREA BR03

LOUDSPEAKERS

Despite its decidedly non-French-sounding name*, Triangle is a completely French loudspeaker manufacturer that builds its speakers entirely in that country, including building its own drivers, of which its famous horn-loaded tweeter with its distinctive gold-coloured phase plug (as used on the company's top-line Magellan model), is the best-known.

Triangle was founded by Renaud De Vergnette in 1980, in the town of Soissons, which is approximately 100km north-east of Paris, and has remained there ever since. The town is one of the most ancient in France and during the Hundred Years War in 1429 was famously liberated by French troops under the command of Joan of Arc.

*In fact, the word triangle is spelled the same in both French and English. It also has exactly the same meaning in both languages: a two-dimensional shape with three sides and therefore three (tri) angles. However the French pronunciation is 'tree-on-gleh'. The name of the company derives from the fact that De Vegnette's first speaker, the Model 1180, had an almost triangular front baffle.

EQUIPMENT

The BR03 uses a new tweeter design from Triangle which the company calls an 'EFS' system: short-form for 'Efficient Flow System'. The acronym comes about because Triangle has partially horn-loaded the tweeter's 25mm silk dome, which improves its efficiency and reduces baffle/grille reflections. It has also fitted a phase plug that corrects phase across the frequency range and also improves dispersion, which in turn means a wider 'sweet spot' in the listening room, as well as a more accurate far-field frequency response.

As do most other manufacturers, Triangle makes use of a powerful neodymium magnet to drive the tweeter's voice coil (and thus its dome) but goes a step further than most by attaching to the magnet a very efficient heat-sink to ensure the motor system remains cool. This is particularly important because the amount of neodymium required in a tweeter is quite small so there's very little thermal mass. Without proper heat-sinking, such a small mass could quickly heat up and lose efficiency, which would not only affect the speaker's frequency balance but also its dynamics. Many price-conscious loudspeaker manufacturers do not bother to fit fiddly (and pricey!) heatsinks.

The speaker grille is comprised of acoustically transparent cloth stretched over an MDF frame. Although the frame is a 'picture-frame' design, with no cross-struts, so as not to obstruct the output from either of the drivers, Triangle recommends you remove the grilles when listening.

To make this as easy as possible, the grilles attach magnetically, so there is no requirement to press lugs into sockets. The use of invisible fixings also means that when the grilles are removed, the 'look' of the front baffle is, as the French would say, '*très élégant*'. If you could look inside the Triangle BR03's cabinet you'd find a curious structure that Triangle calls a 'Driver Vibration Absorption System' or DVAS. Its aim is firstly to absorb driver vibration before it reaches the cabinet itself and then, secondly, to reduce the cabinet's ability to vibrate, so that if any vibration does get past the first defence, it's negated by the second. To do this, Triangle uses what it describes as "perforated internal panels in MDF and EVA foam, thus stiffening the transducer/cabinet combination and reducing vibration to ensure neutrality and clarity when listening, due to there being no colouration or structure noise." Essentially DVAS is a bracing system that braces both the drivers and the cabinet walls, but at the same time decouples the braces themselves from both.

The Triangle Borea BR03's bass/midrange driver cone is made from the same untreated cellulose paper material that Triangle developed for — and uses in — its more expensive Esprit Ez series. The company says it "confers a natural sound with no colouration".

Although it's rated with a diameter of 160mm, its total moving diameter (cone plus roll surround) is 140mm and the all-important Thiele/Small diameter is 130mm, for an effective cone area (Sd) of 133cm². Because the cones are untreated, you should not use these speakers in a bathroom or a kitchen, but I don't imagine that anyone would. (Triangle's warranty specifically excludes issues related to 'high humidity'). Speaking of the warranty, Triangle's Australian distributor, Audio Marketing, gives a five year warranty on all Triangle speakers to extend the manufacturer's own warranty by three years.

Bass response is a stand-out feature of the BR03s, again aided by that high-efficiency untreated paper cone

As you can see from the photograph, the BR03 is a bass-reflex design where rather than using just a single port, Triangle's engineers have used two, each one of which is 40mm in diameter and 105mm in length. This not only gives the baffle a pleasingly symmetrical appearance but also improves its structural integrity and enables the baffle itself to have a smaller area, which improves driver dispersion.

The rear of the speaker has a single pair of multi-way colour-coded binding posts, so there is no avenue for bi-wiring. Four different cabinet finishes are available: Light Oak, Black, White and Walnut.

As for the cabinet size, each cabinet measures 206×380×314mm (HWD) and weighs 6.26kg.

LISTENING SESSIONS

Designed for stand-mounting (on either of two stands made specifically for them, the Triangle S02 or the Triangle S04), but equally at home on bookshelves, Triangle recommends a listening triangle with minimum side dimensions of two metres: that is, two metres between the speakers and two metres from your listening position to each of the speakers. (It also suggests placing them at least 40cm away from a back wall and at least 50cm from a side wall.)

In fact I had great success using the speakers as near-field monitors, placed either side of a computer screen, and also in a larger-than-recommended room, one in which where the 'listening triangle' had three-metre sides.

You will need to toe-in the speakers slightly differently depending on how far apart they are, but this is no great chore and gives you the ability to 'tune' the level of the high-frequency response to suit your personal preference (that is, the maximum treble level will be delivered when both tweeters are aimed directly at the listening position).

As with all loudspeakers, the BR03s sound their best when they are positioned a little way from walls (both back and side) but you might want to sacrifice a little of that imaging and airiness to make some gains in the bass by operating them a little closer to a rear wall. These speakers are designed to best energise rooms with a floor area of between 15 and 30m², but if you don't listen at loud levels, they will work beautifully well in larger rooms as well. If your room is smaller than 15m², I'd say that Triangle's Borea BR02 model would likely be a better acoustic match.

The moment I fired up the BR03s I heard why Triangle has used an untreated paper cone, because this speaker is very efficient for its size, meaning that it produces high-volume sound with very little amplifier power. This not only ensures superior dynamic range, even with low-powered amplifiers, but also cleaner sound, since most amplifiers will be operating in their Class-A mode when driving them, because they require so little power.

The very high efficiency also ensures a lively, energetic quality to the sound because the cones can start up so quickly and stop so quickly, due to their low mass. Be careful not to confuse this 'lively' sound with forwardness across the midrange — the BR03s are very linear across the mids, as I proved to myself when listening to the Mayo Nakano Piano Trio's outstanding album 'Miwaku'. This is a beautifully recorded album that sounds amazing in any of the various formats in which it's available. Indeed it captures the sound of Nakano's grand piano more authentically than any other recording that comes to mind. And at the same time, recording engineer Masamichi Ohashi has also perfectly captured the sound of both Yoshio Ikeda's double-bass and Takamochi Baba's unusually-outfitted drum kit.

I also loved the sound of Triangle's soft-dome tweeter which delivers the sound of Baba's cymbals wonderfully well. Their output was beautifully balanced against the midrange, and the tone is sweet and pure. Also, being a soft-dome tweeter, there's not that slightly bright tone right up-top that you get from hard-domed tweeters — though you'll only notice hard-dome brightness if you're lucky enough to have perfect hearing.

Bass response is a stand-out feature of the BR03s, again aided by that light-weight, high-efficiency untreated paper cone. The bass extension is impressive: you'll likely not hear such deep, extended bass from any other speaker of a similar cabinet size. It's also tuneful bass, with excellent pace, timing and pitch definition, so I could easily discriminate between A1 and A#1 which are right down in the lowest musical octave. On the minus side, you'll easily hear if a double-bassist doesn't quite hit the note!

My listening sessions coincided with Keith Jarrett's announcement that he would no longer be performing, which seemed like another good reason to listen to his extraordinary playing and again use the sound of a grand piano to test the limits of the BR03's abilities. This meant I couldn't listen to the Köln Concert, with its woefully inadequate piano, so I instead listened to his Carnegie Hall performance from 2006 which includes 40 minutes of repertoire in addition to more than an hour of improvisation.

The Triangle BR03s reproduced the piano sound faithfully, though they were perhaps a little light-on in the lowest octave, as I'd expect from any two-way bookshelf design. Above these very lowest frequencies, the Triangle BR03s very accurately and very precisely reproduced not only the sound of the piano, but also the sounds of Jarrett himself, as well as those made by members of his very unruly audience. These were made more obvious than usual, and reproduced with particular clarity, so the level of detail the BR03s bring to the party is obviously exceptionally high.

CONCLUSION

Despite being a relatively new addition to Triangle's range, the Borea BR03 has already won an award from *Hi-Fi+* magazine as '*Stand-mount Loudspeaker of the Year, Up to £10,000*' plus it was an integral part of the system that won a 'B*est Buy Home Theatre System*' award from the European Imaging and Sound Association (EISA) which uses expert judges from 29 countries around the world to determine its winners. It was also awarded 5 Stars by UK Magazine *What Hi-Fi* which noted: "it's rare to find a pair of speakers at this price that sound so sophisticated, but these Triangles deliver refinement and detail in spades" and declared them "*a new contender for best in class.*"

I can only add my own praise to that clamour of approval from the experts. If you are intending to spend up to a thousand dollars — or even a bit more! — on a pair of loudspeakers, Triangle's BR03s should be an essential audition. *Donald Bittman*

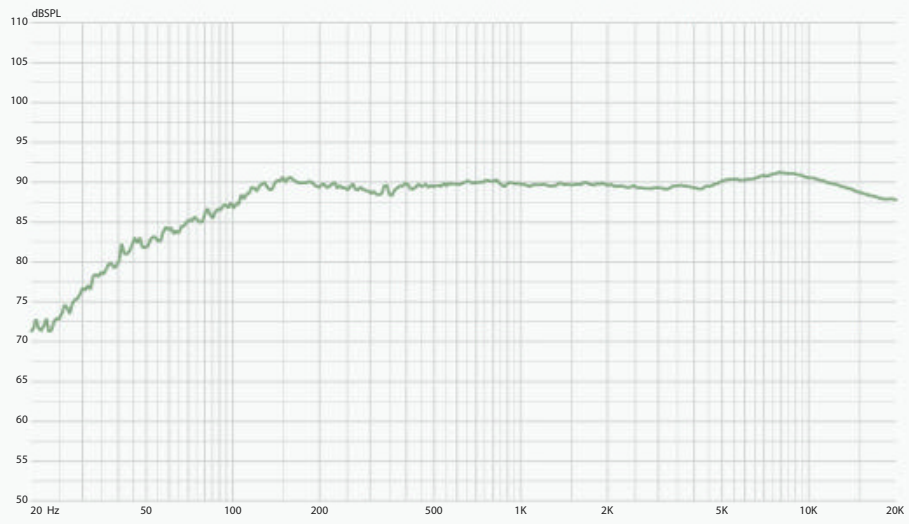
CONTACT DETAILS

Brand: Triangle
Model: Borea BR03
Price: $850 RRP (per pair)
Warranty: Five Years
Distributor: Audio Marketing Pty Ltd
Address: Rear 64 Burns Bay Road
Lane Cove, NSW, 2066
T: (02) 9882 3877
E: info@audiomarketing.com.au
W: www.audiomarketing.com.au

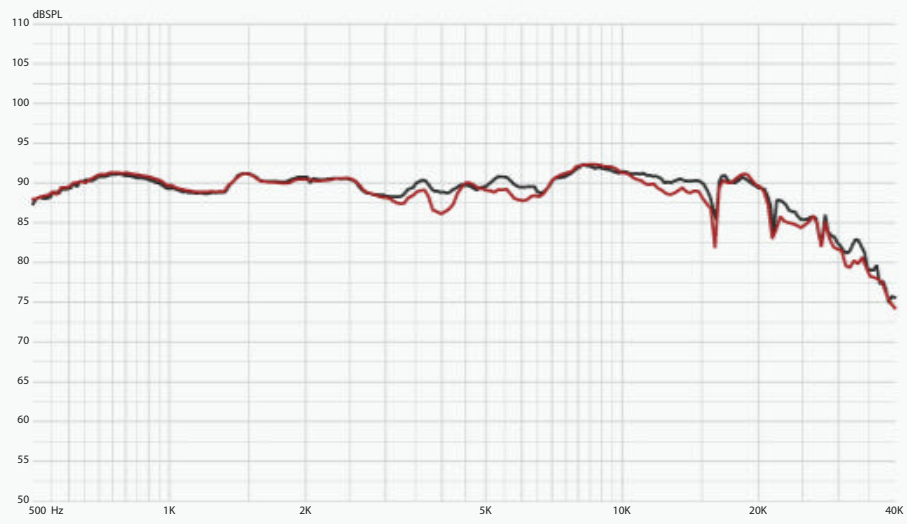
- Amazing value
- Great sound
- Classy looks

- No bi-wiring

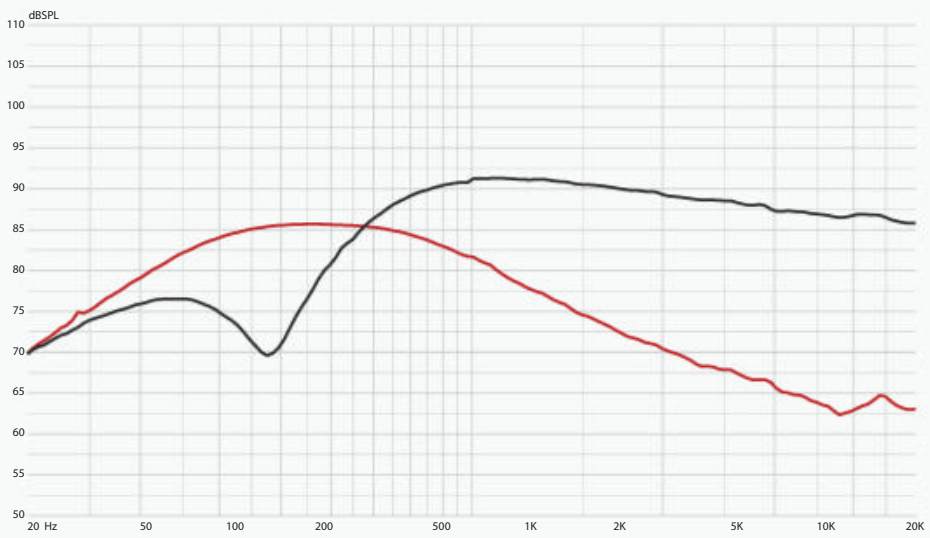
Readers interested in a full technical appraisal of the performance of the Triangle Borea BR03 Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.



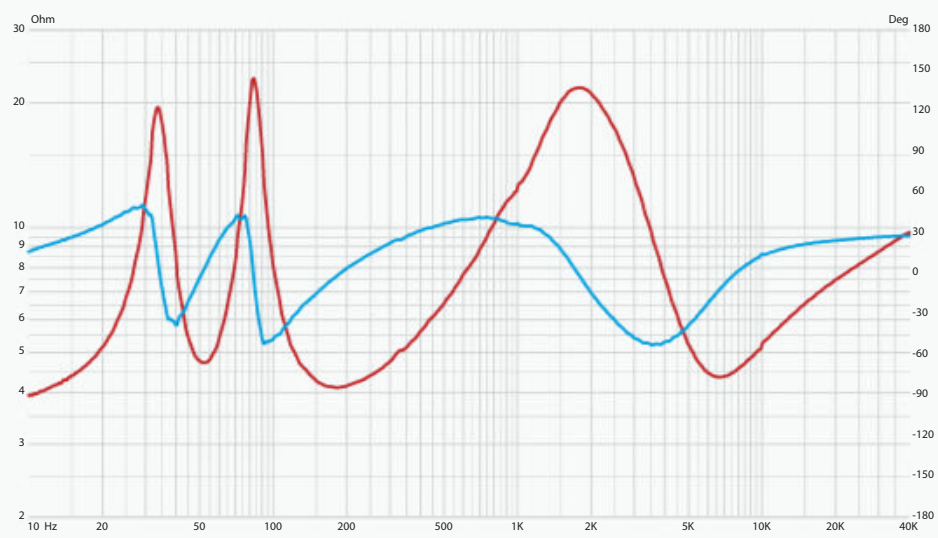
Graph 1: Room response. Trace is the averaged result of nine frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter using pink noise.



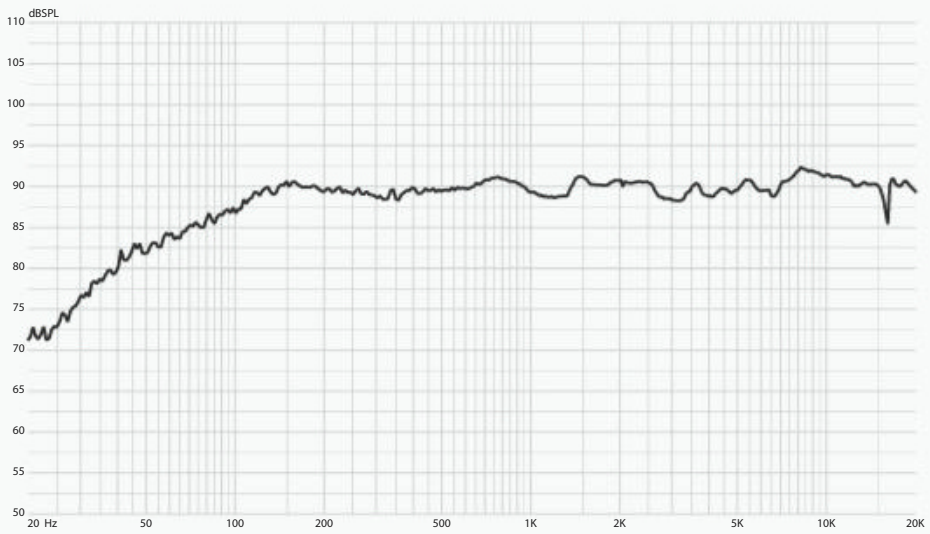
Graph 2: High-frequency response, expanded view, with grille on (red trace) and grille off (black trace). Test stimulus gated sine. Mic dist 1M on-axis with dome tweeter.



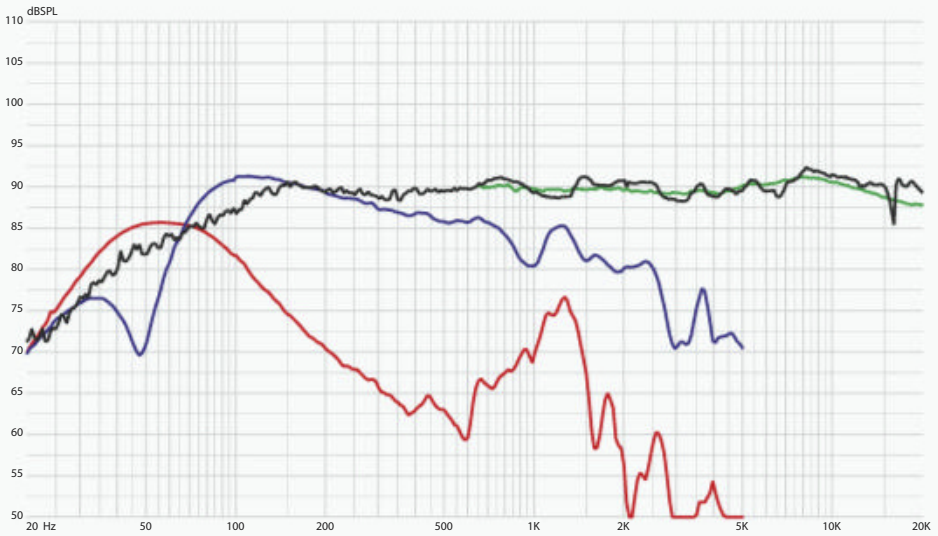
Graph 3: Low frequency response of front-firing bass reflex port (red trace) and woofer. Nearfield acquisition. Port/woofer levels not compensated for diff. in radiating areas.



Graph 4: Impedance modulus (red trace) plus phase (blue trace).



Graph 5: Frequency response. Trace below 650Hz is averaged result of nine 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 (at 650Hz) to the gated high-frequency response (see Graph 2).



Graph 6: Composite response. Red trace is output of bass reflex port. Dark blue trace is anechoic response of bass driver. Black trace (see Graph 5). Green trace (see Graph 1.)

LABORATORY TEST REPORT

Newport Test Labs first tested the in-room frequency response of the Triangle Borea BR03 and if you look at the result they measured in Graph 1 you won't need me to tell you that it's outrageously good. The first thing to note is that the response between 150Hz and 7kHz is spectacularly linear, but indeed the entire response is linear, with the graphed response extending from 70Hz to 20kHz ±3dB.

The second point to note is the spectral balance is perfectly uniform, with the mid-range being super-flat and both the lowest and highest frequencies rolling off evenly, gently, and complementarily. There's no spectral skew that would give the speakers' sound a unique 'signature'. The low-frequency extension could be improved if the speakers had been closer to a rear wall, but Newport Test Labs measures small speakers on their stands, two metres from any boundaries. Moving the speaker closer to a rear wall would extend their low-frequency performance. (Triangle claims –3dB at 46Hz).

Graph 2 shows the high-frequency performance of the Triangle Borea BR03 in

much greater detail by ‘zooming in’ and expanding the horizontal scale of the graph (necessarily truncating the low frequencies) and using a measurement technique that not only replicates the frequency response that would be obtained in an anechoic chamber but allows 1Hz resolution across the measured bandwidth. On this graph, the lab has also measured differences between operating the speaker with the grille off (black trace) and with it on (red trace).

You can see that the frequency response returned with the grille off is marginally smoother, but the only real variances are very small discrepancies at 4kHz, 5–6.5kHz, 10–16kHz and 23–33kHz. So yes, you’ll get superior performance without the grilles but the differences are so slight I doubt they’d be significant enough for it to be worth the bother of constantly swapping the grilles on and off. This, however, is something you can easily evaluate for yourself.

The increased resolution afforded by the more sophisticated measurement technique means we can see very small suck-outs in the response at 16kHz, 22kHz and 28kHz. These are very high-Q notches, so would not be audible, because the bandwidth they affect is so small. For example the suck-out at 16kHz (which is more than an octave above the highest note on a piano) only affects frequencies above 15kHz and below 17kHz, plus the maximum dip is just 5dB.

Newport Test Labs measured the low-frequency performance of the Triangle Borea BR03 using a near-field technique, the result of which is shown in Graph 3. You can see that the bass/midrange driver starts rolling off below 100Hz to a minima at 47Hz, meaning you should not expect much bass below this frequency. The output of the port has a very low Q, which is fairly unusual tuning for such a small cabinet, and peak port output is at around 55–60Hz: I would have expected it to peak at below 50Hz, though you can see there’s still appreciable port output below 50Hz.

The impedance graph (Graph 4) shows that the impedance across the audio band (20Hz–20kHz) never falls below 4Ω and reaches a minimum of 4.2Ω at around 180Hz. This minimum is exactly as specified by Triangle. Although Triangle specifies the ‘nominal’ impedance of the BR03 design as being 8Ω, the fact that the actual impedance is lower than 8Ω everywhere except the three resonant peaks means I would personally have put its nominal impedance at 6Ω. The impedance above 20kHz (7.5Ω then rising with frequency) means the BR03 can happily be paired with any Class-D amplifier, while the impedance below 20kHz and the benign phase response (blue trace) mean that this design will be an easy load for any other Class of amplifier as well.

Graph 5 is a composite that combines the various measurements on a single graph and extends the response of the nearfield measurements upwards. You can see there is some unwanted output from the bass reflex port up at 1.3kHz, but it’s quite a ‘way down in level.

Newport Test Labs measured the sensitivity of the Triangle Borea BR03 using its usual stringent test methodology, which tends to favour larger speakers, rather than smaller ones, but the Borea BR03 still managed to deliver 89.5dBSPL at one metre for a 2.83Veq input. This is just 0.5dB shy of Triangle’s specification of 90dBSPL, but it’s an extraordinarily high figure — indeed I think it’s the highest I have ever seen from such a small bass/driver/cabinet combination. This means you’ll get maximum performance from whatever amplifier you use to drive it.

Triangle’s engineers have succeeded in designing a small loudspeaker with an extended bass response and an extraordinarily flat midrange response without making the speaker difficult to drive and at the same time delivering equally extraordinary efficiency. These are all outstanding achievements. *Steve Holding*

Extended bass response and an extraordinarily flat midrange response

MARANTZ SA-12SE

SACD PLAYER

What is perhaps most special about the new Marantz SA-12SE SACD player is that for Japanese audiophiles, it's not particularly special at all. Essentially, the new 'Special Edition' or 'SE' version of the SA-12 has apparently been available exclusively in Japan for some time now.

The difference is that Marantz has now decided to make it available on the world market. I have no knowledge of the reason for this change in the company's approach, but I can't help that it might have something to do with the death of Ken Ishiwata, who was instrumental in the establishment of Marantz's Special Edition models, and whose name personally graced some of the 'Signature' versions.

THE EQUIPMENT

But Marantz says that the SA-12 Special Edition SACD player is more than just the version that was exclusively available in Japan. It says that before being released on the world market it was 'tuned' by specialist engineers at Marantz for superior performance. In the words of the company itself: "Our dedicated in-house Sound Masters occasionally identify products with higher potential than expected, then hone them into Special Edition models through extraordinary attention to detail. Drawing also upon achievements made while developing the acclaimed KI Ruby series, the Marantz Sound Master together with our European sound engineers have meticulously crafted the new 12 Series Special Editions.' (The plural is used because Marantz has also released a specially tuned integrated amplifier, the SA-12SE.)

Unlike many modern CD and SACD players, which use transports not specifically designed to play either CDs or SACDs (usually a computer transport of some type) the disc mechanism inside the SA-12SE is one that was specifically designed for CD and SACD operation, as you'd probably guess for yourself if I told you that the mech was designated a SACDM-3. It's not a new mech by any means, because it was in the Marantz SA-KI Ruby SACD player and also in a Ken Ishiwata 'Signature' model. It was designed by Marantz and is built in-house at Marantz's own factory in Japan.

Obviously the SACDM-3 mechanism can play both commercially produced CDs and SACDs, but it can also play back discs you've recorded on your computer on DVD-R/-RW/+R/+RW or CD-R/-RW discs, in a variety of formats including MP3, WMA, AAC, WAV, FLAC, ALAC, AIFF and DSD. One thing it can't do is play back multi-channel SACDs. It's strictly only a two-channel mech. But this doesn't mean that you can't play an SACD that says it has 5.1 channels — it will play such discs, but only in two-channels.

I'll be buying an argument if I write here that SACD is a 'failed format', but I think the facts would support that statement. Sure you can still buy SACDs, but they're not common and very few have any music on them that was recorded in the last two decades. Sure SACDs have a more extended high-frequency response and greater dynamic range than CDs, but you can get this from downloadable high-resolution audio files.

So why would you want an SACD player, rather than just a CD player? (Assuming, of course, that you don't have an existing library of SACDs, in which case you DO need an SACD player.) The answer is simply that the more modern SACD mech extracts the data stored on CDs a little more precisely than most dedicated CD transports, so there's less error correction going on, and therefore better sound quality.

(The other way to get around error-correction issues when using a standard CD transport is to buffer the data and, if necessary, re-read it, then release the corrected data from the buffer, but this is an expensive process, as you'll find for yourself if you investigate the prices of the players that employ it.)

Then there's the fact that many fans of SACD don't think of it as a 'failed format' at all, but as an exclusive 'cult format' that offers superior value. Devoted SACD fan Coury Turczyn wrote on his website: "So why don't I just invest in high-res FLACs from online stores like HD Tracks and play them through a nice DAC? Because they're still too expensive and their resale value is zero. Meanwhile, new SACDs are still being published by boutique labels like Analogue Productions, ORG, Mobile Fidelity Sound Lab, and others. I'd much rather spend the same money on physical media that has a chance of retaining its value (or even going up) than a computer file that's instantly worthless. Also, collecting things that are hard to find is fun. Pressing a button to get illegal downloads: boring."

Which is not to say you can't have the best of both worlds, because in addition to being able to play back SACDs and CDs, the SA-12SE is also able to play back hi-res files from your computer, either via its coaxial input or via its USB input. When you do this (PCM signals up to 384kHz/32-bit are accommodated, along with DSD256/11.2MHz), all these signals are are up-converted to DSD at 11.2MHz using Marantz's proprietary MMM-Stream converter within the player, and the high-frequency signal produced is processed by the unique MMM-Conversion stage that's used in place of a conventional DAC, to produce the analogue output.

When you do use the 'hardware' inputs of the SA-12SE, the unit automatically turns off all the circuits related to the SACDM-3 optical disc mechanism in order to ensure optimal sound quality.

Marantz's 'MMM-Stream' process replaces the oversampling filters normally used in digital to analogue conversion and allows the implementation of 'Marantz Musical Mastering filtering'. Two different system clocks are used when up-converting, depending on whether the incoming signal is coming from the transport or from the digital inputs. The Sigma Delta Modulation process allows DSD signals to be passed to the conversion section in the form of a stream of high-frequency pulses.

As mentioned earlier, you can select between two different filters when playing back your music. Marantz says of Filter 1 that it has: "A very short but symmetrical impulse response, very precise soundstage and smooth tonal balance." It says of Filter 2 that it has "very short pre-ringing — long post-ringing, neutral tonal balance — slightly brighter than Filter 1." So it's not an overly informative description but I guess it's all in the proof of the pudding: listening to the filters and deciding for yourself which one sounds the best with the music you're playing at the time is the only way to decide which filter should be used.

> The sound is superb. The SA-12SE will extract the ultimate aural fidelity from any disc (or file) you play

HDAM TECHNOLOGY INSIDE

Marantz makes much of its use of 'HDAMs' and in the new SA-12SE, it uses its SA2 and SA3 versions. (The player's headphone amplifier also uses HDAM-SA2 modules.) An HDAM (the initials stand for 'Hyper Dynamic Amplifier Module') is a circuit that uses discrete components and is used in a place in the circuitry where most other manufacturers would use an integrated circuit called an op-amp (short-form for operational amplifier). Currently, Marantz makes these in several quality levels — a standard HDAM, the HDAM SA2 and the HDAM SA3 (the latter delivering the highest performance of the three).

Ordinary 'off-the-shelf' op-amps offer different levels of performance, depending on how much you want to pay, but Marantz says its HDAM3s have a higher slew rate and less noise than even the very best op-amps, the result of which is, according to the company: "more dynamic, accurate and detailed sound." The circuitry also makes use of current feedback, rather than the more usual voltage feedback. Marantz says that using current feedback reduces the need for phase compensation. It also claims that current feedback is better-suited to the requirements of wide-bandwidth, high-speed (a.k.a. 'hi-res') music reproduction.

As for the op-amp itself, the circuit was originally so named because it was designed to perform mathematical operations, multiplication, division, addition and so forth back in the days when computers were analogue, not digital. It has a differential input, the 'legs' of which its internal circuitry keeps at the same voltage, so whatever voltage is at the (+) side of the op-amp's input will be maintained at the same voltage as the op-amp's (–) input—and that's for both d.c. as well as a.c. voltages. This enables an op-amp to be used as a buffer, an integrator, a non-inverting amplifier or an inverting amplifier. It's an extraordinarily useful circuit.

IN USE

Basic player operation is self-explanatory, because all the controls you'll need to operate the player are right there on the front panel.

Or, if you'd prefer to operate the player from the comfort of your own couch, on the very handsome remote control that comes standard with the player. The only operation that requires a little bit of hands-on is if you want to use the SA-12SE SACD in conjunction with your computer in which case you'll have to load the appropriate driver (at least you will if you have a Windows computer — Mac owners won't have to do anything but plug it in).

If you do have to load a driver, you don't have to go searching on the internet, or email the manufacturer, Marantz provides the driver on a CD-ROM. On the same disc you'll find an electronic version of the excellent 'Owners Manual' that Marantz provides in hard-copy form as well.

If you do have to use the remote control, it's a stunner, because it's the same RC005PMSA device Marantz supplies with its top-line models. The rear is silvered plastic, but the top of the remote is made from brushed silvered aluminium that's 2mm thick and all the push-buttons on it are high-quality. It's also supplied with two high-quality AA alkaline batteries, which means you won't have to supply your own until they run flat.

The remote has two modes—CD and AMP—so if switched to AMP it can also be used to control the Marantz SA-12SE amplifier mentioned previously (as well as other Marantz amplifiers). The remote gives access to the SA-12SE's track programming options, its random and repeat playback modes and more.

Two features I would have liked to see on the SA-12SE are balanced outputs and the ability to control the output voltage, but the fact that they aren't there isn't any kind of deal-breaker.

If you have not used an SACD player previously, you will have to get used to the slow load times when loading CDs, because when you load a CD, the SA-12SE needs around 30 seconds before play commences, whereas with an SACD, playback starts after only a 17 second delay. Marantz seems to have sped-up the 'play to drawer open' time, however, because this takes only six seconds, either for CD or SACD.

LISTENING SESSIONS

Shocked to my core by the retirement of Daft Punk, my personal homage was to let them be the very first album I played on the Marantz SA-12SE. It seemed most appropriate to start with *Aerodynamic*, the second track on what I reckon is their best album, 'Discovery', from 2001. This track seemed most appropriate because it starts off with a mournful bell toll — you know, from the

John Donne's poem: "Send not to know for whom the bell tolls, it tolls for thee." Then it launches into that iconic riff with its sub-bass line that will have your woofers leaping from their cabinets if you've let the volume stray too high. Next comes that high-pitched riff that will have your tweeters begging for mercy. Then it all comes together in a miasma of convoluted sound. Daft punk indeed.

On *Harder, Better, Faster, Stronger*, Daft Punk play all their usual sonic tricks (the one I hate the most is when they make the music sound as if it's coming from a radio) including using a vocoder for the vocals. But at the same time listen to the cymbal sound, which is wonderfully captured and delivered perfectly by the Marantz SA-12SE. This is also a great track for finding out how fast the speakers in your system can start and stop, thanks to the studio chop. If you'd like a gentle introduction to this album, listen to *Something About Us* before you listen to anything else. It's a lovely track. You might then go on to *Night Vision* and then to *Veridas Quo* with its fabulous organ progressions after which you can play the other tracks in any order you like... and of course I was able to do exactly this thanks to the ability to program the Marantz SA-12SE to do exactly this. Yeah, I know you can do this in software if your music is stored on NAS (or elsewhere) but you might not enjoy this type of playback.

For something a bit less daft, I switched to my current everyday listen, which is 'An Overview on Phenomenal Nature', the new album from Cassandra Jenkins with its melancholy sound, melancholy lyrics and sympathetic playing. The layered sounds are so well-recorded that you can hear exactly where all the instruments are located, and exactly how they sound because, despite being rather lavishly produced, the instruments have been recorded exactly 'as they sound'. The saxophone sound (Doug Wieselman), in particular, is stunning. So too is the sound of the fret-less bass of Annie Nero. You'll hear all this if you listen to the CD on the Marantz. Hopefully it will have been re-pressed by the time you read this. Only 500 copies initially? What was she thinking? This album was always going to be a hit. (If you can't get it on CD, it's also available on vinyl and via download.)

It was then on to using the Marantz SA-12SE to listen to Natalie Mering's latest album 'Titanic Rising', released under her pseudonym, Weyes Blood (apparently a reference to Flannery O'Connor's novel Wise Blood, but a reference whose meaning eludes me) and the Marantz was on top of the lush sound of the opener, *A Lot's Gonna Change*, right from the outset. If you can tear yourself away from the extraordinary sound of her voice, and the emotive lyric, listen to the high-pitched accompaniment at 0.59, which the Marantz delivers with ethereal beauty (lesser players render it coarsely).

Andromeda, which follows, has some depthy sounds that will test out your bass drivers, and the Marantz had no problem maintaining the complex rhythms and the blistering pace, plus you can hear the tonality of all the instruments, even when all are playing in unison. Then listen to the piano intro to *Everyday*. Played on the lowest octave of the keyboard the twang of the strings is uncannily true to life. A little further on, the hand-claps are also reproduced with an authenticity that escapes lesser machines, both CD and SACD.

The track *Movies* is a great test for your system's ability to separate channels and achieve stereo imaging, with the image shifting subtly under a programmed synth arpeggio, but the complexity proved to be child's play for the Marantz SA-12SE, which didn't skip a beat delivering it exactly as it was recorded. Again the production is lush, and the sound is great, but I'm not such a fan of the music: I tired of the arpeggiation, the lyrics aren't her best and the melodic lines are stodgy. If you'd like to really appreciate Mering at her best, I'd recommend you listen to her album 'Front Row Seat to Earth' from back in 2016.

Of course there's nothing like a full orchestra to fully test out an SACD player's (or any playback device's) ability, and what better than Mahler's mighty second symphony, 'Resurrection', with Adriana Kucerova (soprano), Christianne Stotijn (mezzo-soprano), the London Philharmonic Orchestra and the London Philharmonic Choir under the baton of Vladimir Jurowski, recorded at London's Royal Festival Hall in September 2009. Perhaps what makes this recording so magical is that unlike many conductors, Jurowski actually sticks to the instructions written on Mahler's score, so you're going to hear a completely different Resurrection to most that have been recorded (and one that's the better for it).

The recording quality is wonderful, particularly given the constraints of the live nature of it, witness the second movement's string ostinato and the entry of the basses reminding us of the first movement. The presentation of the sound by the Marantz SA-12SE was flawless, clearly evidenced by the sound of the violin and flute in the third movement, and in the way you can count the trumpets that are playing close harmony in the trio. The *finale*, which is always wonderful, is here heard to perfection such that whereas my eyes usually well with tears when listening to it, this audition had them overflowing and rolling down my cheeks. This is truly exceptional high-fidelity performance at its best.

My listening experiences using the Marantz's external digital inputs really duplicated what I heard when listening to CDs and SACDs: the sound was superb. I did run across a tiny little technical glitch when playing back from a USB stick, which was that I could only access files in its root directory, but this may have been an issue with the way I transferred my music to the stick.

CONCLUSION

The build quality of the Marantz SA-12SE is second to none. This is a component that will make you smile with satisfaction every time you look at it. Look inside it and even if you're not an engineer, you'll appreciate the attention to detail in the alignment of the resistors, capacitors and other circuit components and the layout of the printed circuit boards.

That smile of satisfaction will become even bigger whenever you listen to the Marantz SA-12SE because the sound is superb. It will extract the ultimate aural fidelity from any disc (or file) you play. *Conor Daly*

CONTACT DETAILS

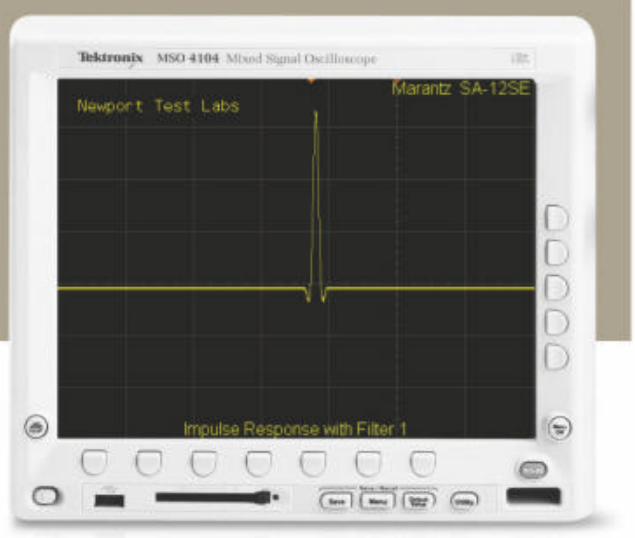
Brand: Marantz
Model: SA-12SE
RRP: $7,890
Warranty: Two Years (+2 with reg)
Distributor: QualiFi Pty Ltd
Address: 24 Lionel Road
Mt Waverley, VIC. 3149
TF: 1800 242 426
T2: (03) 8542 1111
E: info@qualifi.com.au
W: www.qualifi.com.au

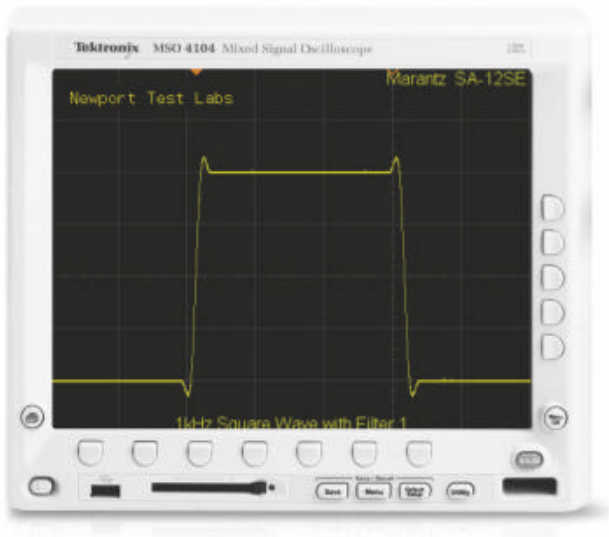
- Superb sound
- Doubles as USB DAC

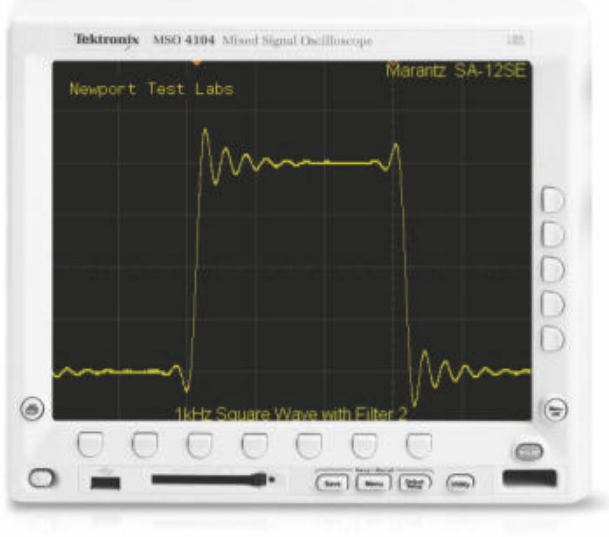
- Volume control
- Balanced outputs

Readers interested in a full technical appraisal of the performance of the Marantz SA-12SE CD/SACD Player 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 output voltage of the Marantz SA-12SE as 1.9950 volts from the left channel and 1.9952 volts from the right channel, a very healthy voltage that will be more than sufficient for any ancillary components.

As you can see from the closeness of these two voltages, the balance of the left and right channels is exceptionally good, one of the best results I can remember seeing, such that the channel balance is 0.001dB. This would not only be totally imperceptible, but is also well within measurement error limits for this particular test.

Channel separation was not quite in the same league, as you can see from the tabulated figures, but all three results (71dB at 16Hz, 81dB at 1kHz and 63dB at 20kHz) are more than required for the Marantz SA-12SE to deliver excellent stereo separation and accurate imaging (this last in combination with the channel balance results, of course).

The first graph (Graph 1) shows the frequency response of the Marantz SA-12SE for both Filter 1 (red trace) and Filter 2 (black trace). As you can see the response depends on which filter you use. Filter 1 is a linear phase, slow roll-off type that trades minimal pre/post ringing against image rejection and a roll-off of –4.9dB at 20kHz when playing CDs. (You can't quite see this down-point on the graph because the lowest graphing line is at –3.0dB.)

You can see that the frequency response with Filter 2 is 'flatter', extending out to be just 1.45dB down at 20kHz (and –4.9dB at 45kHz and –20dB at 90kHz).

SACD/DSD64 files were –0.7dB at 20kHz, –3.0dB at 50kHz and –13dB at 100kHz. (I put 'flatter' in inverted commas, because both responses are superbly flat across the audio band.)

Graph 2 shows THD and noise for a 1kHz (44.1kHz/16-bit) test signal at 0dB recorded level. The result is, as you can see, excellent. The two obvious harmonically-related distortion components (the second and third) are both more than 100dB down (0.001% THD). You can see some non-harmonic distortion components up higher, initially either side of 8kHz, then 12kHz, then higher, but all these are more than 115dB down (0.0001778% THD).

Noise across the majority of the audio band is more than 120dB down, but you can see that below 1kHz, there's noise above this level, with a noise spike at 50Hz that's at around –90dB.

Graph 3 shows THD & Noise for a 1kHz (44.1kHz/16-bit) test signal at –10dB recorded level. Again, the Marantz returned spectacularly good performance with only one harmonically-related distortion component (third harmonic at 3kHz) at –112dB (0.0002512% THD). Again, non-harmonically-related distortion components are visible, but they're all down close to –120dB (0.0001% THD). Except down close to mains frequencies and up to 1kHz, the noise floor is down around –140dB.

In Graph 4, which shows THD & Noise for a 1kHz (44.1kHz/16-bit) test signal at –20dB recorded level, the third harmonic distortion component has dropped down

Marantz SA-12SE CD/SACD Player
LABORATORY TEST RESULTS

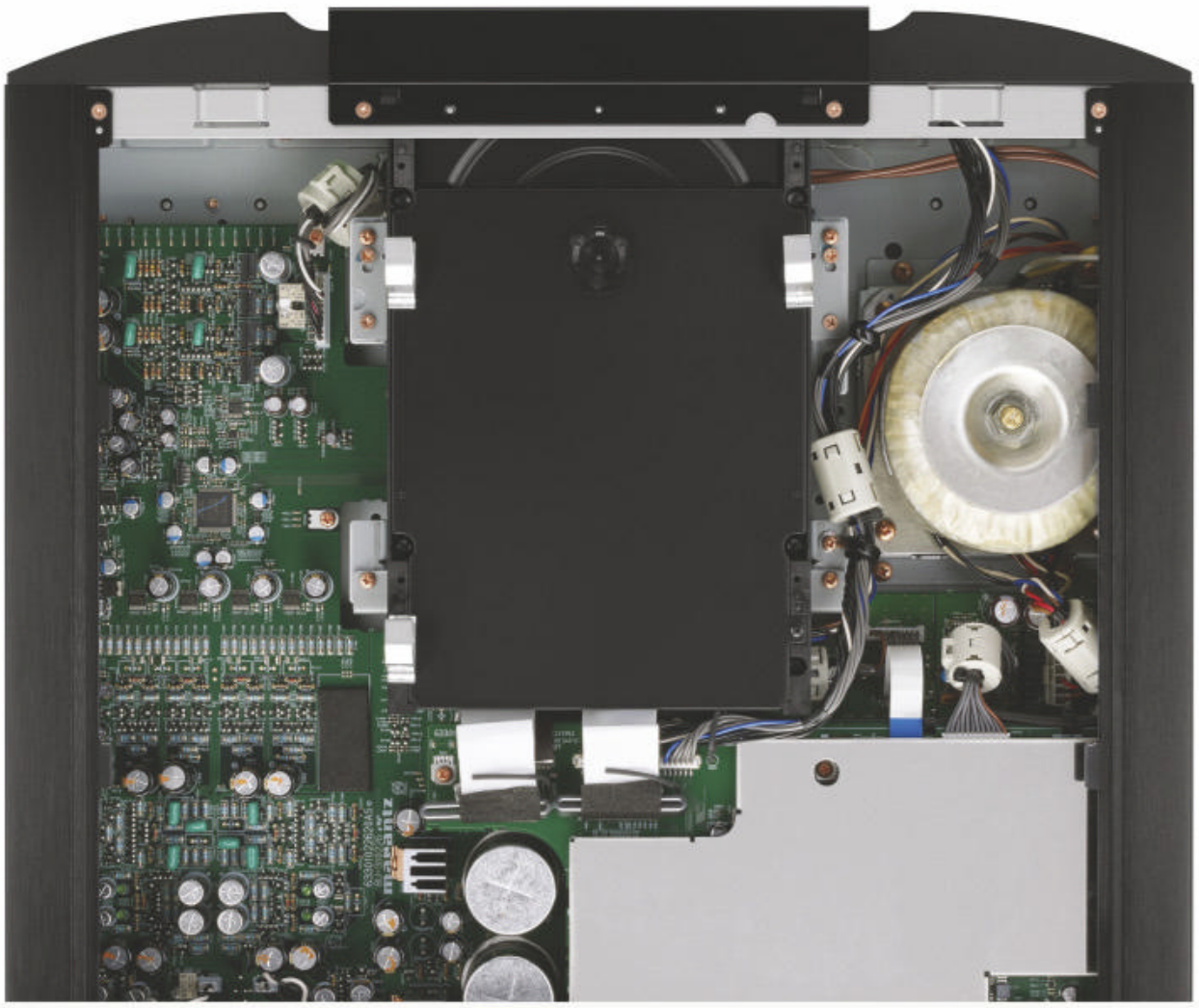
Analogue Section	Result	Units/Comment
Output Voltage	1.9950 / 1.9952	volts (Left Ch/ Right Ch)
Frequency Response (w Filter 1)	2Hz – 20kHz	–1.5dB (also see graph)
Channel Separation	71 / 81 / 63	dB at 16Hz / 1kHz / 20kHz
THD+N	0.01	@ 1kHz @ 0dBFS
Channel Balance	0.001	@ 1kHz @ 0dBFS
Channel Phase	0.01 / 0.00 / 0.003	degrees at 16Hz / 1kHz / 20kHz
Group Delay	180 / 6.35	degrees (1–20kHz / 20–1kHz)
Signal-to-Noise Ratio (No Pre-emph)	81 / 100	dB (unweighted/weighted)
De-Emphasis Error	0.006 / 0.007 / 0.291	at 1kHz / 4kHz / 16kHz
Linearity Error @ –60.00dB / –70.00dB	0.00 / 0.06	dB (Test Signal Not Dithered)
Linearity Error @ –80.59dB / –85.24dB	0.03 / 0.04	dB (Test Signal Not Dithered)
Linearity Error @ –89.46dB / –91.24dB	0.10 / 0.03	dB (Test Signal Not Dithered)
Linearity Error @ –80.70dB / –90.31dB	0.10 / 0.10	dB (Test Signal Dithered)
Power Consumption	0.18 / 32.66	watts (Standby / On)
Mains Voltage During Testing	236 – 251	(Minimum – Maximum)

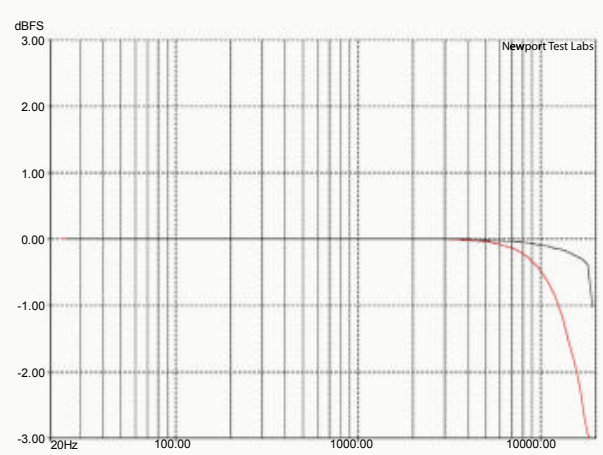
below –121dB, but the non-harmonic components have remained at essentially the same levels as previosly.

Graph 5, which shows THD & Noise for a 1kHz (44.1kHz/16-bit) test signal at –60dB recorded level is a surprising result because the noise floor is essentially unchanged, so the conversion process is not introducing spuraie. Marantz appears to have made significant improvements to its MMM-stream digital-to-analogue conversion process.

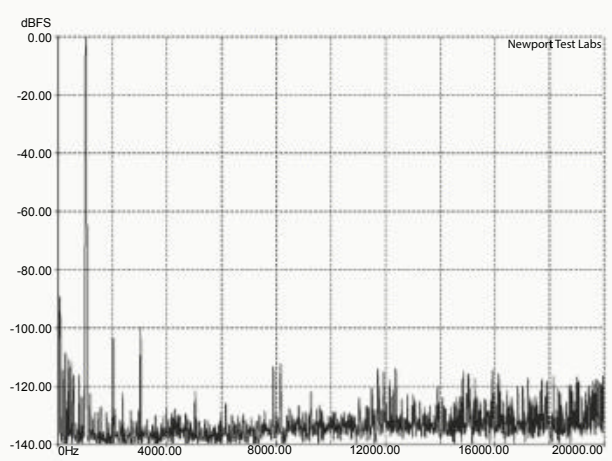
The same is true for Graphs 6 and 7 which show the effects of dithering the test signals (no dither for Graph 6, dither for Graph 7). Normally I would expect to see a considerable rise in the noise floor with the dithered test signal but, as you can see for yourself, this didn't happen with the Marantz SA-12SE — it stayed down around –140dB. Again, on Graphs 8 and 9, when the test signal was more than 90dB down the same result was noted.

CONTINUED ON PAGE 114 ▶

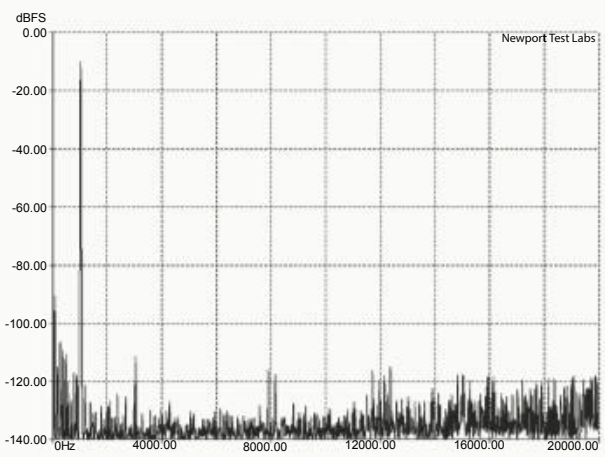




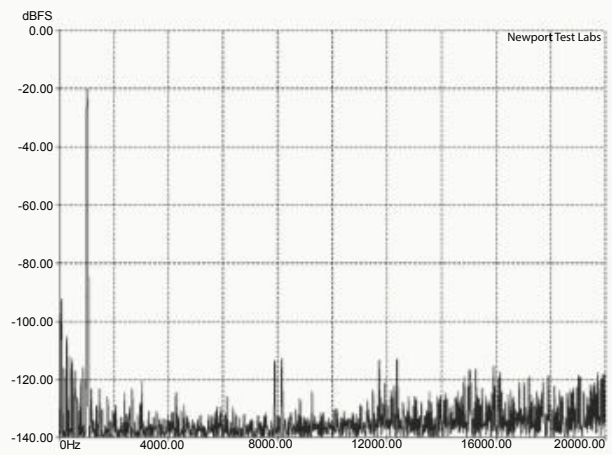
Graph 1: Frequency response (44.1kHz/16-bit) with Filter 1 (red trace) and Filter 2 (black trace).



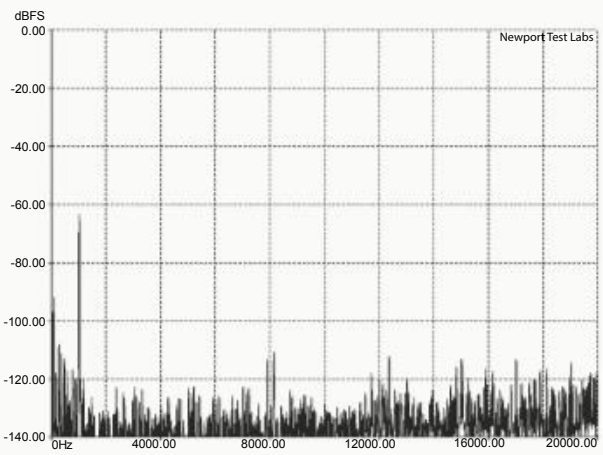
Graph 2: THD @ 1kHz @ 0dB recorded level.



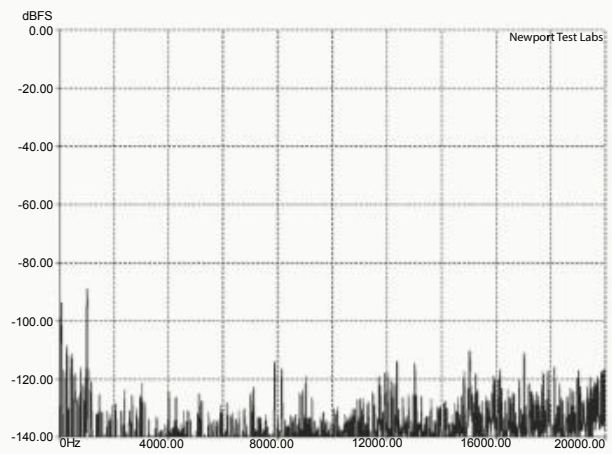
Graph 3: THD @ 1kHz @ -10dB recorded level.



Graph 4: THD @ 1kHz @ -20dB recorded level.



Graph 5: THD @ 1kHz @ -60dB recorded level.



Graph 6: THD @ 1kHz @ -80.59dB recorded level (no dither}.

BOWERS & WILKINS PX5

WIRELESS NOISE-CANCELLING HEADPHONES

On-ear headphones — supra-aural rather than circum-aural — are often neglected as a breed in favour of either in-ear buds or full-size over-ear headphones. Some don't like the permanent press of fabric against ear; the fit can feel tighter, even when, as with the PX5, the softness of the earpads are more like having little pillows either side of your head.

Besides, the advantages are considerable. They avoid, of course, the invasion of your ear-canal and potential hazardous pressure development of in-ear designs, while they score significantly for size compared with over-ear models, as is immediately apparent when comparing the PX5 design directly with the PX7. They weigh 241g compared with the PX7's 310g, and they take up significantly less storage space, though again here the headshells turn flat but don't pivot inwards into a foetal fold for more compactness still. That's likely due to the limited flexibility of the injection-moulded composite carbon fibre arms used here as on the PX7, which again look a little dirty in their patchy matte finish, but which contributes to that reduced weight along with the strength of this futuristic material. Overall the PX5s look very sleek indeed, with the logo-embossed metallic housings contrasting with the woven headband and leather memory foam earcups. I tested the sporty blue model, but they also come in a more purposeful black.

The trade-off for the smaller size and lower weight is a smaller driver, 35.6mm in diameter compared to the PX7's 43.6mm, not that this affects either their frequency response or distortion levels, which are quoted identically to the larger model. Their quoted battery life is 25 hours compared with the PX7's 30 hours, but that aside everything else is the same — the intuitive controls with four settings of noise-cancelling available (one being 'off'), the same app to oversee your selections and perform firmware updates, and the same aptX Adaptive codec onboard to support better-than-CD Bluetooth transmission from those devices able to support it.

Perhaps most impressive is the way they combine their luxurious look and feel with their delightful sonic performance, which loses a little in spaciousness and dynamics compared to the PX7's over-ear imaging, but they maintain the natural balance and detail, delivering one of the most enjoyable on-ear performances I've heard; I used the PX5s as my commute 'phones of choice for several months. Their natural midrange was a delight with Billie Holiday's 'Songs For Distingué Lovers' album, her raspy story-telling dead centre while the band ping-ponged from either channel in tight support, sax and trumpet right, drums and piano left; all the languor and swing of *One For My Baby* was impeccably imparted. Bass frequencies are warm and well-balanced on modern material; on Michael Kiwanuka's *You Ain't the Problem*, the meandering bass lines complemented distorted guitar lines and Kiwanuka's centrally-boxed vocal without overpowering the complex rhythms beneath.

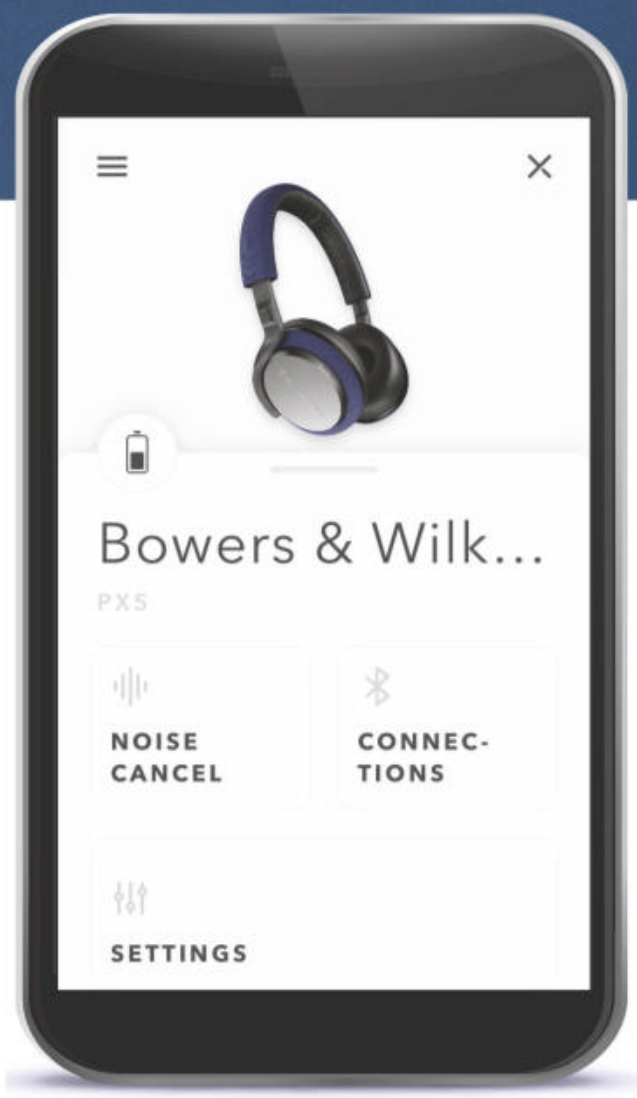
Only when critically listening do a few flaws become more evident, notably some of the lower-mid support being curtailed, so that vocals can thin out — kd lang sounded slighter than her usual velvet tones, Leonard Cohen's vocal tone descended less deeply than it should, and the PX5s left Dion's *I Read It (in the Rolling Stone)* sounded overly edgy. But that's not to say they can't take a modern bass line and run with it: Tyler, The Creator's *Earfquake* sounded fine and fizzy on its open bars before the massive descending bass notes flooded out full and dominant.

If you are out for a spell of critical listening, plug in the cable. It returns some of that lower midrange, better supporting both male and female vocals, and it also sharpens timing, something particular notable when comparing performance on dynamic solo piano pieces, where the edge and attack were significantly improved by taking Bluetooth out of the circuit. As with the PX7, though, you still need power to play via cable, so it won't save you in a battery crisis, though again the PX5 can refill for five more hours play time from just a 15-minute charge.

I didn't need to reach for the cable to improve latency, however; the PX5s had impressively low audio delay when watching videos or playing games, avoiding that annoying lag between audio and visual that sometimes occurs over Bluetooth. With just the slightest delay in lip-sync over Bluetooth AAC from an iPhone, even my resident sync-o-phobe

The B & W PX5 wireless on-ear headphones sound fantastic, with a detailed and natural-sounding profile

Strong but patchy: the carbon-fibre-molded arms are high-tech but look a little dirty in their finish.



had no problem watching spoken-word video content over the PX5s. This should be still further reduced once you have a device supporting aptX Adaptive (or indeed, if you use the supplied cable).

As for noise-cancelling, this was only marginally less effective than that enabled by their bigger brother PX7, the on-ear design not providing quite the passive seal and acoustic control of the best over-ear noise-cancellers, but they still hugely reduced the bus commute rumble to allow a quieter background for my music and podcasts. As usual, screaming kids or chattering teenagers still break through, since noise-cancelling is more effective at lower frequencies than high.

Overall, the Bowers & Wilkins PX5 wireless on-ear headphones sound fantastic, with a detailed, natural-sounding profile. They have slightly smaller drivers than the flagship PX7, sounding less spacious and full, but their compact design may be a better fit for those looking for sound on a regular commuting run. *Jez Ford*

SPECS & CONTACT DETAILS

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Bluetooth codecs: SBC, AAC, aptX Classic, aptX HD, aptX adaptive
Quoted playback time: 25 hours Bluetooth with NC; rapid charge 5 hours playback in 15 mins
Weight: 241g
Contact: Bowers & Wilkins
Telephone: (02) 9196 8990
Web: www.bowers-wilkins.net

THE WEATHER STATION

Ignorance [Fat Possum/Inertia]

Rich with deft and diverse instrumentation, mazelike production and breezy, low-key guitar lines that really come to life on repeat listens, the fifth Weather Station album is a true *tour-de-force* of conscionable musicality — it comes three years after their self-titled effort, but it's the kind of album most bands would spend decades slaving over. The stirring flourishes of strings, flute, saxophone, synth and other instruments add a sense of luminous, extraterrestrial whimsy to what are otherwise very pensive and melancholic tunes; not a minute passes by without at least a flicker of something alluringly *avant-garde*, leading to what I am confident in stating is The Weather Station's most charismatic — and effortlessly most exciting — offering to date.

PINEGROVE

Amperland, NY [Rough Trade/Remote Control]

Showcasing all the best parts of the band's idiosyncratic spirit, Amperland, NY works equally well as an entry point for potential new 'pinenuts' as it does as the soundtrack for Pinegrove's titular high-concept arthouse film. The charmingly analogue affair re-appropriates 22 of the emo-country icons' greatest and most emotionally stirring gems, but adds more fleshed-out arrangements, a greater sense of cinematic opulence, and a perfectly struck balance between the rough, low-fi edginess of their early recordings and the crisp, polished shimmer of 2020's Marigold LP. The earliest cuts obviously benefit most from this, but the record as a whole sounds resoundingly tight and calculated. For those already steeped in the band's lore, there are plenty of flourishes to make these cuts feel fresh.

STUMPS

All Our Friends [Cooking Vinyl]

Driven by slick and summery, ultra-jangly guitar leads, shimmery synths and soulful vocal hooks that belt far beyond the foreground, Stumps have rung a dismal year out with a well-earned dose of over-the-top ebullience. Even in its most reflective points (such as the aptly gloomy *2020*), the Sydney trio makes it hard not to have toes tapping or shoulders swaying — and when they kick into full force on power-pop epics such as *I've Had Enough* and *Daffodils*, dancing in your seat like a total maniac is absolutely mandatory. Of course, I'd be remiss not to note how candidly earnest their debut album is beneath its bouncy, bombastic veneer by pointing out that *All Our Friends* is a retro-tinged indie-rock epic with equal parts heart and spirit, and plenty of both to share. It digs deep into multiple diverse genres, reprising stories of depression, addiction and abuse, but there's also humour, contemplation and joy here, with a ying and yang balance that's a feast for the ears.

CITIZEN

Life In Your Glass World [Run For Cover/Cooking Vinyl]

After winding us down the rabbit hole of heavy-hearted post-rock and heady emo on 2017's 'As You Please', nothing could've prepared me for the fearlessly bold punch and pomp of Citizen's career-defining fourth LP. Life In Your Glass World sees this Toledo-based trio acutely energised and amped right the hell up, revelling in huge, headbang-inducing riffs and a rhythm section that's always nothing short of riveting. Perhaps it's because they did the whole thing in-house (actually, Mat Kerekes' garage, though you'll never be able tell, even with a great sound system, because this record sounds mighty sharp, with mixes always beautifully dense and dynamic), or that every track was built around beats instead of riffs. It's an unashamedly bouncy ride from start to finish, with splashes of bassy funk and shimmery pop making cuts such as *Blue Sunday* (the second single) and *Black and Red* immediate hits.

HAYLEY WILLIAMS

Flowers for Vases/ descansos [Atlantis/Warner]

The surprise sequel to Hayley Williams' synth-inflicted solo debut, 'Petals For Armor', puts the enigmatic Paramore frontwoman in a much gloomier and more introspective atmosphere. The slow-burning journey is strikingly analogue, Williams laying her soul bare over a bed of raw, folky acoustic guitars and warm, empyrean keys. Such visceral honesty and tangible intimacy makes the record a bold and bewitching listen from cover to cover; I've always known Hayley had a skill for earnest and emotive balladry, but Flowers For Vases ups the ante tenfold with its soft and strained vocal runs and wintry, understated melodies. It's a truly enthralling spread of strum and sonder, on which Williams fully embraces her Nashville origins and absolutely nails every folky bend and atmospheric warble. In many ways it's just a follow-up break-up album, the break-up being of her 10-year relationship with New-Found Glory's Chad Gilbert, but Williams looks beyond him to previous failed romances. It's a memorial — *descansos* indeed.

THE ANTLERS

Green To Gold [Anti-]

There's no other way to say it really: The Antlers' comeback effort is simply delightful. Like a warm cup of tea and the smell of fresh earth on a dewy autumn's morning, the ultra-crisp strumming, honeyed warbles and hypnotically dreamy vocal runs at play are downright idyllic and enthralling. It's a markedly more joyful offering from the indie-rocking Brooklynites, lacking their once-signature undertone of existential anxiety. But it suits the record well, shifting between cruisy, snail-pace balladry and bright, cantering indie-pop jams. The production is clean, but not plastic, the performances tight but not over-wrung; it feels good to listen to — a bit like you're sitting in on a casual Sunday morning jam session with the band, sharing smiles, the odd illicit substance or three and nodding along as you all lose yourselves in the labrythnine soundscapes and the ethereal joy of music-making. Why have we had to wait a long seven years from "Familiars" I would like to ask Peter Silberman. But likely he wouldn't reply.

JONI MITCHELL
Archives Vol 1 [Rhino]

As you can guess from the subtitle, this collection of five discs reveals Joni at the very start of her career, beginning with a radio broadcast that finds her performing nine tracks, including *House Of The Rising Sun* and *Molly Malone*. The set concludes with a live recording made at Canterbury House in 1967, on which we hear more familiar self-penned tracks, including *Little Green* (about giving up her daughter for adoption) and *The Circle Game*. The beauty of this collection is that we first hear her strumming her guitar and singing standard folk repertoire in her unusually austere soprano voice, but then we hear her as she matures into a unique artist, first with unusual covers, and then singing her own material. Along the way we hear spoken interludes where she shares her philosophies, analyses her first marriage, and makes asides about the likes of Dylan. It's a true portrait of an artist and, as such, it's a priceless record of her work.

BLACK SABBATH
Paranoid Super Deluxe [BMG]

Black Sabbath set the blueprint for what heavy metal looks and sounds like. Headed up by Ozzy Osbourne and with Tony Iommi on guitar, their music still resonates today. The album that put them on the map is Paranoid, which now gets a 5LP/ 4CD 50th Anniversary deluxe release: the full original album, a 1974 quad mix converted to stereo, and two concerts from 1970. To hear hits such as *War Pigs*, *Paranoid*, *Planet Caravan* and *Iron Man* in new formats is quite something. The grainy distortion and muted chugging of *Paranoid* still creates goosebumps, while the shudder of *Iron Man*'s intro, and *Rat Salad*'s snaky riffs illuminate Iommi's esteemed place in metal. The remastered audio sounds clearer, although the often unique stereo placement does offer new perspective. As strong as the album sounds, the live tracks are something else, especially the Casino de Montreux performances which positively scream out of the speakers! Great stuff!

MARTIN BARRE
50 Years of Jethro Tull [Store For Music]

This 2CD compilation is a collection of live and studio cuts that Barre says celebrates some of his favourite Tull tunes. The song listing is drawn almost exclusively from Tull's classic late-60s/70s period. The live tracks are delivered with a confident swagger, mining a very 21st century classic rock sound — these are modern interpretations rather than re-creations, singer Dan Crisp adopting a mid-Atlantic tone. Retooled as a swinging showband blues, opening track *My Sunday Feeling* sets the pace: Barre's guitar is tastefully metallic in flavour. It's also an opportunity to enjoy some of the deeper cuts in Tull's back catalogue: the clever, twisty *Sealion*, the proto-doom of *Nothing To Say*, and especially the groovy *Teacher*. The studio tracks feature the vocals of Alex Hart and Becca Langsford, with upbeat and bittersweet runs through the *Life Is A Long Song*, *Cheap Day Return* and *One White Duck*. The highlight is a folk gospel version of *Locomotive Breath*.

CHRIS SQUIRE
Fish Out Of Water [Esoteric]

Of all the mid-70s solo albums made by Yes members, Squire's has perhaps endured as the best loved. Reissued in 2018, it's now available on Blu-ray, with hi-res mixes and original promo footage, specifically to appeal to those for whom sound quality is important. It's an album that begins high and keeps on elevating. *Hold Out Your Hand* succeeds in compressing the very essence of Yes into four minutes, with hooks and harmonies, and one's reminded how key Squire's own voice was to that band's distinctive magic. And as it swims through seas of strings, brass, horns and woodwind, Fish… embraces the motherlode on *Silently Falling*, which lopes through tempo shifts in a lovely sonic description of a snowfall. Inevitably, Squire's bass playing is present and characterful, but this never feels like it's a record about the bass: it's ambitious music attaining both warmth and wildness. The 15-minute finale, *Safe*, has Squire paying homage to *Tubular Bells*.

UNITOPIA
The Garden [Plane Groovy]

The first two discs in this new set contain a remastered version of the original album, while the third features a collection of live performances and one new song. Unitopia dip their toes into a variety of styles when the mood is upon them, and they're not afraid to show off. (The title track name-checks 15th century Dutch painter Hieronymus Bosch and his famous triptych The Garden Of Earthly Delights.) The midsection throws in Spanish guitar and flute, a piano solo and some smooth jazz saxophone. These stylistic diversions are undeniably engaging, but Trueack and Timms never allow them to extend to a full track and the band is quick to revert to their middle-of-the-road instincts. *Give And Take* borrows a leaf from the book of Peter Gabriel, and there's a dash of Arabian music in *Angeliqua*, but the tendency towards a steady mid-tempo and the gentle vocal delivery of Mark Trueack means that much of the set feels pedestrian.

THE POLICE
Every Move You Make [A&M]

If you thought that the release of The Police's studio recordings on six LPs was a bit pricey, despite the fact that the vinyl, created by Germany's Optimal Media, was ultra-flat and ultra-quiet, you need to pick up the set on CD. At around $60, it's a bargain. Jazz, rock and reggae influences are evident, along with world-class musicianship. The remastered sound is brilliant. But most of all, you'll hear some of the most distinctive pop melodies ever written, mostly by Sting. His classics in his time with The Police included *Message in a Bottle, Spirits in the Material World*, *Every Little Thing She Does is Magic*, *The Bed's Too Big Without You*, *Roxanne*, *So Lonely*, *Walking on the Moon* — the list just goes on and on. I binge-listened and when I finally finished, I couldn't credit that back in the day I took the band for granted when in hindsight it's obvious that they were of the very best groups to emerge from the post-punk era. Maybe they made it look too easy back then.

DAWNWALKER

Ages [Bandcamp]

As wistful, windswept and epic as their name suggests, Dawnwalker have evolved hugely since their 2018 debut. Ages is an album designed for total immersion, as the London four-piece explore the outer reaches of progressive metal, post-rock and a strain of dark, lysergic folk. The production has a shoegaze-like warmth and density to it; the perfect way to present songs like sprawling opener *The Wheel*, with its brutal metal detours and moments of woozy ambience. Everything is shrouded in reverb, but played with punch: especially the the fast, furious black metal sections in A*ncient Sands*. For all its diversity, Dawnwalker leader and songwriter Mark Norgate has written some emotionally potent songs. *Burning World* mixes dreampop elegance and post-metal stomp, building to a hair-raising mid-song crescendo, before spiralling off into a feedback-laced chorale. In contrast, closer *The Cataclysm* is a model of simplicity and timeless folk rock grace.

KEPLER TEN

A New Kind Of Sideways [White Star]

On the follow-up to 2017's well-received debut album Delta-V, Kepler Ten have invested in considerably more jazz fusion mechanisms, layering on deft melodic touches, thereby showing they've an appreciation for intelligent pop. This is evident on *Weaver*, where James Durand's sensitive vocals dovetail brilliantly with a musicality that sweeps across the spectrum from volatile complexity to easy listening. The same is true on *These Few Words*, where Durand and Steve Hales' keyboard motifs and Alistair Bell's guitar surges bring 80s Rush to mind. First single *Falling Down* and the title track both dip into the Muse book with the way they merge sumptuous sounds with tough riffs. ANKOS is a semi-conceptual album, but it can be enjoyed for its musical sentiments as much as any narrative thread. The emotional *One And The Same*, the final track, brings provides a stunning conclusion to what is a breathtaking experience.

PLINI

Impulse Voices [Plini.co]

Plini Roessler Holgate is a master guitarist, but *I'll Tell You Someday*, the first track on his second album, brings a frown to the face. It's all about fretboard technique as opposed to any musical message. Could this gifted young Australian have succumbed to the lure of indulgence? Thankfully, no. *Papelillo* and *Perfume* soon have him back on the rails, as the jazz rock applications, so crucial on that first album, spring back to prominence. *Last Call* sees Plini complemented by piano (Dave Mackay), bass (Simon Grove) and drums (Chris Allison). For the most part, the album finds the musicians working in harmony. Naturally, the guitar is to the fore, but the rhythmic inventiveness of Allison and Grove is vital to the way the title track and *Pan* are hatched — Plini never makes the mistake of burying them in the mix. *The Glass Bead Game* is a formidable closer, the three instrumentally embracing one another in a forceful, titanic fusion.

KEVIN GODLEY

Muscle Memory [The state51 Conspiracy]

Kevin Godley's very first solo album grew out of a single track, *Expecting A Message*. French EDM producer Luke Mornay approached the ex-10cc man to add the words and melody to music he'd written. Energised by the experience, Godley put out an ad asking for others to "write and record" with him. Of the 286 tracks he was sent, Muscle Memory is the result; it's a splendidly varied set of collaborations linked by Godley's unique voice and take on things. *The Bang Bang Theory* looks at America's gun culture, *The Ghosts Of The Living* is a melancholic take on those once held dear; *Periscope* is astonishing, almost as if David Bowie has chosen Godley to channel his vocals from beyond. In 1974, 29-year-old Godley sang on 10cc's Sheet Music "Old men of rock and roll came bearing music, where are they now?" At 75, Godley is right here. His voice on Muscle Memory may not be quite as sweet as back then, but it's as imaginative and surprising as ever.

KING GIZZARD & LIZARD WIZARD

K.G. [Bandcamp]

There's something rather disconcerting about the melody played by the acoustic guitar and flutey keyboards on K.G.L.W., the short, stately opener on King Gizzard's 16th album in eight years. A return to the quarter-tone tunings that this Melbourne band first used on Flying Microtonal Banana in 2017, these scales colour their songs with an unspecified exotica with a Middle Eastern vibe. *Ontology* evokes the approach of American psychedelic group allied with a 21st century take on raga rock. It also echoes the group's own Nonagan Infinity from 2016, but that album's relentless rhythmic drive is replaced here by drummer Michael Cavanagh's skipping syncopated beats. He gives the songs a feel of rotation. Towards the end of the album it starts to veer away from this template. *Honey* is more straight-ahead, but that track's breezy lightness is chomped up by the closer *The Hungry Wolf Of Fate* with its snarling wah-wah riffs and lead guitar wig-outs.

TIGER MOTH TALES

The Whispering Of The World [White Knight]

A spirit of romanticism suffuses the new album from Tiger Moth Tales, aka Peter Jones. To make it, Jones decamped from his usual home studio setting to Fieldgate Studios in Wales. There, in another first, he worked with a producer and instead of playing all the instruments himself, his piano is accompanied by a string quartet, (the arrangements are sumptuous). The album explores themes of appreciating the beauty of the natural world, memory and loss, and the promise of renewal that comes with every dawn. Jones is a sensitive and astute lyricist, unafraid to bare his heart while remembering absent friends in *Sweeter Than Wine*. The sad songs, such as *Lost To The Years*, are bittersweet rather than maudlin. In *Blackbird* and *Taking The Dawn*, Jones finds hope in the sound of birds singing with the sunrise, while the instrumental *A Town By The Sea* captures the bustle of some idyllic hamlet. A beautiful listen.

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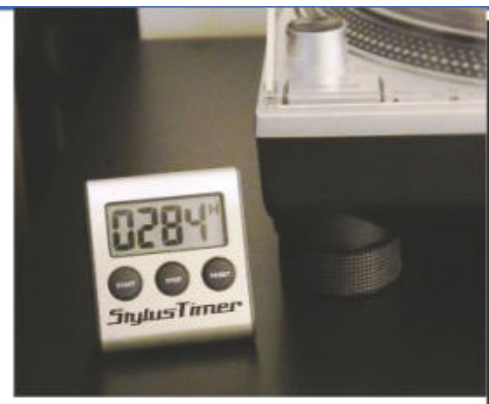

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▶ ***CONTINUED FROM PAGE 99***

Marantz's engineers have made significant improvements to the company's D/A conversion process

Graph 8, without dither, shows the 'grass' across the noise floor introduced by the DAC's non-linearity, while Graph 9 shows that the dithered signal removes the non-linearities but not at the expense of an increased noise floor.

Intermodulation distortion (CCIF) was extremely low, as you can see from Graph 10. The two signals to the left are the test signals at 19kHz and 20kHz and you can see that there are no sidebands, nor has a 'phantom' unwanted difference signal been regenerated down at 1kHz, as is usually the case. The two signals to the right of the test signals are images caused by the digital-to-analogue conversion process Marantz is using.

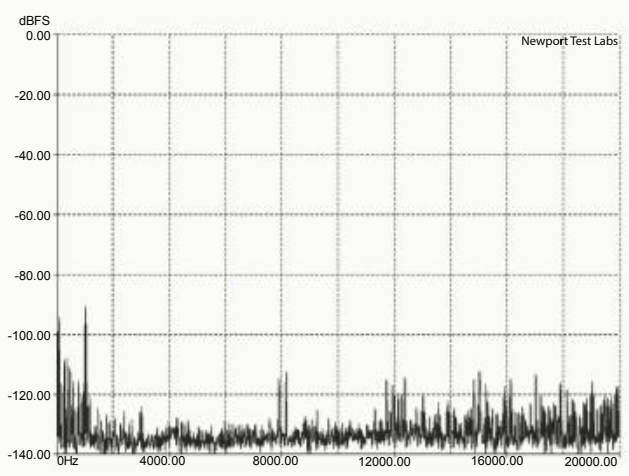
Graphs 11 and 12 show the effect of the Marantz's two filters on frequencies above 20kHz, using a 20kHz test signal. You can see the image of the signal is attenuated far more by Filter 2 than it is by Filter 1.

The effect of the filters on an impulse is shown on the two oscillograms. You can see that although Filter 1 gives a very clean impulse, there's time-reversed ringing present (albeit almost non-existent) and almost no negative-going waveform at all. Filter 2 has a more significant time reversed component, increased ringing overall and a significant negative-going waveform component.

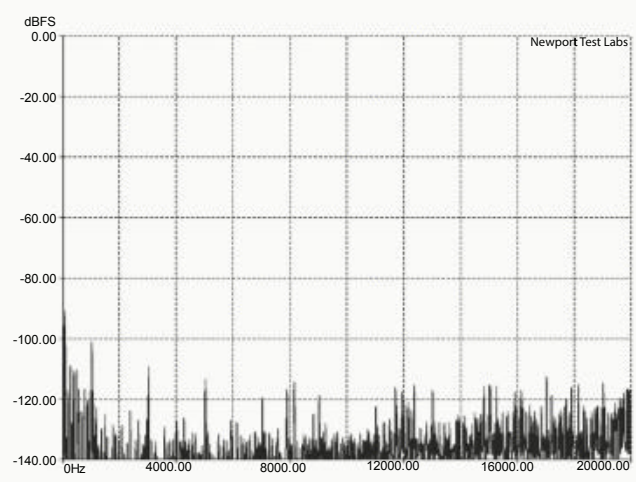
The same effect can be noted on the square waves captured by Newport Test Labs. Other than not being entirely 'square' due to the high-frequency cut-off necessitated by the sampling rate (44.kHz), the square wave reproduced by using Filter 1 looks the most like it came from a square wave generator. Interestingly, although there's significant ringing introduced by using Filter 2, the time-reversal is not extensive, extending only around half-way along the tops and bottoms of the square wave.

At just 0.18-watts, standby mains power consumption was far lower than the Australian government's mandate of 0.5-watts, and while the 32.66-watts drawn from your mains power while the player is operating is a little higher than I might have expected, it's less than your average light bulb, so not an issue.

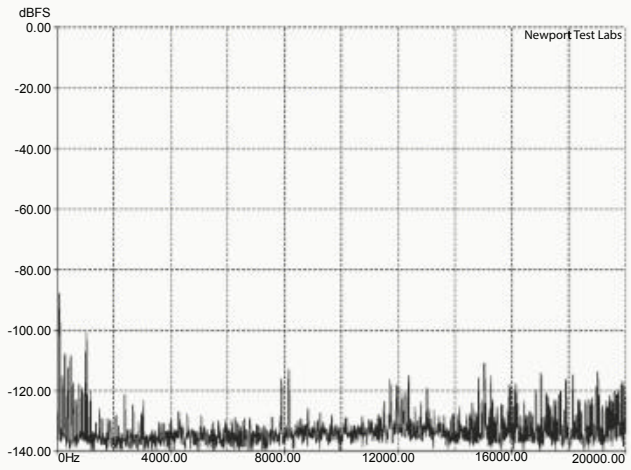
It is truly gratifying to discover that Marantz's engineers are not sitting on their laurels and have made significant improvements to the company's unique digital-to-analogue conversion process — improvements that are plainly evidenced by the superior measured performance of the Marantz SA-12SE. *Steve Holding*



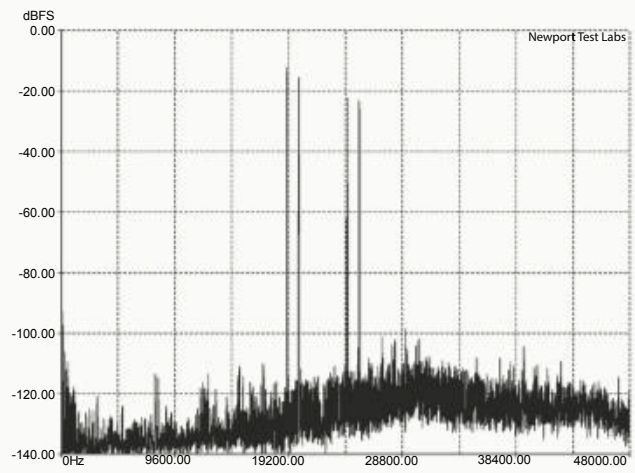
Graph 7: THD @ 1kHz @ -80.70dB recorded level (dithered).



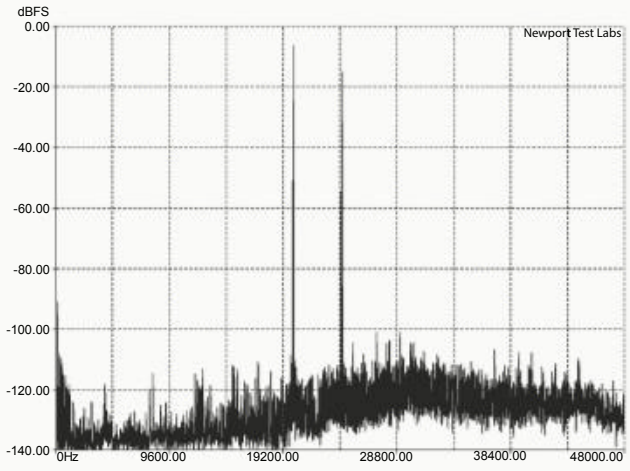
Graph 8: THD @ 1kHz @ -91.24dB recorded level (no dither).



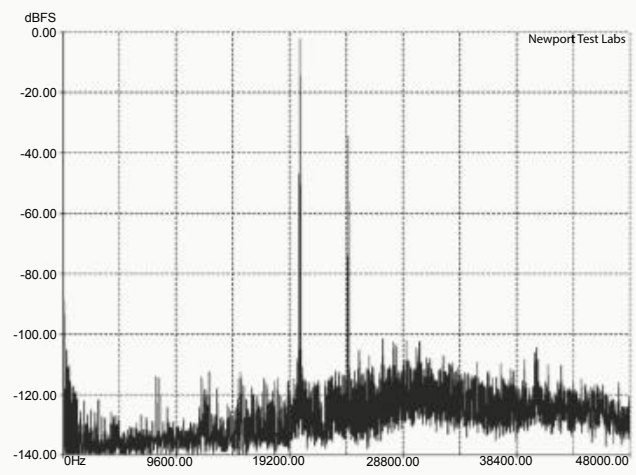
Graph 9: THD @ 1kHz @ -90.31dB recorded level (dithered).



Graph 10: CCIF IMD @ 0dB using 19kHz and 20kHz test signals in 1:1 ratio.



Graph 11: THD @ 20kHz @ 0dB recorded level using Filter 1.



Graph 12: THD @ 20kHz @ 0dB recorded level using Filter 2.

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ANNIVERSARY EDITION

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Oak

603 S2
Anniversary Edition
Red Cherry

606 S2
Anniversary Edition
matte white
Optional STAV24 floor stand shown

HTM6 S2
Anniversary Edition
matte black